# EROSION AND SEDIMENTATION CONTROL PLAN

| | | |
|---|---|---|
| *Company:* | SABAL TRAIL TRANSMISSION, LLC | |
| *Project:* | SABAL TRAIL PROJECT | |
| *Location:* | Alabama: | Tallapoosa, Chambers, Lee, and Russell Counties |
| | Georgia: | Stewart, Webster, Terrell, Dougherty, Mitchell, Colquitt, Brooks, and Lowndes Counties |
| | Florida: | Hamilton, Madison, Suwannee, Gilchrist, Alachua, Levy, Marion, Sumter, Lake, Polk, Citrus, Osceola, and Orange Counties |

*Contact:* *George A. McLachlan*
*Environmental Project Manager*
*Sabal Trail Transmission, LLC*
*400 Colonial Center Parkway, Suite 300*
*Lake Mary, Florida 32746*
*Telephone: (321) 249-8615*

Effective Date: TBD
Revision 4: November 14, 2014

# TABLE OF CONTENTS

## LIST OF APPENDICES

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ADEM | Alabama Department of Environmental Management |
| BMPs | best management practices |
| CFR | Code of Federal Regulations |
| DEF | Duke Energy Florida, Inc. |
| EIs | Environmental Inspectors |
| EPD | Georgia Environmental Protection Division |
| FDEP | Florida Department of Environmental Protection |
| FERC | Federal Energy Regulatory Commission |
| FERC Plan | Upland Erosion Control, Revegetation, and Maintenance Plan |
| FERC Procedures | Wetland and Waterbody Construction and Mitigation Procedures |
| FGT | Florida Gas Transmission Company, LLC |
| FSC | Florida Southeast Connection, LLC |
| GADNR | Georgia Department of Natural Resources |
| Gulfstream | Gulfstream Natural Gas System, LLC |
| HDD | horizontal directional drill |
| lbs | pounds |
| M&R | meter and regulating |
| MP | milepost |
| NextEra | NextEra Energy, Inc. |
| NOI | Notice of Intent |
| NPDES | National Pollutant Discharge Elimination System |
| Plan | Erosion and Sediment Control Plan |
| PLS | Pure Live Seed |
| Project | Sabal Trail Project |
| ROW | right-of-way |
| Sabal Trail | Sabal Trail Transmission, LLC |
| SPCC Plan | Spill Prevention Control and Countermeasure Plan |
| Transco | Transcontinental Gas Pipe Line Company, LLC |
| U.S. | United States |
| USACE | U.S. Army Corps of Engineers |
| USDOT | U.S. Department of Transportation |
| USGS | U.S. Geological Survey |

# 1. INTRODUCTION

## 1.1 Project Description

Sabal Trail Transmission, LLC ("Sabal Trail"), a joint venture between affiliates of Spectra Energy Partners, LP and NextEra Energy, Inc. ("NextEra"), is seeking a Certificate of Public Convenience and Necessity ("Certificate") from the Federal Energy Regulatory Commission ("FERC") pursuant to Section 7 (c) of the Natural Gas Act authorizing the construction and operation of the Sabal Trail Project ("Project").

The Project is a new natural gas transmission pipeline comprised of a combination of lease capacity and new greenfield pipeline construction that will provide approximately 1,075,000 dekatherms per day ("Dth/d") of new firm natural gas transportation capacity. Sabal Trail will acquire the capacity created by Transcontinental Gas Pipe Line Company, LLC's ("Transco") Hillabee Expansion Project (FERC Docket Nos. PF14-6-000 and CP15-16-000) pursuant to a capacity lease, which extends from Transco's Compressor Station 85 in Choctaw County, Alabama to an interconnection with the new greenfield pipeline in Tallapoosa County, Alabama. Sabal Trail will construct, own and operate the greenfield pipeline, which will extend from Tallapoosa County, Alabama to a new interconnection hub ("the Central Florida Hub") in Osceola County, Florida. At the Central Florida Hub, the Project will connect with the Florida Southeast Connection Pipeline Project, currently being proposed by Florida Southeast Connection, LLC ("FSC") (FERC Docket No. PF14-2-000 and CP14-554-000). In addition, at or near the Central Florida Hub, the Project will interconnect with Gulfstream Natural Gas System, LLC ("Gulfstream") and Florida Gas Transmission Company, LLC ("FGT"). The greenfield portion of the Project will have an initial capacity of 830,000 Dth/day with a proposed in-service date of May 1, 2017. Through a series of phased compressor station expansions to meet the future capacity needs of Sabal Trail's customers, the Project capacity will increase to approximately 999,000 Dth/day by 2020 and 1,075,000 Dth/day by 2021.

*Pipeline Facilities*

The Project includes construction of approximately 474.4 miles of new 36-inch diameter natural gas transmission pipeline (the "Mainline Route"), approximately 13.1 miles of new 36-inch diameter natural gas pipeline (the "Hunters Creek Line"), and approximately 21.4 miles of new 24-inch diameter natural gas pipeline (the "Citrus County Line"). A summary of the Project pipeline facilities is provided in Table 1.1-1 of Resource Report 1 (*see* Tables section). A location map of the Project pipeline facilities is provided as Figure 1.1-1 of Resource Report 1 (*see* Figures section).

- Mainline Route – Originates in Tallapoosa County, Alabama near Transco milepost ("MP") 944 and ends at an interconnection with the Florida Southeast Connection Pipeline Project at the Central Florida Hub in Osceola County, Florida;
- Hunters Creek Line – Connects at the proposed Reunion Compressor Station located at approximately MP 474.4 to FGT's existing 24-inch diameter mainline natural gas pipeline in Orange County, Florida; and
- Citrus County Line – Located in Marion and Citrus Counties, Florida, extending from Sabal Trail's facilities at approximately MP 389.8 to a new electric generation plant proposed by Duke Energy Florida, Inc. ("DEF") to be located in Citrus County, Florida.

*Aboveground Facilities*

Five new compressor stations are proposed to be constructed along the Mainline Route. Three compressor stations (Alexander City, Hildreth, and Reunion) would have a 2017 in-service date, followed by two additional compressor stations (Dunnellon and Albany) with a 2020 in-service date. Expansion work (i.e., additional compression) at two of these five new compressor stations (Hildreth and Albany) would then be completed with an in-service date of 2021. Natural gas will be the proposed fuel source for the facilities within each compressor station. A summary of the Project aboveground facilities is provided in Table 1.1-2. Aboveground facility plot plans are provided in Appendix 1A, Volume II-B of Resource Report 1. United States ("U.S.") Geological Survey ("USGS") topographic location excerpts and aerial photography are provided as Figures 1.1-2 and 1.1-3 of Resource Report 1.

- Compressor Stations
    - Alexander City Compressor Station (approximate MP 0.0) – In service 2017. Construction of a new compressor station near Alexander City in Tallapoosa County, Alabama. The compressor station will include two Solar Titan 130 and one Solar Titan 250 compressor units;
    - Albany Compressor Station (approximate MP 159.3) – In service 2020. Construction of a new compressor station near Albany in Dougherty County, Georgia after the initial Project in-service date. The compressor station will include one Solar Titan 130 compressor unit. An additional Solar Titan 130 compressor unit will be constructed in a later phase of the Project with an in-service date of 2021;
    - Hildreth Compressor Station (approximate MP 296.3) – In service 2017. Construction of a new compressor station near Lake City in Suwannee County, Florida, consisting of one Solar Titan 130 compressor unit. An additional Solar Titan 130 compressor unit will be constructed in a later phase of the Project with an in-service date of 2021;
    - Dunnellon Compressor Station (approximate MP 389.8) – In service 2020. Construction of a new compressor station near Ocala in Marion County, Florida after the initial in-service date. The compressor station will include one Solar Titan 130 compressor unit; and
    - Reunion Compressor Station (approximate MP 474.4) – In service 2017. Construction of a new compressor station near Intercession City in Osceola County, Florida, consisting of one Titan 130 compressor unit and one Solar Mars 100 compressor unit.

In addition, six meter and regulating ("M&R") stations are proposed for the Project.

- M&R Stations
    - Mainline Route M&R Stations
        - Transco Hillabee M&R Station in Tallapoosa County, Alabama (MP 0.0)
        - FGT Suwannee M&R Station in Suwannee County, Florida (MP 299.7)
        - FSC M&R Station in Osceola County, Florida (MP 474.4)
        - Gulfstream M&R Station in Osceola County, Florida (MP 474.4)

- Hunters Creek Line M&R Station
  - FGT Hunters Creek M&R Station in Orange County, Florida (MP 13.1)
- Citrus County Line M&R Station
  - DEF Citrus County M&R Station in Citrus County, Florida (MP 21.4)

A total of 39 mainline valves ("MLVs"), five "pig" launcher, and five "pig" receiver facilities are also proposed for the Project. Thirty-three MLVs would be located along the Mainline Route, four of which would be located within the site of proposed compressor stations. Three MLVs would be located along the Hunters Creek Line, one of which would be located within the Reunion Compressor Station (MP 0.0 on the Hunters Creek Line) and one within the FGT Hunters Creek M&R Station (MP 13.1 on the Hunters Creek Line). Three MLVs would be located along the Citrus County Line, one of which would be located within the Dunnellon Compressor Station (MP 0.0 on the Citrus County Line) and one within the DEF Citrus County M&R Station (MP 21.4 on the Citrus County Line). All MLVs will have blow down capabilities, however four MLVs along the Mainline Route (MLVs 2, 18, 23, and 24) will be equipped with remote blow down facilities where the right-of-way ("ROW") is located next to an electric transmission line corridor. The locations of proposed MLV sites are listed in Table 1.1-2 and shown on the aerial-based alignment sheets in Appendix 1A, Volume II-B of Resource Report 1.

*Proposed Mainline Capacity Lease*

Transco Lease – Mainline capacity lease on Transco's existing pipeline facilities extending from Transco's Zone 4 Pool and Transco's interconnections with Midcontinent Express Pipeline, LLC and Gulf South Pipeline Company, LP, all located at Transco Compressor Station 85 near Transco MP 784 in Choctaw County, Alabama to the point of interconnection with the proposed Sabal Trail facilities to be located near Transco MP 944 in Tallapoosa County, Alabama. The facilities associated with the Transco Lease will be addressed in a separate certificate application filed by Transco.

## 1.2 Purpose of this Plan

This Erosion and Sedimentation Control Plan ("Plan") has been prepared for use by Sabal Trail and its contractors as a guidance manual for minimizing erosion of disturbed soils and transportation of sediments off the ROW and into sensitive resources (wetlands, streams, and residential areas) during natural gas pipeline construction. Although Sabal Trail is a new company, Sabal Trail is a joint venture between affiliates of Spectra Energy Partners, LP and NextEra Energy, Inc., both of whom have many years of construction, operations, and management experience. This experience has been incorporated into the development of this Plan.

The procedures developed in this Plan, which represent Sabal Trail's best management practices ("BMPs"), are designed to accommodate varying field conditions while maintaining rigid minimum standards for the protection of environmentally sensitive areas. This Plan is designed to provide specifications for the installation and implementation of soil erosion and sediment control measures while permitting adequate flexibility to use the most appropriate measures based on site-specific conditions. The intent of this Plan is to provide general information on the pipeline construction process and to describe specific measures that will be employed during and following construction to minimize effects on the environment from the construction of the Project facilities.

The purpose of this Plan is to preserve the integrity of environmentally sensitive areas and to maintain existing water quality by implementing the following objectives:

- Minimize the extent and duration of disturbance;
- Protect exposed soil by diverting runoff to stabilized areas;
- Install temporary and permanent erosion control measures; and
- Establish an effective inspection and maintenance program.

## 1.3 Guidelines and Requirements

The measures described in this Plan have been developed based on guidelines from the FERC, U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the U.S. Department of Agriculture, the Natural Resource Conservation Service, Alabama Department of Environmental Management ("ADEM"), Georgia Department of Natural Resources ("GDNR"), Environmental Protection Division ("EPD") and the Florida Department of Environmental Protection ("FDEP"), as well as from the Sabal Trail's significant experience and practical knowledge of pipeline construction and effective environmental protection measures. Lessons and insights gained during pipeline construction projects along the Spectra Energy's existing pipeline system and comments from agency representatives are also incorporated into this Plan.

Any deviation from the placement of the structures specified in the construction drawings, or changes in the design of control measures as set forth in this Plan, must be approved by Sabal Trail's Environmental Permitting and Construction Department and must have the concurrence from the appropriate permitting agency.

Pursuant to changes in the FERC regulations, interstate pipeline companies are now required to comply with the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan ("FERC Plan", May 2013 Version) and the FERC's Wetland and Waterbody Construction and Mitigation Procedures ("FERC Procedures", May 2013 Version), unless approval to deviate from the FERC Plan and Procedures is received from FERC and the appropriate state agency.

The following identifies the differences between this Plan and the FERC's Plan and Procedures as well as the reasons behind the differences:

1. FERC Plan (Section V.C.1 and V.C.3): Perform compaction testing in residential areas disturbed by construction activities and perform appropriate soil compaction mitigation in severely compacted residential areas.

   This Plan: Compaction testing and mitigation are not required in residential areas.

   Reason to Deviate: This Plan requires that topsoil either be segregated or replaced in residential areas. Topsoil that is segregated or replaced results in little compaction and provides a suitable medium for grass. Most yard areas that are sown in grass do not require deep root penetration. Post-construction monitoring will be conducted during this timeframe as discussed in Section 8.1.

2. FERC Procedures (Section VI.B.2.d): Do not trench the wetland until the pipeline is assembled and ready for lowering in.

This Plan: Normal cross-country construction practices will be used in wetlands when conditions allow, such as low flow or unsaturated soils.

Reason to Deviate: If conditions allow, such as low flow or unsaturated soils, normal cross-country construction practices will be used in wetlands. In these instances, Sabal Trail requests a deviation from Section VI.B.2.d of the FERC Procedures to excavate the trench prior to the pipeline assembly. Otherwise, after the pipeline is assembled, equipment will not be able to access the area where trenching will occur nor would there be sufficient construction workspace to safely excavate the trench.

## 1.4 Surveys, Permits, and Notifications

Sabal Trail will perform the required environmental field surveys and acquire the necessary environmental permits prior to start of construction of the Project. Sabal Trail will notify the appropriate federal and state agencies prior to, during, and/or subsequent to the construction of the Project, as identified in the Clearance Package/ Permit Book. Prior to construction, a Notice of Intent ("NOI") must be completed and filed in each State with the proper agency. In Florida this is completed on line through the iNOI website, in Georgia and Alabama an NOI is completed via hardcopy.

State agencies:

Alabama:

Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, AL 36110-2400
(334) 271-7700

Georgia:

Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive, Suite 1456 East Tower
Atlanta, GA 30334
Telephone: (404)-657-5947

Florida:

Florida Department of Environmental Protection
3900 Commonwealth Boulevard M.S. 49
Tallahassee, Florida 32399
850-245-2118

## 1.5 Inquiries

Inquiries regarding this Plan should be addressed to George A. McLachlan, Environmental Project Manager; Sabal Trail Transmission, LLC; 400 Colonial Center Parkway, Suite 300; Lake Mary, Florida 32746. For field conditions requiring an immediate response, contact the Managers at the following field office addresses:

Albany Georgia Field Office
1301 Evelyn Ave.
Albany, GA 31705
(229) 299-8272

Valdosta Georgia Field Office
2110 N. Patterson St.
Suite C
Valdosta, GA 31602
(229) 326-3211

Lake City Florida Field Office
484 SW Commerce Blvd.
Suite 105
Lake City, FL 32025
(386) 205-1735

Gainesville Florida Field Office
418 SW 140th Terrace
Newberry, FL 32661
(352) 327-0072

Groveland Florida Field Office
8508 Justice Place
Groveland, FL 34736
(352) 431-0062

# 2. SUPERVISION AND INSPECTION

To effectively mitigate Project-related effects, the Plan must be properly implemented in the field. Quick and appropriate decisions in the field regarding critical issues such as stream and wetland crossings, placement of erosion controls, trench dewatering, spoil containment, and other construction related items are essential.

To ensure that the Plan is properly implemented, at least one Lead Environmental Inspector and several Environmental Inspectors ("EIs") will be designated by Sabal Trail for each construction spread during active construction or restoration. In Georgia, in addition to the EIs, a stormwater pollution prevention team will be identified by the contractor. The EIs will have peer status with all other activity inspectors and will report directly to the Environmental Manager who has overall environmental authority on the construction spread. The EIs will have the authority to stop activities that violate the environmental conditions of the FERC's Orders (if applicable), other federal and state permits, or landowner requirements, and to order corrective action.

24 Hour Emergency Contact: TBD

Key Project Contacts: TBD

***Alabama:*** TBD

***Georgia:*** TBD

***Florida:*** TBD

## 2.1 Responsibilities of the Lead Environmental Inspector

At a minimum, the EIs will be responsible for:

1. Inspecting construction activities for compliance with the requirements of this Plan, the construction drawings, the environmental conditions of the FERC's Orders (if applicable), proposed mitigation measures, State requirements, and other Federal or State environmental permits and approvals, and environmental requirements in landowner easement agreements;
2. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;
3. Verifying that the limits of authorized construction work areas and locations of access roads are visibly marked before clearing, and maintained throughout construction;
4. Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;
5. Identifying erosion/sediment control and soil stabilization needs in all areas;
6. Ensuring that the location and design of slope breakers will not cause erosion or direct water into sensitive environmental resource areas, including cultural resources sites, wetlands, waterbodies, and sensitive species habitat;

7. Verifying that dewatering activities are properly monitored and do not result in the deposition of sand, silt, and/or sediment into a sensitive environmental resource areas, including wetlands, waterbodies, cultural resource sites, and sensitive species habitats; stopping dewatering activities if such deposition is occurring and ensuring the design of the discharge is changed to prevent reoccurrence; and verifying that dewatering structures are removed after completion of dewatering activities;
8. Ensuring that subsoil and topsoil are tested in agricultural areas to measure compaction and determine the need for corrective action;
9. Advising the Chief Inspector when environmental conditions (such as wet weather or frozen soil) make it advisable to restrict or delay construction activities to avoid topsoil mixing or excessive compaction;
10. Ensuring restoration of contours and topsoil;
11. Verifying that the soils imported for agricultural or residential use are certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;
12. Ensuring that erosion control devices are properly installed to prevent sediment flow into environmental resource areas (e.g., wetlands, waterbodies, cultural resource sites, and sensitive species habitats) and onto roads, and determining the need for additional erosion control devices;
13. Inspecting, reporting, and ensuring the maintenance of temporary erosion control measures at least:

***Alabama***

i. On a daily basis in areas of active construction or equipment operation;

ii. On a weekly basis in areas with no construction or equipment operation;

iii. Within 24 hours of each 0.5 inch of rainfall:

iv. As often as necessary until any poorly functioning erosion controls or sediment controls, non-compliant discharges, or any other deficiencies observed during a prior inspection are corrected and documented.

***Georgia***

i. First rain event > 0.5 inches after clearing and grubbing operations have been completed;

ii. First rain event >0.5 inches that occurs either 90 days after the first sampling event OR after all mass grading operations have been completed, whichever event comes first;

iii. On a daily basis in areas of active construction or equipment operation;

iv. On a weekly basis in areas with no construction or equipment operation;

v. Within 24 hours of each 0.5 inch of rainfall; and

vi. As often as necessary until any poorly functioning erosion controls or sediment controls, non-compliant discharges, or any other deficiencies observed during a prior inspection are corrected and documented.

***Florida***

i. On a daily basis in areas of active construction or equipment operation;

ii. On a weekly basis in areas with no construction or equipment operation; and

iii. Within 24 hours of the end of a storm event producing 0.5 inch of rainfall or greater.

iv. As often as necessary until any poorly functioning erosion controls or sediment controls, non-compliant discharges, or any other deficiencies observed during a prior inspection are corrected and documented.

14. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental effects;
15. Keeping records of compliance with the environmental conditions of the FERC's Order conditions, State requirements, proposed mitigation measures, and other Federal or state environmental permits during active construction and restoration;
16. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase;
17. Verifying that locations for any disposal of excess construction materials for beneficial reuse comply with Section 3.6.3.2 and 3.6.3.3 of this Plan;
18. Ensuring that the Contractor implements and complies with Sabal Trail's Spill Prevention Control and Countermeasure ("SPCC") Plan;
19. Documenting daily rainfall at the site;
20. Reporting and Noncompliance (See Appendix C,D,E for Reporting and noncompliance forms by State, respectively):

***Alabama***

Monitoring Reports (Daily, Weekly, Monthly and Noncompliance)

Must be kept on site and submitted to ADEM yearly to:

**Industrial General Permit Section**
**Industrial/Municipal Branch**
**Water Division**
**Alabama Department of Environmental Management**
**PO Box 301463**
**Montgomery, AL 36130-1463**

***Georgia***

Monitoring Reports (Daily, Weekly, Monthly and Noncompliance)

Must be kept on site and submitted yearly to Georgia Department of Natural Resources:

**Environmental Protection Division**
**NonPoint Source Program**
**2 Martin Luther King Drive, S.W., Suite 1462**
**Atlanta, GA 30334**

***Florida***

Monitoring Reports (Daily, Weekly, Monthly and Noncompliance)

Must be kept on site and submitted to FDEP yearly to:

**NPDES Stormwater MSGP DMR, MS #2511**
**Florida Department of Environmental Protection**
**2600 Blair Stone Road**
**Tallahassee, FL 32399-2400**

## 2.2 Environmental Training for Construction

If required by the FERC's Order, environmental training will be given to both Sabal Trail personnel and contractor personnel whose activities will impact the environment during Project construction. The level of training will be commensurate with the type of duties of the personnel. All construction personnel from the chief inspector, EIs, craft inspectors, contractor job superintendent to loggers, welders, equipment operators, and laborers will be given some form of environmental training. In addition to the EIs, all other construction personnel are expected to play an important role in maintaining strict compliance with all permit conditions to protect the environment during construction. Training will be given prior to the start of construction and throughout the construction process, as needed, and will cover the following issues:

- The specifics of this Plan and the SPCC Plan;
- Job or activity specific permit requirements;
- Sabal Trail policies and commitments;
- Cultural resource procedures and restrictions;
- Threatened and endangered species restrictions;
- Any other pertinent information related to the job; and
- State Specific Training as follows:

***Alabama***

All construction personnel inspecting Erosion and Sedimentation BMP's in Alabama will be certified as a "Qualified Credentialed Inspector." A Qualified Credentialed Inspector means an operator, operator employee, or operator designated qualified person who has successfully completed initial training and annual refresher Qualified Credentialed Inspection Program training, and holds a valid certification from a Department approved cooperating training entity.

***Georgia***

All construction personnel working in Georgia will have one of several different levels of certification based upon their role in the project:

- The Level IA is designed to train contractors, builders, developers, site superintendents, grading and utility contractors, and monitoring consultants in the proper installation, maintenance, and inspection of BMPs on construction sites.
- Level IB is designed to train regulatory enforcement inspectors and non-regulatory personnel inspectors contracted to do regulatory work to accurately inspect land disturbance areas for compliance with state erosion and sedimentation laws.
- At a minimum, any worker must have the Subcontractor Awareness Level, which is designed to provide the mandatory 3-year certification to individuals working in a subcontractor capacity for overview of:
    - Erosion and sedimentation controls;
    - The effects erosion and sedimentation have on the environment;
    - BMPs both vegetative and structural; and
    - Laws governing erosion and sedimentation.
- Subcontractors include but are not limited to:
    - Grading personnel, as well as grading and earthmoving equipment operators;
    - Irrigation system personnel (residence, commercial and industrial sites);
    - Landscape personnel;
    - Utility personnel (excludes entities regulated by the Public Service Commission or FERC, and other entities listed in Official Code of Georgia Annotated 12-7-17(10), if within a Common Development;
    - Wastewater personnel installing on-site systems (includes septic tank excavation and drain fields);
    - Well drilling personnel (includes directional boring equipment operators);
    - Plumbers and electricians (will require certification if conducting a land disturbing activity within a permitted project site); and
    - Erosion control installation personnel. Other personnel involved in land disturbing activities acting as a subcontractor.

***Florida***

All construction personnel working in Florida will be certified though the FDEP through the Florida Stormwater, Erosion, and Sedimentation Control Inspector Training Program. The goal of the program is to ensure the proper design, construction, and maintenance of erosion and sediment controls during construction and to assure the proper long-term operation and maintenance of stormwater systems after construction is completed. The primary program objective is to provide training to private and public employees in various construction related fields. The training program is primarily directed towards inspectors and contractors.

# 3. CONSTRUCTION TECHNIQUES FOR NATURAL GAS PIPELINES

## 3.1 Typical ROW Requirements

Pipeline construction workspace requirements are a function of pipe diameter, equipment size, topography, geological rock formations, location of construction such as at road crossings or river crossings, pipeline crossovers, methods of construction such as boring or open-cut construction, or existing soil conditions encountered during construction. As the diameter of the pipeline being installed increases, so does the depth of trench, excavated spoil material, equipment size, and ultimately the amount of construction work space that will be required to construct the Project. All construction activities are restricted to the ROW limits identified on the construction drawings. However, in limited, non-wetland areas, the construction ROW width may be expanded by up to 25 feet without approval from the FERC for the following situations:

1. To accommodate full construction ROW topsoil segregation;
2. To ensure safe construction where topographic conditions (i.e., side-slopes) or soil limitations exist; and
3. For truck turn-arounds where no reasonable alternative access exists in limited, non-wetland or non-forested areas.

Use of these limited areas is subject to landowner approval and compliance with all applicable survey, mitigation, and reporting requirements.

The U.S. Department of Transportation ("USDOT") and Occupational Safety and Health Administration have established minimum size and area requirements for worker safety involving construction activities. See Figures 1-10 (Appendix A) for typical construction ROW widths. Figure 11 demonstrates a typical trench detail and Figure 12 provides a typical trench excavation procedure and backfill. Additional construction ROW may be required at specific locations to construct a pipeline including, but not limited to, steep side or vertical slopes, road crossings, crossovers, areas requiring topsoil segregation, and staging areas associated with wetland and waterbody crossings. These locations are shown on the construction drawings. Select areas require topsoil segregation methods as per the Plans and Procedures (see Figure 13).

## 3.2 Access Roads

All access to the construction ROW will be limited to existing roads and minimized in wetlands to the extent practical. Additional access roads to the ROW are required at various points along the project ROW where other road crossings (paved or gravel/state/local roads) do not exist. Examples of types of access used include abandoned town roads, railroad ROWs, powerline service roads, logging roads and farm roads. Improvements to access roads (i.e., grading, placing gravel, replacing/installing culverts, and trimming overhanging vegetation) may be required due to the size and nature of the equipment that would utilize the road (Figure 14).

1. Access to the ROW during construction and restoration activities is permitted only by the new or existing access roads identified on the construction drawings.
2. Contractor will maintain safe conditions at all road crossings and access points during construction and restoration. All access roads will be maintained during construction by grading and the addition of gravel or stone when necessary.

3. Contractor will implement all appropriate erosion and sedimentation control measures for construction/improvement of access roads.
4. Contractor will ensure that all paved road surfaces utilized during construction are kept free of mud and debris to the extent practical.
5. If crushed stone pads are used in residential or agricultural areas, the stone will be placed on synthetic fabric to facilitate rock removal after construction (Figure 15).
6. The use of tracked equipment will be minimized on public roadways. Remove any soil or gravel spilled or tracked onto roadways daily or more frequent as necessary to maintain safe road conditions. Repair any damages to roadway surfaces, shoulders, and bar ditches.
7. All access roads across a waterbody will use an equipment bridge in accordance with Section 5.2.2.
8. The only access roads, other than the construction ROW, which can be used in wetlands are those existing roads that can be used with no modifications or improvements, other than routine repair, and no impact on the wetland.
9. Limit construction equipment operating in wetland areas to that needed to clear the ROW, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the ROW. All other construction equipment will use access roads located in upland areas to the maximum extent practical. Where access roads in upland areas do not provide reasonable access, all other construction equipment usage will be limited to one pass through the wetland using the ROW, whenever practical.
10. Timber mats or an equivalent (Figure 16) will be used for access through a saturated wetland, unless otherwise authorized by agency permits.

## 3.3 Pipe and Contractor Wareyards

Pipe and contractor wareyards are required for storing and staging equipment, pipe, fuel, oil, pipe fabrication, and other construction related materials. The Contractor will perform the following measures at pipe and contractor wareyards:

1. Strip and segregate topsoil in agricultural lands;
2. Install erosion control structures ("BMP's") as directed by the EIs, outlined in this Plan, or identified on the construction drawings, and maintain them throughout construction and restoration activities;
3. Implement and comply with the SPCC Plan; and
4. Restore and revegetate all disturbed areas in accordance with the measures outlined in this Plan and as directed by the EIs.

## 3.4 Off-ROW Disturbance

With certain exceptions, which are required in order to comply with FERC Plan and Procedures, all construction activities are restricted to within the limits identified on the construction drawings (exceptions include the installation of slope breakers, installation of energy-dissipating devices, installation of dewatering structures, and drain tile system repairs which are subject to applicable survey requirements). However, in the event that off-ROW disturbance occurs, the following measures will be implemented:

1. The EIs will immediately report the occurrence to the Chief Inspector and ROW Agent;
2. The conditions that caused the disturbance will be evaluated by the Chief Inspector and the EIs, and they will determine whether work at the location can proceed under those conditions; and
3. If deemed necessary by the Chief Inspector and EIs, one or more of the following corrective actions will be taken: immediate restoration of the original contours, seeding and mulching of the disturbed area, and/or installation of erosion control devices. Sabal Trail's Environmental Project Manager will be notified as soon as practical.

## 3.5 Construction Sequence

Natural gas pipelines are installed using conventional overland buried pipeline construction techniques. These activities are necessary for the installation of a stable, safe, and reliable transmission facility consistent with USDOT requirements and regulations. This section provides an overview of the equipment and operations necessary for the installation of a natural gas pipeline, describes potential effects that may occur from each operation, and identifies the measures that will be implemented to control these potential effects. This section also discusses in detail the erosion and sediment control techniques that apply to each construction activity including clearing, grading, trenching, lowering-in of pipe, backfilling, and hydrostatic testing. It is the responsibility of the Contractor to provide a detailed outline of the proposed construction sequence. ROW restoration will be addressed in Section 3.7.

Installation of the pipeline will typically proceed from one end of the construction spread to the other in an assembly line or "mainline" fashion. The spacing between the individual crews responsible for each interdependent activity is based on anticipated rate of progress. The activities listed below are normally performed in the following sequence:

- Survey and Flag the ROW;
- Clearing the ROW;
- Installing temporary sediment barriers;
- Grading the ROW;
- Installing temporary interceptor dikes;
- Trenching/excavating the trench;
- Pipe stringing and bending;
- Welding and weld inspection;
- Trench dewatering;
- Lowering the pipe into the trench;
- Backfilling the trench;
- Hydrostatic testing of pipe; and
- ROW restoration and clean-up.

Obstacles to the mainline technique are often encountered and are not considered to be out of the ordinary. These obstacles, which include side hill crossings, rock, wetlands, streams, roads, and residential areas, do not normally interrupt the assembly line flow.

### *3.5.1 Clearing*

Clearing operations will include the removal of vegetation within the construction ROW. Various clearing methods will be employed depending on tree size, contour of the land, and the ability of the ground to support clearing equipment. Vegetative clearing will either be accomplished by hand or by cutting equipment. The following procedures will be standard practice during clearing:

1. Prior to beginning the removal of vegetation, the limits of clearing will be established and identified in accordance with the construction drawings;
2. All construction activities and ground disturbance will be confined to within the ROW shown on the construction drawings;
3. Clearly mark and protect trees to be saved as per landowner requests or as otherwise required;
4. All brush and trees will be felled into the construction ROW to minimize damage to trees and structures adjacent to the ROW. Trees that inadvertently fall beyond the edge of the ROW will be immediately moved onto the ROW and disturbed areas will be immediately stabilized;
5. Trees will be chipped or cut into lengths identified by the landowner and then stacked at the edge of the ROW or removed;
6. Brush and limbs may be disposed of in one or more of the following ways depending on State or local restrictions, applicable permits, construction Line List stipulations, and landowner agreements:
    a. Stockpiled along the edge of the ROW;
    b. Burned;
    c. Chipped, spread across the ROW in upland areas, and plowed in; or
    d. Hauled off site.
7. Existing surface drainage patterns will not be altered by the placement of timber or brush piles at the edge of the construction ROW.

### *3.5.2 Installing Temporary Sediment Barriers*

Sediment barriers, which are temporary erosion controls intended to minimize the flow of sediment and to prevent the deposition of sediments beyond approved workspaces or into sensitive resources, will be installed following vegetative clearing operations. They may be constructed of materials such as silt fence, compacted earth (e.g., drivable berms across travel lanes), sandbags, or an equivalent material as identified by the EI (Figures 17 and 18).

Temporary stabilization of the disturbed ROW will be initiated immediately whenever work toward project completion and final stabilization has temporarily ceased on any portion of the disturbed ROW and will not resume for a period exceeding thirteen calendar days.

Install temporary sediment barriers at the base of slopes adjacent to road crossings and at waterbody and wetland crossings in accordance with Sections 5.2.4 and 6.2.2 respectively.

1. Temporary sediment barriers will be designed and maintained to minimize erosion and maximize sediment removal resulting from a 2-year, 24-hour storm event.

2. Inspect temporary sediment barriers daily in areas of active construction to ensure proper functioning and maintenance. In other areas, sediment barriers will be inspected and maintained on a weekly basis throughout construction, and within 24 hours following storm events. (See State-specific monitoring requirements in Section 2.1)
3. Maintain all temporary sediment barriers in place until permanent revegetation measures are successful or the upland areas adjacent to wetlands, waterbodies, or roads are stabilized.
4. Accumulated sediment will be removed when the BMP has reached recommended capacity and disposed of properly as recommended per individual BMP. For information on proper disposal of sediment and/or location for disposal, contact the local state agency. (See contact information for ADEM, GAEPD and FDEP in Section 1.4)
5. Remove temporary sediment barriers from an area when replaced by permanent erosion control measures or when the area has been successfully restored as specified in Section 8.1.

### *3.5.3 Grading*

The construction ROW will be graded as needed to provide a level workspace for safe operation of heavy equipment used in pipeline construction. The following procedures will be standard practice during grading.

#### *3.5.3.1 Topsoil Segregation*

1. Topsoil segregation methods will be used in all residential areas, cultivated or rotated croplands, managed pastures, hayfields, and other areas at the landowner's or land managing agency's request.
2. Prevent the mixing of topsoil with subsoil by stripping topsoil (Figure 13) from either the full work area or from the trench line and subsoil storage area (ditch plus spoil side method) as stipulated in the Construction Contract or Line List.
3. Segregate at least 12 inches of topsoil in deep soils with more than 12 inches of topsoil. In soils with less than 12 inches of topsoil, make every effort to segregate the entire topsoil layer.
4. Where topsoil segregation is required, maintain separation of salvaged topsoil and subsoil throughout all construction activities.
5. For wetlands, segregate the top 12 inches of topsoil within the ditchline, except in areas where standing water is present or soils are saturated.
6. Leave gaps in the topsoil piles for the installation of temporary interceptor dikes to allow water to be diverted off ROW.
7. Topsoil replacement (i.e., importation of topsoil) may be used as an alternative to topsoil segregation if approved by the landowner and Chief Inspector.
8. Never use topsoil for padding the pipe, constructing temporary slope breakers or trench plugs, improving or maintaining roads, or as a fill material.
9. Stabilize topsoil piles and minimize loss due to wind and water erosion with use of sediment barriers, mulch, temporary seeding, tackifiers, or functional equivalents, where necessary.

#### *3.5.3.2 Tree Stump Removal and Disposal*

1. Remove tree stumps in upland areas along the entire width of the permanent ROW to allow adequate clearance for the safe operation of vehicles and equipment. Stumps within the temporary ROW will be removed or ground to a suitable height that will allow the safe passage of equipment, as stipulated by the Chief Inspector or EIs.
2. Dispose of stumps by one of the following methods, pending approval by the Chief Inspector or EIs, and the landowner, and in accordance with regulatory requirements:
3. Buried at a Sabal Trail-approved off-site location (except in wetlands and agricultural areas);
4. Burned;
5. Chipped, spread across the ROW in upland areas, and plowed in; or
6. Ground to grade in wetlands, excess chips will be removed for proper disposal.
7. Grading operations and tree stump removal in wetland areas will be conducted in accordance with Section 6.2.1.

#### *3.5.3.3 Rock Disposal*

Rock (including blast rock) will be disposed of in one or more of the following ways:

1. Buried on the ROW or in approved construction work areas either in the ditchline or as fill during grade cut restoration in accordance with the Construction specifications. In cultivated/ agricultural lands, wetlands, and residential areas, rock may only be backfilled to the top of the existing bedrock profile;
2. Windrowed per written landowner agreement with Sabal Trail;
3. Removed and disposed of at a Sabal Trail-approved site; or
4. Used as riprap for stream bank stabilization where allowed by an applicable regulatory agency(s) (Figure 26).

### *3.5.4 Installing Temporary Interceptor Dikes*

1. Temporary interceptor dikes, which are temporary erosion control measures intended to reduce runoff velocity and divert water off the construction ROW, will be installed following grading operations (Figure 24). The interceptor dikes are to be installed on all disturbed areas as necessary to avoid excessive erosion. Temporary interceptor dikes may be constructed of materials such as compacted soil, silt fence, or sand bags.

   Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetland or road crossing at the spacing indicated below (closer spacing should be used if necessary). Where the base of the slope is equal to or greater than 50 feet from a waterbody, wetland, or road crossing, install interceptor dikes at a spacing necessary to avoid excessive erosion.

| **Slope (%)** | **Spacing (feet)** |
|---|---|
| <5 | No Structure |
| 5 - 15 | 300 |

| | |
|---|---|
| > 15 - 30 | 200 |
| > 30 | 100 |

2. Direct the outfall of each temporary interceptor dike to a stable, well vegetated area or construct an energy-dissipating device (silt fence, erosion control fabric) at the end of the interceptor dike.
3. Position the outfall of each temporary interceptor dike to prevent sediment discharge into wetlands, waterbodies, or other sensitive environmental resource areas.
4. Install temporary interceptor dikes across the entire ROW at all waterbody and wetland crossings, as well as the base of slopes adjacent to roads, when directed by the EIs.
5. Drivable berms, which are smaller versions of interceptor dikes constructed of compacted soil or sand bags, may be used at the entrances and exits of travel lanes at road crossings, waterbodies, and wetlands. They are installed for the width of the travel lane at the start of the equipment crossing and made low enough to allow equipment and other vehicles to pass. Yet, they reduce and divert water runoff from sensitive environmental resources.
6. Inspect temporary interceptor dikes daily in areas of active construction to insure proper functioning and maintenance. In other areas, the interceptor dikes will be inspected and maintained on a weekly basis throughout construction, and within 24 hours following storm events.
7. Remove sediment from temporary interceptor dikes when one-half full.
8. Maintain until project is vegetated or otherwise stabilized. Remove temporary interceptor dikes and accumulated sediment and stabilize the exposed area when the project is stabilized.

### *3.5.5 Trenching*

The trench centerline will be staked after the construction ROW has been prepared. In general, a trench will be excavated to a depth that will permit burial of the pipe with a minimum of 3 feet of cover (Figure 11). Overland trenching may be accomplished using a conventional backhoe or a rotary wheel-ditching machine. In rocky areas where the use of the wheel-ditching machine is limited, a tractor-drawn ripper will be employed to break and loosen hard substratum material. In areas where rock cannot be ripped, drilling and blasting may be required. A backhoe may then be used to remove rock and soil from the ditch.

The following procedures will be standard practice during ditching:

1. Flag drainage tiles damaged during ditching activities for repair; and
2. Place spoil at least 10 feet up gradient from the edge of waterbodies. Spoil will be contained with erosion and sedimentation control devices to prevent spoil materials or heavily silt-laden water from transferring into waterbodies and wetlands or off of the ROW.

#### *3.5.5.1 Temporary Trench Plugs*

Temporary trench plugs are intended to segment a continuous open trench prior to backfill. Along steep slopes, they will serve to reduce erosion and sedimentation in the trench and minimize dewatering problems at the base of slopes where sensitive environments such as waterbodies and wetlands are frequently located. In addition, they will provide access across the trench for wildlife and livestock.

1. Temporary trench plugs may consist of unexcavated portions of the trench, compacted subsoil, sandbags, or some functional equivalent.
2. Position temporary trench plugs, as necessary, to reduce trenchline erosion and minimize the volume and velocity of trench water flow at the base of slopes.
3. Do not use topsoil for installing temporary soft trench plugs.
4. Coordinate with the landowner to identify optimal locations for the placement of temporary hard trench plugs designed to provide access for livestock.
5. Temporary trench plugs may be used in conjunction with interceptor dikes to prevent water in the trench from overflowing into sensitive environmental resource areas (Figure 25). Attempt to divert trench overflow to a well-vegetated off-ROW location or construct an energy-dissipating device.

### *3.5.6 Trench Dewatering*

Trench dewatering (Figure 20) may be periodically required along portions of the proposed pipeline prior to and/or subsequent to installation of the pipeline to remove collected water from the trench.

1. Trench dewatering will be conducted (on or off the construction ROW) in such a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody or wetland.
2. The intakes of the hoses used to withdraw the water from the trench will be elevated and screened to minimize pumping of deposited sediments.
3. Water may be discharged into areas where adequate vegetation is present adjacent to the construction ROW to function as a filter medium.
4. Where vegetation is absent or in the vicinity of waterbody/ wetland areas, water will be pumped into a filter bag (Figure 21) or through a structure composed of sediment barriers (Figure 23). When using filter bags, secure the discharge hose to the bag with a clamp.
5. Remove dewatering structures as soon as practicable after the completion of dewatering activities.

### *3.5.7 Pipe Installation*

#### *3.5.7.1 Stringing and Bending*

Following trench excavation, pipe sections will be delivered to the construction site by truck or tracked vehicle, and strung out along the trench. Individual pipe sections will be placed on temporary supports or wooden skids and staggered to allow room for work on the exposed ends. Certain pipe sections will be bent, as necessary, to conform to changes in slope and direction of the trench.

#### *3.5.7.2 Welding and Weld Inspection*

Once the bending operation is complete, the pipe sections will be welded together on supports using approved welding procedures that comply with Sabal Trail welding specifications. After welding, the welds will be inspected radiographically or ultrasonically to ensure their structural integrity.

#### *3.5.7.3 Lowering-in*

Lowering-in consists of placing the completed pipeline sections into the trench where a tie-in weld will be made. Lowering-in is usually accomplished with two or more sideboom tractors acting in unison and spaced so as not to buckle or otherwise damage the pipe. The pipeline will be lifted from the supports, swung out over the trench, and lowered directly into the trench. The equipment uses a "leap frogging" technique requiring sufficient area to safely move around other equipment within the construction ROW to gain an advanced position on the pipe.

### *3.5.8 Backfilling*

Backfilling consists of covering the pipe with the earth removed from the trench or with other fill material hauled to the site when the existing trench spoil is not adequate for backfill. Backfilling will follow lowering-in of the pipeline as close as is practical.

In areas where the trench bottom is irregularly shaped due to consolidated rock or where the excavated spoil materials are unacceptable for backfilling around the pipe, padding material may be required to prevent damage to the pipe. This padding material will generally consist of sand or screened materials from trench excavation.

1. Under no circumstances will topsoil be used as padding material.
2. Excess rock, including blast rock, may be used to backfill the trench to the top of the existing bedrock profile in accordance with Sabal Trail specifications. Rock that is not used to backfill the trench will be treated as described in Section 3.6.3.3.
3. Any excess material will be spread within the ROW in upland areas and land contours will be roughed-in to match adjacent topography.
4. The trench may be backfilled with a crown over the pipe in upland areas to compensate for compaction and settling. Openings will be left in the completed trench crown to restore pre-construction drainage patterns. Crowning will not be used in wetland areas.

#### *3.5.8.1 Permanent Trench Plugs*

Permanent trench plugs are intended to slow subsurface water flow and erosion along the trench and around the pipe in sloping terrain (Figure 22). Permanent trench plugs will be constructed with sand bags or an equivalent as identified in the permit requirements. On severe slopes greater than 30 percent, "Sakrete" may be used at the discretion of the Chief Inspector.

1. Topsoil will not be used to construct trench plugs.
2. Permanent trench plugs, which are used in conjunction with interceptor dikes, will be installed at the locations shown on the construction drawings or as determined by the EIs. If not shown, use the following spacing:

| **Slope (%)** | **Spacing (feet)** |
|---|---|
| <5 | No Structure |
| 5 - 15 | 300 |
| > 15 - 30 | 200 |
| > 30 | 100 |

3. Trench plugs will be installed at the base of slopes adjacent to waterbodies and wetlands, and where needed to avoid draining of a sensitive environmental resource area.

### *3.5.9 Hydrostatic Testing*

Once the pipeline is completed and before it is placed into service, it will be hydrostatically tested for structural integrity. Hydrostatic testing involves filling the pipeline with clean water and maintaining a test pressure in excess of normal operating pressures for a specified period of time (typically eight hours). The testing procedure involves filling the pipeline with test water, performing the pressure test, and discharging the test water.

1. The EIs will notify appropriate state agencies (as identified in the Hydrostatic Test Package) of the intent to use specific test water sources at least one week before testing activities (unless waived in writing).
2. Pumps used for hydrostatic testing will only be used within 100 feet of any waterbody or wetland upon approval of the EIs. These pumps will be operated and refueled in accordance with the SPCC Plan. Secondary containment and refueling of these pumps will occur as addressed in the SPCC Plan.
3. State-designated exceptional value waters, waterbodies that provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies will not be used, unless appropriate federal, state, and/or local permitting agencies grant written permission. Only the water sources identified in the Clearance Package/Permit Book will be used.
4. Screen the intake hose to minimize the potential for entrainment of fish and other aquatic life.
5. Maintain ambient, downstream flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.
6. Locate hydrostatic test manifolds outside wetlands and riparian areas to the greatest extent practical.
7. For an overland discharge of test water from a new pipeline, dewater into an energy dissipation device (Figure 23). If required by the appropriate permitting agency, the test water may be discharged through an appropriate filtration system including frac tanks and/ or carbon filters.
8. Dewater only at the locations shown on the construction drawings.
9. Locate all dewatering structures in a well-vegetated and stabilized area, if practical, and will maintain at least a 50-foot vegetated buffer from adjacent waterbody/wetland areas. If an adequate buffer is not available, sediment barriers or similar erosion control measure will be installed.
10. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour to aquatic resources, suspension of sediments, flooding or excessive stream flow.
11. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as

public water supplies, unless appropriate federal, state, and local permitting agencies grant written permission.

12. The EIs will sample and test the source water and discharge water in accordance with the permit requirements.

## 3.6 ROW Restoration and Final Cleanup

Restoration of the ROW will begin after pipeline construction activities have been completed. Restoration measures include the re-establishment of final grades and drainage patterns as well as the installation of permanent erosion and sedimentation control devices to minimize post-construction erosion. Residential areas will be restored in accordance with Section 4.3.3. Property will be restored as close to its original condition as practical unless otherwise specified by the landowner.

1. Final cleanup of the disturbed ROW will be initiated immediately following final grading, and the Contractor shall make every reasonable effort to complete final cleanup of an area (including final grading and installation of permanent erosion control structures) within 20 days after backfilling the trench in that area (within 10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (temporary slope breakers, sediment barriers, and mulch) until conditions allow completion of cleanup.

2. The disturbed ROW will be seeded within six working days of final grading, weather and soil conditions permitting.

3. If final cleanup and seeding cannot be completed and is delayed until the next recommended growing season, the winter stabilization measures in Section 3.7.4 will be followed.

4. Grade the ROW to pre-construction contours.

5. Spread segregated topsoil back across the graded ROW to its original profile.

6. Remove excess rock from at least the top 12 inches of soil to the extent practical in all rotated and cultivated cropland, hayfields, managed pastures, residential areas, and other areas at the landowner's request. The size, density, and distribution of rock on the construction ROW should be similar to adjacent areas not disturbed by construction. The landowner or land management agency may approve other provisions in writing.

7. A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed, regularly inspected and maintained. When access is no longer required, the travel lane must be removed and the ROW restored.

8. Remove all construction debris from all construction work areas unless the landowner or land managing agency approves leaving materials onsite for beneficial reuse, stabilization, or habitat restoration.

9. Remove temporary sediment barriers when replaced by permanent erosion control measures (Figure 24) or when revegetation is successful.

### *3.6.1 Permanent Erosion Control*

#### *3.6.1.1 Permanent Interceptor Dikes*

Permanent interceptor dikes are intended to reduce runoff velocity, divert water off the construction ROW, and prevent sediment deposition into sensitive resources (Figure 24). Permanent interceptor dikes will be constructed of compacted soil. Stone or some functional equivalent may be used when directed by the EIs.

1. Install permanent interceptor dikes in all areas, except cultivated areas and lawns, at the locations shown on the construction drawings or as directed by the EIs. If not shown, use the spacing outlined for temporary interceptor dike installation in Section 3.6.4.
2. Install permanent interceptor dikes across the entire ROW at all waterbody and wetland crossings, and at the base of slopes adjacent to roads. When the ROW parallels an existing utility ROW, permanent interceptor dikes may be installed to match existing interceptor dikes on the adjacent undisturbed pipeline ROW.
3. Construct interceptor dikes with a two to eight percent outslope to divert surface flow to a stable vegetative area without causing water to pool or erode behind the interceptor dike. In the absence of a stable vegetative area, install an energy-dissipating device at the end of the interceptor dike.
4. Interceptor dikes may extend slightly (about four feet) beyond the edge of the construction ROW to effectively drain water off the disturbed area. Where interceptor dikes extend beyond the edge of the construction ROW, they are subject to compliance with all applicable survey requirements.
5. Install chevron-style interceptor dikes on slopes when directed by the EIs.
6. Install a rock-lined drainage swale along the ROW with restricted drainage features when directed by the Lead EI. The drainage swale is generally eight feet wide and a maximum of 18-24 inches deep (Figure 26).
7. On slopes greater than 30 percent, install interceptor dikes with erosion control fabric on the swale side.
8. Provide a description of the best management practices (BMP's) to be installed during site construction and to be operated during construction and maintained following final stabilization at sites where the post-construction volumes or velocities of stormwater runoff are significantly different from conditions existing prior to the construction activity.

#### *3.6.1.2 Erosion Control Fabric*

1. Install erosion control fabric at interceptor dike outlets and drainage swales as necessary or as directed by the EIs (Figure 27).
2. Install erosion control fabric or matting on slopes greater than 30 percent adjacent to roads or waterbodies (Figure 28). Anchor the erosion control fabric or matting with staples or other appropriate devices in accordance with the manufacturers' recommendations.
3. The EIs will direct the installation of high-velocity erosion control fabric on the swale side of permanent interceptor dikes.

### *3.6.2 Revegetation and Seeding*

Successful revegetation of soils disturbed by Project-related activities is essential. Seeding will be conducted using the following requirements:

1. Fertilize and add soil pH modifiers in accordance with the recommendations in Appendix B. Incorporate recommended soil pH modifier and fertilizer into the top two inches of soil as soon as practical after application;
2. Seed all disturbed areas within six working days of final grading, weather and soil conditions permitting;
3. Prepare seedbed in disturbed areas to a depth of three to four inches to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed;
4. Seed disturbed areas in accordance with the seed mixes, rates, and dates in Appendix B, except in upland areas where landowners or a land management agency may request alternative seed mixes. Seeding is not required in cultivated croplands unless requested by the landowner.
5. Perform seeding of permanent vegetation within the recommended seeding dates as outlined in Appendix B. If seeding cannot be done within those dates, use appropriate temporary erosion control measures and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Dormant seeding or temporary seeding of annual species may also be used, if necessary, to establish cover, as approved by the EI. Mulch in accordance with Section 3.7.3. Lawns may be seeded on a schedule established with the landowner;
6. Base seeding rates on Pure Live Seed ("PLS"). Use seed within 12 months of seed testing;
7. Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydroseeding); and
8. Uniformly apply and cover seed in accordance with Appendix B. In the absence of any recommendations from the local Natural Resource Conservation Service offices, landowner, or land managing agency to the contrary. A seed drill equipped with a cultipacker is preferred for application, but broadcast or hydroseeding can be used at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or roller after seeding. In rocky soils, or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by the EIs.

### *3.6.3 Mulch*

Mulch is intended to stabilize the soil surface and will consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric, or some functional equivalent as approved by the EI and Chief Inspector.

1. Mulch all disturbed upland areas (except cultivated cropland) **before** seeding if:

a. Final cleanup, including final grading and installation of permanent erosion control measures, is not completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas); or

b. Construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions.

NOTE: When mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of three tons/acre of straw or equivalent.

2. Apply mulch on all slopes (except in cultivated cropland) concurrent with or immediately after seeding, where necessary, to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the ROW at a rate of two tons/acre of straw or equivalent.

3. Mulch with woodchips only under the following conditions with prior approval from the Chief Inspector or the EIs:

   a. Do not use more than one ton/acre; and

   b. Add the equivalent of 11 pounds ("lbs")/acre available nitrogen (at least 50 % of which is slow release).

4. Ensure that mulch is anchored to minimize loss by wind and water. Anchoring may be achieved by wet soil conditions (when approved by the Lead EI), mechanical means, or with liquid mulch binders.

5 When anchoring with liquid mulch binders, use rates recommended by the manufacturer. **Do not use liquid mulch binders within 100 feet of wetlands and waterbodies,** except where the product is certified environmentally non-toxic by the appropriate state or federal agency or independent standards-setting organization**.**

6. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat, unless the product is specifically designed to minimize harm to wildlife. Anchor the erosion control fabric with staples or other appropriate devices.

### *3.6.4 Winter Stabilization*

In the event that the final phases of construction or restoration occur too late in the year for cleanup activities to adequately proceed, the following procedures will be implemented along the disturbed ROW at those locations until final restoration measures can be completed. Sabal Trail will file for review and written approval from the FERC, a Winter Construction Plan (Section 3.7.5) if construction continues into the winter season where conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring.

1. Install permanent interceptor dikes at specified intervals on all slopes, or as directed by the EIs;

2. Install temporary sediment barriers adjacent to stream and wetland crossings, as well as other critical areas;

3. Seed and mulch the ROW and seed segregated topsoil piles in accordance with Appendix B; and

Remove flumes from waterbody crossings to reestablish natural stream flow.

### *3.6.5 Winter Construction Plans*

If construction is planned to occur during winter weather conditions, develop and file a project-specific Winter Construction Plan with the Initial Implementation Plan. The plan will address:

1. Winter construction procedures (e.g., snow handling and removal, access road construction and maintenance, soil handling under saturated or frozen conditions, topsoil stripping);
2. Stabilization and monitoring procedures if ground conditions will delay restoration until the following spring (e.g., mulching and erosion controls, inspection and reporting, stormwater control during spring thaw conditions); and
3. Final restoration procedures (e.g., subsidence and compaction repair, topsoil replacement, seeding).

## 3.7 Unauthorized Vehicle Access to ROW

Saba Trail will offer to install and maintain measures to control unauthorized vehicle access to the ROW based on requests by the land manager or landowner of forested lands. These measures may include:

- Signs;
- Fences with locking gates;
- Slash and timber barriers, pipe barriers, or a line of boulders across the ROW; or
- Conifers or other appropriate shrubs with a mature height of four feet or less across the ROW.

# 4. SPECIAL CONSTRUCTION METHODS

Sabal Trail will utilize the following specialized construction procedures for agricultural areas, road crossings, and residential areas along the Project. The Project construction drawings, Line Lists, and Construction Contract will indicate the locations where specialized construction methods will be used.

## 4.1 Agricultural Areas

### *4.1.1 Drain Tiles*

1. Attempt to locate existing drain tiles and irrigation systems.
2. Develop procedures for constructing through drain tiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.
3. Engage qualified drain tile specialists, as needed, to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialist from the Project area, if available.
4. Probe all drainage tile systems within the area of disturbance to check for damage.
5. Repair damaged drain tiles to their original condition (Figure 29). Filter-covered drain tiles may not be used unless the local soil conservation authorities and the landowner agrees in writing prior to construction.
6. Ensure that the depth of cover over the new pipeline is sufficient to avoid interference with drain tile systems (existing or proposed). For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).

### *4.1.2 Irrigation*

1. Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.
2. Repair any damage to the systems as soon as practical.

### *4.1.3 Soil Compaction Mitigation*

1. Test topsoil and subsoil for compaction at regular intervals in agricultural areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to identify approximate preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.
2. Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.

## 4.2 Road Crossings

Unpaved private and public roads supporting minimal traffic volumes are usually crossed by boring or by means of an open cut, if this method is approved by the owner or appropriate road management agency. An open cut crossing may involve closing the road to all traffic and constructing an adequate detour around the crossing area, or excavating one-half of the road at a time allowing through traffic

to be maintained (Figures 30 and 31). The trench for an open cut crossing is excavated with a backhoe or similar equipment, all backfill is compacted, and the road resurfaced. All state, national, and interstate highways as well as all railroads must be crossed by boring (Figures 32, 33, and 34), unless the crossing permit allows an open cut crossing. Access roads shall be used in accordance with Section 3.3.

## 4.3 Residential Areas

### *4.3.1 Construction Procedures*

Specialized construction procedures will be utilized in areas of heavy residential or commercial/ industrial congestion where residences or business establishments are located within 50 feet of construction work areas.

1. Install safety fence at the edge of the construction ROW for a distance of 100 feet on either side of the residence or business establishment.
2. Attempt to maintain a minimum distance of 25 feet between any residence/business establishment and the edge of the construction work area for a distance of 100 feet on either side of the residence/business establishment.
3. Avoid removal of mature trees and landscaping within the construction work area unless necessary for safe operation of construction equipment, or as specified in landowner agreements.
4. Restore all lawn areas and landscaping immediately following cleanup operations, or as specified in landowner agreements.
5. If seasonal or other weather conditions prevent compliance with these time frames, maintain and monitor temporary erosion controls (sediment barriers and mulch) until conditions allow completion of restoration.

### *4.3.2 Construction Techniques*

In addition to the previously identified specialized procedures, smaller "spreads" of labor and equipment, operating independent of the mainline work force, will utilize either the stove pipe or drag section pipeline construction techniques in those areas of congestion where a minimum distance of 25 feet cannot be maintained between the residence (or business establishment) and the edge of the construction work area. In no case will the temporary work area be located within 10 feet of a residence unless the landowner agrees in writing, or the area is within the existing maintained ROW. The following techniques will be utilized for a distance of 100 feet on either side of the residence or business establishment at the locations identified in the Construction Contract and/or Line List.

1. The stove pipe construction technique is a less efficient alternative to the mainline method of construction, typically used when the pipeline is to be installed in very close proximity to an existing structure or when an open trench would adversely impact a commercial/industrial establishment. The technique involves installing one joint of pipe at a time whereby the welding, weld inspection, and coating activities are all performed in the open trench. At the end of each day after the pipe is lowered-in, the trench is backfilled and/or covered with steel plates or timber mats. The length of excavation performed each day will not exceed the amount of pipe installed.

2. The drag section construction technique, while less efficient than the mainline method, is normally preferred over the stove pipe alternative. This technique involves the trenching, installation, and backfill of a prefabricated length of pipe containing several segments all in one day. At the end of each day after the pipe is lowered-in, the trench is backfilled and/or covered with steel plates or timber mats. Use of the drag section technique will typically require adequate staging areas outside of the residential and/or commercial/industrial congestion for assembly of the prefabricated sections.

### *4.3.3 Cleanup and Restoration*

1. Reseed all disturbed lawns with a seed mixture acceptable to landowner or comparable to the adjoining lawn.

2. Landowners will be compensated for damages to ornamental shrubs and other landscape plantings based on the appraised value as set forth in the Guide for Plant Appraisal, authored by the Council of Tree and Landscape Appraisers, 8th Edition and published in 1992 by the International Society of Arboriculture.

3. Landowners will be compensated for damages in a fair and reasonable manner, and as specified in the damage provision within the controlling easement on each property.

## 4.4 Foreign Pipelines and Buried Cable Crossings.

### *4.4.1 Foreign Pipelines*

The pipeline can be constructed to cross a foreign pipeline (Figure 35) according to the written agreement with the owner. Surficial crossing of a foreign pipeline will be accomplished by the use of a temporary air bridge (Figure 36) of the appropriate material as the requested by the owner.

### *4.4.2 Buried Cables*

All appropriate clearances and permissions will be obtained from the authorizing agencies before construction near buried cables (Figure 37) commences.

# 5. WATERBODY CROSSINGS

The following section describes the construction procedures and mitigation measures that will be used for pipeline installations at waterbodies. The intent of these procedures is to minimize the extent and duration of project related disturbances within waterbodies.

## 5.1 Waterbody Definitions

The term "**waterbody"** as used in this Plan includes any natural or artificial stream or river with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes. In this Plan, waterbodies are characterized into three main categories depending on the width of the waterbody. The categories are as follows:

- A **"minor waterbody"** includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of construction.
- An "**intermediate waterbody"** includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of construction.
- A "**major waterbody"** includes all waterbodies greater than 100 feet wide at the water's edge at the time of construction.
- A "**state designated waterbody**" includes all perennial waterbodies that support coldwater fisheries and warmwater fisheries considered significant by the state.

The waterbody crossing procedures described in this Plan comply with the Section 404 Nationwide Permit Program terms and conditions (33 Code of Federal Regulations ["CFR"] Part 330).

## 5.2 General Waterbody Procedures

Pipeline construction across waterbody channels may result in short term water quality impacts. Decisions regarding waterbody crossing techniques will be based on agency consultations. Mobilization of construction equipment, trench excavation, and backfilling will be performed in a manner that will minimize the potential for erosion and sedimentation within the waterbody channel. Erosion control measures will be implemented to confine water quality impacts within the immediate construction area and to minimize impacts to downstream areas. The length of the crossing, the sensitivity of the area, existing conditions at the time of the crossing, and permit requirements will determine the most appropriate measures to be used.

### *5.2.1 Time Window for Construction*

Unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, will occur during the following time windows:

a. Coldwater Fisheries – June 1 through September 30; and

b. Coolwater and Warmwater Fisheries – June 1 through November 30.

The Project contains no Coldwater Fisheries.

### *5.2.2 Temporary Equipment Bridges*

A temporary equipment bridge is a structure that may be installed across a waterbody to provide a means for construction equipment to cross the stream while minimizing impacts to the channel bottom or banks.

1. Until the equipment bridge is installed, only clearing equipment and equipment necessary for installation of equipment bridges may cross the waterbody and the number of crossings will be limited to one crossing per piece of equipment, unless otherwise authorized by the appropriate permitting agency.
2. Construct equipment bridges to maintain unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:
    a. Equipment pads and culverts (Figure 38);
    b. Clean crushed stone and culverts (Figure 39);
    c. Flexi-float or portable bridges (Figure 40); or
    d. Equipment pads or railroad car bridges without culverts
3. Construct crossings as close to perpendicular to the axis of the waterbody channel.
4. Design and maintain each equipment bridge to withstand the highest flows that would occur. Align culverts/flumes to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.
5. Do not use soil to construct or stabilize equipment bridges.
6. Design and maintain equipment bridges to prevent soil from entering the waterbody.
7. Remove temporary equipment bridges as soon as practicable after permanent seeding.
8. If there will be more than one month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the ROW is available, remove equipment bridges as soon as practical after final cleanup.
9. Obtain any necessary approval from the U.S. Army Corps of Engineers ("USACE"), or the appropriate state agency for permanent bridges.

### *5.2.3 Clearing and Grading*

1. Confine construction activities and ground disturbance to within the ROW boundaries shown on the construction drawings.
2. Restrict extra work areas (such as staging areas and additional spoil storage areas) to those shown only on the construction drawings. All extra work areas must be located at least 50 feet away from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. If site-specific conditions do not permit a 50-foot setback, Sabal Trail can receive written approval from the FERC to locate these extra work areas closer than 50 feet from the water's edge.
3. If the pipeline parallels a waterbody, maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the ROW except at the crossing location, except where maintaining this offset will result in greater environmental impact.
4. Clear the ROW adjacent to all waterbodies *up to the high water bank* (where discernible).

5. Immediately remove all cut trees and branches that inadvertently fall into a waterbody and stockpile in an upland area on ROW for disposal.
6. Grade the ROW adjacent to waterbodies *up to within 10 feet of the high water bank*, leaving an ungrubbed vegetative strip intact.
7. Clearing and grading operations may proceed through the 10-foot vegetative strip **only on the working side of the ROW** in order to install the equipment bridge and travel lane. Use temporary sediment barriers to prevent the flow of bank spoil into the waterbody.
8. Maintain adequate flow rates to protect aquatic life and prevent the interruption of existing downstream uses.

### *5.2.4 Installing Temporary Erosion and Sediment Control*

1. Install sediment barriers immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench), until replacement by permanent erosion controls or restoration of adjacent upland areas is complete.
2. Install sediment barriers across the entire construction ROW at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Temporary or removable sediment barriers such as interceptor dikes or drivable berms as described in Section 3.6.4 may be used in lieu of sediment barriers in front of equipment bridges or timber mats across the travel lane. These temporary sediment barriers can be removed during the construction day, but must be reinstalled after construction has stopped for the day and/or when heavy precipitation is imminent.
3. Install sediment barriers as necessary along the edge of the construction ROW to contain spoil within the ROW and prevent sediment flow into the waterbody where waterbodies are adjacent or parallel to the construction ROW and the ROW slopes toward the waterbody.
4. Use temporary trench plugs at all waterbody crossings to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody. Trench plugs shall be of sufficient size to withstand upslope water pressure.

### *5.2.5 Various Types of Crossings*

Construction at waterbodies (Figures 41 through 45) will be conducted using two principal crossing methods, a "dry" crossing and a "wet" crossing. The "dry" crossing procedure is further divided into a flumed crossing and a dam and pump crossing. These methods are designed to maintain downstream flow at all times and to isolate the construction zone from the stream flow by channeling the water flow through a flume pipe or by damming the flow and pumping the water around the construction area. The overall objective is to minimize siltation of the waterbody and to facilitate trench excavation of saturated spoil. Unless approved otherwise by the appropriate federal or state agency, pipeline construction and installation must occur using one of the two "dry" crossing methods for waterbodies state-designated as either coldwater or significant coolwater or warmwater fisheries, or federally-designated as critical habitat. The flumed and dam and pump crossing methods are applicable to waterbodies up to 30 feet wide at the water's edge at the time of construction. The two "dry" crossings are further described below in Sections 5.2.5.2 and 5.2.5.3.

The "wet" crossing procedure involves open cutting the waterbody without isolating the construction zone from the stream flow. The objective of this method is to complete the waterbody crossing as

quickly as practical in order to minimize the duration of impacts to aquatic resources. All streams, their classifications, timing windows, and crossing procedures will be identified in the Clearance Package/Permit Book and on the construction drawings. Table 5-1 outlines the general procedures to be followed at all waterbody crossings.

**TABLE 5-1: GENERAL WATERBODY CROSSING PROCEDURES**

| | WATERBODY TYPE | | | | | |
|---|---|---|---|---|---|---|
| | MINOR | | INTERMEDIATE | | MAJOR | |
| **WATERBODY CROSSING ACTIVITIES** | Non-State[1] Designated | State[2] Designated | Non-State[3] Designated | State[2] Designated | Non-State[3] Designated | State[2] Designated |
| Flumed Crossing (Dry) *Section 5.2.5.2, Figure 43* | | X | | X | | |
| Dam and Pump Crossing (Dry) *Section 5.2.5.3, Figure 44* | | X | | X | | |
| Wet Crossing *Section 5.2.5.4, Figure 45* | X | | X | X | X | X |
| Construction timing window during the year *Section 5.2.1* | | X | | X | | X |
| Time to complete construction of crossing (not including blasting) [4] | 24 Hours | | 48 Hours | | | |
| Equipment bridge required [5] | | X | X | X | X | X |

[1] Includes agricultural intermittent drainage ditches, intermittent streams, and perennial warmwater streams not considered significant by the state.

[2] Includes all perennial waterbodies that support coldwater fisheries and warmwater fisheries considered significant by the state.

[3] Includes perennial warmwater streams not considered significant by the state.

[4] If a flume is installed within the waterbody during mainline activities, it can be removed just prior to lowering in the pipeline. The 24-hour timeframe starts as soon as the flume is removed.

[5] An equipment bridge may not be required for a waterbody being crossed by a horizontal directional drill.

#### *5.2.5.1 General Crossing Procedures*

1. Dewater trench in accordance with the procedures described in Section 3.6.6.
2. For minor waterbodies:
   a. Place all spoil from the waterbody within the construction ROW at least 10 feet from the water's edge or in the extra work areas shown on the construction drawings. Use sediment barriers to prevent flow of spoil or heavily silt-laden water into the waterbody.
3. For intermediate waterbodies:
   a. Less than 30 feet in width, place all spoil from the waterbody within the construction ROW at least 10 feet from the water's edge or in the extra work areas shown on the construction drawings. Use sediment barriers to prevent flow of spoil or heavily silt-laden water into the waterbody.
   b. Greater than 30 feet in width, spoil may be temporarily sidecast into the waterbody provided that site specific approval is received from the appropriate permitting agency.
4. For major waterbodies:
   a. Place all upland bank spoil from the waterbody within the construction ROW at least 10 feet from the water's edge or in the extra work areas shown on the construction drawings. Use sediment barriers to prevent flow of spoil or heavily silt laden water into the waterbody.
5. Restore and stabilize the banks and channel in accordance with Section 5.2.6.
6. Crossing of waterbodies when they are dry and not flowing (Figure 42) may proceed using standard upland construction techniques, provided that the EI verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, Sabal Trail will comply with all applicable crossing procedure requirements for "waterbodies" as defined in Section 5.1 of this Plan.

#### *5.2.5.2 Flumed Crossing*

The flumed crossing method utilizes a flume pipe(s) to transport stream flow across the disturbed area and allows trenching to be done in drier conditions (Figure 43). The flume pipe(s) installed across the trench will be sized to accommodate anticipated stream flows. This method is utilized for perennial waterbodies (minor and intermediate) up to 30 feet wide that are state designated fisheries including coldwater fisheries and warmwater fisheries considered significant by the state. Flumes are generally not recommended for use on a watercourse with a broad unconfined channel, unstable banks, a permeable substrate, excessive stream flow, or where the installation and construction of the flume crossing will adversely affect the bed or banks of the stream.

1. Cross all minor waterbodies that are state-designated fisheries, as identified in the Clearance Package/ Permit Book, using a dry crossing technique (Figures 43 and 44).
2. All construction equipment must cross state-designated fisheries on an equipment bridge as specified in Section 5.2.2.
3. The flumed crossing shall be installed as follows:

a. Install flume pipe(s) after blasting and other rock breaking measures (if required), but before trenching;

b. Properly align flume pipe(s) to prevent bank erosion and streambed scour;

c. Use sand bags or equivalent dam diversion structure to provide a seal at either end of the flume to channel water flow (some modifications to the stream bottom may be required to achieve an effective seal);

d. **Do not remove flume pipe** during trenching, pipe laying (thread pipe underneath the flume pipe(s)), or backfilling activities, or initial streambed restoration efforts unless authorized by agency permits; and

e. Remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

#### *5.2.5.3 Dam and Pump Crossing*

The dam and pump method is presented as an alternative dry crossing procedure to the flumed crossing. The dam and pump crossing is accomplished by utilizing pumps to transport stream flow across the disturbed area (Figure 44). This method involves placing sandbags across the existing stream channel upstream from the proposed crossing to stop water flow and downstream from the crossing to isolate the work area. Pumps are used to pump the water across the disturbed area and back into the stream further downstream. This method is intended for use at perennial waterbodies (minor and intermediate) up to 30 feet wide and state designated fisheries including coldwater fisheries and warmwater fisheries considered significant by the state. The dam and pump procedure allows for more space and flexibility during trenching and pipe installation, which shortens the duration of time spent at the waterbody.

1. The dam and pump method may be used for crossings of waterbodies where pumps can adequately transfer stream flow volumes around the work area, and where there are no concerns about sensitive species passage.

2. Implementation of the dam and pump crossing method will meet the following performance criteria:

   a. Use sufficient pumps, including onsite backup pumps, to maintain downstream flows;

   b. Construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);

   c. Screen pump intakes to minimize entrainment of fish;

   d. Prevent streambed scour at pump discharge; and

   e. Continuously monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

3. The dam and pump crossing shall be installed as follows:

a. Install and properly seal sandbags at the upstream and downstream location of the crossing;

b. Create an in-stream sump using sandbags if a natural sump is unavailable for the intake hose;

c. Initiate pumping of the stream around the work area prior to excavating the trench;

d. Screen all intake hoses to prevent the entrainment of fish and other aquatic life;

e. Direct all discharges from the pumps through energy dissipaters to minimize scour and siltation;

f. Monitor pumps at all times until construction of the crossing is completed; and

g. Following construction, remove the equipment crossing and sandbag dams.

#### *5.2.5.4 Wet Crossing*

This construction technique is typically used to cross waterbodies that are non-state-designated as well as intermediate and major waterbodies with substantial flows that cannot be effectively culverted or pumped around the construction zone using the dry crossing techniques (Figure 45). Non-state designated waterbodies include perennial warmwater streams not considered significant by the state, intermittent drainage ditches, and intermittent streams.

The wet-ditch crossing shall be installed as follows:

1. For minor waterbodies:
   a. Equipment bridges are not required at non state-designated fisheries or protected status (e.g. agricultural or intermittent drainage ditches) minor waterbodies. However, if an equipment bridge is used, it must be constructed in accordance with Section 5.2.2;
   b. Limit use of equipment operating in the waterbody to that needed to construct the crossing;
   c. Complete trenching and backfilling in the waterbody (not including blasting and other rock breaking measures) within 24 continuous hours; and
   d. If a flume is installed within the waterbody during mainline activities, it can be removed just prior to lowering in the pipeline. The 24-hour timeframe starts as soon as the flume is removed.
2. For intermediate waterbodies:
   a. Limit use of equipment operating in the waterbody to that needed to construct the crossing. All other construction equipment must cross on an equipment bridge as specified in Section 5.2.2; and
   b. Attempt to complete trenching and backfill work within the waterbody (not including blasting and other rock breaking measures) within 48 continuous hours, unless site-specific conditions make completion within 48 hours infeasible.
3. For major waterbodies:
   a. Sabal Trail will develop site-specific crossing plans to be submitted for approval by the FERC and the appropriate permitting agency; and

b. Construct the crossing in accordance with the measures contained in this Plan to the maximum extent practical.

#### *5.2.5.5 Horizontal Directional Drill*

For each waterbody or wetland that would be crossed using the horizontal directional drill ("HDD") method (Figure 46), prepare a plan that includes:

1. Site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;
2. Justification that disturbed areas are limited to the minimum needed to construct the crossing;
3. Identification of any aboveground disturbance or clearing between the HDD entry and exit workspaces during construction;
4. A description of how an inadvertent release of drilling mud would be contained and cleaned up; and
5. A contingency plan for crossing the waterbody or wetland in the event the HDD is unsuccessful and how the abandoned drill hole would be sealed, if necessary.

### *5.2.6 Restoration*

1. Return all waterbody banks to preconstruction contours or to stable angle of repose as approved by the EIs.
2. Install erosion control fabric or a functional equivalent on waterbody banks at the time of final bank recontouring. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices.
3. Use clean gravel or native cobbles for the upper 12 inches of trench backfill in all waterbodies identified in the Clearance Package/Permit Book as coldwater fisheries.
4. For wet crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing the crossing. For dry crossings, complete bank stabilization before returning flow to the waterbody channel.
5. Limit the placement of riprap to the slopes along the disturbed waterbody crossing.
6. Install erosion control fabric along waterbodies with low flow conditions (Figure 28).
7. Revegetate disturbed riparian areas with conservation grasses and legumes in accordance with the recommended Upland Seed Mix in Appendix B. In the event that final cleanup is deferred more than 20 days after the trench is backfilled, all slopes within 100 feet of waterbodies shall be mulched with three tons/acre of straw.
8. Remove all temporary sediment barriers when replaced by permanent erosion controls or when restoration of adjacent upland areas is successful as specified in Section 8.1.
9. Install a permanent interceptor dike and a trench plug at the base of slopes near each waterbody crossed. Locate the trench plug immediately upslope of the interceptor dike. Permanent interceptor dikes may not be installed in agricultural areas.

# 6. WETLAND CROSSINGS

## 6.1 Definition

The term "**Wetland**" as used in this Plan includes any area that satisfies the requirements of the current Federal and FDEP methodology for identifying and delineating wetlands. Wetland areas have been delineated prior to construction and are identified on the construction drawings. The wetland crossing procedures described in this Plan (Figure 47) comply with the Section 404 Nationwide Permit Program terms and conditions (33 CFR Part 330). The requirements outlined below do not apply to wetlands in cultivated or rotated cropland. Standard upland protective measures including workspace and topsoiling requirements, will apply to these agricultural wetlands.

## 6.2 General Procedures

### *6.2.1 Clearing and Grading*

1. Limit construction activity and ground disturbance in wetland areas to a construction ROW width of 75 feet or as shown on the construction drawings. With written approval from the FERC and FDEP for site-specific conditions, construction ROW width within the boundaries of federally and FDEP delineated wetlands may be expanded beyond 75 feet.
2. Wetland boundaries and buffers will be clearly marked in the field with signs and /or highly visible flagging until construction-related ground disturbing activities are complete.
3. Restrict extra work areas (such as staging areas and additional spoil storage areas) to those shown only on the construction drawings. All extra work areas must be located at least 50 feet away from wetland boundaries, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. If site-specific conditions do not permit a 50-foot setback, Sabal Trail can receive written approval from the FERC and FDEP to locate these extra work areas closer than 50 feet from the wetland.
4. Aboveground facilities will not be located in any wetland, except as permitted or where the location of such facilities outside of wetlands would prohibit compliance with USDOT regulations.
5. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment or operate normal equipment on timber riprap, prefabricated equipment mats or terra mats on the working side of the ROW during clearing operations (Figure 48). Do not use more than two layers of timber riprap to stabilize the ROW.
6. Cut vegetation just above ground level and grind stumps to ground level, leaving existing root systems in place. Immediately remove all cut trees and branches from the wetland and stockpile in an upland area on ROW for disposal. Woody debris can be burned in wetlands, if approved by the USACE and FDEP, ensuring that all remaining woody debris is removed for disposal.
7. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the ROW in wetlands unless the Chief Inspector and EIs determine that safety-related construction constraints require removal of tree stumps from under the working side of the ROW.

8. Do not cut trees outside of the construction ROW to obtain timber for riprap or equipment mats.
9. Cleared materials (slash, logs, brush, wood chips) will not be permanently placed within wetland areas.

### *6.2.2 Temporary Erosion and Sediment Control*

1. Install sediment barriers immediately after initial ground disturbance at the following locations:
   a. Within the ROW at the edge of the boundary between wetland and upland;
   b. Across the entire ROW immediately upslope of the wetland boundary to contain spoil within the ROW and prevent sediment flow into the wetland;
   c. Along the edge of the ROW, where the ROW slopes toward the wetland, to protect adjacent, off ROW wetland; and
   d. Along the edge of the ROW as necessary to contain spoil and sediment within the ROW through wetlands.
2. Maintain all sediment barriers throughout construction and reinstall as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete in accordance with Section 8.1.

### *6.2.3 Crossing Procedure*

1. Minimize the length of time that topsoil is segregated and the trench is open.
2. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to stabilize the ROW.
3. Perform topsoil segregation (Figure 49 and 50) in accordance with Section 3.6.3.1 and trench dewatering in accordance with Section 3.6.6.
4. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
5. Use “push pull” or “float” (Figure 51) techniques to place the pipe in the trench where water and other site conditions allow.
6. Install trench plugs at wetland boundaries and/or seal the trench bottom as necessary to maintain the original wetland hydrology at locations where the pipeline trench may drain a wetland.
7. Restore pre-construction wetland contours to maintain the original wetland hydrology.
8. Install a permanent interceptor dike and a trench plug at the base of slopes near the boundary between the wetland and adjacent upland areas. In addition, install sediment barriers as outlined in Section 3.6.2. Permanent interceptor dikes shall not be installed in agricultural areas.
9. Restore segregated topsoil to its original position after backfilling is complete. When required, additional fill material imported from off the ROW must be approved by the EIs. The original wetland contours and flow regimes will be restored to the extent feasible.

### *6.2.4 Cleanup and Restoration*

1. Revegetate the ROW with annual ryegrass at 40 lbs/acre PLS or with the recommended Wetland Seed Mix in Appendix B, unless standing water is present.
2. **Do not use mulch, lime or fertilizer in wetland areas unless required in writing by the appropriate federal or state agency.**
3. Mulch the disturbed ROW only when required by the appropriate land management or state agency, as identified in the Clearance Package/Permit Book.
4. In the event that final cleanup is deferred more than 20 days after the trench is backfilled, all slopes adjacent to wetlands will be mulched with three tons/acre of straw for a minimum of 100 feet on each side of the crossing.
5. Remove all timber riprap and prefabricated equipment mats upon completion of construction.
6. Develop specific procedures in coordination with the appropriate federal or state agencies, where necessary, to prevent the invasion or spread of invasive species and noxious weeds.
7. Ensure that all disturbed areas permanently revegetate in accordance with Section 8.1.
8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are successful as specified in Section 8.1.

# 7. SPILL PREVENTION CONTROL

The Contractor will adhere to Sabal Trail's SPCC Plan at all times.

1. Do not store hazardous materials, chemicals, fuels, or lubricating oils within 100 feet of any wetland, waterbody or within any designated municipal watershed area where feasible. If the 100-foot setback cannot be met, this activity can be performed within the 100-foot setback, with EI approval, if done in accordance with the SPCC Plan.
2. Refuel all construction equipment at least 100 feet from any wetland or waterbody, where feasible. If the 100-foot setback cannot be met, this activity can be performed within the 100-foot setback, with EI approval, if done in accordance with the SPCC Plan.
3. Do not perform fondu or concrete coating activities within 100 feet of any wetland or waterbody, unless the location is an existing industrial site designated for such use. If the 100-foot setback cannot be met, these activities can be performed within the 100-foot setback, with EI approval, if done in accordance with the SPCC Plan. These activities can occur closer only if the EI determines that there is no reasonable alternative, and Sabal Trial and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;
4. Pumps operating within 100 feet of a waterbody or wetland boundary utilize appropriate secondary containment systems to prevent spills; and
5. Bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils have appropriate secondary containment systems to prevent spills.

# 8. POST CONSTRUCTION ACTIVITIES

## 8.1 Post-Construction Monitoring

Sabal Trail will meet the monitoring requirements set forth in this section. Sabal Trail personnel will perform the following:

1. Establish and implement a program to monitor the success of restoration upon completion of construction and restoration activities;
2. Conduct follow-up inspections of all disturbed areas, as necessary to determine the success of revegetation in accordance with applicable state requirements and address landowner concerns. Alabama, Georgia and Florida monitoring requirements are available in Appendices G, H and I, respectively. At a minimum, conduct inspections after the first and second growing seasons;
3. Revegetation in non-agricultural areas will be considered successful if the vegetative cover is sufficient to prevent the erosion of soils on the disturbed ROW and density and cover are similar to that in adjacent undisturbed area. Sufficient coverage in upland areas is defined per State as:

   ***Alabama***

   See the Alabama Manual for Erosion and Sediment Control (Appendix G)

   ***Georgia***

   When 70 percent of the surface area is covered in a uniform, vegetative cover (permanent or temporary) or anchored mulch of the appropriate thickness with 90% coverage. “Final stabilization” means that all soil disturbing activities at the site have been completed, and that for unpaved areas and areas not covered by permanent structures and areas located outside the waste disposal limits of a landfill cell that has been certified by EPD for waste disposal, 100 percent of the soil surface is uniformly covered in permanent vegetation with a density of 70 percent or greater, or landscaped according to the Plan (uniformly covered with landscaping materials in planned landscaped areas), or equivalent permanent stabilization measures (Appendix H).

   ***Florida***

   See Chapter 7 of the Florida Manual for Erosion and Sediment Control (Appendix I)
4. Restoration will be considered successful if the ROW surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless otherwise approved by the land owner or land managing agency), revegetation is successful, and proper drainage has been restored;
5. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in active agricultural areas until restoration is successful;

6. Make efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, throughout the life of the project. Maintain signs, gates, and permanent access roads as necessary;

7. Monitor and record the success of wetland revegetation annually until wetland revegetation is successful. Wetland revegetation will be considered successful if all of the following criteria are satisfied: the affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation); Vegetation is at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction; if natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction.

8. For any wetland where vegetation is not successful at the end of three years after construction, Sabal Trail will develop and implement (in consultation with a professional wetland ecologist) a plan to actively revegetate the wetland with native wetland herbaceous and woody plant species; and

9. Inspect all temporary remaining erosion and sedimentation controls during routine patrols to ensure proper functioning. Any deficiencies found will be reported and corrected as needed. Once the area has revegetated and stabilized, the erosion controls will be removed.

## 8.2 Post-Construction Maintenance

Sabal Trail will meet the maintenance requirements set forth in this section. The following requirements restrict the amount of routine vegetation mowing or clearing that can occur on new pipeline facilities. Where the newly established pipeline ROW is located on other existing ROWs not affiliated with Sabal Trail, the easement holder or owner will continue to maintain their ROWs using procedures specified in their vegetative management programs.

### *8.2.1 Uplands*

Routine maintenance of the ROW is required to allow continued access for routine pipeline patrols, maintaining access in the event of emergency repairs, and visibility during aerial patrols. In upland areas, maintenance of the ROW will involve clearing the entire ROW of woody vegetation.

1. Routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands will be conducted no more frequently than once every three years. However, to facilitate periodic corrosion and leak surveys, a 10-foot wide corridor centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot wide corridor in an herbaceous state.

2. In no case shall routine vegetation mowing or clearing occur during the migratory bird nesting season between April 15 and August 1 of any year unless specifically approved in writing by the responsible land management agency or the U.S. Fish and Wildlife Service.

### *8.2.2 Waterbodies and Wetlands*

1. Routine vegetation mowing or clearing practices on the construction ROW adjacent to waterbodies will consist of maintaining a riparian strip that measures 25 feet back from the

mean high water mark. This riparian area will be allowed to permanently revegetate with native plant species across the entire ROW.

2. Routine vegetation mowing or clearing over the full width of the construction ROW in wetlands is prohibited.
3. To facilitate periodic corrosion and leak surveys at wetlands and waterbodies, a 10-foot wide corridor centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. Trees and shrubs that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the ROW. No routine vegetation mowing or clearing in riparian areas that are between HDD entry and exit points will occur.
4. Herbicides or pesticides will not be used in or within 100 feet of a wetland or waterbody, except as specified by the appropriate federal or state agency.
5. Time of year restrictions (April 15 – August 1 of any year) apply to routine mowing and clearing of riparian areas.

## 8.3 Reporting

Sabal Trail will maintain records that identify by milepost:

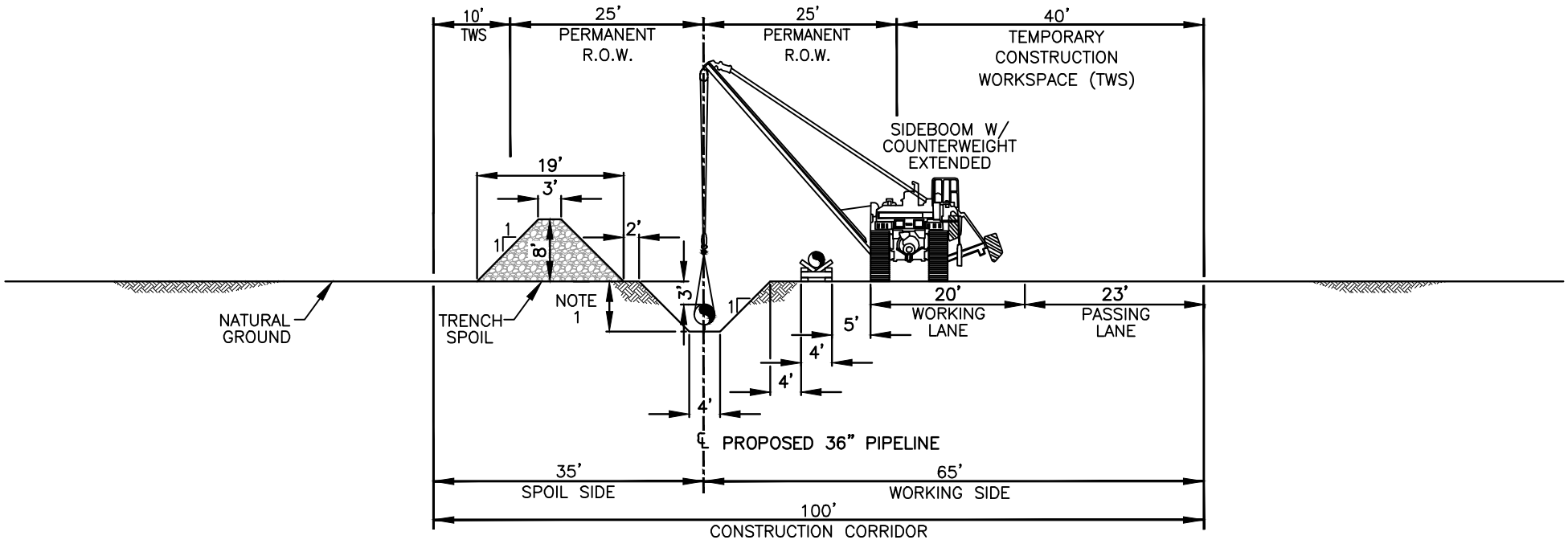
1. Method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
2. Acreage treated;
3. Dates of backfilling and seeding;
4. Names of landowners requesting special seeding treatment and a description of the follow-up actions;
5. Location of any subsurface drainage repairs or improvements made during restoration; and
6. Any problem areas and how they were addressed.

Sabal Trail will file quarterly activity reports documenting the results of follow-up inspections and any problem areas, including those identified by the landowner, and corrective actions taken for at least two years following construction.

A wetland revegetation monitoring report identifying the status of the wetland revegetation efforts will be filed at the end of three years following construction, and annually thereafter documenting progress in these wetlands until revegetation is successful.

# APPENDIX A

# FIGURES




TYPICAL CONSTRUCTION CORRIDOR

N.T.S.

NOTES:

1. MINIMUM TRENCH DEPTH WILL BE 6'–6".
2. THIS CONSTRUCTION METHOD APPLIES TO LOCATIONS WHERE THE APPLICABLE R.O.W. ARRANGEMENT CALLS FOR 25'/25' PERMANENT R.O.W.
3. THIS CONSTRUCTION METHOD APPLIES TO FORWARD & REVERSE PIPELINE LAY.

| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 0 | ISSUED FOR PERMITTING | NC | 11/20/14 | JW | JC |

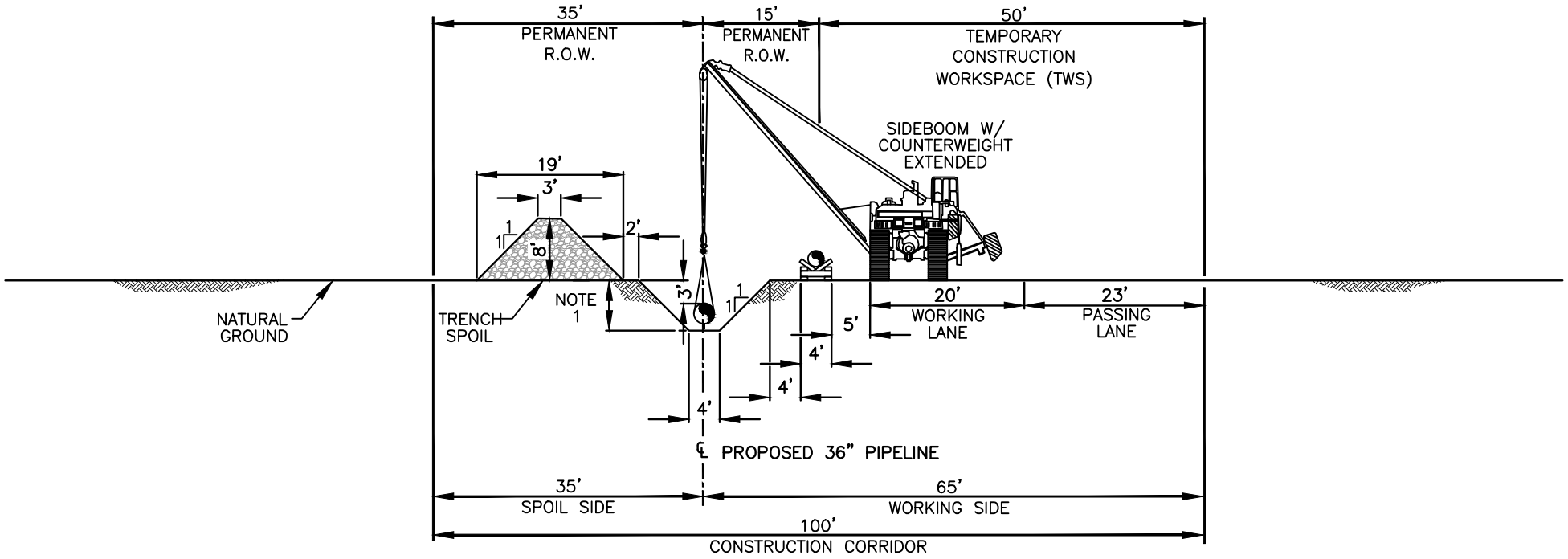
| | | |
|---|---|---|
| DWN. BY: | NC | 4–23–14 |
| CHK. | JC | 5–30–14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
WITHOUT TOPSOIL
SEGREGATION
FIGURE #1

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28201 | 1 OF 1 | 0 |

C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Const. Drawings\1657-PL-DG-28201.dwg Plotted on: Nov 18, 2014 – 12:07pm by scarlson




TYPICAL CONSTRUCTION CORRIDOR
N.T.S.

NOTES:
1. MINIMUM TRENCH DEPTH WILL BE 6'–6".
2. THIS CONSTRUCTION METHOD APPLIES TO LOCATIONS WHERE THE APPLICABLE R.O.W. ARRANGEMENT CALLS FOR 35'/15' PERMANENT R.O.W.
3. THIS CONSTRUCTION METHOD APPLIES TO FORWARD & REVERSE PIPELINE LAY.

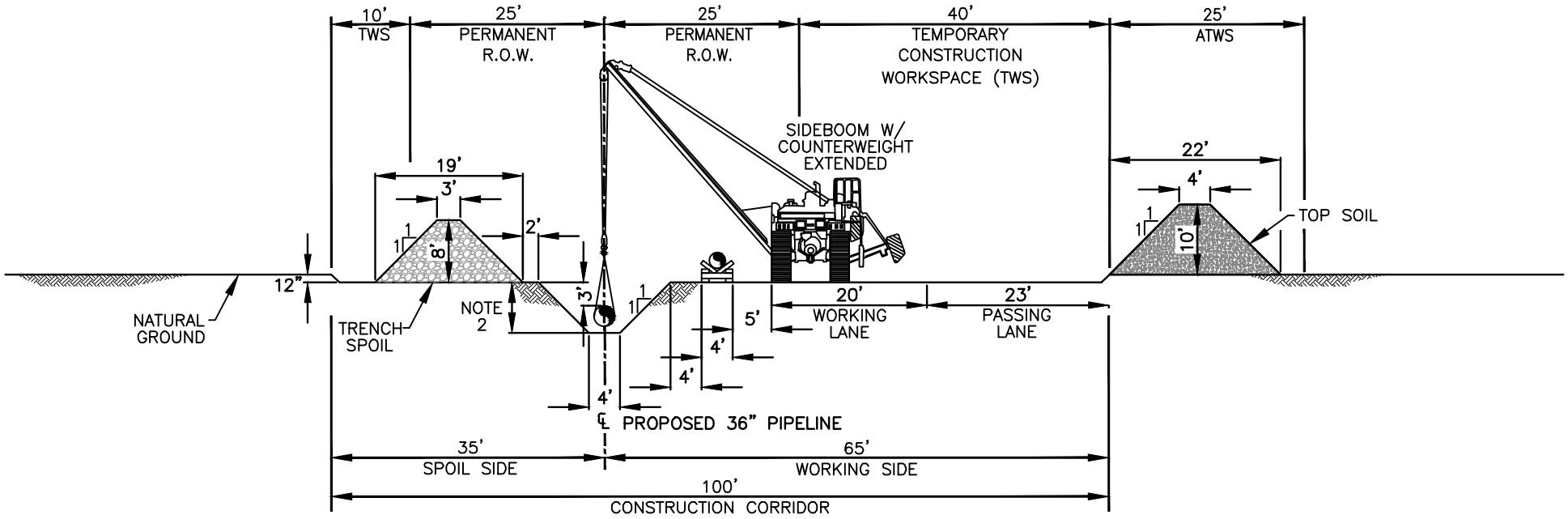
| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 0 | ISSUED FOR PERMITTING | NC | 11/20/14 | JW | JC |

| | | |
|---|---|---|
| DWN. BY: | NC | 4–23–14 |
| CHK. | JC | 5–28–14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
WITHOUT TOPSOIL
SEGREGATION
FIGURE #2

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28202 | 1 OF 1 | 0 |




TYPICAL CONSTRUCTION CORRIDOR
N.T.S.

NOTES:

1. UP TO 12" OF TOPSOIL TO BE SEPARATED FROM EITHER THE FULL WORK AREA OR FROM THE TRENCH AND SUBSOIL STORAGE AREA (DITCH PLUS SPOIL SIDE METHOD) IN CULTIVATED OR ROTATED CROPLANDS, MANAGED PASTURES, RESIDENTIAL AREAS, HAYFIELDS, AND OTHER AREAS AT THE LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.
2. MINIMUM TRENCH DEPTH AFTER TOPSOIL IS REMOVED WILL BE 6'–6".
3. THIS CONSTRUCTION METHOD APPLIES TO LOCATIONS IN ALABAMA OR GEORGIA WHERE THE APPLICABLE R.O.W. ARRANGEMENT CALLS FOR 25'/25' PERMANENT R.O.W. AND TOPSOIL SEPARATION IS NEEDED.
4. THIS CONSTRUCTION METHOD APPLIES TO FORWARD & REVERSE PIPELINE LAY.
5. FOR ADDITIONAL DETAILS IN REGARDS TO CO–LOCATED UTILITIES REFER TO APPLICABLE R.O.W. ARRANGEMENT.

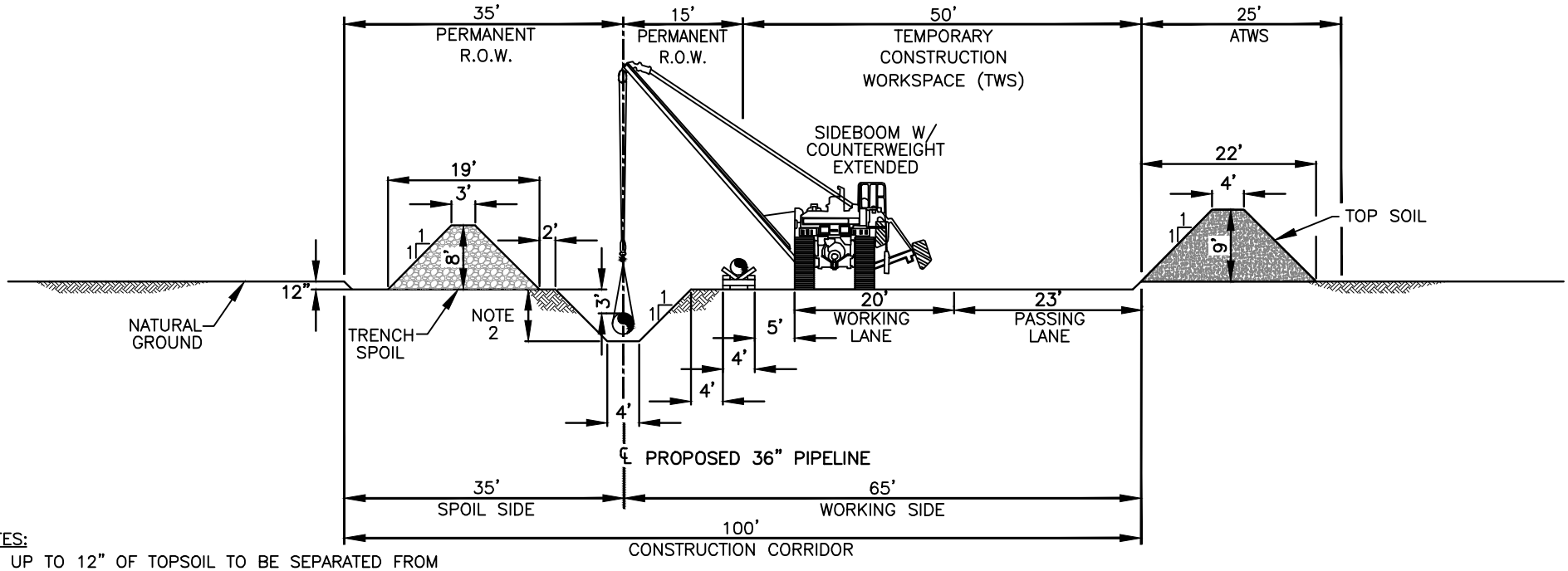
| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| 0 | ISSUED FOR PERMITTING | GIE | 11/20/2014 | JW | JC |

| | | |
|---|---|---|
| DWN. BY: | GIE | 4–23–14 |
| CHK. | JC | 5–28–14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
FULL WIDTH TOPSOIL
SEGREGATION (AL,GA)
FIGURE #3

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28203 | 1 OF 1 | 0 |




TYPICAL CONSTRUCTION CORRIDOR

N.T.S.

NOTES:

1. UP TO 12" OF TOPSOIL TO BE SEPARATED FROM EITHER THE FULL WORK AREA OR FROM THE TRENCH AND SUBSOIL STORAGE AREA (DITCH PLUS SPOIL SIDE METHOD) IN CULTIVATED OR ROTATED CROPLANDS, MANAGED PASTURES, RESIDENTIAL AREAS, HAYFIELDS, AND OTHER AREAS AT THE LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.
2. MINIMUM TRENCH DEPTH AFTER TOPSOIL IS REMOVED WILL BE 6'–6".
3. THIS CONSTRUCTION METHOD APPLIES TO LOCATIONS IN ALABAMA OR GEORGIA WHERE THE APPLICABLE R.O.W. ARRANGEMENT CALLS FOR 35'/15' PERMANENT R.O.W. AND TOPSOIL SEPARATION IS NEEDED.
4. THIS CONSTRUCTION METHOD APPLIES TO FORWARD & REVERSE PIPELINE LAY.
5. FOR ADDITIONAL DETAILS IN REGARDS TO CO–LOCATED UTILITIES REFER TO APPLICABLE R.O.W. ARRANGEMENT.

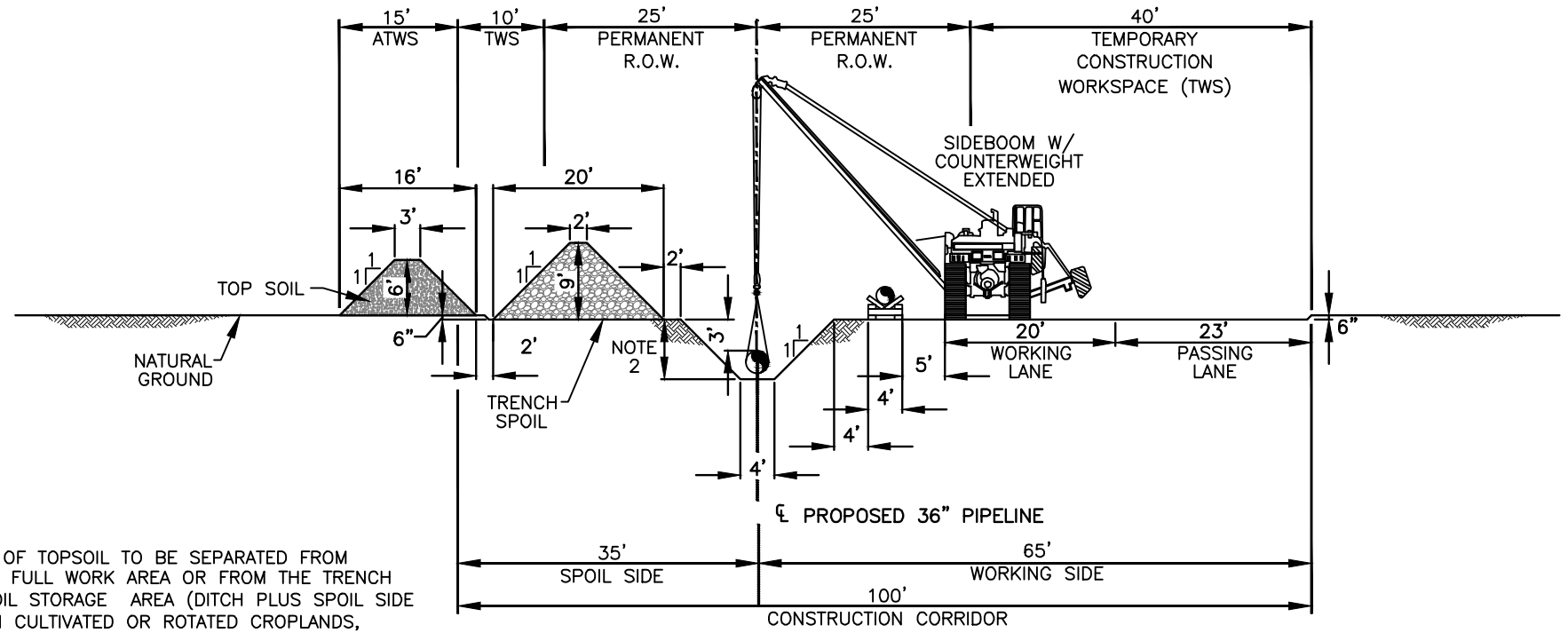
| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 0 | ISSUED FOR PERMITTING | GIE | 11/20/14 | JW | JC |

| | | |
|---|---|---|
| DWN. BY: | GIE | 4–23–14 |
| CHK. | JC | 5–28–14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
FULL WIDTH TOPSOIL
SEGREGATION (AL,GA)
FIGURE #4

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28204 | 1 OF 1 | 0 |




TYPICAL CONSTRUCTION CORRIDOR
N.T.S.

NOTES:

1. UP TO 12" OF TOPSOIL TO BE SEPARATED FROM EITHER THE FULL WORK AREA OR FROM THE TRENCH AND SUBSOIL STORAGE AREA (DITCH PLUS SPOIL SIDE METHOD) IN CULTIVATED OR ROTATED CROPLANDS, MANAGED PASTURES, RESIDENTIAL AREAS, HAYFIELDS, AND OTHER AREAS AT THE LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.
2. MINIMUM TRENCH DEPTH AFTER TOPSOIL IS REMOVED WILL BE 7'-0".
3. THIS CONSTRUCTION METHOD APPLIES TO LOCATIONS IN FLORIDA WHERE THE APPLICABLE R.O.W. ARRANGEMENT CALLS FOR 25'/25' PERMANENT R.O.W. AND TOPSOIL SEPARATION IS NEEDED.
4. THIS CONSTRUCTION METHOD APPLIES TO FORWARD & REVERSE PIPELINE LAY.
5. FOR ADDITIONAL DETAILS IN REGARDS TO CO-LOCATED UTILITIES REFER TO APPLICABLE R.O.W. ARRANGEMENT.

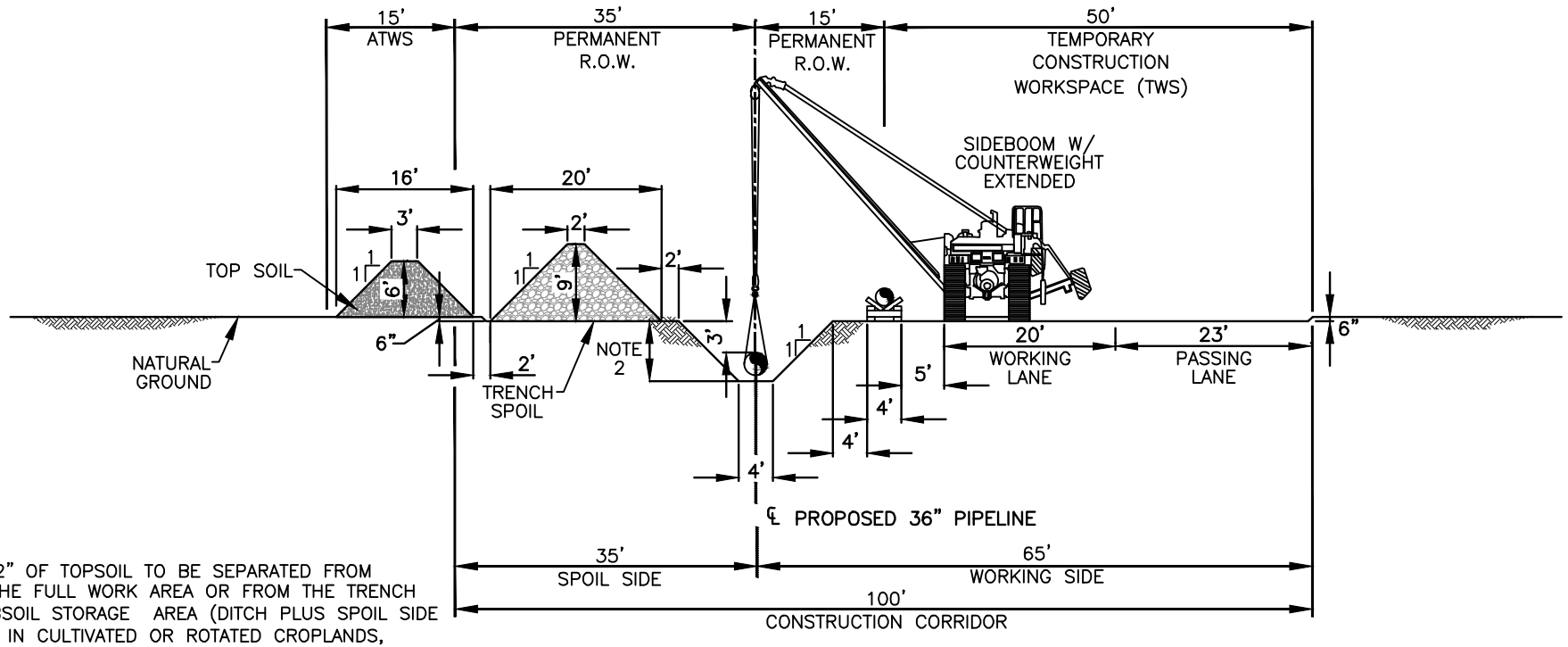
| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 0 | ISSUED FOR PERMITTING | NC | 11/20/14 | JW | JC |

| | | |
|---|---|---|
| DWN. BY: | NC | 4-23-14 |
| CHK. | JC | 5-28-14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
FULL WIDTH TOPSOIL
SEGREGATION (FL)
FIGURE #5

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28205 | 1 OF 1 | 0 |




TYPICAL CONSTRUCTION CORRIDOR
N.T.S.

NOTES:

1. UP TO 12" OF TOPSOIL TO BE SEPARATED FROM EITHER THE FULL WORK AREA OR FROM THE TRENCH AND SUBSOIL STORAGE AREA (DITCH PLUS SPOIL SIDE METHOD) IN CULTIVATED OR ROTATED CROPLANDS, MANAGED PASTURES, RESIDENTIAL AREAS, HAYFIELDS, AND OTHER AREAS AT THE LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.
2. MINIMUM TRENCH DEPTH AFTER TOPSOIL IS REMOVED WILL BE 7'-0".
3. THIS CONSTRUCTION METHOD APPLIES TO LOCATIONS IN FLORIDA WHERE THE APPLICABLE R.O.W. ARRANGEMENT CALLS FOR 35'/15' PERMANENT R.O.W. AND TOPSOIL SEPARATION IS NEEDED.
4. THIS CONSTRUCTION METHOD APPLIES TO FORWARD & REVERSE PIPELINE LAY.
5. FOR ADDITIONAL DETAILS IN REGARDS TO CO-LOCATED UTILITIES REFER TO APPLICABLE R.O.W. ARRANGEMENT.

| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 0 | ISSUED FOR PERMITTING | NC | 11/20/14 | JW | JC |

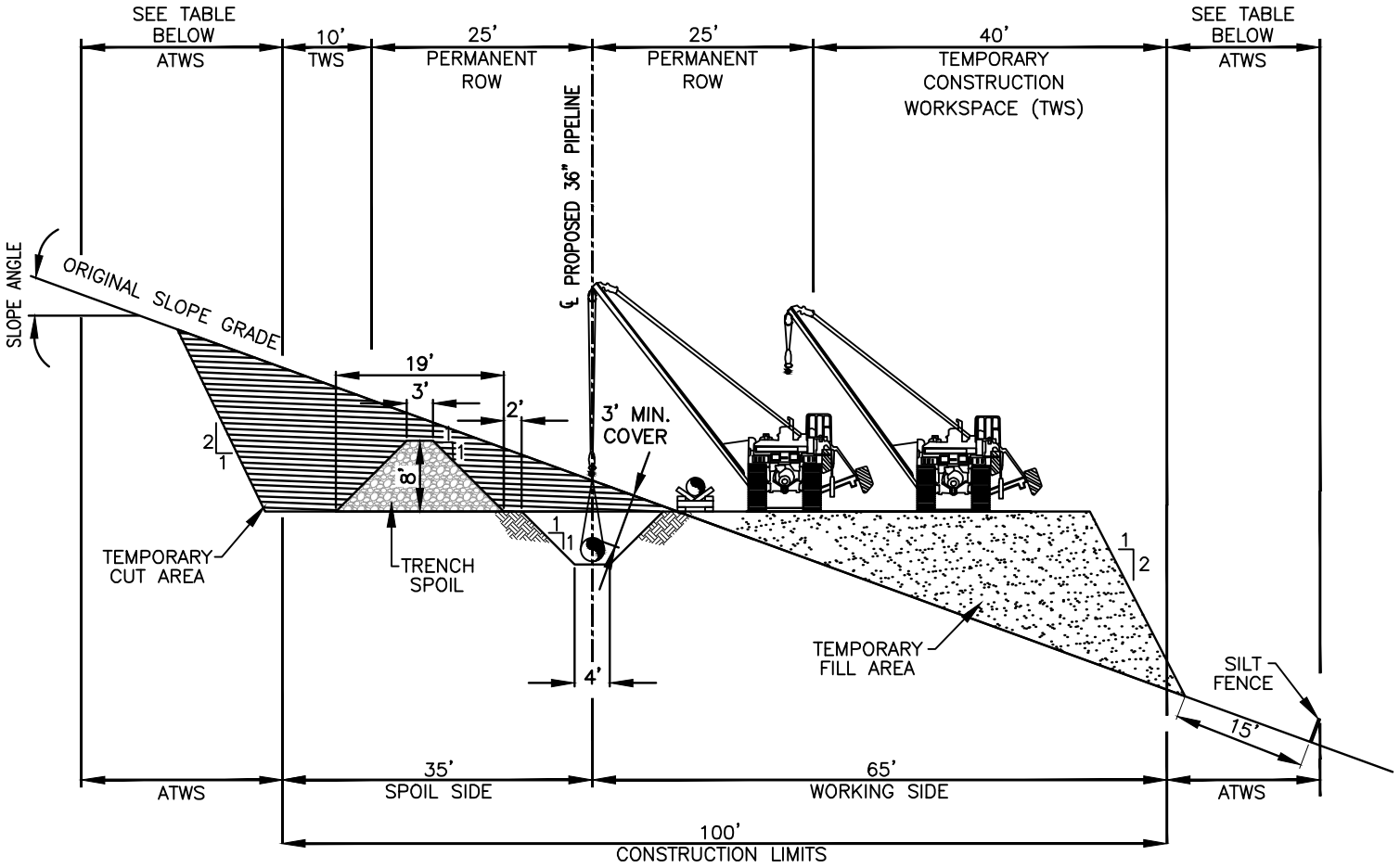
| | | |
|---|---|---|
| DWN. BY: | NC | 4-23-14 |
| CHK. | JC | 5-28-14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
FULL WIDTH TOPSOIL
SEGREGATION (FL)
FIGURE #6

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28206 | 1 OF 1 | 0 |

C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Const. Drawings\1657-PL-DG-28206.dwg Plotted on: Nov 18, 2014 - 1:12pm by jwhite




TYPICAL CONSTRUCTION CORRIDOR
N.T.S.

| ADDITIONAL TEMPORARY WORKSPACE | | |
|---|---|---|
| SLOPE ANGLE | SPOIL SIDE | WORKING SIDE |
| 0°–10° | 0' | 15' |
| 10°–20° | 5' | 25' |
| 20°–30° | 15' | 50' |

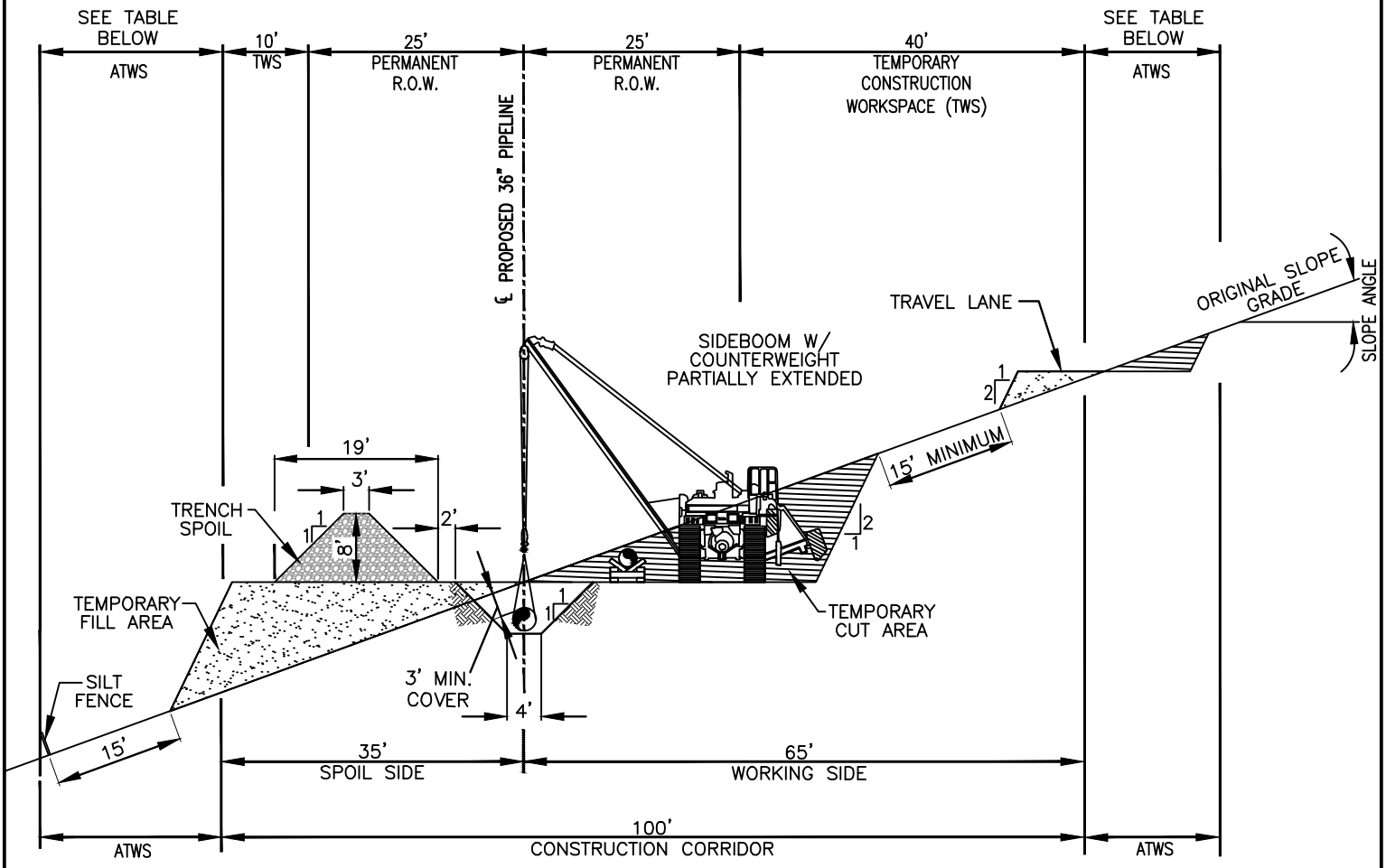
| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| 0 | ISSUED FOR PERMITTING | GIE | 11/20/2014 | JW | JC |

| | | |
|---|---|---|
| DWN. BY: | GIE | 4–23–14 |
| CHK. | JC | 5–28–14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
TYPICAL SIDE SLOPE
GREENFIELD SECTION
FIGURE #7

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28207 | 1 OF 1 | 0 |




TYPICAL CONSTRUCTION CORRIDOR
N.T.S.

| ADDITIONAL TEMPORARY WORKSPACE | | |
|---|---|---|
| SLOPE ANGLE | SPOIL SIDE | WORKING SIDE |
| 0°–10° | 15' | 15' |
| 10°–20° | 25' | 25' |
| 20°–30° | 25' | 50' |

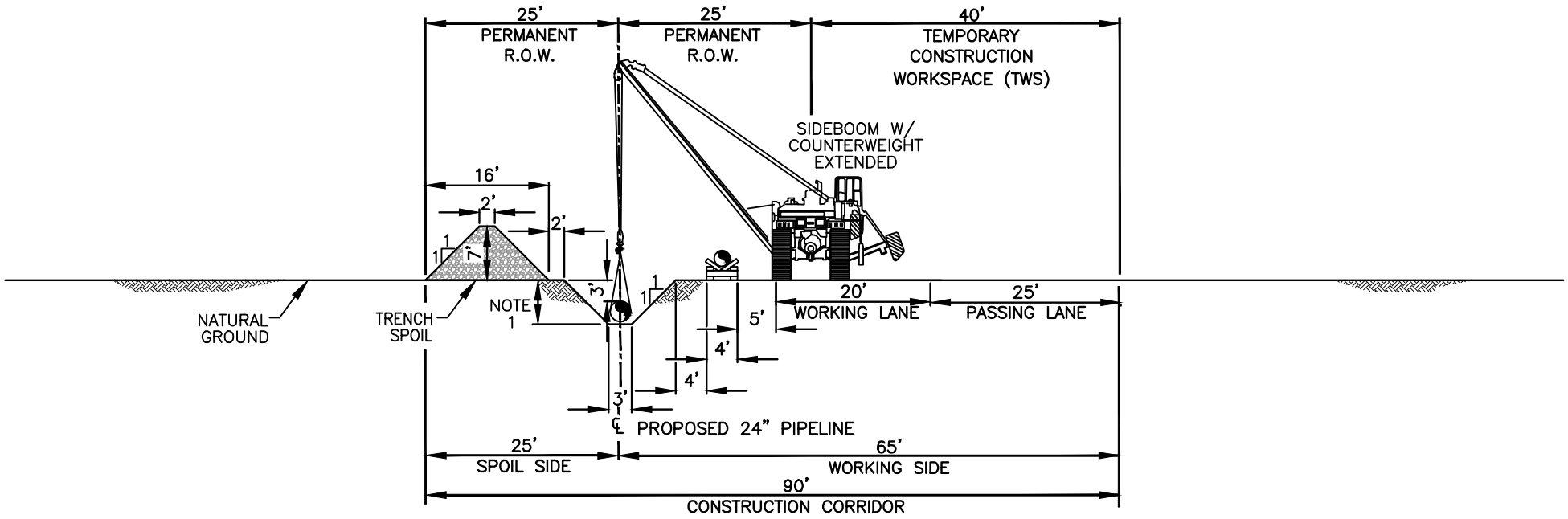
| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| 0 | ISSUED FOR PERMITTING | GIE | 11/20/2014 | JW | JC |

| | | |
|---|---|---|
| DWN. BY: GIE | 4–25–14 | |
| CHK. JC | 5–28–14 | |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: AS NOTED | | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
TYPICAL SIDE CUT
GREENFIELD SECTION
FIGURE # 8

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28208 | 1 OF 1 | 0 |




TYPICAL CONSTRUCTION CORRIDOR

N.T.S.

NOTES:

1. MINIMUM TRENCH DEPTH WILL BE 5'–6".
2. THIS CONSTRUCTION METHOD APPLIES TO CITRUS COUNTY LINE LOCATIONS WHERE THE APPLICABLE R.O.W. ARRANGEMENT CALLS FOR 25'/25' PERMANENT R.O.W.
3. THIS CONSTRUCTION METHOD APPLIES TO FORWARD & REVERSE PIPELINE LAY.

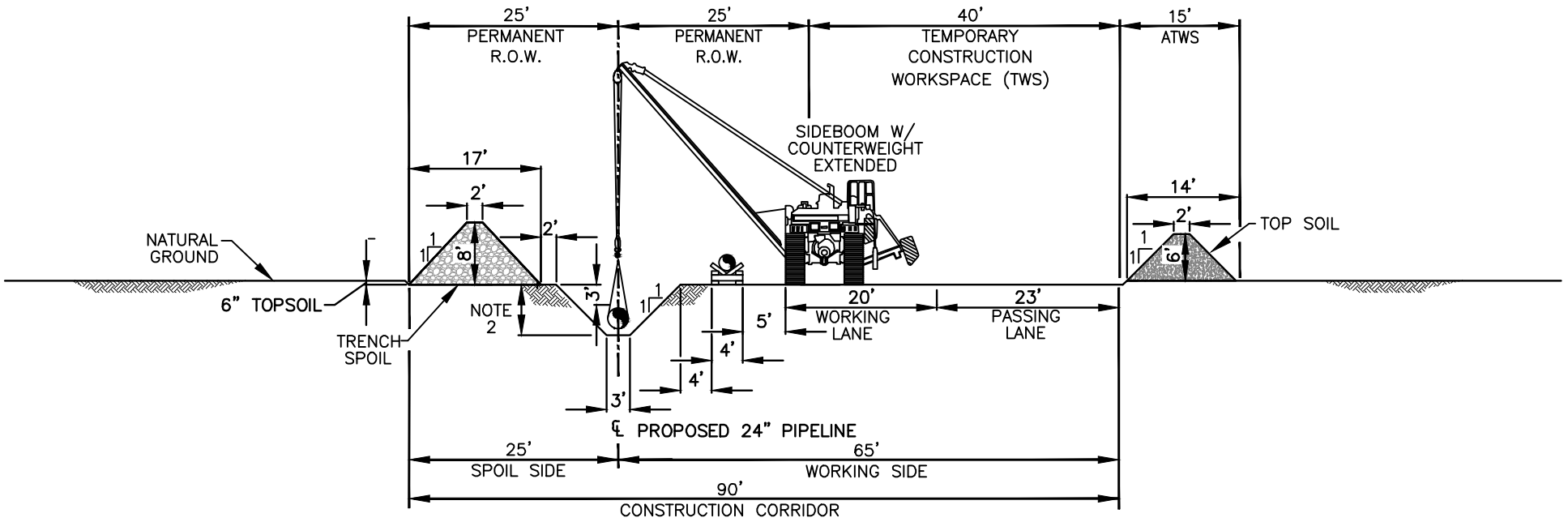
| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 0 | ISSUED FOR PERMITTING | NC | 11/20/14 | JW | JC |

| | | |
|---|---|---|
| DWN. BY: | NC | 4–23–14 |
| CHK. | JC | 05–28–14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
WITHOUT TOPSOIL
SEGREGATION
FIGURE #9

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28211 | 1 OF 1 | 0 |




TYPICAL CONSTRUCTION CORRIDOR
N.T.S.

NOTES:

1. UP TO 12" OF TOPSOIL TO BE SEPARATED FOR FULL CONSTRUCTION CORRIDOR WIDTH THROUGHOUT CULTIVATED AND ROTATED CROPLANDS, PASTURE, RESIDENTIAL AREAS.
2. MINIMUM TRENCH DEPTH AFTER TOPSOIL IS REMOVED WILL BE 6'–0".
3. THIS CONSTRUCTION METHOD APPLIES TO LOCATIONS WHERE THE APPLICABLE R.O.W. ARRANGEMENT CALLS FOR 25'/25' PERMANENT R.O.W. AND TOPSOIL SEPARATION IS NEEDED.
4. THIS CONSTRUCTION METHOD APPLIES TO FORWARD & REVERSE PIPELINE LAY.
5. FOR ADDITIONAL DETAILS IN REGARDS TO CO–LOCATED UTILITIES REFER TO APPLICABLE R.O.W. ARRANGEMENT.

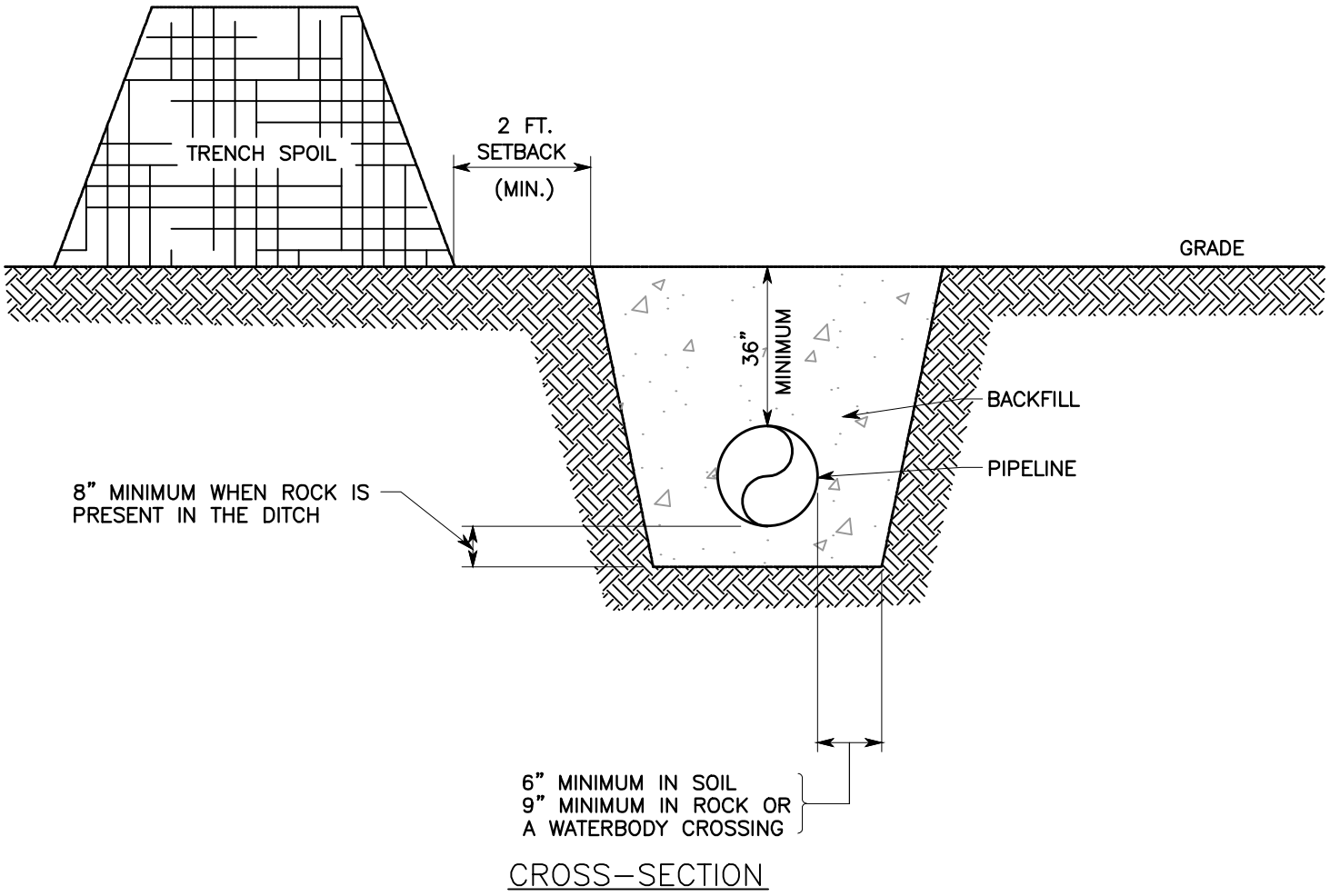
| NO. | REVISION DESCRIPTION | BY | DATE | CHK'D | APP'D |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 0 | ISSUED FOR PERMITTING | NC | 11/20/14 | JW | JC |

| | | |
|---|---|---|
| DWN. BY: | NC | 4–25–14 |
| CHK. | JC | 5–28–14 |
| PROJ. ENGR. | | |
| PROJ. MGR. | | |
| CLIENT APP. | | |
| SCALE: | AS NOTED | |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
UPLAND CONSTRUCTION
FULL WIDTH TOPSOIL
SEGREGATION (FL)
FIGURE #10

| DWG. NO. | SHT. NO. | REV. |
|---|---|---|
| 1657-PL-DG-28215 | 1 OF 1 | 0 |




CROSS–SECTION

NOTES:

1. ALL ORIGINAL CONTOURS WILL BE RE–ESTABLISHED UPON COMPLETION OF PIPE INSTALLATION. EXCEPT IN WETLANDS, A CROWN MAY BE LEFT TO ACCOUNT FOR DITCH SETTLING, AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

2. IN COLD WATER FISHERY STREAMS, THE TOP 12" OF THE TRENCH WILL BE BACKFILLED WITH CLEAN GRAVEL OR NATIVE COBBLES

Sabal Trail TRANSMISSION

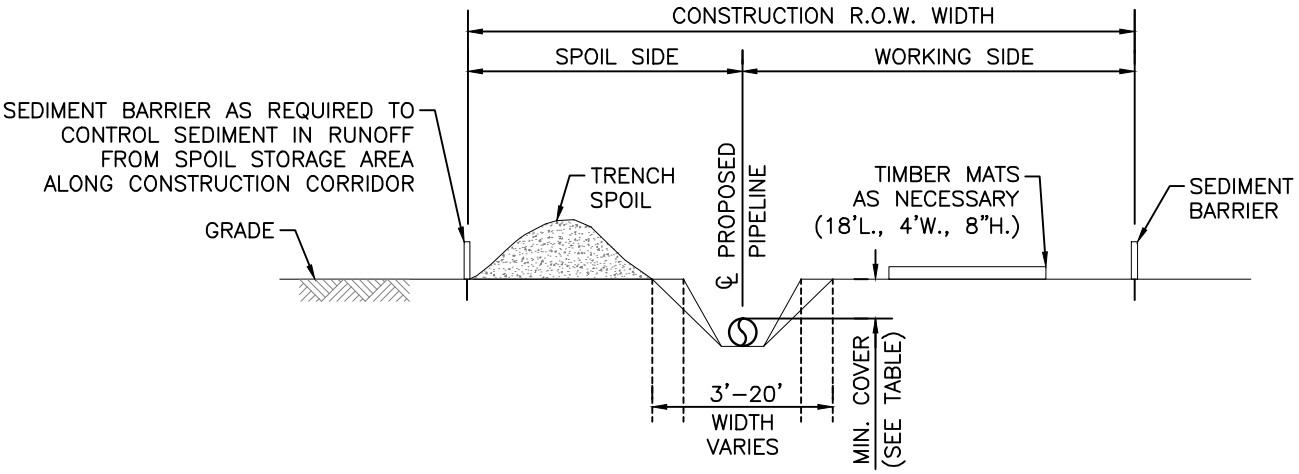
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL TRENCH DETAIL

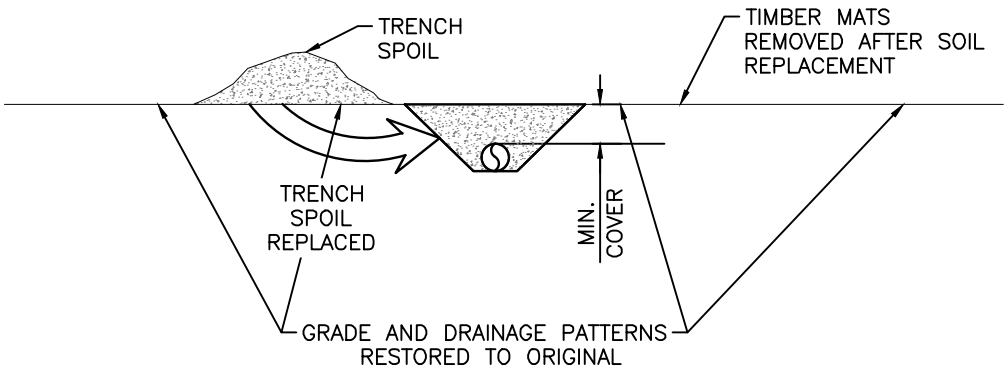
FIGURE #11

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28141 | 1 OF 1 | 0 |

12:18:28 PM 11/18/2014 monochrome.ctb
H:_doc\1657\Engineering & Technical\10_Pipeline\Mapping\Typicals\Drawings\10–29–14 New Typicals\1657–PL–DG–28141.dwg




EXCAVATION
CROSS SECTION
(N.T.S.)




FILL CROSS SECTION
N.T.S.

TABLE

| 36" PIPE | MINIMUM DEPTH OF COVER |
|---|---|
| LOCATION | NORMAL SOIL |
| ALL LOCATIONS NOT SPECIFIED | 36" |
| CULTIVATED LAND | 48" (NOTE 1) |
| DRAINAGE DITCHES OF PUBLIC ROADS, RAILROAD CROSSINGS | 42" |
| STREAM AND WATERWAY CROSSINGS | 60" |
| ROADWAYS | 60" |
| RAILROADS | 120" |

NOTES:

1. TO BE DETERMINED BY LANDOWNER AGREEMENT.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

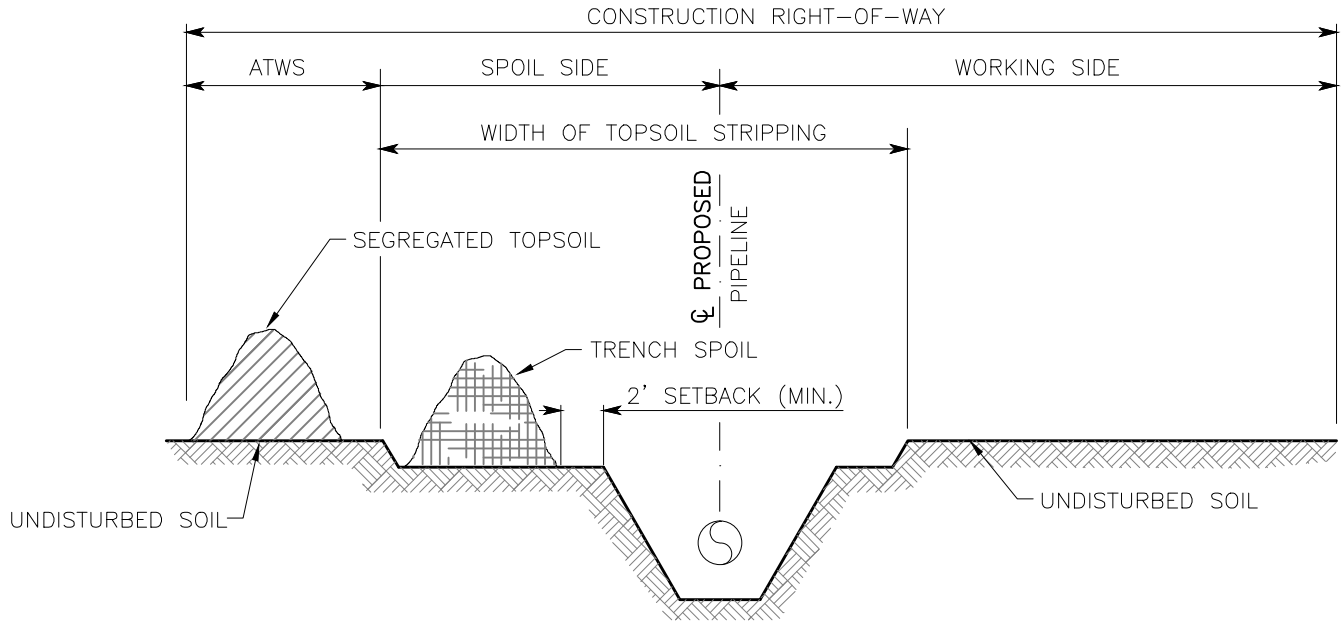
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL TRENCH EXCAVATION AND FILL

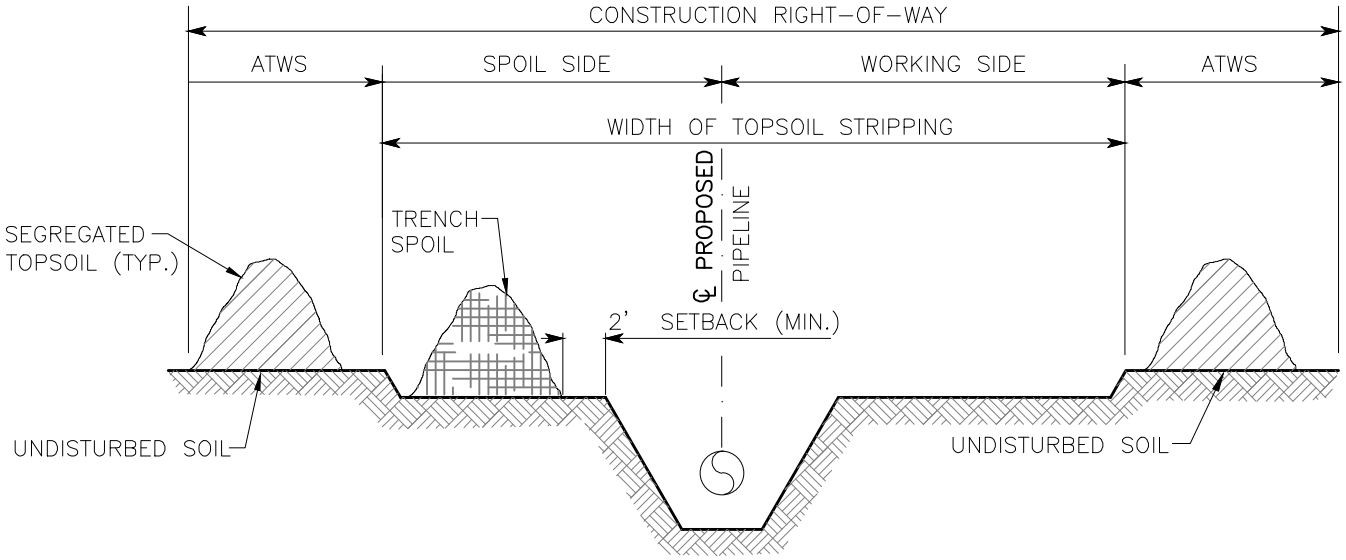
FIGURE #12

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28113 | 1 OF 1 | 0 |

12:19:35 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28113.dwg




## DITCH PLUS SPOIL SIDE TOPSOIL SEGREGATION




## FULL RIGHT-OF-WAY TOPSOIL SEGREGATION

NOTES:

1. TOPSOIL MAY BE STORED IN LOCATIONS AS SHOWN ABOVE, OR AT OTHER COMPANY APPROVED LOCATIONS WITHIN THE CONSTRUCTION R.O.W.
2. LEAVE GAPS IN SPOIL PILES FOR WATER RUN-OFF.
3. R.O.W. MAY BE EXPANDED UP TO 25' IN NON WETLAND AREAS FOR FULL R.O.W. TOPSOIL SALVAGE.

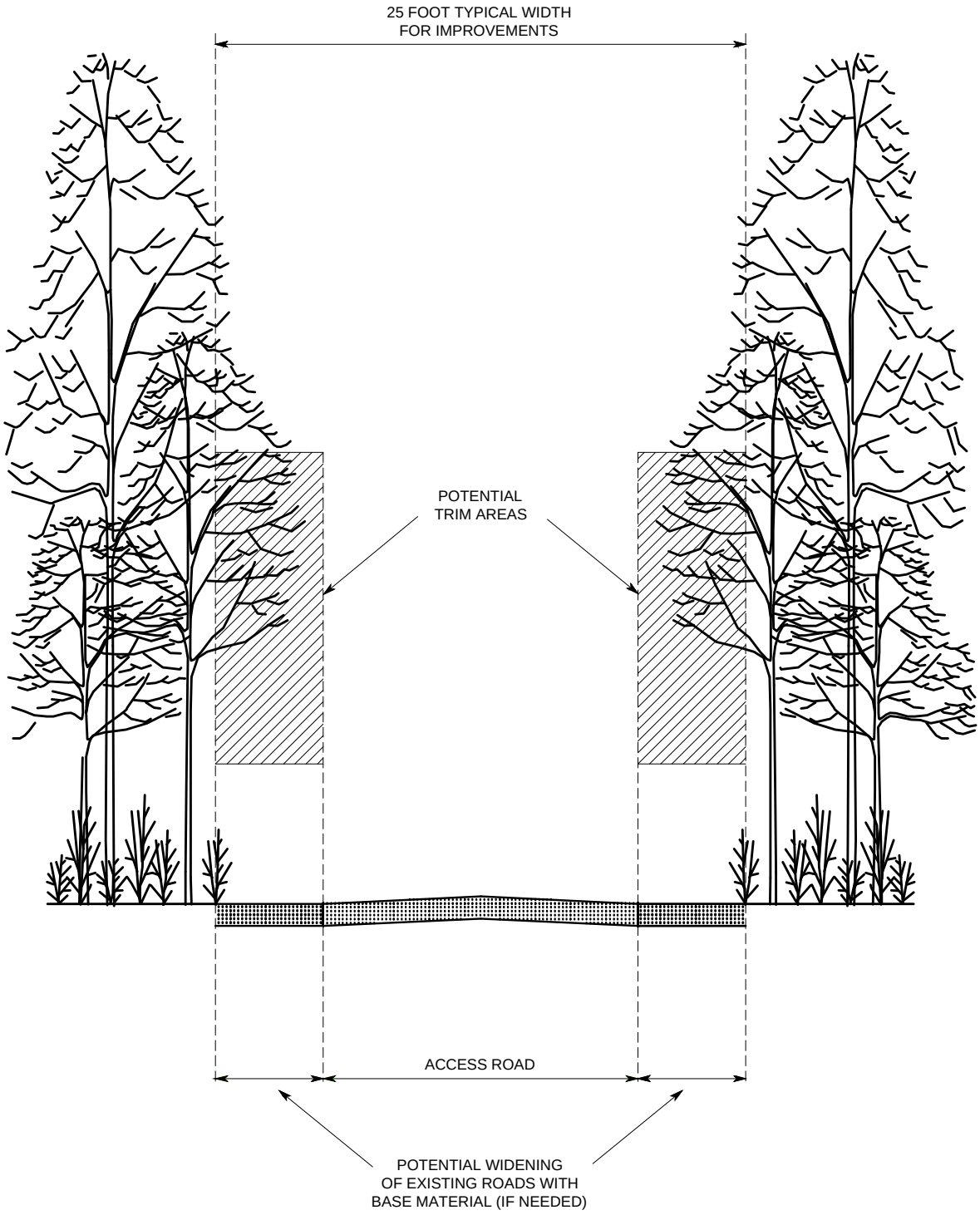
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
R.O.W. TOPSOIL
SEGREGATION TECHNIQUES
FIGURE #13

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28142 | 1 OF 1 | 0 |

12:20:19 PM 11/18/2014 monochrome.ctb
H:_doc\1657\Engineering & Technical\10_Pipeline\Mapping\Typicals\Drawings\10-29-14 New Typicals\1657-PL-DG-28142.dwg




Sabal Trail
TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 08/27/14 |
| CHECKED BY: | CF | DATE: | 08/28/14 |
| SCALE: | NONE | W.O.: | |

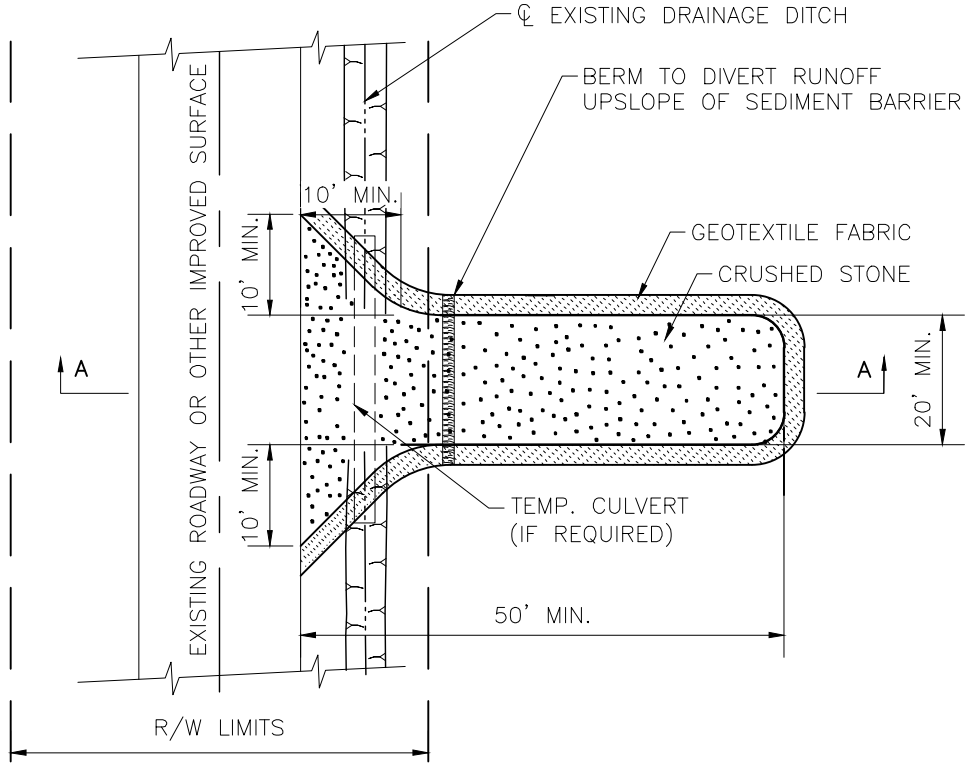
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
ACCESS ROAD CROSS SECTION

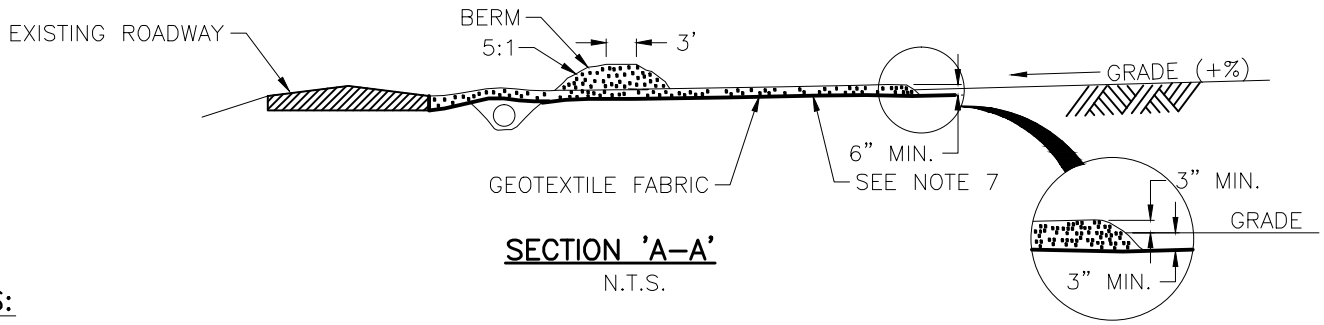
FIGURE #14

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28139 | 1 OF 1 | 0 |

12:21:07 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28139.dwg




**PLAN**
N.T.S.




**SECTION 'A–A'**
N.T.S.

## NOTES:

1. CONSTRUCTION ENTRANCES AS ILLUSTRATED ARE TO BE INSTALLED ADJACENT TO EXISTING PAVED ROADS AT LOCATIONS IDENTIFIED ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE COMPANY'S REPRESENTATIVE.
2. STABILIZED ENTRANCE SHALL BE INSTALLED WHERE EQUIPMENT ENTERS OR EXITS CONSTRUCTION SITES ONTO A PAVED ROADWAY OR OTHER IMPROVED SURFACE.
3. LOCATE ALL ROADWAY CROSSINGS AND ENTRANCES TO ENSURE SAFE AND ACCESSIBLE CONDITIONS THROUGHOUT THE CONSTRUCTION PHASE.
4. THE ENTRANCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION IN A CONDITION WHICH WILL MINIMIZE TRACKING OF SEDIMENT ONTO A PUBLIC ROADWAY.
5. SHOULD THE ROCK PAD BECOME INEFFECTIVE FOR REDUCING THE BUILDUP OF MUD AND DIRT AND MINIMIZE TRACKING ONTO THE PAVED ROAD. THE CONTRACTOR SHALL WASH THE EXISTING ROCKFILL SURFACE OR ADD A ROCK FILL LAYER TO THE ACCESS PAD.
6. ALL SEDIMENT TRACKED ONTO PAVEMENT SHALL BE REMOVED BY SWEEPING OR SCRAPING.
7. TOPSOIL SHALL BE REMOVED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF GEOTEXTILE FABRIC AND STONE.
8. WHERE DRAINAGE DITCH EXISTS, CONTRACTOR SHALL PROVIDE AND INSTALL A FLUME PIPE IN ORDER TO PREVENT IMPEDIMENT OF WATER FLOW.
9. THE CONSTRUCTION ENTRANCE SHALL BE REMOVED AND THE AREA RESTORED AS PART OF FINAL CLEANUP. REMOVAL IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.

Sabal Trail TRANSMISSION

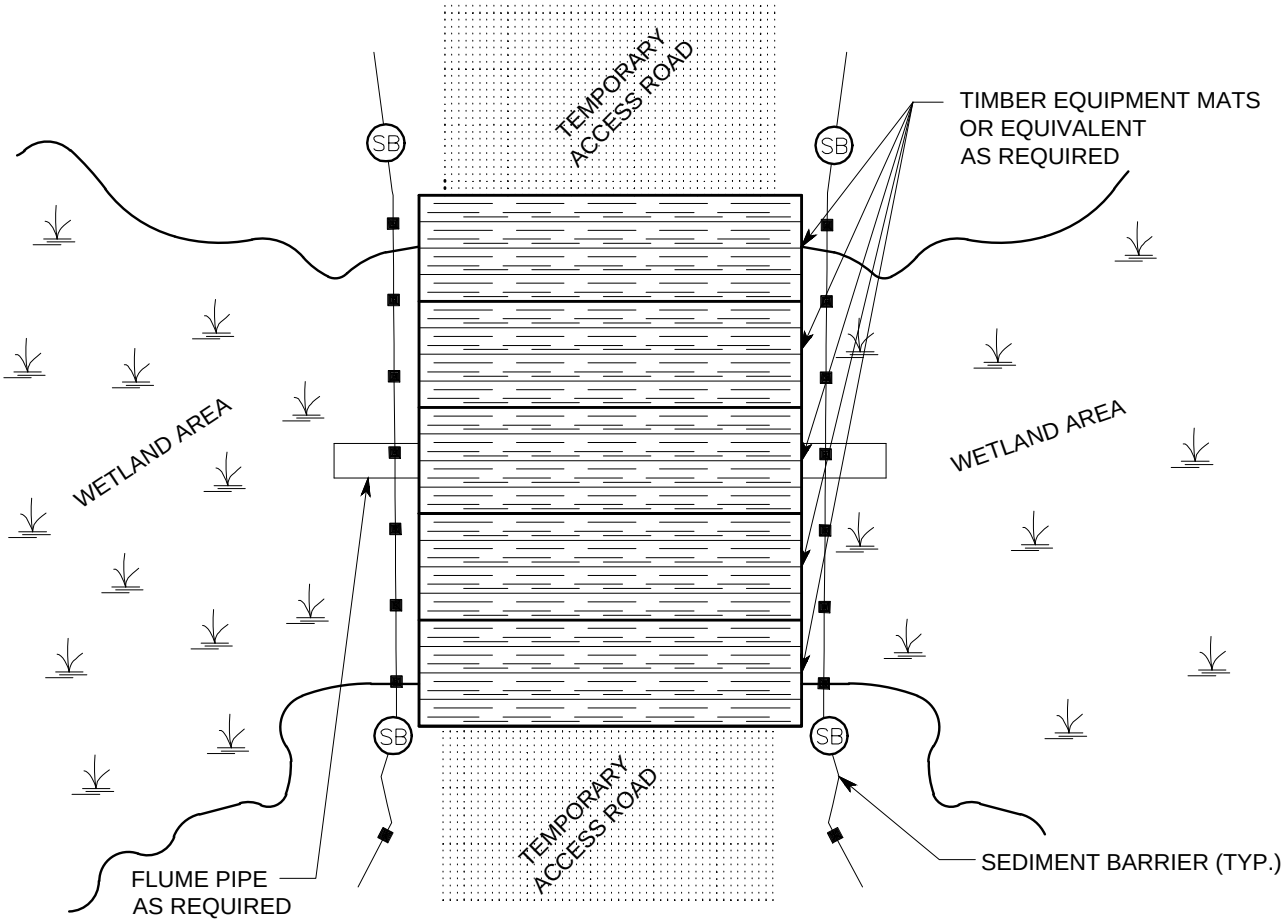
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

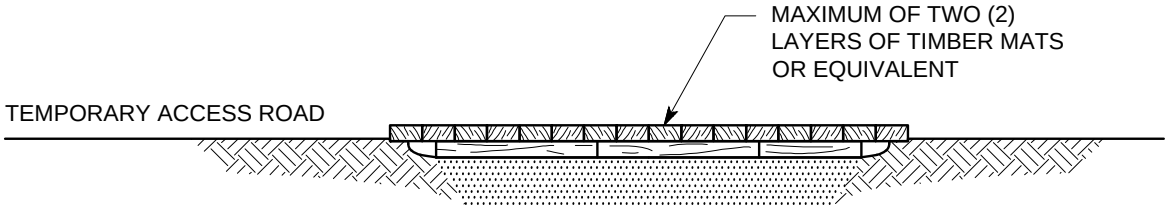
SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
CONSTRUCTION ENTRANCE, ROCK ACCESS PAD INSTALLATION AND MAINTENANCE
FIGURE #15

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28126 | 1 OF 1 | 0 |

12:21:58 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28126.dwg




PLAN VIEW
N.T.S.




CROSS SECTION
N.T.S.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.

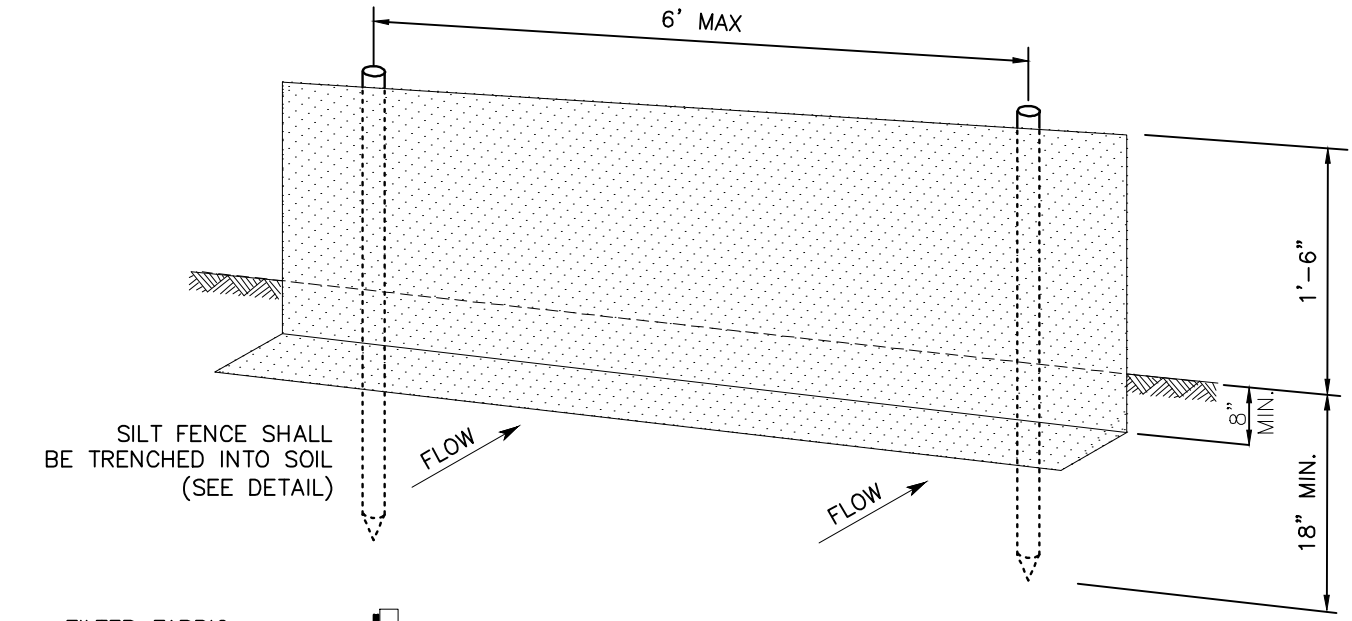
Sabal Trail TRANSMISSION

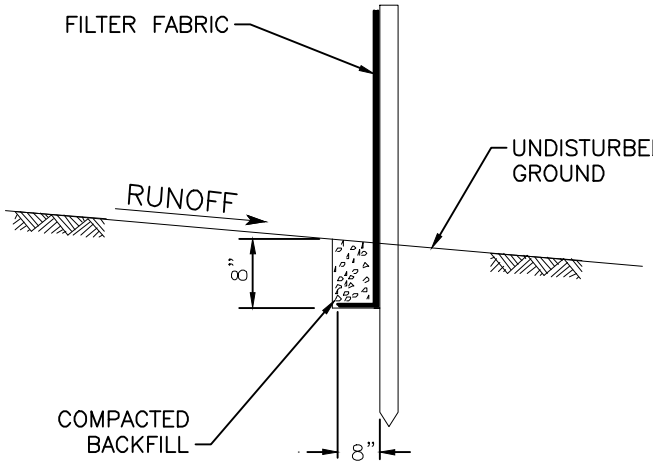
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 08/27/14 |
| CHECKED BY: | CF | DATE: | 08/28/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL TEMPORARY
ACCESS ROAD THROUGH WETLANDS
FIGURE #16

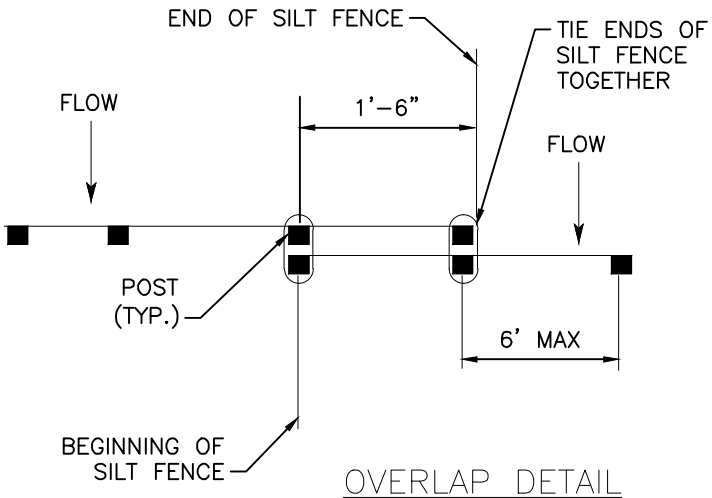
| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28140 | 1 OF 1 | 0 |

12:22:57 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28140.dwg




TRENCH DETAIL




OVERLAP DETAIL

## NOTES:

1. SILT FENCE SHALL BE INSTALLED TO FILTER SEDIMENT FROM SURFACE RUNOFF.
2. INSTALLATIONS SHALL BE PERIODICALLY CHECKED, THE SEDIMENT SHALL BE REMOVED WHEN IT REACHES ONE-THIRD THE HEIGHT OF THE SILT FENCE.
3. SILT FENCE SHALL BE LEFT IN PLACE UNTIL PERMANENT VEGETATIVE COVER IS ESTABLISHED.
4. SILT FENCE SHALL BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT IT REDUCES THE EFFECTIVENESS OF THE SILT FENCE.
5. AREA DISTURBED AS A RESULT OF REMOVING THE SILT FENCE SHALL BE RESTABILIZED BY BACKFILLING, COMPACTING, AND SEEDING IN ACCORDANCE WITH THE REVEGETATION PLAN.
6. SILT FENCE SHALL BE PLACED TO FOLLOW (RUN PARALLEL TO) THE CONTOURS.
7. ON UPSLOPE INSTALLATIONS, BOTH ENDS OF THE SILT FENCE SHALL BE TURNED AND EXTENDED UPSLOPE.

Sabal Trail TRANSMISSION

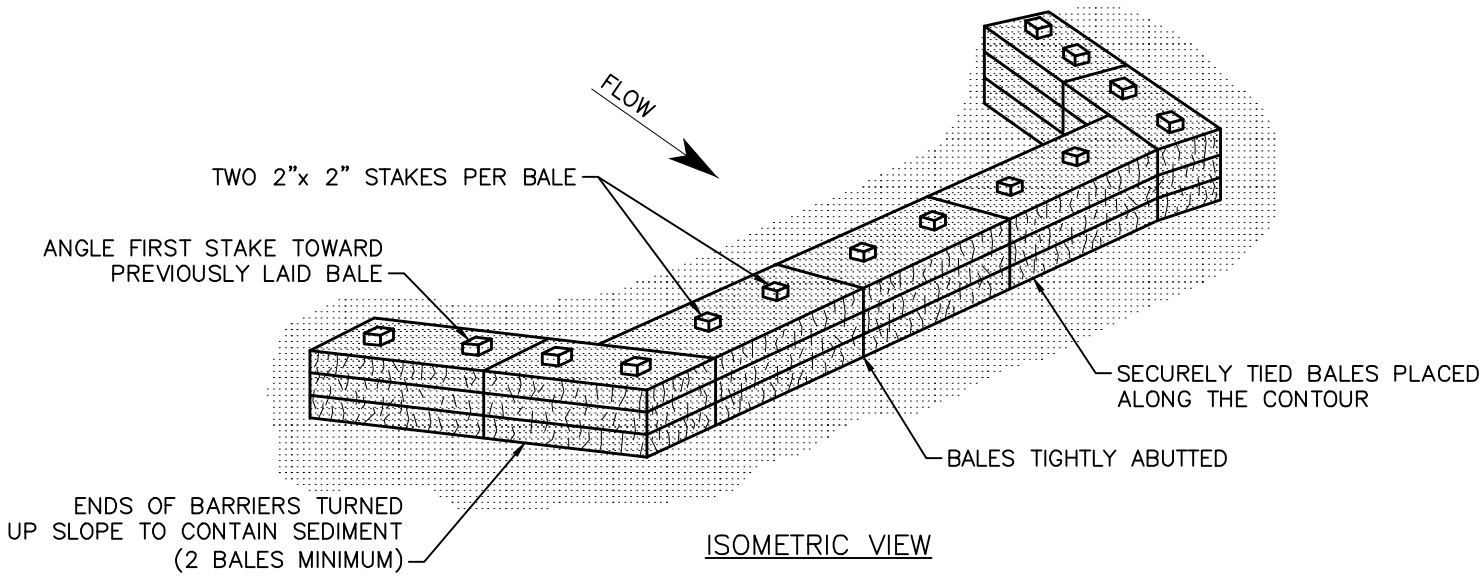
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

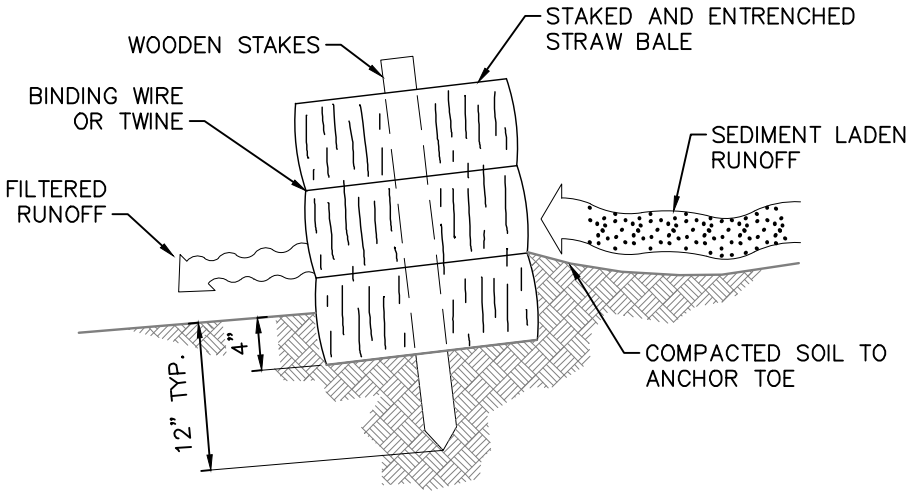
SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
SILT FENCE, SEDIMENT BARRIER
INSTALLATION AND MAINTENANCE
FIGURE #17

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28118 | 1 OF 1 | 0 |

12:24:10 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28118.dwg




ISOMETRIC VIEW




CROSS SECTION

## INSTALLATION REQUIREMENTS:

- WHEN USING STRAW BALES, PLACE THEM:
  - WITH THEIR ENDS TIGHTLY ABUTTING AND EMBEDDED IN THE SOIL A TYPICAL OF 4".
  - BETWEEN DISTURBED AREAS AND DOWN-SLOPE ENVIRONMENTAL RESOURCE AREAS.
  - AT THE BASE OF ALL SLOPES NEXT TO WETLANDS, WATERBODIES, AND ROAD CROSSINGS
  - AT THE INLET AND OUTLET OF OPEN DRAINAGE STRUCTURES.
  - APPROXIMATELY 6 FEET BEYOND THE TOE OF THE SLOPE TO GIVE THE SEDIMENT ROOM TO COLLECT.
- KEY IN THE BOTTOM OF THE BALE IN AREAS WHERE IT IS NOT FEASIBLE TO TRENCH IT IN (LEDGES, ROCKY SOIL, LARGE TREE ROOTS, ETC.). USE NATIVE SOIL AS BACKFILL UP-SLOPE OF THE BALE.
- IF USED IN CONJUNCTION WITH SILT FENCE, BALES ARE PLACED UPSLOPE OF THE SILT FENCE AND DO NOT NEED TO BE TRENCHED IN.

## MAINTENANCE REQUIREMENTS:

- INSPECT BALES:
  - DAILY IN AREAS OF ACTIVE CONSTRUCTION.
  - WEEKLY IN AREAS WITH NO CONSTRUCTION.
  - WITHIN 24 HOURS FOLLOWING EACH MAJOR STORM EVENT.
- REPAIR OR REPLACE BALES AS NEEDED.
- REMOVE ACCUMULATED SEDIMENTS TO AN UPLAND AREA AS NEEDED.

Sabal Trail TRANSMISSION

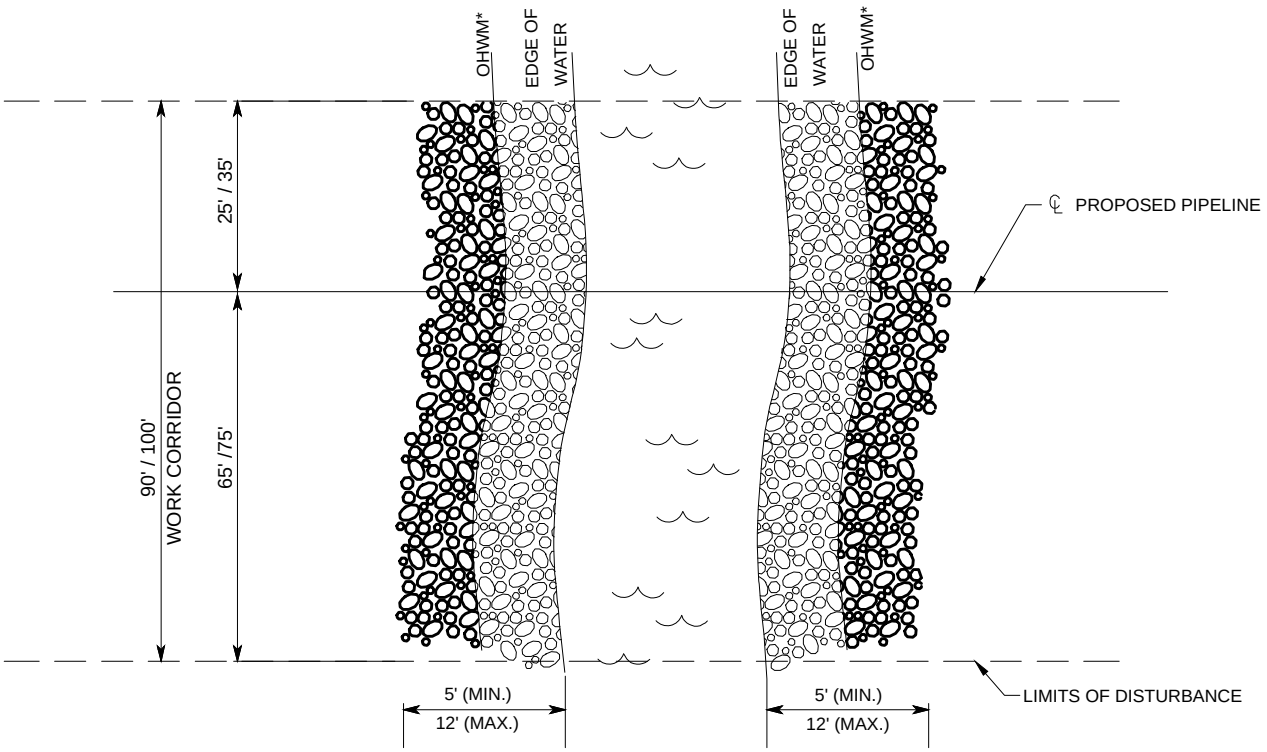
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
STRAW BALE, SEDIMENT BARRIER
INSTALLATION AND MAINTENANCE
FIGURE #18

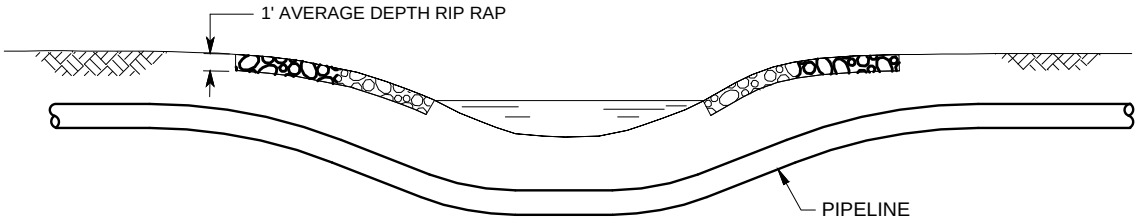
| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28119 | 1 OF 1 | 0 |

12:25:12 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28119.dwg




PLAN

N.T.S.




* ORDINARY HIGH WATER MARK

PROFILE

N.T.S.

NOTES:

1. RIP-RAP WILL NOT EXCEED AN AVERAGE OF ONE CUBIC YARD PER RUNNING FOOT BELOW THE OHWM.
2. RIP-RAP INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE PERMITS.
3. RIP-RAP MUST BE CLEAN AND FREE OF SOIL AND DEBRIS.
4. RIP-RAP SHALL NOT BE PLACED IN A MANNER THAT IMPAIRS SURFACE WATER FLOW.
5. GEOTEXTILE FABRIC MAY BE INSTALLED BELOW RIP-RAP.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 08/27/14 |
| CHECKED BY: | CF | DATE: | 08/28/14 |
| SCALE: | NONE | W.O.: | |

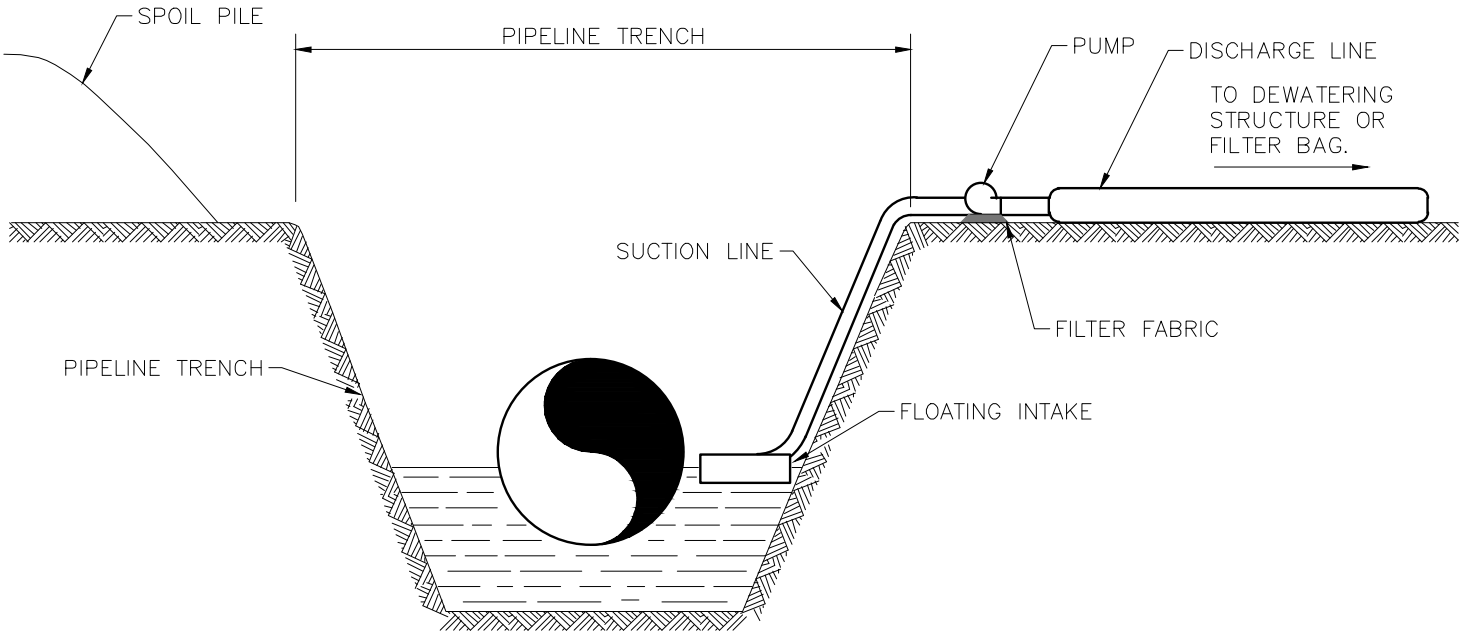
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL RIP RAP DETAIL

FIGURE #19

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28138 | 1 OF 1 | 0 |

12:26:30 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28138.dwg




## CROSS SECTION

SCALE: N.T.S.

NOTES:

1. WATER PUMPED OUT OF TRENCH SHALL NOT BE DISCHARGED INTO WATERWAYS. WATER SHALL BE DISCHARGED INTO A FILTER BAG OR DEWATERING STRUCTURE.
2. PUMP SHALL BE CONTROLLED SO THAT DISCHARGE DOES NOT OVERFLOW DEWATERING STRUCTURE.
3. PUMP SUCTION HOSE MUST NOT BE ALLOWED TO COME IN CONTACT WITH TRENCH BOTTOM. PROVISIONS MUST BE MADE TO ELEVATE THE SUCTION HOSE TO AT LEAST ONE FOOT ABOVE THE BOTTOM OF THE PIPE TRENCH UNTIL BOTTOM DEWATERING IS NECESSARY.
4. DEWATERING SHALL NOT OCCUR DURING TIMES OF HEAVY RAINFALL EXCEPT AS REQUIRED TO PREVENT FLOODING OF CONSTRUCTION EQUIPMENT LOCATED IN BORE PITS AND TRENCHES.
5. PUMPS UTILIZED DURING DEWATERING SHALL BE PLACED WITHIN SECONDARY CONTAINMENT IF POSITIONED WITHIN 100 FEET OF A WETLAND OR WATERBODY.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

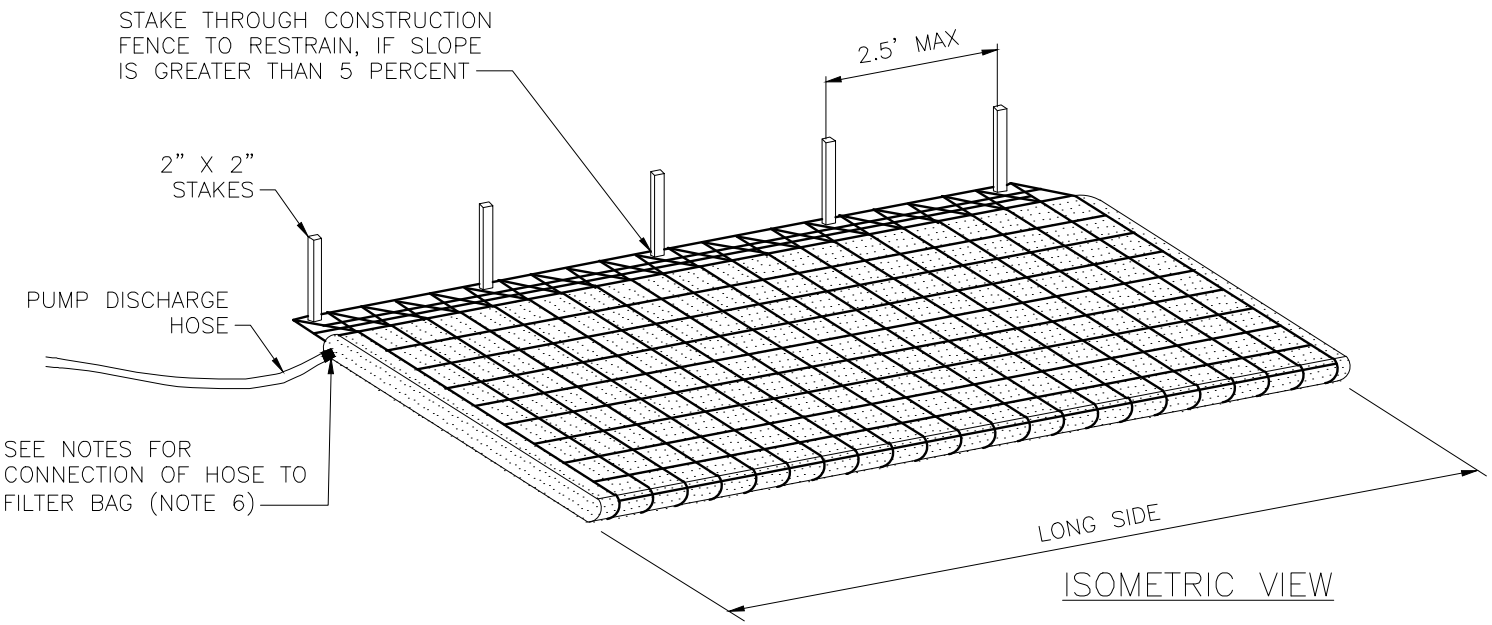
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TRENCH DEWATERING

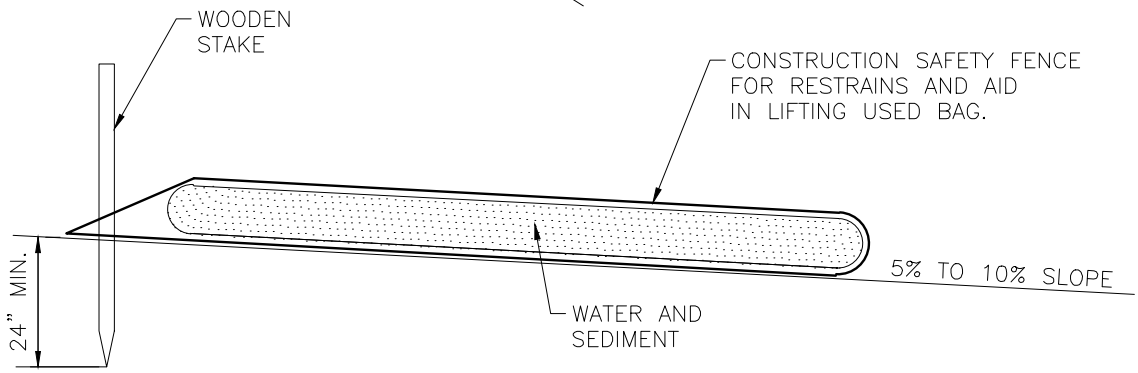
FIGURE #20

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28114 | 1 OF 1 | 0 |

12:27:17 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28114.dwg




ISOMETRIC VIEW




CROSS SECTION

NOTES:

1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
2. THE FILTER BAG MUST BE STAKED IN PLACE IF THE FILTER BAG IS PLACED ON A SLOPE GREATER THAN 5 PERCENT.
3. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN NOTED BY MANUFACTURER.
4. CONTRACTOR SHALL PROPERLY REMOVE AND PROPERLY DISPOSE OF USED FILTER BAGS IMMEDIATELY UPON COMPLETION OF DEWATERING OPERATIONS. UNDER NO CIRCUMSTANCES SHALL USED FILTER BAGS BE LEFT IN PLACE FOR A PERIOD OF TIME GREATER THAN 48 HOURS AFTER DEWATERING DISCHARGE OPERATIONS ARE COMPLETE.
5. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA WITHIN THE CONSTRUCTION CORRIDOR AND THE AREA SHALL BE STABILIZED AND REVEGETATED.
6. TO ATTACH HOSE, CUT OPEN CORNER OF FILTER BAG, GATHER UP MATERIAL AND CLAMP TO A SHORT SECTION OF STEEL PIPE. CLAMP HOSE TO OTHER END OF PIPE. BOTH CONNECTIONS SHALL BE WATERTIGHT.
7. CONTRACTOR SHALL ONLY INSTALL ONE DEWATERING HOSE PER FILTER BAG.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

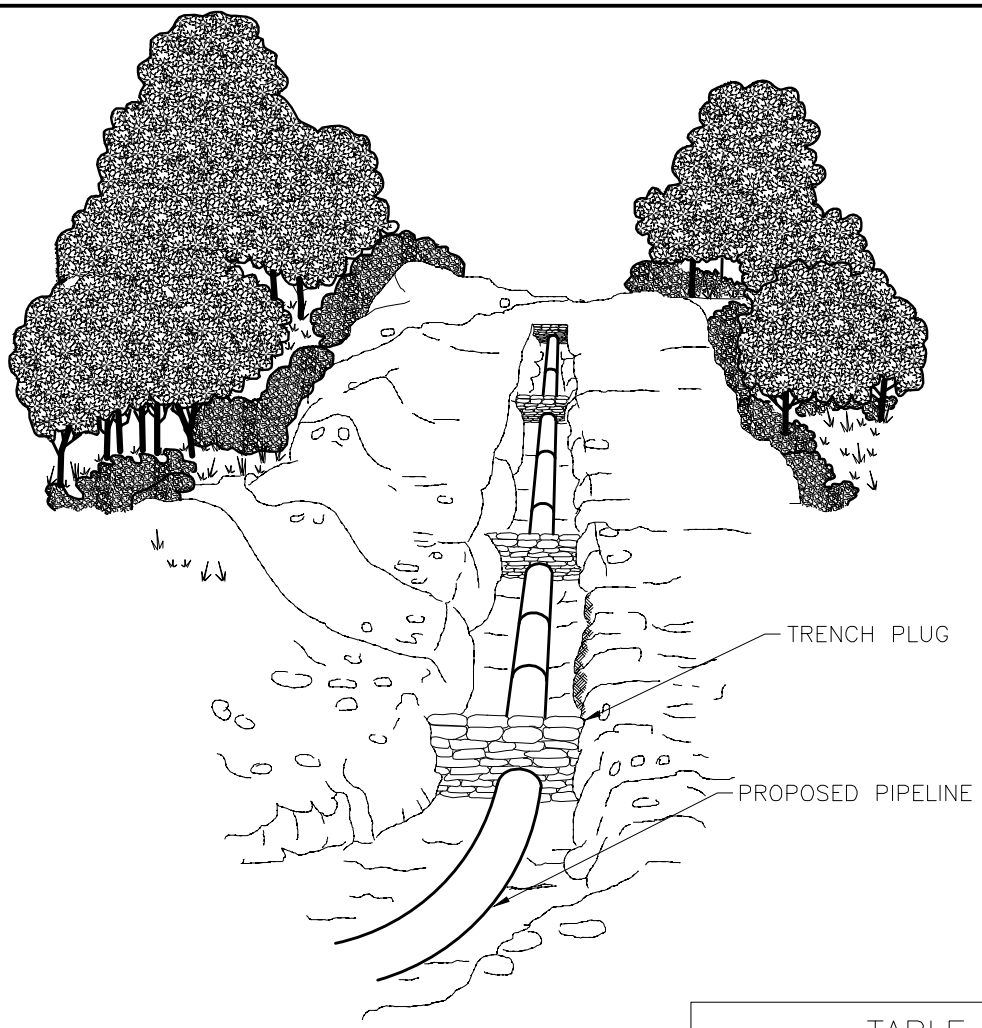
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
FILTER BAG FOR DEWATERING

FIGURE #21

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28115 | 1 OF 1 | 0 |

12:28:13 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28115.dwg




| TABLE 1 | |
|---|---|
| SLOPE (%) | SPACING (FEET) |
| 5 – 15 | 300 |
| 15 – 30 | 200 |
| >30 | 100 |

NOTES:

1. TRENCH PLUGS SHALL BE INSTALLED:
   - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN;
   - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS;
   - WHERE NEEDED TO AVOID DRAINING A WETLAND;
   - ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS;
   - IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYPICALLY INSTALLED, AT THE SPACING SHOWN IN TABLE 1.
2. TRENCH PLUGS SHALL BE INSTALLED PER TABLE 1 OR AS DIRECTED BY COMPANY'S REPRESENTATIVE.
   - SACK PLUGS SHALL UTILIZE OPEN WEAVE HEMP OR JUTE SACKS FILLED TO A MINIMUM OF 55 LBS. OF SUBSOIL, SAND OR A MIXTURE OF 1 PART CEMENT TO 6 PARTS SAND OR SUBSOIL AS DETERMINED BY COMPANY'S INSPECTOR.
   - POLYURETHANE FOAM PLUGS MAY BE USED IN LIEU OF SACK PLUGS, WHEN APPROVED BY COMPANY'S REPRESENTATIVE.
3. TRENCH PLUG AND CONFIGURATION MAY BE CHANGED AS DIRECTED BY COMPANY. DEPTH OF DITCH MAY VARY WITH SITE CONDITIONS.

Sabal Trail TRANSMISSION

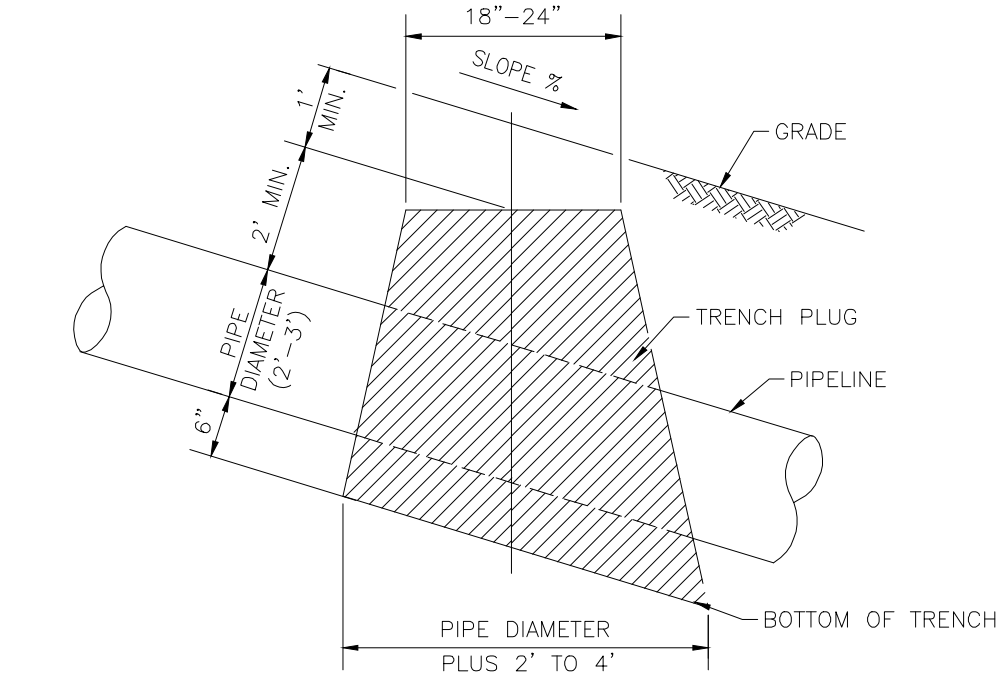
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
PERMANENT TRENCH PLUGS

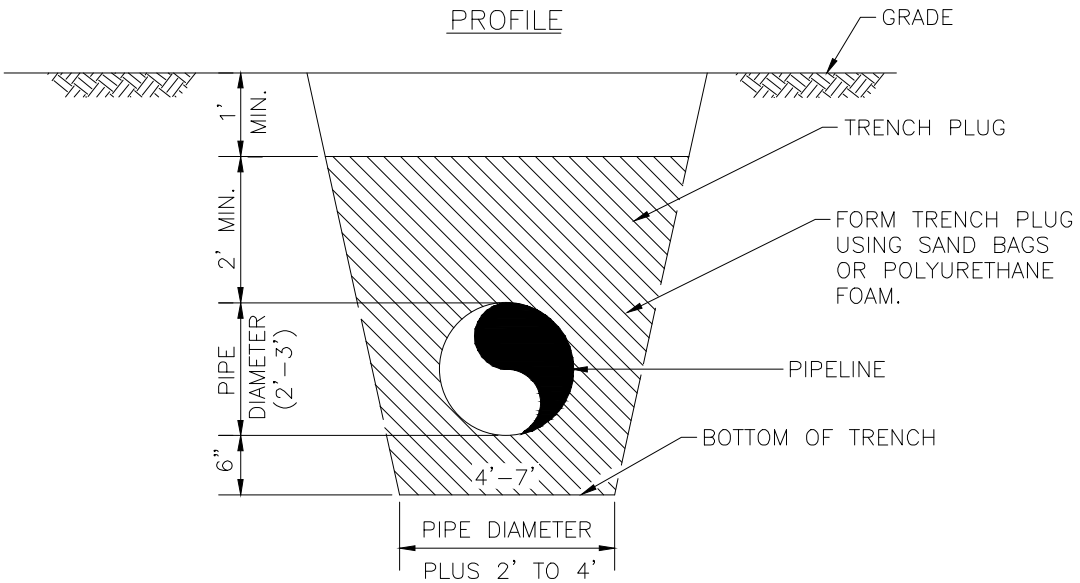
FIGURE #22

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28116 | 1 OF 2 | 0 |

12:29:19 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28116_01.dwg




PROFILE




CROSS SECTION

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

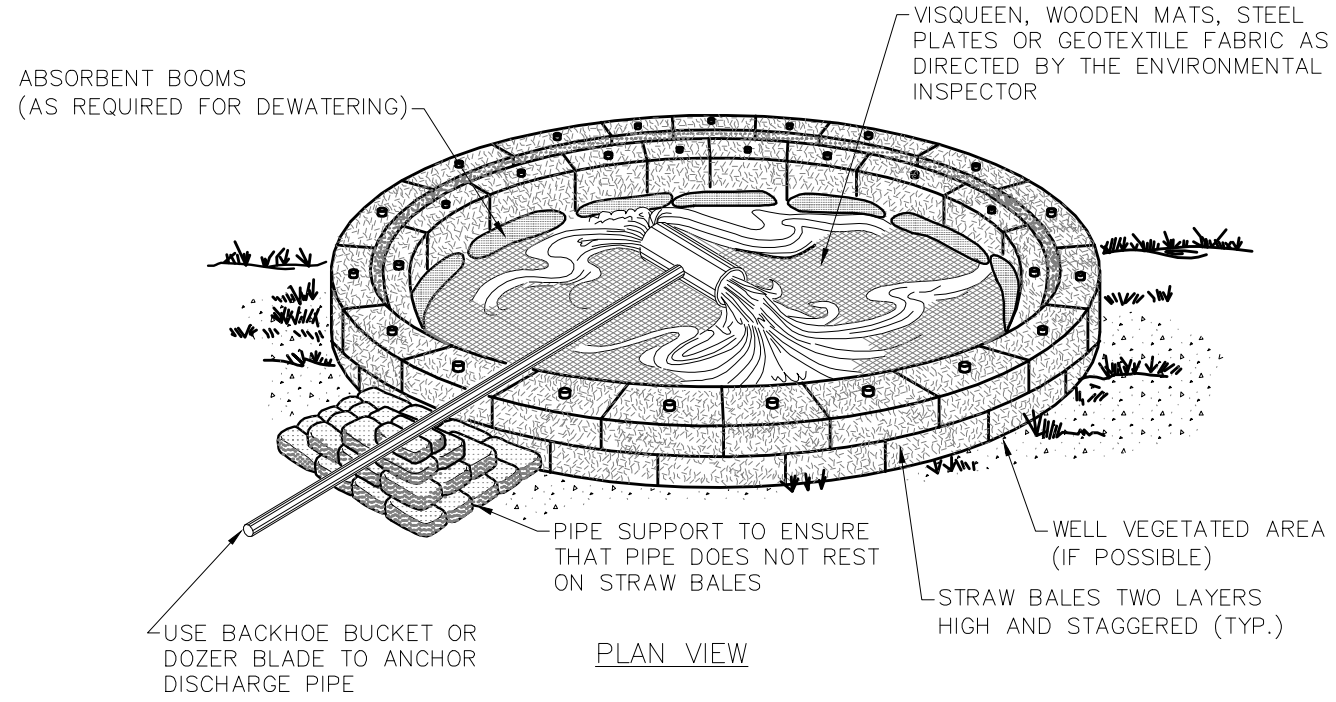
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
PERMANENT TRENCH PLUGS

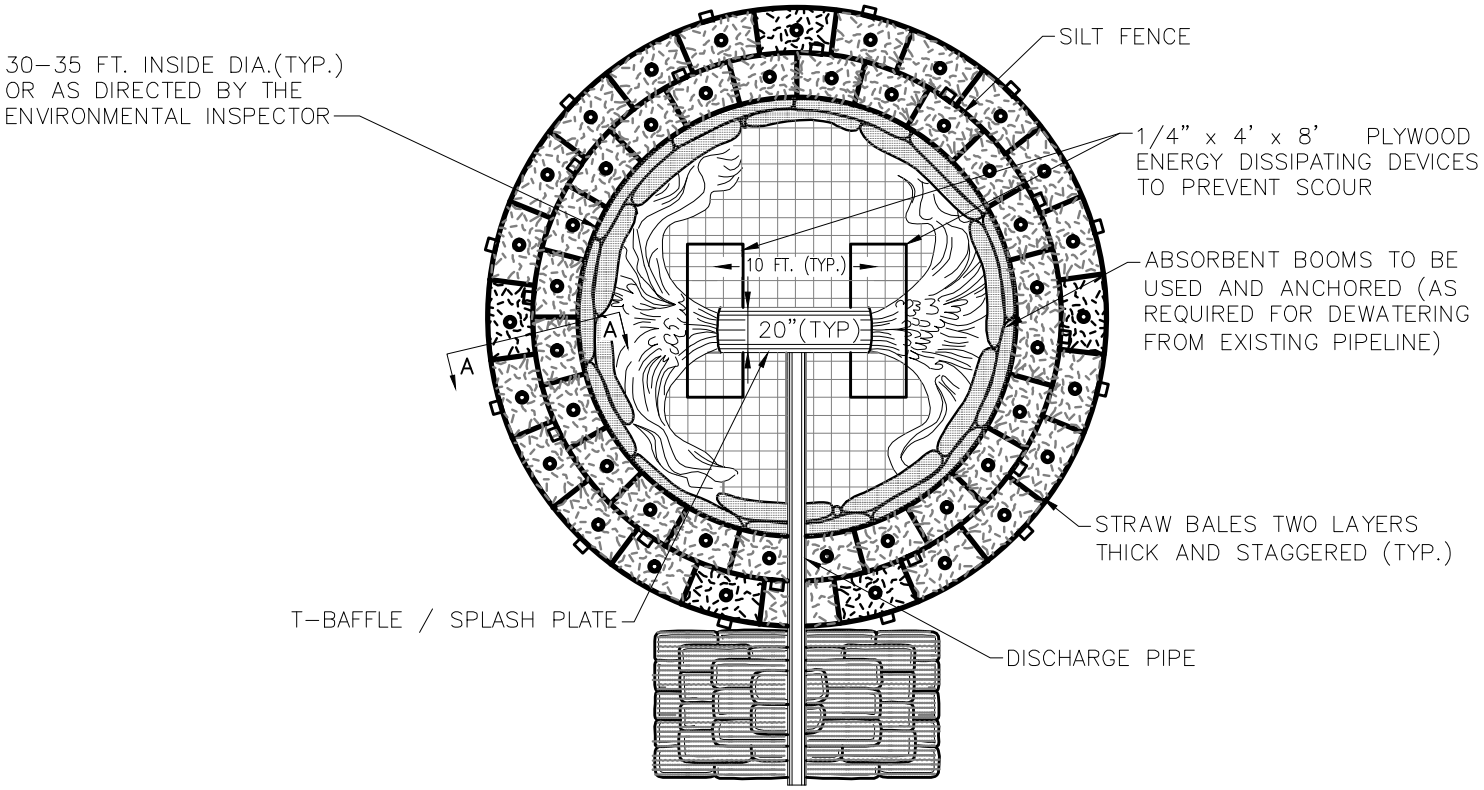
FIGURE #22

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28116 | 2 OF 2 | 0 |

12:29:59 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28116_02.dwg




PLAN VIEW




TOP VIEW

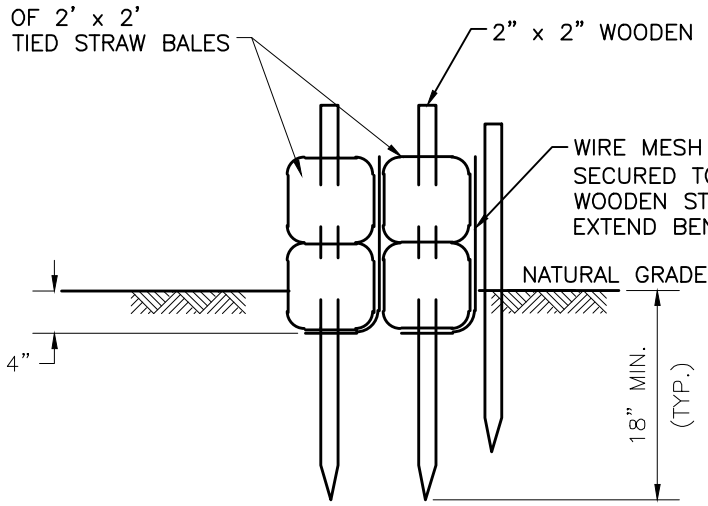
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
DEWATERING STRUCTURE
FOR HYDROSTATIC TESTING
FIGURE #23

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28127 | 1 OF 2 | 0 |

12:30:54 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28127_01.dwg




NOTE

STAKES SECURING SILT FENCE BETWEEN BALES ARE NOT SHOWN FOR CLARITY.

SECTION 'A–A'
(N.T.S.)

NOTES:

1. STRUCTURE SHALL BE PLACED ON A LEVEL WELL VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM STRUCTURE AND ANY WORK AREAS.
2. FLOW RATES THROUGH DISCHARGE AND DIVERTOR PIPES SHALL BE SUCH THAT STRUCTURE WILL NOT OVERFLOW.
3. A 30' OR 35' RECTANGULAR STRUCTURE MAY BE SUBSTITUTED FOR THE CIRCULAR CONFIGURATION SHOWN.
4. DIMENSIONS SHOWN ARE THE MINIMUM ACCEPTABLE AND MAY BE VARIED DEPENDING UPON SPECIFIC LOCATION.

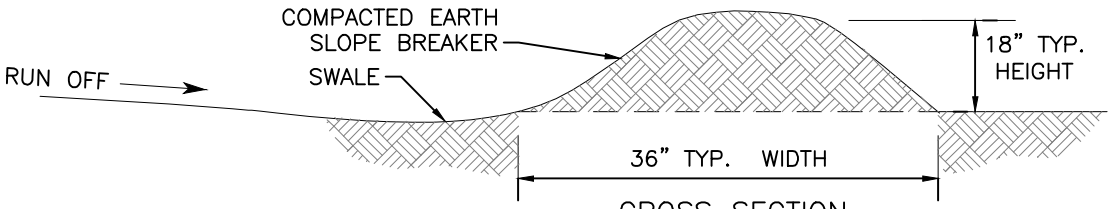
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: SC | DATE: 02/18/14 | | |
| CHECKED BY: J.W. | DATE: 02/18/14 | | |
| SCALE: NONE | W.O.: | | |
| 0 | ISSUED FOR PERMITTING | 11/20/14 | |
| REV. | DESCRIPTION | DATE | |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
DEWATERING STRUCTURE FOR
HYDROSTATIC TESTING
FIGURE #23

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28127 | 2 OF 2 | 0 |

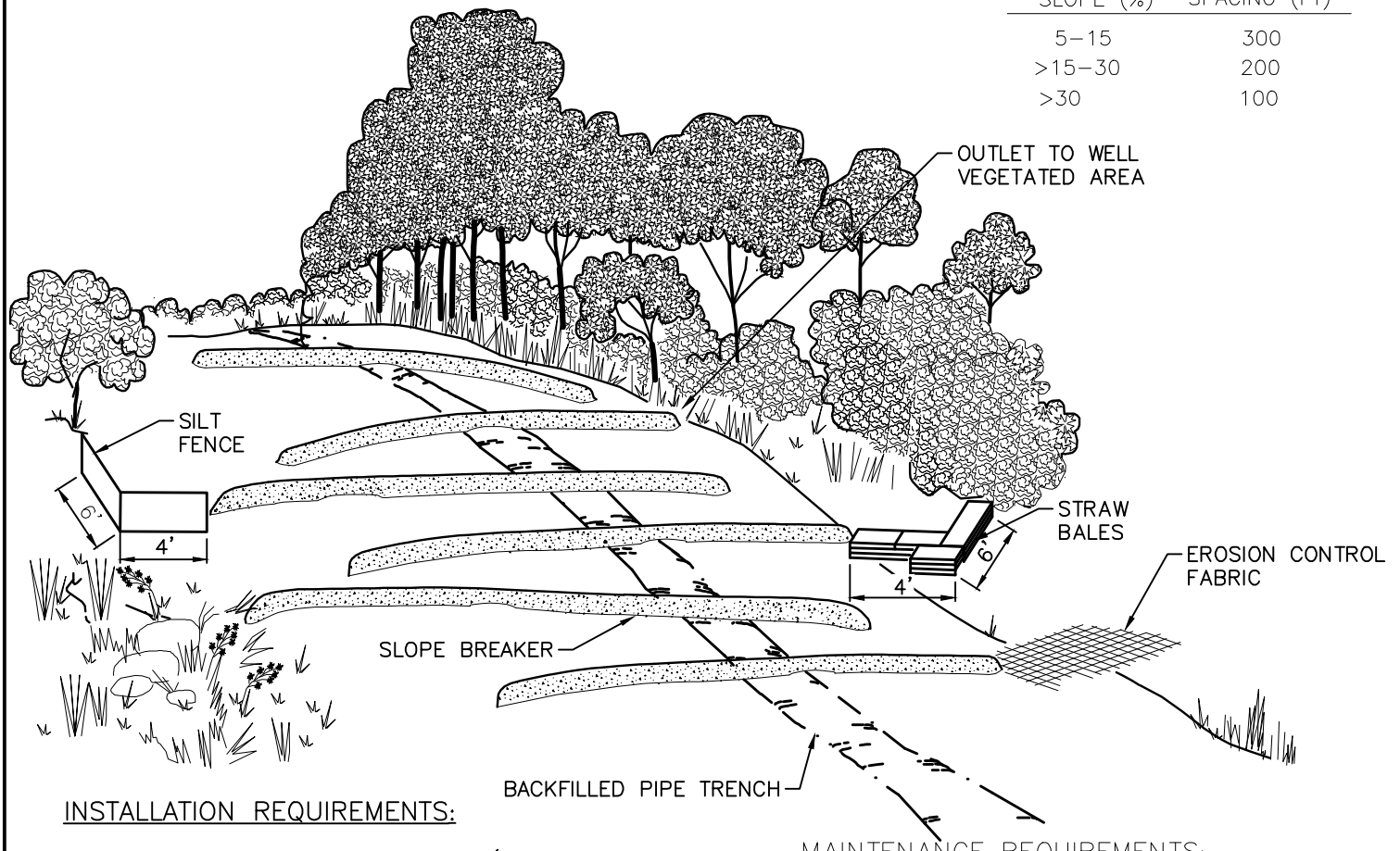
12:32:09 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28127_02.dwg




CROSS SECTION

## SLOPE BREAKER SPACING

| SLOPE (%) | SPACING (FT) |
|---|---|
| 5–15 | 300 |
| >15–30 | 200 |
| >30 | 100 |




## INSTALLATION REQUIREMENTS:

- INSTALL IN ALL DISTURBED AREAS (UNLESS OTHERWISE SPECIFIED BY LANDOWNER IN WRITING).
- CONSTRUCT USING COMPACTED EARTH, SAND FILLED SACKS OR STAKED STRAW BALES FOR TEMPORARY OR COMPACTED EARTH AND ROCK OR SAND BAGS FOR PERMANENT.
- INSTALL WITH A 2%–8% OUTFALL ANGLE.
- FILTER RUN–OFF WATER BY CONSTRUCTING THE OUTLET IN A WELL VEGETATED STABLE AREA, OR BY USING AN ENERGY DISSIPATING DEVICE (SILT FENCE, STRAW BALES, EROSION CONTROL FABRIC) AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
- POSITION THE OUTFALL TO PREVENT SEDIMENT DISCHARGE INTO WETLANDS, WATERBODIES, OR OTHER SENSITIVE RESOURCES.
- ENSURE ORIENTATION SO THAT DISCHARGE DOES NOT FLOW INTO AN OPEN TRENCH OR BACK ONTO THE DISTURBED R.O.W.
- SLOPE BREAKERS MAY BE INSTALLED TO MATCH EXISTING SLOPE BREAKERS ON ADJACENT UNDISTURBED PIPELINE R.O.W.
- ON SLOPES GREATER THAN 30% INSTALL PERMANENT SLOPE BREAKERS WITH EROSION CONTROL FABRIC ON THE SWALE (UPSLOPE) SIDE.

## MAINTENANCE REQUIREMENTS:

- INSPECT SLOPE BREAKERS DURING AND FOLLOWING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.
  - DAILY IN AREAS OF ACTIVE CONSTRUCTION
  - WEEKLY IN AREAS WITH NO CONSTRUCTION
  - WITHIN 24 HOURS FOLLOWING EACH MAJOR STORM EVENT (0.5 INCH RAINFALL).
- KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.
- SEED AND MULCH PERMANENT SLOPE BREAKERS FOLLOWING CONSTRUCTION.

Sabal Trail TRANSMISSION

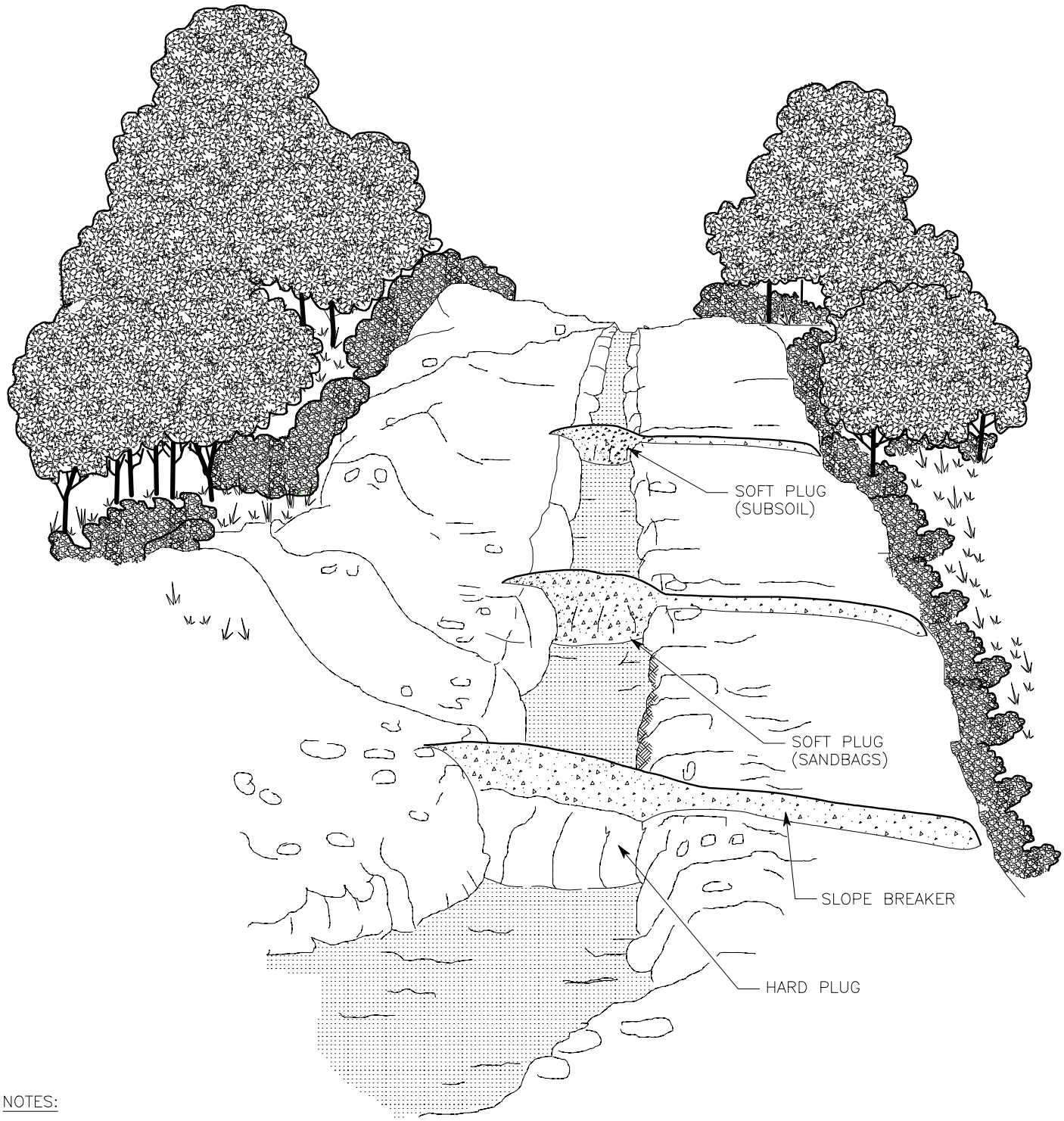
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
SLOPE BREAKER
INSTALLATION AND MAINTENANCE
FIGURE #24

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28117 | 1 OF 1 | 0 |

12:33:52 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28117.dwg




NOTES:

1. TEMPORARY TRENCH PLUG MATERIALS MAY CONSIST OF UNEXCAVATED PORTIONS OF THE TRENCH (HARD PLUG), COMPACTED SUBSOIL OR SANDBAGS PLACED ACROSS THE DITCH (SOFT PLUG), OR SOME FUNCTIONAL EQUIVALENT. THESE OPTIONS ARE DEPICTED ABOVE. DO NO USE TOPSOIL FOR TRENCH PLUGS.

2. POSITION TEMPORARY TRENCH PLUGS, AS NECESSARY, TO REDUCE TRENCHLINE EROSION AND MINIMIZE THE VOLUME AND VELOCITY OF TRENCH WATER FLOW AT THE BASE OF SLOPES.

Sabal Trail
TRANSMISSION

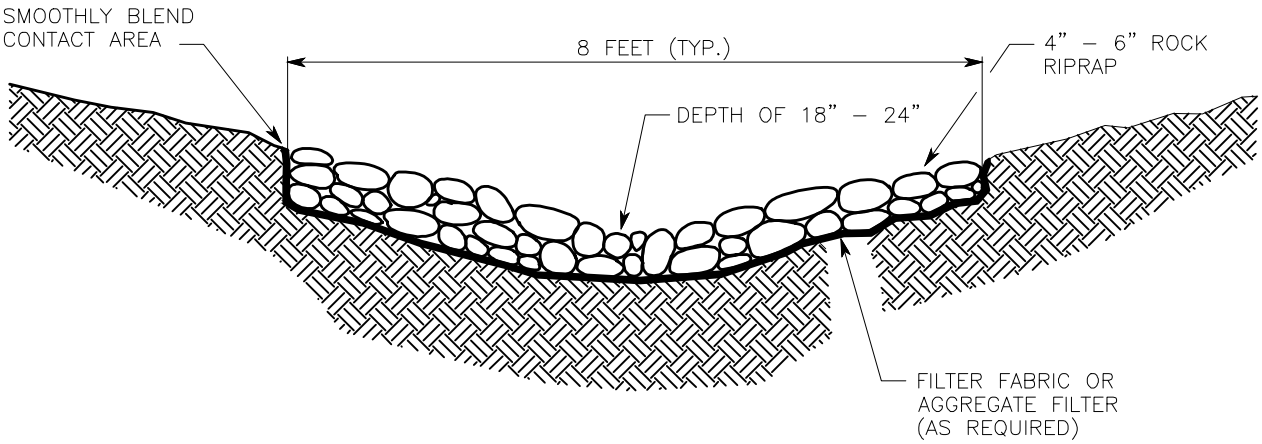
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TEMPORARY TRENCH PLUGS

FIGURE #25

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28143 | 1 OF 1 | 0 |

12:37:36 PM 11/18/2014 monochrome.ctb
H:_doc\1657\Engineering & Technical\10_Pipeline\Mapping\Typicals\Drawings\10-29-14 New Typicals\1657-PL-DG-28143.dwg




INSTALLATION REQUIREMENTS:

1. RIPRAP CHANNELS CAN BE CONSTRUCTED WITH GRASS–LINED SLOPES WHERE SITE CONDITIONS WARRANT.
2. STABILIZE CHANNEL INLET POINTS AND INSTALL OUTLET PROTECTION (AS NEEDED) DURING CHANNEL INSTALLATION.
3. INSTALL ENERGY DISSIPATING DEVICE (AS NEEDED) TO PREVENT SCOUR TO THE RECEIVING OUTLET.
4. REMOVE ALL TREES, BRUSH, AND OTHER OBJECTIONABLE MATERIAL FROM THE CHANNEL.
5. INSTALL FILTER FABRIC OR GRAVEL LAYER TO PREVENT PIPING (AS REQUIRED)

MAINTENANCE REQUIREMENTS:

1. INSPECT CHANNEL DURING AND FOLLOWING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.
2. KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.

Sabal Trail TRANSMISSION

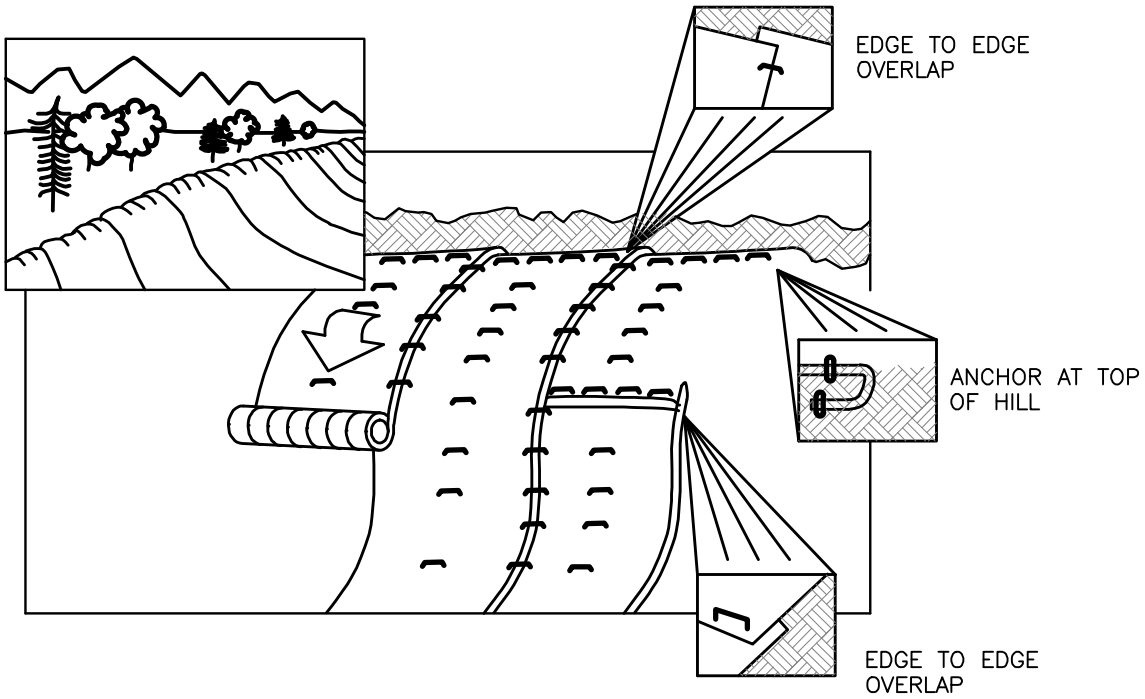
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
ROCK LINED DRAINAGE SWALE
INSTALLATION AND MAINTENANCE
FIGURE #26

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28144 | 1 OF 1 | 0 |

12:41:44 PM 11/18/2014 monochrome.ctb
H:_doc\1657\Engineering & Technical\10_Pipeline\Mapping\Typicals\Drawings\10–29–14 New Typicals\1657–PL–DG–28144.dwg




NOTES:

1. EROSION CONTROL MATTING (BLANKETS) SHALL BE USED AT LOCATIONS IDENTIFIED IN THE PLAN AND/OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
2. EROSION CONTROL MATTING SHALL MEET THE REQUIREMENTS SPECIFIED IN THE PLAN AND/OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
3. STAPLES SHALL BE MADE OF 11 GAUGE WIRE, U-SHAPED WITH 6" LEGS AND A 1" CROWN. STAPLES SHALL BE DRIVEN INTO THE GROUND FOR THE FULL LENGTH OF THE STAPLE LEGS.
4. MATTING SHALL BE INSTALLED ACCORDING TO MANUFACTURER SPECIFICATIONS OR AS STATED BELOW:
   - EXTEND TOP OF BLANKET 3 FEET PAST THE UPPER EDGE OF THE SLOPE.
   - ANCHOR ("KEY") THE UPPER EDGE OF THE BLANKET INTO THE SLOPE USING A 6" DEEP TRENCH AND ROLL THE BLANKET DOWN THE HILL. DOUBLE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPACTING TRENCH.
   - AVOID STRETCHING EROSION CONTROL MATTING (LOOSELY) DURING INSTALLATION.
   - BRING MAT ROLL BACK OVER THE TOP OF THE TRENCH AND CONTINUE TO ROLL DOWN SLOPE. STAPLE EVERY 12" WHERE MAT EXITS THE TRENCH AT THE TOP OF THE SLOPE.
   - WHEN BLANKETS ARE SPLICED DOWN-SLOPE TO ADJOINING MATS (SLOPE OR STREAM BANK MATS), THE UPPER BLANKET SHALL BE PLACED OVER THE LOWER MAT (SHINGLE STYLE) WITH APPROXIMATELY 6" OF OVERLAP. STAPLE THROUGH THE OVERLAPPED AREA EVERY 12".
   - OVERLAP ADJACENT BLANKETS 6". STAPLE EDGES OF BLANKETS AND CENTER EVERY 36".
5. IN LIVESTOCK AREAS WHERE EROSION CONTROL MATTING IS APPLIED TO THE SLOPES, FENCING WILL BE USED IF NECESSARY TO EXCLUDE LIVESTOCK, WITH PERMISSION OF THE LANDOWNER.
6. MONITOR WASHOUTS, STAPLE INTEGRITY OR MAT MOVEMENT. REPLACE OR REPAIR AS NECESSARY.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

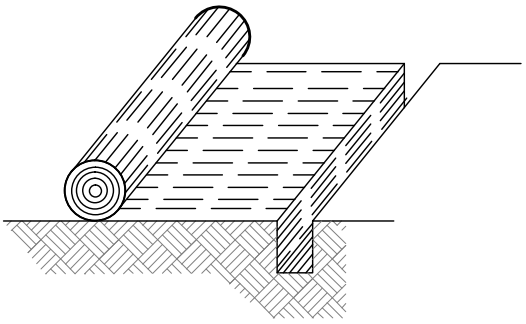
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
EROSION CONTROL
MATTING ON SLOPES
FIGURE #27

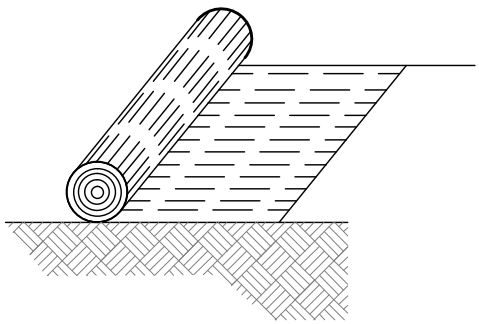
| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28120 | 1 OF 2 | 0 |

12:43:20 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28120_01.dwg

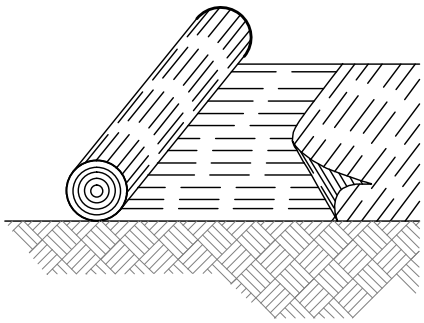
A. BURY THE TOP END OF THE JUTE STRIPS IN A 6" TRENCH (TYPICAL)



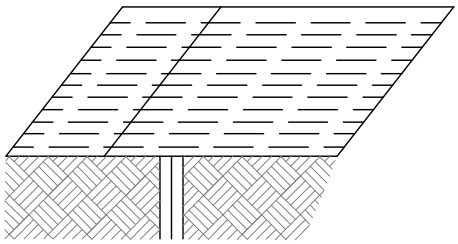
B. DOUBLE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPACTING.

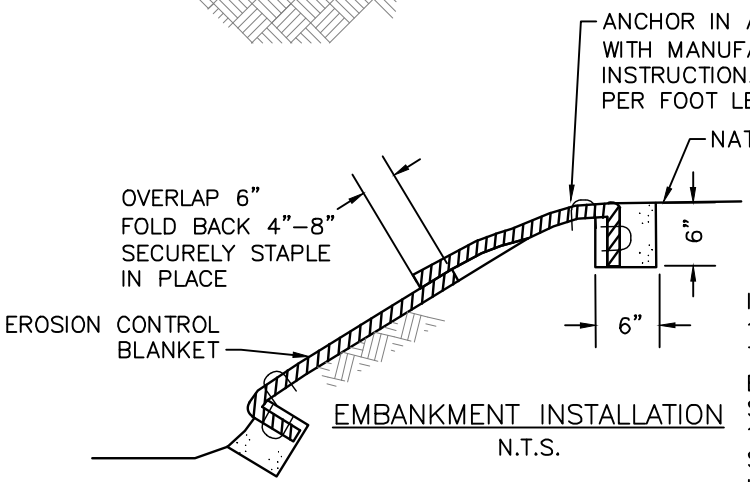


C. BURY AND TAMP UPPER END OF LOWER STRIP AS IN "A" AND "B". OVERLAP END OF TOP STRIP 4" AND STAPLE.



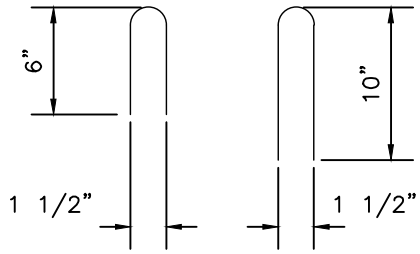
D. WHERE FABRIC STOPS, FOLD, BURY, AND TAMP JUTE STRIPS IN SLIT TRENCH. PROVIDE DOUBLE ROW OF STAPLES



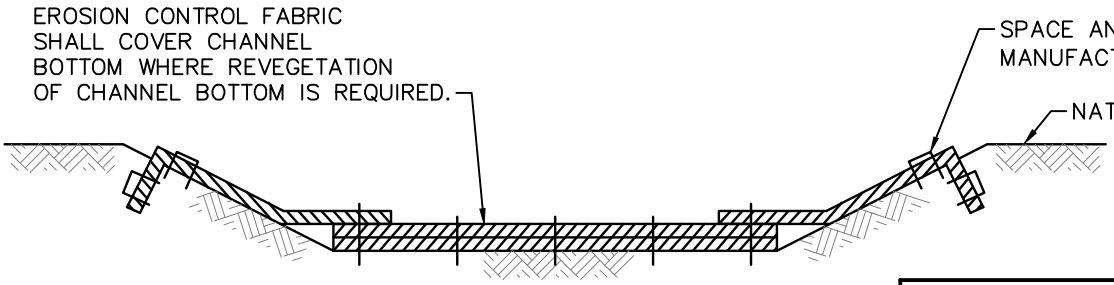



EMBANKMENT INSTALLATION
N.T.S.

INSTALL STAPLES 18" TO 24" APART THROUGHOUT THE BLANKET/MAT. STAPLES SHALL BE 11–GAUGE COLD DRAWN STEEL WIRE FORMED IN A "U" SHAPE NOT LESS THAN 6" LENGTH.




TYPICAL STAPLES
NO. 11 GAUGE WIRE




CHANNEL INSTALLATION
N.T.S.

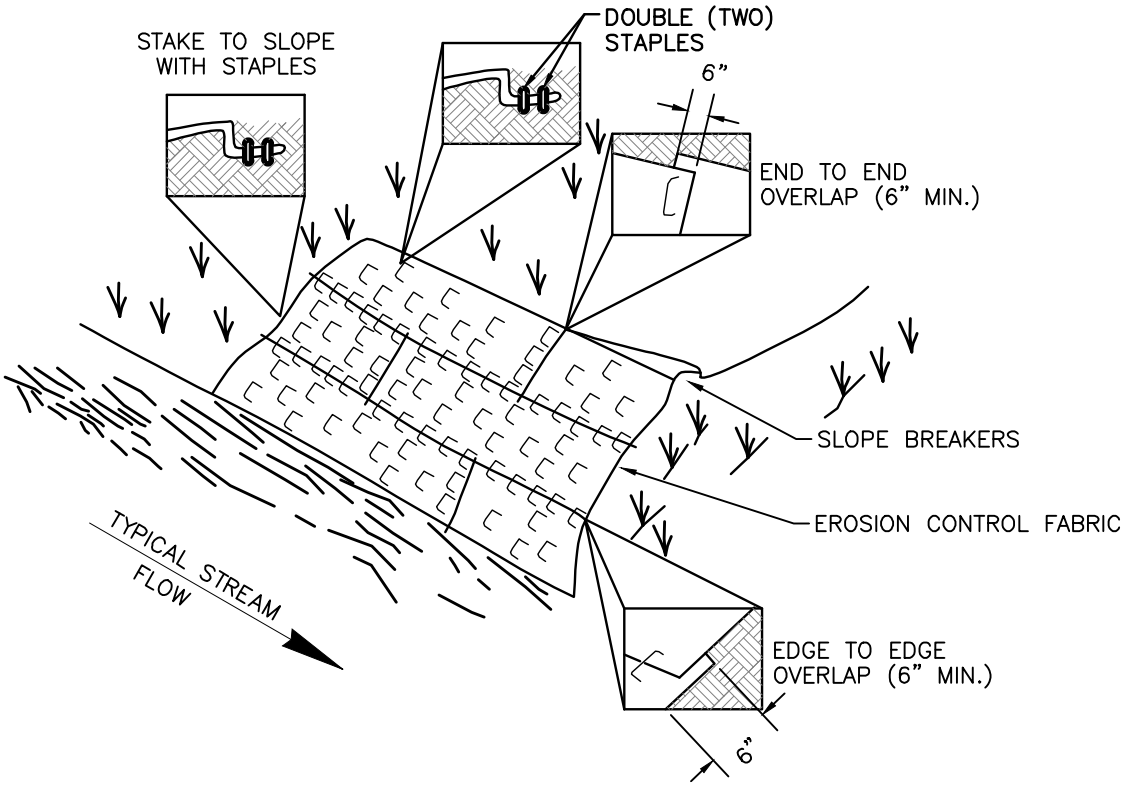
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
EROSION CONTROL
FABRIC INSTALLATION
FIGURE #27

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28120 | 2 OF 2 | 0 |

12:44:19 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28120_02.dwg




## NOTES:

1. EROSION CONTROL MATTING SHALL BE PLACED ON THE BANKS OF FLOWING STREAMS WHERE VEGETATION HAS BEEN REMOVED OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

2. EROSION CONTROL MATTING SHALL MEET THE REQUIREMENTS SPECIFIED IN THE PLAN AND/OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

3. STAPLES SHALL BE MADE OF AT LEAST 11 GAUGE WIRE, U-SHAPED WITH 6" LEGS AND A 1" CROWN. STAPLES SHALL BE DRIVEN INTO THE GROUND FOR THE FULL LENGTH OF THE STAPLE LEGS. ALTERNATELY, 1" DIA. WOODEN PEGS 6" LONG AND BEVELED MAY BE USED TO SECURE MATTING.

4. MATTING SHALL BE INSTALLED ACCORDING TO MANUFACTURER SPECIFICATIONS OR AS STATED BELOW:

   - EXTEND TOP OF BLANKET 2 FEET PAST THE UPPER EDGE OF THE HIGH WATER MARK. IF A SLOPE BREAKER IS PRESENT ON THE APPROACH SLOPE, BEGIN THE BLANKET ON THE UPHILL SIDE OF THE SLOPE BREAKER.
   - INSTALL BLANKET(S) ACROSS THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
   - ANCHOR ("KEY") THE UPSTREAM EDGE OF THE BLANKET(S) INTO THE SLOPE USING A 6" DEEP TRENCH. DOUBLE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPACTING TRENCH
   - OVERLAP THE EDGES OF PARALLEL BLANKETS A MINIMUM OF 6". PLACE THE UPPER BLANKET OVER THE LOWER BLANKET (SHINGLE STYLE) AND STAPLE EVERY 12" ALONG THE LENGTH OF THE EDGE.
   - WHEN BLANKET ENDS ARE ADJOINED, PLACE THE UPSTREAM BLANKET OVER THE DOWNSTREAM BLANKET (SHINGLE STYLE) WITH APPROXIMATELY 6" OF OVERLAP AND STAPLE THROUGH THE OVERLAPPED AREA EVERY 12".
   - STAPLE DOWN THE CENTER OF THE BLANKET(S), THREE STAPLES IN EVERY SQUARE YARD.

5. IN LIVESTOCK AREAS WHERE EROSION CONTROL MATTING IS APPLIED TO THE STREAMBANKS, FENCING WILL BE USED IF NECESSARY TO EXCLUDE LIVESTOCK, WITH PERMISSION OF THE LANDOWNER.

6. MONITOR WASHOUTS, STAPLE INTEGRITY OR MAT MOVEMENT. REPLACE OR REPAIR AS NECESSARY.

7. INSTALLATION MAY BE USED AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR AT SEVERELY SLOPING ROAD BANKS, BUT MAY ONLY BE INSTALLED TO A MAXIMUM OF ONE BLANKET WIDTH.

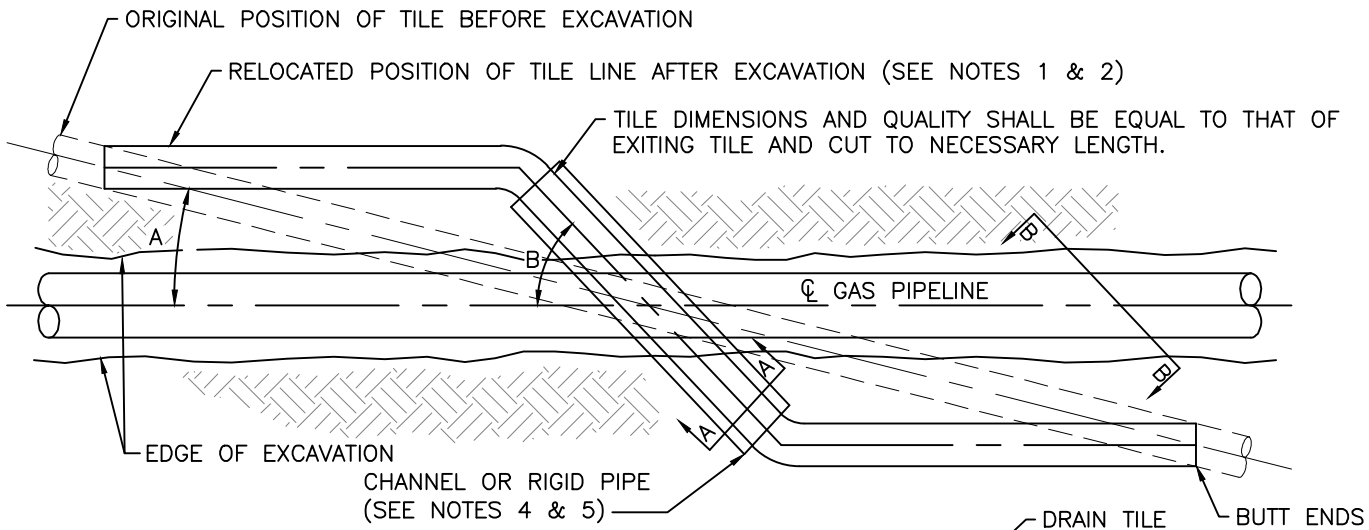
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

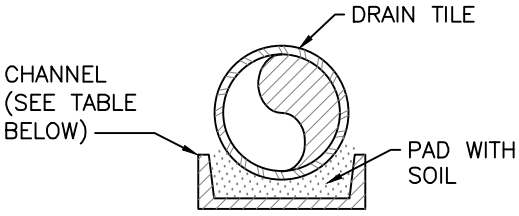
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
EROSION CONTROL MATTING OF STREAM BANKS AND SEVERELY SLOPING ROAD BANKS
FIGURE #28

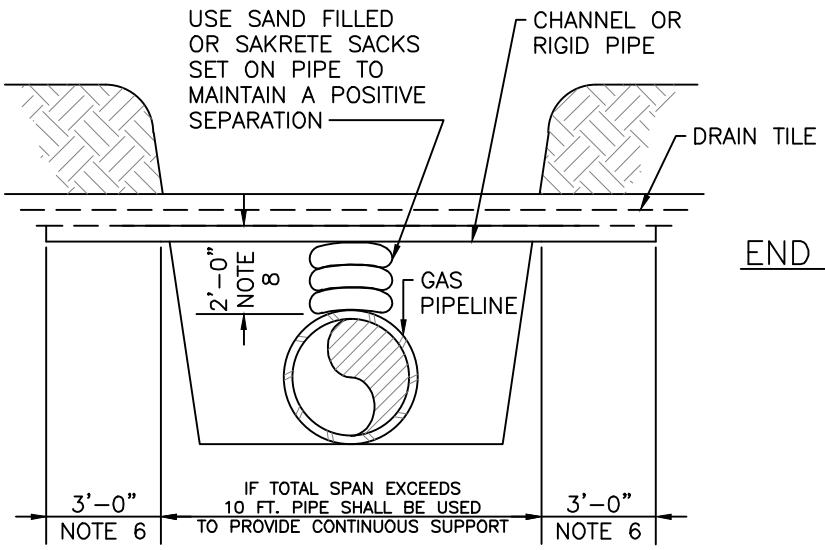
| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28121 | 1 OF 1 | 0 |




PLAN VIEW

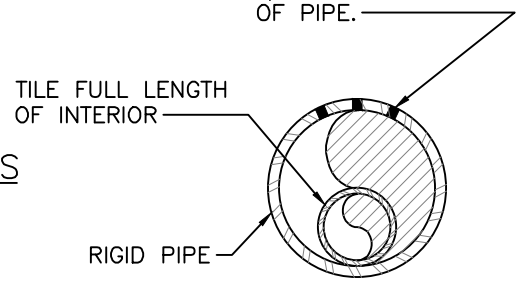



SECTION 'A–A'
**CHANNEL PIPE**
(SPANS ≤ 10 FT.)




SECTION 'B–B'

END VIEWS




SECTION 'A–A'
RIGID PIPE
(SPANS > 10 FT.)

| MINIMUM SUPPORT TABLE | | |
|---|---|---|
| TILE SIZE | CHANNEL SIZE | PIPE SIZE |
| 3" | 4" @ 5.4 #/FT. | STD. WT. |
| 4"–5" | 5" @ 6.7 #/FT. | STD. WT. |
| 6"–9" | 7" @ 9.8 #/FT. | STD. WT. |
| 10" | 10" @ 15.3 #/FT. | STD. WT. |

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 04/16/14 |
| CHECKED BY: | J.W. | DATE: | 04/17/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL DRAIN TILE

FIGURE #29

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28133 | 1 OF 2 | 0 |

12:48:35 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28133_01.DWG

NOTES:

1. TILE REPAIR SHALL MAINTAIN ORIGINAL ALIGNMENT AND GRADIENT WHEN ANGLE "A" BETWEEN PIPELINE AND ORIGINAL TILE, IS MORE THEN 20° UNLESS OTHERWISE DIRECTED BY COMPANY REPRESENTATIVE.
2. WHEN ANGLE "A" IS LESS THAN 20°. UNLESS OTHERWISE DIRECTED BY COMPANY, ANGLE "B" SHALL BE 45° FOR USUAL WIDTHS OF TRENCH FOR EXTRA WIDTHS IT MAY BE GREATER AS DIRECTED BY COMPANY REPRESENTATIVE.

3. DRAINAGE TILE SHALL BE REPLACED SO THAT ITS FORMER GRADIENT AND ALIGNMENT ARE RESTORED.

4. DIAMETER OF RIGID PIPE SHALL BE ADEQUATE SIZE TO ALLOW FOR THE INSTALLATION OF THE TILE FOR THE FULL LENGTH OF RIGID PIPE.

5. OTHER METHODS OF SUPPORTING DRAIN TILE MAY BE USED IF THE ALTERNATE PROPOSED IS EQUIVALENT IN STRENGTH TO THE CHANNEL/PIPE SECTIONS SHOWN AND IF APPROVED BY THE COMPANY REPRESENTATIVE IN ADVANCE. SITE SPECIFIC ALTERNATE SUPPORT SYSTEM TO BE DEVELOPED BY COMPANY REPRESENTATIVE AND FURNISHED TO CONTRACTOR FOR SPANS IN EXCESS OF 20 FT., TILE GREATER THAN 10" IN DIAMETER, AND FOR "HEADER" SYSTEMS.

6. 3'–0" MIN. LENGTH OF CHANNEL OR RIGID PIPE SUPPORTED BY UNDISTURBED SOIL IF CROSSING IS NOT AT RIGHT ANGLES TO GAS PIPELINE, EQUIVALENT LENGTH PERPENDICULAR TO TRENCH.

7. WHEN SPAN EXCEEDS 6 FEET, INSTALL SAND FILLED SACKS TO BOTTOM OF CHANNEL OR RIGID PIPE TO PROVIDE CONTINUOUS FIRM SUPPORT.

8. A MINIMUM CLEARANCE OF 12" MUST BE MAINTAINED FROM ANY UNDERGROUND STRUCTURE NOT ASSOCIATED WITH THE PIPELINE. THE RECOMMENDED CLEARANCE IS 24" BETWEEN ANY UTILITY AND PROPOSED PIPELINE.

9. ALL MATERIAL TO BE FURNISHED BY CONTRACTOR.

10. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL PROBE INTO THE EXISTING TILE TO THE FULL WIDTH OF THE RIGHT OF WAY TO DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. ALL DAMAGED/DISTURBED TILE SHALL BE REPAIRED AS NEAR AS PRACTICAL TO ITS ORIGINAL CONDITION AS SOON AS PRACTICAL.

11. "NIGHT CAP" OPEN ENDS OF PIPE IF REPAIRS ARE NOT COMPLETED BY END OF WORK DAY.

12. THE ENDS OF THE EXISTING TILE SHALL NOT BE PLUGGED AND CONTINUOUS FLOW SHALL BE MAINTAINED IN THE TILE SYSTEM DURING THE CONSTRUCTION ACTIVITY UNLESS OTHERWISE AUTHORIZED.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 04/16/14 |
| CHECKED BY: | J.W. | DATE: | 04/17/14 |
| SCALE: | NONE | W.O.: | |

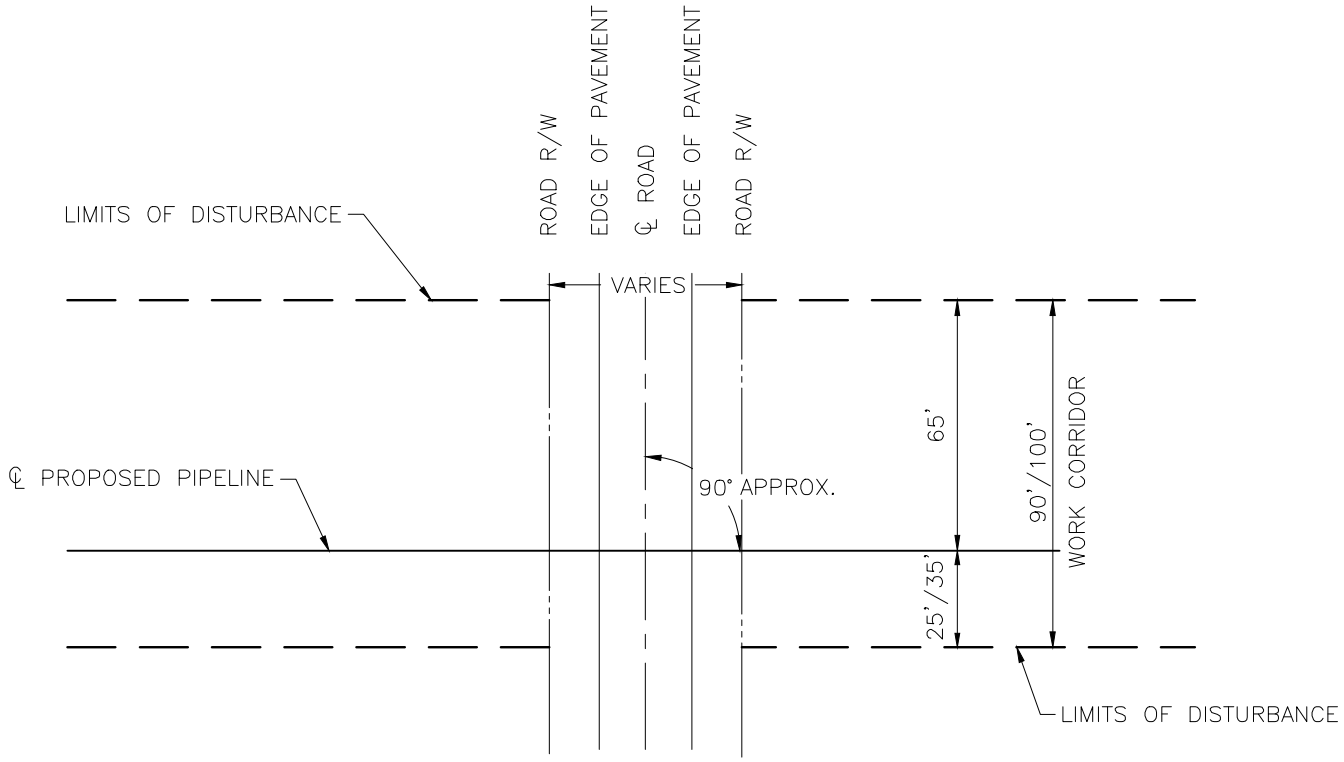
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL DRAIN TILE

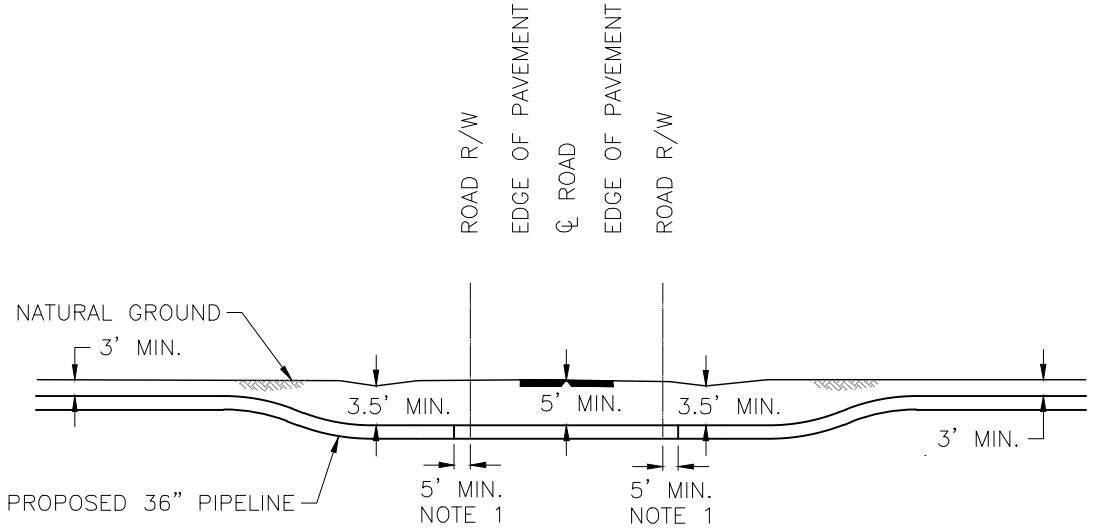
FIGURE #29

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28133 | 2 OF 2 | 0 |

12:49:15 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28133_02.DWG




PLAN
N.T.S.




PROFILE
N.T.S.

NOTE:

1. DEFINES MINIMUM FOOTAGE OF STRAIGHT PIPE OUTSIDE OF ROAD R/W BEFORE RETURNING PIPELINE TO 3 FEET MIN. COVER AND POSSIBLE PIPE MATERIAL CHANGE.

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/23/14 |
| CHECKED BY: | J.W. | DATE: | 02/23/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

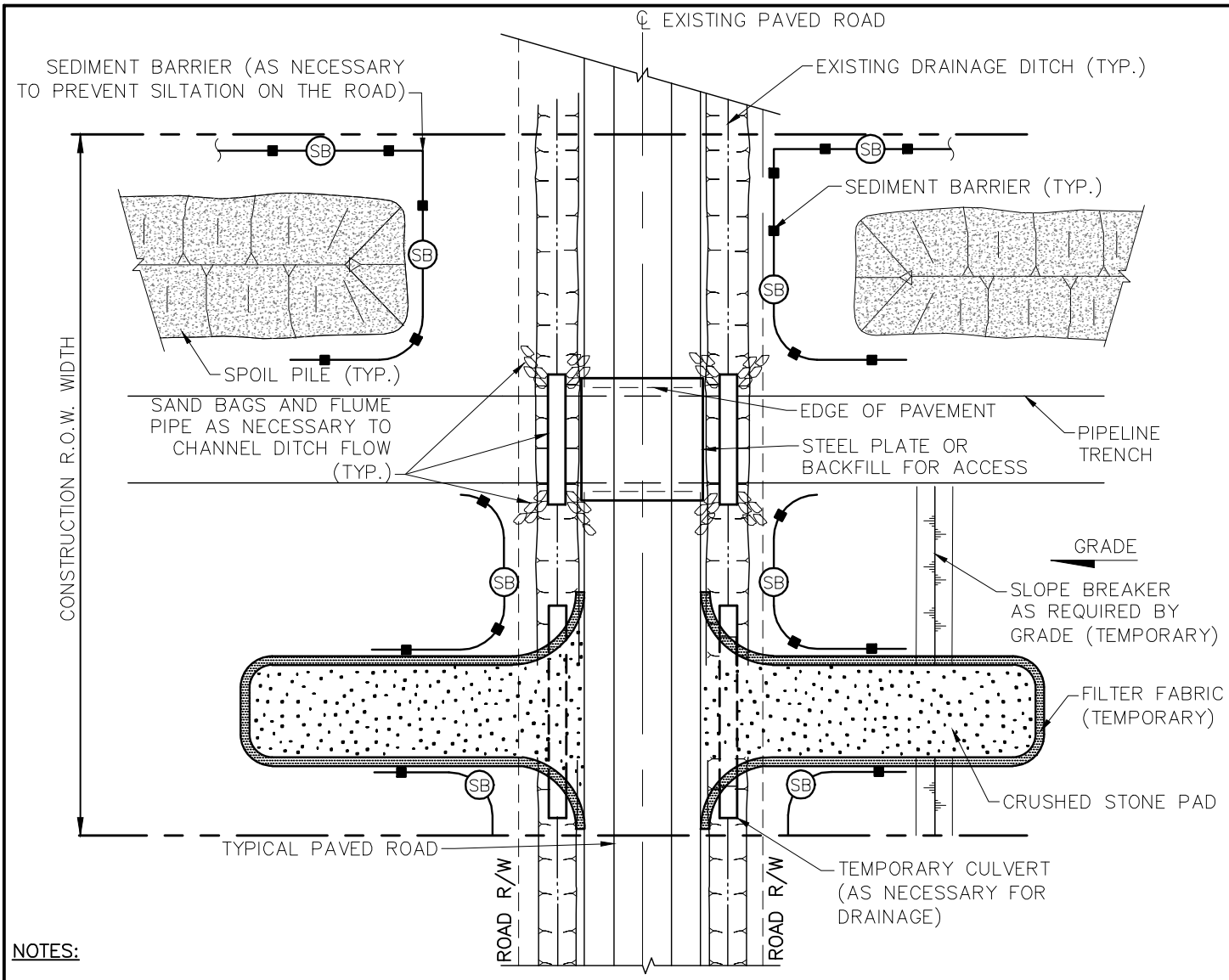
Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL ROAD CROSSING

FIGURE #30

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28135 | 1 OF 1 | 0 |

12:50:22 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28135.dwg




NOTES:

1. PROVIDE MINIMUM OF 3.5 FEET OF COVER BETWEEN TOP OF PIPE AND LOWEST POINT IN THE BORROW DITCHES, OR PROVIDE MINIMUM 5 FEET OF COVER BETWEEN PIPE AND TOP OF ROAD SURFACE, OR MINIMUM DEPTH REQUIRED BY PERMIT, WHICHEVER DIMENSION PROVIDES GREATER DEPTH FOR PIPELINE.
2. TRENCH SHALL BE DONE IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. SEDIMENT BARRIERS SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED TO INTERCEPT SURFACE RUNOFF.
4. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED,
5. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
6. WATER REMOVED FROM TRENCH AND TRENCH PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
7. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS CONTRACTOR SHALL CONSULT WITH COMPANY'S ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK ORDER TO DETERMINE PROPER DEWATERING DISCHARGE LOCATION.
8. CONTRACTOR SHALL BE REQUIRED TO KEEP THE ROAD CLEAN OF DEBRIS AT ALL TIMES.
9. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE TRENCH.
10. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIERS MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT OF WAY AT THE EDGE OF ROAD.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.

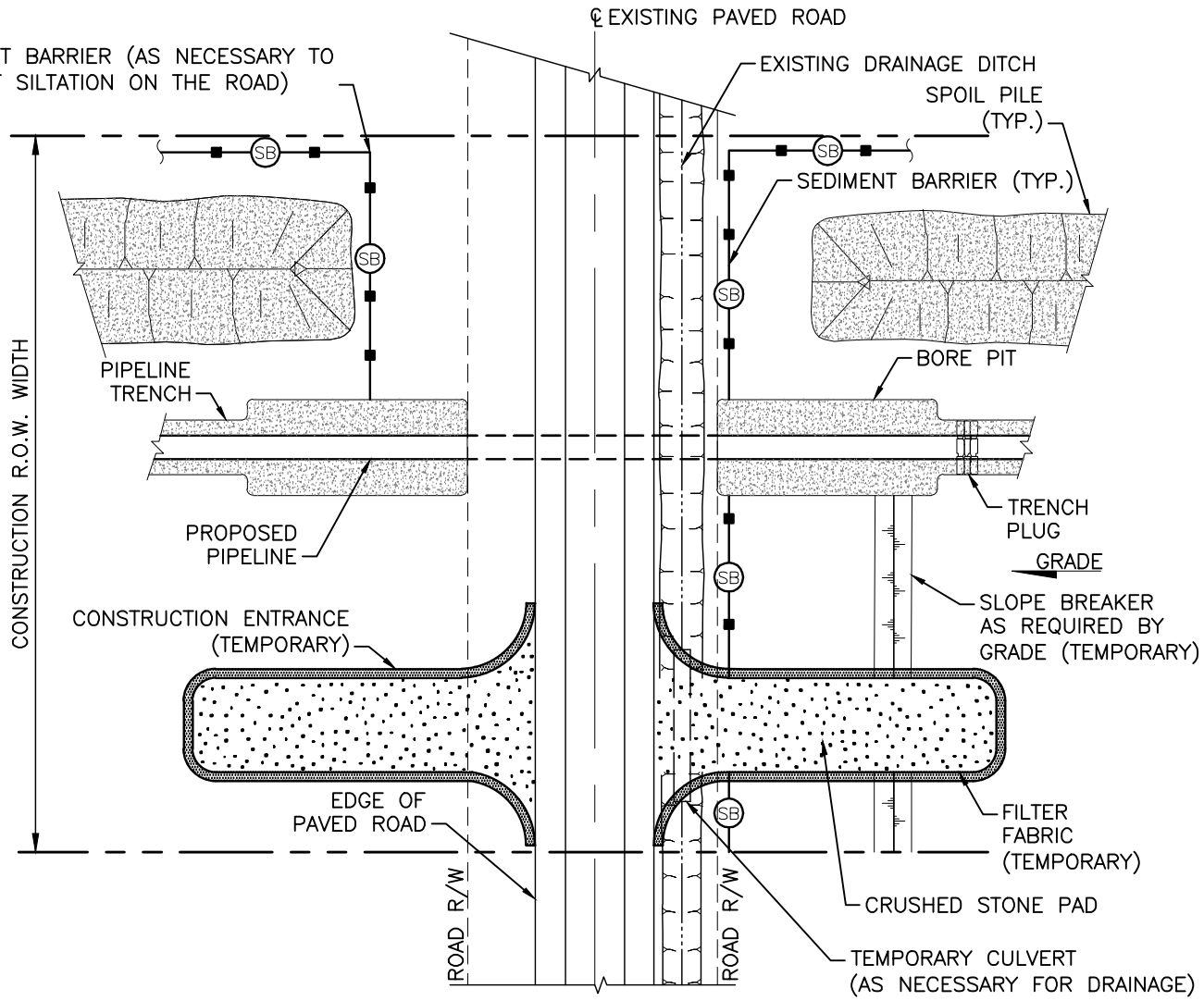
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/05/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL OPEN CUT ROAD CROSSING
CONTROL MEASURE
FIGURE #31

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28103 | 1 OF 1 | 0 |

12:50:14 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28103.dwg




NOTES:

1. PROVIDE MINIMUM OF 3.5 FEET OF COVER BETWEEN TOP OF PIPE AND LOWEST POINT IN THE BORROW DITCHES, OR PROVIDE MINIMUM 5 FEET OF COVER BETWEEN PIPE AND TOP OF ROAD SURFACE, OR MINIMUM DEPTH REQUIRED BY PERMIT, WHICHEVER DIMENSION PROVIDES GREATER DEPTH FOR PIPELINE.
2. TRENCH AND BORE PIT SHALL BE DONE IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. SEDIMENT BARRIERS SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED TO INTERCEPT SURFACE RUNOFF.
4. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
5. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
6. WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
7. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS CONTRACTOR SHALL CONSULT WITH COMPANY'S ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK ORDER TO DETERMINE PROPER DEWATERING DISCHARGE LOCATION.
8. CONTRACTOR SHALL BE REQUIRED TO KEEP THE ROAD CLEAN OF DEBRIS AT ALL TIMES.
9. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE BORE PITS.
10. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIERS MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT-OF-WAY AT THE EDGE OF ROAD.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.

Sabal Trail TRANSMISSION

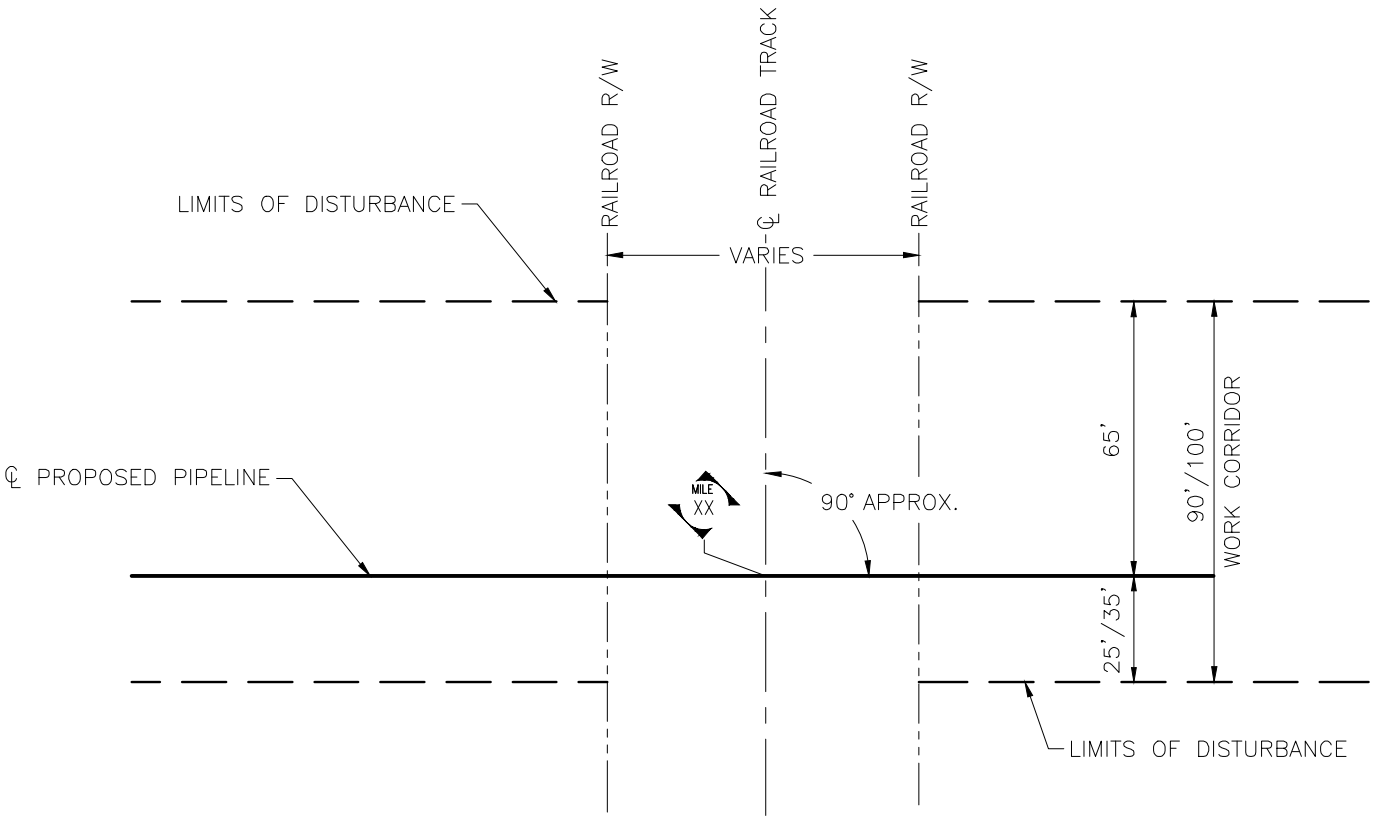
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

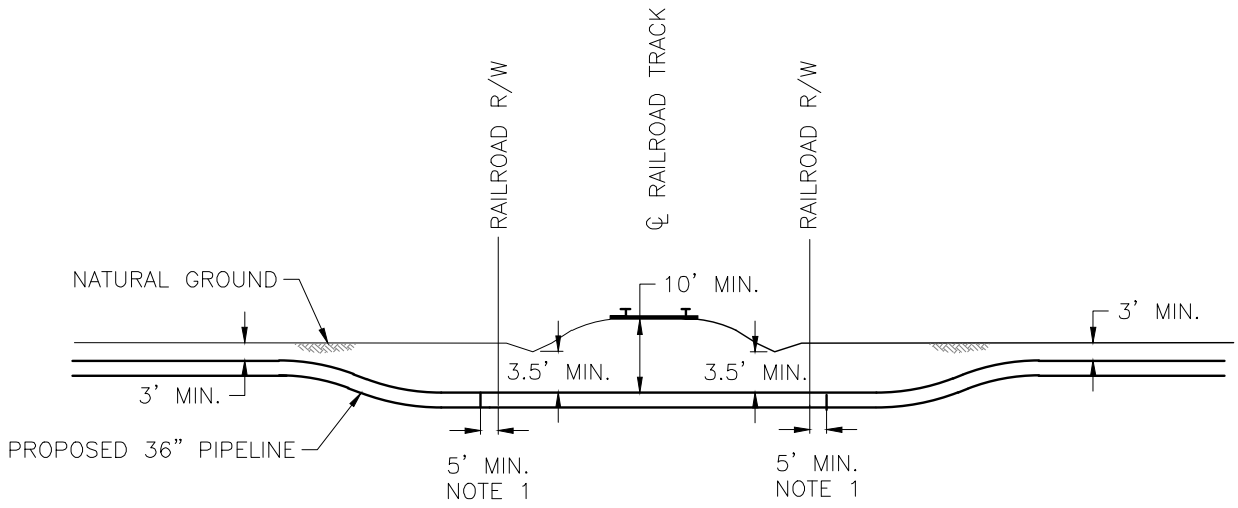
SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL BORED ROAD CROSSING
CONTROL MEASURE
FIGURE #32

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28101 | 1 OF 1 | 0 |

12:49:15 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28101.dwg




PLAN
N.T.S.




PROFILE
N.T.S.

NOTE:

1. DEFINES MINIMUM FOOTAGE OF STRAIGHT PIPE OUTSIDE OF RAILROAD R/W BEFORE RETURNING PIPELINE TO 3 FEET MIN. COVER AND POSSIBLE PIPE MATERIAL CHANGE.

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/23/14 |
| CHECKED BY: | J.W. | DATE: | 02/23/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

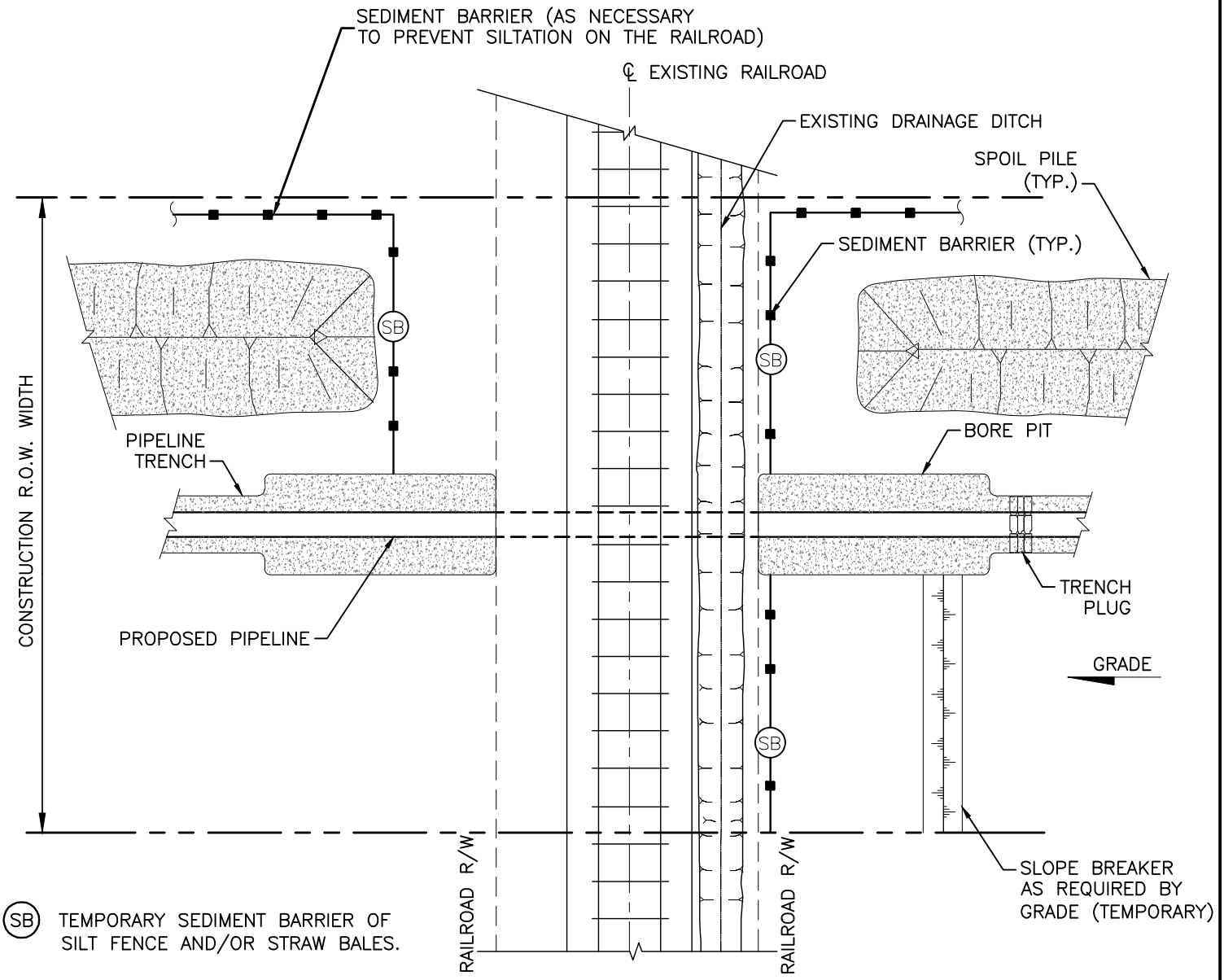
Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL RAILROAD CROSSING

FIGURE #33

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28134 | 1 OF 1 | 0 |

12:47:16 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28134.dwg




NOTES:

1. PROVIDE MINIMUM OF 3.5 FEET OF COVER BETWEEN TOP OF PIPE AND LOWEST POINT IN THE BORROW DITCHES, OR PROVIDE MINIMUM 10 FEET OF COVER BETWEEN PIPE AND BOTTOM OF RAILROAD BALLAST, OR MINIMUM DEPTH REQUIRED BY PERMIT, WHICHEVER DIMENSION PROVIDES GREATER DEPTH FOR PIPELINE.
2. TRENCH AND BORE PIT SHALL BE DONE IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. SEDIMENT BARRIERS FOR SPOIL PILES SHALL BE INSTALLED.
4. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
5. WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING DISCHARGE STRUCTURE OR FILTER BAG.
6. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS CONTRACTOR SHALL CONSULT WITH COMPANYS ENVIROMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK IN ORDER TO DETERMINE PROPER DEWATERING LOCATION.
7. CONTRACTOR MAY ELECT TO USE SHEET PILING IN ORDER TO STABILIZE BORE PITS.

Sabal Trail TRANSMISSION

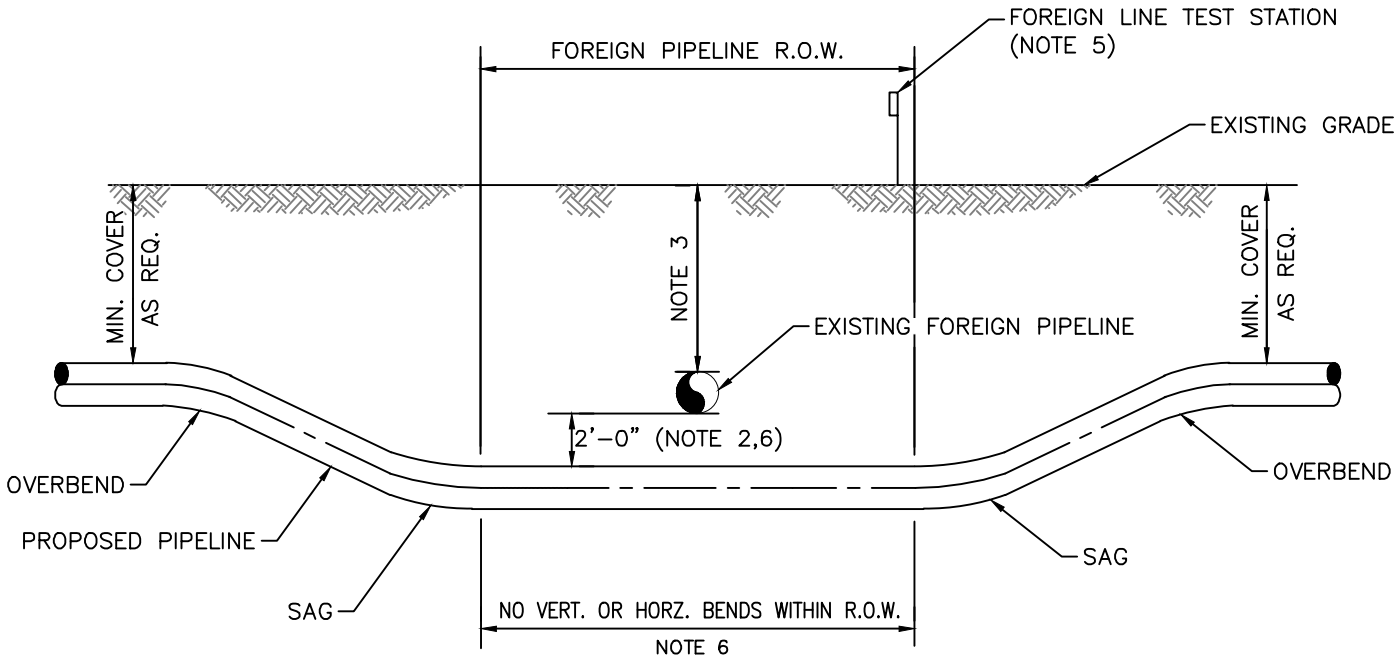
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL BORED RAILROAD CROSSING
CONTROL MEASURE
FIGURE #34

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28102 | 1 OF 1 | 0 |

12:45:46 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28102.dwg




CROSS SECTION OF FOREIGN PIPELINE R.O.W.

NOTES:

1. PROPOSED PIPELINE MAY CROSS ABOVE THE FOREIGN PIPELINE(S), WHERE APPROVED BY FOREIGN OWNER IN WRITING, UNLESS REQUIREMENTS FOR MINIMUM DEPTH OF COVER CANNOT BE ACHIEVED, OR THE OWNING AUTHORITY REQUIRES CROSSING UNDER THE EXISTING FOREIGN LINE.
2. A MINIMUM CLEARANCE OF 12" MUST BE MAINTAINED FROM ANY UNDERGROUND STRUCTURE NOT ASSOCIATED WITH THE PIPELINE. THE RECOMMENDED CLEARANCE IS 24" BETWEEN ANY FOREIGN PIPELINE AND THE PROPOSED PIPELINE.
3. FOREIGN PIPELINE LOCATIONS & DEPTHS TO BE DETERMINED BY ELECTRONIC MEANS IN ADVANCE OF PIPELINE CONSTRUCTION AND CONFIRMED BY CAREFULLY EXPOSING FACILITY BY NON-MECHANIZED EQUIPMENT WHEN WITHIN 24" IN ANY DIRECTION FROM THE FACILITY.
4. OWNER OF FOREIGN LINES SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF EXCAVATION OF CROSSING.
5. TEST LEAD STATION TO BE INSTALLED WHERE PRACTICAL AT POINT OF CROSSING OR AT THE NEAREST FENCE, HEDGE ROW OR FIELD EDGE, AND WHERE READILY ACCESSIBLE.
6. DEPTH OF PIPELINE INCLUDING CLEARANCE SHALL BE MAINTAINED FOR THE FULL ANGULAR WIDTH OF FOREIGN PIPELINE R.O.W.
7. CONTRACTOR SHALL NOTIFY THE 811 CALL BEFORE YOU DIG PROGRAM AT LEAST 48 HOURS PRIOR TO DIGGING.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

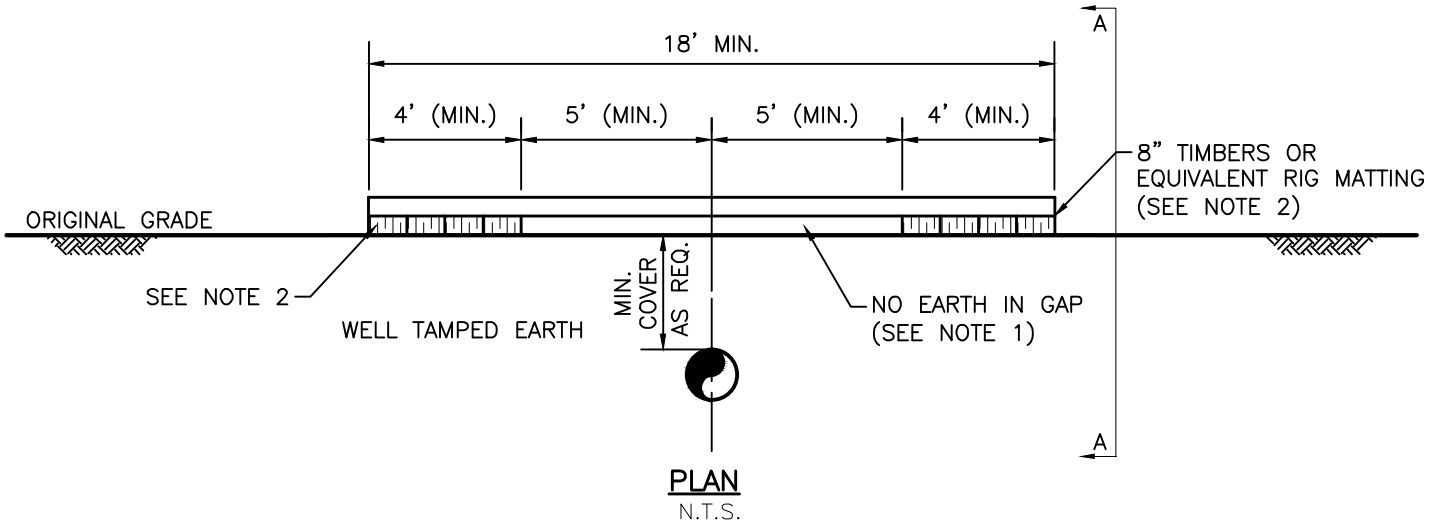
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
FOREIGN PIPELINE CROSSING

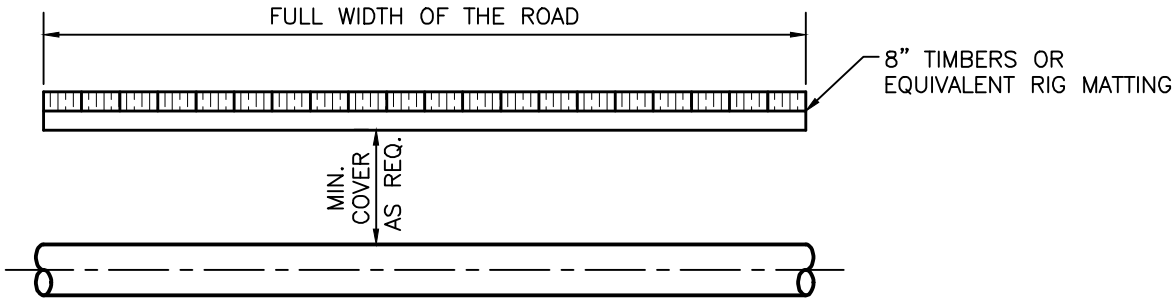
FIGURE #35

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28128 | 1 OF 1 | 0 |

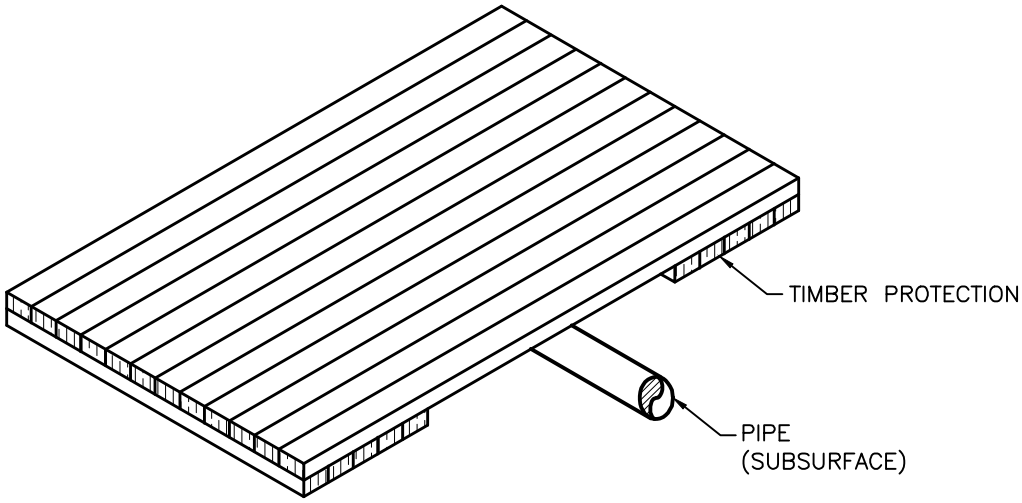
12:43:55 PM 11/18/2014 map full.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28128.dwg




PLAN
N.T.S.




SECTION 'A–A'
N.T.S.




NOTES

1. ENSURE THAT MINIMUM 10' WIDE x 6" HIGH GAP IS MAINTAINED BETWEEN THE BASE OF THE TIMBER AND THE GRADE DIRECTLY OVER THE CENTERLINE OF THE PIPE.
2. TIMBER TO BE PLACED AT EACH END OF BRIDGE TO SLOPE EQUIPMENT FOR ACCESS.

Sabal Trail TRANSMISSION

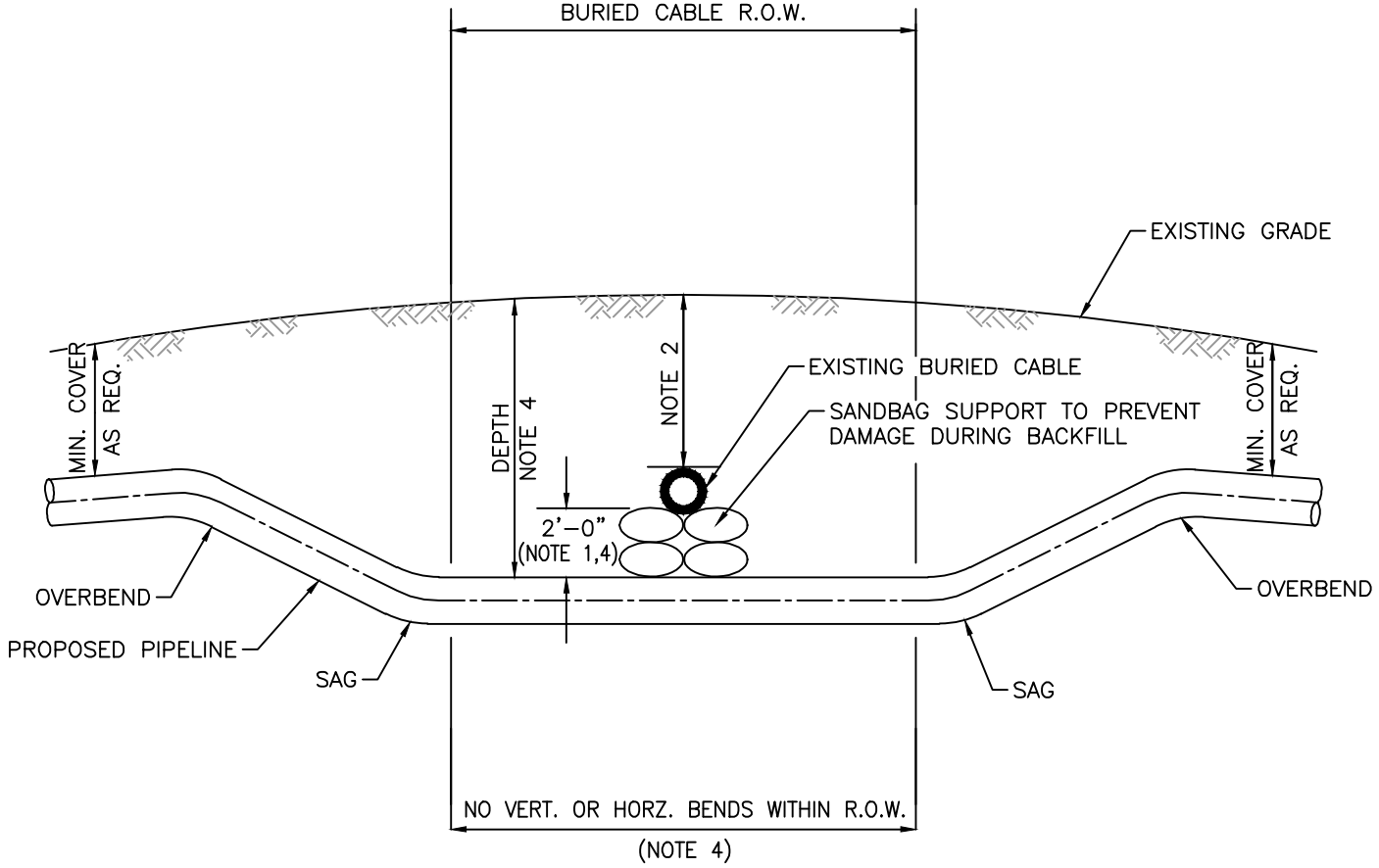
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/22/14 |
| CHECKED BY: | J.W. | DATE: | 02/24/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TEMPORARY PIPELINE CROSSING
AND TYPICAL AIR BRIDGE
FIGURE #36

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28130 | 1 OF 1 | 0 |

12:41:41 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28130.dwg




NOTES:

1. A MINIMUM CLEARANCE OF 12" MUST BE MAINTAINED FROM ANY UNDERGROUND STRUCTURE NOT ASSOCIATED WITH THE PIPELINE. THE RECOMMENDED CLEARANCE IS 24" BETWEEN ANY FOREIGN UTILITY AND THE PROPOSED PIPELINE.
2. BURIED CABLE LOCATIONS & DEPTHS TO BE DETERMINED BY ELECTRONIC MEANS IN ADVANCE OF PIPELINE CONSTRUCTION AND CONFIRMED BY CAREFULLY EXPOSING BY NON-MECHANIZED EQUIPMENT WHEN WITHIN 24" IN ANY DIRECTION FROM THE EXISTING FACILITY.
3. OWNER OF BURIED CABLE(S) SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF EXCAVATION OF CROSSING.
4. DEPTH OF PIPELINE INCLUDING CLEARANCE SHALL BE MAINTAINED FOR THE FULL ANGULAR WIDTH OF BURIED CABLE R.O.W.
5. CONTRACTOR TO SUPPORT AS REQUIRED BY THE CABLE OWNER. IF CABLE OWNER HAS NO SPECIFIC REQUIREMENTS, THEN SUPPORT EXPOSED CABLE WITH WOOD PLANK OR STRUCTURAL STEEL ANGLE IRON DURING CONSTRUCTION.
6. CONTRACTOR TO UTILIZE CAUTION WITH PLACEMENT OF BACKFILL TO MINIMIZE POSSIBLE DAMAGE TO THE CABLE.
7. CONTRACTOR SHALL NOTIFY THE 811 CALL BEFORE YOU DIG PROGRAM AT LEAST 48 HOURS PRIOR TO DIGGING.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

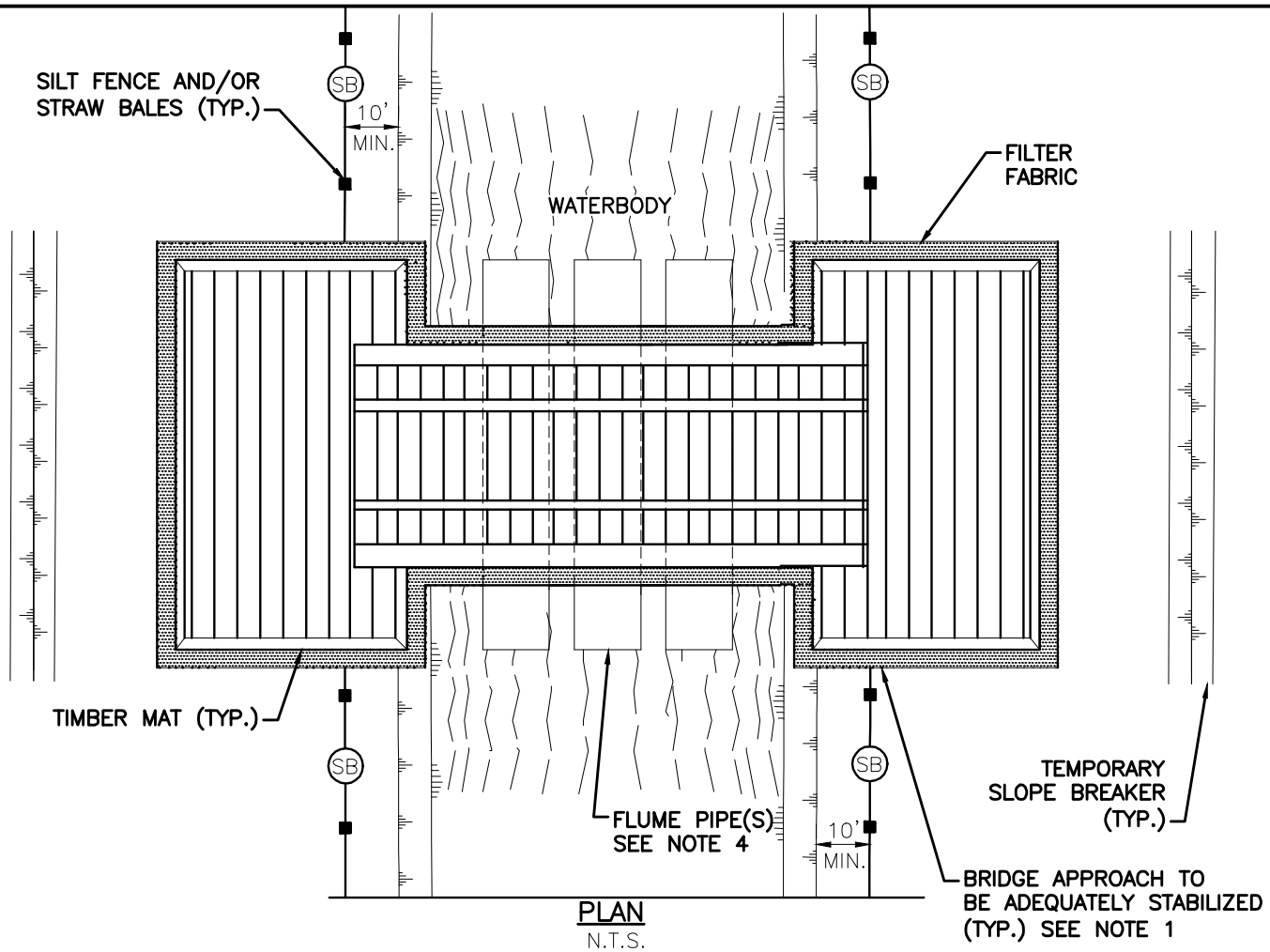
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
BURRIED CABLE CROSSING DETAIL

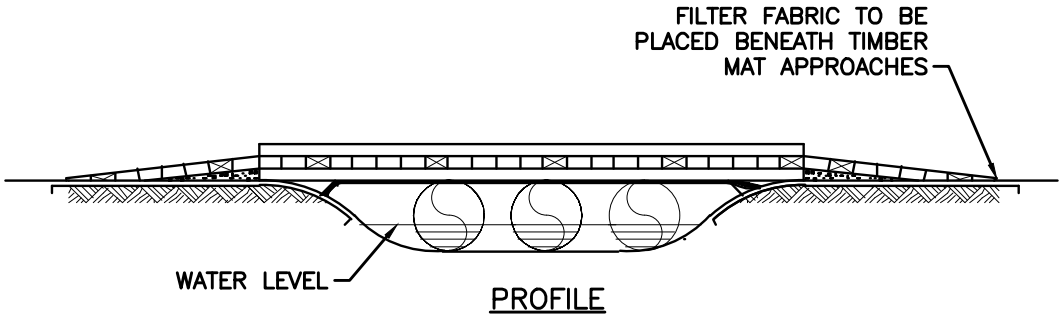
FIGURE #37

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28129 | 1 OF 1 | 0 |

12:40:43 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28129.dwg




PLAN
N.T.S.




PROFILE
N.T.S.

## NOTES:

1. TIMBER BRIDGES SHALL BE ADEQUATELY ANCHORED AT BOTH ENDS.
2. PERIODICALLY CHECK BRIDGE INSTILLATION AND REMOVE BUILD–UP OF SEDIMENT OR DEBRIS ON BRIDGE.
3. MATERIALS PLACED ALONG WATERBODY SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN–UP. REMOVAL OF THE STRUCTURE IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.
4. FLUME PIPE USED IF ADDITIONAL SUPPORT IS REQUIRED AND/OR TO FACILITATE FISH MIGRATION.
5. BRIDGE TO BE INSTALLED SO AS TO SPAN BANK TO BANK.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.

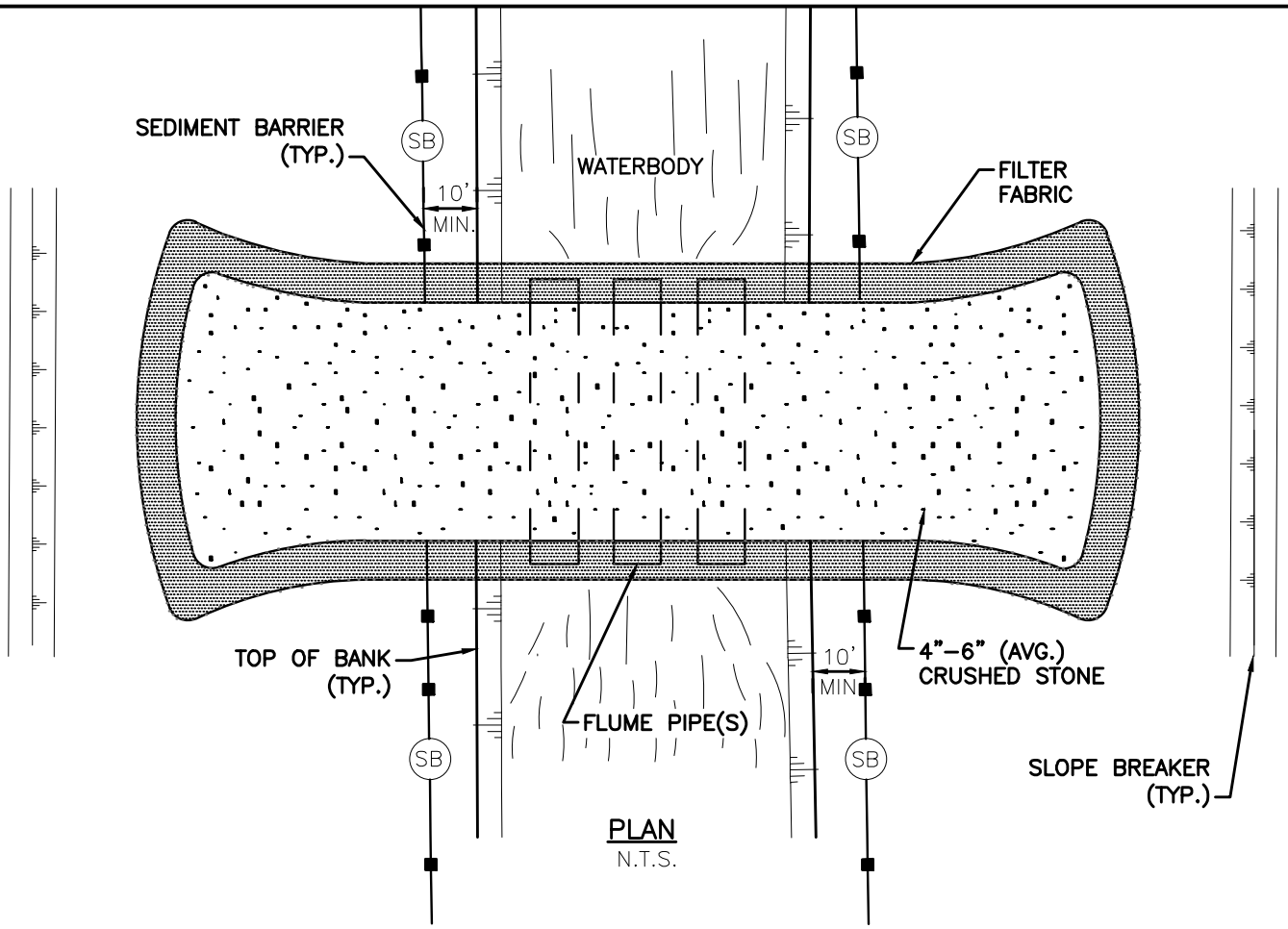
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

Sabal Trail TRANSMISSION

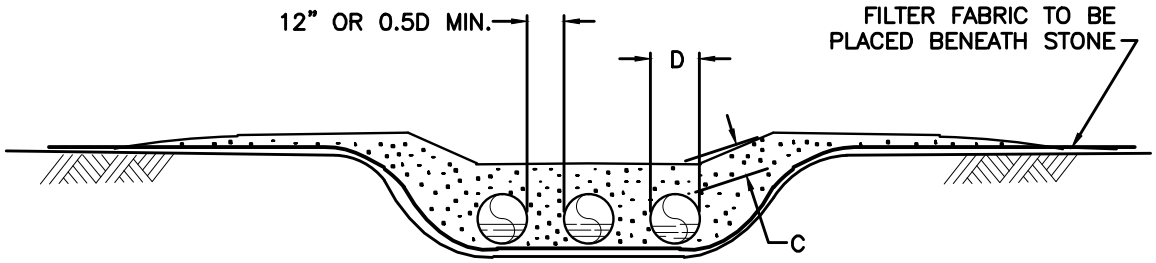
SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TEMPORARY WATERBODY EQUIPMENT BRIDGE
(EQUIPMENT MATS)
FIGURE #38

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28123 | 1 OF 1 | 0 |

12:39:38 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28123.dwg




PLAN
N.T.S.




SB TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES

PROFILE
N.T.S.

NOTES:

1. PERIODICALLY CHECK BRIDGE INSTALLATION AND REMOVE BUILD–UP OF SEDIMENT OR DEBRIS ON BRIDGE.
2. FLUME PIPE(S) SHALL BE SIZED AS SHOWN ON THE DRAWINGS. USE AS MANY FLUMES AS REQUIRED TO SPAN ENTIRE WATERBODY. FLUME PIPE SHALL BE PLACED AT LEAST ONE–HALF (1/2) THEIR DIAMETER APART. CONTRACTOR SHALL PROVIDE FLUME PIPE(S).
3. MATERIALS PLACED IN WATERBODY SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN–UP. REMOVAL OF THESE ITEMS IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.

WHERE: D = PIPE DIAMETER
C = COVER DEPTH = 12" MINIMUM

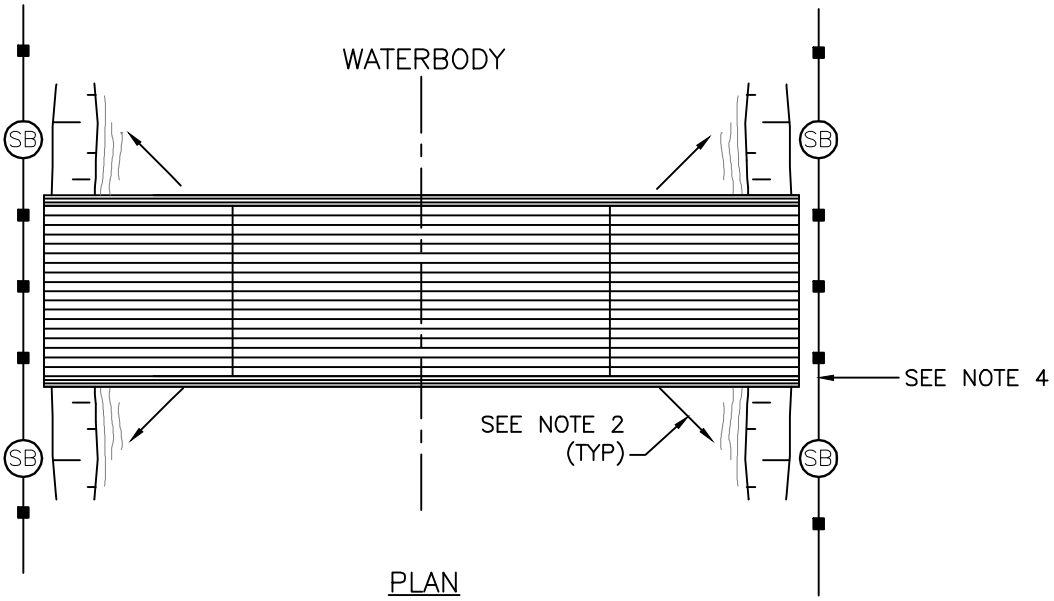
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

Sabal Trail TRANSMISSION

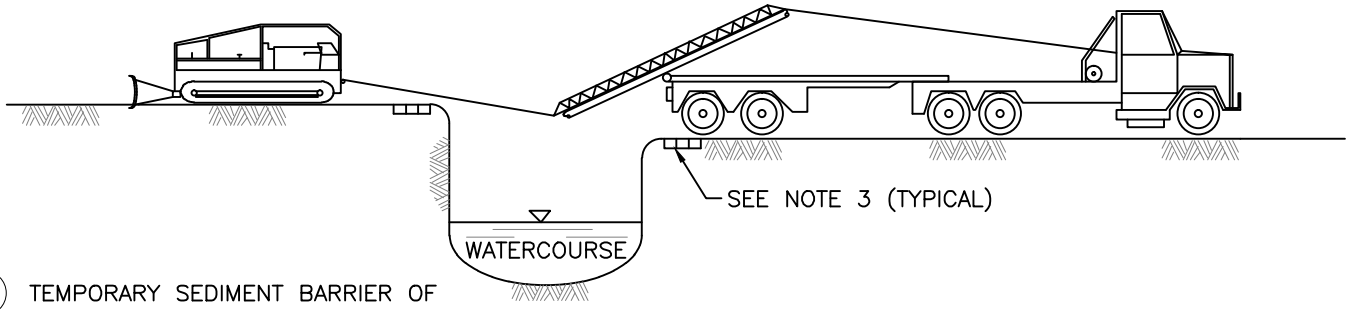
SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TEMPORARY WATERBODY EQUIPMENT BRIDGE
(CRUSHED STONE AND CULVERTS)
FIGURE #39

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657–PL–DG–28124 | 1 OF 1 | 0 |

12:38:28 PM 11/18/2014
C:\work\Vault\1657\PL – Pipeline\3 Pipeline\Typicals\Env. Drawings\1657–PL–DG–28124.dwg




PLAN




SB TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES

PROFILE

## NOTES:

1. THIS TYPE OF BRIDGE IS GENERALLY USED ON NARROW, DEEP CROSSINGS.
2. BRIDGE IS ANCHORED AND/OR TIED OFF TO ANCHOR BLOCKS FOR STABILITY.
3. UTILIZE APPROACH FILLS OF CLEAN GRANULAR MATERIAL, MATS, SKIDS OR OTHER SUITABLE MATERIALS TO AVOID CUTTING THE BANKS WHEREVER FEASIBLE. ENSURE ADEQUATE FREEBOARD. AS REQUIRED, ENSURE THAT FILL MATERIAL USED DOES NOT SPILL INTO WATERCOURSE.
4. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM 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 PORTABLE BRIDGES AS SOON AS POSSIBLE AFTER PERMANENT SEEDING UNLESS OTHERWISE DIRECTED BY COMPANY 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 ANY ROCK AS DIRECTED BY THE COMPANY REPRESENTATIVE.
7. RESTORE AND STABILIZE BED AND BANKS TO APPROXIMATE PRE-CONSTRUCTION CONDITIONS.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

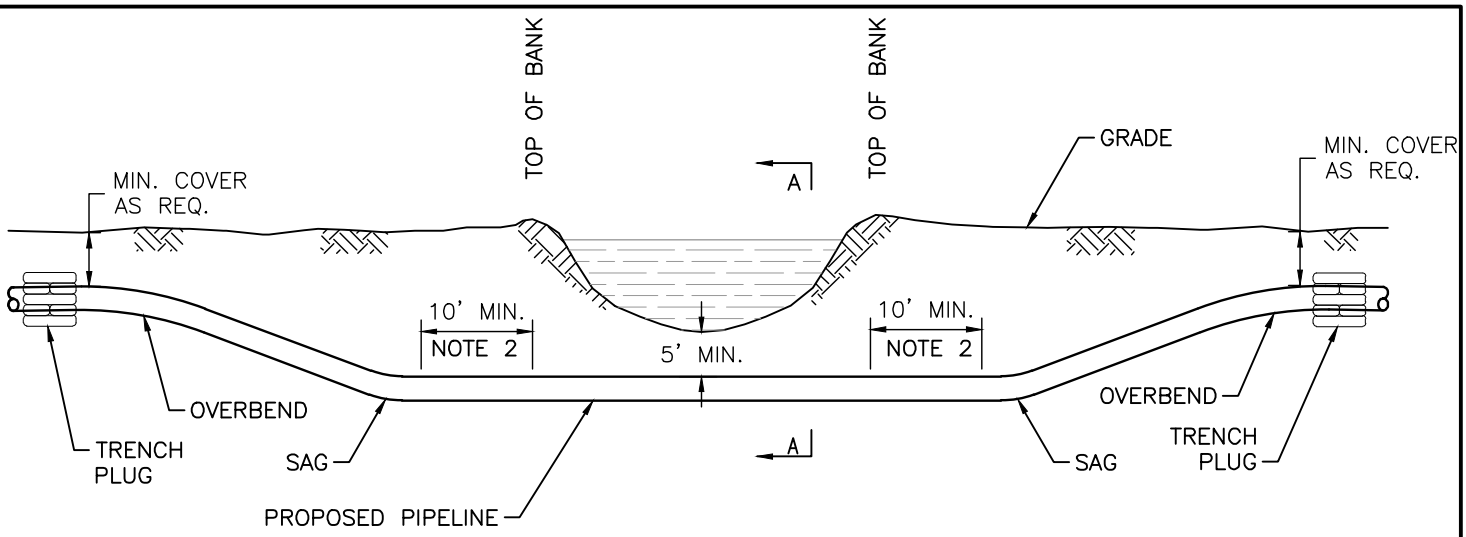
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
PORTABLE WATERBODY BRIDGE

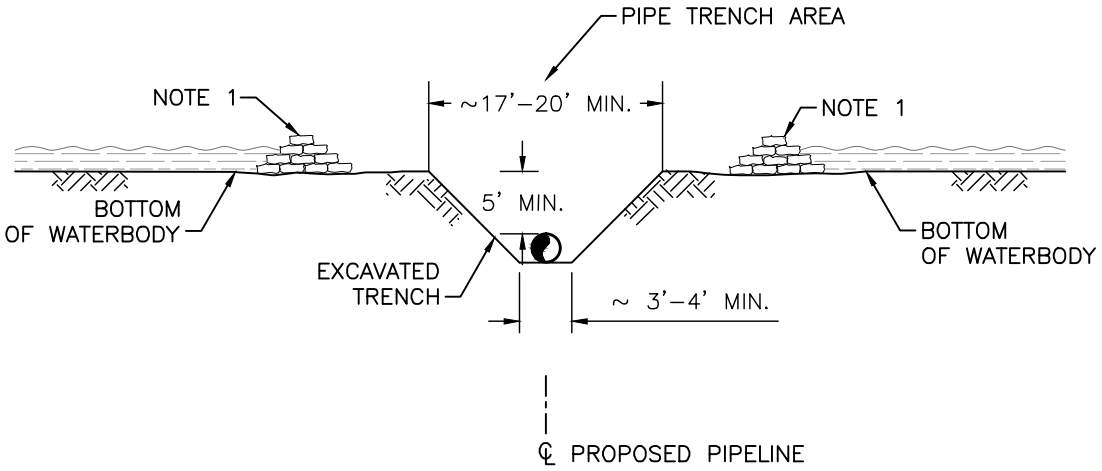
FIGURE #40

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28122 | 1 OF 1 | 0 |

12:37:23 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28122.dwg




PROFILE
N.T.S.




SECTION 'A-A'
N.T.S.

NOTES:

1. WATER BLADDER DAMS OR SANDBAGS WITH PLASTIC LINER TO FORM UPSTREAM & DOWNSTREAM DAMS.
2. SAG BENDS SHALL BE LOCATED SO THAT THE BEGINNING OF THE BEND IS A MINIMUM OF 10' FROM TOP OF BANK UNLESS OTHERWISE APPROVED BY COMPANY REPRESENTATIVE.

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

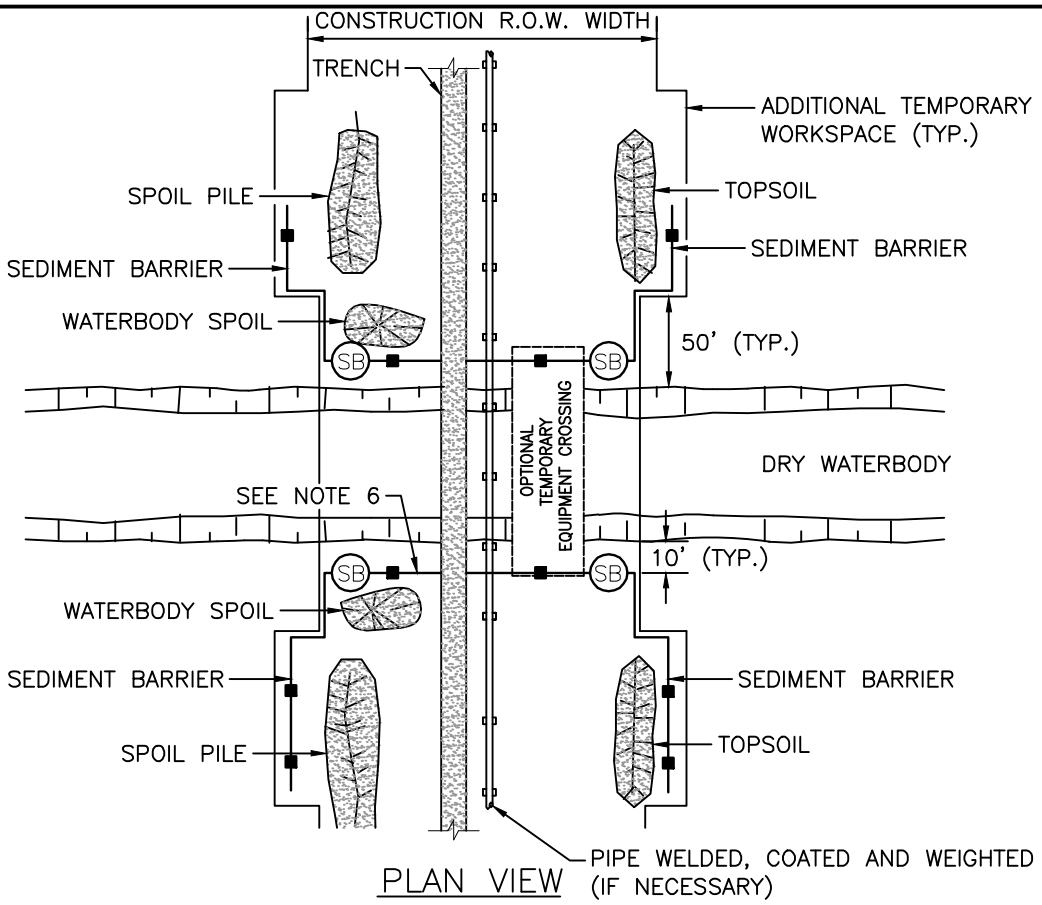
Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL TRENCHED WATERBODY CROSSING

FIGURE #41

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28104 | 1 OF 1 | 0 |

12:32:43 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28104.dwg




PLAN VIEW

NOTES:

1. METHOD APPLIES TO CROSSINGS WHERE NO FLOWING WATER IS PRESENT AT THE TIME OF CROSSING.
2. CONTRACTOR MAY "MAINLINE THROUGH" THE CROSSING OR UP TO BOTH SIDES OF THE CROSSING; STRING, WELD, COAT, AND WEIGHT (IF NECESSARY), USING THE MAINLINE CREW WITH THE PIPE SKIDDED OVER THE CROSSING.
3. NO REFUELING OF MOBILE EQUIPMENT WITHIN 100 FEET OF DRY WATERBODY. REFUEL STATIONARY EQUIPMENT AS PER THE SPCC PLAN.
4. INSTALLATION OF TEMPORARY EQUIPMENT CROSSING IS OPTIONAL AT THE DISCRETION OF THE COMPANY'S REPRESENTATIVE.
5. IN AGRICULTURAL LAND, STRIP TOPSOIL FROM FULL CONSTRUCTION R.O.W. WIDTH. STOCKPILE TOPSOIL AND SPOIL SEPARATELY. TOPSOIL AND SPOIL WILL NOT BE STOCKPILED IN THE WATERBODY AND WILL BE PLACED A MINIMUM OF 10 FEET FROM THE BANKS WITHIN THE CONSTRUCTION R.O.W.
6. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. FOLLOWING CLEARING AND GRADING AND MAINTAIN UNTIL CONSTRUCTION OF THE CROSSING. EROSION CONTROL MEASURES SHALL BE REINSTALLED IMMEDIATELY FOLLOWING BACKFILLING OF TRENCH AND STABILIZATION OF BANKS. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
7. WATERBODY SPOIL TO BE STORED OUT OF THE CHANNEL A MINIMUM OF 10 FEET FROM THE BANK AND WITHIN THE CONSTRUCTION R.O.W. UNLESS DEPICTED OTHERWISE IN SITE SPECIFIC CROSSING PLANS. ADDITIONAL TEMPORARY WORKSPACE MUST BE A MINIMUM OF 50 FEET FROM THE WATERS EDGE.
8. BACKFILL WITH NATIVE MATERIAL.
9. RESTORE DRY WATERBODY TO APPROXIMATE PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
10. RESTORE BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.
11. ALL DIMENSIONS INDICATED SHALL BE DETERMINED BY ACTUAL CONSTRUCTION CONDITIONS.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.

Sabal Trail TRANSMISSION

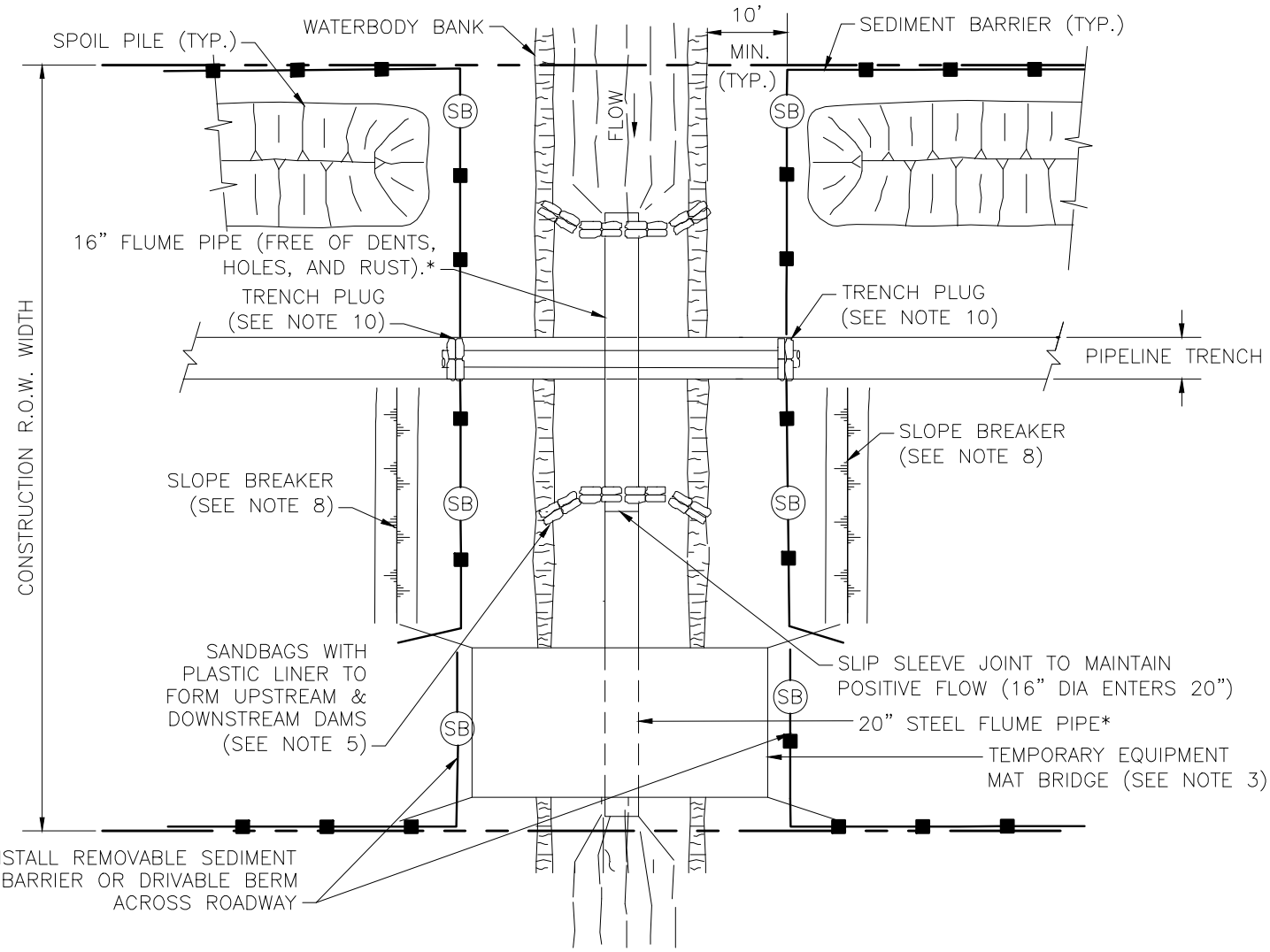
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL NON-FLOWING WATERBODY CROSSING
OPEN CUT TRENCHED
FIGURE #42

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28106 | 1 OF 1 | 0 |

12:36:12 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28106.dwg




**PLAN**
N.T.S.

* ACTUAL NUMBER OF FLUMES REQUIRED TO BE DETERMINED BY STREAM WIDTH.

SB **TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES**

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
WATERBODY CROSSING - OPEN CUT, FLUME

FIGURE #43

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28108 | 1 OF 2 | 0 |

12:30:59 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28108_01.dwg

NOTES:

1. SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT-OF-WAY.

2. HARD DITCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL THE WATERBODY CROSSING IS INSTALLED AND BACKFILLED.

3. EQUIPMENT OPERATING IN THE WATERBODY SHALL BE LIMITED TO THAT NEEDED TO PERFORM CONSTRUCTION. IF OTHER TYPES OF EQUIPMENT MUST CROSS THE WATERBODY, CONTRACTOR SHALL PROVIDE AND USE A TEMPORARY WATERBODY CROSSING.

4. STAGING AREA(S) FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.

5. FLUME CROSSING METHOD REQUIREMENTS INCLUDE:
   A. INSTALL FLUME PIPE(S) BEFORE ANY TRENCHING.
   B. USE SAND BAG OR SAND BAG AND PLASTIC LINER DIVERSION STRUCTURE OR EQUIVALENT TO DEVELOP AN EFFECTIVE SEAL AND TO DIVERT STREAM FLOW THROUGH THE FLUME PIPE (SOME MODIFICATIONS TO THE STREAM BOTTOM MAY BE REQUIRED TO ACHIEVE AN EFFECTIVE SEAL).
   C. PROPERLY ALIGN FLUME PIPE(S) TO PREVENT BANK EROSION AND STREAMBED SCOUR.
   D. DO NOT REMOVE FLUME PIPE DURING TRENCHING, PIPE LAYING, OR BACKFILLING ACTIVITIES, OR INITIAL STREAM BED RESTORATION EFFORTS.
   E. REMOVE ALL FLUME PIPES AND DAMS THAT ARE NOT ALSO PART OF THE EQUIPMENT BRIDGE AS SOON AS FINAL CLEAN-UP OF THE STREAM BANK IS COMPLETE.

6. THE FLUME PIPE MUST BE SIZED TO PREVENT IMPEDIMENT OF THE UPSTREAM FLOW AND TO MAINTAIN ADEQUATE FLOW RATES TO PROTECT AQUATIC LIFE, AND PREVENT THE INTERRUPTION OF EXISTING DOWNSTREAM USES.

7. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.

8. INSTALL SLOPE BREAKERS AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY.

9. CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY.

10. INSTALL TRENCH PLUGS ON BOTH SIDES OF THE WATERBODY TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.

11. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY IMMEDIATELY ADJACENT TO WATERBODY UNTIL STAGING AREA IS PREPARED AND WORK IN THE WATERBODY IS READY TO COMMENCE.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

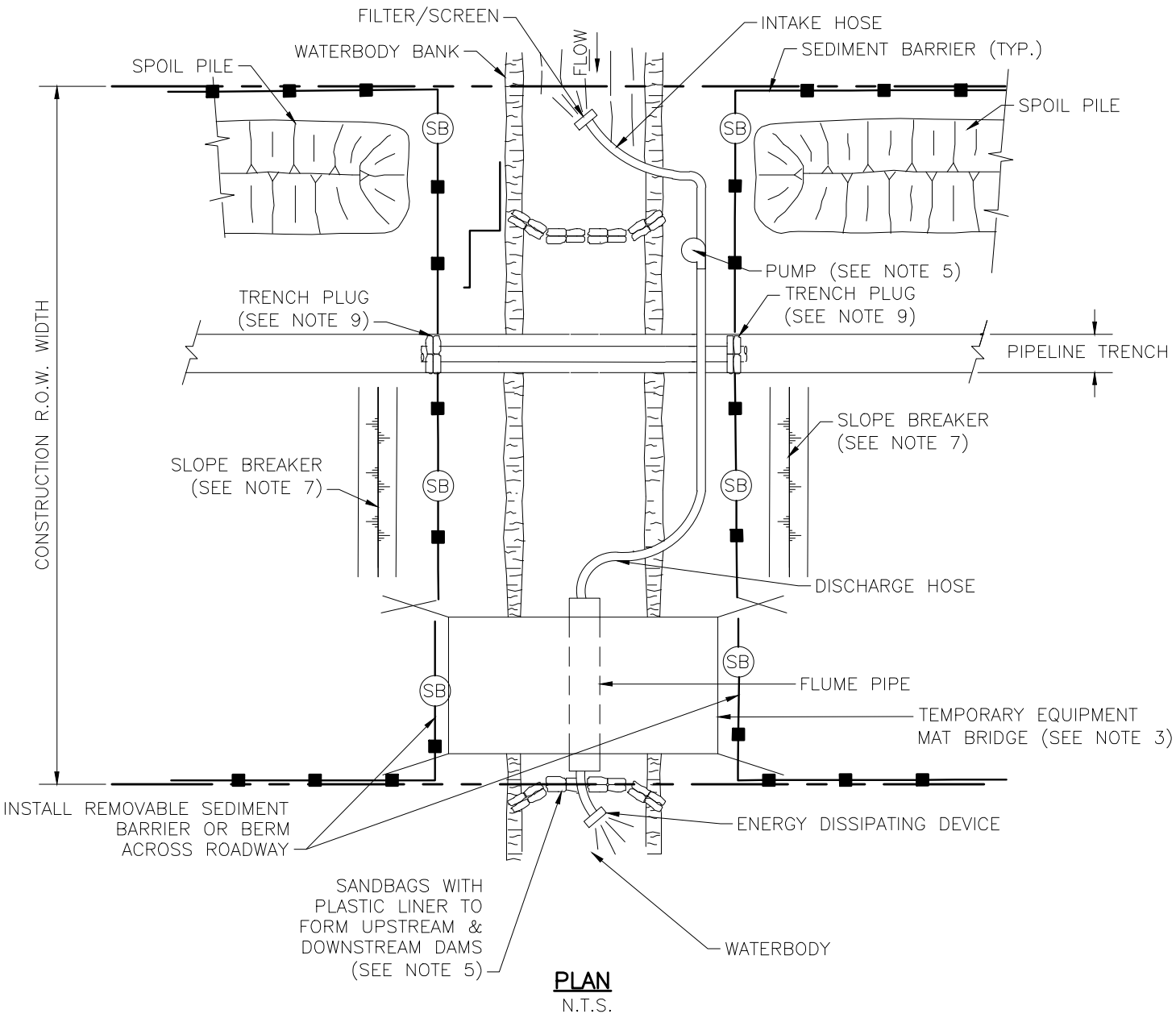
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
WATERBODY CROSSING-OPEN CUT, FLUME

FIGURE #43

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28108 | 2 OF 2 | 0 |

12:31:46 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28108_02.dwg




**PLAN**
N.T.S.

SB **TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES**

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
WATERBODY CROSSING
OPEN CUT, DAM & PUMP
FIGURE #44

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28109 | 1 OF 2 | 0 |

12:29:17 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28109_01.dwg

NOTES:

1. SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT-OF-WAY.

2. HARD DITCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL THE WATERBODY CROSSING IS INSTALLED AND BACKFILLED.

3. EQUIPMENT OPERATING IN THE WATERBODY SHALL BE LIMITED TO THAT NEEDED TO PERFORM CONSTRUCTION. IF OTHER TYPES OF EQUIPMENT MUST CROSS THE WATERBODY, CONTRACTOR SHALL PROVIDE AND USE A TEMPORARY STREAM CROSSING.

4. ADDITIONAL TEMPORARY WORKSPACE, STAGING AREA(S) FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.

5. IMPLEMENTATION OF THE DAM-AND-PUMP CROSSING METHOD MUST MEET THE FOLLOWING PERFORMANCE CRITERIA:
   A. USE SUFFICIENT PUMPS, INCLUDING ON-SITE BACKUP PUMPS, TO MAINTAIN DOWNSTREAM FLOWS.
   B. CONSTRUCT DAMS WITH MATERIALS THAT PREVENT SEDIMENT AND OTHER POLLUTANTS FROM ENTERING THE WATERBODY (E.G., SANDBAGS AND PLASTIC LINER OR EQUIVALENT).
   C. SCREEN PUMP INTAKE
   D. PREVENT STREAMBED SCOUR AT PUMP DISCHARGE.
   E. MONITOR THE DAM AND PUMPS TO ENSURE PROPER OPERATION THROUGHOUT THE WATERBODY CROSSING.

6. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.

7. INSTALL SLOPE BREAKERS AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY.

8. CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY.

9. INSTALL TRENCH PLUGS ON BOTH SIDES OF THE WATERBODY TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.

10. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY IMMEDIATELY ADJACENT TO WATERBODY UNTIL STAGING AREA IS PREPARED AND WORK IN THE WATERBODY IS READY TO COMMENCE.

Sabal Trail TRANSMISSION

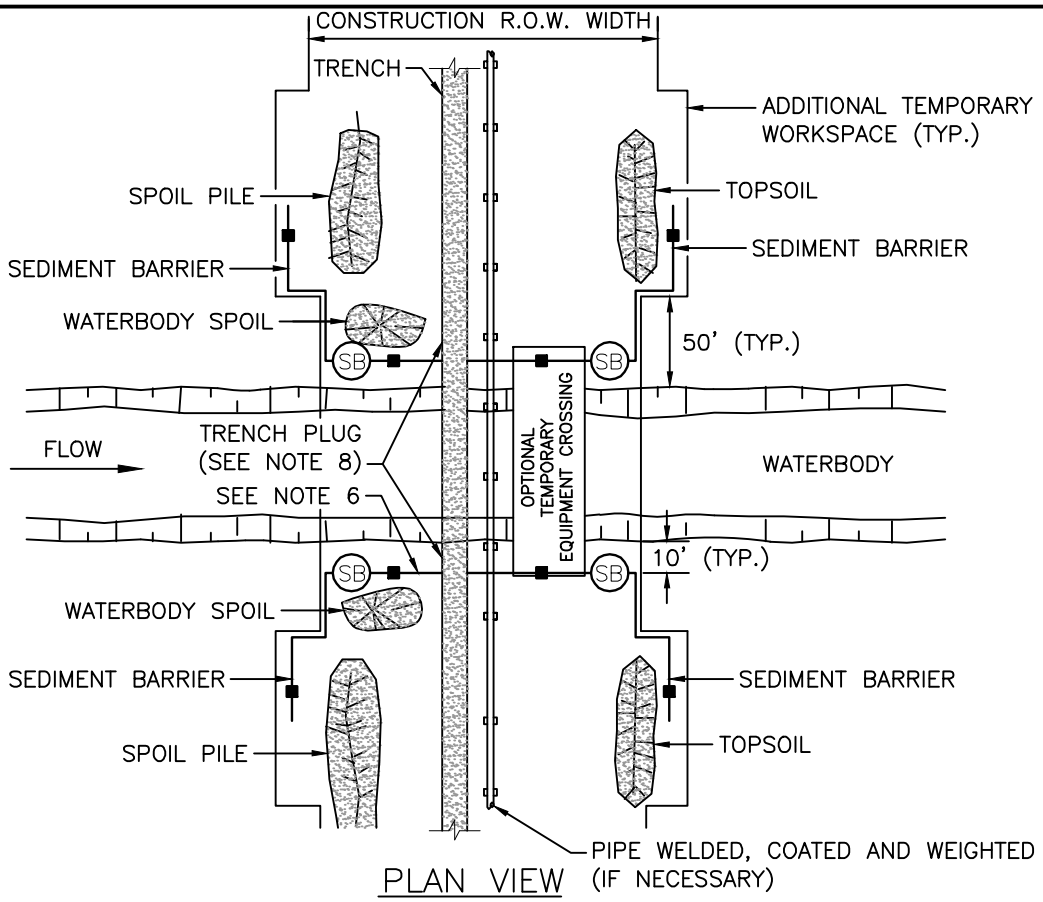
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
WATERBODY CROSSING
OPEN CUT, DAM & PUMP
FIGURE #44

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28109 | 2 OF 2 | 0 |

12:30:06 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28109_02.dwg




PLAN VIEW

NOTES:

1. METHOD APPLIES TO WATERBODIES THAT ARE NOT STATE-DESIGNATED FISHERIES WHERE FLUME CROSSINGS ARE NOT REQUIRED.
   - IF TOPOGRAPHY PERMITS TEMPORARY EQUIPMENT BRIDGE INSTALLATION, THE CONTRACTOR SHALL TRENCH, STRING, WELD, COAT, WEIGHT (IF NECESSARY), LOWER IN AND BACKFILL UTILIZING THE MAIN LINE CREW TRAVELING OVER THE BRIDGE.
   - IF TOPOGRAPHY PROHIBITS INSTALLATION OF A TEMPORARY EQUIPMENT BRIDGE, CONTRACTOR SHALL TRENCH UP TO BOTH SIDES OF CROSSING; STRING, WELD, COAT AND WEIGHT (IF NECESSARY) USING THE MAINLINE CREW. IN STREAM EXCAVATION, LOWER IN, AND BACKFILL WILL UTILIZES A CLAM OR HOES WORKING FROM THE BANKS.
2. SCHEDULE CROSSING DURING LOW FLOW PERIOD IF POSSIBLE.
3. COMPLETE ALL IN-STREAM ACTIVITIES WITHIN 24 HOURS FOR STREAMS 0-10 FEET IN WIDTH IF FEASIBLE.
4. NO REFUELING OF MOBILE EQUIPMENT WITHIN 100 FEET OF WATERBODY. REFUEL STATIONARY EQUIPMENT AS PER THE SPCC PLAN.
5. INSTALLATION OF TEMPORARY EQUIPMENT CROSSING IS REQUIRED AT ALL STATE-DESIGNATED FISHERIES AND IS OPTIONAL AT THE DISCRETION OF THE COMPANY'S INSPECTOR AT ALL OTHER CROSSINGS.
6. CONSTRUCT SEDIMENT BARRIERS ALONG THE SIDES OF STOCKPILES AND ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
7. WATERBODY SPOIL TO BE STORED A MINIMUM OF 10 FEET FROM THE BANK AND WITHIN THE CONSTRUCTION R.O.W. UNLESS DEPICTED OTHERWISE IN SITE SPECIFIC CROSSING PLANS. ADDITIONAL TEMPORARY WORKSPACE MUST BE A MINIMUM OF 50 FEET FROM THE WATERS EDGE.
8. TRENCH THROUGH WATERCOURSE USING MAINLINE EXCAVATION EQUIPMENT WHERE PRACTICAL.
9. INSTALL SOFT PLUGS AT THE EDGE OF STREAM BANKS UNTIL JUST PRIOR TO PIPE INSTALLATION TO CONTROL WATER FLOW & TRENCH SLOUGHING.
10. MAINTAIN STREAM FLOW THROUGHOUT CROSSING CONSTRUCTION.
11. RESTORE STREAM BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.

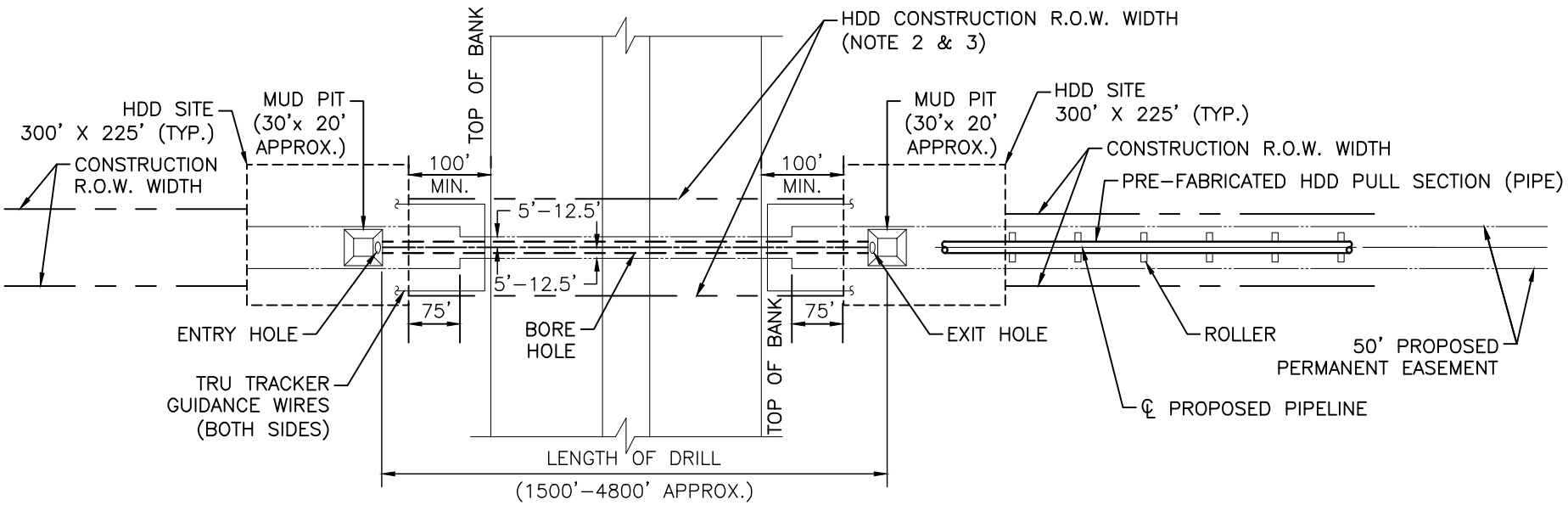
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/2014 |
| REV. | DESCRIPTION | | DATE |

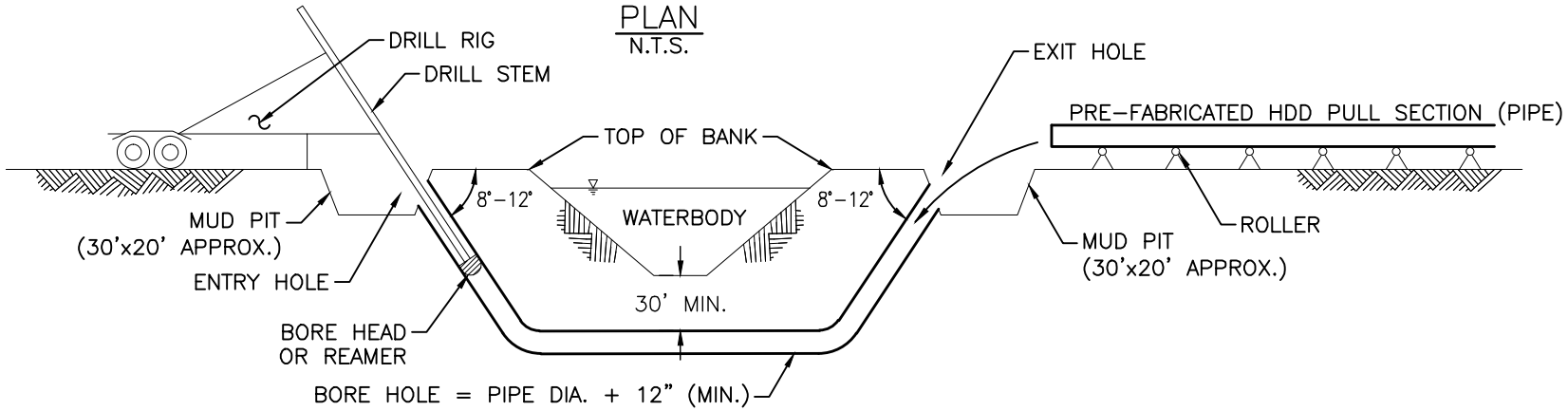
SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL FLOWING WATERBODY CROSSING
OPEN CUT TRENCHED
FIGURE #45

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28107 | 1 OF 1 | 0 |

12:27:56 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28107.dwg




PLAN
N.T.S.




PROFILE
NOT TO SCALE (N.T.S.)
(VERTICAL TO HORIZONTAL RATIO EXAGGERATED)

NOTES:

1. HDD SITE APPROX. (300' X 225') WILL BE TEMPORARILY CLEARED.
2. ONLY HAND CLEARING WILL OCCUR IN THE HDD CONSTRUCTION R.O.W. WIDTH TO ALLOW FOR THE PLACEMENT OF THE TRU TRACKER GUIDANCE WIRES (APPROX. 5' WIDTH FOR EACH WIRE).
3. ONLY MINOR CLEARING WILL OCCUR IN THE HDD CONSTRUCTION R.O.W. WIDTH FOR THE PLACEMENT OF TEMPORARY WATER PIPELINES FOR HYDROSTATIC TESTING & PUMP AND FILL; AS DETAILED ON SITE SPECIFIC HDD DRAWINGS, ACCESS LOCATIONS.
4. REFER TO HDD SITE SPECIFIC DRAWINGS FOR ADDITIONAL DETAILS.

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/14/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL HDD WATERBODY CROSSING

FIGURE #46

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28105 | 1 OF 1 | 0 |

12:24:02 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28105.dwg

# WETLAND CROSSING GENERAL PROCEDURES

## Clearing and Grading

1. Limit construction activity and ground disturbance in wetland areas to a construction ROW width of 75 feet or as shown on the construction drawings. With written approval from the FERC for site-specific conditions, construction ROW width within the boundaries of federally delineated wetlands may be expanded beyond 75 feet.
2. Wetland boundaries and buffers must be clearly marked in the field with signs and /or highly visible flagging until construction-related ground disturbing activities are complete.
3. Restrict extra work areas (such as staging areas and additional spoil storage areas) to those shown only on the construction drawings.
   a. All extra work areas must be located at least 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.
   b. If site-specific conditions do not permit a 50-foot setback, the Company can receive written approval from the FERC to locate these extra work areas closer than 50 feet from the wetland.
4. Above ground facilities shall not be located in any wetland, except as permitted or where the location of such facilities outside of wetlands would prohibit compliance with DOT regulations.
5. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment or operate normal equipment on timber riprap, prefabricated equipment mats or terra mats on the working side of the ROW during clearing operations. Do not use more than two layers of timber riprap to stabilize the ROW.
6. Cut vegetation just above ground level and grind stumps to ground level, leaving existing root systems in place. Immediately remove all cut trees and branches from the wetland and stockpile in an upland area on ROW for disposal.
7. Limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the ROW in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or removal of tree stumps from under the working side of the ROW.
8. Do not cut trees outside of the construction ROW to obtain timber for riprap or equipment mats.
9. Cleared materials (slash, logs, brush, wood chips) shall not be permanently placed within wetland areas.

## Temporary Erosion and Sediment Control

1. Install sediment barriers immediately after initial ground disturbance at the following locations:
   a. Within the ROW at the edge of the boundary between wetland and upland;
   b. Across the entire ROW immediately upslope of the wetland boundary at all wetland crossings to prevent sediment flow into the wetland;
   c. Along the edge of the ROW, where the ROW slopes toward the wetland, to protect adjacent, off ROW wetland; and
   d. Along the edge of the ROW as necessary to contain spoil and sediment within the ROW through wetlands.
2. Maintain all sediment barriers throughout construction and reinstall as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
WETLAND PIPELINE
CONSTRUCTION REQUIREMENTS
FIGURE #47

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28112 | 1 OF 2 | 0 |

12:21:47 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28112_01.dwg

Crossing Procedure

1. Minimize the length of time that topsoil is segregated and the trench is open.
2. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction ROW.
3. Perform topsoil segregation and trench dewatering, as applicable.
4. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
5. Use “push pull” or “float” techniques to place the pipe in the trench where water and other site conditions allow.
6. Install trench plugs and/or seal the trench bottom as necessary to maintain the original wetland hydrology at locations where the pipeline trench may drain a wetland.
7. Install a permanent slope break and a trench plug at the base of slopes near the boundary between the wetland and adjacent upland areas. In addition, install sediment barriers. Permanent slope breakers shall not be installed in agricultural areas.
8. Restore segregated topsoil to its original position after backfilling is complete. When required, additional material imported from off the ROW must be approved by the Environmental Inspector. The original wetland contours and flow regimes will be restored to the extent practical.

Cleanup and Restoration

1. Unless there is a wetland specific restoration plan, temporarily revegetate the ROW with annual ryegrass at 40 lbs/acre Pure Live Seed or with the recommended Wetland Seed Mix, unless standing water is present.
2. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate federal or state agency in wetland areas.
3. Mulch the disturbed ROW.
4. In the event that final cleanup is deferred more than 20 days after the trench is backfilled, all slopes adjacent to wetlands shall be mulched with 3 tons/acre of straw for a minimum of 100 feet on each side of the crossing.
5. Remove all timber riprap and prefabricated equipment mats upon completion of construction.
6. Develop specific procedures in coordination with the appropriate land management or state agency, where necessary, to prevent the invasion or spread of undesirable exotic vegetation, invasive species, and noxious weeds (such as purple loose strife and phragmites).
7. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.
8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are judged to be successful.

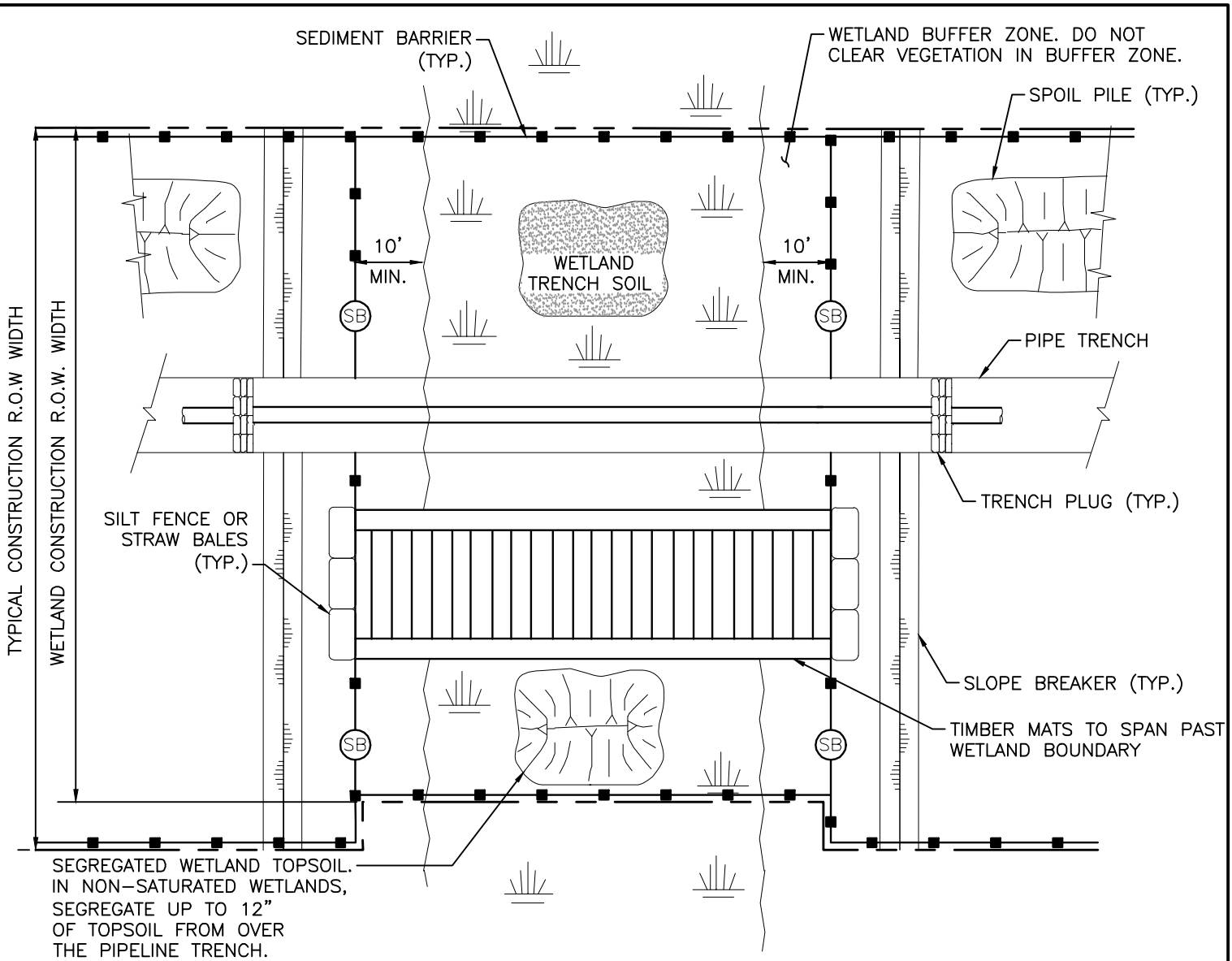
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: SC | | DATE: 02/17/14 | |
| CHECKED BY: J.W. | | DATE: 02/18/14 | |
| SCALE: NONE | | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
WETLAND PIPELINE
CONSTRUCTION REQUIREMENTS
FIGURE #47

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28112 | 2 of 2 | 0 |

12:22:52 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28112_02.dwg




NOTES:

1. INSTALL TEMPORARY SLOPE BREAKERS AT THE BASE OF ALL SLOPES ADJACENT TO THE WETLAND.
2. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY ADJACENT TO WETLAND UNTIL STAGING AREA IS PREPARED AND WORK IN THE WETLAND IS READY TO COMMENCE.
3. SILT FENCE OR STRAW BALES SHALL BE PLACED IN THE GAP AT THE TIMBER MATS BY THE END OF EACH DAY OR PRIOR TO APPROACHING RAIN TO PREVENT SEDIMENT FLOW INTO WETLAND.
4. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
5. INSTALL EARTHEN RAMP APPROACHES TO TIMBER EQUIPMENT MATS. EARTHEN RAMPS TO BE CONSTRUCTED OF UPLAND MATERIAL, TOPSOIL SHALL NOT BE USED TO CONSTRUCT EARTHEN RAMPS.
6. IF WATERBODY IS LOCATED WITHIN A WETLAND SYSTEM, EXTEND TIMBER EQUIPMENT MATS TO THE BRIDGE EQUIPMENT CROSSING USED TO CROSS THE WATERBODY IN ORDER TO ALLOW FOR CONTINUOUS TIMBER EQUIPMENT MAT COVERAGE THROUGH THE WETLAND AND WATERBODY AREA.
7. PERIODICALLY CHECK BRIDGE INSTALLATION AND REMOVE BUILD UP OF SEDIMENT OR DEBRIS ON BRIDGE.
8. MATERIALS PLACED IN WETLANDS SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN UP.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/18/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

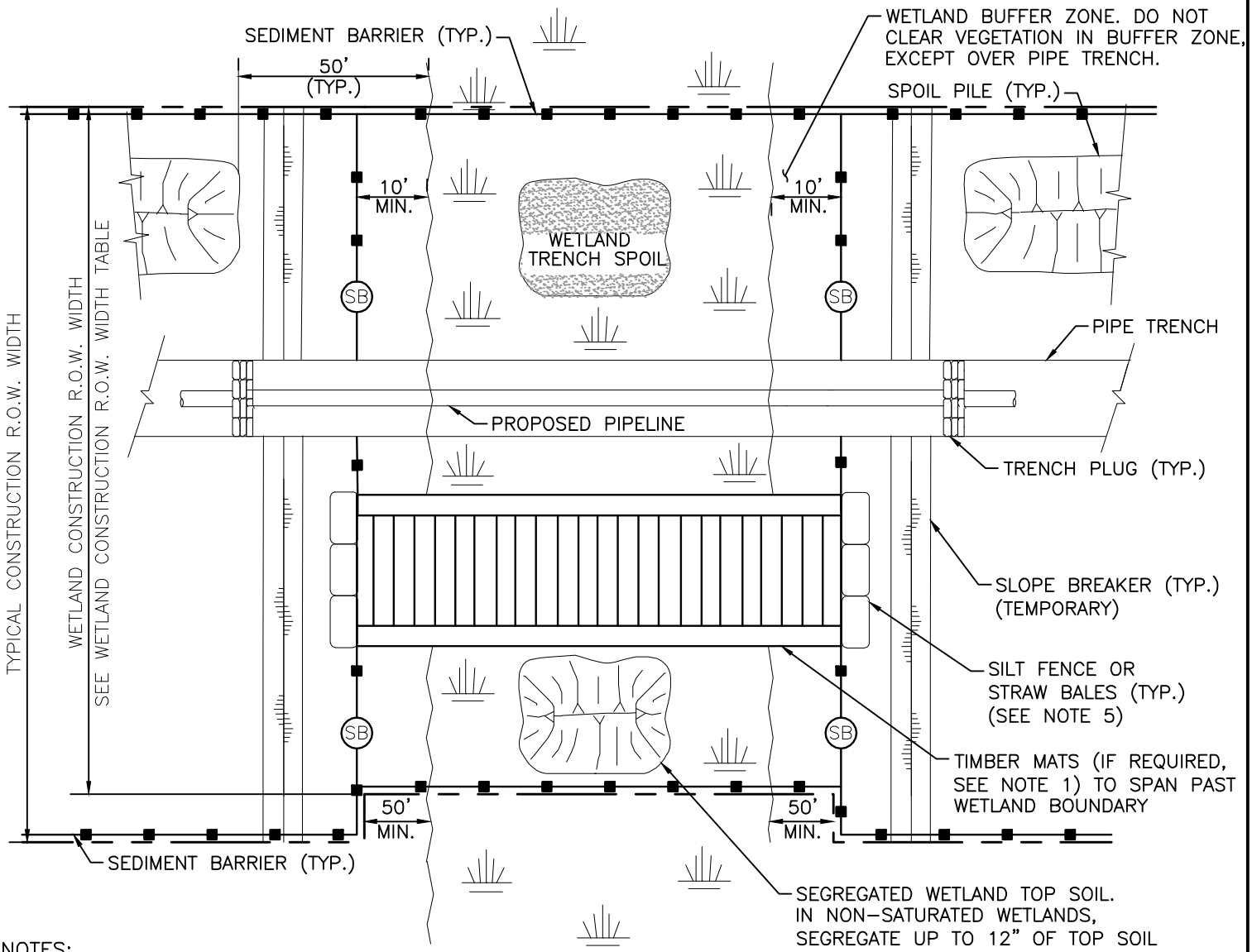
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
WETLAND EQUIPMENT CROSSING

FIGURE #48

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28125 | 1 OF 1 | 0 |

12:20:35 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28125.dwg




NOTES:

1. THIS METHOD WILL BE USED IN WETLANDS WITHOUT STANDING WATER OR SATURATED SOILS. IF NORMAL CONSTRUCTION EQUIPMENT CAUSES RUTS OR MIXING OF TOPSOIL AND SUBSOIL, LOW-GROUND-PRESSURE EQUIPMENT WILL BE USED, OR NORMAL EQUIPMENT WILL BE OPERATED ON TIMBER MATS.
2. INSTALL TEMPORARY SLOPE BREAKERS AT THE BASE OF ALL SLOPES ADJACENT TO THE WETLAND.
3. INSTALL TRENCH PLUGS ON BOTH SIDES OF THE WETLAND TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WETLAND.
4. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY ADJACENT TO WETLAND UNTIL STAGING AREA IS PREPARED AND WORK IN THE WETLAND IS READY TO COMMENCE.
5. SILT FENCES OR STRAW BALES SHALL BE PLACED IN THE GAP AT THE TIMBER MATS BY THE END OF EACH DAY OR PRIOR TO APPROACHING RAIN TO PREVENT SEDIMENT FLOW INTO WETLAND.
6. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
7. SEDIMENT BARRIER AND SLOPE BREAKER TO BE REMOVED ACROSS PIPE TRENCH AND DURING CONSTRUCTION OF PIPELINE. SEDIMENT BARRIER AND SLOPE BREAKER TO BE REPLACED AFTER BACKFILL OF TRENCH.

| WETLAND CONSTRUCTION R.O.W. WIDTH TABLE | | | |
|---|---|---|---|
| WETLAND LENGTH | CONSTRUCTION CORRIDOR | WORKING SIDE | SPOIL SIDE |
| LESS THAN 100' LONG | 75' | 50'-40' | 25'-35' |
| GREATER THAN 100' LONG | 75' | 50'-40' | 25'-35' |

SB TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES

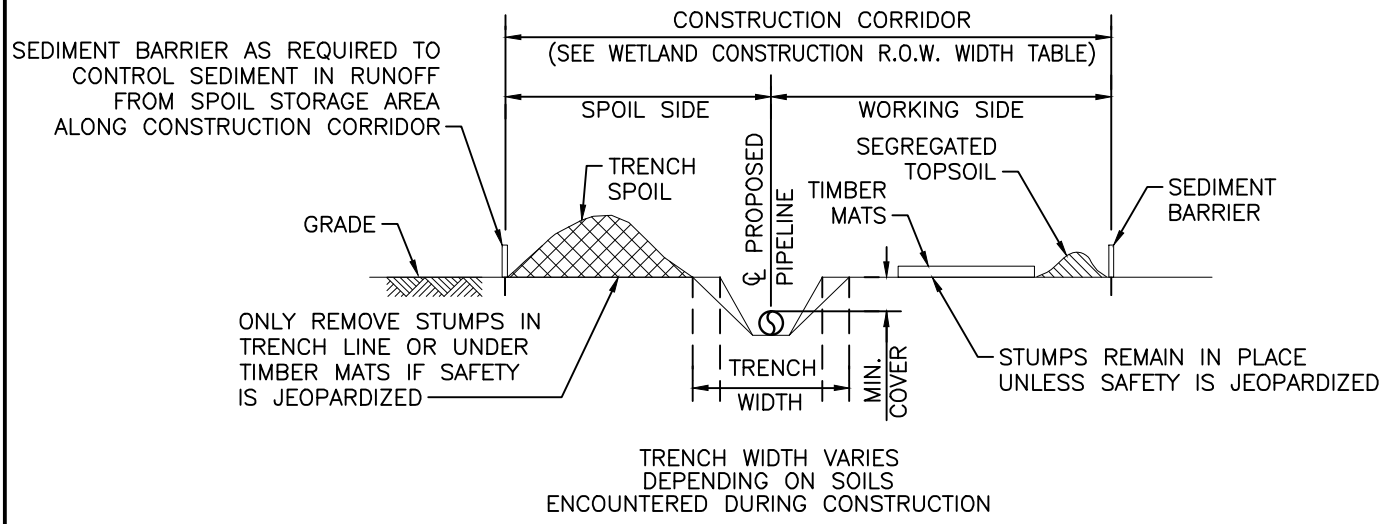
Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

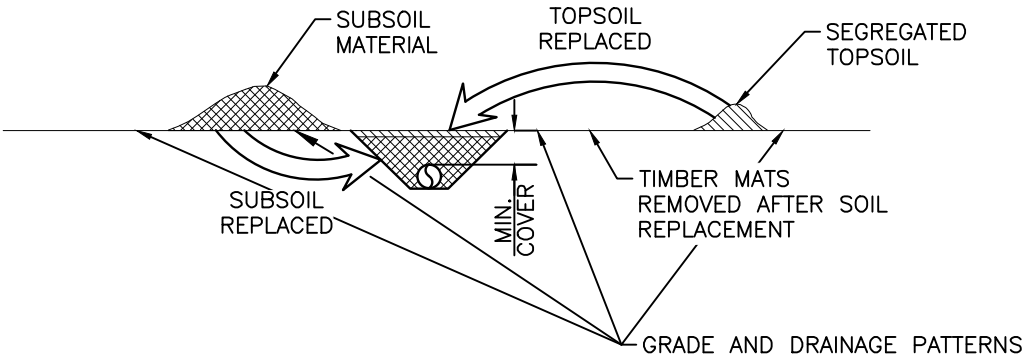
SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
NON-SATURATED WETLAND
WITH TOPSOIL SEGREGATION
FIGURE #49

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28111 | 1 OF 2 | 0 |

12:18:03 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28111_01.dwg




CROSS SECTION




WETLAND RESTORATION

Sabal Trail TRANSMISSION

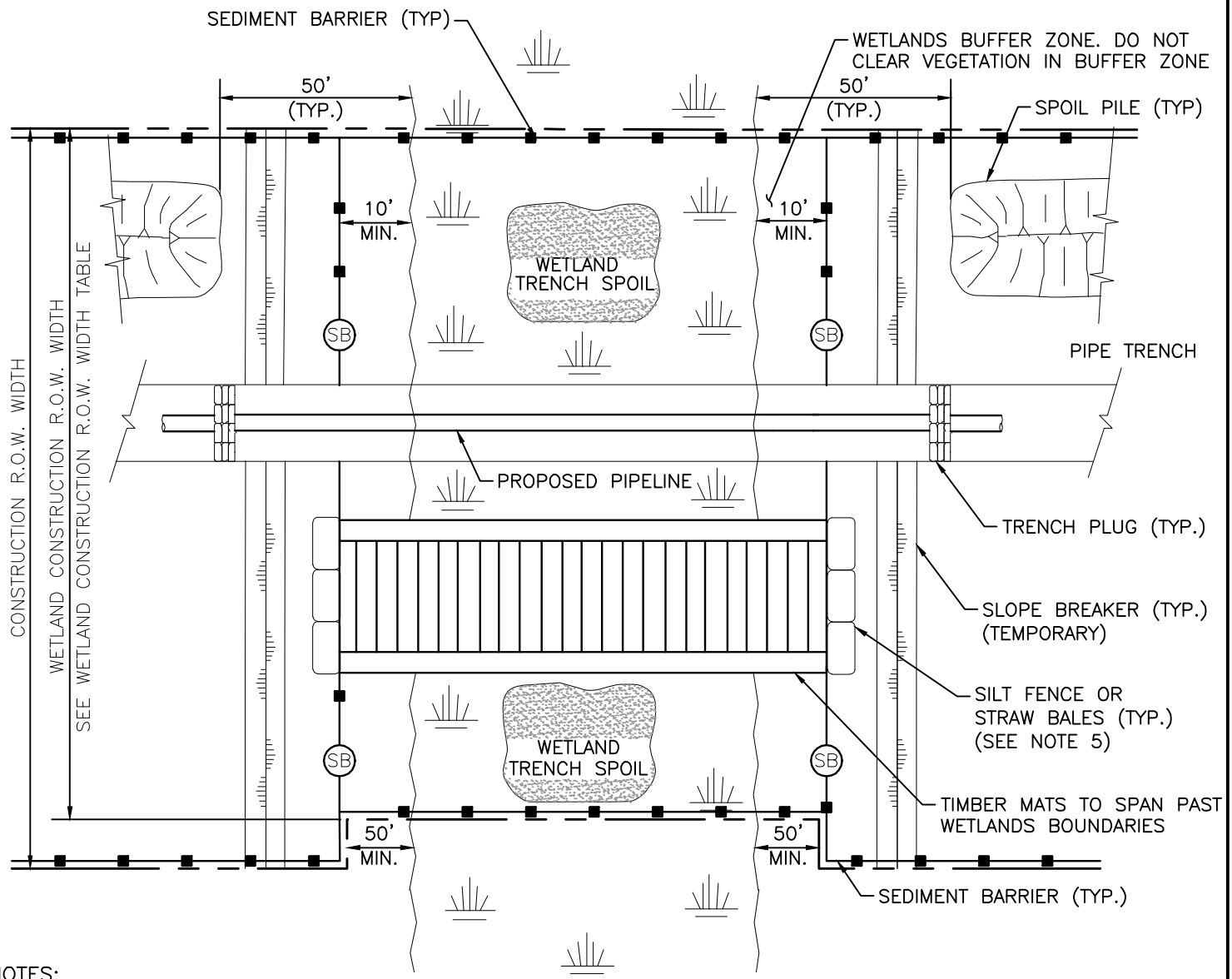
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
NON-SATURATED WETLAND
WITH TOPSOIL SEGREGATION
FIGURE #49

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28111 | 2 OF 2 | 0 |

12:19:12 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28111_02.dwg




NOTES:

1. TOPSOIL SEGREGATION WILL NOT BE PERFORMED IF STANDING WATER OR SATURATED SOILS ARE PRESENT.
2. INSTALL TEMPORARY SLOPE BREAKERS AT THE BASE OF ALL SLOPES ADJACENT TO THE WETLAND.
3. INSTALL TRENCH PLUGS ON BOTH SIDES OF THE WETLAND TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WETLAND.
4. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY ADJACENT TO WETLAND UNTIL STAGING AREA IS PREPARED AND WORK IN THE WETLAND IS READY TO COMMENCE.
5. SILT FENCES OR STRAW BALES SHALL BE PLACED IN THE GAP AT THE TIMBER MATS BY THE END OF EACH DAY OR PRIOR TO APPROACHING RAIN TO PREVENT SEDIMENT FLOW INTO WETLAND.
6. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
7. SEDIMENT BARRIERS AND SLOPE BREAKERS TO BE REMOVED ACROSS PIPE TRENCH AND DURING CONSTRUCTION OF PIPELINE. SEDIMENT BARRIER AND SLOPE BREAKER TO BE REPLACED AFTER BACKFILL OF TRENCH.

| WETLAND CONSTRUCTION R.O.W. WIDTH TABLE | | | |
|---|---|---|---|
| WETLAND LENGTH | CONSTRUCTION R.O.W. WIDTH | WORKING SIDE | SPOIL SIDE |
| LESS THAN 100' LONG | 75' | 50'-40' | 25'-35' |
| GREATER THAN 100' LONG | 75' | 50'-40' | 25'-35' |

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES

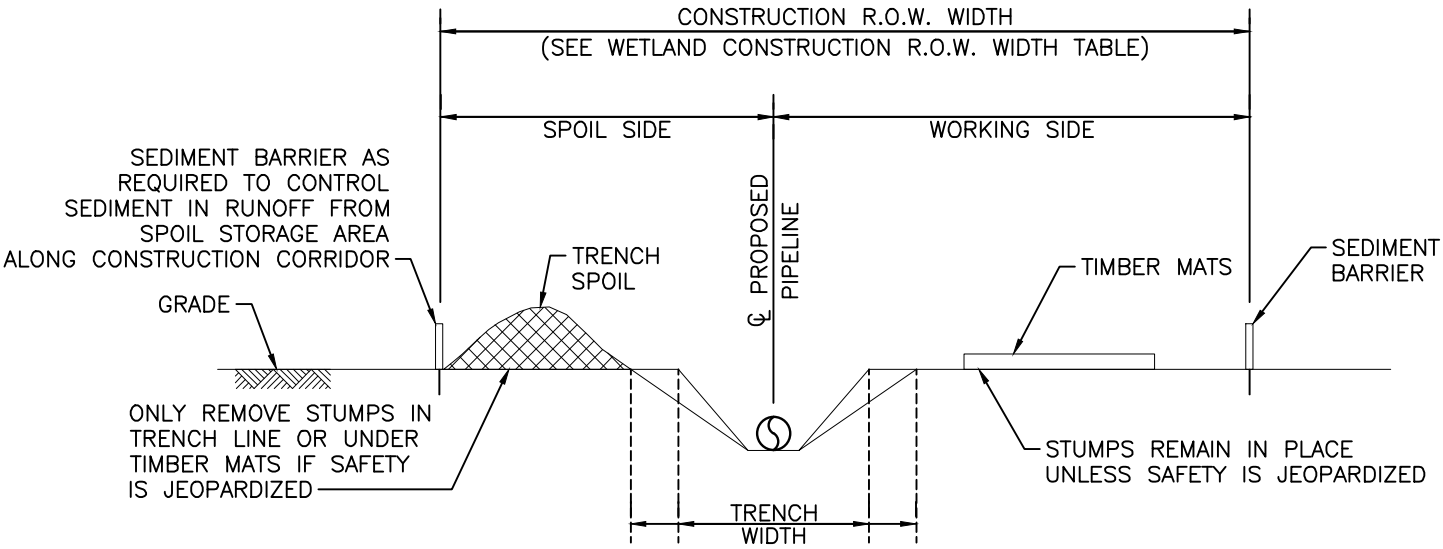
| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |
| 0 | ISSUED FOR PERMITTING | | 11/20/14 |
| REV. | DESCRIPTION | | DATE |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
SATURATED WETLAND
WITHOUT TOP SOIL SEGREGATION
FIGURE #50

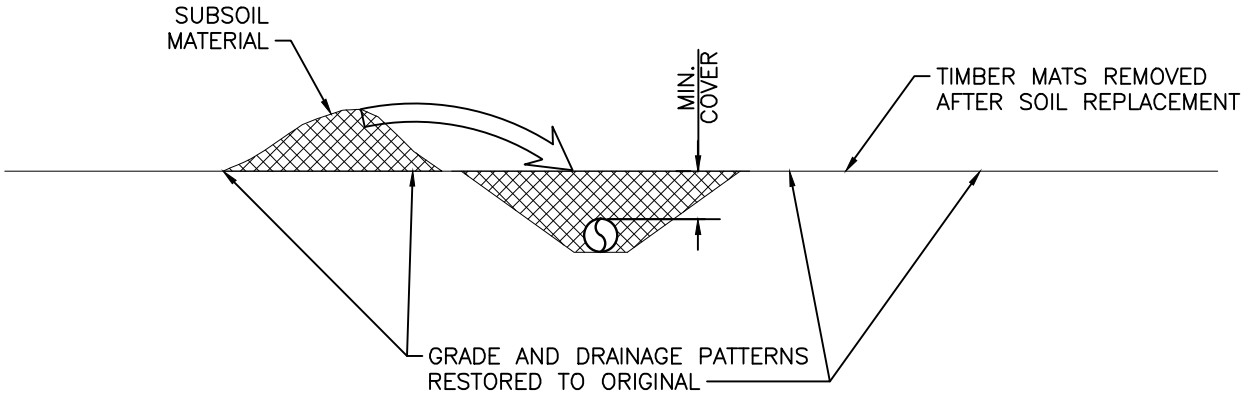
| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28110 | 1 OF 2 | 0 |

12:14:59 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28110_01.dwg




TRENCH WIDTH VARIES
DEPENDING ON SOILS
ENCOUNTERED DURING CONSTRUCTION

## CROSS SECTION




## WETLAND RESTORATION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/17/14 |
| CHECKED BY: | J.W. | DATE: | 02/18/14 |
| SCALE: | NONE | W.O.: | |

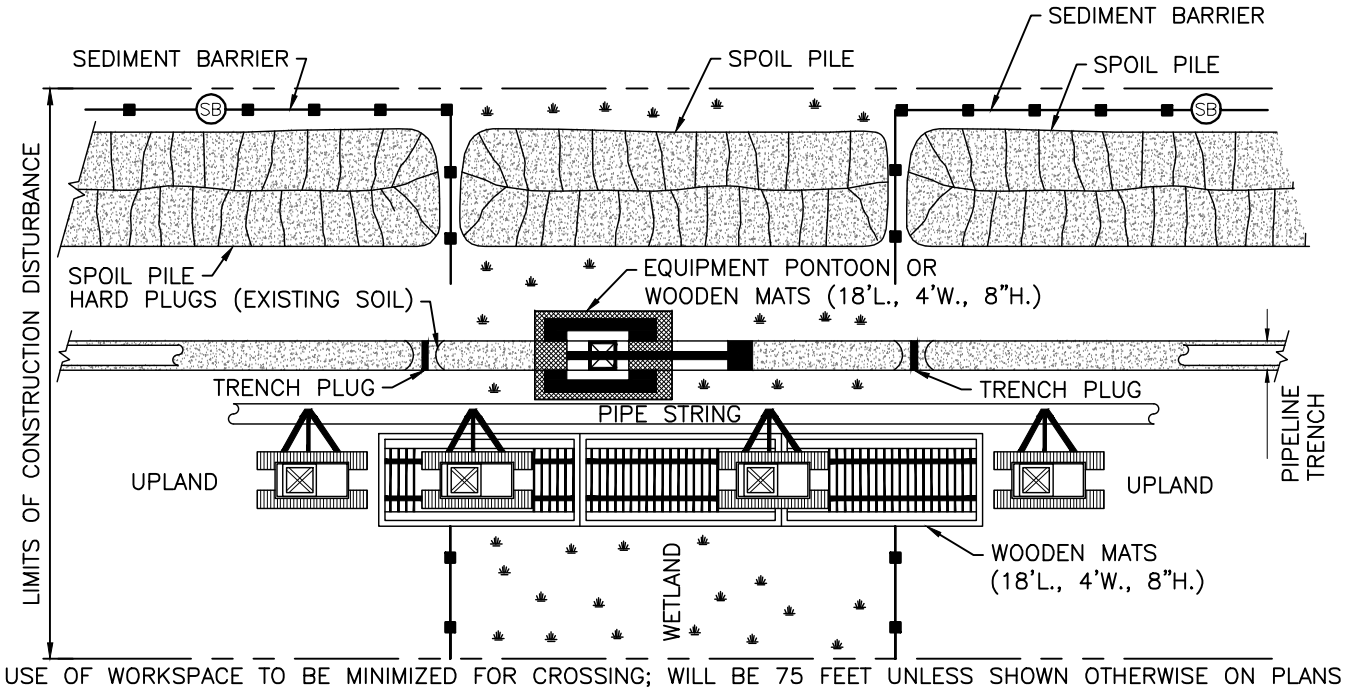
| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

Sabal Trail TRANSMISSION

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
SATURATED WETLAND
WITHOUT TOP SOIL SEGREGATION
FIGURE #50

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28110 | 2 OF 2 | 0 |

12:16:01 PM 11/18/2014 monochrome.ctb
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28110_02.dwg




NOTES:

1. CONTRACTOR SHALL UTILIZE THIS METHOD FOR WETLAND PIPELAY WHERE SUPPORT OF CONSTRUCTION EQUIPMENT ON MATS FOR EXCAVATION, STRINGING, WELDING, PIPELAY, BACKFILLING AND RESTORATION IS VERY DIFFICULT.
2. CONTRACTOR SHALL UTILIZE AMPHIBIOUS EXCAVATORS (PONTOON MOUNTED BACKHOES) OR TRACKED BACKHOES SUPPORTED BY FABRICATED TIMBER MATS OR FLOATS TO EXCAVATE TRENCH.
3. CONTRACTOR SHALL INSTALL SEDIMENT BARRIERS AT THE WETLAND EDGE AND MAINTAIN THROUGHOUT CONSTRUCTION TO THE EXTENT POSSIBLE TO PREVENT SURFACE RUNOFF FROM THE UPLAND CONSTRUCTION AREA AND UPLAND SPOIL STORAGE AREAS FROM ENTERING THE WETLAND.
4. CONTRACTOR SHALL FABRICATE THE PIPE STRING IN AN ADJACENT UPLAND AREA AND FLOAT OR CARRY IT ACROSS THE WETLAND AREA ON MATS OR USING SWAMP CONSTRUCTION EQUIPMENT. EQUIPMENT LOCATED ON THE ADJACENT UPLAND WILL PUSH OR PULL PIPE STRING ACROSS WETLAND.
5. TOPSOIL SEPARATION WILL NOT BE REQUIRED IN SATURATED WETLANDS.
6. CONTRACTOR SHALL BACKFILL THE PIPELINE USING IN-WETLAND EQUIPMENT AND/OR EQUIPMENT LOCATED ON THE ADJACENT UPLAND AREAS. TRENCH PLUGS WILL BE INSTALLED AT THE WETLAND EDGES.
7. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND CONTRACTOR SHALL REPAIR IF NECESSARY
8. CONTRACTOR SHALL PLACE SIGNAGE 100 FEET BACK FROM WETLAND BOUNDARY AND ADVISE NO REFUELING OF MOBILE EQUIPMENT WITHIN 100 FEET OF STREAM BANK. REFUEL STATIONARY EQUIPMENT AS PER SPCC PLAN.
9. CONTRACTOR SHALL RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY AND INSTALL PERMANENT EROSION CONTROL.
10. CONTRACTOR SHALL REMOVE ANY TIMBER MATS OR FILL CONSISTING OF NON-NATIVE MATERIAL FROM WETLANDS UPON COMPLETION.
11. CONTRACTOR SHALL AVOID ADJACENT WETLANDS AND INSTALL SEDIMENT BARRIERS (STRAW BALES AND/OR SILT FENCE) AT EDGE OF ROW ALONG WETLAND EDGES AS REQUIRED.
12. CONTRACTOR SHALL LEAVE HARD PLUGS AT EDGE OF WETLAND, UNTIL JUST PRIOR TO TRENCHING.
13. WETLAND BOUNDARIES SHALL BE FLAGGED PRIOR TO CLEARING.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.

Sabal Trail TRANSMISSION

| | | | |
|---|---|---|---|
| DRAWN BY: | SC | DATE: | 02/22/14 |
| CHECKED BY: | J.W. | DATE: | 02/24/14 |
| SCALE: | NONE | W.O.: | |

| REV. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR PERMITTING | 11/20/14 |

SABAL TRAIL TRANSMISSION
PROPOSED 36" & 24" PIPELINE
TYPICAL PUSH-PULL CROSSING METHOD

FIGURE #51

| DRAWING NUMBER: | SHEET NO. | REV. |
|---|---|---|
| 1657-PL-DG-28131 | 1 OF 1 | 0 |

12:13:15 PM 11/18/2014
C:\work\Vault\1657\PL - Pipeline\3 Pipeline\Typicals\Env. Drawings\1657-PL-DG-28131.dwg

Sabal Trail
TRANSMISSION℠

# APPENDIX B

# SEED MIX RECOMMENDATIONS

Sabal Trail TRANSMISSION℠

# Seed Mix Recommendations – Alabama (Central Zone)

| Alabama (Central Zone) - Plants Commonly Used for Cover Crops | | | | | | |
|---|---|---|---|---|---|---|
| | **Plant** | **Broad Cast Seeding Rate (lbs per acre)** | **Drill Seeding Rate (lbs per acre)** | **Pure Live Seed** | **Drill Depth (inches)** | **Time of Year** |
| **Warm Season Annual Grasses** | Millet, Browntop, Proso & Foxtail | 30 | 20 | | .5-.75 | Apr 1 - Aug 15 |
| | Millet, Pearl | 30 | 15 | | .5 - 1.5 | Apr 20 - Jul 1 |
| | Sorghum-Sudan Hybrids | 35 | 25 | | .5-1 | Apr 15 - Aug 1 |
| | Sorghum, Forage | 20 | NA | | NA | Apr 20 - May 15 |
| | Sudangrass | 35 | 25 | | .5-1 | May 1 - Aug 1 |
| **Cool Season Annual grasses** | Ryegrass | NA | 25 | | 0-.5 | Sep 1 - Oct 15 |
| | Small Grains (Oats, Rye, Wheat, Barley, Triticale) | NA | 90-120 | | 1.0-2.0 | Sep 1 - Nov 1 |
| **Warm Season Annual Legumes** | Lespedeza, Annual | NA | 30 | | .25-.5 | Feb 15 - Apr 1 |
| **Cool Season Annual Legumes** | Austrian Winter Peas | NA | 40 | | 1.0-2 | Sep 1 - Oct 15 |
| | Caley Peas | NA | 50 | | .5-1 | Sep 1 - Oct 15 |
| | Clover, Arrowleaf | NA | 6 | | 0-.5 | Sep 1 - Oct 15 |
| | Clover, Ball | NA | 4 | | 0-.25 | Sep 1 - Oct 15 |
| | Clover, Crimson | NA | 25 | | 0-.05 | Sep 1 - Oct 15 |
| | Clover, Red | 15 | 8 | | .25-.5 | Sep15 - Nov 15 or Feb 1 - Apr 1 |
| | Clover, Subterranean | NA | 10 | | .25-.5 | Sep 1 - Oct 31 |
| | Vetch, Common | NA | 35 | | 1.0-2 | Sep 1 - Oct 15 |
| | Vetch, Hairy | NA | 25 | | 1.0-2 | Sep 1 - Oct 15 |

**Alabama (Central Zone) - Critical Area Planting:** Critical area planting is establishing vegetation, such as trees, shrubs, vines, grasses and/or legumes, on highly erodible, critically eroding, or potentially critically eroding areas.

| | Plant | Broad Cast Seeding Rate (lbs per acre) | Drill Seeding Rate (lbs per acre) | Pure Live Seed | Drill Depth (inches) | Time of Year |
|---|---|---|---|---|---|---|
| **Perennial Grasses, Legunes and Mixtures for Critical Area Plantings on Prepared Seedbeds** | | | | | | |
| **Temporary Cover** | Barley | | 3 Bushels | | 1 | Sep 1-Oct 30 |
| | Oats | | 4 Bushels | | 1 | Sep 1-Oct 30 |
| | Rye | | 3 Bushels | | 1 | Sep 15 - Nov 15 |
| | Wheat | | 3 Bushels | | 1 | Sep 1 - Oct 15 |
| | Ryegrass | | 30 | | 0.25 | Apr 1 - Aug 15 |
| | Millet, Browntop | | 40 | | 0.5 | Apr 15 - Aug 1 |
| | Sudangrass | | 40 | | 0.75 | Apr 15 - Aug 1 |
| | Sorghum-Sudan Hybrids | | 40 | | 0.75 | Apr 15 - Aug 1 |
| | Bermudagrass, Common | | 10 | | 0.75 | Mar 15 - Jul 15 |
| | Partridge Pea | | 10 | | 0.5 | Feb 15 - Mar 15 |
| **Perennial Grasses, Legunes and Mixtures** | Bahiagrass*/ ** | | 40 | | .25-.5 | Mar 1 - Jul 1 |
| | Bermudagrass, Common, (Hulled) | | 10 | | .25-.5 | Mar 15 - Jul 15 |
| | Bahiagrass*/** | | 27 | | .25-.5 | Mar 1 - Jul 1 |
| | Common Bermudagrass (Hulled) | | 7 | | .25-.5 | Mar 1 - Jul 15 |
| | Bermudagrass, Sprigs (Forage Type) | | 30 Bushels | | 3.0-6 | Mar 15 - Jul 15 |
| | Bermudagrass, Sprigs Common | 45 Bushels | | | 2.0-4 | Mar 15 - Jul 15 |
| | Fescue, Tall | 50 | 40 | | .25-.5 | Sep 1 - Nov 1 |
| | Fescue, Tall and White Clover | 50 | 40 | | .25-.5 | Sep 1 - Nov 1 |
| | Sericea | 50 | 40 | | 0.25 | Mar 1 - Jul 15 |

**Alabama (Central Zone) - Critical Area Planting:** Critical area planting is establishing vegetation, such as trees, shrubs, vines, grasses and/or legumes, on highly erodible, critically eroding, or potentially critically eroding areas.

| | Plant | Broad Cast Seeding Rate (lbs per acre) | Drill Seeding Rate (lbs per acre) | Pure Live Seed | Drill Depth (inches) | Time of Year |
|---|---|---|---|---|---|---|
| | Sericea and Bermudagrass (Hulled) | 60 | 40 | | 0.25 | Mar 1 - Jul 15 |
| | Switchgrass | | | 10 | 0.25 | Mar 15 - Jul 15 |
| | * Bahiagrass planting: Sand Mountain variety: N,C,S Pensacola, Tift9, UF Riata, Tifquick: S, C, counties contiguous to Central Alabama plus St. Clair, Calhoun, & Cleburne. | | | | | |
| | ** Fall planting of bahiagrass should contain 45 pounds of small grain to provide cover during winter months. | | | | | |
| | PLS – Pure Live Seed (lbs. of live seed x % purity = lbs. Pure Live seed) | | | | | |

| **Woody Plants, Shrubs and Vines** | Plant | Spacing | Mature Height | Remarks |
|---|---|---|---|---|
| | American Beautyberry 1-2 ft centers 2-4 ft | 1-2' Centers | 2-4' | |
| | Indigo Bush Seeded 2-4 ft Established by seeding. | Seeded | 2-4' | Established by seeding |
| | Memorial Rose (Rosa wichuriana) 3-4 ft centers 2 ft | 3-4' centers | 2' | May be used on slopes as steep as 1 to 1. |
| | Perwinkle | 1-2' Centers | 6-12" | May be used on slopes as steep as 1 to 1. |
| | Shore Juniper | 5' Centers | 2-3' | Emerald Sea or Blue Pacific |

**Fertilizer**

Agricultural limestone shall have a neutralizing value of not less than 90% calcium carbonate equivalent and 90% will pass through a 10 mesh sieve and 50% will pass through a 60 mesh sieve.

Selma chalk shall have a neutralizing value of not less than 80% calcium carbonate equivalent and 90% will pass through a 10 mesh sieve.

Apply plant nutrients according to a current soil test report from Auburn Soil testing Laboratory or other laboratories that make recommendations based on soil analysis. A soil test will be considered current if made within the prior 3 year period. When a soil test is not made, use the following rates of plant nutrients.

- For grasses seeded alone use 30 lbs. nitrogen, 100 lbs. P205, and 100 lbs K20 per acre at planting. Apply 30 lbs. of additional nitrogen when grass has emerged and begun growth.
- For grass and legume mixtures, use 30 lbs. nitrogen, 100 lbs. P205 and 100 lbs. K20 per acre.
- For legumes seeded alone use 100 lbs. P205 and 100 lbs. K20. per acre.
- For woody ground covers, shrubs vines and trees planted on prepared seedbeds apply 100 lbs. nitrogen, 100 lbs. P205 and 100 lbs. K20 per acre in 3 split applications during the growing season.

# Seed Mix Recommendations - Georgia

**Georgia - Critical Area Planting:** Establishing permanent vegetation on sites that have or are expected to have high erosion rates, and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices.

| Perennial | Cover Crop | Broad Cast Seeding Rate (lbs per acre) | Drill Seeding Rate (lbs per acre) | Drill Depth (inches) | Time of Year |
|---|---|---|---|---|---|
| **Common Bermuda (Hulled)** | | 5 | NA | NA | Mar 1 - May 15 |
| **Bahia** | | 50 | NA | NA | Mar 1 - May 15 |
| | Browntop Millet | 40 | NA | NA | Apr 1 - Aug 15 |
| **Common Bermuda (Unhulled)** | | 5 | NA | NA | Sep 1 - Dec 1 |
| | Browntop Millet | 40 | NA | NA | Sep 1 - Dec 1 |
| | Oats | 50 | NA | NA | Oct 1 - Nov 15 |
| | Rye | 50 | NA | NA | Sept. 15 - Jan 1 |
| | Wheat | 50 | NA | NA | Oct 15 - Dec 15 |

**Fertilizer**

Apply soil amendments (e.g. lime, fertilizer, compost) at rates necessary to enhance the establishment of the vegetation. Incorporate 1500 lbs./ac of 5-10-15, 6-12-12 or 10-10-10 before planting on sites where the results of a current soil test are not available for the perennial crop. Current soil test results are no older than three years for most crops Georgia (NRCS Nutrient Management Standard, Code 590). Apply a similar rate of complete fertilizer if hydroseeding. Preplant nitrogen fertilizer must be applied as inorganic fertilizer, rather than from organic fertilizer, in order to make this nutrient available to the vegetation soon after application. Also, apply 50 lbs. of nitrogen/acre after establishing the vegetation for all methods of applying preplant fertilizer. This final application of nitrogen during the first year may be applied as compost because the availability of nitrogen will not be as critical as it was at the time of seeding. However, incorporating compost early in the season is encouraged as a soil amendment, but not as a source of nitrogen fertilizer.

**Mulch**

| | |
|---|---|
| Jan and Feb: | Apply and anchor mulch to newly exposed critical soils because it is not likely that an annual cover crop can be established quickly during the cold winter months. Perennial grasses will not germinate or thrive during the winter. |
| Aug 15 - Sep 1 | Apply mulch to newly exposed critical soils throughout the state because it is not likely that one can establish an annual cover crop or a perennial grass vegetation because rainfall is likely to limit seed germination during this time of the year. Plant unhulled common bermudagrass (throughout the state) or tall fescue (in north Georgia) in a nurse crop of oats, rye or wheat. |
| | Replant the cereal grain cover crop by November 1, or apply mulch, if a perennial grass has not been established during the fall. |

Sabal Trail TRANSMISSION℠

# Seed Mix Recommendations - Florida

| **Florida Critical Area Planting:** | | | |
|---|---|---|---|
| Planting dates for introduced warm season perennials establishment are: | North Florida (Madison, Hamilton, Suwannee, Gilchrist, Alachua, Levy): Mar 1 - Aug 15 (vegetative and seed) | | |
| | **Crop** | **Broad Cast Seeding Rate (per acre)** | **Time of Year** |
| **Annual (Nurse) Crop Cool Season** | Oats | 65lbs. | September to Feb |
| | Rye | 45.lbs | September to Feb |
| | Wheat | 45lbs. | September to Feb |
| | Annual Ryegrass | 15lbs. | September to Feb |
| **Annual (Nurse) Crop - Warm Season** | Browntop Millet | 20-30lbs. | March-August |
| | Pearlmillet | 20-30lbs. | March-August |
| | Japanese Millet | 20-30lbs. | March-August |
| | Proso Millet | 20-30lbs. | March-August |
| **Seeded perennial Herbaceous Warm Season Species or Mixtures** | Bahiagrass (Use Argentine, Pensacola ot Tifton-9) | 50lbs. | North Florida – March 1 to August 15<br>Central Florida – February 1 to March 15 |
| | Bahiagrass and Partrdge pea (Commanche) | 50 + 10lbs. | North Florida – March 1 to August 15<br>Central Florida – February 1 to March 15 |
| | Switchgrass (only Alamo recommended) | 10lbs. | North Florida – Dec 1 to Apr 15<br>Central Florida – Dec 1 to Mar 15 |
| | Switchgrass and Partridge pea (only Commanche recommended) | 10 + 10lbs. | North Florida – Dec 1 to Apr 15<br>Central Florida – Dec 1 to Mar 15 |
| **Vegetatively Planted Perennial Species** | Bermudagrass, hybrid (*Cynodon dactylon)* | Sprigs or stems at 1000-2000 lb/acre | |
| | Peanut, perennial (*Arachis glabrata)* | Sod (or rhizomes at 80-120 buschels/acre | |
| | Stargrass (*Cynodon nlemfuensis)* | Stems at 1000-2000 lb/acre | |

| Florida Critical Area Planting: | |
|---|---|
| **Introduced warm season seeded perennial grasses can be planted with a cool season nurse crop in September through January, but the site needs to be inspected the following summer to ensure adequate stand has established.** | |
| **Mulch** | |
| Use mulch on all slopes steeper than 3%, on dams and spillways, and on road banks.<br>Straw bales placed on the contour can be used in addition to mulch on long slopes. Place bales end to end and anchor each individual bale with two stakes.<br>Dry straw or hay used for mulch needs to be free of weed seed and applied at the rate of 1.5 to 2 tons per acre (75 – 100 lb per 1,000 sq feet) so that above 75 percent of the soil surface is covered.<br>Wood cellulose fiber used as carrier in hydraulic seeding operations functions as a self-sticking mulch when applied at 500 lb per acre.<br>If jute matting is used as mulch, half the seed needs be planted prior to the matting being is anchored down and the remainder planted afterward. Anchor jute matting on all edges and down the center of the roll at 5- or 6-foot intervals.<br>Bonded fiber blankets (1/4 X 1/4 inch plastic mesh laminated to a mulch blanket) can be used on areas highly susceptible to wind or water erosion. Unroll blankets and secure in place after the area has been seeded. | |
| **Fertilizer** | |
| If practical, use a current soil test (< 3 yr old) processed by the IFAS Extension Soil Testing Laboratory or equivalent laboratory to determine the need for liming materials and plant nutrients. | |
| If a soil test can not be made, use the following nutrient rates: | • On sites to be planted to introduced species, apply 1 to 2 tons per acre (of finely ground dolomite or agricultural limestone per acre. Do not apply lime on sites to be planted with native species. |
| | • For grasses, other than native species, seeded alone use 40 to 50 lb per acre of nitrogen, phosphorous, and potassium at planting and annually each spring. This can be supplied by 400 to 500 lb per acre of a 10-10-10 formulation. Apply an additional 30 to 60 lb of additional nitrogen as ammonium nitrate or ammonium sulfate when grass has emerged and begun growth. If native species are planted, follow recommendations for legume plantings. |
| | • For legumes alone or grass and legume mixtures, apply only phosphorous and potassium by using 200 to 400 lb per acre of a 0-10-20 formulation at planting. |
| | • For woody ground covers, shrubs, vines, and trees planted on prepared seedbeds apply 1,000 lb per acre of a 10-10-10 formulation in 3 split applications during the growing season. |

# APPENDIX C

# ALABAMA INSPECTION FORMS

**(To Be Provided in Contractors Copy)**

# APPENDIX D

## GEORGIA INSPECTION FORMS

**(To Be Provided in Contractors Copy)**

# APPENDIX E

## FLORIDA INSPECTION FORMS

**(To Be Provided in Contractors Copy)**

# APPENDIX F

## FLORIDA CALCULATIONS

This appendix of the Plan will be provided by the contractor and contains information and calculations used in completing the design and illustration of the BMP's found in the drawings. These calculations may include but are not limited to:

- Sizing of the sediment containment systems
- Sizing of slope drains
- Shear stress and velocity values for drainage channel Rolled Erosion Control Products
- Seed mixture and application rates
- Application of soil amendments, herbicides, pesticides and fertilizers
- Flood flow evaluations and critical design points
- Any other pertinent calculations used in the design and/or implementation of E&SC BMP's in Florrida

Sabal Trail
TRANSMISSION℠

# APPENDIX G

## ALABAMA HANDBOOK FOR EROSION, SEDIMENT CONTROL AND STORMWATER MANAGEMENT ON CONSTRUCTION SITES AND URBAN SITES

**(To Be Provided in Contractors Copy)**

# APPENDIX H

## GEORGIA MANUAL FOR EROSION AND SEDIMENTATION CONTROL

**(To Be Provided in Contractors Copy)**

# APPENDIX I

## STATE OF FLORIDA EROSION AND SEDIMENT CONTROL DESIGNER AND REVIEWER MANUAL

**(To Be Provided in Contractors Copy)**