

APPLICATION REQUIREMENTS FOR TRENCHLESS INSTALLATIONS

Each permit applicant shall review and adhere to the applicable Special Condition(s) (Forms 3703 A through F) for a proposed trenchless installation, and shall submit the following documentation (as needed) with an individual permit application package. All plans submitted shall be sealed by a Professional Engineer who is licensed in the State of Michigan and is competent in geotechnical and structural engineering. The plans shall be drawn to scale and shall indicate the following information whenever any pipe or borehole involves temporary works or bore pits, and whenever a utility will be installed by using a horizontal directional drill that is 8 inches or greater.

An annual permit package *may* be used to allow for a trenchless installation of a utility conduit, that has a borehole diameter of less than 3 inches – without submitting the required information listed below.

1. Plan views shall be drawn to scale, include the following information, and indicate the locations of the following items, that are located within the project's influence area – with dimensioned distances, as indicated:

- North arrow, road alignment and nearest crossroad – dimensioned from the installation.
- MDOT Right-of-Way boundaries - dimensioned from the roadway centerline.
- Existing MDOT facilities; sidewalks, roadways, signals, poles, buildings, private or public utilities, drainage structures, bridge structures, ITS facilities, waterways, and all other facilities that *may* be affected or influenced by the underground installation.
- All utility facilities – including separation requirements.
- Casing and/or carrier pipe – including installation length, invert elevation, size, and material type.
- Installation area – including ingress and egress locations, pipe/borehole layout, and installation method.
- Soil borings and access pits -including length, width, depth, and, offset distances from roadway/curb.
- Work areas – including earth retention, equipment staging, and material storage.
- Dewatering areas and layouts – accompanied with an operational plan.
- Proposed vertical exploratory investigations – including the method.
- Potential bore failure contingency plan.

2. Profile views shall be drawn to scale, include the following information, and indicate the locations of the following items, that are located within the project's influence area – with dimensioned distances, as indicated:

- MDOT right-of way boundaries.
- All subsurface facilities or utilities located above or below the centerline of the pipe/borehole – including the required separation between utility facilities.
- Pipe/borehole depth, diameter, invert elevation, length, cover, and grade of the – dimensioned from the curb and gutter, shoulders, roadway surface, and ground surface.
- Access pits and earth retention system – including width, depth, and offset distance from roadway/curb.
- Water table elevation.
- MDOT Form PA-10 *may* be acceptable.

3. The following additional geotechnical information is required whenever a proposed trenchless utility installation crosses a road and has a borehole – diameter of 12 inches or larger:

- Borings shall be offset from the proposed pipeline path, but shall not exceed a maximum of 10 feet away from the proposed installation alignment.
 - At least two soil borings are required for single roadways – one on each side of the road.
 - At least three soil borings are required for divided roadways – one on each side of the road, and one in the median.
 - For interchanges or other unique roadway layouts, contact the local Transportation Service Center (TSC) permit staff to determine the appropriate soil boring requirements.

- Standard Penetration Testing shall be conducted at 2.5 foot intervals for the entire depth explored.
- Sample and test the soil as necessary to accurately define properties including, but not limited to, moisture content and shear strength of cohesive soils.
- Groundwater measurements shall be recorded during and after drilling the soil borings. The installation of temporary ground water monitoring wells *may* also be required.
- Soil boring locations shall be identified by station and offset and referenced to a bench mark of known elevation. Assumed elevations are not acceptable. Stationing and offset distances can be aligned parallel with either the roadway or the proposed trenchless installation.
- Soil borings shall extend at least 10 feet below the bottom of the proposed trenchless bore elevation.
- Upon completion, soil boring holes shall be grouted and sealed with cement and bentonite. Soil cuttings for backfill is not acceptable.
- Soil reports shall be completed by a qualified, registered geotechnical engineer that has experience with trenchless installations. The geotechnical engineer shall possess a minimum of 5 years of current qualifying experience. The report shall include recommendations for the appropriate trenchless method for crossing the road, based upon the subsurface conditions revealed at the site. The geotechnical report shall contain all subsurface information, including; field and laboratory test results, soil descriptions, ground water levels observed during and after drilling, potential presence of cobble(s), and boulder(s), and an assessment of how the existing subsurface conditions may affect the successful completion of the trenchless crossing.
- An aerial photograph of the site shall completely encompass where; road alignment, nearest crossroad, MDOT Right-of-Way boundaries, existing MDOT facilities, utility facilities, proposed installation areas, proposed trenchless alignment, soil borings, work areas, dewatering areas, proposed vertical exploratory investigations, and potential bore failure contingency plans exist.

4. The following additional specifications and/or documentation *may* be required – depending upon a project’s complexity and the proposed trenchless installation method:

- Qualifications and contact information of the project superintendent and operator(s).
- Utility status report that certifies all private and public utility company facilities, located within the area of influence of the project, were consulted and that each utility’s location, bearing, invert elevation, grade, depth, and diameter is accurately represented on the plans and profiles.
- Geotechnical information including soil reports, and soil boring information.
- Casing and/or carrier pipe information including; material type, material class, yield strength, allowable pipe pulling or jacking force, diameter and wall thickness.
- Overcut diameter, and/or back-ream diameter increase.
- Casing blocking, chocks or spacer material.
- Bulkhead construction.
- Annulus flowable-fill requirements.
- Pre-existing condition survey – including photographs, video and ground/roadway surface elevations.
- Plan for corrective action – including contact information for a ground penetrating radar (GPR), locating company and a grouting contractor that will be “on-call” during the crossing operations
- Pipe material certifications.
- Pipe joining method, including joint gasket and/or cushion details.
- Leak test methods and certification.
- Ground movement monitoring methodology.
- Continuous monitoring records information.
- Construction staging.
- Make, model, and operational characteristics of the trenchless equipment.
- Grade and alignment control system.
- Lubrication system and method.
- Grouting or capping method.
- Control, treatment, and disposal of slurry water and soil cuttings.
- Temporary pipe bypass layout and pump capacity.
- Dewatering operation plan.