

APPENDIX D

Islander East's and Algonquin's Erosion and Sedimentation Control Plan

EROSION AND SEDIMENTATION CONTROL PLAN

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Project: Islander East Pipeline Project

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TABLE OF CONTENTS

	<u>Page</u>
1. INTRODUCTION	1-1
1.1 Purpose of this Plan	1-1
1.2 Guidelines and Requirements	1-1
1.3 Surveys, Permits, and Notifications	1-3
1.4 Inquiries	1-3
2. SUPERVISION AND INSPECTION	2-1
2.1 Responsibilities of the Environmental Inspector	2-1
2.2 Environmental Training for Construction	2-2
3. CONSTRUCTION TECHNIQUES FOR NATURAL GAS PIPELINES	3-1
3.1 Typical ROW Requirements	3-1
3.2 Access Roads	3-1
3.3 Pipe and Contractor Wareyards	3-2
3.4 Off-ROW Disturbance	3-2
3.5 Construction Sequence	3-3
3.5.1 Clearing	3-3
3.5.2 Installing Temporary Sediment Barriers	3-4
3.5.3 Grading	3-5
3.5.3.1 Topsoil Segregation	3-5
3.5.3.2 Tree Stump Removal and Disposal	3-5
3.5.3.3 Rock Disposal	3-6
3.5.4 Installing Temporary Interceptor Dikes	3-6
3.5.5 Trenching	3-7
3.5.5.1 Temporary Trench Plugs	3-7
3.5.6 Trench Dewatering	3-8
3.5.7 Pipe Installation	3-8
3.5.7.1 Stringing and Bending	3-8
3.5.7.2 Welding and Weld Inspection	3-8
3.5.7.3 Lowering-in	3-8
3.5.8 Backfilling	3-9
3.5.8.1 Permanent Trench Plugs	3-9
3.5.9 Hydrostatic Testing	3-10
3.6 ROW Restoration and Final Cleanup	3-11
3.6.1 Permanent Erosion Control	3-12
3.6.1.1 Permanent Interceptor Dikes	3-12
3.6.1.2 Erosion Control Fabric	3-12
3.6.2 Revegetation and Seeding	3-13
3.6.3 Mulch	3-14
3.6.4 Winter Stabilization	3-14
3.7 Unauthorized Vehicle Access to ROW	3-15

4.	SPECIAL CONSTRUCTION METHODS	4-1
4.1	Agricultural Areas	4-1
	4.1.1 Drain Tiles	4-1
	4.1.2 Irrigation	4-1
	4.1.3 Soil Compaction Mitigation	4-1
4.2	Road Crossings	4-1
4.3	Residential Areas	4-2
	4.3.1 Construction Procedures	4-2
	4.3.2 Construction Techniques	4-2
	4.3.3 Cleanup and Restoration	4-3
5.	WATERBODY CROSSINGS	5-1
5.1	Waterbody Definitions	5-1
5.2	General Waterbody Procedures	5-1
	5.2.1 Time Window for Construction	5-2
	5.2.2 Temporary Equipment Bridges	5-2
	5.2.3 Clearing and Grading	5-2
	5.2.4 Installing Temporary Erosion and Sediment Control	5-3
	5.2.5 Various Types of Crossings	5-4
	5.2.5.1 General Crossing Procedures	5-4
	5.2.5.2 Flumed Crossing	5-5
	5.2.5.3 Dam and Pump Crossing	5-5
	5.2.5.4 Wet Crossing	5-6
	5.2.6 Restoration	5-7
6.	WETLAND CROSSINGS	6-1
6.1	Definition	6-1
6.2	General Procedures	6-1
	6.2.1 Clearing and Grading	6-1
	6.2.2 Temporary Erosion and Sediment Control	6-2
	6.2.3 Crossing Procedure	6-2
	6.2.4 Cleanup and Restoration	6-2
7.	SPILL PREVENTION CONTROL	7-1
8.	POST CONSTRUCTION ACTIVITIES	8-1
8.1	Post-Construction Monitoring	8-1
8.2	Post-Construction Maintenance	8-2
	8.2.1 Uplands	8-2
	8.2.2 Waterbodies and Wetlands	8-2
8.3	Reporting	8-3

APPENDICES

APPENDIX A – FIGURES

- 1 Typical Construction Widths Acquiring New Permanent Right-of-Way
- 2 Typical Construction Widths Not Acquiring New Permanent Right-of-Way (Multiple Line System)
- 3 Typical Construction Widths Not Acquiring New Permanent Right-of-Way (Single Line System)
- 4 Access Road Cross Section
- 5 Rock Access Pad Installation and Maintenance
- 6 Typical Temporary Access Road Through Wetlands
- 7 Silt Fence Installation and Maintenance
- 8 Straw Bale Installation and Maintenance
- 9 Straw Bale Installation for a Check Dam in a Drainage Way
- 10 Storm Drain Inlet Protection
- 11 ROW Topsoil Segregation Techniques
- 12 Interceptor Dike Installation and Maintenance
- 13 Typical Trench Detail
- 14 Temporary Trench Plugs
- 15 Filter Bag
- 16 Permanent Trench Plugs
- 17 Trench Plug Detail
- 18 Dewatering Structure for Hydrostatic Testing
- 19 Alternate Dewatering Structure for Hydrostatic Testing
- 20 Chevron Interceptor Dike Installation and Maintenance
- 21 Rock-Lined Drainage Swale Installation and Maintenance
- 22 Typical Matting on Slopes
- 23 Erosion Control Fabric Installation

APPENDIX A – FIGURES (CONT.)

- 24 Drain Tile Repair Procedure
- 25 Typical Paved Road Crossing Control Measures (Open Cut)
- 26 Typical Paved Road Crossing Control Measures (Bored)
- 27 Temporary Equipment Bridge (Equipment Pads and Culverts)
- 28 Temporary Equipment Bridge (Crushed Stone and Culverts)
- 29 Temporary Equipment Bridge (Flexi-float or Portable Bridge)
- 30 Typical Flumed Crossing
- 31 Typical Dam and Pump Crossing
- 32 Typical Wet Crossing
- 33 Typical Matting of Streambanks

APPENDIX B – SEED MIX RECOMMENDATIONS

APPENDIX C – SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

1. INTRODUCTION

1.1 Purpose of this Plan

This Erosion and Sedimentation Control Plan (Plan) has been prepared for use by the Company and its contractors as a guidance manual for minimizing erosion of disturbed soils and transportation of sediments off the right-of-way (ROW) and into sensitive resources (wetlands, streams, and residential areas) during natural gas pipeline construction. The procedures developed in this Plan, which represent the Company's best management practices, 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 impacts to the environment along the pipeline ROW.

The goal 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.

1.2 Guidelines and Requirements

The measures described in this Plan have been developed based on guidelines from the Federal Energy Regulatory Commission (FERC), United States Army Corps of Engineers (COE), the United States Fish and Wildlife Service (USF&W), the United States Department of Agriculture, and the Natural Resource Conservation Service, as well as from the Company's significant experience and practical knowledge of pipeline construction and effective environmental protection measures. Lessons and insights gained during pipeline construction projects along the Company's 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 the Company's Environmental Protection 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 and the FERC's Wetland and Waterbody Construction and Mitigation Procedures (Plan and Procedures), unless approval to deviate from the Plan and Procedures is received from 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 VI.C.1 and VI.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. In the event that the grass needs deeper root penetration, the subsequent freeze-thaw cycles of the upper portions of the subsoil will provide natural mitigation of any compacted areas of the ROW within 2-3 years. Post-construction monitoring will be conducted during this timeframe as discussed in Section 8.1.

2. FERC Procedures (Section VI.D.5): For all forested wetlands affected:

- a. Plant native trees to ultimately restore the temporary ROW and the non-maintained portion of the permanent ROW to its preconstruction state;
- b. Plant native shrub and herbaceous species to revegetate the 30-foot wide portion of the permanent ROW; and
- c. Consult with the USF&W, EPA, COE, and the appropriate state agency to determine the density for planting the native trees and shrubs.

This Plan: All wetlands shall be temporarily revegetated along the ROW with annual ryegrass for short-term erosion control, allowing for subsequent natural revegetation with native tree species.

Should a permitting agency identify the need to develop a forested wetland revegetation plan, the Company will do so on a site-specific basis and defer to the regional agencies for consultation and recommendations.

Reason to Deviate: The subsequent reestablishment of native species would be a natural process developing from the seedbank and rootstock present in the wetland topsoil. The need to plant trees and shrubs within disturbed, forested wetlands is not necessary or cost effective. A planting program would require continual monitoring and occasional replacement of the planting materials as necessary. At present, the post-construction vegetation maintenance guidelines set forth in the FERC Procedures and adopted in this Plan, is not only conducive for the quick establishment of a scrub-shrub wetland cover type, but also allows for the redevelopment of a forested component along the edges of the disturbed ROW.

3. FERC Procedures (Section V.B.4.a): For all intermediate waterbody crossings, spoil shall be placed at least 10 feet from the water's edge.

This Plan: Spoil may be sidecast into intermediate waterbodies greater than 30 feet in width.

Reason to Deviate: Allowing sidecasting minimizes stream disturbance and earth disturbance as well as enhances restoration efforts, as discussed below:

- a. The backhoe to be used for excavation of the waterbody from the top of bank does not have a boom with a long enough reach. The equipment would need to operate in the waterbody if it is wider than 30 feet and tracking equipment in and out of the waterbody would cause more impacts than sidecasting spoil;
- b. If the high bank has to be graded to allow an approach to the waterbody, more stream damage could occur not only from the initial pipeline installation but from the subsequent high bank restoration efforts as well; and
- c. If sidecasting is not allowed, not only could the issues described in a) and b) occur, the size of the spoil storage area would need to increase to accommodate all of the excavated spoil. Workspace areas, which typically contain the spoil storage area and are located 50 feet or more from the waterbody's edge, would have to be large enough and sufficiently cleared to accommodate the spoil storage as well as the movement of tracked equipment to and from the waterbody.

1.3 Surveys, Permits, and Notifications

The Company shall perform the required environmental field surveys and acquire the necessary environmental permits prior to start of construction of the project. The Company shall 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.

1.4 Inquiries

Inquiries regarding this Plan should be addressed to the Supervising Engineer; Environmental Protection Department; Company name as shown on the front cover; P.O. Box 1642; Houston, Texas 77056. For field conditions requiring an immediate response, contact the Area Manager at the address shown on the front cover.

2. SUPERVISION AND INSPECTION

To effectively mitigate project-related impacts, 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 Environmental Inspector (EI) will be designated by the Company for each construction spread during active construction or restoration. The EI will have peer status with all other activity inspectors and will report directly to the Resident Engineer/ Chief Inspector who has overall authority on the construction spread. On smaller projects, the EI role may be carried out by the Resident Engineer/ Chief Inspector or a Craft Inspector, as designated by the Company. The EI will have the authority to stop activities that violate the environmental conditions of the FERC certificate (if applicable) or other permits, and to order corrective action.

2.1 Responsibilities of the Environmental Inspector

At a minimum, the EI shall be responsible for:

1. Ensuring compliance with the requirements of this Plan, the construction drawings, the environmental conditions of the FERC certificate (if applicable), proposed mitigation measures, and other federal or state environmental permits and approvals;
2. Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;
3. Verifying the location of drainage and irrigation systems;
4. Identifying stabilization needs in all areas;
5. Identifying locations for dewatering structures and interceptor dikes to ensure they will not direct water into known cultural resources sites or locations of sensitive resources;
6. Verifying that trench-dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If such deposition is occurring, the dewatering activity shall be stopped. The design of the discharge shall be changed by the EI to prevent reoccurrence;
7. Testing subsoil and topsoil in agricultural areas to measure compaction and determine the need for corrective action;
8. Advising the Chief Inspector when conditions (such as wet weather) make it advisable to restrict construction activities in agricultural areas;
9. Ensuring restoration of contours and topsoil;
10. Pre-approving imported soils for use in agricultural and residential areas;
11. Ensuring that temporary erosion controls are properly installed and maintained, daily if necessary;

12. Inspecting temporary erosion control measures at least:
 - a. On a daily basis in areas of active construction or equipment operation;
 - b. On a weekly basis in areas with no construction or equipment operation; and
 - c. Within 24 hours of each 0.5 inch of rainfall;
13. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification;
14. Ensuring that the Contractor implements and complies with the Company's Spill Prevention Control and Countermeasure (SPCC) Plan; and
15. Keeping records of compliance with the environmental conditions of the FERC certificate (if applicable), proposed mitigation measures, and other Federal or state environmental permits during active construction and restoration.

2.2 Environmental Training for Construction

If required by the FERC certificate, environmental training will be given to both the Company personnel and contractor personnel whose activities will impact the environment during pipeline construction. The level of training will be commensurate with the type of duties of the personnel. All construction personnel from the chief inspector, EI, craft inspectors, contractor job superintendent to loggers, welders, equipment operators, and laborers will be given some form of environmental training. In addition to the EI, 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 including the SPCC Plan;
- Job or activity specific permit requirements;
- Company policies and commitments;
- Cultural resource procedures and restrictions;
- Threatened and endangered species restrictions; and
- Any other pertinent information related to the job.

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.

The U.S. Department of Transportation (DOT) and Occupational Safety and Health Administration (OSHA) have established minimum size and area requirements for worker safety involving construction activities. See Figures 1, 2, and 3 for typical construction ROW widths. 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.

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 4).

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 shall 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 shall ensure that all paved road surfaces utilized during construction are kept free of mud and debris to the extent practical.

5. If rock access pads are required by the permitting agencies in residential or active agricultural areas, rock shall be placed on nonwoven geotextile fabric to facilitate rock removal after construction (Figure 5).
6. All access roads across a waterbody must use an equipment bridge in accordance with Section 5.2.2.
7. The only access roads, unless otherwise permitted, that can be used in wetlands other than the construction ROW are those existing roads requiring no modification and no impact on the wetland.
8. 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 shall use access roads located in upland areas to the maximum extent practical. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the ROW, whenever practical.
9. For access through a saturated wetland, unless otherwise authorized by agency permits, use timber mats or an equivalent (Figure 6).

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 shall perform the following measures at pipe and contractor wareyards:

1. Strip and segregate topsoil in agricultural lands;
2. Install erosion control structures as directed by the EI, 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 EI.

3.4 Off-ROW Disturbance

All construction activities are restricted to within the limits identified on the construction drawings. However, in the event that off-ROW disturbance occurs, the following measures will be implemented:

1. The EI 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 EI, and they will determine whether work at the location can proceed under those conditions; and

3. If deemed necessary by the Chief Inspector and EI, 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. The Company's Environmental Protection Department 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 DOT requirements and regulations. This section provides an overview of the equipment and operations necessary for the installation of a natural gas pipeline, describes potential impacts that may occur from each operation, and identifies the measures that will be implemented to control these potential impacts. 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. ROW restoration will be addressed in Section 3.6.

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 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, shall be installed following vegetative clearing operations. They may be constructed of materials such as silt fence, staked straw bales, sandbags, or an equivalent material as identified by the EI (Figures 7, 8, 9, 10). Hay bales may be used in lieu of straw bales with the following restrictions – hay bales shall not be used for mulching and the Contractor is responsible for their removal and disposal.

1. 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.
2. Do not stake or trench in place straw bales used on equipment bridges or on mats across the travel lane.

3. 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.
4. 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.
5. Remove temporary sediment barriers from an area when it 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

Topsoil segregation methods will be used in all residential areas and when the construction ROW is wider than 30 feet in annually cultivated or rotated agricultural lands (except pasture), hayfields, and other areas at the landowner's request.

- a. Prevent the mixing of topsoil with subsoil by stripping topsoil 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 (Figure 11).
- b. 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.
- c. For wetlands, segregate the top 12 inches of topsoil within the ditchline, except in areas where standing water or saturated soils are present. Do not use geotextile fabric to segregate topsoil.
- d. Leave gaps in the topsoil piles for the installation of temporary interceptor dikes to allow water to be diverted off ROW.
- e. Topsoil replacement (i.e., importation of topsoil) may be used as an alternative to topsoil segregation if approved by the landowner and Chief Inspector.
- f. Never use topsoil for padding, backfill or trench plugs.

3.5.3.2 Tree Stump Removal and Disposal

- a. 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 EI.

- b. Dispose of stumps by one of the following methods, pending approval by the Chief Inspector and the landowner, and in accordance with regulatory requirements:
- Buried at a Company-approved off-site location (except in wetlands and agricultural areas);
 - Burned;
 - Chipped, spread across the ROW in upland areas, and plowed in; or
 - Ground to grade in wetlands, excess chips will be removed for proper disposal.
- c. 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:

- a. 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;
- b. Windrowed per written landowner agreement with the Company;
- c. Removed and disposed of at a Company-approved site; or
- d. Used as riprap for stream bank stabilization where allowed by applicable.

3.5.4 Installing Temporary Interceptor Dikes

Temporary interceptor dikes, which are temporary erosion control measures intended to reduce runoff velocity and divert water off the construction ROW, shall be installed following grading operations (Figure 12). Temporary interceptor dikes may be constructed of materials such as compacted soil, silt fence, staked straw bales, or sand bags. Hay bales may be used in lieu of straw bales with the following restrictions – hay bales shall not be used for mulching and the Contractor is responsible for their removal and disposal.

1. Install temporary interceptor dikes at the following spacing:

<u>Slope (%)</u>	<u>Spacing (feet)</u>
<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, staked straw bales, erosion control fabric) at the end of the interceptor dike.
3. 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 EI.
4. Driveable berms, which are smaller versions of interceptor dikes constructed of compacted soil or sand bags, may be used in place of staked straw bales at the entrances and exits of travel lanes at road crossings, waterbodies, and wetlands. They are installed 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.
5. 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.

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 13). Overland trenching may be accomplished using a conventional backhoe or a rotary wheel-ditching machine. In shale or 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 upgradient from the edge of waterbodies. Spoil will be contained with erosion and sedimentation control devices to prevent spoil materials from transferring into waterbodies and wetlands or off of the ROW.

3.5.5.1 Temporary Trench Plugs

Temporary trench plugs are barriers within the ditch that segment the continuous open trench. They typically consist of compacted subsoil or sandbags (soft) placed across the ditch or composed of unexcavated portions of the ditch (hard). Along steep slopes, they 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 provide access across the trench for wildlife and livestock.

- a. Do not use topsoil for installing temporary soft trench plugs.
- b. Coordinate with the landowner to identify optimal locations for the placement of temporary hard trench plugs designed to provide access for livestock.
- c. Temporary trench plugs may be used in conjunction with interceptor dikes to prevent water in the trench from overflowing into sensitive resource areas (Figure 14). Attempt to divert trench overflow to a well-vegetated off-ROW location.

3.5.6 Trench Dewatering

Trench dewatering 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 in such a manner that no heavily silt-laden water flows 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 15) or through a structure composed of sediment barriers. When using filter bags, secure the discharge hose to the bag with a clamp.

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 Company 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 tractors 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 spoil materials from trench excavation.

1. Under no circumstances shall 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 Company specifications.
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 to compensate for compaction and settling. Openings will be left in the completed trench crown to restore pre-construction drainage patterns. Crowning shall 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 (Figures 16, 17). 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.

- a. Topsoil shall not be used to construct trench plugs.
- b. Permanent trench plugs, which are used in conjunction with interceptor dikes, shall be installed at the locations shown on the construction drawings or as determined by the EI. If not shown, use the following spacing:

<u>Slope (%)</u>	<u>Spacing (feet)</u>
<5	No Structure
5 - 15	300
> 15 - 30	200

- c. Trench plugs shall be installed at the base of slopes adjacent to waterbodies and wetlands, and where needed to avoid draining of a resource.

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 8 hours). The testing procedure involves filling the pipeline with test water, performing the pressure test, and discharging the test water.

1. The EI shall notify appropriate state agencies (as identified in the Hydrostatic Test Package) of the intent to use specific test water sources at least 48 hours before testing activities (unless waived in writing).
2. Pumps used for hydrostatic testing within 100 feet of any waterbody or wetland shall be operated and refueled in accordance with the SPCC Plan.
3. Do not use state-designated exceptional value waters, waterbodies that provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and/or local permitting agencies grant written permission. Use only the water sources identified in the Clearance Package/Permit Book.
4. Screen the intake hose to prevent 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 constructed of straw bales (Figures 18, 19).
8. For an overland discharge of test water from an existing pipeline, dewater into an energy dissipation device constructed of straw bales and absorbent booms (Figure 18). 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.
9. Dewater only at the locations shown on the construction drawings or locations identified in the Hydrostatic Test Package.
10. Locate all dewatering structures in a well-vegetated and stabilized area, if practical, and attempt to 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 must be installed.

11. 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.
12. 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.
13. The EI shall 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 shall be restored as close to its original condition as practical unless otherwise specified by the landowner.

1. 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 10 days after backfilling the trench in that area. If this schedule cannot be met, final cleanup must be completed as soon as practical.
2. The disturbed ROW will be seeded within 6 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 3.6.4 shall 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 permanent cropland, hayfields, 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.

7. Make diligent efforts to remove stones greater than 4 inches if the off-ROW areas do not contain stones greater than 4 inches. The landowner may approve other rock size provisions in writing.
8. Leave travel lane open temporarily to allow access by construction traffic and install the temporary erosion control structures as specified in Section 3.5.2. When access is no longer required, the travel lane must be removed and the area restored.
9. Remove all construction debris (used filter bags, skids, trash, etc.) from the ROW and grade or till the ROW to leave the soil in the proper condition for planting.

3.6.1 Permanent Erosion Control

3.6.1.1 Permanent Interceptor Dikes

Permanent interceptor dikes are intended to reduce runoff velocity and divert water off the construction ROW (Figure 12). Permanent interceptor dikes will be constructed of compacted soil. Sand bags may be used when directed by the EI.

- a. 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 EI. If not shown, use the spacing outlined for temporary interceptor dike installation in Section 3.5.4.
- b. 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.
- c. Construct interceptor dikes with a 2 to 8 percent outslope to divert surface flow to a stable vegetative area. In the absence of a stable vegetative area, install an energy-dissipating device at the end of the interceptor dike (Figure 12).
- d. Install chevron-style interceptor dikes on slopes when directed by the EI (Figure 20).
- e. Install a rock-lined drainage swale along the ROW with restricted drainage features when directed by the EI. The drainage swale is generally 8 feet wide and a maximum of 18-24 inches deep (Figure 21).
- f. On slopes greater than 30 percent, install interceptor dikes with erosion control fabric on the swale side.

3.6.1.2 Erosion Control Fabric

- a. Install erosion control fabric at interceptor dike outlets and drainage swales as necessary or as directed by the EI (Figure 12, 21).

- b. Install erosion control fabric or matting on slopes greater than 30 percent adjacent to roads or waterbodies (Figure 22). Anchor the erosion control fabric or matting with staples or other appropriate devices in accordance with the manufacturers' recommendations.
- c. The EI will direct the installation of high-velocity erosion control fabric on the swale side of permanent interceptor dikes (Figure 23).

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 2 inches of soil as soon as practical after application;
2. Seed slopes steeper than 30 percent immediately after final grading, weather permitting;
3. Seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting;
4. Prepare seedbed in disturbed areas to a depth of 3 to 4 inches to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed;
5. Seed disturbed areas in accordance with the seed mixes, rates, and dates in Appendix B, except in upland areas where landowners may request alternative seed mixes. Seeding and mulching in cultivated cropland shall conform with the adjacent off ROW area unless otherwise requested by the landowner in writing;
6. 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 discussed in Section 3.5.2 and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Mulch in accordance with Section 3.6.3. Lawns may be seeded on a schedule established with the landowner;
7. Base seeding rates on Pure Live Seed (PLS). Use seed within 12 months of seed testing;
8. Treat legume seed with an inoculant specific to the species (for conventional seeding methods, use 4 times the manufacturer's recommendation – for hydroseeding, use 10 times the manufacturer's recommendations); and
9. Uniformly apply and cover seed in accordance with Appendix B. In the absence of any recommendations, 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.

3.6.3 Mulch

Mulch is intended to stabilize the soil surface and shall consist of straw, erosion control fabric, or some functional equivalent as approved by the EI and Chief Inspector. **Hay shall not be used for mulch.**

1. Mulch before seeding if:
 - a. Final cleanup, including final grading and installation of permanent erosion control measures, is not completed in an area within 10 days after the trench in that area is backfilled; 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 3 tons/acre.

2. Mulch all disturbed ROW on slopes greater than 8 percent and in areas of dry sandy soil. Spread mulch uniformly over the ROW at a rate of 2 tons/acre of mulch.
3. Mulch with woodchips only under the following conditions with prior approval from the Chief Inspector or the EI:
 - a. Do not use more than 1 ton/acre; and
 - b. Add the equivalent of 11 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 EI), mechanical means, or with liquid mulch binders.
5. If a mulch blower is used, the strands of the mulching material shall be at least 8 inches long to allow anchoring.
6. When anchoring by mechanical means, use a mulch anchoring tool to properly crimp the mulch to a depth of 2 to 3 inches.
7. 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.**
8. Install and anchor erosion control fabric, such as jute thatching, or bonded fiber blankets, at a minimum, on waterbody banks at the time of final bank recontouring.

3.6.4 Winter Stabilization

In the event that the final phases of construction occur too late in the year for cleanup activities to proceed, the following procedures will be implemented along the disturbed ROW at those locations until final restoration measures can be completed:

1. Install permanent interceptor dikes at specified intervals on all slopes, or as directed by the EI;
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
4. Remove flumes from waterbody crossings to reestablish natural stream flow.

3.7 Unauthorized Vehicle Access to ROW

The Company will offer to install and maintain measures to control unauthorized vehicle access to the ROW based on requests by the manager or owner 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 4 feet or less across the ROW.

4. SPECIAL CONSTRUCTION METHODS

The Company will utilize the following specialized construction procedures for agricultural areas, road crossings, and residential areas along the pipeline 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. Mark drain tile locations identified during construction.
2. Probe all drainage tile systems within the area of disturbance to check for damage.
3. Repair damaged drain tiles to their original condition (Figure 24). Filter-covered drain tiles may not be used unless the local soil conservation authorities and the landowner agrees in writing prior to construction.
4. 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 COE-style cone 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. Alternatively, make arrangements with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. 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 involves closing the road to all traffic, excavating one-half of the road at a time, or constructing an adequate detour around the crossing area (Figure 25). 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 (Figure 26), unless the crossing permit allows an open cut crossing. Access roads shall be used in accordance with Section 3.2.

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 lie greater than 25 feet but less than 50 feet from the edge of the construction ROW.

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. Attempt to leave mature trees and landscaping intact within the construction work area unless the trees and landscaping interfere with the installation techniques or present unsafe working conditions.

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 shall 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 shall 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 cannot 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 shall 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 (CTLA), 8th Edition and published in 1992 by the International Society of Arboriculture.
3. Landowners shall be compensated for damages in a fair and reasonable manner, and as specified in the damage provision within the controlling easement on each property.

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, river, or drainage 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.
- A "non-state designated waterbody" includes intermittent drainage ditches, intermittent streams, and perennial warmwater streams not 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 CFR Part 330).

5.2 General Waterbody Procedures

Decisions regarding waterbody crossing techniques will be reviewed and based on agency consultations. Pipeline construction across waterbody channels may result in short term water quality impacts. 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

1. Unless expressly permitted or further restricted by the appropriate state agency in writing on a site-specific basis, crossings shall be constructed during the following time windows:
 - a. Coldwater Fisheries – June 1 through September 30; and
 - b. Coolwater and Warmwater Fisheries – June 1 through November 30.

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 may cross the waterbody and the number of crossings shall be limited to one crossing per piece of equipment, unless otherwise authorized by the appropriate permitting agency.
2. Construct equipment bridges using one of the following methods:
 - a. Equipment pads and culverts (Figure 27);
 - b. Clean crushed stone and culverts (Figure 28); or
 - c. Flexi-float or portable bridges (Figure 29).
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.
5. Do not use soil to construct or stabilize equipment bridges.
6. Maintain equipment bridges to prevent soil from entering the waterbody.
7. Remove equipment bridges as soon as practical after permanent seeding unless agency permits authorized that the bridge remains in place.
8. If there will be more than 1 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.

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 waterbody boundaries, where site-specific conditions permit. 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 at least 10 feet from the water's edge.
3. If the pipeline parallels a waterbody, attempt to maintain at least 15 feet of undisturbed vegetation between the waterbody and the ROW except at the crossing location.
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. Temporary interceptor dikes or driveable berms as described in Section 3.5.4 may be used in lieu of sediment barriers in front of equipment bridges or timber mats across the travel lane.
3. Install sediment barriers as necessary along the edge of the construction ROW to contain spoil and sediment within the ROW where waterbodies are adjacent or parallel to the construction ROW.
4. Use trench plugs at all non-flumed 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 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. 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 6-1 outlines the general procedures to be followed at all waterbody crossings.

5.2.5.1 General Crossing Procedures

1. Dewater trench in accordance with the procedures described in Section 3.5.6.
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 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 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 into the waterbody.
 - b. Sidecasting is permitted in major waterbodies upon approval from the appropriate permitting agencies.
5. Restore and stabilize the banks and channel in accordance with Section 5.2.6.

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 30). The flume pipe(s) installed across the trench will be sized to accommodate anticipated stream flows. This method is utilized for perennial, minor waterbodies 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 30, 31).
2. All construction equipment must cross state-designated fisheries on an equipment bridge as specified in Section 5.2.2.
4. The flumed crossing shall be installed as follows:
 - a. Install flume pipe(s) after blasting (if required), but before trenching;
 - b. Properly align flume pipe(s);
 - c. Use sand bags or equivalent dam diversion structure to provide a seal at either end of the flume to channel water flow;
 - d. **Do not remove flume pipe** during trenching, pipe laying, or backfilling activities unless authorized by agency permits;
 - e. Thread pipe underneath the flume pipe(s); and
 - f. Remove all flume pipes and dams that are not also part of the equipment bridge after final cleanup but before permanent seeding.

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 31). 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, minor waterbodies 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 the pipe installation, which shortens the duration of time spent at the waterbody.

1. The dam and pump method may be used for crossings of minor waterbodies where fluming is not required.

2. The company will develop a specific dam and pump plan for written approval from the FERC and the appropriate permitting agency for the following instances:
 - a. Minor waterbodies that are state-designated fisheries (as identified in the Clearance Package/Permit Book; and
 - b. Waterbodies that are greater than 10 feet.
3. The dam and pump plan will describe all measures used to maintain downstream flows including:
 - a. Number and capacity of active and backup pumps;
 - b. Types of dams to be used upstream and downstream of the crossing;
 - c. How streambed scour would be prevented at the pump discharge; and
 - d. How the operation would be monitored if the crossing takes longer than one normal construction day.
4. 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 32). 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. 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) 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) within 48 continuous hours, unless site-specific conditions make completion within 48 hours infeasible.
 3. For major waterbodies:
 - a. Company 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.

5.2.6 Restoration

1. Return all waterbody banks to preconstruction contours.
2. 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.
3. 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.
4. Limit the placement of riprap to the slopes along the disturbed waterbody crossing.
5. Install erosion control fabric along waterbodies with low flow conditions (Figure 33).
6. 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 10 days after the trench is backfilled, all slopes within 100 feet of waterbodies shall be mulched with 3 tons/acre of straw.
7. Remove all temporary sediment barriers when restoration of adjacent upland areas is successful as specified in Section 8.1.

8. 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.

Table 5-1: General Waterbody Crossing Procedures

WATERBODY CROSSING ACTIVITIES	WATERBODY TYPE					
	MINOR		INTERMEDIATE		MAJOR	
	Non-State ¹ Designated	State ² Designated	Non-State ³ Designated	State ² Designated	Non-State ³ Designated	State ² Designated
Flumed Crossing (Dry) <i>Section 5.2.5.2, Figure 30</i>		X		X		
Dam and Pump Crossing (Dry) <i>Section 5.2.5.3, Figure 31</i>		X		X		
Wet Crossing <i>Section 5.2.5.4, Figure 32</i>	X		X	X	X	X
Construction timing window during the year <i>Section 5.2.1</i>		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.

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 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 comply with the Section 404 Nationwide permit program terms and conditions (33 CFR Part 330).

6.2 General Procedures

6.2.1 Clearing and Grading

1. Confine construction activity and ground disturbance in wetland areas to a construction ROW of 75 feet or as 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 wetland boundaries, where site-specific conditions permit. 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 at least 10 feet from the wetland.
3. Aboveground 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.
4. If standing water or saturated soils are present, either use low-ground-weight construction equipment or install timber riprap or prefabricated equipment 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.
5. Cut vegetation off at or 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.
6. 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 EI determine that safety-related construction constraints require removal of tree stumps from under the working side of the ROW.
7. Do not cut trees outside of the construction ROW to obtain timber for riprap or equipment mats.
8. Cleared materials (slash, logs, brush, wood chips) shall 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 prevent sediment flow into the wetland;
 - c. Along the edge of the ROW to protect adjacent, off ROW wetland; and
 - d. Along the edge of the ROW as necessary to contain spoil and sediment within the ROW.
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 duration of construction-related disturbance within wetlands.
2. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to stabilize the ROW.
3. Perform topsoil segregation in accordance with Section 3.5.3.1 and trench dewatering in accordance with Section 3.5.6.
4. Where water and other site conditions allow, the pipeline may be assembled in an upland area and the "push-pull" or "float" techniques used to place the pipe in the trench.
5. 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.
6. Install a permanent interceptor dike and a trench plug at the base of slopes near the boundary between the wetland and adjacent upland areas. Permanent interceptor dikes shall not be installed in agricultural areas.
7. 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 EI. The original wetland contours and flow regimes will be restored to the extent practical.

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 lime or fertilizer in wetland areas.

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 10 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 (such as purple loose strife and phragmites).
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

7.1 The Contractor shall adhere to the SPCC Plan in Appendix C 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 will be performed in accordance with Section 3.1 of 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 will be performed in accordance with Section 3.1.3 of the SPCC Plan.
3. Do not perform fondu or concrete coating activities within 100 feet of any wetland or waterbody. If the 100-foot setback cannot be met, these activities will be conducted in accordance with Section 3.1.4 of the SPCC Plan.

8. POST CONSTRUCTION ACTIVITIES

8.1 Post-Construction Monitoring

All projects conducted under this Plan, with the exception of insitu pipe replacements (i.e. DOT-mandated replacements, line lowerings, and anomaly repairs), shall meet the monitoring requirements set forth in this section. Company personnel shall 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 upland areas after the first growing season and if necessary, the second growing season (normally 3 to 9 months and 15 to 21 months after seeding, respectively) to determine the success of revegetation;
3. Revegetation shall be considered successful if the vegetative cover is sufficient to prevent the erosion of soils on the disturbed ROW. Sufficient coverage in upland areas is defined when vegetation has a uniform 70 percent vegetative coverage. If sufficient vegetative cover has not been achieved or if there are excessive noxious weeds after two full growing seasons, a professional agronomist shall be consulted to determine the need for additional restoration measures (such as fertilizing or reseeding). The measures recommended by the agronomist will be implemented by the Company;
4. Restoration shall be considered successful if the ROW surface condition is similar to adjacent undisturbed lands, revegetation is successful, and all temporary erosion control devices are removed;
5. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in active agricultural areas;
6. Monitor crops for at least 2 years to determine the need for additional restoration;
7. Make efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, throughout the life of the project. Maintain signs, gates, and vehicle trails as necessary;
8. Monitor wetlands annually for the first 3 to 5 years (or as required by permit) to determine the success of revegetation. Wetland revegetation will be considered successful when the native herbaceous and/or woody cover is at least 80 percent of the total cover and native species diversity is at least 50 percent of the diversity originally found in the wetland. If revegetation is not successful at the end of 3 years, the Company shall 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

All projects conducted under this Plan, with the exception of insitu pipe replacements (i.e. DOT-mandated replacements, line lowerings, and anomaly repairs), shall meet the maintenance requirements set forth in this section. The following requirements restrict the amount of vegetation maintenance that can occur on new pipeline facilities. Where the newly established pipeline ROW is located on other existing ROWs not affiliated with the Company, 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 maintenance clearing shall be conducted no more frequently than once every 3 years. However, to facilitate periodic corrosion and leak surveys, a 10-foot wide corridor centered on the pipeline may be maintained annually in a herbaceous state.
2. In no case shall routine vegetation maintenance clearing occur between April 15 and August 1 of any year.

8.2.2 Waterbodies and Wetlands

1. Vegetation maintenance 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. Vegetation maintenance practices 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 maintained in a herbaceous state. Trees and shrubs greater than 15 feet in height that are located within 15 feet of the pipeline may be cut and removed from the ROW.
4. Herbicides or pesticides shall not be used in or within 100 feet of a wetland or waterbody, except as specified by the appropriate land management or state agency.

8.3 Reporting

The Company shall 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; and
4. Names of landowners requesting special seeding treatment and a description of the follow-up actions.

For the FERC-certificated projects, the Company will file quarterly activity reports documenting problems, including those identified by the landowner, and corrective actions taken for at least 2 years following construction.

APPENDIX A

FIGURES

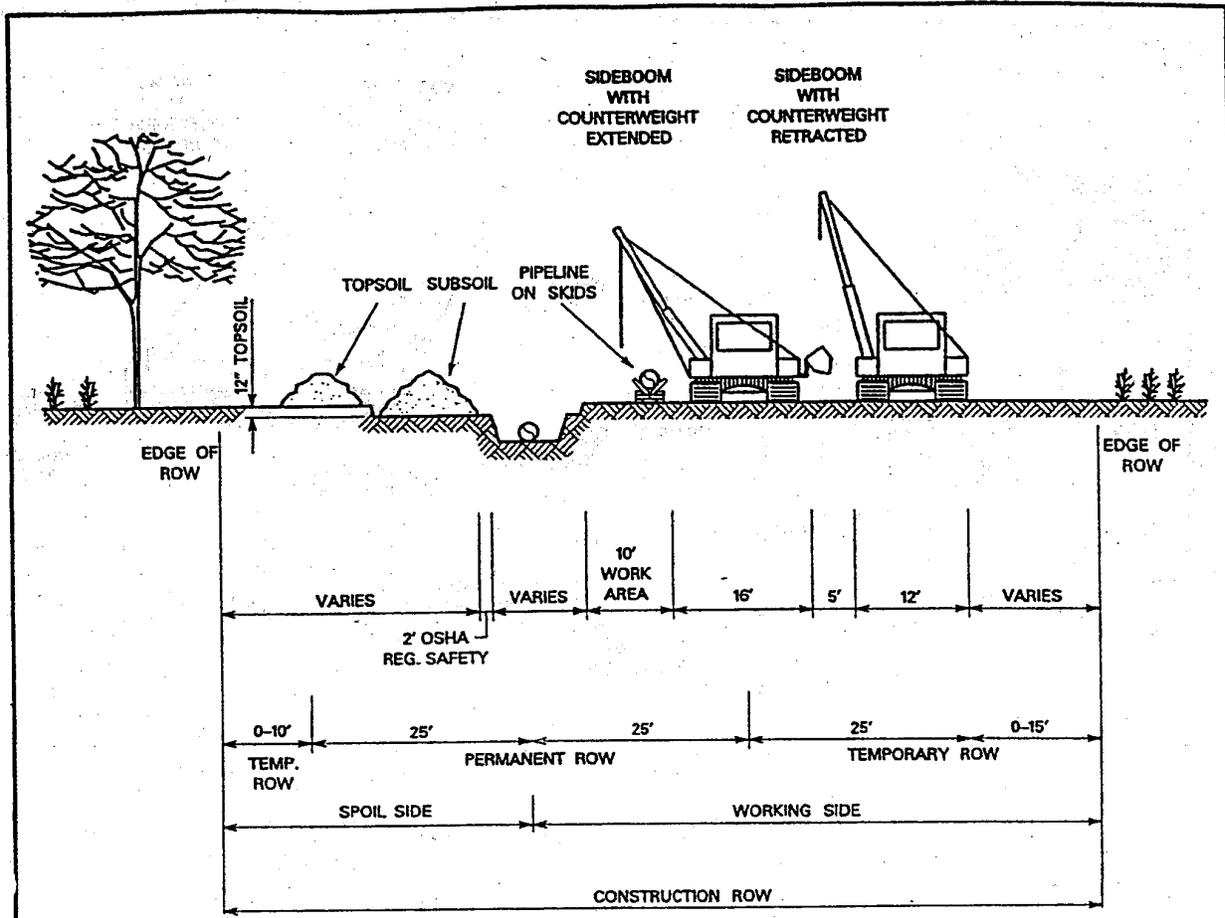
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<u>FIGURE NUMBER</u>	<u>STANDARD NUMBER</u>	<u>DRAWING TITLE</u>
FIGURE #1	ES-0001	TYPICAL CONSTRUCTION WIDTHS ACQUIRING NEW PERMANENT RIGHT-OF-WAY
FIGURE #2	ES-0002	TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NEW PERMANENT RIGHT-OF-WAY (MULTIPLE LINE SYSTEM)
FIGURE #3	ES-0003	TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NEW PERMANENT RIGHT-OF-WAY (SINGLE LINE SYSTEM)
FIGURE #4	ES-0004	ACCESS ROAD CROSS SECTION
FIGURE #5	ES-0005	ROCK ACCESS PAD INSTALLATION AND MAINTENANCE
FIGURE #6	ES-0006	TYPICAL TEMPORARY ACCESS ROAD THROUGH WETLANDS
FIGURE #7	ES-0007	SILT FENCE INSTALLATION AND MAINTENANCE
FIGURE #8	ES-0008	STRAW BALE INSTALLATION AND MAINTENANCE
FIGURE #9	ES-0009	STRAW BALE INSTALLATION FOR A CHECK DAM IN A DRAINAGE WAY
FIGURE #10	ES-0010	STORM DRAIN INLET PROTECTION
FIGURE #11	ES-0011	ROW TOPSOIL SEGREGATION TECHNIQUES
FIGURE #12	ES-0012	INTERCEPTOR DIKE INSTALLATION AND MAINTENANCE
FIGURE #13	ES-0013	TYPICAL TRENCH DETAIL
FIGURE #14	ES-0014	TEMPORARY TRENCH PLUGS
FIGURE #15	ES-0015	FILTER BAG
FIGURE #16	ES-0016	PERMANENT TRENCH PLUGS
FIGURE #17	ES-0017	TRENCH PLUG DETAIL
FIGURE #18	ES-0018	DEWATERING STRUCTURE FOR HYDROSTATIC TESTING
FIGURE #19	ES-0019	ALTERNATE DEWATERING STRUCTURE FOR HYDROSTATIC TESTING
FIGURE #20	ES-0020	CHEVRON INTERCEPTOR DIKE INSTALLATION AND MAINTENANCE
FIGURE #21	ES-0021	ROCK LINED DRAINAGE SWALE INSTALLATION AND MAINTENANCE
FIGURE #22	ES-0022	TYPICAL MATTING ON SLOPES
FIGURE #23	ES-0023	EROSION CONTROL FABRIC INSTALLATION
FIGURE #24	ES-0024	DRAIN TILE REPAIR PROCEDURE
FIGURE #25	ES-0025	TYPICAL PAVED ROAD CROSSING CONTROL MEASURES (OPEN CUT)
FIGURE #26	ES-0026	TYPICAL PAVED ROAD CROSSING CONTROL MEASURES (BORED)
FIGURE #27	ES-0027	TEMPORARY EQUIPMENT BRIDGE (EQUIPMENT PADS AND CULVERTS)
FIGURE #28	ES-0028	TEMPORARY EQUIPMENT BRIDGE (CRUSHED STONE AND CULVERTS)
FIGURE #29	ES-0029	TEMPORARY EQUIPMENT BRIDGE (FLEX-FLOAT OR PORTABLE)
FIGURE #30	ES-0030	TYPICAL FLUMED CROSSING
FIGURE #31	ES-0031	TYPICAL DAM AND PUMP CROSSING
FIGURE #32	ES-0032	TYPICAL WET CROSSING
FIGURE #33	ES-0033	TYPICAL MATTING OF STREAMBANKS

INDEX OF FIGURES

APPENDIX A

DWG.	ES-0000	REV.
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PIPE DIAMETER	SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONSTRUCTION ROW (FT.)
12" OR LESS	25	50	75
14"-30"	35	50	85
36"-42"	35	65	100
WETLANDS	25	50	75

NOTES:

- ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE MAXIMUM WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE AS SHOWN IN THE TABLE FOR THE APPROPRIATE PIPE DIAMETER.
- TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN WETLAND, RESIDENTIAL, AGRICULTURAL (EXCEPT PASTURES), HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S REQUEST.

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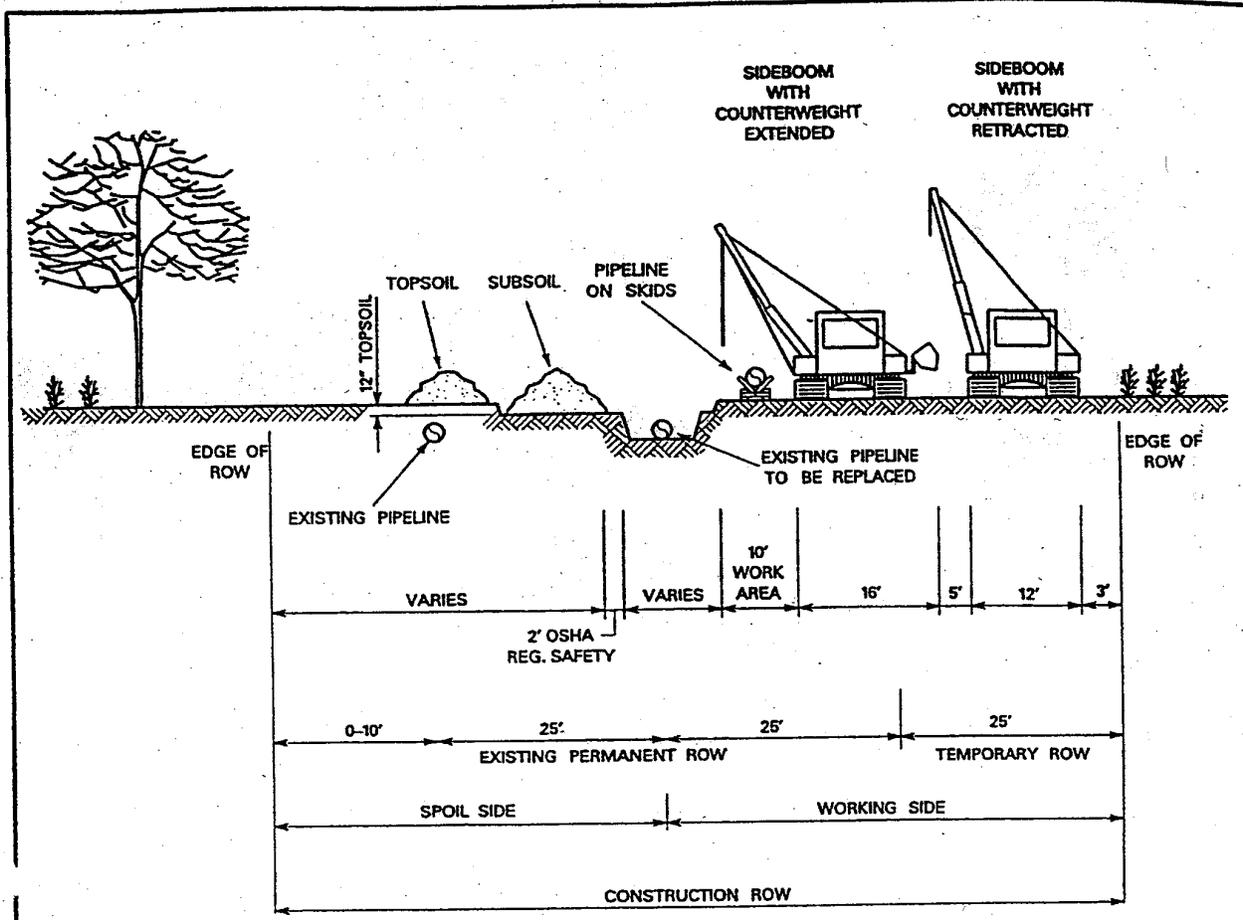
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TYPICAL CONSTRUCTION WIDTHS ACQUIRING
NEW PERMANENT RIGHT-OF-WAY

FIGURE #1

DWC. ES-0001

REV.



PIPE DIAMETER	SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONSTRUCTION ROW (FT.)
12" OR LESS	25	50	75
14"-30"	35	50	85
36"-42"	35	50	85
WETLANDS	25	50	75

NOTES:

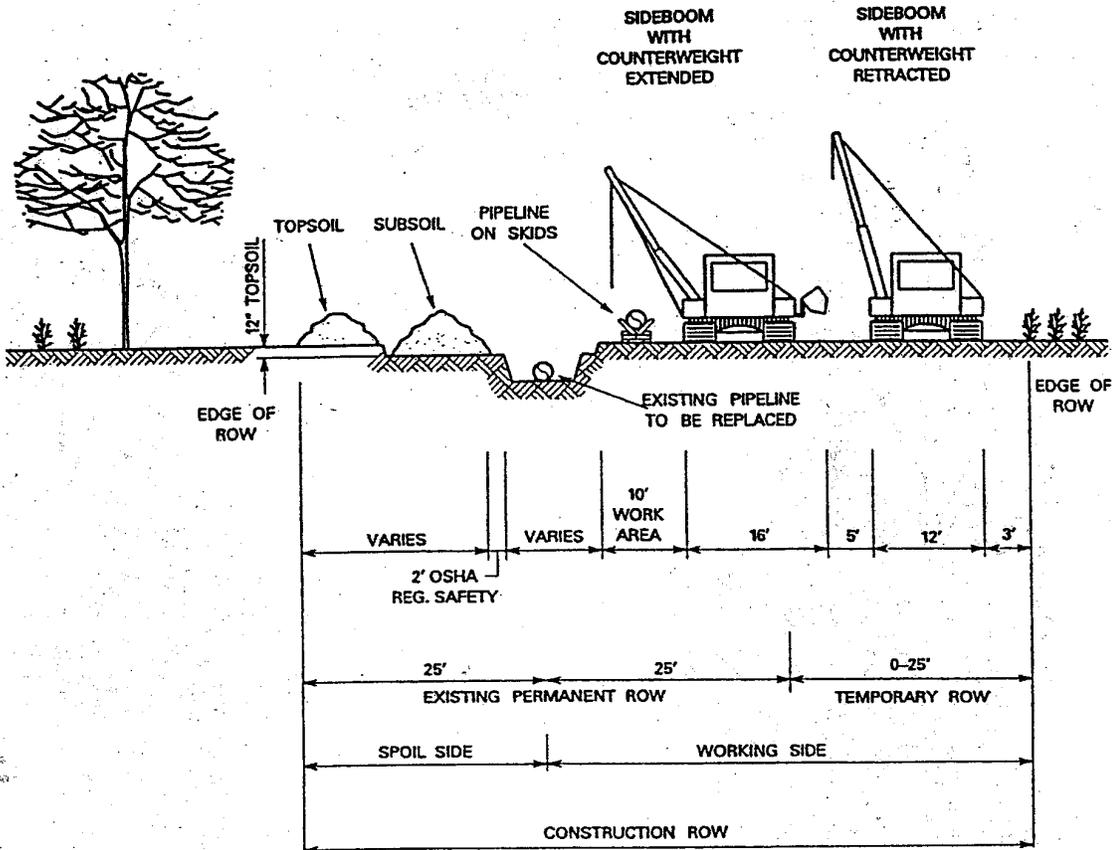
1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE MAXIMUM WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE AS SHOWN IN THE TABLE FOR THE APPROPRIATE PIPE DIAMETER.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN WETLAND, RESIDENTIAL, AGRICULTURAL (EXCEPT PASTURES), HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S REQUEST.
3. IF THE WORKING SIDE MUST BE GREATER THAN 50 FEET (i.e. TEMPORARY WORKSPACE IS GREATER THAN 25 FEET), COMPANY MUST REQUEST APPROVAL FROM THE FERC.

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TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING
 NEW PERMANENT RIGHT-OF-WAY
 (MULTIPLE LINE SYSTEM)

FIGURE #2

DWG. ES-0002	REV.
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PIPE DIAMETER	SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONSTRUCTION ROW (FT.)
12" OR LESS	25	25	60
14"-30"	25	50	75
36"-42"	25	50	75
WETLANDS	25	50	75

NOTES:

- ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE MAXIMUM WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE AS SHOWN IN THE TABLE FOR THE APPROPRIATE PIPE DIAMETER.
- TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN WETLAND, RESIDENTIAL, AGRICULTURAL (EXCEPT PASTURES), HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S REQUEST.
- IF THE WORKING SIDE MUST BE GREATER THAN THE VALUES SHOWN IN THE TABLE, COMPANY MUST REQUEST APPROVAL FROM THE FERC.

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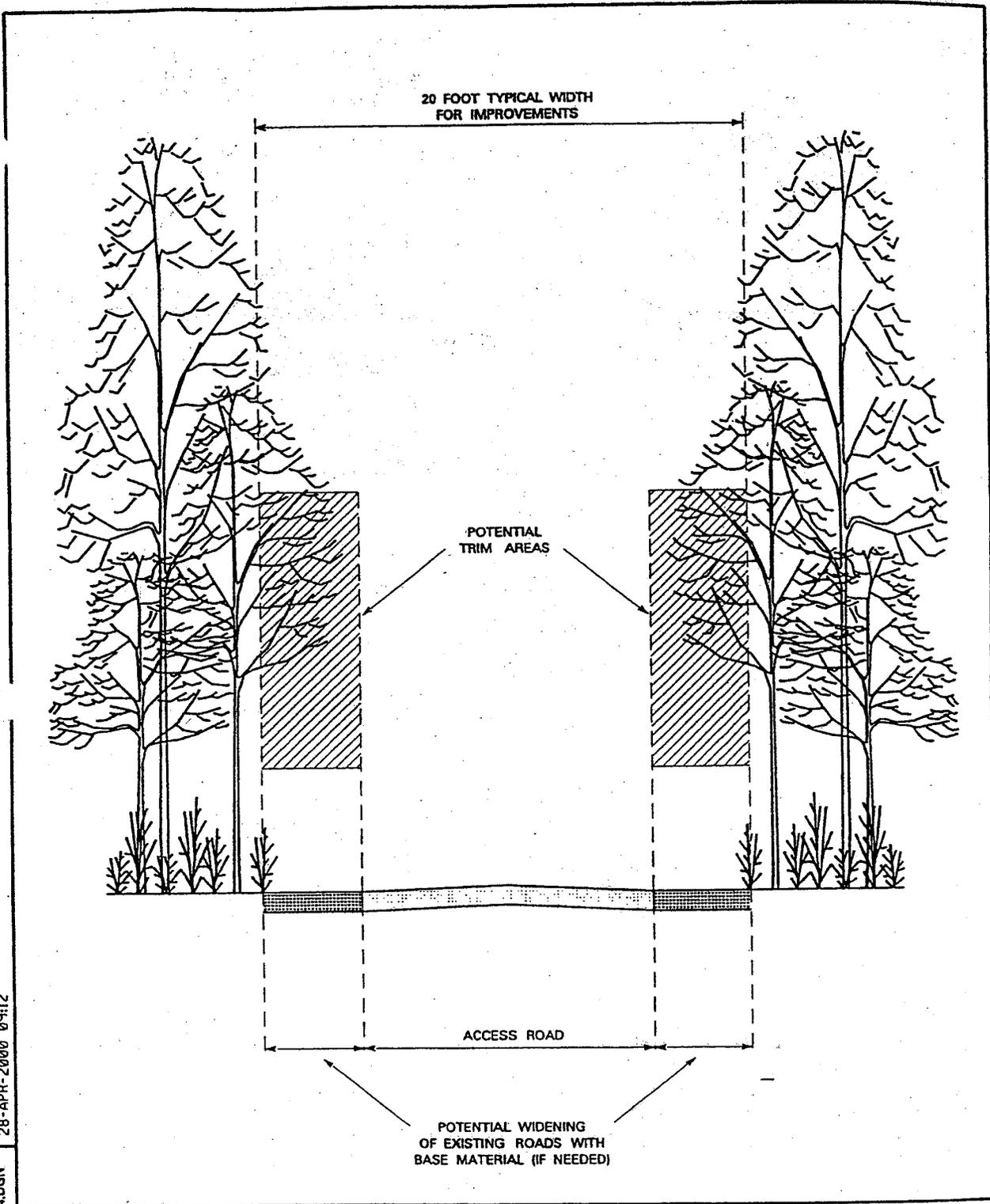
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TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NEW PERMANENT RIGHT-OF-WAY (SINGLE LINE SYSTEM)

FIGURE #3

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REV.



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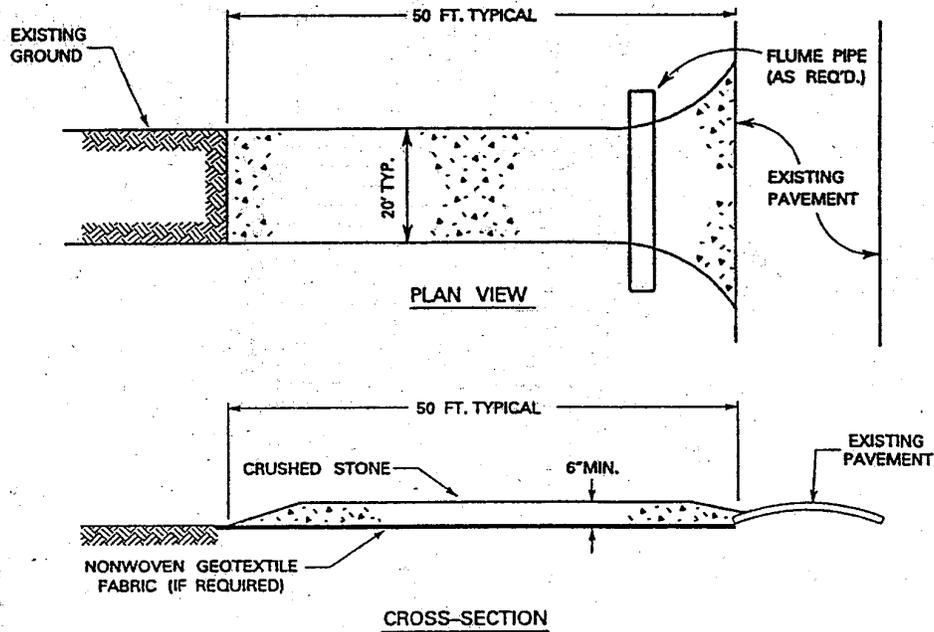
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ACCESS ROAD CROSS SECTION

FIGURE #4

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CONSTRUCTION SPECIFICATIONS:

1. STONE SIZE = 4" - 6" (AVG.) CRUSHED STONE
2. ALL STONE MUST BE PLACED ON NON-WOVEN GEOTEXTILE FABRIC IF USED IN RESIDENTIAL OR ACTIVE AGRICULTURAL AREAS.
3. LENGTH = FIFTY (50) FOOT TYPICAL (IF SITE CONDITIONS ALLOW)
4. WIDTH = TWENTY (20) FOOT TYPICAL
5. THICKNESS = SIX (6) INCHES MINIMUM.
6. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A DRIVEABLE BERM OR OTHER TEMPORARY EROSION CONTROL DEVICE CAN BE USED.
7. THE ENTRANCE SHALL BE PERIODICALLY INSPECTED AND MAINTAINED IN A CONDITION THAT MINIMIZES TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. MAINTENANCE MAY INCLUDE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE REPAIR /CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ANY SEDIMENT THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED AS SOON AS PRACTICAL.

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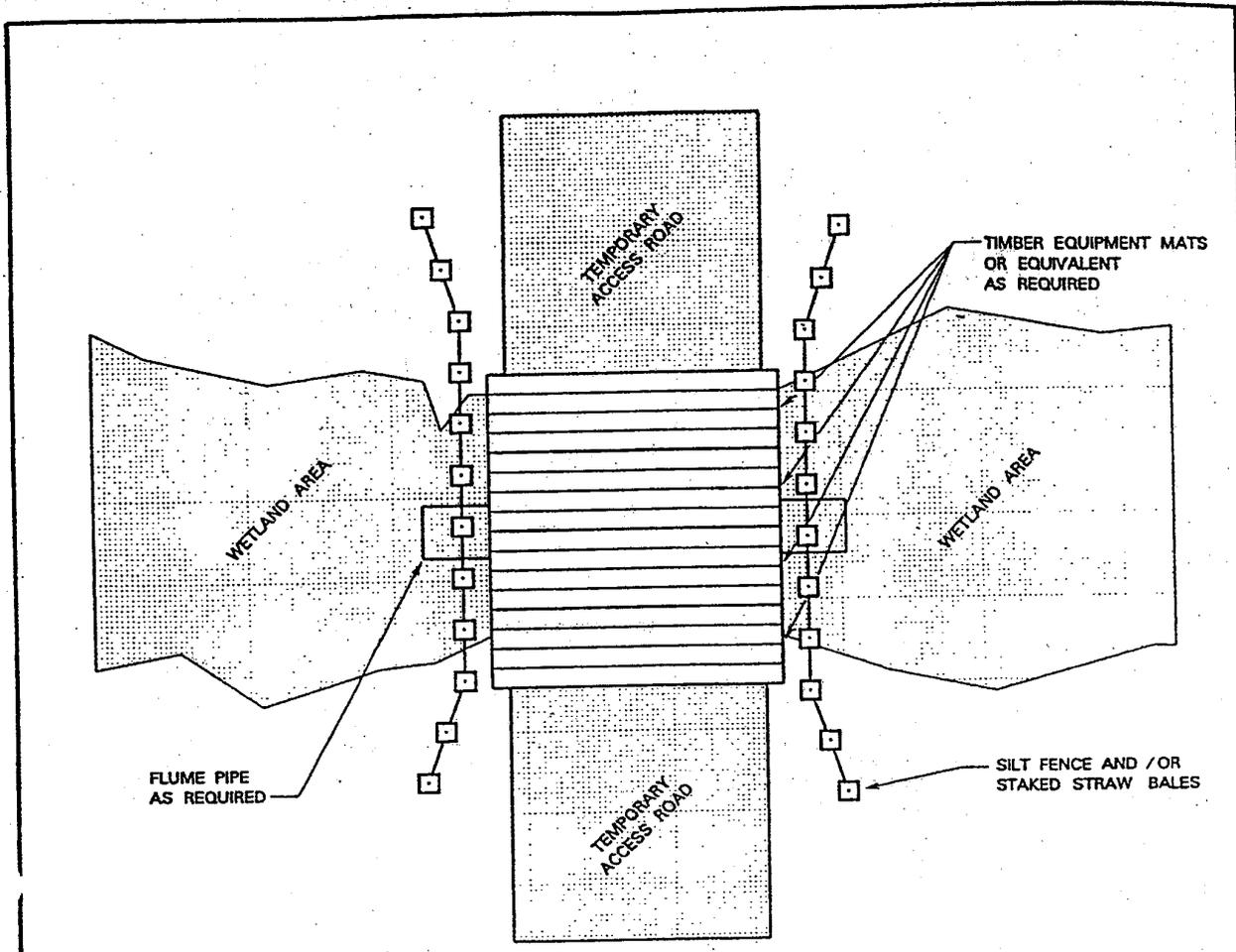
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**ROCK ACCESS PAD INSTALLATION
AND MAINTENANCE**

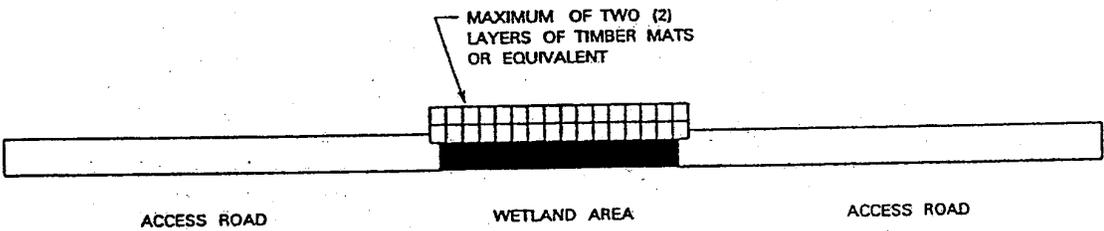
FIGURE #5

DWG. **ES-0005**

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PLAN VIEW
N.T.S.



CROSS SECTION
N.T.S.

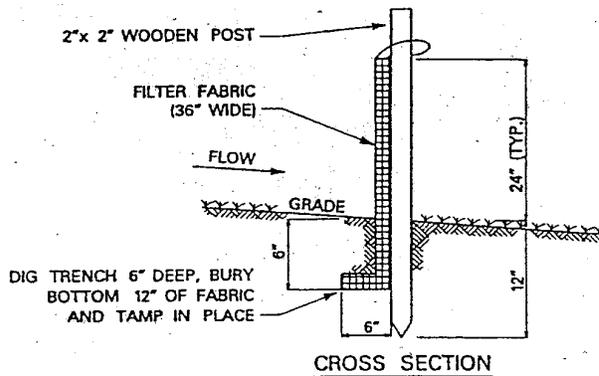
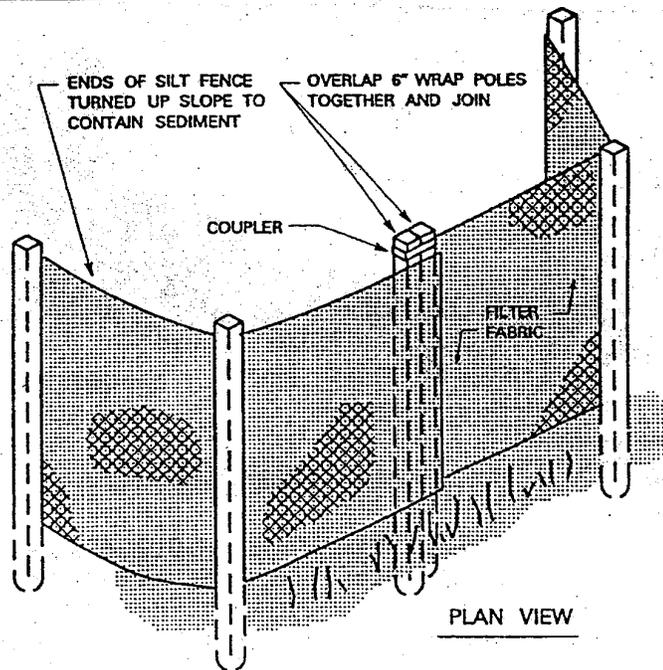
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TYPICAL TEMPORARY ACCESS ROAD THROUGH WETLANDS

FIGURE #6

DWG. ES-0006

REV.



INSTALLATION REQUIREMENTS:

- WHEN USING SILT FENCE, PLACE IT:
 - ♦ 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
- USE SANDBAGS OR BACKFILLING TO KEY IN THE BOTTOM OF THE FABRIC WHERE IT IS NOT FEASIBLE TO TRENCH IT IN (LEDGES, ROCKY SOIL, LARGE ROOTS, ETC.)

MAINTENANCE REQUIREMENTS:

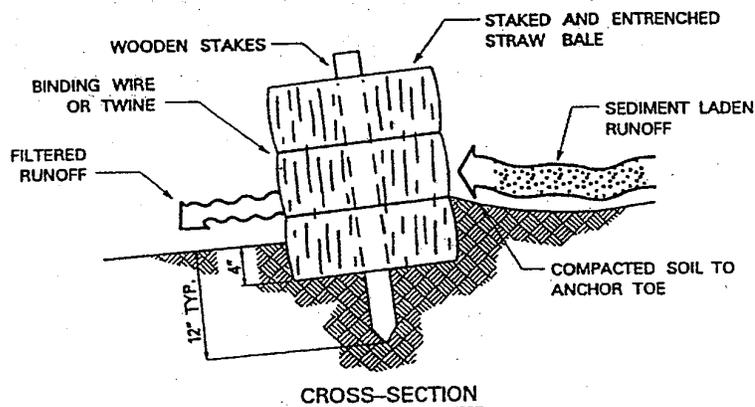
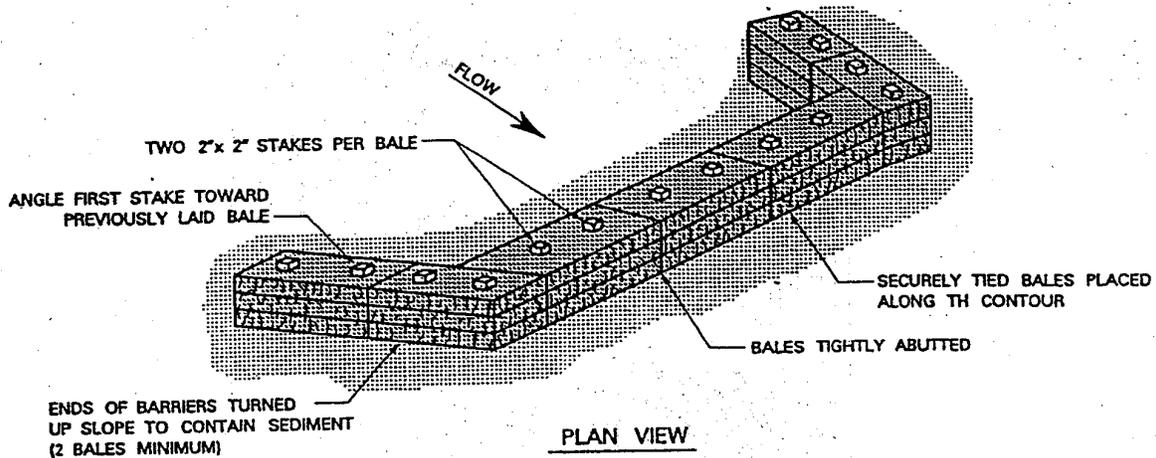
- INSPECT SILT FENCE:
 - ♦ DAILY IN AREAS OF ACTIVE CONSTRUCTION
 - ♦ WEEKLY IN AREAS WITH NO CONSTRUCTION
 - ♦ WITHIN 24 HOURS FOLLOWING EACH MAJOR STORM EVENT
- REPAIR OR REPLACE SILT FENCE AS NEEDED
- REMOVE ACCUMULATED SEDIMENTS TO AN UPLAND AREA AS NEEDED

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SILT FENCE INSTALLATION AND MAINTENANCE

FIGURE #7

DWG. **ES-0007** REV.



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.

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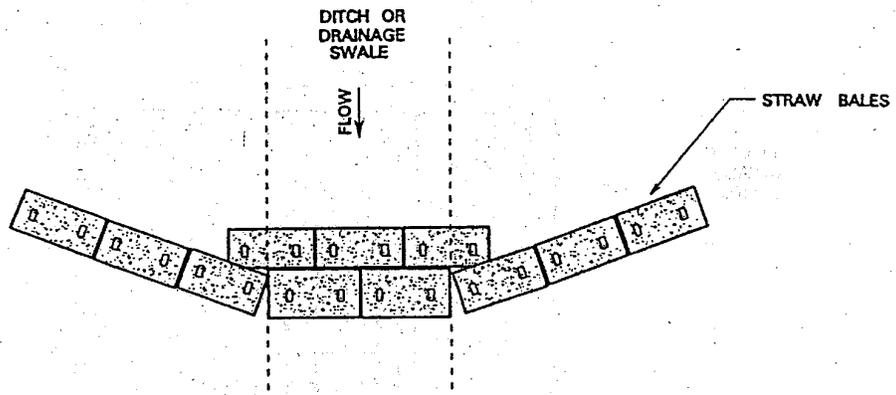
JOB DGN

I.G.

STRAW BALE INSTALLATION AND MAINTENANCE

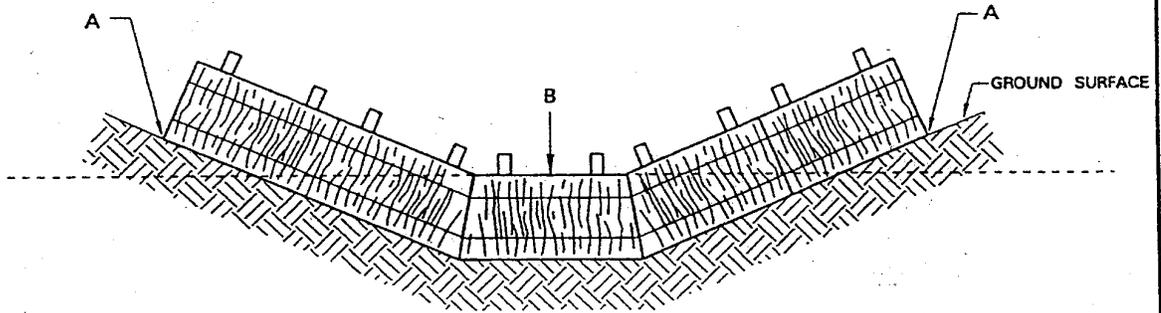
FIGURE #8

DWC. ES-0008 REV.



PLAN VIEW
N.T.S.

POINTS A SHALL BE HIGHER THAN POINT B



CROSS-SECTION
N.T.S.

ICSM 28-APR-2000 09:05

109. DGN

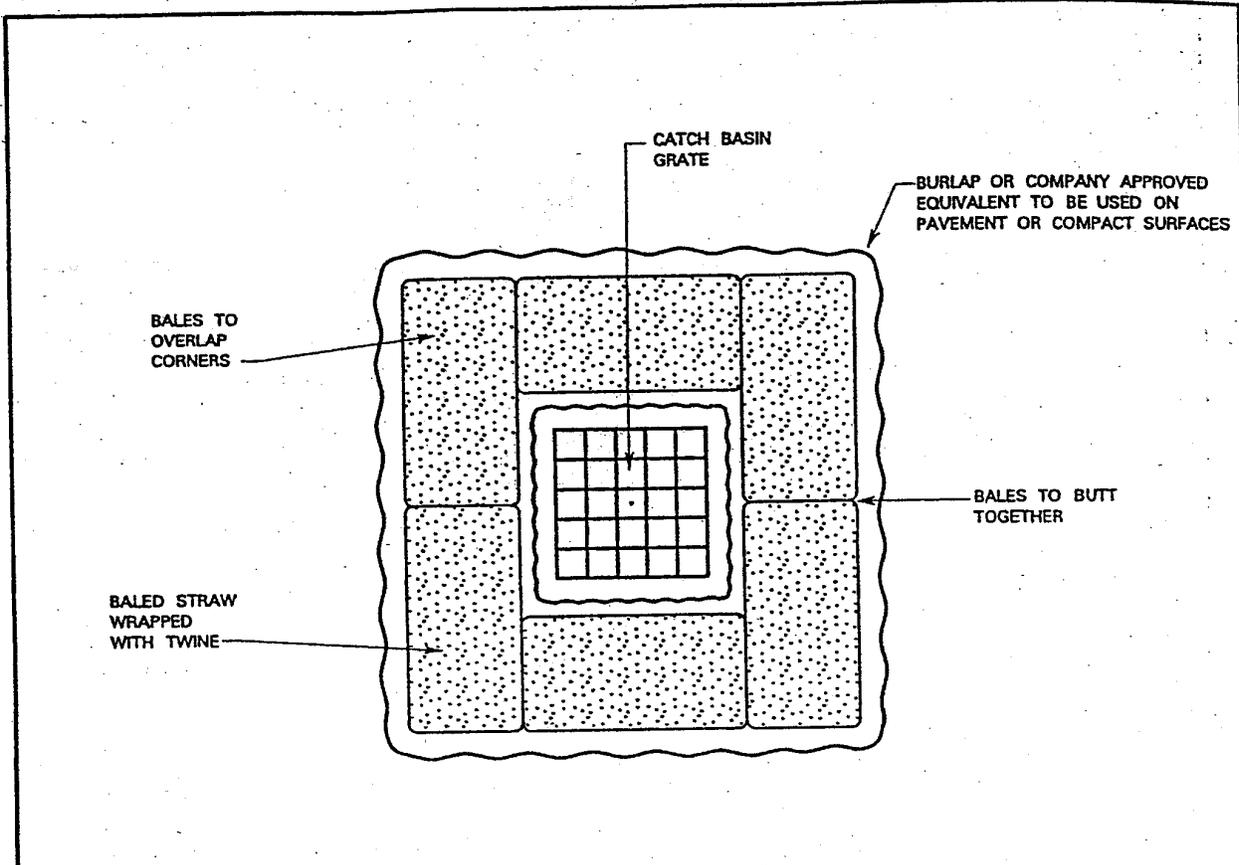
1.0.E

STRAW BALE INSTALLATION
FOR A CHECK DAM IN A
DRAINAGE WAY

FIGURE #9

DWG. ES-0009

REV.



1. SURROUND STREET DRAINAGE STRUCTURE INLET WITH BALES PRIOR TO CONSTRUCTION AND MAINTAIN UNTIL CONSTRUCTION IS COMPLETED.
2. FOR BALES PLACED ON PAVEMENT (OR COMPACT SURFACES), PLACE BURLAP OR COMPANY APPROVED EQUIVALENT BETWEEN PAVEMENT AND BALE.
3. REMOVE ACCUMULATED SEDIMENT.

ICSmith
 28 APR 2000 09:04

J10.DGN

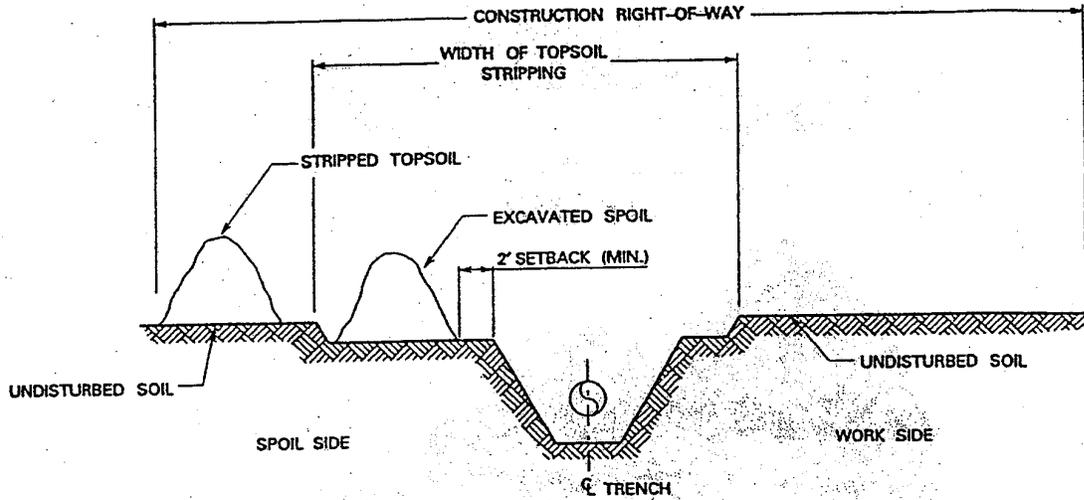
I.C.

STORM DRAIN INLET PROTECTION

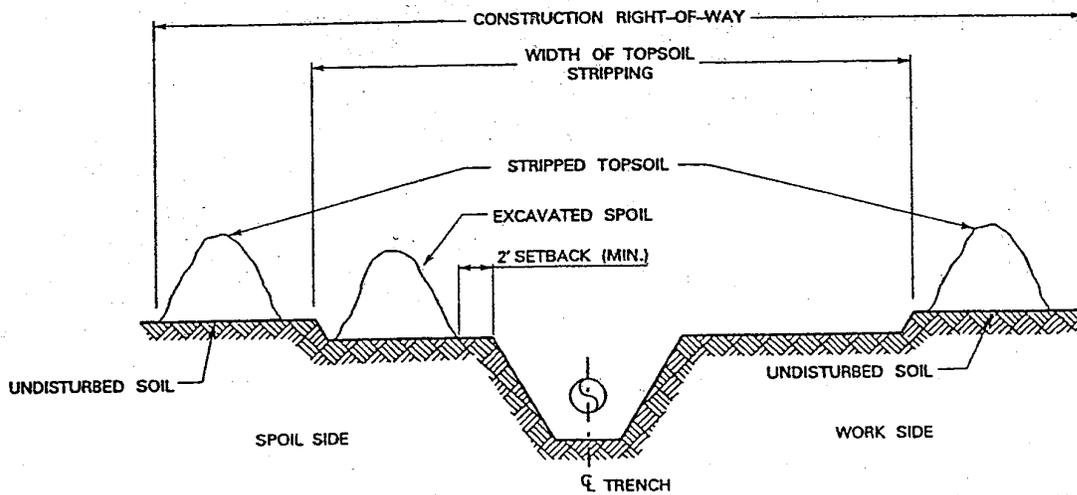
FIGURE #10

DWG. ES-0010

REV.



DITCH PLUS SPOILSIDE TOPSOIL SEGREGATION



FULL RIGHT-OF-WAY TOPSOIL STRIPPING

NOTES:

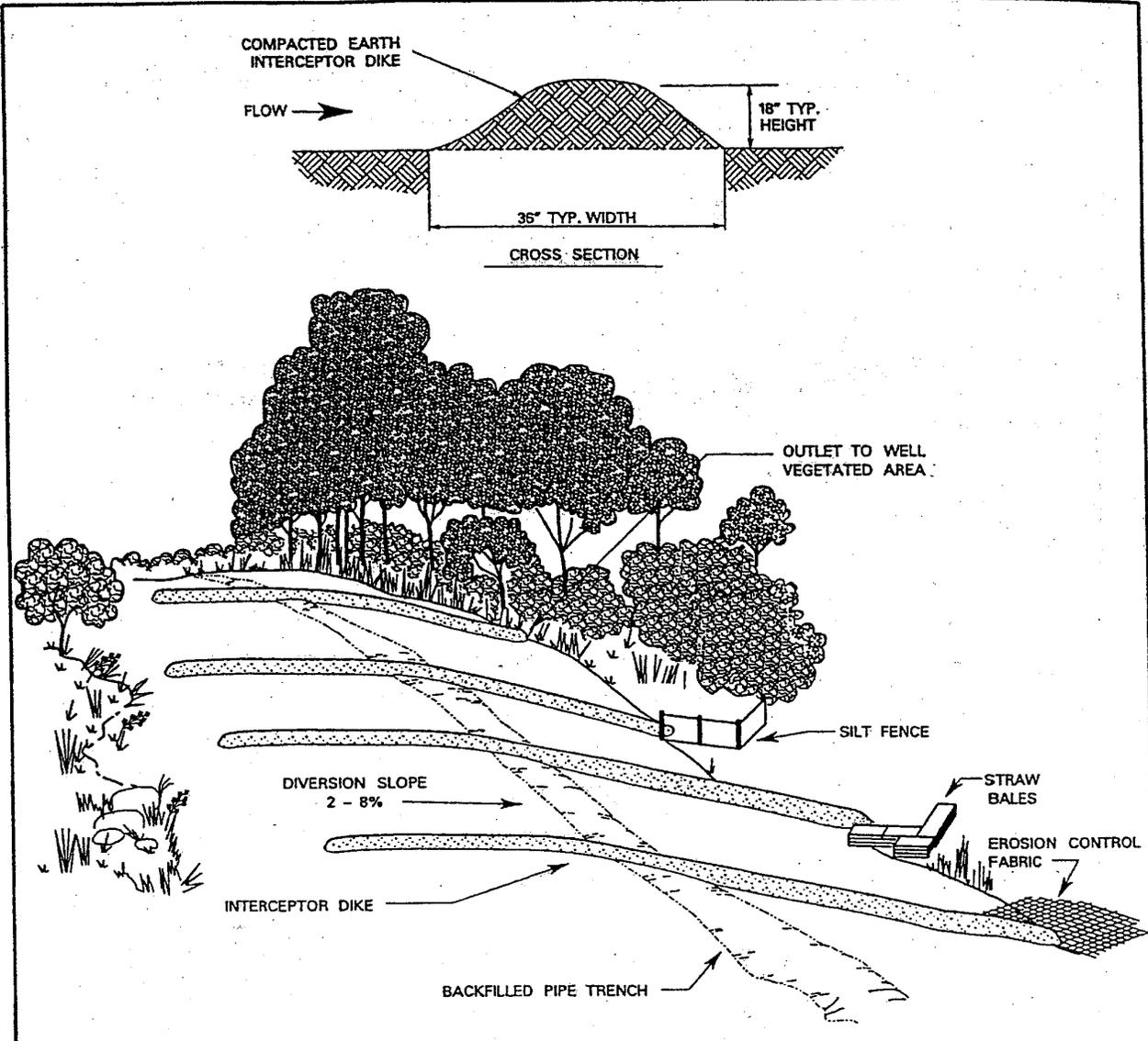
1. TOPSOIL MAY BE STORED IN LOCATIONS AS SHOWN ABOVE, OR AT OTHER COMPANY APPROVED LOCATIONS WITHIN THE CONSTRUCTION ROW.
2. LEAVE GAPS IN SPOIL PILES FOR WATER RUN-OFF

ICS 011.00N 28-APR-2000 09:03
 10.

ROW TOPSOIL SEGREGATION TECHNIQUES

FIGURE #11

DWG.	ES-0011	REV.
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INSTALLATION REQUIREMENTS:

- INSTALL IN ALL AREAS EXCEPT RESIDENTIAL OR AGRICULTURAL (UNLESS AUTHORIZED BY LANDOWNER).
- CONSTRUCT USING EARTH FILLED SACKS OR STAKED STRAW BALES FOR TEMPORARY OR COMPACTED EARTH AND ROCK 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.

MAINTENANCE REQUIREMENTS:

- INSPECT DURING AND FOLLOWING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.
- KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.
- SEED AND MULCH PERMANENT INTERCEPTOR DIKES FOLLOWING CONSTRUCTION.

INTERCEPTOR DIKE SPACING

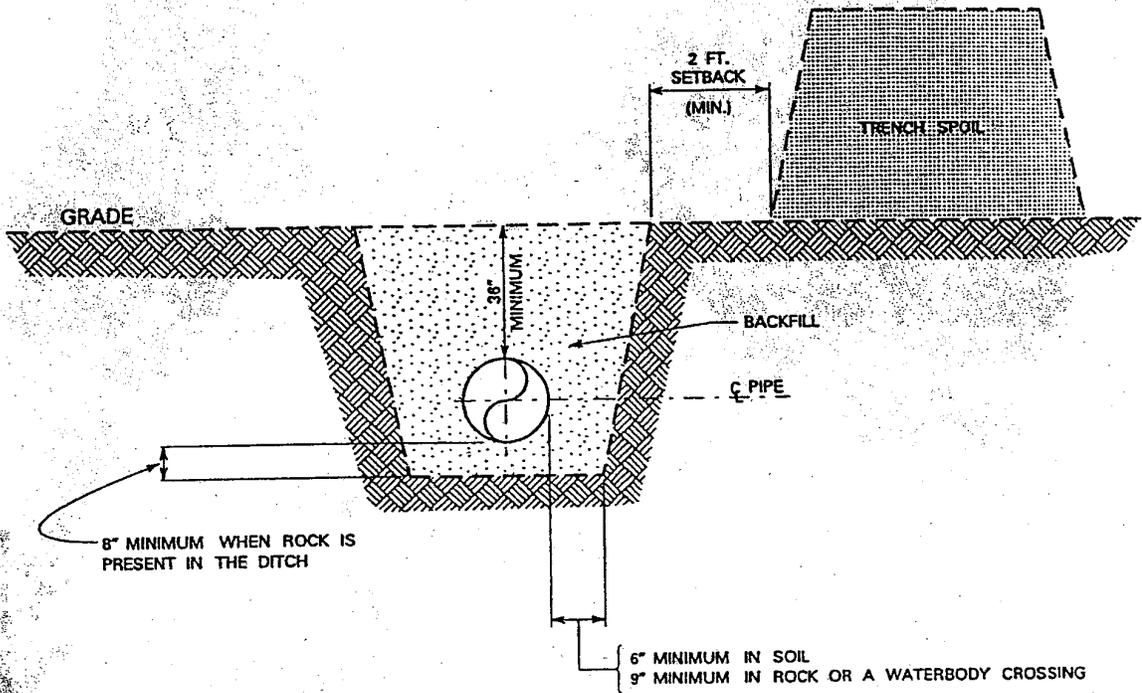
SLOPE (%)	SPACING (FT.)
5-15	300
>15-30	200
>30	100

I.C. ES-0012.DGN
 ICS 09/14/2001

INTERCEPTOR DIKE INSTALLATION AND MAINTENANCE

FIGURE #12

DWG. **ES-0012** REV.



CROSS-SECTION VIEW OF TYPICAL TRENCH

NOTES:

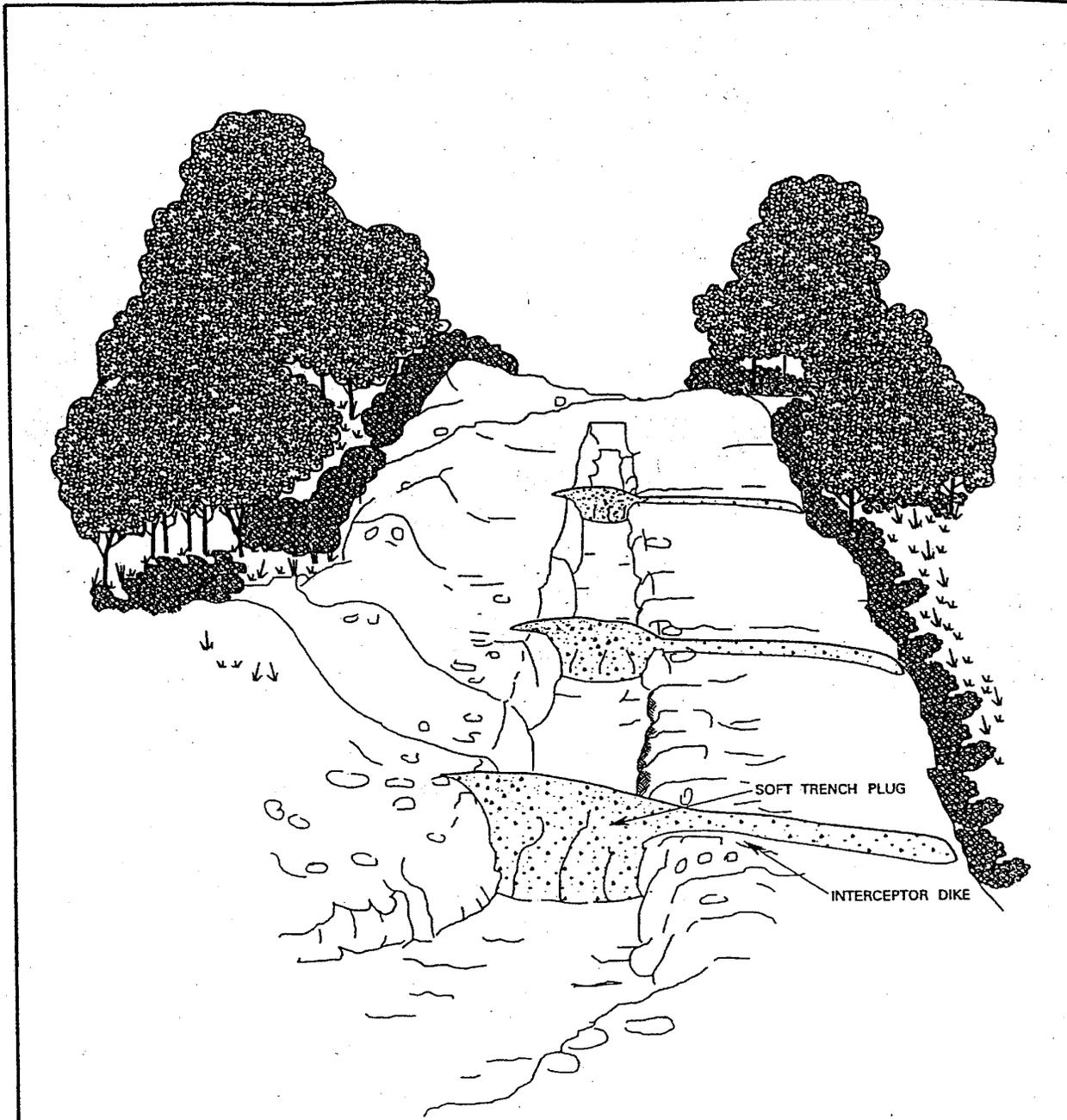
1. ALL ORIGINAL CONTOURS WILL BE RE-ESTABLISHED UPON COMPLETION OF PIPE INSTALLATION. EXCEPT IN WETLANDS, A CROWN MAY BE LEFT TO ACCOUNT FOR DITCH SETTLING, AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
2. IN COLD WATER FISHERY STREAMS, THE TOP 12" OF THE TRENCH WILL BE BACKFILLED WITH CLEAN GRAVEL OR NATIVE COBBLES.

ICS:mlh
 28-APR-2000 09:01
 JT3.DGN
 I.G.

TYPICAL TRENCH DETAIL

FIGURE #13

DWG.	ES-0013	REV.
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NOTES:

1. TEMPORARY TRENCH PLUGS MAY BE USED IN CONJUNCTION WITH INTERCEPTOR DIKES TO PREVENT WATER FROM OVERFLOWING INTO SENSITIVE RESOURCE AREAS.
2. DIVERT TRENCH OVERFLOW TO A WELL-VEGETATED OFF-ROW LOCATION.

TCS with
10 APR 2001

4.DGN

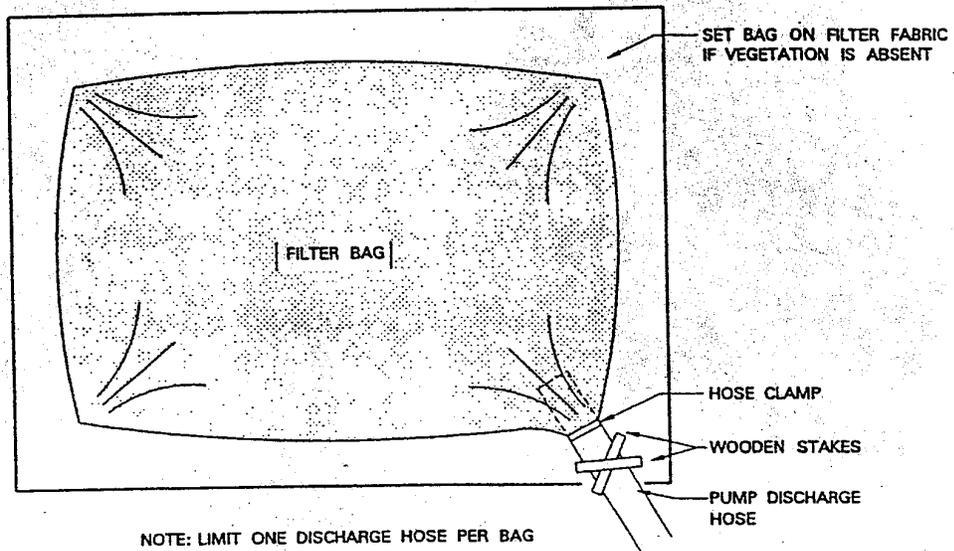
I.G. E.

TEMPORARY TRENCH PLUGS

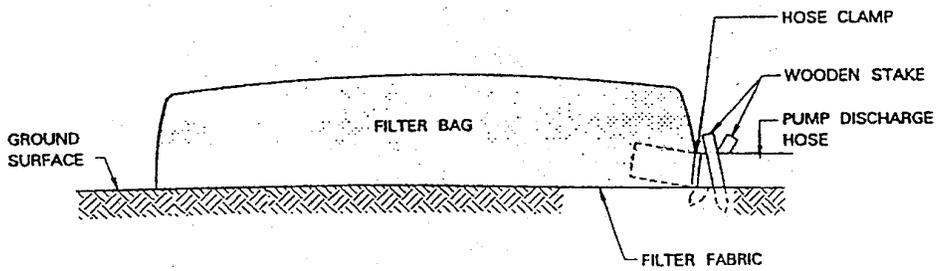
FIGURE #14

DWG. **ES-0014**

REV.



PLAN VIEW
N.T.S.



CROSS-SECTION
N.T.S.

IC Smith
28-APR-2000 08:58

15. dgn

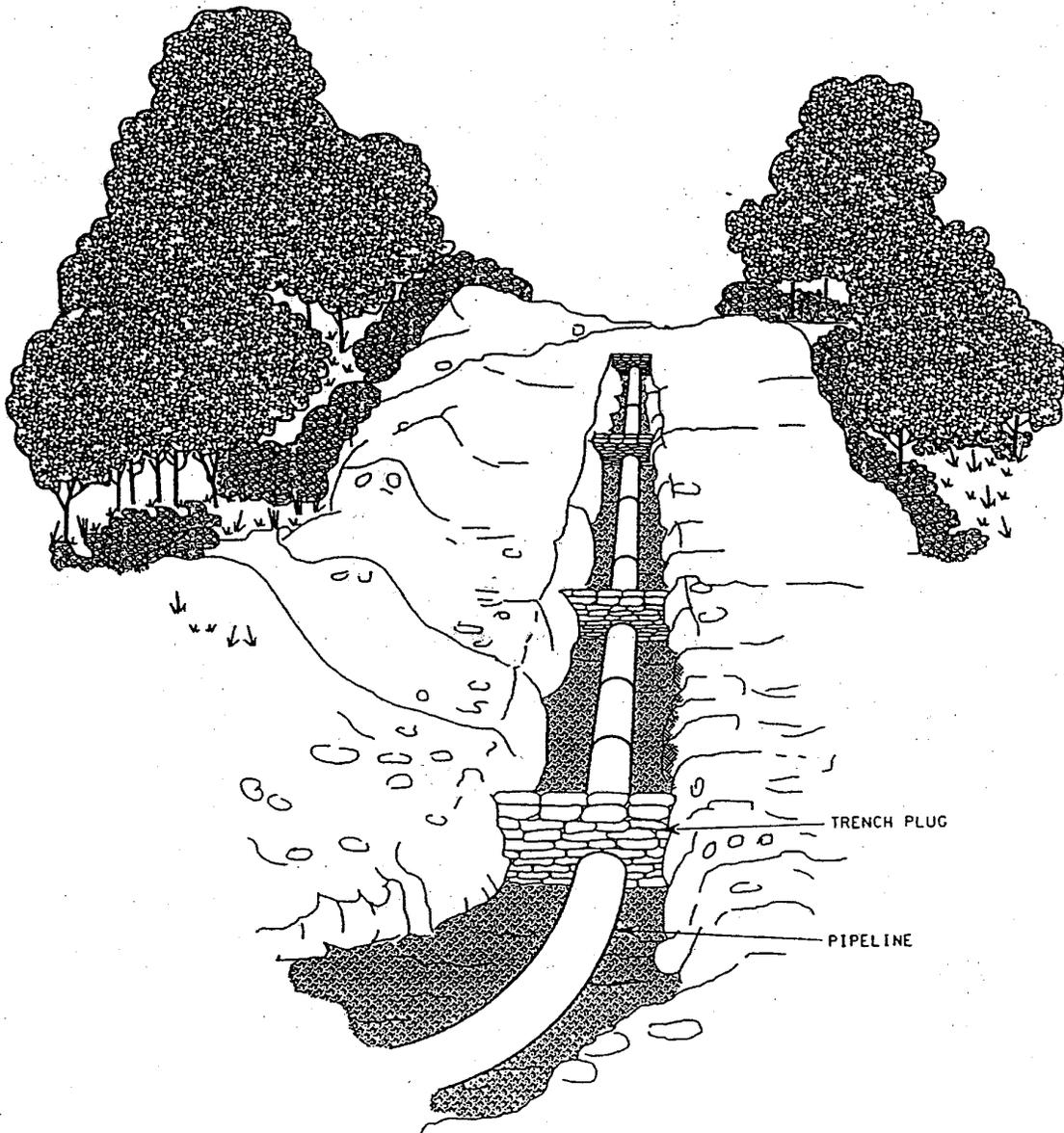
ig. r

FILTER BAG

FIGURE #15

DWG. ES-0015

REV.



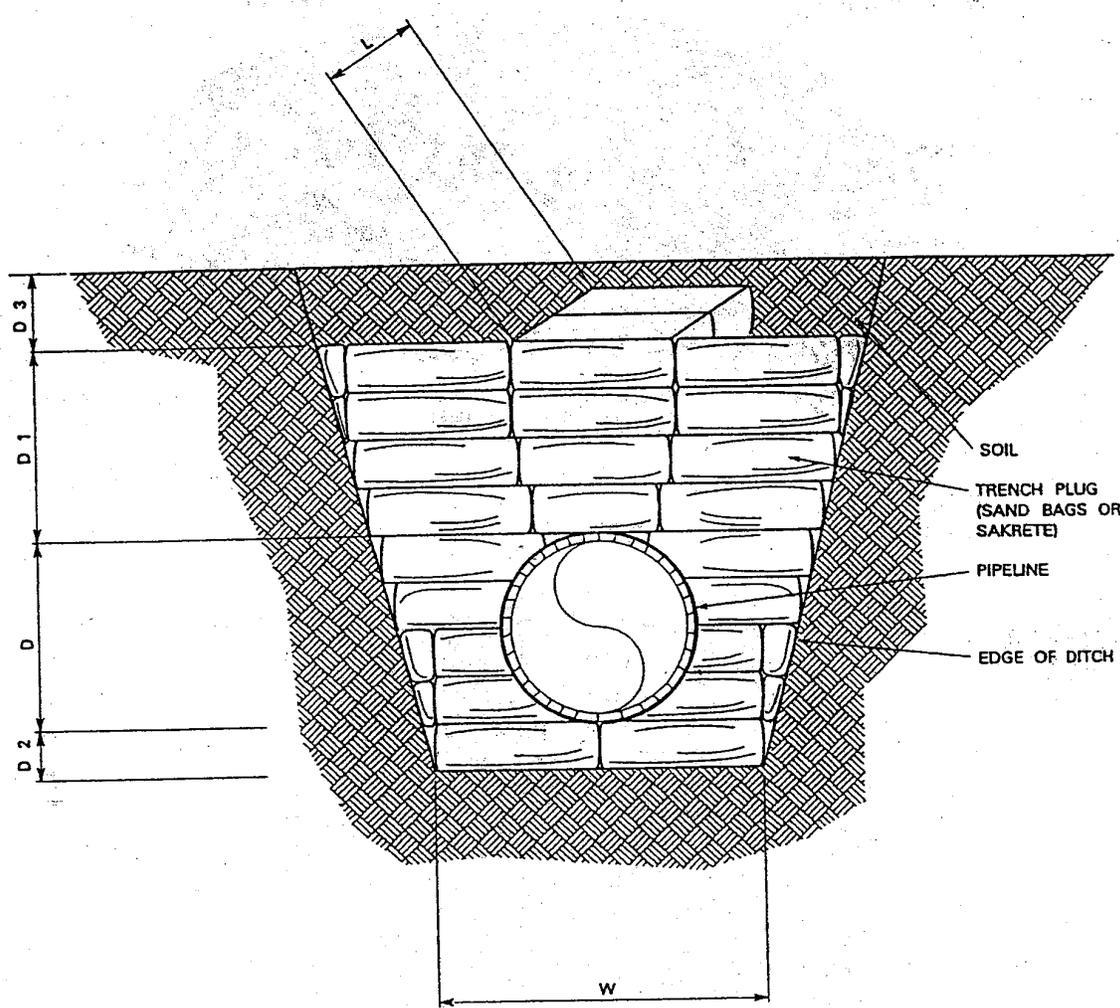
SLOPE (%)	SPACING (FT)
5-15	300
>15-30	200
>30	100

ICSmith
 28-APR-2000 08:57
 16.DGN
 I.C.

PERMANENT TRENCH PLUGS

FIGURE #16

DWG. ES-0016 REV.



- D = PIPE DIAMETER
- D1 = APPROXIMATELY 24"
- D2 = APPROXIMATELY 6" (8" MIN. IN ROCK)
- D3 = APPROXIMATELY 12"
- W = D + 2 to 4 FEET
- L = APPROXIMATELY 18" - 24"
- D1 + D3 = 36" MINIMUM

NOTE:
 USE OF SAKRETE SHALL REQUIRE PRIOR COMPANY APPROVAL.

ICS 017.DCN 28-APR-2000 08:55

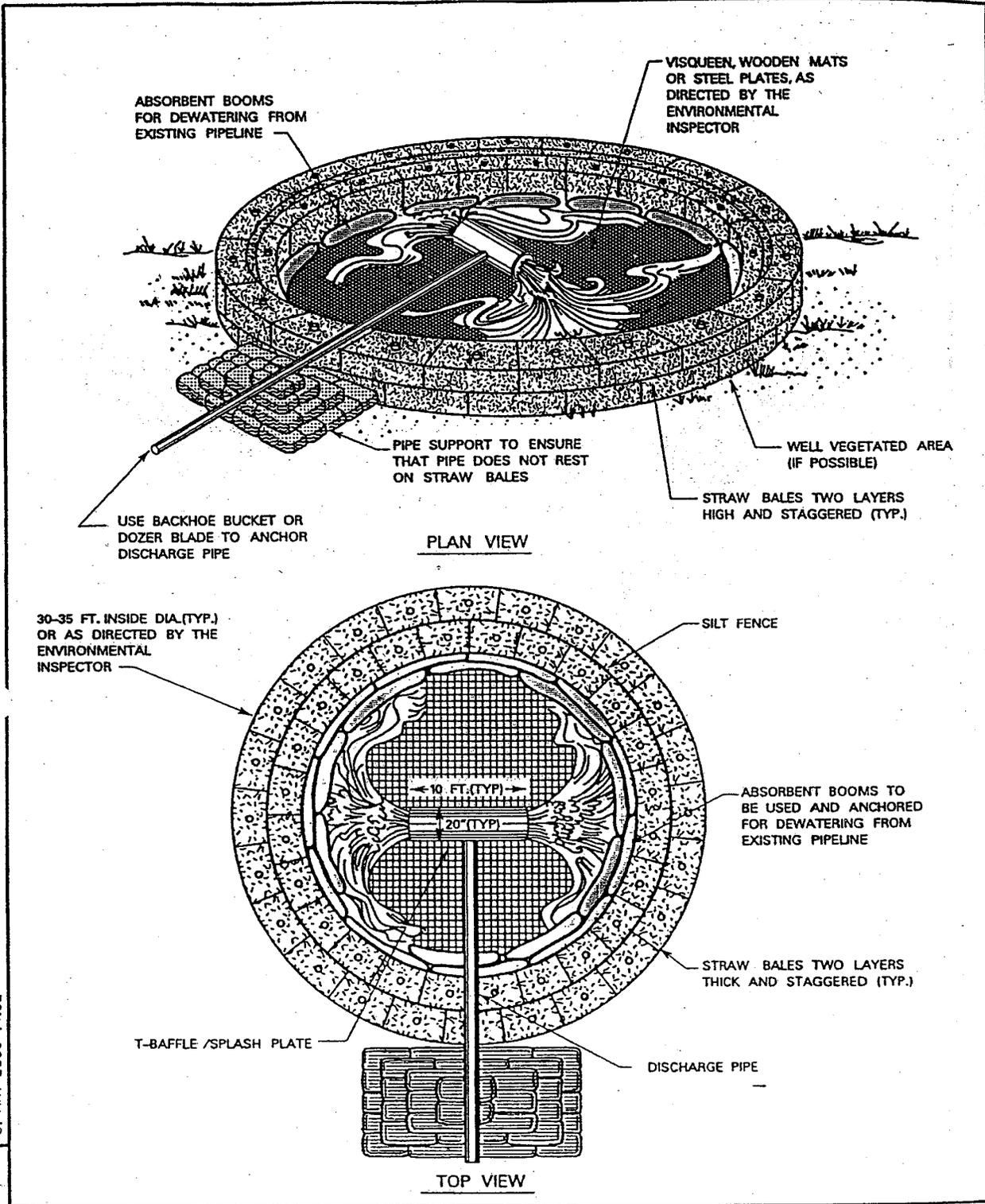
I.G.

TRENCH PLUG DETAIL

FIGURE #17

DWC. ES-0017

REV.



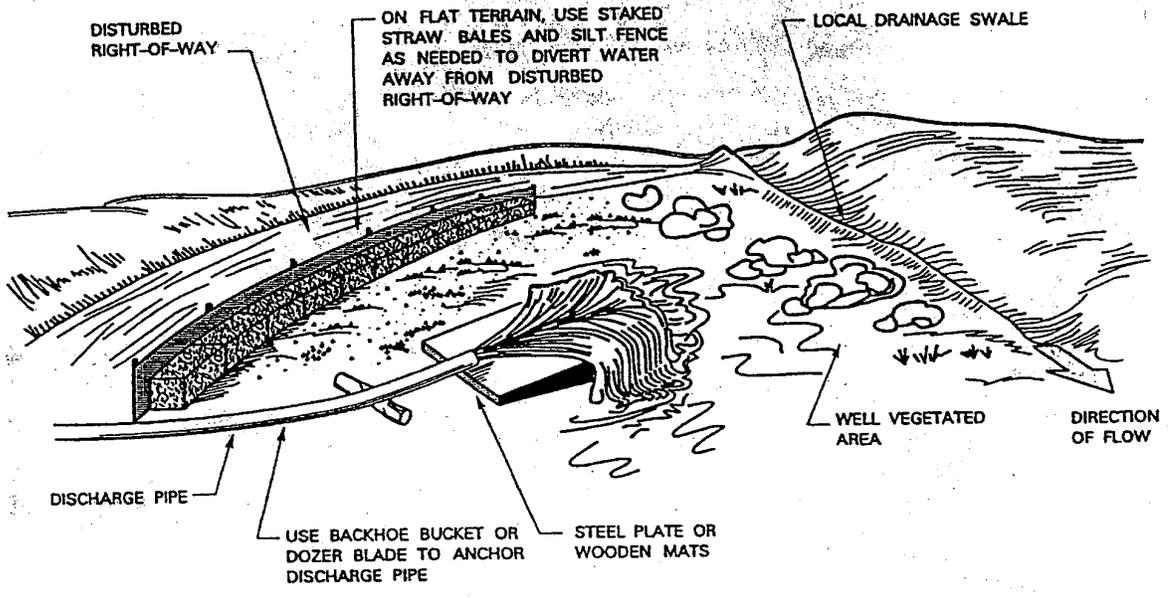
DCBach 01-MAY-2000 14:52
 018.DGN
 I.C.

DEWATERING STRUCTURE FOR HYDROSTATIC TESTING

FIGURE #18

DWG. ES-0018 REV.

DCBback 2
01-MAY-2000 10:39
19. DGN
I.C.



NOTE:

1. THIS DEWATERING STRUCTURE CAN ONLY BE USED FOR SMALL DISCHARGES FROM NEW PIPELINES WHEN A HYDROSTATIC TEST PACKAGE HAS NOT BEEN ISSUED. IT IS SUBJECT TO APPROVAL BY THE ENVIRONMENTAL INSPECTOR.

**ALTERNATE
DEWATERING STRUCTURE FOR
HYDROSTATIC TESTING**

FIGURE #19

OWG. **ES-0019** REV.

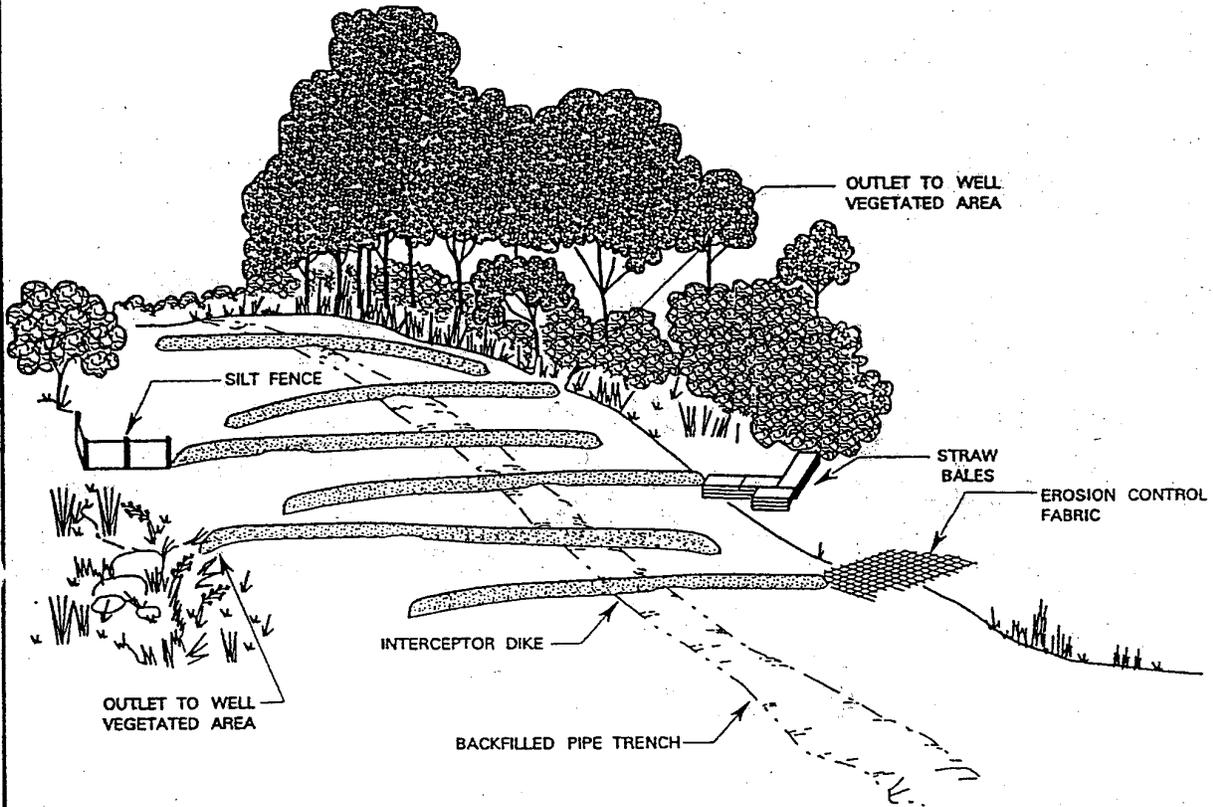
COMPACTED EARTH
INTERCEPTOR DIKE

FLOW →

18" TYP.
HEIGHT

36" TYP. WIDTH

CROSS SECTION



INSTALLATION REQUIREMENTS:

- INSTALL IN ALL AREAS EXCEPT RESIDENTIAL OR AGRICULTURAL (UNLESS AUTHORIZED BY LANDOWNER).
- CONSTRUCT USING EARTH FILLED SACKS OR STAKED STRAW BALES FOR TEMPORARY OR COMPACTED EARTH AND ROCK FOR PERMANENT
- INSTALL WITH A 2-3% OUTFALL ANGLE IF NECESSARY.
- FILTER RUN-OFF WATER BY CONSTRUCTING AN OUTLET USING AN ENERGY DISSIPATING DEVICE (SILT FENCE, STRAW BALES, EROSION CONTROL FABRIC), AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

MAINTENANCE REQUIREMENTS:

- INSPECT DURING AND FOLLOWING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.
- KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.
- SEED AND MULCH PERMANENT INTERCEPTOR DIKES FOLLOWING CONSTRUCTION.

ICSM 28-APR-2000 10:33

.020.DGN

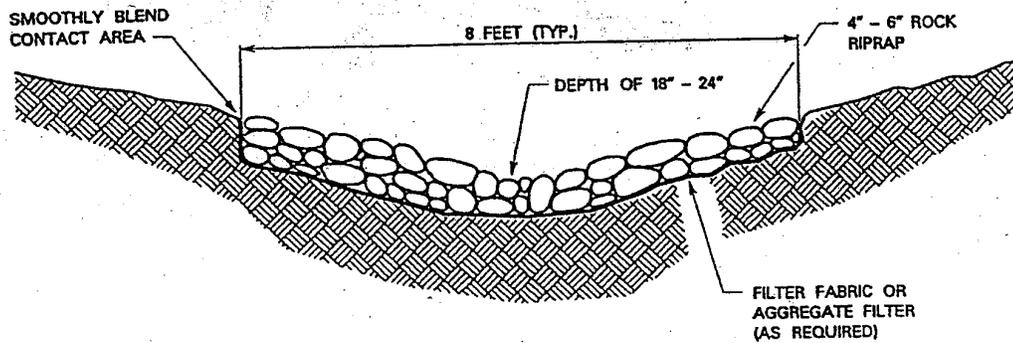
I.C.

**CHEVRON INTERCEPTOR DIKE
INSTALLATION AND MAINTENANCE**

FIGURE #20

DWG. **ES-0020**

REV.



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.

JCSmith
28-APR-2000 08:45

1.DGN

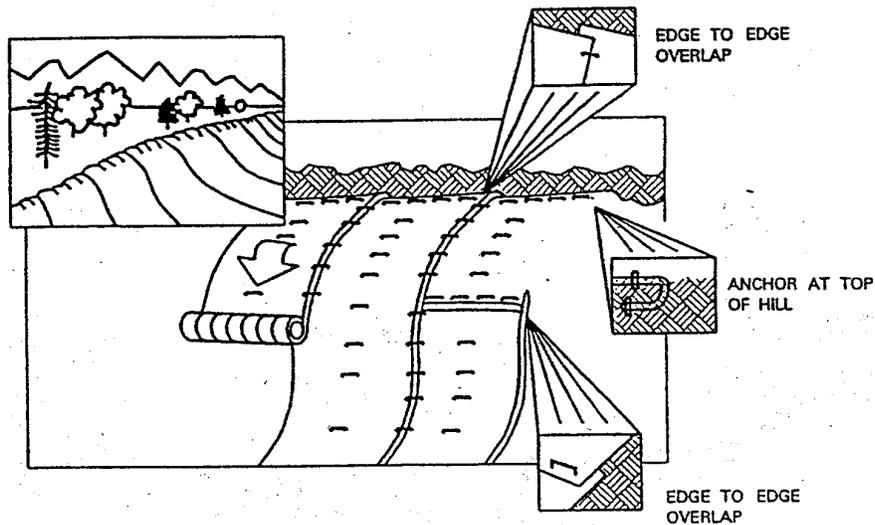
I.G.

**ROCK LINED DRAINAGE SWALE
INSTALLATION AND MAINTENANCE**

FIGURE #21

OWG. ES-0021

REV.



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.

IS Smith
28-APR-2000 08:44

J22.DGN

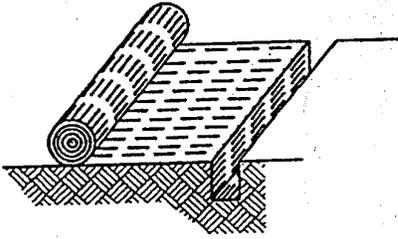
1.0.

TYPICAL MATTING ON SLOPES

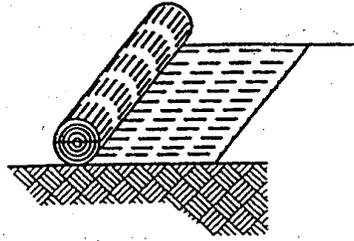
FIGURE #22

DWG. ES-0022 REV.

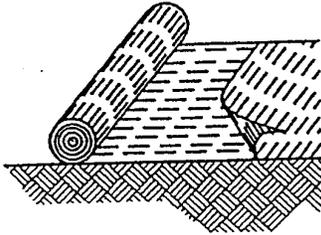
A. BURY THE TOP END OF THE JUTE STRIPS IN A 6" TRENCH (TYPICAL)



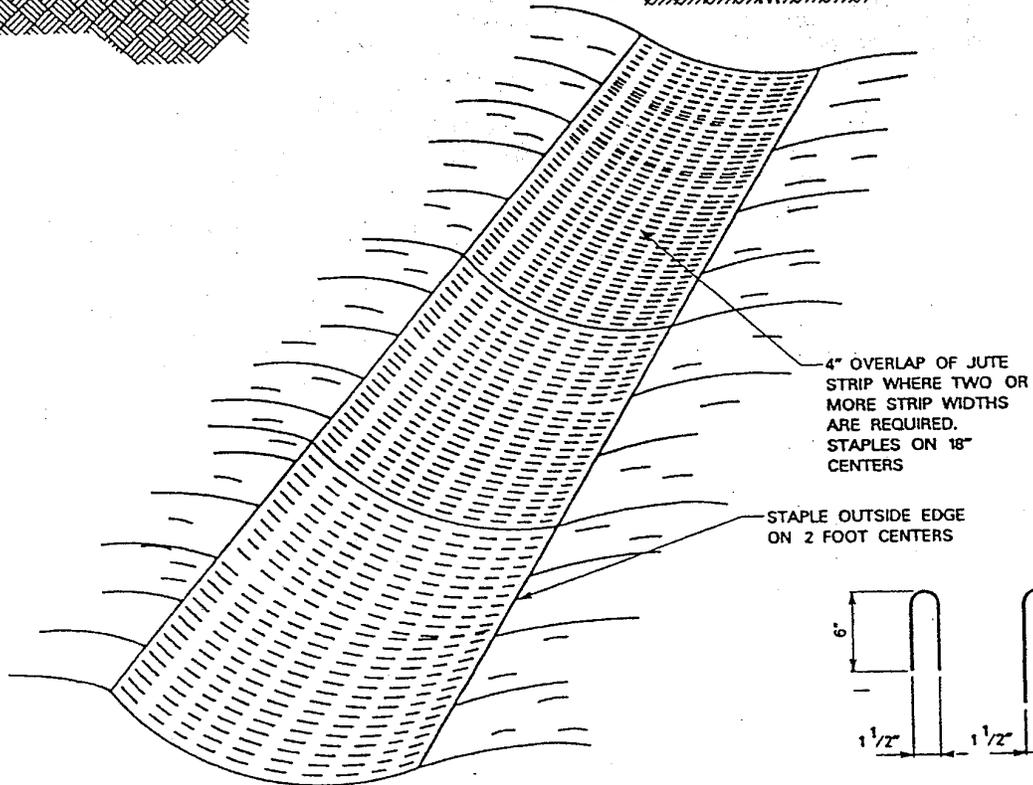
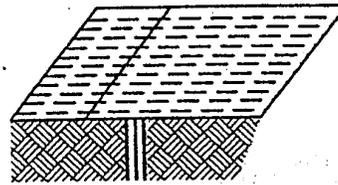
B. DOUBLE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPACTING.



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

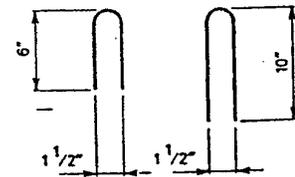


D. WHERE FABRIC STOPS, FOLD, BURY, AND TAMP JUTE STRIPS IN SLIT TRENCH. PROVIDE DOUBLE ROW OF STAPLES



4" OVERLAP OF JUTE STRIP WHERE TWO OR MORE STRIP WIDTHS ARE REQUIRED. STAPLES ON 18" CENTERS

STAPLE OUTSIDE EDGE ON 2 FOOT CENTERS



TYPICAL STAPLES
NO. 11 GAUGE WIRE

ICSM 28-APR-2000 08:43

23. DGN

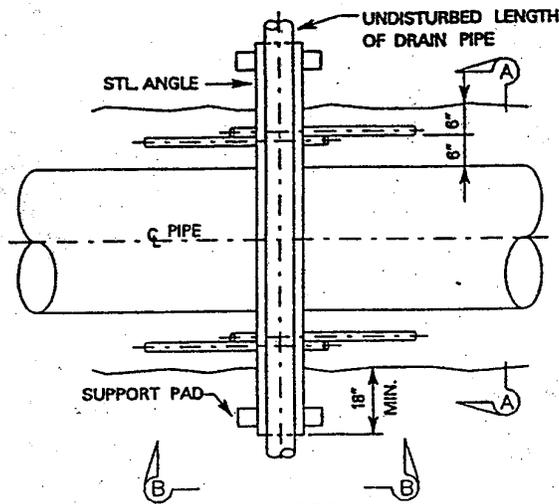
I.G.

EROSION CONTROL FABRIC INSTALLATION

FIGURE #23

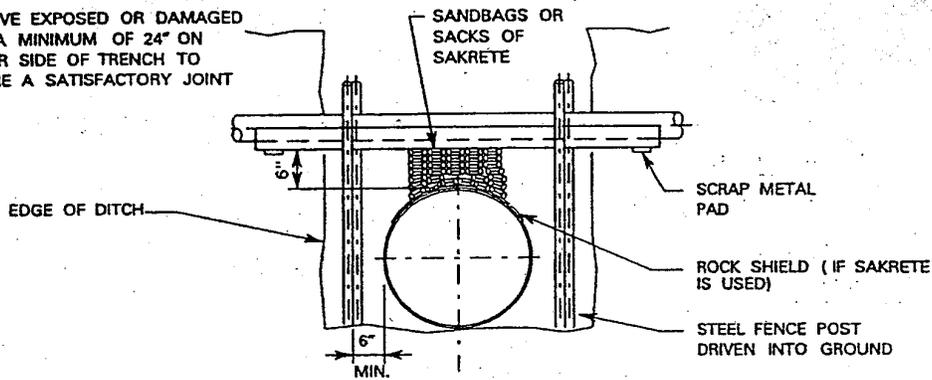
DWG. ES-0023

REV.



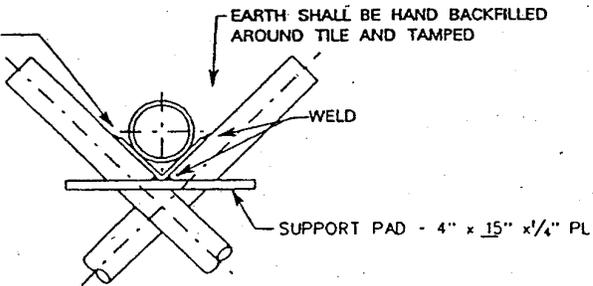
PLAN VIEW
N.T.S.

REMOVE EXPOSED OR DAMAGED TILE A MINIMUM OF 24" ON EITHER SIDE OF TRENCH TO INSURE A SATISFACTORY JOINT



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

TO SUPPORT 4" & 6" TILE USE 4" x 1/4" ANGLE			
" 8"	" 6" x 7/16"	"	"
" 10"	" 6" x 7/16"	"	"
" 12"	" 8" x 1/2"	"	"
" 16"	" 8" x 1/2"	"	"



SECTION "B-B"
N.T.S.

NOTE:
USE OF SAKRETE SHALL REQUIRE PRIOR COMPANY APPROVAL.

ICSM 28-APR-2000 08:42

4. DCN

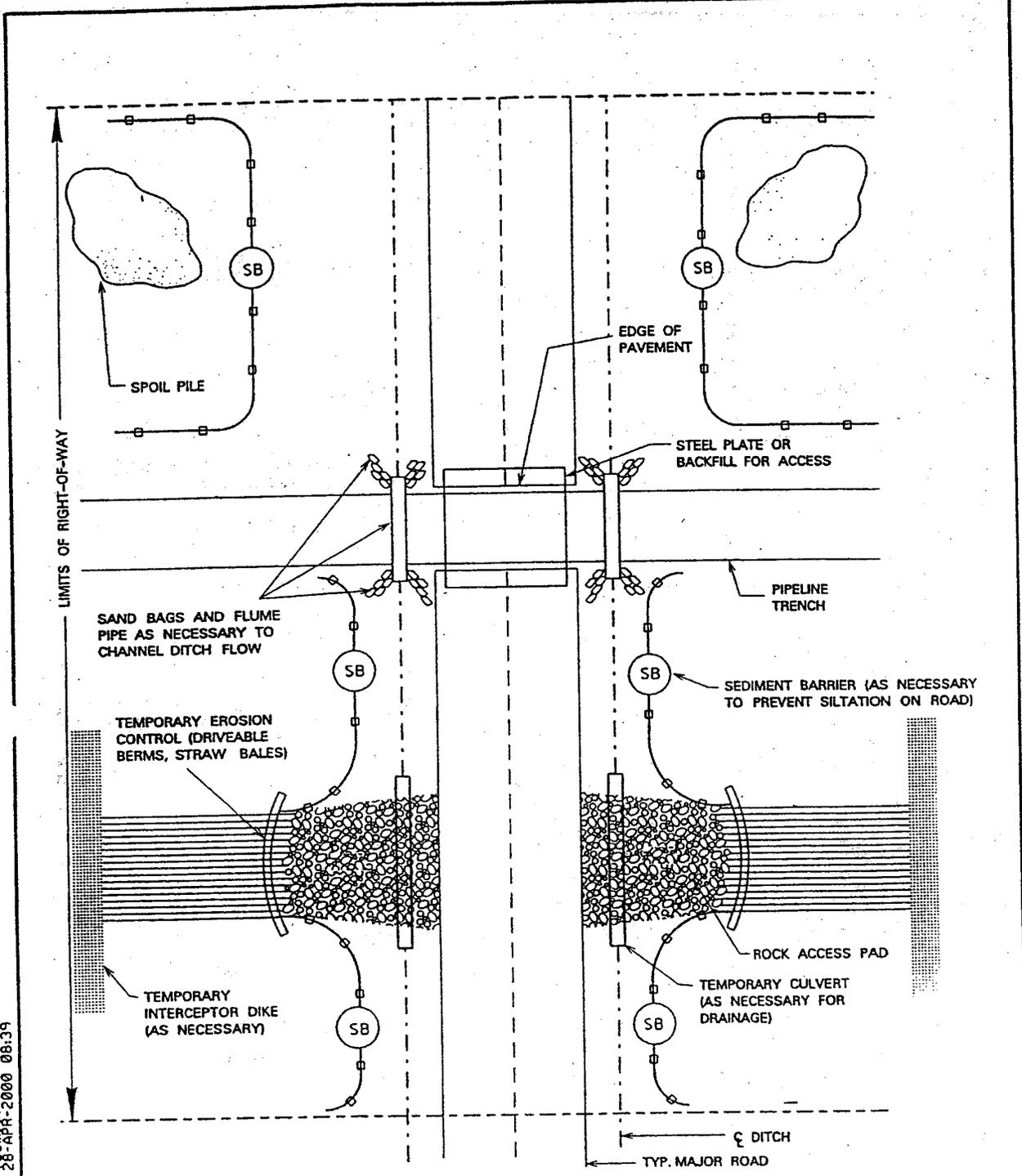
I.G. E

DRAIN TILE REPAIR PROCEDURE

FIGURE #24

DWG. ES-0024

REV.



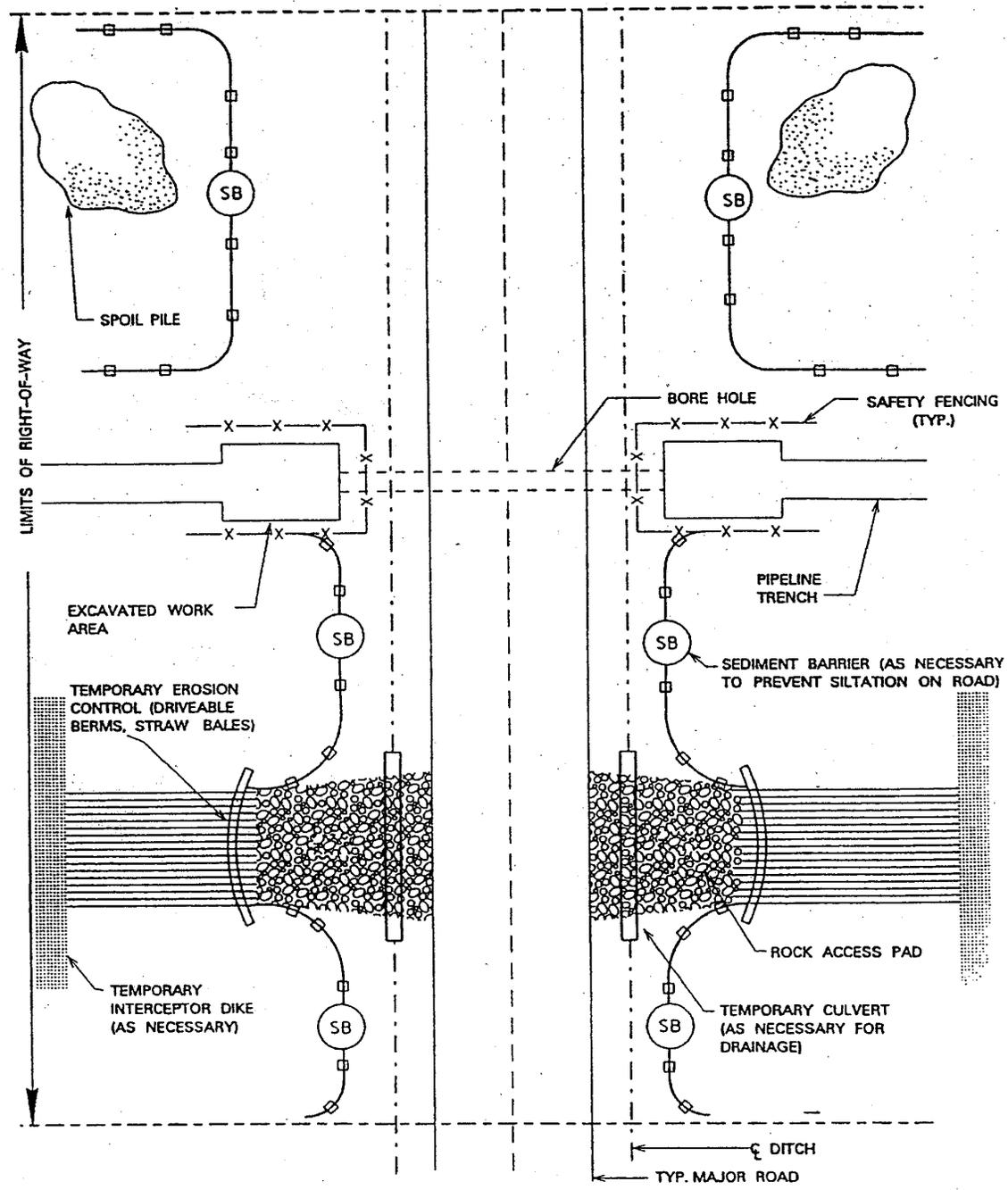
ICS 3/28/00
 28-APR-2000 08:39
 325. DGN
 I.G.

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

TYPICAL PAVED ROAD CROSSING
 CONTROL MEASURES (OPEN CUT)

FIGURE #25

DWG. ES-0025	REV.
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15 Smith
 28-APR-2000 08:38
 -26. DGN

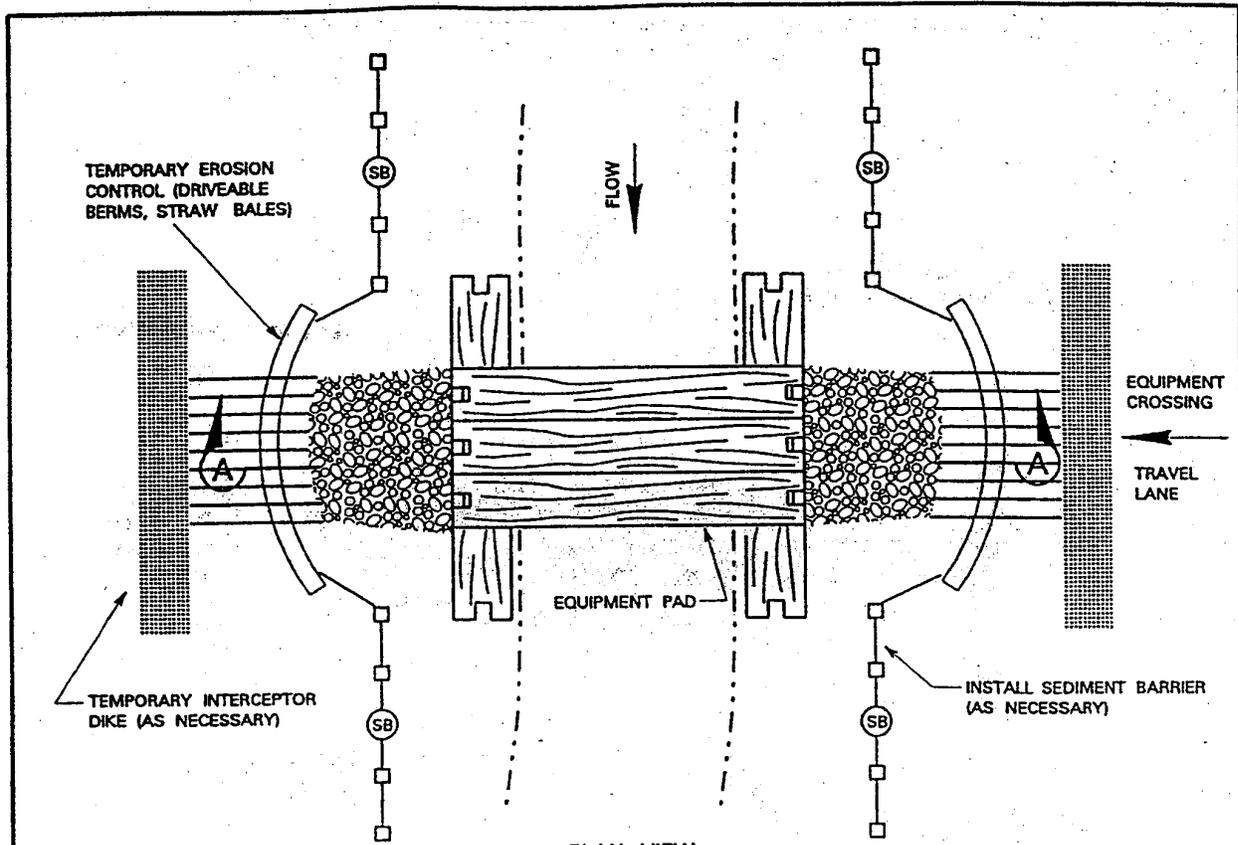
SB TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND /OR STRAW BALES

TYPICAL PAVED ROAD CROSSING
 CONTROL MEASURES (BORED)

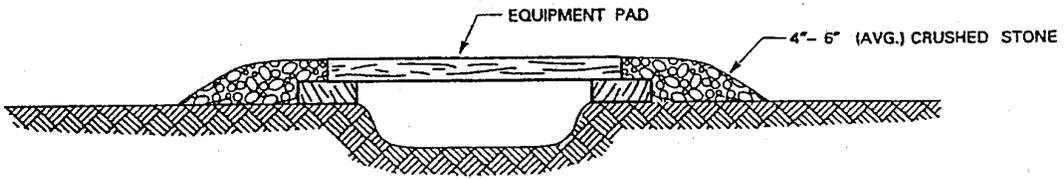
FIGURE #26

DWG.	ES-0026	REV.
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1.G.



PLAN VIEW
N.T.S.



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

NOTES:

1. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND /OR STRAW BALES.
2. ADDITIONAL EQUIPMENT PADS CAN BE PUT SIDE BY SIDE IF EXTRA WIDTH IS REQUIRED.
3. EQUIPMENT PAD TYPICALLY CONSTRUCTED OF HARDWOOD; MUST ACCOMMODATE THE LARGEST EQUIPMENT USED.
4. CRUSHED STONE MUST EXTEND A MINIMUM OF 10 FEET FROM THE TOP OF THE BANK.

ICSM/MS/28-APR-2000 08:36

:DGN

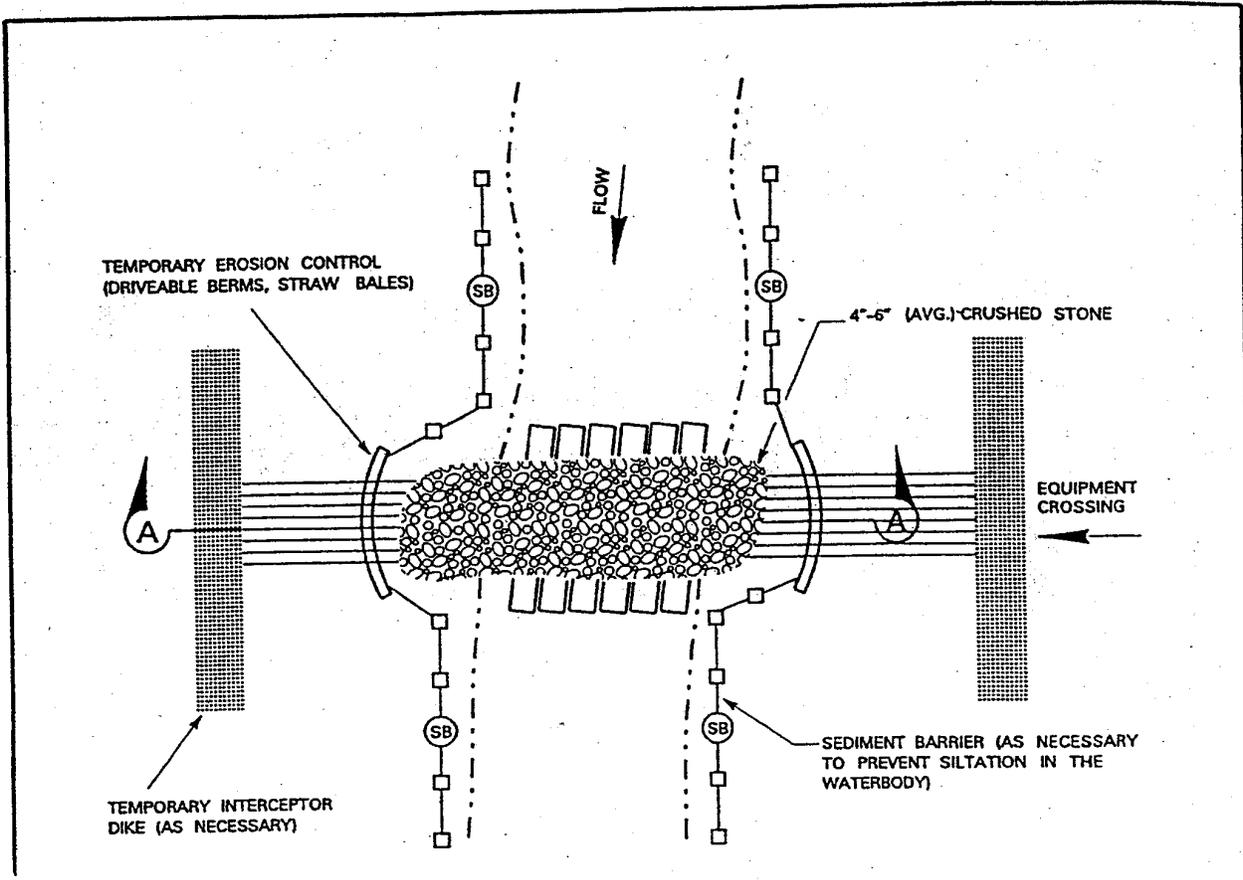
1.G. E

TEMPORARY EQUIPMENT BRIDGE
(EQUIPMENT PADS AND CULVERTS)

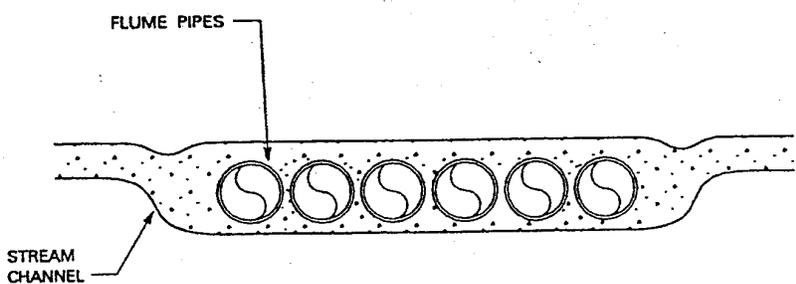
FIGURE #27

DWG. ES-0027

REV.



PLAN VIEW
N.T.S.



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

ⓈB TEMPORARY SEDIMENT BARRIER OF SILT FENCES AND /OR STRAW BALES

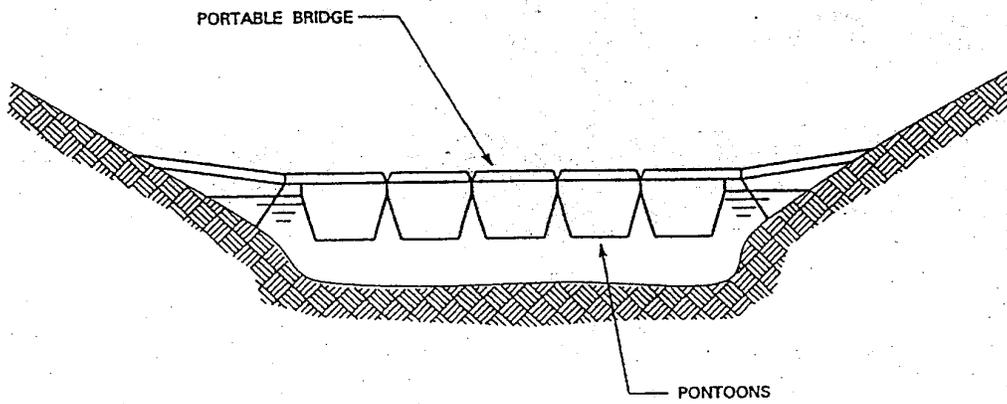
ICS 28-APR-2000 08:35
 J28.DGN
 I.C.

TEMPORARY EQUIPMENT BRIDGE
(CRUSHED STONE AND CULVERTS)

FIGURE #28

DWG. ES-0028

REV.



NOTES:

1. STABILIZE EDGES WITH SANDBAGS OR STONE.
2. REMOVE BRIDGE DURING CLEANUP.

IC 5014
28-APR-2000 08:34

29.DGN

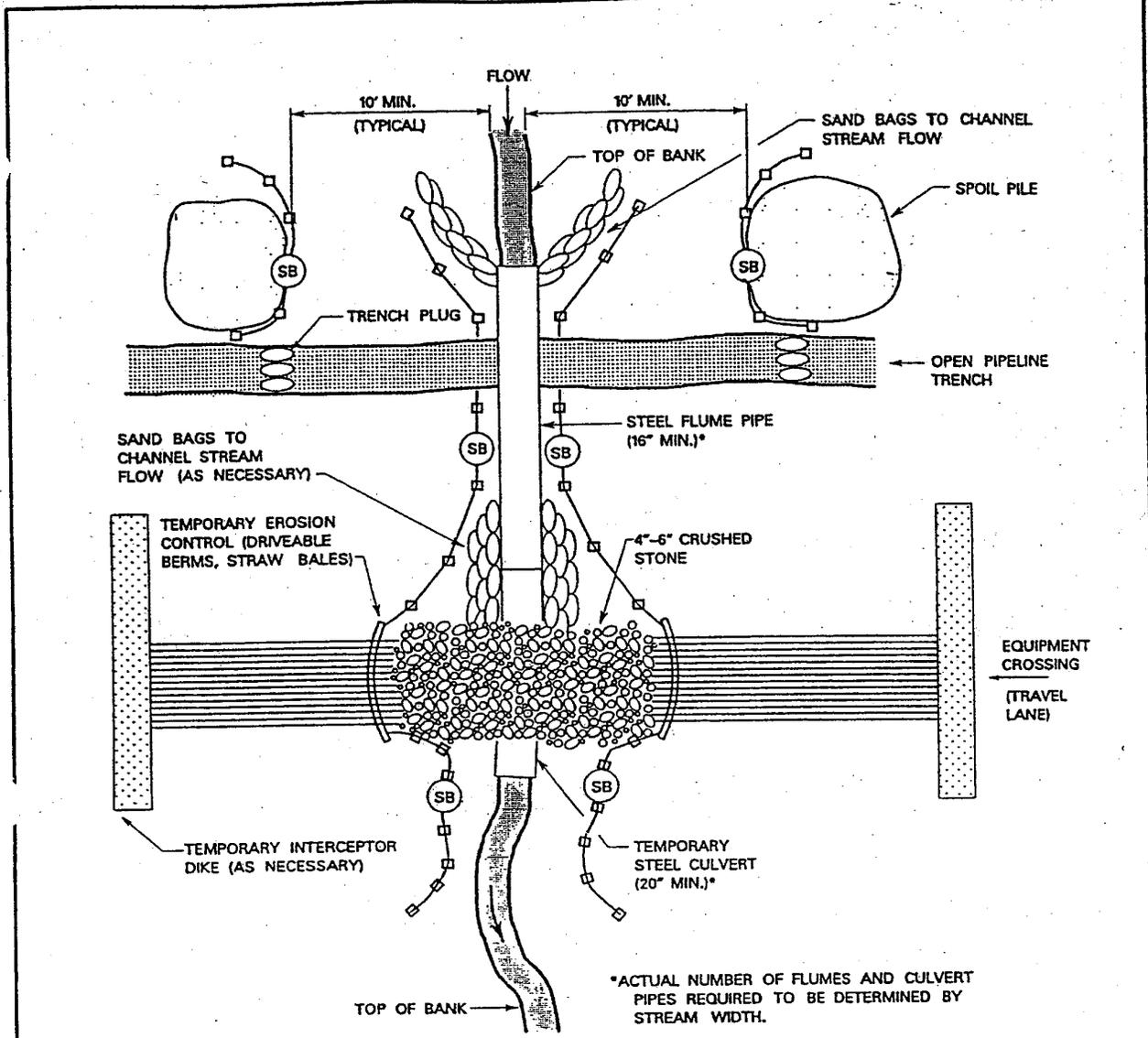
I.C.

TEMPORARY EQUIPMENT BRIDGE
(FLEXI-FLOAT OR PORTABLE)

FIGURE #29

DWG. ES-0029

REV.



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

NOTES:

1. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES
2. SAND BAGS MUST BE FILLED WITH SAND FREE OF SILT, ORGANICS, AND OTHER MATERIAL.
3. CONDUCT ALL IN-STREAM ACTIVITY (EXCEPT BLASTING) WITH THE FLUME(S) IN PLACE. FLUME PIPE(S) MAY NOT BE REMOVED FOR LOWERING IN.
4. THE ENDS OF THE FLUME AND CULVERT MUST EXTEND TO AN UNDISTURBED AREA.

IC5014h 28 APR 2000 08:33

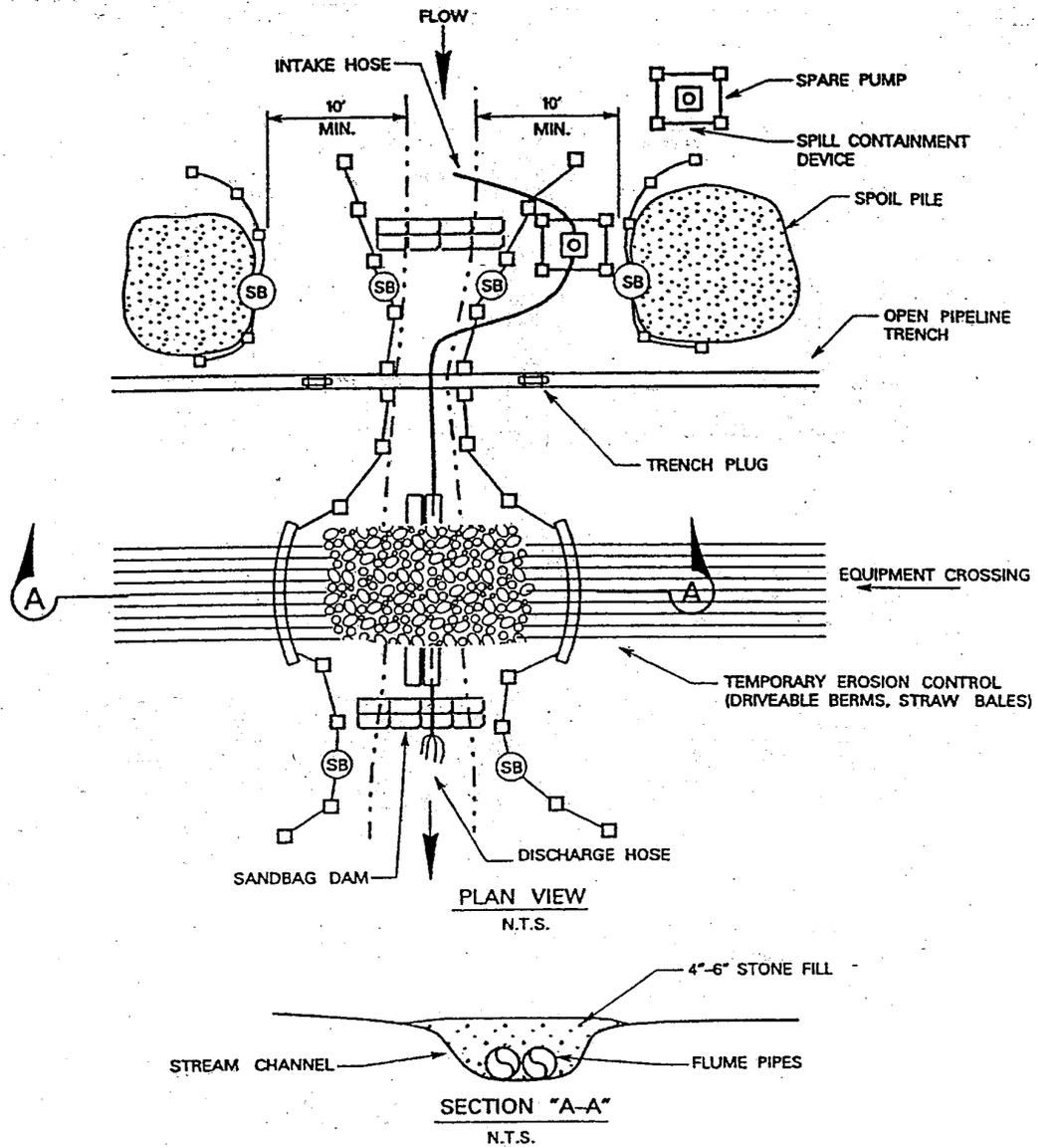
10. DGN

I.G.

TYPICAL FLUMED CROSSING

FIGURE #30

DWG. ES-0030	REV.
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NOTES:

1. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES.
2. INSTALL AND SEAL SANDBAGS UPSTREAM AND DOWNSTREAM OF THE CROSSING.
3. CREATE AN UPSTREAM SUMP USING SANDBAGS IF NATURAL SUMP IS UNAVAILABLE FOR THE INTAKE HOSE.
4. EXCAVATE ACROSS STREAM CHANNEL FOLLOWING WATER RE-ROUTING.
5. DO NOT REFUEL OR STORE FUEL WITHIN 100 FEET OF THE WATERBODY, WHERE FEASIBLE.
6. MONITOR PUMPS AT ALL TIMES DURING STREAM CROSSING PROCEDURE.
7. NUMBER OF FLUME PIPES FOR EQUIPMENT BRIDGE WILL VARY DEPENDING ON SITE CONDITIONS.

ICSD 28-APR-2000 08:32

LDGN

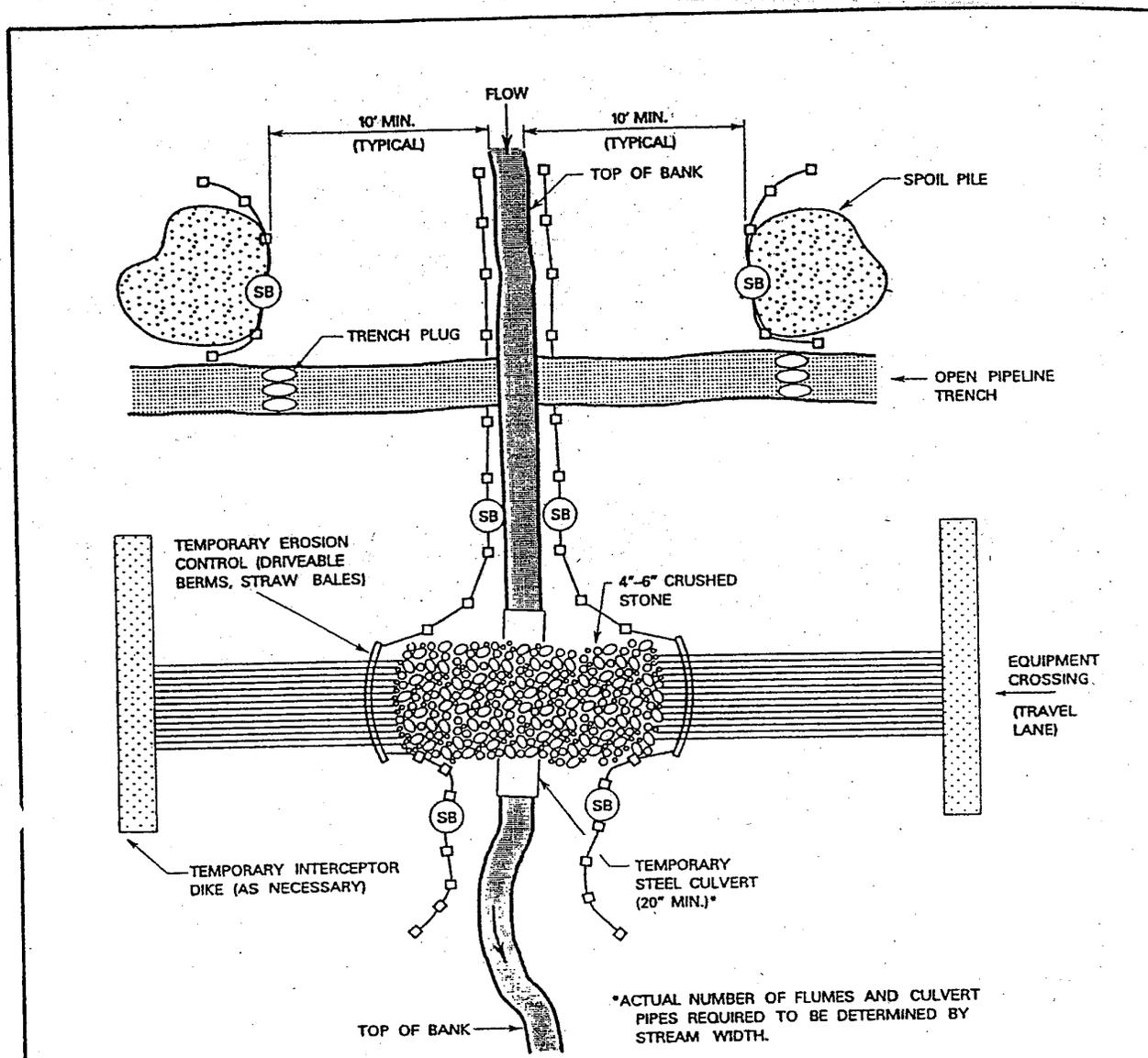
I.C.

TYPICAL DAM AND PUMP CROSSING

FIGURE #31

DWG. **ES-0031**

REV.



NOTES:

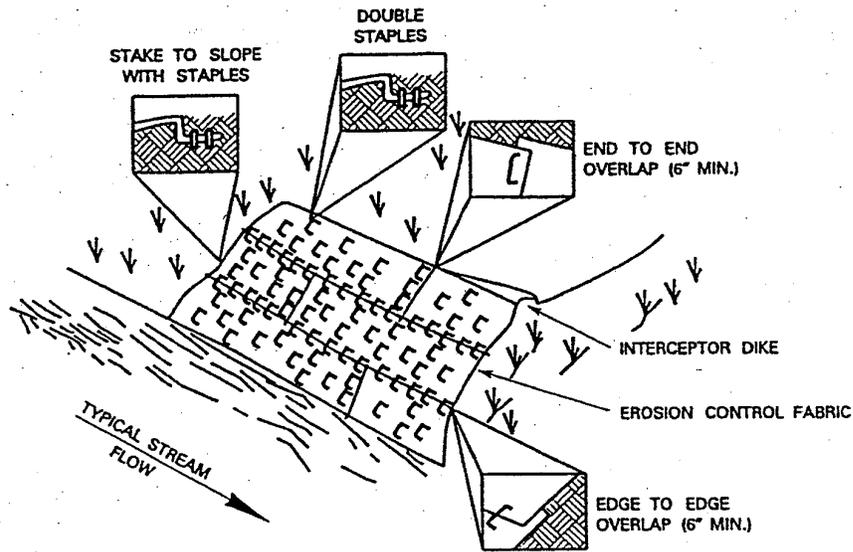
1. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES
2. FOR MINOR WATERBODIES, COMPLETE TRENCHING AND BACKFILLING IN THE WATERBODY (NOT INCLUDING BLASTING) WITHIN 24 CONTINUOUS HOURS. IF A FLUME IS INSTALLED WITHIN THE WATERBODY DURING MAINLINE ACTIVITIES, IT CAN BE REMOVED JUST PRIOR TO LOWERING IN THE PIPELINE. THE 24-HOUR TIMEFRAME STARTS AS SOON AS THE FLUME IS REMOVED.
3. FOR INTERMEDIATE WATERBODIES, COMPLETE TRENCHING AND BACKFILLING IN THE WATERBODY (NOT INCLUDING BLASTING) WITHIN 48 CONTINUOUS HOURS, IF FEASIBLE.

185044
 28-APR-2000 08:30
 J2. DCN
 I.G.

TYPICAL WET CROSSING

FIGURE #32

DWG. **ES-0032** REV.



NOTES:

1. EROSION CONTROL MATTING SHALL BE PLACE 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 ANDOR 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. ALTERNATELY 1" WOODEN PEGS 6" LONG AND BEVELED 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 AN INTERCEPTOR DIKE IS PRESENT ON THE APPROACH SLOPE, BEGIN THE BLANKET ON THE UPHILL SIDE OF THE INTERCEPTOR DIKE.
 - 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
 - ANCHOR ("KEY") THE UPPER EDGE OF THE BLANKET 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.

ICS 28-APR-2000 08:29

J.DGN

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TYPICAL MATTING OF STREAMBANKS

FIGURE #33

DWG.	ES-0033	REV.
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APPENDIX B

SEED MIX RECOMMENDATIONS

SEED MIX RECOMMENDATIONS "SOUTHERN ZONE"¹

UPLAND AREAS

Lime (agricultural limestone)	2.5 tons/acre
Fertilizer (6-12-12)	950 lbs./acre
Mulch (Oats, Wheat or Bermudagrass Straw)	3.0 tons/acre

- 1. Seed Mixture²**

Sorghum, Sudangrass, or Sudangrass Hybrids ³	40 lbs/acre Pure Live Seed (PLS)
Kentucky 31 Tall Fescue ⁴	10 lbs/acre PLS
Big Bluestem	10 lbs/acre PLS
Indiangrass	10 lbs/acre PLS
Bermudagrass	10 lbs/acre PLS
Sericea Lespedeza ⁵	10 lbs/acre PLS
White Clover ⁵	5 lbs/acre PLS
Birdsfoot Trefoil ⁵	10 lbs/acre PLS
- 2. Recommended seeding dates:**
(For establishment of temporary or permanent vegetation.)

Spring:	March 15 - May 30
Fall:	August 1 - October 15

WINTER STABILIZATION

If restoration can not occur prior to October 15, seed the ROW with 1.5 bushels per acre of winter rye or similar variety of rye as requested by the landowner. Mulch ROW at 3.0 tons per acre with wheat straw, including areas adjacent to stream and wetland crossings. Seed segregated topsoil piles with winter rye and mulch at a rate of 3.0 tons per acre.

WETLAND AREAS

DO NOT USE LIME OR FERTILIZER !!!

Mulch (Oats, Wheat, or Bermudagrass Straw)	3.0 tons/acre
1. Wetland Seed Mix: Annual Ryegrass	40 lbs/acre PLS

¹ The Southern Zone is generally defined as extending south from the Northern borders of Arkansas and Tennessee.

² An alternative seed mixture may be requested by the landowner(s).

³ These species may be sold under the following trade names: DeKalb SX17, Greentreat II, Greentreat III, Tastemaker DR, Tastemaker III, FFR202, or Sordan 79.

⁴ Fescue must be endophyte-free.

⁵ Legumes should be treated with a species specific inoculate prior to seeding. Legume seed and soil should be scarified.

SEED MIX RECOMMENDATIONS

"NORTHERN ZONE"¹

UPLAND AREAS

Lime	4.0 tons/acre
Fertilizer	1000 lbs./acre (10-20-20)
Mulch (Wheat Straw)	3.0 tons/acre

1. Upland Seed Mix 75 lbs./acre Pure Live Seed (PLS)

Kentucky Bluegrass	20%
Red Fescue ²	20%
Kentucky 31 Tall Fescue ²	15%
Redtop	10%
Perennial ryegrass	20%
White clover	5%
Birdsfoot Trefoil (Minimum 20% hard seed)	10%

2. Pasture Mix 20 lbs./acre PLS
(For use only in disturbed pasture areas with landowner's permission.)

Kentucky Bluegrass	31%
Medium Red clover	26%
Norcen Trefoil	17%
Poly Perennial Rye	26%

3. Recommended Seeding Dates:
(For the establishment of temporary or permanent vegetation.)

Spring:	March 15 - May 30
Fall:	August 1 - October 15

WINTER STABILIZATION

If restoration can not occur prior to October 15, seed the ROW with 1.5 bushels per acre of winter rye or similar variety of rye as requested by the landowner. Mulch ROW at 3.0 tons per acre with wheat straw, including areas adjacent to streams and wetland crossings. Seed segregated topsoil piles with winter rye and mulch at a rate of 3.0 tons per acre.

WETLAND AREAS

DO NOT USE LIME OR FERTILIZER !!!

Mulch (Wheat Straw)	3.0 tons/acre
1. <u>Wetland Seed Mix</u>	
Annual Ryegrass	40 lbs./acre PLS

¹ The Northern Zone is generally defined as extending north from the Northern borders of Arkansas and Tennessee.

² Fescue must be endophyte-free.

APPENDIX C

**SPILL PREVENTION CONTROL AND COUNTERMEASURE
(SPCC) PLAN**

ALGONQUIN GAS TRANSMISSION COMPANY

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN/

PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLAN

Prepared By:

Algonquin Gas Transmission Company
Environmental Protection Department
5400 Westheimer Court
Houston, TX 77056-5310

May 7, 2001

EAST TENNESSEE NATURAL GAS COMPANY

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN/

PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLAN

Prepared By:

East Tennessee Natural Gas Company
Environmental Protection Department
5400 Westheimer Court
Houston, TX 77056-5310

May 7, 2001

TEXAS EASTERN TRANSMISSION, L.P.

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN/

PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLAN

Prepared By:

Texas Eastern Transmission, L.P.
Environmental Protection Department
5400 Westheimer Court
Houston, TX 77056-5310

May 7, 2001

TABLE OF CONTENTS

General Information	Page
1.0 GENERAL DESCRIPTION OF SPCC/PPC PLAN.....	1
2.0 MATERIAL AND WASTE INVENTORY.....	1
3.0 SPILL AND LEAK PREVENTION AND PREPAREDNESS.....	2
3.1 PREVENTION AND PREPAREDNESS.....	2
3.1.1 Containers.....	2
3.1.2 Tanks.....	2
3.1.3 Loading/Unloading Areas.....	3
3.1.4 Concrete Coating Areas for Field Joints.....	3
3.2 EMPLOYEE TRAINING.....	4
3.3 EMERGENCY EQUIPMENT.....	4
4.0 EMERGENCY RESPONSE PROCEDURES.....	4
4.1 COMPANY AND CONTRACTOR RESPONSIBILITIES.....	4
4.1.1 Contractor Responsibilities.....	4
4.1.2 Company Responsibilities.....	5
4.1.3 Environmental Compliance Department (ECD) Responsibilities.....	6
4.2 SPILL CLEAN-UP PROCEDURES.....	6
4.2.1 Oil/Fuel Spills.....	6
4.2.2 Hazardous Substance Releases.....	7
4.3 DISPOSAL OF CONTAMINATED MATERIALS/SOILS.....	7
4.4 EQUIPMENT CLEANING/STORAGE.....	8
5.0 HOUSEKEEPING PROGRAM.....	8
6.0 SECURITY.....	8
7.0 EXTERNAL FACTORS.....	8
TABLES.....	9
MATERIAL AND WASTE INVENTORY.....	10
Oil/Fuel:.....	10
Commercial Chemicals:.....	10
Hazardous and Non-Hazardous Wastes:.....	10
EMERGENCY RESPONSE AND PERSONAL PROTECTIVE EQUIPMENT.....	11
Spill Response.....	11
Fire Protection.....	11
Personnel Protection.....	11
KEY EMERGENCY CONTACTS.....	12
Company Emergency Contacts.....	12
Contractor Emergency Contact.....	12
Local Authorities.....	12
APPENDIX A: MSDS SHEETS.....	13

1.0 GENERAL DESCRIPTION OF SPCC/PPC PLAN

Texas Eastern Transmission, L.P.-(Company) has prepared a Spill Prevention Control and Countermeasure (SPCC) Plan which incorporates the Preparedness, Prevention, and Contingency (PPC) Plan, as well as emergency provisions. The Company's overall objective is to develop a functional contingency plan that meets all federal, state, and local emergency response programs. This plan is designed to minimize hazards to human health and/or the environment from any unplanned sudden or non-sudden releases of oils, toxic, hazardous, or other polluting materials to the air, soil, surface water or groundwater.

This plan identifies the:

- o Type and quantity of material handled for this project (Table I);
- o Measures taken for spill preparedness and prevention;
- o Emergency response procedures describing the actions that the Company and Contractor personnel will take in response to leaks, spills, or discharges of oil and hazardous wastes and hazardous substances;
- o Designated emergency coordinator (s) and his/her responsibilities;
- o Evacuation plan;
- o Spill incident reporting procedures; and
- o Arrangements with the local police and fire departments, hospitals, and state and local emergency response teams.

2.0 MATERIAL AND WASTE INVENTORY

Table I, Material and Waste Inventory, will be completed by the Contractor prior to construction. This table provides a list of the locations, sources and quantities of chemicals used or stored at the site that have the potential of causing environmental degradation or endangerment of public health and safety through accidental releases. This list includes nutrients, such as fertilizers and sanitary wastes; solid waste, such as scrap metals, masonry products and other construction raw materials and debris; construction chemicals, such as paints, soil additives and acids for cleaning; petroleum products, such as fuels and lubricants; and other materials including concrete wash from mixers, explosives, etc.

Material Safety Data Sheets for all hazardous substances listed in Table I are included in Appendix A. Other potential waste from this site, not included in Table I, would include construction debris, rock and excess spoil.

3.0 SPILL AND LEAK PREVENTION AND PREPAREDNESS

3.1 PREVENTION AND PREPAREDNESS

The Contractor will take the following precautions to prevent a spill from occurring and to be prepared in the event that a spill does occur.

3.1.1 Containers

- X All containers shall be stored on pallets and surrounded with temporary containment. Small cans of gasoline, diesel, solvents, etc., should be stored within the temporary containment when not in use.
- X No incompatible materials shall be stored in the same containment area.
- X Containment for storage areas that will hold more than six 55-gallon drums will include polyethylene (10 mil) lined earthen berms. Smaller areas, storing less than six 55-gallon drums, will use containment as above or a portable manufactured rack with a containment feature.
- X Containment areas shall be capable of containing 110% of the volume of material stored in these areas.
- X All container storage areas shall be inspected daily for leaks and deterioration.
- X Leaking and/or deteriorated containers shall be replaced as soon as the condition is first detected.
- X No storage area shall be unattended for periods longer than one (1) day.

3.1.2 Tanks

- X The contractor shall operate only those tanks for fuel and material storage which meet the approval of the Company. Single wall tanks shall be provided with temporary containment as described in Section 3.1.1 for containers.
- X Self-supporting tanks shall be constructed of carbon steel or other materials compatible with the contents of each tank.
- X All tanks will be elevated a maximum of two (2) feet above grade.
- X All tanks and storage areas shall be inspected daily for leaks and deterioration.
- X Vehicle mounted tanks shall be equipped with flame/spark arrestors on all vents to ensure that self ignition does not occur.
- X Tanks will not be used to store incompatible materials in sequence unless first thoroughly decontaminated.

- X Any tank utilized at different construction locations will be thoroughly decontaminated between locations.

3.1.3 Loading/Unloading Areas

- X Transferring of liquids and refueling shall only occur in predesignated locations at least 100 feet from all waterbodies and wetlands and 200 feet from any water well.

- X All loading/unloading areas will be closely monitored to prevent leaks and spills, and ensure immediate response in the event of a spill.

- X All hose connections shall be inspected for leaks. If leaks should occur, the operation shall cease until the leak is repaired or a containment pan is placed under the leaking connection.

- X Any service vehicle used to transport lubricants and fuel must be equipped with an emergency response kit. At a minimum, this kit must include:

- 10, 48" x 3" oil socks,
- 5, 17" x 17" oil pillows,
- 1, 10" x 4" oil boom,
- 20, 24" x 24" x 3/8" oil mats,
- Garden size, 6 mil, polyethylene bags,
- 10 pair of latex gloves, and
- 1, 55-gallon polyethylene open-head drum.

- X In addition, a smaller chemical response kit shall be available which contains:

- 1 bag of loose chemical pulp,
- 2 to 3, 17" x 17" chemical pillows,
- 2, 48" x 3" chemical socks,
- 5, 18" x 18" x 3/8" adsorbent mats,
- garden size, 6 mil, polyethylene bags,
- 10 pair of latex gloves,
- 1, 30-gallon polyethylene open-head drum, and
- hazardous waste labels.

- X Each refueling vehicle shall have a sufficient number of shovels, brooms, 10 mil polyethylene sheeting, and fire protection equipment to contain a moderate oil/fuel spill.

- X The area beneath loading/unloading location shall be inspected for spills before and after each use.

3.1.4 Concrete Coating Areas for Field Joints

- X Concrete coating of field joints for road, rail, waterbody, and wetland crossings shall be performed at least 100 feet from the edge of all waterbodies.

- X Where topographic conditions and/or work space limitations necessitate application of concrete coating within 100 feet of a waterbody, the following containment measures shall be performed:

- a. Concrete coating materials shall be temporarily stored in an earthen berm with polyethylene underling of sufficient mil thickness, or in a portable containment tray constructed of steel plate measuring a minimum of four (4) feet square by one (1) foot deep.
- b. Portable-mechanical mixing equipment, if required, shall be operated within a containment area constructed of temporary earthen berms and polyethylene underling of sufficient mil thickness.
- c. Manual mixing of concrete materials in a portable container (such as a 55 gallon drum cut in half, or equivalent) shall be performed within an earthen berm with polyethylene underling of sufficient mil thickness, or within a portable containment tray constructed of steel plate, measuring a minimum of four (4) feet square by one (1) foot deep.

3.2 EMPLOYEE TRAINING

All personnel involved in the construction of the proposed facilities will be aware of the SPCC/PPC Plan. Training briefings will be conducted by the Contractor Superintendent and the Company Chief Inspector on the job site.

3.3 EMERGENCY EQUIPMENT

The construction site will have adequate manpower and equipment necessary to divert any spill from reaching water bodies and wetland areas. Emergency equipment shall include, but is not limited to shovels, backhoes, dozers, front-end loaders, oil absorbent booms, pillows, socks and/or mats and chemical absorbent pulp, pillows, socks and/or mats. A list of emergency response equipment and personal protective equipment is provided in Table II.

4.0 EMERGENCY RESPONSE PROCEDURES

This section provides a description of emergency response procedures to be performed to address spills that occur during this construction project.

4.1 COMPANY AND CONTRACTOR RESPONSIBILITIES

The Contractor and Company on-site personnel have responsibilities for spill prevention, control and countermeasures. The Company's Environmental Compliance Department (ECD) will determine if state and/or federal notifications are required and make notification accordingly.

Both the Company and the Contractor will designate an Emergency Coordinator (EC) for the site. The Contractor Superintendent will act as the Emergency Coordinator for the Contractor. The Chief Inspector will act as the Emergency Coordinator for the Company. The responsibilities of the Emergency Coordinators will be as follows:

4.1.1 Contractor Responsibilities

- X The Contractor Superintendent will act as the Contractor's EC for the site.
- X The Contractor is responsible for coordinating the response to all spills which occur as a result of their operations, except for spills of pipeline liquids, which will be coordinated by the Company.

X All spills (including a sheen created on water) must be reported to the Company's EC.

X The Contractor shall supply necessary manpower and equipment to address releases resulting from their operations.

X In the event of a spill, the Contractor Superintendent shall:

- a. Immediately notify the Company Chief Inspector of any spills.
- b. Direct remediation efforts to contain and control releases in accordance with this plan.
- c. Document the remedial effort, including taking photographs if possible.
- d. Coordinate cleaning and disposal activities as described in Sections 4.2, 4.3 and 4.4.

4.1.2 Company Responsibilities

X The Company's Chief Inspector will act as the Company's EC for the site.

X The Company will be responsible for coordinating the clean-up of all spills of pipeline liquids.

X The Company's EC will be responsible for notifying appropriate local agencies of releases.

X The Company will provide supporting personnel and equipment to address releases.

X In the event of a spill the Chief Inspector shall:

- a. Determine the source, character, amount and extent of the release or incident.
- b. Assess the potential hazards to the site, environment, and neighboring community due to the incident, including possible toxic gases, hazardous runoff, etc.
- c. Sound the alarm and /or evacuation command to alert personnel, when required.
- d. If necessary, notify the local fire department, law enforcement authority, or health authority as appropriate. The following information should be provided:
 - (1) name of the caller and callback number;
 - (2) the exact location and nature of the incident;
 - (3) the extent of personnel injuries and damage;
 - (4) the extent of release;
 - (5) the material involved, and appropriate safety information.
- e. Notify the ECD immediately at 1-800-735-6364 (24 hr. hotline) and the Company Area Field Construction Office listed in Table III for releases of:
 - (1) one pound or more of a solid material;
 - (2) five gallons or more of a liquid material;
 - (3) any spill to water, including any sheen on water.
- f. Contact the Division Area Office for any spill of pipeline liquids.

- g. If necessary, contact outside remediation services, in coordination with the ECD, to assist with clean-up.
- h. Commit manpower and equipment for minor incidents which can be reasonably corrected by Company and Contractor personnel.
- i. Complete Waste Removal Storage and Disposal Record Form (WRSDR Forms to be obtained from the ECD) to track waste generated during this project.
- j. Complete and distribute a "Field Spill Report" (Company Form) and transmit the original copy of the report to the ECD.

4.1.3 Environmental Compliance Department (ECD) Responsibilities

- X Upon receiving spill information from the Chief Inspector, determine if the release requires reporting to regulatory agencies.
- X If the incident requires reporting, notify the appropriate regulatory agencies. This includes both verbal and written reports.
- X Contact outside remediation services, in coordination with the Company's Chief Inspector, to assist with incidents which require additional resources.
- X Arrange for the transport of hazardous waste and waste containing PCBs greater than 1 ppm to an approved disposal facility within the applicable federal and state regulatory requirements.

4.2 SPILL CLEAN-UP PROCEDURES

The following identifies the clean-up and control measures to be utilized by the contractor in the event of a spill of oil, fuel or a hazardous substance on the construction right-of-way.

4.2.1 Oil/Fuel Spills

- X Small spills and leaks must be remediated as soon as feasible. Use adsorbent pads wherever possible to reduce the amount of contaminated articles.
- X Restrict the spill by stopping or diverting flow to the oil/fuel tank.
- X If the release exceeds the containment system capacity, immediately construct additional containment using sandbags or fill material. Every effort must be made to prevent the seepage of oil into soils and waterways.
- X If a release occurs into a facility drain or nearby stream, immediately pump any floating layer into drums. For high velocity streams, place oil booms or hay bales between the release area and the site boundary. As soon as possible, excavate contaminated soils and sediments.
- X After all recoverable oil has been collected and drummed, place contaminated soils and articles in containers.

- X For larger quantities of soils, construct temporary waste piles using plastic liners placing the contaminated soils on top of the plastic and covered by plastic. Plastic-lined roll-off bins should be leased for storing this material as soon as feasible.
- X Label the drum following the procedures outlined in the Company's Environmental Procedures Manual.
- X Move drum to secure staging or storage area.
- X Document and report activities to the ECD as soon as feasible.

4.2.2 Hazardous Substance Releases

- X Identify the material and quantity released.
- X Block off drains and containment areas to limit the extent of the spill. Never wash down a spill with water.
- X Ensure that Personal Protective Equipment and containers are compatible with the substance.
- X Collect and reclaim as much of the spill as possible using a hand pump or similar device. Containerize contaminated soils in appropriate DOT container in accordance with the Company's Environmental Procedures Manual. Never place incompatible materials in the same drum.
- X Sample the substance for analysis and waste profiling, according to instructions from the ECD.
- X Decontaminate all equipment in a contained area. Collect and containerize decontamination fluids.
- X Label the drum following the procedures outlined in the Company's Environmental Procedures Manual.
- X Move the drum to secure staging or storage area.
- X Document and report activities to the ECD as soon as feasible.

4.3 DISPOSAL OF CONTAMINATED MATERIALS/SOILS

- X The Contractor shall work with the ECD to characterize waste generated during this project. All wastes generated as a result of spill response activities will be analyzed to determine if hazardous, or if PCBs are greater than 1 ppm. Knowledge of the contaminant(s) may be applied to classify the waste/spill materials as determined by the ECD.
- X The Contractor is responsible for the proper disposal of wastes generated during this project that is determined by the ECD to be non-hazardous and to contain PCBs less than 1 ppm. This includes obtaining applicable authorizations and registrations for waste disposal.

- X The ECD is responsible for the proper disposal of hazardous wastes and PCB wastes containing PCBs greater than 1 ppm generated during this project, including obtaining applicable EPA Identification Numbers.
- X Hazardous wastes and waste containing PCBs shall be stored in a secured location (i.e. fenced, locked, etc.) until such time as this material is transported off-site. At no time will hazardous waste be stored for a period exceeding 90 days nor a waste with PCBs greater than 50 ppm be stored for a period exceeding 30 days.

4.4 EQUIPMENT CLEANING/STORAGE

- X Upon completion of remedial activities, the Contractor shall be responsible for decontaminating emergency response equipment.
- X The Contractor shall be responsible for replacing all spent emergency response equipment prior to resuming construction activities.
- X Reusable personal protective equipment shall be tested and inventoried by the Contractor prior to being placed back into service.

5.0 HOUSEKEEPING PROGRAM

The construction area will be maintained in a neat and orderly manner. Solid wastes, such as food wrappings, cigarette butts and packets, styrofoam cups and plates, and similar wastes will be disposed of off-site, not in the construction hole. Any spills or leaks will be cleaned up as expeditiously as possible. Trash will be routinely collected for off-site disposal. Container storage areas will be maintained in a neat and orderly manner.

6.0 SECURITY

Hazardous wastes and waste containing PCBs greater than 50 ppm will be stored in a secured location (i.e. fenced, locked, etc.). Temporary fencing will be installed around fuel storage areas to prevent tampering by unauthorized personnel during non-operational hours.

7.0 EXTERNAL FACTORS

There will be no direct effect on the construction site due to a power outage or snowstorm. In the event of a flood or strike, all tanks and containers would be removed from the right-of-way and placed in a secure area.

TABLES

**TABLE I
MATERIAL AND WASTE INVENTORY**

Oil/Fuel:

Quantity (Gallons)	Storage Location	Reportable Quantity

Commercial Chemicals:

Quantity (Gallons)	Storage Location	Reportable Quantity

Hazardous and Non-Hazardous Wastes:

Quantity (Gallons)	Storage Location	Reportable Quantity

THIS TABLE TO BE COMPLETED BY CONTRACTOR

**TABLE II
EMERGENCY RESPONSE AND PERSONAL PROTECTIVE EQUIPMENT**

Spill Response:

Equipment	Quantity	Location

Fire Protection:

Equipment	Quantity	Location

Personnel Protection:

Equipment	Quantity	Location

THIS TABLE TO BE COMPLETED BY CONTRACTOR

**TABLE III
KEY EMERGENCY CONTACTS**

The list of key personnel who will be contacted in the event of an emergency or spill incident include the following:

I. Company Emergency Contacts

1. Emergency Coordinator
2. Field Construction Office
3. Environmental Compliance Department (ECD)
Emergency 24-hour Hotline: 1-800-735-6364
4. Area Office (in case of pipeline liquid spills)

II. Contractor Emergency Contact

1. Contractor Emergency Coordinator

Not available at this time. Information to be supplied prior to construction.

III. Local Authorities

Department

Number

State Police

Local Police

Local Fire Department

Hospital

Ambulance

THIS TABLE TO BE COMPLETED BY COMPANY
--

APPENDIX A

MSDS SHEETS