

CROWN CASTLE BU NO.:  
878782

SITE NAME:  
PORTLAND WARREN AVE



CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS  
118 FLANDERS ROAD, 3RD FLOOR  
WESTBOROUGH, MA 01581

SITE NAME:  
**PORTLAND\_12\_ME**

LOCATION CODE:  
**136569**

SITE ADDRESS:  
**188 WARREN AVENUE  
PORTLAND, ME 04103**



Know what's below.  
Call before you dig.

PREPARED BY:

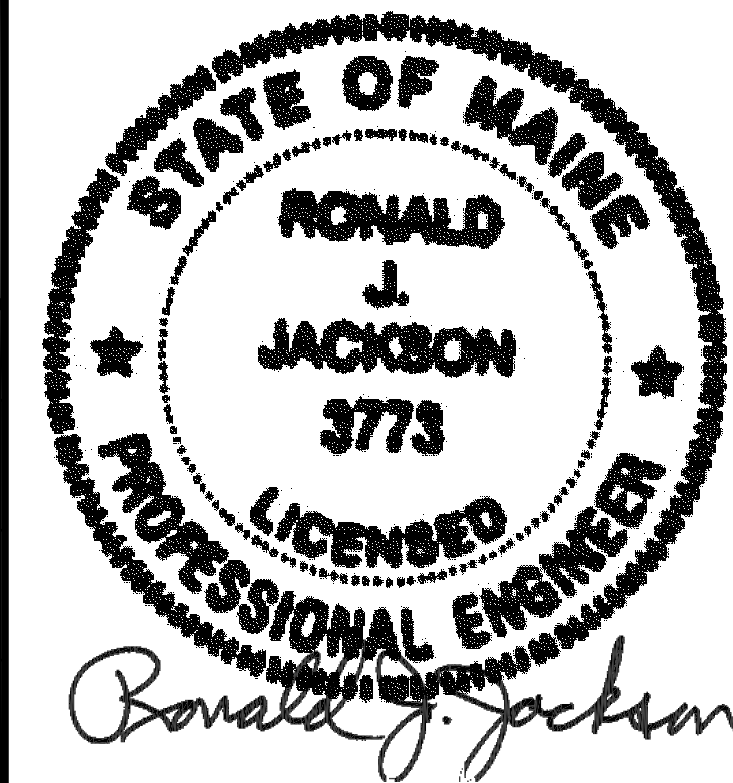
**NEXIUS**  
TRANSFORM YOUR BUSINESS...THROUGH WIRELESS

A&E OFFICE:  
7A LYBERTY WAY  
WESTFORD, MA 01886  
1 (972) 755-1882

APPLICANT:



CELLCO PARTNERSHIP d/b/a  
VERIZON WIRELESS  
118 FLANDERS ROAD, 3RD FLOOR  
WESTBOROUGH, MA 01581



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**SITE INFORMATION**

SITE NAME: PORTLAND\_12\_ME  
LOCATION CODE: 136569  
SITE ADDRESS: 188 WARREN AVENUE  
PORTLAND, ME 04103  
COUNTY: CUMBERLAND COUNTY  
LATITUDE: 43° 41' 15.05" N (NAD83)  
LONGITUDE: 70° 18' 15.20" W (NAD83)  
GROUND LEVEL: 93' A.M.S.L. (NAVD83)  
TOWER OWNER: CROWN CASTLE INTERNATIONAL  
500 CUMMINGS PARK DRIVE #3600  
WOBURN, MA 01801  
STRUCTURE TYPE: MONOPOLE  
STRUCTURE HEIGHT: 184'-0"± A.G.L.  
RAD CENTER: 110'-0"± A.G.L.

**GENERAL NOTES AND APPLICABLE CODES**

- THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION.
    - HANDICAPPED ACCESS IS NOT REQUIRED.
    - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
    - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
  - CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
  - DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.
    - MUBC (MAINE UNIFORM BUILDING CODE) CONSISTS OF:
      - 2009 INTERNATIONAL RESIDENTIAL CODE (IRC)
      - 2009 INTERNATIONAL BUILDING CODE (IBC)
      - 2009 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
      - 62.1 - 2007 (VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY)
      - 62.2 - 2007 (VENTILATION AND ACCEPTABLE INDOOR AIR QUALITY IN LOW-RISE RESIDENTIAL BUILDINGS)
      - E-1465-2006, STANDARD PRACTICE FOR RADON CONTROL OPTIONS FOR THE DESIGN AND CONSTRUCTION OF NEW LOW-RISE RESIDENTIAL BUILDINGS
    - ELECTRICAL CODE: NATIONAL ELECTRIC CODE 2014
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS.
- AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION.
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)
    - TIA 222-G, STRUCTURAL STANDARDS FOR STEEL ANTENNA SUPPORTING STRUCTURES AND ANTENNAS WITH ADDENDUM.
    - TIA 607, GENERIC TELECOMMUNICATIONS BONDING AND GROUNDING (EARTHING) FOR CUSTOMER PREMISES.
  - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
    - IEEE 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUNDING SYSTEM.
    - IEEE 1100 (2005) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT.
    - IEEE C62.41.1, RECOMMENDED PRACTICES ON CHARACTERIZATION OF SURGES IN LOW VOLTAGE (1000V OR LESS) AC POWER CIRCUITS.
  - TELCORDIA, GR-1275, GENERAL INSTALLATION REQUIREMENTS.
  - TELCORDIA, GR-1503, COAXIAL CONNECTORS.
  - ANSI T1.311, TELECOMMUNICATIONS - DC POWER SYSTEMS - TELECOMMUNICATIONS ENVIRONMENT PROTECTION.

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

**SHEET INDEX**

SHEET NUMBER	SHEET DESCRIPTION
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GN-1	GENERAL NOTES
A-1	COMPOUND PLAN
A-2	TOWER ELEVATION, ANTENNA PLAN & NOTES
A-3	CONSTRUCTION DETAILS
A-4	EQUIPMENT PAD DETAILS
A-5	EQUIPMENT CANOPY DETAILS
E-1	ELECTRICAL NOTES & POWER RISER DIAGRAM
E-2	GROUNDING DETAILS & NOTES
E-3	GROUNDING PLAN, DETAILS & NOTES

**APPROVALS**

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

LEASING/SITE ACQUISITION: \_\_\_\_\_ DATE: \_\_\_\_\_  
 LANDLORD: \_\_\_\_\_ DATE: \_\_\_\_\_  
 VERIZON WIRELESS CM: \_\_\_\_\_ DATE: \_\_\_\_\_  
 VERIZON WIRELESS RF: \_\_\_\_\_ DATE: \_\_\_\_\_

**VICINITY MAP**



**SUBMITTALS**

REV	DATE	DESCRIPTION	BY
A	01/20/16	FOR REVIEW	JM
B	06/23/16	REVISED PER SA	JM

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**136569**  
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**188 WARREN AVENUE  
PORTLAND, ME 04103  
CUMBERLAND COUNTY**

**SHEET TITLE:**

**TITLE SHEET**

NEXIUS PROJ. NO:  
**VZ11509**

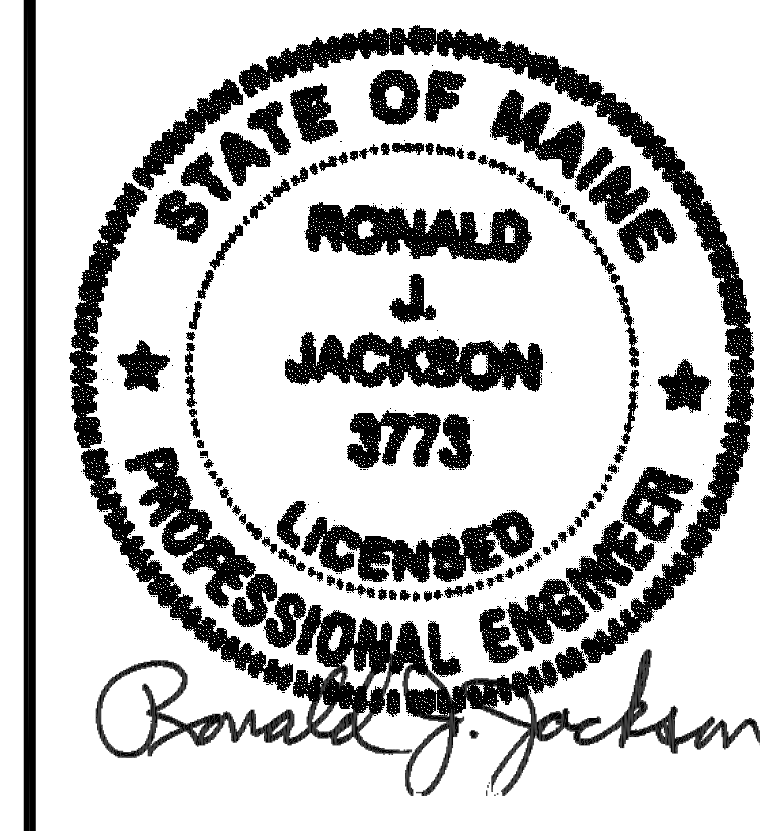
CHECKED BY:  
KB

CHECKED BY DATE:  
01/12/16

SHEET NUMBER:

**T-1**





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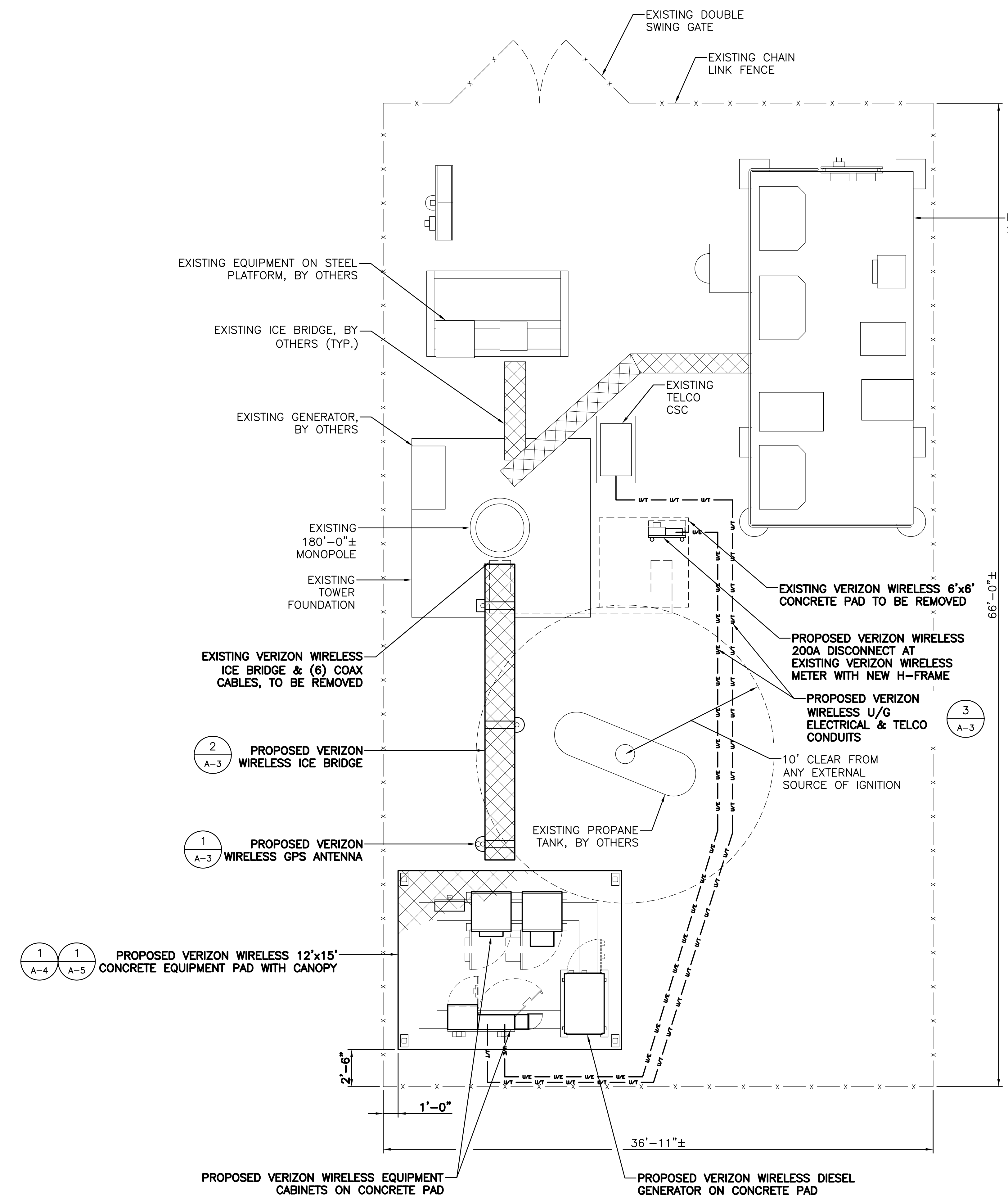
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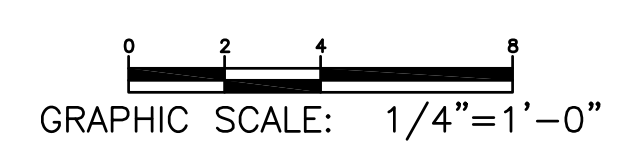
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SHEET TITLE:  
**COMPOUND PLAN**

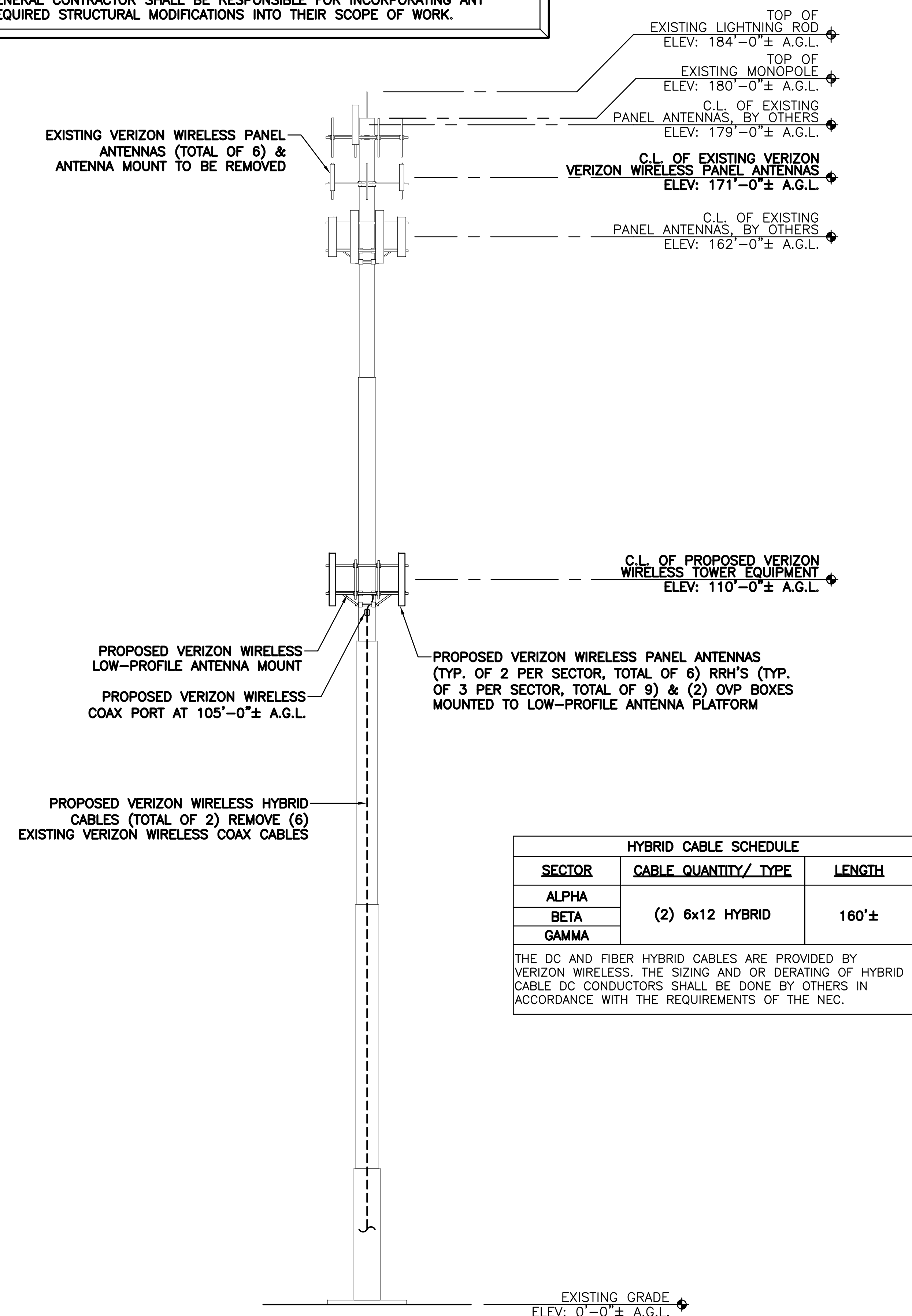
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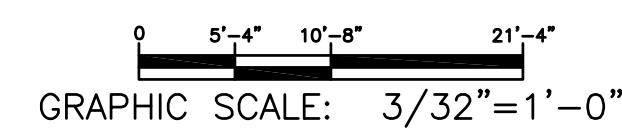
1 COMPOUND PLAN  
 SCALE: 1/4" = 1'-0"



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

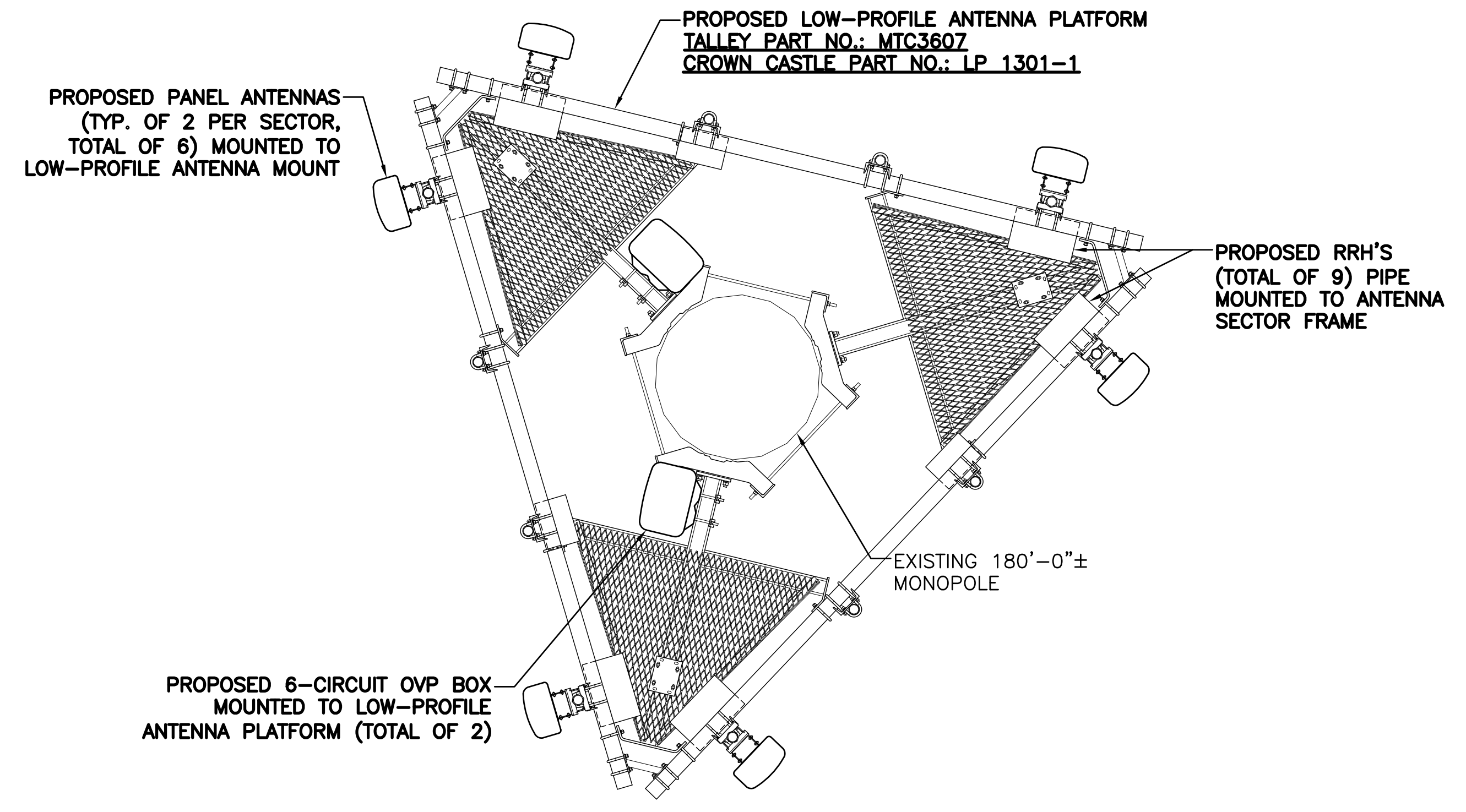


**1 TOWER ELEVATION**  
SCALE: 3/32" = 1'-0"



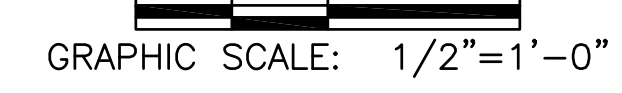
HYBRID CABLE SCHEDULE		
SECTOR	CABLE QUANTITY/ TYPE	LENGTH
ALPHA	(2) 6x12 HYBRID	160'±
BETA		
GAMMA		

THE DC AND FIBER HYBRID CABLES ARE PROVIDED BY VERIZON WIRELESS. THE SIZING AND OR DERATING OF HYBRID CABLE DC CONDUCTORS SHALL BE DONE BY OTHERS IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEC.



**2 ANTENNA PLAN**  
SCALE: 1/2" = 1'-0"

APPROX. NORTH



**NOTE:**  
1. REFER TO LATEST RFDS FOR FINAL ANTENNA CONFIGURATION.  
2. ALL PROPOSED EQUIPMENT TO BE INSTALLED IN ACCORDANCE TO THE MANUFACTURER'S SPECIFICATIONS.

**STRUCTURAL STEEL NOTES:**

- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFIRM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION" FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 "STRUCTURAL STEEL", UNLESS OTHERWISE NOTED.
- STEEL TUBING SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRAD B, OR ASTM A53 "PIPE STEEL, BLACK AND HOT DIPPED, ZINC-COATED WELDED AND SEAMLESS", TYPE E OR S, GRADE B. PIPE SIZE INDICATED ARE NOMINAL. ACTUAL ARE OUTSIDE DIAMETER IF LARGER.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE MI., OR EQUAL STRUT MEMBERS SHALL BE 1 5/8" X 1 5/8" X 12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
- FIELD CONNECTIONS SHALL BE BOLTED UNLESS OTHERWISE INDICATED. ALL BOLTS FOR STRUCTURAL CONNECTIONS SHALL BE HIGH STRENGTH BOLTS AND CONFORM TO THE LATEST EDITION OF ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS, AND PLAIN HARDENED WASHERS". BOLTS SHALL BE 3/4 INCH DIA. UNLESS OTHERWISE NOTED.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATIONS FF-S-325, GROUP II, TYPE 4, CLASS 1, HILTI KWIK BOLT II, OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE (4) INCHES.
- SLEEVE ANCHORS SHALL CONFORM TO FEDERAL SPECIFICATIONS FF-S-325, GROUP II, TYPE 3, CLASS 3, AS MANUFACTURED BY HILTI FASTENING SYSTEMS OR APPROVED EQUAL. INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE THREE (3) INCHES.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF 1/2" DIAMETER STAINLESS STEEL ANCHORS ROD WITH NUTS & WASHERS, AN INTERNAL THREADED INSERT, A SCREEN TUBE, AND AN EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE HTE HILTI HIT HY-20 SYSTEM OR ENGINEER APPROVED EQUAL WITH 6" MIN. EMBEDMENT.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
- SUBMIT SHOP DETAIL DRAWINGS OF ALL STRUCTURAL AND MISCELLANEOUS STEEL TO THE ENGINEER FOR APPROVAL, AND INCORPORATE ALL COMMENTS PRIOR TO FABRICATION.
- CONNECTIONS DESIGN BY FABRICATOR WILL BE SUBJECT TO REVIEW AND APPROVAL BY ENGINEER.
- INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO TAKING CORRECTIVE ACTION, ANY SUCH ACTION SHALL REQUIRE PRIOR ENGINEER APPROVAL.
- ALL WORK SHALL BE INSPECTED BY THE ENGINEER DURING AND AT THE COMPLETION OF CONSTRUCTION.

**WELDING:**

- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE, AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES"

**GALVANIZING:**

- ALL STEEL MATERIALS EXPOSED TO WEATHER SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS". UNLESS OTHERWISE NOTED. ALL BOLTS, ANCHORS, AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- DAMAGE GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZED IN ACCORDANCE WITH ASTM A780, UNLESS OTHERWISE NOTED.

**ANTENNA MOUNTING NOTES:**

- DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFIRM TO ANSI/TIA/EIA-222-G "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES". NOTE: SEE CODE FOR COUNTY SPECIFIC DESIGN WIND SPEEDS.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- DAMAGE GALVANIZE SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
- DESIGN RESPONSIBILITY OF ANTENNA MOUNTING BRACKETS, SUPPORTS AND ALL COMPONENTS THEREOF AND ATTACHMENT THERETO SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER. MFR SHALL PROVIDE THE OWNER DRAWINGS DETAILING ALL COMPONENTS OF THE ASSEMBLY, INCLUDING CONNECTIONS, DESIGN LOADS, AND ALL OTHER PERTINENT DATA. MFR SHALL ALSO PROVIDE THE OWNER WITH A STATEMENT OF COMPLIANCE INDICATING THAT THE ANTENNA SUPPORTS HAVE BEEN DESIGNED IN ACCORDANCE WITH TIA/EIA-222-G STANDARDS. ALL SUBMISSIONS SHALL BEAR THE STAMP AND SIGNATURE OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE THE WORK IS BEING PERFORMED.

**STANDARD ANTENNA COLOR CODE NOTES:**

- VERIZON WILL COLOR CODE AND TAG THE COAX AT BOTH THE TOP OF THE TOWER AND INSIDE THE CELL SITE BUILDING AT THE CABLE ENTRY PART. THE MARKING SYSTEM WILL COMPRISE OF COLOR TAPE WITH A MINIMUM WIDTH OF 3/4 INCHES, 7 MIL. VINYL PLASTIC TAPE, SCOTCH 35 OR EQUIVALENT.
- THE TAGGING WILL BE DONE WITH METAL "DOG" TAGS. A TAG WILL BE PLACED ON THE COAX AT THE ANTENNA AND ON THE COAX IN THE CELL SITE BUILDING. THE TAG WILL IDENTIFY THE ANTENNA NUMBER AND FUNCTION; TX, RX ETC.
- THE ENTRY PORT ASSIGNMENT SHOULD BE FOLLOWED WHERE POSSIBLE. THIS STANDARD ASSUMES THAT THE ENTRY PORT CONSISTS OF THREE ROWS OF FOUR PORTS. WITH THE FIRST ROW BEING NUMBERED FROM 1-6 FROM LEFT TO RIGHT. THE SECOND ROW IS NUMBERED 7-12 (LEFT TO RIGHT) AND THE THIRD ROW IS 13-18 (LEFT TO RIGHT).
- A SITE SPECIFIC COAX COLOR SHEET TO BE PROVIDED BY CELLULAR EQUIPMENT ENGINEER.

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*Ronald J. Jackson*

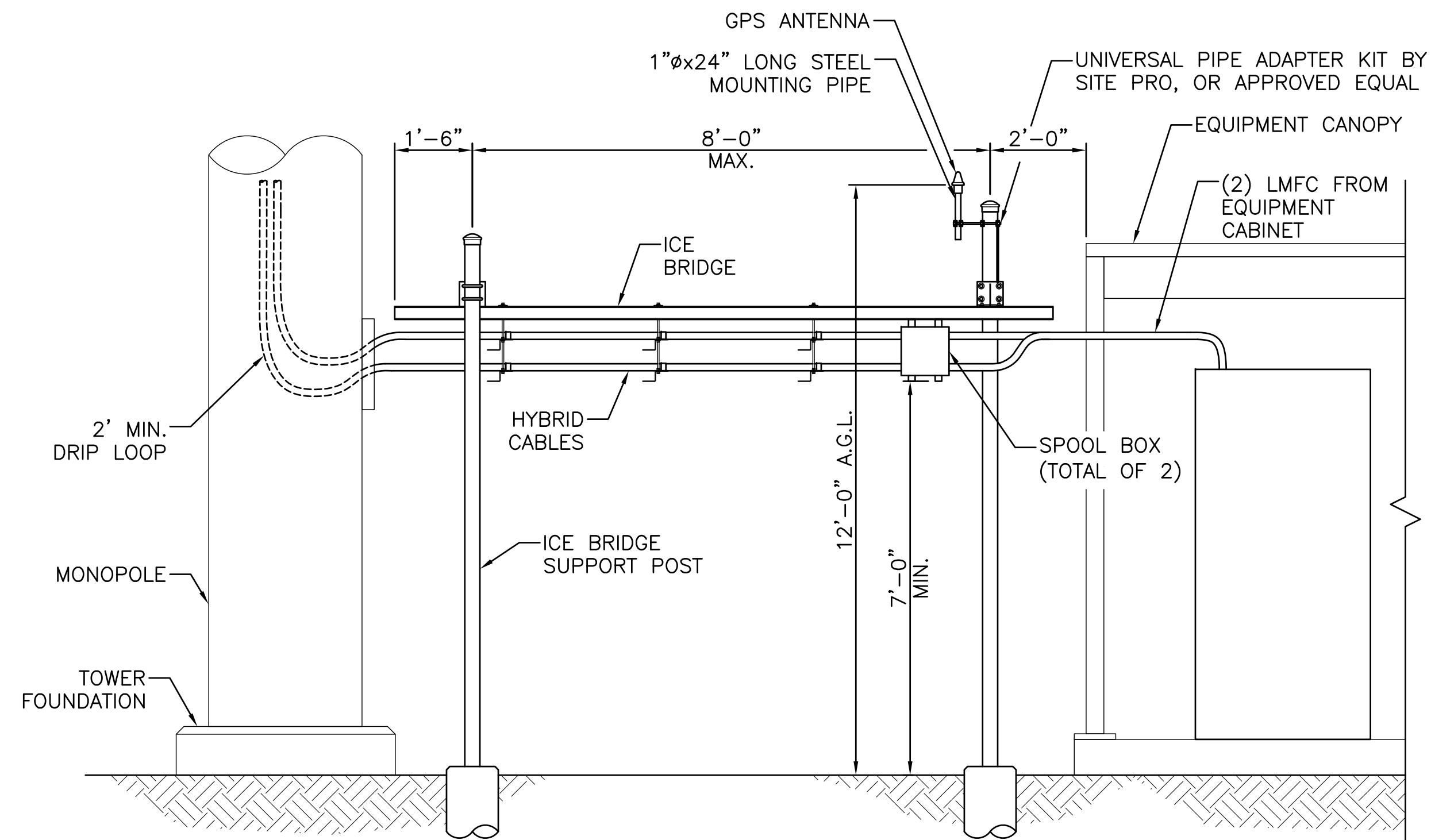
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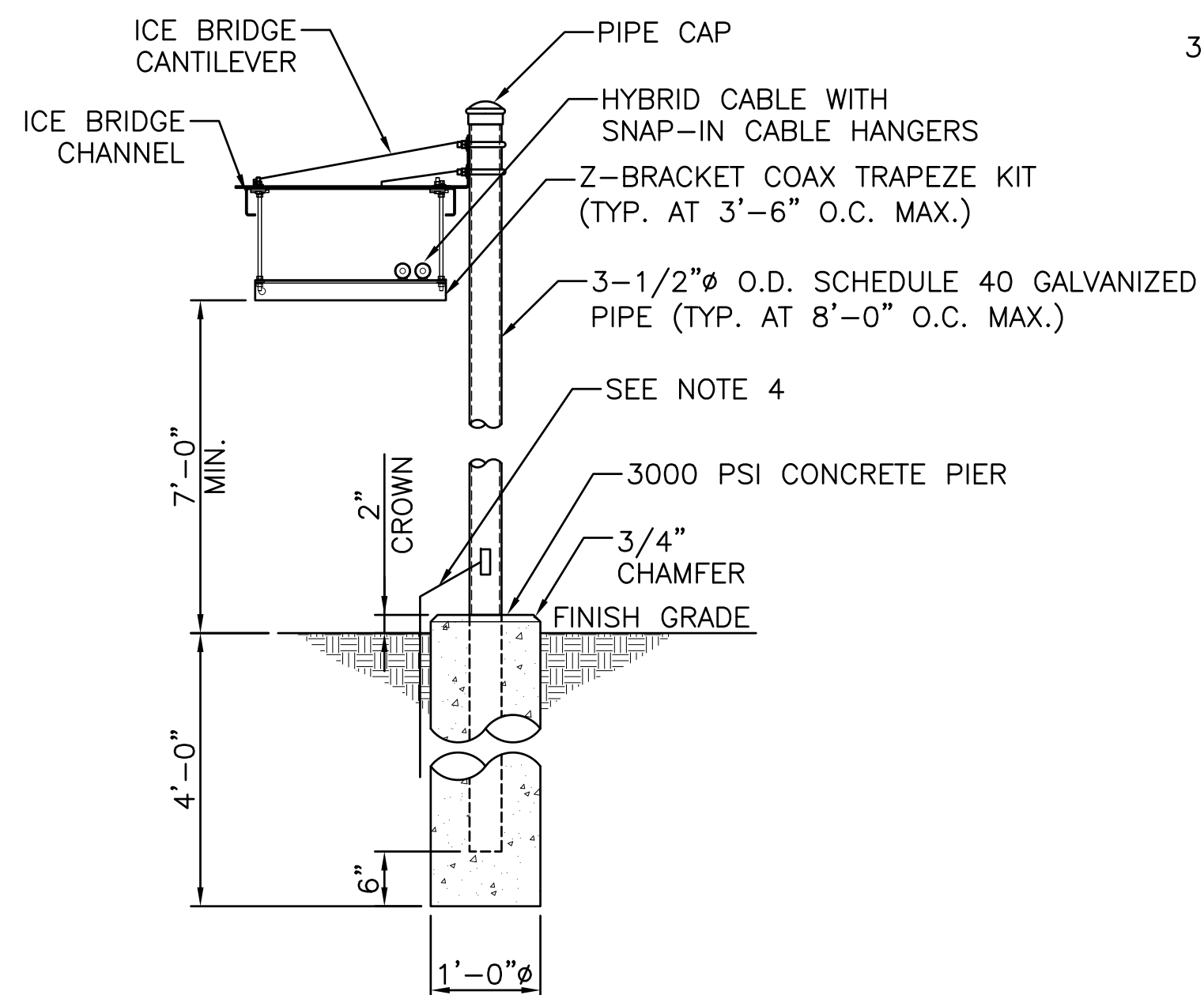
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CUMBERLAND COUNTY**

SHEET TITLE:  
**ELEVATION, ANTENNA  
PLAN & NOTES**

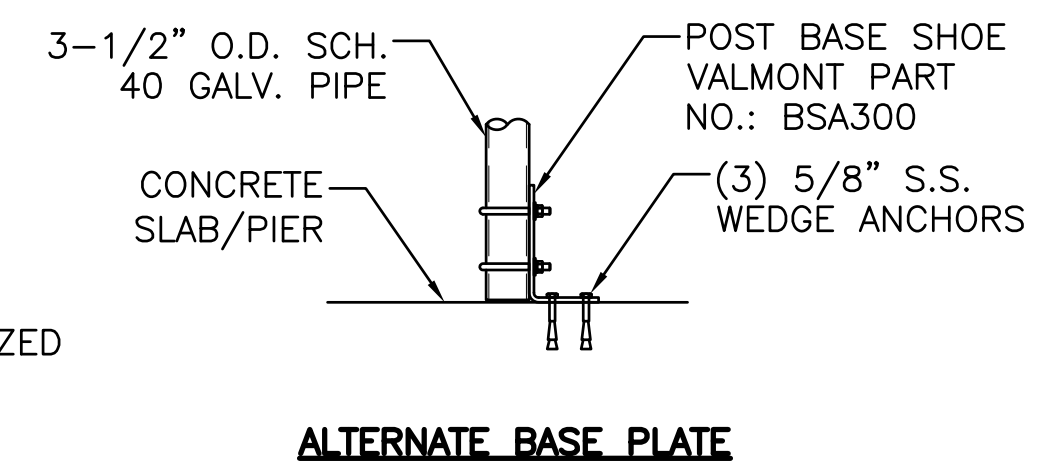
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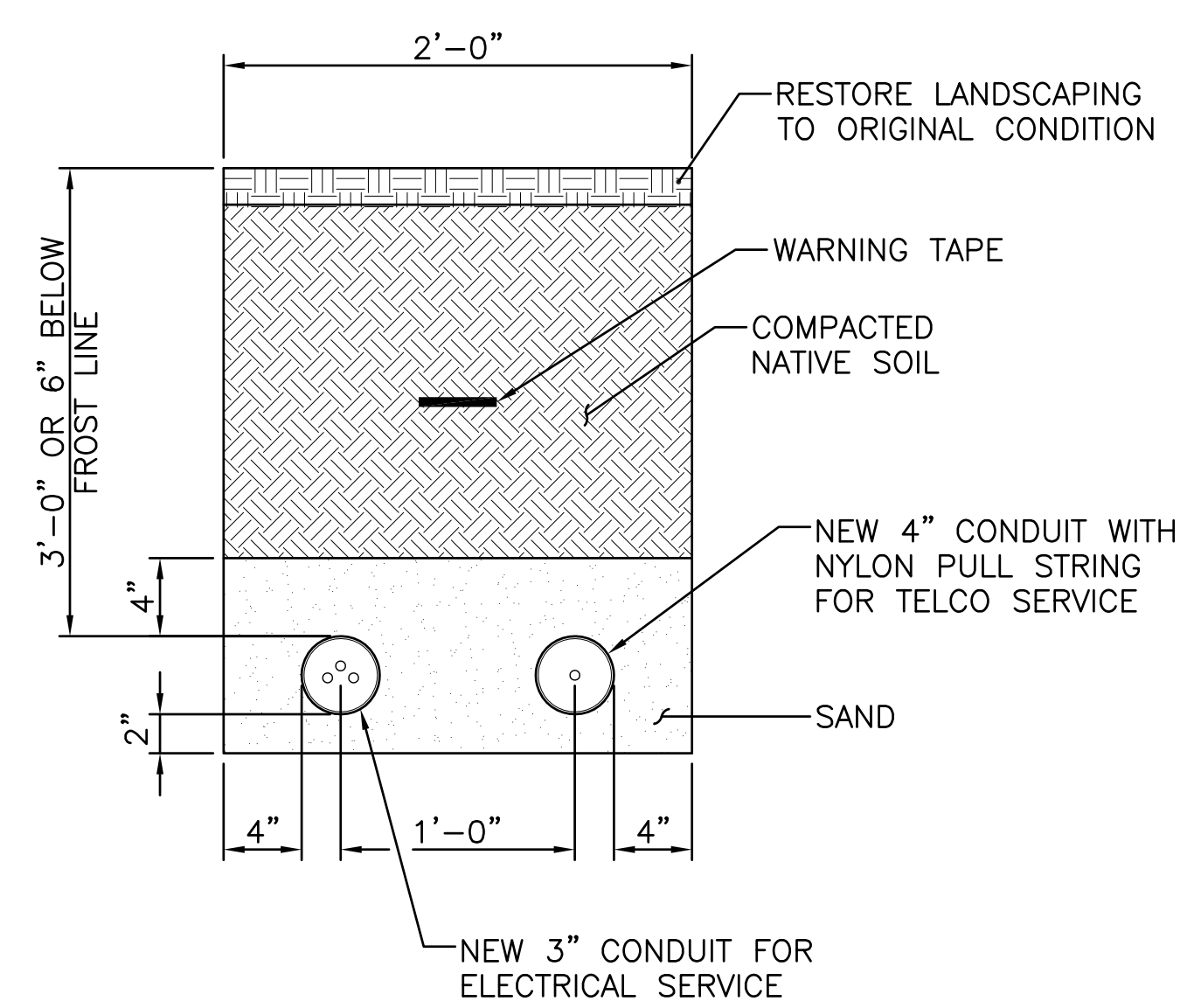
① ICE BRIDGE DETAIL  
SCALE: N.T.S.



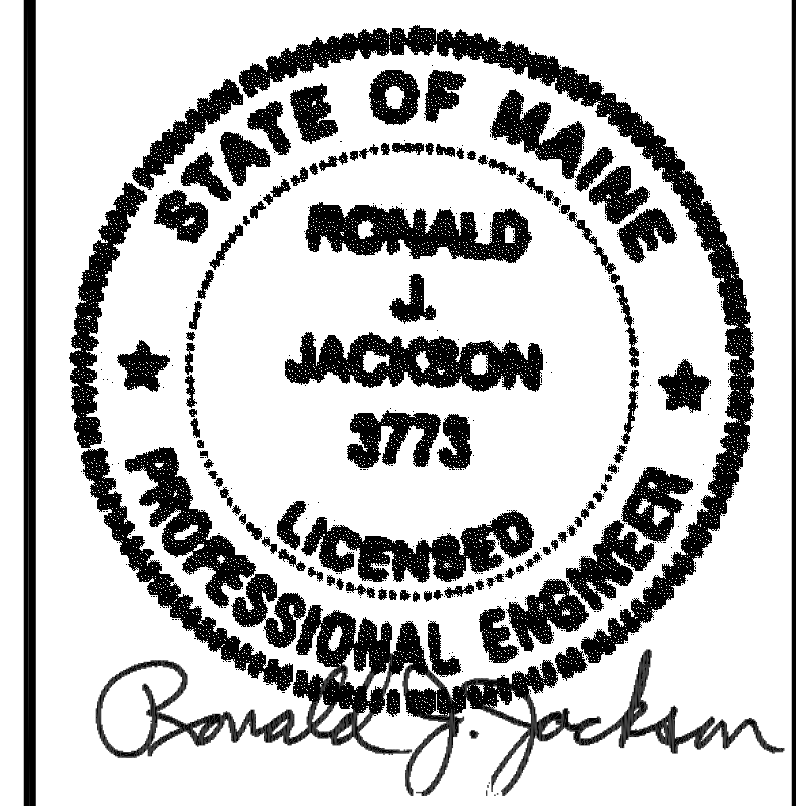
② ICE BRIDGE SUPPORT POST DETAIL  
SCALE: N.T.S.



**NOTE:**  
 1. ALL PARTS SHOWN ARE FROM SITE PRO, OR APPROVED EQUAL.  
 2. ALL STRUCTURAL STEEL & BOLTS ARE TO BE HOT DIPPED/RIGID GALVANIZED OR STAINLESS STEEL.  
 3. ALL BOLTS TO BE FURNISHED W/ WASHERS & NUTS.  
 4. #2 AWG SOLID TINNED COPPER WIRE IN 5/16" FLEXIBLE STEEL CONDUIT, CRIMPED EVERY 6" TO 8" WITH CORROSION INHIBITOR. SILICONE SEAL AT OPENING.



③ UTILITY TRENCH DETAIL  
SCALE: N.T.S.

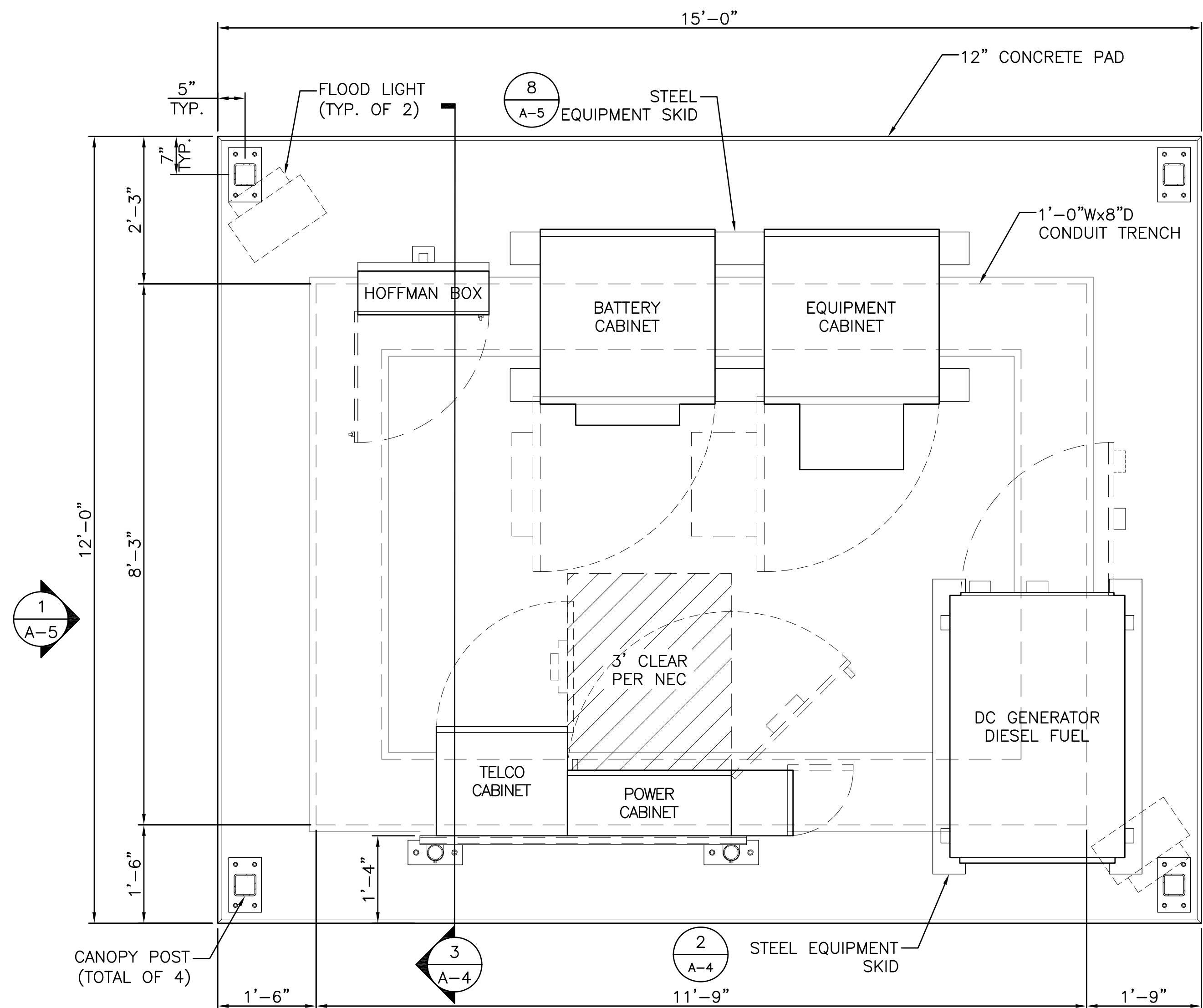


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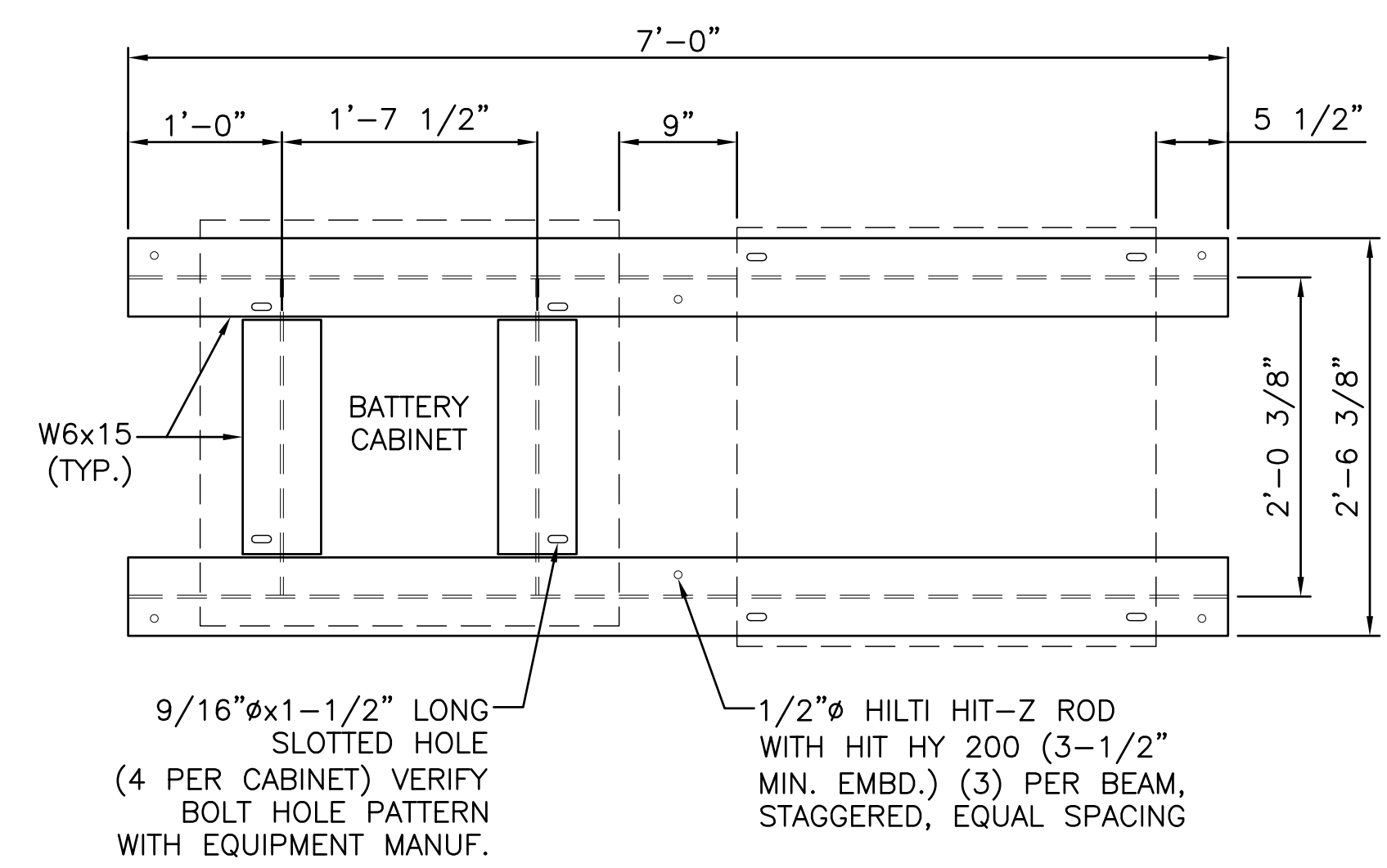
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SHEET TITLE:  
**CONSTRUCTION  
 DETAILS**  
 NEXIUS PROJ. NO:  
**VZ11509**  
 SHEET NUMBER:  
**A-3**  
 CHECKED BY:  
 KB  
 CHECKED BY DATE:  
 01/12/16



**1 EQUIPMENT PLAN**  
SCALE: 3/4" = 1'-0"

APPROX. NORTH

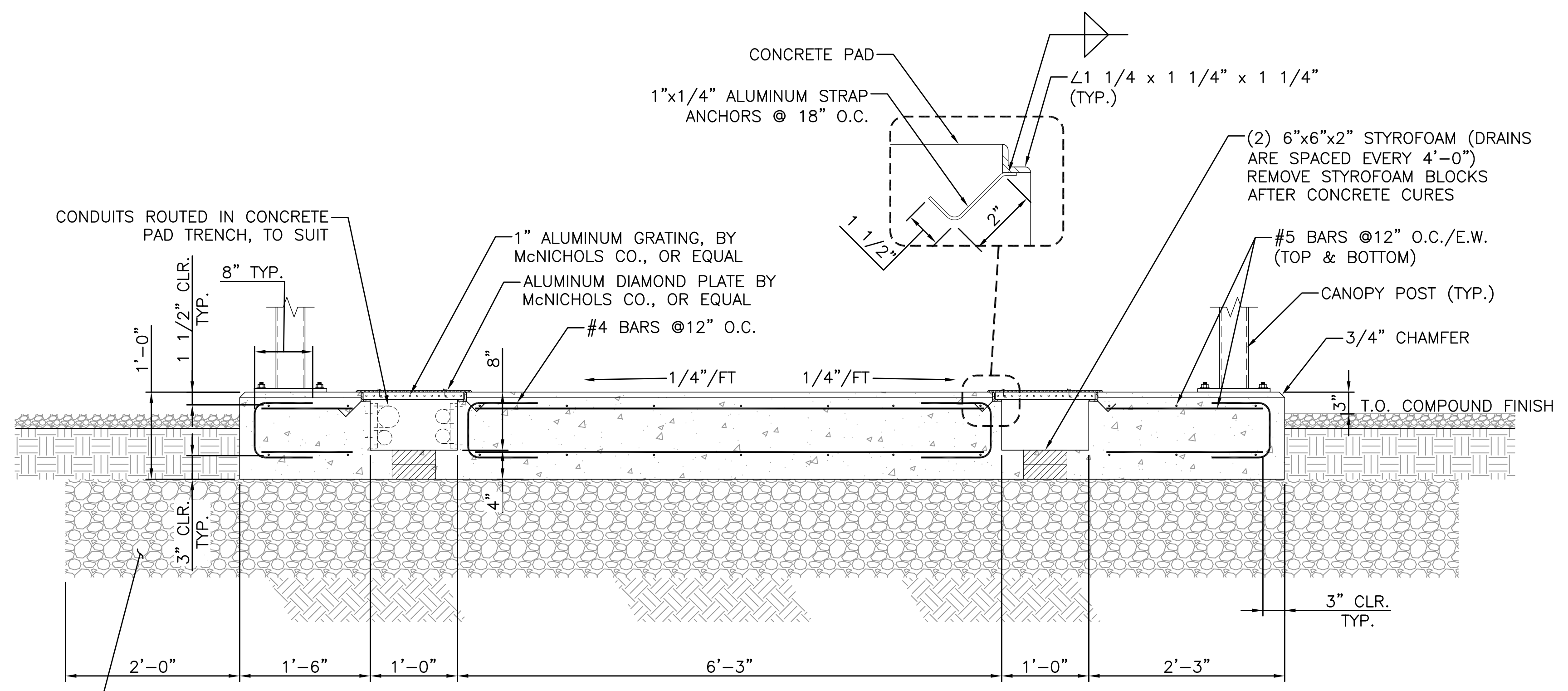


**2 EQUIPMENT SKID DETAIL**  
SCALE: N.T.S.

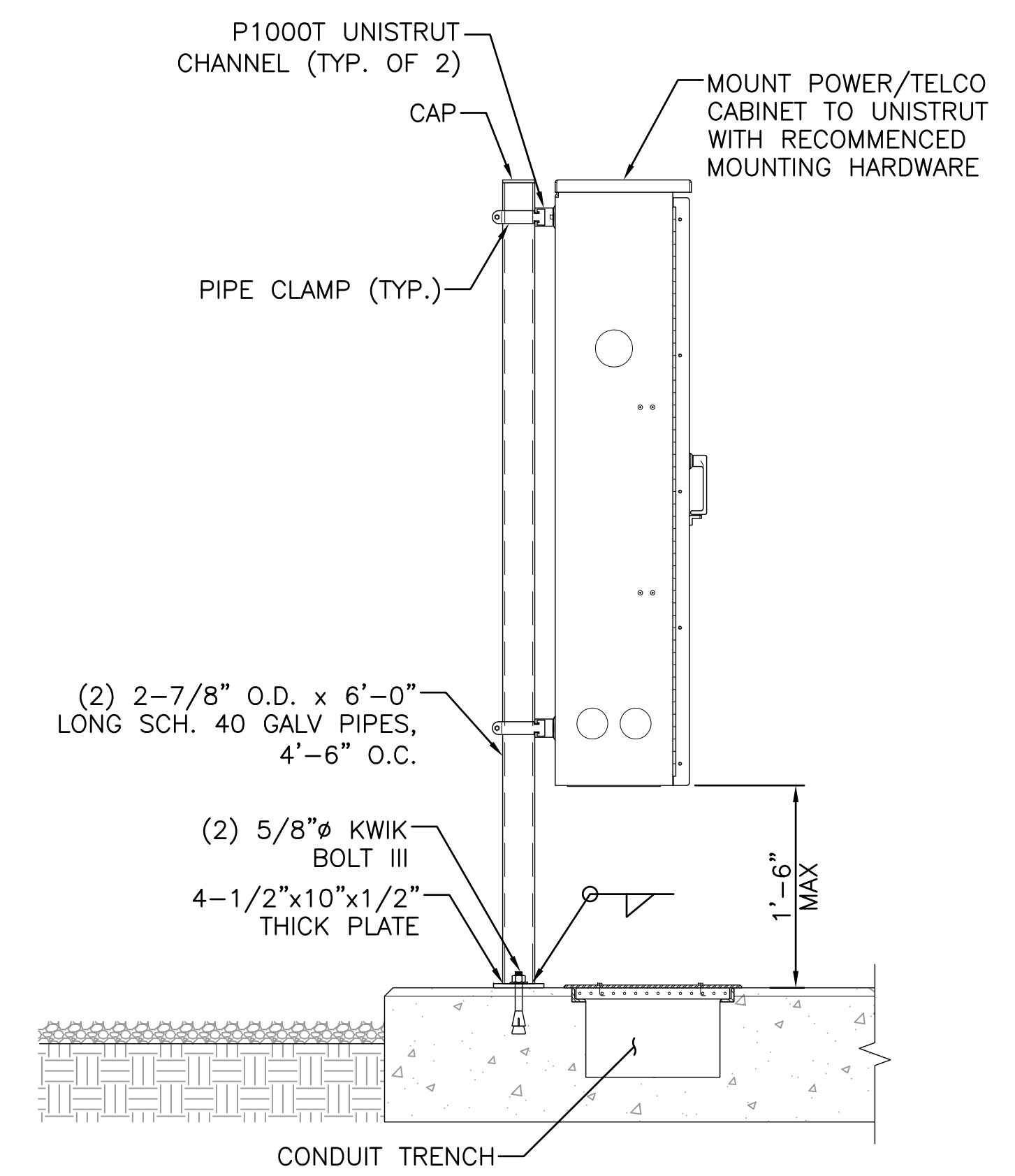
**FOUNDATION NOTES & CONCRETE SPECIFICATIONS**

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

**NOTE:**  
-ALL STRUCTURAL STEEL IS TO BE GALVANIZED.  
-ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.



**3 CONCRETE PAD SECTION**  
SCALE: N.T.S.



**4 POWER/TELCO H-FRAME DETAIL**  
SCALE: N.T.S.

PREPARED BY:  
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APPLICANT:  
**verizon**  
CELLCO PARTNERSHIP d/b/a  
VERIZON WIRELESS  
118 FLANDERS ROAD, 3RD FLOOR  
WESTBOROUGH, MA 01581

STATE OF MAINE  
RONALD J. JACKSON  
3773  
LICENSED PROFESSIONAL ENGINEER  
*Ronald J. Jackson*

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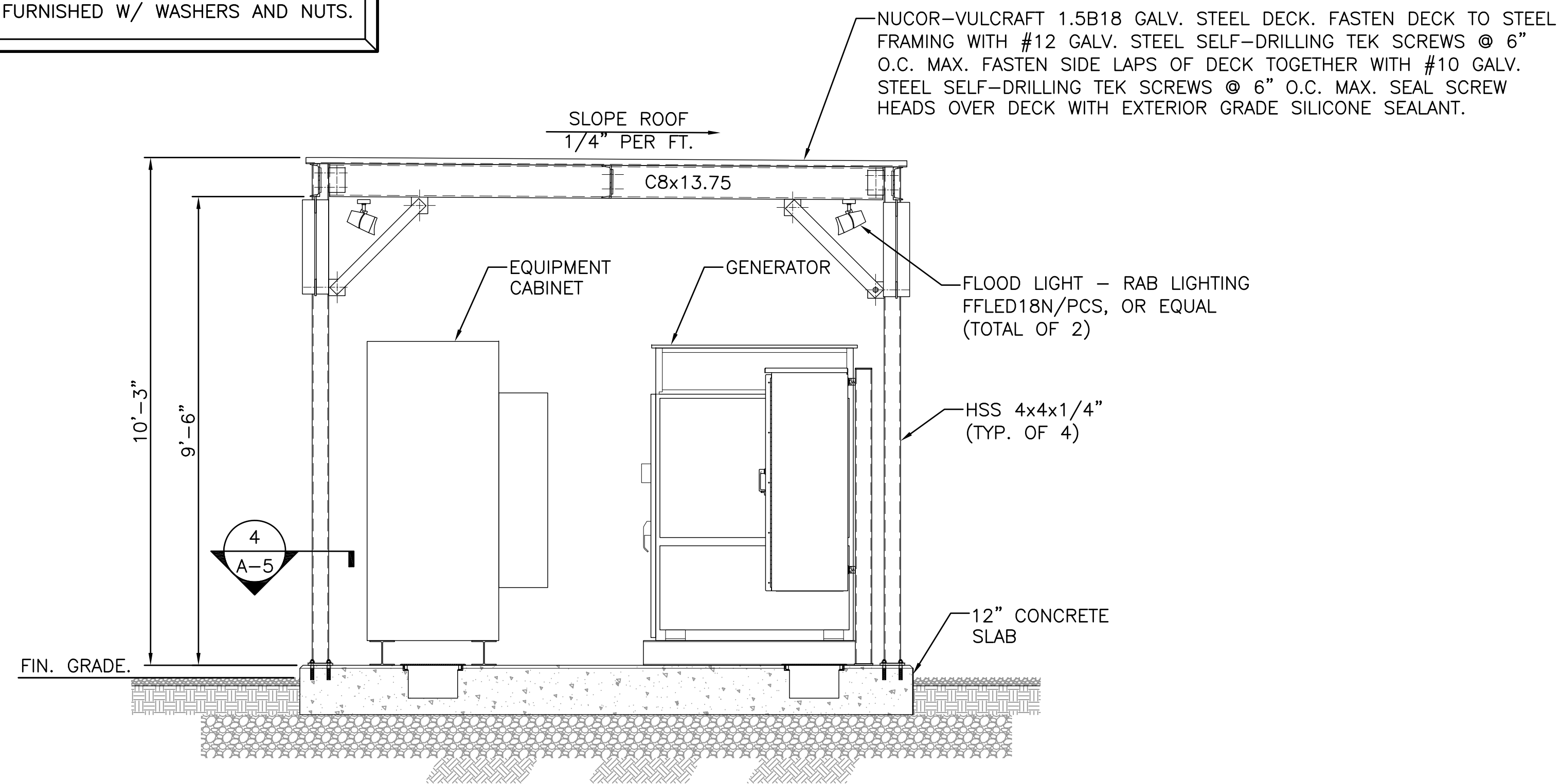
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A	01/20/16	FOR REVIEW	JM
B	06/23/16	REVISED PER SA	JM

SITE INFO:  
SITE NAME:  
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LOCATION CODE:  
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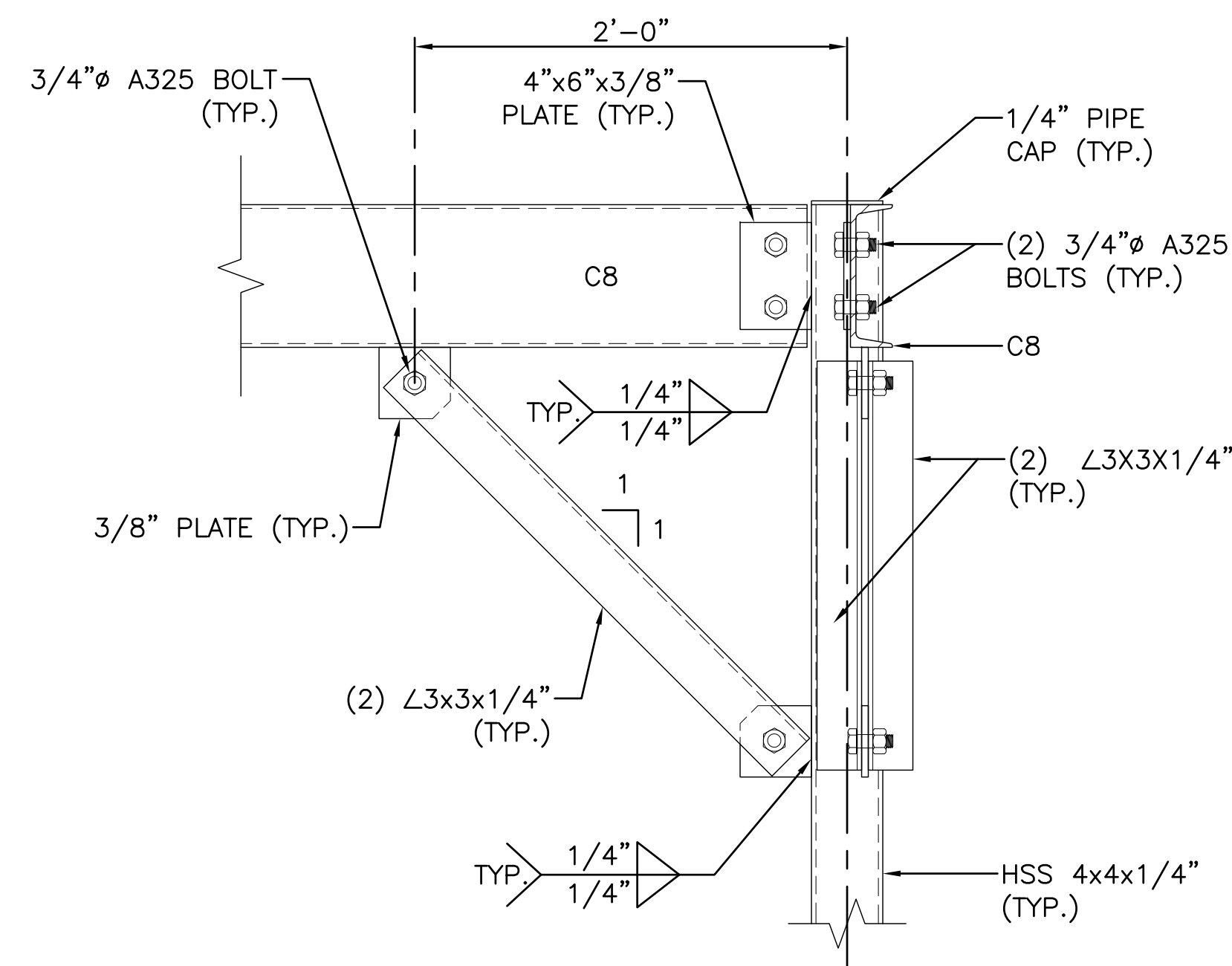
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**EQUIPMENT PAD DETAILS**

NEXIUS PROJ. NO: <b>VZ11509</b>	SHEET NUMBER: <b>A-4</b>
CHECKED BY: KB	
CHECKED BY DATE: 01/12/16	

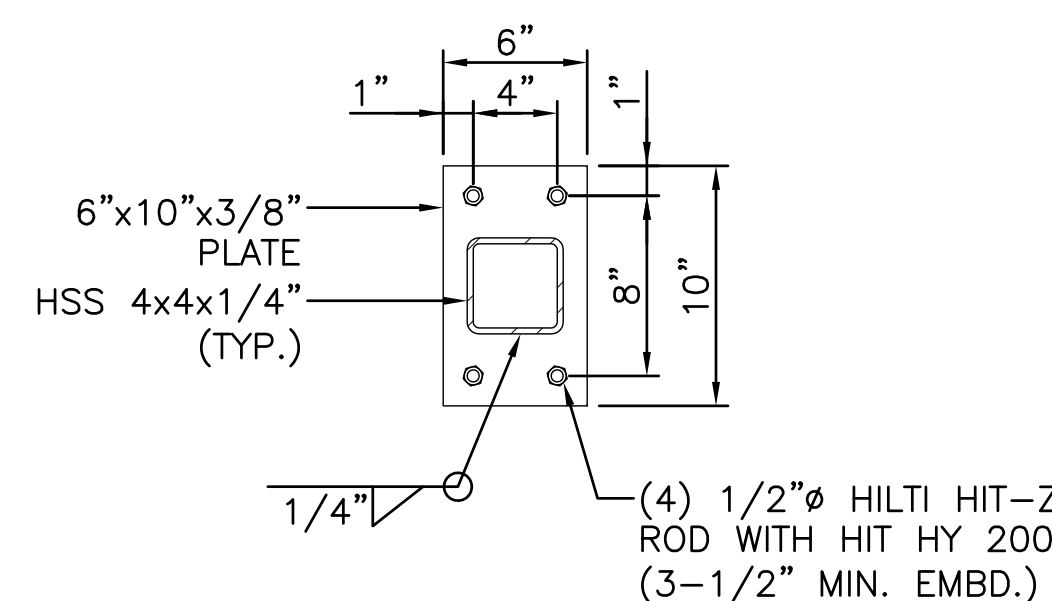
**NOTE:**  
 -ALL STRUCTURAL STEEL IS TO BE GALVANIZED.  
 -ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.



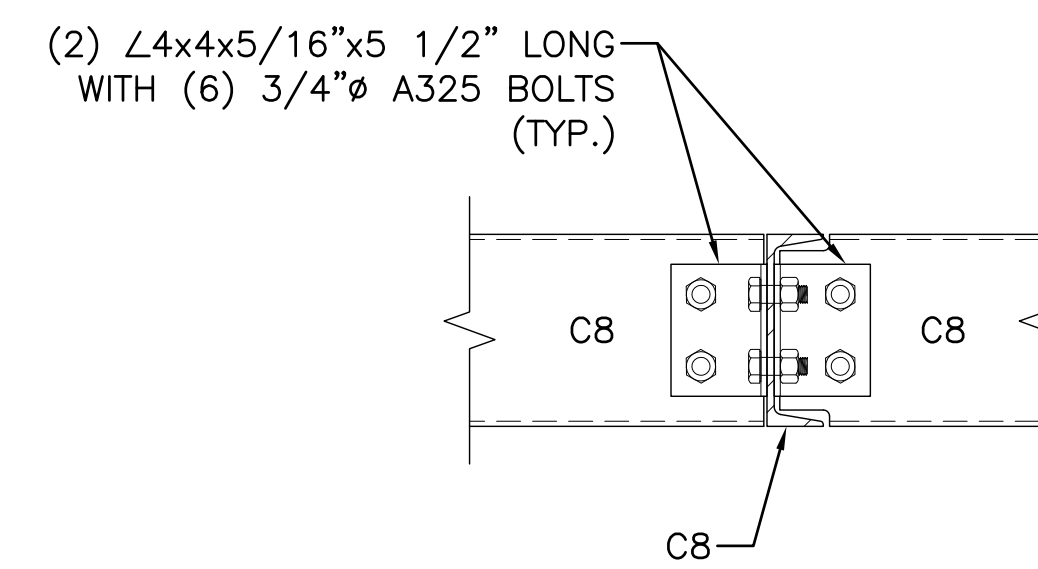
**1 EQUIPMENT ELEVATION**  
 SCALE: N.T.S.



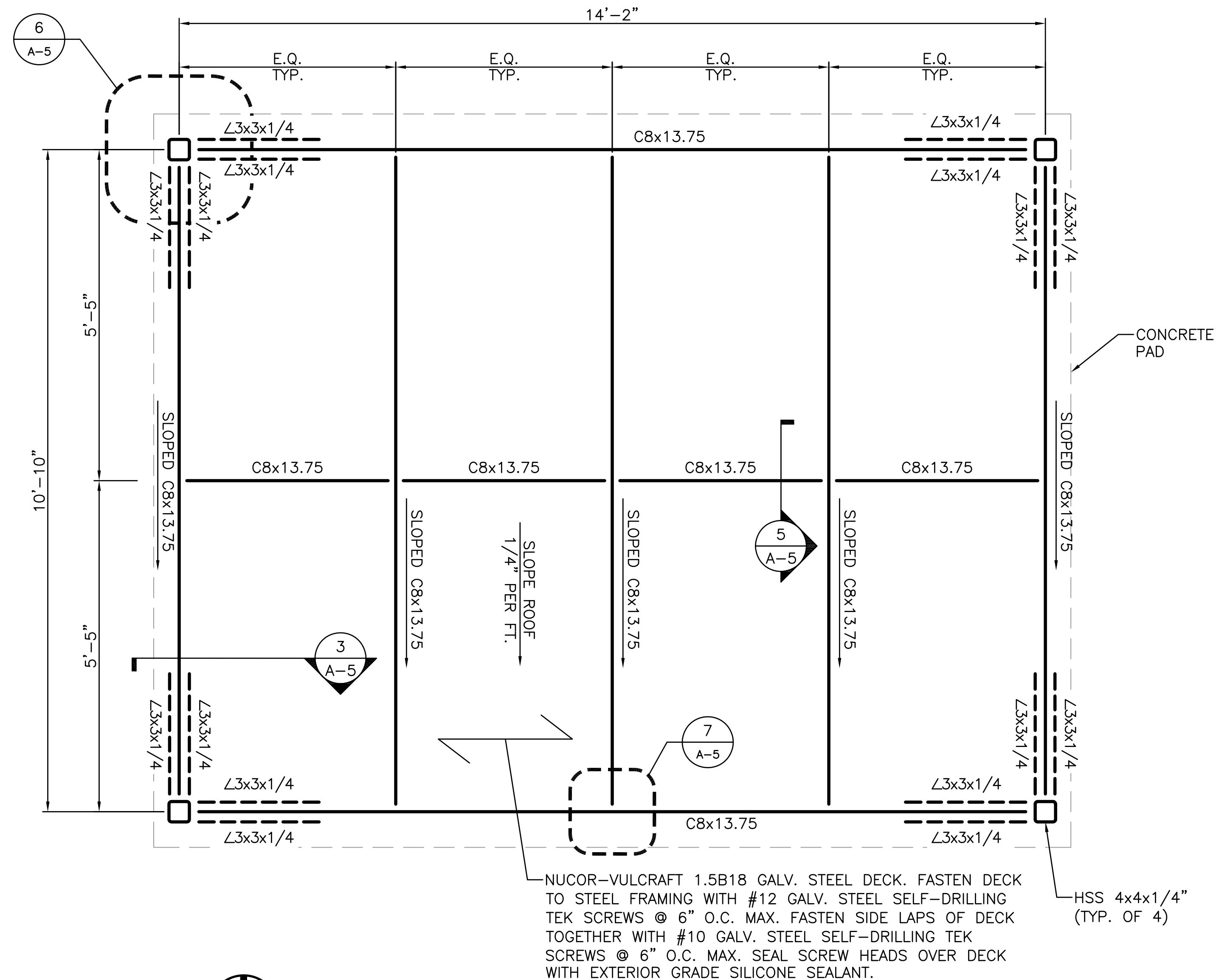
**3 CANOPY SECTION**  
 SCALE: N.T.S.



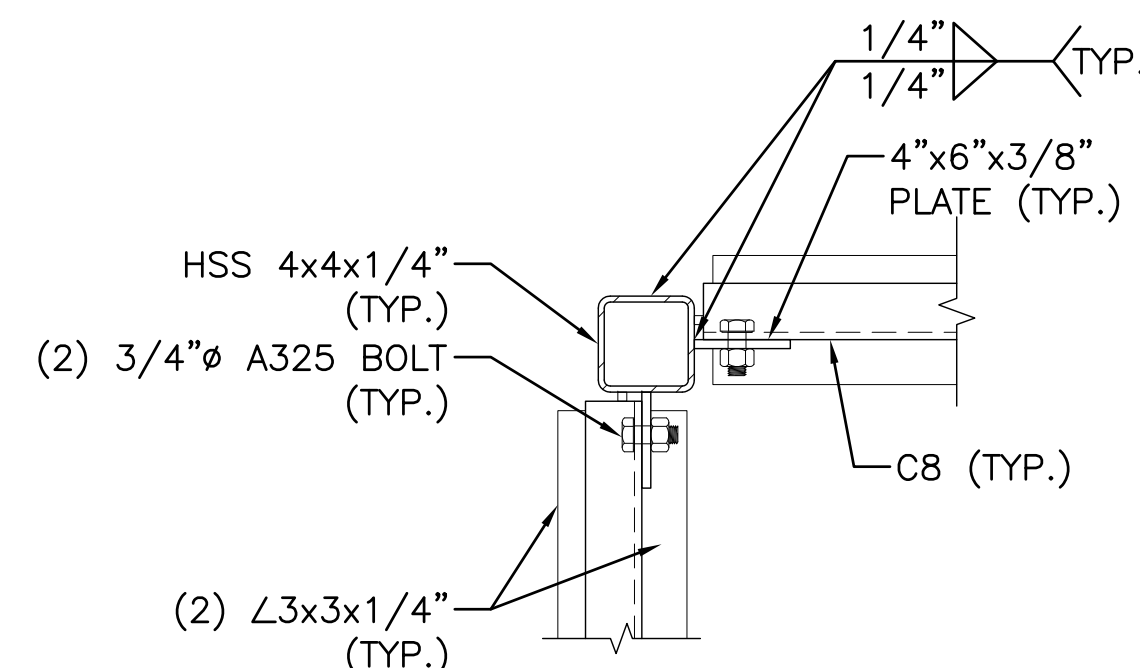
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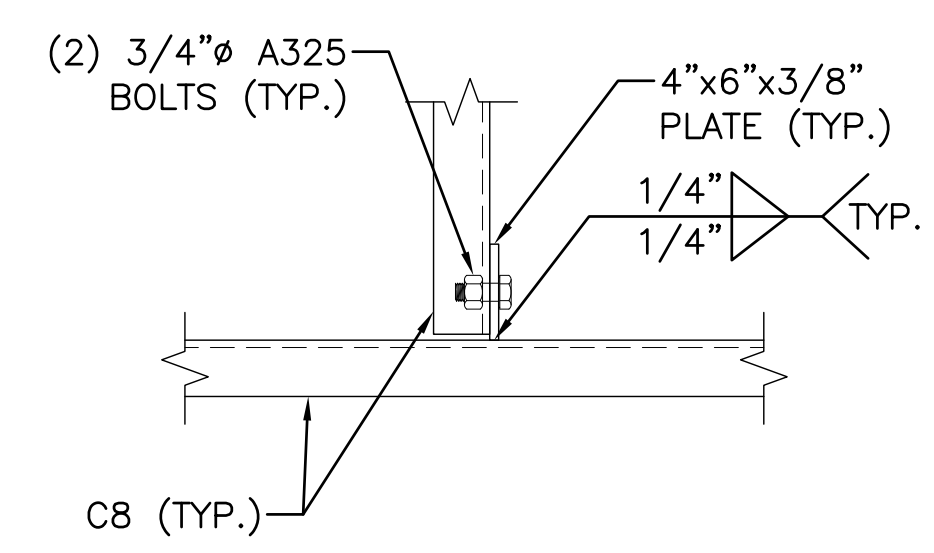
**5 CANOPY SECTION**  
 SCALE: N.T.S.



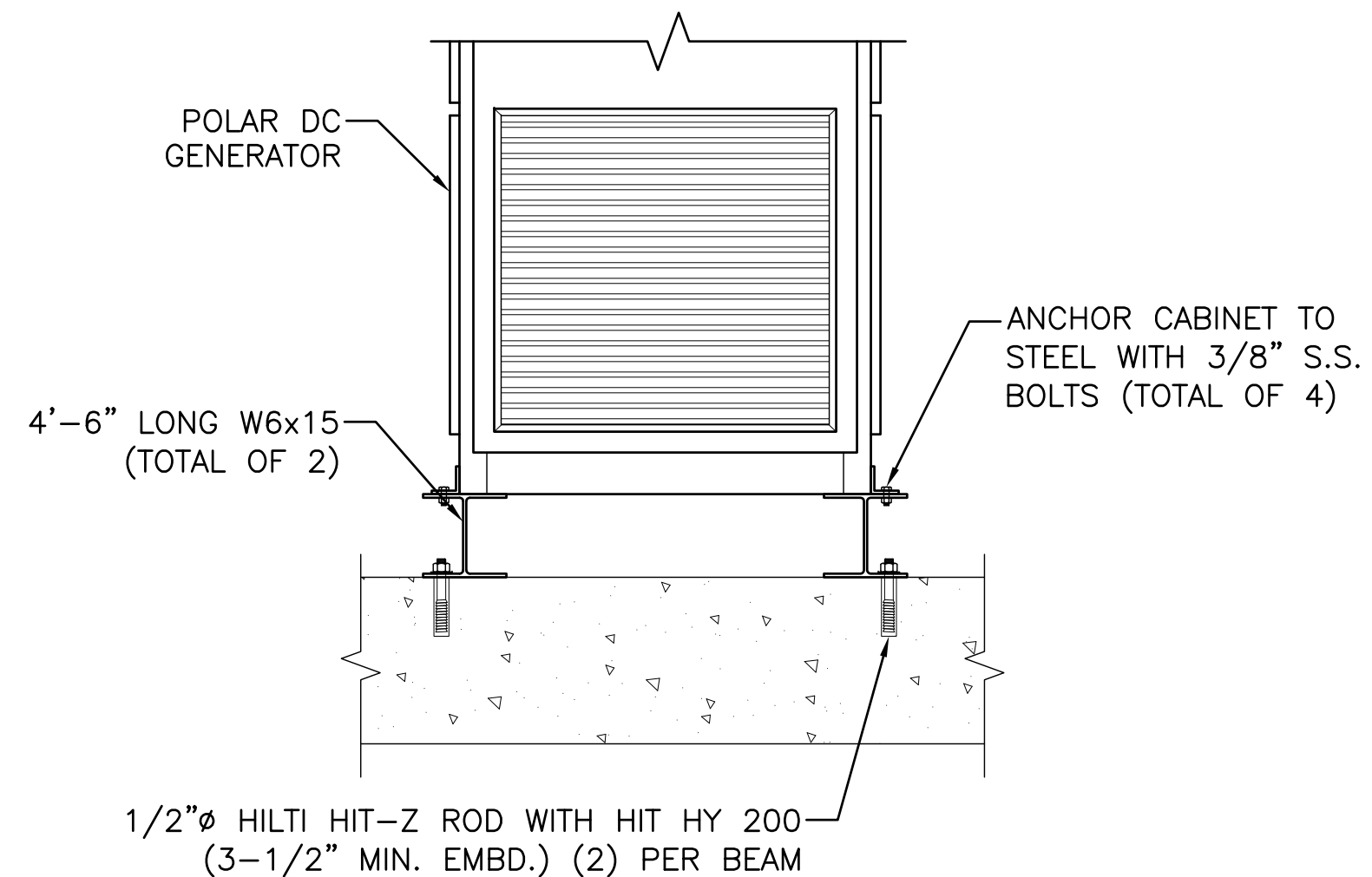
**2 CANOPY FRAMING PLAN**  
 SCALE: 3/4" = 1'-0"



**6 CANOPY SECTION**  
 SCALE: N.T.S.



**7 CANOPY SECTION**  
 SCALE: N.T.S.

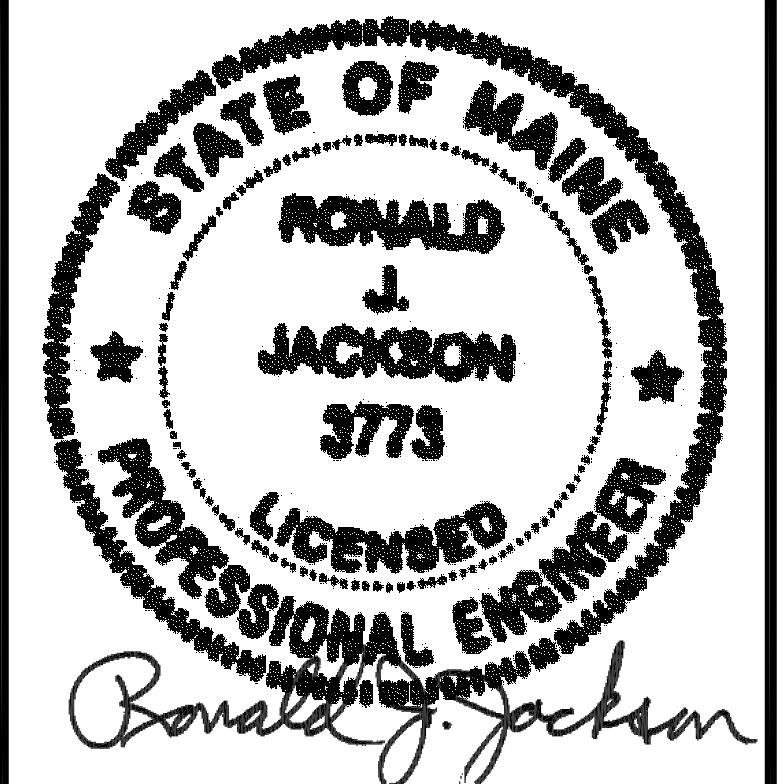


**8 GENERATOR SKID DETAIL**  
 SCALE: N.T.S.

APPLICANT:



CELLCO PARTNERSHIP d/b/a  
 VERIZON WIRELESS  
 118 FLANDERS ROAD, 3RD FLOOR  
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SHEET TITLE:

**EQUIPMENT CANOPY  
 DETAILS**

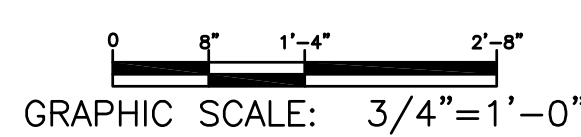
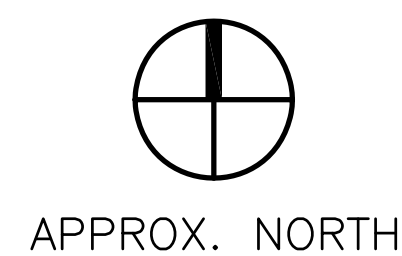
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CHECKED BY DATE:  
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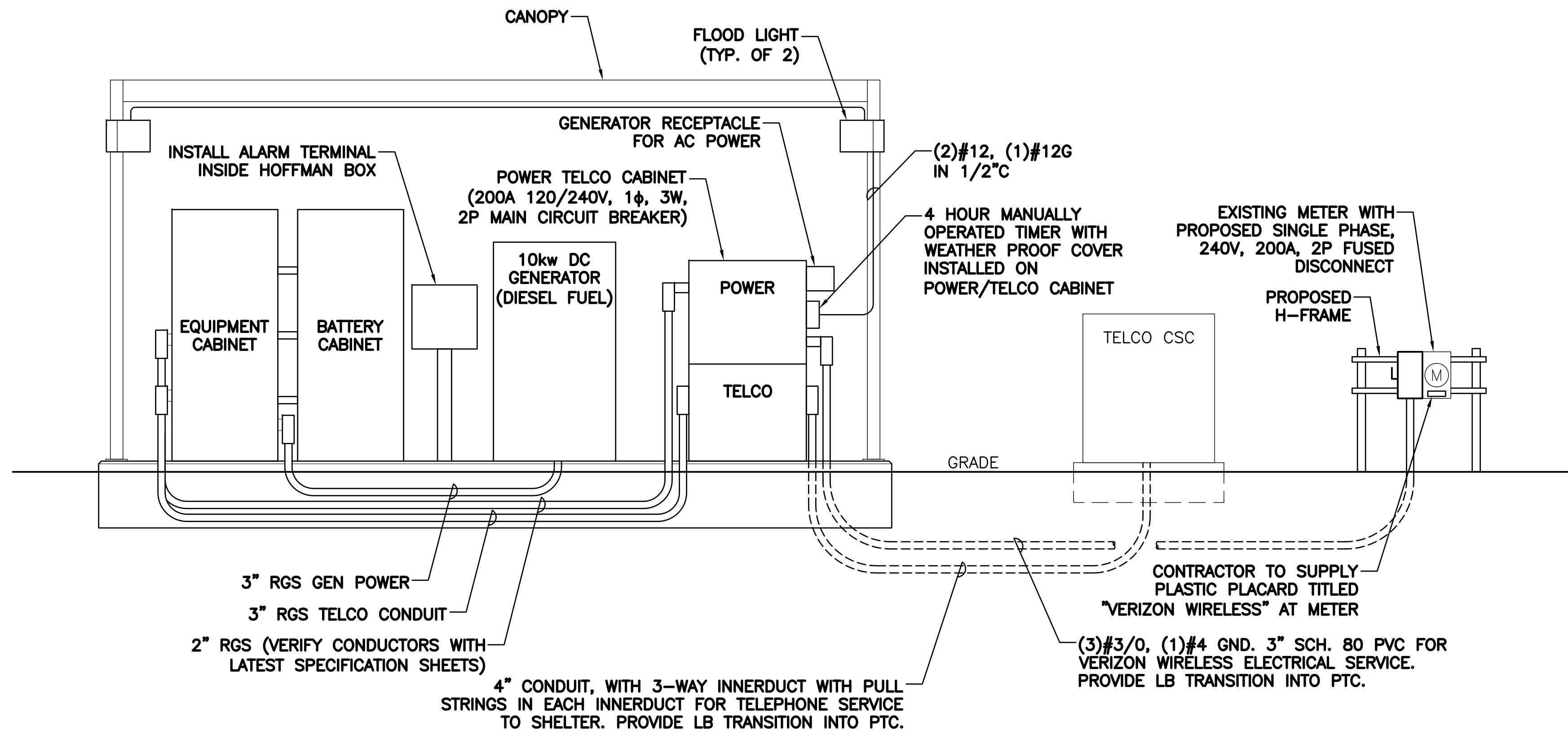
**VERIZON WIRELESS GENERAL ELECTRICAL NOTES:**

- SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT. CONTRACTOR IS RESPONSIBLE FOR ALL FIELD VERIFICATION.
- THESE PLANS ARE DIAGRAMMATIC ONLY AND NOT TO BE SCALED.
- UTILITY SERVICES SHOWN ARE PROPOSED, THE ELECTRIC CONTRACTOR SHALL COORDINATE EXACT TELEPHONE AND ELECTRIC SERVICE CONNECTION POINTS, PULL BOXES, ROUTING AND ASSOCIATED REQUIREMENTS WITH LOCAL UTILITY COMPANIES.
- VISIT THE SITE AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED. REPORT ADVERSE CONDITIONS IN WRITING. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS INCLUDING PREPARATORY WORK DONE BY OTHERS.
- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. ALL CONDUCTORS SHALL BE COPPER. ALL WIRING DEVICES AND EQUIPMENT SHALL BE SPECIFICATION GRADE AND UL LISTED AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, AND NBFU.
- ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED UNLESS OTHERWISE NOTED. ALL METALLIC CONDUITS SHALL BE PROVIDED WITH BONDING BUSHINGS. THE ENTIRE SYSTEM SHALL BE SOLIDLY GROUNDED USING COMPRESSION-TYPE CONDUIT FITTINGS ON CONDUITS AND PROPERLY BONDED GROUND CONDUCTORS. CRIMP-TYPE AND SET SCREW-TYPE CONDUIT FITTINGS ARE NOT ALLOWED.
- CONTRACTOR SHALL CARRY OUT THE WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY, LOCAL CODES, AND BY O.S.H.A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES AND SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE.
- ELECTRICAL CONTRACTOR SHALL GIVE NOTICES, FILE PLANS, OBTAIN ELECTRICAL PERMITS AND LICENSES, PAY REQUIRED FEES AND BACK CHARGES AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
- THE CONTRACTOR IS TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOK-UP COSTS SHALL BE PAID BY THE CONTRACTOR.
- THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANY AND FIELD CONSTRUCTION MANAGER. THE CONTRACTOR IS TO PROVIDE ALL NECESSARY SUPPORTS FOR CONDUIT RUNS ALONG WALL AND CEILING IN ACCORDANCE WITH SPECIFICATIONS. CONDUITS INDICATED SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAMS.
- LOCATION OF TENDONS AND RE-BARS ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT VIA X-RAY, OR OTHER DEVICES THAT CAN ACCURATELY LOCATE THE REINFORCING STEEL TENDONS.

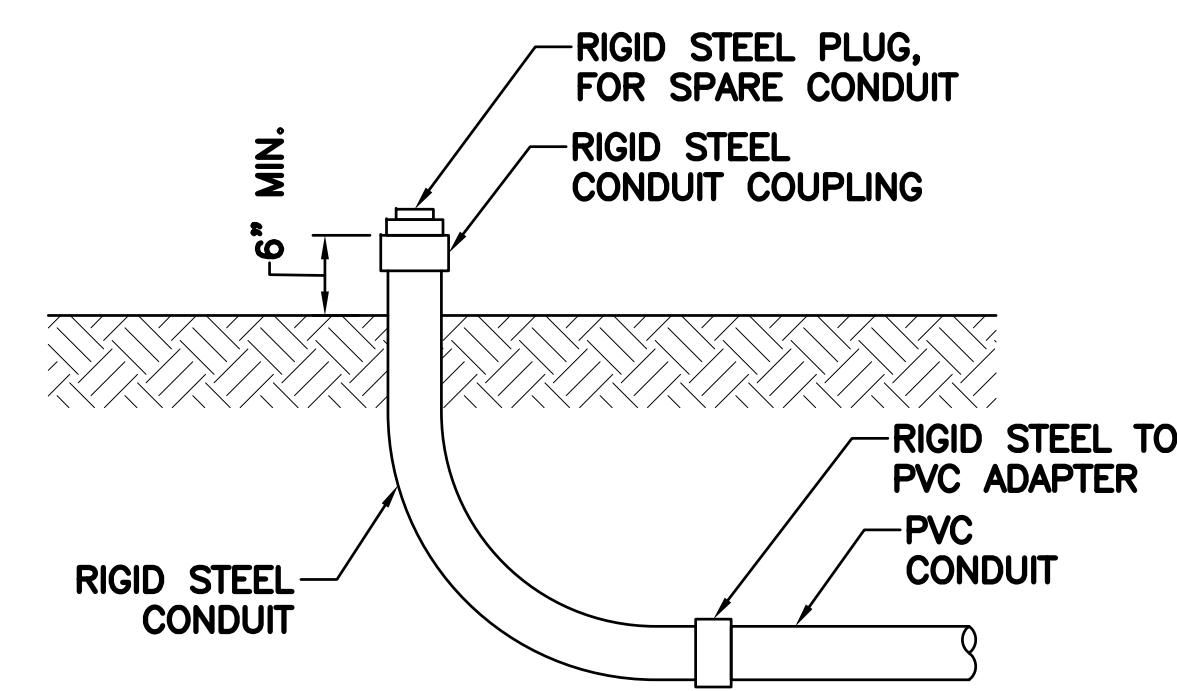
- UPON DRILLING HOLES INTO CONCRETE, WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS, ETC. IT MUST BE CLEARLY UNDERSTOOD THAT TENDONS AND REBARS WILL NOT BE DRILLED INTO, CUT, OR DAMAGED UNDER ANY CIRCUMSTANCES.
- PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH APPLICABLE LOCAL BUILDING CODES. USING U.L. RATED MATERIALS
- PROVIDE "FIRE FLANGE" RATED PENETRATIONS FOR PIPES AND CONDUITS THROUGH RATED WALL CONSTRUCTION. CAULK AS REQUIRED WITH 3M BRAND FIRE BARRIER CAULK OR APPROVED EQUAL.
- ALL WALL PENETRATIONS FOR TELCO, POWER, AND GROUNDING SHALL REQUIRE RIGID STEEL SLEEVES. ALL EXTERIOR WALL PENETRATIONS SHALL BE SILICONE SEALED.
- PATCH, REPAIR, AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
- ALL EXISTING UNDERGROUND LINES ON SITE SHALL BE LOCATED PRIOR TO CONSTRUCTION.
- ALL EMPTY CONDUITS SHALL HAVE A PULL WIRE OR ROPE INSTALLATION.
- ALL CIRCUIT BREAKERS, FUSES, AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED AND A MINIMUM OF 10,000 AIC.
- MATERIAL AND EQUIPMENT SHALL BE UL, NEMA, ANSI, IEEE, ADA AND CBM APPROVED FOR INTENDED SERVICE. INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND STATE ELECTRICAL CODES.
- ALL WIRING SHALL BE TYPE THWN RATED 75°C, 600V, WET OR DRY LOCATIONS. MINIMUM BRANCH CIRCUIT WIRING SHALL BE #12 AWG SOLID COPPER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL TELEPHONE COMPANY AS MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED SITE
- CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETED AND UNDAMAGED CONDITION.
- PROVIDE THE OWNER WITH ONE SET OF COMPLETE ELECTRICAL "AS BUILT" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS AND CIRCUITS, WITHIN 10 WORKING DAYS OF PROJECT COMPLETION.
- ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. FOR SPECIFIED AND UNSPECIFIED ORIGINAL MATERIALS AND EQUIPMENT SHALL BE TURNED OVER TO PROJECT MANAGER AT JOB COMPLETION.
- \* COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF NO LESS THAN ONE YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK MATERIAL, OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION AT THE EXPENSE OF THE CONTRACTOR.
- UPON COMPLETION OF WORK, CONDUCT CONTINUITY SHORT CIRCUIT, AND FALL-OFF-POTENTIAL GROUNDING TEST WITH WRITTEN REPORT SUBMITTED TO THE PROJECT MANAGER FOR REVIEW AND APPROVAL.
- CONTRACTOR SHALL CONTACT \*DIG SAFE\* (1-888-DIG-SAFE) PRIOR TO COMMENCEMENT OF WORK.

\* INDICATES BY NOTICE OF COMPLETION: SIGNED OFF BY CONSTRUCTION ENGINEER AND INCLUDES DATES ON ALL WARRANTY FORMS.

CONDUIT EXPANSION JOINTS SHALL BE INSTALLED ON ANY AND ALL CONDUITS ENTERING OR EXITING FROM UNDERGROUND.



1 POWER RISER DIAGRAM  
SCALE: N.T.S.



2 CONDUIT STUB-UP DETAIL  
SCALE: N.T.S.

**ABBREVIATIONS**

A	AMPERE
A.I.C.	AVAILABLE INTERRUPTING CURRENT
A.T.S.	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
RGS.	RIGID GALVANIZED STEEL
GND.	GROUND
KWH	KILOWATT HOUR
φ	PHASE
P	POLE
PVC	POLYVINYL CHLORIDE
SCA	AVAILABLE SHORT CIRCUIT CURRENT
TBCW	TINNED BARE COPPER WIRE
THHN	THERMOPLASTIC HIGH HEAT RESISTANT NYLON-COATED
THWN	THERMOPLASTIC HEAT & WATER RESISTANT NYLON-COATED
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
W	WIRE

**NOTE:**

- ALL POWER ROUTING SHALL BE COORDINATED WITH THE VERIZON WIRELESS CONSTRUCTION MANAGER AND THE SITE OWNER OR REPRESENTATIVE. ANY DISRUPTION OF ELECTRICAL SERVICE MUST BE APPROVED AND COORDINATED WITH THE SITE REPRESENTATIVE AND THE VERIZON WIRELESS CONSTRUCTION MANAGER.

PREPARED BY:

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WESTFORD, MA 01886  
1 (972) 755-1882

APPLICANT:

**verizon**

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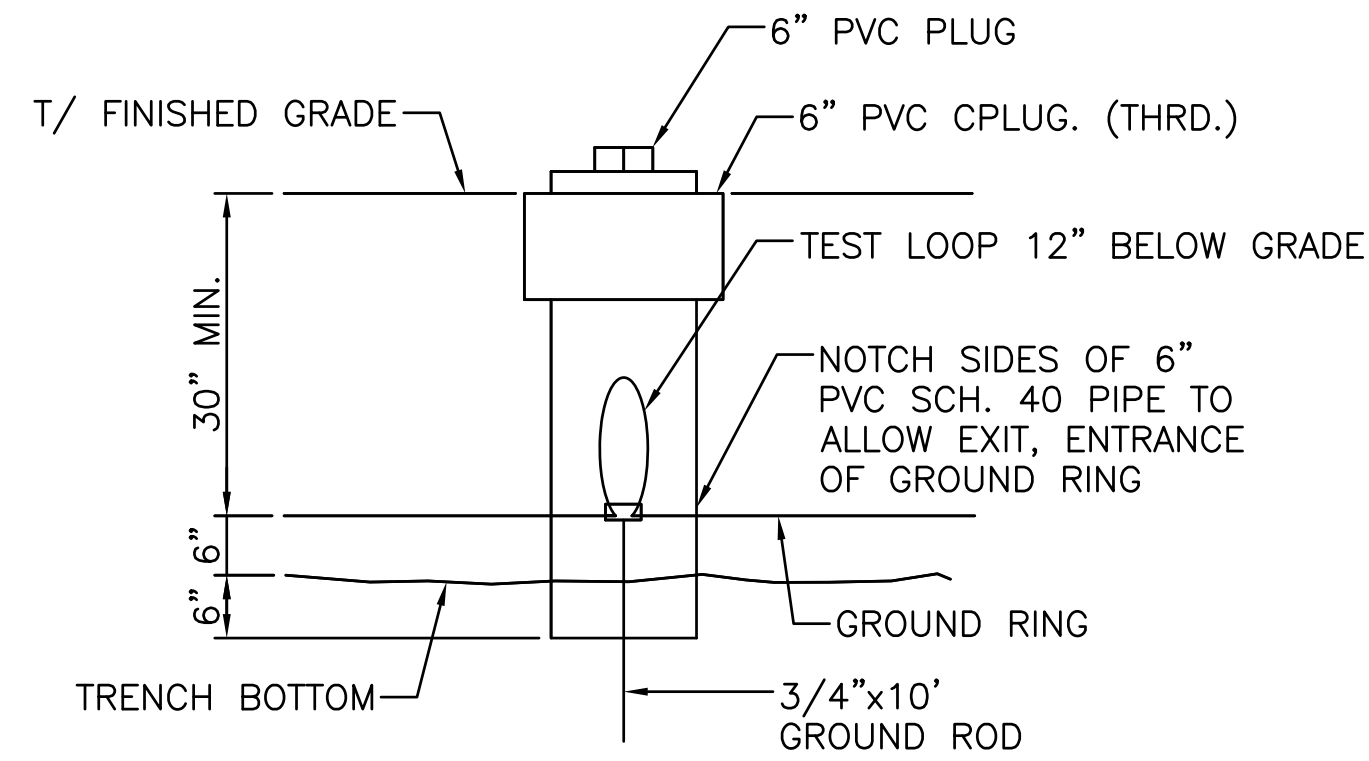
SHEET TITLE:  
**ELECTRICAL NOTES & POWER RISER DIAGRAM**

NEXIUS PROJ. NO: <b>VZ11509</b>	SHEET NUMBER: <b>E-1</b>
CHECKED BY: MS	
CHECKED BY DATE: 01/12/16	

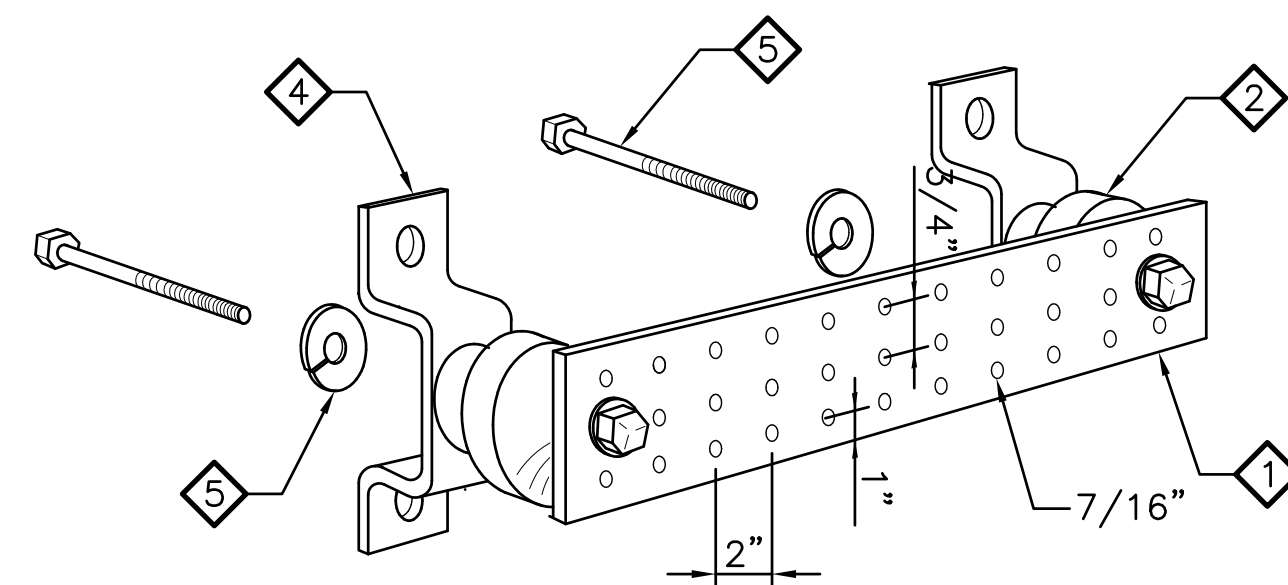


GROUNDING NOTES

- ALL ELECTRICAL AND GROUNDING AT THE SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE, (NEC) NFPA 70, (NATIONAL FIRE PROTECTION ASSOCIATION).
- ALL GROUND WIRE SHALL BE INSULATED GREEN COPPER #2 AWG UNLESS OTHERWISE NOTED.
- ALL GROUND WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
- ELECTRICAL CONTRACTOR SHALL COORDINATE CONNECTIONS TO EXISTING GROUND ELECTRODE WITH SITE CONSTRUCTION MANAGER.
- EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MIGB) WITH #2 AWG INSULATED STRANDED COPPER WIRE. EQUIPMENT CABINETS SHALL EACH HAVE (2) CONNECTIONS, UNLESS NOTED OTHERWISE.
- PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE (TYPICAL FOR FOUR MOUNTING PIPES PER SECTOR).
- ANTENNA GROUND KITS SHALL BE FURNISHED BY VERIZON WIRELESS AND INSTALLED BY ELECTRICAL CONTRACTOR.
- THE GROUND SYSTEM SHALL BE TESTED AND SHALL HAVE A RESISTANCE OF 5 OHMS OR LESS.
- ALL RECEPTACLES AND EQUIPMENT CIRCUITS SHALL BE GROUNDED USING A FULL-SIZE EQUIPMENT GROUNDING CONDUCTOR RUN WITH THE CURRENT CONDUCTORS
- ALL #6 STRANDED COPPER WITH GREEN INSULATION TO BE ATTACHED WITH CRIMPED DOUBLE LUG BOLTED ATTACHED WITH CAD PLATED BOLTS AND STAR WASHERS (TYPICAL). NO OX-GREASE
- IF THE AC PANEL IN THE POWER CABINET IS WIRED AS SERVICE ENTRANCE THE AC SERVICE GROUND CONDUCTOR SHALL BE CONNECTED TO THE GROUND ELECTRODE SYSTEM. WHEN THE AC PANEL IN THE POWER CABINET IS CONSIDERED A SUB-PANEL, THE GROUND WIRE SHALL BE INSTALLED IN THE AC POWER CONDUIT, THE INSTALLATION SHALL BE PER LOCAL AND NATIONAL ELECTRIC CODE (NFPA-70)
- EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL. OTHERWISE, THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE-2 HOLES, LONG BARREL LUGS OR DOUBLE CRIMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH ANTIOXIDANT (COPPER SHIELD) BEFORE MAKING THE CRIMP CONNECTIONS. THE MANUFACTURER'S TORQUING RECOMMENDATIONS ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS ARE TO BE FOLLOWED.
- THE ANTENNA CABLES SHALL BE GROUNDED AT THE TOP AND BOTTOM OF THE VERTICAL RUN FOR LIGHTNING PROTECTION. THE ANTENNA CABLE SHIELD SHALL BE BONDED TO A COPPER GROUND BUS AT THE LOWERMOST POINT OF A VERTICAL RUN JUST BEFORE IT BEGINS TO BEND TOWARD THE HORIZONTAL PLANE. WIRE RUNS TO GROUND SHALL BE KEPT AS STRAIGHT AND SHORT AS POSSIBLE. THE ANTENNA CABLE SHIELD SHALL BE GROUNDED JUST BEFORE ENTERING THE MINICELL. ANY ANTENNA CABLES OVER 200 FEET IN LENGTH SHALL ALSO BE EQUIPPED WITH ADDITIONAL GROUNDING AT MID-POINT.
- THE MASTER GROUND BUS (MGB) SHALL BE MADE OF BARE 1/4"x4" COPPER (FOR OUTDOOR APPLICATIONS. IT SHALL BE TINNED COPPER) AND LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICALLY INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
- GROUND CONNECTIONS: CLEAN SURFACES THOROUGHLY BEFORE APPLYING GROUND LUGS OR CLAMPS. IF SURFACE IS COATED, THE COATING MUST BE REMOVED DOWN TO THE BARE METAL. AFTER THE COATING HAS BEEN REMOVED, APPLY A NON-CORROSIVE APPROVED COMPOUND TO THE CLEANED SURFACE AND INSTALL LUGS OR CLAMPS. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH "GALVAMOX", OR EQUAL.

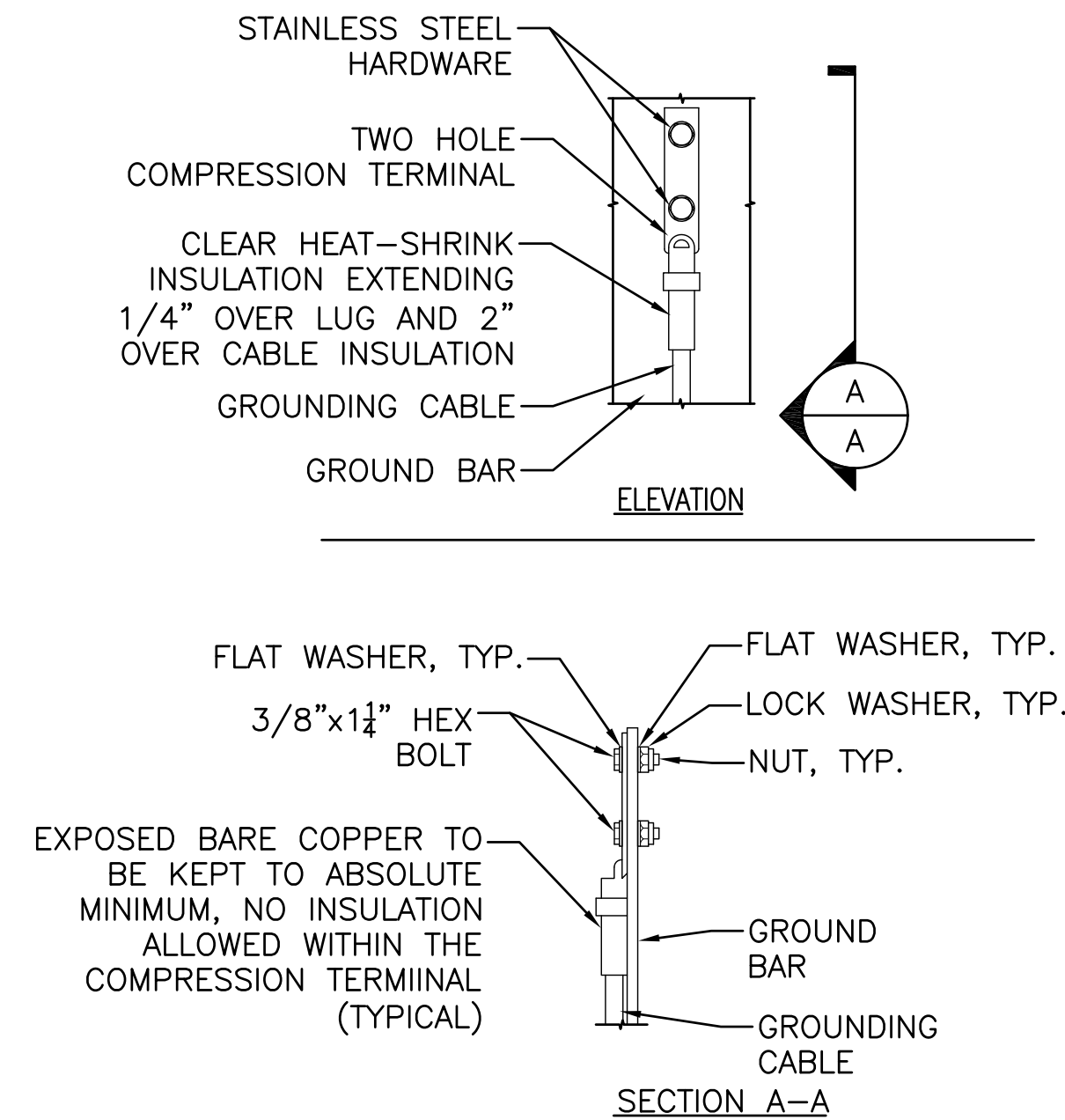


1 GROUND TEST WELL DETAIL  
N/A



LEGEND	
1	HOT-DIPPED GALV. STEEL GROUND BAR, 1/4"x4"x24", HOLE CENTER TO MATCH NEMA DOUBLE LUG CONFIGURATION
2	INSULATORS
3	3/8" LOCK WASHERS
4	WALL MOUNTING BRACKET
5	3/8"-11x1" H.H.C.S. BOLTS

2 STANDARD GROUND BAR DETAIL  
N/A



NOTE:

- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
- CADWELD DOWNLOADS FROM UPPER EGB, LOWER EGB AND MGB.

3 GROUND BAR CONNECTIONS DETAIL  
N/A

PREPARED BY:

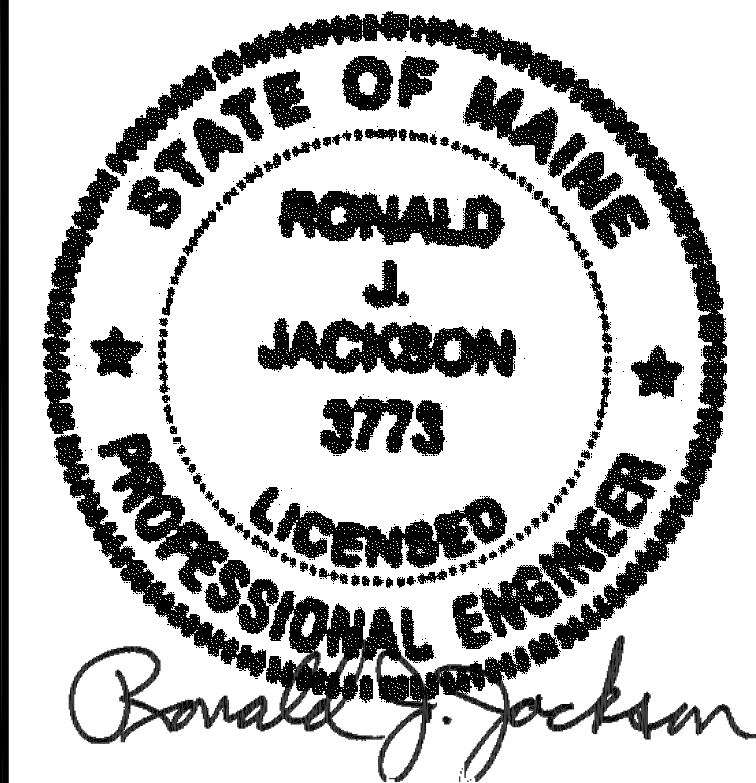
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SHEET TITLE:

**GROUNDING DETAILS  
& NOTES**

NEXIUS PROJ. NO:  
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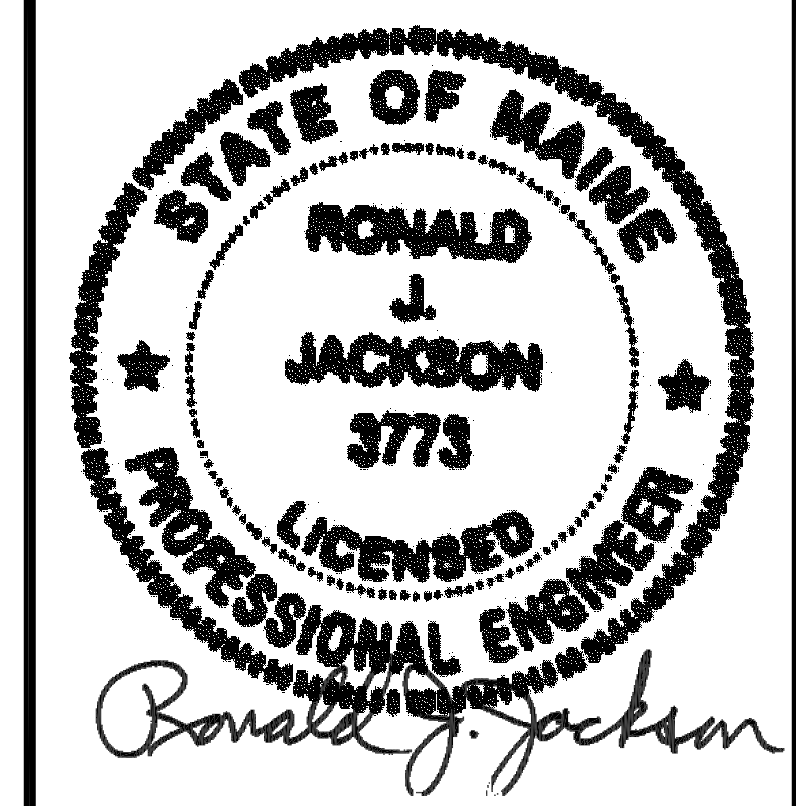
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SHEET TITLE:

**GROUNDING PLAN,  
DETAILS & NOTES**

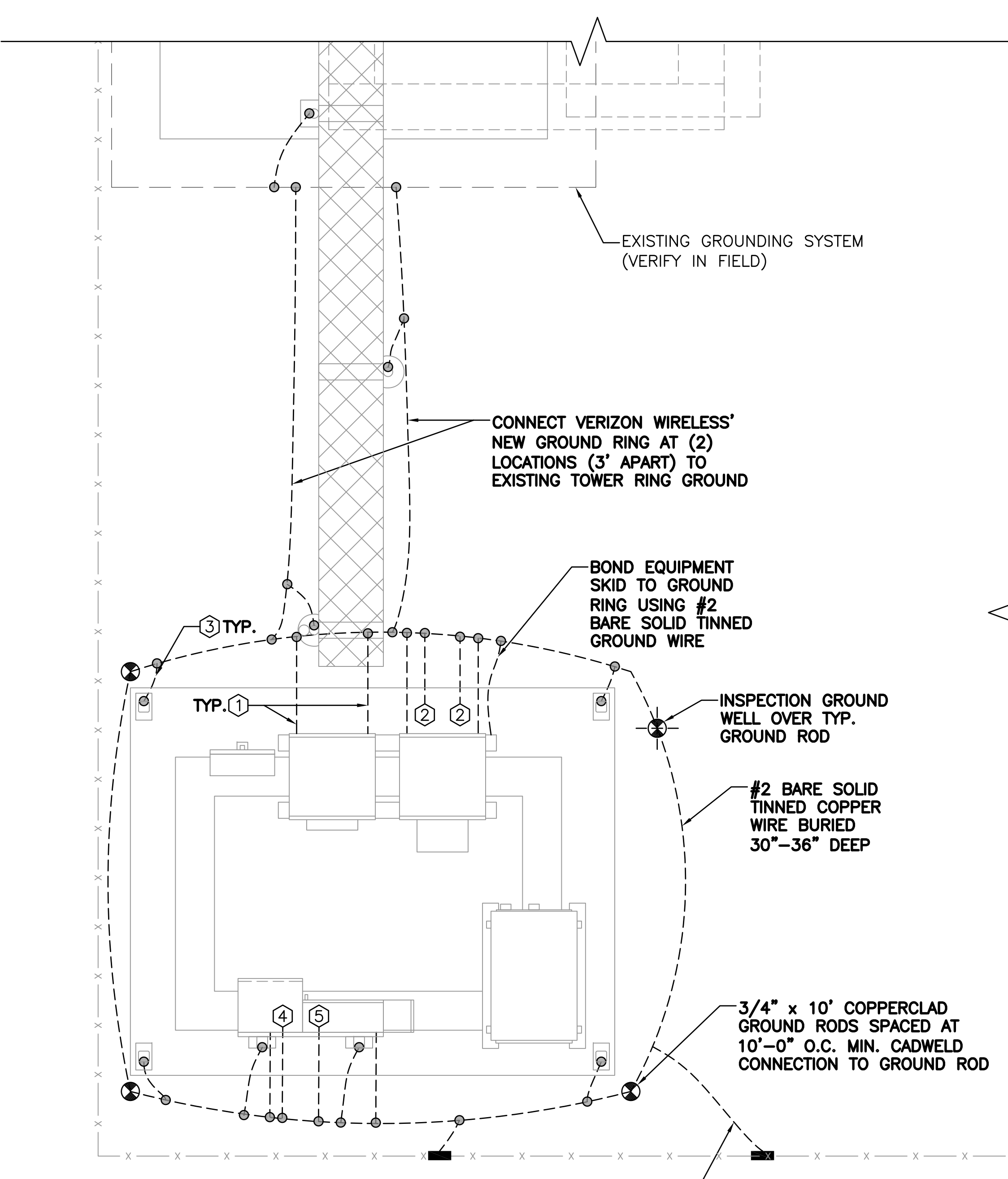
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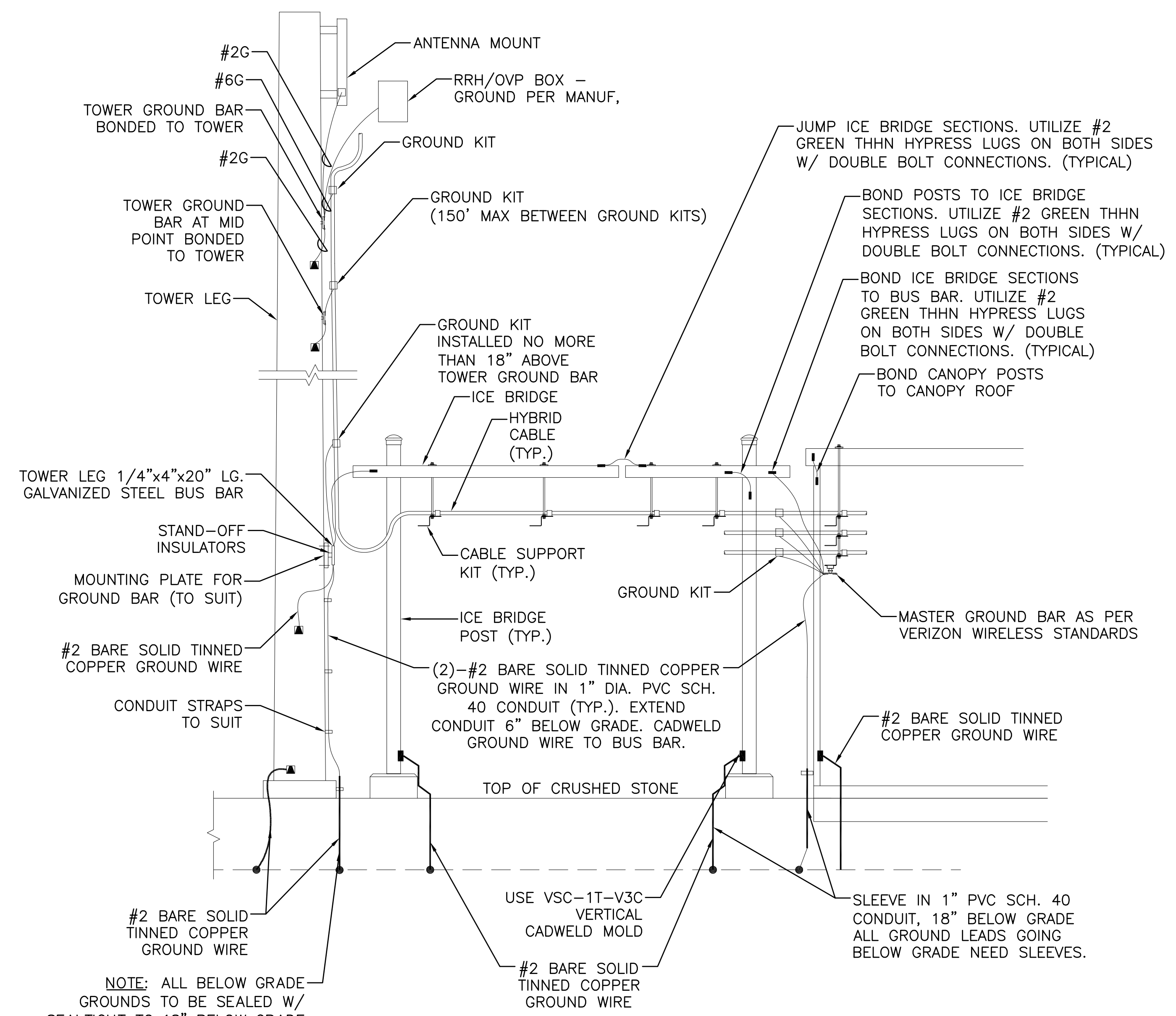
**1 GROUNDING PLAN**  
SCALE: N.T.S.

**GROUNDING CONNECTIONS**

- ① EQUIPMENT CABINET GROUND WIRE, #2 BARE SOLID TINNED COPPER GROUND WIRE, (2) PER CABINET. FASTENED TO CONCRETE PAD.
- ② MASTER BUS BAR, (2) #2 BARE SOLID TINNED COPPER GROUND WIRE.
- ③ ICE BRIDGE POST & CANOPY POST GROUND, #2 BARE SOLID TINNED COPPER GROUND WIRE.
- ④ INTERIOR TELCO CABINET EGB, #2 BARE SOLID TINNED COPPER GROUND WIRE
- ⑤ MAIN DISCONNECT SWITCH GROUND #2 BARE TINNED COPPER GROUND WIRE.

- LEGEND**
- ⊗ 3/4" X 10' COPPERCLAD GROUND ROD SPACED AT 10' O.C. MIN. CADWELD CONNECTION TO GROUND ROD
  - VERTICAL CADWELD MOLD
  - CADWELD CONNECTION
  - ⊕ INSPECTION WELL SEE DETAIL DWG
  - ▲ CADWELD CONNECTION TO TOWER

- NOTES**
1. ALL ENDS OF CONDUIT SHALL BE SEALED WITH A FOAM SEALANT AFTER WIRES AND CABLES ARE INSTALLED.
  2. ALL EQUIPMENT GROUND LEADS, CORNER GROUNDS, EXTERIOR GROUND BAR, TO BE #2 TINNED SOLID TO GROUND RING.
  3. IF EXISTING GROUND RING IS ACCIDENTALLY BROKEN DURING CONSTRUCTION IT SHALL BE RECONNECTED VIA CADWELD.



- NOTES:**
1. CONTRACTOR SHALL ADD ADDITIONAL GROUND RODS & CONDUCTORS OR APPROVED GROUND ENHANCING MATERIAL TO ACHIEVE LESS THAN 5 OHMS RESISTANCE TO GROUND.
  2. MAXIMUM VERTICAL/HORIZONTAL DISTANCE BETWEEN CABLE GROUNDING KITS SHALL NOT EXCEED 150 FEET. INSTALL ADDITIONAL KITS AS REQUIRED BY FIELD CONDITIONS.
  3. GROUND ALL EQUIPMENT AT ANTENNAS AS REQUIRED BY MANUFACTURER.

**2 GROUNDING RISER DIAGRAM**  
SCALE: N.T.S.