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COCOONUT CREEK CITY HALL

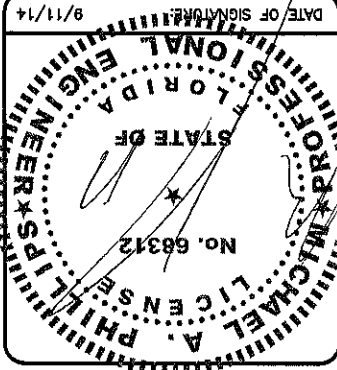
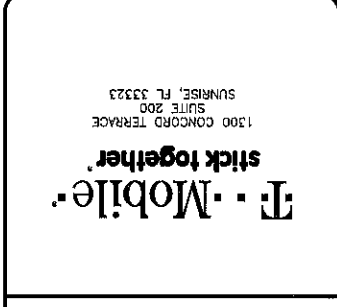
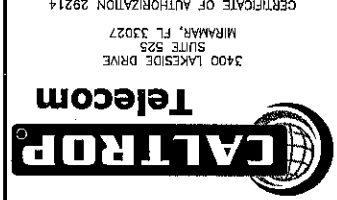
4800 W COPANS ROAD
COCOONUT CREEK, FL 33063

FB2181A

COLOCATION

REV	DATE	DESCRIPTION
0	9/11/14	FOR PERMIT
PROJECT NO.: 140-770.27		
DRAWN BY: B. RODRIGUEZ		CHECKED BY: M. ABBEY

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COCOONUT CREEK CITY HALL	FB2181A	4800 W COPANS ROAD COCOONUT CREEK, FL 33063	SHEET NAME	TITLE SHEET	SHEET NUMBER
					T1

INDEX OF DRAWINGS	
REV.	DESCRIPTION
T1	TITLE SHEET
T2	NOTES
C1	COMPOUND PLAN
C2	EQUIPMENT PLAN
C3	ELEVATION AND MOUNTING DETAILS
C4	DETAILS
C5	DETAILS
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C7	DETAILS
E1	ELECTRICAL AND GROUNDING NOTES
E2.1	UTILITY ROUTING SITE PLAN
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E3	ELECTRICAL DETAILS
E4	GROUNDING PLAN AND NOTES
E5	ELECTRICAL DETAILS
E6	GROUNDING DETAILS

DESIGN CRITERIA	
SHT. NO.	DESCRIPTION
170 MPH (ULTIMATE, 3-SECOND GUST)	DESIGN WIND SPEED:
132 MPH (NOMINAL, 3-SECOND GUST)	RISK CATEGORY:
II	OPEN STRUCTURE
CONTACTS	
APPLICANT	
T-MOBILE USA	
1300 CONCORD TERRACE	
SUITE 200	
SUNRISE, FL 33323	
PROPERTY OWNER CONTACT:	
CITY OF COCONUT CREEK	
4800 W COPANS ROAD	
COCOONUT CREEK, FL 33063	
APPLICABLE CODES	

SCOPE OF WORK	
INSTALLATION OF NEW UNMANNED T-MOBILE TELECOMMUNICATIONS EQUIPMENT WITHIN EXISTING FENCED COMPOUND AND NEW ANTENNAS ON EXISTING TOWER. CONNECTIONS TO EXISTING POWER SUPPLY.	
PROPERTY SUMMARY	
FOLIO #:	4842 19 08 2220
LATITUDE:	26.258167 N
LONGITUDE:	80.187714 W
ZONING JURISDICTION:	CITY OF COCONUT CREEK
LEGAL DESCRIPTION	
TARTAN COCONUT CREEK PHASE I 103-29 B TR D, TR CC & 100.72 S 150.5 W 42.41 W 158.5 W 100.13 W 30.03 W 47.14 POR OF TR 42, DESC AS, BEG NE COR TR 42 S 40.03 S W 100.72 S 150.5 W 42.41 W 158.5 W 100.13 W 30.03 W 47.14 CF-1.1006/W PALM BEACH FARMS 2-54 PB POR OF TR 3, DESC AS BEG SE COR TR 3 NLY 447.85 S WLY 587 TO P/T SWLY 145.90 TO S/L OF TR 3, ELY 575.12 TO POB, LESS PAR DESC IN OR 15865/757 BLK 93	
APPLICABLE CODES	
THE CONTRACTOR WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS, AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, LRFD 13th EDITION, TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS.	
INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) B1, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM, IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT.	
IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE").	
FOR TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION.	
FOR TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION.	

LOCAL MAP	
VICINITY MAP	

GENERAL NOTES

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 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.

STRUCTURAL STEEL NOTES

1

3

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.

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.

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 "N" 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.

REV

DATE

DESCRIPTION

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9/11/14

FOR PERMIT

PROJECT NO.: 140-770-27

DRAWN BY: B. RODRIGUEZ

CHECKED BY: M. ABBEY

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SUITE 525
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CERTIFICATE OF AUTHORIZATION 29214

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1300 CONCORD TERRACE
SUITE 200
SUNRISE, FL 33323

PHILIP A. MICHAEL

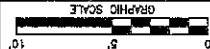
Professional Engineer

State of Florida

License No. 68312

9/11/14

COCONUT CREEK CITY HALL
FB2181A
4800 W COPANS ROAD
COCONUT CREEK, FL 33063
SHEET NAME
NOTES
SHEET NUMBER
T2



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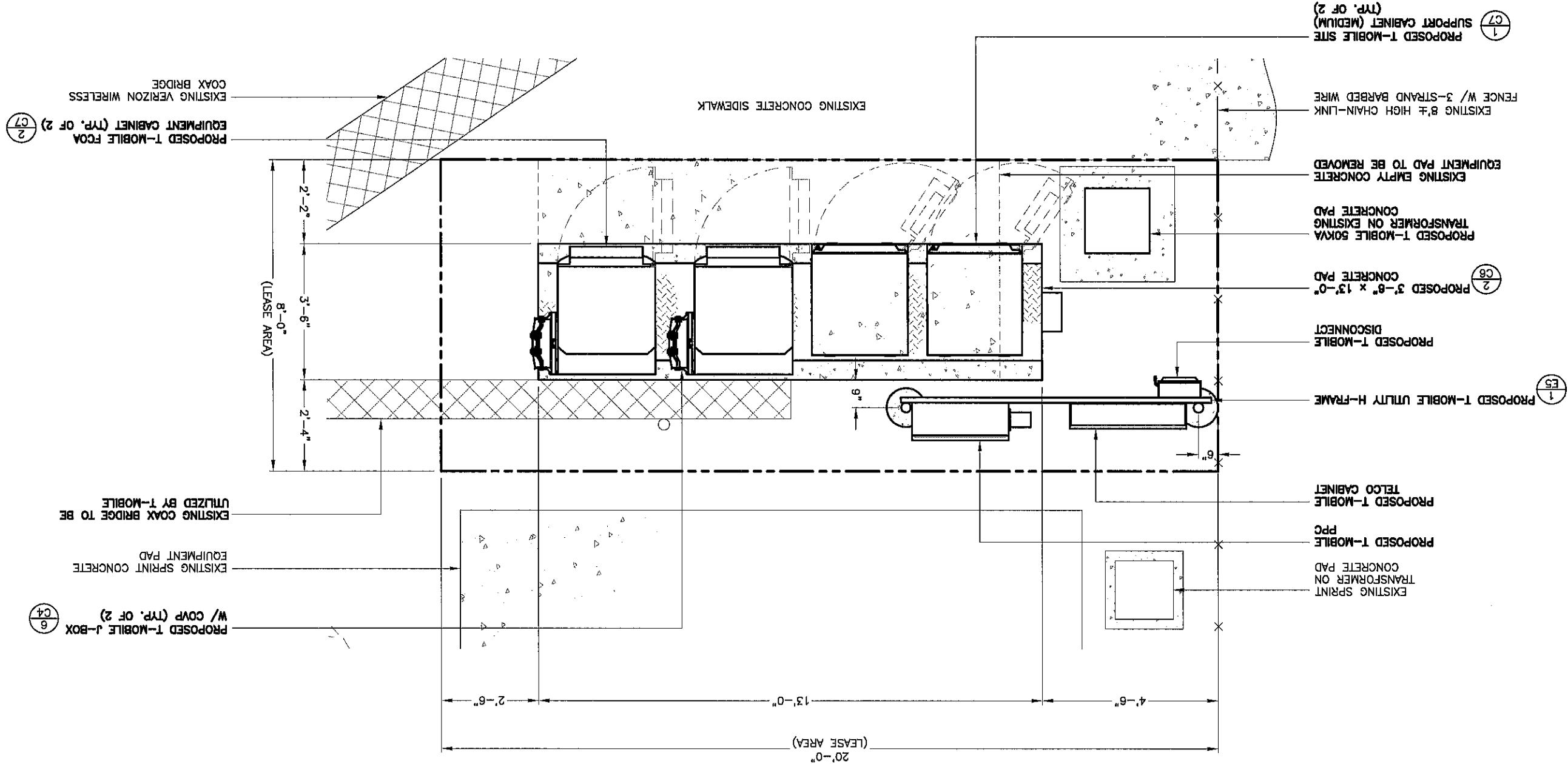
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SUNRISE, FL 33323



SHEET NAME

SHEET NUMBER

C1



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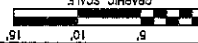
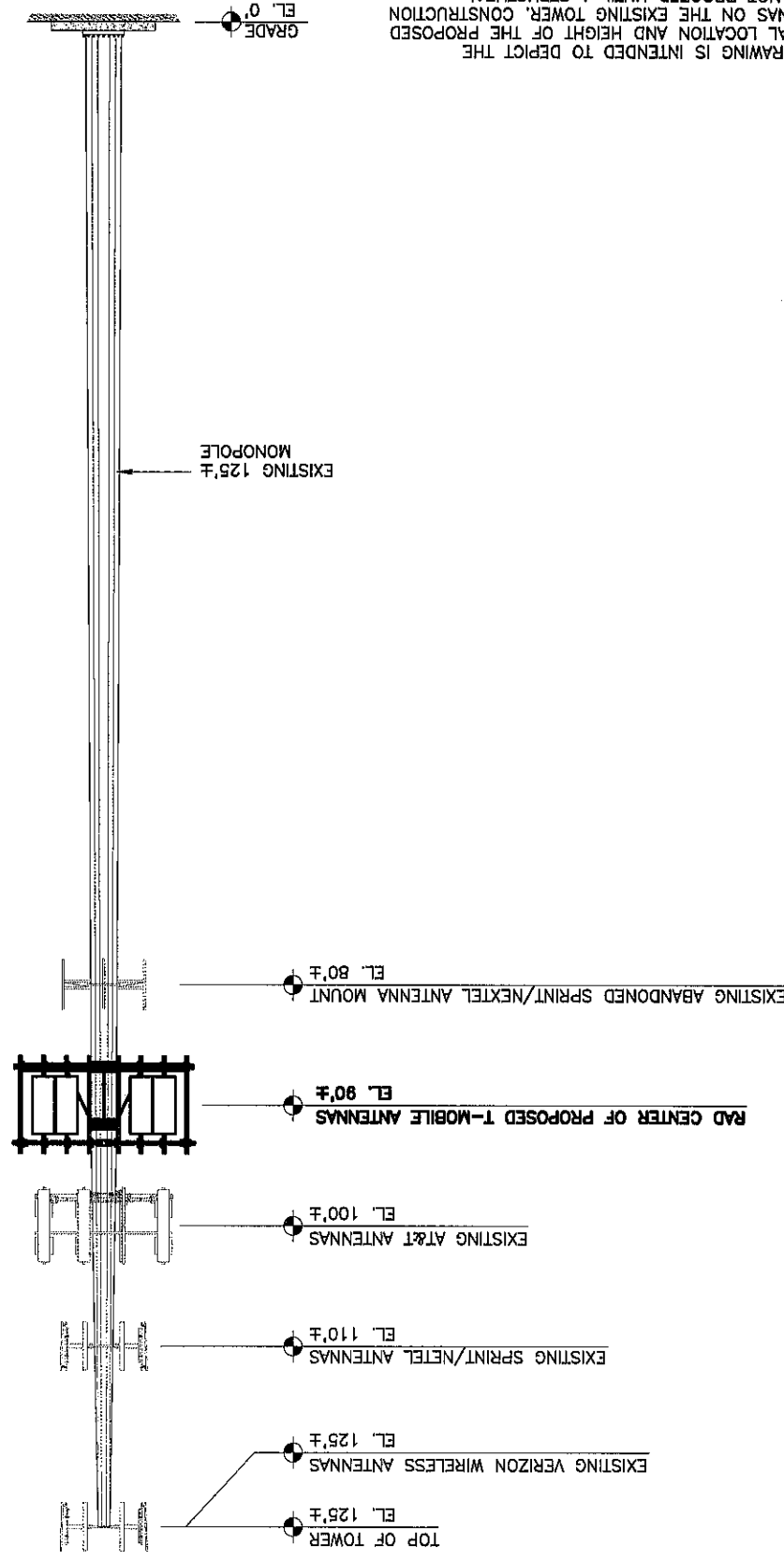
COCONUT CREEK CITY HALL	FB2181A	4800 W COPANS ROAD COCONUT CREEK, FL 33063	SHEET NAME	EQUIPMENT PLAN	SHEET NUMBER	C2
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DATE OF SIGNATURE: 9/11/14

TOWER ELEVATION

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.

NOTE:



1

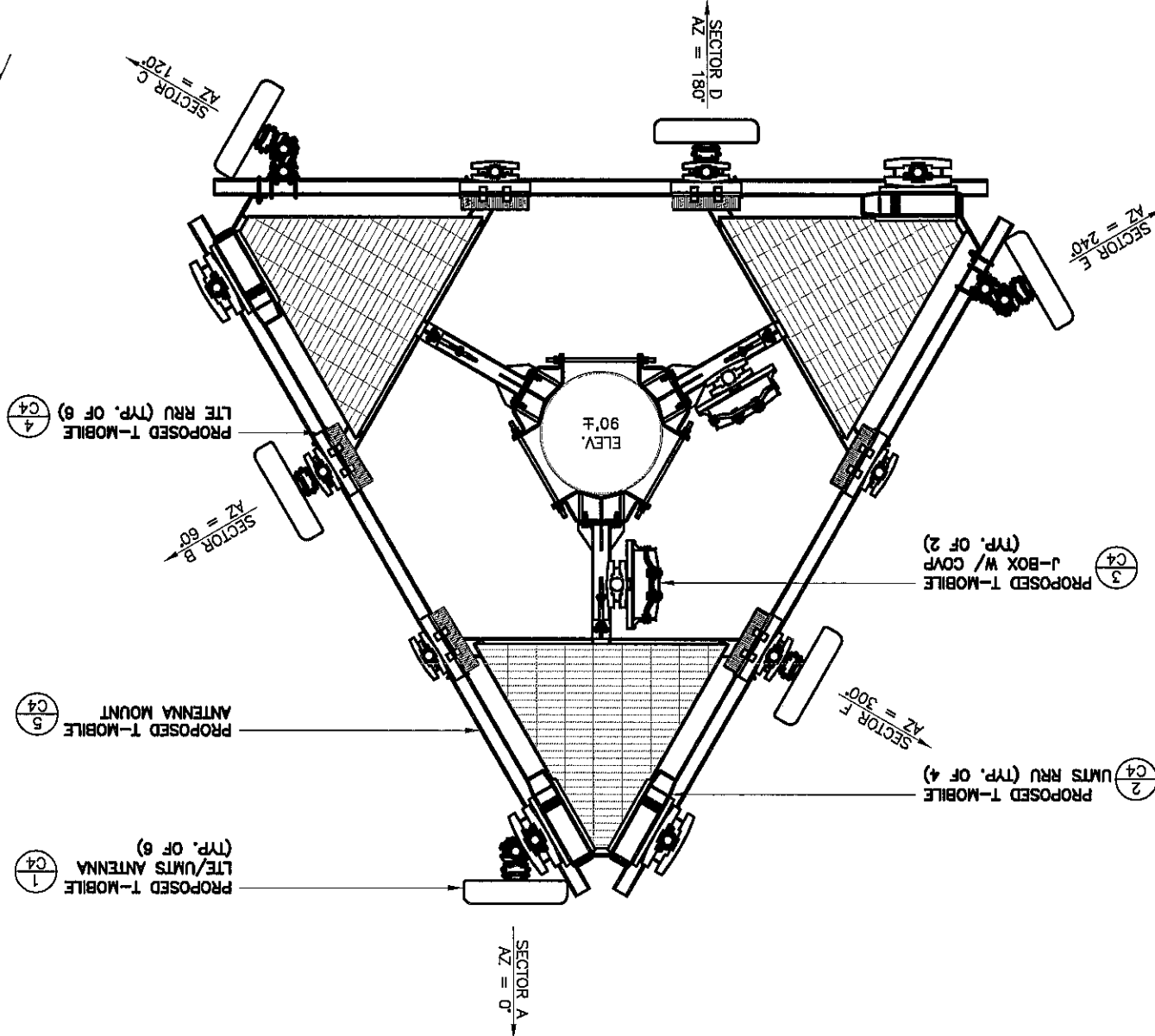
PROPOSED ANTENNA MOUNT DETAIL

CONTRACTOR SHALL CONFIRM POLE DIAMETER AT COLLAR LOCATIONS PRIOR TO ORDERING MOUNT (SEE TABLE).

NOTE:

POLE DIAMETER	CONNECT-TT ANTENNA MOUNT MODEL NUMBER
10" - 30"	LPPS14-12-96-HD-PKBK-PHK
30" - 60"	LPPL14-12-96-HD-PKBK-PHK

2



REV

DATE

DESCRIPTION

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PROJECT NO.:

140-770.27

DRAWN BY:

B. RODRIGUEZ

CHECKED BY:

M. ABBEY

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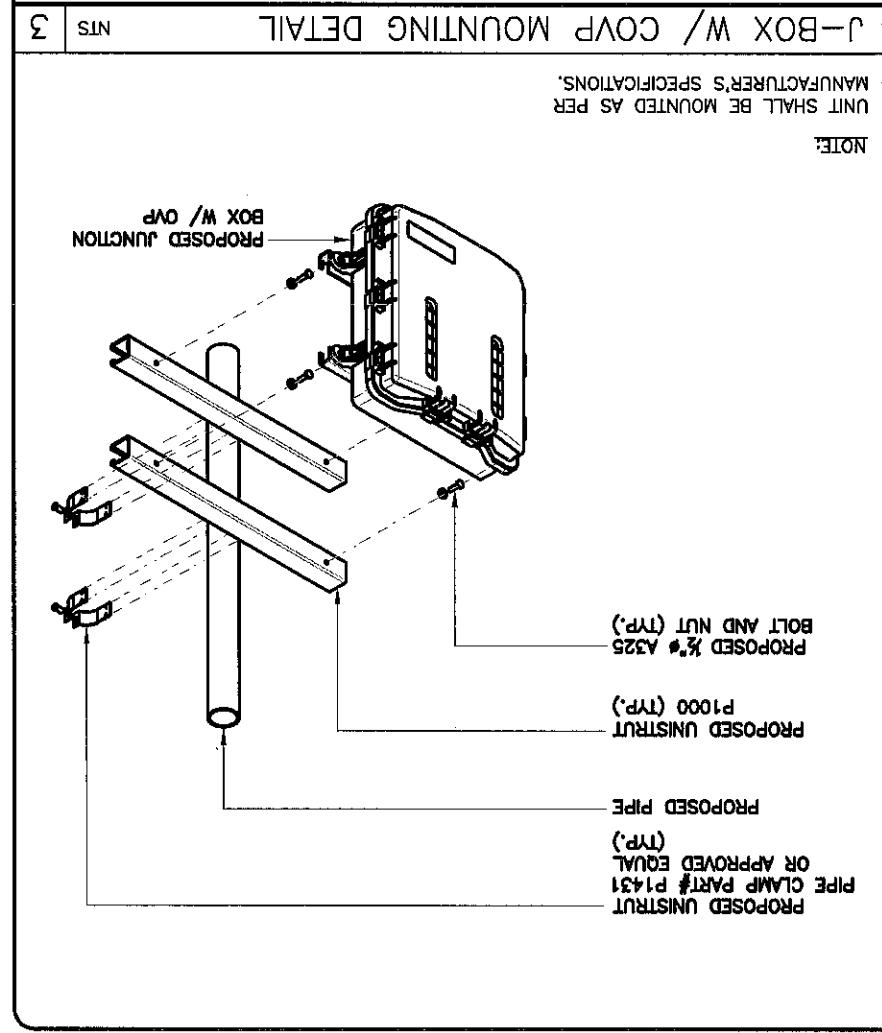
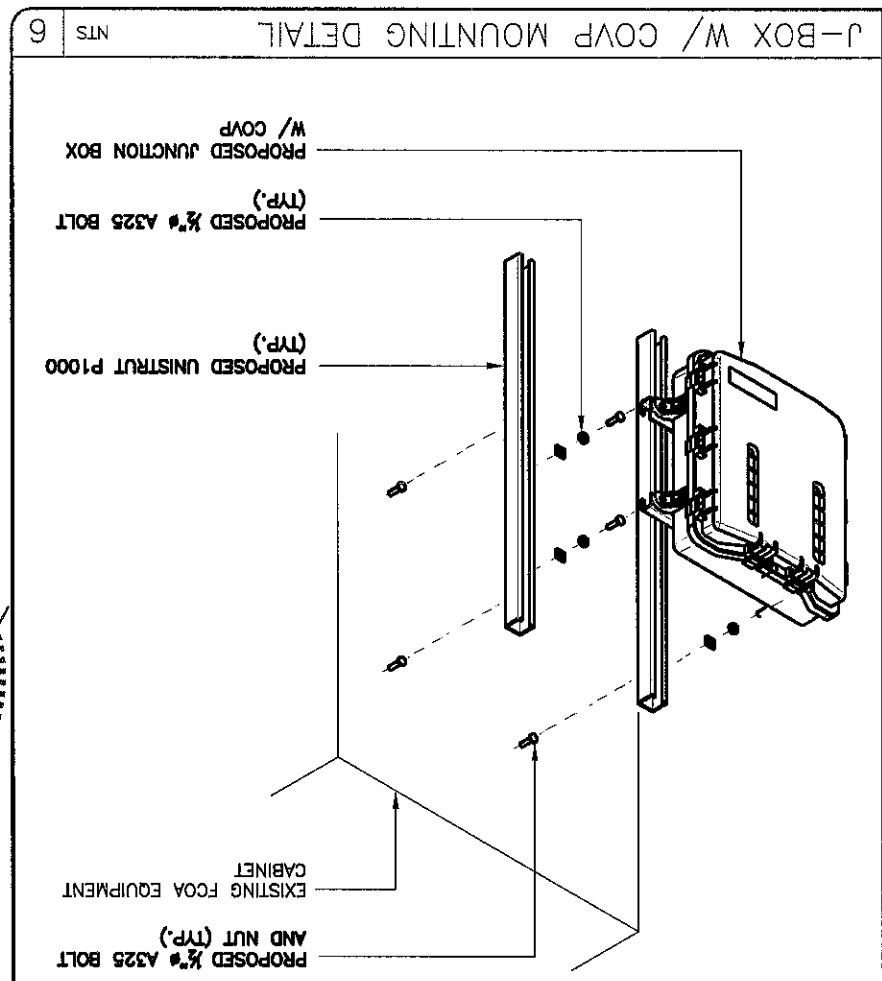
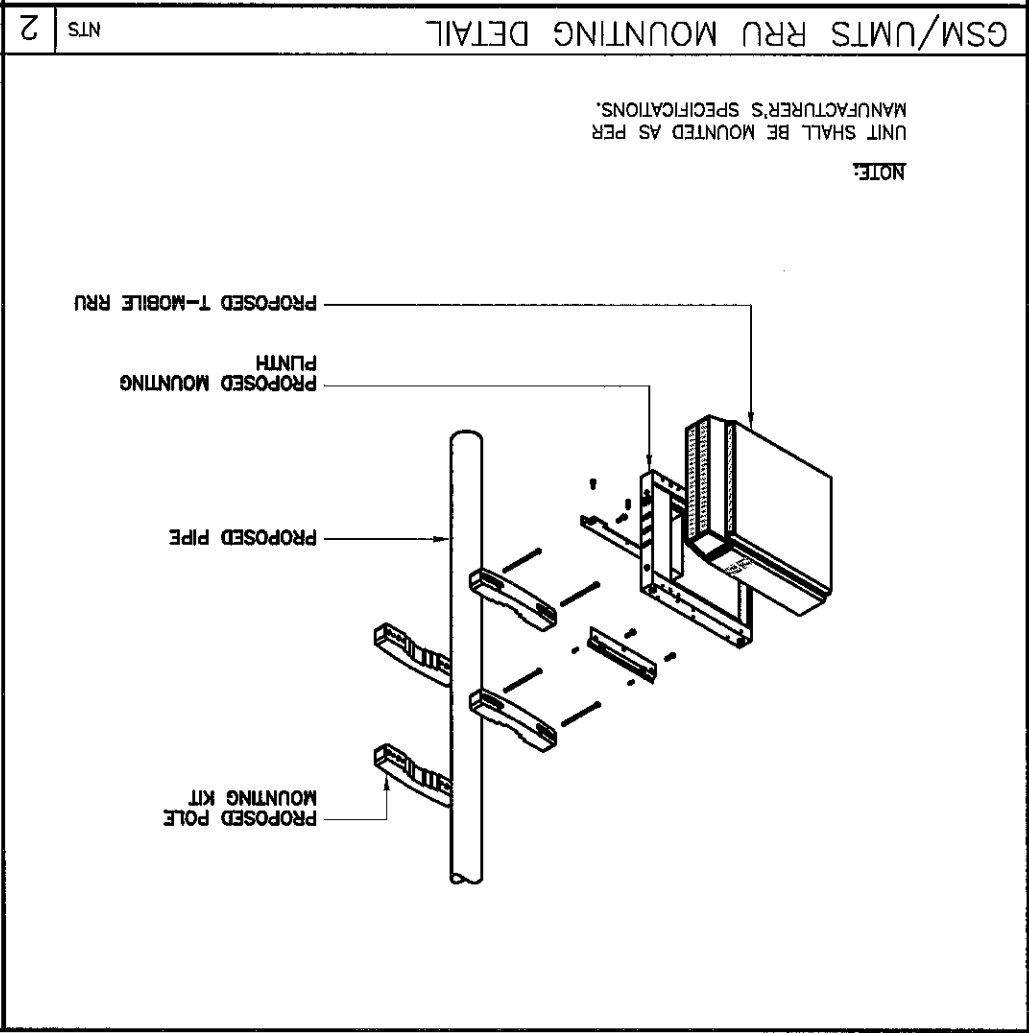
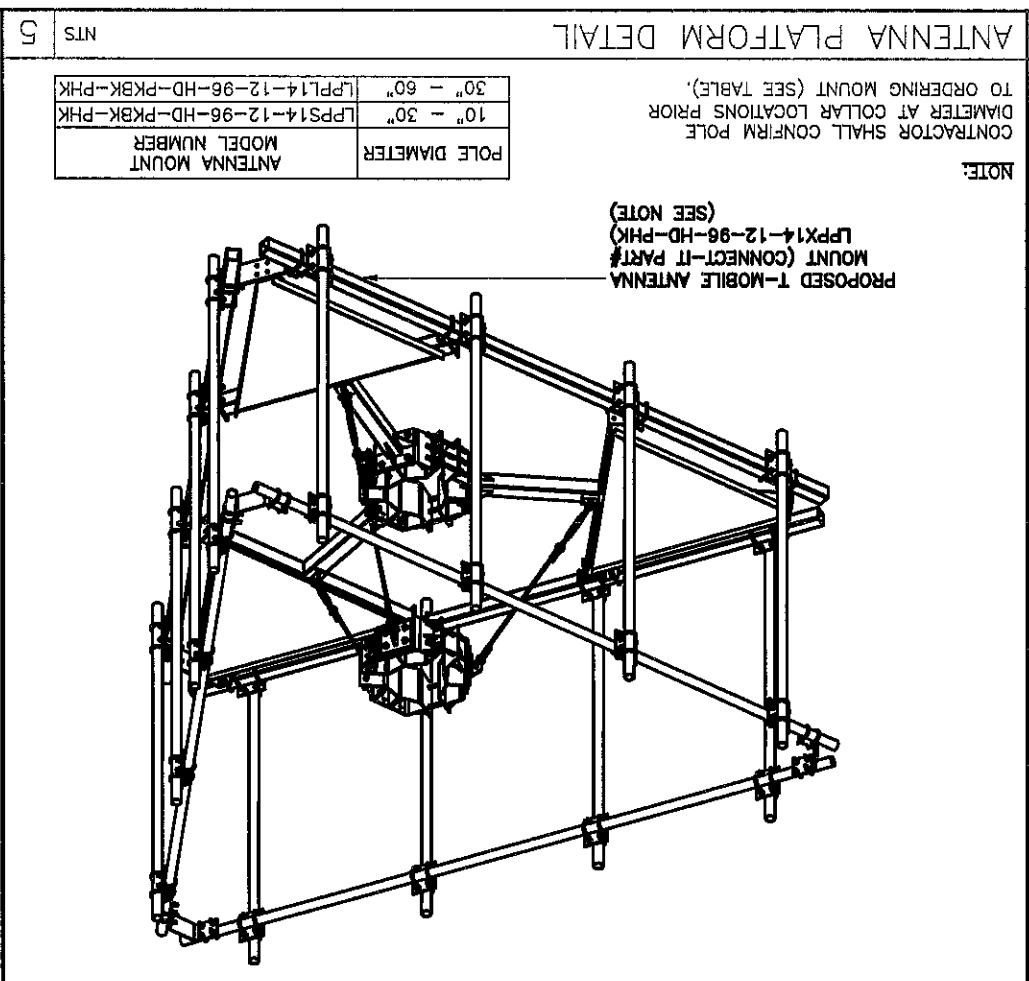
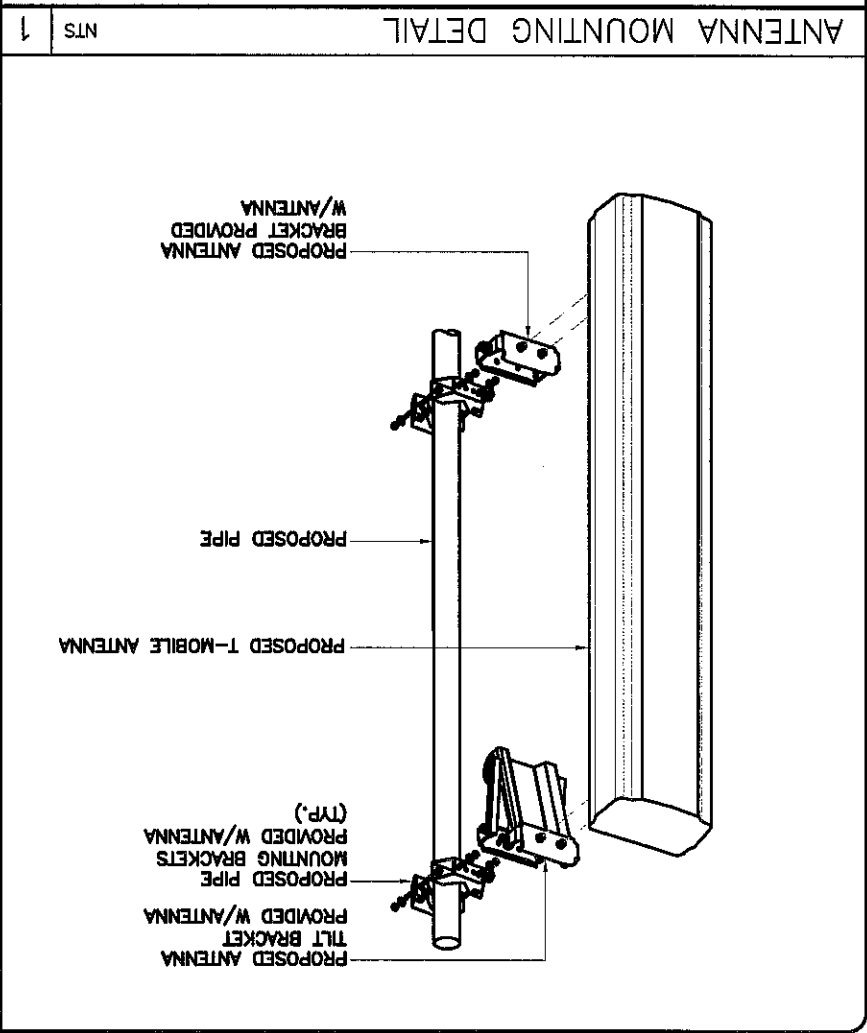
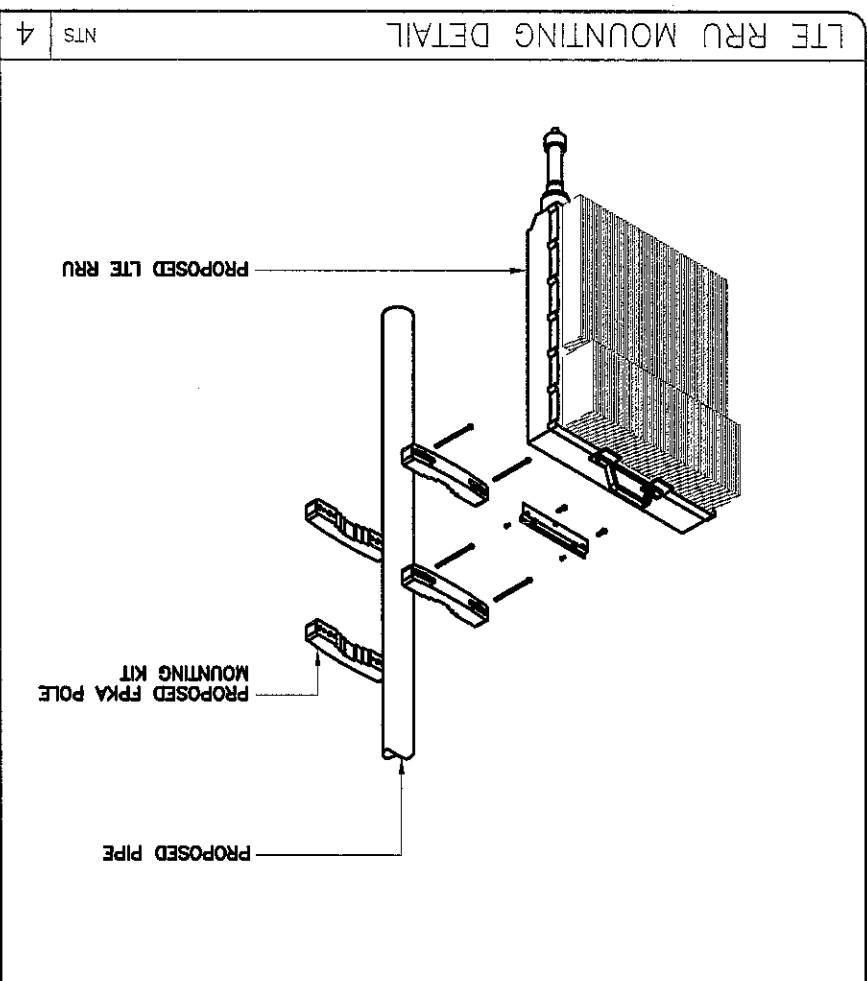
9/11/14

SHEET NAME

ELEVATION AND MOUNTING DETAILS

SHEET NUMBER

C3



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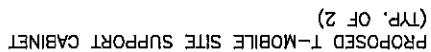
1300 CONCORD TERRACE
SUITE 200
SUNRISE, FL 33323

PHILIP A. MICHAEL, P.E.
No. 68312
STATE OF FLORIDA
PROFESSIONAL ENGINEER
DATE OF SIGNATURE: 9/11/14

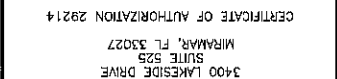
COCONUT CREEK CITY HALL
FB2181A
4800 W COPANS ROAD
COCONUT CREEK, FL 33083

SHEET NAME
DETAILS
SHEET NUMBER C4

1. CHOICE OF FIBERRETE OR CONCRETE PAD TO BE MADE IN FIELD BY T-MOBILE CONSTRUCTION MANAGER.
2. ORIENTATION AND LOCATION OF EQUIPMENT CABINETS ON TRIPLE-BASE PLINTH IS SCHEMATIC ONLY, CHECK PLAN SHEETS FOR SITE SPECIFIC DETAILS.
3. ATTACH DIAMOND PLATE TO PLINTH W/ 1/2" A325 BOLTS



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4800 W COPANS ROAD
COCONUT CREEK, FL 33063


SHEET NUMBER

C5

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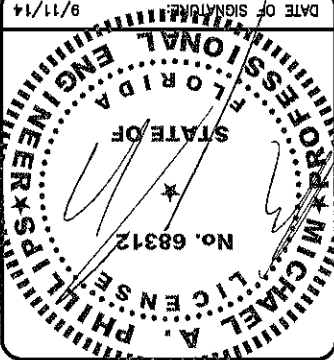
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DATE OF SIGNATURE: 9/11/14

COCOONUT CREEK
CITY HALL

FB2181A

4800 W COPANS ROAD
COCOONUT CREEK, FL 33063

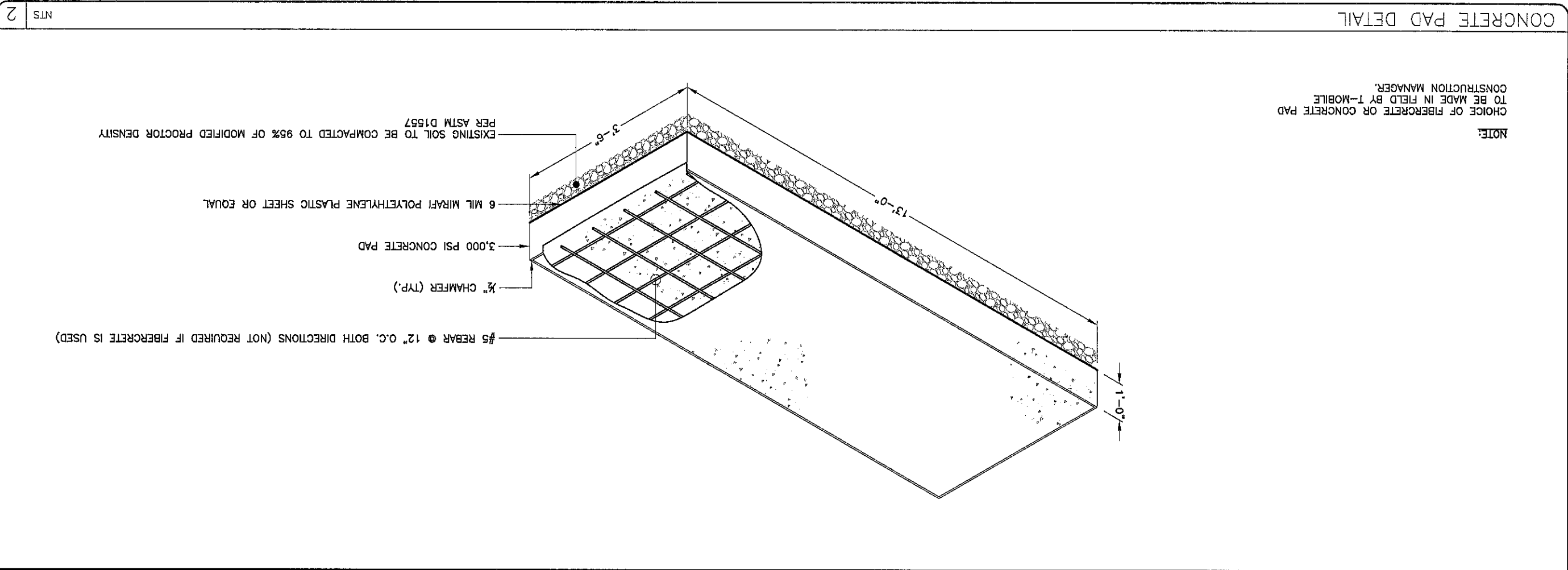
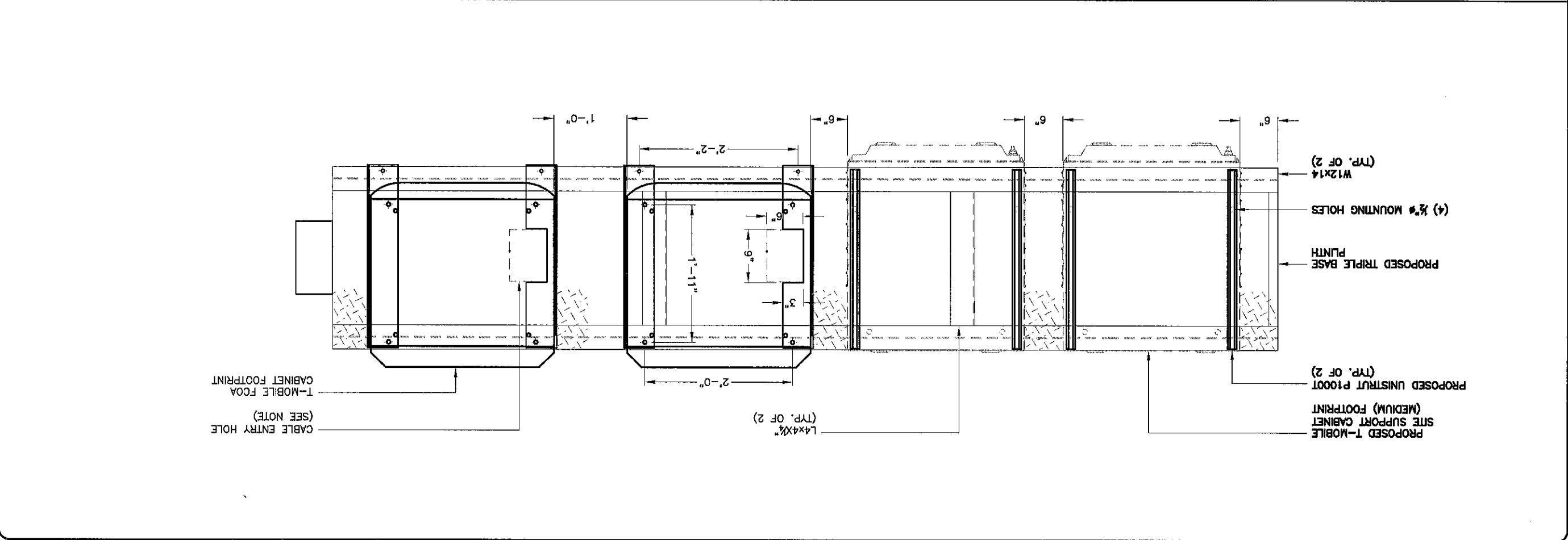
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DETAILS

SHEET NUMBER

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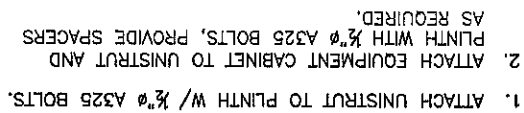
CABINET TO PLINTH CONNECTION DETAIL



CONCRETE PAD DETAIL

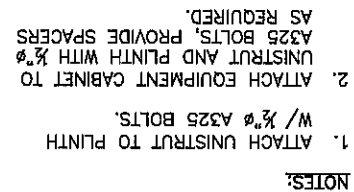
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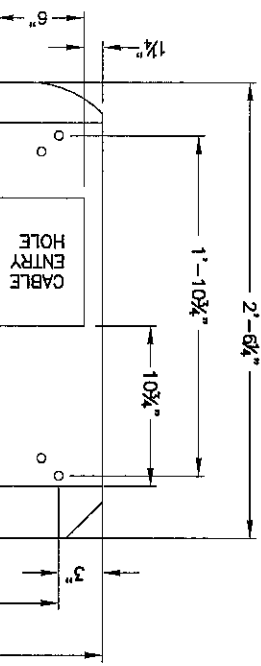
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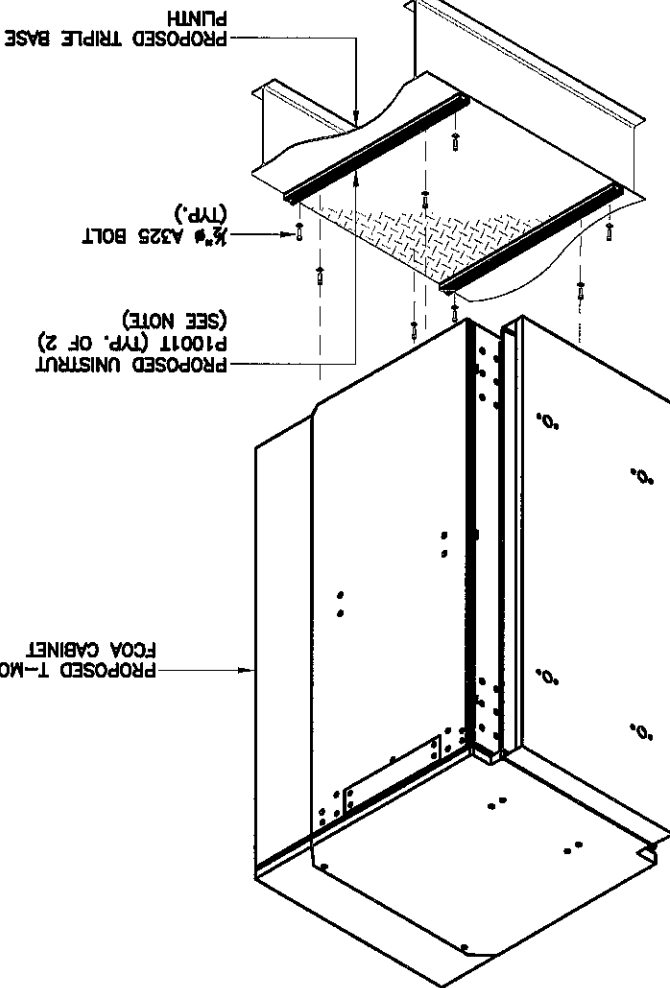
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1. ATTACH UNISTRUT TO PLINTH W/ $\frac{1}{2}$ " ϕ A325 BOLTS.
2. ATTACH EQUIPMENT CABINET TO UNISTRUT AND PLINTH WITH $\frac{1}{2}$ " ϕ A325 BOLTS, PROVIDE SPACERS AS REQUIRED.

SHEET NUMBER

DETAILS

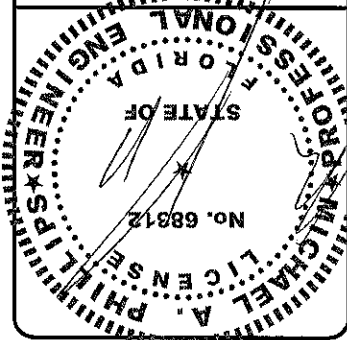
SHEET NAME

4800 W COPANS ROAD
COCONUT CREEK, FL 33063

FB2181A

COCONUT CREEK
CITY HALL

DATE OF SIGNATURE: 8/11/14



1300 CONCORD TERRACE
SUITE 200
SUNRISE, FL 33323

முதுகூறு

T-Mobile
stick together.

CERTIFICATE OF AUTHORIZATION 29214

MIRAMAR, FL 33027

3400 LAKEVIEW DRIVE
SUITE 535



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B. RODRIGUEZ	M. ABBEY
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DRAWN BY:	CHECKED BY:
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PROJECT NO.: 140-770.27

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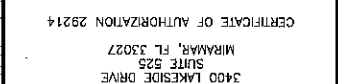
A	GENERAL	1
A1.	INSTALLATION OF GROUNDING ELECTRODE SYSTEM SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRIC CODE AND WITH ALL BUILDING CODES OF AUTHORITIES HAVING JURISDICTION.	1
A2.	GROUNDING CONDUCTORS SHALL BE #2 AWG TINNED SOLID BARE COPPER BELOW AND ABOVE GRADE, UNLESS OTHERWISE NOTED AND SHALL BE ROUTED IN A DOWNWARD PATH TOWARDS GROUND BARS.	1
A3.	GROUNDING CONDUCTORS SHALL BE KEPT AS SHORT AND DIRECT AS POSSIBLE WITH MINIMUM BEND RADIUS OF 12 INCHES.	1
A4.	ALL BELOW GRADE CONNECTIONS SHALL BE GADWELD TYPE CONNECTIONS AND ALL CONNECTIONS TO EQUIPMENT AND GROUND BARS SHALL BE 2-HOLE BRONZE COMPRESSION CONNECTORS UNLESS OTHERWISE NOTED.	1
A5.	GROUNDING CONDUCTORS SHALL BE BONDED TO CABLE SUPPORTS, ANTENNA FRAMES, AND ANY SUPPORT FRAMES OR RACKS USING EXOTHERMIC WELDS OR MECHANICAL CONNECTIONS.	1
A6.	CONTRACTOR SHALL PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS, STAINLESS STEEL HARDWARE SHALL BE USED THROUGHOUT.	1
A7.	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.	1
A8.	BONDING OF GROUNDED CONDUCTOR (NEUTRAL) AND GROUNDING CONDUCTOR SHALL BE AT SERVICE DISCONNECTING MEANS.	1
A9.	CONTRACTOR SHALL VERIFY EXACT CONDUIT ROUTING FOR GROUNDING CONDUCTORS WHERE APPLICABLE.	1
A10.	DOUBLING OR STACKING OF ANY GROUNDING CONNECTIONS IS NOT ACCEPTABLE.	1
T	MOBILE GROUNDING REQUIREMENTS	1
T1.	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.	1
T2.	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.	1
T3.	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.	1
C	LAND BUILDS AND CO-LOCATES	1
C1.	WAVEGUIDE BRIDGE SHALL BE BONDED TO GROUND RINGS OR INTERCONNECTING CONDUCTORS WITH GROUNDING CONDUCTORS BONDED TO DIAGONALLY OPPOSED SUPPORT POSTS.	1
C2.	GROUND BARS SHALL BE BONDED TO GROUND RING WITH SINGLE GROUNDING CONDUCTOR.	1
C3.	BONDS TO ANTENNA MASTS, FENCE POSTS, WAVEGUIDE BRIDGE, TOWER STEEL (UNLESS PROHIBITED BY TOWER MANUFACTURER) AND THOSE BELOW GRADE SHALL BE EXOTHERMIC TYPE (GADWELD). ALL OTHER BONDS SHALL BE BRONZE 2-HOLE COMPRESSION FITTINGS UNLESS OTHERWISE NOTED.	1
B	PREPARATION	1
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.	1
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.	1

- 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 - LAND BUILDS AND CO-LOCATES
- C1. WAVEGUIDE BRIDGE SHALL BE BONDED TO GROUND RINGS OR INTERCONNECTING CONDUCTORS WITH GROUNDING CONDUCTORS BONDED TO DIAGONALLY OPPOSED SUPPORT POSTS.
- C2. GROUND BARS SHALL BE BONDED TO GROUND RING WITH SINGLE GROUNDING CONDUCTOR.
- C3. 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.
- T-MOBILE GROUNDING REQUIREMENTS
- T1. COAX CABLE OUT 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.
- T2. 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.
- T3. 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.

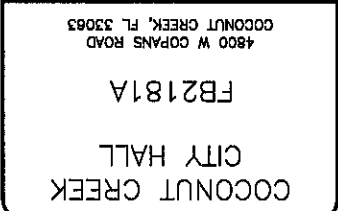
1	ELECTRICAL NOTES
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86. WHERE ELECTRICAL POWER IS TO BE SUB-FED FROM AN EXISTING DISTRIBUTION SYSTEM, THE FOLLOWING SHALL APPLY:
- A) CONTRACTOR SHALL PERFORM LOAD TESTING TO DETERMINE MAXIMUM FEEDER DEMAND PER N.E.C. ARTICLE 220-87.
 - B) CONTRACTOR SHALL VERIFY WHETHER EXISTING FEEDER CAPACITY EXCEEDS VALUE CALCULATED PER N.E.C. ARTICLE 220-87.
 - 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

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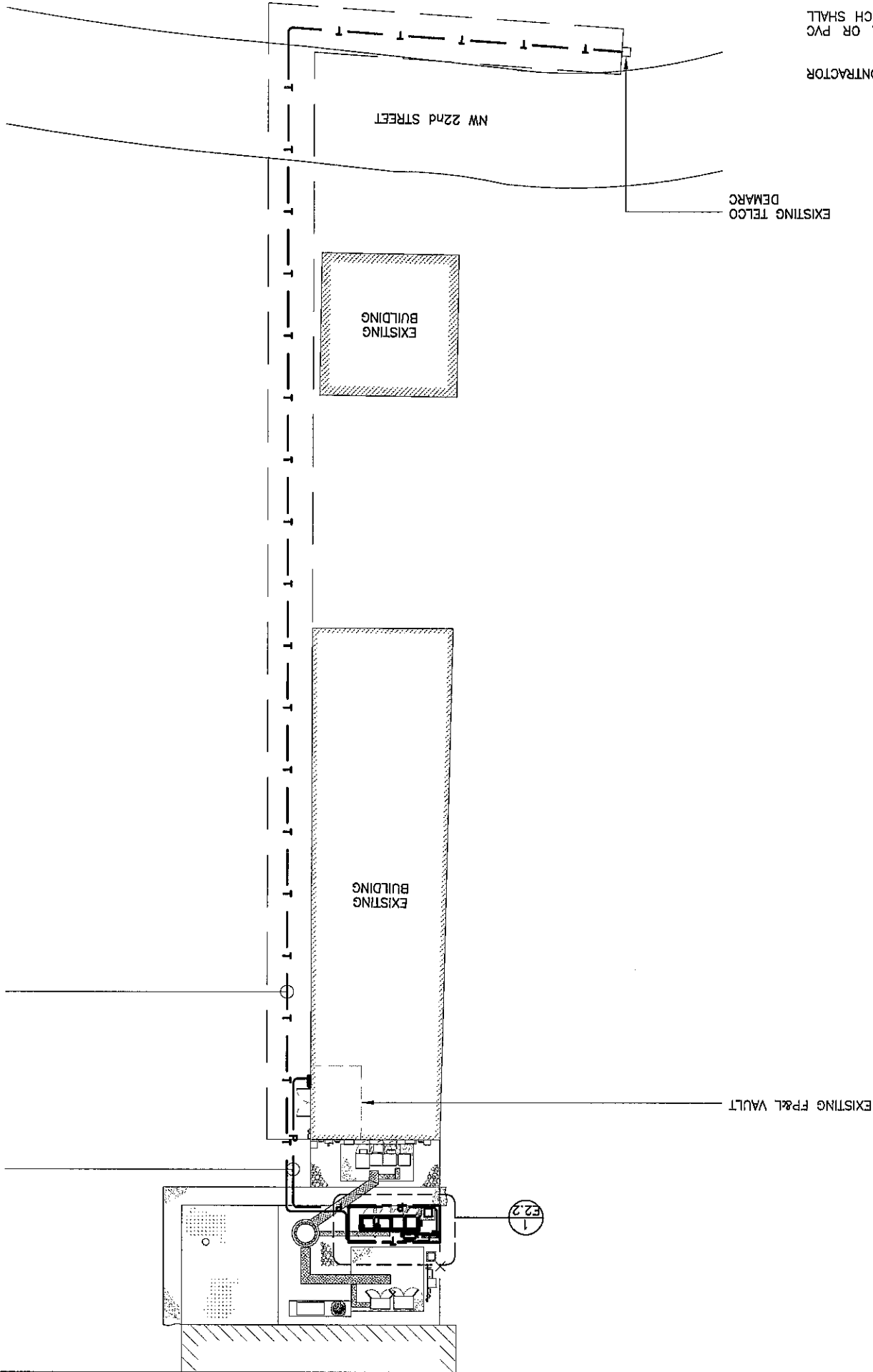
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SHEET NAME ELECTRICAL AND GROUNDING NOTES	SHEET NUMBER E1
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- NOTES:
1. PROPOSED CONDUIT ROUTING IS SCHEMATIC ONLY, CONTRACTOR SHALL DETERMINE SUITABLE ROUTING IN THE FIELD.
 2. PROPOSED CONDUIT SHALL BE GALVANIZED RIGID STEEL OR PVC APART FROM PORTION ENTERING EQUIPMENT CABINET, WHICH SHALL BE FLEXIBLE LIQUID TIGHT CONDUIT.



- PROPOSED 2" CONDUIT
FOR POWER FROM PROPOSED
T-MOBILE DISCONNECT
- PROPOSED (2) 2" CONDUITS
FOR TELCO FROM EXISTING
TELCO DEMARC

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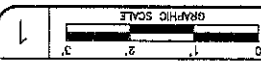
PROFESSIONAL ENGINEER
STATE OF FLORIDA
MICHAEL A. PHILLIPS
No. 68312

DATE OF SIGNATURE: 9/11/14

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SHEET NAME
UTILITY ROUTING
SITE PLAN

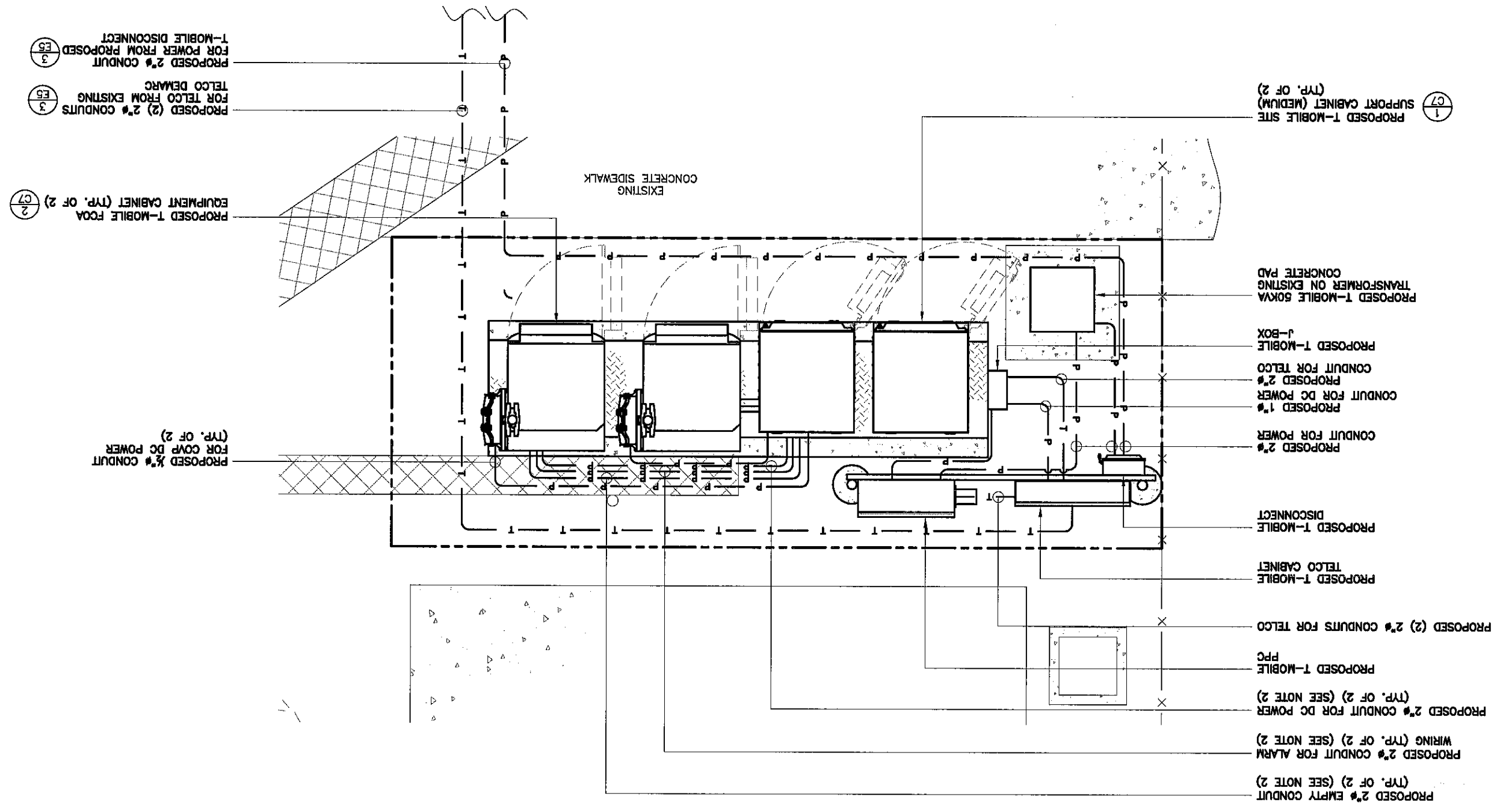
SHEET NUMBER
E2.1



1

UTILITY ROUTING EQUIPMENT PLAN

- 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.



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No. 68312
STATE OF FLORIDA
ENGINEER
DATE OF SIGNATURE: 9/11/14

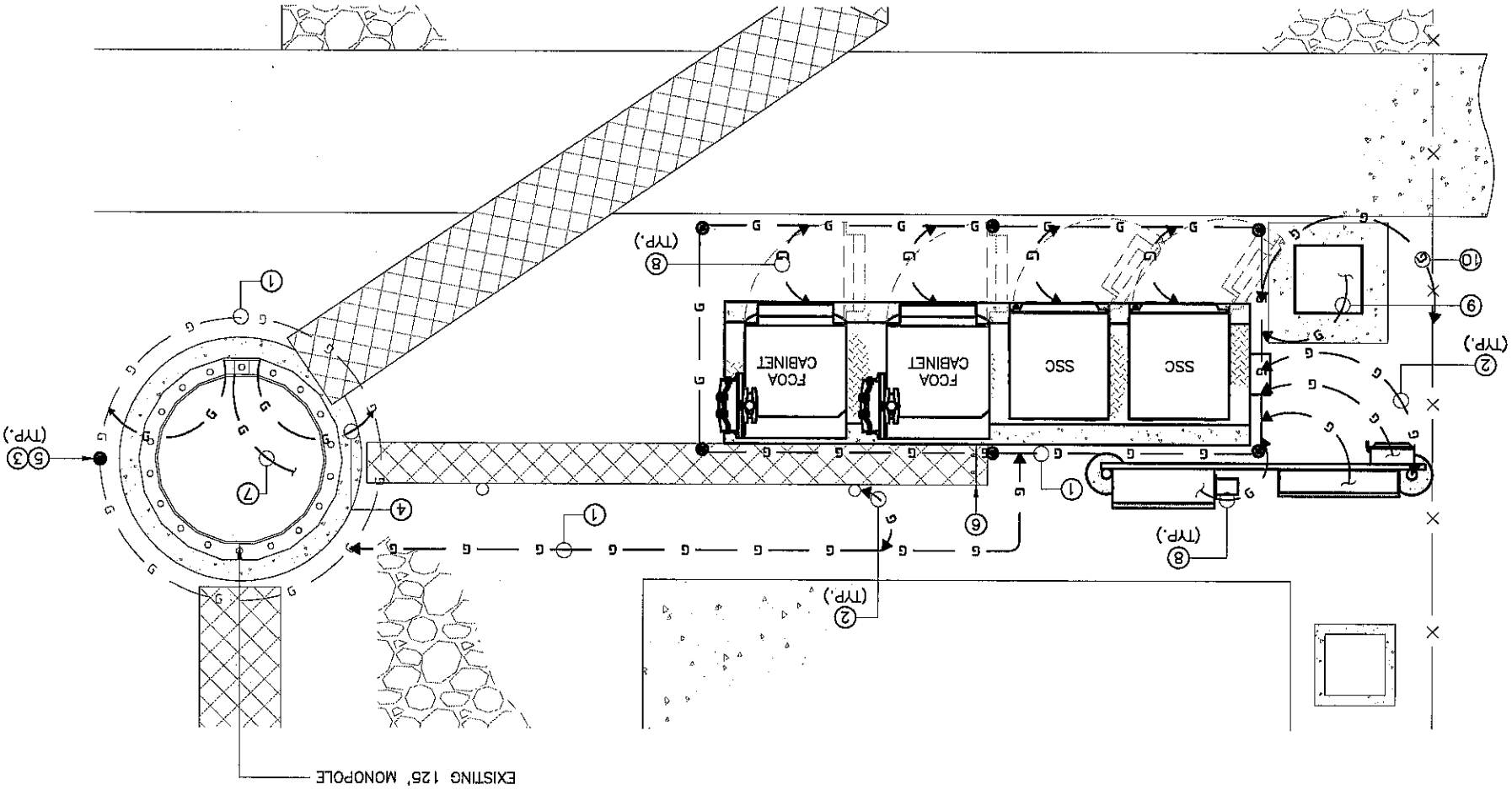
Utility Routing Equipment Plan
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FB2181A
4800 W COPANS ROAD
COCONUT CREEK, FL 33063
SHEET NUMBER
E2.2



GROUNDING PLAN

NOTE:

CONTRACTOR SHALL VERIFY LOCATION OF EXISTING TOWER GROUND RING BEFORE DIGGING TO PREVENT FROM DAMPING EXISTING GROUND.



1 NTS

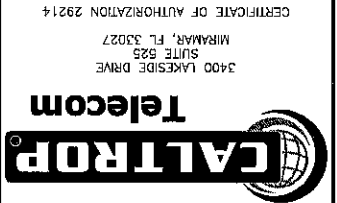
GROUNDING KEY NOTES

2

- 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 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-6, 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 3/4" 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-6, IF ROCK IS ENCOUNTERED, GROUND ROD MAY BE INSTALLED WITH A MAXIMUM VARIATION OF 30" FROM VERTICAL AND CONDUCTOR 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-6 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 PROVIDE #2 AWG SOLID BARE TINNED COPPER WIRE TO ANY METAL FENCE POST WITHIN 6' OF T-MOBILE EQUIPMENT GROUND RING.

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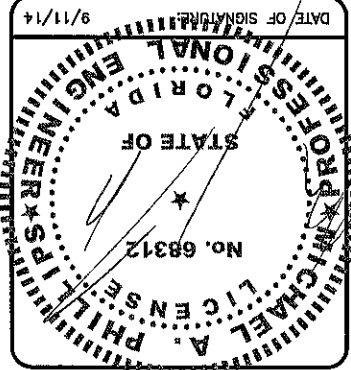
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SHEET NAME

GROUNDING PLAN
AND NOTES


SHEET NUMBER

E4

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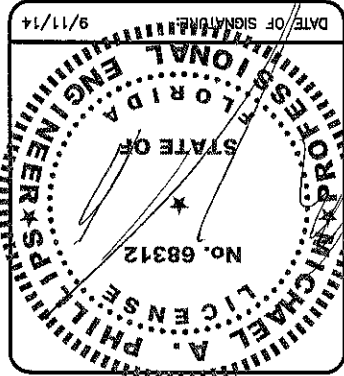
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Professional Engineer
Michael A. Phillips
No. 68312
State of Florida
Date of Signature: 9/11/14

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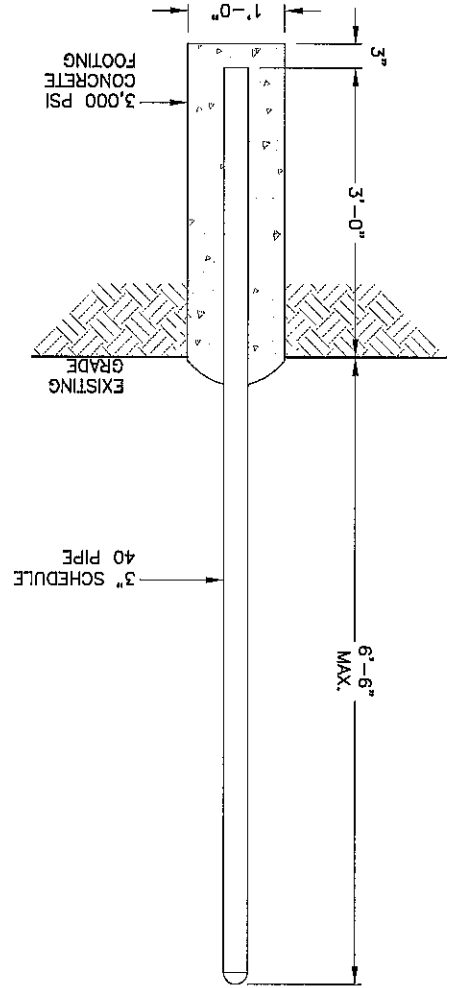
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SHEET NAME
ELECTRICAL
DETAILS

SHEET NUMBER
E5

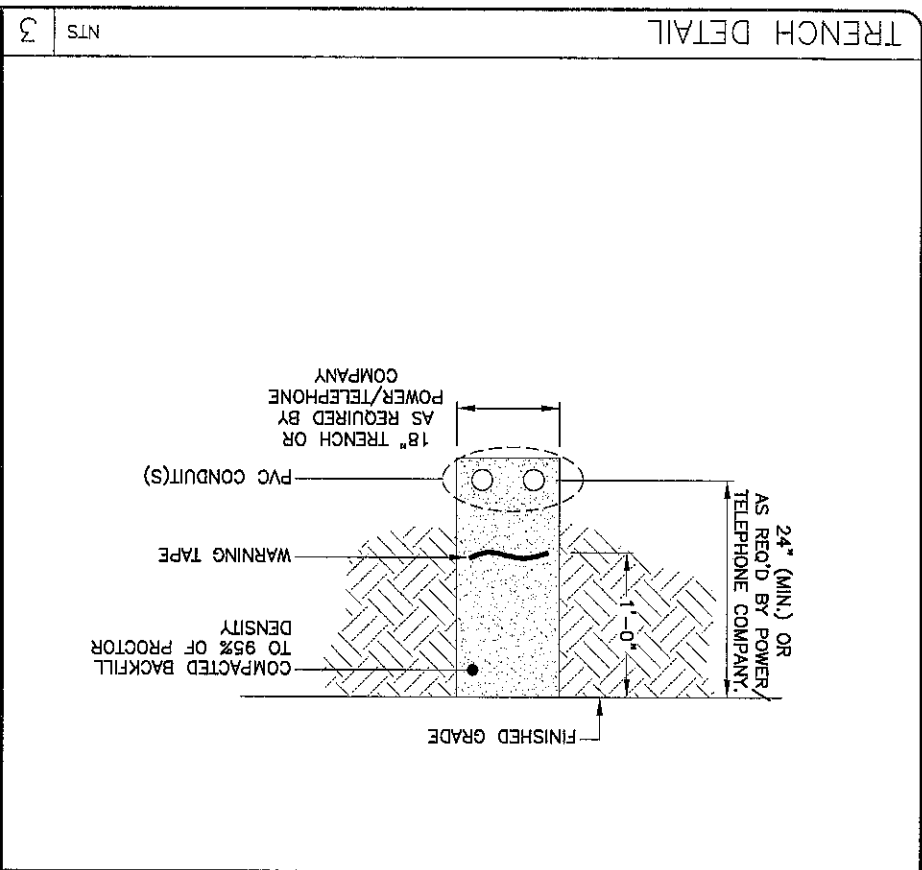
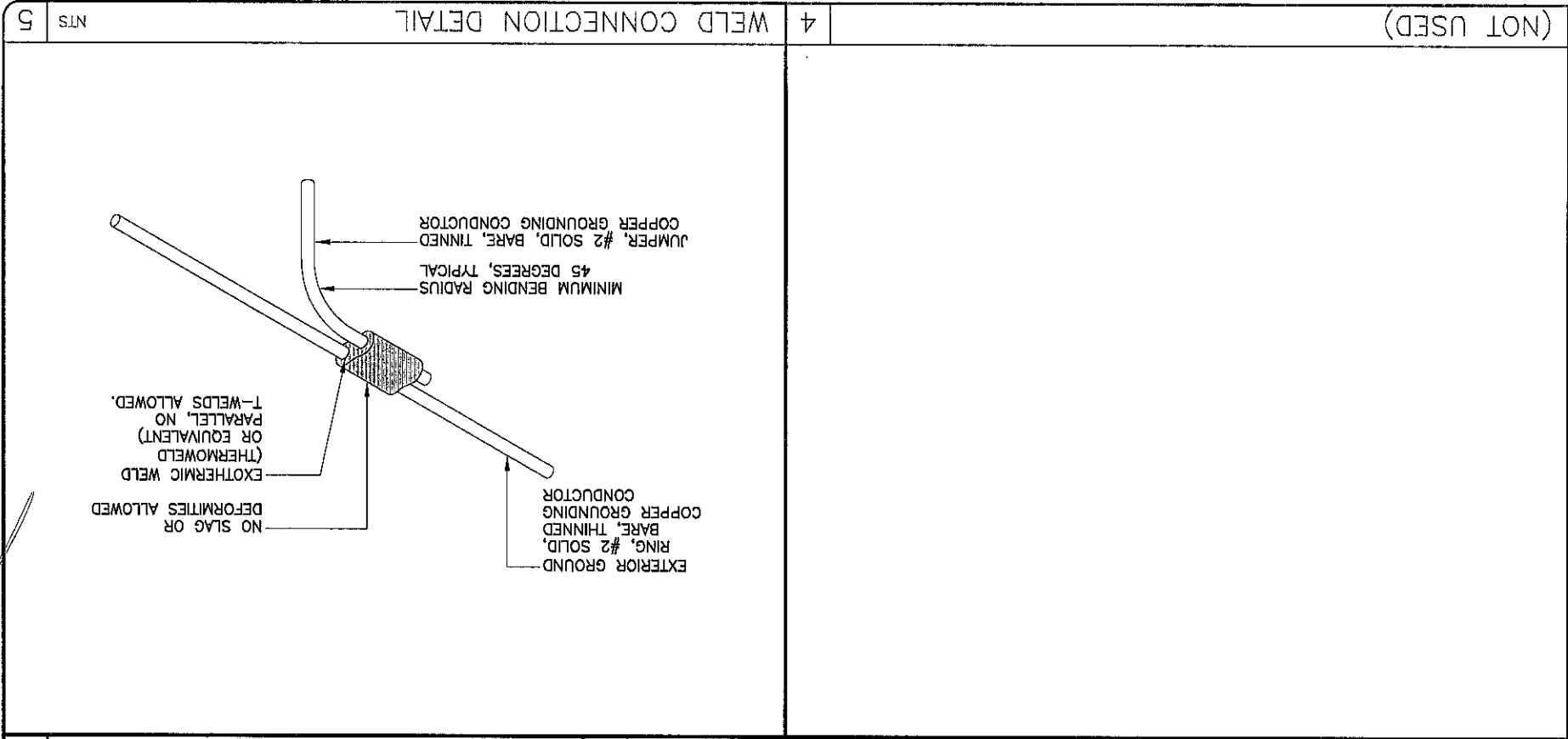
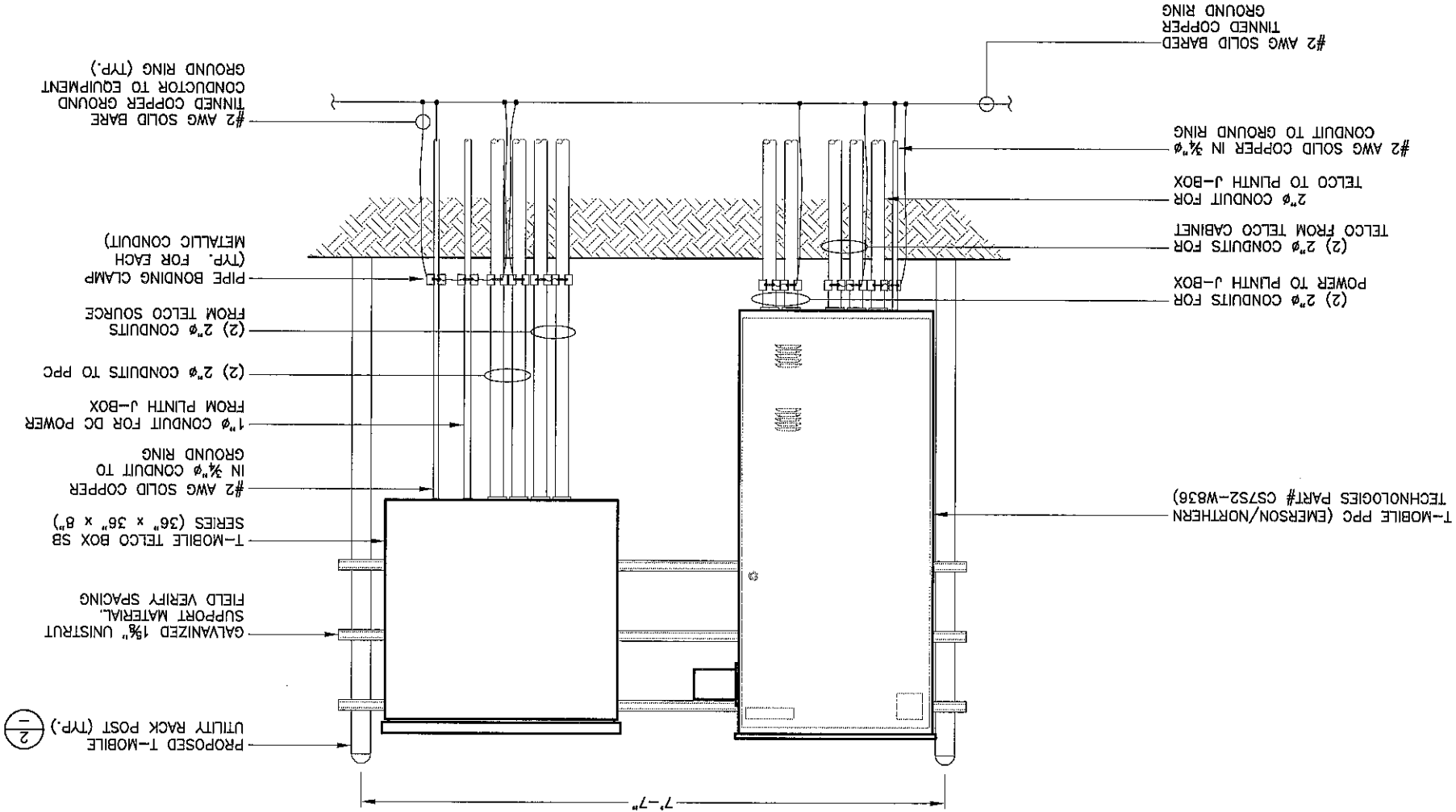
UTILITY RACK POST DETAIL

NTS 2



UTILITY RACK DETAIL

NTS 1



TRENCH DETAIL

NTS 3

(NOT USED)

4

WELD CONNECTION DETAIL

NTS 5

REV

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SHEET NAME
GROUNDING
DETAILS

SHEET NUMBER
E6

1

TO TOWER GROUND RING

2

BURIED EQUIPMENT GROUND RING (#2 BARE TINNED SOLID COPPER)

3

SSC EQUIPMENT CABINET

4

CONCRETE EQUIPMENT PAD

5

TOWER TOP GROUND BAR (SEE DETAIL 1/E6)

6

TOWER BOTTOM GROUND BAR (SEE DETAIL 1/E6)

7

MASTER GROUND BAR MOUNTED TO COAX BRIDGE SUPPORT LEG (SEE DETAIL 1/E6)

8

ANTENNA (TYP.)

9

ANTENNA MOUNTING PIPE (TYP.)

10

#2 BARE TINNED SOLID COPPER

11

JUMPER CABLE (TYP.)

12

COAX CABLE (TYP.)

13

COAX GROUNDING STRAP (TYP.)

14

SURGE ARRESTOR

15

SUPPORT PLINTH

16

FCOA EQUIPMENT CABINET

GROUNDING RISER DIAGRAM

TYPICAL GROUND BAR

GROUND ROD INSPECTION WELL DETAIL