

Pre-Bid Meeting for Contract R-44722

Richard Gilyeat – Crawfordsville District Senior Project Manager

Ben Carnahan – AECOM Indiana Transportation Lead

Greg Reilly – AECOM Electrical Engineering Manager

7/27/2023

Agenda

- Welcome (Richard Gilyeat, INDOT)
- Des. 2201174, DWPT Pilot Overview (Ben Carnahan, AECOM)
- Des. 2201174, DWPT Pilot Electrical (Greg Reilly, AECOM)
- Q & A

DWPT Pilot – Overview

(Ben Carnahan, AECOM)

Contract R-44722 Details

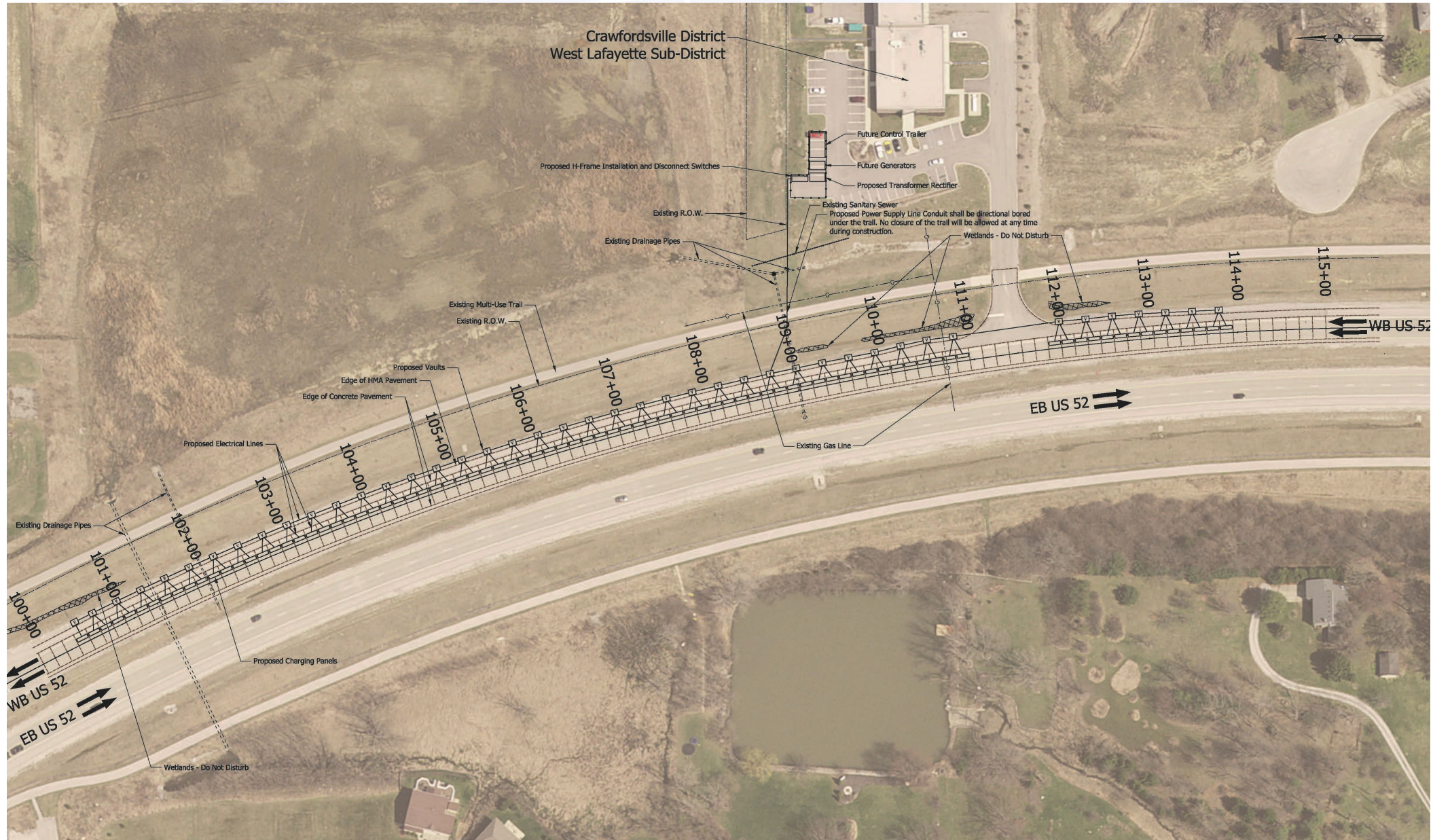
- Des Number - 2201174
- Letting Date – 8/9/2023
- Project Description and Intent – Dynamic Wireless Power Transfer (DWPT) System Test Site Installation. The intent of this project is to test the constructability, functionality, and capabilities of the DWPT system and specially equipped EVs designed to receive its power.

Contract R-44722 Location

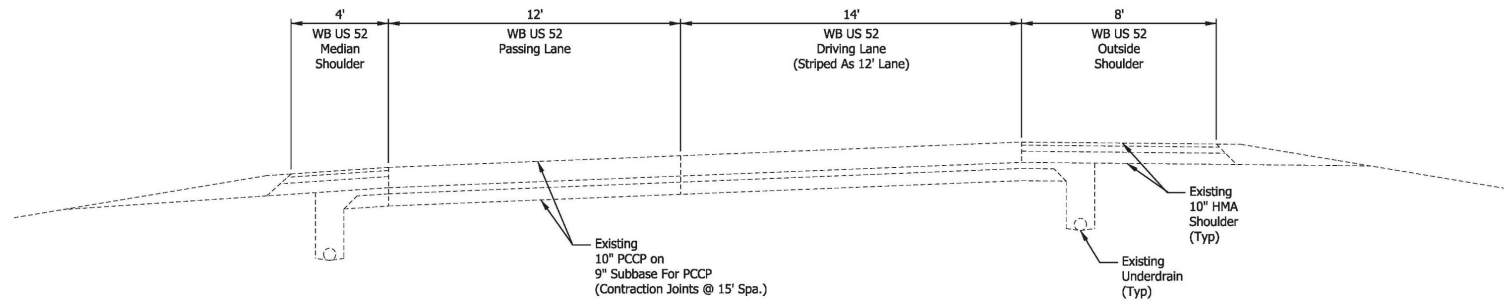
- On US 52 from 5.17 Miles to 5.42 Miles North of SR 25 in West Lafayette in Tippecanoe County (WB/NB US 52 between Lindberg Rd & Cumberland Ave)



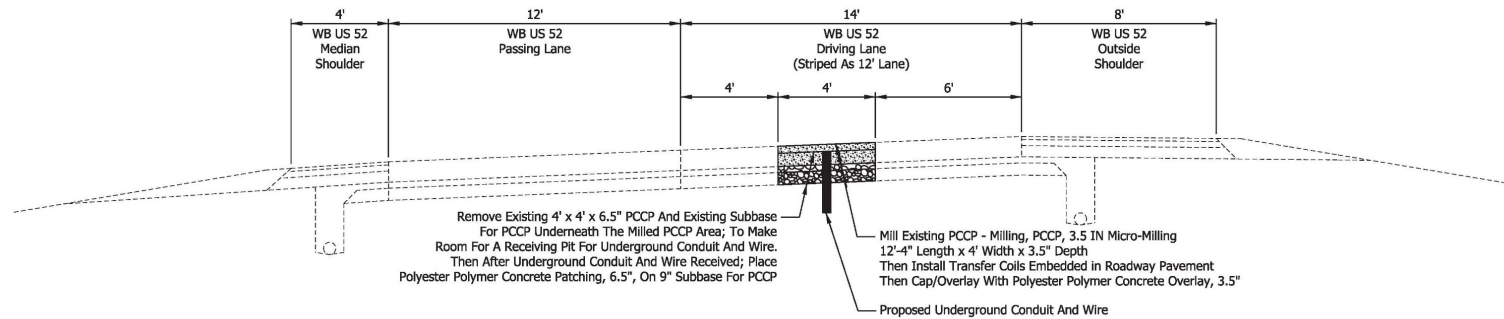
Contract R-44722 Site Plan



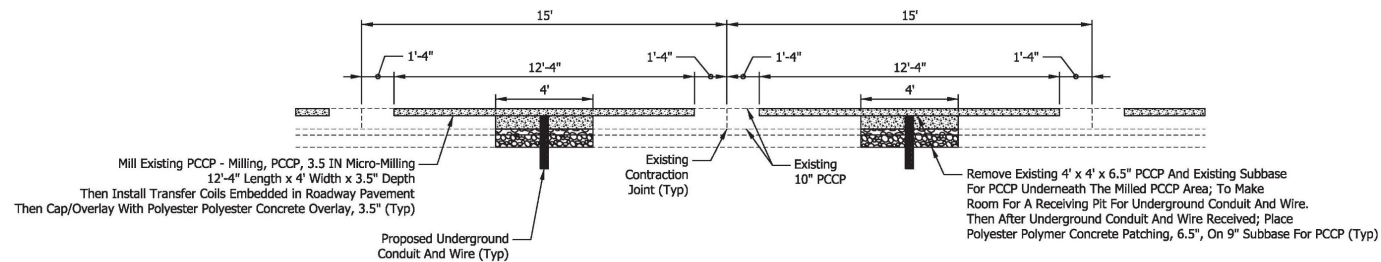
Contract R-44722 Typical Sections



Existing Typical Section - WB US 52
Sta. 100+00 to Sta. 115+00 Line "A"

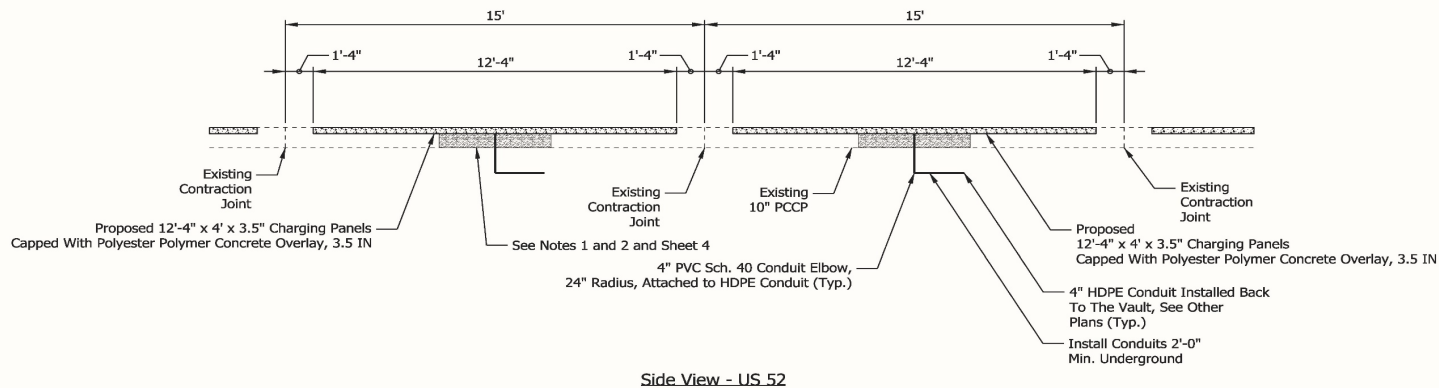
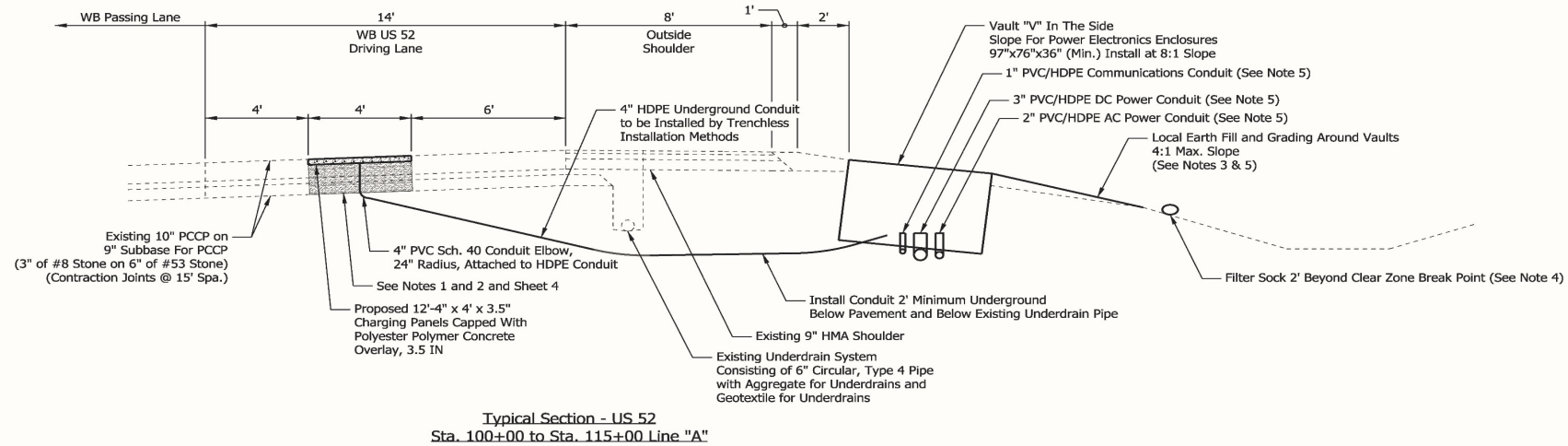


Proposed Typical Section - WB US 52
Sta. 100+00 to Sta. 115+00 Line "A"



Proposed Side View - WB US 52

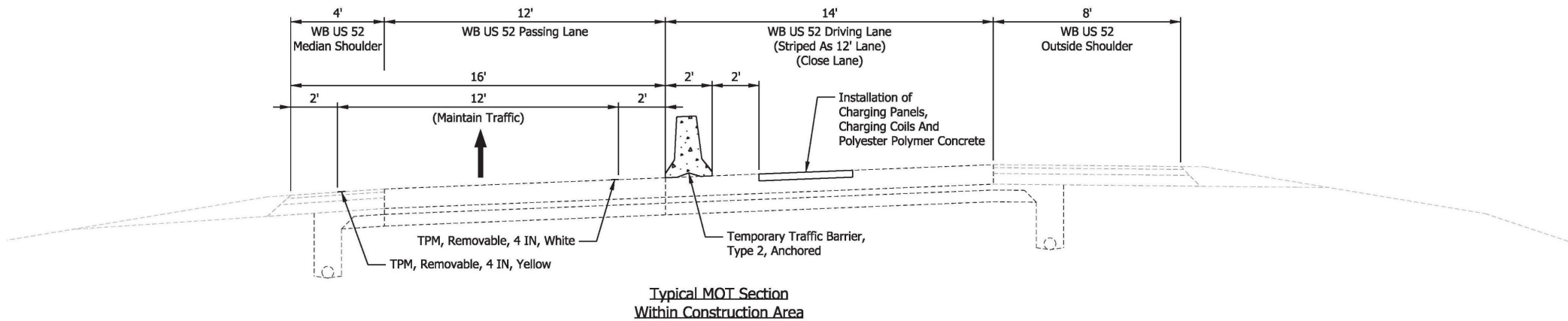
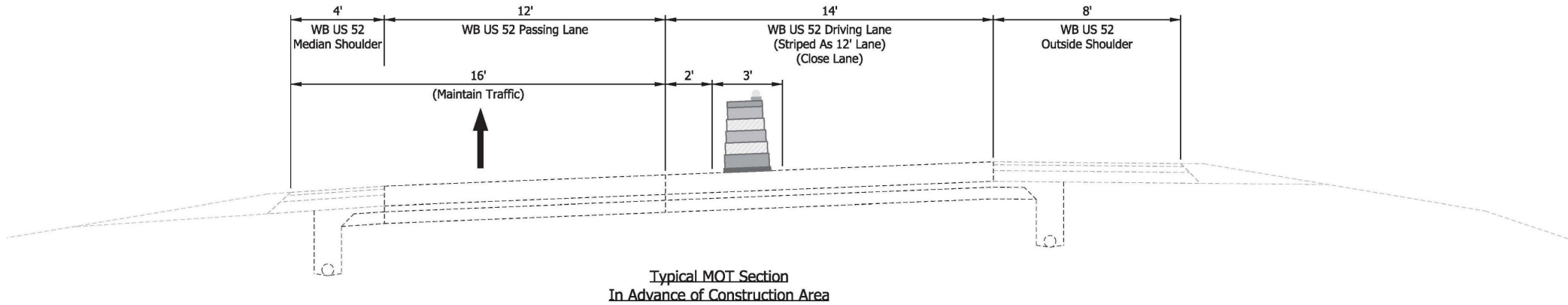
Contract R-44722 Electrical Typical Sections



Notes:

1. The Contractor shall saw cut and remove approximately 4'x4' of concrete pavement for the directional boring receiving pit. Vacuum or traditional excavation shall be used to remove the subbase stone and earth in the receiving pit. All the work for the 4'x4' receiving pit shall be included in the cost of the pipe installation.
2. After the conduit is installed the contractor shall replace the earth and subbase material in kind. The earth and subbase shall be compacted per the Standard Specifications.
3. Grading at the vaults shall be 4:1 maximum ahead and back of the vaults. The grading shall not extend into or beyond existing ditches or previously identified wetlands. Excavation and grading shall be included in the cost of the vault.
4. Provide temporary inlet protection for any inlets, pipes, or underdrain outlets within the project area.
5. Provide fertilizer, temporary mulch and temporary seeding for temporary measures for disturbed areas.

Contract R-44722 MOT Typical Sections

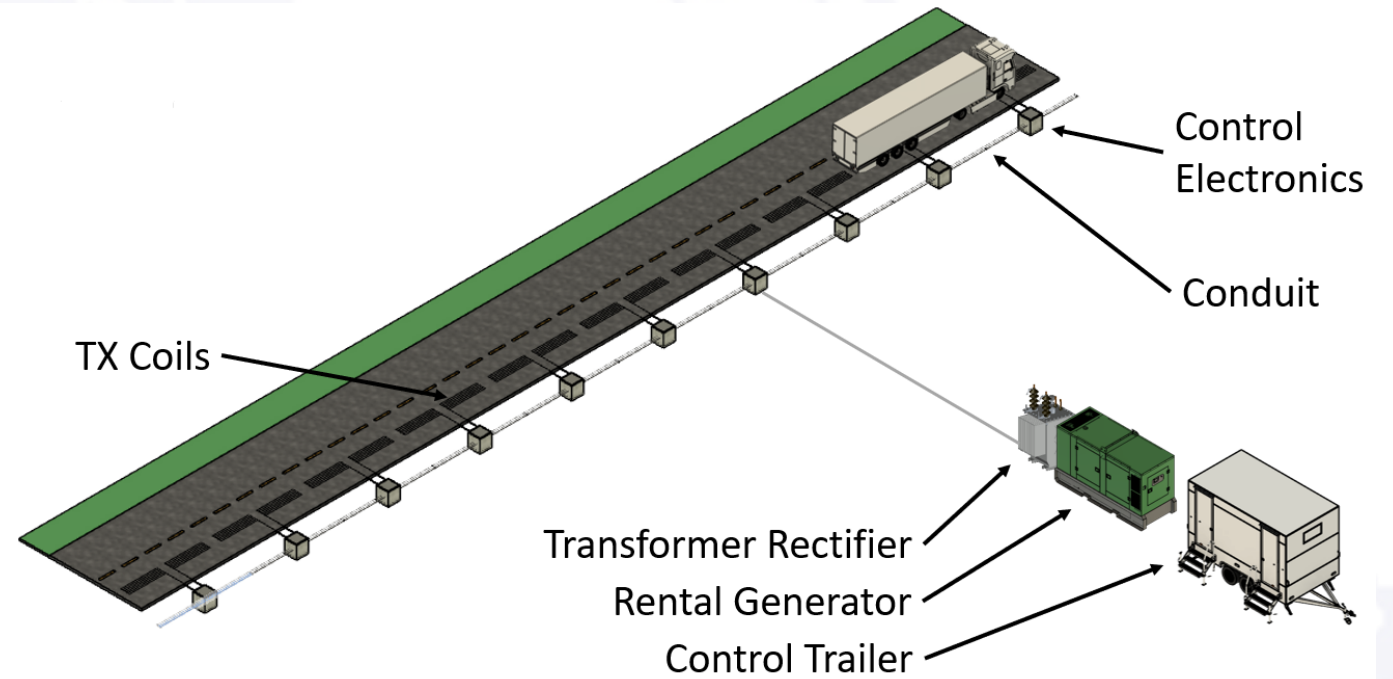


DWPT Pilot – Electrical

(Greg Reilly, AECOM)

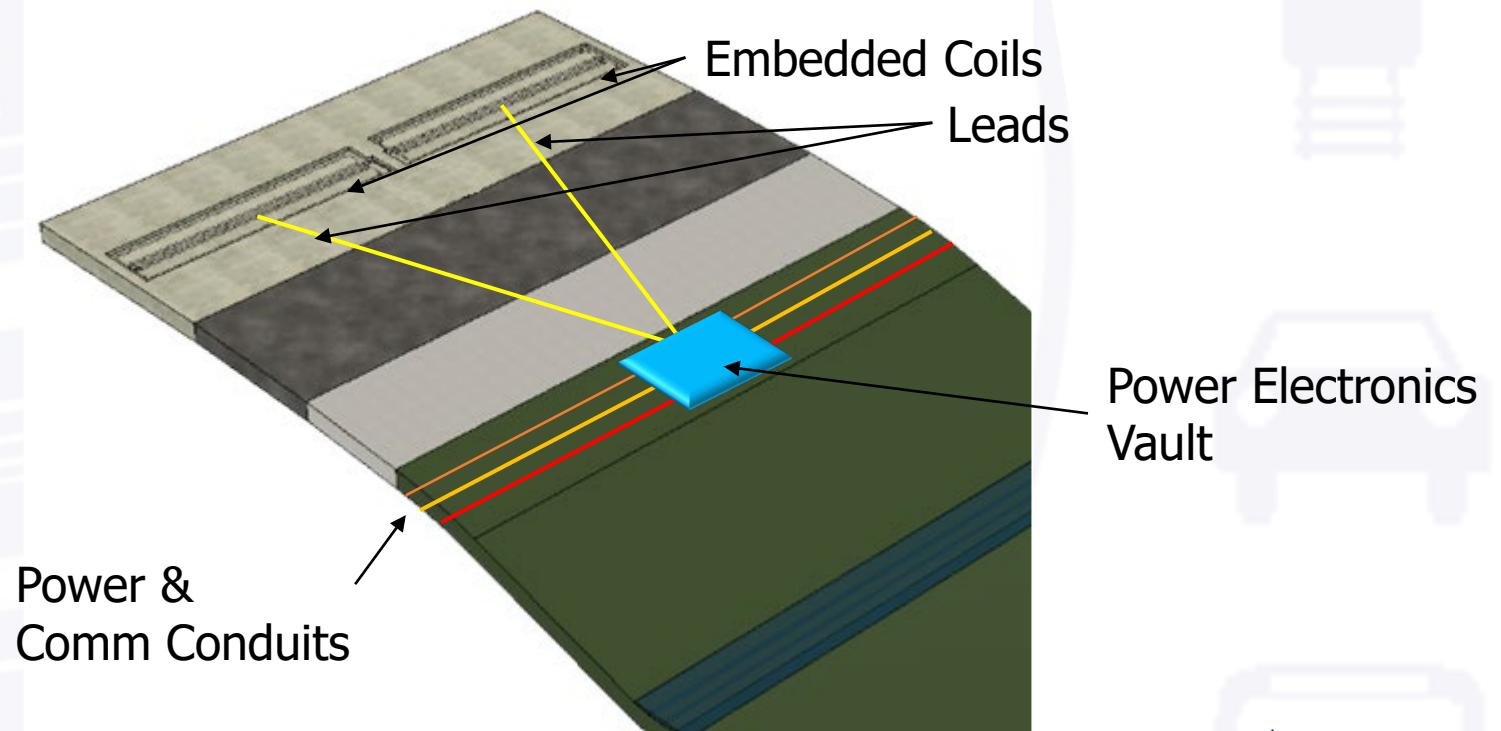
DWPT Electrical

- Charge vehicle moving along roadway
- Deliver up to 230 kW per pad
- Control trailer managing system
- Portable generators
- AC to DC transformer/rectifier



DWPT Electrical

- Embedded coils in pavement
- Vaults for power electronics
- DC & AC Power distribution
- CAT6 & MMF communications



DWPT Components by Contractor

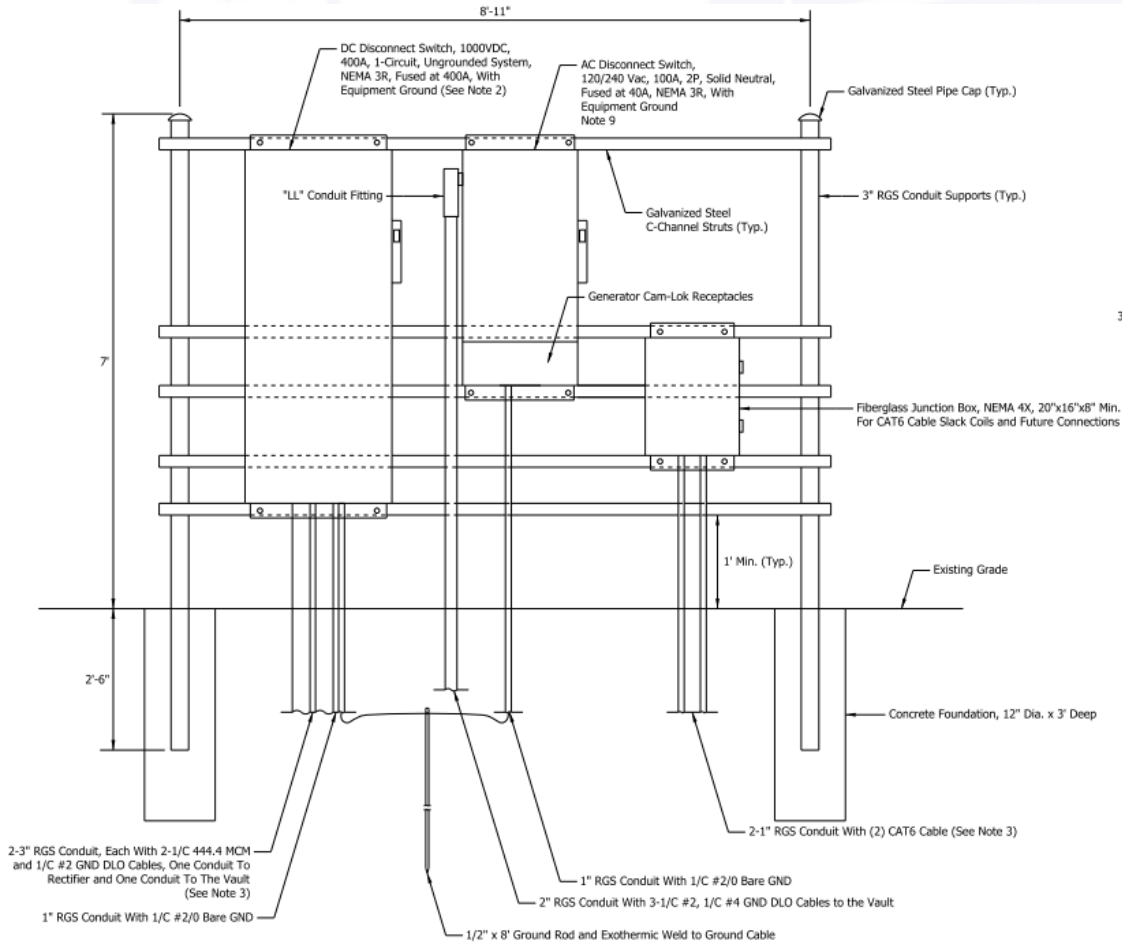
- Portable generators (only for acceptance testing)
- AC to DC transformer rectifier unit & concrete pad
- Disconnect switches/junction box/H-frame rack
- DC & AC feeder cables
- CAT6 & MMF cables
- Litz wire (for embedded coils)
- PVC/HDPE Conduits
- Polymer concrete vaults
- Inverters
- Transmitter compensation units
- Grounding

DWPT Components by Others

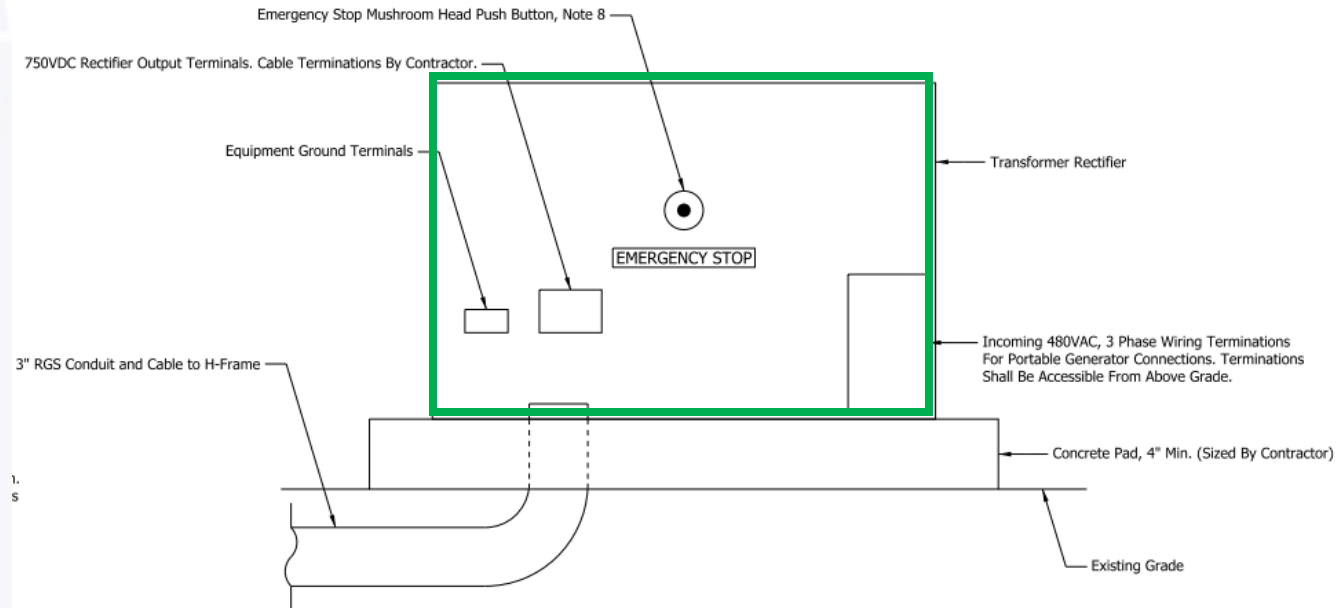
- Control trailer
- Portable generators (long term for pilot)
- Mobile test apparatus/vehicle
- Wiring from trailer to H-frame/transformer rectifier unit

DWPT Components

-Disconnect switches/junction box/
H-frame rack



-AC to DC transformer rectifier unit
-Outdoor rated



DWPT Components

-DC & AC feeder DLO cables

-750VDC & 120VAC operating Voltages

-CAT6 & MMF cables

2kV HDFPC-DLO, RHH/RHW-2 & RW90

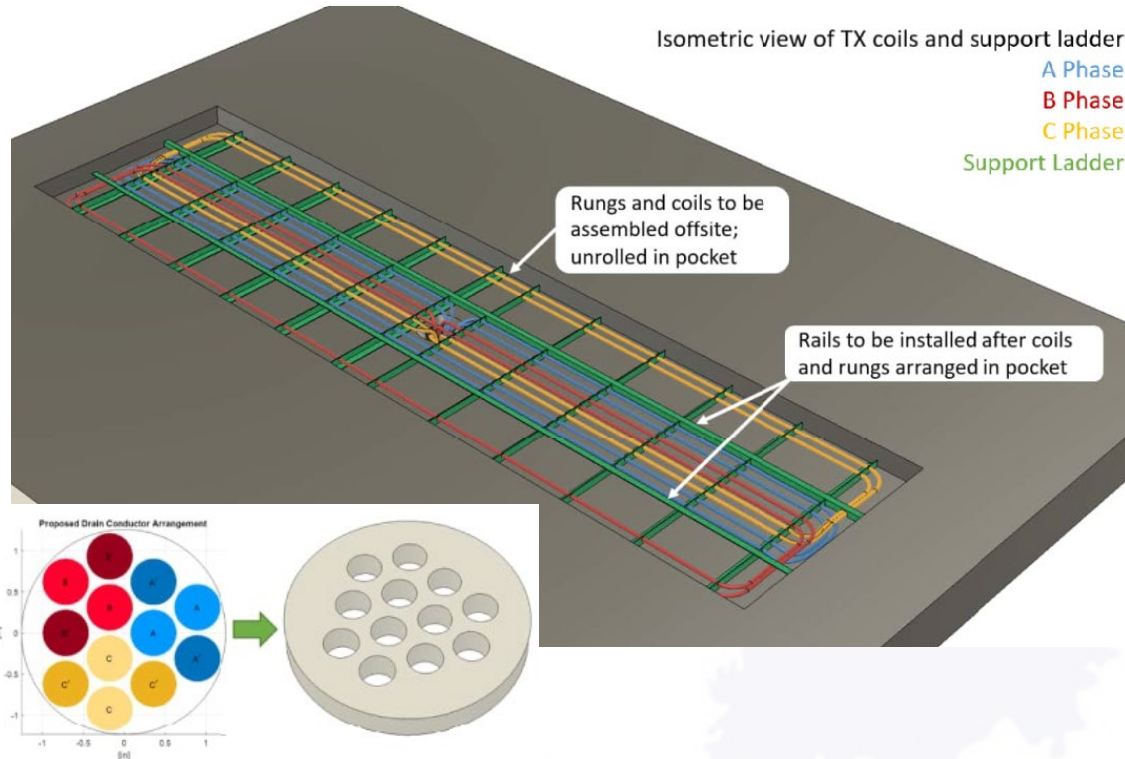


IP68 Cord Grip



DWPT Components

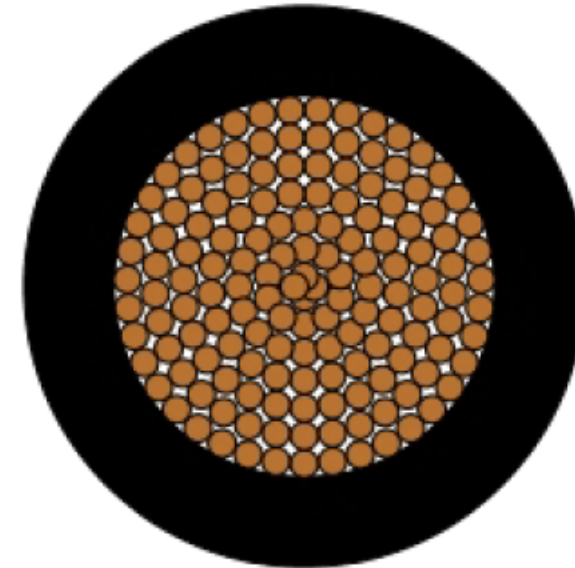
- Litz wire (for embedded coils)
 - Pattern is critical
 - Wire leads twisted back to vault
 - No splices



New England Wire Technologies
130 North Main Street
Lisbon, NH 03585
(603) 838-6624

Product Datasheet

Part Number: N48-38E-100015-2



Description:

Insulated SGL, Type 2 Litz 4 AWG 3125/38 SPN MW80-C, .08" BLK CLPE

Cable Components

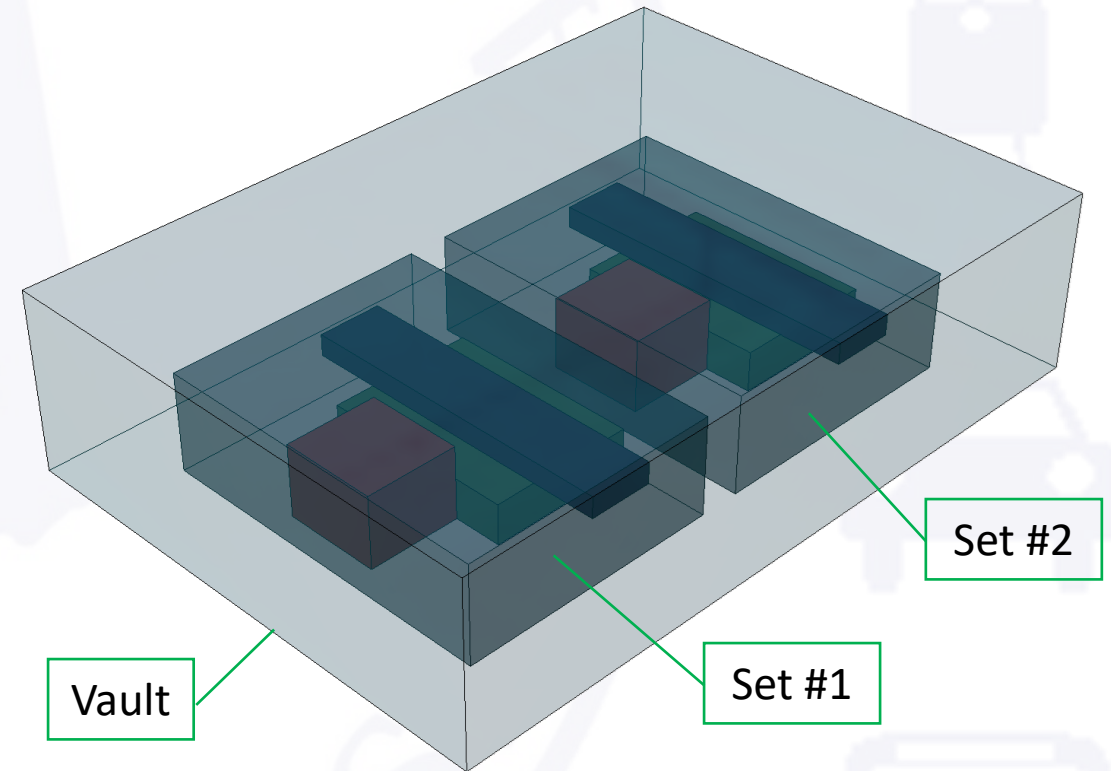
SGL, Type 2 Litz 4 AWG 3125/38 SPN MW80-C, .08"
BLK CLPE

Finished Product Attributes

Conductor AWG:	4
Nominal Product Weight (lbs/Mft):	216.7
Min Diameter (in):	0.483
Nominal Diameter (in):	0.503
Max Diameter (in):	0.523

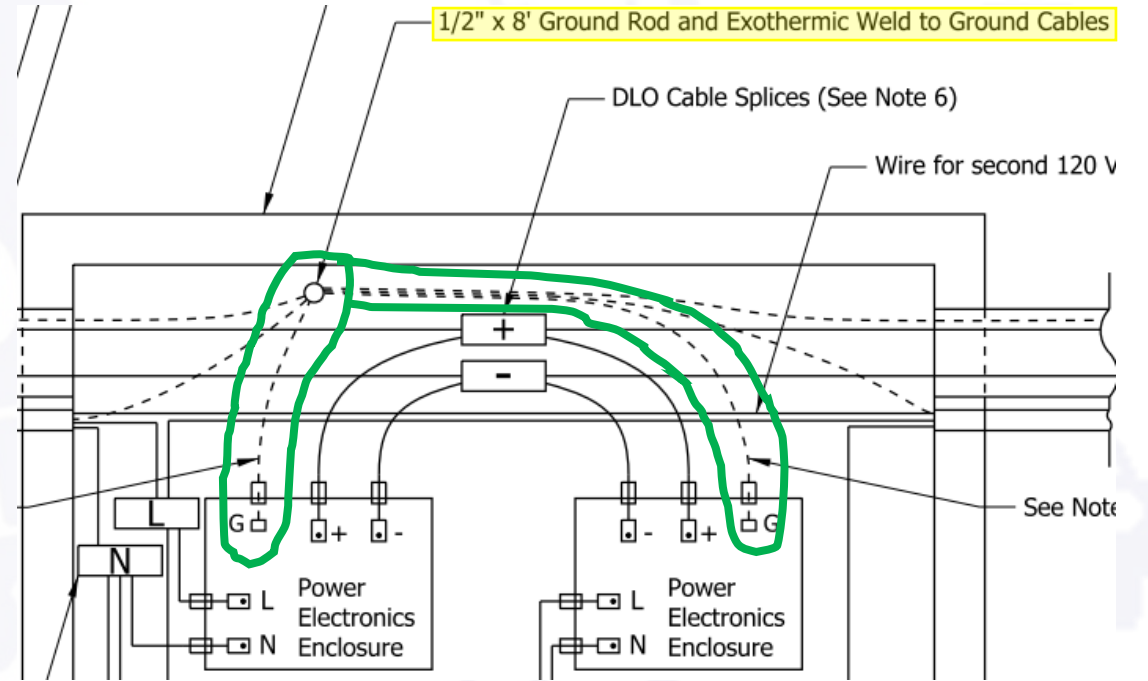
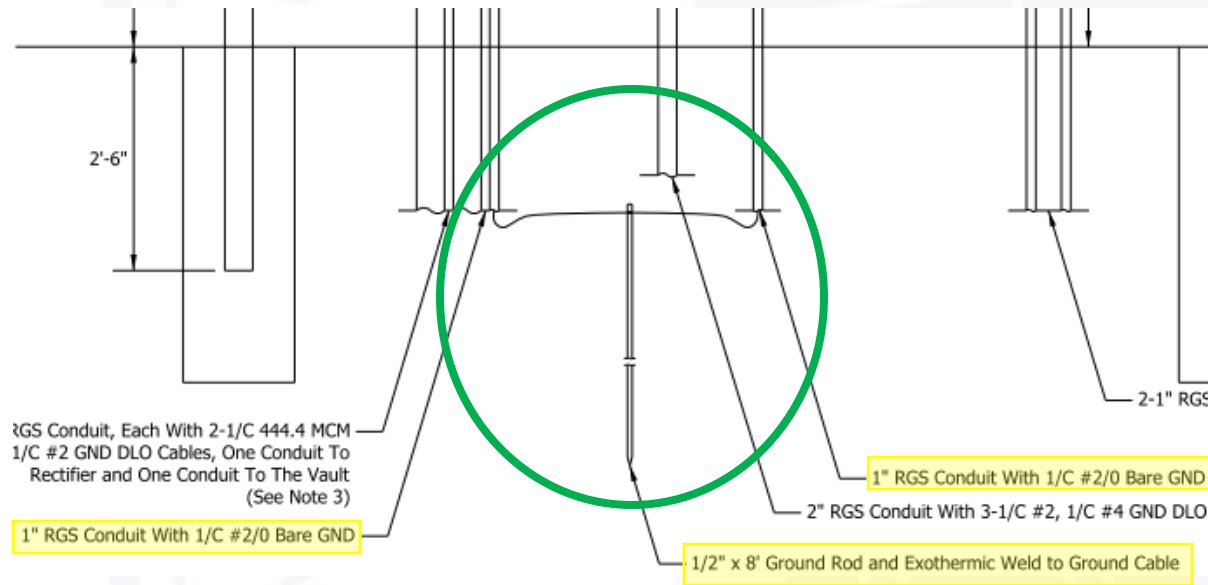
DWPT Components

- Inverters for DC to 3-phase AC conversion
 - 230kW, 506-585 VAC, 79-90 kHz output
 - Controller (120VAC) w/4-port Ethernet switch
 - MMF for synchronization
- Transmitter compensation units
 - Capacitors & inductors to tune coils
- Outdoor rated
- Can be combined into same enclosure
- One set per embedded coil



DWPT Components

- Grounding



DWPT Acceptance Testing

- Power distribution cable & Litz wire – continuity & insulation resistance
- Transmitters/Litz wire – AC/DC resistance & inductance of each phase coil
- MMF – bi-directional OTDR & optical source/power meter
- CAT6 – continuity and communications
- AC to DC transformer rectifier unit – manufacturer test data
- Inverters & Transmitter compensation units
 - 2 samples delivered with factory testing report for Department/Purdue testing
 - After successful testing, Department to authorize remaining 83
 - Comms and power testing by Department (contractor provides portable generators)
 - Mobile test apparatus (MTA) provided by Department

Q & A