

**Madison Fields Solar Project, LLC
Case No. 19-1881-EL-BGN**

Application Part 5 of 8

Part 5 includes:

- **Exhibit M Horizontal Drilling – Inadvertent Return Control Plan**

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Exhibit M

Horizontal Drilling – Inadvertent Return Control Plan

Timmons Group
May 2020

Respectfully submitted,

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SOLAR PROJECT – HORIZONTAL DRILLING - INADVERTENT RETURN CONTROL PLAN



MAY, 2020

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Standard Horizontal Directional Drilling Construction Inadvertent Return Control Plan

General Information

Savion or its affiliates will contract portions of the project, and construction responsibilities to a construction contractor. Savion or its affiliates is hereafter referred to as the “Owner.” The construction contractor is hereafter referred to as the “Contractor”. The Owner will contract preparation of the detailed design package and major material specifications to a consulting services provider, hereafter referred to as the “Engineer.”

Horizontal directional drilling (HDD) is a carrier pipe installation method typically used to avoid disturbance of sensitive surface features, including water bodies and wetlands. There is, however, the potential for surface disturbance through an inadvertent drilling fluid release. Drilling fluid releases are typically caused by pressurization of the drill hole beyond the containment capability of the overburden soil material, which allows the drilling fluid to flow to the ground surface. Releases can also be caused by fractures in bedrock or other voids in the geologic strata that allow the fluid to surface even if down hole pressures are low.

The directional drilling process uses drilling fluid to remove the cuttings from the borehole, stabilize the borehole, and act as a coolant and lubricant during the drilling process. The fluid consists primarily of water and (bentonite - naturally occurring clay), active clays, inert solids and water. Drilling fluid is not a hazardous or toxic material, as it is composed of benign components; however, an inadvertent release will require mitigation measures to reduce the impact to a water body or sensitive area.

Objectives

The proposed project consists of horizontal directional drilling on a utility scale solar farm. The specific objectives of this plan and specifications are to:

1. Provide Technical Specifications and guidance for the Contractor performing the boring work
2. Ensure the that works are performed to AHJ (Authority Having Jurisdiction). It is the Contractor's responsibility to be knowledgeable and employ designs and construction practices that incorporate the latest revisions of these standards where and when applicable.
3. Minimize the potential for an inadvertent return associated with directional drilling activities.
4. Provide for the timely detection of inadvertent returns.
5. Protect the environmentally sensitive watercourses / riverbeds and associated riparian vegetation.
6. Ensure an organized, timely and “minimum-impact” response in the event of an inadvertent return; and
7. Ensure that all appropriate notifications are made immediately to the AHJ, Management and safety personnel.

Requirements – Contractor Equipment and Submittals

The Contractor shall follow the general guidelines and requirements outlined in this section.

Contractor Equipment on Site

1. Site Supervisor
2. Construction personnel as required
3. Vacuum truck
Staged a location where it can be mobilized and relocated so that any place along the drill shot can be reached by the apparatus within 10 minutes of the inadvertent return.
4. Spill Containment Materials *
 - a. Spill Response Kit
 - b. Portable pumps
 - c. Absorbent pads
 - d. Plastic sheeting
 - e. Silt fence and stakes
 - f. Lumber for temporary shoring
 - g. Hay Bales
 - h. Sand Bags
 - i. Filter Sock
 - j. Hand Tools
5. Equipment required to contain and remediate a frac-out release readily available
6. Boring Machine
7. MSDS (Material Data Sheet) for the fluid being used
8. PPE

* Equipment associated with fluid removal shall be of sufficient enough quality (i.e., pump capacity, hose condition) and quantity (i.e. hose length, number of pumps), to efficiently manage any returns associated with the project.

Procedures

Prior to commencement of work, a site meeting shall be conducted with the Owner, Contractor and Drilling Contractor to develop the site- specific work procedure. The Contractor will sign off accepting the terms and for the daily work procedure and record-keeping progress. Daily reports are to be submitted to the Owner Representative.

All Directional Drilling will be conducted per the local codes and AHJ guidelines.

The Contractor has ultimate responsibility for implementing this plan. The Owner and AHJ shall be notified immediately in the event of a frac-out.

The areas that present the highest potential for drilling fluid seepage are the drill entry and exit points where the overburden depth is minimal. At the entry and exit points, a pit will be constructed to collect and provide temporary storage for the drilling fluid seepage until it can be removed. These pits will be lined with geotextile and sized adequately to accommodate the maximum volume of drilling fluid that may need to be contained in the pits. Secondary containment of the pits will contain any seepage and minimize any migration of the mud from the work area. This containment system may consist of straw bales and silt fencing around the pit.

Monitoring Procedures during Construction

Before any drilling operations begin, all applicable erosion and sedimentation controls included in the Stormwater Pollution Prevention Plan (SWPPP) will be properly installed per the included drawings and specifications and inspected by a qualified environmental inspector. The SWPPP, state permit(s), landowner restriction list, and any other applicable documents must be carefully reviewed before any disturbance occurs.

To determine if an inadvertent release has occurred, horizontal directional drilling activities will constantly be monitored by the contractor.

1. Inspection along the drill path.
2. Continuous examination of drilling mud pressures and return flows.
3. Periodic documentation of status of conditions during drilling activities.
4. Drilling operations will be halted by the drill rig operators immediately upon the detection of a drop-in drilling pressure or other evidence of an inadvertent return.
5. The clean up of all spills shall begin immediately.

Inadvertent Release

If a wetland/water body release occurs, inspection to determine the potential movement of released drilling mud within the wetland/water body will be necessary. To contain and control drilling fluid seepage on land or in a water body, the contractor will have equipment and materials available onsite.

The following measures will be implemented to minimize or prevent further release, contain the release, and clean up the affected area:

Upland Release

The contractor will place containment structures at the affected area to prevent migration of the release. If the amount of the release is large enough to allow collection, the drilling mud released into containment structures will be collected and disposed of per the HDD Fluid/Cutting Disposal procedures at the end of this document. If the amount of the release is not large enough to allow collection, the affected area will be diluted with fresh water and restored as necessary. Steps will be taken to prevent silt-laden water from flowing into a wetland or water body.

If public health and safety are threatened by an inadvertent release, drilling operations will be shut down until the threat is eliminated.

All disturbed areas associated with the project will be stabilized and restored per the specifications outlined in the project SWPPP.

Water Body Release

If a release occurs within a water body, the contractor will attempt to place containment structures at the affected area to prevent migration of the release if feasible. If public health and safety are threatened by an inadvertent release, drilling operations will be shut down until the threat is eliminated.

All disturbed areas associated with the project will be stabilized and restored per the specifications outlined in the project SWPPP.

In the event of a return to a stream, wetland, or other water body, the contractor will contact the construction environmental manager immediately. The Contractor will use the contact information included in the Project Information Table at the beginning of this document to contact the appropriate parties as necessary.

Drilling Operation Controls/Adjustments

If an inadvertent return takes place, the contractor will immediately cease operations and contact the Owner. If directed by the Owner, drilling operations will be further reduced or suspended to assess the extent of the release and to implement corrective actions. Drilling will resume after the Owner's assessment of the situation. If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure. After a drilling fluid seepage has been contained, the contractor will make every effort to determine the cause of the seepage. After the cause has been determined, measures will be implemented to control the factors causing the seepage and to minimize the chance of recurrence.

For either water body or upland returns, the contractor, in conjunction with environmental inspectors, drill operator, etc., will attempt to adjust the drilling technique or composition of drilling fluid and implement any modifications to minimize or prevent further releases of drilling mud. This may include:

- Thickening of mud by increasing bentonite content
- Changing the drilling rate
- Changing the fluid pumping rate
- Attempting a deeper directional drill

Developing the corrective measure will be a joint effort of the Owner and the contractor and will be site and problem specific. In some cases, the corrective measure may involve a determination that the existing hole encountered a void, which may be bypassed with a slight change in the profile. In other cases, it may be determined that the existing hole encountered a zone of unsatisfactory soil material and the hole may have to be abandoned. If abandoned, the hole will be filled with cuttings and drilling fluid.

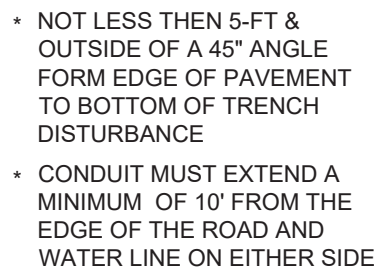
HDD Fluid/Cutting Disposal

A VacBox/Tank/Container for containment will be placed on site to contain the drilling fluids and cuttings associated with the drilling operation. A composite sample of the drilling fluids will be collected for analytical testing and completion of the Form U (chemical data reporting) composite. Once the drilling fluids have passed the analytical testing and the Form U has been approved, drilling fluid will be disposed of at an approved disposal facility. However, if drilling fluid is found to be impacted or contaminated, the contractor will defer to the Owner for disposal instructions as well as any cost associated with removal of impacted or contaminated soils.

Project Closeout

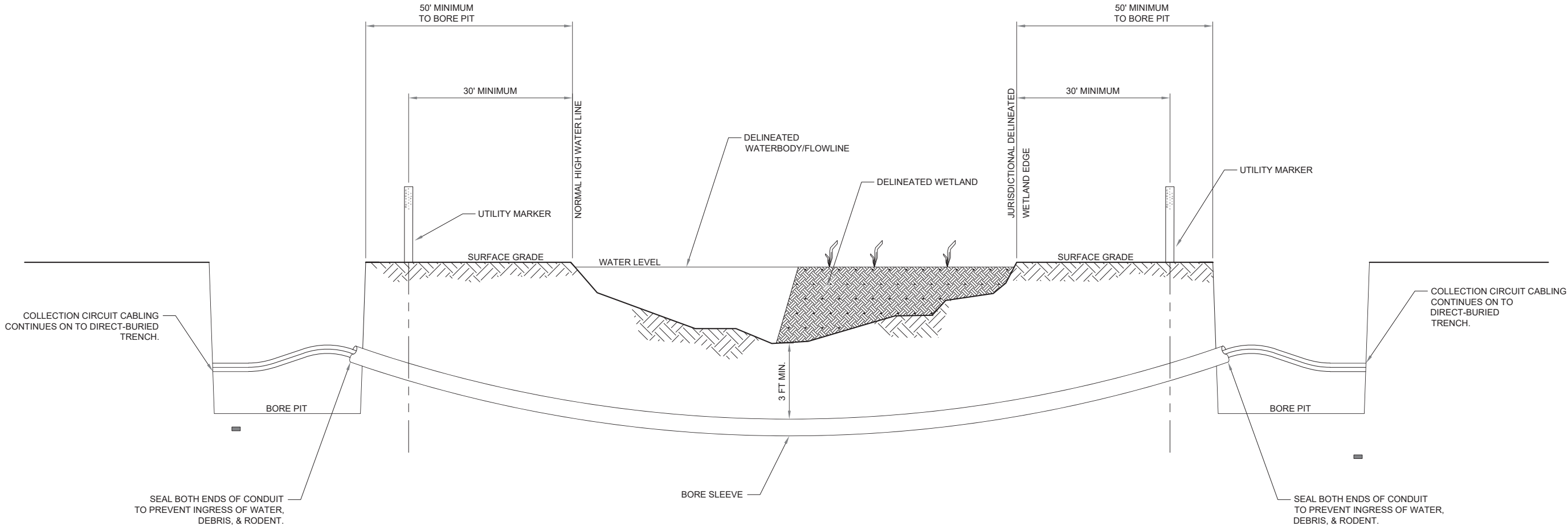
All material and all construction debris shall be removed from the construction zone. Bore pits will be filled and returned to natural grade and / or design grades as specified in the approved design. All protective measures will be removed and restored as per the SWMPP and environmental requirements.

Appendix A – Typical Standard Directional Bore Details and Requirements



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1

WETLAND/WATERWAY CROSSING - DIRECTIONAL BORE - SECTION VIEW
NOT TO SCALE

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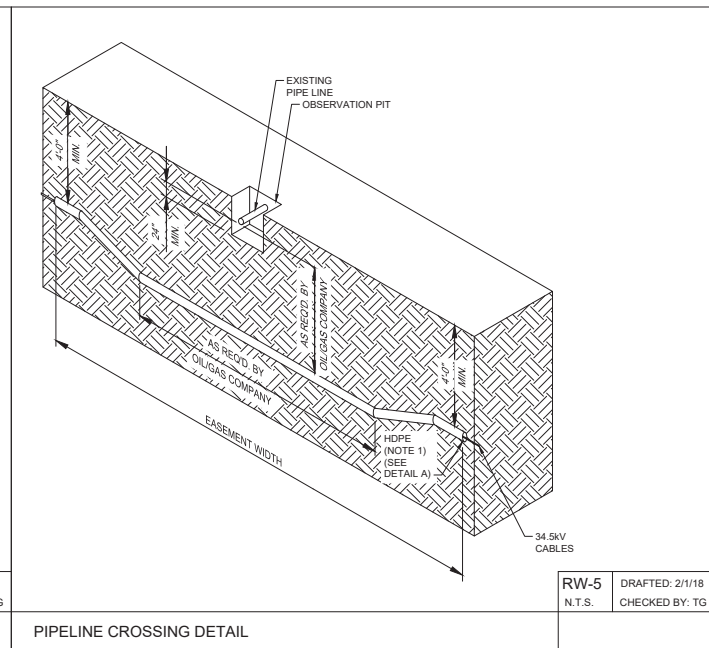
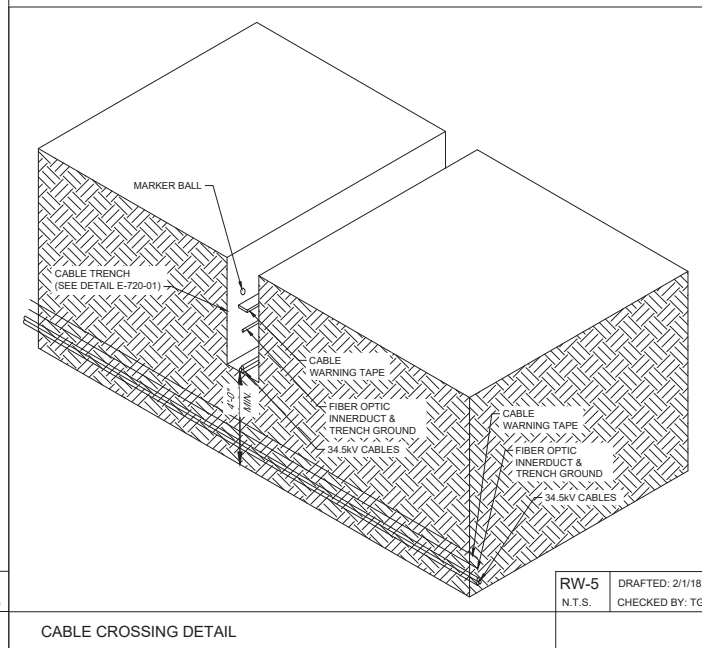
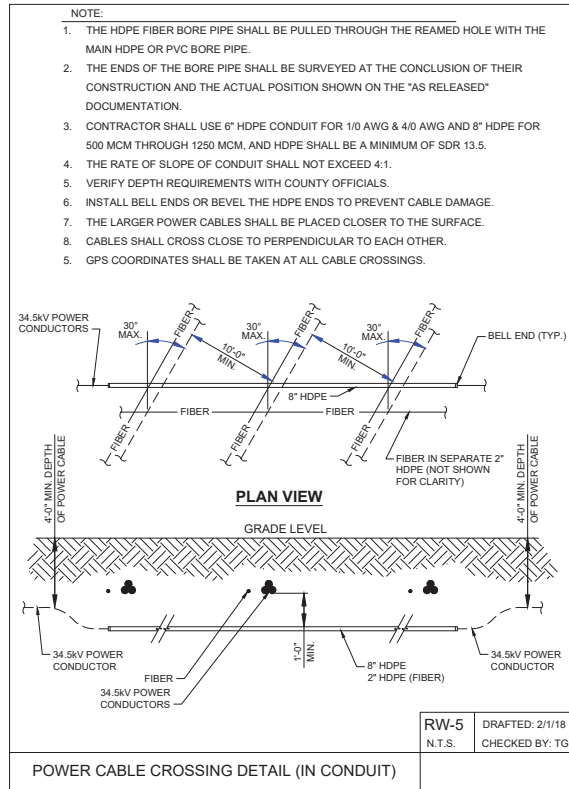
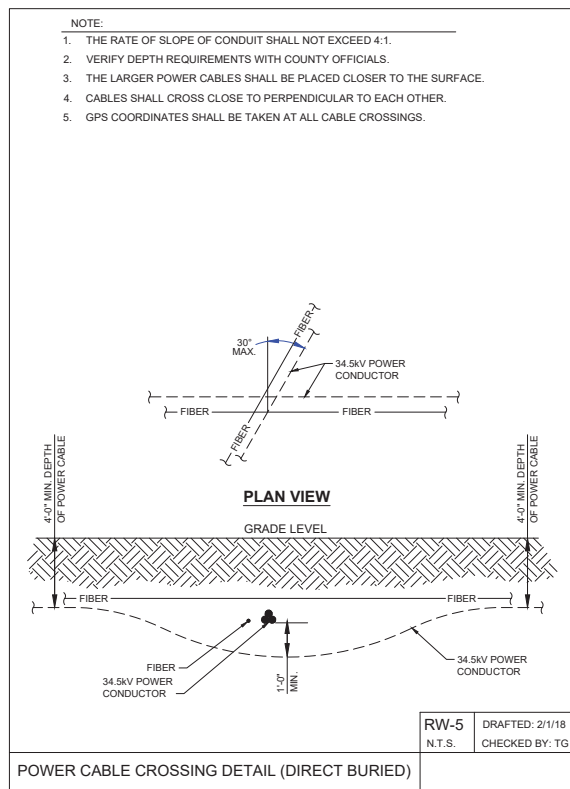
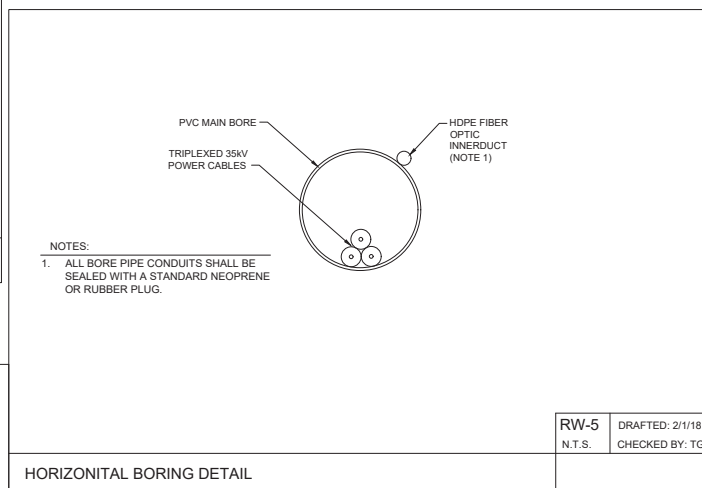
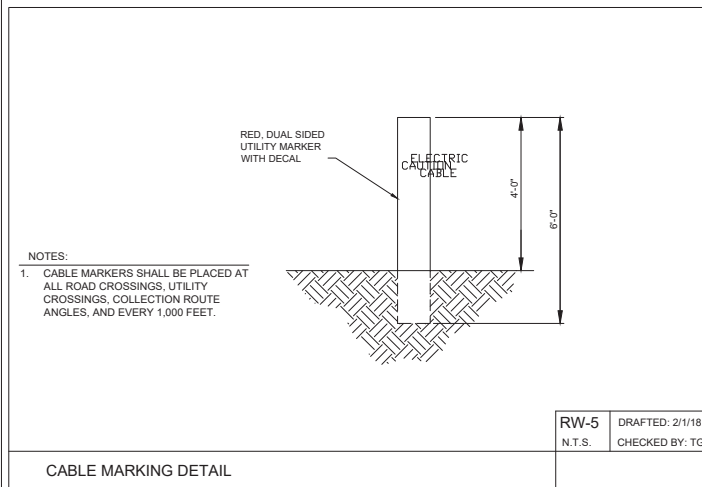
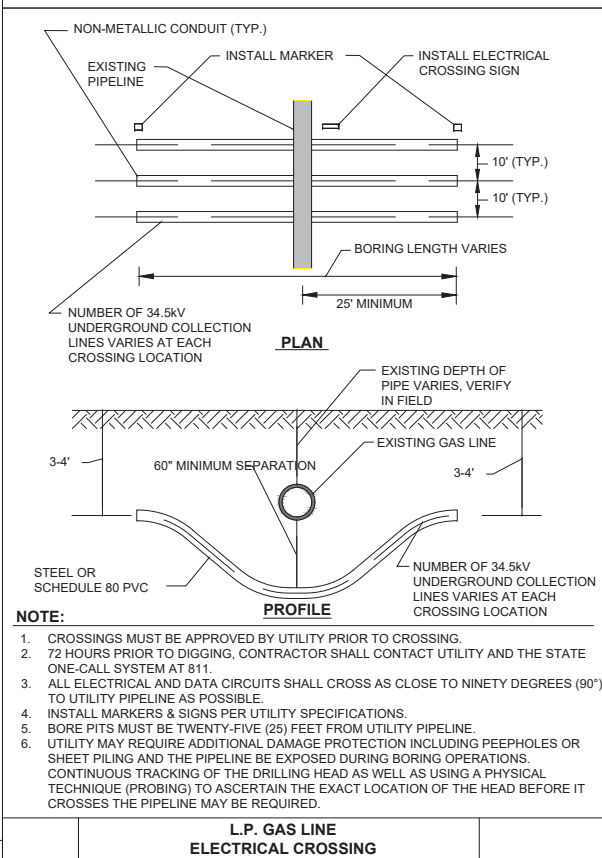
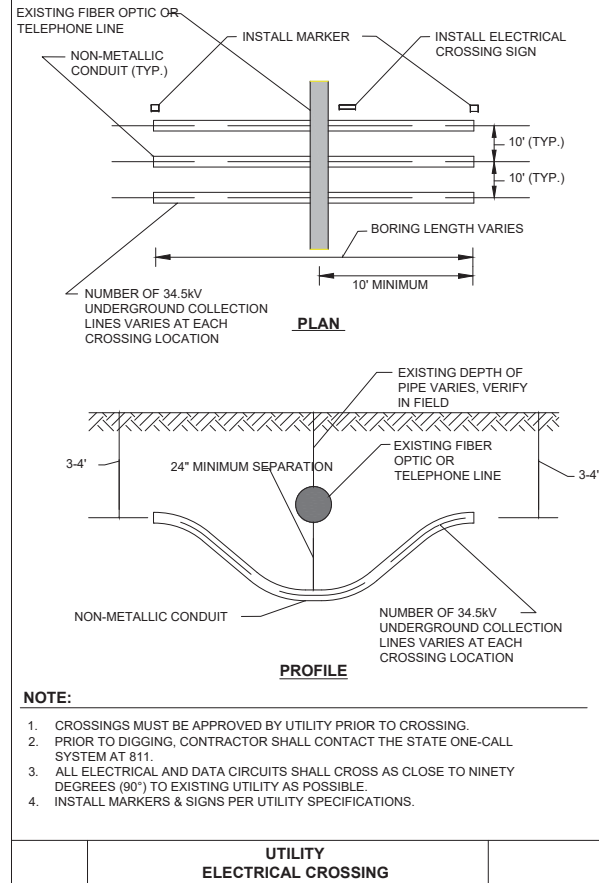
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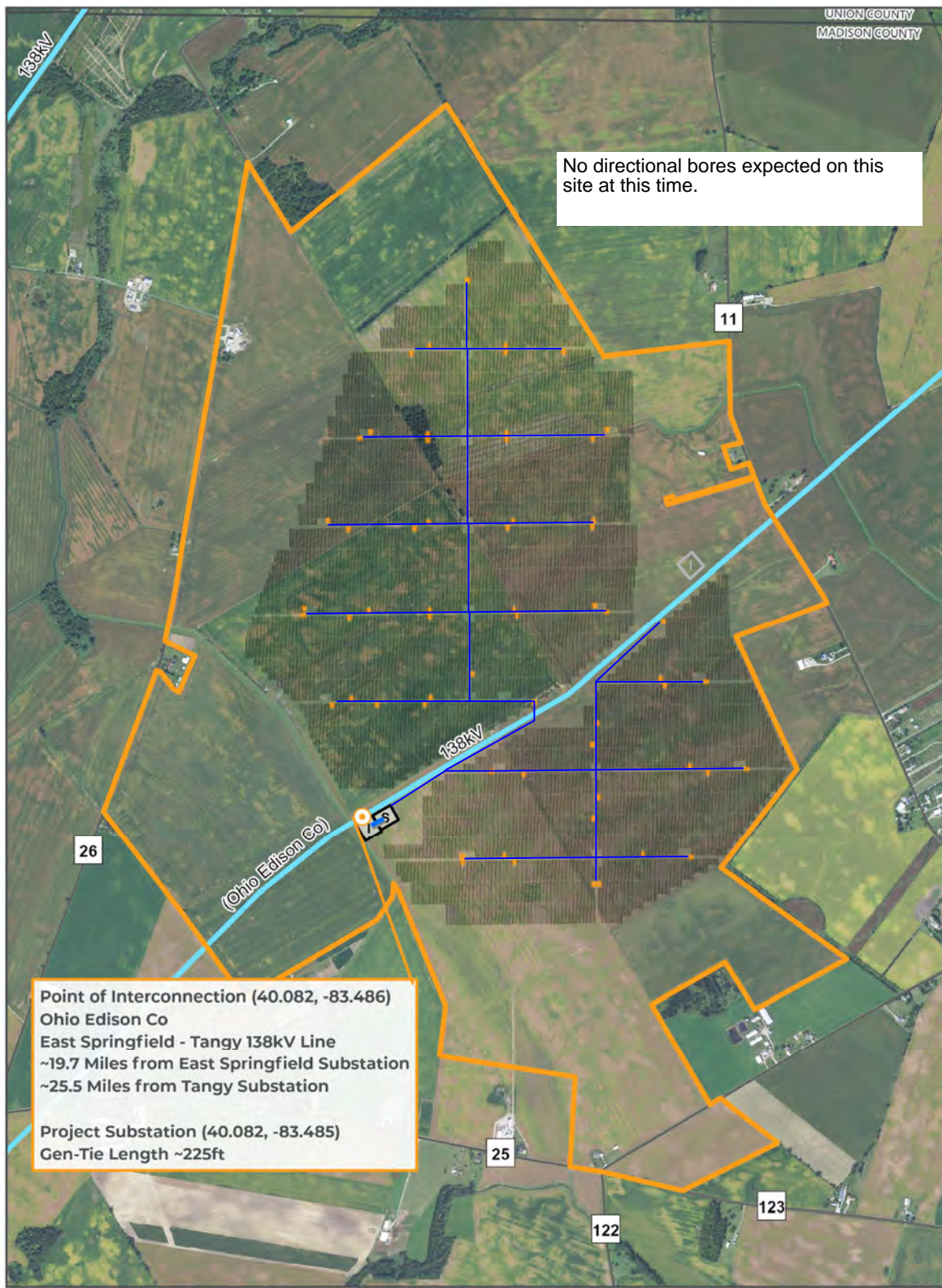
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JOB NO.	PROJECT NAME	
	COUNTY, STATE	
SHEET NO.	UNDERGROUND CROSSING OF WETLANDS & WATERWAYS	
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DATE	DESIGNED BY	
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DATE	CHECKED BY	
	N. FARAH	
DATE	SCALE	
	NTS	



Appendix B – Location Plan with Directional Drill Boring Locations



No directional bores expected on this site at this time.

Point of Interconnection (40.082, -83.486)
Ohio Edison Co
East Springfield - Tangy 138kV Line
~19.7 Miles from East Springfield Substation
~25.5 Miles from Tangy Substation
Project Substation (40.082, -83.485)
Gen-Tie Length ~225ft

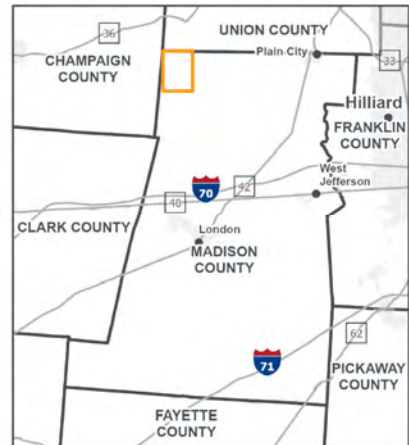
MADISON FIELDS SOLAR PROJECT

- Project Boundary
- Point of Interconnection
- Solar Array**
 - Inverter
 - Panel
 - Gen-Tie
- Facilities**
 - Interconnection / POI Switchyard
 - [Previous POI Location]
 - Substation
- Transmission Lines**
Voltage kV
 - 138
 -



Scale 1:35,000

Coordinate System:
WGS 1984 Web Mercator Auxiliary Sphere



SITE LOCATION 40.088°, -83.48°

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Case No(s). 19-1881-EL-BGN

Summary: Application - Part 5 of 8 (Exhibit M) electronically filed by Christine M.T. Pirik on behalf of Madison Fields Solar Project, LLC