



Mainline Horizontal Directional Drill Best Practices and Tiered Classification

Design, Construction, and Supply Chain Considerations

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Dominion Energy North Carolina (DENC)	AG-BP-G-050-001
Dominion Energy Ohio (DEO)	Asset Class
Dominion Energy South Carolina (DESC)	<input checked="" type="checkbox"/> Transmission
Dominion Energy Utah/Wyoming/Idaho (DEUWI)	<input type="checkbox"/> Storage
Dominion Energy West Virginia (DEWV)	<input checked="" type="checkbox"/> Distribution
Dominion Energy Wexpro (DEWex)	<input checked="" type="checkbox"/> Gathering

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STANDARD OPERATING PROCEDURE

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1. PURPOSE

- 1.1 The goal of the classification of horizontal directional drills (HDD) into tiers is to provide Project Managers, Engineers, Technicians, and other internal stakeholders with a tool to aid in the effective implementation of the directional drilling Best Practices; providing guidance, structure, and standardization around design, construction, and the procurement process while retaining the flexibility to meet project specific goals and requirements.

2. SCOPE

- 2.1 This procedure applies to all HDD installations with exceptions listed in Sections 2.2 and 2.3.
- 2.2 Given the diversity in the portfolio of projects where trenchless technology may be implemented, some types of work are excluded from full implementation of the best practices. Due to the volume of service installations, their typically minimal environmental impact, and low design complexity, they have been excluded from this process.
- 2.3 Work done under emergency conditions or that has regulatory, time, or other constraints which may inhibit the feasibility of full implementation of the best practices are also exempt. Emergency work, work with other constraints, or time sensitive mainline extensions will be evaluated on an individual project basis and exceptions to the Best Practices will be documented in the Exception Form (Appendix B)

3. REGULATORY REFERENCES AND COMMITMENTS

- 3.1 See State specific environmental regulations for the applicable Business Unit. Contact the Environmental Compliance Coordinator (ECC) if an inadvertent return occurs to determine if regulatory reporting is required.

4. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS**4.1 General**

- 4.1.1 Common definitions defined within the pipeline safety regulations are found in the document AG-OM-A-030-001, "Code Definitions," on the TEIC SharePoint site.

4.2 Definitions

- 4.2.1 Company: Dominion Energy Operating Company or Business Unit.
- 4.2.2 Tier 1 HDD:
- a. A Tier 1 HDD is defined as a relatively low risk activity with little to no design complexity or potential for environmental exposure. These types of drills occur on a daily basis on replacements, relocations, main extensions, and include only distribution main line.
 - b. They generally run at a depth less than ten feet to allow for future access to the facility and are matters of efficiency in construction as opposed to necessity. They will not require formal drill designs or geotechnical borings as their implementation and execution in construction are well within the parameters and capabilities of DE contractors and the associated environmental risks are minimal.

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- c. For bidding purposes Tier 1 HDDs will not carry additional specifications beyond those already enumerated in the general construction requirements and SOP's, and will be awarded based on current Supply Chain policies and Construction feedback.

4.2.3 Tier 2 HDD:

- a. A Tier 2 HDD bears similar design characteristics with a Tier 1 drill; however, there is an increase in environmental sensitivity due to proximity to (but not crossing of) an environmental feature. Tier 2 drills do not involve the actual crossing of any stream, river or wetland, but are defined by being within close proximity of any such feature along the bore path.
- b. These HDDs retain the minimal design complexity of Tier 1 HDDs along with the same bidding and award processes. In these instances, geotechnical borings may be taken to evaluate the proposed drill corridor for potential risks.
- c. If geotechnical data indicates questionable soils or rock formations through which bore fluid could potentially migrate, then a formal drill design should be developed escalating the job to a Tier 3 HDD.

4.2.4 Tier 3 HDD:

- a. A Tier 3 HDD is defined by moderate environmental risk and/or design complexity. These drills involve the crossing of any environmental feature including but not limited to streams, rivers, lakes, ponds, and wetlands, and other such features which increase risks or design complexity. Drinking water wells, drinking water intakes, Railroad, and highway crossings are also included in this Tier due to the strict design requirements and the consequences associated with a poorly executed drill.
- b. Prior to pull back of steel pipe, Tier 3 HDDs will also require 100% X-Ray of the drill string to ensure weld integrity.
- c. These drills involve bending in one plane only and follow typical HDD "rules of thumb" regarding bending radius and entry/exit angles. These drills typically are not deeper than 50' below grade and less than 1,500 feet in length.
- d. If the carrier pipe is greater than 12" in diameter, the project will be escalated to a Tier 4 HDD. All Tier 3 HDD projects will include geotechnical borings, a formal drill design by an outside vendor, and hydro fracture analysis.
- e. Due to the increased risk and complexity, Tier 3 HDDs may be accompanied with additional construction bidding deliverables regarding tooling, drill equipment, and steering to match the appropriate contractor to the job.

4.2.5 Tier 4 HDD:

- a. A Tier 4 HDD is a high risk, high complexity drill requiring intense rigor around design, bidding, and execution in the construction phase. These jobs involve the crossing of major rivers, large wetlands, lakes, and may include complicated/multiple railroad crossings and interstate highways.
- b. Tier 4 HDDs may involve unconventional entry/exit angles, complex bends in the vertical and horizontal planes, and an aggressive bend radius to complete the drill. These drills will generally be over 1,000 feet in length and include all pipe diameters along with depths making the pipe inaccessible in the future.

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- c. As such, the full HDD design process will be accompanied by increased scrutiny around the construction bidding and award process. The drill complexity and probable lack of access to the pipe will require design requirements above those found in a tier 3. This may include specialized tooling, drill equipment, mud mixing equipment, and advanced steering/tracking.
- d. Strict adherence to the HDD design with tolerances around entry/exit angles, bending, and target depth is required and will be monitored during construction.
- e. Tier 4 HDDs will involve an intense construction bidding and evaluation process along with increased focus on contracts and risk.

4.3 Acronyms

- 4.3.1 Dominion Energy Environmental Services (DEES).
- 4.3.2 Environmental Compliance Coordinator (ECC).
- 4.3.3 Horizontal Directional Drill (HDD).
- 4.3.4 Inadvertent Return (IR).
- 4.3.5 Material Safety Data Sheet (MSDS/SDS).
- 4.3.6 Operator Qualification (OQ).
- 4.3.7 Reportable Environmental Event (REE).
- 4.3.8 Standard Operating Procedure (SOP).

5. RESPONSIBILITIES, TRAINING, AND QUALIFICATIONS

5.1 Responsibilities

- 5.1.1 The procedure user shall use and adhere to this best practice as required by Dominion Energy's Procedure Use and Adherence Policy.
- 5.1.2 Procedure users including employees and contractors are responsible for confirming each day before using this procedure that it is the current and effective version for the Business Unit that the work is being performed.
- 5.1.3 Employees and contractors subject to this best practice should be aware of its contents.
- 5.1.4 Role Specific Responsibilities
 - a. Dominion Energy Environmental Services (DEES):
 - 1. Typically during pre-construction,
 - 2. Determining and obtaining pre-construction environmental permitting,
 - 3. Assist the BU design team with the decision to open-cut or HDD an environmental resource and the Tier determination based on environmental resource,
 - 4. Approves drilling mud additives before use, on a per-project basis, and
 - 5. DEES personnel must sign the Verification of Accuracy Form to indicate the HDD Best Practices were followed.

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- b. Environmental Compliance Coordinator (ECC):
 - 1. Typically during construction and post-construction,
 - 2. Responsible for environmental compliance during and post-construction,
 - 3. Attends pre-drill meeting for high-risk drills,
 - 4. Participate in pre-drill meetings for Tier 3 and Tier 4 HDDs,
 - 5. Recommends appropriate IR monitoring and response,
 - 6. Assist the BUs with developing the site-specific IR response plan for Tier 4 HDDs,
 - 7. Reporting inadvertent returns to applicable regulatory agencies, and
 - 8. ECC must sign the Verification of Accuracy Form to indicate the HDD Best Practices were followed.
- c. Dominion Energy Business Unit (Company):
 - 1. Implements HDD Best Practices,
 - 2. Implement the HDD Best Practices from design through pipe installation,
 - 3. Communicates with appropriate environmental personnel,
 - 4. Coordinate with DEES during the initial design phase to verify environmental resources and determine if permitting is required, discuss the open-cut vs HDD decision, and Tier determination,
 - 5. Coordinate with ECC during pre-drill meetings,
 - 6. Develop site-specific IR response plans for Tier 4 HDDs,
 - 7. Obtaining drilling mud additive approval from DEES before use, on a per project basis,
 - 8. Reporting of inadvertent returns to ECC, and
 - 9. Initiation and routing of the Verification of Accuracy Form to DEES and ECCs for formal sign-off.

5.2 Training

- 5.2.1 The Company is responsible for implementation of the HDD Best Practices. The Company should provide guidance to design teams to ensure understanding of risk evaluation.
 - a. DEES is responsible for training DEES personnel in the roles outlined in 5.1.4.a.
 - b. Gas EC is responsible for training ECC personnel in the roles outlined in 5.1.4.b.
 - c. The Company is responsible for training Company personnel in the roles outlined in 5.1.4.c.

5.3 Qualifications

- 5.3.1 All employees and contractors performing the activities described within this SOP shall be qualified according to OQ requirements and shall adhere to those requirements, when and where applicable. Refer to the appropriate Company OQ plan.

6. PRECAUTIONS AND LIMITATIONS

6.1 None.

7. PRELIMINARY ACTIONS

7.1 Initial Conditions

7.1.1 None.

7.2 Planning and Coordination

7.2.1 HDD Classification

- a. HDDs have been classified into four different tiers based on environmental risk, impact to third parties, and overall drill complexity. The scale ranges from Tier 1 to Tier 4, with the latter carrying the highest risk and complexity. The tier classification allows the designer/project manager to identify and define the HDD along with the applicable design, bidding, and construction requirements and considerations.
- b. For those projects whose classifications are not clear or fall into more than one tier, the preference will be to classify the HDD in the more conservative tier to ensure proper design considerations and to mitigate potential risks.

HDD Consideration/Feature	Tier 1	Tier 2	Tier 3	Tier 4
Is HDD in close proximity to an environmental feature?	No	Yes	Yes	Yes
Is the HDD part of a typical replacement, relocation, or extension?	Yes	Yes	No	No
Is the HDD a, or part of, a railroad crossing?	No	No	Yes	Yes
Is the nominal pipe diameter greater than 12"?	No	No	No	Yes
Is the environmental feature a small/minor pond, stream, river, or wetland?	No	No	Yes	No
Is the proposed drill depth greater than 20'?	No	No	Yes	Yes
Is the environmental feature a large/major river, lake, or wetland?	No	No	No	Yes
Does the HDD include a complex bend (vertical and horizontal deflection)?	No	No	No	Yes
Are entry/exit angles outside the typical range of 8-12 degrees from the existing grade?	No	No	No	Yes
Is the bending radius tighter than typical (less than R x 100)?	No	No	No	Yes

- c. Matrix intended to aid in the initial classification of directional drills. Company project management, design, environmental, or leadership may classify into a higher or more conservative tier based on risk evaluation and design criteria.

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7.2.2 Evaluation of Project for Trenchless Technology

- a. The evaluation phase of the project is critical as it includes the review and consideration of potential risks, regulatory requirements and considerations, constructability, environmental impact, schedule, and costs. The goal is to consider the available options for construction and make the best decision for the project and its success.. The Company should engage DEES to discuss risks and ensure thorough evaluation to assist in determining the open cut versus HDD decision.
- b. One of the key components in this effort is to prevent or reduce environmental impacts where possible, and to prepare and develop contingency plans to mitigate risks to the environment during construction. Trenchless technology does have some risks affiliated with inadvertent returns; however, those risks can be reduced or mitigated through design and sound construction practices. The design team should discuss risks with design vendors to ensure risks are identified and understood. These risks must be evaluated against the environmental impact of cutting through a wetland, stream, or lake to evaluate actual and potential environmental impact. The Company should engage DEES and ECC to discuss appropriate risk mitigation, including inadvertent return response.
- c. Operational concerns must also be considered as distribution lines, for example, are not required to be piggable and evaluated for corrosion or metallurgical anomalies on a rotating frequency. The need for the ability to access a transmission line for integrity purposes would be heavily considered in such an instance.
- d. Schedule must also be considered as trenchless construction permits typically can be obtained faster than those for excavation. Cost is also a factor to be taken into account and should be evaluated to determine where the best value lies among the various design and construction options. These factors and many others will be taken into account by Dominion Design, Construction, Environmental, and Project Management to reach the optimal solution for the proposed project.
- e. If the decision has been made to pursue trenchless technology then the project will be classified into the appropriate Tier to match the project scope, complexity, and risks with design, bidding, and construction requirements.
- f. The Company will initiate the routing of the Verification of Accuracy Form for signature by DEES and ECC for applicable HDDs as described in Appendix A.

7.2.3 Trenchless Technology Design Process Standardization

- a. Projects classified as Tier 3 or Tier 4 HDDs will require a formal design by a third-party vendor including geotechnical soil sampling and hydro fracture analysis, along with site planning and recommendations on the types of equipment recommended for the directional drill. Differing soil types will present different challenges and the hydro fracture analysis shall include a factor of safety that balances risk and constructability. The following table is an example of relative risk based on an applied factor of safety.

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- b. Relative hydraulic fracture and drilling fluid surface release risk:

Factor of Safety	Relative Risk
Less than 1	Very High
Between 1 and 1.5	High
Between 1.5 and 2	Moderate
Greater than 2	Low

- c. This is a continuation of the process in matching design rigor and detail with the project's specific requirements. Under the current model quotes are obtained from a handful of vendors for design and each design group has a different process or request for obtaining proposals. The discontinuity internally is matched externally as vendors provide proposals and estimates in different formats.
- d. To create standardization between the design groups a single scope of work document was developed for the purposes of spot bidding projects or sole sourcing where appropriate. This streamlines the process creating continuity between design groups and Dominion Energy markets. Project Managers/Engineers will not need to create their own RFPs or develop one from another source or peer.
- e. The bidding document need only be populated with the requisite project information and released for bid. The use of the standardized RFP will allow design groups, and DENC, DEO, DESC, DEUWI, and DEWV to share common language, concepts, and best practices.
- f. The next step will be to manage and control costs by leveraging the buying power of Dominion's gas infrastructure groups to create a pool of outside design vendors competing for work at each LDC, or possibly all of them, depending on the business footprint of the vendor. An RFP has been generated seeking to establish pricing under purchase orders awarded through a competitive process where vendors may bid on one, two, or all Dominion markets.
- g. Each LDC will have two to three "preferred" vendors who will then compete in a short bid process as projects arise through which the Project Manager/Engineer will supply the project information to the vendors for a cost estimate and proposal. Through this process the outside vendors will compete once to be established as a preferred vendor, and again through the secondary bid process.
- h. All projects included in the RFP will be Tier 3 directional drills only. All Tier 4 projects will be spot bid due to design complexity, constructability, and risks.

7.2.4 Construction Bidding Standardization

- a. Once the decision has been made to utilize trenchless technology, the classification of the project into Tier 3 or 4 will require tier specific requirements which will be included in the bid. Due to the potential risks of an inadvertent return, accuracy in steering, and pipeline integrity, the through line is extended from classification, through design, and into the construction bid process.

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- b. The design process includes recommendations for the size of the drill rig, steering methods, site staging, and pipe pullback which Dominion can incorporate into their bid documents and review process. This will allow the Project Manager/Engineer to match the project complexity and requirements with the appropriate contractor.
- c. Cost and value are of course a consideration, but the ability of the contractor to safely and successfully complete the project without adversely impacting the environment is equally as important. For example, the low bid for a job may be from a drill contractor or sub whose experience, machinery, and capabilities are not in line with the project. In such an instance the contractor would be removed from consideration in favor of those bids whose capabilities and experience correlate with the project requirements.
- d. The goal as these projects progress through the process is to identify potential risks, then mitigate those risks through improved design, bidding and construction practices. The Company must discuss risks with DEES and ECC ensure evaluation and discuss feasible methods to minimize risks.
- e. Tier 3 directional drills may be bid on by any of our current group of construction contractors. If the awarded prime contractor utilizes a subcontractor, the construction bid process ensures the sub is subject to the same requirements as the prime contractor.
- f. The construction requirements for Tier 4 projects place more constraints around the contractor due to higher design complexity, constructability, and risks. Only preapproved contractors may bid on Tier 4 projects or work under a prime contractor as a sub. If the prime contractor submits a bid with a directional drill subcontractor not on the list, prior work history, capabilities, and examples of similar projects must be submitted as part of the bid package for Operating Company review.
- g. Due to the challenges these types of jobs entail, the goal is to place as much rigor and structure around the construction bid as possible to ensure successful execution through the construction process.

7.2.5 Inadvertent Return Response Plan

- a. A component of any directional drill is the possibility for an Inadvertent Return (IR). It is understood that an IR can occur despite geotechnical and subsurface investigation, engineering design of the drill path, subsurface monitoring of pressures and drilling fluids, and other preventive measures involved in the design and construction process. These measures all serve to reduce the risks affiliated with directional drilling and the probability of an IR, but the possibility does remain.
- b. The final component in the development of best practices is for the business unit to be prepared for an inadvertent return should one occur and be in a position to effectively execute on the plan in the construction environment.
- c. Each business unit should develop a baseline response plan for inadvertent returns in conjunction with support and input from Dominion Energy Design, Environmental (Compliance and Regulation), and Construction. The plan should also incorporate any known state and/or regulatory requirements the business unit operates in/under to ensure compliance with those agencies.
- d. The IR Response Plan should include information on internal and external stakeholders to contact, requirements for the implementation of containment and clean up measures, the

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types of equipment and materials required onsite or available for use, and process requirements for the evaluation of the drill and IR prior to resuming drilling activities.

- e. The IR Response Plan should serve as the foundation for an IR Response for all HDD Tiers, however considerations should be made for each project that may be specific to the site during the design and preconstruction phase.
- f. For Tier 3 HDDs site-specific concerns such as ingress and egress to the feature being crossed and equipment staging should be discussed and planned at the pre-drill meeting.
- g. For Tier 4 HDDs, a site-specific IR Response Plan should be developed based on the evaluation of the geotechnical data, projected downhole pressures, pull forces, foreign crossings, and site conditions including but not limited to paths for bore fluid to migrate (fractured rock, sewers, ducts), changes in elevation, difficulty of access, banks, slopes, weather, etc. which will affect the IR response should one occur.
- h. The response plan should be reviewed internally by Design, DEES, ECC, and Construction for comment and adjustment prior to going to construction and discussed at the pre-drill meeting. It may be prudent to also review the plan with business unit leadership prior to construction to ensure an understanding of the project, plan, and potential risks prior to project release.

7.2.6 The Verification of Accuracy Form documents alignment between the Company, DEES, and ECC. The form should be considered during the evaluation phase and will be signed by applicable Company, DEES, and ECC personnel. The Company is responsible for initiating and routing of the form. The form is recommended to be signed before the HDD is bid for construction and is required before HDD begins.

7.2.7 The Exception Form is used by the Company for mainline HDDs that do not follow the HDD Best Practices. Emergency work, defined by the Company, and projects with a regulatory time constraint would utilize the Exception Form. To ensure appropriate evaluation, the design team should complete the form and route to Company Director and Vice President for approval and signature. Routing of the form is recommended to be completed during the evaluation phase.

7.3 Special Tools, Measuring and Test Equipment, Parts and Supplies

7.3.1 None.

7.4 Field Preparations

7.4.1 Construction Considerations and Requirements

- a. The previous efforts during the evaluation, design, and the bidding process culminate in project execution in the construction environment. The through line is continued to ensure the contractor is able to execute per the project design and bid requirements.
- b. Dominion Project Management and Construction will review the bid documents to ensure the contractor has arrived with the appropriate drill machine, steering capabilities, downhole pressure monitoring capability, etc. Any drilling mud additives (other than sodium bentonite) must be approved by Dominion Environmental before use.
- c. Prior to construction starting a directional drill specific meeting will be held including representatives from Project Management, Design, DEES, ECC, Construction, and the Contractor to review the project and all requirements prior to the commencement of drilling operations. The purpose of this meeting is to ensure all stakeholders are fully engaged,

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understand their roles in the process, and a process established between the contractor, third party inspector, and Dominion to allow for the successful navigation of unforeseen challenges and risks.

- d. An onsite meeting is required for all HDD Tier 4 classifications. The Project Manager shall determine if other HDD Tier classifications are high-risk and require an onsite meeting. The onsite meeting, if required, should be held with the Contractor(s) at the beginning or resumption of a drill to discuss and achieve the following:
 - 1. Increase contractor awareness of expectations,
 - 2. Onsite personnel from HDD contractor and contractor responsible for IR response should be in attendance,
 - 3. Discuss responsibilities of onsite personnel,
 - 4. Discuss response plan and containment expectations,
 - 5. Identify high-risk areas, especially culverts/existing utilities on roadside projects,
 - 6. Discuss reaming procedures, and
 - 7. Discuss speed during pullback.
- e. Any deviation or exception from the bore plan or bidding requirements must be reviewed and approved by Dominion Construction, DEES, ECC, and Project Management before being allowed to proceed.
- f. Upon completion, the process of improvement and reduction of risks continues with the post project evaluation process. The Project Manager and Construction will identify any processes and ideas which did or did not work and socialize them with peers, internal leadership, and partners at the other LDC's.
- g. The goal is to collectively improve in our ability to properly review and evaluate projects requiring trenchless technology, manage design costs, standardize the bid process for construction, and safely execute in construction.

7.5 Approvals and Notifications

7.5.1 Additive Approval Process

- a. DEES to develop and maintain a state-by-state list of additives for tracking.
- b. For additives not on the list, contractor must submit additive information (MSDS/SDS) to Dominion contact, typically the ECC, for approval by DEES.
- c. To stay current with state-by-state regulations, all additives must be approved by DEES.
- d. Additives to be considered for use need to be addressed early in the project to allow sufficient time for DEES approval, preferably starting the approval request immediately after award of the project to the contractor.

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7.5.2 Inadvertent Return Internal Notification Requirements

- a. DEUWI/Wexpro contact list:
 - 1. The Project Manager/Engineer,
 - 2. Contact Dispatch for DEUWI or Gas Control for Wexpro; Dispatch or Gas Control are responsible for notifying the On-call ECC,
 - 3. The Construction ECC, or designated ECC for the project, and
 - 4. Engineering Services Management.
- b. DEO and DEWV contact list:
 - 1. ECCs.
- c. DENC and DESC contact list:
 - 1. ECC,
 - 2. Project Manager/Engineer, and
 - 3. Engineering Projects and Construction Management.

7.5.3 External Reporting Requirements - Inadvertent Return

- a. Reporting responsibilities:
 - 1. DEES to provide state-by-state guidance for determination of single reporting Reportable Environmental Event (REE) versus multiple reporting events (REEs) for IRs occurring into the same resource/complex from one HDD installation effort.
 - 2. DEES to provide state-by-state regulations and guidance for reporting of upland IRs.
 - 3. DEES to provide state-by-state guidance for other site-specific regulations concerning IRs.

7.5.4 Internal Reporting Requirements – Inadvertent Return and High-Risk HDD

- a. Reporting responsibilities:
 - 1. ECC to provide internal reporting of IRs, and high-risk HDDs, based on the reporting minimum criteria below.
- b. Reporting minimum criteria:
 - 1. Include HDD Tier,
 - 2. Include pipe diameter,
 - 3. Include phase (i.e., Pilot, Ream, Pullback) when IR occurred,
 - 4. Include length of HDD,
 - 5. Include depth of HDD; and
 - 6. Company is expected to track all Tier 3 and Tier 4 HDDs, for the purpose of tracking factors of successful HDDs.

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8. PROCEDURE**8.1 General**

- 8.1.1 The activities described in Section 8 Procedure occur during the operation of the HDD equipment while performing the drilling activities.

8.2 Onsite Monitoring Requirements

- 8.2.1 Increased onsite monitoring is required for all HDD Tier 4 classifications. The Project Manager shall determine if other HDD Tier classifications are high-risk and require increased onsite monitoring.
- 8.2.2 Monitoring roles and responsibilities:
- a. IR detection and response assistance; Environmental Inspector, construction contractor.
 - b. Pressure; HDD inspector.
 - c. Drill path; HDD inspector.
 - d. Mud returns; HDD inspector and contractor.

9. ACCEPTANCE CRITERIA**9.1 System Restoration Parameters**

- 9.1.1 None.

9.2 Testing Criteria

- 9.2.1 None.

9.3 Inspection Criteria

- 9.3.1 None.

10. RECORDS AND RECORDS RETENTION

- 10.1 The project design team should house The Verification of Accuracy Form or the Exception Form with the project design information for a minimum of 6 months after the HDD has been completed.

11. ADDITIONAL PROCEDURE REFERENCES**11.1 Procedure Exceptions**

- 11.1.1 Refer to Sections 2.2, 2.3, 7.2.7, and Appendix B HDD Best Practices Exception Form.

11.2 Work Procedures

- None.

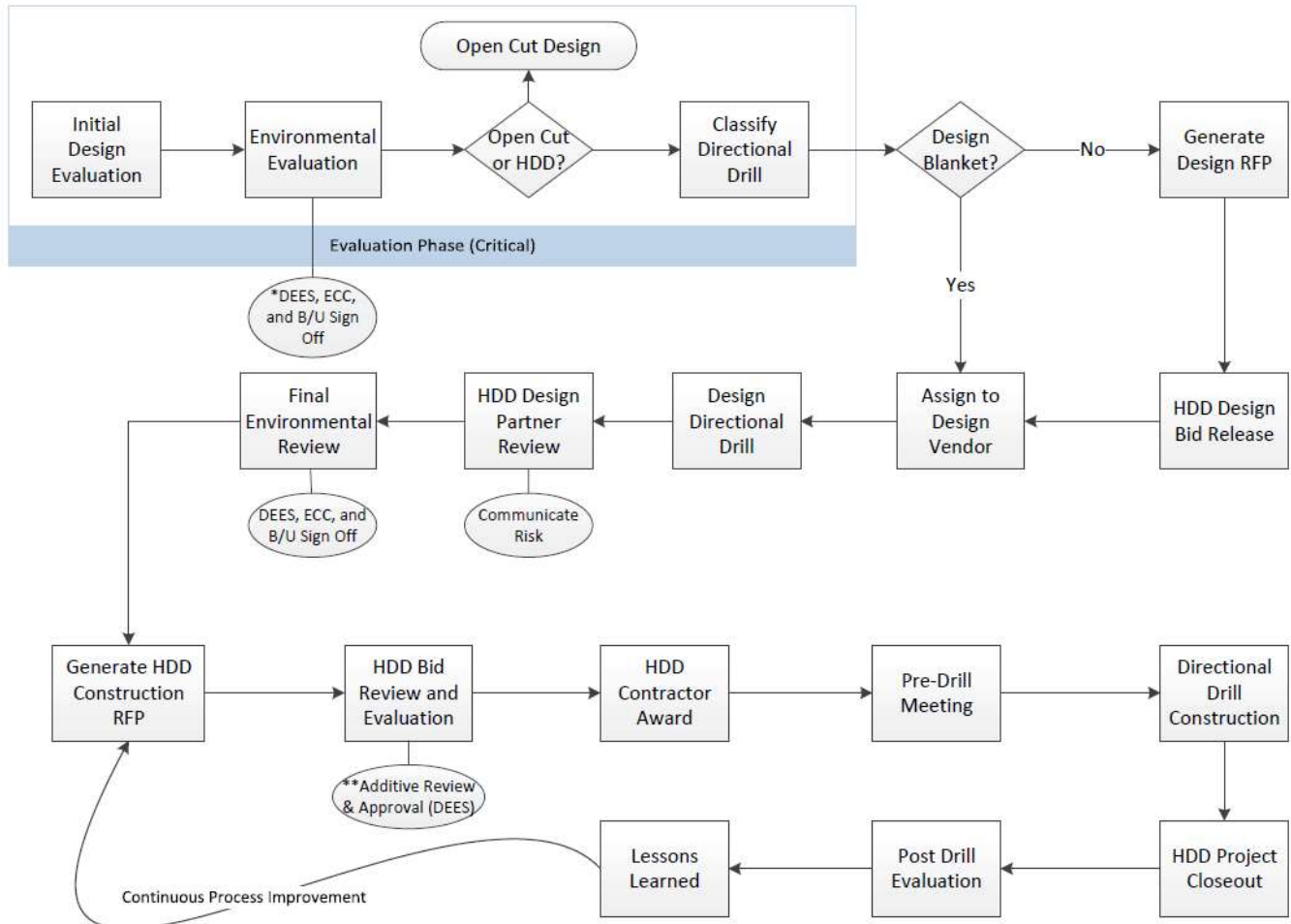
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11.3 Safety and Environmental Procedures

- None.

11.4 Charts, Graphs, Drawings, and Lists

- Trenchless Technology Implementation Process



*Services, emergency, and time sensitive installations to be excluded from full implementation process and must be discussed with and documented by business unit Director of Engineering and Vice President

**DEES must approve all additives prior to use on a per project basis

11.5 Software Applications

- None.

11.6 Forms

- Mainline Horizontal Directional Drill Best Practices Verification of Accuracy Sign-Off (Appendix A)
- Mainline Horizontal Directional Drill Best Practices Exception Form (Appendix B)

12. REVISION HISTORY

Revision History

Revision 0 (November 19, 2020)

New document. Entire document.

Revision 1 (December 23, 2021)

This document was converted to PWG format resulting in section numbering changes. Lines below refer to the section numbering in this SOP.

Added DE Wexpro to the Operating Company list on the Cover Page and added the “Gathering” Asset Type. This renumbered the document to AG-BP-G-050-001.

SOP Content

- 2.1 – Added scope exception sentence
- 2.3 – “Work with other constraints” exceptions added to both sentences
- 4.1 and 4.1.1 – Added this section/sentence (per PWG template)
- 4.2.1 – Added Company definition
- 4.3 – Added Abbreviation section (per PWG template)
- 5.1.1 and 5.1.2 – Added Responsibilities sections (per PWG template)
- 5.1.4.c.9. – Added “Initiation” to the responsibilities sentence
- 5.2 – Added Training Responsibilities section
- 7.2.2.a – Included regulatory requirements and BU/DEES discussion
- 7.2.2.b – Included items for discussion
- 7.2.2.f. – Added section clarifying responsibility
- 7.2.4.d – Revised risk mitigation/design and discussion
- 7.2.6 – Added section for VOA clarification
- 7.2.7 – Added section for Exception Form clarification
- 7.5.2.c. – Corrected contact list
- 8.1 and 8.11 – Added this section/sentence
- 8.2.2.a. – Added contractor responsibility
- 10.1 – Added housing and retention of forms
- 11.1.1 – Added exception references

Appendix A – Verification of Accuracy Form

- Clarified when the VOA should be signed by DEES and ECC “...for all Tier 2, Tier 3, and Tier 4 HDDs under or near environmental resources.” This will provide clarity that the VOA is not needed for projects where an HDD is driven by something other than an environmental feature (such as an HDD under a highway) and there are no environmental resources nearby.

Appendix B – Exception Form

- Question 1 revised to list justification for not using the best practices

APPENDIX A – Mainline Horizontal Directional Drill Best Practices Verification of Accuracy Sign-Off**Mainline Horizontal Direction Drill Best Practices
Verification of Accuracy Sign-Off**

Project Reviewed:	
Date:	

The Mainline HDD Best Practice Verification of Accuracy Sign-off form will be initiated and routed by the Business Unit Project Manager/Design Team for all Tier 2, Tier 3, and Tier 4 HDDs under or near environmental resources.

The following Team members participated in a review of the proposed HDD crossing(s) and confirm:

- 1) Open-cut versus HDD decision has been discussed
- 2) Verification of environmental resources
- 3) Tier determination is appropriate based on environmental resource
- 4) Inadvertent return response plan is appropriate for the Tier

On behalf of my organization, I agree that the above noted project has followed the HDD Best Practices

Title/Role	Printed Name	Signature	Date
Dominion Environmental (DEES)			
Dominion Environmental (ECC)			
Business Unit (PM/Design)			

APPENDIX B – Mainline Horizontal Directional Drill Best Practices Exception Form

**Mainline Horizontal Directional Drill Best Practices
Exception Form**

Project Reviewed:	
Project Manager	
Project Type (MLX, Reloc, Replacement, Service, etc.)	
Date:	

The HDD Best Practice Exception form will be initiated and routed by the Business Unit Project Manager/Design Team

The Project Manager/Design Team requests an exception to the HDD Best Practices based on the following:

- 1) Please list the justification for not following the HDD Best Practices. Examples include work done under emergency conditions or regulatory/other time constraints.

- 2) Provide a brief summary of the items that do not conform to the requirements in the HDD Best Practices and the reasons why:

- 3) Please list the environmental best management practices and/or measures that are expected to be implemented during the HDD to reduce the risk of an inadvertent return:

On behalf of my organization, I approve the exception to the Mainline HDD Best Practices for the above-mentioned project

Title/Role	Printed Name	Signature	Date
Business Unit (Project Manager/Engineer)			
Business Unit (Director of Engineering)			
Business Unit (Vice President)			