Appendix D – Entergy's Erosion and Sediment Control Measures Construction Specifications

Page intentionally blank

Entergy

ENTERGY TRANSMISSION STANDARDS
ENVIRONMENT AND VEGETATION
CONSTRUCTION

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**
Prepared By: H. Steve Kimbrough	**Approved By:** Ronald L. Rowland Manager, Transmission Design	

Table of Contents

Rev. No	Revisions	Date	Rev. by	App. by
0	New issue / Original	Dec-04	HSK	RLR

Title:	Erosion and Sediment Control Measures Construction Specification	Standard No.: ES0101, Rev. 00	Effective Date: Dec-04

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

1.0 Introduction

1.1 Purpose

The purpose of this specification is to provide contractors with requirements in addition to those of the contract task order or stand-alone contract. These specifications are intended to provide contractors and company crews with Entergy's minimum technical requirements for the installation of erosion and sediment control measures on all transmission lines (69 kV and above) and on all substations. The standard is worded to be used as either instructions for Entergy personnel or as a part of a contract. Where the standard is to become a part of a contract, the other components of the contract shall be prepared in accordance with the **Transmission Line** or **Substation** guidelines for preparation of construction packages. Where this specification conflicts with drawings, this written specification has superiority.

1.2 Scope

1.2.1 These specifications apply to both Transmission Line projects and Substation projects for the installation of all erosion and sedimentation control measures, usually as part of site preparation or a part of the Storm Water Pollution Prevention Plan.

1.2.2 The accompanying design drawings and the "Request for Proposal" will indicate the type of control measures to be used.

2.0 Definitions

Entergy Engineer - Shall represent the Entergy employee who has responsibility for the project construction. The Entergy engineer may delegate some responsibilities to the project inspector, when appropriate.

Entergy - Also called Owner in some contract documents. Shall represent the appropriate Entergy Operating Company. See the General Services Agreement or Stand-Alone Contract to be signed by a duly authorized representative of Entergy and the Contractor.

Contractor - Shall represent the General Contractor and all subcontractors contracted for work on the project. See the above mentioned General Services Agreement or Stand-Alone Contract. This term shall also refer to Entergy construction crews when work is being performed in house.

3.0 Reference Standards

3.1 Industry Standards.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4439 (1997) Standard Terminology for Geosynthetics

ASTM D 4491 (1996) Water Permeability of Geotextiles by Permittivity

ASTM D 4533 (1991; R 1996) Trapezoid Tearing Strength of Geotextiles

ASTM D 4632 (1991; R 1996)) Grab Breaking Load and Elongation of Geotextiles

ASTM D 4751 (1995) Determining Apparent Opening Size of a Geotextile

ASTM D 4873 (1995) Identification, Storage, and Handling of Geosynthetic Rolls

UFGS-01356 (August 1996) U. S. Army Corps of Engineers, Uniform Facilities Guide Specifications 01356A, (Replacing CEGS of same number)

3.2 Transmission Line Standards

Refer to construction specifications numbered in the TO01—series. Construction packages for each project will contain copies and an index of all applicable specifications. TO0102, Technical Guidelines for Construction Specifications, should be part of every stand-alone contract or General Services Agreement.

3.3 Substation Standards

Refer to other substation contract documents and drawings in the construction package.

3.4 Drawings

ESI Dwg. No.	Title
TNSW01A0	Straw Bale Check Dam
TNSW02A0	Slope Installation
TNSW03A0	Dissipator
TNSW04A0	Riprap Slope Protection
TNSW05A0	Rock Check Dam
TNSW06A0	Straw Bale Dike
TNSW07A0	Silt Fence
TNSW08A0	Temporary Diversion Dike
TNSW09A0	Typical Stream Crossing
TNSW10A0	Typical Cross Slope Protection
TNSW11A0	Typical Down-Slope Protection
TNSW12A0	Typical Wet Weather Conveyance
TNSW13A0	Rolling Dip and Waterbar

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

4.0 Safety

Workers shall have a weekly safety briefing to caution them of working around energized facilities, operating equipment on steep slopes and near facilities that might be damaged (guys, anchors, towers, poles, underground utilities, etc.). Workers entering Entergy Substations must notify the Entergy dispatcher when they enter and leave unless other workers have already made notification. Workers must wear personal protective gear while on Entergy right of ways and properties. If the Contractor does not have a published safety manual, his workers must comply with the Entergy Safety Manual.

5.0 General

Extracts of Corps of Engineer Unified Facilities Guide Specification UFGS-01356A, dated August 1996, are incorporated in this standard and represent the Entergy standard for installation for erosion and control measures. Corrections and revisions to the extracts and paragraph numbering was changed to conform to Entergy standard practices. The term "Owner" has been replaced with "Entergy".

5.1 Technical Terms and Conditions

The Contractor shall implement the storm water pollution prevention measures specified in this section in a manner which will meet the requirements of the Stormwater Pollution Prevention Plan (SWPPP) and the National Pollution Discharge Elimination System (NPDES) permit issued by the state in which the project is located. Any control measure that the Contractor recognizes a need for, that is not described in the SWPPP, shall be brought to the attention of the Entergy Engineer for consideration and approval before doing any construction on said control measure. Some control measures are inappropriate in some cases and may need confirmation from the consulting expert that prepared the SWPPP. Subject to the General Services Agreement or Stand-Alone Contract and any approved Change orders, the precedence of Control Measures documents is as follows:

a) National Pollution Discharge Elimination System.
b) Stormwater Pollution Prevention Plan.
c) This written specification.
d) The attached drawings.

5.1.1 Submittals

Entergy approval is required for submittals. The following shall be submitted for approval:

a) Mill Certificates or Affidavits for geotextiles.

5.1.2 Stabilization Practices

The stabilization practices to be implemented shall include temporary seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, erosion control mats, protection of trees, preservation of mature vegetation, etc., as indicated in the SWPPP or as directed by Entergy.

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

The Contractor shall record and report the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs 5.1.2.1 (Unsuitable Conditions) and 5.1.2.2 (No Activity for Less Than 21 Days), stabilization practices shall be initiated as soon as practicable, but no more than 14 days later, in any portion of the site where construction activities have temporarily or permanently ceased.

5.1.2.1 Unsuitable Conditions

Where the initiation of stabilization measures, by the fourteenth day after construction activity temporarily or permanently ceases, is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

5.1.2.2 No Activity for Less Than 21 Days

Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

5.1.3 Structural Practices

The SWPPP requirements for sediment traps, silt fences, or equivalent sediment controls for all sideslope and downslope boundaries of the construction area may provide for an alternative consisting of a sediment basin providing storage for a predetermined capacity, depending upon the size of the site. Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices. Location and details of installation and construction are shown on the drawings included in the SWPPP. Additional practices shall be implemented as required by field observation to prevent erosion and off-site transport of sediments.

5.1.3.1 Silt Fences

This item consists of placing and securing a geotextile fabric to an existing support system or constructing a self-supporting geotextile fence where shown on the plans or as directed by Entergy for the purposes of impeding the flow of water carrying silt toward existing streams and/or across adjacent property; redirecting the flow of silt laden water to a sediment basin; and/or routing clean water through the construction area. The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment before or immediately after completing each phase of work (e.g. clearing and grubbing, excavation, embankment, and grading) where erosion would occur in the form of sheet and rill erosion. Silt fences shall also be installed

around spoil piles, haul routes and staging areas as required to prevent erosion and sediment transport from the site. Silt fences shall be installed in the locations indicated on the drawings and additionally as required by field observations. Final removal of silt fence barriers shall be upon approval by Entergy. Generally, installation may be at the following locations:

a. Along the downhill perimeter edge of all areas disturbed.

b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc., that traverse disturbed areas.

c. Along the toe of all cut slopes and fill slopes of the construction areas. Across disturbed slopes. Rows shall be spaced as required in the SWPPP drawings, details and text. Silt fence shall not be installed in or below slopes greater than 6:1 without wire mash support nor within channels or conveyances.

5.1.3.2 Straw Bales

The Contractor shall provide bales of straw as a temporary structural practice to minimize erosion and sediment runoff as indicated. Typical uses of straw bales include, but is not limited to, straw bale dikes (on slopes) and straw bale check dams (in drainage channels) as described in the SWPPP details and text. Bales shall be properly placed to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge and drain, bales shall be placed as work progresses, bales shall be removed/replaced/relocated as needed for work to progress in the drainage area). Areas where straw bales are to be used are shown on the drawings or described in the SWPPP. Final removal of straw bale barriers shall be upon approval by Entergy. Rows of bales of straw shall generally be provided as follows unless directed otherwise by Entergy:

a. Along the downhill perimeter edge of areas disturbed.

b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc., that traverse disturbed areas.

c. Along the toe of cut slopes and fill slopes of the construction areas.

d. Perpendicular to the flow in the bottom of existing drainage ditches, channels, swales, etc., that traverse disturbed areas or carry runoff from disturbed areas. Rows shall be spaced as required in the SWPPP drawings, details, and text.

e. Perpendicular to the flow in the bottom of new drainage ditches, channels, and swales. Rows shall be spaced as required in the SWPPP drawings, details and text.

f. At the entrance to culverts that receive runoff from disturbed areas.

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

5.1.3.3 Diversion Dikes

Diversion dikes shall have a maximum channel slope of 2 percent and shall be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 18 inches. The minimum base width shall be 6 feet and the minimum top width shall be 2 feet. The Contractor shall ensure that the diversion dikes are not damaged by construction operations or traffic. Diversion dikes shall be located as required by the SWPPP drawings, details, and text.

5.1.3.4 Diversion Ditch

Where shown on the plans or as directed by Entergy, this item shall consist of excavation or grading for diversion ditches to control soil erosion at selected locations. Diversion ditches will generally be excavated above the backslopes of cuts, along the top of embankments, or across foreslopes and backslopes to divert the run-off to natural drainage channels, downslope protection locations, or sediment basins. Sediment laden water shall not be discharged directly into natural drainage channels.

5.1.3.5 Erosion Control Matting

This item shall consist of the placement of temporary and permanent erosion control matting at locations shown on the plans or as directed by Entergy. It will generally be used in diversion ditches and at the ends of berms, or at other location where the flow of water is concentrated. Areas receiving matting shall be shaped, limed, fertilized and seeded, when required, before placement of the matting.

5.1.3.6 Baled Straw Check Dams

This item shall consist of preparing and placing baled straw in ditches to impede run-off velocity of water and to prevent scouring and eroding of soil. Check dams shall be constructed at the locations shown on the plans or as directed by Entergy.

5.1.3.7 Rock Check Dams

This item shall consist of constructing small dams across swales or ditches to slow concentrated storm water runoff to a non-erosive velocity. Rock check dams shall be constructed at locations shown on the plans or as directed by Entergy.

5.1.3.8 Sandbag Check Dams

Where shown on the plans or as directed by the Engineer, this item shall consist of preparing and placing sandbags in ditches to impede run-off velocity of water and to prevent scouring and eroding of soil until permanent erosion control items can be placed.

5.1.3.9 Sediment Basin

This item shall consist of excavating and grading a storage area to detain sediment-laden runoff from disturbed areas long enough to allow sediment to settle out. Sediment basins shall be placed at locations shown on the plans or as directed by the Engineer.

5.1.3.10 Dumped Riprap

This item shall consist of a protective layer of riprap of the type specified, placed according to these specifications, to the line, grade, thickness and location shown on the plans or as directed by the Engineer.

6.0 Products

6.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439 and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. A mill certificate or affidavit shall be provided attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers. The Contractor shall submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric. Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE		
PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile Elongation (%)	ASTM D 4632	100 lbs. min. 30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

6.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction shall have a minimum cross section of 2 inches by 2 inches. Steel posts (standard "U" or "T" section) utilized for silt fence construction shall have a minimum weight of 1.33 pounds per linear foot.

6.3 Straw Bales

The straw in the bales shall be stalks from oats, wheat, rye, barley, rice or from grasses such as bahiagrass, bermuda, etc., furnished in air dry condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be string-tied. The Contractor shall use wooden stakes to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have minimum dimensions of 2 inches x 2 inches in cross section and shall

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) having a minimum weight of 1.33 pounds per linear foot or steel rebar having a minimum diameter of 5/8" may be used in lieu of wooden posts, with prior approval of Entergy.

6.4 Temporary Erosion Control Matting

6.4.1 The matting shall be as shown on the plans and/or as specified in the project specifications. The type of matting used in a particular area shall be at the option of the Contractor, except as specified in the SWPPP or otherwise directed by Entergy.

6.4.2 The matting shall be provided as follows, unless approved otherwise by Entergy:

a. Straw matting with single netting shall be Contech Ero-Mat, North American Green S75, or American Excelsior Company Premier Straw Blanket (single net).
b. Straw matting with double netting shall be Contech High Velocity Ero-Mat, North American Green S150, or American Excelsior Company Premier Straw Blanket (double netting).
c. Wood excelsior matting with single netting shall be American Excelsior Curlex I or Contech Standard Excelsior Matting.
d. Wood Excelsior matting with double netting shall be American Excelsior Curlex II or Contech Standard Plus Excelsior Matting.
e. Non-organic open weave temporary erosion control matting shall be Contech C-Jute or approved alternate.

6.5 Rock Check Dams

Rock for rock check dams shall be hard, durable, crushed stone aggregate as manufactured by local quarries ranging in size from 1-1/2" minimum to 6" maximum. It shall not contain more than 5% by weight of shale, slate, or other deleterious matter. The stone shall be uniformly graded and the amount passing the #200 sieve shall be not more than 10% by weight. Rock having a different gradation may be used when determined by Entergy to be suitable for the purpose intended.

6.6 Sandbag Check Dams

Sand for sandbags shall consist of a sandy type soil or clean sand that meets the approval of Entergy. Bags for sand shall be of tightly woven burlap or other material that is sufficiently durable to remain intact for the time intended.

6.7 Slope Drains

Pipe for slope drains shall have a 12" minimum diameter and shall comply with Type C corrugated polyethylene pipe complying with AASHTO M 294. Polyethylene pipe shall have a corrugated outer shell with an essentially smooth wall waterway. Couplings and fittings or recommended by the pipe manufacturer shall be used. Used pipe meeting these requirements may be used when determined by Entergy to be suitable for the purpose

intended.

6.8 Riprap

6.8.1 Dumped riprap shall be reasonably free of fines and reasonably well graded between the maximum and minimum rock sizes so as to produce a minimum of voids. In general, the maximum piece size shall not be greater than 18" in any dimension and approximately 50% of the material shall consist of pieces weighing 35 pounds or more.

6.8.2 Broken concrete conforming to the above requirements may be used in lieu of dumped riprap when specified on the plans or approved by Entergy. Broken concrete shall be free of protrusions of reinforcing steel.

6.9 Geotextile for Riprap Underlayment

A synthetic fiber geotextile fabric shall be used as a filter blanket under dumped riprap. Fabric shall be Contech C80NW or approved equal.

6.10 Strings

All strings on bales of straw and hay and all string used for holding mats or mulch in place shall be of synthetic fibers that will endure at least 18 months of ultraviolet radiation before breaking down.

6.11 Tie Wire

Any tie wire used in construction of the control measures shall be soft drawn iron wire with no protective coating, so as to allow rapid deterioration.

7.0 Installation

7.1 Silt Fences

Silt fences shall be placed on contour. Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post with a minimum 6-inch overlap and securely sealed. A trench shall be excavated approximately 4 inches wide and 6 inches deep on the upslope side of the location of the silt fence. The 4-inch by 6-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by Entergy.

7.2 Straw Bales

Straw bales for check dams shall be placed in a single row with the center or lowest bale placed upstream against and overlapping the two adjacent bales to provide a lower, reinforced spillway. Straw bales for dikes shall be placed in a single row lengthwise on the contour. Ends of adjacent bales shall tightly abut one another. Straw bales shall be installed so that

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier. Loose straw shall be scattered over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake, steel post, or rebar in each bale shall be driven toward the previously laid bale to force the bales together. Stakes, steel posts, or rebars shall be driven a minimum 18 inches deep into the ground to securely anchor the bales.

7.3 Erosion Control Matting

7.3.1 The matting shall be applied after the area has been properly shaped, limed, fertilized and seeded as specified in the SWPPP.

7.3.2 The materials shall be applied according to the manufacturer's recommendations. Size and gauge of staples, staple spacing, overlap of materials, direction of matting, etc., shall follow the manufacturer's instructions for installation for the site conditions. The Contractor shall supply Entergy with manufacturer's guidelines before installation.

7.3.3 The Contractor shall maintain the matting areas until all work on the entire project has been completed and accepted.

7.3.4 Additional work and materials required because of loss through erosion will be paid for under the pertinent contract items. Additional work and materials required due to the Contractor's negligence in properly installing or maintaining the completed work shall be accomplished at no extra cost to Entergy.

7.4 Rock Check Dams

Rock ditch checks shall be constructed as shown in the SWPPP or as directed by Entergy. The overflow area in the center of the check dam shall be constructed lower than the sides.

7.5 Baled Straw Check Dams

Bales for baled straw check dams shall be installed so that the bindings are oriented around the sides of the bales and not along the tops and bottoms. The bales shall be keyed into the ground a minimum of 4" and securely held in place by stakes, tie wire, and/or other methods that will prevent floating and/or displacement. No gaps shall be left between bales. The number of bales required and the specific arrangement of them will vary with the conditions at each site. Bales that become displaced shall be retrieved and re-installed, if suitable. Bales that become unserviceable in their original locations shall be removed and replaced.

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

7.6 Sandbag Check Dams

7.6.1 Sandbags for sandbag check dams shall be filled approximately 3/4 full, shall weigh a minimum of 55 pounds, and shall be securely closed.

7.6.2 Sandbags shall be placed in the ditches at locations shown in the SWPPP or as directed by Entergy. They shall be laid in horizontal courses and successive courses shall break joints with preceding ones. The sacks shall be rammed and packed against each other and tamped on the surface to secure a uniform surface. The number of bags required and the arrangement at each installation will vary with on-site conditions.

7.7 Slope Drains

Slope drains shall be constructed as shown on the plans or as directed by Entergy. Pipe for slope drains shall be installed down the slope as shown in the SWPPP and securely held in place by anchor stakes or other devices as approved by Entergy.

7.8 Diversion Ditches

Excavation and grading for diversion ditches shall be according to the dimensions and at the locations shown in the SWPPP or as directed by Entergy.

7.9 Sediment Basins

Sediment basins shall be constructed to the dimensions shown in the SWPPP or as directed by Entergy. The soil used in basin construction shall be amended, compacted, and stabilized. Dumped riprap and geotextile for a sediment basin outlet shall be placed on the spillway as shown on the plans.

7.10 Dumped Riprap

7.10.1 Prior to placing filter blanket and riprap, the slopes shall be shaped as shown on the plans.

7.10.2 Geotextile fabric used for filter fabric shall be placed directly on the prepared surface. Fabric sections may be placed vertically or horizontally on the slope. Adjacent fabric sections shall be joined by overlapping a minimum of 2' at the edges and pinning the overlapped strip with U-shaped wire pins, single shaped steel pins with metal disc heads, or similar fasteners. The fasteners shall be 6" or more in length and shall hold the fabric firmly in place. Fasteners shall be inserted through both strips of overlapped fabric at intervals of approximately 4' along the overlap. Additional pins shall be installed as necessary to prevent displacement of the fabric. Fabric shall be overlapped in the direction of water flow. The fabric shall be turned down and buried approximately 12" deep at the exterior limits. No construction equipment will be permitted directly on the fabric.

Title: **Erosion and Sediment Control Measures Construction Specification**	Standard No.: **ES0101, Rev. 00**	Effective Date: **Dec-04**

7.10.3 Stone or broken concrete for dumped riprap shall be placed in such a manner as to produce a reasonably well graded mass of rock with the minimum practicable percentage of voids and shall be constructed to the lines and grades shown on the plans or as directed by the Engineer. Material shall be placed in such a manner as to avoid displacing the underlying material. The larger pieces shall be well distributed throughout the entire mass and the finished riprap shall be free from objectionable pockets of small or large pieces. Hand placing, to a limited extent, may be required, but only to the extent necessary to secure the results specified above. Placing riprap by dumping into chutes or by similar methods likely to cause segregation will not be permitted. Riprap stone shall not be deposited in a manner that will cause damage to the filter blanket. Any damage to fabric during placement of riprap shall be corrected by the Contractor at no cost to Entergy prior to proceeding with the work. Damaged fabric shall be repaired by placing a piece of fabric large enough to cover the damaged area and overlapping and pinning in accordance with this section.

7.11 Sediment Removal and Disposal

Sediment collected in the various erosion and sediment control devices shall be removed when needed and as directed by Entergy. Sediment basins and ditch checks shall have sediment removed when their capacity is reduced by half. Silt fences shall have sediment removed when a deposit covers 1/3 the height of the structure. Sediment removed shall be deposited and stabilized according to the requirements of Entergy. Sediment will normally be incorporated back into the embankment construction or as directed by Entergy.

8.0 Inspections

8.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls and areas where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month.

8.2 Inspections Details

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

8.3 Inspection Reports

For each inspection conducted, the Contractor shall prepare a report summarizing the scope

of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to Entergy within 24 hours of the inspection. A copy of the inspection report shall be maintained on the job site.

9.0 Not Used

10.0 Not Used

11.0 Responsibilities

11.1 Interpretation

Interpretation of this standard is the responsibility of the author and/or reviewers

11.2 Deviation

The Manager of Transmission Design and the Manager of Transmission Construction are responsible for assuring that transmission line facilities are installed in accordance with this standard. Deviations from this standard may be made with the consent of the Manager of Transmission Design and the Manager of Transmission Construction or an approved agent thereof. Any deviations granted shall be reported to the Manager of Transmission Design and the Manager of Design Services for consideration for inclusion in the standard. No other employee is granted independent authority to grant deviations.

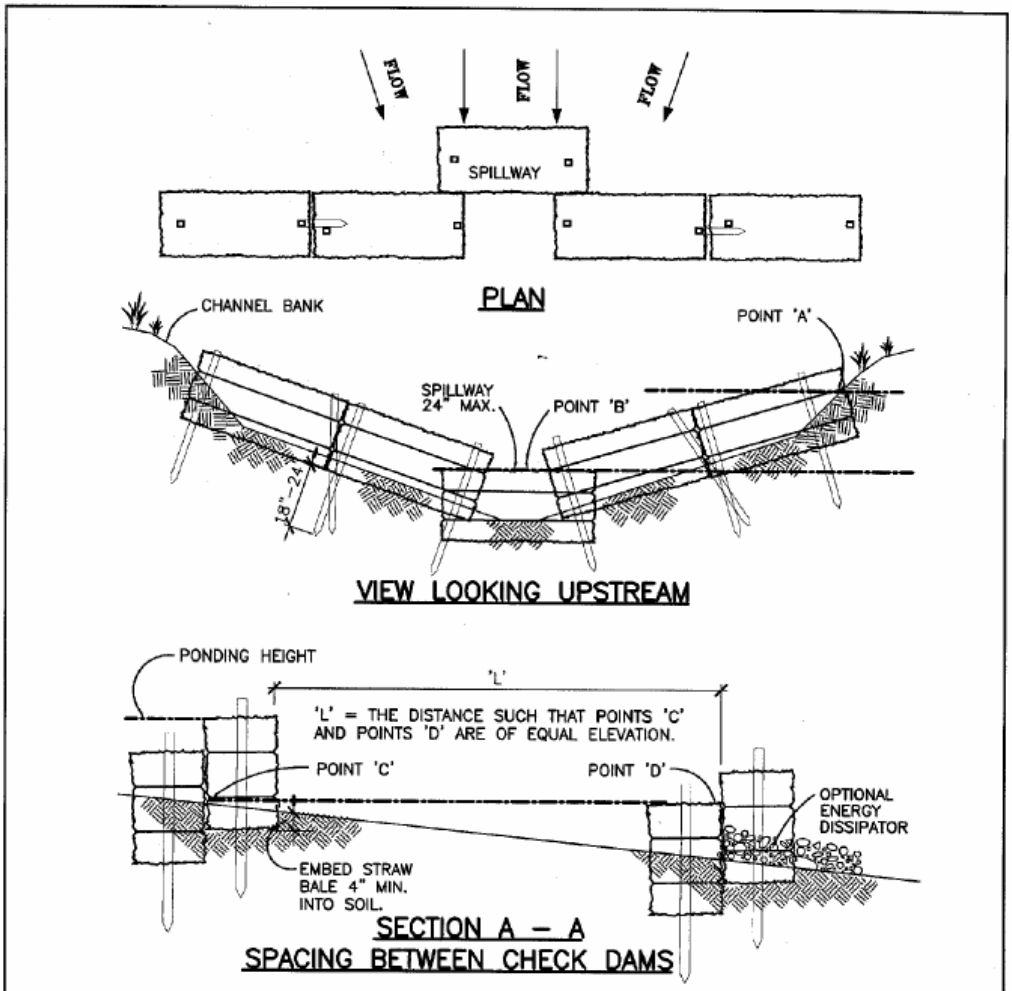
12.0 Acknowledgments

Robert Durham was helpful in providing specifications and drawings from previous projects.

13.0 Attachments

1) Straw Bale Check Dam.
2) Slope Installation.
3) Dissipator.
4) Riprap Slope Protection.
5) Rock Check Dam.
6) Straw Bale Dike.
7) Silt Fence.
8) Temporary Diversion Dike.
9) Typical Stream Crossing.
10) Typical Cross Slope Protection.
11) Typical Down Slope Protection.
12) Typical Wet Weather Conveyance.
13) Rolling Dip and Waterbar.
14) Inspection Report, Erosion and Sediment Control Measures.

Attachment 1
Straw Bale Check Dam



NOTES:

1. EMBED BALES 4" INTO THE SOIL AND 'KEY' BALES INTO THE CHANNEL BANKS.
2. POINT 'A' MUST BE HIGHER THAN POINT 'B'. (SPILLWAY HEIGHT)
3. PLACE BALES PERPENDICULAR TO THE FLOW WITH ENDS TIGHTLY ABUTTING. USE STRAW, ROCKS OR FILTER FABRIC TO FILL ANY GAPS AND TAMP BACKFILL MATERIAL TO PREVENT EROSION OR FLOW AROUND THE BALES.
4. SPILLWAY HEIGHT SHALL NOT EXCEED 24".
5. INSPECT AFTER EACH SIGNIFICANT STORM, MAINTAIN AND REPAIR PROMPTLY.

NO.	DATE	REVISION	BY	CHK	APPR
0	10-11-04	CREATED PER FIELD NOTES	TWF	SK	

ENTERGY SERVICES, INC.

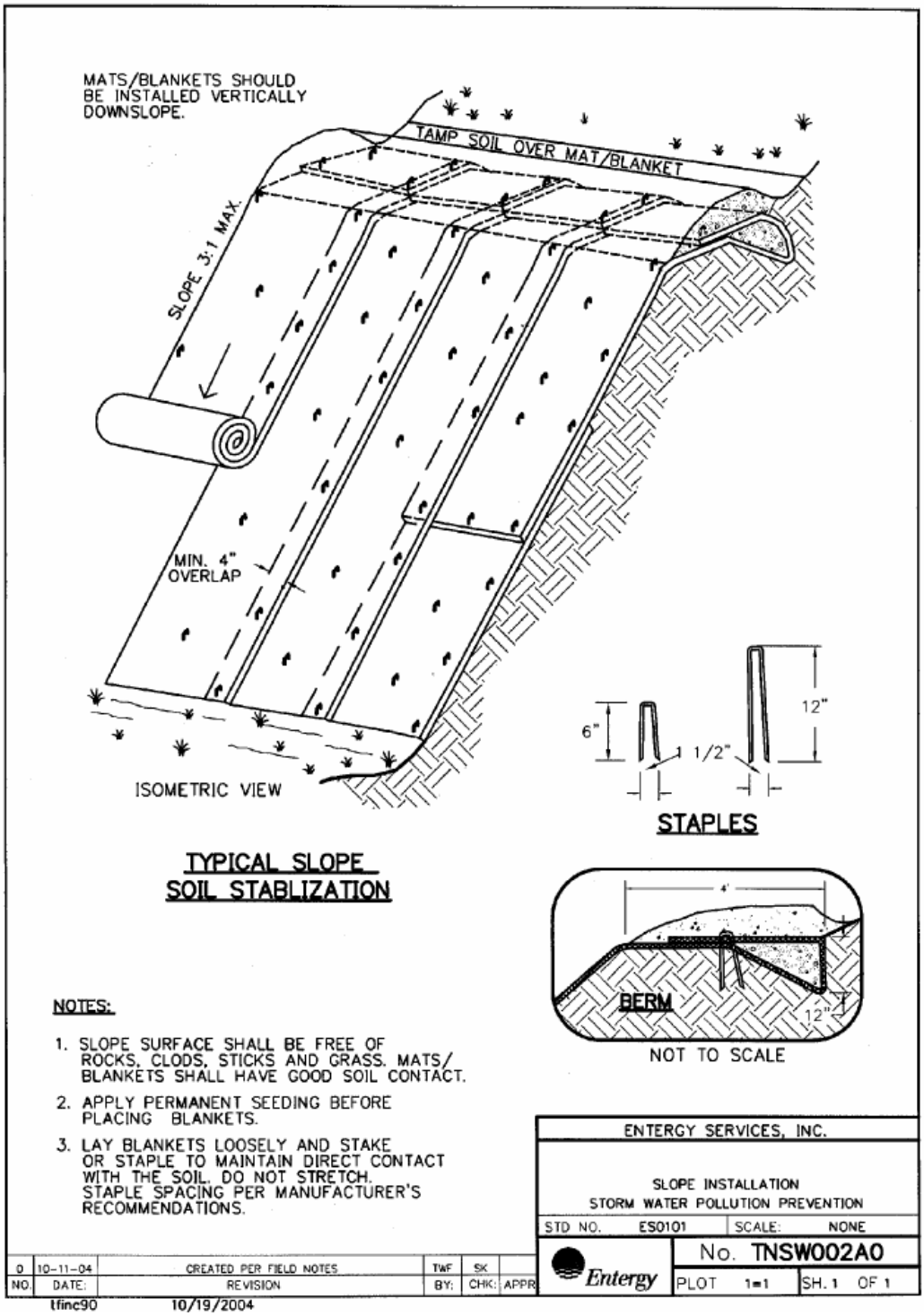
STRAW BALE CHECK DAM
STORM WATER POLLUTION PREVENTION

STD NO. ES0101	SCALE: NONE
Entergy	No. TNSW001A0
	PLOT 1=1 SH. 1 OF 1

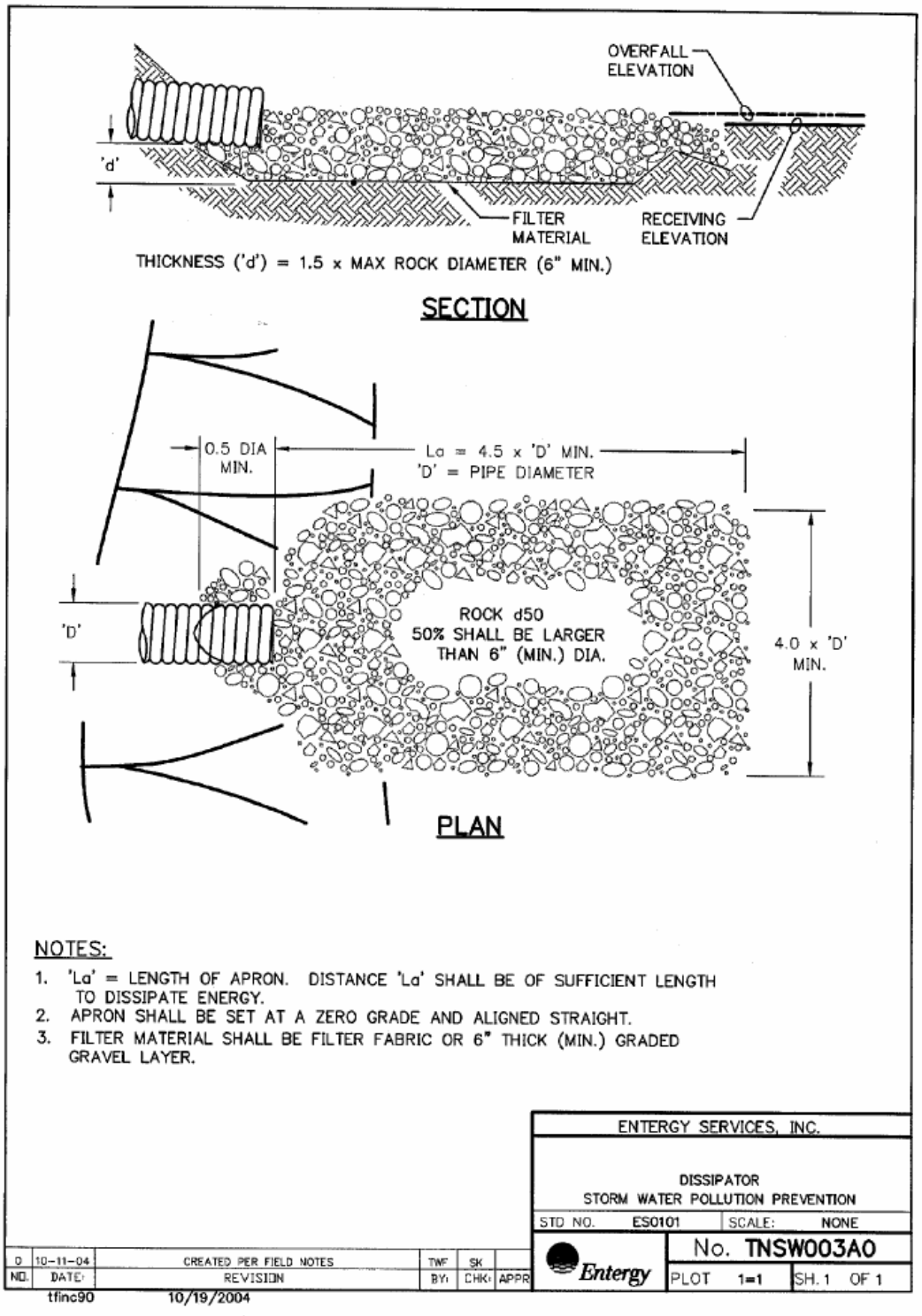
tfinc90 10/19/2004

C:\temp\AM-Work\tfinc90\M-Cctapetsp047,D-TDoCS,S-Template\ES\STANDARDS\Transmission\TNSW001A0.DWG, 01/05/2005 07:15:54 AM, tfinc90, drogill

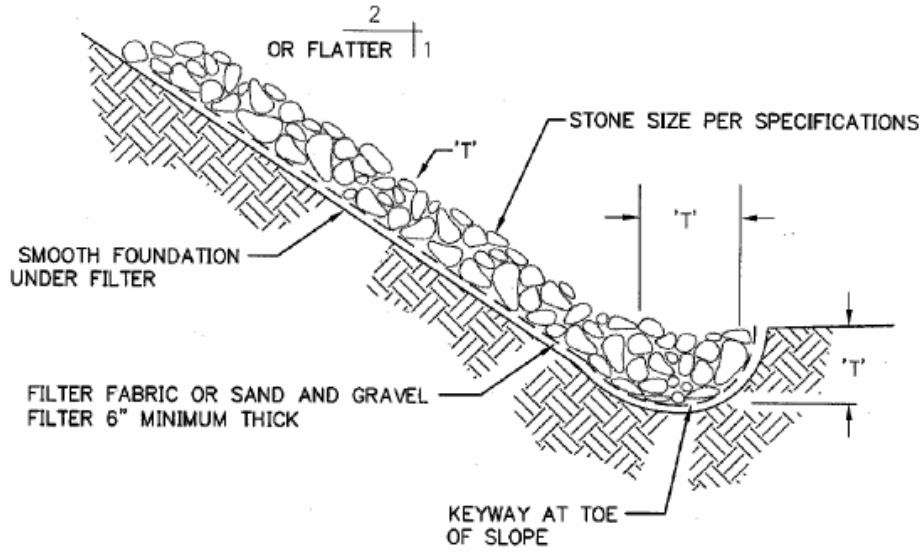
Attachment 2
Slope Installation



Attachment 3
Dissipator



Attachment 4
Riprap Slope Protection



TYPICAL SECTION

NOTE:

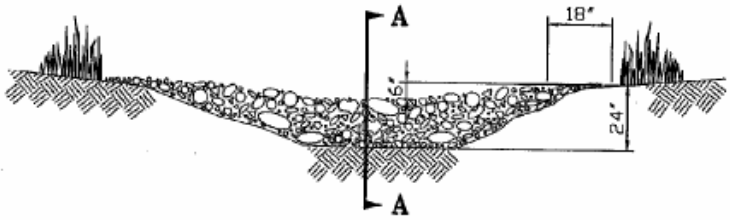
'T' = THICKNESS: THICKNESS SHALL BE AS SHOWN IN SWPPP OR AS DETERMINED BY THE ENGINEER.

MINIMUM THICKNESS SHALL BE 1.5x THE MAXIMUM STONE DIAMETER, AND SHALL BE NEVER LESS THAN 12".

ENTERGY SERVICES, INC.					
RIPRAP SLOPE PROTECTION STORM WATER POLLUTION PREVENTION					
STD NO. ES0101			SCALE: NONE		
0	10-11-04	CREATED PER FIELD NOTES	TWF	SK	
NO.	DATE:	REVISION	BY:	CHK:	APPR
Entergy			No. TNSW004A0		
			PLOT 1=1	SH. 1 OF 1	

tfinc90 10/19/2004

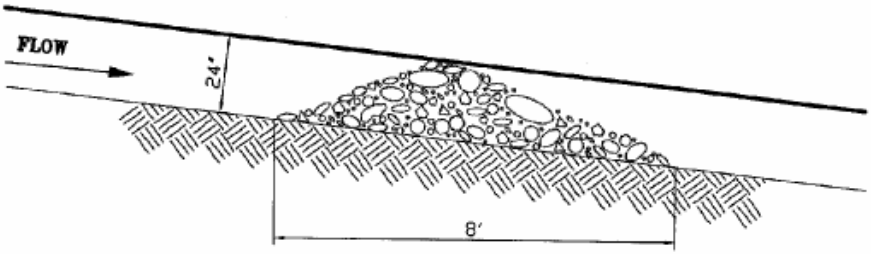
Attachment 5
Rock Check Dam



VIEW LOOKING UPSTREAM

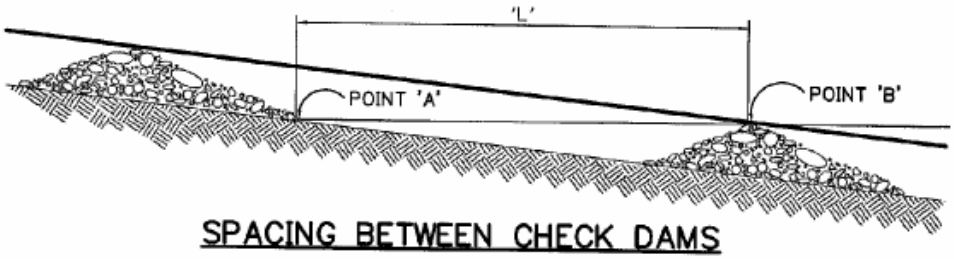
NOTE:

KEY STONE INTO THE DITCH BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIMUM OF 18" TO PREVENT OVERFLOW AROUND DAM.



SECTION A – A

'L' = THE DISTANCE SUCH THAT POINTS 'A' AND 'B' ARE OF EQUAL ELEVATION.



SPACING BETWEEN CHECK DAMS

NOTE:

1. IF CHANNEL DEPTH IS LESS THAN 24", ADJUST DAM HEIGHT AND SPACING AS REQUIRED.

0	10-11-04	CREATED PER FIELD NOTES	TWF	SK	
NO.	DATE:	REVISION	BY:	CHK:	APPR

tfinc90 10/19/2004

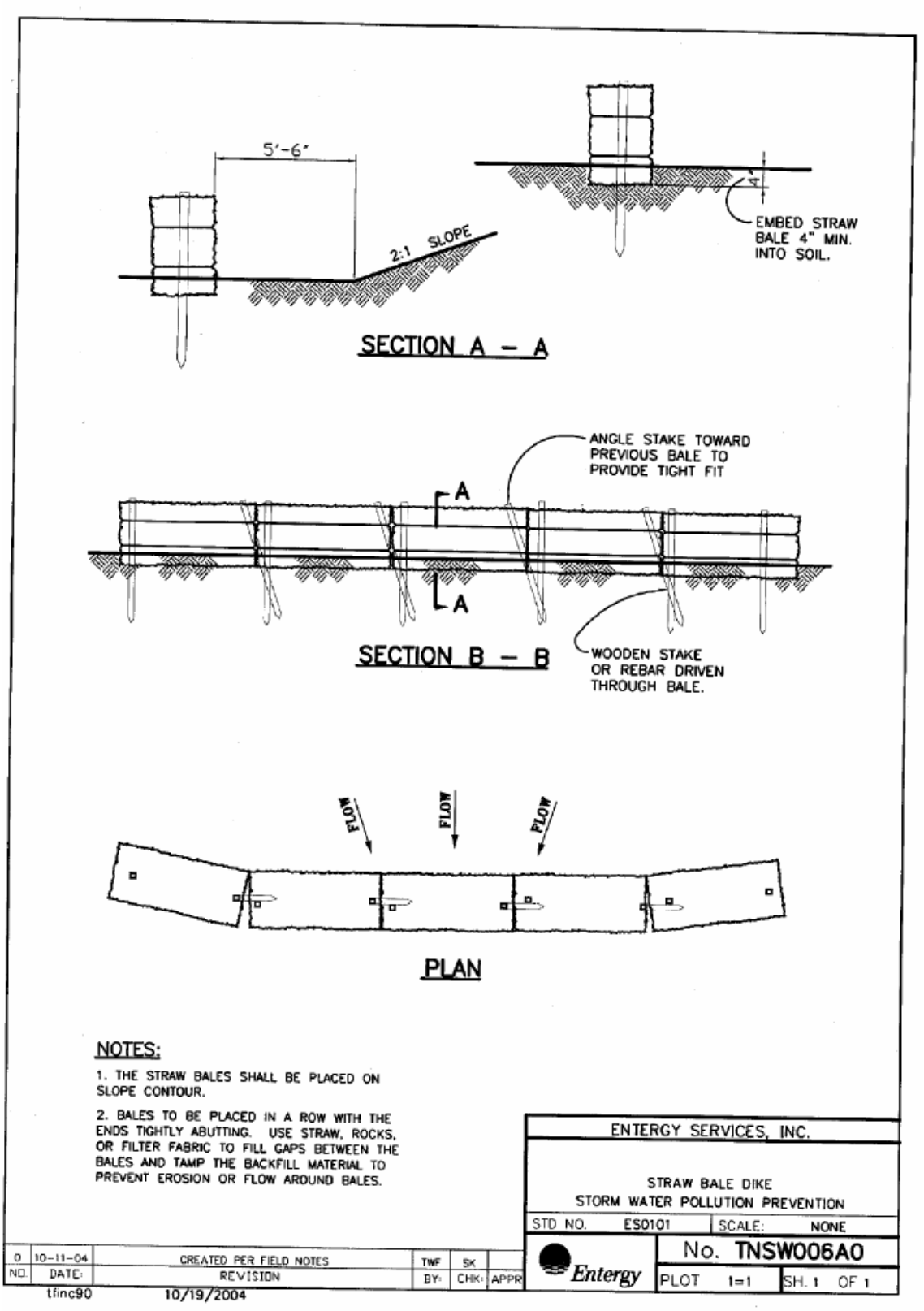
ENTERGY SERVICES, INC.

ROCK CHECK DAM
STORM WATER POLLUTION PREVENTION

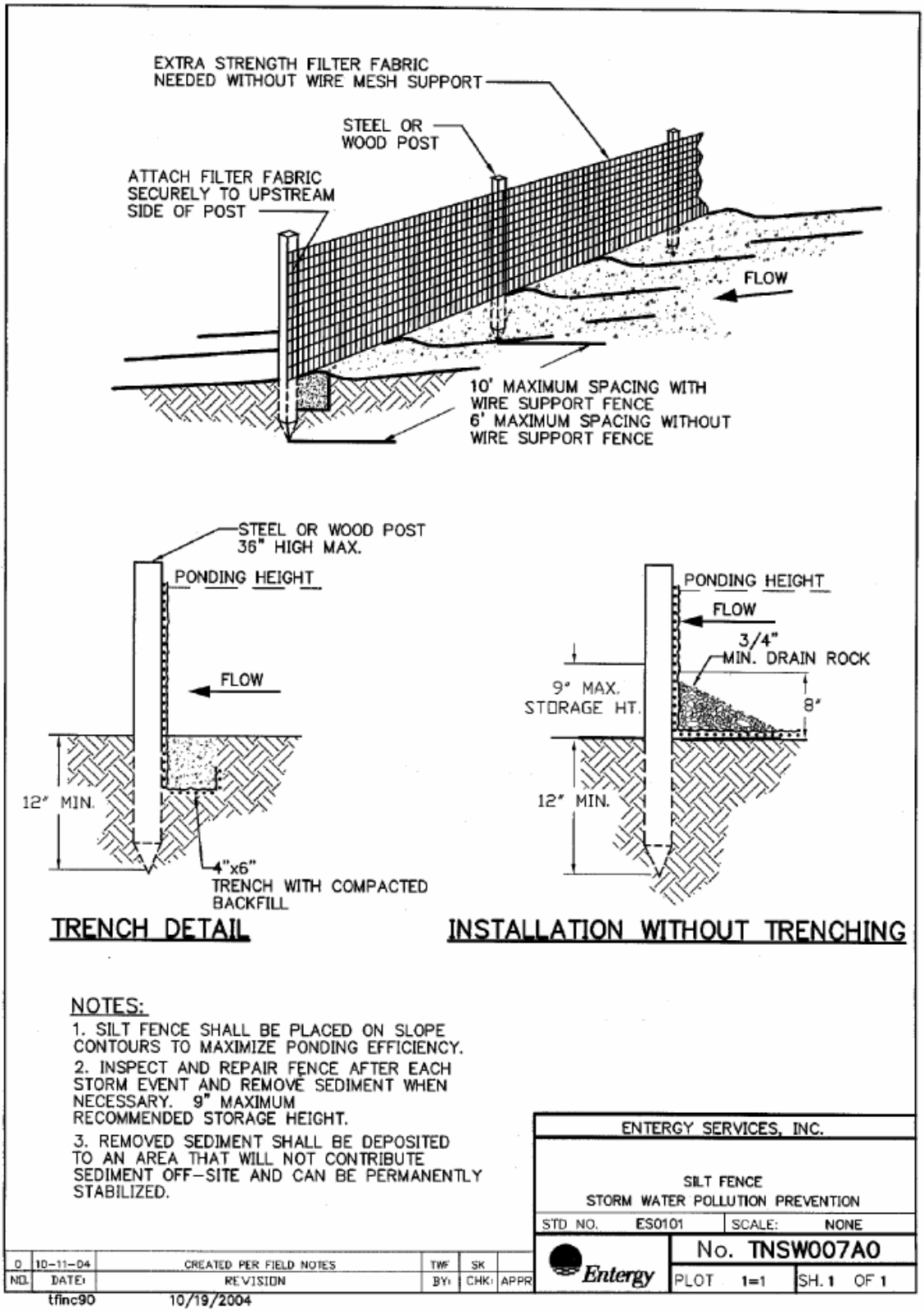
STD NO. ES0101 | SCALE: NONE

Entergy | No. TNSW005A0 | PLOT 1=1 | SH. 1 OF 1

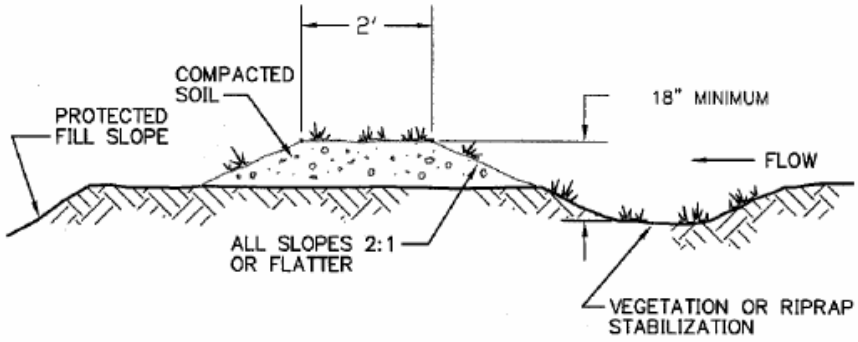
Attachment 6
Straw Bale Dike



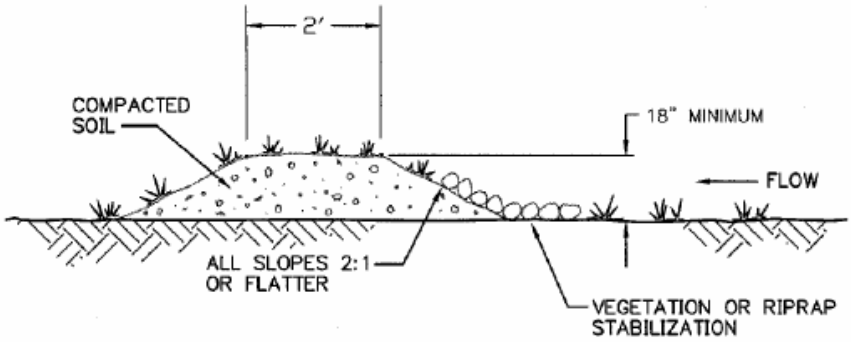
Attachment 7
Silt Fence



Attachment 8
Temporary Diversion Dike



TYPICAL FILL DIVERSION



TYPICAL TEMPORARY DIVERSION DIKE

NOTES:

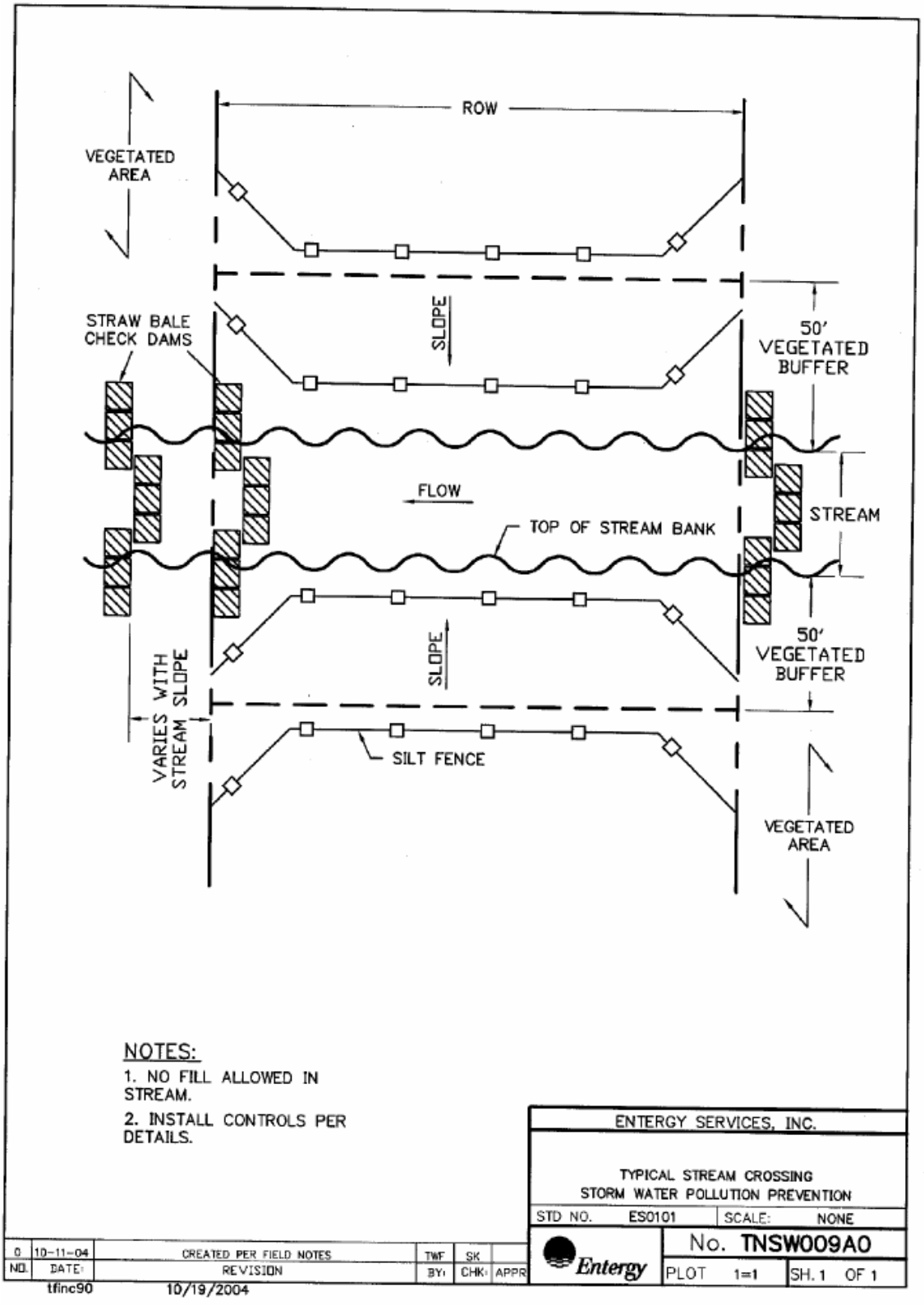
1. THE CHANNEL BEHIND THE DIKE SHALL HAVE POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE DIKE SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. THE DIKE SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT SEEDING OR RIPRAP.

ENTERGY SERVICES, INC.			
TEMPORARY DIVERSION DIKE STORM WATER POLLUTION PREVENTION			
STD NO. ES0101	SCALE: NONE		
Entergy	No. TNSW008A0		
	PLOT 1=1	SH. 1 OF 1	

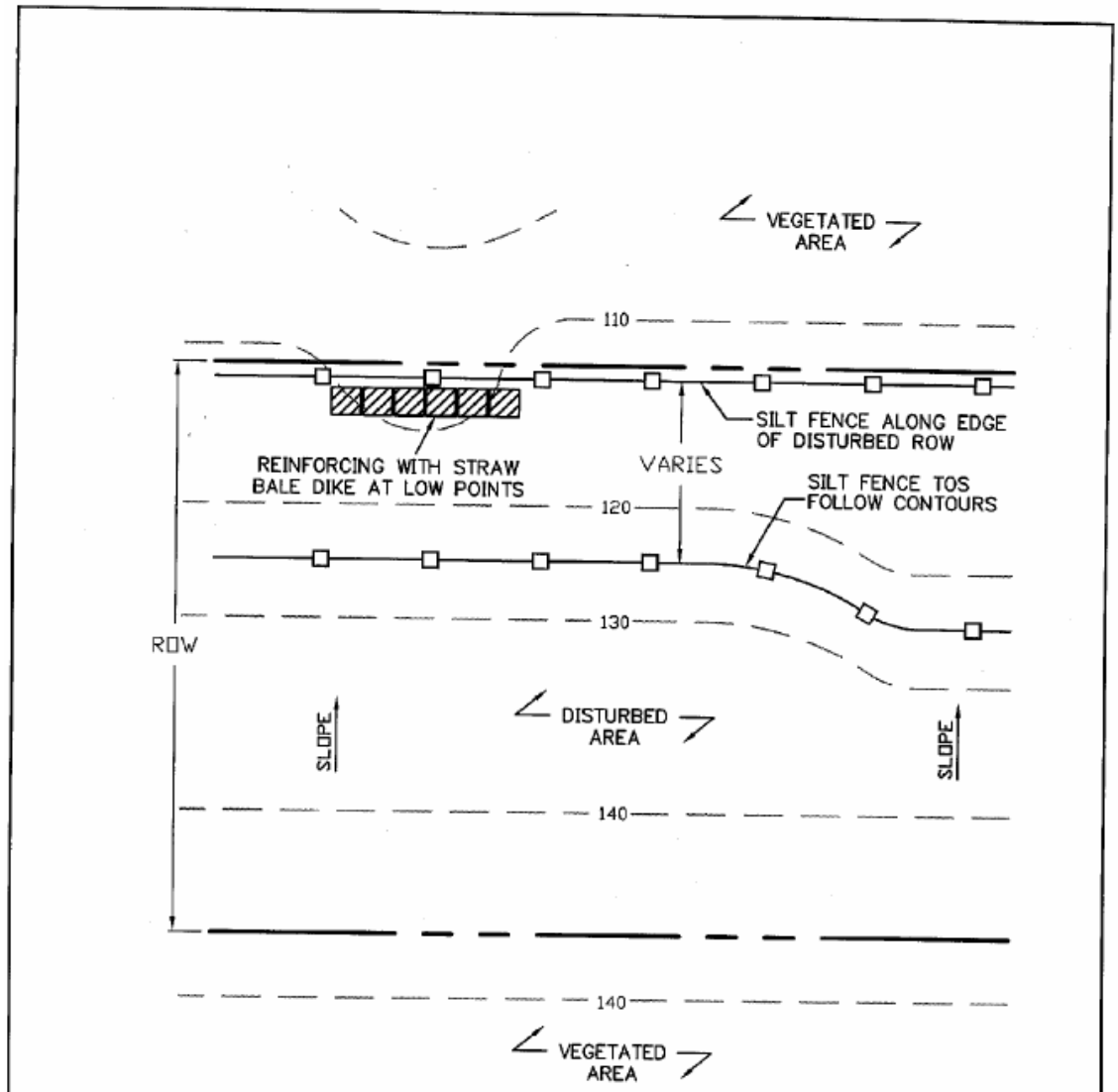
NO.	DATE	REVISION	BY	CHK	APPR
0	10-11-04	CREATED PER FIELD NOTES	TWF	SK	

tfinc90 10/19/2004

Attachment 9
Typical Stream Crossing



Attachment 10
Typical Cross Slope Protection



NOTES:

1. INSTALL SILT FENCE TO FOLLOW CONTOURS. SPACING VARIES PER SLOPE GRADE.
2. REINFORCE SILT FENCE WITH HAY BALES AT ANY LOW POINTS. SEE STRAW BALE DIKE INSTALLATION DETAILS.

0	10-11-04	CREATED PER FIELD NOTES	TWF	SK	
NO.	DATE:	REVISION	BY:	CHK:	APPR

tfinc90 10/19/2004

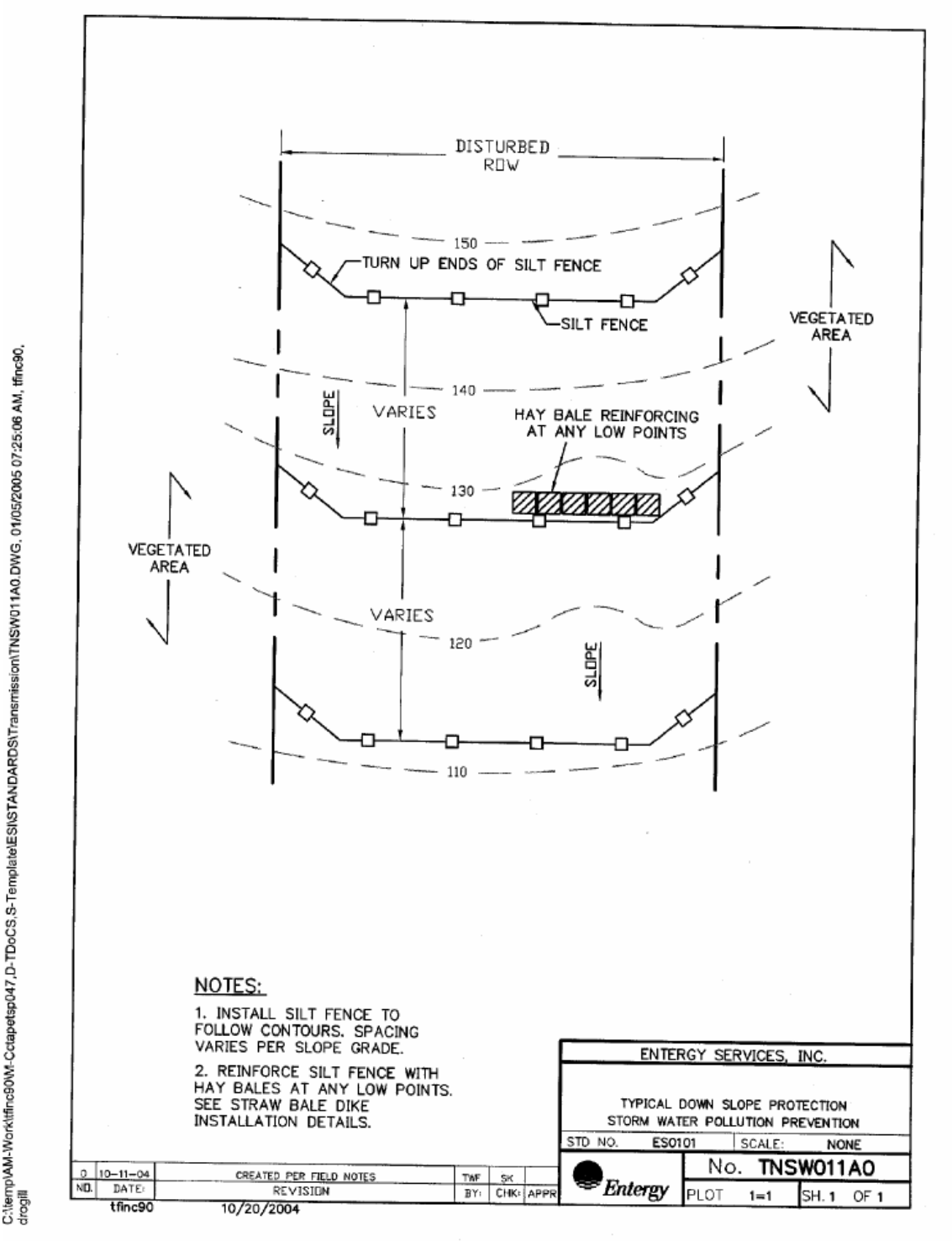
ENTERGY SERVICES, INC.

TYPICAL CROSS SLOPE PROTECTION
STORM WATER POLLUTION PREVENTION

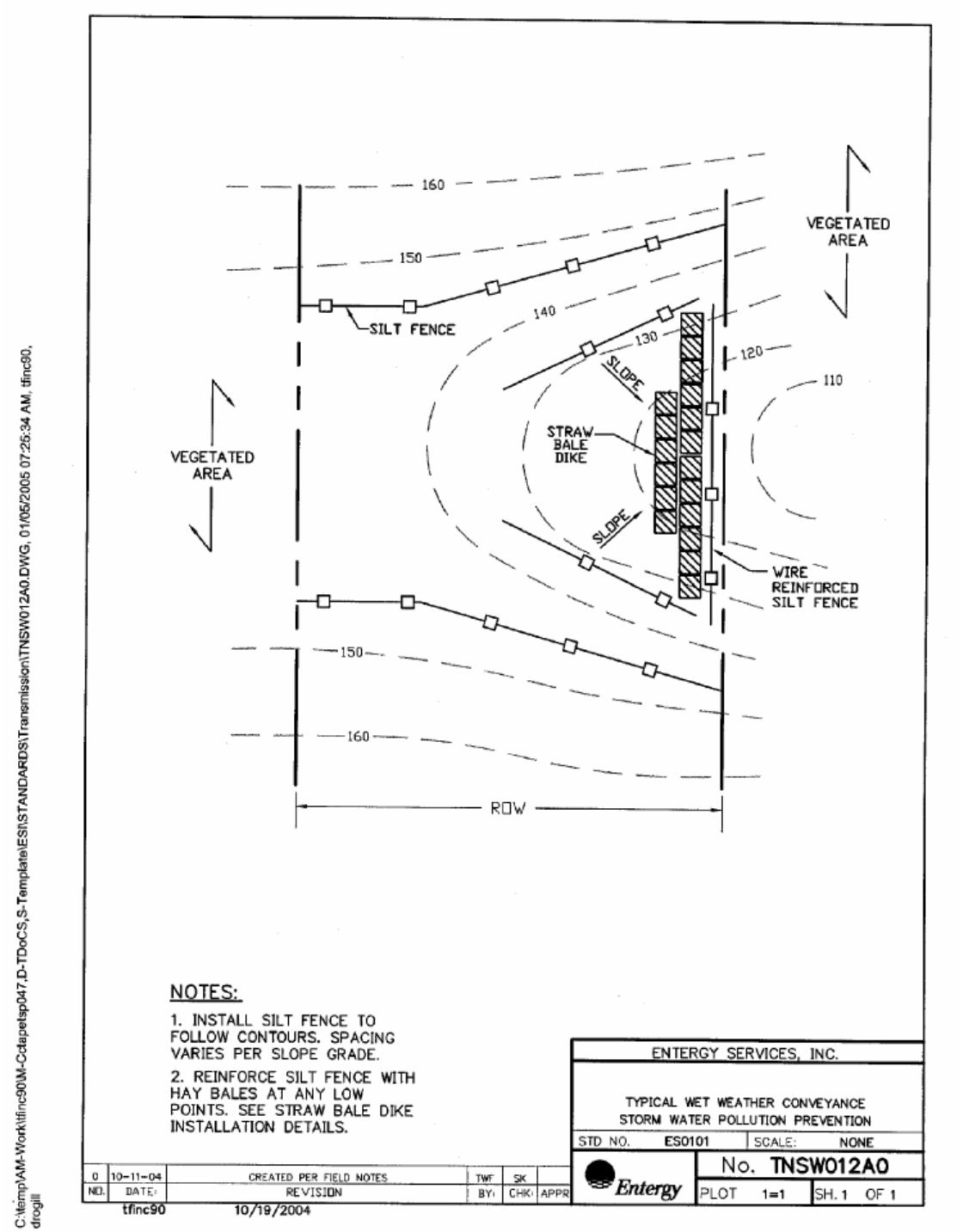
STD NO. ES0101 | SCALE: NONE

Entergy | No. TNSW010A0 | PLOT 1=1 | SH. 1 OF 1

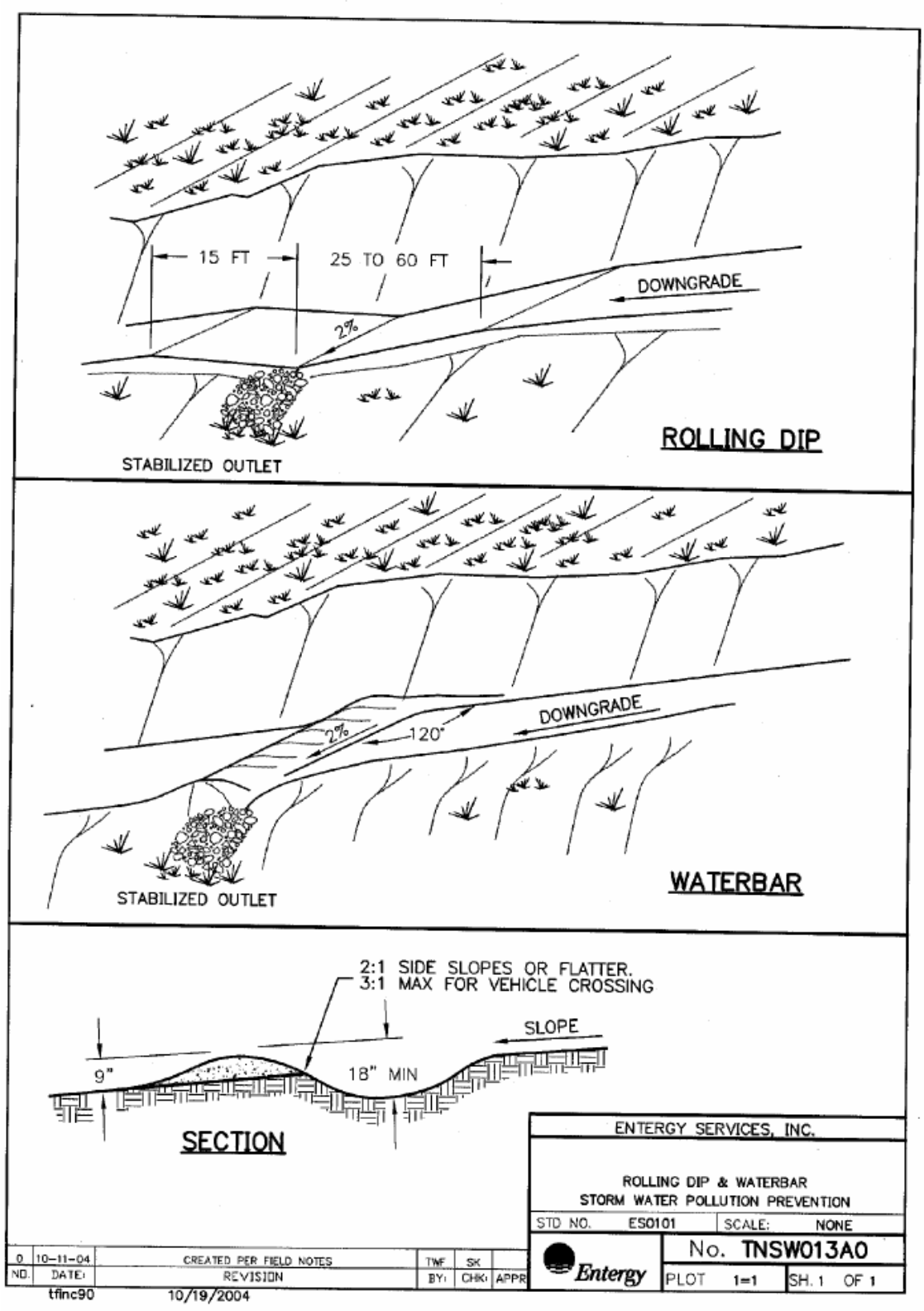
Attachment 11
Typical Down-Slope Protection



Attachment 12
Typical Wet Weather Conveyance



Attachment 13
Rolling Dip and Waterbar



Attachment 14
Inspection Report, Erosion and Sediment Control Measurements

Critical to the success of a SWPPP are the documented procedures of inspecting and maintaining the component parts of erosion and sediment control measures. At a minimum, the inspection schedule should include:

1. Routine, weekly review of all erosion and sediment control measures.

2. Inspection of all erosion and sediment control measures within 24 hours of a rainfall event of ½" or more.

3. Inspections shall be performed by trained personnel familiar with erosion and sediment control measures outlined in the SWPPP.

4. All erosion and sediment control measures will be inspected and a log of the inspection will be kept.

5. All receiving streams and discharge areas will be visually assessed, including areas where stormwater runoff from disturbed areas and product storage areas has been encountered.

6. Roads, parking areas, and other areas of vehicular traffic will be inspected for possible off-site contamination sources.

7. Silt fences, straw bales, sediment barriers, and ditch checks will be evaluated for continued integrity.

Documentation of all inspection activities will include:

- **Name of inspector, date and time of the inspection, and the results of the inspection.**
- **Recommended actions relative to stormwater pollution control noted.**
- **Recap of results of previous control practices and their success/failure.**
- **A copy of the SWPPP should be available on the job site at all times ready to present to the inspector.**

These inspection reports will be maintained as a record document for a period of three years from the date of the last report.
Any changes to the erosion and sedimentation control measures based as a result of the inspections will be in accordance with the SWPPP. Staging areas will be inspected to ensure that sediment or particulates from equipment are not reaching storm drains or ditches. Haul routes will be inspected to identify areas of erosion or excessive dust. Paved roads will be inspected to identify areas with mud, dirt, or rock that needs to be removed.
Maintenance actions include prompt repair of any erosion and sediment control measures found to be ineffective. This action will be taken prior to the next rain event. Documentation of required maintenance activities will be provided as described above. Sufficient supply of repair equipment and materials will be kept on hand at all times. An inspection form is included on the following page.

Attachment 14
Inspection Report

Attachment 14
Inspection Report

Erosion and Sediment Control Measures
(To be submitted every 7 days and within 24 hours of each rainfall event of 1/2" or more.)

Project Name: _____ CEA #: _____
Number of days since last rainfall: _____ Amount of last rainfall: _____"
Location: **(One location per report; Substation Name, Line Structure Number, Stream Name, Staging Area, Haul Route, Parking Area, Paved Road, etc.)**

_____
_____

Control Measure Type: **(Silt Fence, Straw Bales, Riprap, Sandbags, Filter Blanket, Matting, Slope Drain, Diversion Ditch, Rolling Dip, Water Bar, etc.)**

_____
_____

Condition: **(Be specific)**

_____
_____

Recommended Maintenance Actions:

_____
_____
_____

Results of Previous Recommended Maintenance Actions:

_____
_____
_____

Copy of this report to be maintained by Entergy for not less than 3 years.

Inspector Signature: _____ Date: _____ Time: _____

Copy submitted to: _____
Construction Engineer

Page intentionally blank