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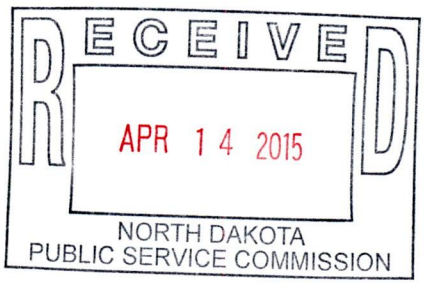
April 13, 2015



Mr. Darrell Nitschke
Executive Secretary
NORTH DAKOTA PUBLIC
SERVICE COMMISSION
600 E. Boulevard Avenue, Dept. 408
Bismarck, ND 58505-0480

Dear Mr. Nitschke:

In re: In the matter of the Application of
Dakota Access LLC
for a Certificate of Site Compatibility
and Route Permit for the Dakota Access
Pipeline Project in Mountrail, Williams,
McKenzie, Dunn, Mercer, Morton and
Emmons Counties, North Dakota
Case No. PU-14-842
Our File No. 31-536-001

Enclosed for filing in the above captioned matter are 11 copies of the following:

1. Tree and Shrub Sampling Plan

2. Environmental Construction Plan.

Please feel free to contact me with any questions.

Very truly yours,

Blaine T. Johnson for
Brian Bjella

bw
Enc.

DAKOTA ACCESS PIPELINE PROJECT

NORTH DAKOTA
Tree and Shrub Sampling Plan

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

Prepared for:

North Dakota Public Service Commission
600 East Boulevard, Department 408
Bismarck, ND 58505

March 2015

1.0 INTRODUCTION

Dakota Access, LLC has developed and intends to implement this tree and shrub sampling plan to satisfy North Dakota Public Service Commission (NDPSC) permitting requirements for the Dakota Access Pipeline Project (DAPL Project). The general guidance from the "Tree and Shrub Mitigation Specifications" are being applied in this plan. The Specifications state that:

- In windbreaks, shelterbelts and other planted areas, trees and shrubs anticipated to be cleared, regardless of size, must be inventoried for replacement.
- In native growth areas, trees anticipated to be cleared that are 1 inch diameter at breast height (dbh) or greater must be inventoried for replacement.
- In native growth areas, trees and shrubs may be inventoried by actual count or by a sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (Commission) and approved prior to the start of construction must define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots must be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

The follow sections outline the DAPL Project's proposed methodology to assess all eligible trees and shrubs on the approximate 359 miles of pipeline in North Dakota. DAPL will conduct this assessment on their 400ft environmental survey corridor centered on the proposed pipeline. Since, the construction workspace has not been finalized, following construction activities, the actual inventory of impacted trees and shrubs will be compiled and submitted for review and approval to the NDPSC along with plans for mitigation of these species.

2.0 Sampling Methodology

Pre-Inventory

Windrows, shelterbelts, and obvious groups of trees and/or shrubs will be located along the ROW using recent aerial imagery (2014) and ArcGIS software. This step will be completed in advance of the tree and shrub sampling field visit and locations will be entered into a GPS unit to aid in field reconnaissance.

Field Inventory

Scientists knowledgeable in tree and shrub species identification will travel along the pipeline route and collect the inventory data. The field team will visit those areas defined in the pre-inventory as well as any recently planted or other woody vegetation areas observed along the route during the field visit. All data will be collected using a tablet and a Tree and Shrub Inventory Form (Appendix B). Data collected during the inventory will include:

- Date of inventory
- Field scientist(s) conducting inventory
- General location (milepost)
- Species name
- Number of individual trees or shrubs
- Whether the trees or shrubs were planted or volunteer
- Designation to avoid mature native trees during construction
- Designation to remove non-native or invasive trees or shrubs during construction and replace them with more desirable species
- Number of trees removed during construction activities
- General notes and landowner specifications for replacement

Location data will also be collected with GPS and linked to tabular data using an identification code based on the milepost and six-digit species code. For example, chokecherry (*Prunus virginiana*) near milepost 3.25 would be recorded in the GPS as "3.25-PRUVIR". When the field data are analyzed in ArcGIS, the location of the shrub or tree on the pipeline route and its associated land-cover will be defined. Location data for large colonies/clusters will be recorded as a polygon and isolated tree/shrub data will be recorded as a single point.

Several species of multi-stem shrubs are anticipated to be found along the DAPL route including snowberry (*Symphoricarpos occidentalis*), chokecherry (*Prunus virginiana*), and prairie rose (*Rosa arkansana*). Chokecherry is an example of a shrub with multiple stems rising from a central point while snowberry and prairie rose are rhizomatous with a single individual creating large colonies. A chokecherry with many stems rising from one central base would be counted as one individual, while a colony of snowberry will be counted as one individual within a specific area. The North Dakota State University Dickenson Research Extension Center states snowberry colonies can vary in size but are typically between 60 and 170 feet in diameter (Manske, 2005). Field scientists will designate obvious colonies of rhizomatous species as one individual. For less obvious colonies, rhizomatous shrubs of a single species within a 120 foot radius will be counted as one individual.

Inventory During Construction

The total number of trees or shrubs removed may vary depending on final workspace, decision-making during construction, and site specific conditions at the time (weather, soil saturation, etc.). As such, the actual number of trees or shrubs removed in a specific location will be recorded. For example, field scientists originally labeled a group of trees for removal in the initial inventory; however, the contractor deemed it feasible to restrict the workspace due to dry conditions which avoided clearing a group of trees, changing the removal inventory. There is also the potential for the opposite situation: for example, a patch of shrubs located on a bend in the pipeline, where more work space is needed for construction.

Manske, L. L. 2005. "Western Snowberry Biology" in *2005 Annual Report Grassland Section*. North Dakota State University Dickenson Research Extension Center. Accessed online: February 10, 2015 http://www.ag.ndsu.edu/archive/dickinso/research/2005/range05a.htm. Modified July 14, 2009.

3.0 Appendix A:
State of North Dakota Public Service Commission
Tree and Shrub Mitigation Specifications

STATE OF NORTH DAKOTA

PUBLIC SERVICE COMMISSION

Tree and Shrub Mitigation Specifications

Inventory

1. Trees and shrubs anticipated to be cleared, including those that are considered invasive species or noxious weeds (*e.g., Caragana arborescens, Elaeagnus angustifolia, Rhamnus cathartica, Tamarix chinensis, T. parviflora, T. ramosissima, Ulmus pumila*), must be inventoried before cutting. The inventory must record the location, number, and species of trees and shrubs.

2. In windbreaks, shelterbelts and other planted areas, trees or shrubs anticipated to be cleared, regardless of size, must be inventoried for replacement.

3. In native growth areas, trees anticipated to be cleared that are 1 inch diameter at breast height (dbh) or greater must be inventoried for replacement.

4. In native growth areas, shrubs anticipated to be cleared in the permanent right-of-way must be inventoried for replacement.

5. In native growth areas outside the permanent right-of-way, shrubs must be cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock intact. If soil disturbance is necessary, the native topsoil must be preserved and replaced after construction. Shrubs must be allowed to regenerate naturally where native topsoil is preserved and replaced. Where native topsoil is not preserved and replaced, shrubs anticipated to be cleared must be inventoried for replacement.

6. In native growth areas, trees and shrubs may be inventoried by actual count or by a sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (Commission) and approved prior to the start of construction must define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots must be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

Clearing for Construction

7. Trees and shrubs must be selectively cleared, leaving mature trees and shrubs intact where practical.

8. The maximum width of clear cuts through windbreaks, shelterbelts and all other wooded areas is 50 feet, unless otherwise approved by the Commission.

9. If the area of trees or shrubs actually cleared differs from the area inventoried, the difference in number of trees and shrubs to be replaced must be noted on the inventory.

Replacement

10. Prior to tree and shrub replacement, documentation identifying the number and variety of trees and shrubs removed, as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings, must be filed with the Commission for approval.

11. Two 2-year-old saplings must be planted for every one tree removed. Two shrubs (stem cuttings) must be planted for every one shrub removed.

12. Except in the case of invasive or noxious species, trees and shrubs must be replaced by the same species or similar species, suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.

Invasive or noxious species must be replaced by similar non-invasive or non-noxious species suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.

13. Tree and shrub replacement must not be conducted within a 20 to 30 foot wide path over the pipeline to facilitate visual inspections of the right-of-way in accordance with U.S. Department of Transportation safety regulations.

14. Landowners must be given the option of having replacement trees and shrubs planted on the landowner's property, either on or off the right-of-way. The landowner must also be given the opportunity to waive those options in writing in order to have replacement trees and shrubs planted off the landowner's property.

15. At the conclusion of the project, documentation identifying the actual number, variety, type, location and date of the replacement plantings must be filed with the Commission.

16. Tree and shrub replacements must be inspected annually, in September, for three years. The first annual inspection must be at least one year from the anniversary date of the original plantings. A report of each annual inspection must be submitted to the Commission by October 1 of each year, documenting the condition of plantings and any woodlands work completed as of September of each year. If after the third annual report the survival rate is less than 75%, the Commission may order additional planting(s).

4.0 Appendix B:
Dakota Access Pipeline Tree and Shrub Inventory Form

Dakota Access Pipeline Tree and Shrub Inventory Form

Date:_____ Scientist(s):_____

General Location MP	Species	Number of Individuals*	Planted/ Volunteer	Avoid or Remove During Const.	Number Removed During Const.	Notes and specifications for replacement

*Only include trees with >1 inch diameter at breast height. Stems of rhizomatous shrub species within a 120 foot diameter are counted as a single individual.

DAKOTA ACCESS PIPELINE PROJECT

NORTH DAKOTA ENVIRONMENTAL CONSTRUCTION PLAN

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

Prepared for:

North Dakota Public Service Commission
600 East Boulevard, Department 408
Bismarck, ND 58505

April 2015

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1.0 INTRODUCTION

This Environmental Construction Plan (ECP) is structured to address construction mitigation, reclamation, and revegetation for the Dakota Access Pipeline Project (DAPL or Project) route within the state of North Dakota.

This ECP was developed based on decades of experience implementing Best Management Practices (BMPs) during construction in accordance with generally accepted industry practices for linear infrastructure and cross-country pipelines. It is intended to meet or exceed federal, state, tribal, and local environmental protection and erosion control requirements, specifications, and practices. The ECP is designed to address typical circumstances that may be encountered along the Project. Project-specific permit conditions and/or landowner agreements may supersede general practices described in this document.

2.0 PRECONSTRUCTION

2.1 CONSTRUCTION ROW FLAGGING AND PROJECT SIGNAGE

Dakota Access will complete a final civil survey and stake/flag the right-of-way (ROW) to locate the pipeline centerline and the construction ROW boundaries. Staking may include the Additional Temporary Workspace (ATWS) boundaries, staging areas, sensitive environmental areas, reclamation treatment areas and access roads. Stakes will be placed along the ROW as appropriate to maintain line-of-sight from one stake to the next. All known underground crossings (e.g., gas and water pipelines, fiber optic cable, telephone lines, etc.) and overhead crossings (power lines) will be located and marked to prevent accidental damage during construction.

Signs will be posted along the construction ROW to identify sensitive areas and to alert construction personnel of restrictions that apply. The limits of these areas will be delineated at the edge of the ROW. Fencing may also be required in some areas to further protect site-specific resources. Signs and/or flags will be posted for sensitive environmental features such as wetlands, waterbodies, buffer zones, etc.

2.2 IDENTIFICATION OF AVOIDANCE AREAS

Signs and/or flagging will be posted identifying sensitive features such as wetlands, waterbodies, jurisdictional drainages, buffer zones, rare plant or ecological community sites, regulated wildlife habitat and cultural resources. These indicators will be posted prior to construction in coordination with the survey activities. Indicators will be maintained throughout construction and will be replaced as necessary. An example of signage typical of these projects is below and will be finalized prior to construction in coordination and compliance with all obtained permits, clearance, agency requirements and landowner agreements.

Table 2.2-1
Dakota Access Project Signage

Sign	Description
No Refueling Zone	Signs will be placed at the boundary of the restricted work areas such as wetlands, streams, wells, and environmentally sensitive areas.
Approved Access Road	Project-related access roads will be identified.
No Project Access	Roads that lead to the ROW and could be confused with approved access roads but are not approved for use will be identified.
Exclusion Zone	Exclusion areas where equipment and personnel are not permitted to enter without approval will be identified with signs posted on the ROW boundary.
Waterbody	Waterbodies will be identified; Dakota Access' waterbody procedures or site-specific plans will apply at these waterbodies.
Wetland	Wetlands will be identified; Dakota Access' wetland procedures will apply at these wetlands.

2.3 CONSTRUCTION LINE LIST AND PERMITS

A document that addresses special requirements (e.g., timber salvage, topsoil segregation, restoration measures, fencing requirements, etc.) as identified in landowner agreements and permit conditions, will be implemented, provided the conditions conform to the Project's permits. The Contractor will comply with these requirements and/or conditions as identified in the Construction Line List (CLL) and Environmental Compliance Binder (ECB).

The CCL identifies some requirements provided in landowner agreements; however, it will not be a comprehensive list of construction requirements. The document will be considered in conjunction with other Projects documents, permits, and agreements. The CLL may include but is not limited to the following:

- Drain tiles;
- Irrigation systems;
- Above and below ground water lines;
- Above and below-ground utilities;
- Landowners that utilize pivot irrigation systems;
- Grazing deferment plans, fence cutting and bracing, cattle guard locations, and water requirements for livestock; and
- Specific landowner seeding/restoration requirements.

Any component of irrigation systems, waterlines, utilities, or other physical impediments encountered during construction will be repaired to pre-construction conditions or better and in accordance with applicable permits and easements.

3.0 GENERAL PIPELINE CONSTRUCTION PROCEDURES

In upland areas, the pipeline will be installed using a construction right-of-way varying in width from 75 feet to 150 feet wide depending on soil conditions, vegetation types, and landowner specifications (see Appendix A). In emergent non-saturated wetland areas, the construction ROW width may be reduced to 100 feet (see Appendix A); in saturated and/or forested, and/or scrub shrub wetlands, upland forested areas, or other sensitive areas as conditioned in permits, the construction workspace may be reduced to 85 feet (see Appendix A). Additional temporary workspace will be required to facilitate crossings of other utilities, roads, railways, waterbodies, and wetlands, etc. At all locations, 50 feet of the construction ROW (generally 25 feet on either side of the centerline of the pipeline) will be secured for permanent easement to facilitate pipeline operations, inspection, and integrity management. Fee owned lands have been or will be secured for all tank sites and pump stations. ATWS at these locations will be acquired as necessary.

3.1 ROW ACCESS AND REQUIREMENTS

Access to the ROW will be from public roadways and approved private access roads only. Signs and project maps will be used to identify approved access roads in the field and to ensure that access is confined to only the approved roads. Vehicle tracking of soil from the construction site will be minimized by installation and implementation of BMPs such as stone pads, timber mats, reducing equipment/vehicle access to the construction ROW where practicable (i.e. off-ROW parking), or the equivalent. Installation of stone or timber mat access pads will be in accordance with applicable permits and state/federal specifications. If such BMPs are not adequately preventing sediment from being tracked onto public roads, street sweeping or other equivalent means of collecting sediment will be used. If soil is tracked onto a roadway, accumulated material will be removed from the road and returned to the construction ROW within an upland area as soon as practical at the end of each workday.

Construction equipment and vehicles will be confined to the approved construction footprint and access routes. Standard pipeline construction is composed of specific activities that make up the linear construction sequence. These operations collectively include survey and staking of the ROW; clearing and grading; trenching; pipe stringing, bending, and welding; lowering the pipeline into the trench; backfilling the trench; hydrostatic testing; final tie-ins; commissioning; and ROW cleanup and restoration (see Appendix A). Construction personnel will be limited to the areas required to conduct these activities and will not be allowed off-ROW unless landowner permission is granted or emergency conditions dictate it.

3.2 CLEARING AND GRADING

Following the completion of surveys, the construction ROW will be cleared of vegetation and debris to the extent necessary to facilitate access for construction, operations, and maintenance of the pipeline. Before clearing and grading are conducted, landowner fences may be braced and cut according to Dakota Access specifications as described in Section 8.7 and typical figures in Appendix A. At stream approaches, the contractor may leave an approximate 20-foot buffer (typically from the Ordinary High Water Mark) of undisturbed herbaceous vegetation on all stream banks during initial clearing, except where grading is needed for bridge installation, or where restricted by applicable regulations and/or permit conditions (such as impaired waterways).

A clearing crew will clear the work area of vegetation and obstacles (e.g., trees, logs, brush, rocks). Grading will be conducted where necessary to provide a reasonably level work surface for safe and

efficient operation of equipment. In forested areas, stumps will be cut as close to the ground as practical and left in place except over the trenchline or as necessary to create a safe work surface. Cleared vegetation and debris along the ROW will be disposed of in accordance with federal, state, and local regulations either by burning, chipping and spreading, or transportation to a disposal facility.

3.3 TEMPORARY EROSION CONTROL

Where necessary to contain disturbed soils and to minimize potential erosion and sedimentation, temporary erosion control devices (ECDs) will be installed and maintained throughout construction (see Appendix A). Vegetative buffers will be left where practical at all wetland and waterbody crossings to limit the exposure and impact to these features, final clearing would take place immediately prior to crossing the feature in advance.

Temporary ECDs include, but are not limited to, slope breakers, sediment barriers (i.e., silt fence, straw bales, bio-logs, etc.), stormwater diversions, trench breakers, mulch, and temporary seeding of exposed soils (see Appendix A). The Contractor will maintain ECDs as required in Project construction documents and in compliance with all applicable permits. ECDs will typically be installed after initial clearing and selected grading activities, and will be replaced by permanent ECDs (if needed) as restoration is completed.

Temporary ECDs will be installed:

- Across the entire construction ROW at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from tile line inlets, drainage ways, wetlands, and/or waterbodies until the area is revegetated or replaced with permanent control device(s);
- At the outlet of a temporary slope breaker when vegetation is not enough to control erosion;
- downslope of any stockpiled soil in the vicinity of waterbodies and wetlands;
- For hydrostatic test water discharges, the water should be released directly into the silt fence/ or hay bale structures in conjunction with other approved velocity dissipating devices;
- The base of sloped approaches to streams, wetlands, and roads;
- The edge of the construction ROW as needed; and
- Other areas as necessary to slow water leaving the site and prevent siltation of waterbodies and wetlands down slope or outside of the construction ROW.

Adequate room will be available between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

Temporary ECDs installed across the travel lane may be removed during active daytime construction; however, ECDs will be properly reinstalled after equipment passage, or activities in the area are completed for the day. Temporary ECDs that will be used during construction are further explained in the following subsections.

3.3.1 Temporary Stabilization

Temporary stabilization measures will be initiated as soon as practicable in portions of the ROW where construction activities have temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day is precluded by weather, stabilization measures will be initiated as soon as machinery is able to access the ROW. If activities will resume within 21 days from when the activities ceased in any given area, temporary stabilization measures are not required.

In the event that construction is completed more than 30 days before the seeding season for perennial vegetation, areas adjacent to waterbodies will be mulched with 3 tons/acre of straw, or its equivalent, to a minimum of 100 feet on either side of the waterbody. A temporary seed mix or cover crop may be applied when the native/preferred seed mix cannot be planted until the next growing season. Recommendations for cover crop seeding can be found in Section 9.3 of this plan.

Temporary sediment barriers may be removed from an area when that area is successfully revegetated (i.e., if the right-of-way surface condition is similar to adjacent undisturbed lands) or it is replaced with a permanent sediment barrier.

3.3.2 Erosion Control Blanket

The appropriate class of erosion control blanket (e.g., jute matting, straw blankets with plastic netting, or curlex) may be installed in accordance with manufacturer recommendations and/or state Department of Transportation (DOT) specifications on slopes greater than 5 percent that would be exposed over the winter and drain to surface waters (see Section 8.8).

3.3.3 Mulch

Mulch (weed-free straw, wood fiber hydromulch, or a functional equivalent) will be applied to disturbed areas during restoration and seeding (except for actively cultivated land and wetlands) if requested by the landowner or land managing agency, if specified by the applicable permits or licenses, or deemed appropriate by the contractor. Mulch is a suitable ECD in combination with other restoration techniques on:

- Slopes greater than 5 percent;
- Dry, sandy areas that can blow or wash away (field decision).

Mulch will be free of noxious weeds as listed in applicable state laws. Sources will be approved by Dakota Access prior to purchase.

When applied, mulch will be applied at a minimum rate of 2 tons per acre to cover at least 75 percent of the ground surface. If mulch is to be applied before seeding, the rate shall be increased to 3 tons per acre on slopes within 100 feet of waterbodies and wetlands unless otherwise stipulated by permit conditions. Mulch may be uniformly distributed by a mechanical mulch blower or by hand. Mulch will be anchored/crimped using a mulch-anchoring tool, disc set in the straight position to minimize loss by wind and water as site conditions allow or other acceptable means to achieve the desired cover.

3.3.4 Cat Tracking

Cat tracking, also known as horizontal slope grading, may be implemented based on site conditions (e.g., sandy or silty soils) to reduce erosion potential. Cat tracking is achieved by driving a bulldozer vertically

up and down the slope which results in the tracks being oriented horizontally; creating small speed bumps for water.

3.3.5 Temporary Slope Breakers

Temporary slope breakers will be installed diagonally across the ROW on slopes to control erosion by shortening the slope length and reducing the velocity and concentration of runoff on the ROW (see Appendix A). Temporary slope breakers may be constructed of materials such as soil (never topsoil), staked straw bales, sand bags or silt fence.

Temporary slope breakers may be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, or road crossings at the following spacing or closer:

Table 3.3.5-1
Spacing of Slope Breakers

Slope (percent)	Spacing (feet)
5 to 15 percent	300 feet
15 to 25 percent	200 feet
>30 percent	100 feet or as necessary

The outfall of each temporary slope breaker will be directed to a stable, well vegetated area or into an energy-dissipating device at the end of the slope breaker and off the construction ROW. The outfall of each temporary slope breaker will be positioned so as to prevent sediment discharge into wetlands, waterbodies or other sensitive resources. Temporary slope breakers will be inspected on a weekly basis in areas of active construction; on a bi-weekly basis in areas with no active construction or within 24 hours of each 0.5-inch or greater rainfall.

3.3.6 Sediment Barriers

Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. Barriers may be constructed of materials such as silt fence, staked straw bales, logs, compacted earth (i.e., drivable berms), sand bags or other appropriate materials (see Appendix A). Where silt fence is used, J-hooks will be installed at outlets.

At a minimum, temporary sediment barriers will be installed across the entire construction ROW at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetland, or road crossing until construction is complete. Adequate room will be left between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

Where wetlands or waterbodies are adjacent to and downslope of construction work areas, sediment barriers may be installed along the edge of the right-of-way at these areas to prevent sediment flow into the wetland or waterbody. In travel lanes, drivable berms may be installed rather than removable sediment barriers such as straw bales.

3.4 TOPSOIL REMOVAL AND STORAGE

Upland areas where topsoil will be stripped include cropland, hay fields, certain pasture lands, selected areas of sensitive native range, residential areas and/or other areas specified in Project plans, commitments and/or permits. Topsoil will not be used to construct trench breakers, temporary slope breakers, to improve or maintain roads, or to pad the pipe. Gaps will be left and ECDs installed where stockpiled topsoil and spoil piles intersect with water conveyances (i.e., ditches, swales and waterways) to maintain natural drainage.

3.4.1 Topsoil Stripping Procedures

Dakota Access will perform topsoil segregation in accordance with landowner agreements and agency conditions. Up to 12-inches of topsoil will be stripped from the trench and spoil area or from across the full construction ROW (see Appendix A). Topsoil will be stored in a manner to avoid mixing with excavated subsoil.

3.5 PIPE STRINGING, BENDING, AND WELDING

Generally, sections of coated pipe (also referred to as joints) up to 80-feet long will be transported over public road networks and authorized private access roads to the ROW by truck and placed or "strung" along the trench line. Pipe is generally placed on wooden skids to keep the pipe off the ground and facilitate welding.

After the pipe sections are strung along the ROW and before they are joined together, individual sections of the pipe will be bent where necessary to allow for uniform fit of the pipeline with the varying contours of the bottom of the trench. Typically, a track-mounted, hydraulic pipe-bending machine will tailor the shape of the pipe to conform to the contours of the terrain. Where direction changes require bends greater than what can be properly bent in the field, a factory made "induction bend" will be used. After the pipe sections are bent, they will be welded together into long sections and placed on wooden support skids.

3.6 TRENCHING

Trenching involves excavation of a ditch for pipeline placement and is accomplished through the use of a trenching machine, backhoe, or similar equipment. Trenching would occur after necessary clearing and grading, with applicable ECD's installed. Trench spoil will be deposited along the trench within the construction work areas with topsoil segregation utilized where necessary (see the typical ROW construction drawings in Appendix A). Gaps will be left between the soil piles to facilitate natural drainage patterns and to prevent stormwater runoff from backing up or flooding adjacent areas.

Generally, the trench will be excavated to a sufficient depth to allow for a minimum of 3 feet of cover over the pipe as required by federal laws, regulations and industry best practices. Typically the bottom width of the trench will be cut at least 12 inches wider than the width of the pipe. The width at the top of the trench will vary to allow the side slopes to be adapted to local conditions at the time of construction for safety and compliance.

3.6.1 Open Trench Wildlife and Livestock Mitigation

Trench plugs will be installed at visible wildlife game trails as identified by an EI or wildlife agency and livestock watering trails as identified by landowner that intersect the trench line to allow cattle and wildlife to cross the trench. Gaps will be left in spoil and topsoil stockpiles at all trench plugs to permit unimpeded movement of wildlife and livestock. Suitable ramps will be installed from the bottom of

trench to the top with a minimum of 5-foot wide open path across the trench plug. A corresponding gap in the welded pipe string will be left at each trench plug.

3.6.2 Trench Breakers

Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Topsoil will not be used to construct a trench breaker. A typical figure showing trench breaker installation is provided in Appendix A.

Trench breaker locations will generally coincide with slope breakers as discussed in Sections 3.3.5 and 3.11.1. At a minimum, a trench breaker will be installed at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

3.6.3 Shallow to Bedrock Conditions

When shallow bedrock conditions are encountered, topsoil and unconsolidated subsoil will be stripped and stored on the ROW as separate lifts from the underlying paralithic bedrock. Mechanical rippers will be used to fracture rock prior to excavation. Rock will be stockpiled along the edge of the construction ROW and either used during reclamation or disposed of off-site. Rock will not be permanently windrowed along the edge of the construction work area, unless specifically requested by the landowner to keep the rock.

3.7 TRENCH DEWATERING, LOWERING-IN, AND BACKFILLING

When water accumulates in the trench (via groundwater infiltration or precipitation), it will be dewatered using pump(s) or well pointing. The water will be discharged to an upland area, utilizing the appropriate sediment filtration/energy dissipation device, within or adjacent to the approved workspace (see Appendix A). Dewatering devices will typically be located on the edge of the construction ROW as detailed in Dakota Access' Storm Water Pollution Prevention Plan (SWPPP). Prior to lowering-in, the trench will be visually inspected to ensure that it is free of rock and other debris that could damage the pipe or coating.

Once the trench is ready to receive the pipe, completed sections of pipe will be lifted off the temporary supports by side boom tractors or similar equipment and placed into the trench. Tie-in welding and inspection will occur within the trench to join the newly lowered-in sections with the previously installed sections of pipe.

In rocky areas, padding material such as finer grain sand, soil, or gravel will be placed in the bottom of the trench to protect the pipeline. No topsoil will be used as padding material. The pipeline may also be wrapped in a rock shield, which is typically made of fabric or screen.

Prior to backfilling, permanent trench breakers will be installed where necessary to minimize the potential for water movement down the ditch and potential subsequent erosion (see Section 3.6.2). Excavated soils will be replaced in the opposite order it was removed and returned to the horizon in which they originally occurred. First, subsoil will be returned to the trenched area, then topsoil will be replaced. Excess rock will be removed in accordance with Section 3.11.2 below. Areas with compacted subsoils may require decompaction measures prior to the replacement of topsoil as described in Section 3.10. Soil may be mounded over the trench in upland areas, establishing a thin crown to compensate for normal soil settling.

3.8 HYDROSTATIC TESTING

After backfilling, the pipeline will be hydrostatically tested to ensure the integrity of the line. The pipeline will be broken into test segments based on final design, water availability, permitting requirements, and terrain. Water for hydrostatic testing will likely be obtained from a combination of groundwater and surface water sources in accordance with all applicable regulations and permit conditions. Internal test pressures will be tested at a pressure 25 percent greater than the maximum operating pressure for a minimum of 8 hours. If leaks are found, the leaks will be repaired and the pipe retested until the test is successful.

Following testing, the hydrostatic test water will be discharged to well vegetated, stable, upland areas utilizing the appropriate energy dissipating devices along the construction ROW.

Details related to hydrostatic testing including test segments, water requirements, withdrawal and discharge locations, aquatic mitigation techniques used during withdrawal, and discharge mitigation techniques will be conducted in accordance with applicable regulations, permits, and authorizations.

3.9 FINAL TIE-INS, COMMISSIONING, AND MARKERS

Following successful hydrostatic testing, test manifolds will be removed and the final pipeline tie-ins will be made. After final tie-ins are complete, the tie-in welds are inspected, and the line is sufficiently dried, pipeline commissioning will commence. Commissioning involves activities to verify that equipment is properly installed and working, the controls and communications systems are functional, and that the pipeline is ready for service. Finally, the pipeline is prepared for service by purging the line of air and loading the line with product.

Markers showing the location of the pipeline will be installed at all public road crossings in order to identify the owner of the pipeline and convey emergency information in accordance with applicable governmental regulations. Additional markers may be installed on fence lines and other areas to facilitate line of sight of the pipeline. Aerial markers providing information and guidance to aerial patrol pilots may also be installed.

3.10 SOIL DECOMPACTION

Both topsoil and subsoil may be decompacted. Soils that have received substantial construction traffic may be tested at the conclusion of construction activities in disturbed areas using penetrometers or other appropriate devices. Similar soil types under similar moisture conditions may be examined in disturbed areas and in undisturbed, off-ROW areas to evaluate compaction on the ROW.

Areas with compacted subsoils (where subsurface rock does not interfere with ripping) may be scarified or ripped to a depth up to 18 inches in lands used for crop production and to a depth up to 12 inches in other agricultural lands using rippers, chisel plow, para-plow, or other similar tillage equipment until the soil density is comparable to adjacent areas off the construction ROW. If ripped, the ripper shanks will be set apart 12 to 18 inches. Topsoil will be replaced after decompaction is completed. Sandy soils will not be scarified. Topsoils exhibiting compaction will be decompacted with a harrow plow or other deep tillage equipment prior to seeding and mulching, as needed.

3.11 CLEANUP AND ROUGH/FINAL GRADING

Construction debris on the ROW will be disposed of at off-site facilities. Subsequent to backfill, the construction ROW will be rough graded, or generally returned to approximate elevations. All work areas will be graded and restored to preconstruction contours. During cleanup, a travel lane may be

temporarily left open to allow access by construction traffic. Interim ECDs will be inspected and maintained during this period. When access is no longer required, the travel lane will be removed and the ROW restored. Access to the newly created ROW may be restricted from unauthorized vehicles at public access points by installing gates, boulders, or other barriers.

3.11.1 Permanent Slope Breakers

Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction ROW, and prevent sediment deposition into non-affected areas and sensitive resources. Permanent slope breakers are typically constructed of materials such as soil, sand bags, or a functional equivalent. With landowner permission, slope breakers may extend slightly (about 4 feet) beyond the edge of the construction ROW to effectively drain water off the disturbed area. Spacing for permanent slope breakers are typically the same as those for temporary slope breakers described in Section 3.3.5, however, land use and landowner specifications may alter the configuration and spacing. Slope breaker spacing may also be modified to correspond with slope breakers from adjacent facilities (see Appendix A). In the absence of stable, adjacent areas, energy-dissipating devices will be constructed at the end of the breaker.

3.11.2 Stone removal

In cultivated or rotated cropland and managed pasture, stones equal to or larger than 4 inches in diameter will be removed from the upper 12 inches of topsoil or as specified in permit conditions, contract documents, or landowner agreements. After the topsoil is replaced, stone removal efforts will cease when the size and density of stones on the construction ROW are similar to undisturbed areas adjacent to the construction ROW as necessary. Excess rock will be piled in upland areas where obtained in accordance with landowner specifications, or will be hauled off-site to an approved site.

3.11.3 Repair of Damaged Conservation Practices

The Contractor will restore all soil conservation practices (e.g., terraces, grassed waterways, etc.) that are damaged by the pipeline construction to preconstruction conditions.

3.11.4 Restoration of Pre-construction Contours

Final grading will be completed within approximately 10 to 20 days of construction completion (including the installation of permanent erosion control measures in the areas of steep slopes) weather permitting. The construction ROW will be restored to its pre-construction conditions as practical. In upland areas, a thin crown will be graded over the trench to account for expected settling of trench backfill. Should uneven settling or documented surface drainage problems occur following the completion of pipeline construction and restoration, the appropriate steps will be taken to remedy the issue.

4.0 ROAD, HIGHWAY, RAILROAD, FOREIGN UTILITY CROSSINGS

Construction across public roads, highways, and railroads will be in accordance with the requirements of road and railroad crossing permits and approvals. Major paved roads, highways and railroads generally will be crossed by bores or horizontal directional drilling (HDD) completed beneath the road or railroad (see Appendix A). HDD methods are described in Section 5.7 below. Boring requires the excavation of a pit on each side of the feature, the placement of boring equipment in the pit, then boring a hole under the road at least equal to the diameter of the pipe. Once the hole is bored, the pipe will be pulled through the borehole. There will be little or no disruption to traffic at road, highway or railroad crossings that are bored or HDD'd.

Most smaller, unpaved roads and driveways may be crossed using the open-cut method where permitted by local authorities or private owners. The open-cut method will require temporary closure of the road to traffic and establishment of detours. If no reasonable detour is feasible, at least one lane of the road being crossed will be kept open to traffic, except during brief periods when it is essential to close the road to install the pipeline. Most open-cut road crossings will be completed and the road resurfaced in a few days. Measures such as posting signs at open-cut road crossings and utilizing flagmen to ensure safety and minimize traffic disruptions will be taken.

Coordination activities with the North Dakota Department of Transportation and counties crossed by the pipeline route are being conducted to obtain permits and develop road mitigation measures that might be necessary for construction and post-construction of the project.

Foreign pipeline and utility infrastructure crossings will meet or exceed industry standard engineering practices and be done in coordination with the owner of the utility. Generally, a one to two foot separation between foreign utilities will be kept.

5.0 WATERBODY CROSSINGS

5.1 NOTIFICATION

Applicable notifications will be made for waterbody crossings to entities including potable water intake authorities as required by local laws and/or regulatory agencies as required by permit.

5.2 INSTALLATION

The majority of the perennial waterbodies will be crossed using the open-cut, flume, or dam and pump method depending on conditions at time of construction (see Appendix A). The HDD method will be used to cross larger waterbodies and in other areas where conventional installation is not idea due to conditions such as topography, saturation or proximity to other sensitive features. All waterbody crossings will be conducted according to the requirements of waterbody crossing permits.

Many small waterbodies crossed by the Project have ephemeral to intermittent flows. If these waterbodies are dry when crossed, Dakota Access will use conventional upland cross-country construction techniques. If the waterbodies are flowing when crossed, the open-cut, flume, or dam and pump methods, described below will be used. All construction activities in waterbodies will be expedited to the extent practicable to minimize impacts.

There will be no refueling of equipment, storage of fuel, lubricants or hazardous materials within 100 feet of a waterbody unless no reasonable alternative exists and additional containment measures are implemented.

5.2.1 Additional Temporary Workspace

ATWS areas may be required on both sides of waterbody crossings to stage construction, fabricate pipe, and/or stockpile soils. These ATWS areas will generally be located at least 20 feet away from the water's edge.

5.3 BRIDGES

During the clearing and grading efforts, temporary bridges may be installed across waterbodies to allow construction equipment to cross. Bridges will be designed to withstand the expected flow of a given waterbody. Construction equipment will be required to use the bridges, except for clearing crews which will be allowed one pass through a waterbody before the bridges can be installed. Bridges will be removed as soon as practical after restoration.

Equipment bridges will consist of one of the following: clean rock placed over flume pipes, prefabricated construction mats, rail flat cars placed over the waterbody with or without a culvert, or flexi-float or other temporary bridging deemed appropriate for site conditions (see Appendix A). In addition, ECDs will be installed along the edges of the equipment bridges to prevent sediment from entering the waterbody being crossed.

5.4 OPEN CUT CROSSING METHOD

For open-cut crossings, clearing adjacent to waterbodies will involve the removal of trees and brush from the construction ROW and ATWS areas. Woody vegetation within the construction ROW will be cut at ground level and cleared to the edge of the waterbody. Sediment barriers will be installed at the top of the streambank if no herbaceous strip exists. Initial grading of the herbaceous strip will be limited to the extent needed to create a safe approach to the waterbody and to install a bridge.

During clearing, sediment barriers will be installed and maintained across the ROW adjacent to a waterbody and within ATWS areas to minimize the potential for sediment runoff (see Appendix A). Silt fence and/or straw bales located across the working side of the ROW will be removed during the day when vehicle traffic is present and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the ROW in lieu of silt fence and/or straw bales.

Once the trench is excavated, the prefabricated segment of pipe will be installed in the trench. Most pipe installed under a waterbody will be coated with concrete or equipped with set-on weights to provide negative buoyancy.

5.4.1 Sediment Control

As stated in Section 3.3, ECDs will be installed and maintained throughout construction where necessary to contain disturbed soils during clearing and grading, and to minimize potential erosion and sedimentation. Vegetative buffers will be left where practical at all wetland and waterbody crossings to limit the exposure and impact to these features, final clearing would take place immediately prior to crossing the feature in advance.

ECDs will be properly installed along the banks of waterbodies. Sediment control devices will be maintained until revegetation of adjacent areas is considered successful or the area is stabilized. Permanent diversion berms may be constructed at the base of slopes near waterbodies, unless otherwise specified by the landowner or land-managing agency.

5.4.2 Trench Plugs

Earthen trench plugs will generally be left in place on both banks of the waterbody until immediately before pipe installation. This will separate the waterbody trench from the upland trench to prevent water from being diverted into the upland portions of the pipeline trench and to prevent the accumulation of sediment laden water from flowing into the waterbody.

5.4.3 Pipeline Burial Depth

The pipeline will be installed at a depth below the bed of waterbodies consistent with DOT pipeline design and operating code as set forth in 49 CFR, PART 195-*TRANSPORTATION OF HAZARDOUS LIQUIDS BY PIPELINE*, to prevent exposure of the pipeline and maintain the integrity of the system in event of a flash flood.

5.4.4 Backfill Material

Excavated native streambed spoil will be used for trench backfill in waterbodies, unless expressly permitted or conditioned otherwise by the respective regulatory agency. Backfilling will begin as soon as practical after installation of the pipe.

5.4.5 Streambed and Bank Stabilization

Original channel configurations will be reestablished, and the banks replaced, compacted, and restored to the original condition. Banks may be graded to a more stable configuration if eroding or unstable conditions were present prior to construction.

To provide additional erosion control, erosion control fabrics (e.g., jute matting, straw blankets with plastic netting, or curlex) will be used on the banks of washes and waterbodies where steep slopes are present and as warranted in other locations.

The banks of perennial streams will be seeded with mixes listed in Section 9.5 or according to landowner agreements. Dry wash bottoms will not be seeded. If required, temporary fences will be installed at the edges of waterbodies to prevent grazing cattle from disturbing the area before a mature vegetative cover is established and the banks stabilized.

5.5 FLUME CROSSING METHOD

The flume crossing method will involve diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody (see Appendix A). The first step in the flume crossing method will involve placing a sufficient number of adequately sized flume pipes in the waterbody to accommodate the anticipated flow during construction. After placing the flume pipes in the waterbody, sand or pea gravel bags, water bladders, or metal wing deflectors will be placed in the waterbody upstream and downstream of the proposed trench to dam the stream in order to seal the waterbody and divert the water flow through the flume pipes, thereby isolating the water flow from the construction area between the dams. Leakage from the dams, or subsurface flow from below the waterbody bed, may cause water to accumulate in the isolated area. As water accumulates in this area, it may be periodically pumped out and discharged into upland areas away from the water's edge. Trackhoes located on the bank(s) of the waterbody will excavate a trench under the flume pipe in the dewatered streambed. Spoil excavated from the waterbody trench will be placed or stored a minimum of 10 feet from the edge of the waterbody, or in accordance with applicable permit conditions. Once the trench is excavated, the pipe will be installed beneath the flume pipes. The trench will then be backfilled with the native spoil and banks stabilized before removing the dams and flume pipes and returning flow to the waterbody channel.

5.6 DAM AND PUMP CROSSING METHOD

The dam and pump crossing method is an alternative to the flume crossing method where pumps and hoses will be used instead of flumes to move water around the construction work area (see Appendix A). The technique involves damming the waterbody with sandbags, steel plates, water bladders or the like upstream and downstream of the trench area. Pumps will be set up at the upstream dam with the discharge line routed across the ROW, discharging water immediately downstream of the downstream dam. The intake will be screened to prevent entrainment of aquatic species, and suspended in the water column to reduce uptake of sediment and the benthic community. Water flow will be maintained through all but a short reach of the waterbody at the actual crossing. The pipeline will be installed in the isolated area between the dams at least 5 feet below the streambed. After backfilling, the dams will be removed and the banks restored and stabilized.

5.7 TRENCHLESS INSTALLATION (BORE OR HORIZONTAL DIRECTIONAL DRILL)

Trenchless installation is utilized to avoid direct impacts to sensitive features, provide efficient and safe installation across major waterbodies, and is used in areas where topography, soils, or other constraints deem conventional techniques unsuitable. A bore beneath a waterbody is the same as a bore for crossing of features discussed above in Section 4.0. Geotechnical surveys, including bores, are completed during the design phase to evaluate the success potential of an HDD at each particular location.

An HDD requires a drill rig to be set up on one side to drill a small-diameter pilot hole from one side of the crossing (entry side) to the other (exit side). Drilling will be achieved using a powered drill bit. The drilling fluid, commonly referred to as mud, will be a mixture of water and bentonite (a naturally occurring clay mineral), which will be pumped into the drill hole through the drill pipe during the drilling process. The pressure of the drilling mud will transmit hydraulic power through the drill bit, transport

cuttings to the surface, lubricate the drill bit and stabilize the drill hole. Water, the main ingredient of drilling mud, will be obtained from the waterbody during drilling or will be trucked in from another source. Water use permits will be obtained prior to uptake if applicable. Small pits will be dug at or near the entry and exit holes to temporarily store the mud and cuttings. The mud and cuttings will be pumped from the temporary storage and properly disposed.

As drilling the pilot hole progresses, segments of drill pipe will be inserted into the pilot hole to extend the length of the drill across and under the waterbody. The drill bit will be steered and monitored throughout the process to maintain the designated path of the pilot hole. Once the pilot hole is complete, a larger reaming tool will be attached to the end of the drill pipe on the exit side of the hole. The reamer will then be drawn back through the pilot hole to the drill rig (entry side). Drill pipe sections will be added to the rear of the reamer as it progresses toward the rig, thereby allowing a string of drill pipe to remain in the hole at all times. Typically, several passes of consecutively larger reaming tools are required before the hole will be of sufficient size.

The pipeline segment to be installed beneath the waterbody will be fabricated into one section on the ROW on the exit side of the crossing. The pipe segment will be radiographically inspected and/or hydrostatically tested prior to installation. After the hole is completed, the pipeline segment will be attached to the drill pipe on the exit side of the hole and pulled back through the drill hole toward the drill rig.

Once the pipeline is installed, excess drilling mud will be collected and disposed of in accordance with applicable regulations. If water will be left over from the drilling process, it will be discharged into a well-vegetated upland area utilizing the appropriate energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale dewatering structure at the site.

Ideally, the HDD process involves no disturbance to the bed or bank of the waterbody being crossed. However, if a natural fracture or void in the ground is encountered, an unexpected release of drilling mud could occur. Unconsolidated gravel, coarse sand, and fractured bedrock present paths that can run laterally or vertically and allow the flow of drilling mud. If drilling mud moves laterally, the release may not be evident on the ground whereas a flow path extending vertically from the drill hole to the surface may be. The volume of mud released will be dependent on a number of factors, including the size of the fault, the permeability of the geologic material, the viscosity of the drilling mud, and the pressure of the hydraulic drilling system.

Releases to surface generally occur above or near the drill path. In the event drilling mud is released on surface, including within a wetland, it could be immediately contained with straw bales, silt fence, or berms. A small pit may be dug at the release site to contain its spread, and a pump be used to transfer the drilling mud from the pit and into a containment vessel.

A drilling mud release to a waterbody could be more difficult to contain because mud may be quickly dispersed into the water and carried downstream. In the event of a release to a waterbody, an attempt may be made to plug the fault by lowering the drilling pressure and thickening the drilling mud with additional bentonite, or other non-hazardous materials that are compatible with the drill equipment being used. In-stream sediment barriers such as silt screens or small coffer dam type structures may be deployed to minimize impacts and facilitate remediation.

The Horizontal Directional Drilling Contingency Plan which has been developed for the Project will describe the prevention, detection, monitoring, notification and corrective action procedures in the event of an inadvertent release of drilling fluid.

In most cases, horizontal directional drilling can be completed in spite of an inadvertent drilling mud release. However, in rare situations, an HDD may be unsuccessful and the waterbody may not be able to be crossed using this method. The presence of outwash interspersed with boulders and cobbles, fractured bedrock, or non-cohesive coarse sands and gravels increase the likelihood an HDD may fail due to refusal of the drill bit or collapse of the bore hole in non-cohesive, unstable substrate.

6.0 WETLAND CROSSINGS

The method of pipeline construction in wetlands will depend largely on the stability of the soils at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on equipment mats, timber riprap, or straw mats, construction will occur in a manner similar to conventional upland cross-country construction techniques. Several modifications and limitations to conventional upland construction procedures can be implemented during wetland construction to reduce the impacts to wetland hydrology and soil structure, ensure the integrity of the pipeline within the feature, and also to facilitate restoration.

In emergent non-saturated wetland areas, the construction ROW width may be reduced to 100 feet; in saturated, forested, and scrub shrub wetlands, or other sensitive areas as prescribed in permits or consultations, the construction workspace may be reduced to 85 feet. ATWS areas will be required on both sides of wetlands to stage construction, fabricate the pipeline, and store materials. ATWS areas will typically be located in upland areas a minimum of 30 feet from the wetland edge.

Construction equipment working in wetlands will be limited to that essential for proper installation. In areas where there is no reasonable access to the ROW except through wetlands, non-essential equipment will be allowed to travel along the prescribed travel path across wetlands. The refueling of equipment, storage of fuel, lubricants or hazardous materials within 100 feet of a wetland in not to be conducted unless no reasonable alternative exists and additional containment measures are implemented.

Clearing of vegetation in wetlands will be limited to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. Generally stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline. Stump removal and grading may be conducted in other areas if dictated by safety-related concerns. In unsaturated wetlands, topsoil from the trenchline and spoil pile area will be stripped and stored separately from subsoil. Topsoil segregation is generally not feasible in saturated soils.

ECDs such as silt fence and staked straw bales will be installed and maintained as necessary to minimize the potential for sediment runoff into wetlands as discussed in Section 3.3. Sediment barriers will be installed across the full width of the construction ROW at the base of slopes adjacent to wetland boundaries. Silt fence and/or straw bales installed across the working side of the ROW may be removed during active construction but will be replaced after each pass or at the end of the working day. Alternatively, drivable berms may be installed and maintained across the ROW. Sediment barriers will also be installed within wetlands along the edge of the ROW, where necessary, to minimize the potential for sediment to run off the construction ROW and into wetland areas outside the work area. If trench dewatering is necessary in wetlands, silt-laden trench water will be discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale structure, to minimize the potential for erosion and sedimentation.

Where wetland soils are saturated and/or inundated, the pipeline may be installed using the push-pull technique. The push-pull technique will involve stringing and welding the pipeline outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats or timber riprap. The prefabricated pipeline will be installed in the wetland by equipping it with buoys and pushing or pulling it across the water-filled trench. After the pipeline is floated into place, the floats will be removed and the pipeline will sink into place. Most pipe installed in wetlands will be coated

with concrete or equipped with set-on weights to provide negative buoyancy. Additionally, trench plugs are often installed at the entry and exit points of the feature to facilitate restoration of the subsurface hydrology and prevent the pipeline trench from inadvertently draining the feature.

Because little or no grading will occur in wetlands, restoration of contours will be accomplished during backfilling. Prior to backfilling, trench breakers will be installed where necessary to prevent subsurface drainage of water from wetlands. In areas where topsoil has been segregated from subsoil, the subsoil will be backfilled first, followed by the topsoil. Construction in wetlands under wet conditions may require use of equipment mats, timber riprap, gravel fill, geotextile fabric, and/or straw mats which will be removed following backfilling.

Where wetlands are located at the base of slopes, permanent slope breakers will be constructed across the ROW in upland areas adjacent to the wetland boundary. Temporary sediment barriers will be installed where necessary until revegetation of adjacent upland areas is successful. Once revegetation is successful, sediment barriers will be removed from the ROW and disposed of properly.

In wetlands where no standing water is present, the construction ROW will be seeded utilizing the seed mixes located in Section 9.5 or be allowed to revegetate naturally based on site condition. Lime, mulch, and fertilizer will not be used in wetlands.

7.0 ABOVE GROUND FACILITY CONSTRUCTION

7.1 TANK TERMINALS AND PUMP STATIONS

Six tank terminal sites and associated infrastructure are planned for the Project. Details are in the North Dakota Public Service Commission Application. The sites are variably sized from 20 to 50 acres and will consist of the following infrastructure.

- Two to three 100,000 to 200,000 barrel storage tanks;
- Three to 5 client shipper receiving traps;
- Three to six booster and mainline pumps;
- Two main pipeline meter skids; and
- One each main pipeline receiver and launcher traps.

Construction activities at each of the tank terminal facilities will be similar and include a standard sequence of activities. These include clearing and grading, installing foundations, undergrounds, and control buildings and associated facilities.

7.1.1 Clearing and Grading

Sites will be cleared of vegetation and graded as necessary to create a level surface for the movement of construction vehicles and to prepare the area for foundations. ECDs will be installed to minimize the potential for erosion. Topsoil may be stripped and segregated from areas that are likely to be used for non-industrial purposes following completion of construction. Reserve soil stored on site will be seeded with a temporary cover crop as described in Section 9.3 to minimize the potential for erosion and sedimentation from these areas.

7.1.2 Foundations

Soils will be excavated as needed for the foundations of buildings, tanks, pumps, traps, and associated infrastructure. Forms will be set, rebar installed, and concrete poured and cured in accordance with applicable standards. Concrete pours will be randomly sampled to verify compliance with minimum strength requirements. Backfill will be compacted in place; excess topsoil and subsoil may be later used onsite for final grading and landscaping or hauled offsite.

7.1.3 Building Design and Construction

Building construction will begin after concrete foundations are completed. Typically, the steel frame of the building is erected, followed by the installation of the roof, exterior casing, insulation, and interior casing. The air inlet and exhaust facilities are then added. Cut-outs for protrusions through the siding (such as inlet and exhaust vents) will be flashed to ensure that the building will be weather-tight. The buildings may be acoustically insulated per design specifications. Aboveground storage tanks will be installed within diked areas or secondary containment in accordance with regulations and operational standards. Each Tank Terminal may include one or more prefabricated buildings, which will be set on the completed foundation(s).

To the extent compatible with Good Engineering Practice, the station buildings will be architecturally designed (form) and painted (color) to be compatible with landscapes in the areas in which they are located. Additionally, the appropriate agencies will be consulted to determine if additional aboveground facilities will require specific measures to enhance visual quality.

7.1.4 Pressure Testing

High pressure piping in the tank terminal facilities will be hydrostatically tested with pressurized water in the piping to ensure the piping is free from leaks and capable of withstanding the operating pressure for which it is designed. Internal test pressures and durations will be in accordance with local, state and Federal requirements, company standards, and applicable permits. Hydrostatic test water appropriation and discharge will be conducted with applicable permits.

7.1.5 Commissioning

Commissioning is performed prior to placing the site in service. Commissioning involves activities to verify that all equipment is properly installed and working; the controls, safety devised, and communications systems are functional; and all associated infrastructure is ready for service.

7.1.6 Final Grading and Landscaping

During startup and testing, or as soon as weather permits thereafter, the tank terminal sites will be final graded and landscaped. If construction extends into the winter, landscaping (if any) may be postponed until the following spring or early summer.

A permanent security fence will be installed around the Tank Terminal sites. Tank terminal access roads also will be final graded. Parking areas for vehicles will similarly be paved or graveled. Because each of the Tank Terminal sites are located in remote, undeveloped areas and/or adjacent to existing commercial/industrial facilities, the station buildings will be designed to be consistent with the character of the surrounding land uses (to the extent possible).

7.1.7 Infrastructure Facilities

The Tank Terminals will operate on locally-purchased power, and will be fully automated for unmanned operation. The power will be utilizing nearby high voltage transmission lines and install a transformer to reduce the voltage to provide 4,160V power. This 4,160V power will be for the motors that drive the pumps. A second transformer will be installed to reduce the transmission line voltage to provide 480V power for other pump station equipment.

7.1.8 Erosion Control, Revegetation, and Maintenance Procedures

During the construction of the tank sites, all applicable state and local permits will be adhered to, as well as site-specific measures developed in consultation with land managing agencies. ECDs will be properly maintained throughout construction and reinstalled as necessary until stabilization is achieved. Areas that are not used for industrial purposes may be restored and reseeded in accordance with Section 9.0.

7.2 MAINLINE VALVES AND LAUNCHERS/RECEIVERS

As part of construction of the pipeline, valves will be installed in accordance with the DOT's Title 49 CFR Part 195.260. Valve construction will include clearing and grading, installing underground piping, testing the piping, testing the control equipment, cleaning up the work area, graveling the site, and fencing the facilities. Valve construction will generally be concurrent with the construction of the pipeline. Upon

completion, the disturbed area will be stabilized with gravel within a chain-link or barbed wire security fence.

8.0 SPECIAL PIPELINE CONSTRUCTION PROCEDURES

In addition to standard pipeline construction methods, special construction techniques will be used where warranted by site-specific conditions.

8.1 TRIPLE DITCH METHODS

Alternate soil handling-procedures may be necessary in areas where standard two-lift pipeline soil handling procedures may result in mixing of dramatically different subsoil and topsoil layers and thereby reducing soil productivity. In these areas, the topsoil (i.e., the "first lift") would be salvaged at a minimum over the trench according to the depth determined during pre-construction surveys. The "second-lift" material (generally B-horizon material that is non-saline and/or has significantly less coarse fragment than the subsoil) would then be salvaged and windrowed next to the salvaged topsoil. The trench spoil material (the "third lift") that would be saline or have a large volume of coarse fragments would then be placed adjacent to the second-lift material. Following construction, the soils would be replaced in the opposite order of extraction and would be feathered across the proposed Project route area.

8.2 DIFFICULT SOILS

To promote the optimum regrowth potential for areas with difficult soils, a detailed analysis of soils along the pipeline route was conducted to assess areas which contain shallow soils, saline/sodic soils, droughty soils, highly erodible soils, and those with a high potential for flooding. Slope, geomorphologic features, and vegetative cover were also accounted for U.S. Department of Agriculture Natural Resources Conservation Service county field office and North Dakota State University Soils Laboratory personnel's knowledge of problem areas based on adjacent project ROW or other factors were used to produce recommendations for site-specific mitigation and seed mixes which are best suited to produce a stable ROW and maximize regrowth potential.

8.2.1 Shallow Soils and Steep Soils

On steep slopes, shallow soils can be extremely erosive having limited root depths and water storage capacity. These areas are referred to as shallow bedrock, and bedrock outcrop areas. Special site treatment during construction will allow the best chance of successful post-construction restoration. A combination of previously detailed measures will be utilized in these areas. These measures could consist of installation of erosion control blankets, maintaining topsoil through stripping/segregation, and hydroseeding, in addition to normal best management practices on slopes.

8.2.2 Salinity/Sodicity

Saline soils are the result of accumulated soluble salts in concentrations that can prevent plants from taking water and therefore severely limit germination potential. Sodic soils are the result of accumulated sodium which crusts at the ground surface. Plant germination and the potential for root penetration is typically greatly reduced in these areas. In many areas these soils are found together and are therefore discussed together in this plan. Depending on conditions, these soils may require that the non-saline topsoil, non-saline subsoils, and saline subsoil and/or rock be kept separate. This determination will be made prior to construction based on a soil salinity map prepared from the SSURGO2 digital Soil Survey. Soil amendments or topsoil supplementation will be evaluated on a case by case basis in these areas to ensure successful revegetation.

8.2.3 Droughty Soils and Flooding Soils

Droughty soils occur as a result of soil texture, landscape position, aspect and slope and occur in several areas along the pipeline route. They typically occur in south and west aspects, sandy flat areas, and steep slope areas with limited water holding capacity where run off is a problem.

Flooding soils include waterbody "low bottoms" and wetlands that are prone to flooding. These areas are addressed as flooding or unstable areas. Construction procedures that will be used to minimize impacts in droughty soils and flooding soils are addressed in Sections 3.3, 3.6, 5.0 and 6.0.

8.3 SIDE SLOPE CUTTING AND STEEP TERRAIN

Side slope cutting may be necessary in rough, steep terrain, and in areas where rerouting the pipeline is not feasible due to mitigating factors such as sensitive resource avoidance, collocation, etc. Where the pipeline crosses laterally along the side of a slope, cut and fill grading may be required to obtain a safe, flat work terrace. Temporary sediment barriers such as silt fence and straw bales would be installed during clearing to prevent the movement of disturbed soil into wetlands, waterbodies, or other environmentally sensitive areas in steep terrain. Temporary slope breakers consisting of mounded and compacted soil would be installed across the right-of-way during grading. Topsoil would be stripped from the entire right-of-way and stockpiled prior to cut-and-fill grading on steep terrain.

Generally, on steep side slopes, soil from the high side of the ROW will be excavated and moved to the low side of the ROW to create a safe and level work surface. In forested areas the ROW will generally be 85 feet in width to minimize clearing of woody vegetation. In forested areas with steep slopes the ROW may be increased to up to 150 feet in width as necessary to provide safe working conditions. After the pipeline is installed, the soil from the low side of the ROW will be returned to the high side, and the slope's original contours will be restored to the extent practical. See Appendix A for workspace requirements and layout.

8.3.1 Stockpiling

On steep slopes where topsoil, debris, and rock cannot be conventionally stockpiled at the edge of the construction ROW, the material will be pushed to ATWS until hauled offsite for disposal or used during restoration.

8.3.2 Temporary and Permanent Slope Breakers and Trench Breakers

Temporary slope breakers and trench breakers in areas of steep terrain and side slope cuts will be spaced at intervals as necessary (see Appendix A). A temporary breaker may be installed 10 to 30 feet from the crest of a slope to act as a reference point for spacing the remaining breakers. Temporary slope breakers may be omitted where the surface is predominately rock and the potential for erosion is minimal.

Permanent slope and trench breakers will be installed on steep slopes similarly to those described for temporary slope and trench breakers. Where the ground surface is naturally rocky and resistant to erosion, permanent breakers may be omitted or the spacing increased as feasible.

8.3.3 Recontouring and Slope Reduction

Special attention will be given to shaping the construction ROW to direct runoff into existing drainages off the ROW. Cut and fill slopes may have the slope reduced to 3:1 or 4:1 ratio or to match the adjacent utility ROW to aid in reclamation and stabilization. If necessary, energy dissipation devices will

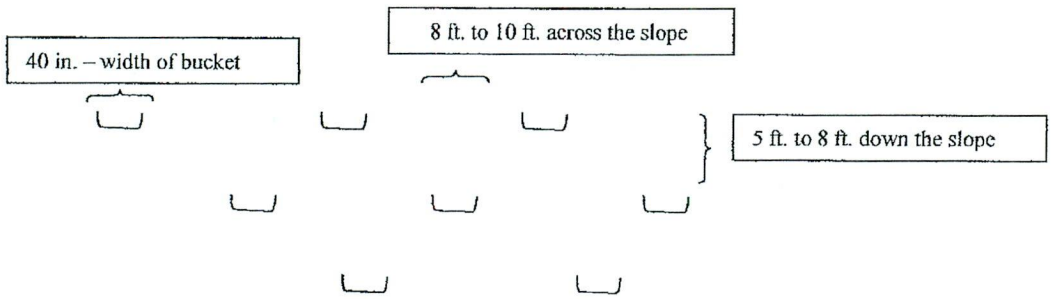
be installed at the bases of cut and fill slopes to prevent scour in adjacent steep banks not located in the construction ROW.

8.3.4 Rock Mulch

Rock mulch may be used to control erosion in areas that have a native gravel, cobble, boulder, or bedrock surface. Rock salvaged and stockpiled from these areas during construction will be distributed over the construction ROW during restoration and seeded with broadcast seeder. The gaps in the rocks will provide a micro environment beneficial to seed germination by allowing moisture to collect and provide protection from wind. A rock cover will also blend the construction ROW into undisturbed areas.

8.3.5 Pocking

In some instances, mulch and erosion control fabrics may not be used. In many areas where slope is 10 percent or greater, a technique called pocking may be used. Pocking creates a seedbed which is conducive to the establishment of permanent vegetative cover that will stabilize steep areas, provide forage for wildlife, and create an aesthetically compatible reclaimed ROW to that of adjacent areas. Pocking will involve creating a series of regularly spaced depressions, or mini terraces, using a backhoe. The depressions are the width of a standard backhoe bucket and are approximately 8 inches to 12 inches in depth. The following schematic outlines generally how the pocking technique occurs.



The small depressions retain water runoff, creating a more mesic site to facilitate seed germination and subsequent seedling establishment. They will also minimize the potential for rill and gullies to form by diverting runoff and retaining a large portion of collecting precipitation. The depressions are offset from one another in order to minimize the potential that lower terraces would fail should a terrace above it fail. Where pocking is used, permanent slope breakers will not be used.

8.4 GRAZING MITIGATION

Dakota Access will work with each landowner/tenant with livestock to avoid and minimize impacts. Ideally the livestock would utilize a field that is not planned to be crossed by the project. Other options to protect livestock include exclusion fencing for the animals, trench plugs across the pipeline trench at livestock trails, trench ramps to allow for the escape of livestock from the trench. Gaps will be left between strung sections of pipe or wherever there is a feature crossing (e.g., waterbody, road, utility),

or where identified by the landowner or EI to allow livestock to pass between long, continuous sections prior to pipe lowering in.

Each fence crossed by construction crews will be braced and secured to prevent slacking of the wire (see Appendix A). The opening created will be closed when construction crews leave the project area to prevent passage of livestock. Any gaps in natural barriers used for livestock control created by construction activity will be fenced according to landowner or lease holder agreements. All fences, gates, irrigation ditches, cattle guards, and reservoirs will be maintained during construction and repaired to pre-construction conditions or better. Following construction and restoration, temporary fences will be removed and livestock will be allowed to graze and roam freely over the permanent ROW.

8.5 WINTER CONSTRUCTION

Dakota Access is currently anticipated to start upon receipt of pending permits and approvals for in-service before the end of 2016. Inclement weather such as snow fall or sub-freezing temperatures during the construction period has the potential to impact construction activities. Pipeline construction typically can take place during difficult weather conditions, although construction progress may be slowed. To maintain the environmental objectives of DAPL, the construction mitigation techniques discussed in this section would be implemented as applicable during inclement weather (winter) in the event that mitigation found elsewhere in this document cannot be implemented due to winter weather.

The winter construction period applies when any of the following conditions occur:

- The ground is frozen and plating of topsoil occurs;
- Equipment slippage from operating on frozen ground results in scalping plant root systems;
- Vehicles slide outside established ROW clearing limits;
- Road crossings cannot be adequately compacted;
- Topsoil is frozen and cannot be separated from sub-grade material;
- Backfill material freezes to the extent that adequate compaction becomes difficult; or
- Topsoil stockpiles are frozen and cannot be uniformly redistributed across disturbed areas.

In general, the following procedures and considerations will be implemented during frozen soil conditions, defined for DAPL as when frost has penetrated the depth of the boundary between topsoil and subsoil on most agricultural lands.

8.5.1 Snow and Cold Weather Management

- Snow, when present, may be stored over the trench line prior to excavation to prevent deep frost penetration in areas requiring excavation. Remove this snow to the edge of the ROW prior to topsoil removal and trenching activities.

- Snow not packed or used to prevent deep frost should be graded/pushed off the ROW to ensure sufficient workspace. Gaps in the windrowed snow should be left at obvious drainage crossings.
- Snow may be removed from the travel lane prior to grading to improve driving conditions.
- Consider additional ATWS, as needed on the working side to store snow.
- Soils and snow should not be mixed when clearing access roads.
- Leave gaps in windrowed snow at drainage crossings in access roads.
- Limit snow removal from the spoil side until trenching activities begin.
- Place subsoil on straw layer to minimize soil mixing in the event the spoil pile freezes and is left over winter.
- Remove excess snow that could interfere with trench backfilling operations.

8.5.2 Soil Handling and Trenching

- Minimize the amount of open trench.
- Limit frozen topsoil stripping activities to equipment capable of accurately stripping variable depths of topsoil.
- Include breaks at drainage crossings in the topsoil or spoil piles left over-winter to allow runoff and snowmelt to be diverted and minimize interference with spring runoff.
- Suspend final clean-up activities and topsoil placement if stored/reserved topsoils are frozen and cannot be uniformly redistributed across the ROW.
- Apply normal temporary ROW stabilization procedures as ground conditions permit.
- Where final clean up and restoration has not been completed, leave the ROW in a significantly roughened condition to reduce potential for erosion during snowmelt.

8.5.3 Temporary and Permanent Erosion Control Methods

- When soils are frozen, utilize erosion control measures such as trench interceptor excavated across slope, mulching, silt fence, straw bales, sandbags in lieu of slope breakers.
- Install silt fence in frozen soils with "ditch witch" trencher, placing silt fence and wooden stakes (hammered below frost line) in the narrow trench, then backfill and tamp with trench cuttings.
- Anchor hay bales with rebar instead of wooden stakes as needed.

- Install ECDs at locations indicated in the erosion control procedures (Section 3.3). Consider winter/spring rains and snowmelt when sizing, locating, and installing and ECDs.

- Stabilize unreclaimed soil surfaces and remaining soil piles left over winter or for more than 7-21 days (depending on slope) with weed free straw mulch applied at a rate of 2.0 tons per acre and sprayed with water to freeze in in lieu of crimping. If significant snow cover exists the decision to apply mulch will be determined by the EIs.

- As applicable, remove temporary bridges and mats before the contractor leaves the ROW for the winter. Store temporary bridges on the ROW in a secure upland area near the crossing for spring re-installation.

- Engineer equipment crossings remaining in place for spring/summer cleanup to handle maximum predicted spring runoff flows.

8.5.4 Lowering in and Backfill

- Clear the pipeline trench of snow prior to lowering in, but limit the mixing of snow with spoil material.

- Backfill trench with unfrozen soil as practical. The first several inches of frozen subsoil may have to be removed from the spoil piles to expose unfrozen soil.

- If subsoil on the spoil side is substantially frozen, backfill the trench with frozen subsoil, broken up as practical. Repair settled areas the following spring using the spoil (previously protected with mulch or functional equivalent) that remains.

- Backfilling activities should immediately follow lowering-in activities, to prevent the infill of snow and reduce excessive freezing of spoil piles. Regrade ROW immediately following backfilling.

- The final clean-up schedule will vary, depending on ground conditions and time of construction. The EI should determine if spring thaw reclamation activities are required.

8.5.5 Hydrostatic Testing/Dewatering

- Carefully consider the locations where hydrostatic testing water and trench water are discharged.

- Depending upon the temperature, filter bags may be subject to freeze and straw bale dewatering structures may need to be replaced daily due to freezing.

- Consider the volume of water discharged and the resulting frozen temporary pond. This area may remain until spring thaw.

- If discharge occurs on agricultural land consult with ROW and landowner to obtain permission for winter discharge of dewatering or hydrostatic test water.

8.5.6 Post-Construction Monitoring

- Identify ECDs requiring repair, areas of slope instability, and areas where significant levels of erosion are occurring.
- The extent of inspections will be based on precipitation events, runoff amounts, and thawing. When snow melts or the ground thaws, the potential for erosion increases and the frequency of inspections would increase.
- Corrective actions may be deferred until spring where no sensitive resources are impacted, where access is not feasible, or where damage from accessing the site would outweigh the benefits of correcting the issue during the winter.

8.5.7 Spring Thaw Conditions

- Work in non-problem areas, such as well drained, dry sites or in shaded and frozen areas until conditions improve.
- Install mats in problem areas until conditions improve.
- Postpone construction activities until evening or early morning in problem areas, when ground conditions are frozen.
- Suspend construction in unsuitable areas.

8.6 BLASTING

Limited blasting may be necessary as a last resort in areas where competent shallow bedrock or boulders are encountered that cannot be removed by conventional excavation. See project-specific Blasting Plan.

8.7 DUST CONTROL

Dust control activities will occur throughout the project area, as needed to minimize impacts from dust generated by construction equipment and traffic across exposed soils. These activities will be performed using primarily water spraying trucks in construction work areas and on access roads.

8.8 WASTE MANAGEMENT

The Contractor will properly handle, store and dispose of all solid and hazardous materials and wastes that are used or generated by the Contractor as a result of the Project. The Contractor will determine if the materials and wastes associated with the Project classify as hazardous materials and/or wastes in accordance with applicable federal and/or state criteria. Upon request by Dakota Access, the Contractor will provide documentation to substantiate findings of the regulatory status of materials and/or wastes used and/or generated as a result of the Project.

The Contractor will collect all waste materials, including oil or other waste liquids generated as a result of equipment maintenance, daily in suitable or approved containers (i.e., labeled and meeting any relevant regulatory requirements). On a routine basis, the Contractor will remove the containers of

waste from the site and properly dispose of them. Throughout the duration of the Project, the Contractor will cleanup areas to the satisfaction of Dakota Access. The Contractor is responsible for proper off-site disposal of all wastes generated during the Project. No wastes are to be left on Dakota Access property, along the ROW, or buried in an excavation or otherwise disposed of on Dakota Access property or ROW. Temporary portable sanitary facilities will be installed during construction in areas where crews are present.

8.8.1 HAZARDOUS WASTES

If a Contractor generates a hazardous waste from materials they have brought on-site (e.g., paint clean-up solvents, waste paints, etc.), then the Contractor is responsible for proper waste collection, storage and disposal in accordance with all applicable regulations. The Contractor remains responsible for the proper handling, storage and disposal of the hazardous waste. Any release of the hazardous waste as a result of the improper handling, storage or disposal by the Contractor in this instance is the responsibility of the Contractor to rectify to the satisfaction of Dakota Access and all applicable regulatory agencies.

8.8.2 ABRASIVE BLAST DEBRIS

The Contractor will contain and collect spent abrasive blast materials as required by local or state laws or ordinances and place the spent material into appropriate containers. The Contractor is responsible for covering the containers with appropriate means of rainwater and stormwater control to prevent said waters from entering or exiting the container. The Contractor is responsible for disposal of the spent abrasive in accordance with applicable federal, state and local regulatory requirements. The Contractor is responsible for determining if the spent abrasive is classified as a "hazardous" or "special" waste as defined by applicable federal and state regulations.

8.9 WEED MANAGEMENT

It is Dakota Access' intent to minimize the potential introduction and/or spread of undesirable species (i.e., invasive species, noxious weeds, or crop diseases) along the construction ROW due to pipeline construction activities. However, it is not practicable for Dakota Access to eradicate undesirable species that are adjacent to the construction ROW. Dakota Access will minimize the potential for the establishment of undesirable species by minimizing the time duration between final grading and/or temporary or permanent seeding.

The state of North Dakota has 11 state listed noxious and invasive weeds ("invasive species"). The species listed are: Russian knapweed (*Acroptilon repens*), absinth wormwood (*Artemisia absinthium*), musk thistle (*Carduus nutans*), diffuse knapweed (*Centaurea diffusa*), yellow toadflax (*Linaria vulgaris*), spotted knapweed (*Centaurea maculosa*), Canada thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esula*), dalmatian toadflax (*Linaria dalmatica*), purple loosestrife (*Lythrum salicaria*), and saltcedar (*Tamarix chinensis*). These state invasive species are controlled and regulated under North Dakota Law (NDCC § 4.1-47-02).

8.9.1 Prevention and Control Measures

To prevent the introduction of the noxious weeds and invasive species identified into the Project area from other construction sites, construction equipment will be cleaned prior to arriving at the Project site. This cleaning consists of removing visible dirt from the equipment and blowing loose material from equipment using compressed air. Equipment found to be in noncompliance with the cleaning requirement will not be allowed on the Project site until it has been adequately cleaned.

Prior to clearing and grading of the construction right-of-way and pending landowner permission, major infestation areas identified during surveys or by Project EIs may be treated with the recommended herbicides or their equivalents as identified through consultation with local authorities. Alternatively, full construction ROW topsoil segregation may be implemented for weed control to allow equipment to work through the area after topsoil has been stripped, as long as equipment stays on the subsoil (clearing, grading, and restoration equipment will still be cleaned). The Contractor will obtain necessary permits and/or certifications for the use of the applicable herbicides, is responsible to limit off-ROW overspray, and will comply with state laws regarding the use of those herbicides. Contractors will keep proper documentation of the locations where the herbicides have been used and provide such documentation to Dakota Access.

If necessary, treatment of known infestation areas will be completed in accordance with applicable chemical contact times (as specified by the manufacturer) in advance of clearing and grading within the construction ROW. Treatment may be restricted in areas that are not readily accessible, such as areas where access is limited by topography or other site conditions such as saturated/inundated soils. In the event that an area is determined to be inaccessible, the EI will be notified and a site-specific alternative treatment may be warranted.

To prevent the spread of noxious weeds and invasive species during construction, mulch used on the Project will be composed of weed-free material. Certified weed-free mulch may also be required at site-specific locations. The Contractor will be responsible for identifying and acquiring sources of weed-free and certified weed-free mulch. Sources will be approved by Dakota Access prior to purchase.

8.10 WET WEATHER SHUTDOWN AND RUTTING

During construction, certain activities may be suspended in wet soil conditions, based on consideration of the following factors:

- extent of surface ponding;
- extent and depth of rutting and potential mixing of soil horizons;
- areal extent and location of potential rutting and compaction (i.e., can traffic be rerouted around wet area); and
- type of equipment and nature of the construction operations proposed for that day.

Tasks will be restricted or work will cease in the applicable area until site conditions are such that work may continue. The EIs, in collaboration with chief inspectors and Dakota Access construction management, will ultimately decide if wet weather shutdown is necessary in a given location.

In areas where topsoil has not been removed, rutting from construction equipment will be considered excessive if greater than 4 inches. Topsoil removal techniques may be modified to remedy topsoil rutting. Rutting stipulations will not apply in areas where topsoil removal has occurred.

9.0 RESTORATION PROCEDURES

The soils and land use along the pipeline and at above ground facilities have been reviewed. The importance of cattle ranching on native and managed pastures as well as intensive agricultural cropping is recognized. The restoration process for cropped agricultural fields, tame pastureland, and native rangeland is based on site soil characteristics and land use, ecological site characteristics, pre-construction conditions, and recommendations from state specialists and include the following general reccomendations:

- Standard area construction and reclamation. Prescriptive reclamation procedures for areas that are not "sensitive" (fragile) have been developed using existing state-specific recommendations and consultation with specialists with the Natural Resource Services Conservation Services (NRCS) and the North Dakota Agricultural Experiment Station. Non sensitive areas would have soil and landform characteristics that would not compromise an effective restoration, can be identified in the field, and would be suited to most farming/ranching operations on active cropland, managed rotation pasture, or extensive grazing with little high maintenance management.

- Sensitive area construction and reclamation. These areas would consist of but not be limited to steep slopes, shallow-to-bedrock soil areas with loamy/silty/sandy soils (highly erosive), saline sodic areas, and droughty areas situations. Reclamation starts with appropriate construction procedures: identifying areas requiring triple lift, dealing with shallow bedrock, special erosion controls, and special cover-crop seeding specifications. Post restoration monitoring and adaptive management may be required on these areas to ensure an acceptable restoration.

- Landowner-Specific Options. Some areas may require site-specific reclamation plans, including pre-construction soil and vegetation assessments, specific prescriptions for implementation of BMPs provided in this ECP, special soil handling procedures, and site-specific planting plans to include a mix of warm and cool season grasses, and native forbs, etc. The reclamation plan for these areas is not prescriptive but a process to be implemented that is site-specific. A site-specific plan would consist of:

    - Pre-construction evaluation of ecological sites and soils: Grassland habitat will be evaluated from the perspective of grasslands with a probable history of tillage and those grassland areas that are untilled. In grassland areas, specialists will evaluate grassland communities through plant transects to determine grassland species distribution in and near the construction corridor.

    - Site specific construction and grading plans: Construction specialists will evaluate landscapes from the perspective of constructability, identifying areas where BMPs are applicable for use on steep terrain and shallow soils.

    - Soil handling procedures: Topsoil stripping and potential subsoil handling procedures during and after construction and reclamation are tailored to facilitate successful restoration for areas with problem soils.

- Soil restoration and seeding/site preparation: Prescriptions are provided for specific restoration and revegetation settings.

Implementing a proper seeding plan will enhance the diversity of native vegetation and reduce the presence of non-native vegetation occurring in the project area. The sections below clarify the steps necessary to facilitate effective reseeding, which includes preparation of the seed bed, acceptable planting methods, nurse and cover crops, seed sources and quality, warm and cool season seed mixtures, seeding dates, and soil amendments.

9.1 SEEDBED PREPARATION

First, ensure that excessive competitive cover from invasive weed species is not present. If undesirable vegetation is present, if possible it should be removed prior to seeding. A herbicide application may be appropriate provided a U.S. Environmental Protection Agency (USEPA) approved formulation is used consistent with labeled instructions by a licensed applicator. If herbicides are to be used or have been applied to areas to be seeded within the last 4 years, consult with restoration specialists for the local NRCS office for information concerning planting timing after spraying. However, if foliar herbicides such as glyphosate are applied to suppress non-native grasses and weeds, no herbicide residue on the soil remains that would prevent or delay seeding after herbicide application.

Prepare areas to be seeded to produce a friable, smooth, firm seedbed. Soil particles should be half an inch or smaller in the top inch of soil. Conventional tillage should result in a clean tilled, smooth seedbed. Use of a no-till seed drill requires a firm seed bed before seeding. The seedbed is considered firm when you can walk on it without sinking more than ½ inch (sole of shoe). Firming of the seedbed after tillage operations can be achieved by rolling or cultipacking prior to planting. If a drop seeder or a broadcast seeder is used for seeding, the site should be cultipacked only after seeding.

Compacted soil prevents the seed from being planted at a proper depth and inhibits root penetration of new seedlings. This severely reduces the establishment of the planted seed. If surface compaction that would preclude establishment of a proper seed bed is observed, rototill the site to loosen the upper four inches of soil. Then harrow the site using a drag harrow or a piece of chain link fence with weight added.

9.2 PLANTING METHOD

Grass Drill

Native seeding is best achieved by use of a grass drill equipped with a double disc or coulter furrow openers with depth bands and press wheels, cultipacker, or drag chains. Seed should be planted ⅛ to ½ inch deep.

Always operate the grass drill at the recommended speed. Excessive ground speed will cause the drill to plant the seed improperly. Inspect the drill while operating it. Avoid drilling in wet conditions.

If the seed level drops below the agitators in the seed boxes, seed doesn't feed as efficiently, resulting in uneven seeding. For smaller sites (less than 1 acre), the seed may not adequately fill the seed boxes. Inert filler material, similar in size to the seed should be added to the seed box to increase the volume. Vermiculite, cat litter, or cracked corn can be used as filler. After placing the seed in the seed box, add an equal amount of filler. Seed the site twice to achieve the required volume of seed to be planted.

Broadcast

If a grass drill cannot be used, seed may be broadcast. For large areas a tractor or ATV-mounted EZEE Flow spreader or Brillion seeder is recommended. For smaller areas, a hand-held seeder is effective. The recommended seeding rates will be doubled when the broadcast method of seed application is utilized. If using a nurse crop, blend nurse crop seed with the native seed to help distribute small, fine textured native seed evenly across the site. After the seed is broadcast, incorporate the seed into the soil be using a drag harrow, dragging a piece of heavy chain or raking in the seed with a garden rake. Seed should be planted ⅛ to ½ inch deep. Then pack the soil with a cultipacker or lawn roller. Brillion seeders are equipped with both a soil conditioning implement and a cultipacker.

Hydroseeding

Hydroseeding has an advantage on areas where steep slopes are inaccessible to seeding equipment and also provides erosion control. The recommended seeding rates should be doubled when the hydroseeding method of seed application is utilized. A good time to hydroseed is just after a rain. The seed and mulch adhere better to the soil, and some moisture is captured under the mulch. Do no start hydroseeding if rain is in the immediate forecast since mulch needs time to set up before it rains.

9.3 NURSE AND COVER CROP

A cover crop may be used when native/preferred seed mix cannot be planted within the recommended seeding dates provided in Table 9.5-1. The cover crop is planted alone and should be fast-growing, nonnative, short-lived annual species that does not form a dense canopy. Oats and winter wheat are recommended because they grow rapidly in cool weather, they withstand moderate frost, and their seed is relatively inexpensive. If needed, cover crops may need to be mowed the following spring prior to planting the native/preferred seed mix.

Recommended cover crop seeding is as follows:

- Summer (July to September) – 30 pounds of oats, 10 pounds annual rye, and one of the following warm-season species per acre:
  - 5 pounds piper sudan
  - 10 pounds of millet (Japanese or Pearl variety) or
  - 30 pounds of sorghum
- Fall (Mid-September to November 1) – 25 pounds of winter wheat per acre.

A nurse crop is planted with the native grass species to minimize soil erosion and invasion of weed species. A nurse crop may be applied in areas where erosion is a severe hazard but are generally not recommended because of excessive competition with the seeded perennial species.

Recommended nurse crop seeding is as follows:

- Spring (Late March to Mid-June) – 1.5 bushel of oats per acre
- Summer (July to September) – 2 bushels of oats per acre

- Fall (Mid-September to November 1) – 20 pounds of winter wheat per acre

9.4 SEED SOURCE AND QUALITY

Seed and planting materials should meet state of North Dakota quality standards. All seed analyses must be conducted in accordance with the North Dakota Seed Law and Rules which specify the kind and amount of weed seed permitted, the requirements for a current analysis report and labeling of all seed to show its purity, germination, date of last germination test, and weed content. The germination test used to determine pure live seed (PLS) is valid for 9 months after the end of the month the test was made so long as the seed remains in North Dakota. When seed is purchased and shipped across state lines, the germination test is valid for 5 months after the end of the month the test was made, according to Federal Seed Law.

PLS is a measure of the proportion of the viable seed that potentially will germinate of a species or variety per unit weight for a given lot of seed. Purity, germination, and dormancy are used to calculate the PLS.

#PLS = (bulk pounds) X (% purity) X (% germination + % dormancy)

Seed should be obtained from a local seed supplier who can verify that the seed is genetically appropriate for the project site. Select seed and plants that are not considered noxious species by federal, state, or local regulations.

9.5 SEEDING MIXTURES

Tables 9.5.2 and 9.5.3 indicate recommended native seed mixes that have been designed for restoration of native rangeland based on the North Dakota State University (NDSU) Extension Service Publication, Successful Reclamation of Lands Disturbed by Oil and Gas Development and Infrastructure Construction. The contractor shall apply these mixes in rangeland areas where native seeding is preferable unless a landowner requests a unique seed mix. The tables detail the PLS planting rate for each selected species.

The use of forbs is recommended as they will inhibit noxious weeds and other weedy species. The use of highly competitive introduced grasses, particularly crested wheatgrass and smooth brome, is not recommended unless the area to be seeded is in, or next to, an area where such species are already established. Listed forbs and legumes may be substituted for other forb and legume species depending on availability/pricing with approval from Dakota Access.

Additional information regarding seed mixtures and seed application can be found in the NDSU Extension Service Publication, Successful Reclamation of Lands Disturbed by Oil and Gas Development and Infrastructure Construction. This publication includes additional seed mixtures for small disturbance sites (well pads, staging areas, power sites, pumping stations and other construction disturbance), hay land reclamation and tame pasture reclamation. Prior to the application of the seed mixtures shown in tables 9.5.2 and 9.5.3 in pasture lands, individual landowners/managers will be consulted to identify seed mixtures that meets the needs of the present and/or future use of the land. Local NRCS offices may be contacted if questions or concerns arise when selecting appropriate seed mixtures.

Table 9.5-1. Seeding Dates	
Species Type and Season of Planting	**North Dakota**
Warm/Cool Season Seeding Plan Spring Late summer [1] Late fall (dormant) [2]	 April 20 to June 15[2] Not recommended See footnote [3]

[1] Weather and soil moisture conditions permitting. If soil moisture levels are forecasted and precipitation amounts are not favorable, this time period of seeding is not recommended.
[2] Seeding may be extended with adequate soil moisture and wen favorable precipitation and temperatures are forecast.
[3] Seed after October 10 when ground temperatures at a depth of 4 inches are 45° Fahrenheit or lower and cooler air temperatures are forecast.

Table 9.5.2 **Pipeline, Access Roads and Other Narrow Disturbance Upland Site Grass Seed Mixtures** **Upland Mixture (loamy, clayey, sandy, sands, shallow loamy, thin loamy)**	
Species	**PLS[1] Seeding Rates Lb/ac**
Grass Species	
Western wheatgrass	2.5
Green needlegrass	2.0
Slender wheatgrass	1.5
Little bluestem	1.0
Prairie sandreed	1.0
Sideoats grama	2.0
Blue grama	0.5
Total Grass Seed Mixture	**10.5**
Forb and Legume Species[2]	
Purple prairieclover	0.1
White prairieclover	0.1
Purple coneflower	0.1
Maximillian sunflower	0.1

Table 9.5.2 Pipeline, Access Roads and Other Narrow Disturbance Upland Site Grass Seed Mixtures Upland Mixture (loamy, clayey, sandy, sands, shallow loamy, thin loamy)	
Blanket flower	0.1
Black-eyed Susan	0.05
Stiff sunflower	0.1
Goldenrod	0.05
Lewis flax	0.1
Scarlet globemallow	0.05
Prairie coneflower	0.1

[1]PLS = Pure live seed: Seeding rates are 1.5 times the normal seeding rate based on 30 seed/ft^2.
[2]Select a minimum of three (3) forb/legume species from the list. The seeding rate of three (3) selected forb/legumes at the prescribed rate will equal approximately 5 percent of the mixture.

Table 9.5.3 Pipeline, Access Roads and Other Narrow Disturbance Wet Meadow, Saline and/or Sodic Site Seed Mixtures Wet Meadow, Saline/Sodic Mixture	
Species	**PLS[1] Seeding Rates Lb/ac**
Grass Species	
Western wheatgrass	7.5
Slender wheatgrass	2.5
Prairie cordgrass	1.5
Inland saltgrass	0.5
Total Grass Seed Mixture	**12.0**
Forb Species[2]	
Western yarrow	0.05
Gardner saltbush[4]	0.3
Fourwing saltbush[4]	0.45
Lewis flax	0.1
Blanket flower	0.1

[1]PLS = Pure live seed: Seeding rates are 1.5 times the normal seeding rate based on 30 seed/ft^2.
[2]Select a minimum of one (1) forb species from the list.
[3]Gardner and fourwing saltbush should be used only on the saline/sodic sites.

9.6 FERTILIZER AND SOIL AMENDMENTS

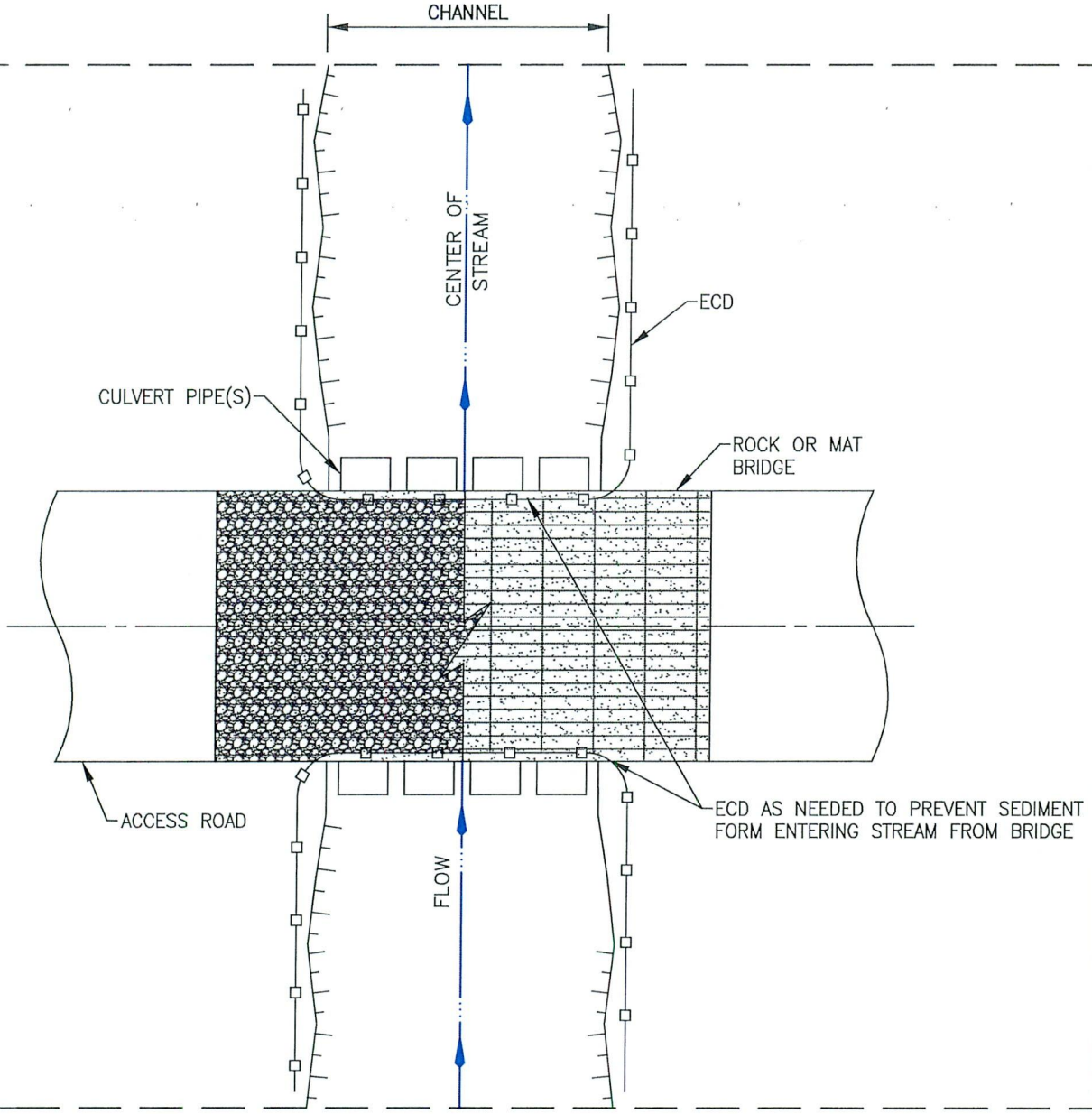
In general, soil additives or amendments (specifically fertilizing) are not recommended to establish native seed mixes as they can enhance exotic grasses and annual weed growth, thereby reducing the chances of success. Should potentially problematic soil characteristics be identified during pre-construction surveys or during post-construction restoration activities, soils will be assessed for nutrient balance and soil nutrient amendments will be applied as needed to meet specific restoration objectives. In areas of improved pasture or active agricultural, Dakota Access will work with landowners to achieve their specific revegetation goals, which may require soil amendments. No amendments will be utilized in wetlands and/or other sensitive environmental features without the express recommendation of resource agencies.

10.0 POST CONSTRUCTION MONITORING

Dakota Access will monitor and address all areas where stabilization techniques have been implemented in accordance with conditions identified in the applicable Project permits, plans, and/or licenses. The monitoring program will identify remedial measures that will be considered to mitigate environmental degradation if the initial treatments were not effective in achieving reclamation objectives. Periodic ground and aerial inspection of the route would detect areas of erosion (i.e., formation of gullies, deposition of sediment) and uncontrolled runoff (i.e., berm washouts) before significant impacts occur. Successful reclamation performance will be based on revegetation success (e.g., cover, frequency, and diversity), the presence of weeds or invasive plants, stability of the construction ROW, waterbody bed and bank stability and returned hydrology in wetlands. As success criteria are met at a given location, additional monitoring will cease.

Appendix A:

Typical Figures



NOTE:

1. USE AS MANY CULVERT PIPE(S) AS REQUIRED TO ENSURE NORMAL STREAM FLOW IS NOT OBSTRUCTED BY ROCK OR MAT BRIDGE.

ECD:

EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

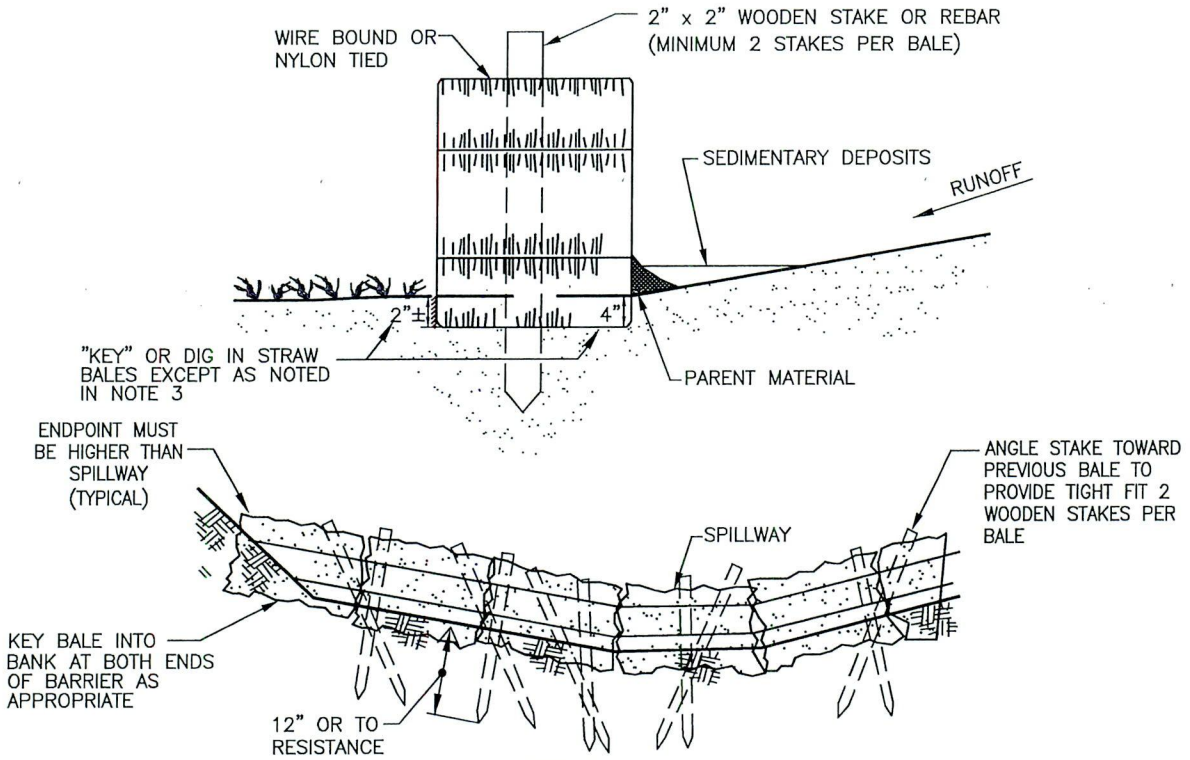
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
ROCK OR MAT BRIDGE WITH CULVERTS

DRAWN BY: JEG	DATE: 12/06/14	DWG. NO.	REV.
CHECKED BY: JEG	DATE: 12/06/14	P12-1	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN



PROFILE

NOTES:

1. STRAW BALE SEDIMENT BARRIERS MAY BE INSTALLED AT THE FOLLOWING LOCATIONS:
   - THE BASE OF ALL SLOPES ABOVE ROADS, SPRINGS, WETLANDS, IMPOUNDMENTS AND STREAMS;
   - THE DOWNSLOPE RIGHT-OF-WAY EDGE WHERE ANY OF THE ABOVE-MENTIONED LOCATIONS ARE ADJACENT TO THE RIGHT-OF-WAY;
   - BETWEEN TOPSOIL/SPOIL STOCKPILES AND STREAMS OR WETLANDS AS NEEDED;
   - ALONG R.O.W. BOUNDARIES IN WETLAND CONSTRUCTION;
   - ACROSS CONSTRUCTION R.O.W. AT ALL WATERBODY CROSSINGS;
   - AS SPECIFIED IN THE SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN;
   - AS DIRECTED BY THE INSPECTOR.
2. STRAW BALE SEDIMENT BARRIERS SHALL CONSIST OF A ROW OF STRAW BALES, PLACED ON THE FIBER-CUT EDGE (TIES NOT IN CONTACT WITH THE GROUND). BALES SHALL BE TIGHTLY ABUTTED TO ONE ANOTHER. THE BARRIER SHALL BE ONE BALE HIGH. ONLY CERTIFIED "NOXIOUS WEED-FREE" STRAW SHALL BE USED.
3. ENTRENCH ("KEY") STRAW BALES INTO THE GROUND TO A DEPTH OF 2" EXCEPT IN FROZEN, SATURATED, OR EXTREMELY ROCKY SOILS. PLACE PARENT MATERIAL ON UPSTREAM SIDE OF STRAW BALES TO PREVENT UNDERMINING.
4. WALK ON STRAW BALES TO INSURE ADEQUATE BALE-TO-SOIL CONTACT.
5. ANCHOR STRAW BALES SECURELY IN PLACE WITH TWO WOODEN OR STEEL REBAR STAKES DRIVEN THROUGH THE TOPS OF THE BALES. THE STAKES SHALL PENETRATE THE GROUND A DISTANCE OF 12" UNLESS ROCK OR AN IMPERMEABLE LAYER IS ENCOUNTERED:
   - THE FIRST, CENTER AND END BALES OF THE BARRIER SHALL HAVE STAKES DRIVEN VERTICALLY THROUGH THE BALE;
   - BALES, OTHER THAN THOSE LOCATED AT THE ENDS OR CENTER OF THE BARRIER, SHALL HAVE THE FIRST STAKE DRIVEN THROUGH THE TOP OF THE BALE AT AN ANGLE SO THAT THE STAKE PASSES THROUGH THE PREVIOUSLY PLACED BALE, IN ORDER TO PROVIDE TIGHT CONTACT BETWEEN BALES. THE SECOND STAKE SHALL BE DRIVEN VERTICALLY THROUGH THE TOP OF THE BALE.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
EROSION CONTROL
STRAW BALE SEDIMENT BARRIER

DRAWN BY: DAH	DATE: 08/05/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/05/14	P12-2	0
SCALE: N.T.S.	APP.:		

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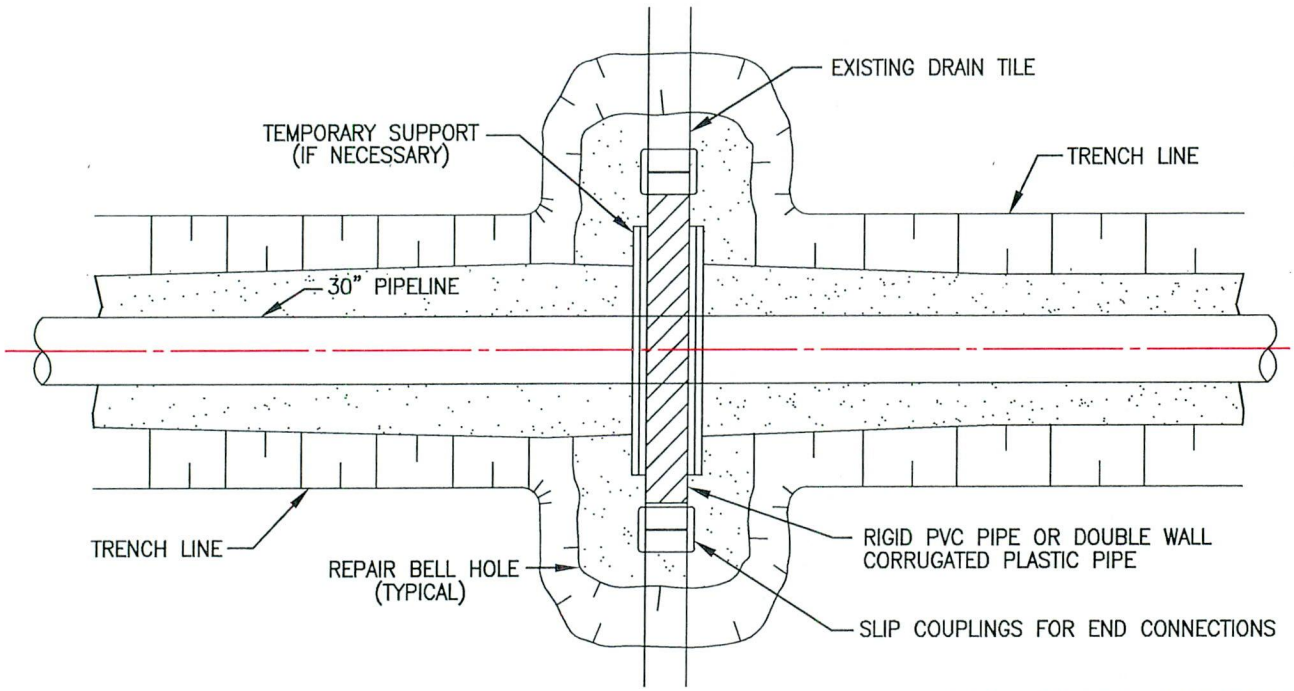
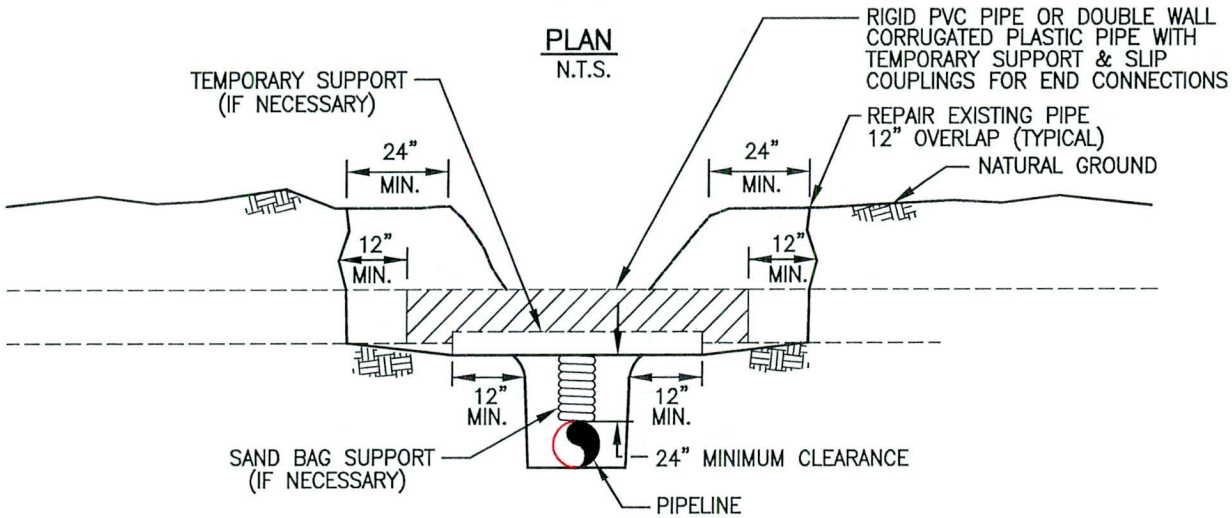


PLAN
N.T.S.



CROSS SECTION
N.T.S.

NOTES:

1. IMMEDIATELY REPAIR TILE IF WATER IS FLOWING THROUGH TILE AT TIME OF TRENCHING.
2. SCREEN ALL EXPOSED ENDS OF TILE LINES.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
DRAINAGE AND IRRIGATION
TEMPORARY DRAIN TILE REPAIR (TDR)

DRAWN BY: DAH	DATE: 08/05/14	DWG. NO.	REV.
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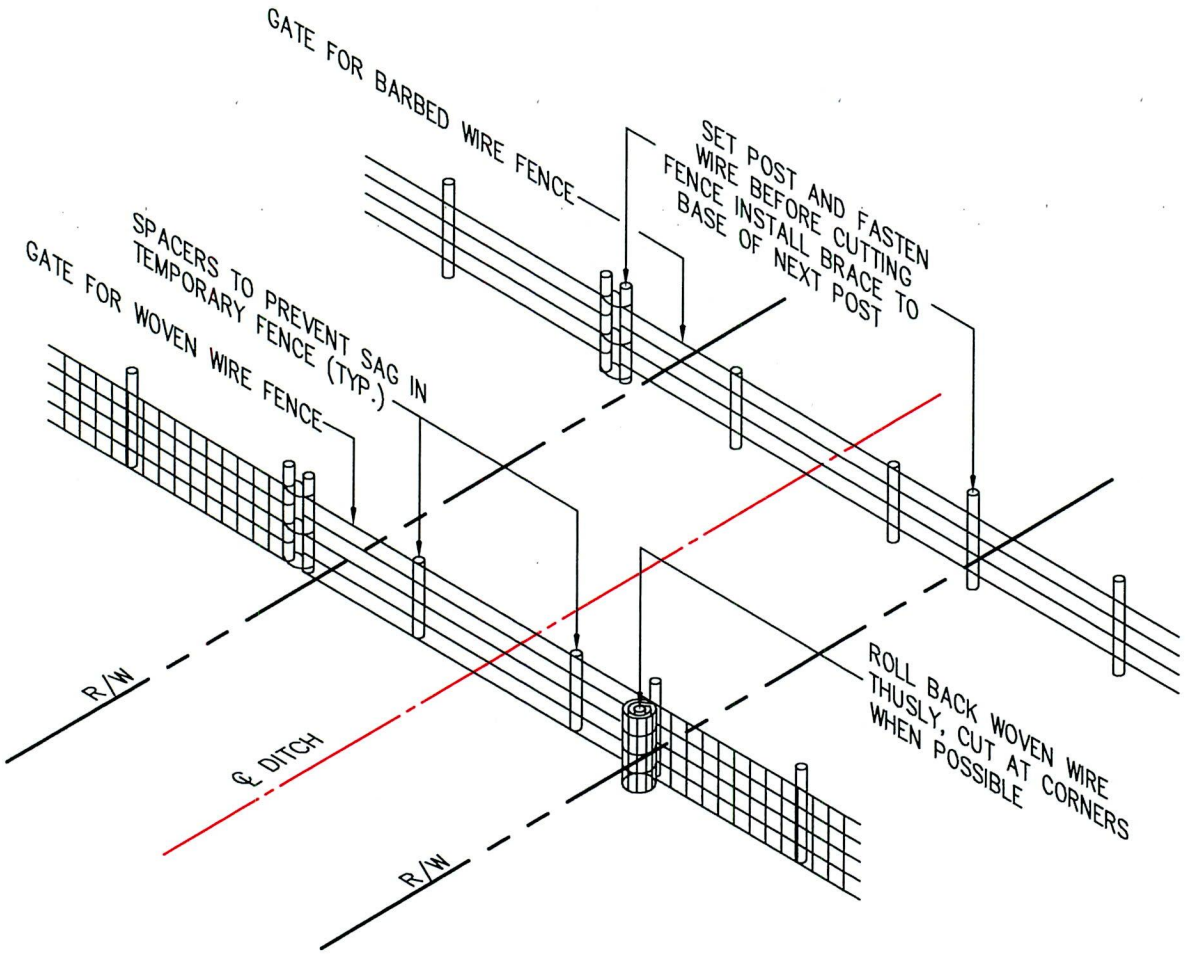


NOTE:

1. CATTLE AND LIVESTOCK MUST BE MOVED TO ANOTHER PASTURE OR TEMPORARY FENCED AREA AND THEY MUST CROSS THE RIGHT-OF-WAY, THEN TRENCH WILL BE BRIDGED AND TEMPORARY FENCING WILL BE INSTALLED.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

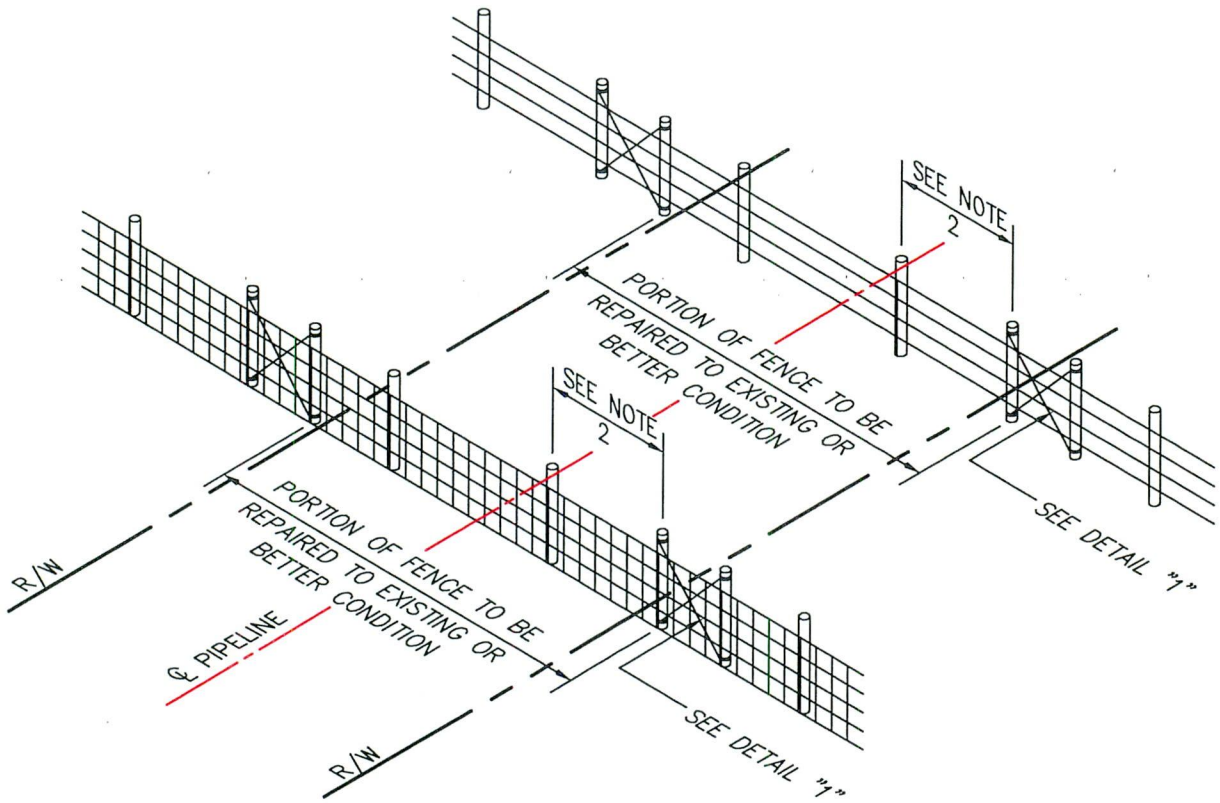
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

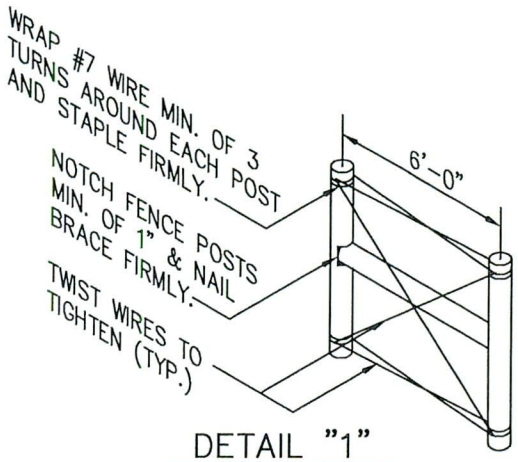
TEMPORARY FENCE DETAIL FOR WOVEN WIRE & BARBED WIRE FENCES

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-4	0
SCALE: N.T.S.	APP.:		



NOTES:

1. ALL NEW FENCE POSTS MUST EXTEND A MINIMUM OF 2' BELOW GRADE & HAVE A HEIGHT EQUAL TO EXISTING POSTS.
2. POST TO BE A MAXIMUM OF 10' CENTER TO CENTER.
3. POST AT EACH END OF REPAIRED SECTION TO BE H BRACED TO THE ADJOINING POSTS.
4. ALL FENCES SHALL BE REPAIRED WITH NEW WIRE OF LIKE MESH AS EXISTING FENCE, OR WIRE MATCHING EXISTING GAUGE AND SPECIFICATIONS & OF THE SAME NUMBER OF STRANDS & NUMBER OF WIRES EXISTING ON THE FENCE PRIOR TO CONSTRUCTION OF THE PIPELINE.
5. ALL POST ON PERMANENT RIGHT OF WAY TO BE PAINTED PER COMPANY PAINTING SPECIFICATIONS.
6. RIGHT-OF-WAY SHALL BE RESTORED TO ORIGINAL CONDITION
7. CATTLE AND LIVESTOCK MAY BE MOVED TO ANOTHER PASTURE OR TEMPORARY FENCED AREA DURING RESTORATION PERIOD PER LAND OWNERS AGREEMENT.



DETAIL "1"
N.T.S.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
WOVEN WIRE & BARBED WIRE FENCE REPLACEMENT FENCE DETAIL

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-5	0
SCALE: N.T.S.	APP.:		

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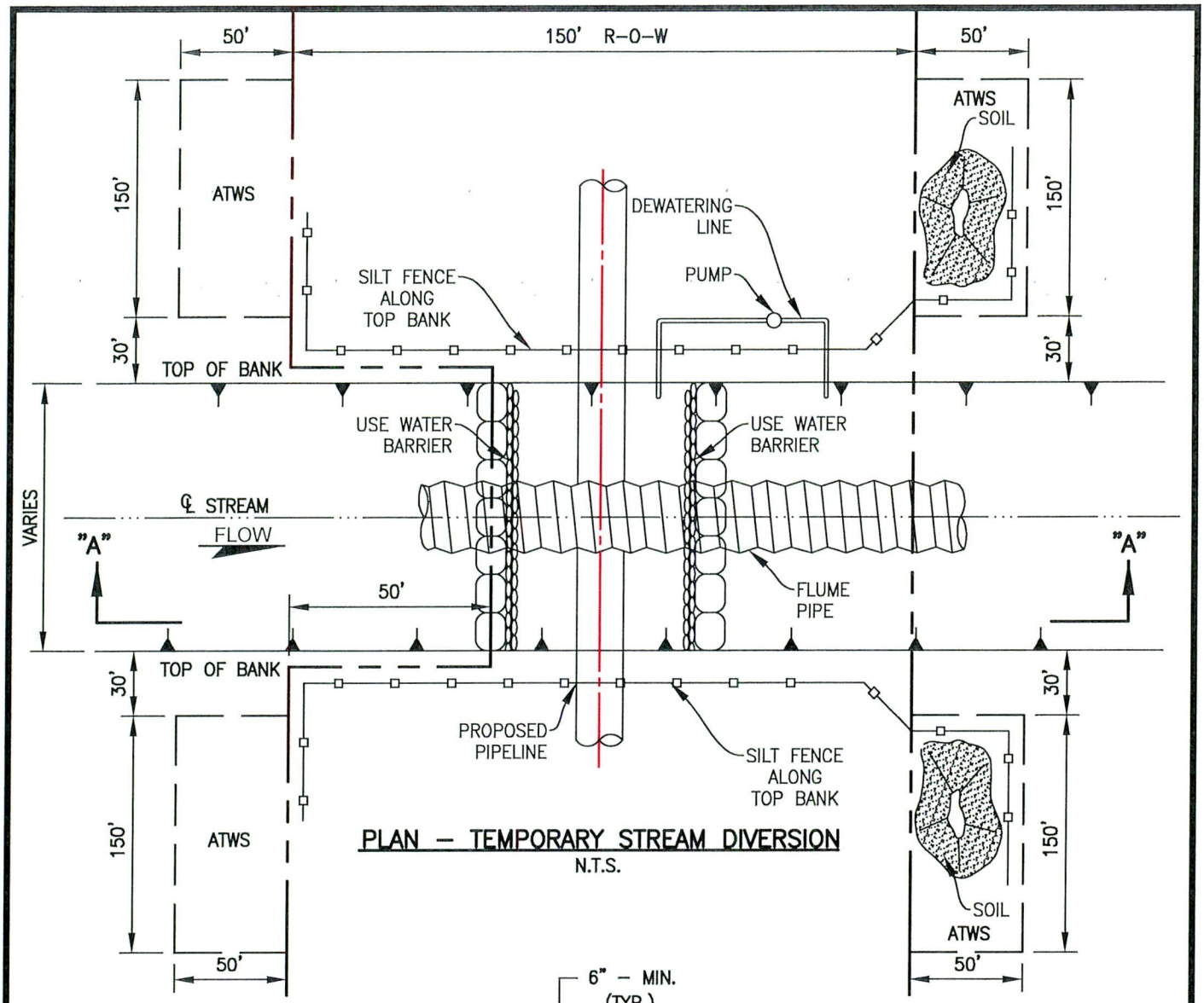
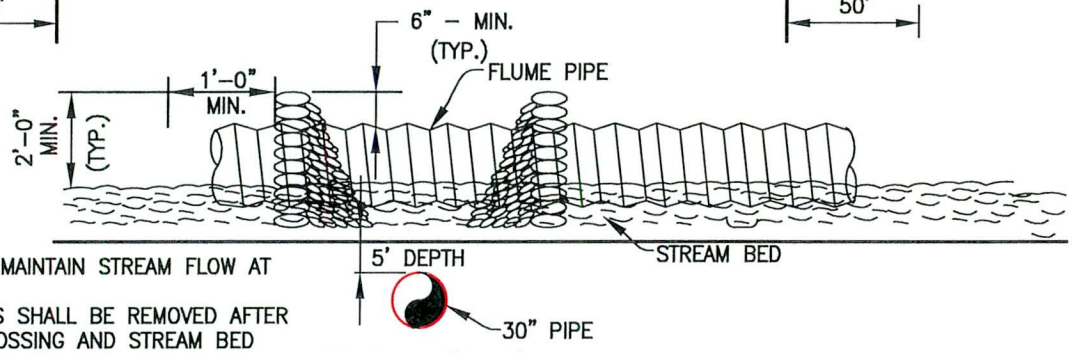


PLAN – TEMPORARY STREAM DIVERSION
N.T.S.



SECTION "A-A"
N.T.S.

NOTES:

1. CONTRACTOR SHALL MAINTAIN STREAM FLOW AT ALL TIMES.
2. ALL WATER BARRIERS SHALL BE REMOVED AFTER INSTALLATION OF CROSSING AND STREAM BED AND BANKS SHALL BE RESTORED TO ORIGINAL SHAPE AND ELEVATION.
3. SIZE OF FLUME PIPE MUST BE SUFFICIENT FOR FLOW.

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
PROPOSED PIPELINE TEMPORARY FLUME CROSSING

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-6	0
SCALE: N.T.S.	APP.:		

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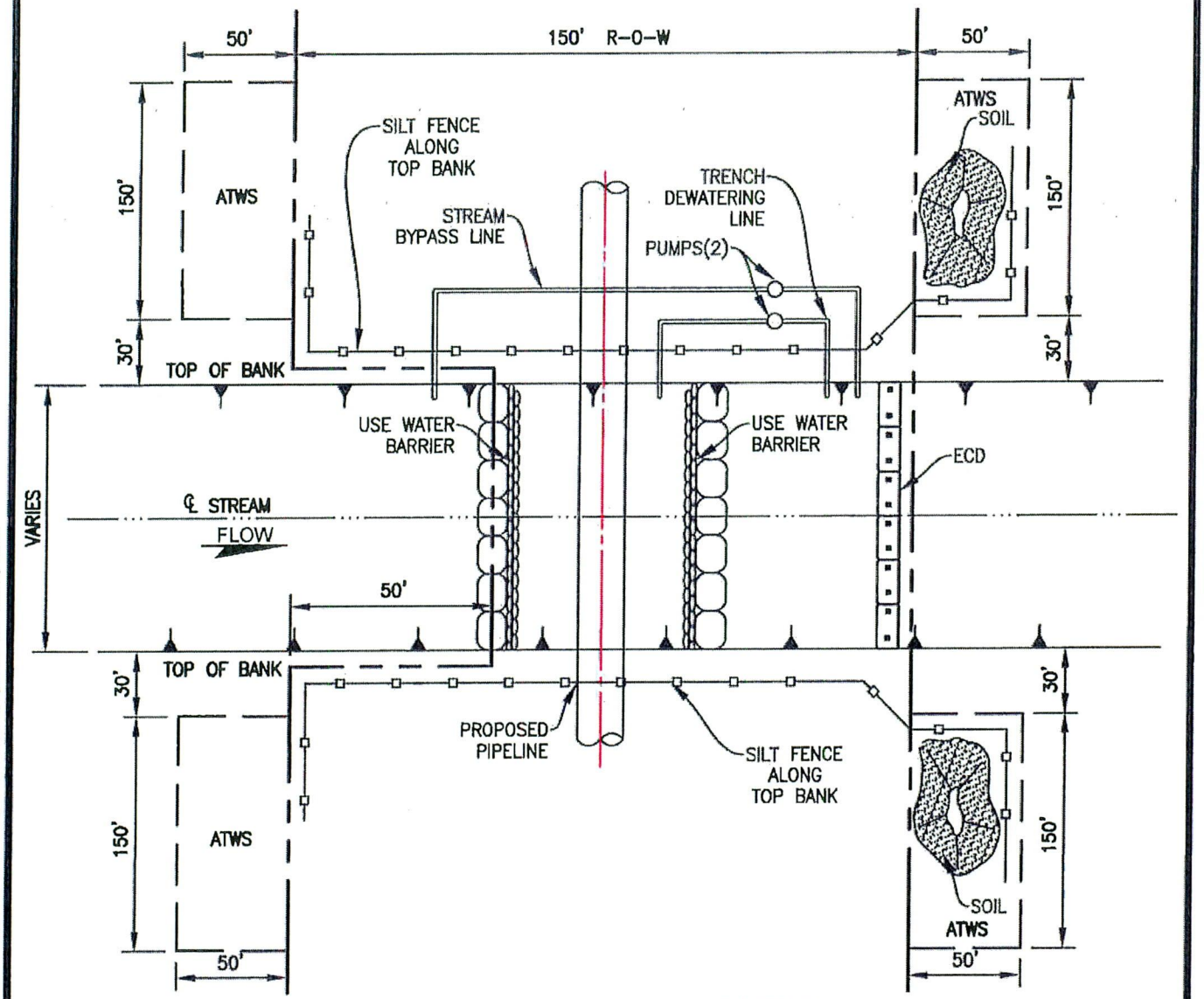

PLAN – TEMPORARY STREAM DIVERSION

N.T.S.

NOTES:

1. CONTRACTOR SHALL MAINTAIN STREAM FLOW AT ALL TIMES.
2. ALL WATER BARRIERS SHALL BE REMOVED AFTER INSTALLATION OF CROSSING AND STREAM BED AND BANKS SHALL BE RESTORED TO ORIGINAL SHAPE AND ELEVATION.
3. SIZE OF PUMPS & STREAM BYPASS LINE MUST BE SUFFICIENT FOR FLOW.

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).

REV.	DATE	BY	DESCRIPTION	CHK.
0	03/06/15	JEG	ISSUED FOR USE	SK

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

PROPOSED PIPELINE
PROPOSED PIPELINE DAM AND PUMP CROSSING

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-6 A	0
SCALE: N.T.S.	APP.:		

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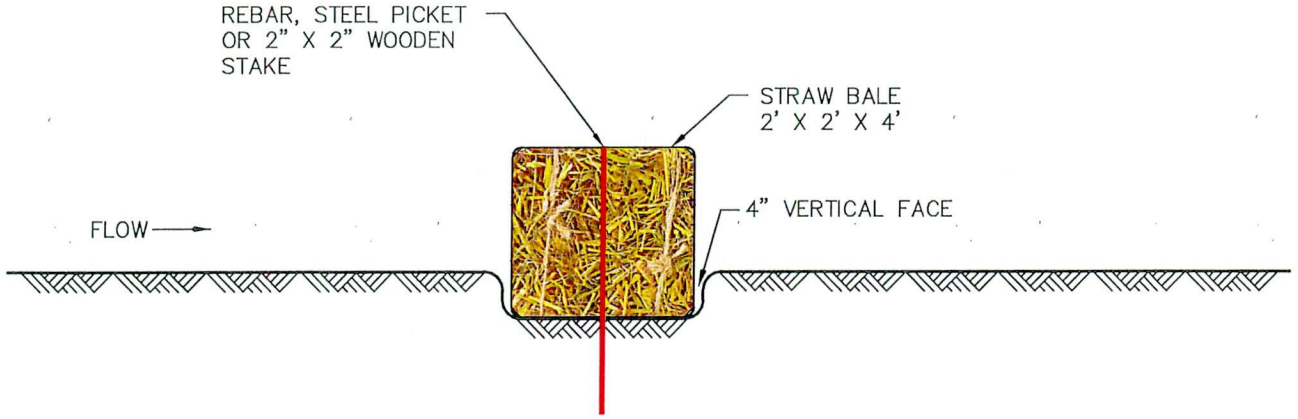
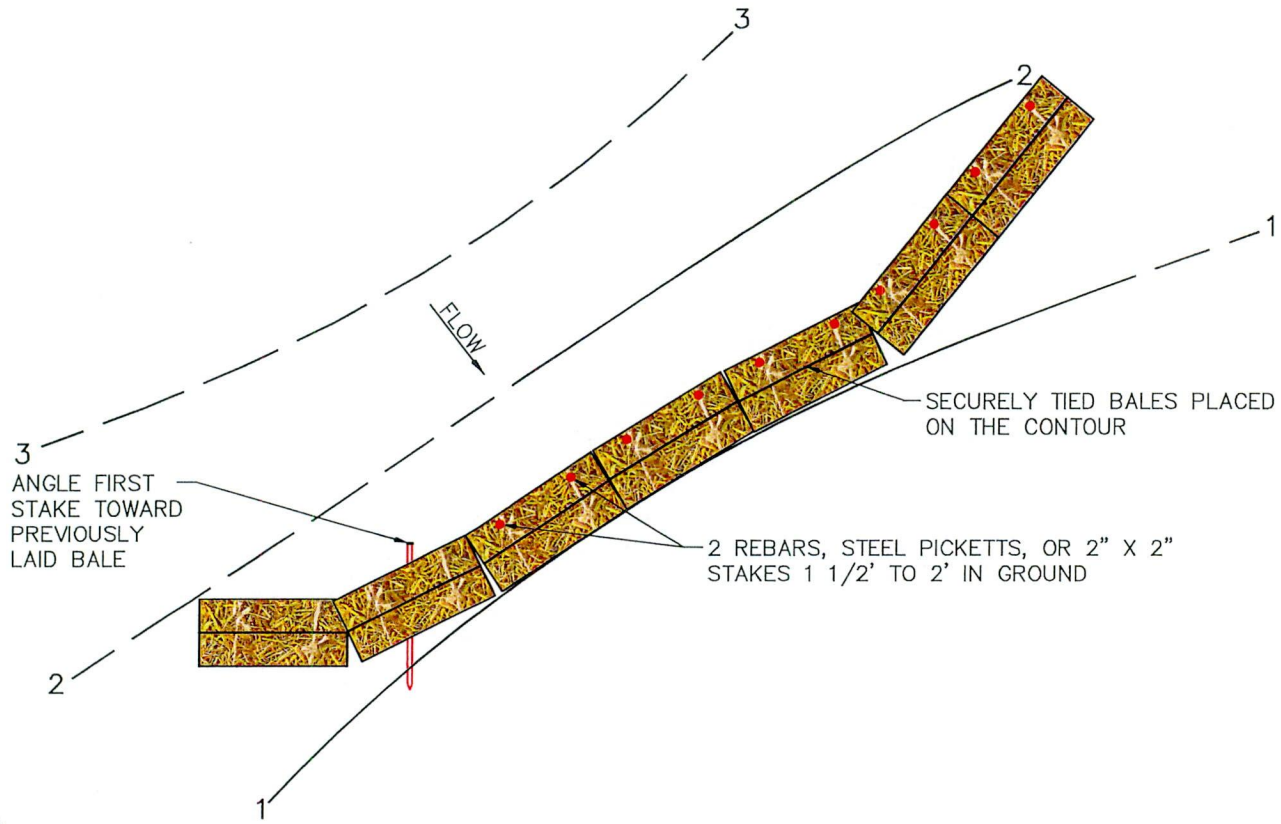


EMBEDDING DETAIL



NOTE:

1. ALL CONTROL DEVICES SIMILAR TO SILT FENCE OR FIBER ROLLS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/3 OF THE HEIGHT OF THE DEVICE. THESE REPAIRS MUST BE MADE WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

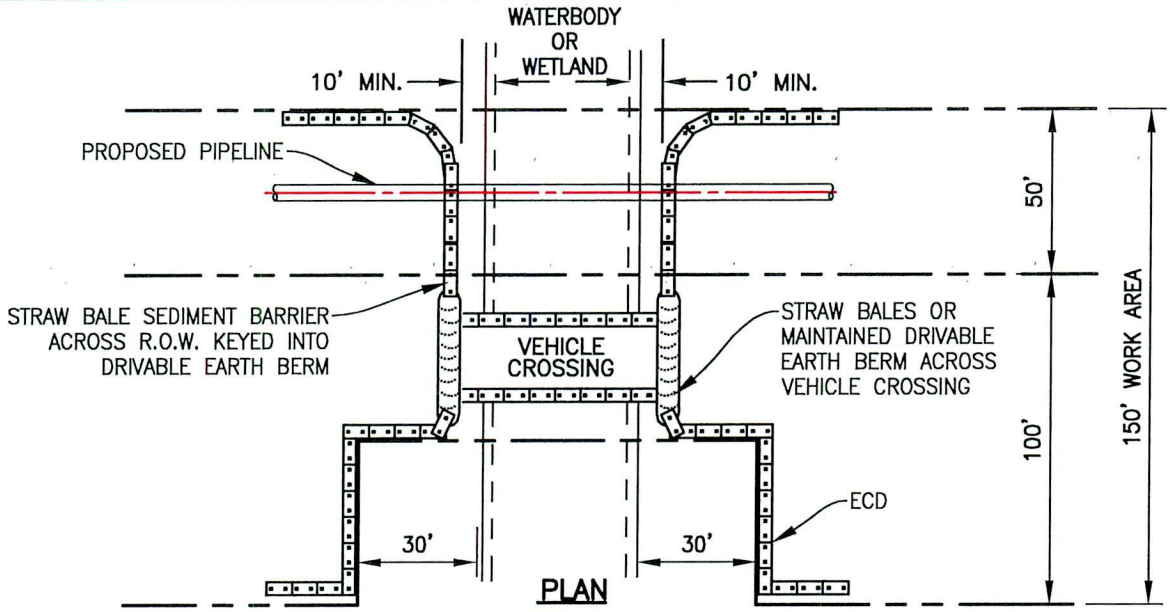
DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
STRAW BALE FILTER

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-7	0
SCALE: N.T.S.	APP.:		

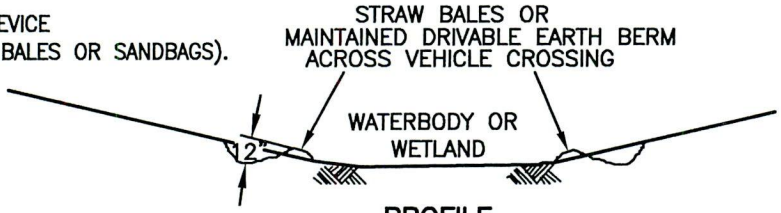
FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN

INSTALLATIONS AT VEHICLE CROSSINGS OF WATERBODIES AND WETLANDS



PLAN

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).



PROFILE

NOTES:

1. PLACE STRAW BALES SO THEY ARE EFFECTIVE BUT DO NOT HINDER CONSTRUCTION. IF NECESSARY, A 15' GAP IN STRAW BALE BARRIERS SHALL BE PROVIDED, AS NEEDED, TO ACCOMMODATE TRAFFIC ON TEMPORARY CONSTRUCTION ROADS. THE GAP SHALL BE CLOSED AT THE END OF EACH WORK DAY USING STRAW BALE BARRIERS, OR A DRIVABLE EARTH BERM TIED INTO ADJACENT STRAW BALES. THE BALES USED TO CLOSE THE GAP SHALL BE PLACED ON THE UPHILL SIDE OF THE STRAW BALE BARRIER, THE END BALES OF THE GAP SEGMENT SHALL OVERLAP A MINIMUM OF 12".
2. A MAINTAINED DRIVABLE EARTH BERM MAY BE INSTALLED ACROSS VEHICLE CROSSING IN LIEU OF STRAW BALES DURING ACTIVE CONSTRUCTION.
3. BERM MUST BE TIED INTO STRAW BALES.
4. BERM MUST BE MAINTAINED TO ENSURE SEDIMENT TRAPPING CAPACITY.
5. WHEN ACTIVE CONSTRUCTION IS COMPLETE, INSTALL STRAW BALES ACROSS ENTIRE R.O.W.
6. MONITOR FOR UNDERMINING OR FLOW-AROUND. INSPECT BALE POSITION TO ASSURE THAT THEY REMAIN CLOSE TOGETHER. MAINTAIN STRAW BALE BARRIERS BY REPLACING DAMAGED BALES AND REMOVING SEDIMENT LOAD. WHEN SEDIMENT LOAD IS GREATER THAN 1/3 THE HEIGHT OF THE BARRIER, SEDIMENT SHALL BE REMOVED AND PLACED IN AN AREA WHERE IT SHALL NOT REENTER THE BARRIER OR A WATERWAY. IF SEDIMENT BEHIND STRAW BALE BARRIERS CANNOT BE REMOVED, A SECOND ROW OF BALES SHALL BE INSTALLED UPSLOPE OF THE BARRIER.
7. WHERE STRAW BALES AND SILT FENCE ARE INSTALLED AS A UNIT, THE STRAW BALES SHALL BE INSTALLED ON THE DOWN SLOPE SIDE OF THE SILT FENCE.
8. EROSION CONTROL STRUCTURES SHALL BE INSPECTED DAILY IN AREAS OF ACTIVE CONSTRUCTION. STRUCTURES SHALL BE INSPECTED WEEKLY AT INACTIVE CONSTRUCTION AREAS AND WITHIN 24 HOURS OF EACH RAINFALL EVENT WITH 0.5 INCH OR MORE. STRUCTURES SHALL BE REPAIRED AS NECESSARY.
9. STRAW BALE BARRIERS SHALL BE REMOVED ONLY AS DIRECTED BY THE PIPELINE INSPECTOR.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
EROSION CONTROL
STRAW BALE SEDIMENT BARRIER

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-8	0
SCALE: N.T.S.	APP.:		

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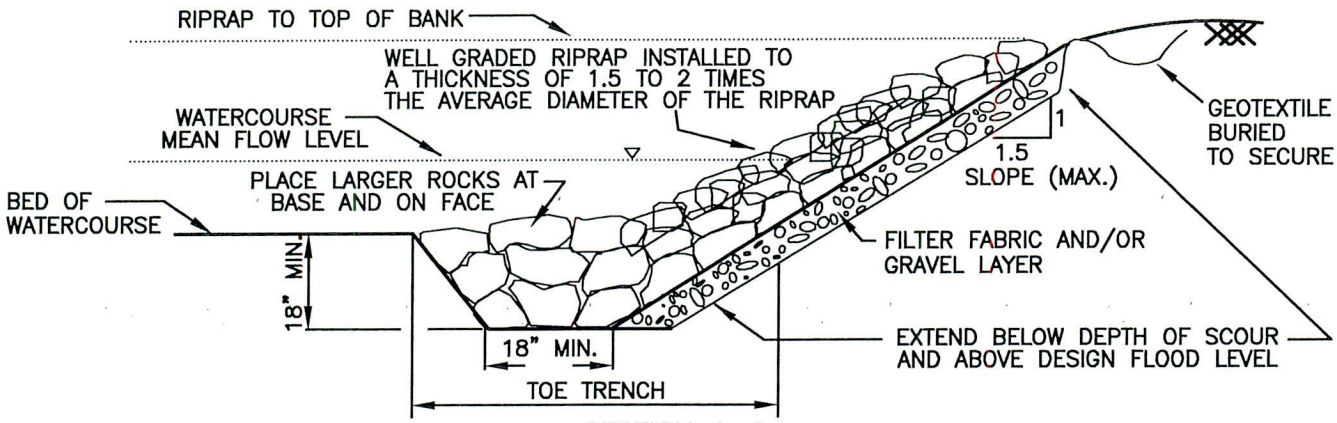
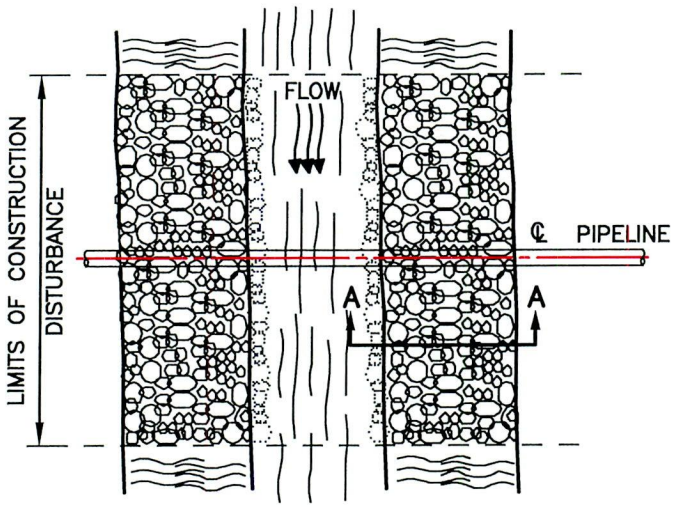


SECTION A–A



PLAN VIEW

Table 256-1
Riprap Gradations

Grade I		Grade II		Grade III	
Size (Inches)	Percent Smaller	Size (Inches)	Percent Smaller	Size (Inches)	Percent Smaller
20	100	28	100	36	100
18	70-90	22	30-80	29	55-85
15	40-60	16	20-50	24	35-50
10	0-10	10	0-5	10	10-15
6	0-2	6	0-2	6	0-2

NOTES:

1. STREAM BANK RIPRAP STRUCTURES SHALL CONSIST OF A LAYER OF STONE UNDERLAIN WITH APPROVED GEOTEXTILE FILTER FABRIC OR A GRAVEL FILTER BLANKET DESIGNED TO PROTECT AND STABILIZE AREAS PRONE TO EROSION.
2. GRAVEL FILTER BLANKET SHALL MEET THE FOLLOWING SPECIFICATIONS:
   - HAVE A PERMEABILITY GREATER THAN THAT OF THE SUBGRADE SOIL;
   - IF A WELL–GRADED GRAVEL OR SAND–GRAVEL LAYER IS USED, THE LAYER SHALL BE A MINIMUM OF 6" THICK AND SPREAD IN A UNIFORM LAYER OVER THE SUBGRADE;
   - IF WATER TURBULENCE COULD RESULT IN EROSION OF BANK MATERIAL BETWEEN LARGE ROCKS (AS DETERMINED BY THE REPRESENTATIVE ENVIRONMENTAL INSPECTOR), A GEOTEXTILE FILTER FABRIC SHALL BE USED BETWEEN THE GRAVEL LAYER AND THE RIPRAP.
3. THE GEOTEXTILE FILTER FABRIC SHALL BE PERMATEX 4000 SERIES OR AN APPROVED EQUIVALENT MEETING THE FOLLOWING SPECIFICATIONS:
   (A) BE COMMERCIAL QUALITY NONWOVEN FABRIC DESIGNED FOR RIPRAP UNDERLAYMENT;
   (B) BE A MINIMUM OF 20 MILS IN THICKNESS;
   (C) HAVE A GRAB STRENGTH BETWEEN 90 TO 120 POUNDS;
   (D) HAVE A GREATER THAN 4% OPEN AREA (U.S. STANDARD SIEVE NUMBER 100 (0.15 MM.);
   (E) HAVE A DENSITY OF 8 oz. PER SQUARE YARD.
4. THE USE OF RIPRAP SHALL BE LIMITED TO AREAS WHERE FLOWING CONDITIONS PREVENT EFFECTIVE VEGETATIVE STABILIZATION TECHNIQUES.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

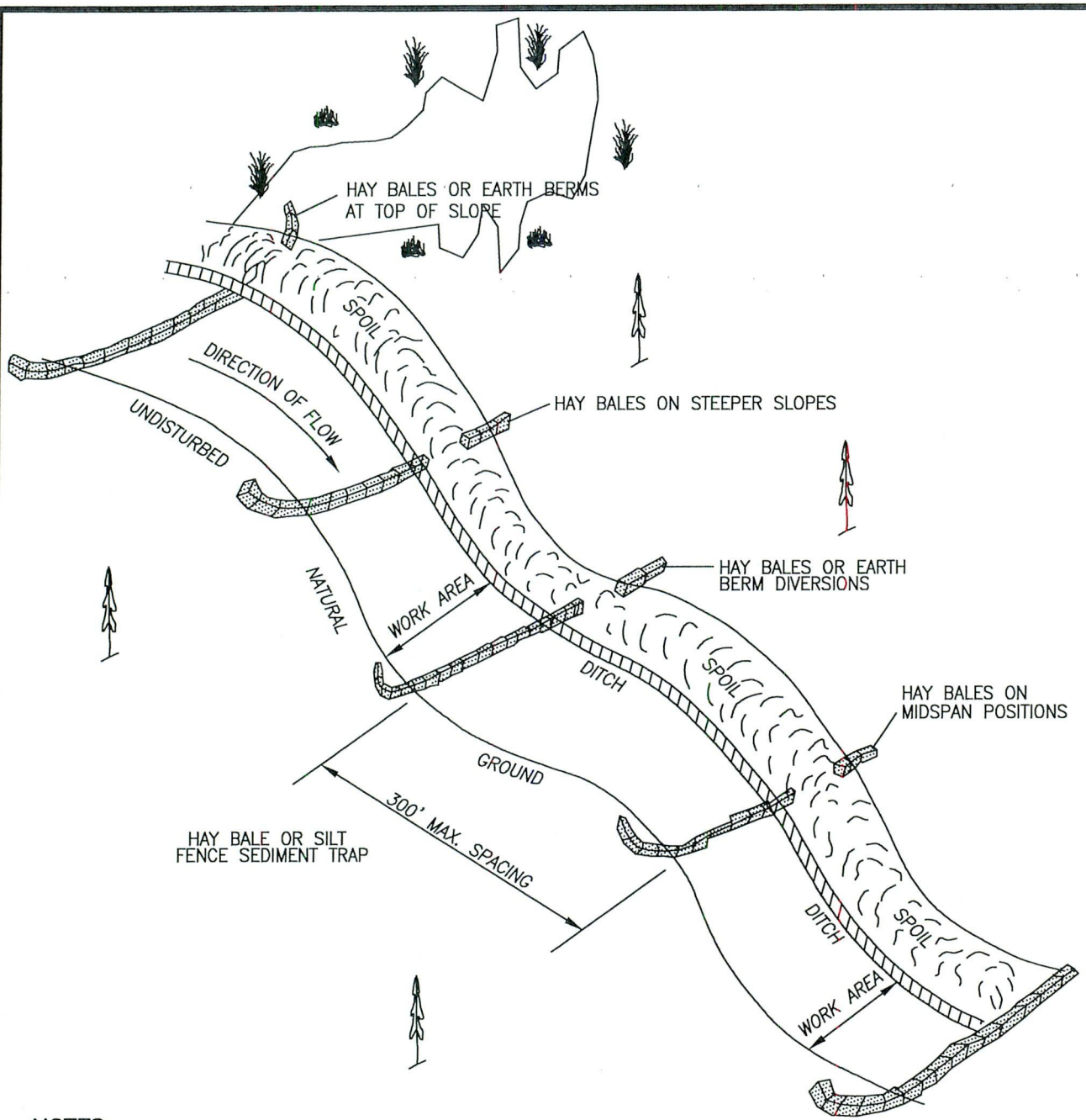
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
EROSION CONTROL RIPRAP AT WATERBODY BANKS

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12–9	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN



NOTES:

1. OUTLET INTO AREAS STABILIZED BY EXISTING VEGETATION OR INSTALL STAKED HAY/STRAW BALES/SILT FENCE.
2. TOPSOIL MAY NOT BE USED FOR SLOPE BEARKERS.

DEGREES	SPACING
5–15	300 ft. MAX.
15–30	200 ft. MAX.
> 30	100 ft. MAX.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

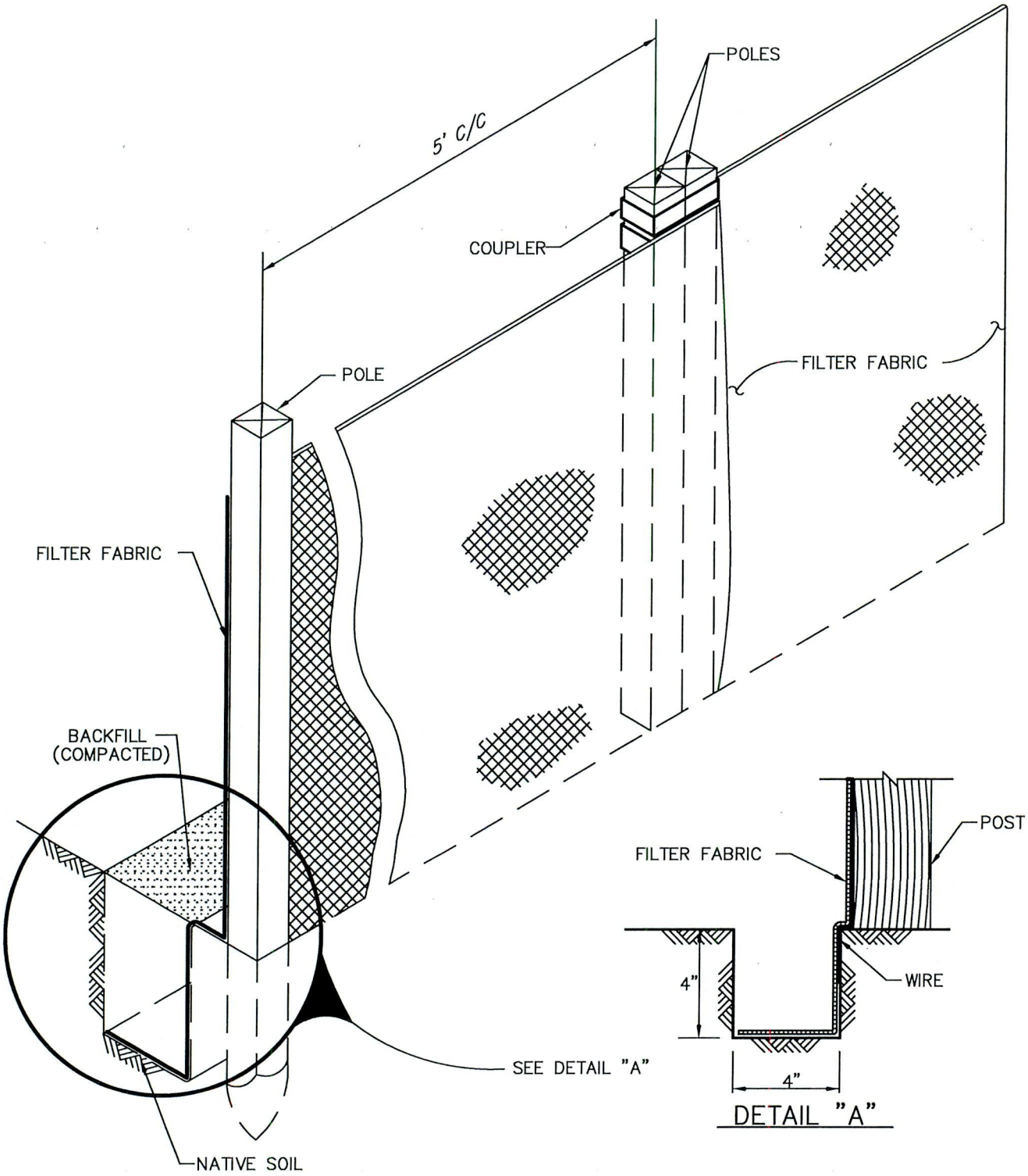
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

TEMPOARY SLOPE BREAKERS SLOPE DIRRECTION WITH SLOPE

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12–10	0
SCALE: N.T.S.	APP.:		



REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

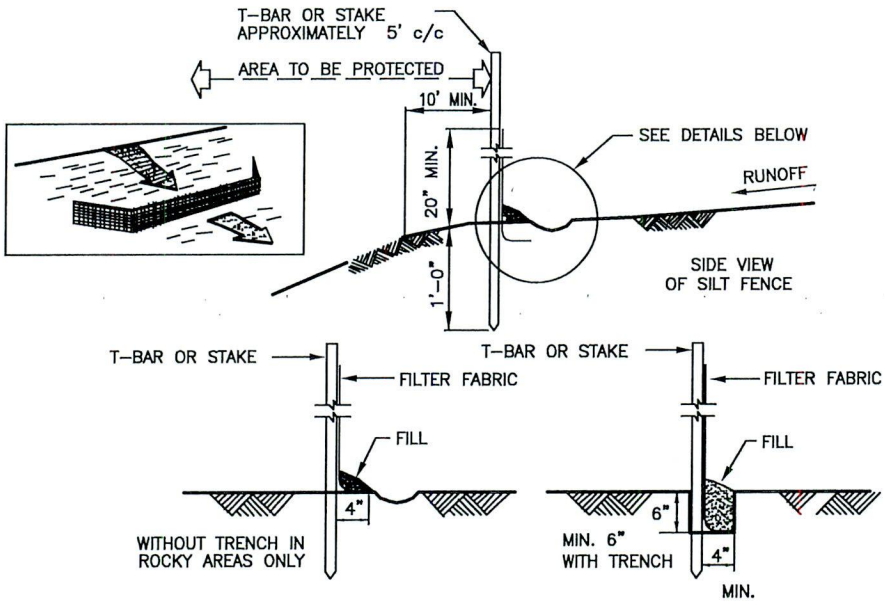
DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

SILT FENCE

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12–11	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN



NOTE:

1. GENERALLY WHEN A LONG SEDIMENT BARRIER IS REQUIRED, SILT FENCE WILL BE UTILIZED RATHER THAN STRAW BALES AT:
   - THE BASE OF ALL SLOPES ABOVE ROADS, SPRINGS, WETLANDS, IMPOUNDMENTS AND PERENNIAL AND INTERMITTENT STREAMS.
   - THE DOWN SLOPE RIGHT–OF–WAY EDGE WHERE ANY OF THE ABOVE MENTIONED LOCATIONS ARE ADJACENT TO THE RIGHT–OF–WAY.
   - ALONG R.O.W.BOUNDARIES OF WETLAND CONSTRUCTION.
   - ACROSS CONSTRUCTION R.O.W. AT ALL WATERBODY CROSSINGS.
   - AS SPECIFIED IN THE SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN.
   - AS DIRECTED BY THE INSPECTOR.

2. THE SILT FENCE SHALL BE CONSTRUCTED AS FOLLOWS:
   - FABRIC USED FOR THE SILT FENCE SHALL BE A "STANDARD STRENGTH" GEOTEXTILE, SUCH AS MIRAFI 100X OR AN APPROVED EQUIVALENT.
   - THE FABRIC SHALL BE CUT FROM A CONTINUOUS FABRIC ROLL.
   - THE HEIGHT OF THE FENCE SHALL NOT EXCEED 36".
   - SPLICES SHALL ONLY BE DONE AT POSTS AND SHALL CONSIST OF A MINIMUM OF 6" OF OVERLAP WITH BOTH ENDS SECURED TO THE POST.
   - POSTS SHALL BE POSITIONED A MAXIMUM OF 5' APART.
   - POSTS SHALL CONSIST OF 2"X2" WOODEN STAKES OF SUFFICIENT LENGTH TO EXTEND A MINIMUM OF 12" INTO THE GROUND.
   - FABRIC SHALL BE STAPLED OR WIRED TO POSTS A MAXIMUM OF EVERY 9".

3. THE SILT FENCE SHALL BE INSTALLED AS SPECIFIED BY THE MANUFACTURER OR AS FOLLOWS:
   - A TRENCH, 4" WIDE AND 6" DEEP, SHALL BE EXCAVATED ALONG THE CONTOUR. THE POST SHALL BE DRIVEN INTO THE BOTTOM OF THE TRENCH ON THE DOWNSTREAM SIDE OF THE FILTER FABRIC. THE TRENCH SHALL BE BACK FILLED AND COMPACTED, ENSURING 6" OF FENCE IS BURIED WITHIN THE TRENCH.
   - IN AREAS WHERE THE TERRAIN IS TOO ROCKY FOR TRENCHING, A 4" GROUND FLAP WITH ROCK FILL TO HOLD IT IN PLACE SHALL BE USED.

4. ALL CONTROL DEVICES SIMILAR TO SILT FENCE OR FIBER ROLLS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/3 OF THE HEIGHT OF THE DEVICE. THESE REPAIRS MUST BE MADE WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

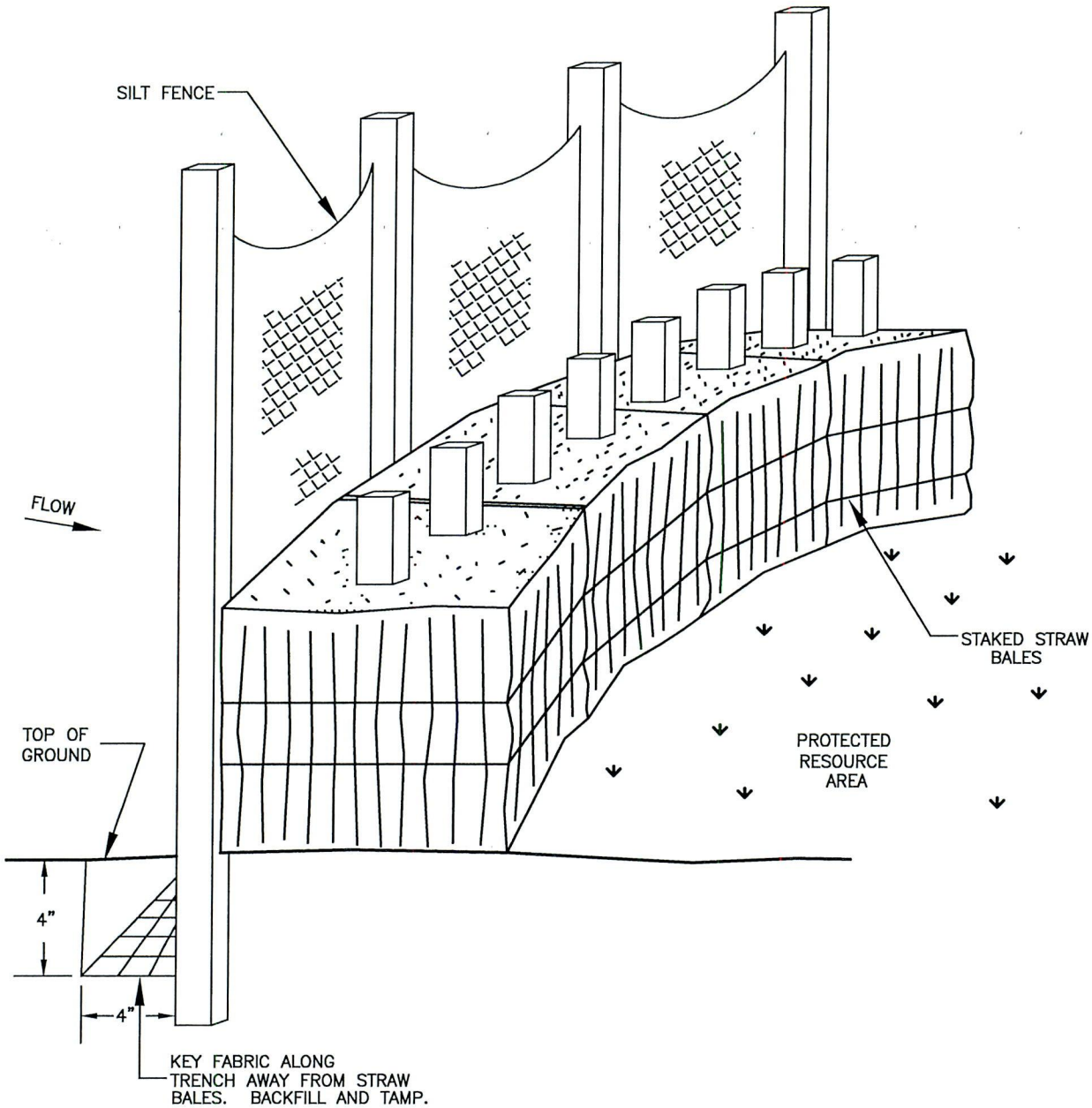
DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

EROSION CONTROL
SILT FENCE SEDIMENT BARRIER

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12–12	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN



1. WHERE EXTREMELY ERODIBLE SOIL CONDITIONS EXIST AND AT THE DIRECTION OF THE INSPECTOR, A COMBINED STRAW BALE AND SILT FENCE SEDIMENT CONTROL BARRIER SHALL BE INSTALLED.
2. ALL CONTROL DEVICES SIMILAR TO SILT FENCE OR FIBER ROLLS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/3 OF THE HEIGHT OF THE DEVICE. THESE REPAIRS MUST BE MADE WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
EROSION CONTROL STRAW BALE AND SILT FENCE

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12–13	0
SCALE: N.T.S.	APP.:		

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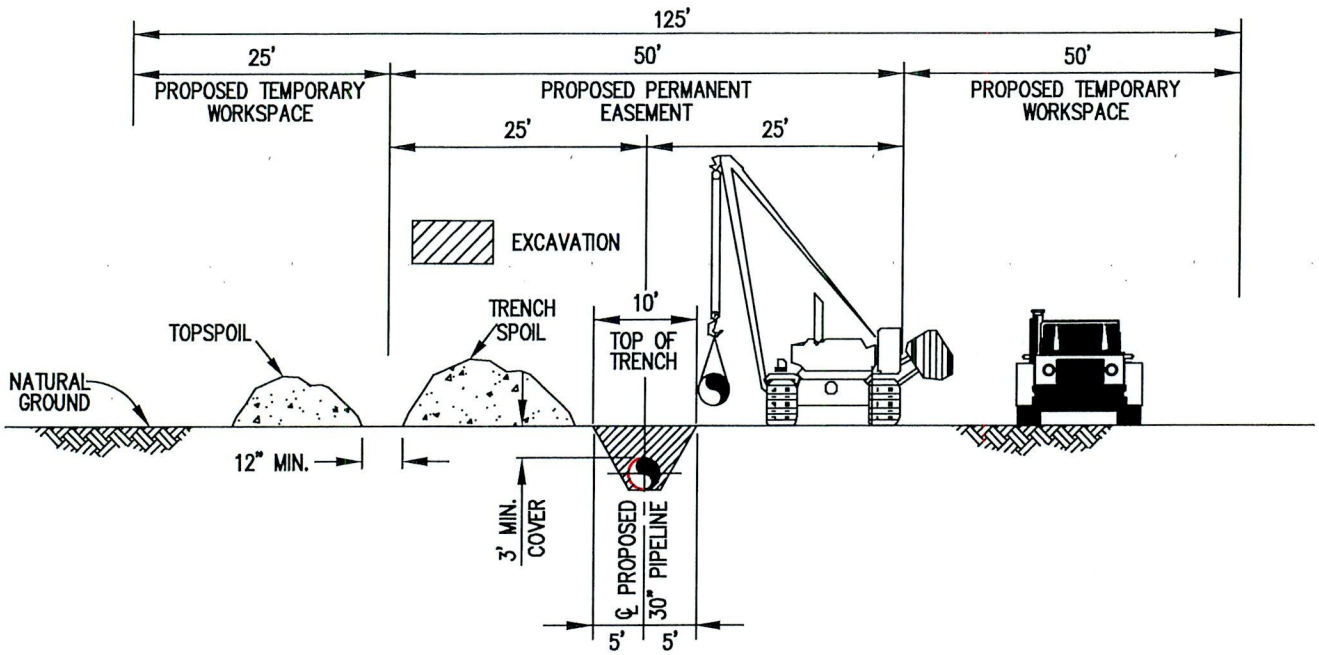


NOTES:

1. CONSTRUCTION RIGHT–OF–WAY WILL TYPICALLY BE 125 FEET WIDE CONSISTING OF 50 FEET PERMANENT EASEMENT AND UP TO 50 FEET OF TEMPORARY WORKSPACE. EXTRA TEMPORARY WORK SPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. UTILIZE THE "TRENCH ONLY" TOPSOIL SALVAGE METHOD AT LOCATIONS SUCH AS RIPARIAN AREAS OR UNMANAGED WOODLAND, WHERE IDENTIFIED ON THE CONSTRUCTION DRAWINGS, OR AS DIRECTED BY THE PIPELINE INSPECTOR.
3. THE TRENCH ONLY METHOD IS NOT TO BE USED ON AGRICULTURAL LAND EXCEPT AS DIRECTED BY THE INSPECTOR (PER LANDOWNER REQUEST).
4. FOR TRENCH ONLY STRIPPING, THE STRIPPED AREA SHALL BE WIDE ENOUGH TO ACCOMMODATE TRENCHING EQUIPMENT.
5. DEPTH OF TOPSOIL STRIPPING NOT TO EXCEED 12 INCHES.
6. STOCKPILE TOPSOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE PIPELINE INSPECTOR. KEEP TOPSOIL AND SPOIL PILES CLEAN OF ALL CONSTRUCTION DEBRIS. MAINTAIN A MINIMUM 12 INCHES OF SEPERATION BETWEEN TOPSOIL AND TRENCH SPOIL PILES.
7. LEAVE GAPS IN TOPSOIL AND SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CREEKS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING.
8. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING SPOIL AND TOPSOIL PILES.
9. SAME LAYOUT APPLIES WHERE CONSTRUCTION R.O.W. DOES NOT ABUT EXISTING R.O.W.
10. TEMPORARILY SUSPEND TOPSOIL HANDLING OPERATIONS DURING INORDINATELY WINDY CONDITIONS UNTIL MITIGATIVE MEASURES TO MINIMIZE WIND EROSION CAN BE IMPLEMENTED.
11. TOPSOIL AND TRENCH SPOIL RELATIVE POSITIONS CAN, AS DIRECTED BY THE PIPELINE INSPECTOR, BE REVERSED.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

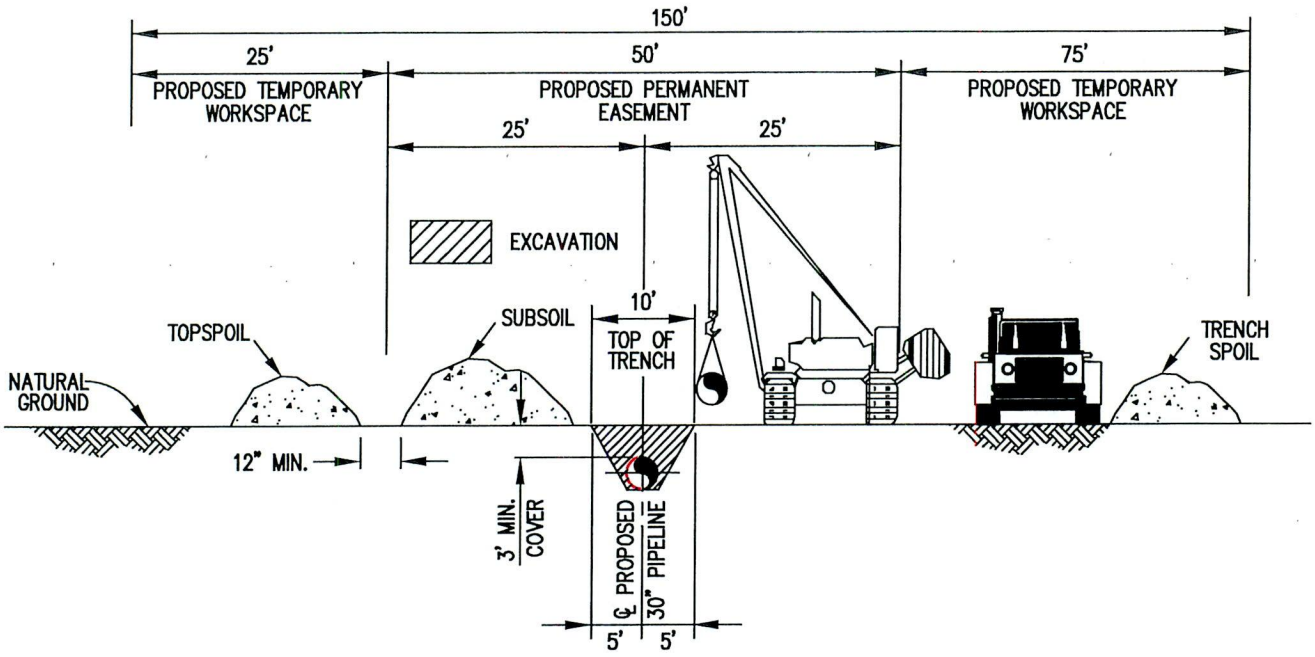
WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
CONSTRUCTION RIGHT–OF–WAY ARRANGEMENT (DOUBLE DITCH)

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12–14	0
SCALE: N.T.S.	APP.:		



NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 150 FEET WIDE CONSISTING OF 50 FEET PERMANENT EASEMENT AND UP TO 75 FEET OF TEMPORARY WORKSPACE. EXTRA TEMPORARY WORK SPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. UTILIZE THE "TRENCH ONLY" TOPSOIL SALVAGE METHOD AT LOCATIONS SUCH AS RIPARIAN AREAS OR UNMANAGED WOODLAND, WHERE IDENTIFIED ON THE CONSTRUCTION DRAWINGS, OR AS DIRECTED BY THE PIPELINE INSPECTOR.
3. THE TRENCH ONLY METHOD IS NOT TO BE USED ON AGRICULTURAL LAND EXCEPT AS DIRECTED BY THE INSPECTOR (PER LANDOWNER REQUEST).
4. FOR TRENCH ONLY STRIPPING, THE STRIPPED AREA SHALL BE WIDE ENOUGH TO ACCOMMODATE TRENCHING EQUIPMENT.
5. DEPTH OF TOPSOIL STRIPPING NOT TO EXCEED 12 INCHES.
6. STOCKPILE TOPSOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE PIPELINE INSPECTOR. KEEP TOPSOIL AND SPOIL PILES CLEAN OF ALL CONSTRUCTION DEBRIS. MAINTAIN A MINIMUM 12 INCHES OF SEPERATION BETWEEN TOPSOIL AND SUBSOIL PILES.
7. LEAVE GAPS IN TOPSOIL AND SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CREEKS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING.
8. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING SPOIL AND TOPSOIL PILES.
9. SAME LAYOUT APPLIES WHERE CONSTRUCTION R.O.W. DOES NOT ABUT EXISTING R.O.W.
10. TEMPORARILY SUSPEND TOPSOIL HANDLING OPERATIONS DURING INORDINATELY WINDY CONDITIONS UNTIL MITIGATIVE MEASURES TO MINIMIZE WIND EROSION CAN BE IMPLEMENTED.
11. TOPSOIL AND TRENCH SPOIL RELATIVE POSITIONS CAN, AS DIRECTED BY THE PIPELINE INSPECTOR, BE REVERSED.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
CONSTRUCTION RIGHT-OF-WAY ARRANGEMENT (TRIPLE DITCH)

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-15	0
SCALE: N.T.S.	APP.:		

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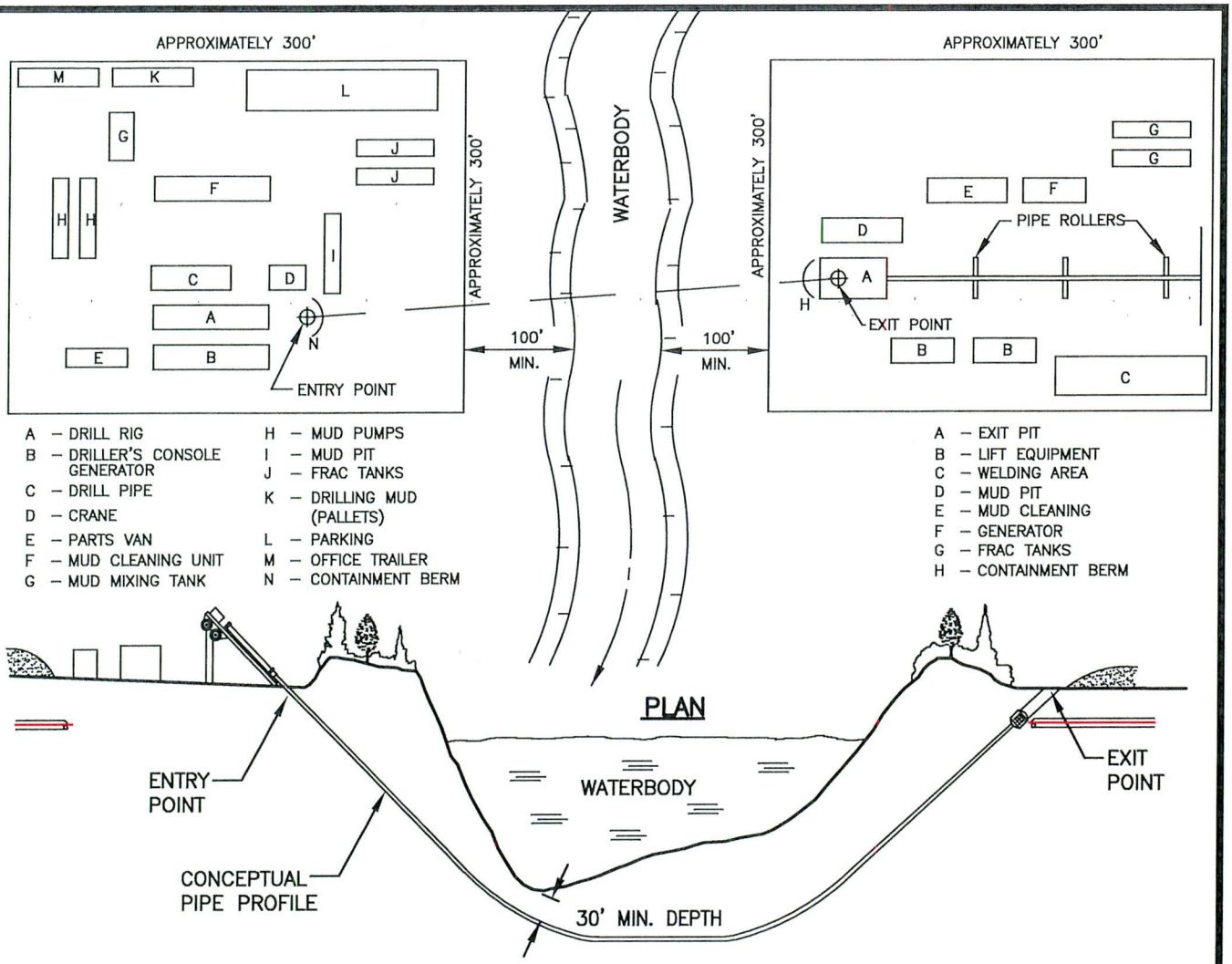

NOTES:

1. SET UP DRILLING EQUIPMENT A MINIMUM OF 300 FEET FROM THE EDGE OF THE WATERCOURSE. DO NOT CLEAR OR GRADE WITHIN THE 100 FOOT ZONE.
2. DO NOT ALLOW THE USE OF ANY ADDITIVES TO THE DRILLING MUD WITHOUT THE APPROVAL OF THE APPROPRIATE REGULATORY AUTHORITIES AND CLIENTS REPRESENTATIVE.
3. INSTALL SUITABLE DRILLING MUD TANKS OR SUMPS TO PREVENT CONTAMINATION OF WATERCOURSE.
4. INSTALL BERMS DOWNSLOPE FROM THE DRILL ENTRY AND ANTICIPATED EXIT POINTS TO CONTAIN ANY RELEASE OF DRILLING MUD.
5. DISPOSE OF DRILLING MUD IN ACCORDANCE WITH THE APPROPRIATE REGULATORY AUTHORITY REQUIREMENTS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
WATERBODY CROSSING HORIZONTAL DIRECTIONAL DRILL

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12–16	0
SCALE: N.T.S.	APP.:		

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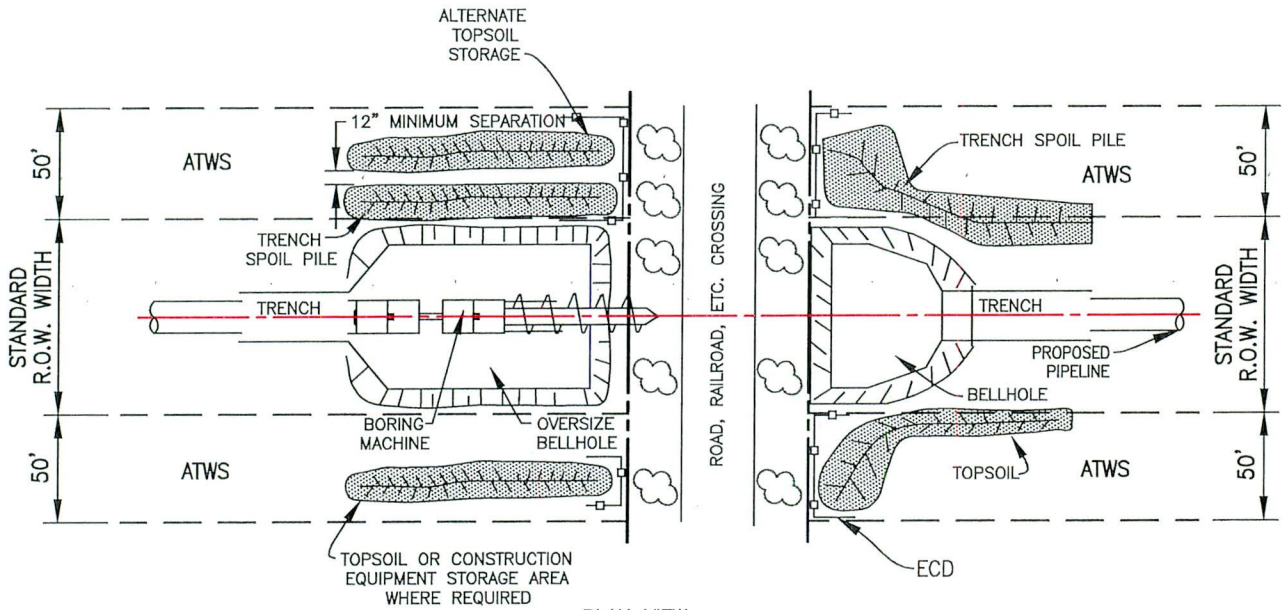
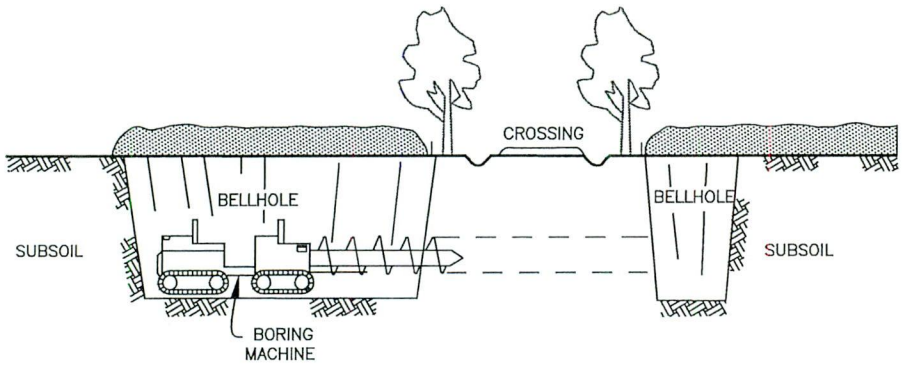


PLAN VIEW
N.T.S.

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).



PROFILE
N.T.S.

NOTES:

1. STRIP TOPSOIL FROM BELLHOLE AREA IN UNMANAGED WOODLANDS. STRIP TOPSOIL FROM THE BELLHOLE AND SPOIL STORAGE AREA ON AGRICULTURAL LAND.
2. EXCAVATE BELLHOLE, STORING TRENCH SPOIL ON OPPOSITE SIDE OF RIGHT-OF-WAY FROM TOPSOIL, OR ADJACENT TO TOPSOIL MAINTAINING A 12" MINIMUM SEPARATION TO AVOID MIXING TOPSOIL AND TRENCH SPOIL.
3. AFTER COMPLETION OF PIPE TIE-INS, BACKFILL AND COMPACT. LEAVE A CROWN TO ALLOW FOR SUBSIDENCE.
4. INSTALL TEMPORARY EROSION CONTROL PROCEDURES AS SPECIFIED BY THE PIPELINE INSPECTOR.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
TOPSOIL SALVAGE CROSSING BORE (CB)

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-17	0
SCALE: N.T.S.	APP.:		

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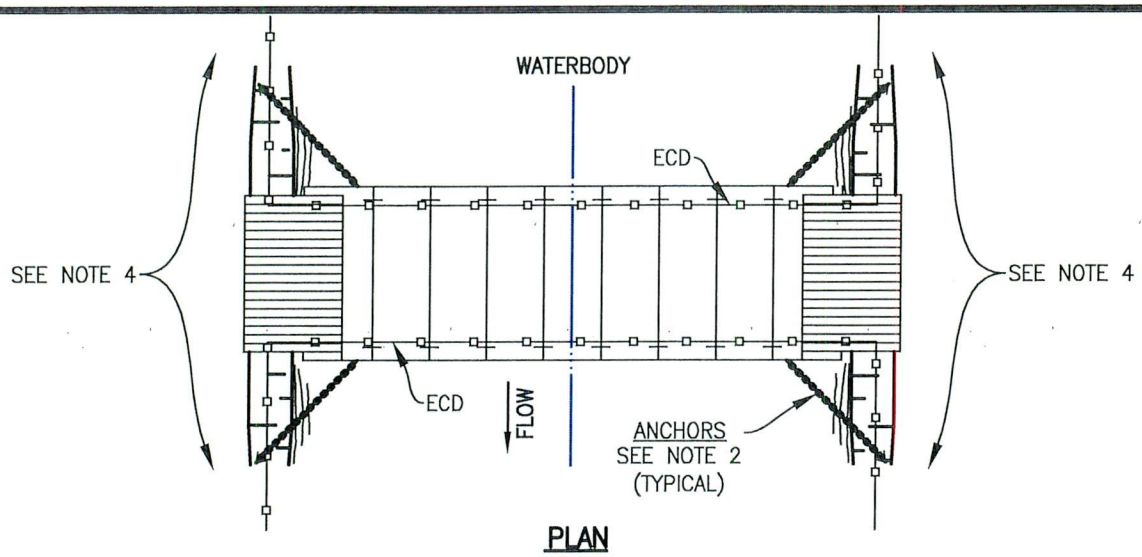
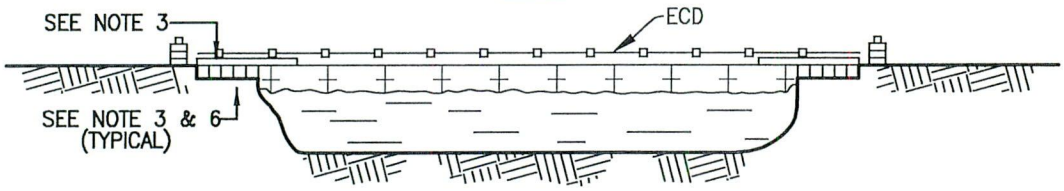


PLAN



PROFILE

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).

NOTES:

1. THIS TYPE OF BRIDGE IS GENERALLY USED ON WIDE, CROSSINGS.
2. BRIDGE SHALL BE ANCHORED AND/OR TIED OFF TO ANCHOR BLOCKS FOR STABILITY.
3. IF REQUIRED, UTILIZE APPROACH FILLS OF CLEAN ROCK MATERIAL, SWAMP MATS, SKIDS OR OTHER SUITABLE MATERIALS TO AVOID CUTTING THE BANKS WHEREVER FEASIBLE. ENSURE ADEQUATE FREEBOARD. ENSURE THAT FILL MATERIAL, IF USED, DOES NOT SPILL INTO WATERCOURSE.
4. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FORM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY. ENVIRONMENTAL CONTROL DEVICES (SILT FENCE, STRAW BALES OR SANDBAGS) MAY BE USED INTERCHANGEABLY.
5. REMOVE FLOATING BRIDGES AS SOON AS POSSIBLE AFTER PERMANENT SEEDING UNLESS OTHERWISE DIRECTED BY REPRESENTATIVE. THE STRUCTURE IS TO BE REMOVED IF THERE IS MORE THAN ONE MONTH BETWEEN FINAL GRADING AND SEEDING, AND ALTERNATIVE ACCESS TO THE CONSTRUCTION R.O.W. IS AVAILABLE.
6. DISPOSE OF A ROCK AS DIRECTED BY COMPANY REPRESENTATIVE.
7. RESTORE AND STABILIZE BED AND BANKS TO APPROXIMATE PRE-CONSTRUCTION CONDITIONS.
8. ALL CONTROL DEVICES SIMILAR TO SILT FENCE OR FIBER ROLLS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/3 OF THE HEIGHT OF THE DEVICE. THESE REPAIRS MUST BE MADE WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

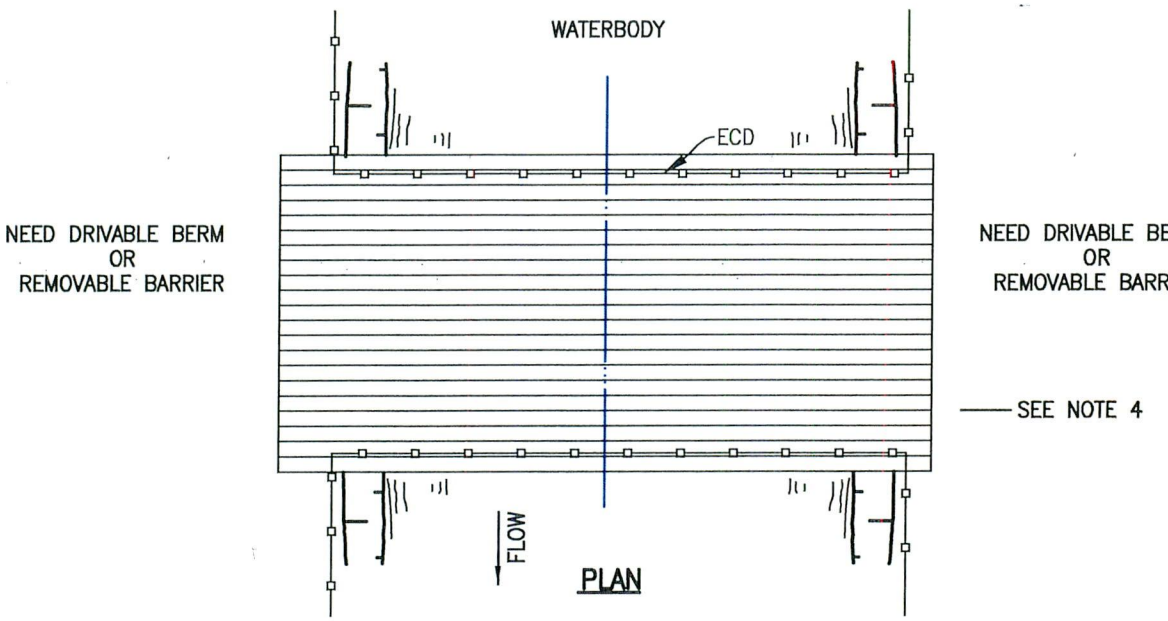
WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

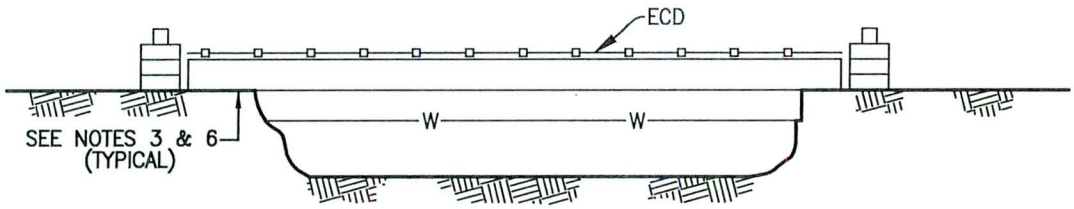
TYPICAL
WATERBODY BRIDGE FLEXIFLOAT TYPE (FF)

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-18	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN



PLAN



PROFILE

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).

NOTES:

1. THIS TYPE OF BRIDGE IS GENERALLY USED ON NARROW CROSSINGS, LESS THAN 20 FEET WIDE WITH APPROPRIATE BANK CONFIGURATION. MULTIPLE MATS MAY BE LAYERED FOR HEAVIER EQUIPMENT CROSSINGS.
2. BRIDGE SHALL BE TEMPORARILY REMOVED IF HIGH WATER RENDERS IT UNSAFE TO USE.
3. IF REQUIRED, UTILIZE APPROACH FILLS OF CLEAN ROCK MATERIAL, SWAMP MATS, SKIDS OR OTHER SUITABLE MATERIALS TO AVOID CUTTING THE BANKS WHEREVER FEASIBLE. ENSURE ADEQUATE FREEBOARD. ENSURE THAT FILL MATERIAL, IF USED, DOES NOT SPILL INTO WATERCOURSE INCLUDING REMOVAL OF DIRT FROM DECK DURING OPERATION.
4. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FORM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY. SILT FENCE, STRAW BALES OR SANDBAGS MAY BE USED INTERCHANGEABLY.
5. REMOVE TIMBER MATS AS SOON AS POSSIBLE AFTER PERMANENT SEEDING UNLESS OTHERWISE DIRECTED BY REPRESENTATIVE. THE STRUCTURE IS TO BE REMOVED IF THERE IS MORE THAN ONE MONTH BETWEEN FINAL GRADING AND SEEDING, AND ALTERNATIVE ACCESS TO THE CONSTRUCTION R.O.W. IS AVAILABLE.
6. DISPOSE OF A ROCK AS DIRECTED BY COMPANY REPRESENTATIVE.
7. RESTORE AND STABILIZE BED AND BANKS TO APPROXIMATE PRE-CONSTRUCTION CONDITIONS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

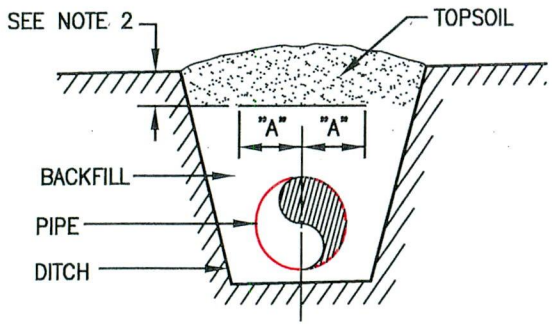
DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
WATERBODY BRIDGE TIMBER MAT (TM)

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-19	0
SCALE: N.T.S.	APP.:		

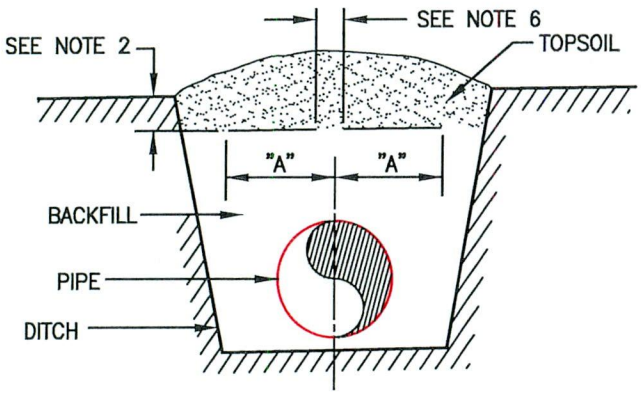
PIPELINE MARKING TAPE INSTALLATION

SINGLE R.O.W.



PIPE DIA.	TAPE WIDTH	"A"
6"	24"	12"
8"	24"	12"
10"	24"	12"
12"	24"	12"
14"	24"	12"
16"	24"	12"

DOUBLE R.O.W.



PIPE DIA.	TAPE WIDTH	"A"
20"	24"	25"
24"	24"	25"
30"	24"	25"
34"	24"	25"
36"	24"	25"
42"	24"	26"
48"	24"	36"

NOTES:

1. PIPELINE MARKING TAPE SHALL BE INSTALLED AT OPEN CUT ROAD AND IN-GROUND UTILITY CROSSINGS AND AT ALL CLASS 2, 3 & 4 LOCATIONS, OR AS DIRECTED BY COMPANY.
2. TAPE IS TO BE INSTALLED 1 FOOT (1') BELOW GRADE EXCEPT IN AGRICULTURAL AREAS, WHERE IT SHALL BE LAID 1'-8" BELOW GRADE. FOR CONVENIENCE, TAPE CAN BE INSTALLED LEVEL AT ROAD CROSSINGS, 1 FOOT (1') BELOW ROAD DITCHES.
3. TAPE IS TO BE INSTALLED ACROSS AND 15 FEET (15') UPSTREAM AND DOWNSTREAM OR ROAD OR UTILITY RIGHT'S-OF-WAY, INCLUDING EXPOSED PORTION OF BORED CROSSINGS.
4. TAPE IS TO BE INSTALLED 15 FEET (15') UPSTREAM AND DOWNSTREAM OF UTILITY CROSSING IF NO RIGHT-OF-WAY EXISTS.
5. TOP OF BACKFILL SHALL BE AS LEVEL AS POSSIBLE PRIOR TO INSTALLATION OF TAPE.
6. GAP BETWEEN ADJACENT TAPES SHALL BE 2".

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

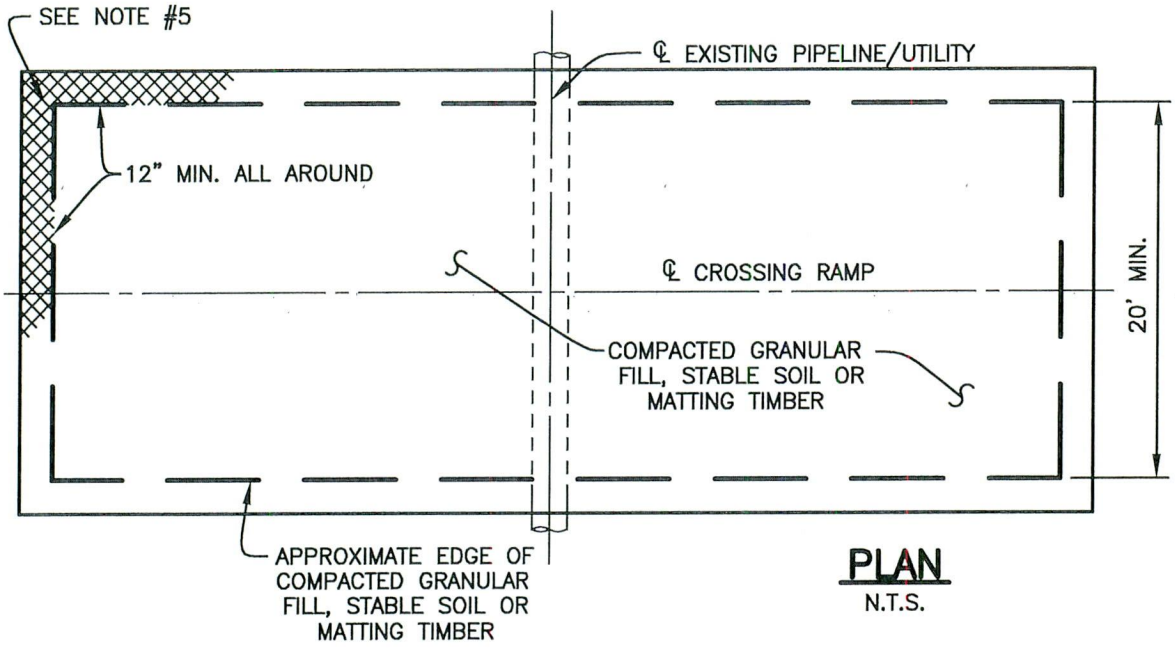
WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

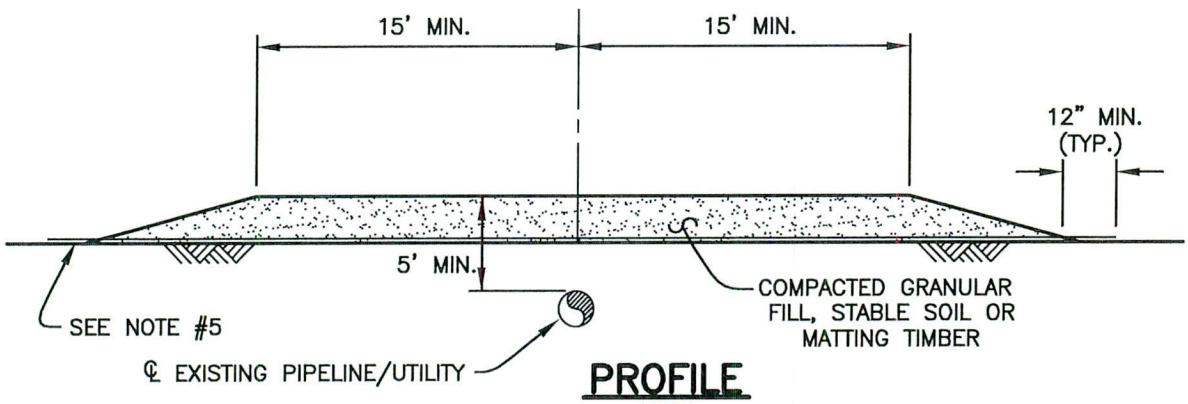
DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
PIPELINE MARKING INSTALLATION

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-20	0
SCALE: N.T.S.	APP.:		



PLAN
N.T.S.



PROFILE
N.T.S.

NOTES:

1. CONTRACTOR TO NOTIFY EXISTING PIPELINE/UTILITY COMPANY PRIOR TO INSTALLATION OF CROSSING RAMP.
2. LENGTH OF RAMP TO VARY IN ACCORDANCE WITH CROSSING ANGLE. MINIMUM CROSSING ANGLE TO BE 45 DEGREES.
3. VEHICLES OR EQUIPMENT USING CROSSINGS SHALL PROCEED SLOWLY & WITH CAUTION TO MINIMIZE IMPACT LOADING & REDUCTION ON DEPTH OF COVER OVER PIPELINE/UTILITY.
4. ON COMPLETION OF CONSTRUCTION, CONTRACTOR TO REMOVE COMPLETE RAMP & RESTORE AREA TO THE SATISFACTION OF THE EXISTING PIPELINE/UTILITY COMPANY & THE CLIENT INSPECTOR.
5. GEOTEXTILE FABRIC (& GEOTEXTILE GRID WHERE REQUIRED) SHALL BE INSTALLED TO PROTECT NATIVE TOP SOIL AS DIRECTED BY THE CLIENT INSPECTOR WHEN IMPORTED GRANULAR FILL, NATIVE SUBSOIL FILL OR MATTING TIMBER MATERIAL IS UTILIZED. IMPORTED GRANULAR FILL MATERIAL OR NATIVE SUBSOIL FILL MATERIAL TO BE REMOVED & DISPOSED OF AS DIRECTED BY THE CLIENT INSPECTOR.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

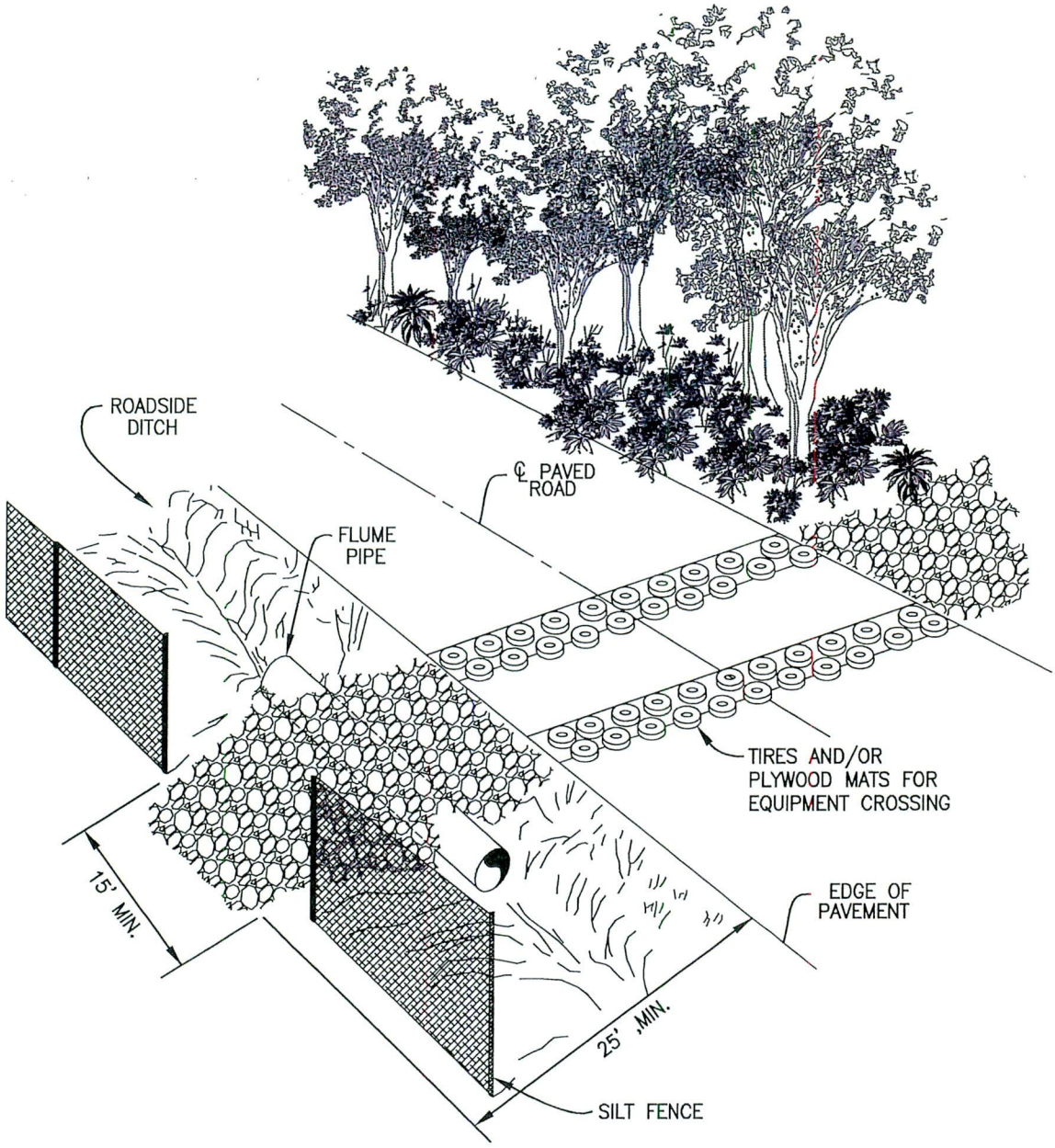
DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
TEMPORARY CROSSING RAMP OVER EXISTING PIPELINE – UTILITY

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12–21	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN

TYPICAL PAVED ROAD CROSSING CONTROL DETAILS



NOTE:

1. CRUSHED STONE RAMP (WITH FABRIC MAT IN AGRICULTURAL AREAS) TO CONSTRUCTED FOR ENTRANCE AND EXIT OF VEHICLES AND EQUIPMENT.
2. ALL VEHICLES SHALL TRAVEL ON ACCESS RAMP WHEN ENTERING OR EXITING THE RIGHT-OF-WAY.
3. STREETS TO BE CLEANED AT THE END OF EACH DAY AS REQUIRED.
4. FLAGGER TO BE PRESENT WHILE TIRES IN ROAD.
5. TIRES ARE TO BE MOVED OUT-OF-WAY AFTER TRACK VEHICLES CROSS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
PAVED ROAD CROSSING CONTROL DETAILS

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-22	0
SCALE: N.T.S.	APP.:		

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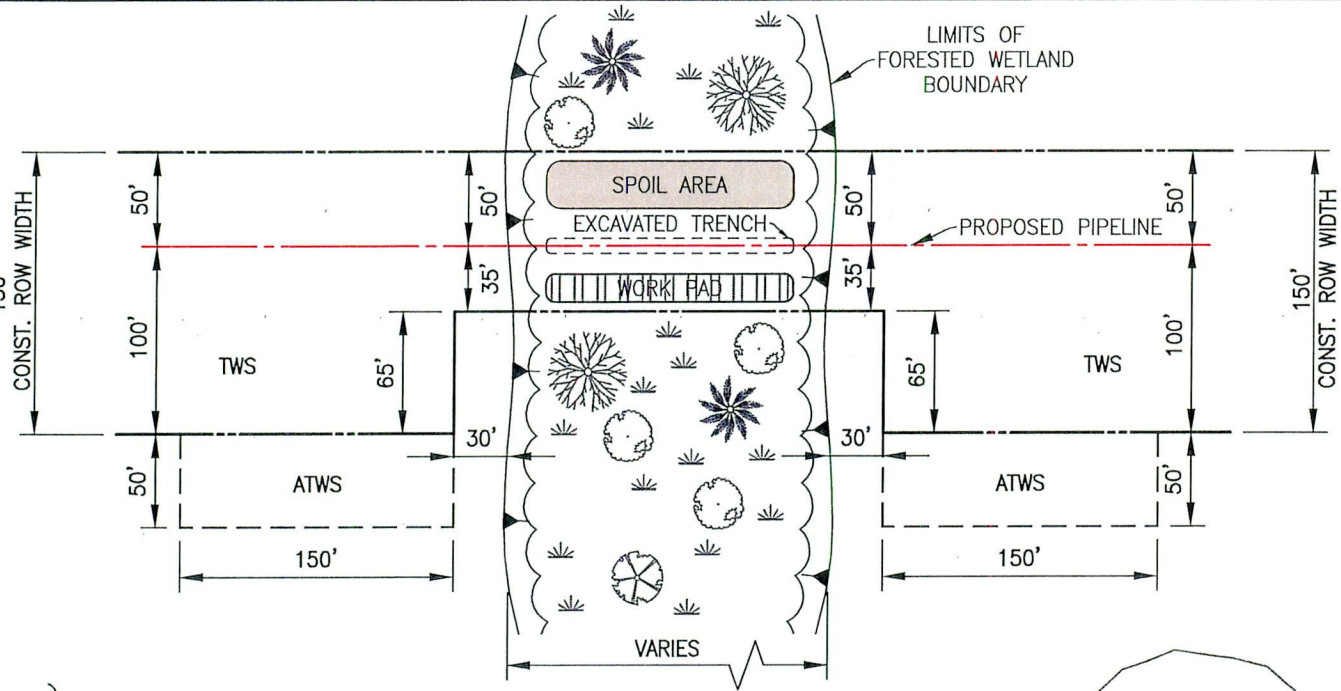

PLAN
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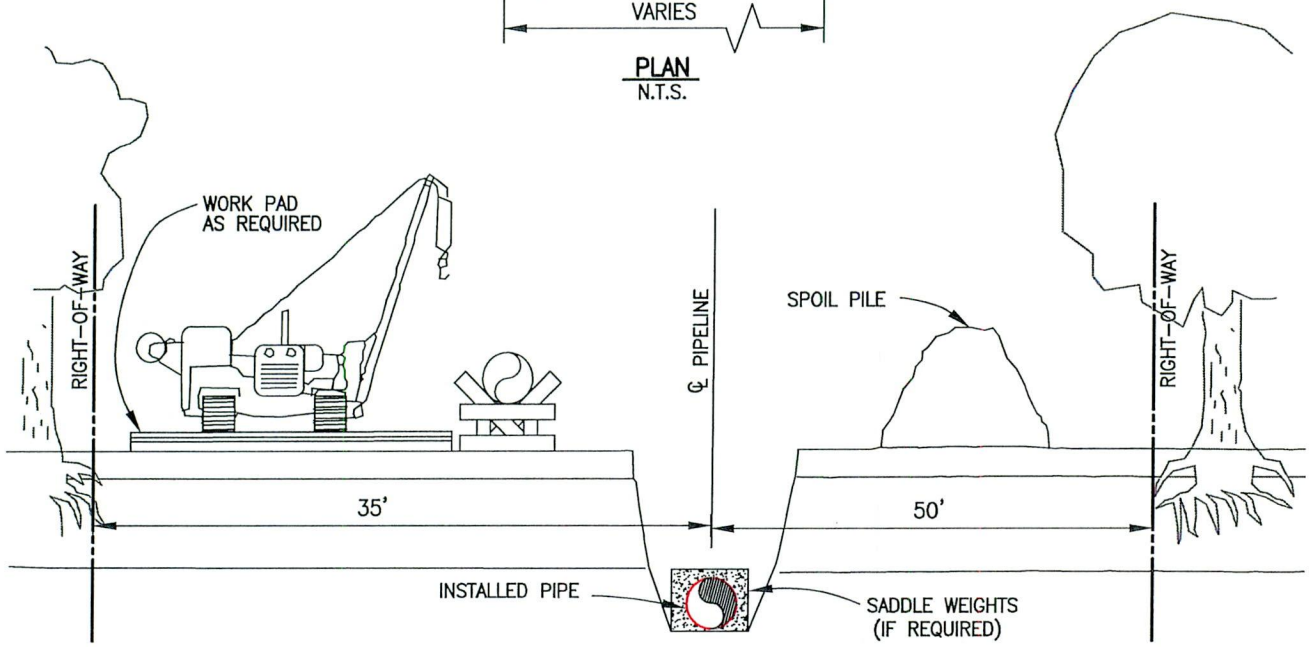

CROSS SECTION THROUGH RIGHT-OF-WAY

NOTES

1. WORK PAD AND / OR EQUIPMENT MATS TO BE INSTALLED AS REQUIRED.
2. STUMPS TO BE REMOVED FROM WORKING RIGHT-OF-WAY.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
WETLAND AND UPLAND FORESTED AREAS

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-23	0
SCALE: N.T.S.	APP.:		

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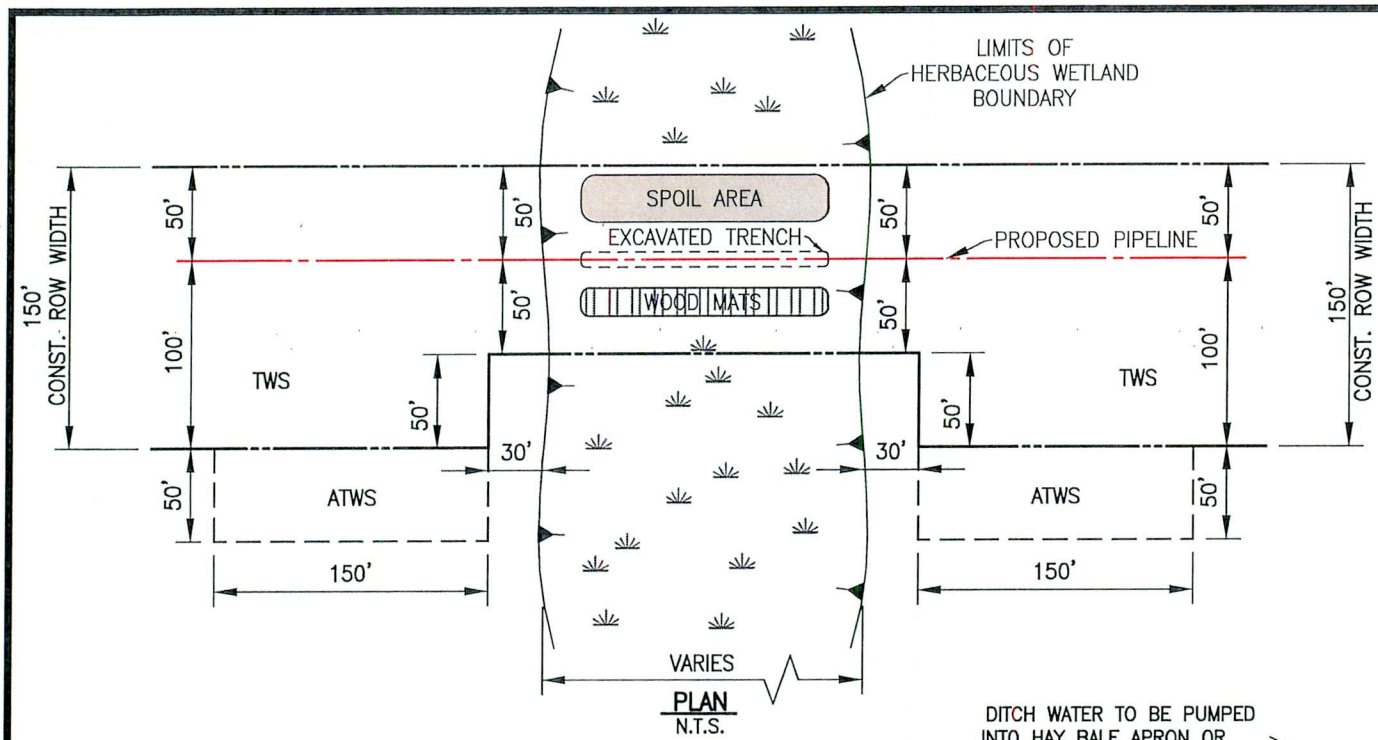

PLAN
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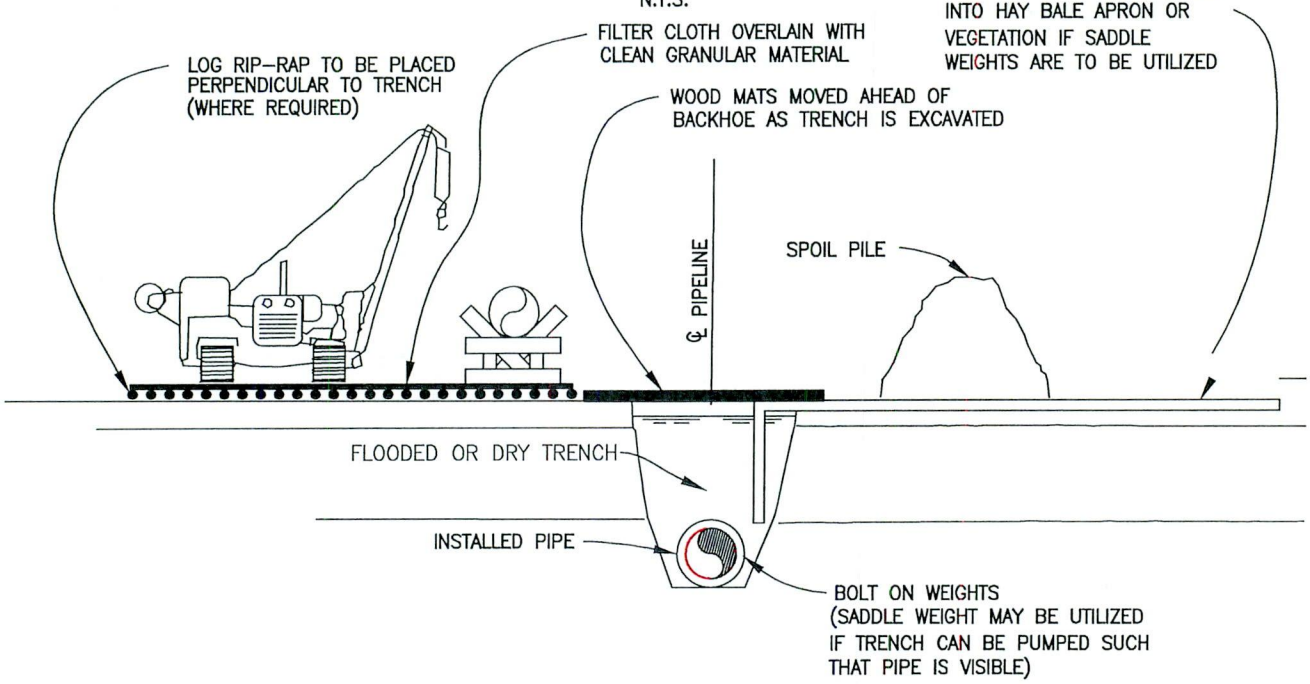

CROSS SECTION THROUGH RIGHT-OF-WAY

NOTES

1. WORK PAD OF LOG RIP-RAP AND / OR FILTER CLOTH WITH GRANULAR MATERIAL TO BE CONSTRUCTED FOR ACCESS FOR ALL EQUIPMENT.
2. TRENCH TO BE EXCAVATED BY BACKHOE POSITIONED ON WOOD MATS.
3. PIPE TO BE FABRICATED ON WORK PAD WITHIN WETLAND.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
HERBACEOUS WETLAND

DRAWN BY: DAH	DATE: 08/07/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/07/14	P12-24	0
SCALE: N.T.S.	APP.:		

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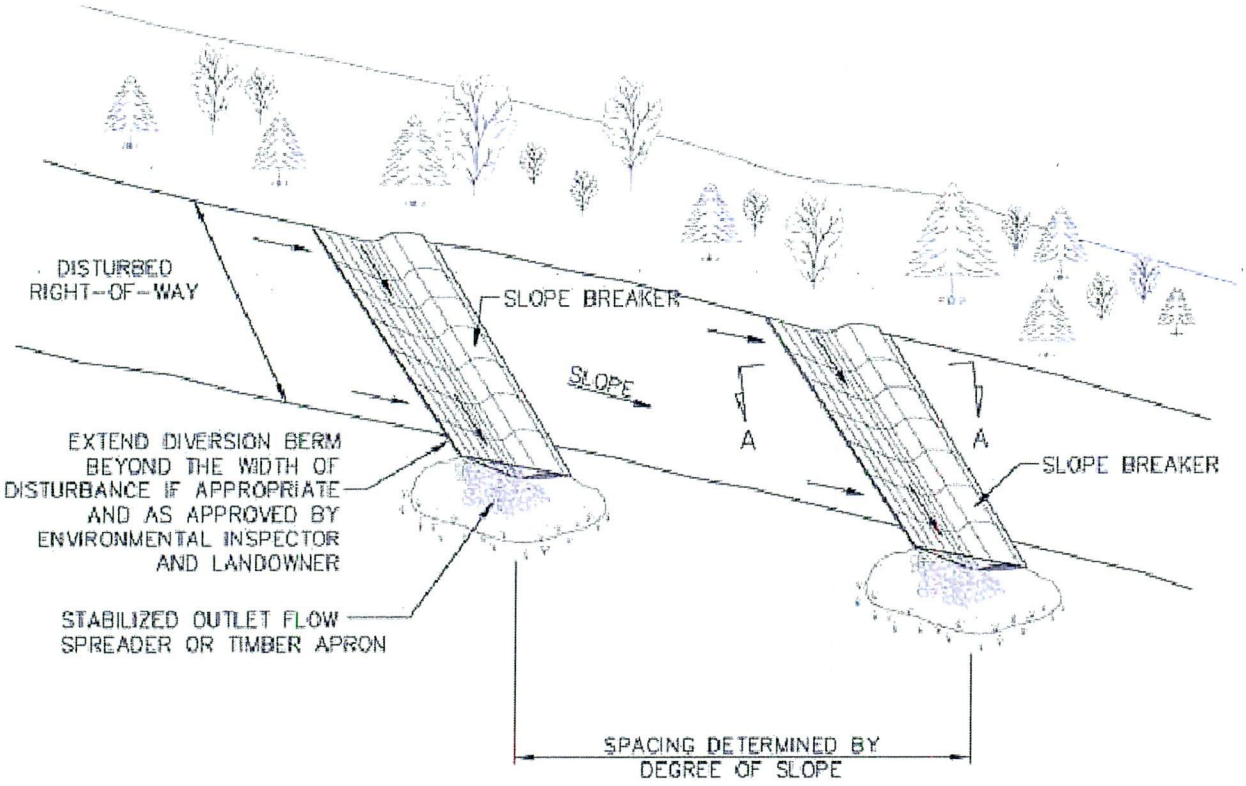
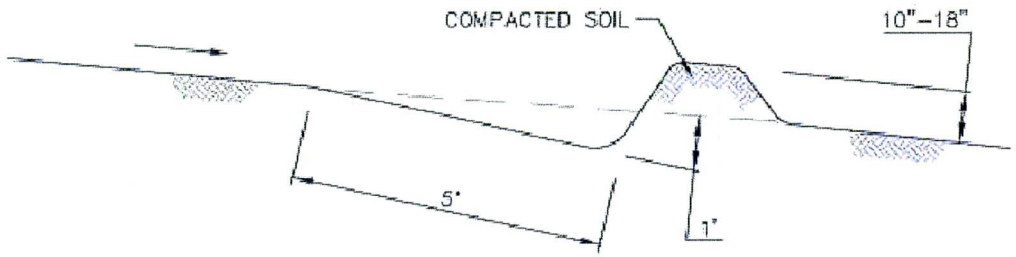


PLAN



NOTES:

1. PERMANENT SLOPE BREAKERS TO PROVIDE POSITIVE DRAINAGE TO A STABILIZED OUTLET.
2. INSTALLATION SPECIFICATIONS TO BE MODIFIED BY THE PROJECT AS NECESSARY TO SUIT ACTUAL SITE CONDITIONS.
3. THE CONTRACTOR SHALL INSTALL TEMPORARY AND PERMANENT SLOPE BREAKERS ON SLOPES GREATER THAN APPROXIMATELY 5% ON ALL DISTURBED LANDS AT THE FOLLOWING RECOMMENDED SPACING:

SLOPE (%)	SPACING (FEET)
5-15	300
>15-30	200
>30	100

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

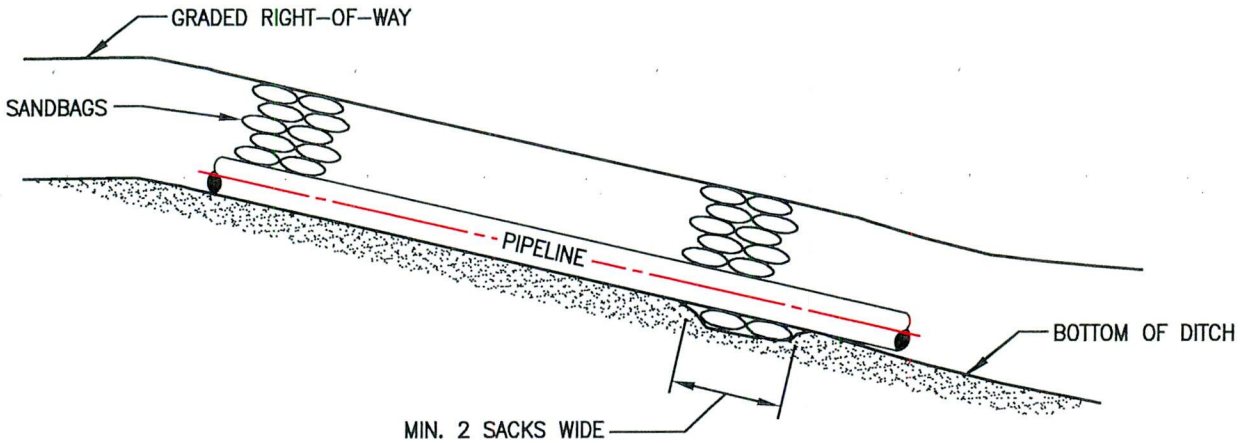
DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

PERMANENT WATER BARS OR TERRACES

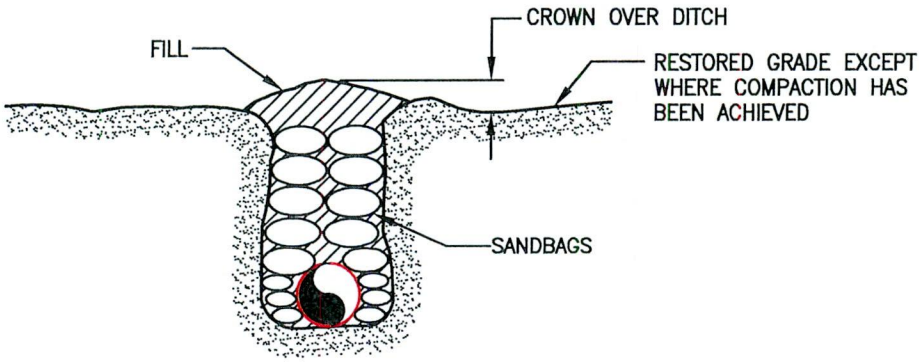
DRAWN BY: DAH	DATE: 08/21/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/21/14	P12-25	0
SCALE: N.T.S.	APP.:		

SIDE VIEW CROSS SECTION



DEGREES	SPACING
5–15	300 ft. MAX.
15–30	200 ft. MAX.
> 30	100 ft. MAX.

END VIEW CROSS SECTION



NOTES:

1. CONSTRUCT ON SLOPING TERRAIN, AT BASE OF SLOPES ADJACENT TO WATERBODIES, AND AT BOTH SIDES OF WETLAND AND WATERBODY CROSSINGS.
2. PRIOR TO LOWERING IN PIPE REMOVE ALL DECOMPOSABLE MATERIAL AND LARGE ROCKS.
3. BREAKERS MAY BE COMPOSED OF SANDBAG OR OTHER APPROVED MATERIALS.
4. MINIMUM 12 INCHES COVER OVER SANDBAGS IN ALL CASES.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

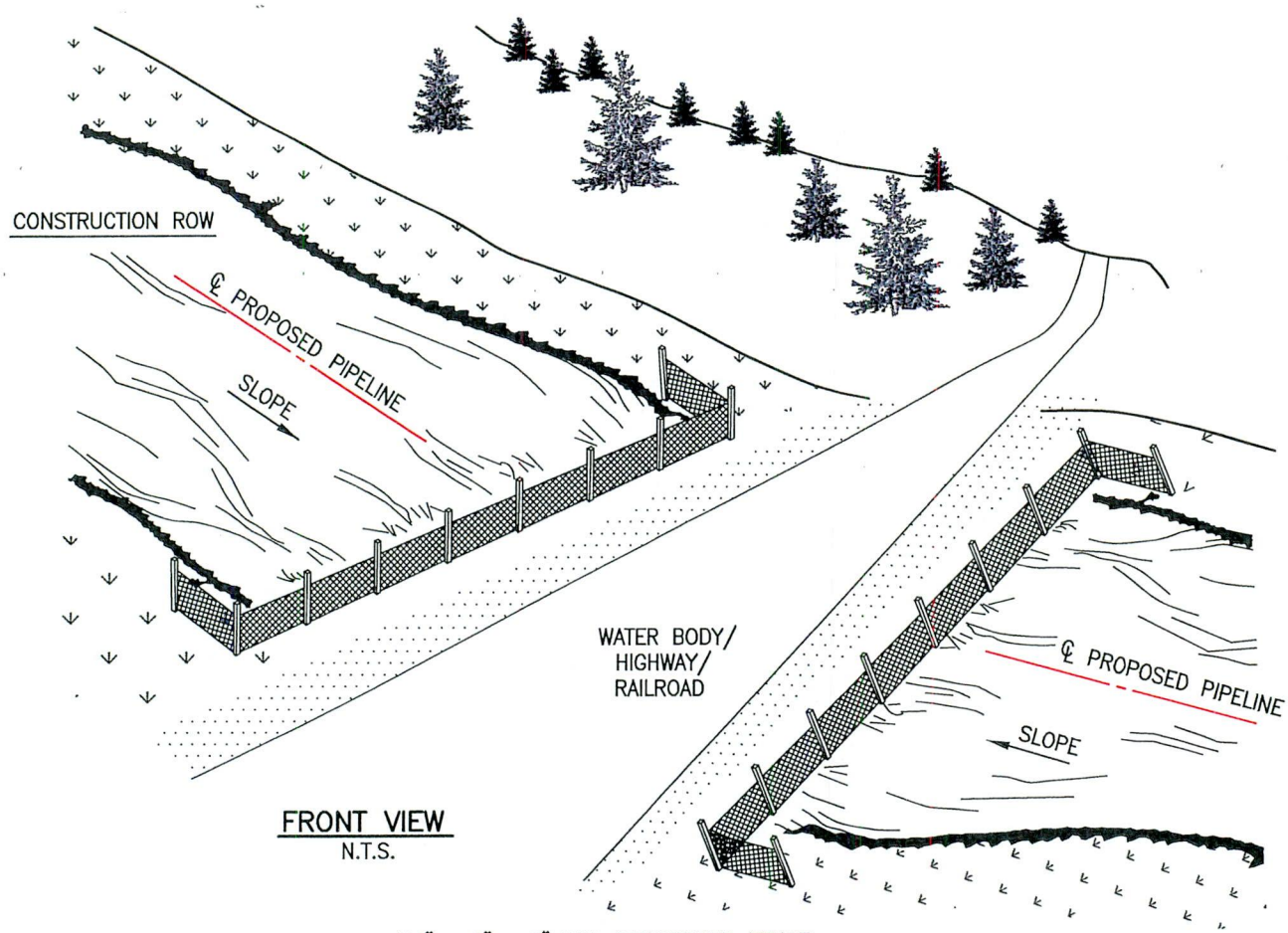
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

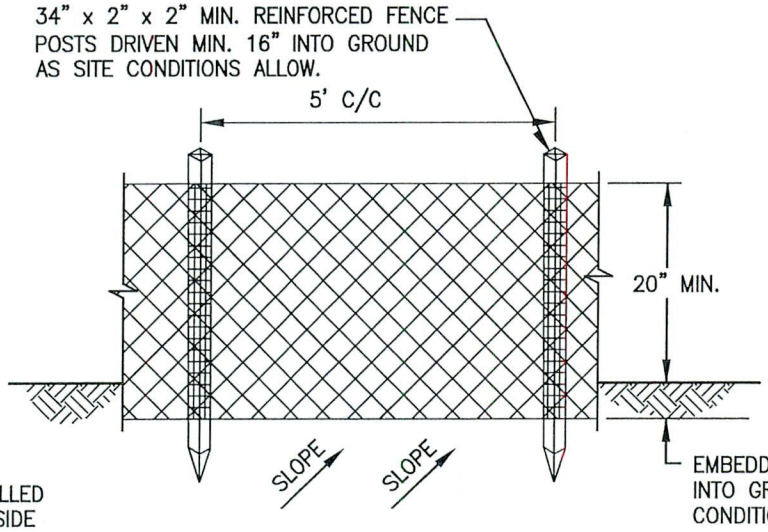
TYPICAL

TEMPORARY TRENCH PLUG INSTALLATION

DRAWN BY: DAH	DATE: 08/21/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/21/14	P12–26	0
SCALE: N.T.S.	APP.:		



FRONT VIEW
N.T.S.



NOTE:

1. REINFORCED FENCE SHOULD BE INSTALLED SO POSTS ARE ON THE DOWNSLOPE SIDE OF THE FABRIC.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

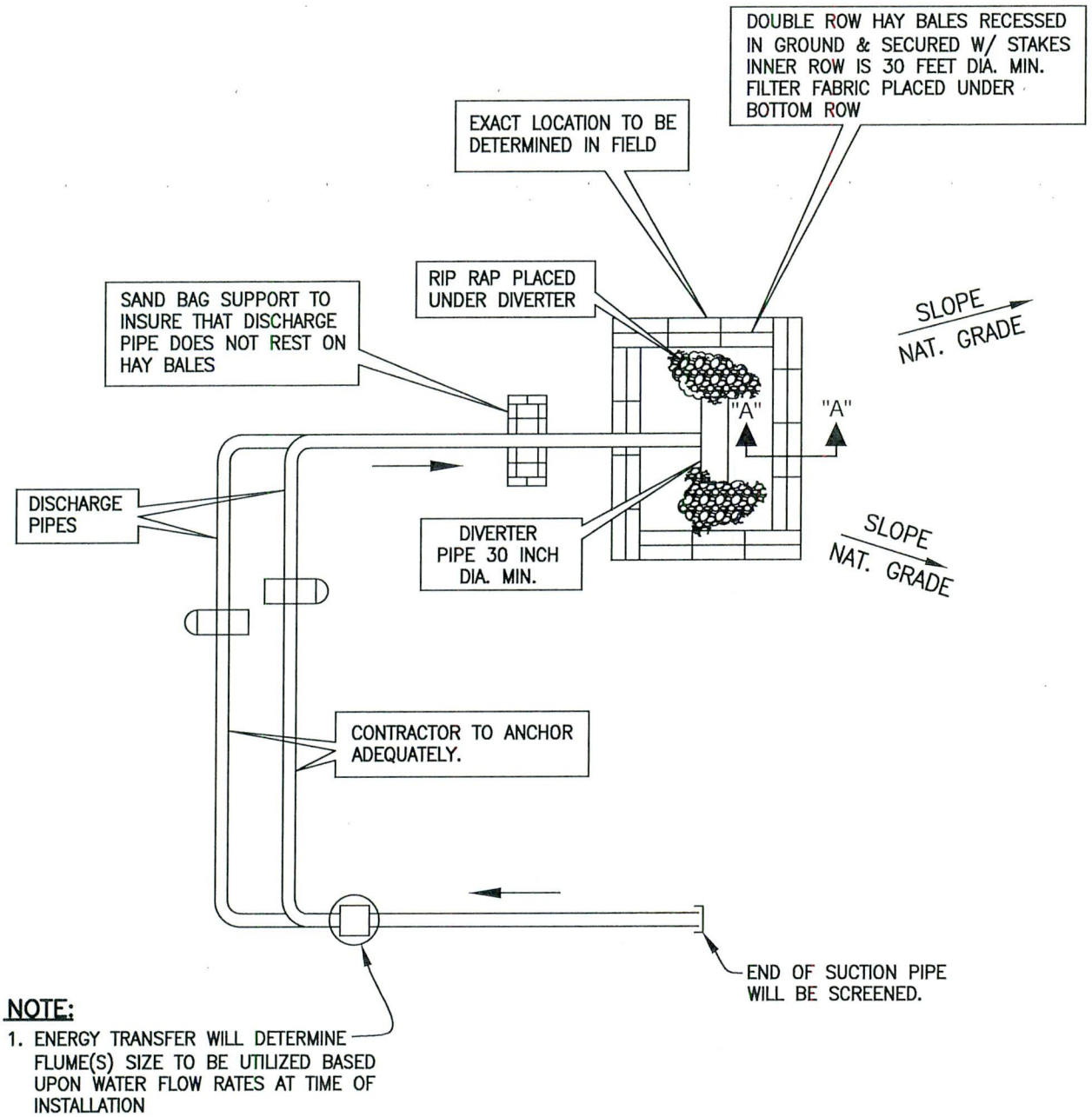
DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

SILT REINFORCED FENCE INSTALLATION

DRAWN BY: DAH	DATE: 08/21/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/21/14	P12-27	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN



NOTE:

1. ENERGY TRANSFER WILL DETERMINE FLUME(S) SIZE TO BE UTILIZED BASED UPON WATER FLOW RATES AT TIME OF INSTALLATION

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

HAY BALE STRUCTURE

DRAWN BY: DAH	DATE: 08/21/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/22/14	P12-28	0
SCALE: N.T.S.	APP.:		

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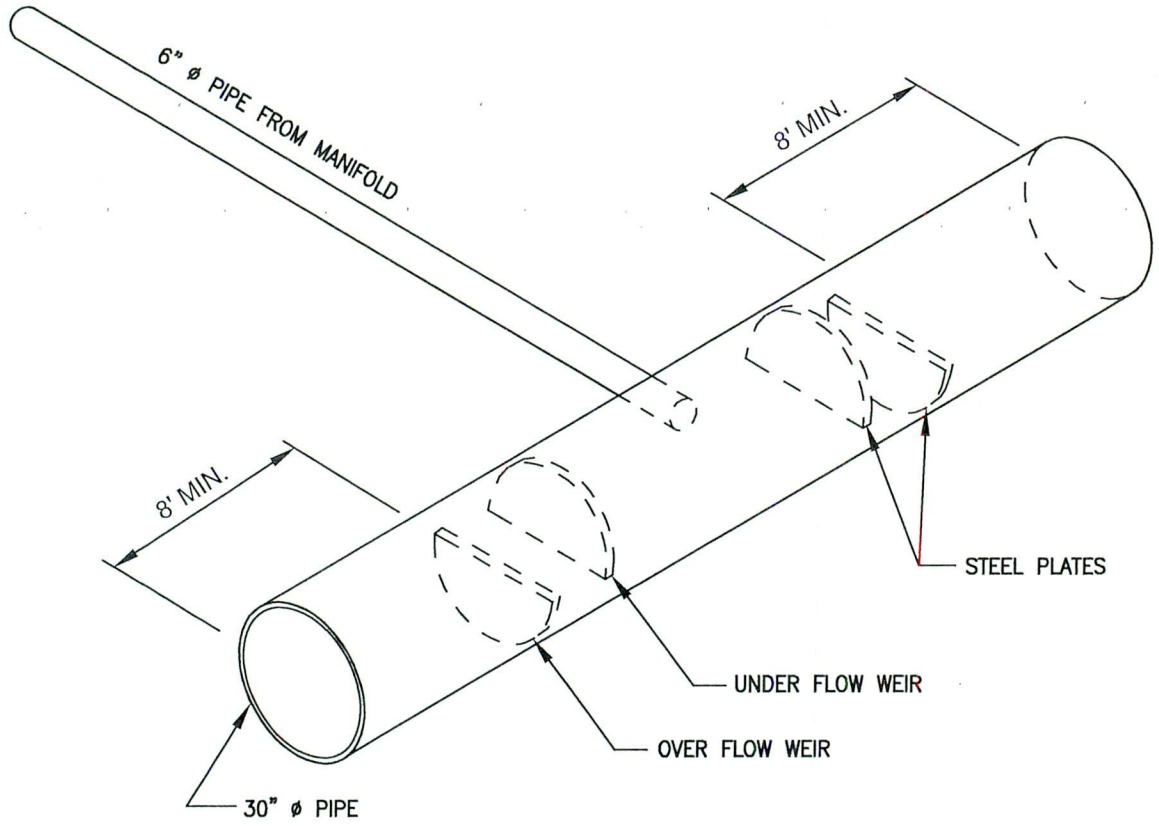


NOTE:

1. ENERGY DISSIPATOR TO BE ANCHORED BY CONTRACTOR

TYPICAL ENERGTY DISSIPATOR MUST BE USED IN CONJUNCTION W/FILTER (AS APPROPRIATE)

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

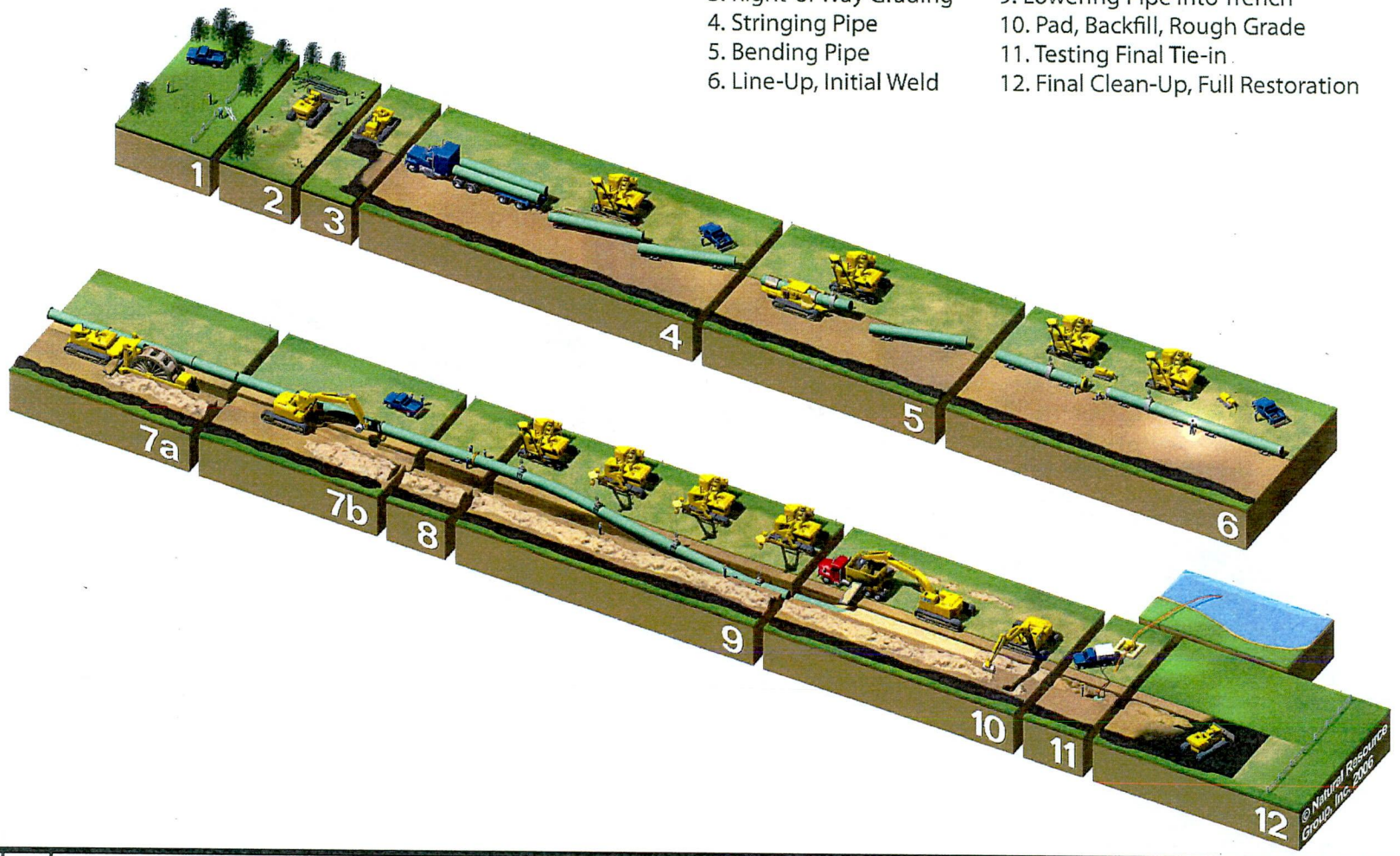
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
ENERGY DISSIPATOR

DRAWN BY: DAH	DATE: 08/21/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/21/14	P12–29	0
SCALE: N.T.S.	APP.:		

1. Survey and Staking
2. Front-End Clearing
3. Right-of Way Grading
4. Stringing Pipe
5. Bending Pipe
6. Line-Up, Initial Weld
7. Trenching
8. Final Coating and Inspection
9. Lowering Pipe into Trench
10. Pad, Backfill, Rough Grade
11. Testing Final Tie-in
12. Final Clean-Up, Full Restoration



REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

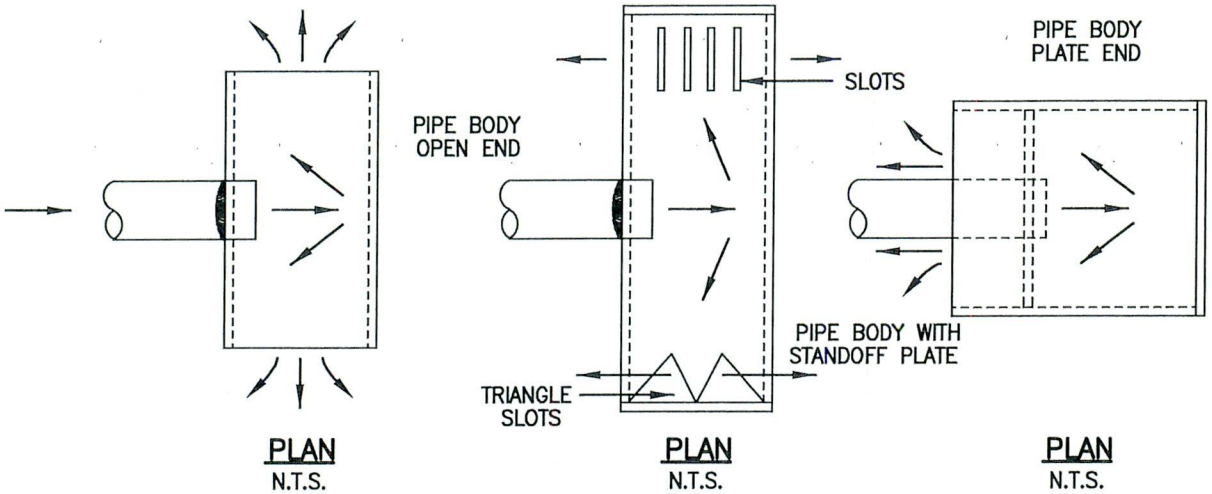
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

PIPELINE CONSTRUCTION SEQUENCE

DRAWN BY: DAH	DATE: 08/26/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/26/14	P12–30	0
SCALE: N.T.S.	APP.:		



PLAN
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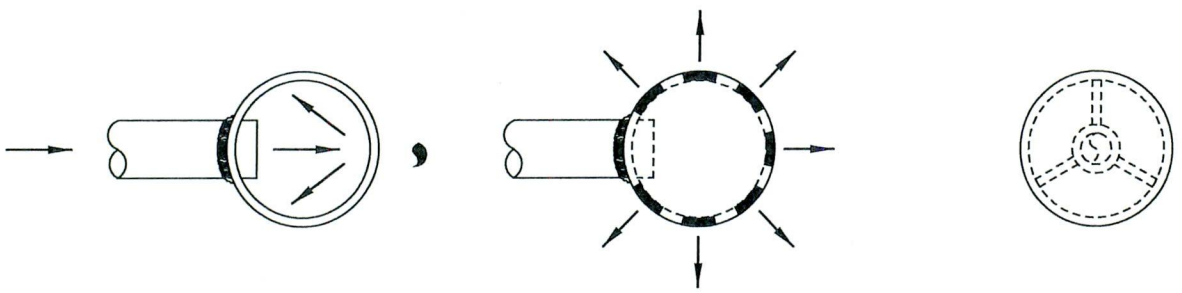


PROFILE
N.T.S.

PROFILE
N.T.S.

END VIEW
N.T.S.

BASIC SPLASH PUP

BASIC SPLASH PLATE

PUP–PLATE COMBINATION

NOTES:

1. AN ENERGY DISSIPATER SHALL BE UTILIZED WHENEVER WATER DISCHARGE VELOCITIES MAY CAUSE EROSION.
2. THE DESIGN AND EFFECTIVENESS OF THE ENERGY DISSIPATER IS THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR.
3. ENERGY DISSIPATERS ARE UTILIZED IN CONJUNCTION WITH A DEWATERING STRUCTURE SUCH AS A SETTLING BASIN OR HAY BALES WITH A SILT FENCE.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

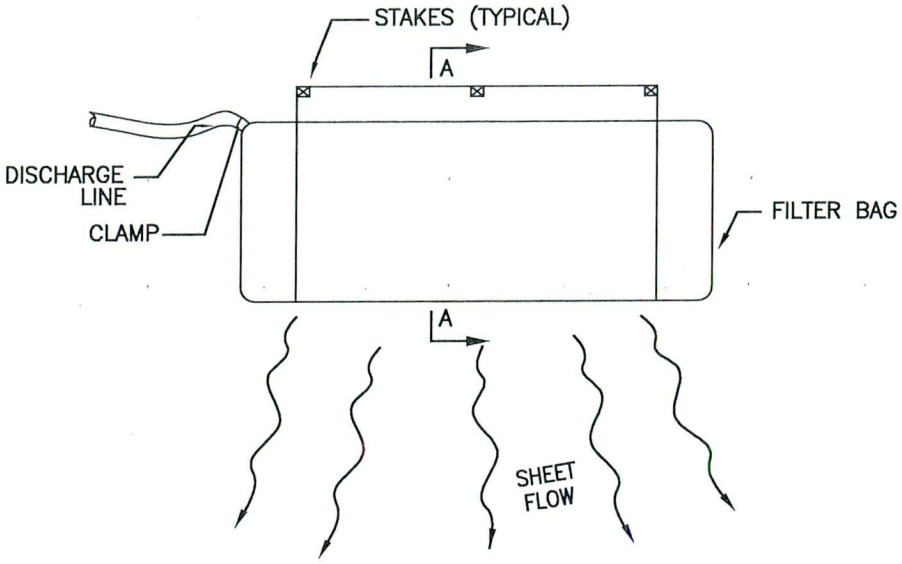
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

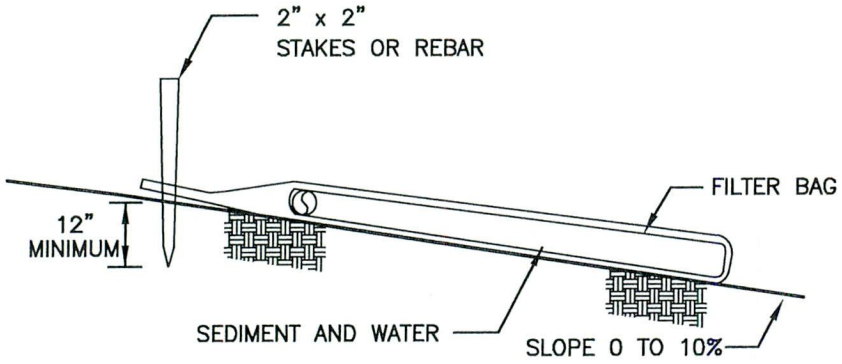
TYPICAL

SPLASH PUP FOR TEST WATER DISCHARGE

DRAWN BY: DAH	DATE: 08/26/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/26/14	P12–31	0
SCALE: N.T.S.	APP.:		



PLAN



SECTION "A–A"

NOTES:

1. INSTALL A DEWATERING GEOTEXTILE FILTER BAG AS DIRECTED BY THE INSPECTOR TO PREVENT THE FLOW OF HEAVILY SILT LADEN WATER INTO WATERBODIES OR WETLANDS.
2. DISCHARGE SITE SHALL BE WELL VEGETATED AND THE TOPOGRAPHY OF THE SITE SUCH THAT WATER WILL FLOW AWAY FROM ANY WORK AREAS. THE AREA DOWN SLOPE FROM THE DEWATERING SITE MUST BE REASONABLY PLANE OR STABILIZED BY VEGETATION OR OTHER MEANS TO ALLOW THE FILTERED WATER TO CONTINUE AS SHEET FLOW.
3. TO ATTACH THE DISCHARGE HOSE, CUT A CORNER OF THE BAG, INSERT DISCHARGE HOSE, AND SECURE THE HOSE TO THE BAG WITH BAND CLAMPS.
4. A SINGLE FILTER BAG SHOULD NOT BE USED FOR FLOWS GREATER THAN 600 GALLONS PER MINUTE.
5. REPLACE FILTER BAG BEFORE IT IS COMPLETELY FILLED WITH SEDIMENT. MONITOR DISCHARGE TO AVOID OVER PRESSURING DUE TO PLUGGING, WHICH MAY RESULT IN RUPTURE.
6. DISPOSE OF USED EMPTIED FILTER BAG AT A PIPELINE DESIGNATED FACILITY.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

GEOTEXTILE FILTER BAG FOR DEWATERING

DRAWN BY: DAH	DATE: 08/26/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/26/14	P12–32	0
SCALE: N.T.S.	APP.:		

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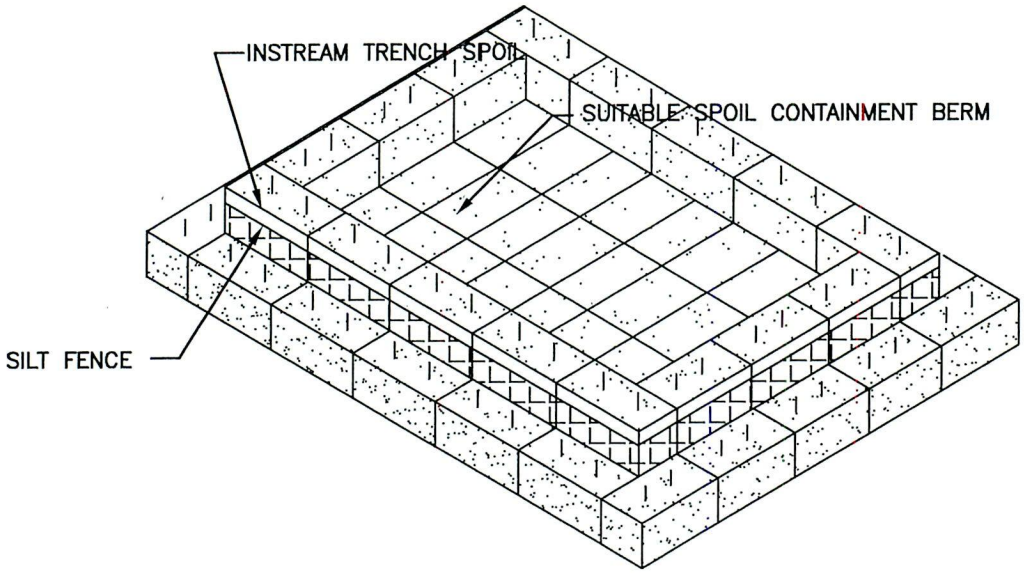
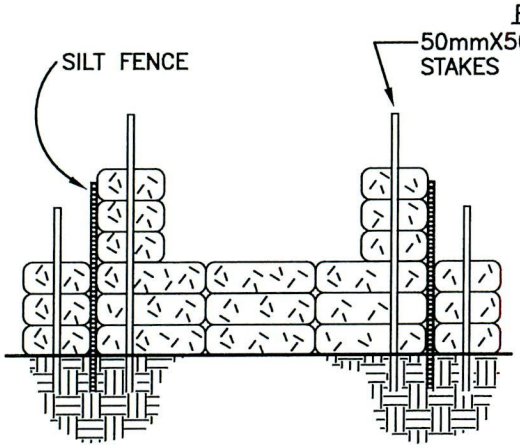
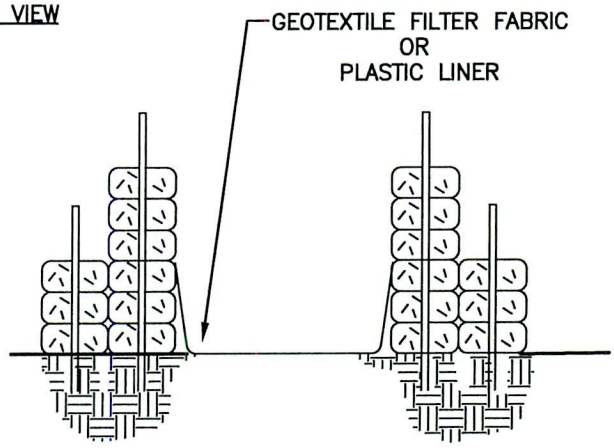


PERSPECTIVE VIEW



OPTION 1



OPTION 2

NOTES:

1. INSTALL A STRAW BALE DEWATERING STRUCTURE WHEREVER IT IS NECESSARY AND AS DIRECTED BY THE INSPECTOR TO PREVENT THE FLOW OF SILT LADEN WATER INTO WATERBODIES OR WETLANDS.
2. DISCHARGE SITE SHALL BE WELL VEGETATED AND THE TOPOGRAPHY OF THE SITE SUCH THAT WATER WILL FLOW AWAY FROM ANY WORK AREAS. THE AREA DOWN SLOPE FROM THE DEWATERING SITE MUST BE REASONABLY PLANE OR STABILIZED BY VEGETATION OR OTHER MEANS TO ALLOW THE FILTERED WATER TO CONTINUE AS SHEET FLOW.
3. IF BOTTOM OF STRUCTURE IS NOT LINED WITH STRAW BALES, IN AREAS OF HIGHLY ERODIBLE SOILS, LINE ENTIRE STRUCTURE WITH GEOTEXTILE FILTER FABRIC OR PLASTIC SHEETING.
4. THE DIMENSIONS OF THE STRUCTURE SHALL BE DETERMINED IN THE FIELD BASED UPON SITE CONDITIONS.
5. DISCHARGE RATES SHALL BE SUCH THAT WATER WILL NOT OVERFLOW THE TOP OF THE STRUCTURE.
6. INSTALL AN ENERGY DISSIPATOR IF THE DISCHARGE VELOCITY IS ERODING THE SOIL.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

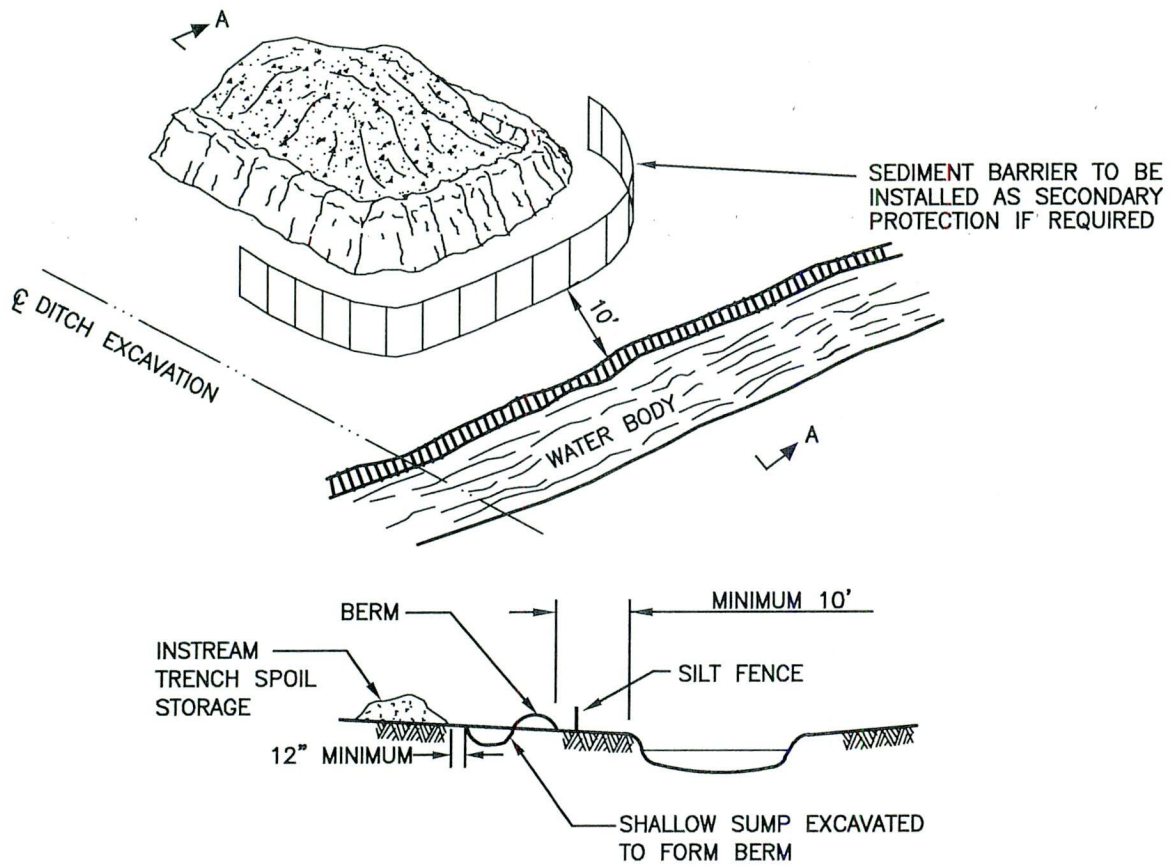
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
STRAW BALE DEWATERING STRUCTURE (LARGE VOLUME)

DRAWN BY: DAH	DATE: 08/26/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/26/14	P12–33	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN



SECTION A–A

NOTES:

1. SOIL CONTAINMENT BERMS ARE TO BE USED WHERE INSTREAM TRENCH SPOIL COULD REENTER THE WATERCOURSE DIRECTLY OR INDIRECTLY AND WITH SIMULTANEOUS UTILIZATION OF SEDIMENT BARRIERS, IF REQUIRED.
2. IF SOIL CONTAINMENT BERMS ARE USED IN AGRICUTURAL AREAS, TOPSOIL MUST BE STRIPPED PRIOR TO CONSTRUCTION OF BERM AND PLACEMENT OF SPOIL.
3. MATERIAL USED FOR THE CONTAINMENT BERM SHOULD BE A MINIMUM OF 10 FEET FROM THE WATERS EDGE. IT SHOULD BE KEPT TO A HEIGHT WHICH REMAINS STABLE DURING THE CONSTRUCTION PERIOD.
4. CARE SHOULD BE TAKEN THAT THE SPOIL PILE DOES NOT OVERTOP THE CONTAINMENT BERM.
5. THE CONTAINMENT BERM SHOULD BE DISMANTLED AND THE SITE RESTORED TO THE ORIGINAL CONDITION UPON COMPLETION OF THE WATER CROSSING.
6. WHERE POSSIBLE, RIPARIAN VEGETATION SHALL BE LEFT IN PLACE.
7. STAGED MOVEMENT OF INSTREAM SPOIL MAY BE REQUIRED IF QUANTITIES ARE EXCESSIVE.
8. CARE AND ATTENTION MUST BE TAKEN TO ENSURE SPOIL CONTAINMENT BERMS ARE MAINTAINED.
9. FULL CONSIDERATION FOR OVERALL SLOPE STABILITY IS REQUIRED WHEN SELECTING A SPOIL CONTAINMENT LOCATION.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

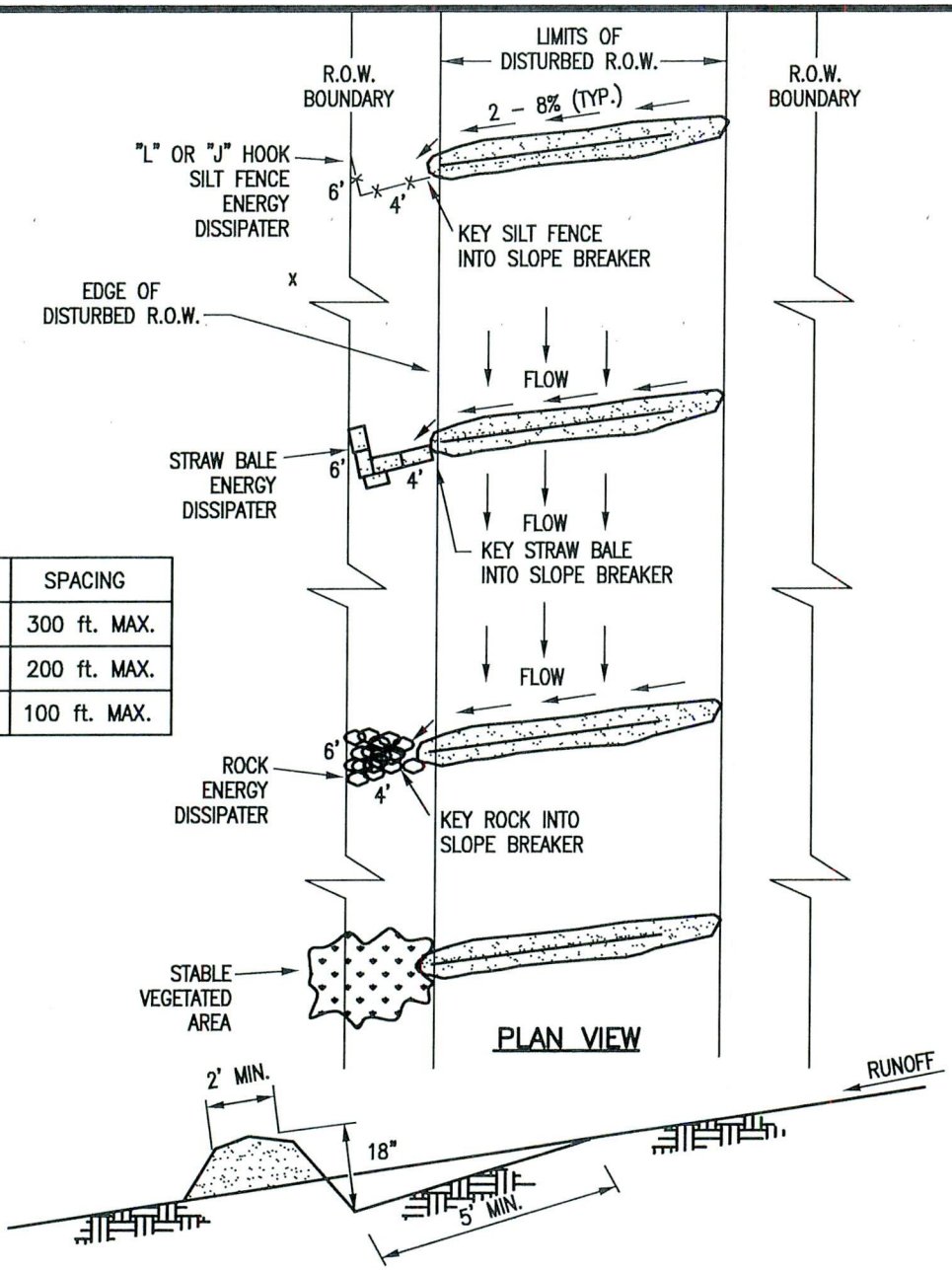
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
SOIL CONTAINMENT BERM
FOR WATERBODY TRENCH SPOIL

DRAWN BY: DAH	DATE: 08/26/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/26/14	P12–34	0
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\103957\discipline\CAD\DRAWINGS\99-typical\~MASTER\103957_Typicals Master.dwg PLOT DATE: 12/15/2014 BY: GIBLIN, JOHN



DEGREES	SPACING
5–15	300 ft. MAX.
15–30	200 ft. MAX.
> 30	100 ft. MAX.

SLOPE BREAKER CROSS SECTION DETAIL

NOTES:

1. SLOPE BREAKERS SHALL BE CONSTRUCTED OF COMPACTED NATIVE SOIL AND INSTALLED AT LOCATIONS AS REQUIRED BY SECTION C1260 OF CONSTRUCTION STANDARDS OR AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
2. SLOPE BREAKERS SHALL BE ORIENTED AS SHOWN OR OTHER PATTERN AS DIRECTED BY THE COMPANY'S REPRESENTATIVE TO DIRECT THE WATER OFF THE R.O.W..
3. SLOPE BREAKERS SHALL BE CONSTRUCTED AT A 2–8% GRADIENT ACROSS THE SLOPE.
4. THE SLOPE BREAKERS SHALL BE 18" DEEP (AS MEASURED FROM THE TROUGH TO THE TOP OF THE SLOPE BREAKER). THE TROUGH WILL BE A MINIMUM OF 5' WIDE ACROSS THE WIDTH OF THE RIGHT–OF–WAY.

*SEE DWG. #CST–P–1260–A220.2 FOR ADDITIONAL INFORMATION.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

SLOPE BREAKER

DRAWN BY: DAH	DATE: 08/26/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/26/14	P12–35	0
SCALE: N.T.S.	APP.:		

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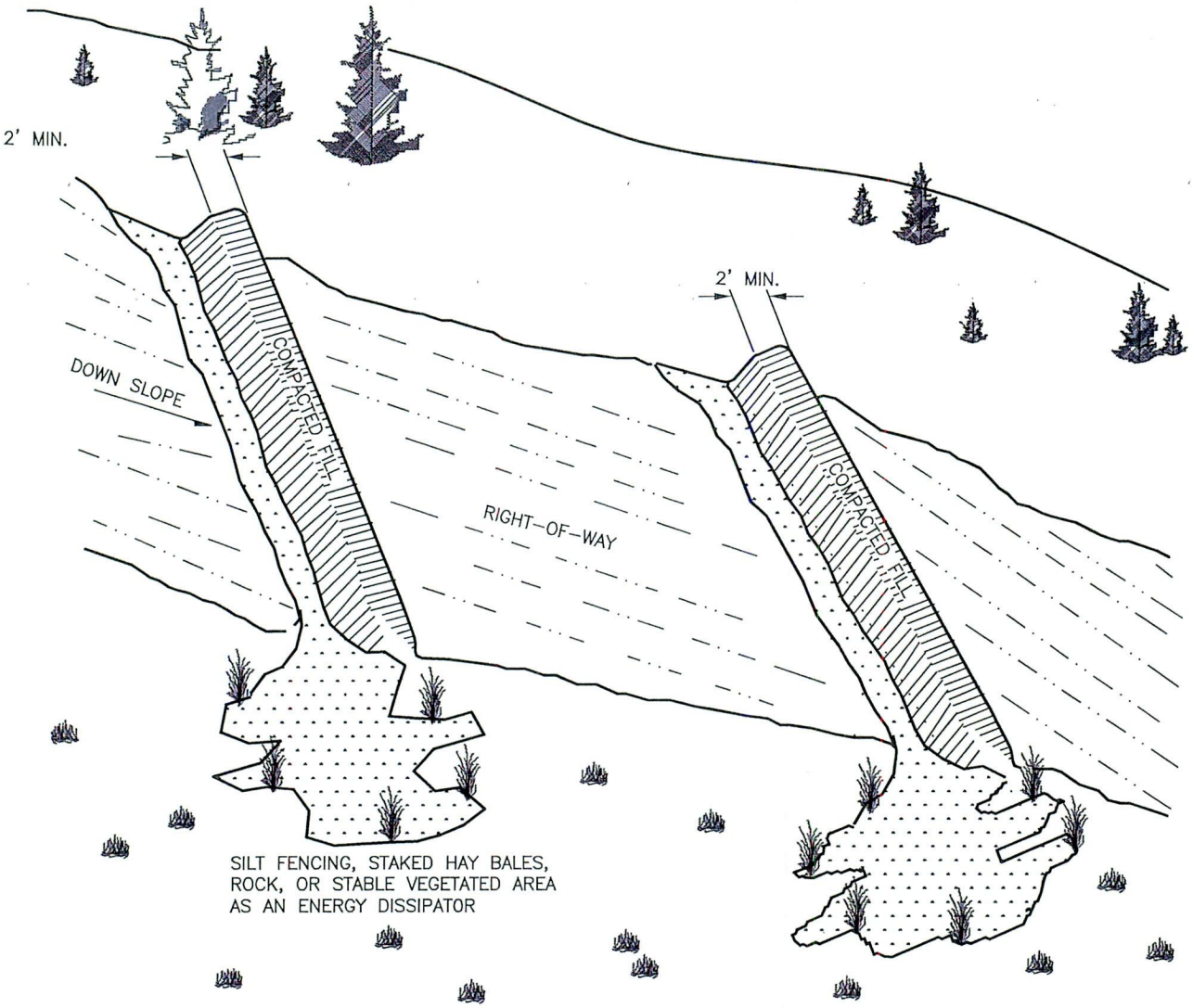

NOTES:

1. SLOPE BREAKERS SHALL BE CONSTRUCTED AND INSTALLED AT LOCATIONS AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
2. SLOPE BREAKER SHALL BE ORIENTED AS SHOWN OR OTHER PATTERN AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR TO DIRECT THE WATER OFF THE R.O.W.
3. THE SLOPE BREAKERS SHALL BE 500mm DEEP (AS MEASURED FROM THE TROUGH TO THE TOP OF THE SLOPE BREAKER). THE TROUGH WILL BE A MINIMUM OF 2m WIDE ACROSS THE WIDTH OF THE RIGHT-OF-WAY.
4. THE OUTLET OF THE SLOPE BREAKER MUST FREELY DISCHARGE ALL RUNOFF OFF THE DISTURBED R.O.W. INTO A STABLE, WELL VEGETATED AREA OR INTO AN ENERGY DISSIPATOR.
5. WHERE SLOPE BREAKERS EXTEND BEYOND THE EDGE OF THE CONSTRUCTION R.O.W. TO DIRECT RUNOFF INTO STABLE, WELL VEGETATED AREAS, THESE LOCATIONS MUST BE APPROVED BY THE ENVIRONMENTAL INSPECTOR.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
SLOPE BREAKER

DRAWN BY: DAH	DATE: 08/26/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/26/14	P12-36	0
SCALE: N.T.S.	APP.:		

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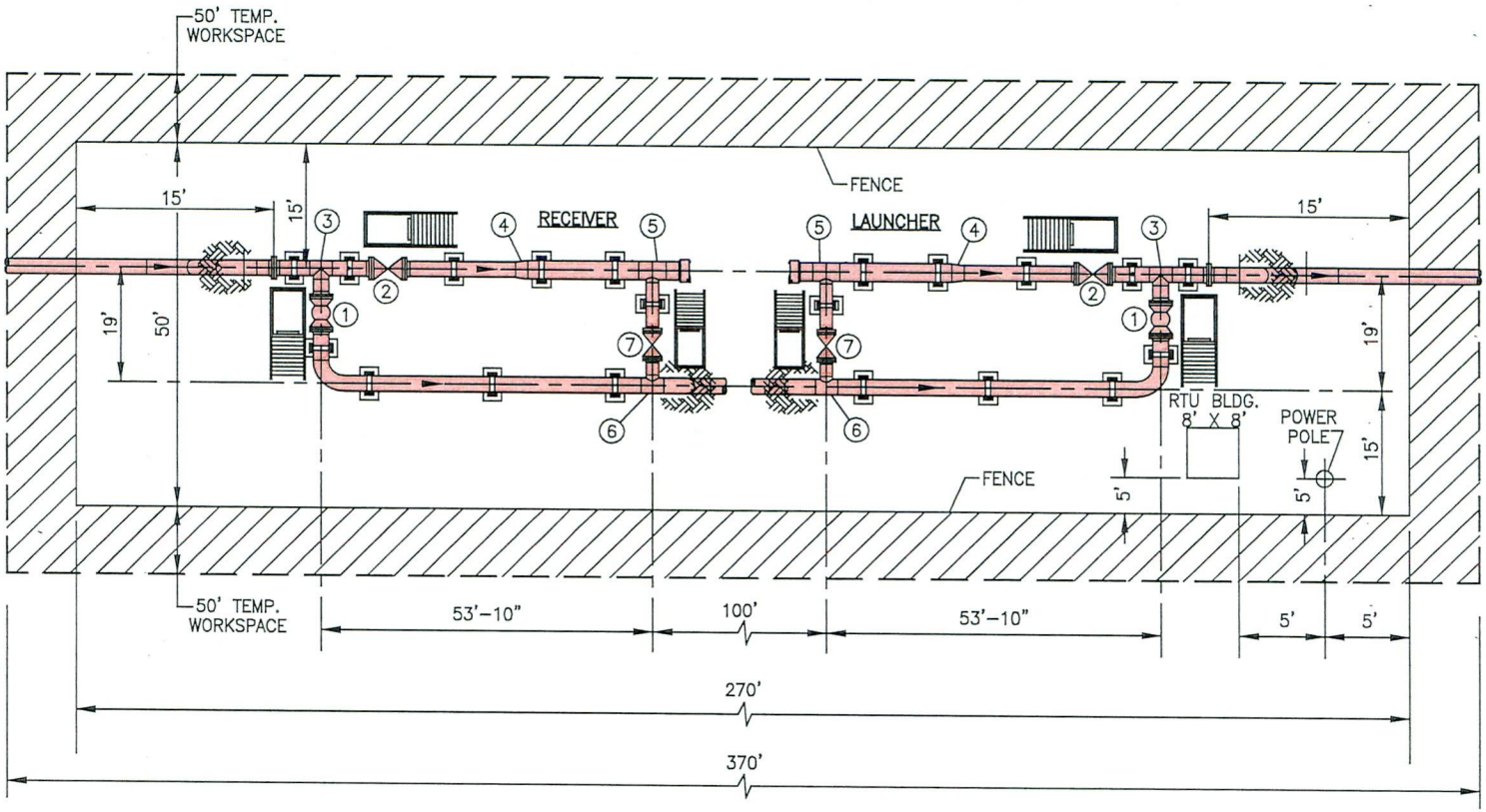


① 30" BALL VALVE
② 30" EXPANDING GATE VALVE
③ 30" BARRED TEE
④ 36"X 30" ECC RED
⑤ 36"X24" BARRED RED. TEE
⑥ 30"X24" RED TEE
⑦ 24" EXPANDING GATE VALVE

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

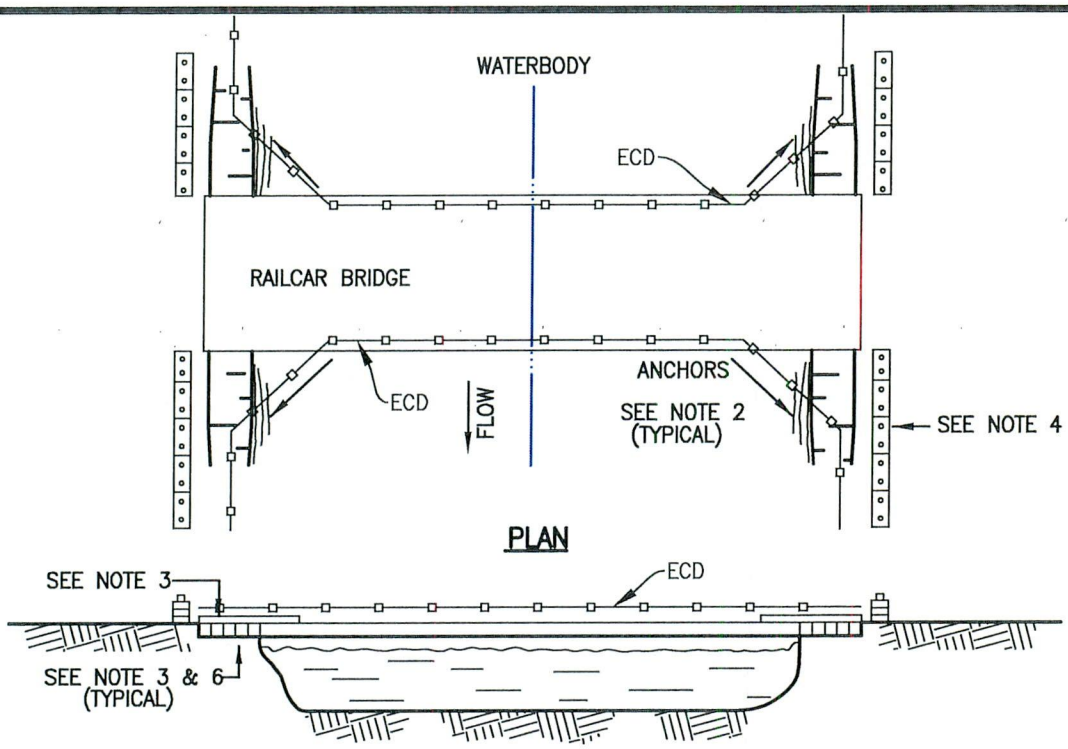
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL

PIPING PLAN RECEIVER AND LAUNCHER PIPELINE

DRAWN BY: DAH	DATE: 08/26/14	DWG. NO. P12-37	REV. 0
CHECKED BY: DAH	DATE: 08/26/14		
SCALE: N.T.S.	APP.:		



PLAN

PROFILE

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).

NOTES:

1. BRIDGE SHALL BE ANCHORED AND/OR TIED OFF TO ANCHOR BLOCKS FOR STABILITY.
2. IF REQUIRED, UTILIZE APPROACH FILLS OF CLEAN ROCK MATERIAL, SWAMP MATS, SKIDS OR OTHER SUITABLE MATERIALS TO AVOID CUTTING THE BANKS WHEREVER FEASIBLE. ENSURE ADEQUATE FREEBOARD. ENSURE THAT FILL MATERIAL, IF USED, DOES NOT SPILL INTO WATERCOURSE.
3. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FORM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY. ENVIRONMENTAL CONTROL DEVICES (SILT FENCE, STRAW BALES OR SANDBAGS) MAY BE USED INTERCHANGEABLY.
4. REMOVE BRIDGES AS SOON AS POSSIBLE AFTER PERMANENT SEEDING UNLESS OTHERWISE DIRECTED BY REPRESENTATIVE. THE STRUCTURE IS TO BE REMOVED IF THERE IS MORE THAN ONE MONTH BETWEEN FINAL GRADING AND SEEDING, AND ALTERNATIVE ACCESS TO THE CONSTRUCTION R.O.W. IS AVAILABLE.
5. DISPOSE OF A ROCK AS DIRECTED BY COMPANY REPRESENTATIVE.
6. RESTORE AND STABILIZE BED AND BANKS TO APPROXIMATE PRE-CONSTRUCTION CONDITIONS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
CLEARSPAN BRIDGE WITH RAILCAR

DRAWN BY: DAH	DATE: 08/29/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 08/29/14	P12-38	0
SCALE: N.T.S.	APP.:		

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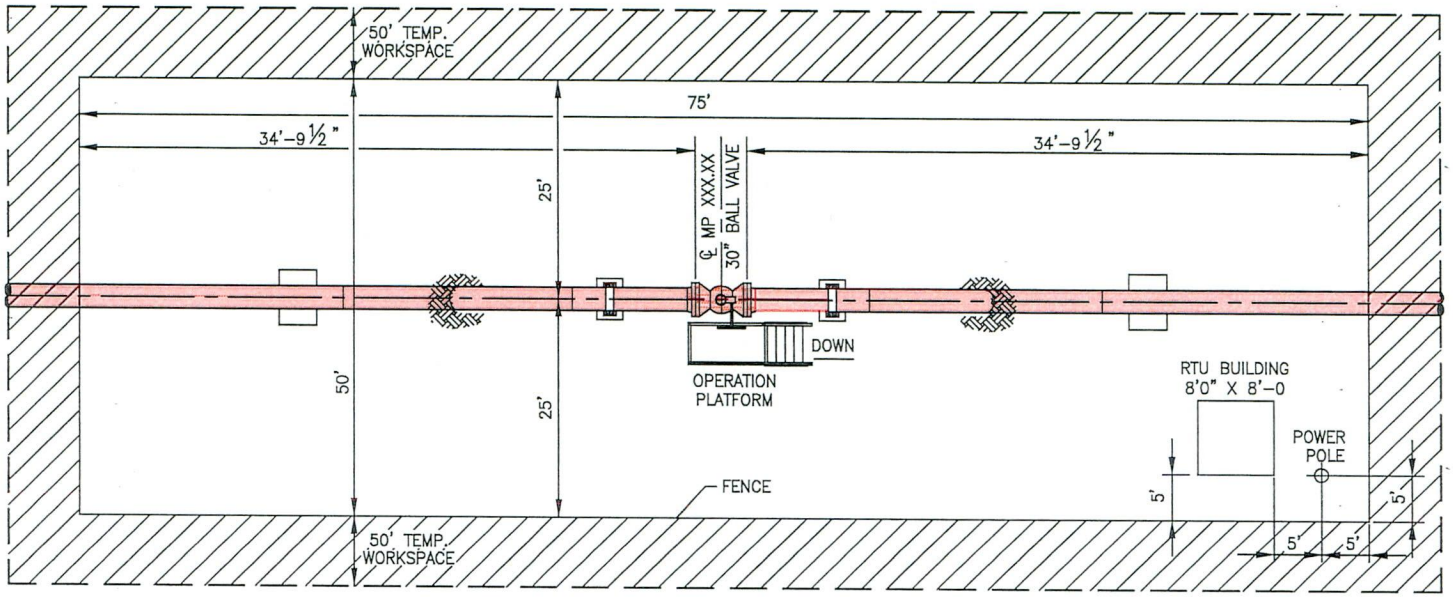
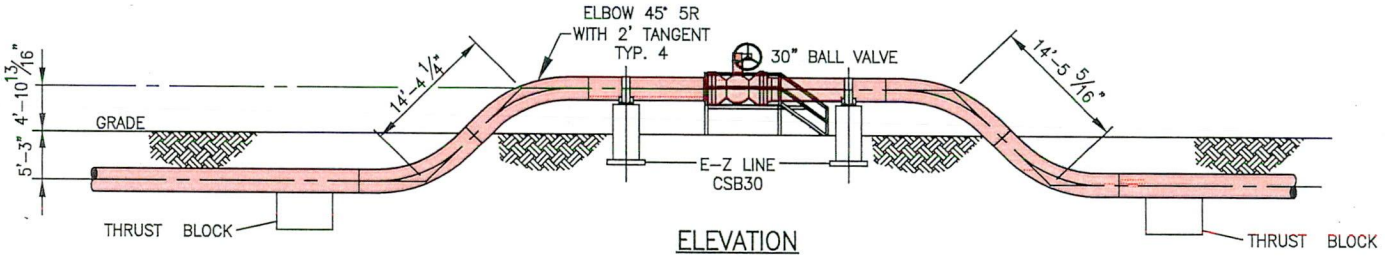


PLAN

N.T.S.



ELEVATION

N.T.S.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

PROJECT NO.

WOOD GROUP MUSTANG, INC.

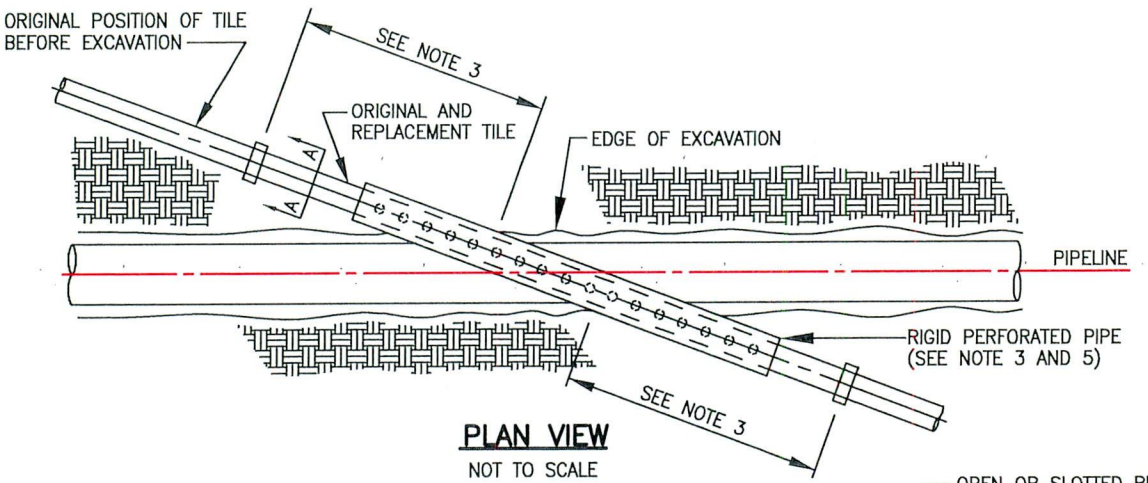
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

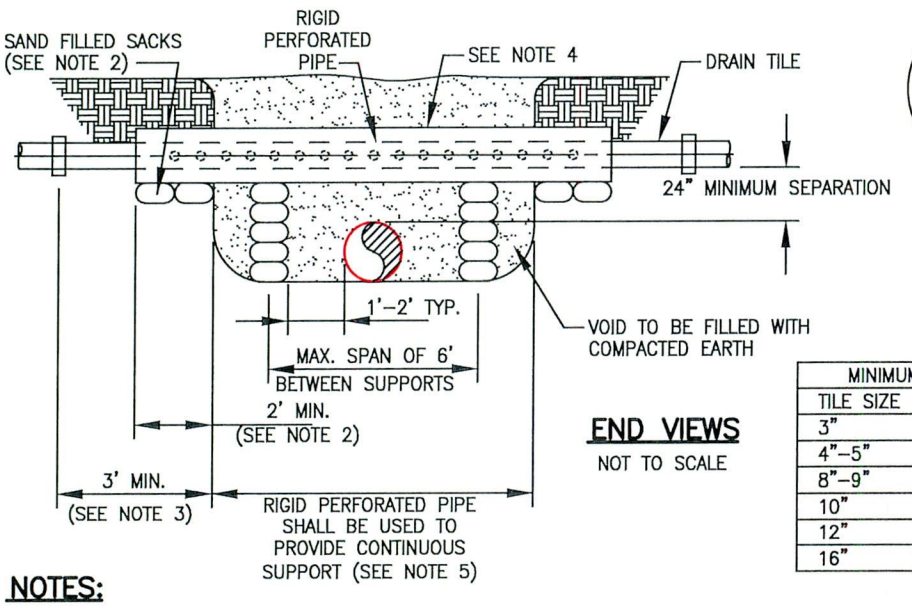
TYPICAL

PIPING PLAN AND ELEVATION 30" MAINLINE VALVE PIPELINE

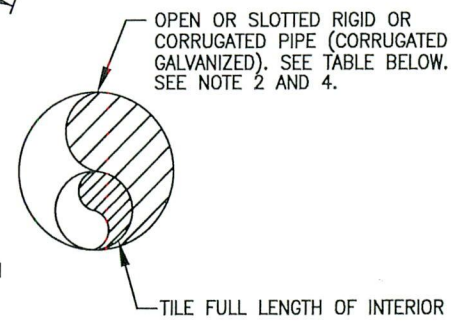
DRAWN BY: DAH	DATE: 09/02/14	DWG. NO. P12-39	REV. 0
CHECKED BY: DAH	DATE: 09/02/14		
SCALE: N.T.S.	APP.:		



PLAN VIEW
NOT TO SCALE



END VIEWS
NOT TO SCALE



SECTION "A"–"A"
NOT TO SCALE

MINIMUM SUPPORT TABLE		
TILE SIZE	PIPE SIZE	
3"	4"	STD. WT.
4"–5"	6"	STD. WT.
8"–9"	10"	STD. WT.
10"	12"	STD. WT.
12"	16"	STD. WT.
16"	20"	STD. WT.

NOTES:

1. TILE REPAIR AND REPLACEMENT SHALL MAINTAIN ORIGINAL ALIGNMENT GRADIENT AND WATER FLOW TO THE GREATEST EXTENT POSSIBLE. IF THE TILE NEEDS TO BE RELOCATED, THE INSTALLATION ANGLE MAY VARY DUE TO SITE SPECIFIC CONDITIONS AND LANDOWNER RECOMMENDATIONS.
2. 2'–0" MINIMUM LENGTH OF RIGID PERFORATED PIPE SHALL BE SUPPORTED BY UNDISTURBED SOIL, OR IF CROSSING IS NOT AT RIGHT ANGLES TO PIPELINE, EQUIVALENT LENGTH PERPENDICULAR TO TRENCH. SHIM WITH SAND BAGS ONLY TO UNDISTURBED SOIL FOR SUPPORT AND DRAINAGE GRADIENT MAINTENANCE (TYPICAL BOTH SIDES).
3. DRAIN TILES WILL BE PERMANENTLY CONNECTED TO EXISTING DRAIN TILES A MINIMUM OF THREE FEET OUTSIDE OF EXCAVATED TRENCH LINE USING INDUSTRY STANDARDS TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES INCLUDING SLIP COUPLINGS.
4. DIAMETER OF RIGID PIPE SHALL BE OF ADEQUATE SIZE TO ALLOW FOR THE INSTALLATION OF THE TILE FOR THE FULL LENGTH OF THE RIGID PIPE.
5. OTHER METHODS OF SUPPORTING DRAIN TILE MAY BE USED IF ALTERNATE PROPOSED IS EQUIVALENT IN STRENGTH AND IF APPROVED BY COMPANY REPRESENTATIVES AND LANDOWNER IN ADVANCE. SITE SPECIFIC ALTERNATE SUPPORT SYSTEM TO BE DEVELOPED BY COMPANY REPRESENTATIVES AND FURNISHED TO CONTRACTOR FOR SPANS IN EXCESS OF 20', TILE GREATER THAN 10" DIAMETER, AND FOR "HEADER" SYSTEMS.
6. ALL MATERIAL TO BE FURNISHED BY CONTRACTOR.
7. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL SWAB LATERALLY INTO THE EXISTING TILE TO FULL WIDTH OF THE RIGHTS OF WAY TO DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. ALL DAMAGED/DISTURBED TILE SHALL BE REPAIRED AS NEAR AS PRACTICABLE TO ITS ORIGINAL OR BETTER CONDITION.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/15/14	JEG	ISSUED FOR USE	RC

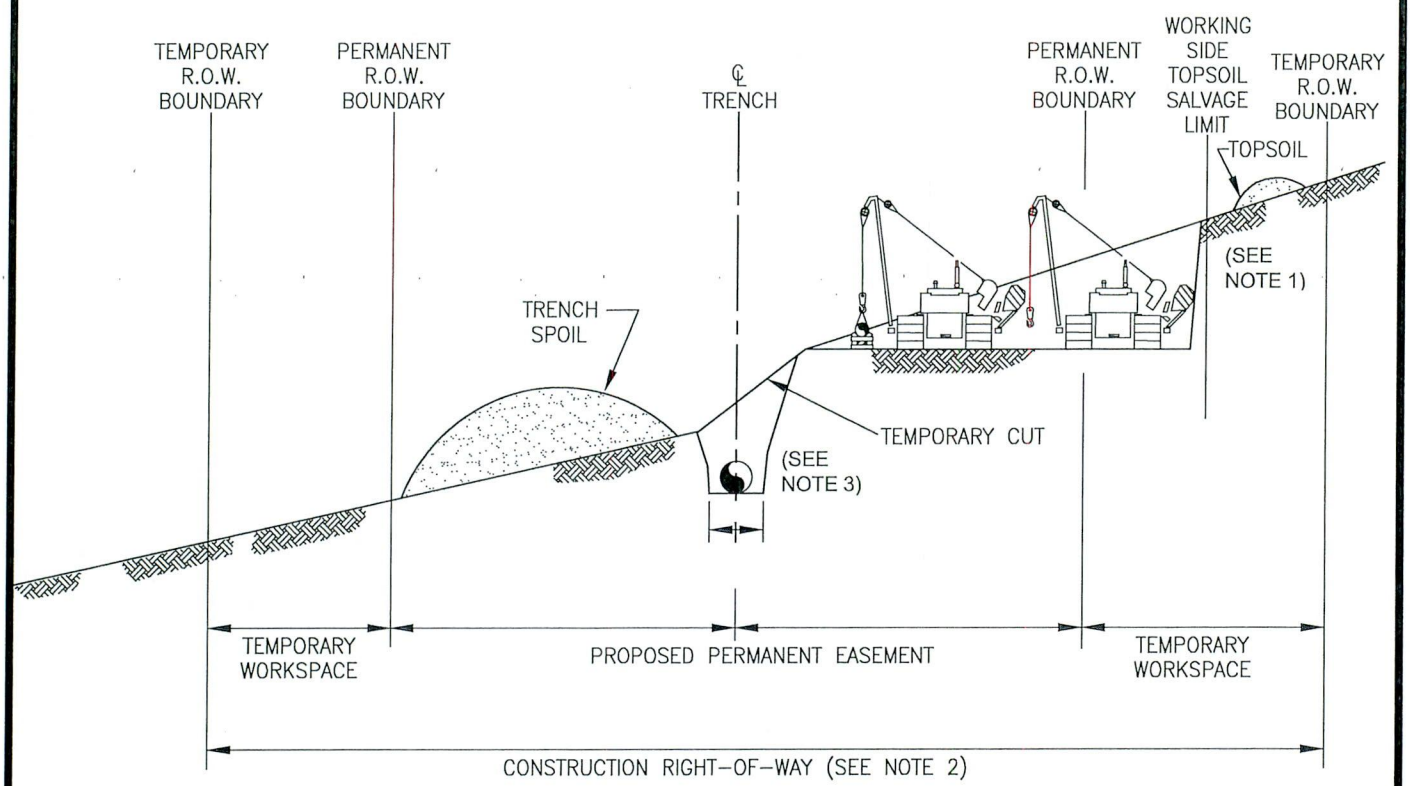
PROJECT NO.

WOOD GROUP MUSTANG, INC.
PROJECT NO: 10395700

DAKOTA ACCESS, LLC
An ENERGY TRANSFER Company

TYPICAL
CONSTRUCTION PERMANENT DRAIN TILE REPAIR

DRAWN BY: DAH	DATE: 09/03/14	DWG. NO.	REV.
CHECKED BY: DAH	DATE: 09/03/14	P12–40	0
SCALE: N.T.S.	APP.:		



PROFILE

NOTES:

1. DEPTH OF TOP SOIL SEGREGATED BASED UPON SITE-SPECIFIC CONDITIONS; MAX. 36"; MIN. ACTUAL DEPTH OF TOP SOIL.

2. ACTUAL WIDTH OF ROW WILL VARY DEPENDING UPON DEPTH OF TOP SOIL TO BE SEGREGATED.

3. DEPTH OF COVER BASED UPON LANDOWNER OR STATE SPECIFIC REQUIREMENTS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	03/20/15	JEG	ISSUED FOR PERMIT	RC

PROJECT NO. 1035700

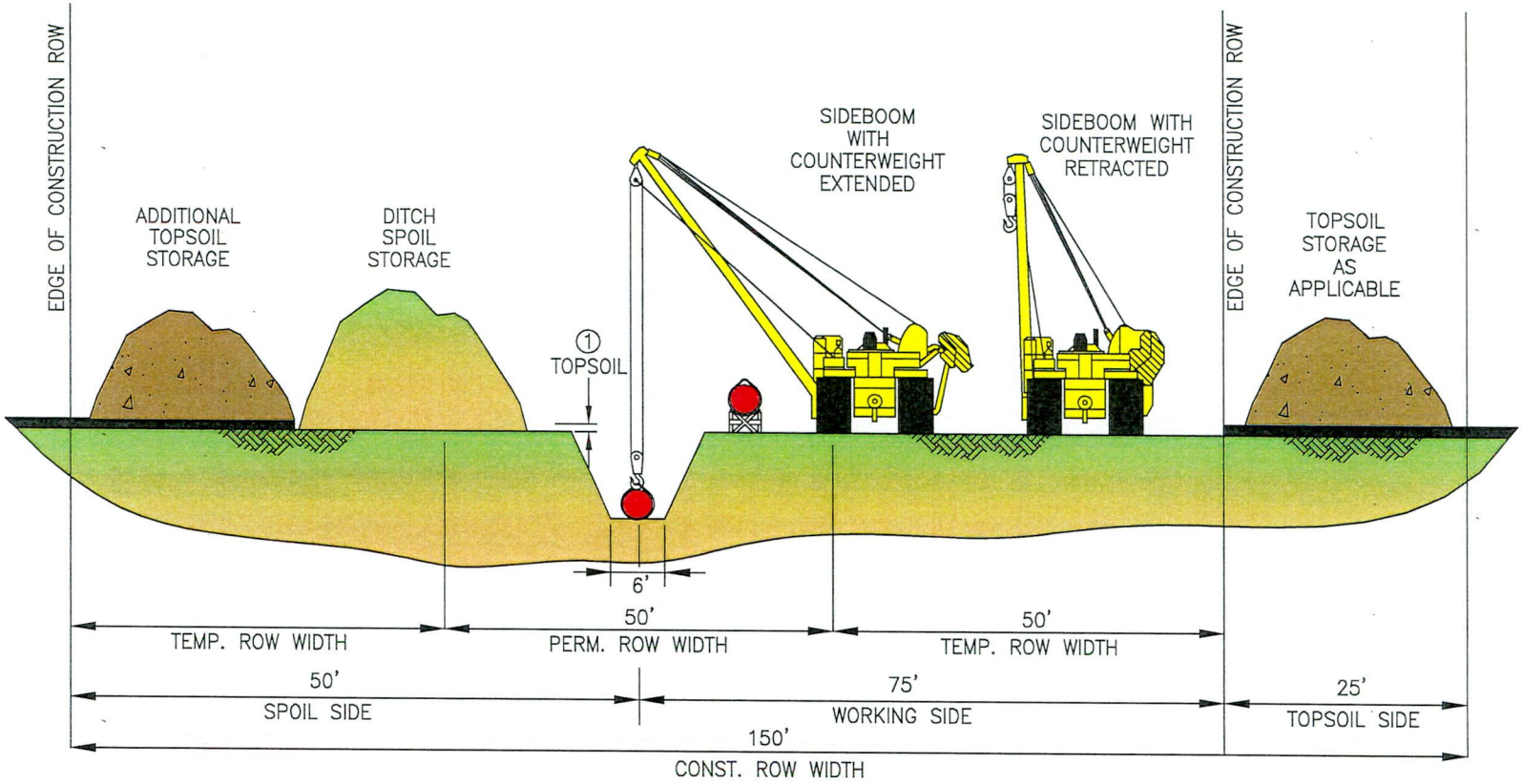
WOOD GROUP MUSTANG, INC.

DAKOTA ACCESS, LLC

NORTH DAKOTA ENVIRONMENTAL CONSTRUCTION PLAN TYPICALS
TRENCH AND SPOIL SIDE HILL CONSTRUCTION

DRAWN BY: JEG	DATE: 03/20/15	DWG. NO.	REV.
CHECKED BY: RC	DATE: 03/20/15	P12-41	0
SCALE: N.T.S.	APP.: ETC		

FILE: R:\Projects\103957\DISCIPLINE\CAD\DRAWINGS\99-TYPICAL\~Final\South Dakota\Env\103957_Typ SD ENV CONST.dwg PLOT DATE: 3/20/2015 BY: GIBLIN, JOHN



NOTES:

① DEPTH OF TOPSOIL SEGREGATED BASED UPON SITE-SPECIFIC CONDITIONS.

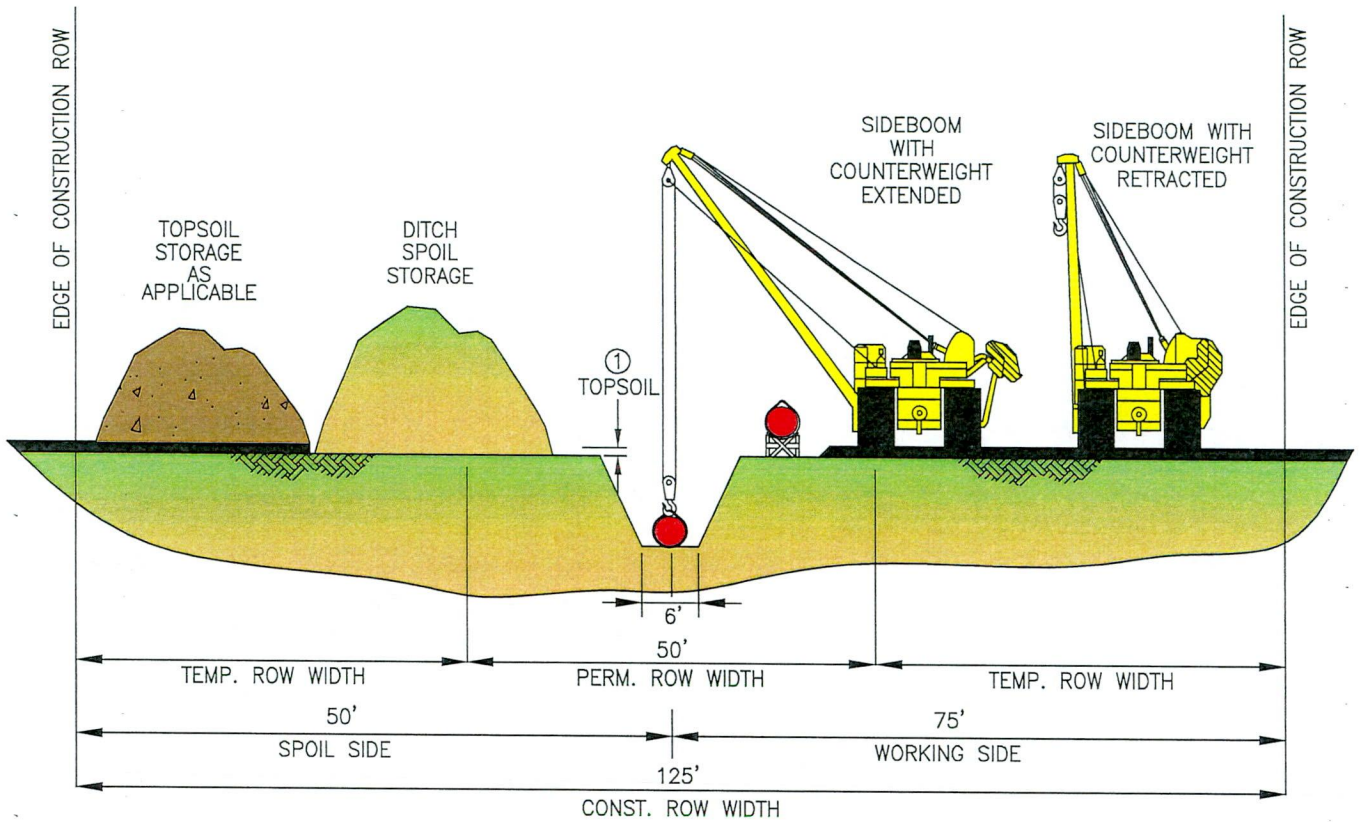
REV.	DATE	BY	DESCRIPTION	CHK.
C	12/12/14	RER	ISSUED FOR REVIEW	
B	12/12/14	RER	ISSUED FOR REVIEW	
A	9/16/14	MR	ISSUED FOR REVIEW	

PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION

UPLAND CONSTRUCTION FULL WIDTH TOPSOIL SEGREGATION

DRAWN BY: MR	DATE: 09/15/14	DWG. NO. P12-55	REV. C
CHECKED BY: RL	DATE: 09/15/14		
SCALE: N.T.S.	APP.:		



NOTES:

① DEPTH OF TOPSOIL SEGREGATED BASED UPON SITE–SPECIFIC CONDITIONS.

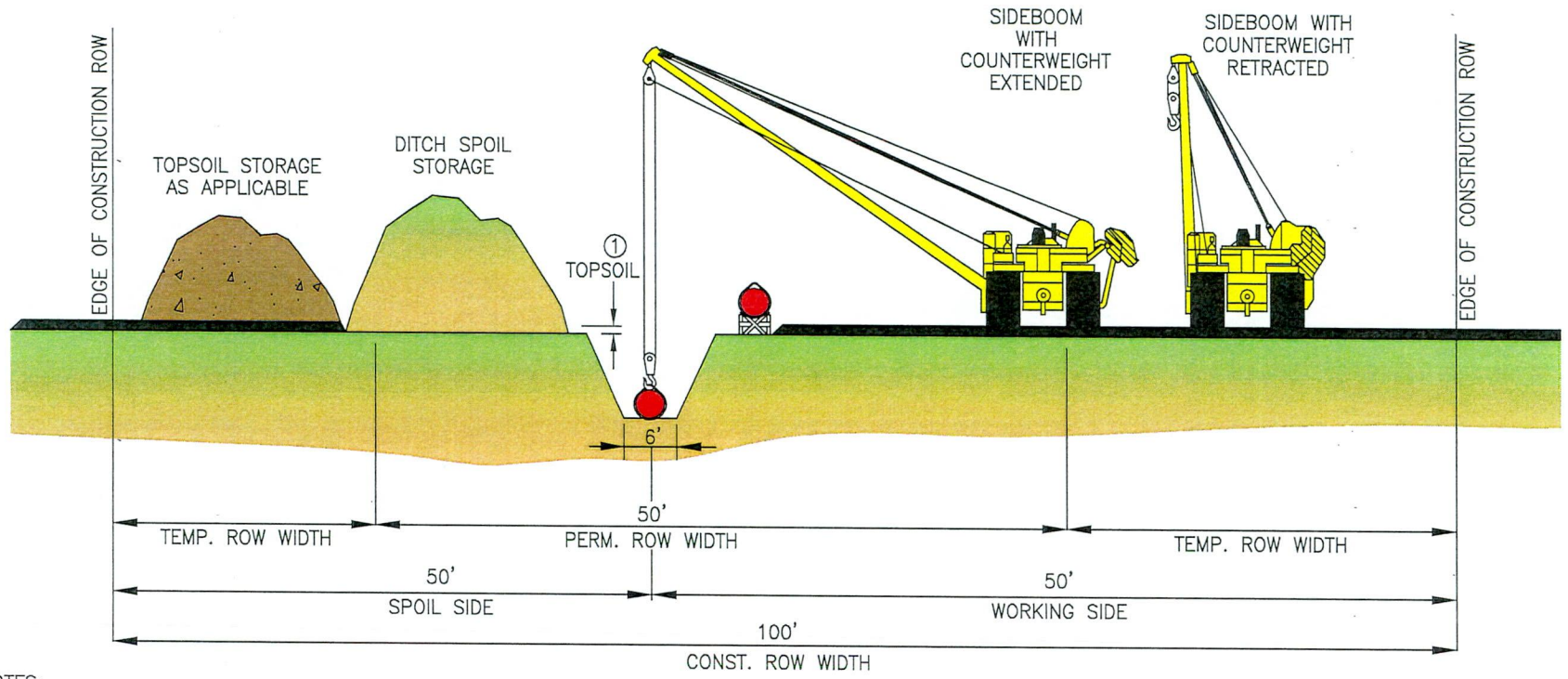
REV.	DATE	BY	DESCRIPTION	CHK.
C	12/12/14	RER	ISSUED FOR REVIEW	
B	12/12/14	RER	ISSUED FOR REVIEW	
A	9/16/14	MR	ISSUED FOR REVIEW	

PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION

UPLAND DITCH LINE AND SPOIL SIDE TOPSOIL SEGREGATION

DRAWN BY: MR	DATE: 09/15/14	DWG. NO. P12–56	REV. C
CHECKED BY: RL	DATE: 09/15/14		
SCALE: N.T.S.	APP.:		



NOTES:

① DEPTH OF TOPSOIL SEGREGATED BASED UPON SITE-SPECIFIC CONDITIONS.

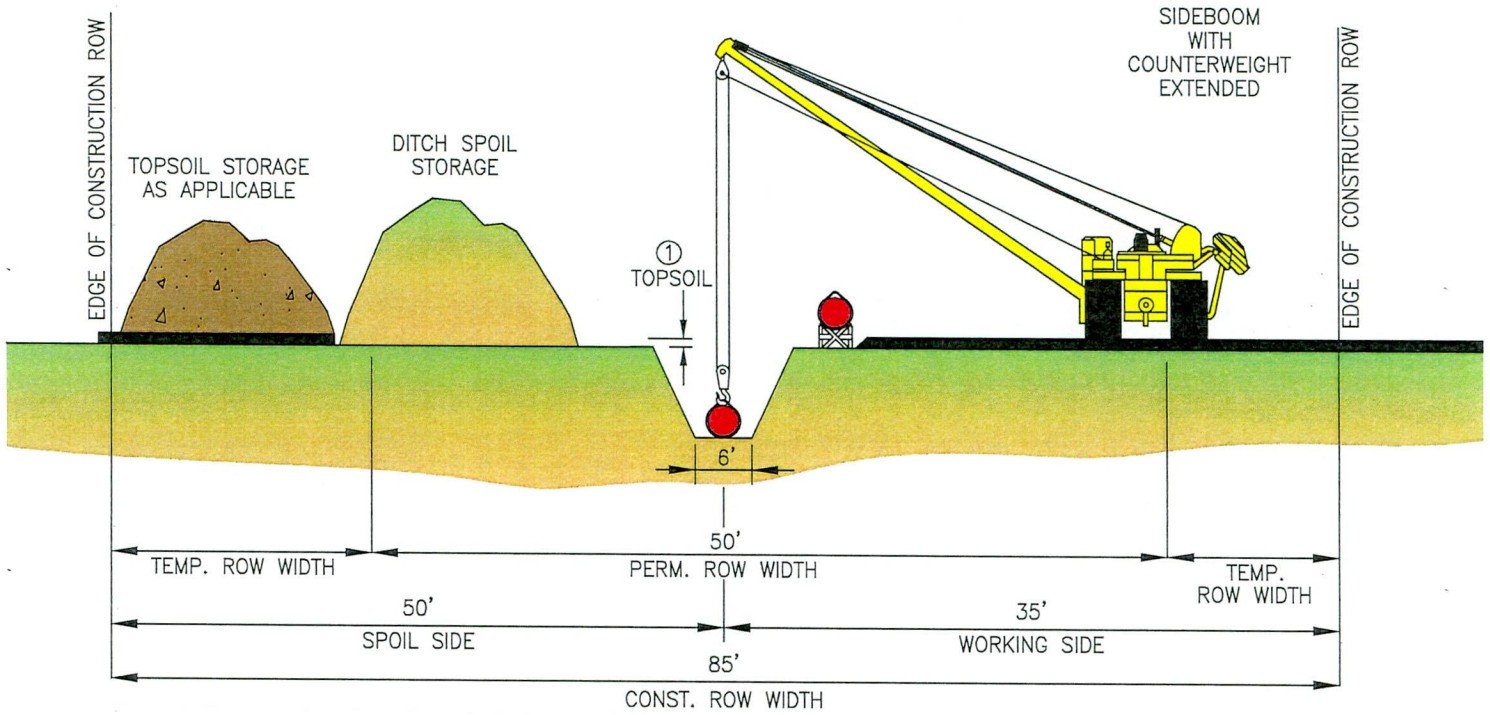
REV.	DATE	BY	DESCRIPTION	CHK.
C	12/12/14	RER	ISSUED FOR REVIEW	
B	12/12/14	RER	ISSUED FOR REVIEW	
A	9/15/14	JWH	ISSUED FOR REVIEW	

PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION

EMERGENT NON-SATURATED WETLANDS

DRAWN BY: JWH	DATE: 09/15/14	DWG. NO. P12-57	REV. C
CHECKED BY: DAH	DATE: 09/19/14		
SCALE: N.T.S.	APP.:		



NOTES:

① DEPTH OF TOPSOIL SEGREGATED BASED UPON SITE–SPECIFIC CONDITIONS.

REV.	DATE	BY	DESCRIPTION	CHK.
C	12/12/14	RER	ISSUED FOR REVIEW	
B	12/12/14	RER	ISSUED FOR REVIEW	
A	9/15/14	JWH	ISSUED FOR REVIEW	

PROJECT NO. 10395700

TYPICAL RIGHT-OF-WAY CONFIGURATION

UPLAND AND WETLAND FORESTED AREAS

DRAWN BY: JWH	DATE: 09/15/14	DWG. NO. P12–58	REV. C
CHECKED BY: DAH	DATE: 08/18/14		
SCALE: N.T.S.	APP.:		