



FB2140A FPL CULLUM SUBSTATION

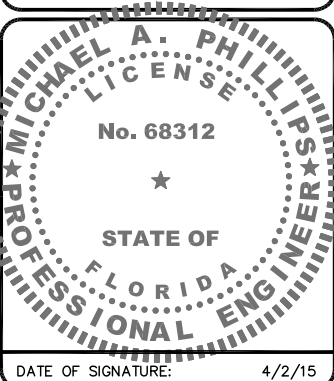
4000 NW 54th AVENUE
COCONUT CREEK, FL 33063

NEW SITE

REV	DATE	DESCRIPTION
A	1/7/15	PRELIMINARY
0	1/16/15	FOR PERMIT
1	4/2/15	REVISED

PROJECT NO.: 140-963.08
 DRAWN BY: M. L. BELLO
 CHECKED BY: M. ABBEY

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FPL CULLUM
SUBSTATION

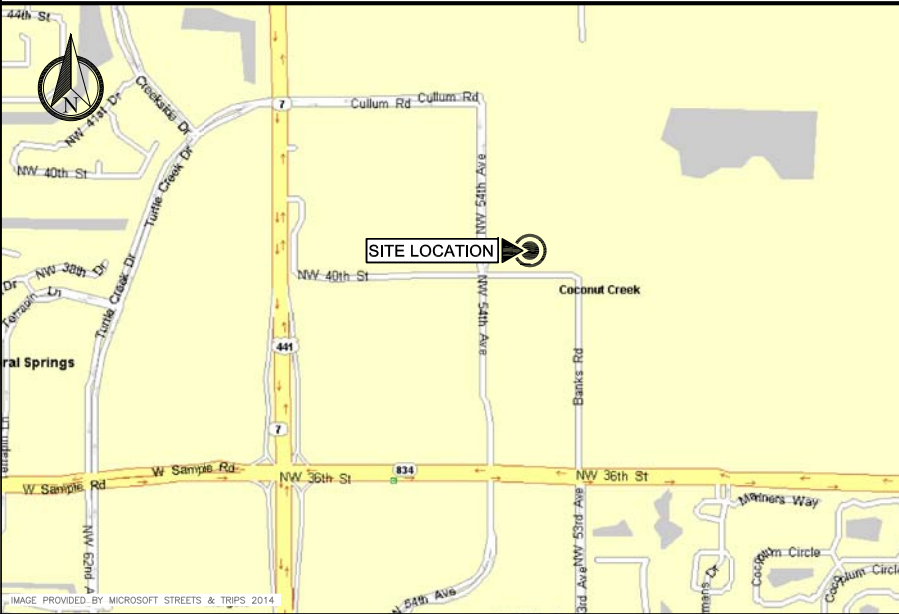
FB2140A

4000 NW 54th AVENUE
COCONUT CREEK, FL 33063

SHEET NAME
TITLE SHEET

SHEET NUMBER
T1

LOCAL MAP



PROPERTY SUMMARY

FOLIO
4842 18 03 0061

PROPERTY OWNER
FLORIDA POWER & LIGHT CO
700 UNIVERSE BLVD
JUNO BEACH FL 33408

LATITUDE
26.278711° N

LONGITUDE
80.195967° W

ZONING JURISDICTION
CITY OF COCONUT CREEK

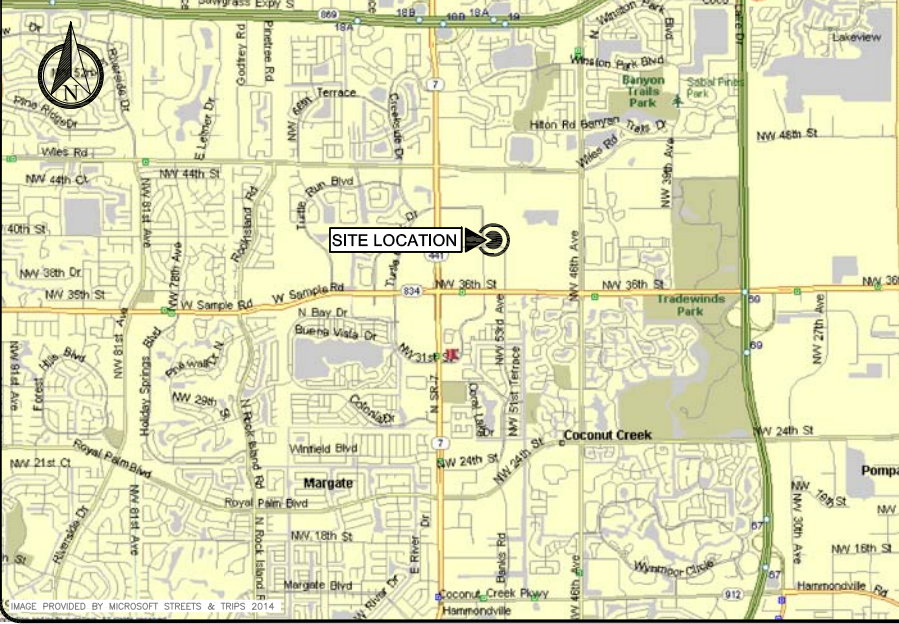
PROJECT DESCRIPTION

1. THE WIRELESS COMMUNICATIONS FACILITY IS NOT INTENDED FOR HUMAN OCCUPANCY.
2. THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. THE SCOPE OF WORK CONSISTS OF:
 - INSTALLATION OF NEW ANTENNAS ON FPL REPLACEMENT POLE.
 - INSTALLATION OF NEW TELECOMMUNICATIONS EQUIPMENT

INDEX OF DRAWINGS

SHT. NO.	DESCRIPTION	REV. NO.
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T2	NOTES	0
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C2	ENLARGED SITE PLAN	0
C3	COMPOUND PLAN	1
C4	ELEVATION	1
C5	EQUIPMENT PAD DETAILS	0
C6	EQUIPMENT MOUNTING DETAILS	0
C7	FENCE DETAILS	1
C8	GATE DETAILS	0
C9	COAX MOUNTING DETAILS	0
C10	UNDERGROUND ROUTING DETAILS	0
S1	STRUCTURAL DETAILS AND NOTES	0
S2	STRUCTURAL DETAILS	0
S3	STRUCTURAL DETAILS	0
S4	STRUCTURAL DETAILS	0
S5	STRUCTURAL DETAILS	0
E1	ELECTRICAL NOTES	0
E2	GROUNDING NOTES	0
E3	UTILITY ROUTING SITE PLAN	0
E4	UTILITY ROUTING EQUIPMENT PLAN	0
E5	ELECTRICAL DETAILS	0
E6	GROUNDING PLAN AND NOTES	0
E7	ELECTRICAL DETAILS	0
E8	GROUNDING DETAILS	0

VICINITY MAP



DESIGN CRITERIA

DESIGN WIND SPEED: 170 MPH (ULTIMATE, 3-SECOND GUST)
132 MPH (NOMINAL, 3-SECOND GUST)

EXPOSURE: C
RISK CATEGORY: II

OPEN STRUCTURE

CODE COMPLIANCE

- ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.
1. 2010 FLORIDA BUILDING CODE WITH 2012 SUPPLEMENT.
 2. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70, NATIONAL ELECTRICAL CODE, 2008 EDITION.
 3. TIA-222-G WITH ADDENDUM 1 APPLICABLE STANDARDS.
 4. LIFE SAFETY CODE NFPA-101-2009.
 5. 2010 FLORIDA FIRE PREVENTION CODE.
 6. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 360-05 AND 341-05.
 7. UNDERWRITERS LABORATORIES (U.L.) APPROVED ELECTRICAL PRODUCTS.
 8. LOCAL JURISDICTIONAL REQUIREMENTS.
 9. CITY/COUNTY ORDINANCES.



1. FOR THE PURPOSES OF THESE CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:

- OWNER - T-MOBILE USA
- ENGINEER - CALTROP CORPORATION
- CONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)

2. PRIOR TO SUBMITTING HIS BID, THE CONTRACTOR SHALL VISIT THE JOB SITE IN ORDER TO (1) VERIFY ALL EXISTING CONDITIONS, (2) CONFIRM WHETHER ALL DIMENSIONS ARE AS SHOWN ON THE PLANS AND (3) CONFIRM WHETHER THE WORK MAY BE ACCOMPLISHED AS SHOWN. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER.
3. A 20-FOOT HORIZONTAL CLEARANCE DISTANCE SHALL BE MAINTAINED FROM ALL EXISTING POWER LINES.
4. THE CONTRACTOR'S USE OF A CONSTRUCTION STAGING AREA SHALL BE COORDINATED WITH THE OWNER WELL IN ADVANCE OF THE CONSTRUCTION START DATE.
5. LABOR, MATERIAL, TOOLS, EQUIPMENT, TRANSPORTATION AND TEMPORARY POWER SERVICES NECESSARY FOR AND INCIDENTAL TO COMPLETION OF ALL WORK SHALL BE PROVIDED AS INDICATED ON THE DRAWINGS AND/OR AS SPECIFIED HEREIN. LABOR AND MATERIALS SHALL BE FURNISHED AS REQUIRED FOR COMPLETE SYSTEMS, INCLUDING ALL ELEMENTS OBVIOUSLY OR REASONABLY INCIDENTAL TO A COMPLETE INSTALLATION, WHETHER OR NOT SPECIFICALLY INDICATED ON THE PLANS.
6. FOR TASKS REQUIRED TO BE PERFORMED BUT NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOT START WORK ON SUCH TASKS WITHOUT HAVING RECEIVED WRITTEN AUTHORIZATION FROM THE CONSTRUCTION MANAGER TO PROCEED.
7. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND EQUIPMENT UNLESS OTHERWISE INDICATED BY DIMENSIONS OR DETAILS. EXACT EQUIPMENT LOCATIONS MAY BE MODIFIED AS REQUIRED BY ACTUAL FIELD CONDITIONS. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE ENGINEER AND THE CONSTRUCTION MANAGER.
8. THE CONTRACTOR SHALL OBTAIN, PAY FOR AND DELIVER ALL REQUIRED PERMITS, CERTIFICATES OF INSPECTION, INCLUDING UTILITY CONNECTION FEES, ETC., REQUIRED BY THE AUTHORITIES HAVING JURISDICTION AND SHALL DELIVER SUCH DOCUMENTS TO THE OWNER PRIOR TO FINAL ACCEPTANCE OF THE WORK.
9. THE CONTRACTOR'S OPERATIONS SHALL BE CONFINED TO AREAS OF NEW CONSTRUCTION.
10. ALL NECESSARY PROVISIONS SHALL BE MADE TO PROTECT EXISTING IMPROVEMENTS, LANDSCAPING, PAVING, CURBS, GALVANIZED SURFACES, ETC, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO SAME RESULTING FROM THE CONSTRUCTION WORK. ALL DISTURBED AND DAMAGED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER UPON COMPLETION OF ALL WORK TO THE SATISFACTION OF THE CONSTRUCTION MANAGER.
11. THE FOLLOWING CLEANUP TASKS SHALL BE PERFORMED AS FOLLOWS: (1) ON A DAILY BASIS, KEEP THE GENERAL AREA CLEAN AND HAZARD FREE, REMOVING ALL WASTE, DEBRIS AND TRASH FROM THE SITE AND DISPOSING OF SAME IN A LEGAL MANNER. (2) UPON COMPLETION, LEAVE THE PREMISES IN A CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
12. ALL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S RECOMMENDATIONS EXCEPT WHERE IT IS SPECIFICALLY INDICATED OTHERWISE IN THE CONTRACT DOCUMENTS OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
13. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY HAVING JURISDICTION OVER THE PERFORMANCE OF THE WORK. MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AS WELL AS LOCAL AND STATE CODES, ORDINANCES AND APPLICABLE REGULATIONS.
14. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AT ALL TIMES, USING THE BEST SKILLS AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL OF THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK, INCLUDING CONTACT AND COORDINATION WITH THE CONSTRUCTION MANAGER AND WITH THE OWNER'S AUTHORIZED REPRESENTATIVE.
15. WITHIN TEN (10) WORKING DAYS AFTER PROJECT COMPLETION, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF AS-BUILT DRAWINGS, SWEEP TEST, CYLINDER TESTS, LIEN RELEASES, AND OTHER CLOSEOUT DOCUMENTATION AS REQUIRED BY THE OWNER. ALL SYSTEMS SHALL BE COMPLETELY ASSEMBLED, TESTED, ADJUSTED AND DEMONSTRATED TO BE READY FOR OPERATION PRIOR TO THE OWNER'S ACCEPTANCE.

GENERAL NOTES

1

1. THE APPROPRIATE UTILITY LOCATING SERVICES SHALL BE CONTACTED PRIOR TO THE START OF CONSTRUCTION IN ORDER TO VERIFY THE EXACT LOCATION OF ALL EXISTING UNDERGROUND UTILITIES.
2. THE INSTALLATION OF NEW UTILITIES SHALL BE COORDINATED WITH LOCAL AUTHORITIES.
3. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SUCH UTILITIES SHALL BE RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. EXTREME CAUTION SHALL BE USED WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES.
4. RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES THAT INTERFERE WITH THE EXECUTION OF THE WORK SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS THAT WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF THE LANDLORD AND/OR LOCAL UTILITIES.
6. DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION SHALL BE MINIMIZED.
7. ANY AREAS OF THE CONSTRUCTION SITE DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE. SUCH GRADING SHALL CAUSE SURFACE WATER TO FLOW AWAY FROM ANY EQUIPMENT SHELTER AND TOWER AREAS AND THE SOIL SHALL BE STABILIZED TO PREVENT EROSION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
8. THE SUB-GRADE SHALL BE COMPACTED AND BROUGHT TO A UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
9. BACKFILL SHALL CONSIST OF CLEAN SAND FILL APPROVED FOR USE BY THE ENGINEER. NO UNAPPROVED MATERIAL WILL BE ALLOWED. CLEAN SAND FILL SHALL BE FREE OF ALL ROOTS, BOULDERS, OR OTHER DELETERIOUS MATERIAL.
10. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EQUAL TO OR BETTER CONDITION THAN ORIGINAL.
11. SITE SIGNAGE SHALL BE PROVIDED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS FOR SUCH SIGNAGE AS MAY BE CONTAINED IN THESE DRAWINGS.

SITE WORK NOTES

2

1. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE LATEST EDITION OF THE AISC "STEEL CONSTRUCTION MANUAL".
2. MATERIAL:
 - A. ALL STRUCTURAL STEEL WF BEAMS SHALL BE ASTM A992 AND "HOT DIPPED" GALVANIZED IN ACCORDANCE WITH ASTM A123 AND ASTM A153 STANDARDS.
 - B. ALL STRUCTURAL PLATES, ANGLES, AND CHANNELS SHALL BE ASTM A36 AND "HOT DIPPED" GALVANIZED IN ACCORDANCE WITH ASTM A123 AND ASTM A153 STANDARDS, UNLESS NOTED OTHERWISE.
 - C. ALL TS MEMBERS SHALL BE ASTM A500 GRADE B (Fy=46ksi), AND "HOT DIPPED" GALVANIZED IN ACCORDANCE WITH ASTM A123 AND ASTM A153 STANDARDS.
 - D. ALL STRUCTURAL PIPE MEMBERS SHALL BE ASTM A500 GRADE B (Fy=42ksi), AND "HOT DIPPED" GALVANIZED IN ACCORDANCE WITH ASTM A123 AND ASTM A153 STANDARDS, UNLESS NOTED OTHERWISE.
 - E. ALL NON-STRUCTURAL PIPE MEMBERS SHALL BE ASTM A53 GRADE B, AND "HOT DIPPED" GALVANIZED IN ACCORDANCE WITH ASTM A123 AND ASTM A153 STANDARDS.
2. DESIGN, FABRICATION, AND CONSTRUCTION OF ALL CONNECTIONS SHALL CONFORM TO AISC STEEL CONSTRUCTION MANUAL.
3. WELDING:
 - A. ALL WELDS, WELDERS, AND WELD INSPECTIONS SHALL CONFORM TO THE REQUIREMENTS OF AWS D 1.1, LATEST REVISION.
 - B. ALL WELDS SHALL BE MADE WITH E70XX LOW HYDROGEN ELECTRODES.
 - C. ALL STEEL SHALL BE SPRAY GALVANIZED AFTER WELDING.
4. ALL BOLTS SHALL BE GALVANIZED 3/4" DIAMETER, A325-N, UNLESS NOTED OTHERWISE AND TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC. SECURE NUT WITH LOCKING WASHER.
5. THE CONTRACTOR/STEEL FABRICATOR SHALL LOCATE ANY REINFORCEMENT IN THE STRUCTURAL MEMBERS IN SUCH A MANNER SO THAT THERE WILL NOT BE CONFLICT WITH THE REINFORCEMENT WHEN INSTALLING ANCHORS. THE ANCHORS SHALL BE INSTALLED PER THE MANUFACTURER'S INSTRUCTION.
6. THE CONTRACTOR/STEEL FABRICATOR SHALL CONFORM TO THE MINIMUM EDGE DISTANCE REQUIREMENTS IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION.
7. ALL STRUCTURAL STEEL SHALL BE FABRICATED TO FIT AT BOLTED CONNECTIONS WITHIN 1/16 INCH TOLERANCE. STRUCTURAL STEEL SHALL NOT BE FLAME CUT UNDER ANY CIRCUMSTANCES WITHOUT APPROVAL OF THE ENGINEER.
8. THE CONTRACTOR/STEEL FABRICATOR SHALL CAP OR SEAL ALL PIPES AS REQUIRED TO PREVENT WATER INTRUSION.
9. THE CONTRACTOR/STEEL FABRICATOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO ANY STEEL FABRICATION. AT THE CONTRACTOR'S OPTION, FIELD SPLICES MAY BE USED FOR ERECTION PURPOSES. IF FIELD SPLICES ARE USED, THE SHOP DRAWINGS SHALL INCLUDE ALL DETAILS FOR THE PROPOSED FIELD SPLICES.
10. AT THE CONTRACTOR'S OPTION, SHOP WELDS MAY BE USED INSTEAD OF FIELD WELDS.
11. SUBMIT ORIGINAL SHOP DRAWINGS, INCLUDING COMPLETE DETAILS, SCHEDULES OF FABRICATION AND ASSEMBLY, PROCEDURES, AND DIAGRAMS. INCLUDE DETAILS OF CUTS, CONNECTIONS, CAMBER, HOLE, AND OTHER PERTINENT DATA. INDICATE WELDS BY STANDARD AWS A2.1 AND A2.4 SYMBOLS, AND SHOW SIZE, LENGTH, AND TYPE OF WELD. PROVIDE SETTING DRAWINGS, TEMPLATES, AND DIRECTIONS FOR INSTALLATION OF ANCHOR BOLTS AND OTHER ANCHORAGES TO BE INSTALLED AS WORK OF OTHERS' SECTIONS.

STRUCTURAL STEEL NOTES

3

REV	DATE	DESCRIPTION
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DRAWN BY: M. L. BELLO	CHECKED BY: M. ABBEY
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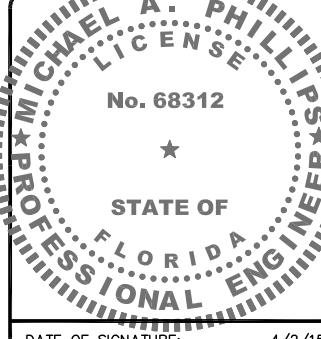
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3400 LAKESIDE DRIVE
SUITE 525
MIRAMAR, FL 33027
CERTIFICATE OF AUTHORIZATION 29214



1300 CONCORD TERRACE
SUITE 200
SUNRISE, FL 33323



DATE OF SIGNATURE: 4/2/15

FPL CULLUM
SUBSTATION

FB2140A

4000 NW 54th AVENUE
COCONUT CREEK, FL 33063

SHEET NAME

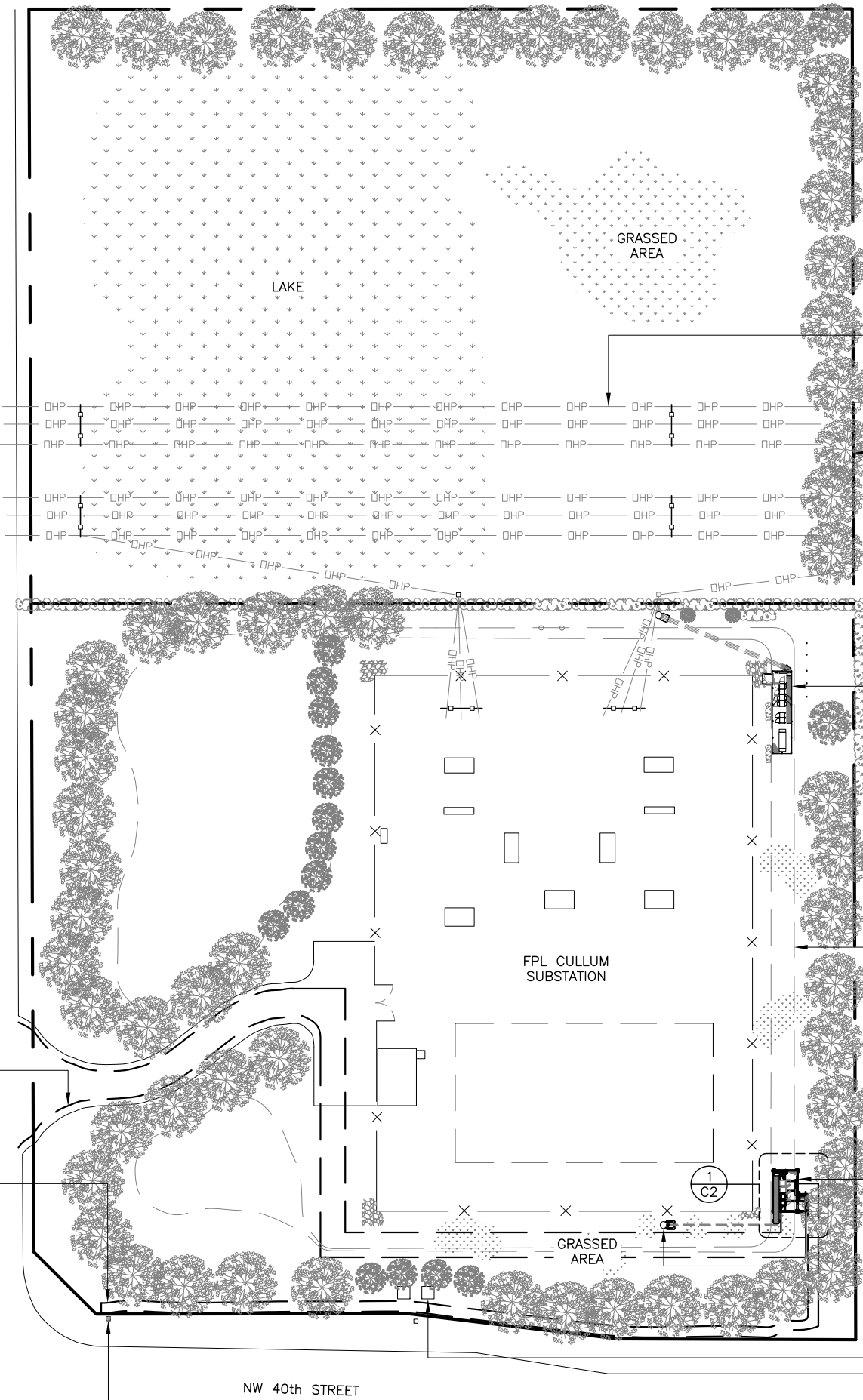
NOTES

SHEET NUMBER

T2



NW 54th AVENUE (WOCHNA BOULEVARD)



PROPOSED T-MOBILE 12' WIDE NON-EXCLUSIVE ACCESS LICENSE

PROPOSED T-MOBILE 5' WIDE NON-EXCLUSIVE UTILITY LICENSE

EXISTING OVERHEAD TRANSMISSION LINE (TYP.)

EXISTING PROPERTY LINE

EXISTING AT&T EQUIPMENT ELEVATED PLATFORM

EXISTING LANDSCAPE (TYP.)

OUTLINE OF RETENTION AREA (TYP.)

BOUNDARY OF PROPOSED T-MOBILE 12' x 20' ELEVATED PLATFORM AND LICENSED PREMISES

EXISTING FPL REPLACEMENT LIGHTNING SHIELDING MAST HARDENED BY FPL TO ACCOMMODATE WIRELESS ATTACHMENTS TO BE INSTALLED BY FPL AS REQUESTED BY WIRELESS CARRIERS

EXISTING PAD MOUNTED TRANSFORMER

EXISTING FPL FIBER DEMARC

NW 40th STREET

GRASSED AREA

LAKE

FPL CULLUM SUBSTATION

GRASSED AREA

1 C2

NOTES:

- 1. PROVIDE TREE BARRICADES FOR TREES ADJACENT TO THE PROPOSED ELEVATED PLATFORM AT THE SE CORNER OF THE SITE. TREE BARRICADES MUST BE PER CITY OF COCONUT CREEK CODE OF ORDINANCES SEC. 13-448 (n).
- 2. ALL SOD AREAS DISTURBED DURING CONSTRUCTION ARE TO BE RE-SODDED WITH LIKE MATERIAL.
- 3. TRENCHING OR ANY DIGGING WITHIN THE DRIPLINE OF EXISTING TREES IS TO BE DONE BY HAND AND THE CITY OF COCONUT CREEK LANDSCAPE INSPECTOR IS TO BE NOTIFIED.
- 4. EXISTING IRRIGATION, IF ANY, IS TO BE REPAIRED IMMEDIATELY IF DAMAGED DURING CONSTRUCTION.

SITE PLAN



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A	1/7/15	PRELIMINARY
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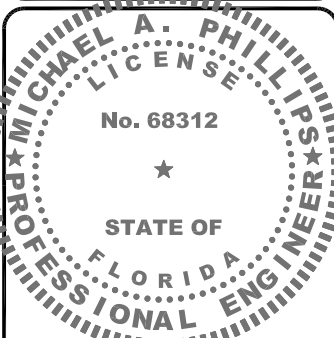
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1300 CONCORD TERRACE SUITE 200 SUNRISE, FL 33323

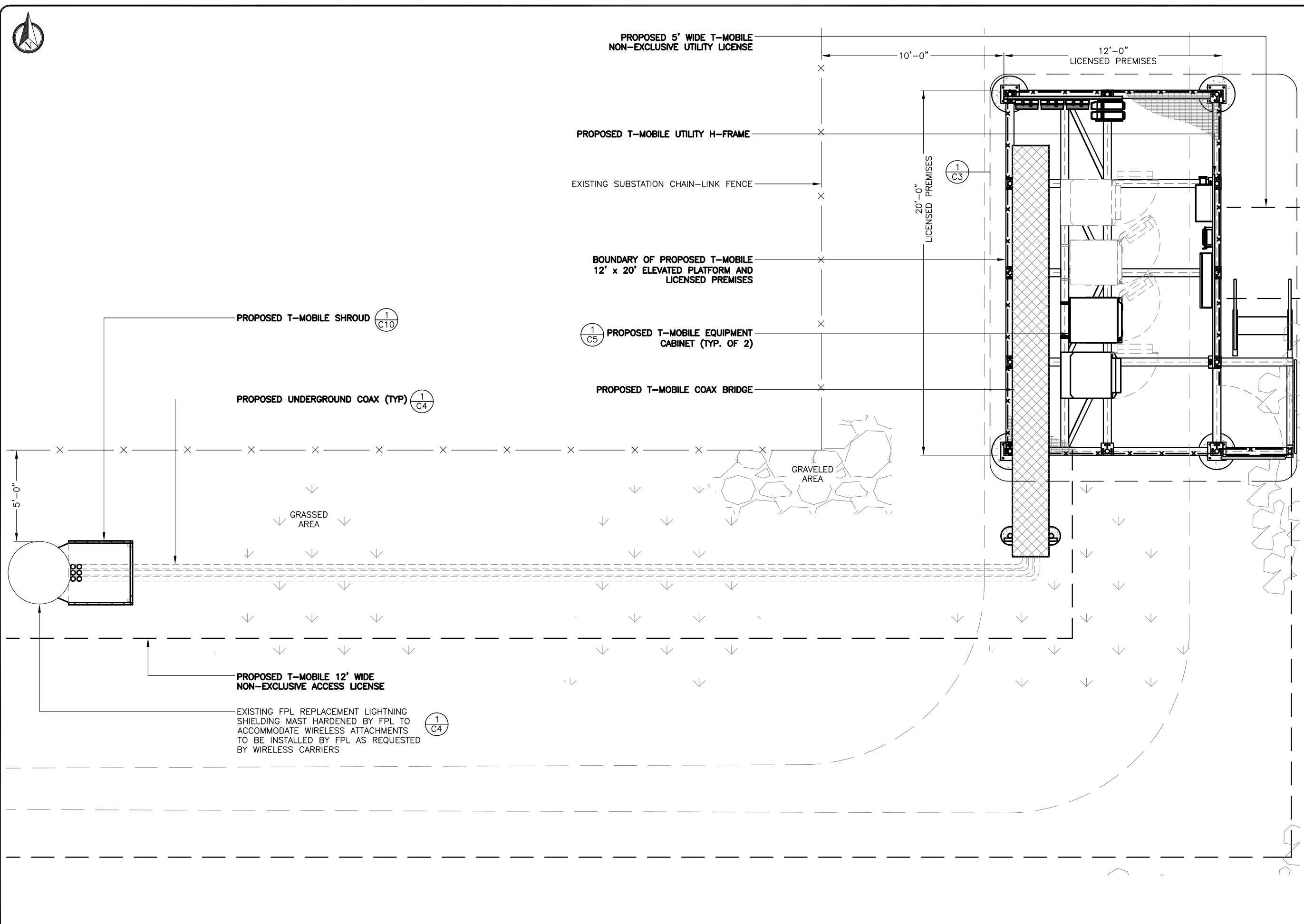


DATE OF SIGNATURE: 4/2/15

FPL CULLUM SUBSTATION FB2140A 4000 NW 54th AVENUE COCONUT CREEK, FL 33063

SHEET NAME: SITE PLAN

SHEET NUMBER: C1



PROPOSED 5' WIDE T-MOBILE NON-EXCLUSIVE UTILITY LICENSE

12'-0" LICENSED PREMISES

PROPOSED T-MOBILE UTILITY H-FRAME

EXISTING SUBSTATION CHAIN-LINK FENCE

BOUNDARY OF PROPOSED T-MOBILE 12' x 20' ELEVATED PLATFORM AND LICENSED PREMISES

PROPOSED T-MOBILE SHROUD (1/C10)

(1/C5) PROPOSED T-MOBILE EQUIPMENT CABINET (TYP. OF 2)

PROPOSED T-MOBILE COAX BRIDGE

PROPOSED UNDERGROUND COAX (TYP) (1/C4)

GRAVELED AREA

GRASSED AREA

PROPOSED T-MOBILE 12' WIDE NON-EXCLUSIVE ACCESS LICENSE

EXISTING FPL REPLACEMENT LIGHTNING SHIELDING MAST HARDENED BY FPL TO ACCOMMODATE WIRELESS ATTACHMENTS TO BE INSTALLED BY FPL AS REQUESTED BY WIRELESS CARRIERS (1/C4)

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CALTROP Telecom

3400 LAKESIDE DRIVE
 SUITE 525
 MIRAMAR, FL 33027
 CERTIFICATE OF AUTHORIZATION 29214

T-Mobile stick together

1300 CONCORD TERRACE
 SUITE 200
 SUNRISE, FL 33323

MICHAEL A. PHILLIPS
 LICENSE
 No. 68312
 ★
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER

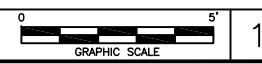
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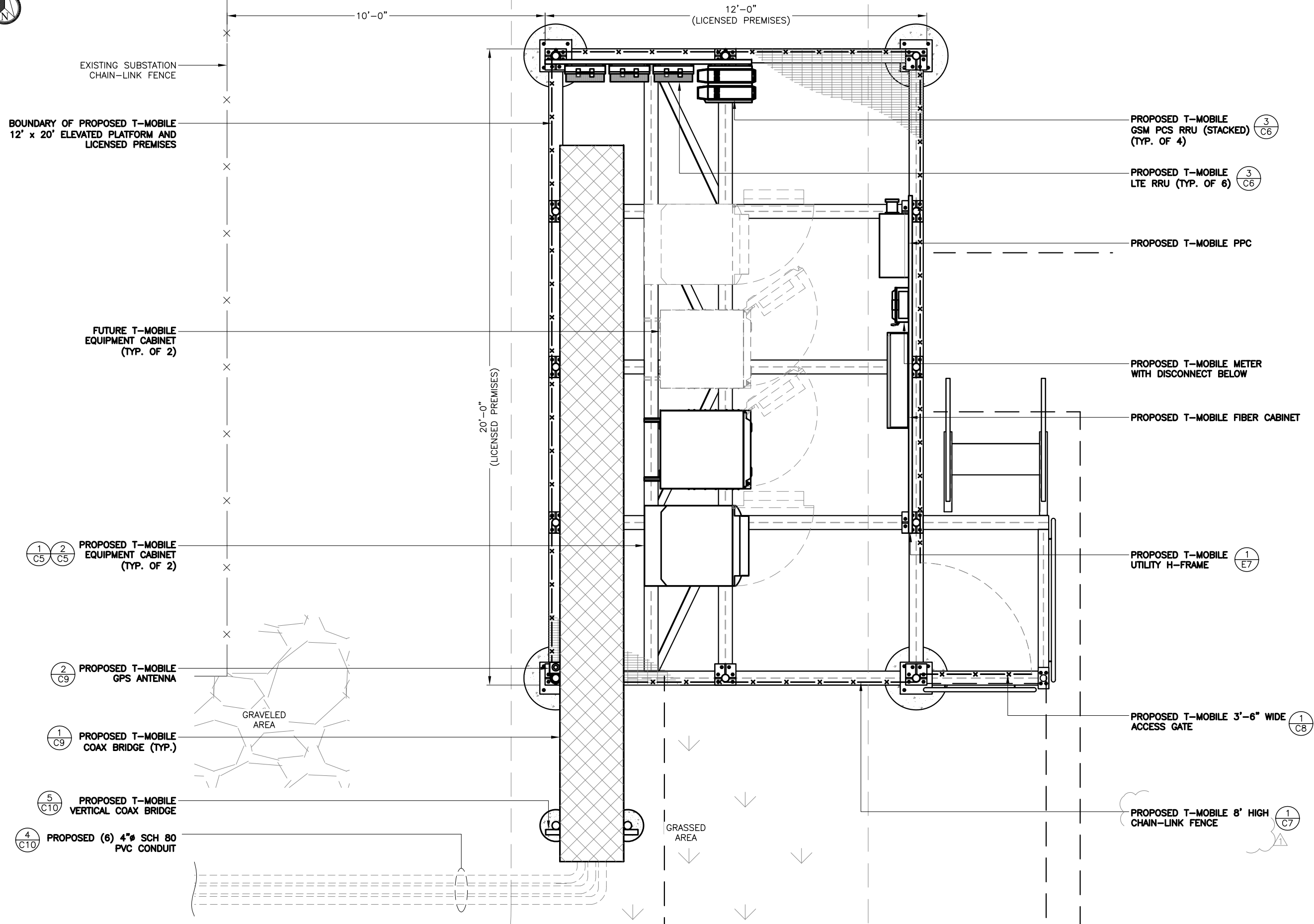
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SHEET NAME
 ENLARGED SITE PLAN

SHEET NUMBER
 C2

ENLARGED SITE PLAN





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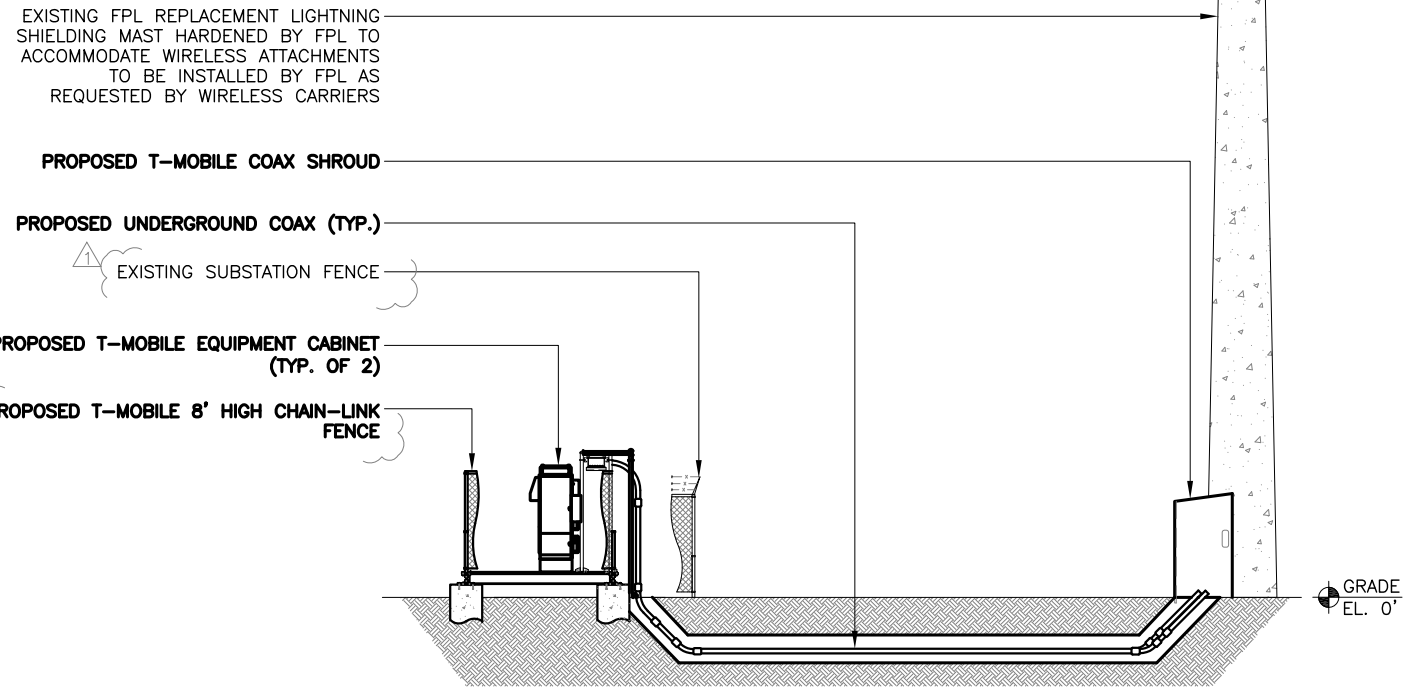
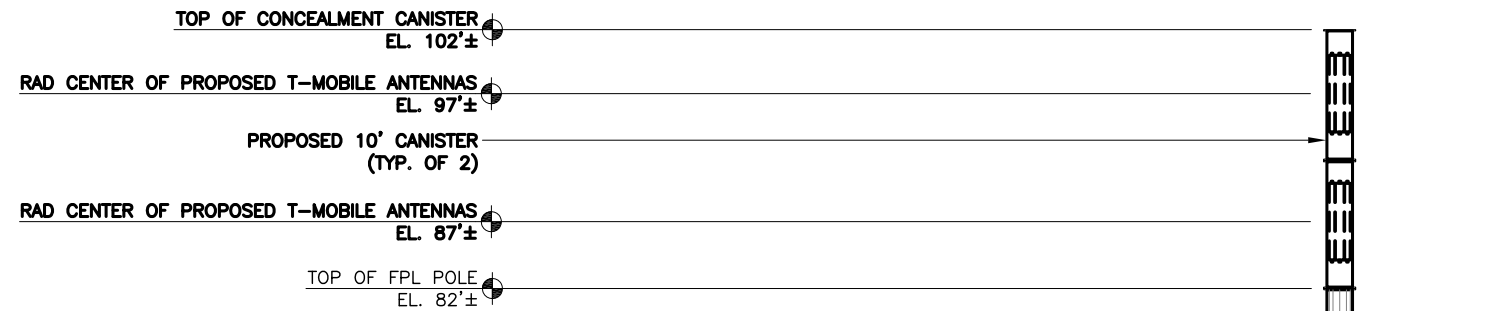
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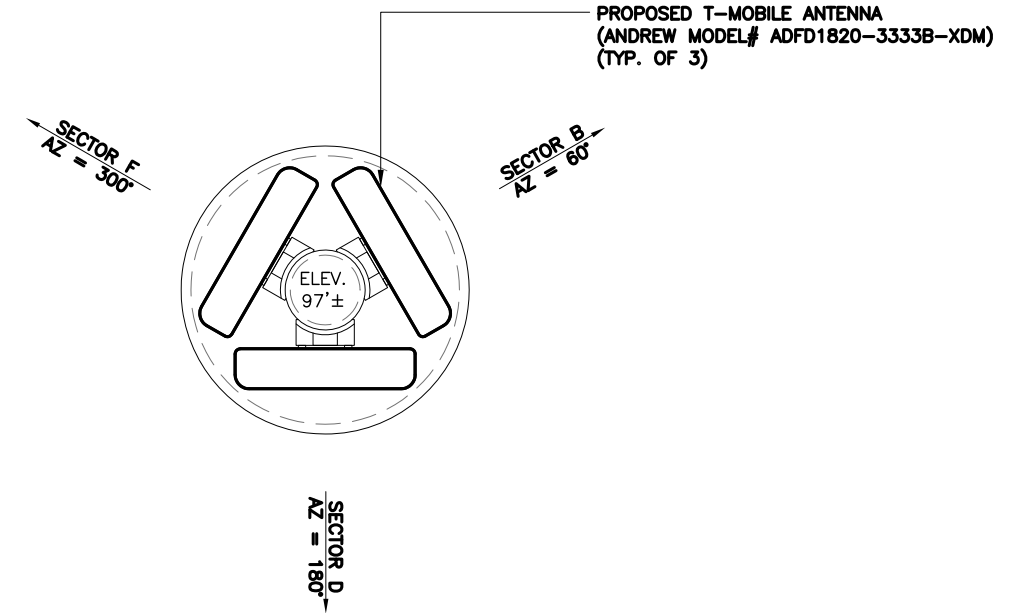
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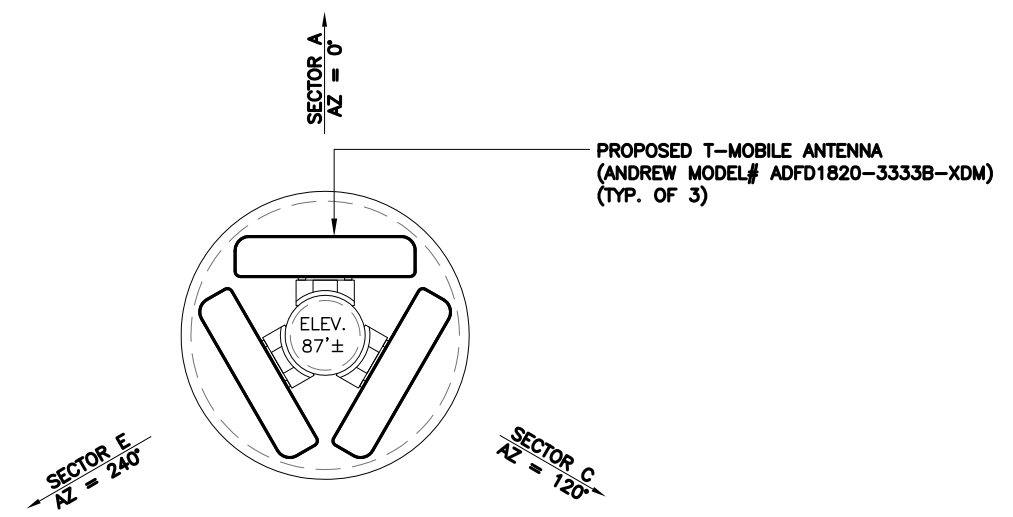
SHEET NAME
 COMPOUND PLAN
 SHEET NUMBER
 C3



NOTE:
 THIS DRAWING IS INTENDED TO DEPICT THE GENERAL LOCATION AND HEIGHT OF THE PROPOSED ANTENNAS ON THE EXISTING TOWER. CONSTRUCTION SHALL NOT PROCEED UNTIL A STRUCTURAL ANALYSIS REPORT HAS BEEN COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THIS STATE, CONCLUDING THAT THE EXISTING TOWER IS STRUCTURALLY ADEQUATE TO RESIST THE EXISTING AND PROPOSED LOADS.



PROPOSED ANTENNA LAYOUT AT 97'±



PROPOSED ANTENNA LAYOUT AT 87'±

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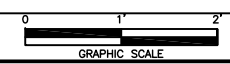
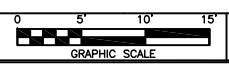
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 SUITE 200
 SUNRISE, FL 33323

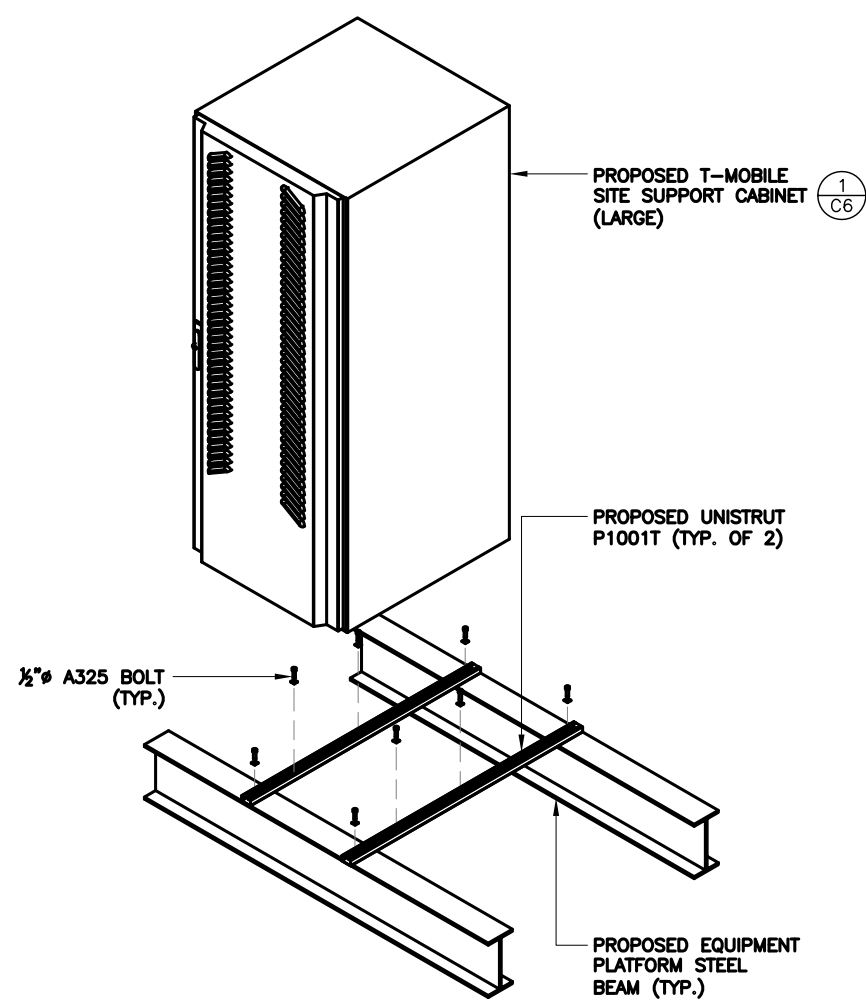
DATE OF SIGNATURE: 4/2/15

FPL CULLUM SUBSTATION
 FB2140A
 4000 NW 54th AVENUE
 COCONUT CREEK, FL 33063

SHEET NAME
 ELEVATION
 SHEET NUMBER
C4

TOWER ELEVATION

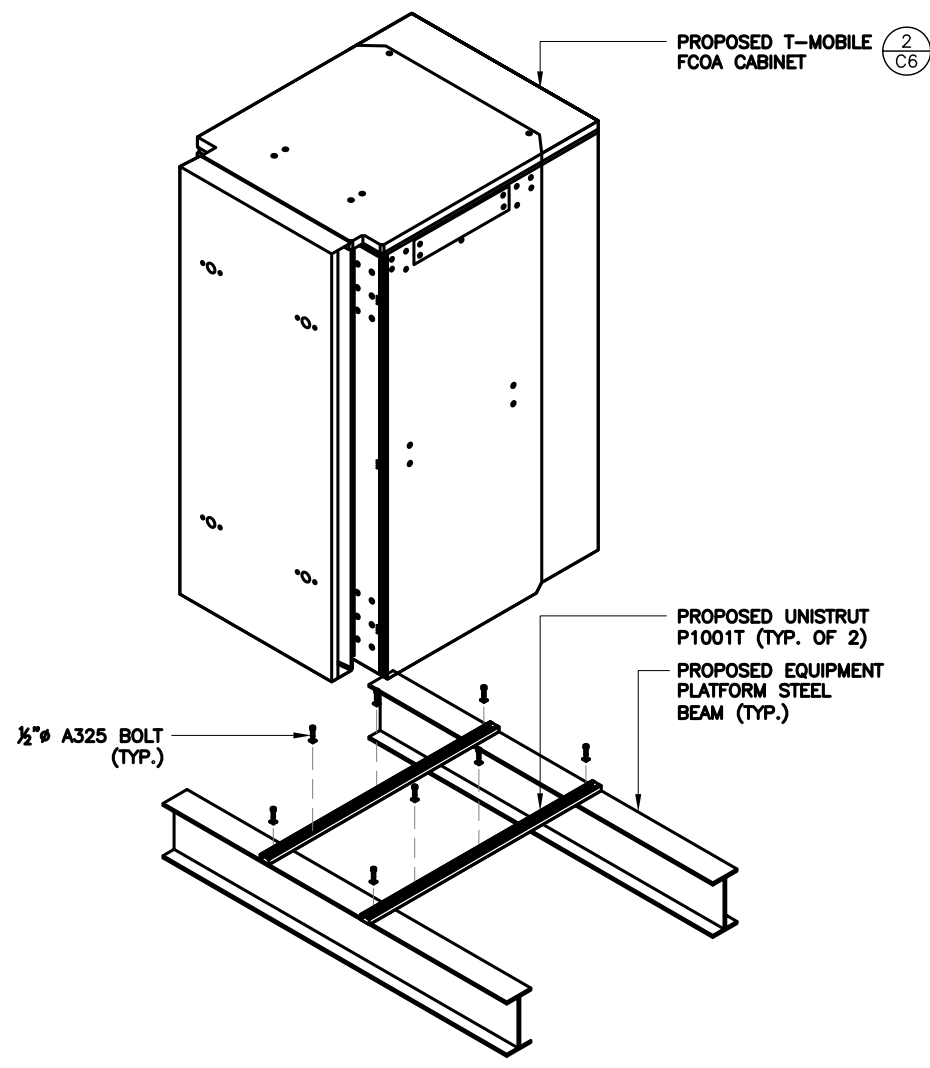




NOTE:
ATTACH UNISTRUT TO BEAMS W/ 1/2" ϕ A325 BOLTS

SSC CABINET CONNECTION DETAIL NTS 1

(NOT USED) 3



NOTE:
ATTACH UNISTRUT TO BEAMS W/ 1/2" ϕ A325 BOLTS

FCOA CABINET CONNECTION DETAIL 2

(NOT USED) 4

REV	DATE	DESCRIPTION
A	1/7/15	PRELIMINARY
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PROJECT NO.: 140-963.08

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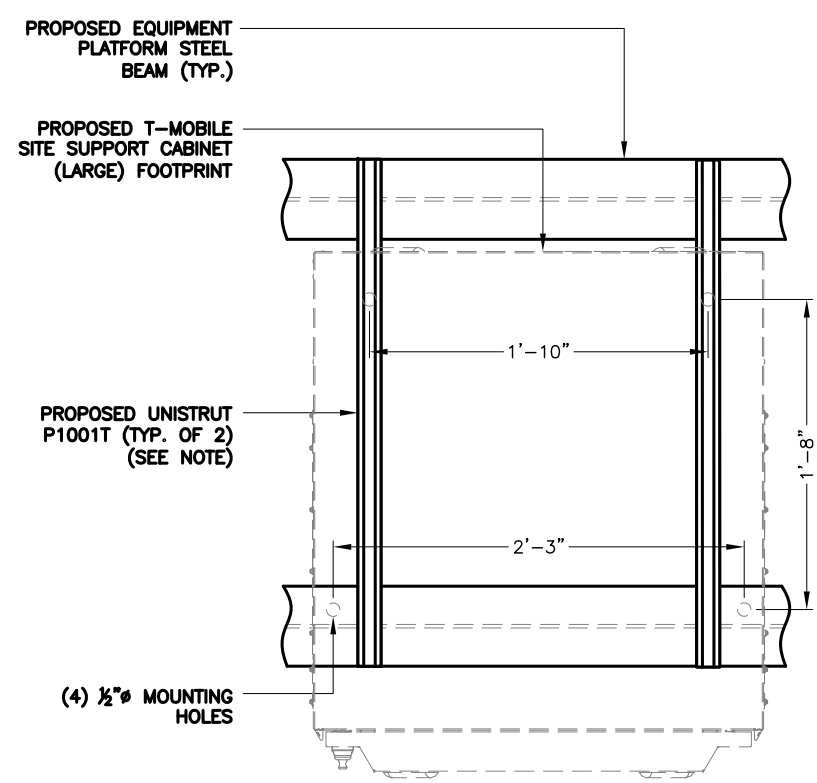
MICHAEL A. PHILLIPS
LICENSE
No. 68312
★
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

DATE OF SIGNATURE: 4/2/15

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SUBSTATION
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COCONUT CREEK, FL 33063

SHEET NAME
EQUIPMENT
PAD DETAILS

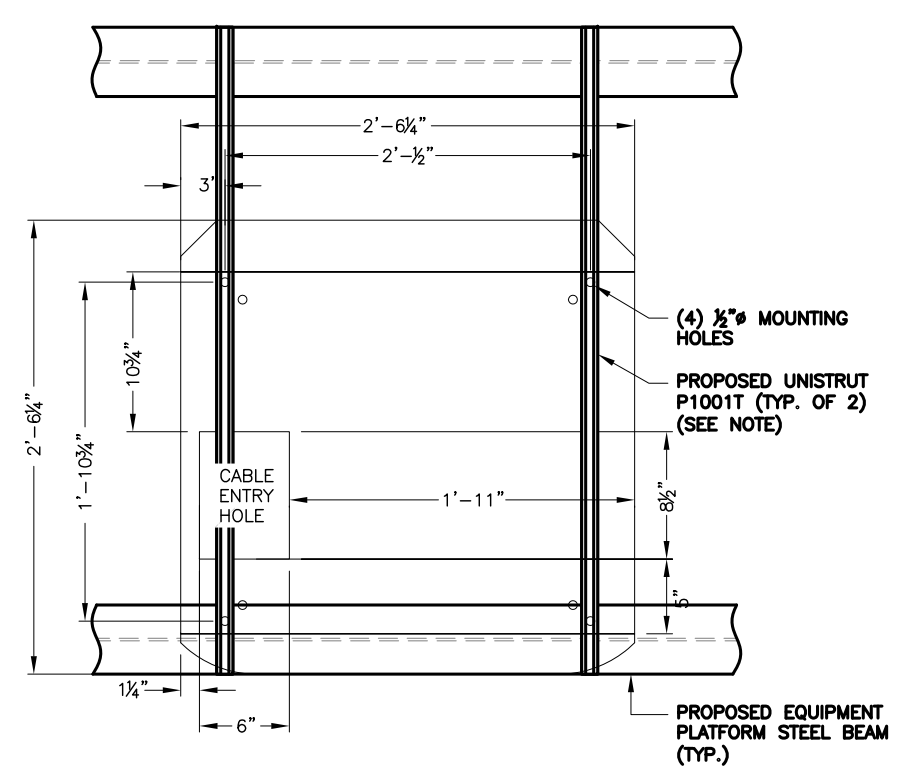
SHEET NUMBER
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NOTE:
ATTACH UNISTRUT TO BEAMS W/ 1/2"φ
A325 BOLTS

SSC CABINET CONNECTION DETAIL

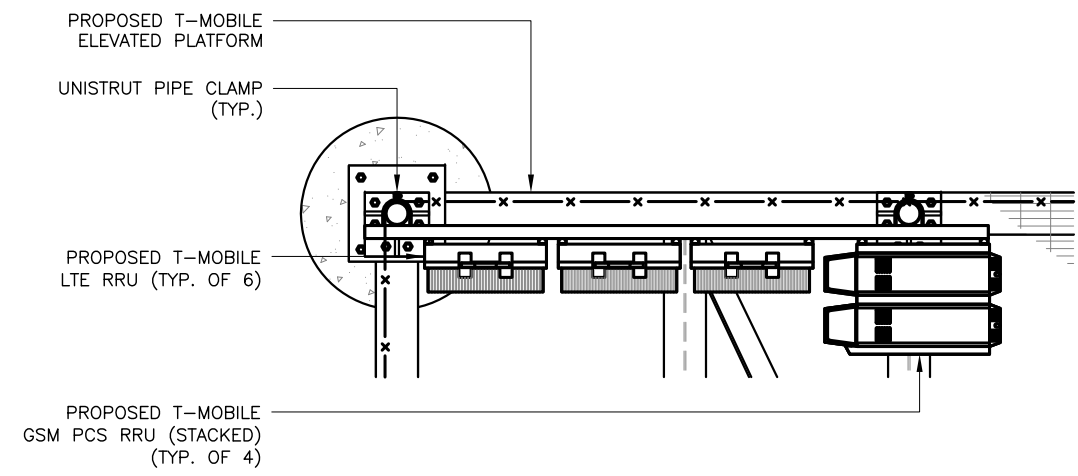
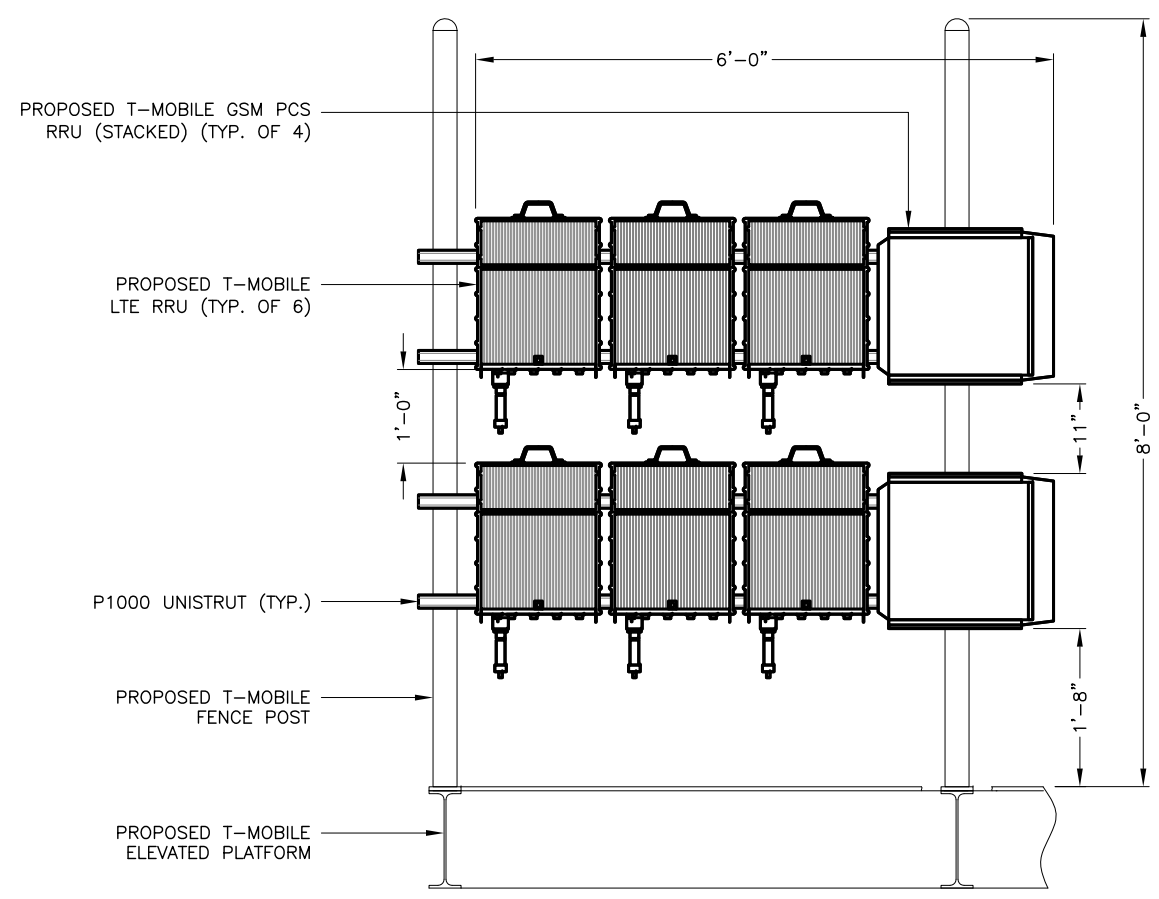
NTS 1



NOTE:
ATTACH UNISTRUT TO BEAMS W/ 1/2"φ
A325 BOLTS

FCOA CABINET MOUNTING FOOTPRINT

NTS 2



RRUS MOUNTING DETAIL

NTS 3

REV	DATE	DESCRIPTION
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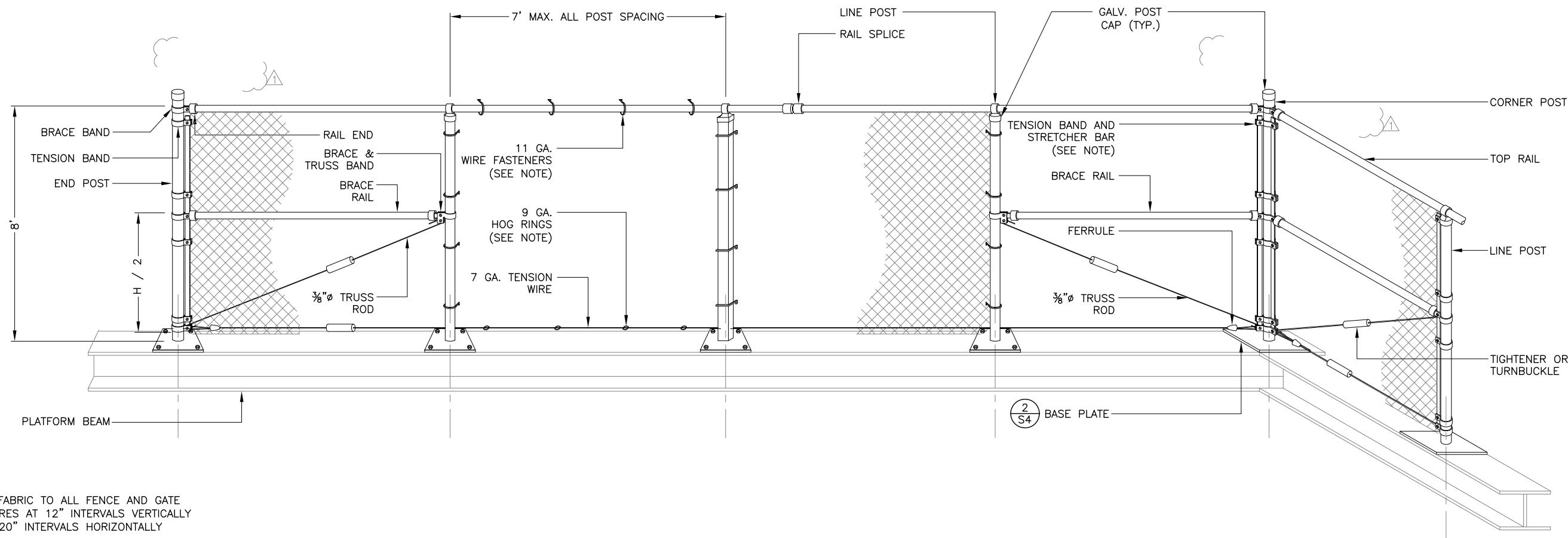
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SHEET NAME EQUIPMENT MOUNTING DETAILS
SHEET NUMBER C6



NOTE:
 ATTACH FABRIC TO ALL FENCE AND GATE STRUCTURES AT 12" INTERVALS VERTICALLY AND AT 20" INTERVALS HORIZONTALLY

FENCE DETAIL

NTS 1

DETAIL REMOVED

DETAIL REMOVED

1. GATE POST, CORNER, TERMINAL OR PULL POST SHALL BE 2 7/8" Ø SCHEDULE 40 PIPE FOR GATE WIDTHS UP TO 6 FEET OR 12 FEET FOR DOUBLE SWING GATE PER ASTM-F1083.
2. LINE POST: REFERENCE SHEET S1.
3. GATE FRAME: 1 1/2" Ø SCHEDULE 40 PIPE PER ASTM-F1083. & ASTM F900.
4. TOP RAIL & BRACE RAIL: 1 3/8" Ø SCHEDULE 40 PIPE PER ASTM-F1083.
5. FABRIC: 2" MESH No. 9 GAGE GALVANIZED WIRE SECURELY FASTENED TO TENSION WIRE, LINE POST, BARS CONFORMING TO ASTM-A392, & AASHTO M 181.
6. TIE WIRE: MINIMUM 11 GA GALVANIZED STEEL. INSTALL A SINGLE WRAP TIE WIRE AT POSTS AND RAILS AT MAX. 12" INTERVALS VERT & 20" HORIZ. INSTALL HOG RINGS ON TENSION WIRE AT 20" INTERVALS.
7. TENSION WIRE: 7 GA. GALVANIZED STEEL.
8. NOT USED
9. NOT USED
10. INSTALL FENCING PER CURRENT BUILDING CODE

(NOT USED)

2 (NOT USED)

3 FENCE NOTES

4

REV	DATE	DESCRIPTION
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1	4/2/15	REVISED

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SHEET NAME
 FENCE DETAILS
 SHEET NUMBER
 C7

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MICHAEL A. PHILLIPS
 LICENSE
 No. 68312
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER

DATE OF SIGNATURE: 4/2/15

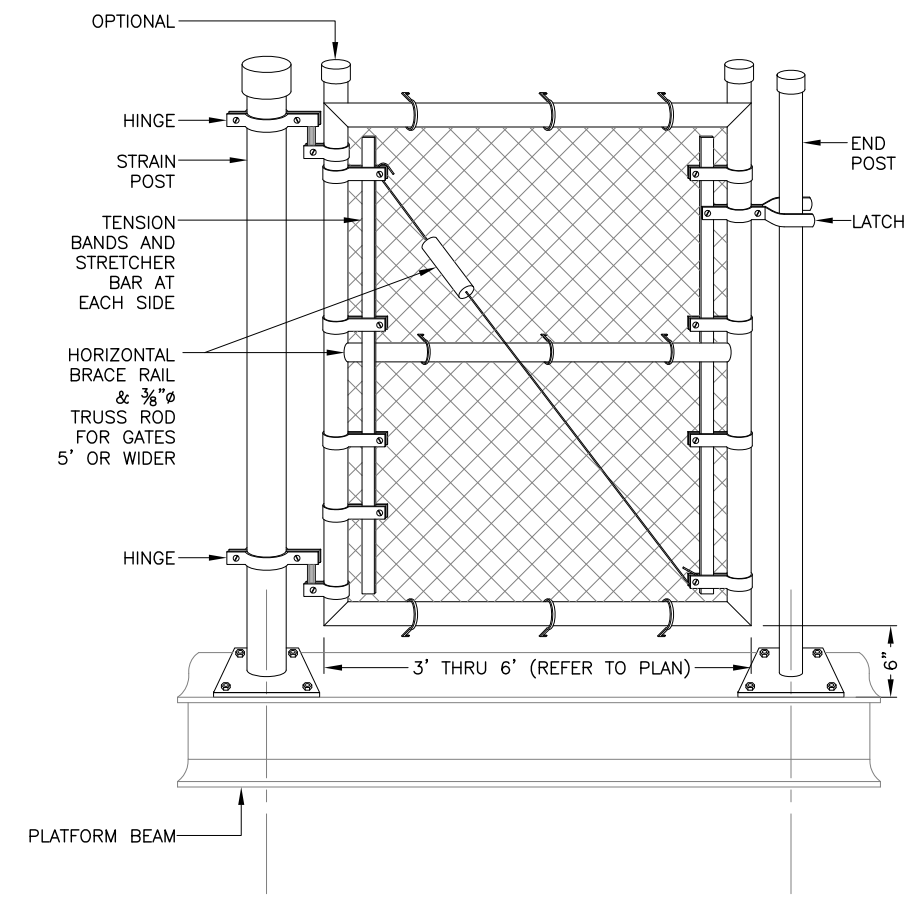
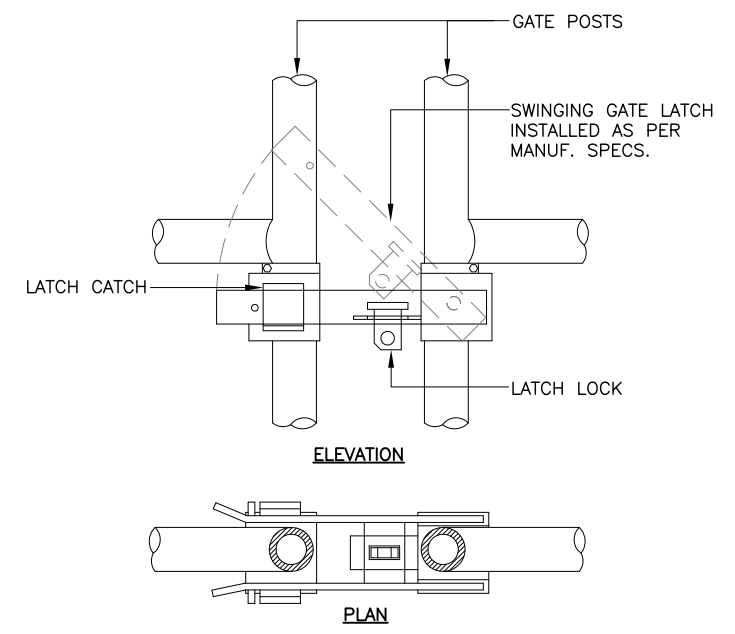
FPL CULLUM
 SUBSTATION
 FB2140A
 4000 NW 54th AVENUE
 COCONUT CREEK, FL 33063

SHEET NAME
 GATE DETAILS

SHEET NUMBER
 C8

(NOT USED)

1



(NOT USED)

2

LATCH DETAIL

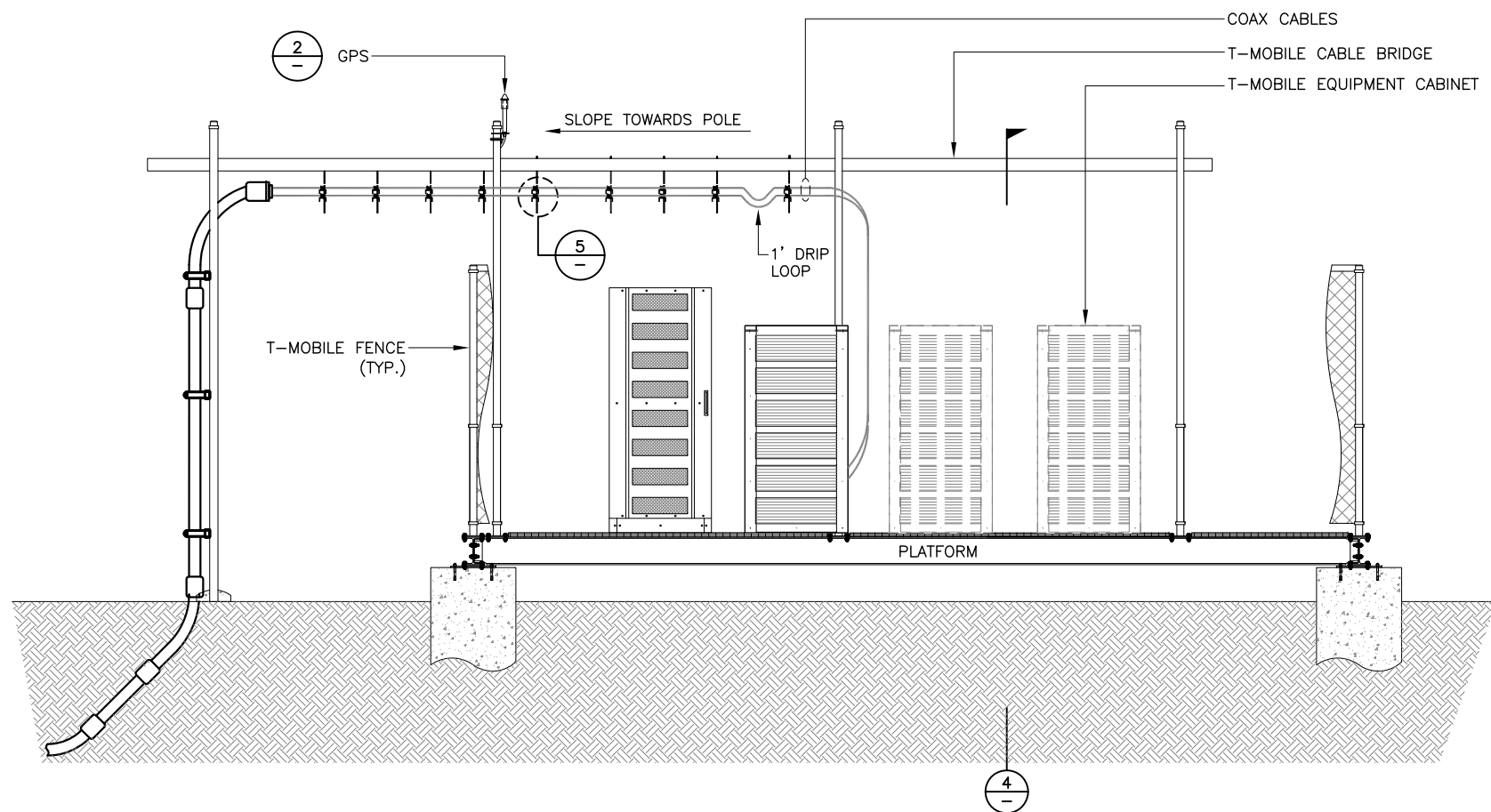
NTS

3

GATE DETAIL

NTS

4

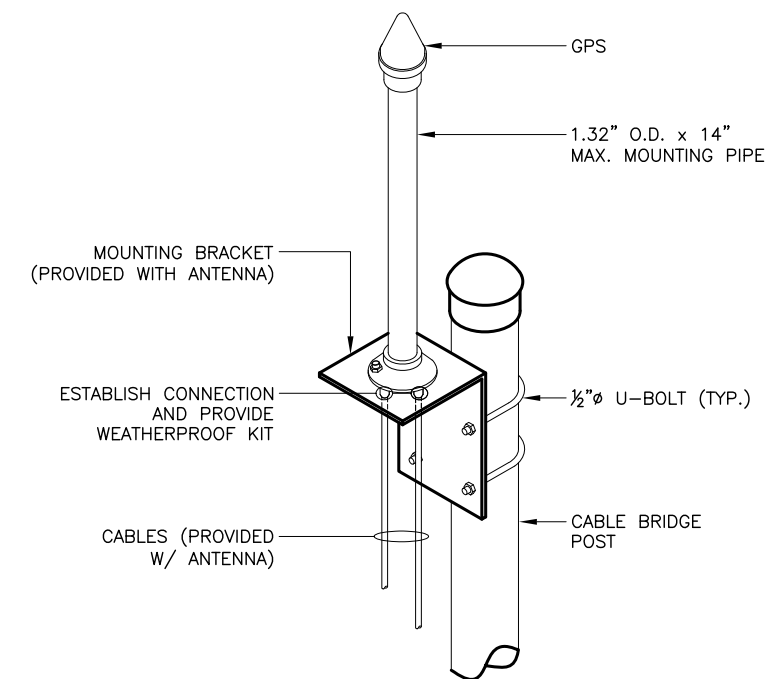


CABLE BRIDGE ELEVATION (SIDE)

NTS 1

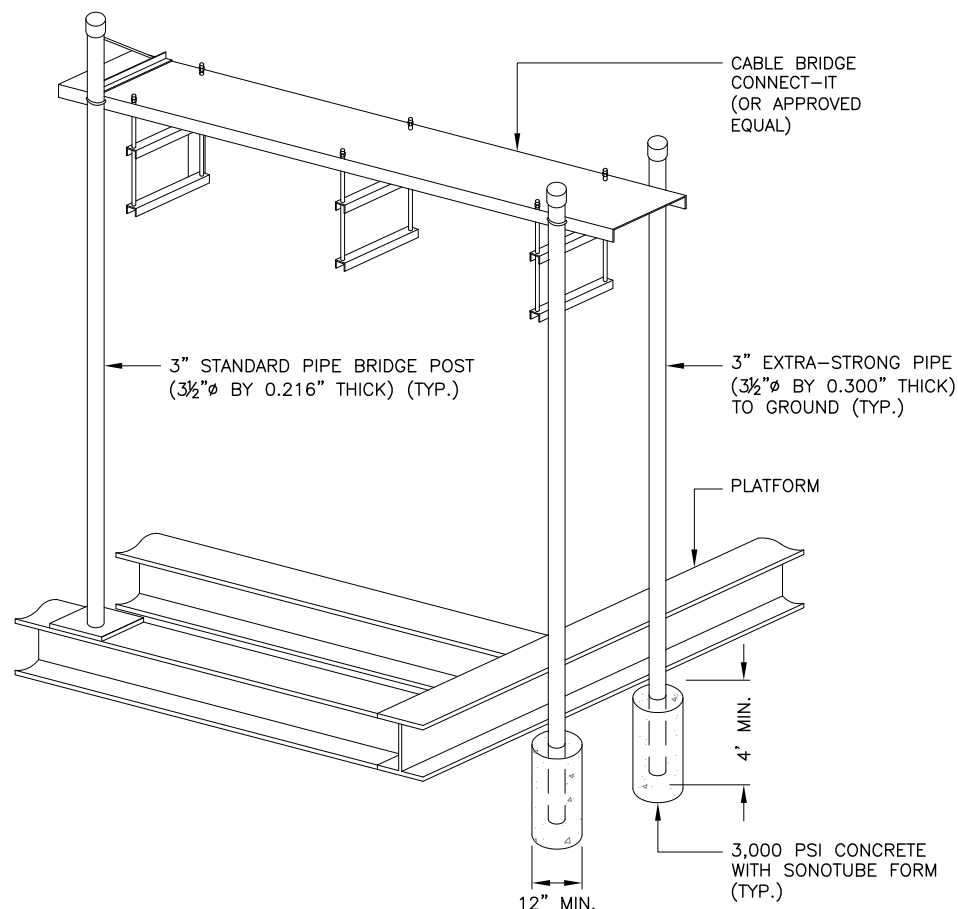
GPS DETAIL

NTS 2



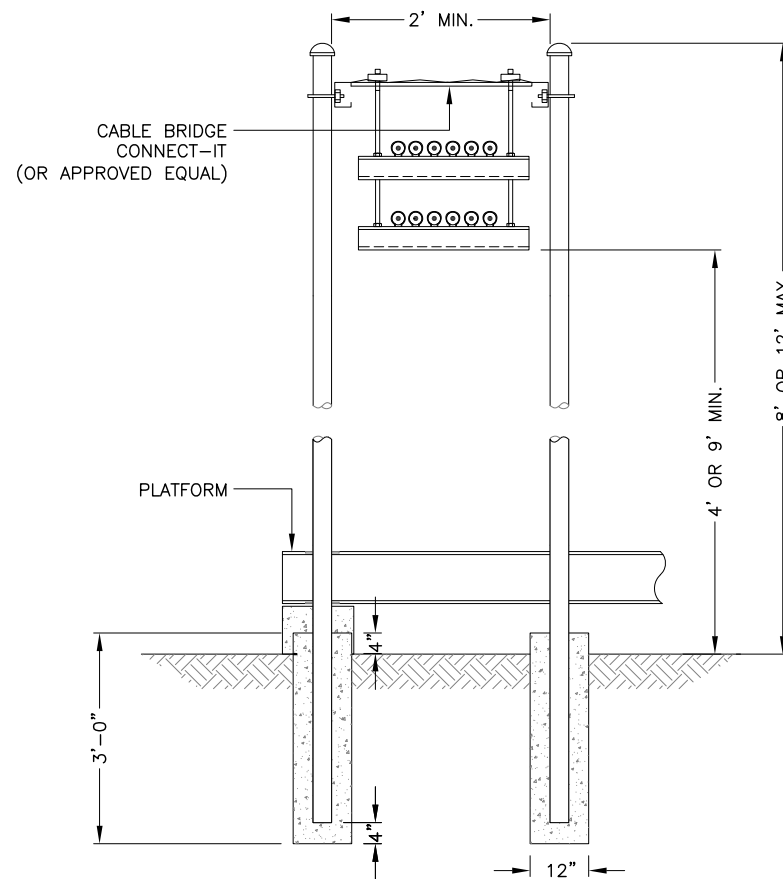
NOTES:

1. LOCATION OF GPS MUST HAVE CLEAR VIEW OF SOUTHERN SKY AND CANNOT HAVE ANY BLOCKAGES EXCEEDING 25% OF THE SURFACE AREA OF A HEMISPHERE AROUND THE GPS.
2. ALL GPS LOCATIONS MUST BE ABLE TO RECEIVE CLEAR SIGNALS FROM A MINIMUM OF FOUR (4) SATELLITES. VERIFY WITH HANDHELD GPS BEFORE FINAL LOCATION OF GPS.



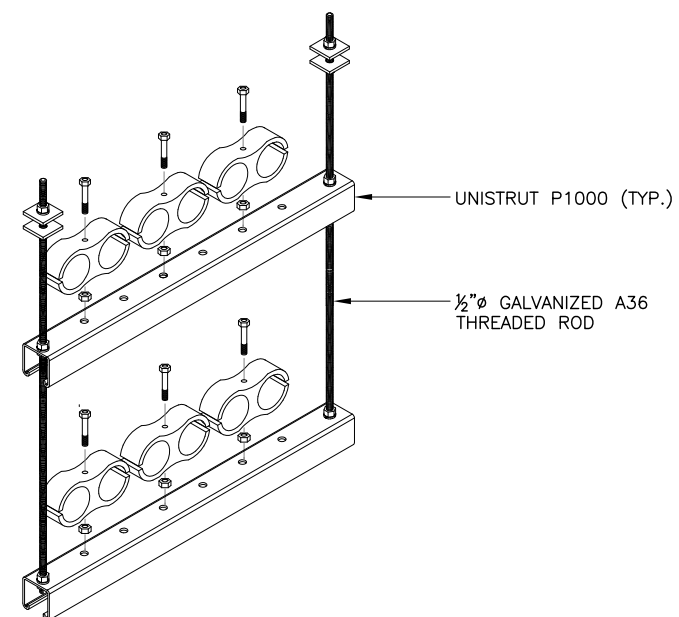
CABLE BRIDGE AXONOMETRIC

3



CABLE BRIDGE CROSS-SECTION

4



TRAPEZE KIT ISOMETRIC

5

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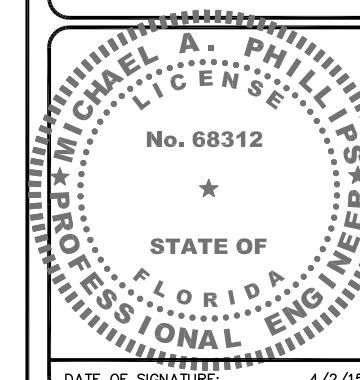
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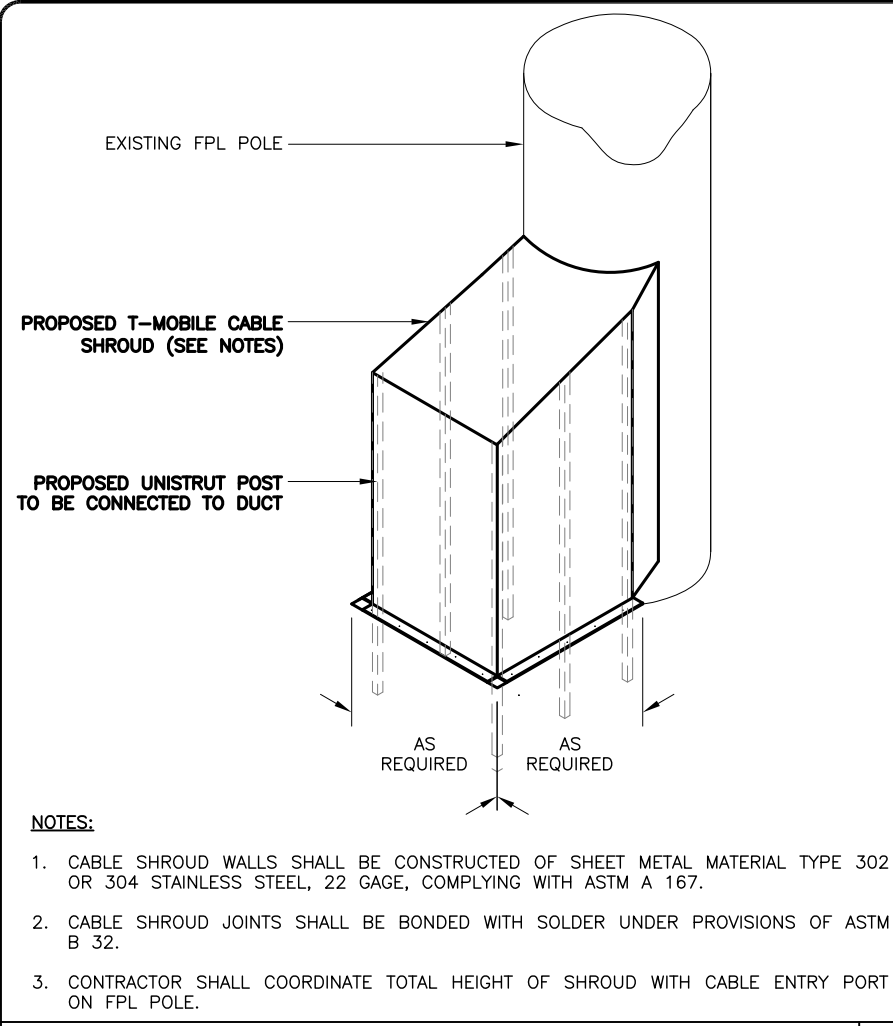
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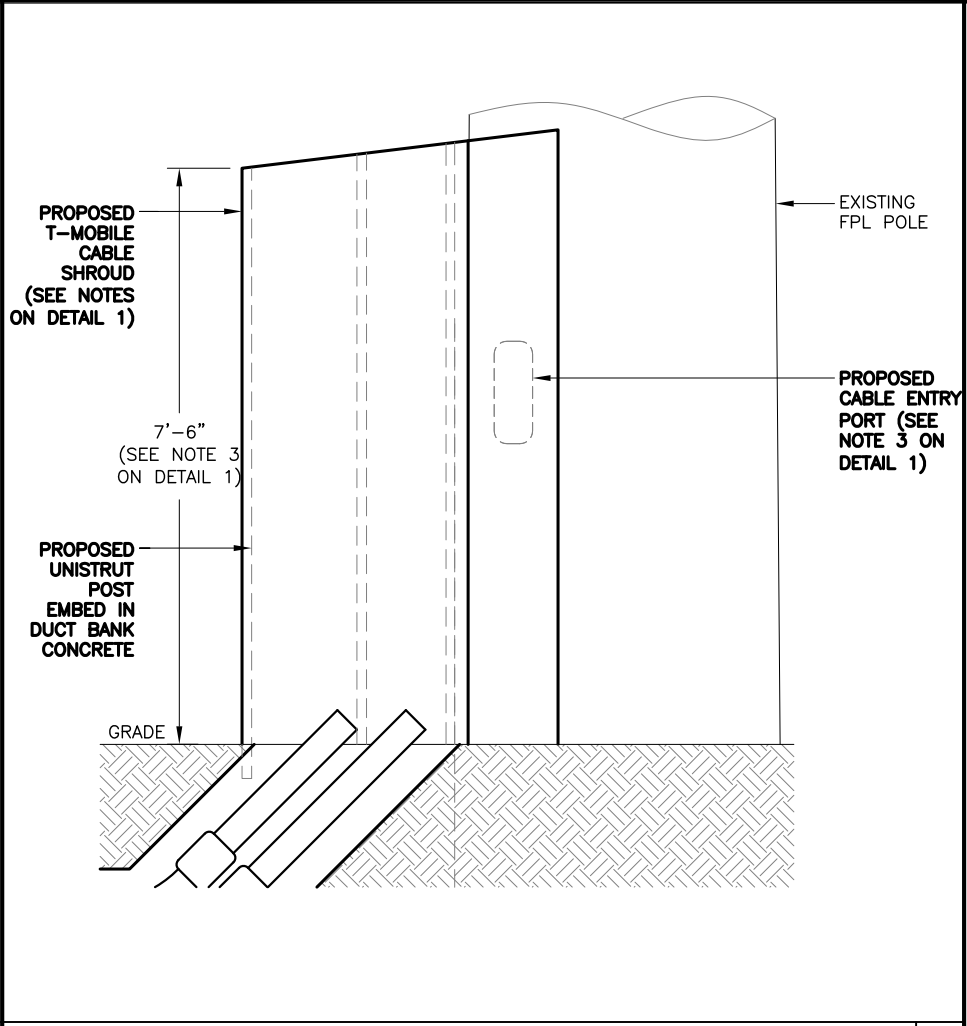
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DETAILS

SHEET NUMBER

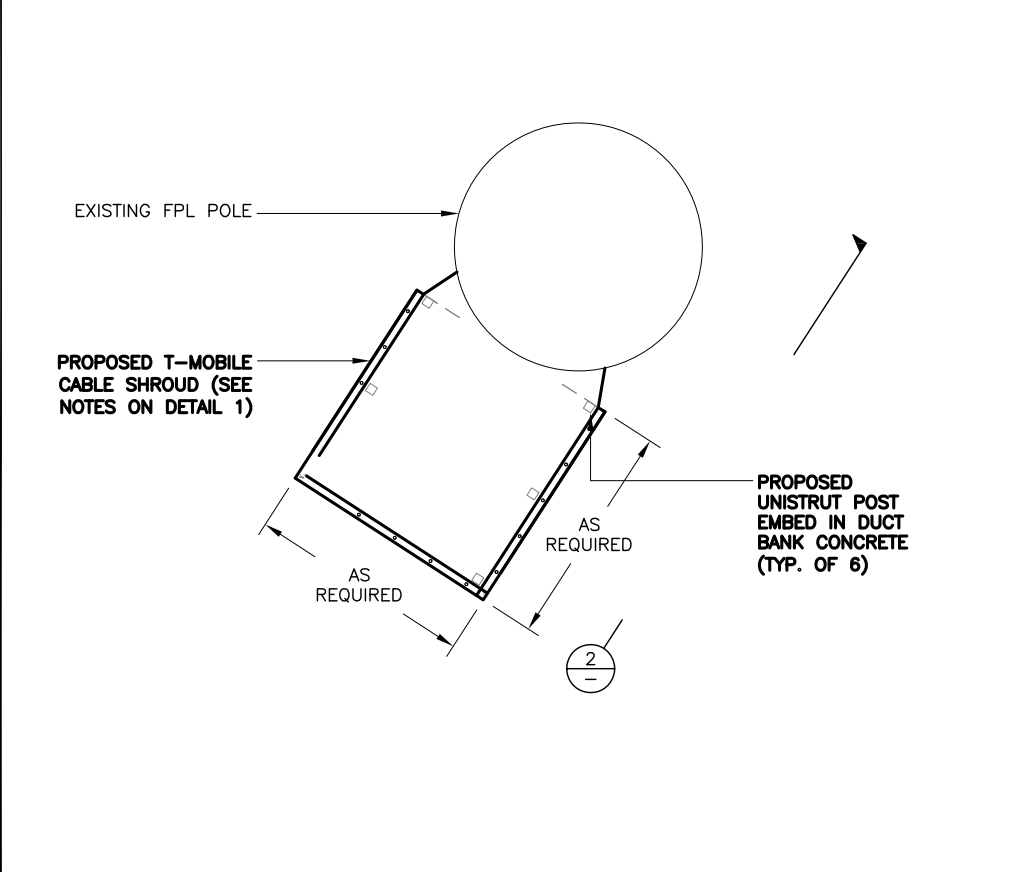
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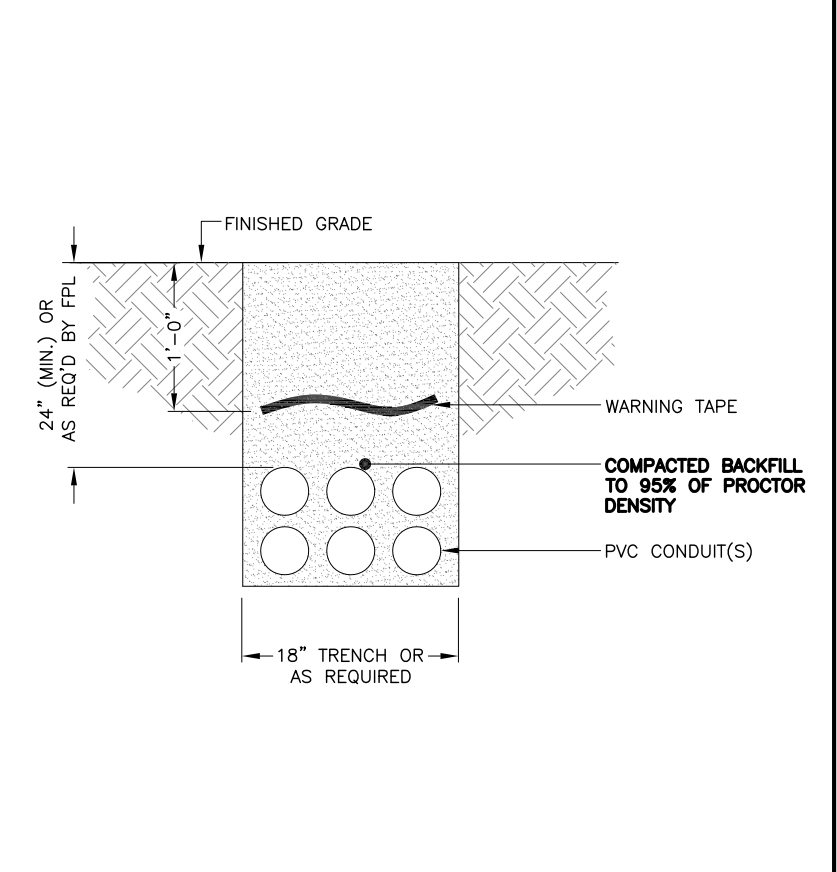
CABLE SHROUD ISOMETRIC DETAIL NTS 1



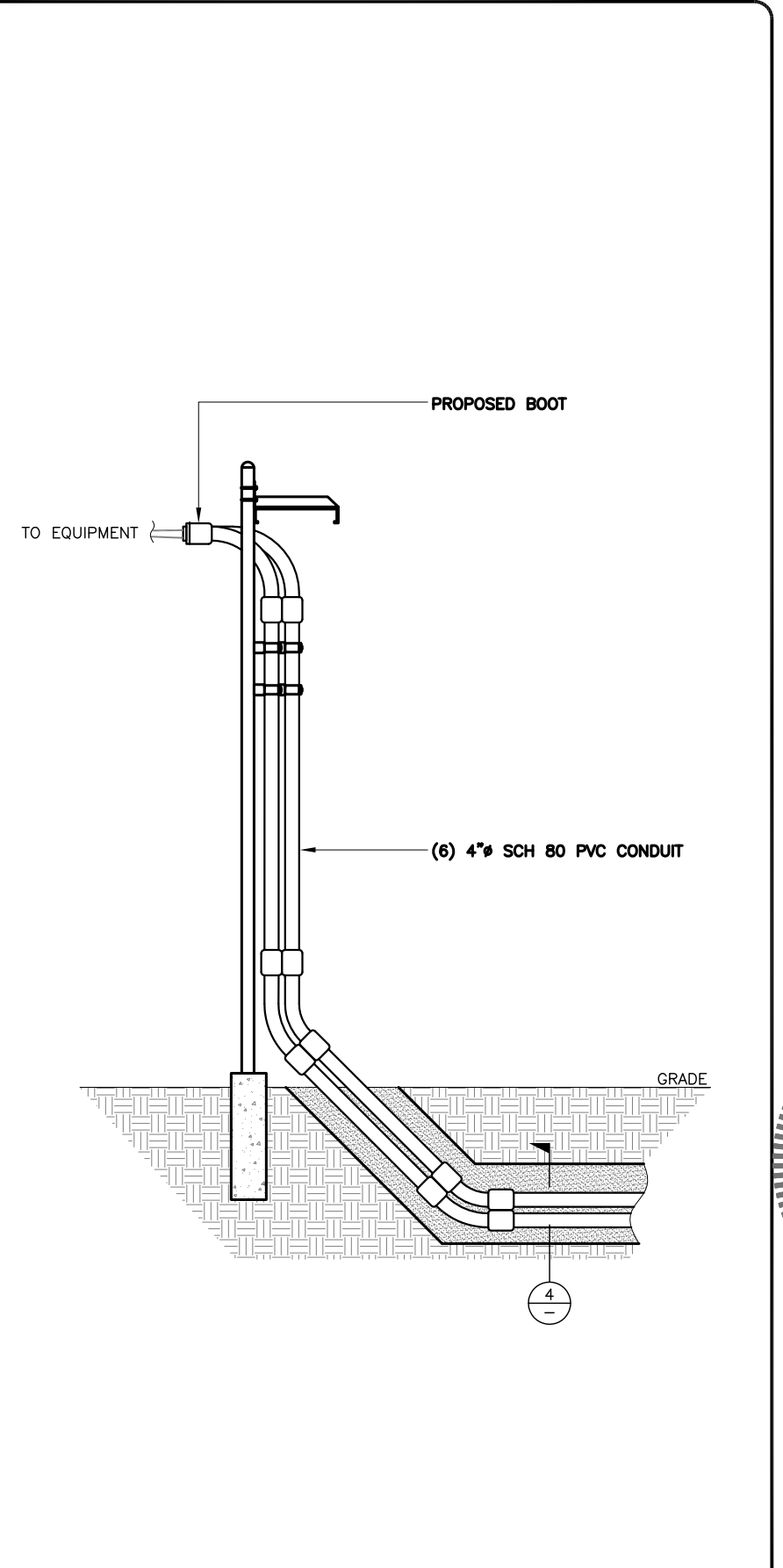
CABLE SHROUD SECTION NTS 2



CABLE SHROUD PLAN NTS 3



TRENCH DETAIL NTS 4



- NOTES:
1. CONTRACTOR TO USE COPPER CABLE.
 2. CONTRACTOR TO PROVIDE BOOT AND CUSHION INSERTS AS REQUIRED.

VERTICAL CABLE BRIDGE ELEVATION NTS 5

REV	DATE	DESCRIPTION
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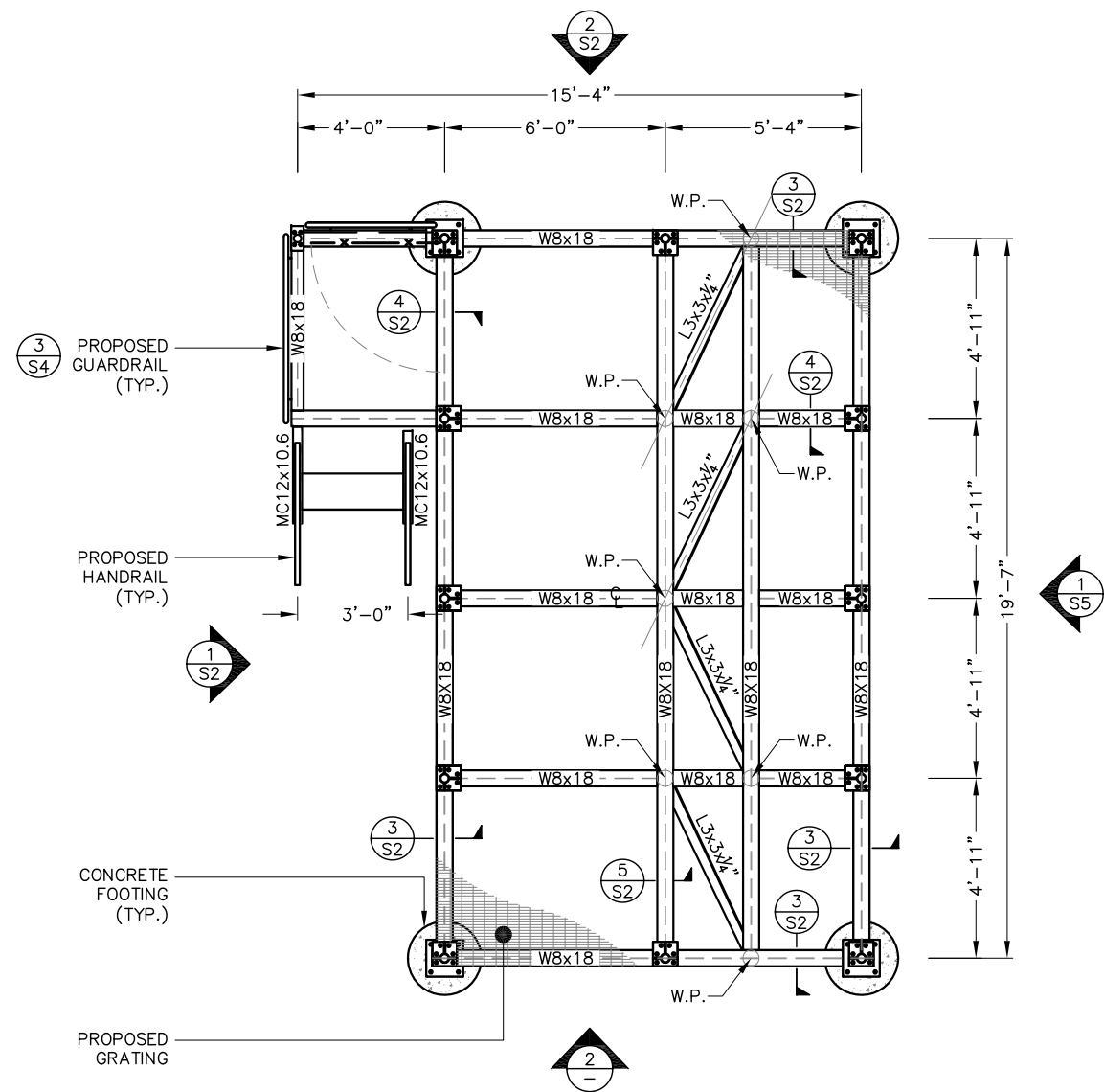
PROFESSIONAL ENGINEER
MICHAEL A. PHILLIPS
LICENSE
No. 68312
STATE OF FLORIDA

DATE OF SIGNATURE: 4/2/15

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FB2140A
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SHEET NAME
UNDERGROUND ROUTING DETAILS

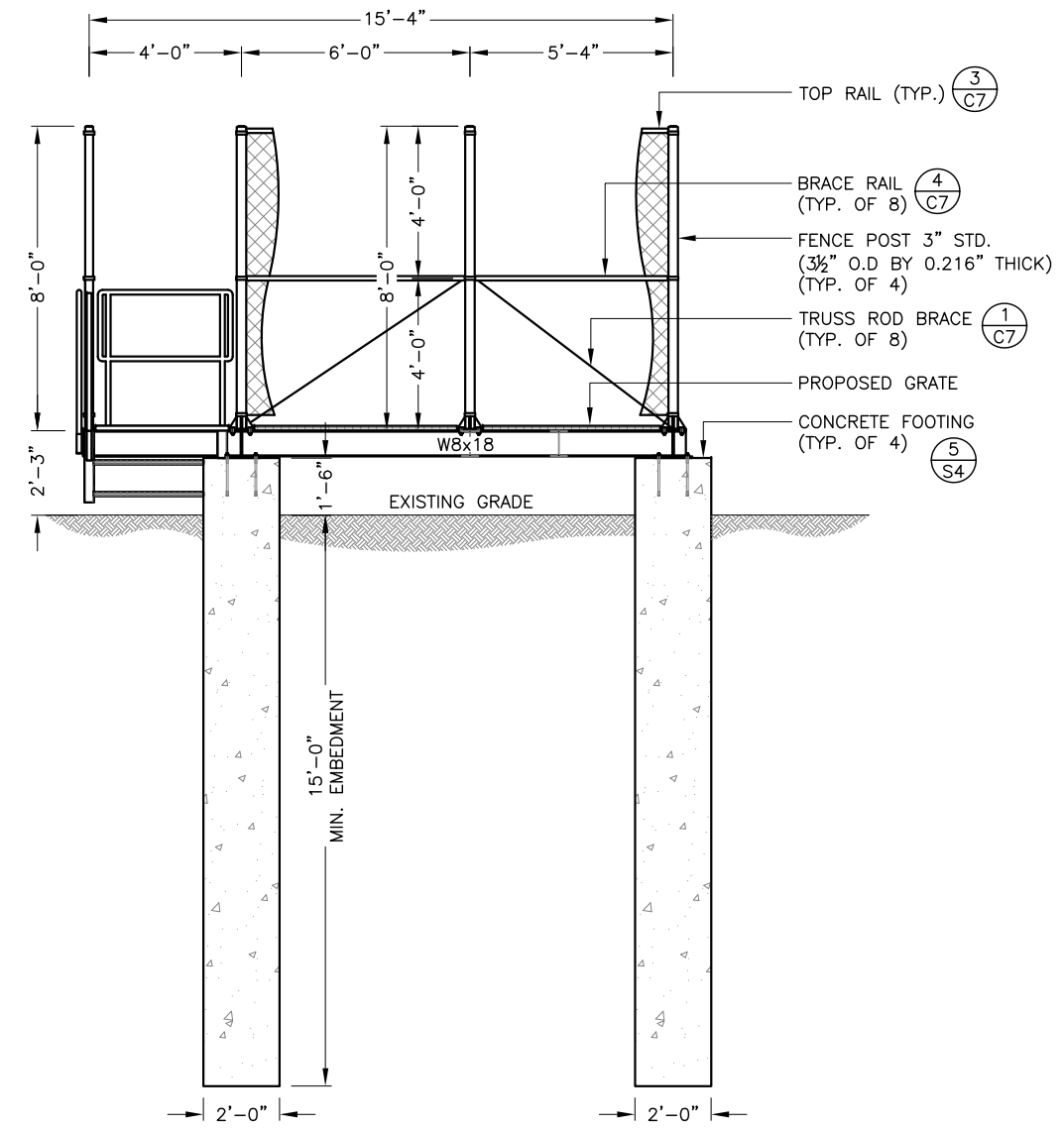
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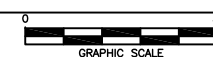
PROPOSED PLATFORM PLAN VIEW



1



PROPOSED FRONT ELEVATION



2

- STRUCTURAL DESIGN PERFORMED IN ACCORDANCE WITH THE 2010 FLORIDA BUILDING CODE WITH 2012 SUPPLEMENT FOR THE FOLLOWING CRITERIA:
 - V = 170/132 MPH (ULTIMATE/NOMINAL, 3-SECOND GUST)
 - EXPOSURE "C"
 - RISK CATEGORY II
 - OPEN STRUCTURE
 - LIVE LOAD - MAINTENANCE ACCESS = 40 PSF OR 300 LBS
 - LIVE LOAD - STAIRS = 100 PSF
 - UMTS/FCOA CABINET WEIGHT = 807 LBS
 - SITE SUPPORT CABINET WEIGHT = 2,162 LBS
- DIMENSIONS ARE APPROXIMATE AND FOR REFERENCE PURPOSES ONLY. ALL DIMENSIONS AND MATERIAL QUANTITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO FABRICATION.
- CONTRACTOR SHALL SUBMIT TO ENGINEER NOTICE OF ANY INTENT TO DEVIATE FROM PLANS AND DETAILS FOR APPROVAL PRIOR TO START OF ANY WORK.
- ALL ANCHORS INTO CONCRETE SHALL BE HILTI HY-200 ADHESIVE ANCHORS. USE 3/4" DIAMETER GRADE 316 STAINLESS STEEL HAS RODS WITH 5" MINIMUM EMBEDMENT, U.N.O.
- PROVIDE 5,000 PSI NON-SHRINK LEVELING GROUT BELOW BASE PLATES, AS REQUIRED, TO A MAXIMUM OF 1" THICKNESS.
- ALL U-BOLTS SHALL BE GALVANIZED ASTM A307 OR ASTM A36.
- ALL STEEL ABRASIONS, FIELD CUTS, AND FIELD WELDS SHALL BE COATED WITH TWO LAYERS OF ZINC-RICH PAINT, CONNECT-IT WIRELESS #BZ01 OR APPROVED EQUAL.
- REFERENCE GENERAL NOTES ON SHEET T2 FOR ADDITIONAL INFORMATION.

STRUCTURAL NOTES

3

- ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF THE ACI SPECIFICATIONS, CODES, AND STANDARDS.
- ALL CONCRETE SHALL BE 4000 PSI 28-DAY COMPRESSIVE STRENGTH, NORMAL WEIGHT, MAXIMUM AGGREGATE SIZE OF 3/4", 0.45 MAX. W/C, 4"-5" SLUMP.
- COVER OVER REINFORCEMENT SHALL BE 3".
- REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. USE 6x6-1.4XW1.4 W.W.F. ON 6 MIL VAPOR BARRIER. WIRE FABRIC SHALL BE CONTINUOUS, LAPPED ONE CROSS WIRE SPACING PLUS 2" MINIMUM.
- WHERE CONTINUOUS REINFORCING IS SPECIFIED, SUCH REINFORCING MAY BE SPLICED WHERE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER.
- LAP SPLICES SHALL BE 48 BAR DIAMETERS, WIRED TOGETHER.
- A 1/4-INCH CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4

CONCRETE NOTES

4

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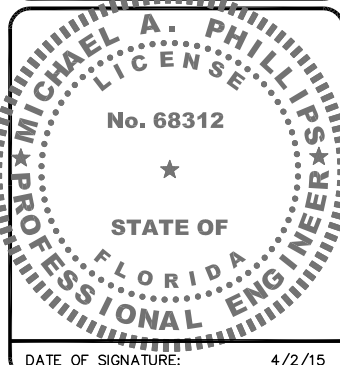
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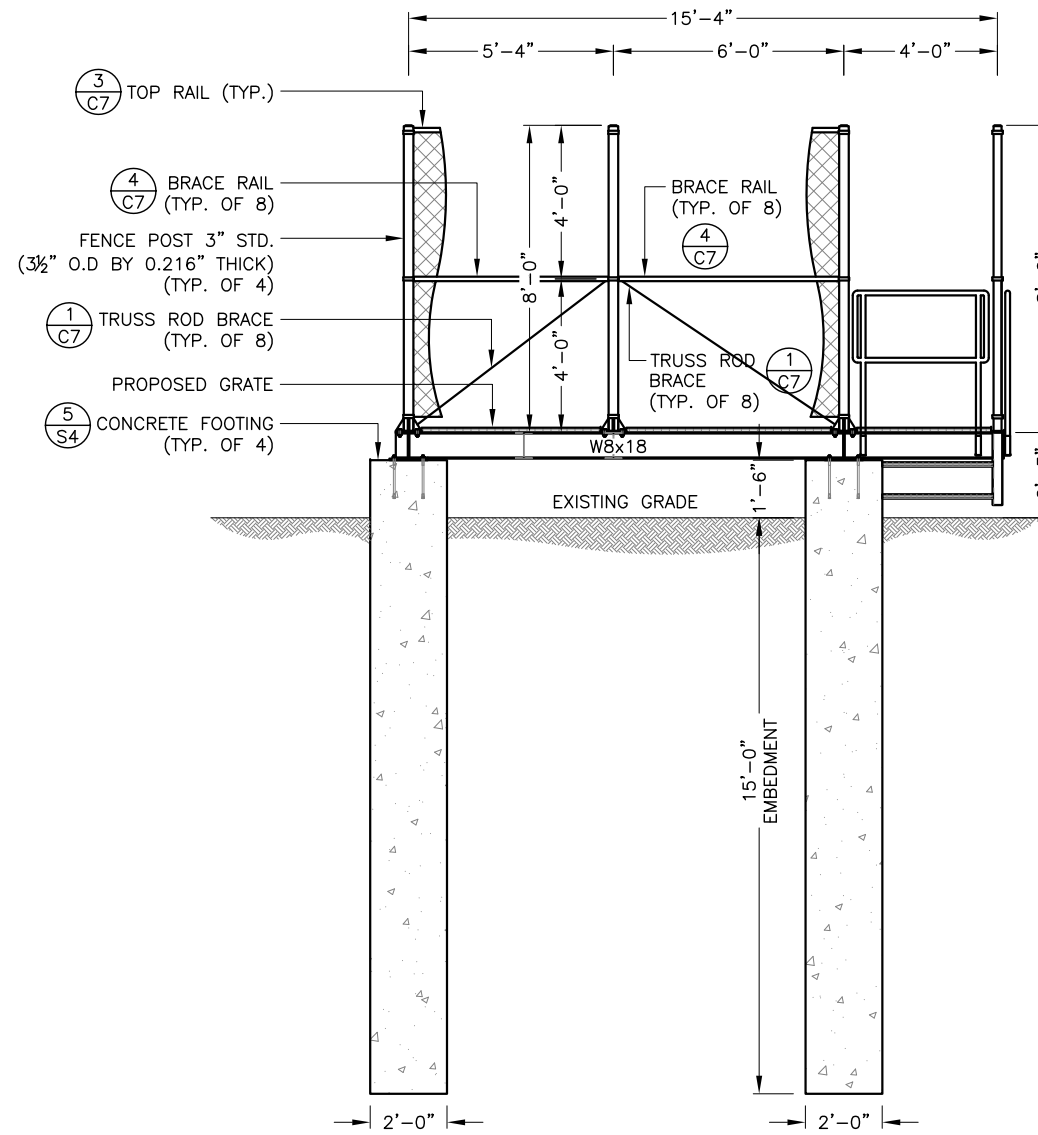
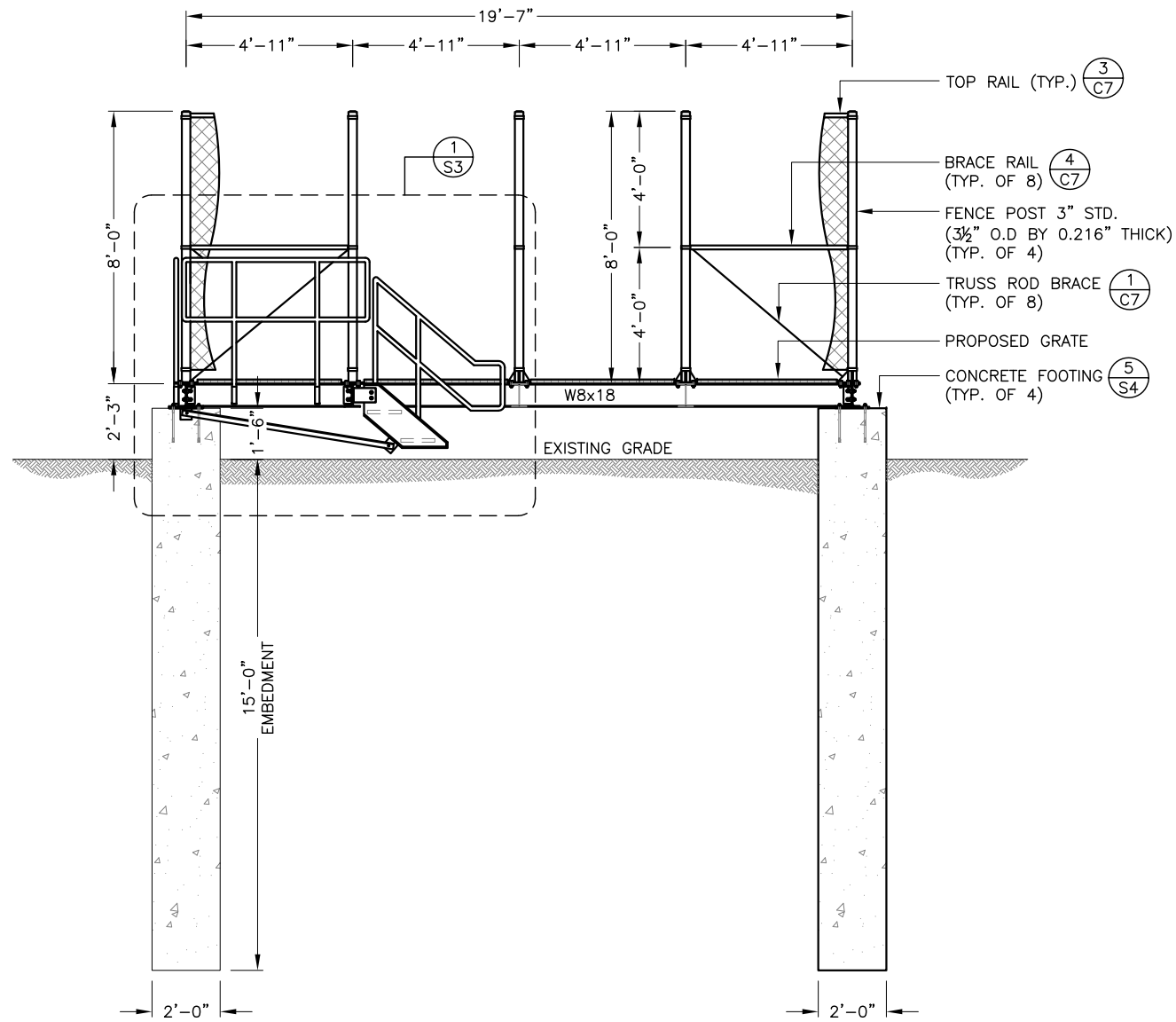
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SHEET NAME
STRUCTURAL DETAILS
AND NOTES

SHEET NUMBER

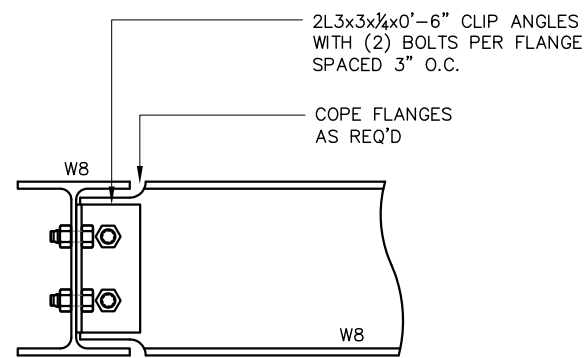
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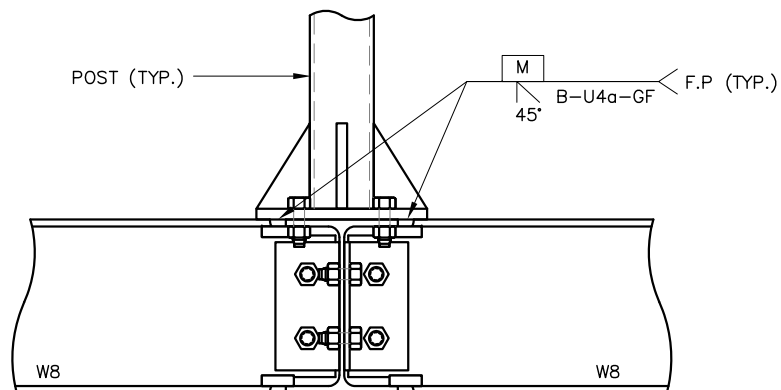
PROPOSED PLATFORM LEFT SIDE ELEVATION



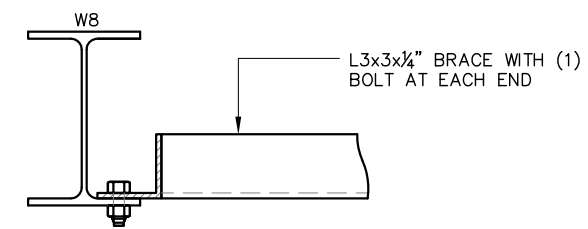
PROPOSED PLATFORM RIGHT SIDE ELEVATION



NTS 3



NTS 4



NTS 5

TYPICAL BEAM CONNECTION

W8 FULL MOMENT CONNECTION

TYPICAL HORIZONTAL BRACE CONNECTION

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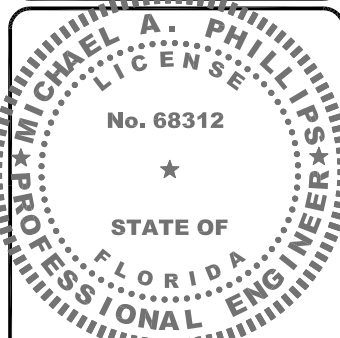
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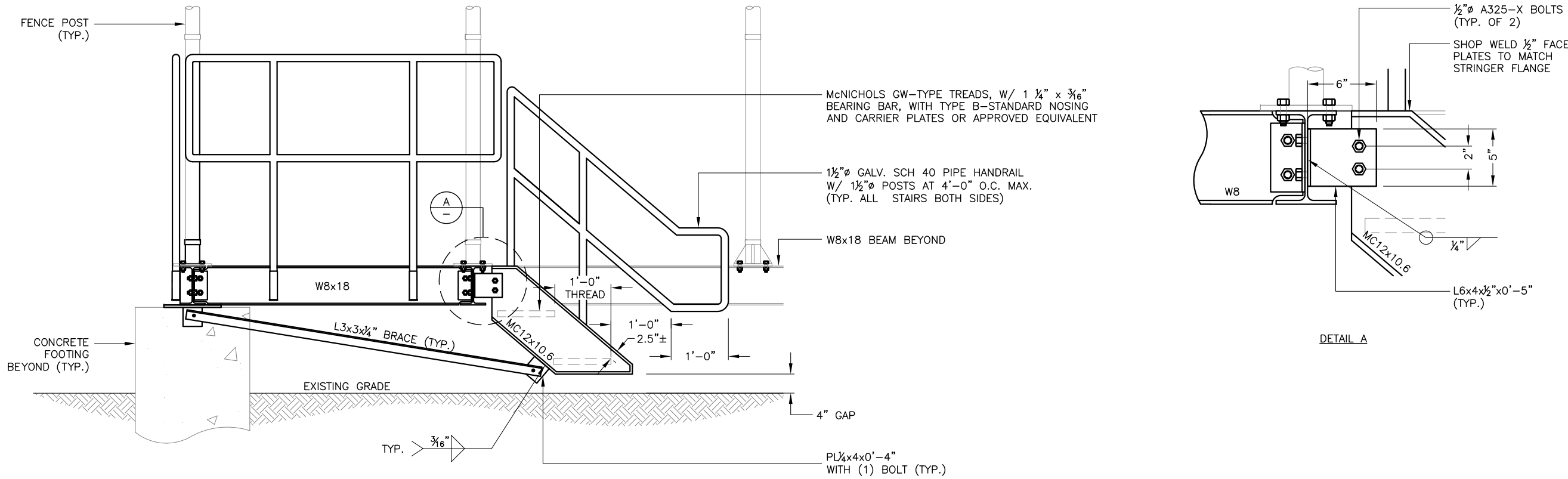
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SHEET NAME
STRUCTURAL
DETAILS

SHEET NUMBER

S2



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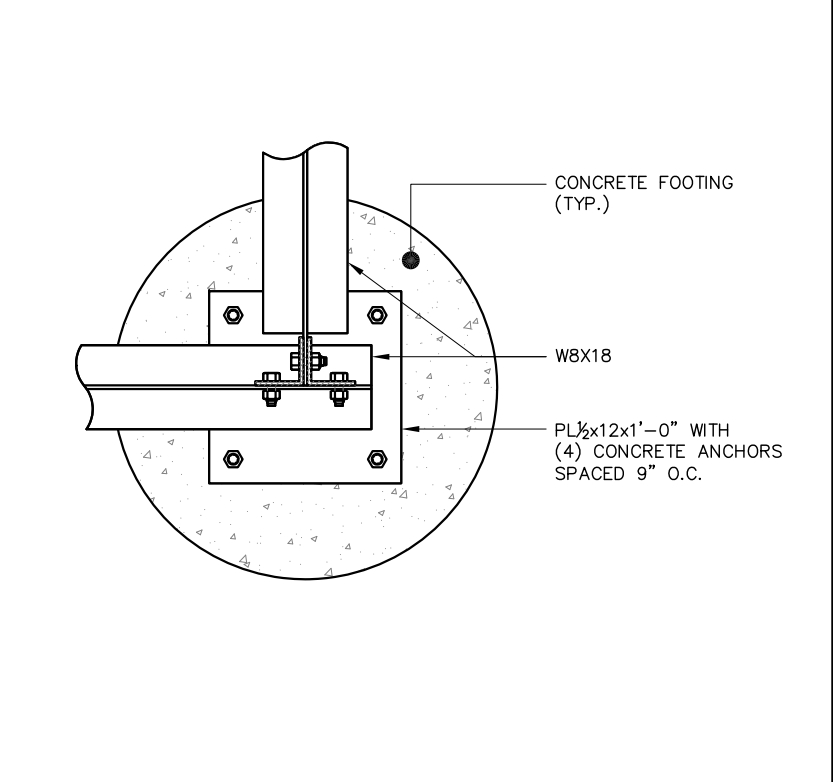
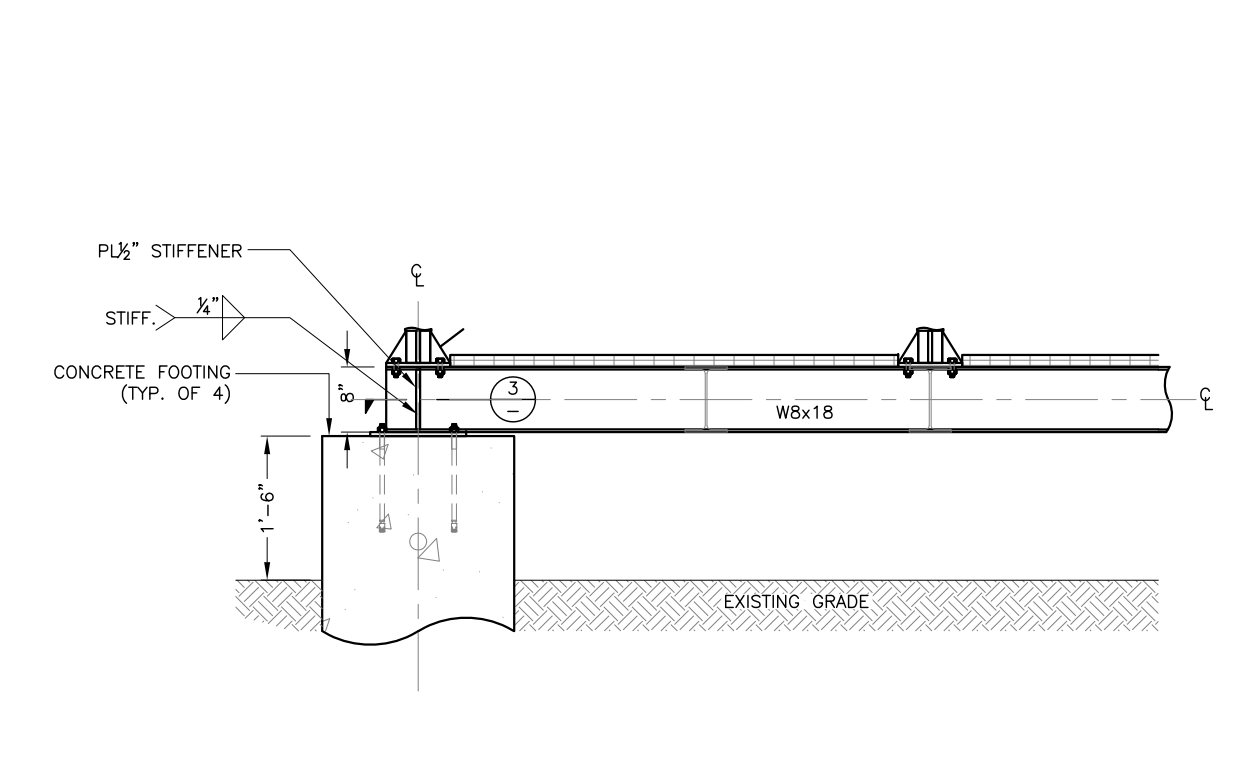
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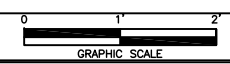
1300 CONCORD TERRACE
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STAIR ELEVATION DETAIL

NTS 1



KNEE BRACE CONNECTION DETAIL



TOP BASE PLATE DETAIL

NTS 3

(NOT USED)

4

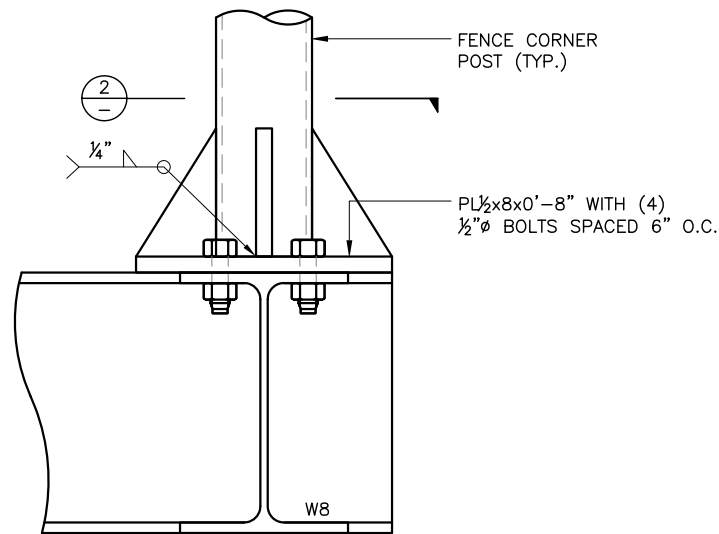
MICHAEL A. PHILLIPS
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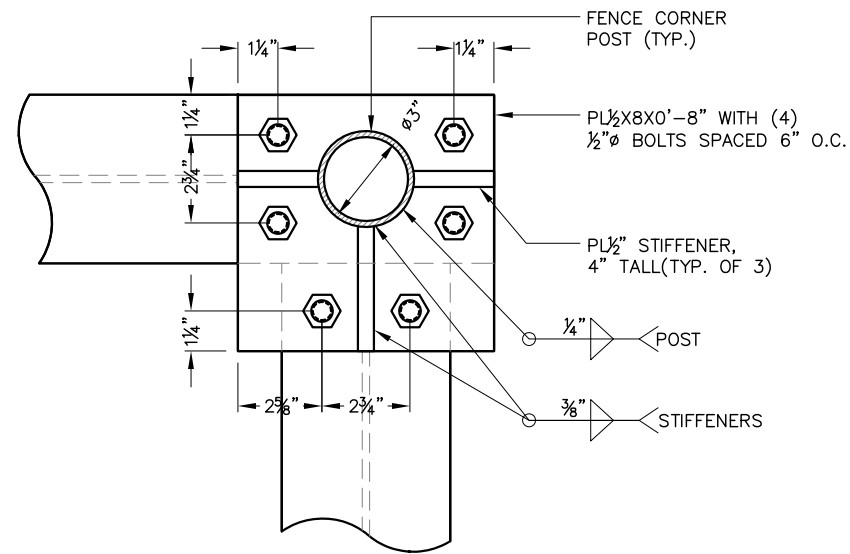
SHEET NUMBER
S3



FENCE CORNER POST (TYP.)

PL 1/2 x 8 x 0'-8" WITH (4) 1/2" Ø BOLTS SPACED 6" O.C.

W8



FENCE CORNER POST (TYP.)

PL 1/2 x 8 x 0'-8" WITH (4) 1/2" Ø BOLTS SPACED 6" O.C.

PL 1/2" STIFFENER, 4" TALL (TYP. OF 3)

1/4" POST

3/8" STIFFENERS

(TYP.) FENCE CORNER POST CONNECTION

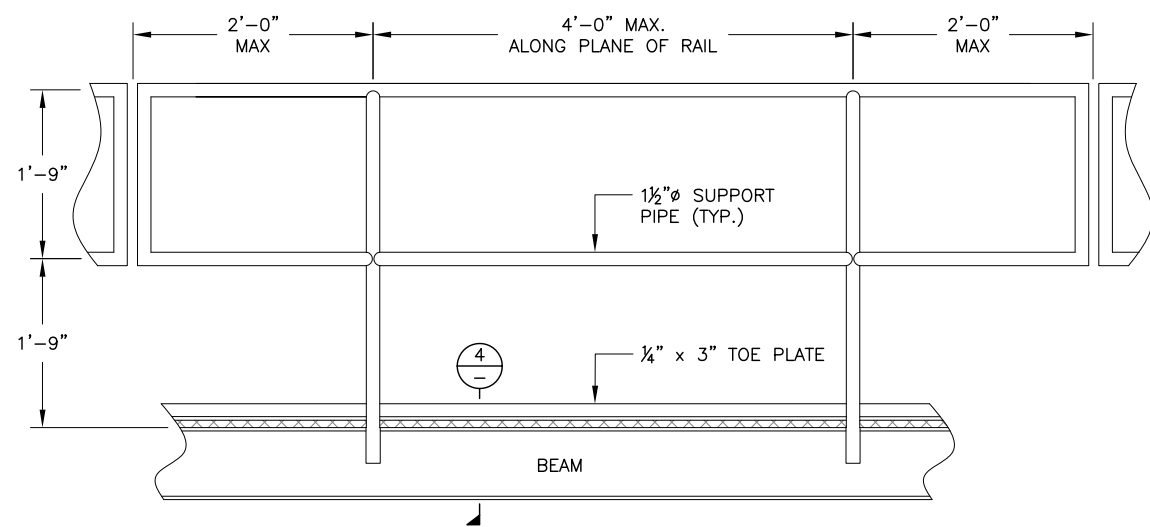
NTS

1

(TYP.) CORNER POST BASE PLATE

NTS

2



1 1/2" Ø SUPPORT PIPE (TYP.)

1/4" x 3" TOE PLATE

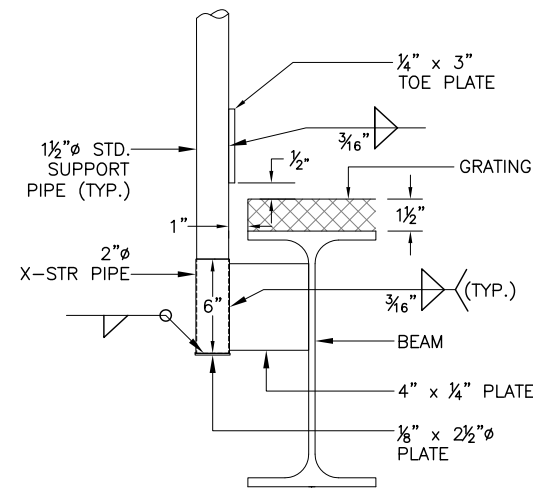
BEAM

4

GUARDRAIL CONNECTION DETAIL

NTS

3



1/4" x 3" TOE PLATE

1 1/2" Ø STD. SUPPORT PIPE (TYP.)

GRATING

2" Ø X-STR PIPE

3/16" (TYP.)

BEAM

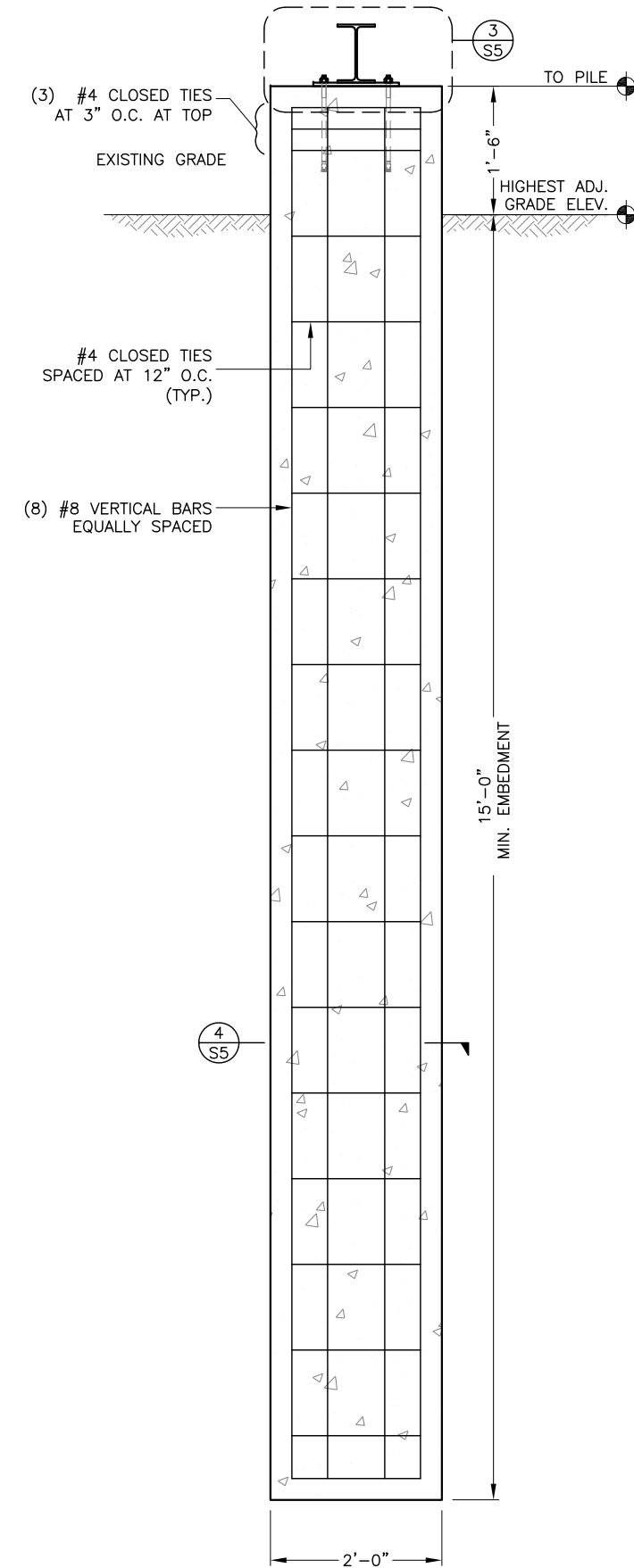
4" x 1/4" PLATE

1/8" x 2 1/2" Ø PLATE

SECTION

NTS

4



(3) #4 CLOSED TIES AT 3" O.C. AT TOP

EXISTING GRADE

#4 CLOSED TIES SPACED AT 12" O.C. (TYP.)

(8) #8 VERTICAL BARS EQUALLY SPACED

15'-0" MIN. EMBEDMENT

3 SS

TO PILE

HIGHEST ADJ. GRADE ELEV.

4 SS

2'-0"

LONGITUDINAL SECTION REINFORCEMENT DET.

NTS

5

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PROJECT NO.: 140-963.08

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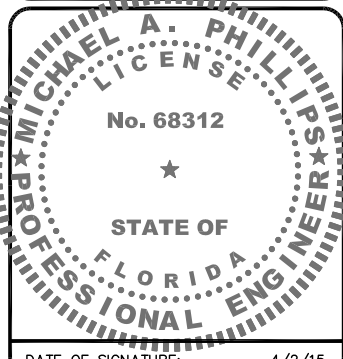
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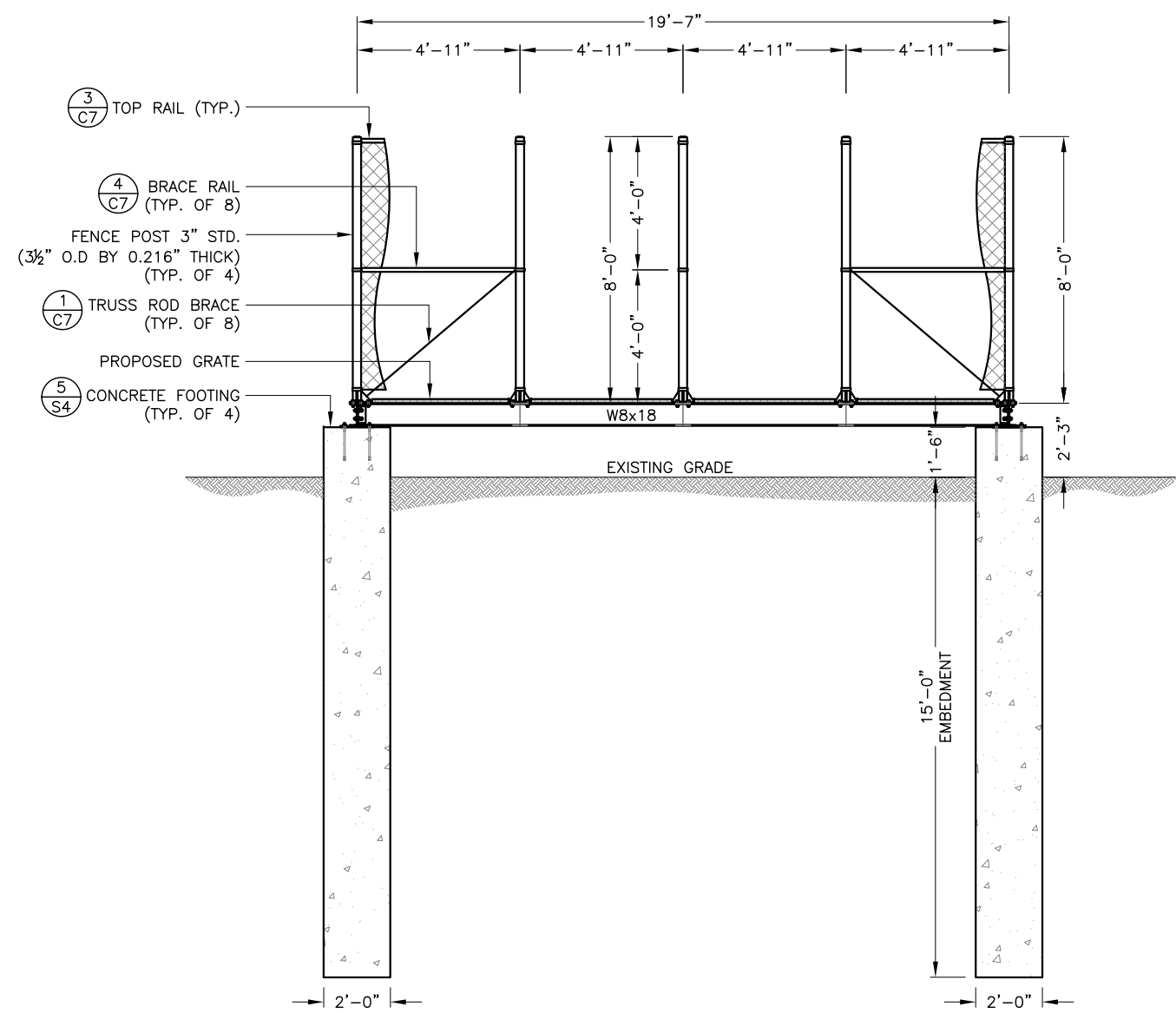


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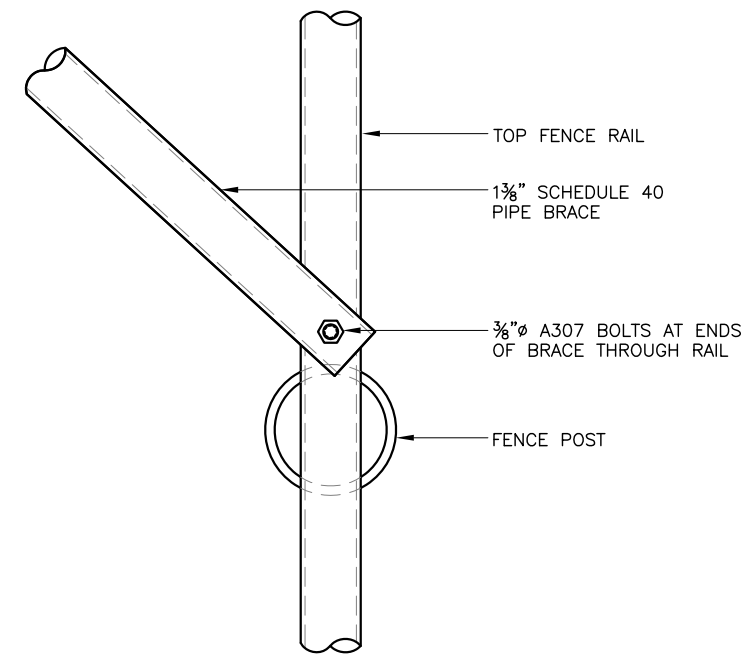
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SHEET NAME
STRUCTURAL DETAILS

SHEET NUMBER
S4



- ③
C7 TOP RAIL (TYP.)
- ④
C7 BRACE RAIL (TYP. OF 8)
- FENCE POST 3" STD. (3 1/2" O.D BY 0.216" THICK) (TYP. OF 4)
- ①
C7 TRUSS ROD BRACE (TYP. OF 8)
- PROPOSED GRATE
- ⑤
S4 CONCRETE FOOTING (TYP. OF 4)



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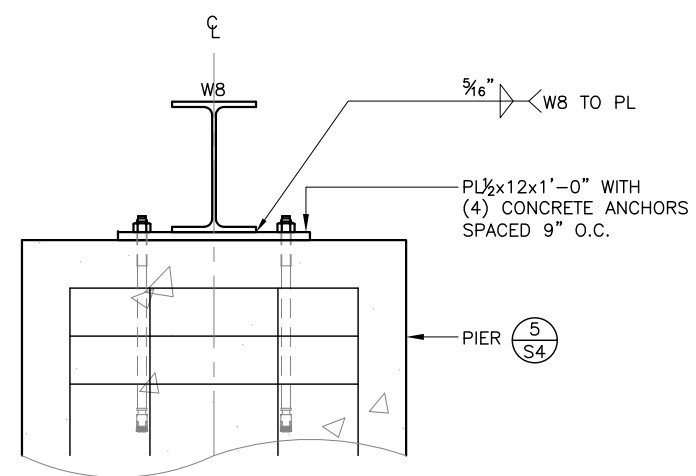
PROPOSED PLATFORM REAR ELEVATION



1 TOP BRACE DETAIL

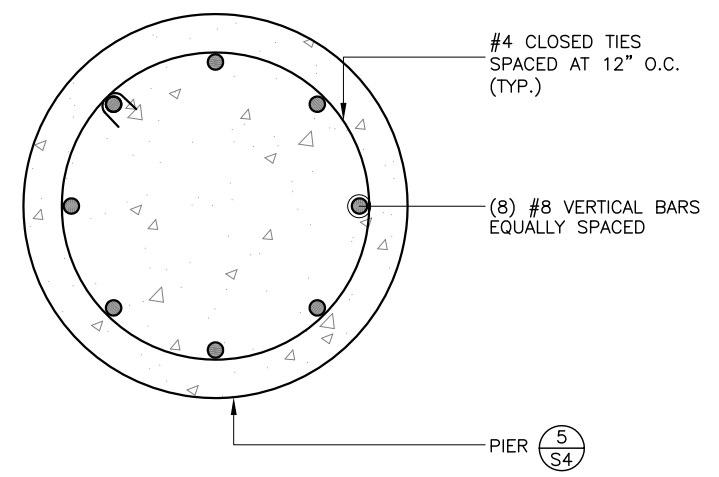
NTS 2

PROFESSIONAL ENGINEER
 MICHAEL A. PHILLIPS
 LICENSE No. 68312
 STATE OF FLORIDA
 DATE OF SIGNATURE: 4/2/15



TYPICAL PLATFORM ANCHORAGE

NTS 3



TYPICAL PILE SECTION

NTS 4

(NOT USED)

5

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SHEET NAME
 STRUCTURAL DETAILS

SHEET NUMBER
 S5

A – GENERAL

- A8. CONTRACTOR SHALL APPLY FOR ELECTRICAL SERVICE AS SOON AS POSSIBLE AND COORDINATE REQUIREMENTS, SERVICE ROUTING, AND METER SOCKET TYPE WITH LOCAL POWER COMPANY.
- A9. CONTRACTOR SHALL APPLY FOR TELEPHONE SERVICE AS SOON AS POSSIBLE AND COORDINATE REQUIREMENTS AND SERVICE ROUTING WITH TELEPHONE COMPANY.
- A10. PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL.
- A11. WHERE LONG POWER CABLE RUNS PREVAIL, CONTRACTOR SHALL CALCULATE THE VOLTAGE DROP AND SIZE WIRES AND CONDUIT ACCORDINGLY.
- A12. WHERE TRANSFORMER IS REQUIRED FOR ELECTRICAL SERVICE, TRANSFORMER SECONDARY SHALL BE GROUNDED PER N.E.C., ARTICLE 250-26.
- A13. REFER TO SITE SPECIFIC DWGS FOR ELEVATIONS.
- A14. ALL ELECTRICAL DEVICES EXPOSED TO WEATHER SHALL BE OF RAINPROOF CONSTRUCTION AND SHALL REQUIRE WATER TIGHT CONDUIT HUBS.
- A15. CONTRACTOR SHALL COIL CABLES AT HANDHOLE WITH LENGTHS AS REQUIRED BY ELECTRICAL UTILITY FOR CONNECTION BY UTILITY.
- A16. ALL UNDERGROUND SERVICE ENTRANCE POWER CABLES SHALL BE TYPE FOR SUCH USE. CONTRACTOR SHALL CALCULATE VOLTAGE DROP AND RE-SIZE CABLES PER NEC REQUIREMENTS FOR CABLE RUNS EXCEEDING 250 FEET.

B – POWER CABLE AND SERVICE

- B1. CONTRACTOR SHALL PROVIDE CONDUIT AND WIRING TO BTS AND VERIFY EXACT CONDUIT ROUTING. RACEWAY SYSTEM MATERIALS AND DEVICES FURNISHED SHALL BE IN ACCORDANCE WITH APPLICABLE STANDARDS OF ANSI, NEMA, AND UL. RACEWAY SYSTEM COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF THE N.E.C.
- B2. A COIL OF WIRE SHALL EXTEND A MINIMUM OF 10 FEET FROM CONDUIT TO PERMIT TERMINATION BY OTHERS.
- B3. CONTRACTOR SHALL SEAL AROUND ALL CONDUIT PENETRATIONS THROUGH WALLS, FLOORS AND ROOFS TO PREVENT MOISTURE PENETRATION OR VERMIN INFESTATION.
- B4. CONDUCTORS RUNNING ALONG HORIZONTAL SURFACES (ROOF TOP OR SLAB) SHALL BE INSTALLED IN RIGID CONDUIT SUPPORTED ON SLEEPERS.
- B5. ALL VERTICAL RUNS OF POWER CABLE EXCEEDING 80 FEET IN LENGTH SHALL BE SUPPORTED PER N.E.C. ARTICLE 300 USING KELLEMS GRIPS OR ACCEPTABLE EQUAL CABLE SUPPORT SYSTEM.
- B6. WHERE A SEPARATE ELECTRICAL SERVICE DROP IS ADDED, CONTRACTOR SHALL INSTALL PERMANENT SERVICE DISCONNECT OR GROUPING THEREOF, DENOTING ALL OTHER SERVICE ENTRANCES, LOCATION OF EACH AND THE AREAS SERVED BY EACH.
- B7. WHERE ELECTRICAL POWER IS TO BE SUB-FED FROM AN EXISTING DISTRIBUTION SYSTEM, THE FOLLOWING SHALL APPLY:
 - A. CONTRACTOR SHALL PERFORM LOAD TESTING TO DETERMINE MAXIMUM FEEDER DEMAND PER N.E.C. ARTICLE 220-35.
 - B. CONTRACTOR SHALL VERIFY WHETHER EXISTING FEEDER CAPACITY EXCEEDS VALUE CALCULATED PER N.E.C. ARTICLE 220-35
 - C. EACH BRANCH CIRCUIT PROTECTIVE DEVICE SHALL HAVE SAME INTERRUPTING RATING AS EQUIPMENT SUPPLYING IT.
 - D. PREFERRED MEANS OF SUPPLY SHALL BE A BRANCH CIRCUIT PROTECTIVE DEVICE LOCATED IN EXISTING PANEL.
 - E. IF A BRANCH CIRCUIT PROTECTIVE DEVICE CANNOT BE OBTAINED OR SPACE IS NOT AVAILABLE, A BRANCH CIRCUIT MAY BE TAPPED FROM EXISTING FEEDER CONDUCTORS USING AN INSTALLED 2-POLE FUSED DISCONNECT AND METER BASE PER N.E.C. ARTICLE 240-21 WITH TEN FOOT (10) MAXIMUM TAP CONDUCTORS. FUSED DISCONNECT SHALL BE LISTED SAME OR BETTER INTERRUPTING RATING AS EXISTING SOURCE OF SUPPLY.

C – RF (COAX) AND LOW VOLTAGE CABLE

- C1. RF CABLES AND LOW VOLTAGE CABLING BETWEEN BTS, LNA OR TMA AND ANTENNA SHALL BE SUPPORTED USING ANDREW "SNAP-IN" HANGERS OR ACCEPTABLE EQUAL.
- C2. RF CABLES AND LOW VOLTAGE CABLING BETWEEN BTS, LNA OR TMA AND ANTENNA SHALL BE ROUTED AS FOLLOWS:
 - A. RUNNING ALONG HORIZONTAL SURFACES: USE WAVEGUIDE SUPPORTS OR BRIDGE KIT MOUNTED ON CONCRETE SLEEPERS.
 - B. RUNNING ALONG VERTICAL TOWER FACE: WAVEGUIDE LADDER W/HANGERS OR KELLEMS GRIPS.
 - C. RUNNING ALONG OR ADJACENT TO BTS PLATFORM: USE 12 X 3 OPEN OR COVERED ELECTRICAL LADDER TRAY.

D- IDENTIFICATION

- D1. LOCATE NAMEPLATE, MARKING, OR OTHER IDENTIFICATION MEANS ON OUTSIDE EQUIPMENT OR BOX FRONT COVERS.
- D2. PROVIDE NAMEPLATE ENGRAVED WITH EQUIPMENT DESIGNATION FOR EACH SAFETY SWITCH AND ALL OTHER ELECTRICAL CABINETS, ETC.
- D3. DURING TRENCH BACK-FILLING FOR EACH UNDERGROUND ELECTRICAL, TELEPHONE, SIGNAL AND COMMUNICATIONS LINE, PROVIDE A CONTINUOUS UNDERGROUND WARNING TAPE TWELVE INCHES BELOW FINISHED GRADE.

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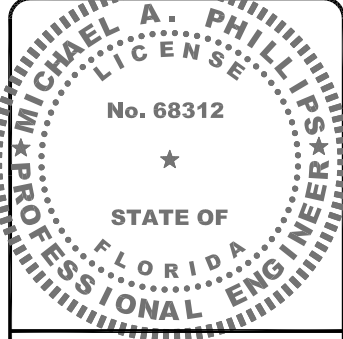


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SHEET NAME

ELECTRICAL
NOTES

SHEET NUMBER

E1

A - GENERAL

- A1. INSTALLATION OF GROUNDING ELECTRODE SYSTEM SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRIC CODE AND WITH ALL BUILDING CODES OF AUTHORITIES HAVING JURISDICTION.
- A2. GROUNDING CONDUCTORS SHALL BE #2 AWG TINNED SOLID BARE COPPER BELOW AND ABOVE GRADE, UNLESS OTHERWISE NOTED AND SHALL BE ROUTED IN A DOWNWARD PATH TOWARDS GROUND BARS.
- A3. GROUNDING CONDUCTORS SHALL BE KEPT AS SHORT AND DIRECT AS POSSIBLE WITH MINIMUM BEND RADIUS OF 12 INCHES.
- A4. ALL BELOW GRADE CONNECTIONS SHALL BE CADWELD TYPE CONNECTIONS AND ALL CONNECTIONS TO EQUIPMENT AND GROUND BARS SHALL BE 2-HOLE BRONZE COMPRESSION CONNECTORS UNLESS OTHERWISE NOTED.
- A5. CONTRACTOR SHALL INSTALL NEW PCS GROUNDING SYSTEM PER SPECIFICATIONS AND INTERCONNECT NEW SYSTEMS TO ANY EXISTING GROUNDING SYSTEMS AS REQUIRED BY NFPA 70 AND 780 (THIS APPLIES TO ELECTRICAL POWER DISTRIBUTION GROUNDING SYSTEM, LIGHTNING PROTECTION GROUNDING SYSTEM, COAX CABLE GROUNDING SYSTEM AND ANY OTHER EXISTING GROUNDING SYSTEMS).
- A6. GROUNDING CONDUCTORS SHALL BE BONDED TO CABLE SUPPORTS, ANTENNA FRAMES, AND ANY SUPPORT FRAMES OR RACKS USING CADWELD OR MECHANICAL CONNECTIONS.
- A7. CONTRACTOR SHALL PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS, STAINLESS STEEL HARDWARE SHALL BE USED THROUGHOUT.
- A8. GROUNDING CONDUCTORS EMBEDDED IN CONCRETE OR PENETRATING WALLS AND FLOORS SHALL BE ENCASED IN PVC CONDUIT. NO METALLIC CONDUIT SHALL BE USED FOR GROUNDING CONDUCTORS UNLESS REQUIRED BY LOCAL CODES OR OTHERWISE INDICATED ON DRAWINGS. CONTRACTOR SHALL SEAL AROUND ALL CONDUIT PENETRATIONS TO PREVENT MOISTURE PENETRATION AND VERMIN INFESTATION.
- A9. CONTRACTOR SHALL BOND PCS GROUNDING SYSTEM VIA THE MASTER GROUND BAR TO ALL METAL OBJECTS WITHIN 12 FEET OF EQUIPMENT, CONDUIT AND CABLES.
- A10. BONDING OF GROUNDED CONDUCTOR (NEUTRAL) AND GROUNDING CONDUCTOR SHALL BE AT SERVICE DISCONNECTING MEANS. BONDING JUMPER SHALL BE INSTALLED PER N.E.C. ARTICLE 250-28.
- A11. CONTRACTOR SHALL VERIFY EXACT CONDUIT ROUTING FOR GROUNDING CONDUCTORS WHERE APPLICABLE.
- A12. A GROUND LEAD IS REQUIRED ONLY FOR BTS SUPPORTED ON STEEL FRAME. AN ADDITIONAL GROUND LEAD IS REQUIRED IF CABLE TRAY IS USED.
- A13. CONNECTIONS TO CGB SHALL BE ARRANGED IN THE FOLLOWING THREE GROUPS:
 - * SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO CABINET AND POWER PEDESTAL GROUND).
 - * SURGE ABSORBERS (GROUNDING ELECTRODE RING OR BUILDING STEEL).
 - * NON-SURGING OBJECTS (EGB GROUND IN BTS).
- A14. DOUBLING OR STACKING OF ANY GROUNDING CONNECTIONS IS NOT ACCEPTABLE.
- A15. ALL GROUND BARS SHALL BE INSTALLED WITH STAND OFF INSULATORS.

B - PREPARATION

- B1. SURFACES: ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FIELD INSPECTED TO ENSURE PROPER CONTACT. ALL GALVANIZED SURFACES ON WHICH GALVANIZING HAS BEEN REMOVED BY CUTTING, DRILLING, OR ANY OTHER OPERATION SHALL BE RE-GALVANIZED IN ACCORDANCE WITH ASTM A780 USING "ZINC RICH" COATING AS MANUFACTURED BY ZRC CHEMICAL PRODUCTS COMPANY (LOCATED IN QUINCY, MASSACHUSETTS), OR ACCEPTABLE EQUAL. NO WASHERS ARE ALLOWED BETWEEN ITEMS BEING GROUNDED. ALL CONNECTIONS ARE TO HAVE A NON-OXIDIZING AGENT ("COPPER SHIELD") APPLIED PRIOR TO INSTALLATION.
- B2. GROUND BAR: ALL COPPER GROUND BARS SHALL BE CLEANED, POLISHED AND A NON-OXIDIZING AGENT ("COPPER SHIELD") APPLIED. NO FINGER PRINTS OR DISCOLORED COPPER SHALL BE PERMITTED.

C - BUILDINGS

- C1. ELECTRICAL CONTRACTOR SHALL PERFORM REQUIRED TESTING ON GROUNDING SYSTEM ONCE GROUNDING SYSTEM IS COMPLETELY CONSTRUCTED AND BEFORE SERVICE POWER AND GROUND IS CONNECTED (SEE NOTE T1 FOR TEST DESCRIPTION).
- C2. A #4/0 AWG COPPER CONDUCTOR SHALL BE ROUTED FROM MASTER GROUND BAR AT BTS SITE TO MAIN METAL COLD WATER PIPE AND BONDED TO PIPE WITH BRONZE 2-HOLE PIPE CLAMP. CLAMP SHALL BE CONNECTED TO WATER PIPE WITHIN 5 FEET OF ENTRY OF PIPE INTO BUILDING WITH NO DEVICES BETWEEN ENTRY POINT AND CONNECTION AND SHALL COME IN CONTACT WITH PIPE FOR A MINIMUM DISTANCE OF 4 INCHES.
- C3. METAL RACEWAYS, ENCLOSURES, FRAMES AND OTHER NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT SHALL BE KEPT AT LEAST 6 FEET AWAY FROM LIGHTNING ROD CONDUCTORS OR THEY MUST BE BONDED TO LIGHTNING ROD CONDUCTORS AT THE LOCATION WHERE SEPARATION DISTANCE IS LESS THAN 6 FEET.
- C4. A MASTER GROUND BAR (MGB) SHALL BE INSTALLED NEAR BTS WITH BUILDING PRINCIPAL GROUND BAR (BPG) INSTALLED NEAR ENTRANCE OF MAIN METAL COLD WATER PIPE INTO BUILDING. A #4/0 AWG STRANDED COPPER DOWN CONDUCTOR (VERTICAL GROUND RISER) SHALL BE USED TO INTERCONNECT GROUND BARS.
- C5. VERTICAL RISER SHALL CONSIST OF A #4/0 AWG (THWN) STRANDED COPPER CONDUCTOR INSIDE 3/4" CONDUIT.
- C6. CONTRACTOR SHALL BOND BUILDING PRINCIPAL GROUND BAR (BPG) NEAR MAIN METAL COLD WATER PIPE TO EXISTING BUILDING GROUND RING AS WELL AS TO MAIN METAL COLD WATER PIPE WITH #4/0 AWG (THWN) STRANDED COPPER CONDUCTOR.
- C7. ANTENNA GROUND BARS (AGB) SHALL BE INSTALLED NEAR ANTENNAS AND SHALL BE BONDED TO MASTER GROUND BAR (MGB) WITH #2 AWG TINNED SOLID BARE COPPER CONDUCTOR.
- C8. F CODES REQUIRE VERTICAL RISER TO BE ISOLATED IN CONDUIT, PVC CONDUIT IS PREFERRED. IF METALLIC CONDUIT IS USED, GROUNDING BUSHINGS SHALL BE INSTALLED ON EACH END OF THE CONDUIT AND BONDED TO GROUND BARS USING #2 AWG (THWN) STRANDED COPPER CONDUCTORS WITH GREEN INSULATION.

D - LAND BUILDS AND CO-LOCATES

- D1. THE GROUND ELECTRODE SYSTEM SHALL CONSIST OF DRIVEN GROUND RODS UNIFORMLY SPACED AROUND THE EQUIPMENT FOUNDATION AND AROUND THE PERIMETER OF THE TOWER FOUNDATION. THE GROUND RODS SHALL BE 5/8" X 10'-0" COPPER CLAD STEEL INTERCONNECTED WITH #2 SOLID TINNED BARE COPPER GROUND CONDUCTOR TO FORM A GROUND RING AT A DEPTH OF 30 INCHES BELOW THE SURFACE OF THE SOIL. A MINIMUM OF 1 FOOT AND A MAXIMUM OF 3 FEET CLEARANCES SHALL BE MAINTAINED FROM FOUNDATIONS. TOWER AND EQUIPMENT GROUND RINGS SHALL BE INTERCONNECTED WITH TWO GROUNDING CONDUCTORS OF EQUAL LENGTH AND MATERIALS.
- D2. GROUND RODS SHALL BE BONDED TO GROUND RINGS AND INTERCONNECTING CONDUCTORS AT EQUAL INTERVALS OF APPROXIMATELY 10 FEET.
- D3. WAVEGUIDE BRIDGE SHALL BE BONDED TO GROUND RINGS OR INTERCONNECTING CONDUCTORS WITH GROUNDING CONDUCTORS BONDED TO DIAGONALLY OPPOSED SUPPORT POSTS.
- D4. GROUND BARS SHALL BE BONDED TO GROUND RING WITH SINGLE GROUNDING CONDUCTOR.
- D5. BONDS TO ANTENNA MASTS, FENCE POSTS, WAVEGUIDE BRIDGE, TOWER STEEL (UNLESS PROHIBITED BY TOWER MANUFACTURER) AND THOSE BELOW GRADE SHALL BE EXOTHERMIC TYPE (CADWELD). ALL OTHER BONDS SHALL BE BRONZE 2-HOLE COMPRESSION FITTINGS UNLESS OTHERWISE NOTED.
- D6. GROUNDING CONDUCTORS MAKING A TRANSITION FROM ABOVE TO BELOW GRADE SHALL BE INSULATED FROM EARTH CONTACT BY PASSING THROUGH PVC CONDUIT. THE CONDUIT SHALL EXTEND AT LEAST 6 INCHES ABOVE AND 12 INCHES BELOW GRADE LEVEL.

E - LIGHTNING PROTECTION

- E1. IF EXISTING BUILDING HAS AN NFPA 780 AIR TERMINAL SYSTEM, EXISTING SYSTEM SHALL BE BONDED TO A GROUND BAR TO BOND THE EXISTING SYSTEM TO THE NEW SYSTEM. SHOULD THE EXISTING SYSTEM COME WITHIN 8 FEET OF ANTENNA STRUCTURES, EXISTING SYSTEM SHALL ALSO BE BONDED TO COAX GROUND BARS.
- E2. IF SITE IS IN A HIGH RISK AREA AND ANTENNAS DO NOT FALL WITHIN EXISTING CONE OF PROTECTION FOR BUILDING, AIR TERMINALS SHALL BE INSTALLED AT ANTENNAS. A SINGLE AIR TERMINAL MAY BE USED WHEN TWO ANTENNAS ARE MOUNTED ON SAME STRUCTURE AND IT HAS BEEN DETERMINED THAT BOTH ANTENNAS WILL FALL WITHIN LIGHTNING CONE OF PROTECTION FOR SINGLE AIR TERMINAL.

T-MOBILE GROUNDING REQUIREMENTS

- T1. CONTRACTOR SHALL INSPECT AND TEST ANY NEW OR EXISTING T-MOBILE GROUNDING SYSTEM WITH A BIDDLE-MEGGER TESTER UTILIZING THE FALL OF POTENTIAL METHOD AND CONTACT CONSTRUCTION MANAGER IF RESISTANCE EXCEEDS 5 OHMS AND SHALL FIELD MODIFY GROUNDING SYSTEM AS NECESSARY TO ACHIEVE COMPLIANCE. TEST RESULTS AND CONCLUSIONS SHALL BE RECORDED FOR PROJECT CLOSE-OUT DOCUMENTATION.
- T2. COAX CABLE OUTER CONDUCTORS (SHIELDS) SHALL BE GROUNDED USING COAX GROUNDING KITS AT A MINIMUM OF TWO POINTS, INCLUDING AT ANTENNA AND AT MASTER GROUND BAR. THE COAXIAL CABLE SHALL NOT EXCEED 100 FEET BETWEEN GROUNDING KITS.
- T3. GROUNDING CONDUCTOR CONSISTING OF #2 AWG TINNED SOLID BARE COPPER WIRE SHALL BE BONDED TO WAVEGUIDE ENTRY GROUND BAR USING CADWELD CONNECTIONS.
- T4. COAX CABLE ENTERING A BUILDING SHALL BE GROUNDED WITH COAX GROUNDING KITS TO AN INSULATED COAX GROUND BAR WHICH SHALL BE INSTALLED ON THE OUTSIDE FACE OF THE BUILDING, BELOW THE CABLE ENTRY PORTS.
- T5. WHEN COAX CABLES ENTER A BUILDING FROM A TOWER, THE COAX GROUND BAR AT THE BUILDING SHALL BE CONNECTED TO THE EXTERNAL GROUND RING USING #2 AWG BARE TINNED SOLID COPPER ISOLATED IN PVC CONDUIT.
- T6. WHEN COAX CABLES ENTER A BUILDING FROM A ROOF TOP, THE COAX GROUND BAR AT THE BUILDING SHALL BE CONNECTED TO THE MASTER GROUND BAR NEAR THE BTS USING #2 AWG STRANDED INSULATED COPPER CONDUCTOR (SEE BUILDINGS NOTES ON THIS DRAWING FOR CONNECTION TO PRINCIPLE GROUND BAR AND BUILDING GROUND).

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DRAWN BY:		CHECKED BY:
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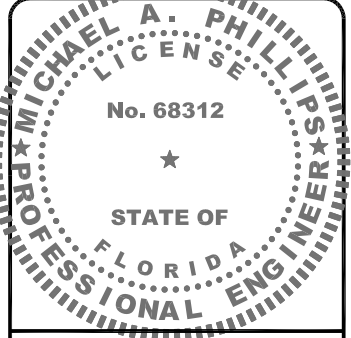
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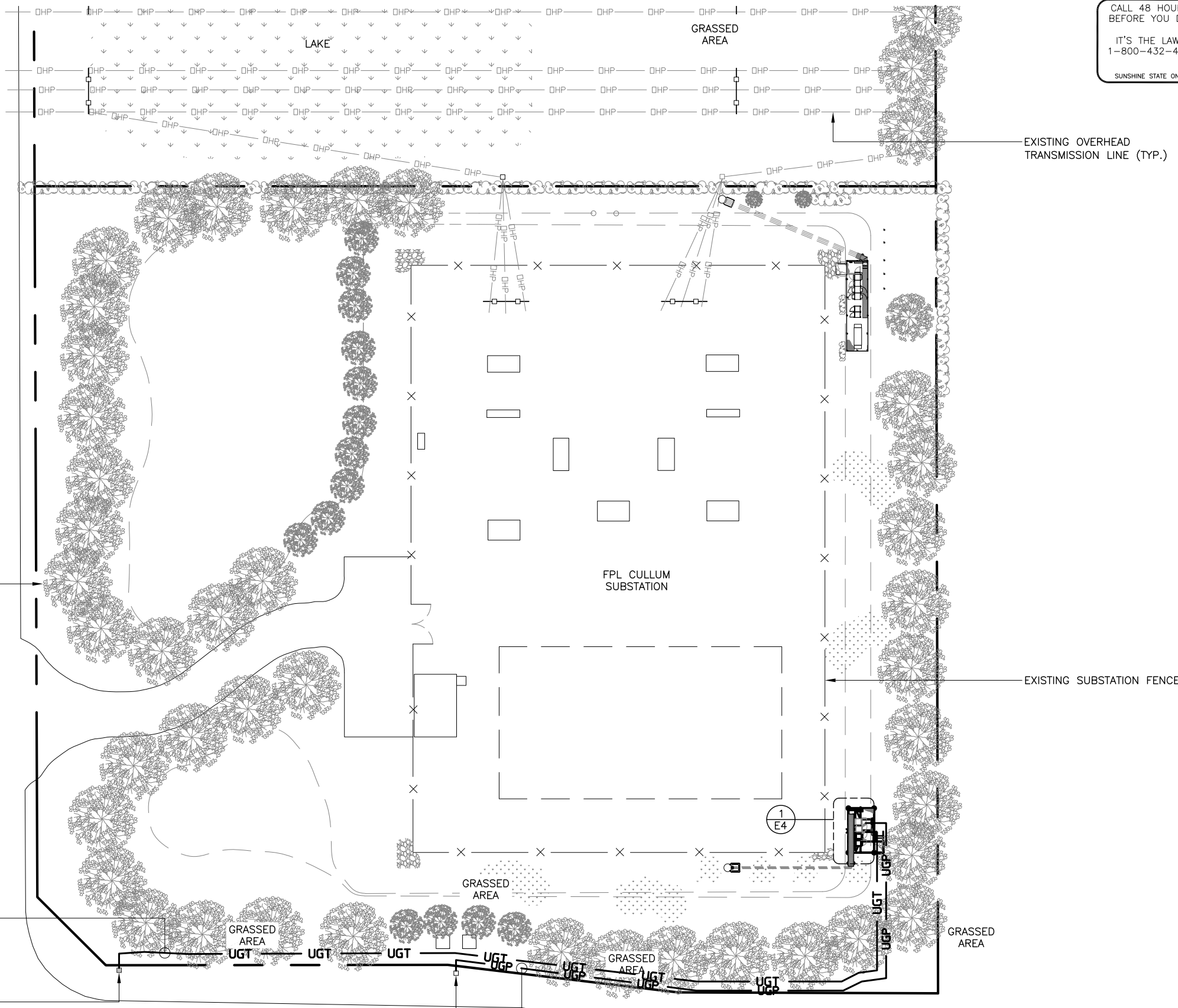
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SHEET NAME
GROUNDING
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E2



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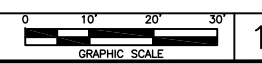
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PROFESSIONAL ENGINEER
DATE OF SIGNATURE: 4/2/15

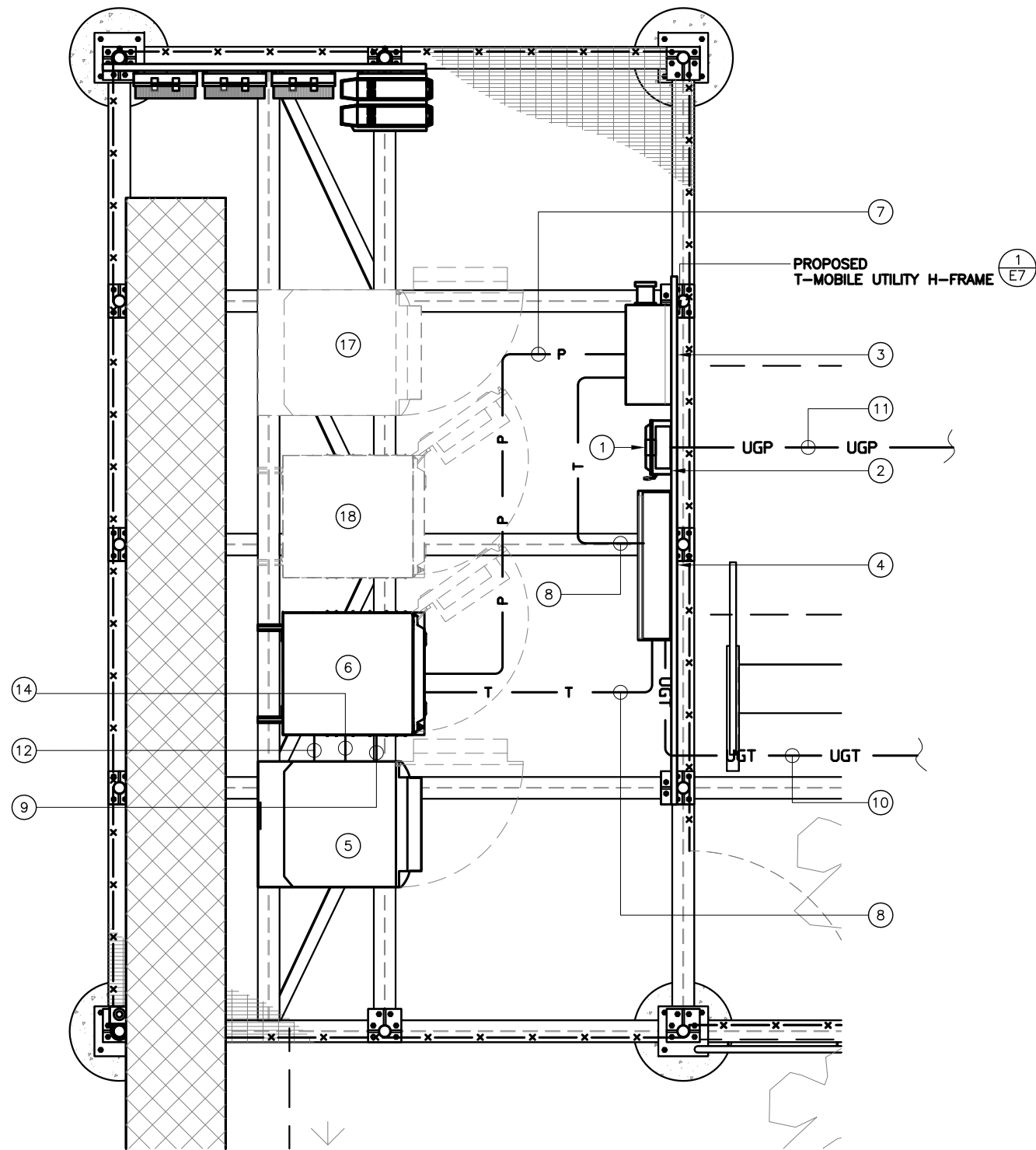
FPL CULLUM SUBSTATION
FB2140A
4000 NW 54th AVENUE
COCONUT CREEK, FL 33063

SHEET NAME
UTILITY ROUTING SITE PLAN
SHEET NUMBER
E3

- NOTES:**
1. PROPOSED CONDUIT ROUTING IS SCHEMATIC ONLY, CONTRACTOR SHALL DETERMINE SUITABLE ROUTING IN THE FIELD.
 2. PROPOSED CONDUIT SHALL BE GALVANIZED RIGID STEEL OR PVC APART FROM PORTION ENTERING EQUIPMENT CABINET, WHICH SHALL BE FLEXIBLE LIQUID TIGHT CONDUIT.

PROPOSED 3" CONDUIT FOR POWER (270'± IN LENGTH) 4 E7
EXISTING FPL PAD MOUNTED TRANSFORMER. CONTRACTOR TO COORDINATE WITH FPL REPRESENTATIVE PRIOR TO START OF WORK



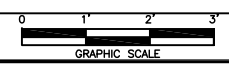


- ① PROPOSED T-MOBILE METER
- ② PROPOSED T-MOBILE DISCONNECT
- ③ PROPOSED T-MOBILE POWER PROTECTION CABINET (PPC)
- ④ PROPOSED T-MOBILE TELCO CABINET
- ⑤ PROPOSED T-MOBILE FCOA CABINET
- ⑥ PROPOSED T-MOBILE SITE SUPPORT CABINET
- ⑦ PROPOSED 2"Ø CONDUIT FOR POWER
- ⑧ (2) PROPOSED 2"Ø CONDUITS FOR TELCO
- ⑨ PROPOSED 2"Ø EMPTY CONDUIT
- ⑩ (2) PROPOSED 2"Ø CONDUITS FOR TELCO (420'± IN LENGTH).
- ⑪ PROPOSED 3"Ø CONDUIT FOR POWER (270'± IN LENGTH).
- ⑫ PROPOSED 2"Ø CONDUIT FOR ALARM WIRING
- ⑬ NOT USED
- ⑭ PROPOSED 2"Ø CONDUIT FOR DC POWER
- ⑮ NOT USED
- ⑯ NOT USED
- ⑰ FUTURE T-MOBILE FCOA CABINET
- ⑱ FUTURE T-MOBILE SITE SUPPORT CABINET (LARGE)

CONSTRUCTION KEY NOTES 2

- NOTES:**
- 1. PROPOSED CONDUIT ROUTING IS SCHEMATIC ONLY, CONTRACTOR SHALL DETERMINE SUITABLE ROUTING IN THE FIELD.
 - 2. PROPOSED CONDUIT SHALL BE GALVANIZED RIGID STEEL OR PVC APART FROM PORTION ENTERING EQUIPMENT CABINET, WHICH SHALL BE FLEXIBLE LIQUID TIGHT CONDUIT.

CALL 48 HOURS BEFORE YOU DIG
 IT'S THE LAW!
 1-800-432-4770
 SUNSHINE STATE ONE CALL OF FLORIDA, INC.



REV	DATE	DESCRIPTION
A	1/7/15	PRELIMINARY
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PROJECT NO.: 140-963.08
 DRAWN BY: M. L. BELLO
 CHECKED BY: M. ABBEY

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 SUITE 525
 MIRAMAR, FL 33027
 CERTIFICATE OF AUTHORIZATION 29214

1300 CONCORD TERRACE
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 SUNRISE, FL 33323

DATE OF SIGNATURE: 4/2/15

FPL CULLUM SUBSTATION
 FB2140A
 4000 NW 54th AVENUE
 COCONUT CREEK, FL 33063

SHEET NAME
 UTILITY ROUTING EQUIPMENT PLAN

SHEET NUMBER
 E4

PANEL NAME: T-MOBILE LOCATION: PPC		PANEL RATING 200 AMPS 120/240 VOLTS										PHASE 1 WIRE 3		X MCB RATING 200 AMP MAIN LUG ONLY	
CKT NO.	DESCRIPTION	KVA		AMP POLE	WIRE	GND	COND	COND	GND	WIRE	AMP POLE	KVA		DESCRIPTION	CKT NO.
		A	B									A	B		
1	SITE SUPPORT CABINET	9.6	-	100/2	#2	#8	2"	*	*	*	60/2	0	-	SURGE SUPPRESSOR	2
3		-	9.6									-	0		
5	SPACE	-	-								15/1	0.18	-	GFI	6
7	SPACE	-	-											SPACE	8
9	SPACE	-	-											SPACE	10
11	SPACE	-	-											SPACE	12
13	SPACE	-	-											SPACE	14
15	SPACE	-	-											SPACE	16
17	SPACE	-	-											SPACE	18
19	SPACE	-	-											SPACE	20
21	SPACE	-	-											SPACE	22
23	SPACE	-	-											SPACE	24
SUB TOTAL KVA (CONT)		0	0									0	0	SUB TOTAL KVA (CONT)	
SUB TOTAL KVA (NON-CONT)		9.6	9.6									0.18	0	SUB TOTAL KVA (NON-CONT)	
TOTAL KVA NON-CONT + 125% CONT.				19.4										TOTAL AMPS	

* PRE WIRED AT FACTORY

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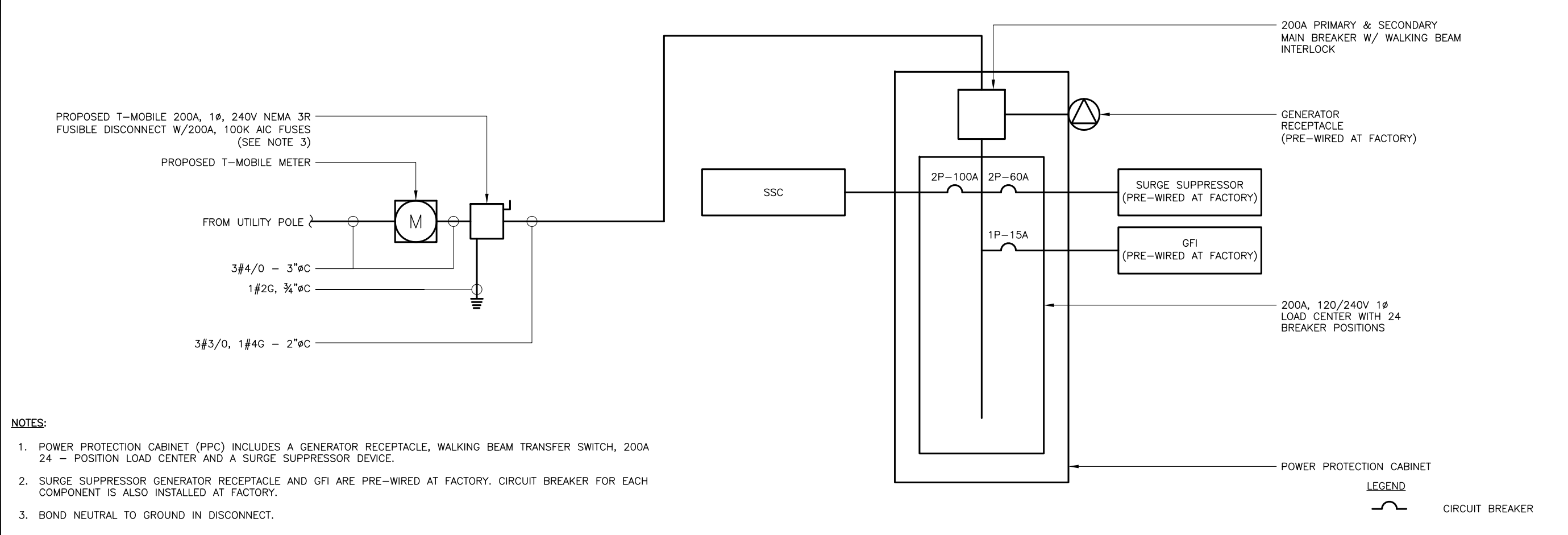


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PANEL SCHEDULE

1

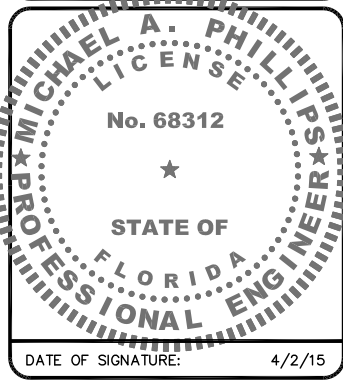


- NOTES:
- POWER PROTECTION CABINET (PPC) INCLUDES A GENERATOR RECEPTACLE, WALKING BEAM TRANSFER SWITCH, 200A 24 - POSITION LOAD CENTER AND A SURGE SUPPRESSOR DEVICE.
 - SURGE SUPPRESSOR GENERATOR RECEPTACLE AND GFI ARE PRE-WIRED AT FACTORY. CIRCUIT BREAKER FOR EACH COMPONENT IS ALSO INSTALLED AT FACTORY.
 - BOND NEUTRAL TO GROUND IN DISCONNECT.

LEGEND
CIRCUIT BREAKER

ELECTRICAL ONE-LINE

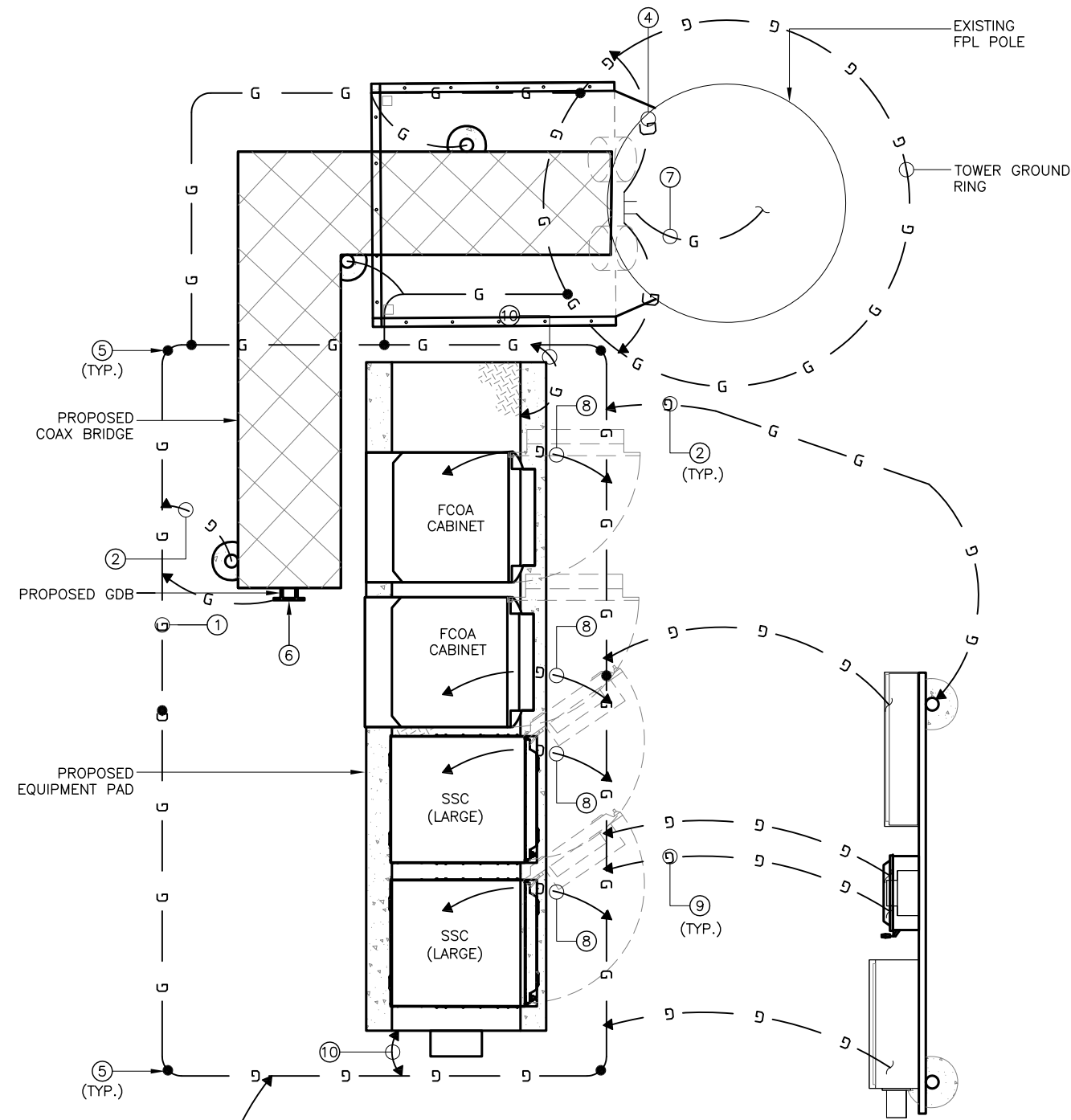
2



FPL CULLUM SUBSTATION
FB2140A
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COCONUT CREEK, FL 33063

SHEET NAME
ELECTRICAL
DETAILS

SHEET NUMBER
E5



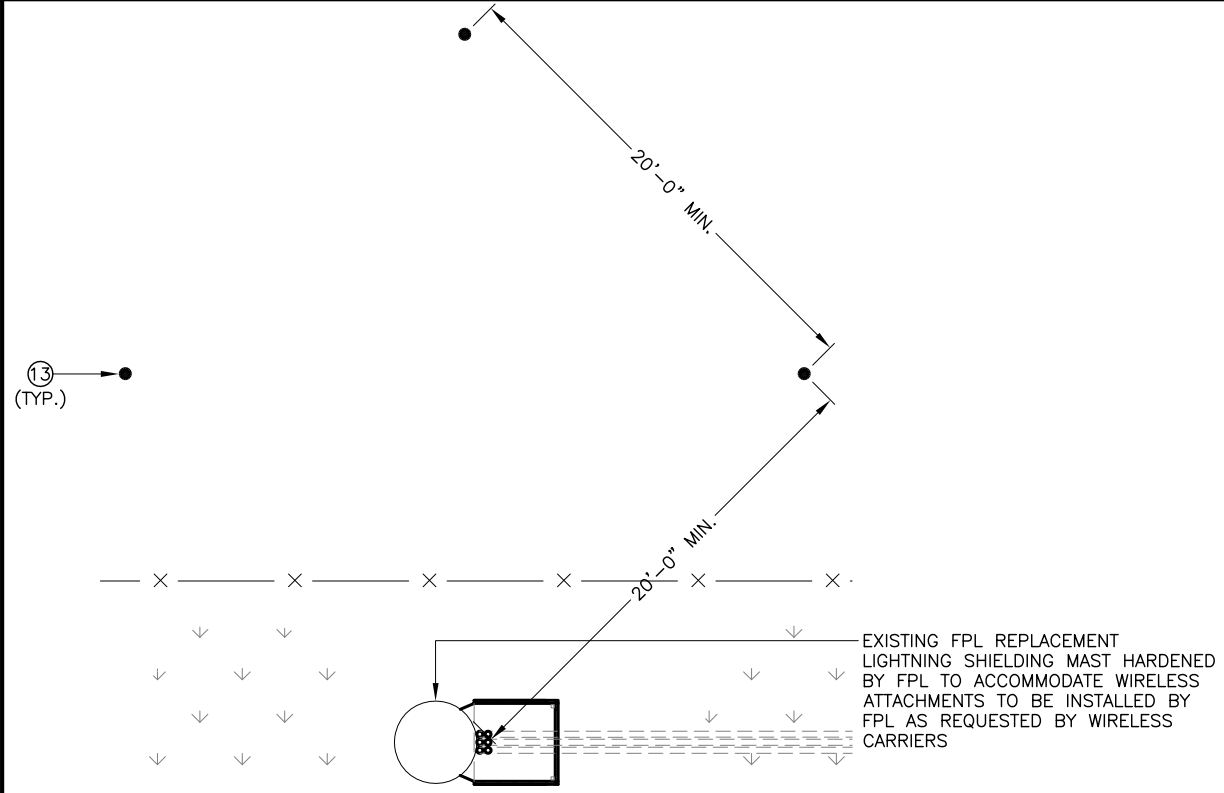
- NOTES:**
1. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING TOWER GROUND RING BEFORE DIGGING TO PREVENT FROM DAMPING EXISTING GROUND.
 2. LANDSCAPING NOT SHOWN FOR CLARITY.

TYPICAL SITE GROUNDING DIAGRAM - PLAN VIEW

NTS 1

1. PROVIDE A #2 AWG SOLID BARE TINNED COPPER GROUND RING AROUND THE PAD, THE TOWER AND TWO SECTIONS ALONG EACH SIDE OF THE COAX BRIDGE, AS SHOWN. ALL EXTERIOR GROUNDING CONDUCTORS SHALL BE BURIED A MINIMUM OF 18" BELOW GRADE. THE GROUND RING SHALL BE INSTALLED 1'-0" AWAY FROM FOUNDATIONS (MINIMUM UNLESS SHOWN OTHERWISE ON DRAWINGS). WHERE REQUIRED DUE TO SOIL CONDITIONS AND THE PRESENCE OF ROCK, THE ROUTING OF THE GROUND RING MAY BE ADJUSTED (WITH APPROVAL FROM T-MOBILE). ALL BONDS TO THE BURIED GROUND RING SHALL BE WITH EXOTHERMIC WELDS.
2. BOND COAX BRIDGE AND UTILITY RACK POSTS TO BURIED GROUND RING. EXOTHERMICALLY WELD A #2 AWG SOLID BARE TINNED COPPER CONDUCTOR TO EACH POST AT 12" ABOVE GRADE AND CONNECT TO THE BURIED GROUND RING. PROVIDE CONDUCTOR LENGTH AS REQUIRED TO MAKE CONNECTION.
3. PROVIDE 6" DIAMETER PVC INSPECTION SLEEVE WITH REMOVABLE COVER IN LOCATION SHOWN. SEE GROUND ROD INSPECTION WELL DETAIL, SHEET E-8, FOR TYPICAL GROUND RING INSPECTION SLEEVE. NOTE: INSPECTION SLEEVE CAN BE USED AS A TEST WELL FOR GROUND WATER LEVEL INSPECTION AND GROUND RESISTANCE TESTING.
4. INSTALL GROUNDING CONDUCTOR(S) FROM THE BURIED GROUND RING FOR CONNECTION TO THE GROUND BAR AT BOTTOM OF TOWER. VERIFY EXACT LOCATION OF GROUNDING BAR AND PROPER CONDUCTOR LENGTH. EXOTHERMICALLY WELD (2) #2 AWG SOLID BARE TINNED COPPER GROUNDING CONDUCTOR (LENGTH AS REQUIRED) TO THE GROUND BAR. GROUNDING CONDUCTORS MUST BE HELD AWAY FROM TOWER BY USING STANDOFFS OR ROUTING THE CONDUCTORS IN FLEXIBLE PVC CONDUIT. COORDINATE LOCATION WITH T-MOBILE CONSTRUCTION MANAGER.
5. INSTALL 5/8" x 10' LONG COPPERCLAD STEEL GROUND RODS. SPACING BETWEEN RODS NOT TO EXCEED 16' (NONLINEAR). TYPICAL FOR ALL GROUND RODS SHOWN, UNLESS NOTED OTHERWISE. SEE GROUND ROD INSPECTION WELL DETAIL, SHEET E-8. IF ROCK IS ENCOUNTERED, GROUND ROD MAY BE INSTALLED WITH A MAXIMUM VARIATION OF 30" FROM VERTICAL AND CONTRACTOR SHALL BE PREPARED TO CORE DRILL TO INSTALL GROUND RODS AND BACKFILL WITH GROUND ENHANCEMENT MATERIAL.
6. INSTALL MASTER GROUND BAR (MGB) TO COAX BRIDGE SUPPORT LEG. EXOTHERMICALLY WELD (2) #2 AWG SOLID BARE TINNED COPPER GROUNDING CONDUCTORS BETWEEN MGB AND GROUND RING. SEE E-8 FOR DETAILS.
7. INSTALL GROUNDING CONDUCTOR FROM THE GROUND BAR AT BOTTOM OF TOWER TO TOWER MOUNTED UPPER GROUND BAR(S). VERIFY EXACT LOCATION OF GROUNDING BARS AND PROPER CONDUCTOR LENGTH. EXOTHERMICALLY WELD (2) #2 AWG SOLID BARE TINNED COPPER GROUNDING CONDUCTORS (LENGTH AS REQUIRED) TO THE GROUND BARS. COORDINATE LOCATION WITH T-MOBILE REPRESENTATIVE.
8. BOND T-MOBILE EQUIPMENT TO BURIED GROUND RING.
9. PROVIDE #2 AWG GROUND CONDUCTOR IN 3/4" PVC CONDUIT.
10. BOND T-MOBILE SUPPORT PLINTH AT TWO LOCATIONS TO BURIED GROUND RING, LOCATIONS FOR BONDS SHALL BE AT DIAGONALLY OPPOSITE CORNERS OF PLINTH.
11. COIL (1) 10'-0" SECTION OF #2 AWG SOLID WIRE ADJACENT TO FUTURE T-MOBILE EQUIPMENT.
12. PROVIDE #2 AWG SOLID BARE TINNED COPPER WIRE TO ANY METAL FENCE POST WITHIN 6' OF T-MOBILE EQUIPMENT GROUND RING.
13. INSTALL 5/8" x 10' LONG COPPER CLAD STEEL GROUND RODS MINIMUM OF 20' APART PER FPL REQUIREMENTS. PROVIDE #2 AWG GROUND BETWEEN GROUND RODS AND CONNECT TO FPL REPLACEMENT POLE AND EXISTING SUBSTATION GROUND RING.

GROUNDING KEY NOTES 2



FPL GROUNDING DETAIL

NTS 3

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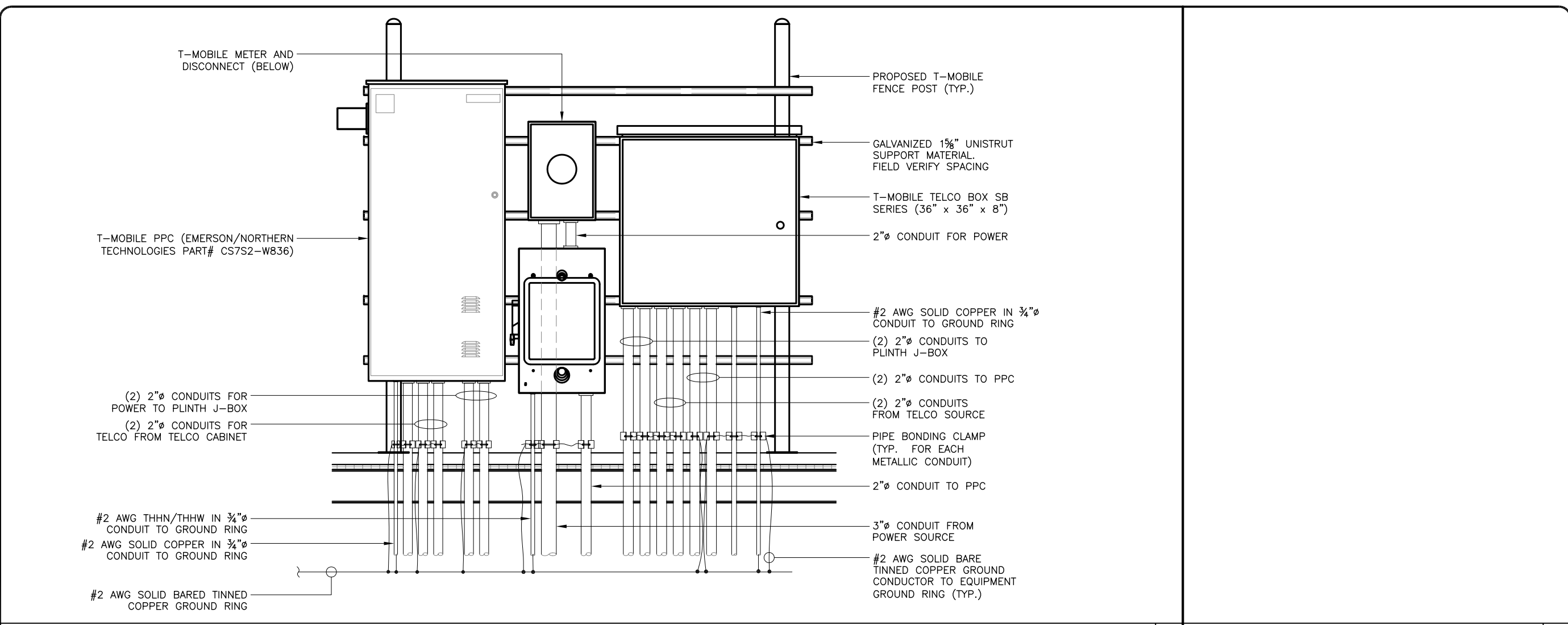
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LICENSE
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STATE OF FLORIDA
PROFESSIONAL ENGINEER

DATE OF SIGNATURE: 4/2/15

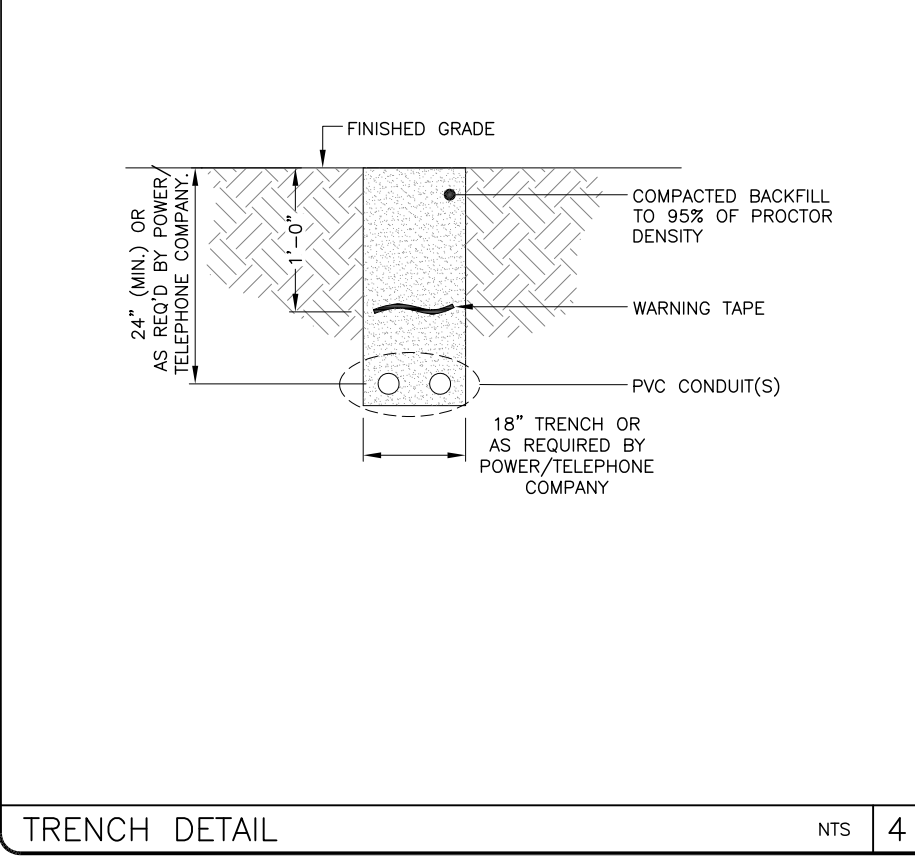
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SHEET NAME
GROUNDING PLAN AND NOTES

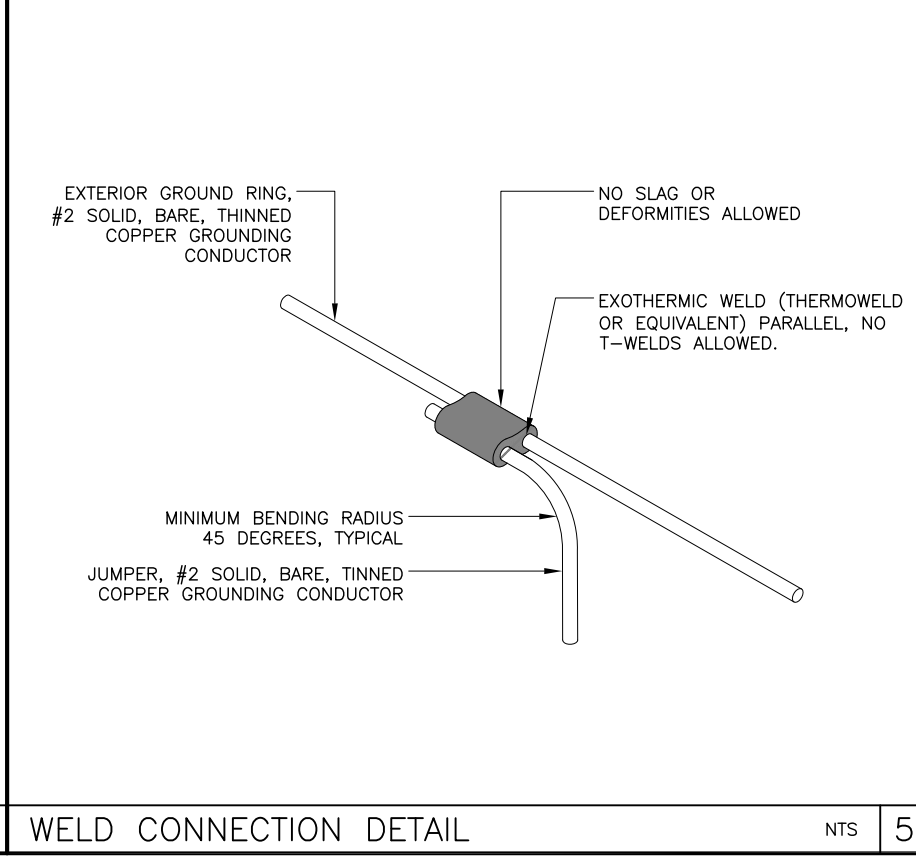
SHEET NUMBER
E6



UTILITY RACK DETAIL NTS 1 (NOT USED) NTS 2



TRENCH DETAIL NTS 4



WELD CONNECTION DETAIL NTS 5 (NOT USED)

(NOT USED) NTS 6

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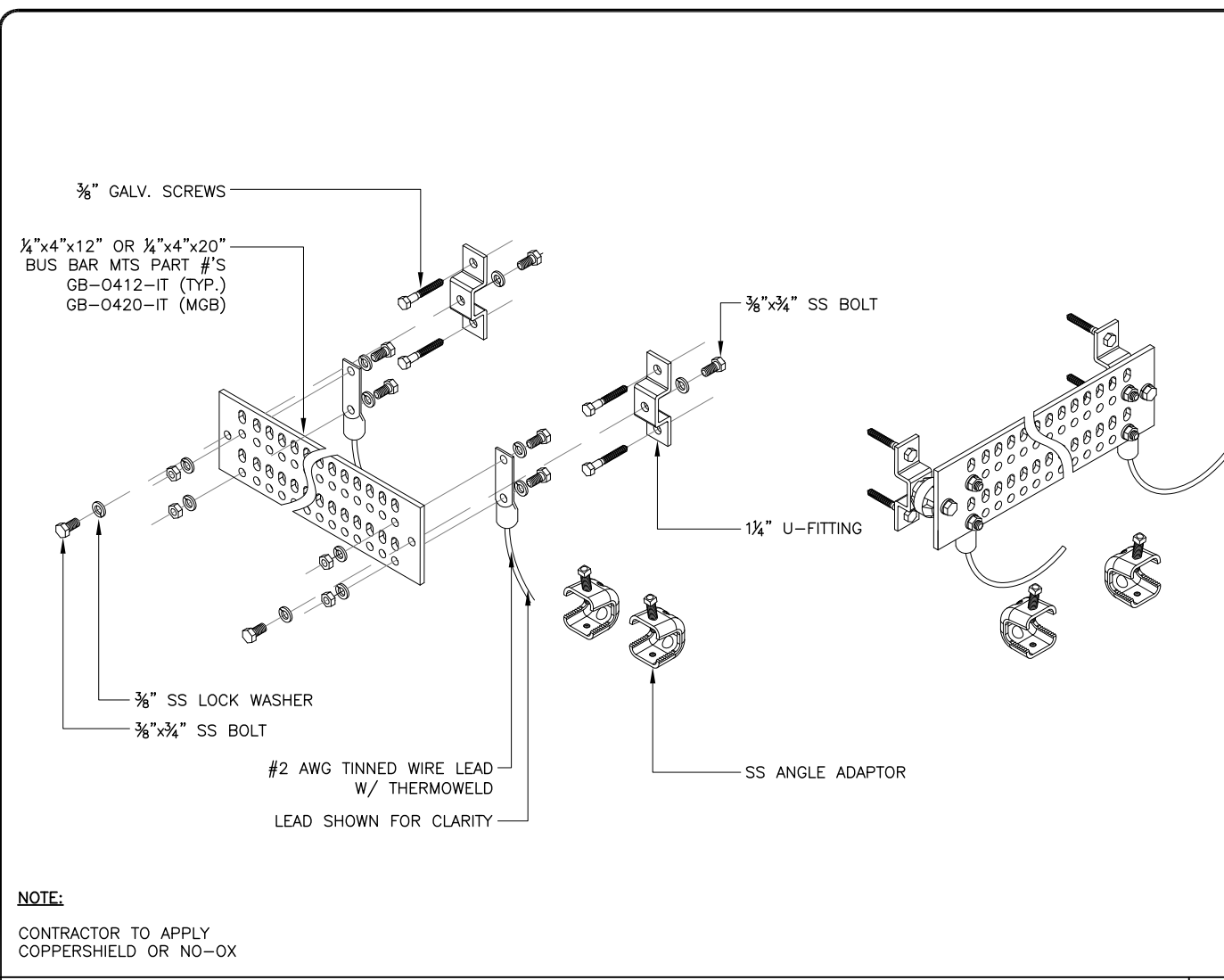
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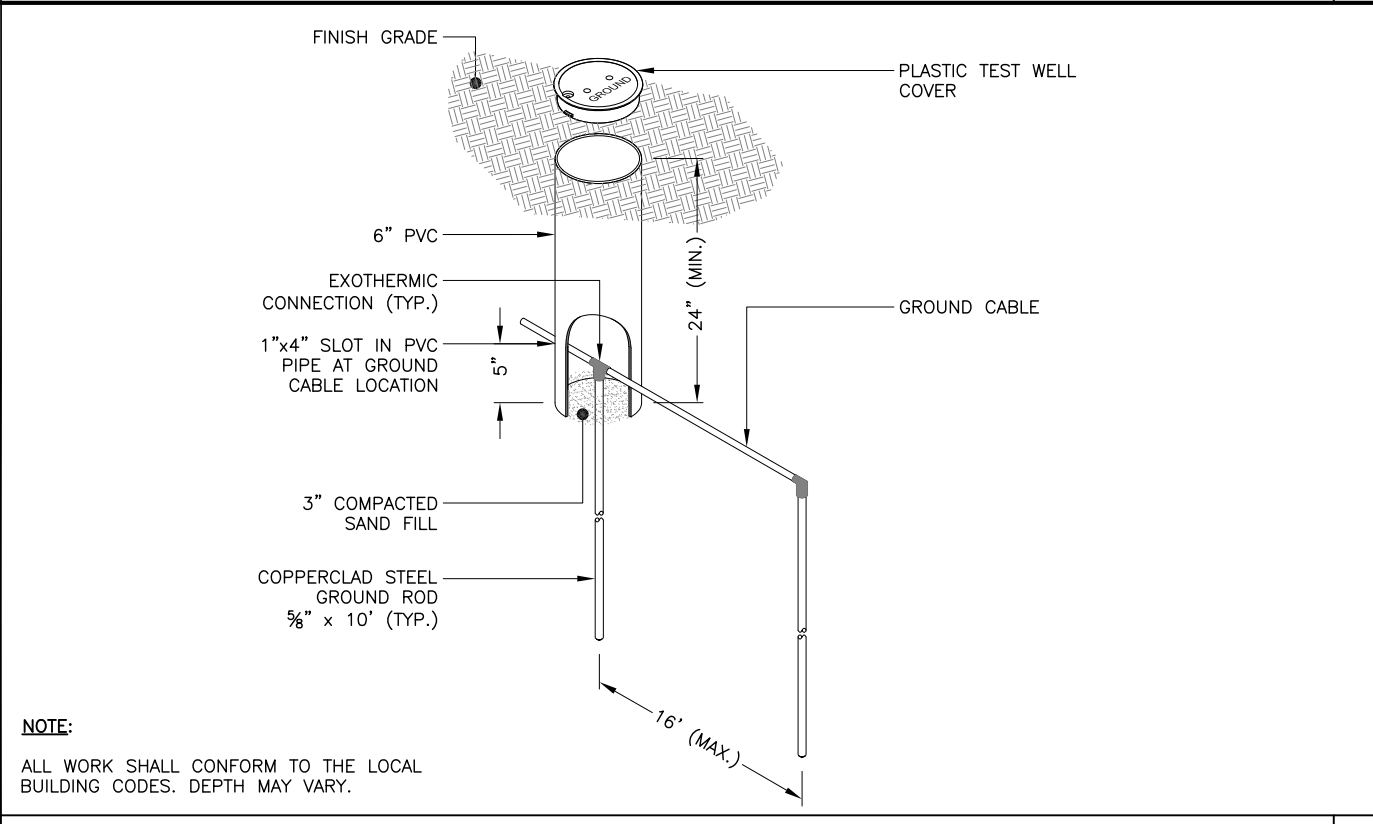
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SHEET NAME
 ELECTRICAL
 DETAILS
 SHEET NUMBER
 E7



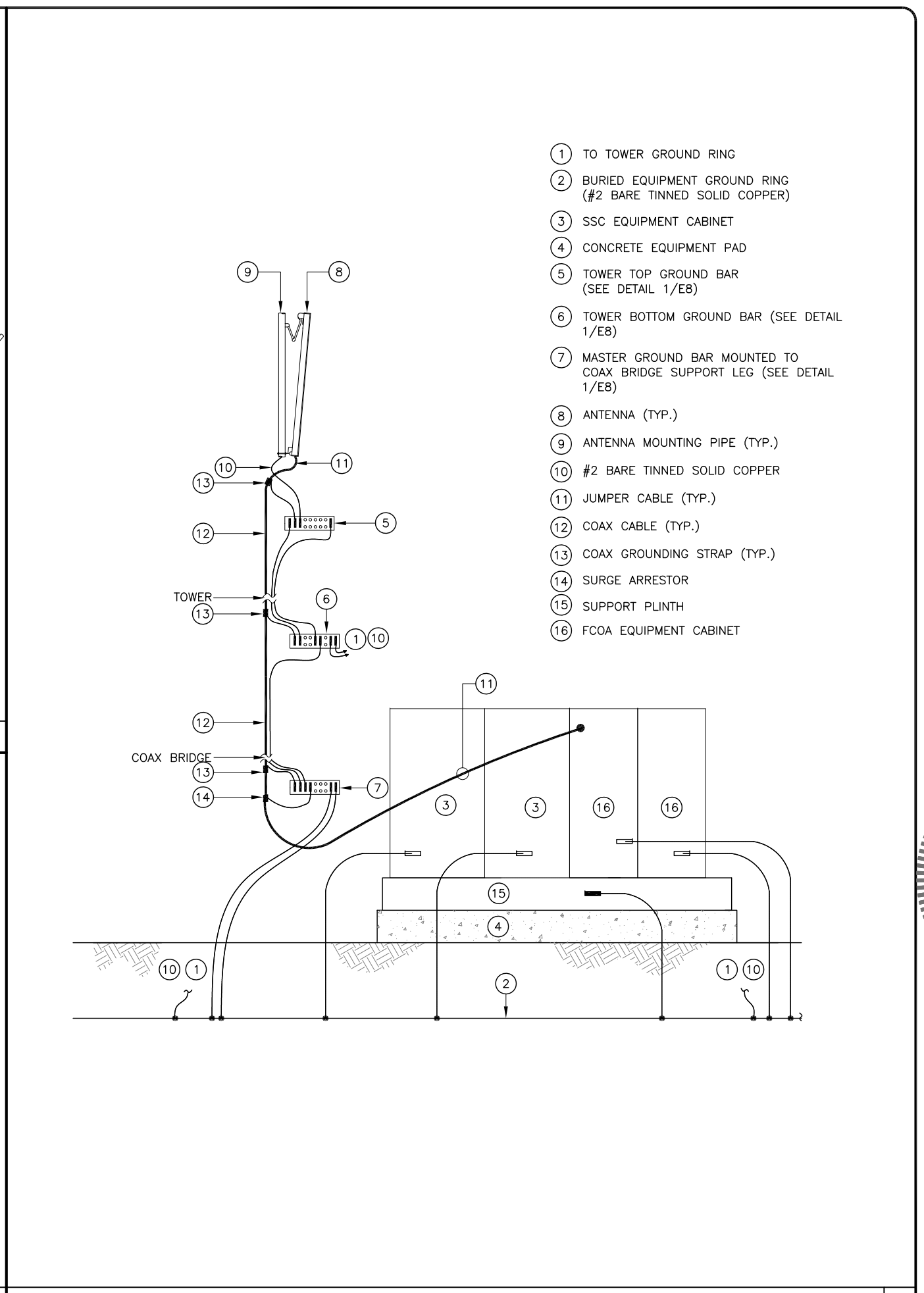
NOTE:
CONTRACTOR TO APPLY COPPERSHIELD OR NO-OX

TYPICAL GROUND BAR NTS 1



NOTE:
ALL WORK SHALL CONFORM TO THE LOCAL BUILDING CODES. DEPTH MAY VARY.

GROUND ROD INSPECTION WELL DETAIL NTS 2



GROUNDING RISER DIAGRAM NTS 3

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 SHEET NAME
 GROUNDING DETAILS
 SHEET NUMBER
 E8