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**SCOPE:** This guidance document provides Best Management Practices (BMPs) for work on electric and natural gas transmission and distribution rights-of-way.

**GENERAL:** The purpose of this guidance document is to provide National Grid personnel, consultants and contractors with Best Management Practices (BMPs) for working on rights-of-way (ROW), both fee-owned and easement, and on customer owned projects, to support work that is protective of the environment and that complies with all applicable environmental laws, regulations and company policies and procedures.

These Best Management Practices (BMPs) are to be effectively and consistently followed by all personnel accessing Company substations, rights-of-way (ROW), and customer projects for inspection, maintenance and construction work purposes. These BMPs do not apply to Company employees and contractors performing routine vegetation management activities that are not a part of construction or re-construction project. Employees and contractors maintaining vegetation on Company ROW and substations must follow the National Grid ROW Vegetation and Substation Vegetation Management Plans. For more information regarding routine vegetation management, please contact a National Grid Forester.

**CONTACTS:** If there are any questions on this guidance, contact the local Environmental Engineer.

**BEST MANAGEMENT PRACTICES:**

**1.0 Background**

National Grid operates substations and has cross-country ROW with overhead electric power lines in four New England (NE) States and New York. Massachusetts, New York, New Hampshire and Rhode Island also have transmission and distribution natural gas pipelines. Access is needed to substations, to ROW, and on customer property, for inspection, maintenance and construction activities. Many of the ROW and structures are located in or near environmentally sensitive areas, such as rivers, streams, or wetlands, etc., which are protected from activities that may disturb these ecosystems.

Prior to the start of any new project, the Project Engineer or other project planner must determine whether any environmental permits or approvals are required, per state-specific EG-301. Any questions regarding which activities may be conducted in an environmentally sensitive area should be referred to an Environmental Engineer or environmental consultant.

The BMP sections presented in this EG address right-of-way access, construction along rights-of-way, structures in wetlands, clean-up and restoration standards, gates on rights-of-way, field refueling and maintenance operations, management of spills/releases, and a summary of key construction best practices.

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*Exhibit D*

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## 2.0 Definitions

Backfill, Common – Unless defined differently in project-specific specifications, common backfill is defined as soil suitable for use as backfill consisting of any mixture of sand and gravel. Rocks less than 6" in diameter and silt may also be included in the mixture.

Backfill, Select – Unless defined differently in project-specific specifications, select backfill is defined as well-graded gravel, well-graded sandy gravel, or a mixture of these materials for use as backfill. Also called Select Borrow.

BMP – Best Management Practices.

Clearing – The cutting of trees and large bushes by hand and/or mechanical means.

Environmental Monitoring Records – Examples of checklists and/or monitoring reports suggested for use by the Company Environmental Engineer to document conformance of the project with this Environmental Guidance and or permit/license conditions.

Environmentally Sensitive Areas – Examples of environmentally sensitive areas that may be found on National Grid properties are rivers, streams, ponds, lakes, wetlands, bogs, swamps, salt marshes, parks, preserves, schools and as otherwise defined by Federal, State or local regulations.

Person in Charge – A National Grid Project Engineer, Manager, Supervisor, Field Construction Coordinator or other personnel assigned to oversee and coordinate work activities.

Regulated Wetland Area – Those areas that are subject to federal, state or local wetland regulation, including certain buffer or adjacent areas.

Route, Access – An improved or unimproved path utilized to move personnel and equipment from an existing public way to and along a right-of-way or into a substation.

Right-of-Way – A corridor of land where National Grid has legal rights (either fee ownership or easement) to construct, operate, and maintain an electric power line and/or natural gas pipeline and may include work on customer owned properties.

Swamp Mats – Components of a temporary wood, plastic or other suitable material used as an access road.

Work Site – An area where work is performed.

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### 3.0 Right-of-Way (ROW) Access

Whenever possible, access should be gained along existing access routes within the ROW. However, in some cases there are no existing access routes and other means of access, such as off-ROW access, are required. In many cases temporary access can be utilized. The following practices provide general guidance on accessing a ROW. Check with an Environmental Engineer to determine if any environmental permitting is required before utilizing a temporary access. Real Estate Asset Management should also be contacted if off-ROW access is needed.

#### Access to ROWs from Public Roads

A suitable (~15-foot wide by 50-foot long) crushed stone ramp, placed on geotextile fabric, should be installed at the intersection of the ROW and public roads and streets, at those locations where equipment could track mud onto the public street. Once work is complete, the crushed stone and geotextile fabric should either be removed or retained, depending upon future maintenance-related access needs; if removed, the area shall be graded, seeded (if adequate root and seed stock are absent) and mulched.

#### Maintenance of Existing Access Road and Routes

In many cases, the existing access road may need to be improved to allow passage of the heavy equipment needed for scheduled maintenance work. Minor improvements may include adding gravel fill or crushed stone to fill depressions and washed-out areas. Major reconstruction projects may require permits. In all cases, the fill to be used should be clean and free of construction debris. Use of processed gravel, including reprocessed concrete (crushed concrete), may be approved by the Person in Charge or the Environmental Engineer, on a case-by-case basis.

#### Maintenance of Existing Access Routes

Ruts and depressions along existing access routes and within the existing ROW can be leveled and graded, only.

#### Maintenance of Existing Gravel Roads

Existing gravel roads can be restored or maintained at their pre-existing width and elevation, with clean gravel or crushed stone.

#### Maintenance of Existing Culverts

Damaged culverts can only be replaced after checking with an Environmental Engineer and determining if a permit may be required. Care must be taken to protect adjacent wetlands and watercourses by installing appropriate sedimentation controls, such as hay or straw bales, around the downstream end of the culvert. If at the time of anticipated replacement, there is heavy flow through the culvert, the Person in Charge should consult with the Environmental Engineer, to verify whether the culvert should be replaced at that time.

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#### **Access When Roads Are Not Available**

If existing roads are not available, access via other methods described below should be explored. Consult with the Person in Charge or the Environmental Engineer.

#### **Upland Access**

- Off ROW or other upland access should be used, if available. (Check with Real Estate Asset Management and with an Environmental Engineer)

#### **Low Bearing Pressure or Track Vehicles**

- In some cases, access through shallow wetlands can be achieved with the use of Low Bearing Pressure or Track Vehicles. Use of this technique requires approval from the Environmental Engineer or Consultant (not all states allow this technique).

#### **Frozen or Dry Conditions**

- If schedules can accommodate deferral of wetland access until frozen or dry conditions, use of swamp mats or other mitigation measures may be avoided. It should be determined beforehand if the regulatory authority in question accepts this alternative.

#### **Swamp Mats**

- In some cases, access through wet areas may require the installation of swamp mats, especially in the case of stream crossings.

#### **Other Methods**

- Where the number of trips, nature of loads and work are suitable, the Person in Charge may determine that helicopter use is justified.

#### **Stream Crossings**

- Stream crossings should be bridged with swamp mats or other temporary minimally-intrusive measures unless fording is acceptable for the site and is authorized by the Environmental Engineer. Care should be taken when installing a swamp mat bridge to insure that the banks are not damaged during installation and removal and that stream flow is not unduly restricted. An environmental permit may be required to cross or disturb protected waters, depending upon state-specific regulatory requirements.

## **4.0 Construction Along ROWs**

During construction activities, efforts should be made to minimize impacts to the environment. Therefore, keep to a minimum the amount of ground cover and soil disturbed, and store materials needed for the project in upland areas. Utilize erosion and sediment controls included in Attachment B, such as silt fencing or straw bales, to limit the impacts from soil erosion.

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**Erosion and Sediment Controls**

Appropriate erosion and sediment control devices shall be installed at work sites, in accordance with permit conditions and/or regulatory approvals, and otherwise, in order to prevent negative impacts to water resources and adjacent properties. The overall purpose of such controls is to prevent and control the movement of disturbed soil and sediments from work sites to adjacent, undisturbed areas, and particularly to water resources, public roads and adjacent properties. Appropriate erosion and sedimentation controls, including such materials as silt fencing, straw bales, or wood chip bales (allowed in some NE states) should be installed between the work area and such environmentally sensitive areas such as wetlands, streams, drainage courses, roads and adjacent property when work activities will disturb soils and result in a potential for causing erosion and sedimentation. Attachment B provides typical sketches of common erosion and sedimentation controls. Erosion and sedimentation controls should be properly maintained and inspected on a periodic basis, until work sites are properly stabilized and restored. Methods of documenting such inspections may include a written log or use of the *Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection/Monitoring Report* (Attachment A).

**Site Grading**

- The work site shall not be graded unless absolutely necessary to complete the work at the site. Grading outside of a regulated area shall be kept to the minimum extent necessary for safe and efficient operations. The Work Site shall be promptly re-graded, re-seeded (if adequate root and seed stock are absent), and mulched with hay or straw (use straw where the potential introduction of invasive plant species is of concern) to reduce erosion and visual impact, as soon as possible following completion of work at the site. Grading within a regulated area shall be subject to the review and approval of the Environmental Engineer or the Project Engineer.

**Top Soil**

- When the Work Site requires excavation and grading, the top soil shall be stockpiled separately from the material excavated and this top soil shall be spread as a top dressing over the disturbed area during restoration of the site.

**Rocks**

- In active agricultural areas, rocks that were brought to the ground surface as a result of the work should be removed from the site, dependent upon consultation with the farmer.

**Construction Material Along ROW**

- After preparing a site by clearing and/or installing any necessary erosion and sediment controls and prior to the start of construction, material such as poles, cross-arms, cable, and insulators may be placed along the ROW, as part of the project. Place construction material out of wetlands or other sensitive resource areas, unless authorized by the Environmental Engineer or Environmental Consultant.

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- As soon as the structure work has been completed, all used parts and trash are to be picked up and removed from the ROW. Retired poles and structures should be removed or cut 18 inches below the ground surface and backfilled to grade. In some cases, the used material from structure work may be temporarily stored at the work area by placing it out of the wetlands or other sensitive resource area until work in the adjacent areas has been completed. If work is discontinued for an extended period, all material must be removed from the ROW. Contact the Environmental Engineer for guidance on whether the work site must be restored.

## 5.0 Construction Activities in Wetlands

### Access to Structures in Wetlands

Access to structures should be obtained utilizing existing gravel roads whenever present. However, in some cases there are no existing gravel access routes, and other means of access to structures are required as discussed below.

#### Structures with Gravel Pads

- Many electric power line structures built in wetlands were constructed with gravel pads. A gravel pad is a deposit of fill material, generally gravel, that was placed in the wetland to support the structure. In most cases the area around the structure was filled to a distance of 15 to 20 feet beyond the structure. This provided room for the construction crew to install and maintain the structures. In most cases, if the structure was built with a gravel pad, there would also be a gravel access road out to it.

#### Structures without Gravel Pads (Deep Wetlands)

- In those cases where the structure is in a deep wetland without a pad, the structure was generally constructed on piles. In deep wetlands (generally greater than 7 feet) a pile would be driven down through the wetland into the hard material below the wetland. A pile would be driven for each leg of the structure. With the piles in place, the structure legs would be attached to the pile and erected on top. At those locations where piles were used, the wetland was generally too deep to construct a gravel access road.
- Access to structures without access roads will be on swamp mats or similar weight-distributing materials. In a deep wetland, timber mats may have to be piled 3 or 4 high to support the construction equipment above the wetland surface.

#### Structures without Gravel Pads (Shallow Wetlands)

- There are cases where structures were built in a wetland and not on piles. This case would be a shallow wetland with a hard bottom. The wetland will probably be one or two feet deep. In this case, there may or may not be an access road out to it. Access for maintenance of the structure will be by driving through the wetland on the hard bottom, under frozen or completely dry conditions such that there is no rutting, or by installing swamp mats or similar weight-distributing bedding. The use of low-bearing or tracked

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vehicles may also be appropriate. The method of access will depend on the time of year and the weather conditions. The Person in Charge should consult with the Environmental Engineer if he or she has any questions on what to use.

**Treated Wood Structures in Wetlands (New York North)**

The New York State Department of Environmental Conservation’s General Permit 0-0000-01147 prohibits the use of treated wood poles containing creosote, pentachlorophenol or chromated copper arsenate to be placed in their jurisdictional wetlands unless these poles have been air dried for at least 3 months prior to placement. In addition, poles placed in the buffer area of a jurisdictional wetland containing known NYSDEC Protected Species must also be air dried for 3 months. Proof of air dried time lapse can be determined from the date stamped on the pole or if necessary, through invoicing.

**6.0 Clean-up and Restoration Standards**

The following steps should be taken after construction has been completed. Refer to the Order of Conditions or other applicable Permit Requirements if issued for the project in question, to determine if the site must be reviewed prior to removal of erosion controls.

**Disturbed Areas**

- Unless otherwise specified in permits or prescribed by an Environmental Engineer or environmental consultant, all disturbed areas, including stream banks, wetlands and access routes, shall be returned to original grade, seeded with an appropriate, site-specific seed mix (if adequate root and natural seed stock are absent), and mulched with hay or straw (use straw in sensitive areas where potential introduction of invasive plant species is of concern). For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites.

**Improved Areas**

- Yards, lawns, agricultural areas, and other improved areas shall be returned to a condition at least equal to that which existed at the start of the project. Alternately, if requested, the property owner may be reimbursed to perform their own restoration, after the site has been left in an environmentally sound manner. If this option is requested, it should be documented in a written release signed by the property owner.

**Access Routes (Cross Country Routes)**

- Cross country access routes shall be returned to pre-construction grade, seeded (if adequate root and seed stock are absent) and mulched.

**Access Roads (Constructed Gravel Roads)**

- Constructed gravel roads shall be returned to a condition at least equal to that which existed at the start of the project except that gravel roads shall, at a minimum, be

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serviceable for four-wheel drive vehicles. Seeding and/or mulching of gravel roads is generally not required, unless necessary to prevent erosion.

#### **Property Damage**

- All damage to property occurring as a result of a project shall be immediately repaired or replaced. In some locations, it may be desirable to document preexisting damage prior to the project in order to demonstrate afterwards that the damage did not result from the project.

#### **Swamp Mats/Temporary Structures**

- After all work is completed, swamp mats and temporary bridges shall be removed and the site restored to pre-construction conditions.

#### **Siltation Controls**

- After all work has been satisfactorily completed and vegetation has been re-established, and upon approval by the Environmental Engineer, siltation fence and stakes from straw bales shall be removed, and the strings on the bales cut in accordance with any pertinent Order of Conditions or similar permit requirements. Straw bales which were used for sedimentation or siltation control may be used to mulch disturbed areas (straw should be used in areas where invasive plant species are of concern). Remaining straw bales that do not block the flow of water may be left in place. Straw bales that block the flow of water must be removed. Removed siltation fence and straw bale stakes shall be disposed of properly, off-site.

#### **Stonewalls**

- Removal or alteration of stonewalls shall be avoided, whenever possible. As appropriate, some stonewalls removed or breached by construction activities shall be repaired or rebuilt. Rebuilt stone walls shall be placed on the same alignment that existed prior to temporary removal, to the extent that it will not interfere with operations.

#### **Work Site**

- Upon satisfactory completion of work, the construction personnel shall remove all work-related trailers, buildings, rubbish, waste soil, temporary structures, and unused materials belonging to them or used under their direction during construction, or waste materials from previous construction and maintenance operations. All areas shall be left clean and restored to a stable condition and where feasible, as near as possible to its original condition.

#### **Material Storage/Staging Areas**

- Upon completion of all work, all material storage yards and staging areas shall be completely cleared of all waste and debris. Unless otherwise directed or unless other arrangements have been made with an off right-of-way land owner, material storage

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yards and staging areas shall be returned to the condition that existed prior to the installation of the material storage yard or staging area. Whether or not arrangements have been made with a landowner, all areas shall be left in an environmentally sound condition. Also any temporary structures erected by the construction personnel, including fences, shall be removed by the construction personnel and the area restored as near as possible to its original condition, including possibly seeding and mulching.

## 7.0 Gates on Rights-of-Way

When not in use, gates shall be locked with a company-approved lock or double locked with the property owner's lock.

## 8.0 Field Refueling and Maintenance Operations

### Field Refueling

- When refueling vehicles, Company personnel or contractors at field locations are to bring vehicles or equipment to an access area away from environmentally sensitive areas (such as wetlands or drinking water sources). A paved area such as a parking lot or roadway is preferred, to minimize the possibility of spill or release to the environment. The driver is to take all usual and reasonable environmental and safety precautions during refueling, such as connecting a safety grounding strap between the fuel tank and vehicle or equipment being refueled. The driver is also to frequently check for fuel spills, drips, or seeps during the refueling operation.
- Small equipment such as pumps and generators should be placed in small swimming pools or on absorbent blankets/pads, to contain any accidental fuel spills.

### Grease, Oil and Filter Change

- When a routine maintenance lubrication or oil change is scheduled on vehicles or equipment in the field, Company personnel or contractors at field locations are to bring vehicles or equipment to an access area away from environmentally sensitive areas (such as wetlands or drinking water sources) if at all possible. A paved area such as a parking lot or roadway is preferred, to minimize the possibility of spill or release to the environment. The driver is to take all usual and reasonable environmental and safety precautions during routine lubrication and oil/filter changes. It is especially important to wipe up all minor drips or spills of grease and oil at field locations.

### Other Field Maintenance Operations

- When other vehicle or equipment maintenance operations (such as emergency repairs) occur, Company personnel or contractors at field locations are to bring vehicles or equipment to an access area away from environmentally sensitive areas (such as wetlands or drinking water sources) if at all possible. A paved area such as a parking

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lot or roadway is preferred, to minimize the possibility of spill or release to the environment.

- Take all usual and reasonable environmental precautions during repair or maintenance operations. It is sometimes not feasible to move the affected vehicle or equipment from an environmentally sensitive area to a suitable access area. When this occurs, precautions should be employed to prevent oil or hazardous material release to the environment. These precautions include (but are not limited to) deployment of portable basins or similar secondary containment devices, use of ground covers, such as plastic tarpaulins, and precautionary placement of floating booms on nearby surface water bodies.

## 9.0 Management of Spills/Releases

Should a spill occur, it must be reported and cleaned-up in accordance with applicable EGs. Contact the Environmental Engineer.

## 10.0 Summary of Key Construction Best Practices

Environmental permits, approvals, or agency notifications may be required when working in or near a wetland resource area or other sensitive environmental area. If you have any questions as to whether these are required for your work activity, contact your Environmental Engineer.

Whenever working in and around wetlands or other sensitive environmental areas, certain construction practices should be implemented to minimize impact to the environment. The practices may vary according to the area and scope of the work, but generally, these BMPs include:

### **Minimizing Soil and Vegetation Disturbance**

Soil disturbance should be limited only to that necessary to safely operate equipment, excavate for structures and anchors, temporarily stockpile soils, and conducting the necessary repair or maintenance work. It may be necessary to use low bearing pressure or track vehicles if access through a wetland is required. Wooden timber mats or similar load-distributing materials - "swamp mats" - are generally used to cross wetlands or streams and to provide an equipment work surface at structures in wetlands. As applicable, the swamp mats should be placed in locations where swamp mats had been previously placed. Removal of the swamp mats is required upon completion of the work. Most work conducted by distribution crews will not require the use of special vehicles or swamp mats as long as wetland contours are maintained, rutting is prevented, and protected stream banks and beds are not disturbed.

### **Erosion and Sedimentation Control**

The overall purpose of erosion and sedimentation control is to prevent and control the movement of disturbed soil and sediments from work sites to adjacent, undisturbed areas, and

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particularly to water resources, public road surfaces and adjacent property. Appropriate erosion and sedimentation controls, consisting of such materials as silt fencing, straw bales, or wood chip bales (allowed in some NE states) should be installed between the work area and environmentally sensitive areas such as wetlands, streams, drainage courses, roads and adjacent property when work activities will disturb soils and result in a potential for causing erosion and sedimentation. Attachment B provides typical sketches of common erosion and sedimentation controls. Erosion and sedimentation controls should be properly maintained and inspected on a periodic basis, until work sites are properly stabilized and restored. Methods of documenting such inspections may include a written log or use of the *Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection/Monitoring Report* (Attachment A).

#### **Restoring and Stabilizing the Area**

When the work is completed, the disturbed vegetation and soil must be restored and stabilized by:

- Regrading the area to pre-existing conditions;
- Seeding (if adequate root and seed stock are absent) and mulching the exposed soil;
- Removing strings and stakes from straw bales and using straw for the mulch; and,
- Removing siltation fencing and stakes and return to the operating facility, for disposal as ordinary waste.

Be sure to consult any regulatory permit associated with the work in question to ensure compliance during and after the project construction.

### **11.0 Notification**

Because it is sometimes difficult to identify wetlands and other sensitive environmental areas, an Environmental Engineer should be notified within 24 hours or by the next working day whenever emergency off-road repair work takes place. Planned off-road maintenance work should be reviewed with an Environmental Engineer before work begins. Although the routine maintenance and emergency repair work is generally allowed, due to site conditions or the scope of the project, notification to the regulating agencies may be required.

### **12.0 Typical Best Management Practice (BMP) Drawings**

Attachment B contains typical BMP drawings of some commonly-used methods for achieving ROW access, wetland and stream crossings, and erosion controls. Note that these typical BMP drawings are provided as general guidance and that project- or contract-specific specifications shall prevail over such guidance.

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Attachment A (Click for Form)  
National Grid

Storm Water, Wetlands & Priority Habitat Environmental Compliance  
Site Inspection / Monitoring Report

Project Name: \_\_\_\_\_ Date: \_\_\_\_\_

City / Town: \_\_\_\_\_ Time: \_\_\_\_\_

Transmission RDV Project?  No  Yes Identify RDV \_\_\_\_\_

Distribution Alliance Contractor Project?  No  Yes Identify Contractor \_\_\_\_\_

Current Weather Conditions:  
 \_\_\_\_\_

Precipitation Since Last Inspection (Date, Est. Duration and Est. Amount from Each Storm):  
 \_\_\_\_\_

Activities/Structures/Locations Inspected:  
 \_\_\_\_\_

Identify Locations/Activities/Structures Within Designated Priority Habitat (Identify Rare Species Observations, if any) and Mitigation/Restoration Measures Implemented:  
 \_\_\_\_\_

Any Significant Discharges of Sediment to Water Bodies or Wetlands? (If "yes," state locations):  
 \_\_\_\_\_

Compliance with SWPPP Storm Water Controls, O&M Plan, Order of Conditions or Other Applicable Environmental Requirements? (Explain if "no" for any feature inspected):  
 \_\_\_\_\_

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Page 2

*Additional BMPs or Other Corrective Action Needed and, if so, Where?*

*Compliance with Previous Observations?*

*Are Spill Control Supplies Available?*     Yes     No

*Are Oil and/or Hazardous Materials Stored On-Site?*     Yes     No

*If So, Are They Properly Labeled and Managed?*     Yes     No

*Are Wastes Stored On-Site?*     Yes     No    *If So, Are They Properly Managed?*     Yes     No

*Miscellaneous (e.g., dumping?):*

*Comments:*

Name:

Title/Company:

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Attachment B

**TYPICAL BEST MANAGEMENT PRACTICE DRAWINGS  
FOR ROW ACCESS, MAINTENANCE AND CONSTRUCTION**

**CONTENTS**

	<b><u>DRAWING NO.</u></b>
<b><u>RIGHT-OF-WAY ACCESS</u></b>	
• TYPICAL ROAD GRADE AND TURNOUT INSTALLATION	LS-6809-0
• TYPICAL CONSTRUCTION ENTRANCE	LS-6810-0
• TYPICAL PLAN WATER BAR AND LEVEL SPREADER	LS-6811-0
○ SECTION 'A-A' (THROUGH WATER BAR)	LS-6812-0
○ SECTION 'B-B' (THROUGH LEVEL SPREADER)	LS-6813-0
• TYPICAL PLAN OPEN TOP LOG CULVERT	LS-6814-0
<b><u>WETLAND AND STREAM CROSSINGS</u></b>	
• TYPICAL SWAMP MAT DETAIL	LS-6815-0
• TYPICAL STREAM CROSSING WITH CULVERT	LS-6816-0
○ SECTIONS 'A-A' AND 'B-B'	
• TYPICAL STREAM CROSSING WITH SWAMP MATS	LS-6817-0
• TYPICAL PLAN STONE FORD	LS-6818-0
• TYPICAL STREAM FORD, TYPE 1 (WHERE LESS THAN 6" SOFT MATERIAL ON BED)	LS-6819-0
• TYPICAL STREAM FORD, TYPE 2 (WHERE BETWEEN 6" AND 3' SOFT MATERIAL ON BED)	LS-6820-0
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• TYPICAL EMBEDDED SEDIMENT BARRIER INSTALLATION	LS-6823-0
• TYPICAL NONEMBEDDED SEDIMENT BARRIER INSTALLATION	LS-6824-0
• TYPICAL SEDIMENT CONTROL FENCE	LS-6825-0
• TYPICAL CHECK DAM INSTALLATIONS	LS-6826-0
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• TYPICAL DEWATERING HAYBALE BASIN	LS-6831-0
• TYPICAL CONCRETE WASTE SUMP	LS-6832-0

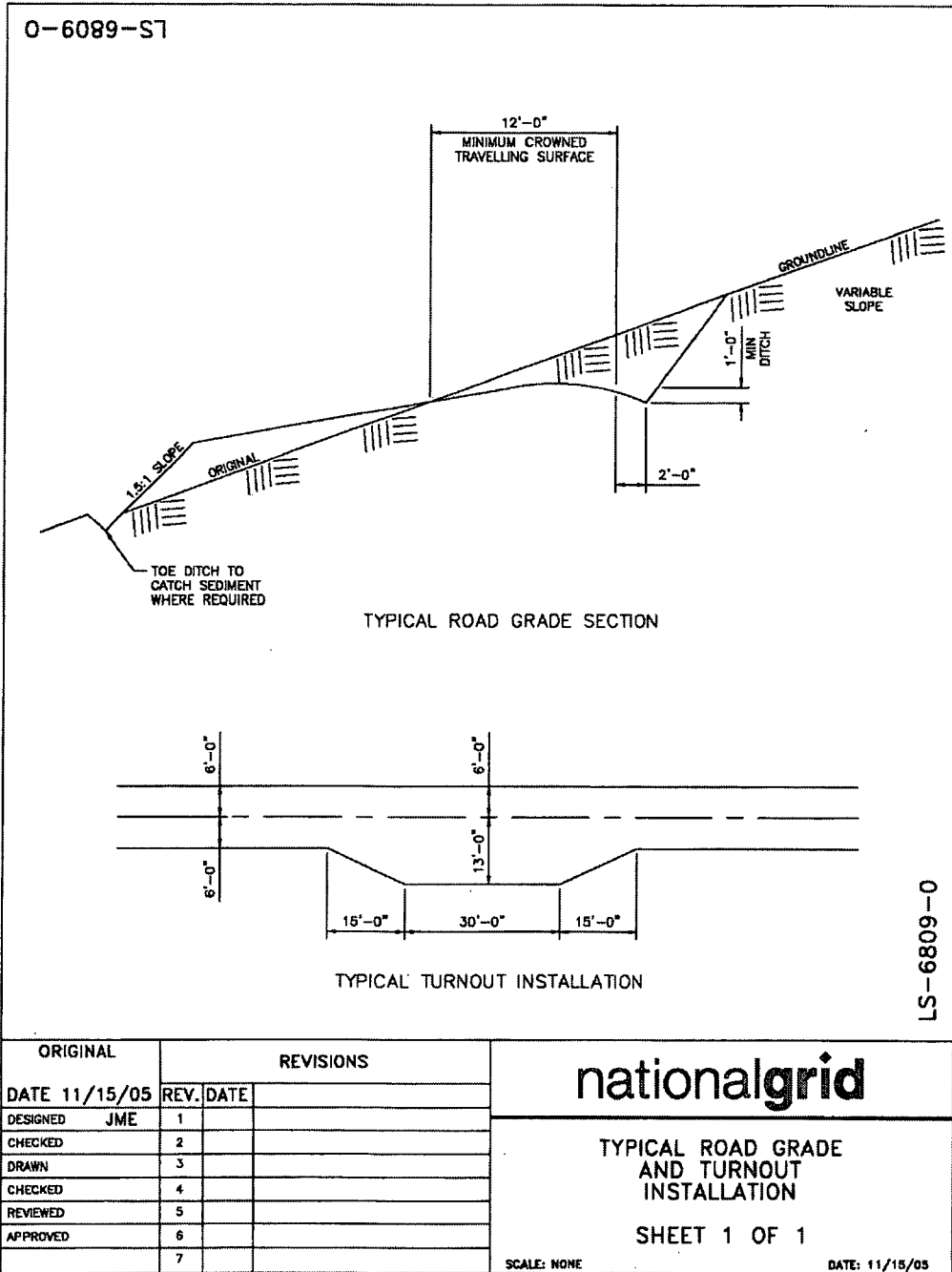
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### **RIGHT-OF-WAY ACCESS**

**General:**

- Roads will normally have a 12 feet wide travel surface and will be routed within a 20 feet wide swath along the ROW, so as to provide the best access to structures and to avoid sensitive environmental resources.
- Off-ROW roads will generally be constructed to the same standards, and shall have permanent or temporary easements executed by the property asset and real estate function, to identify any special restrictions.

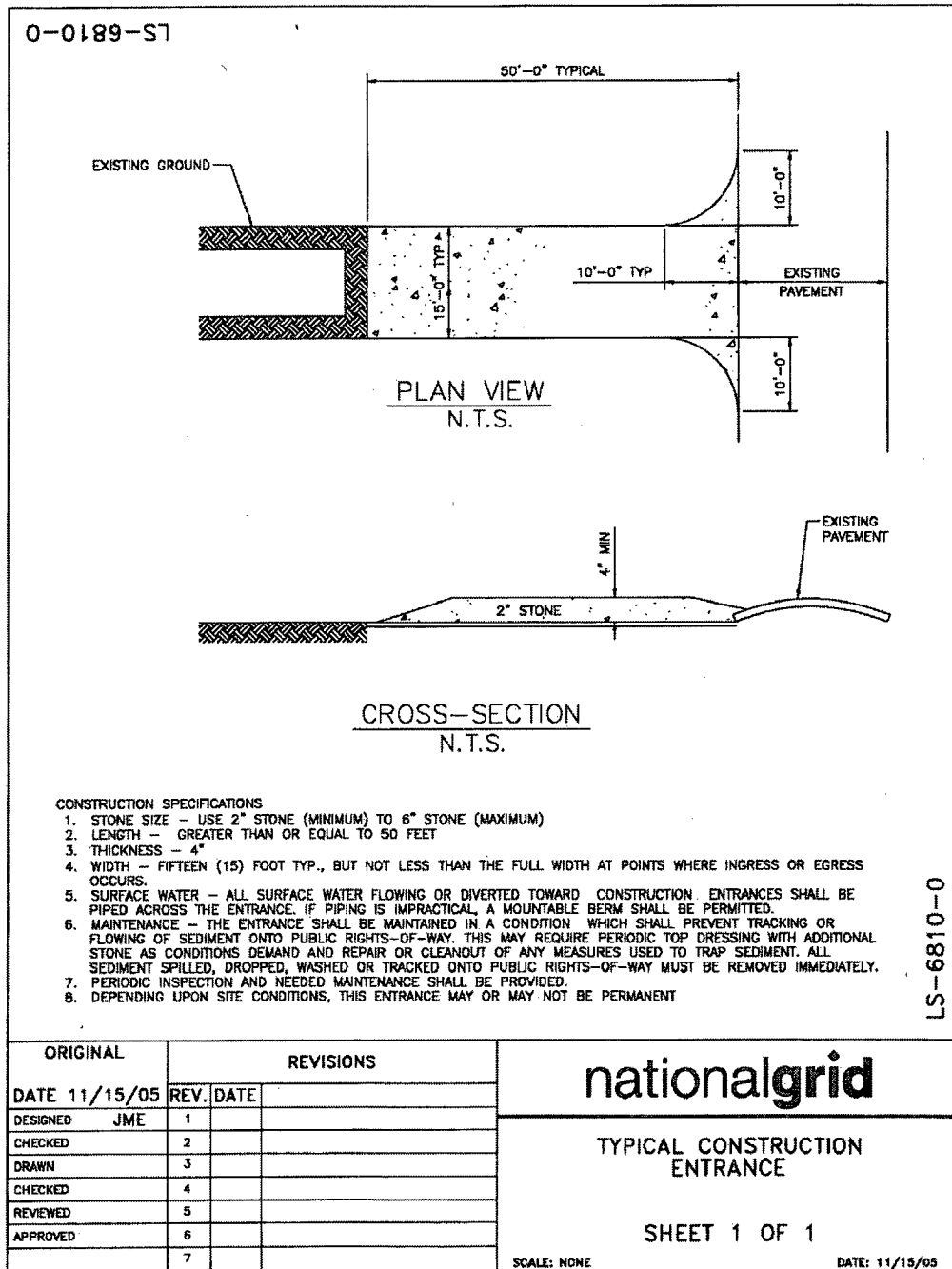
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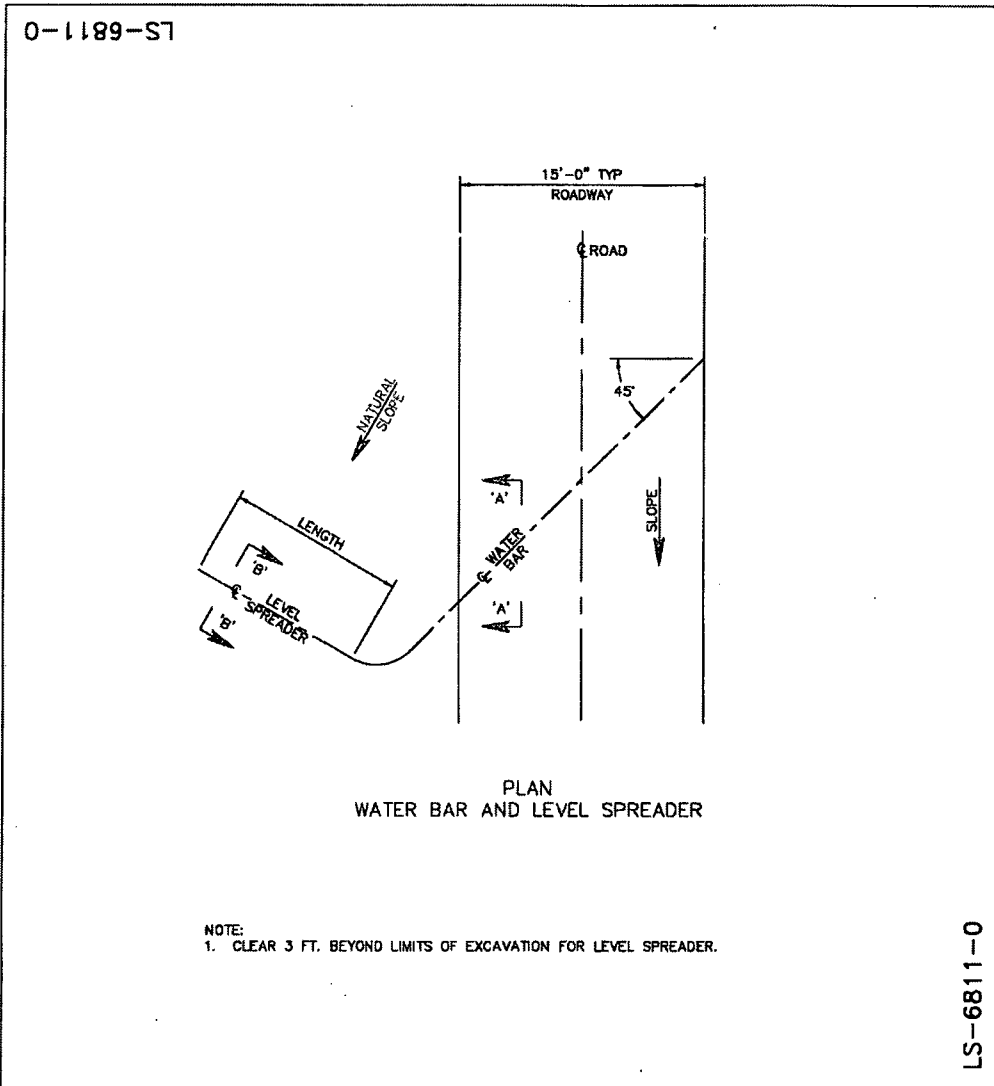


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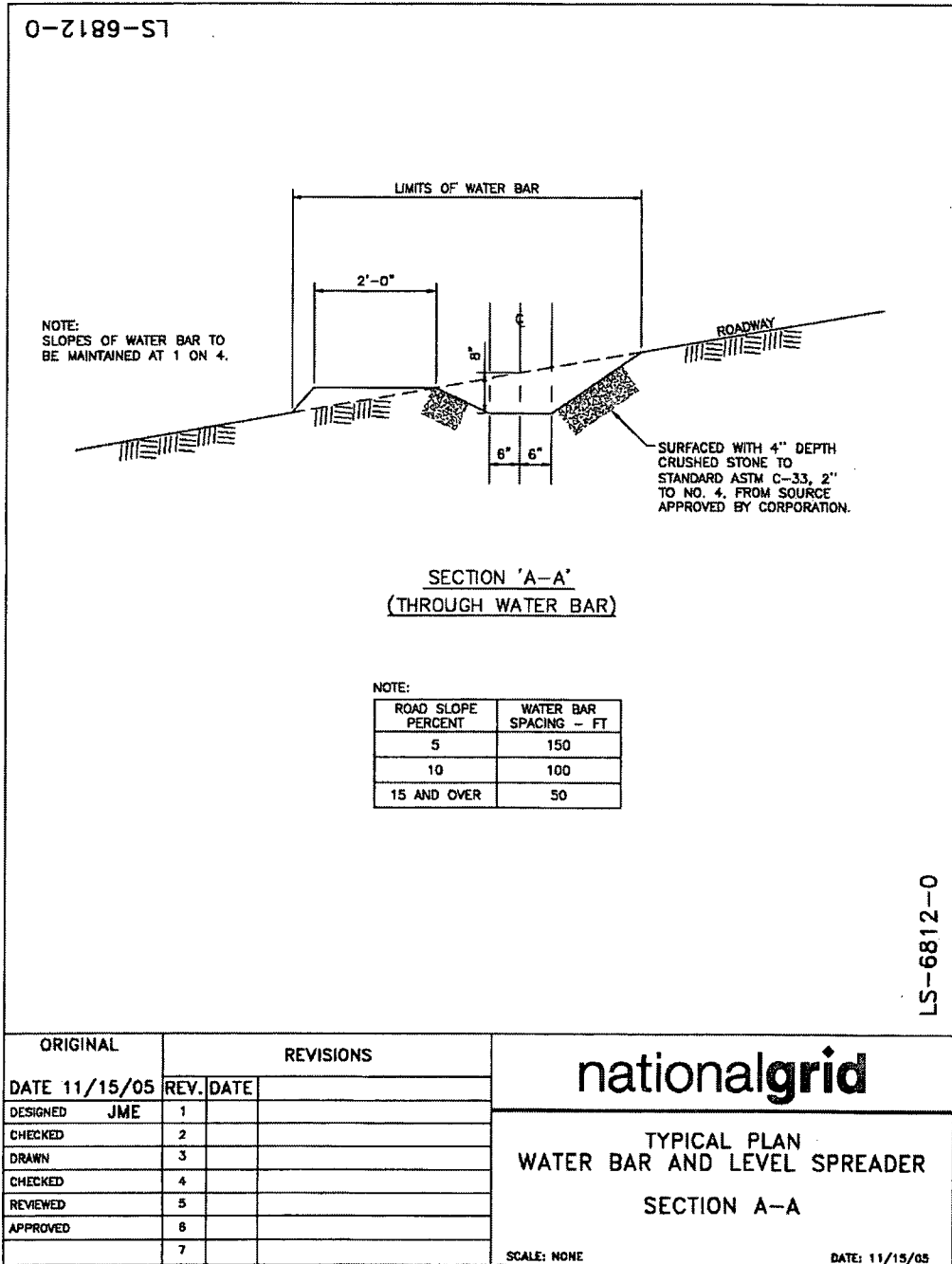
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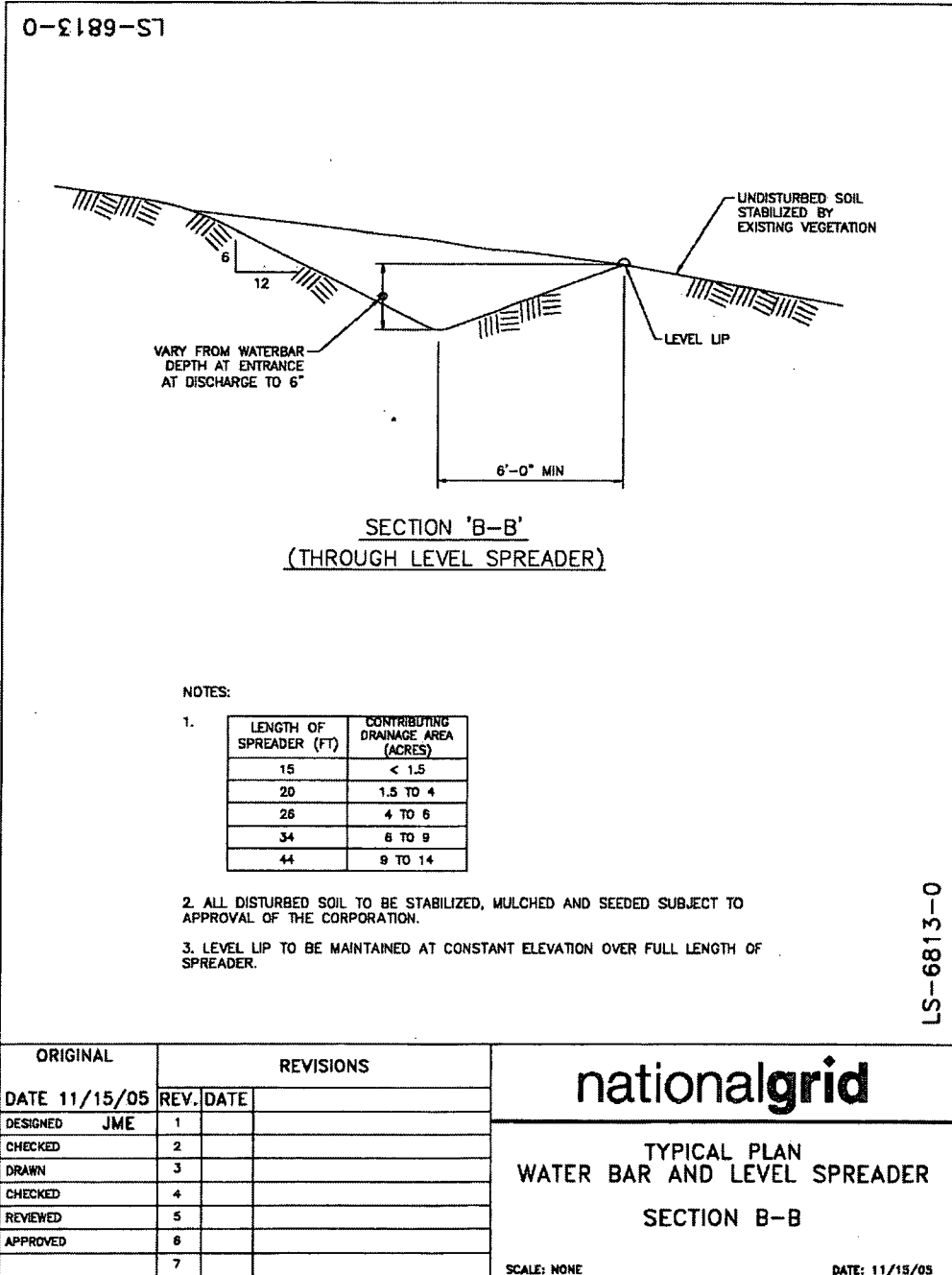
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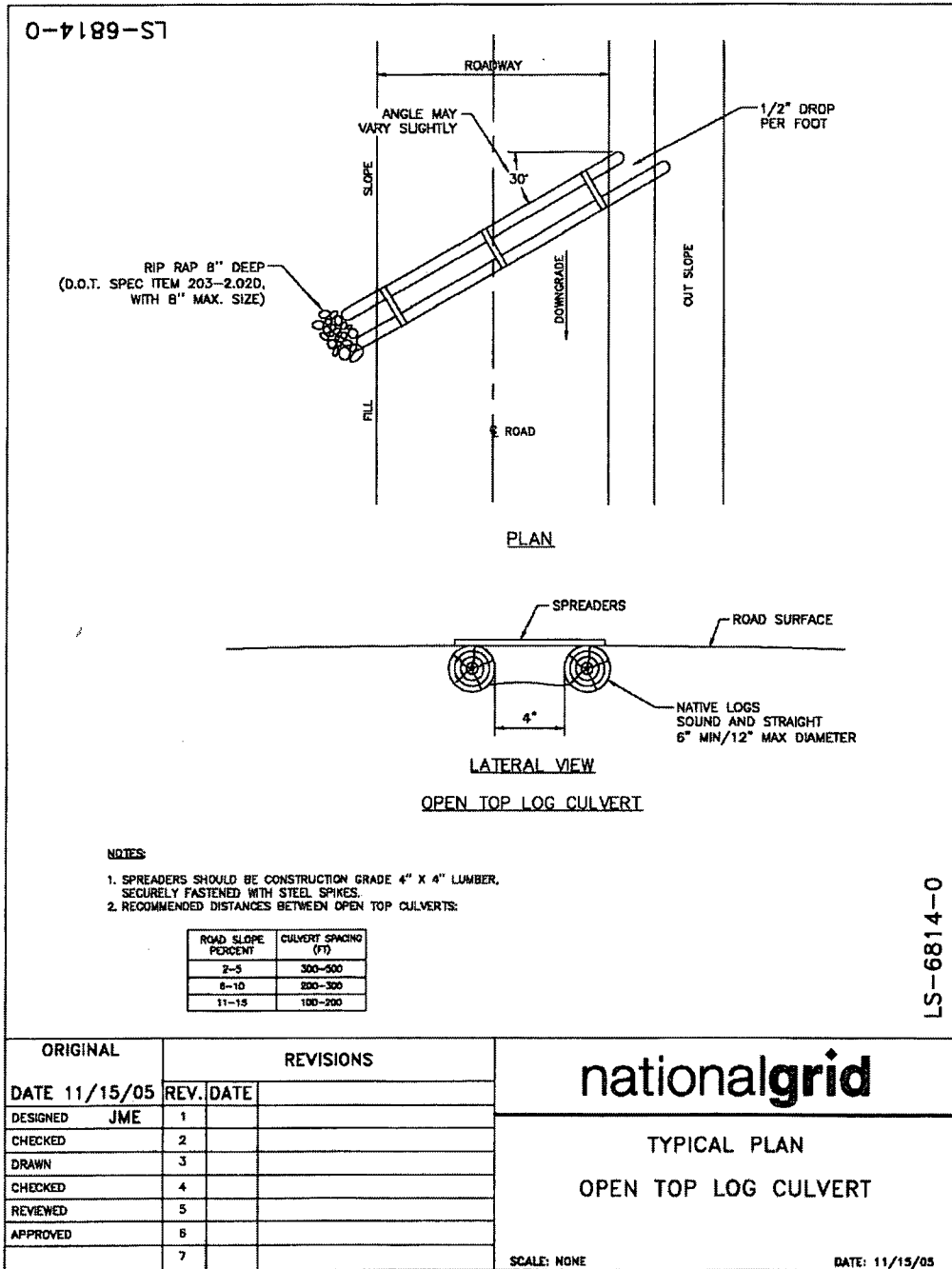
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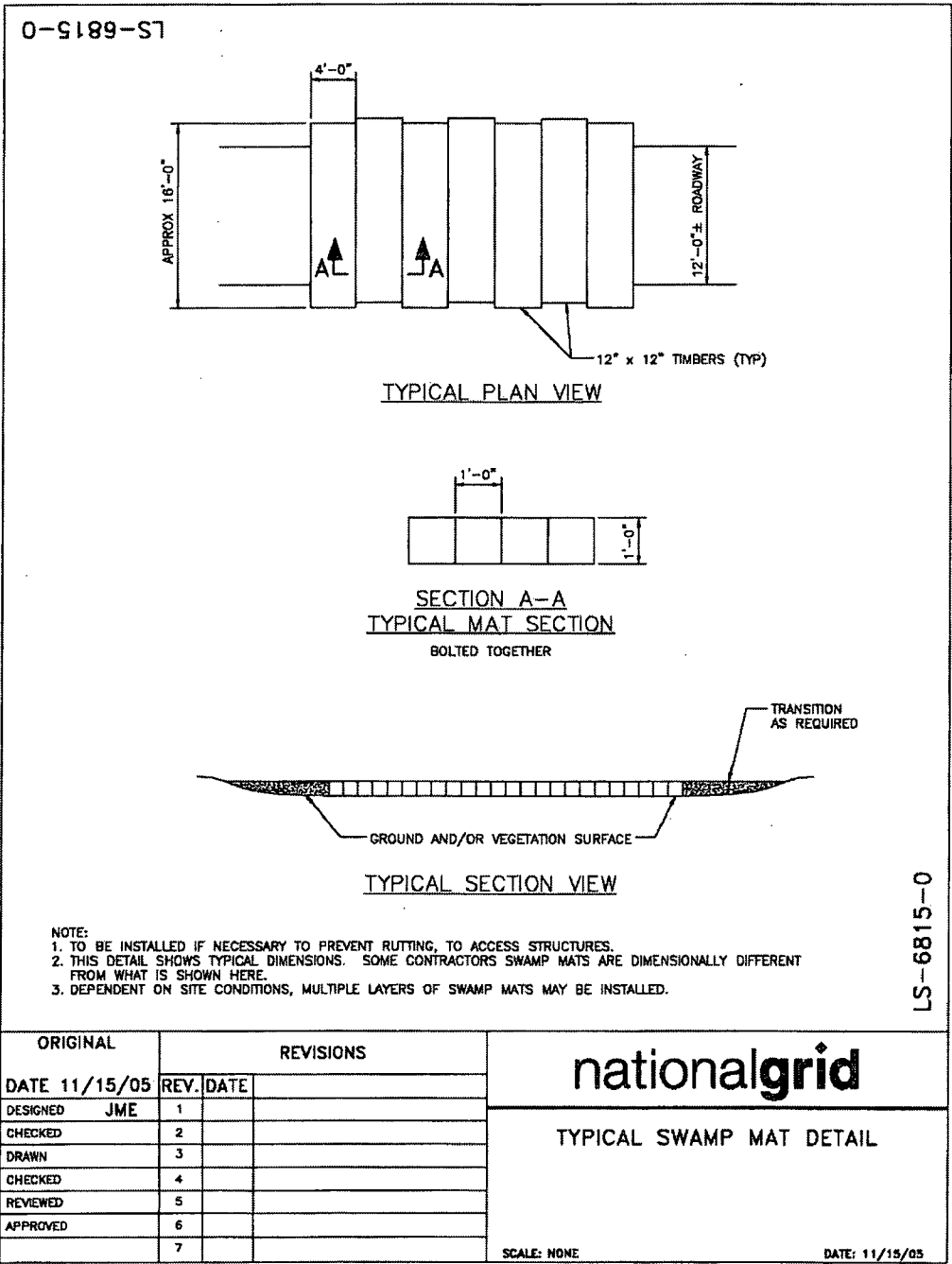
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## WETLAND AND STREAM CROSSINGS

### General:

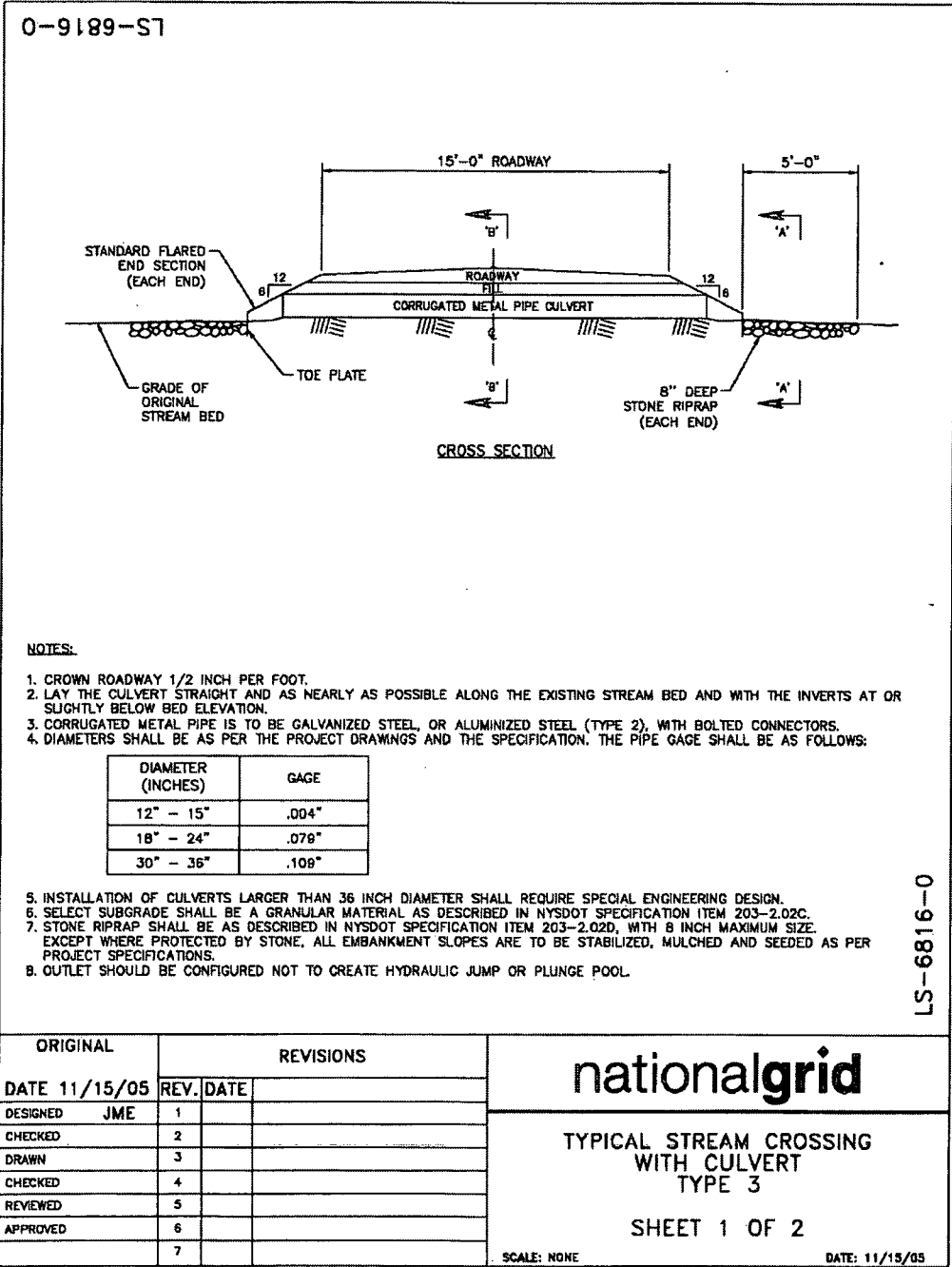
- Installations shall maintain uninterrupted hydraulic and hydrologic continuity and shall be installed to minimize use or damage by beavers, while not interfering with the movement of aquatic and wetland fish and wildlife species, in general.
- No wood preservatives, herbicides, pesticides, fuels, or other deleterious substances may be introduced into wetlands and protected waters.

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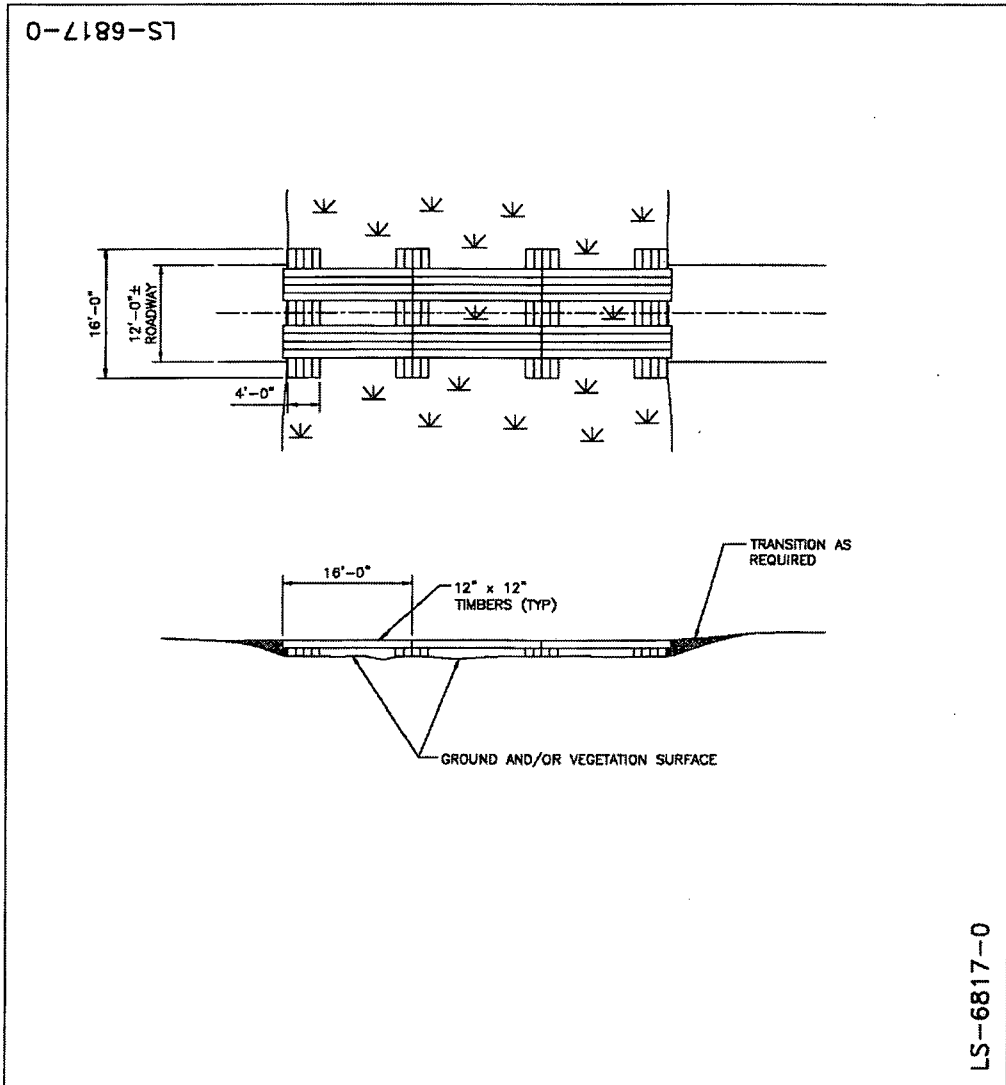
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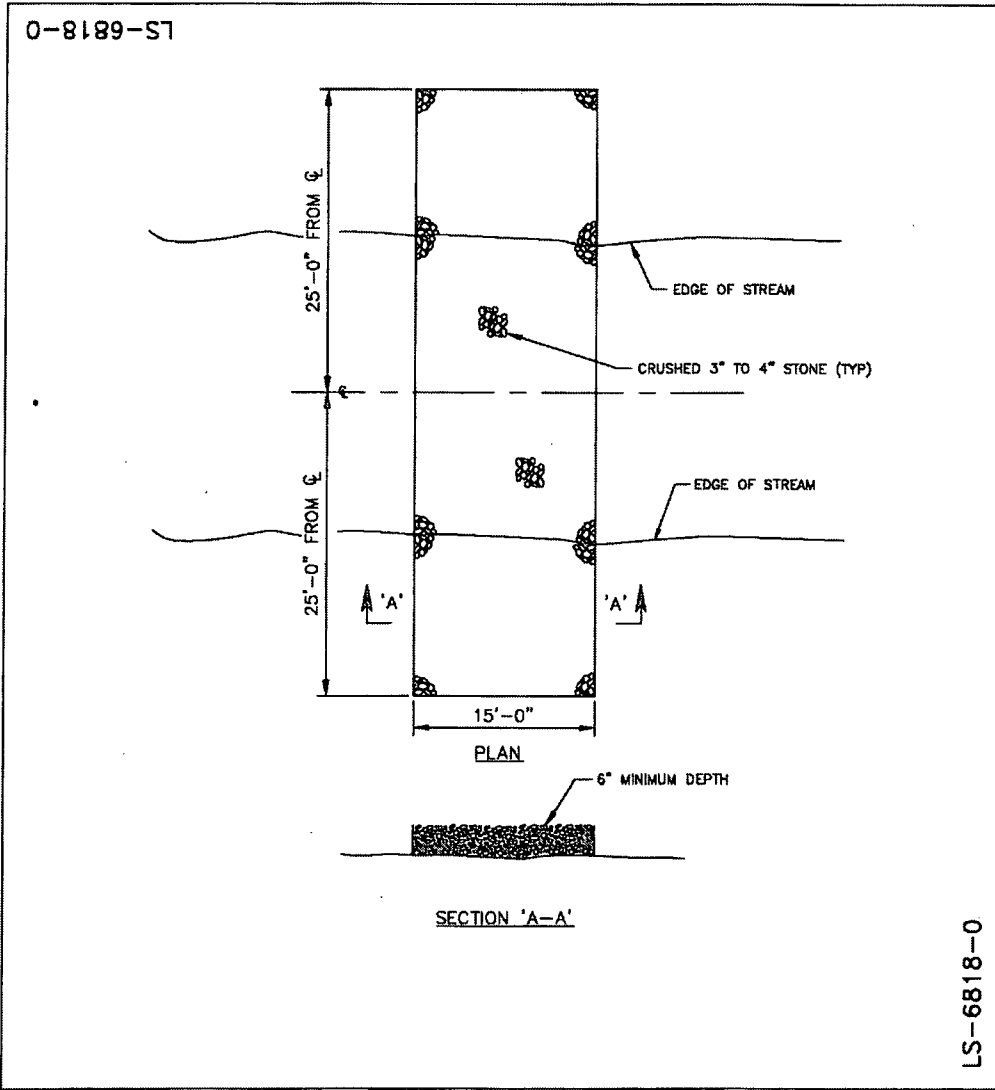
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DATE 11/15/05	DESIGNED JME	REV.	DATE	
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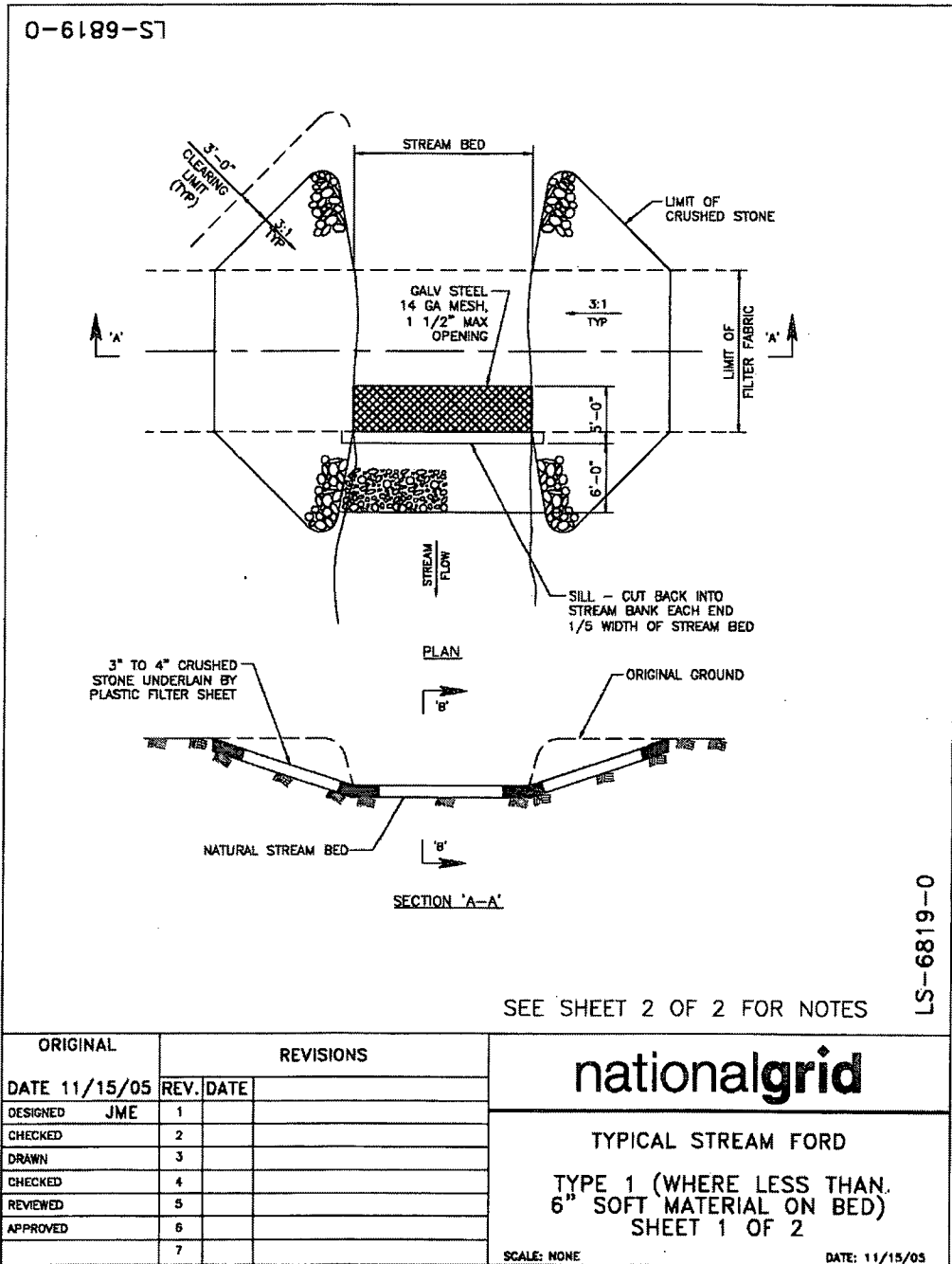
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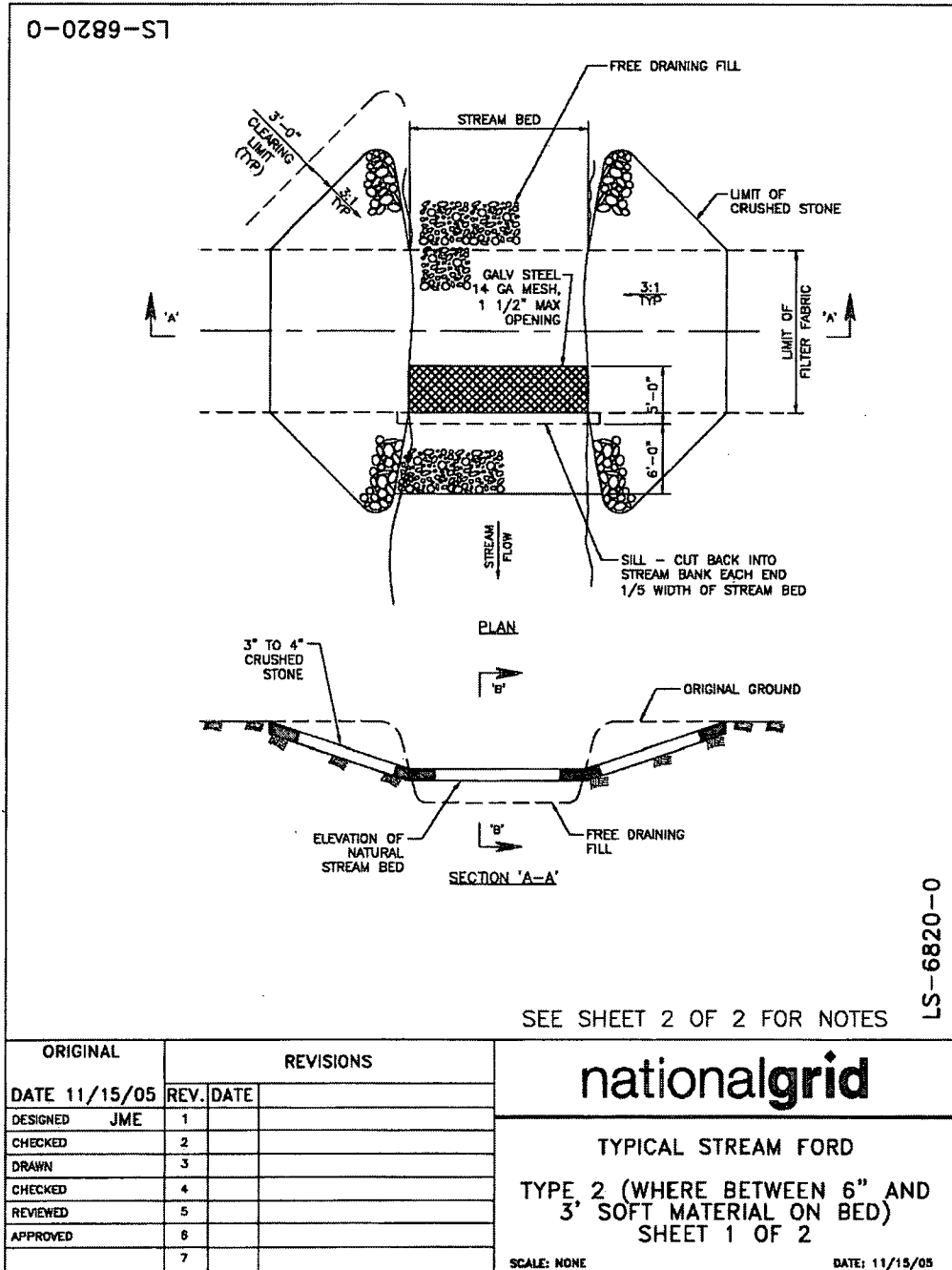
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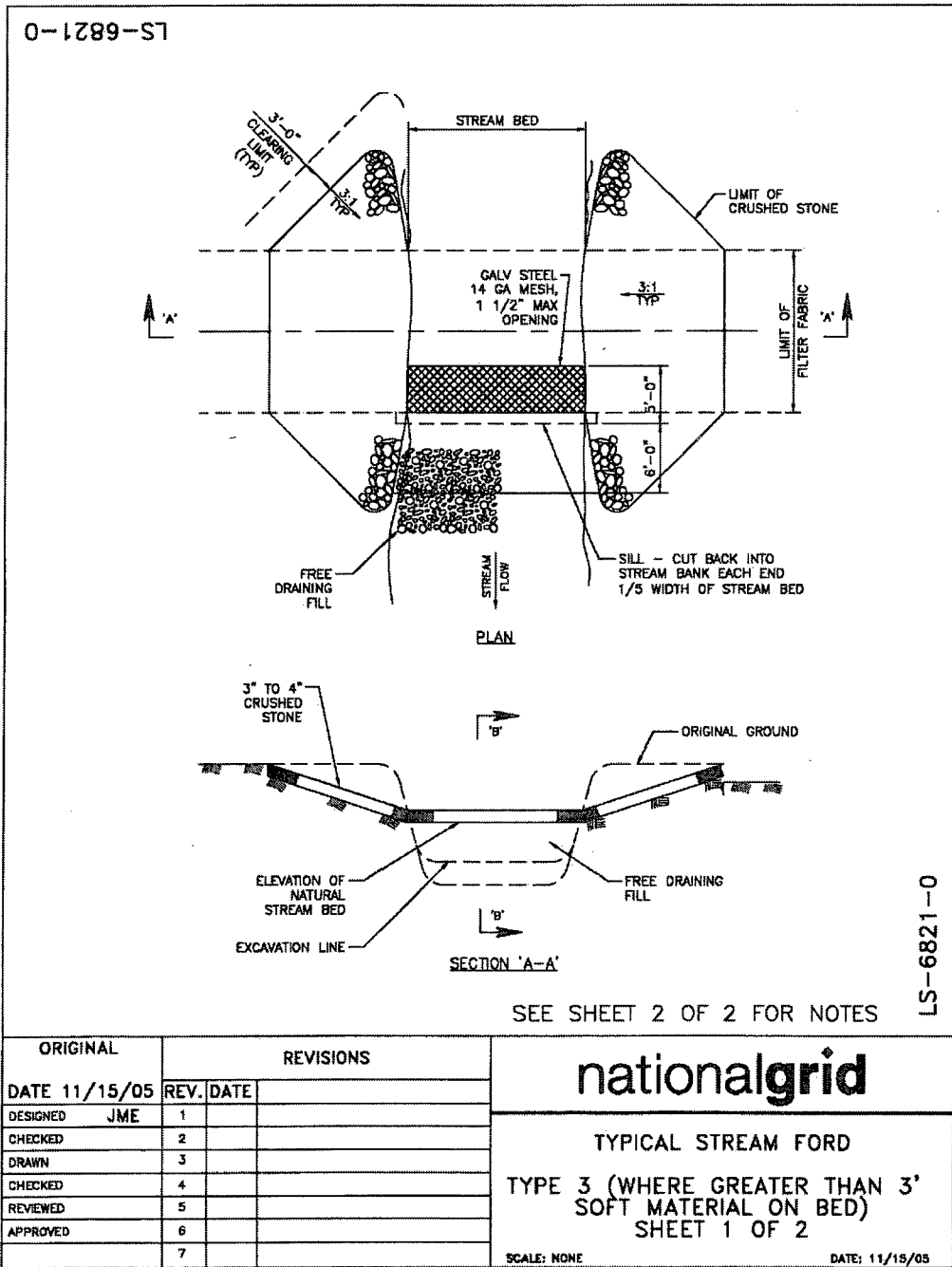
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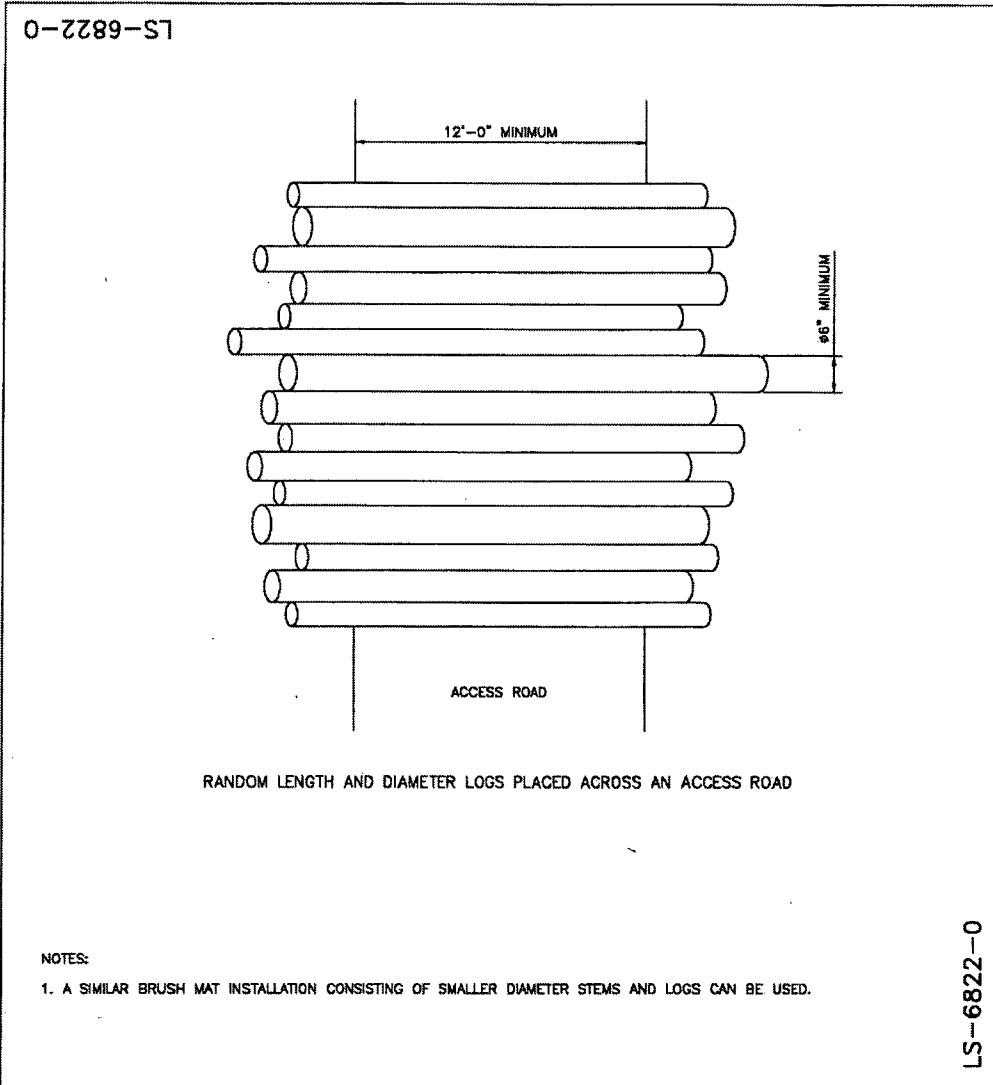
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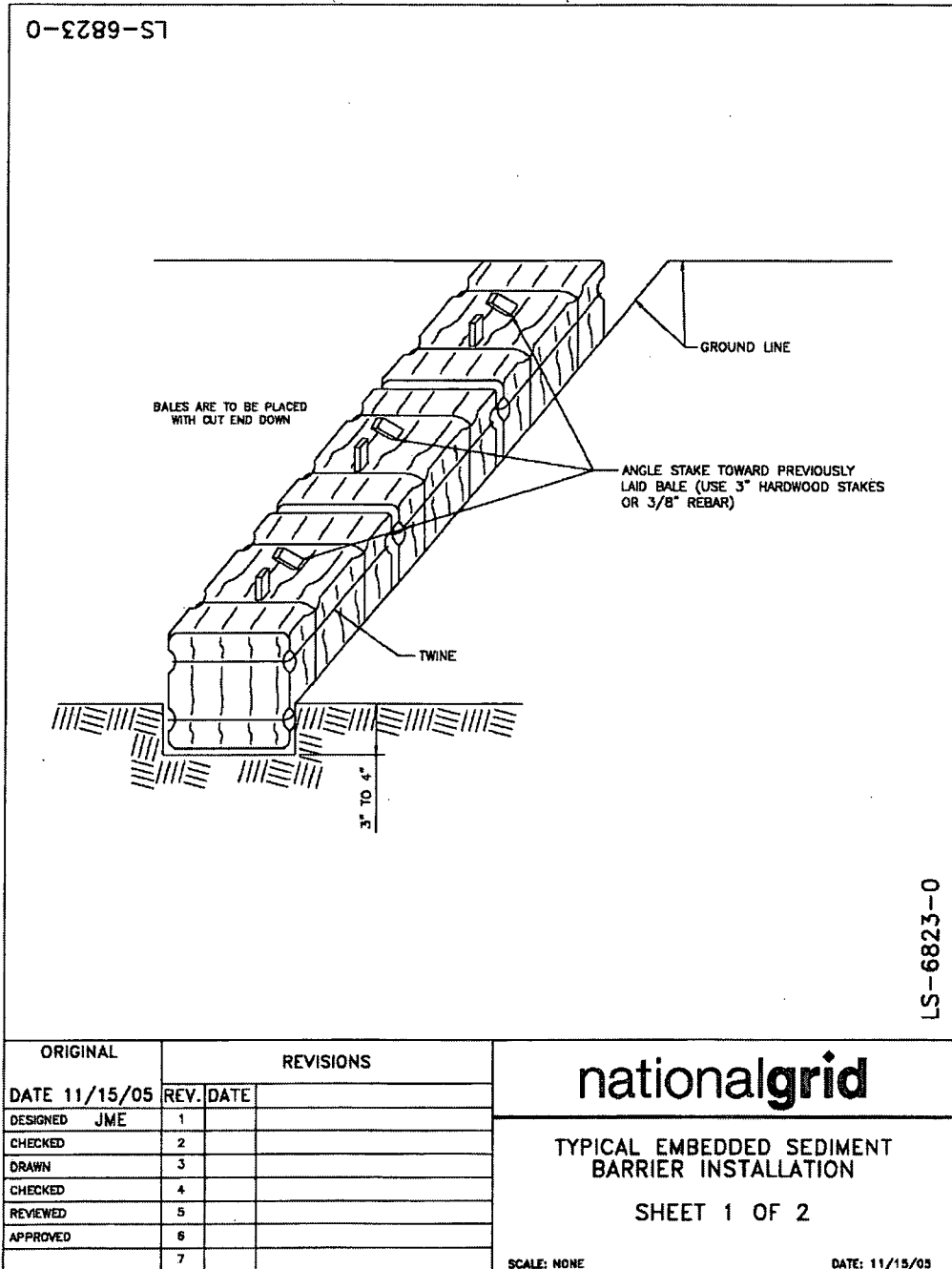
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**EROSION CONTROLS**

**General:**

- Erosion control installations shall not cause turbidity in streams downstream of the worksite and are to contain sediment at or near the spot from which soil or sediment is disturbed.
- Straw bales shall be used instead of hay bales in areas (particularly wetlands) where the potential introduction of invasive plant species is of concern.

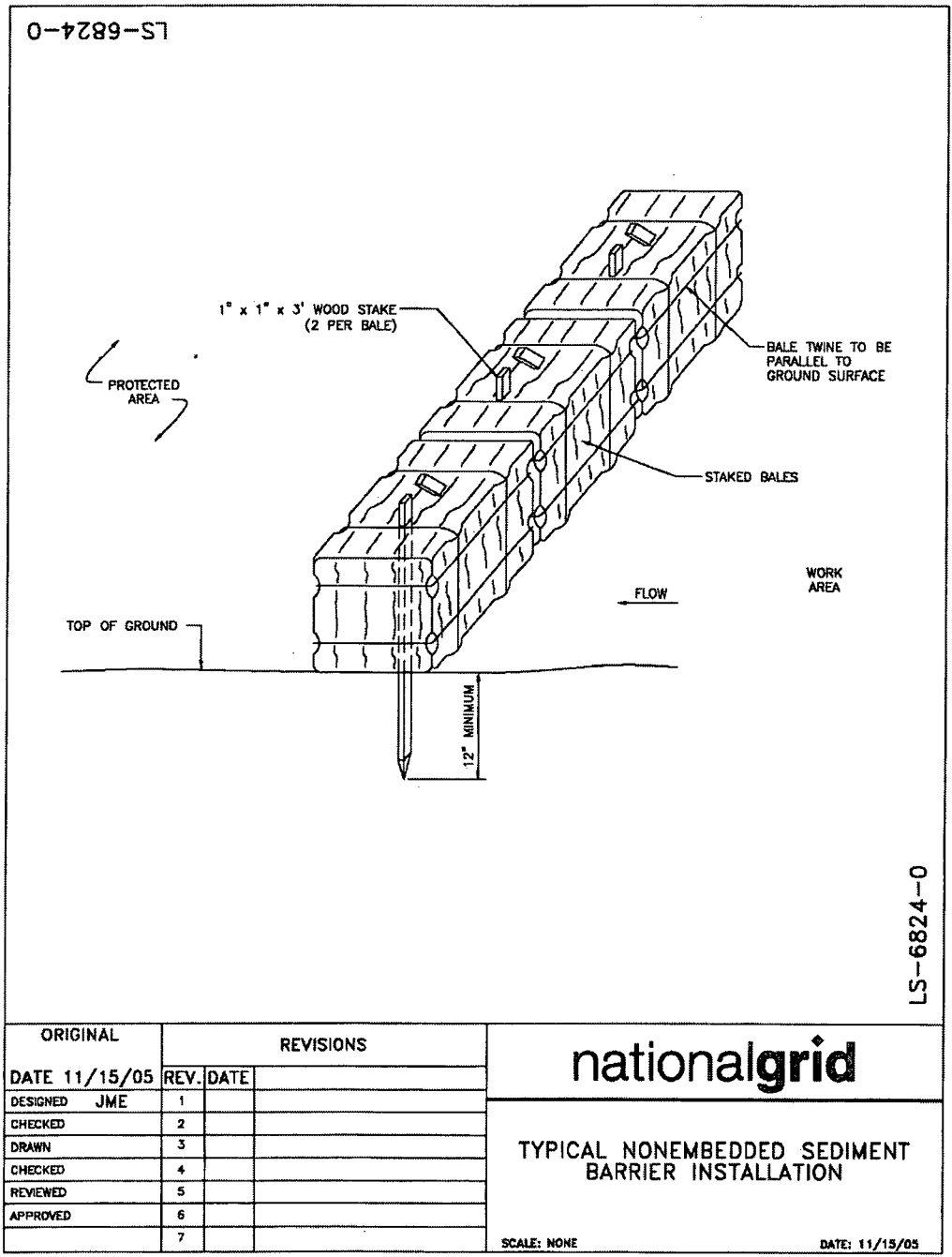
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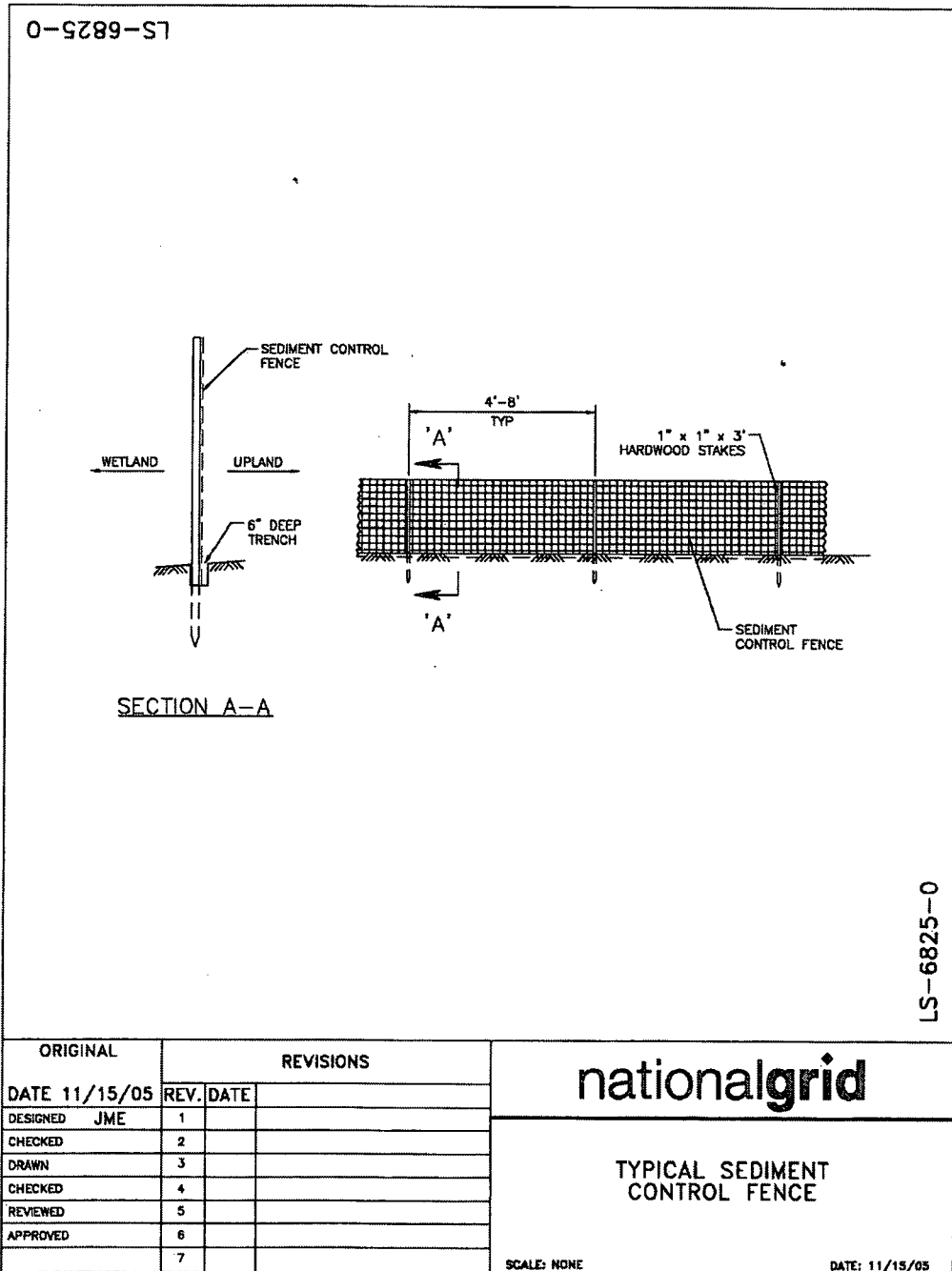


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0-9289-S7

**STRAW/HAYBALE CHECK DAM**

3' HARDWOOD STAKES OR #5/8" REBAR

BALING TWINE

PLACE BALES CUT END DOWN

**SANDBAG CHECK DAM**

TAMP IN BACKFILL

SAND BAGS

**LOG CHECK DAM**

CUT NOTCH IN TOP OF LOG

SET LOG IN DITCH BOTTOM. BACKFILL TO PREVENT UNDERMINING

**STONE CHECK DAM**

COARSE STONE (2"-6" STONE)

NOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY

LS-6826-0

ORIGINAL	REVISIONS	
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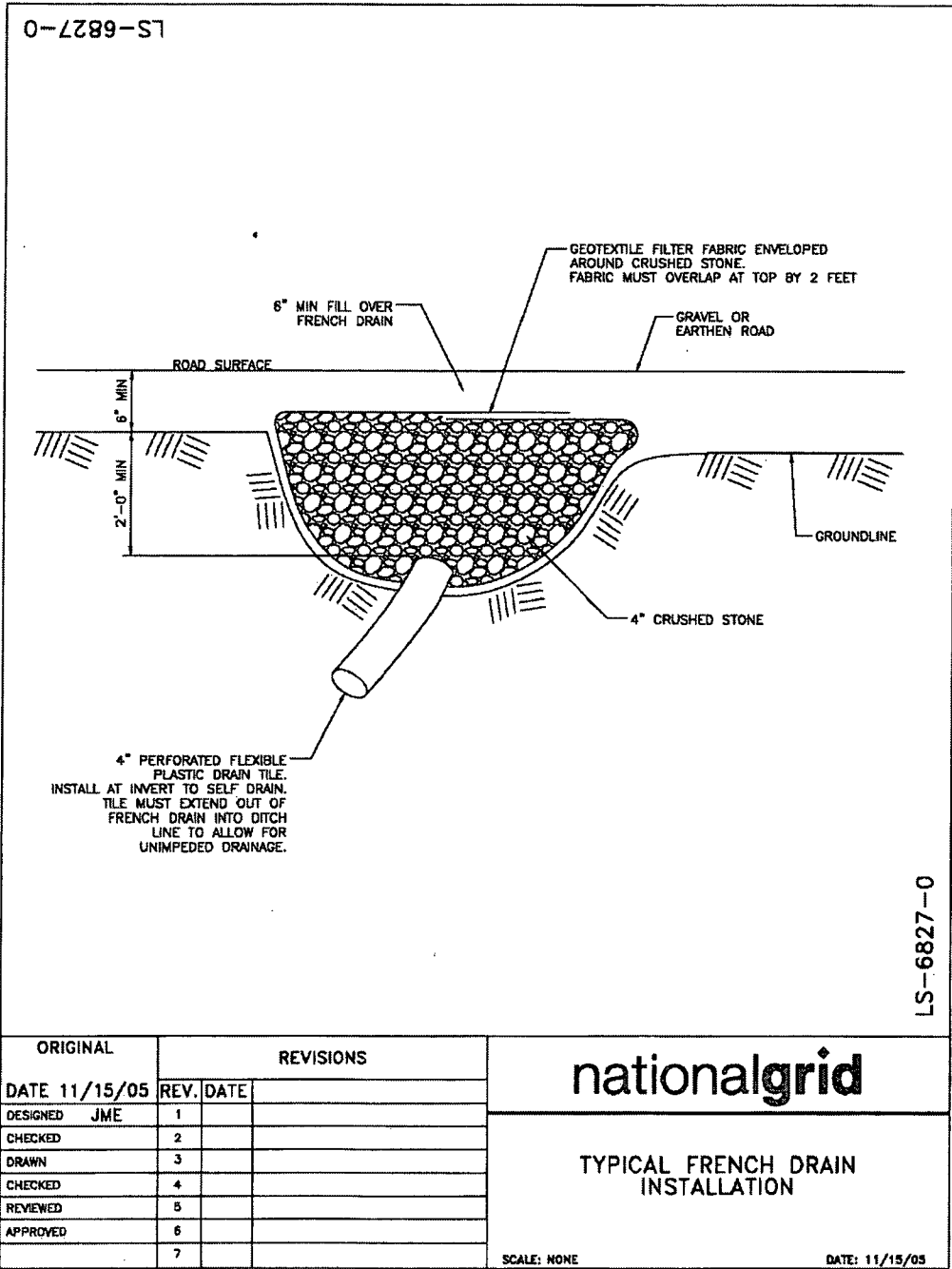
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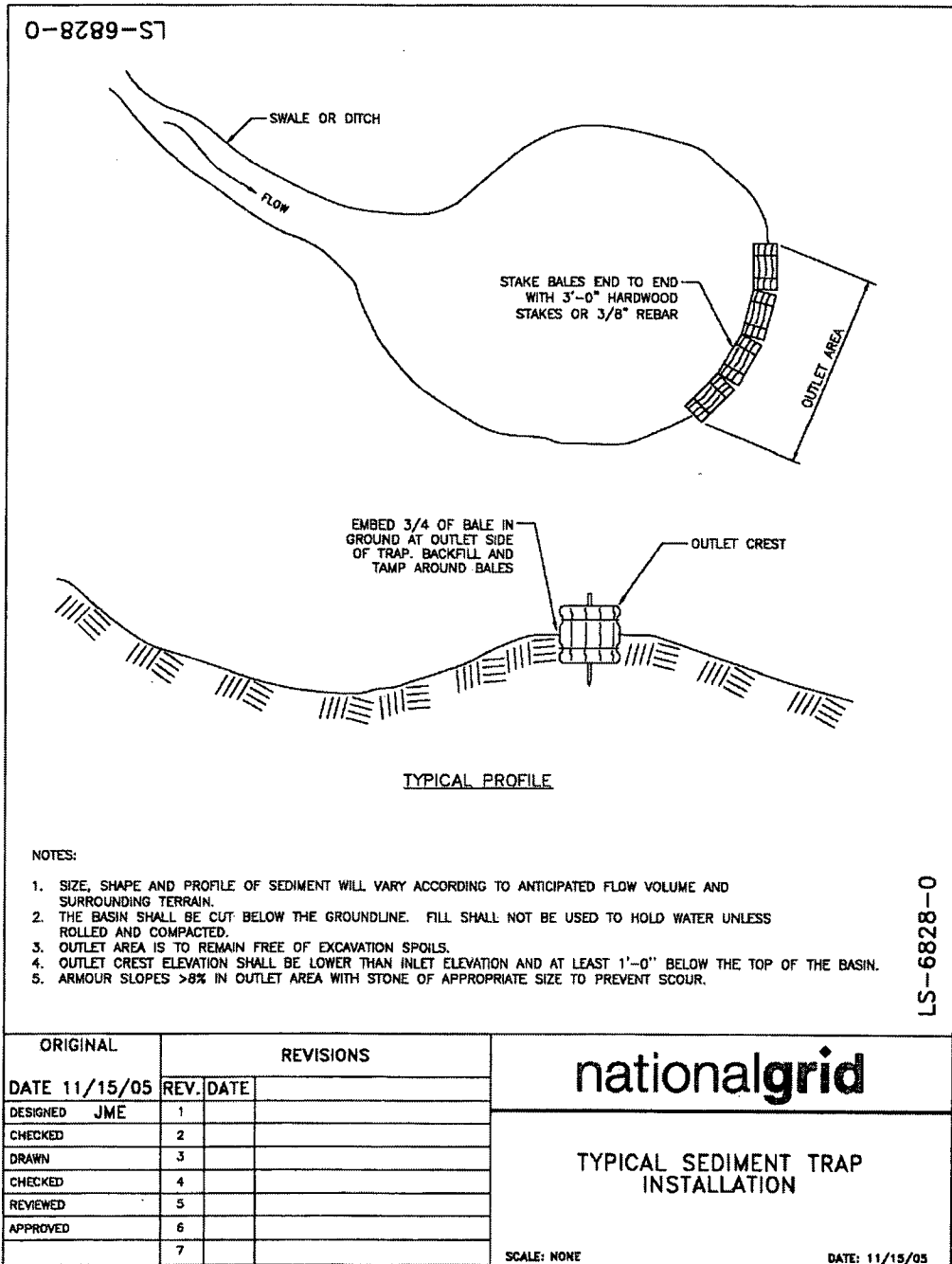
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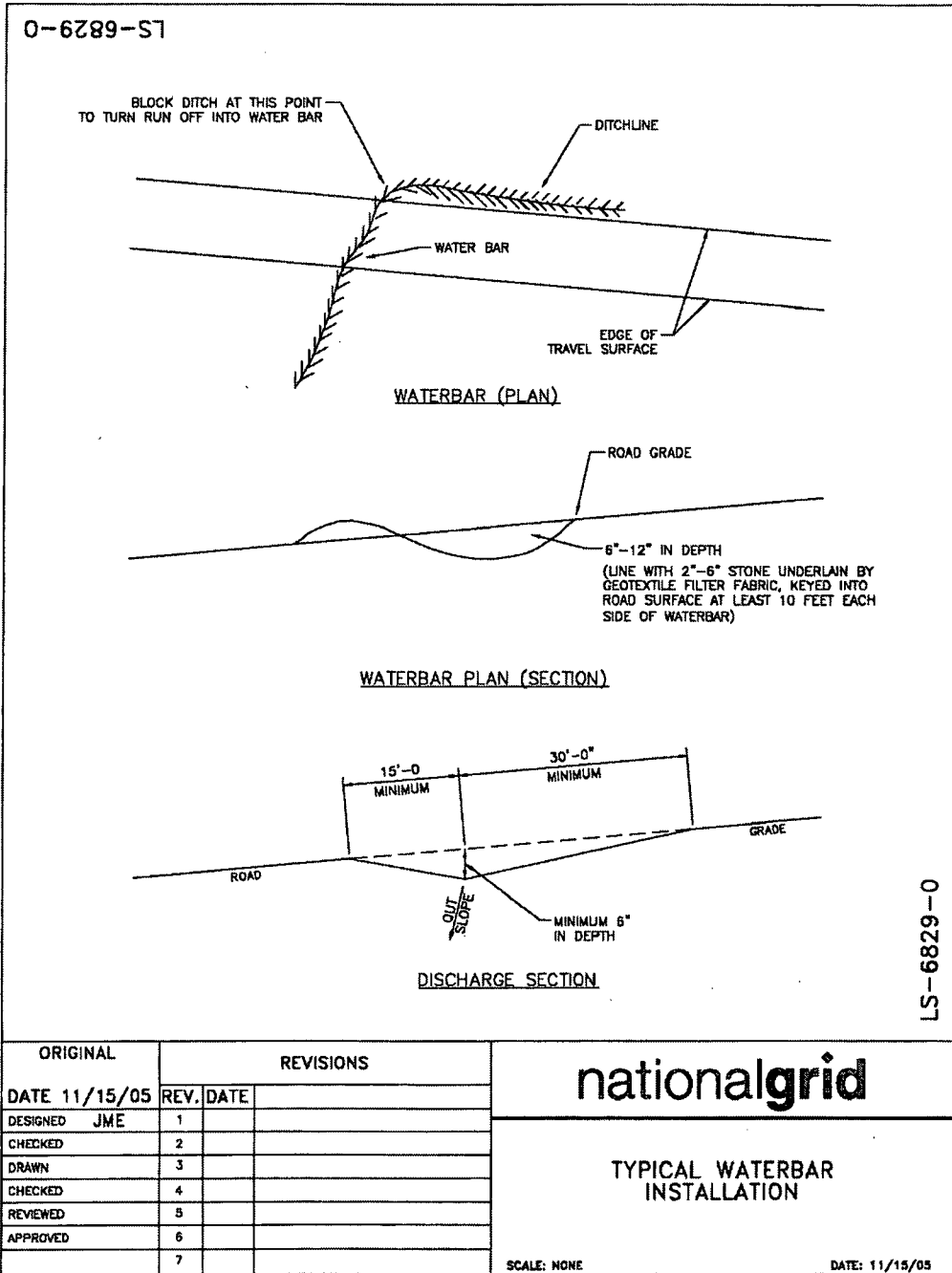
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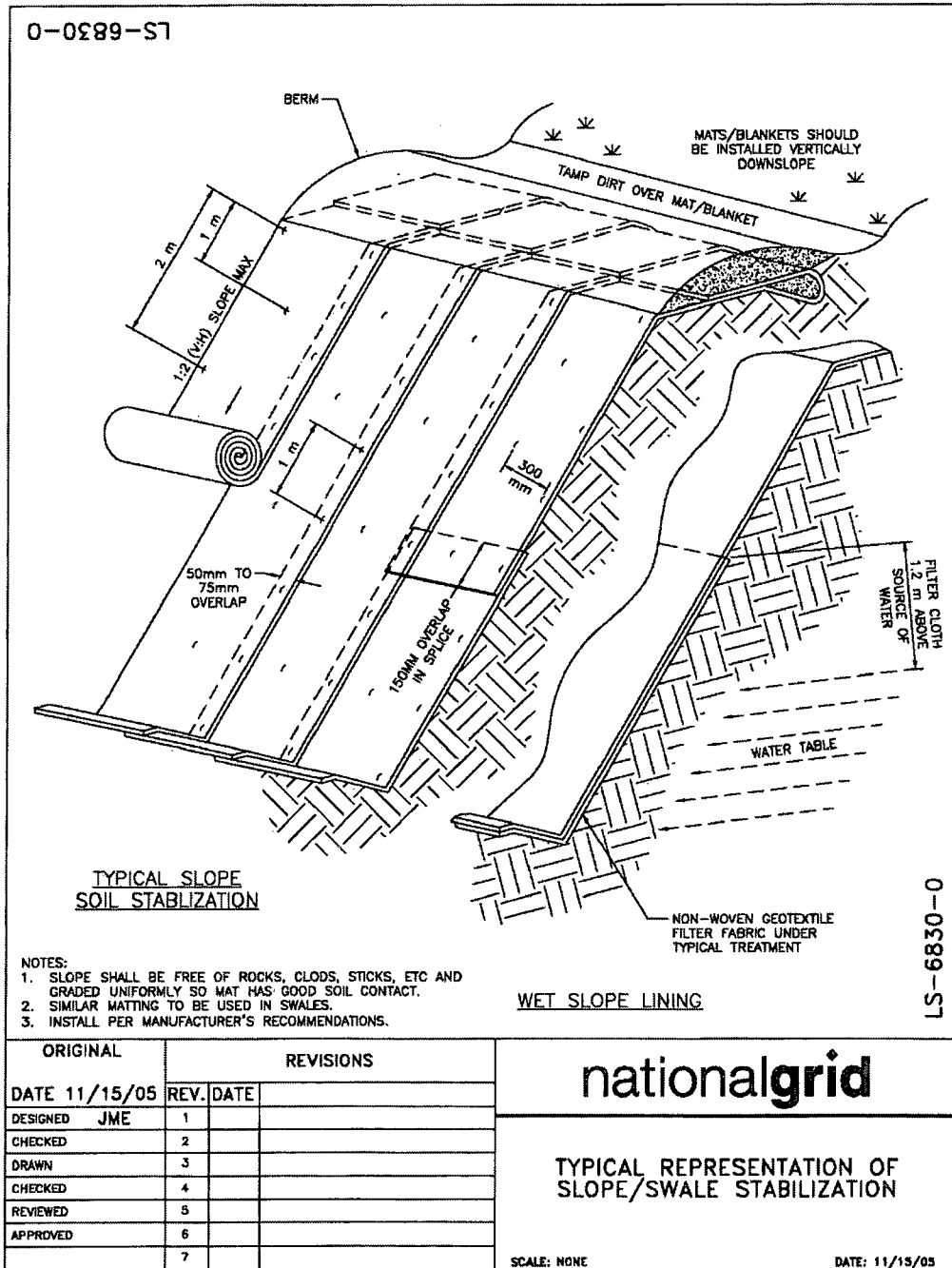
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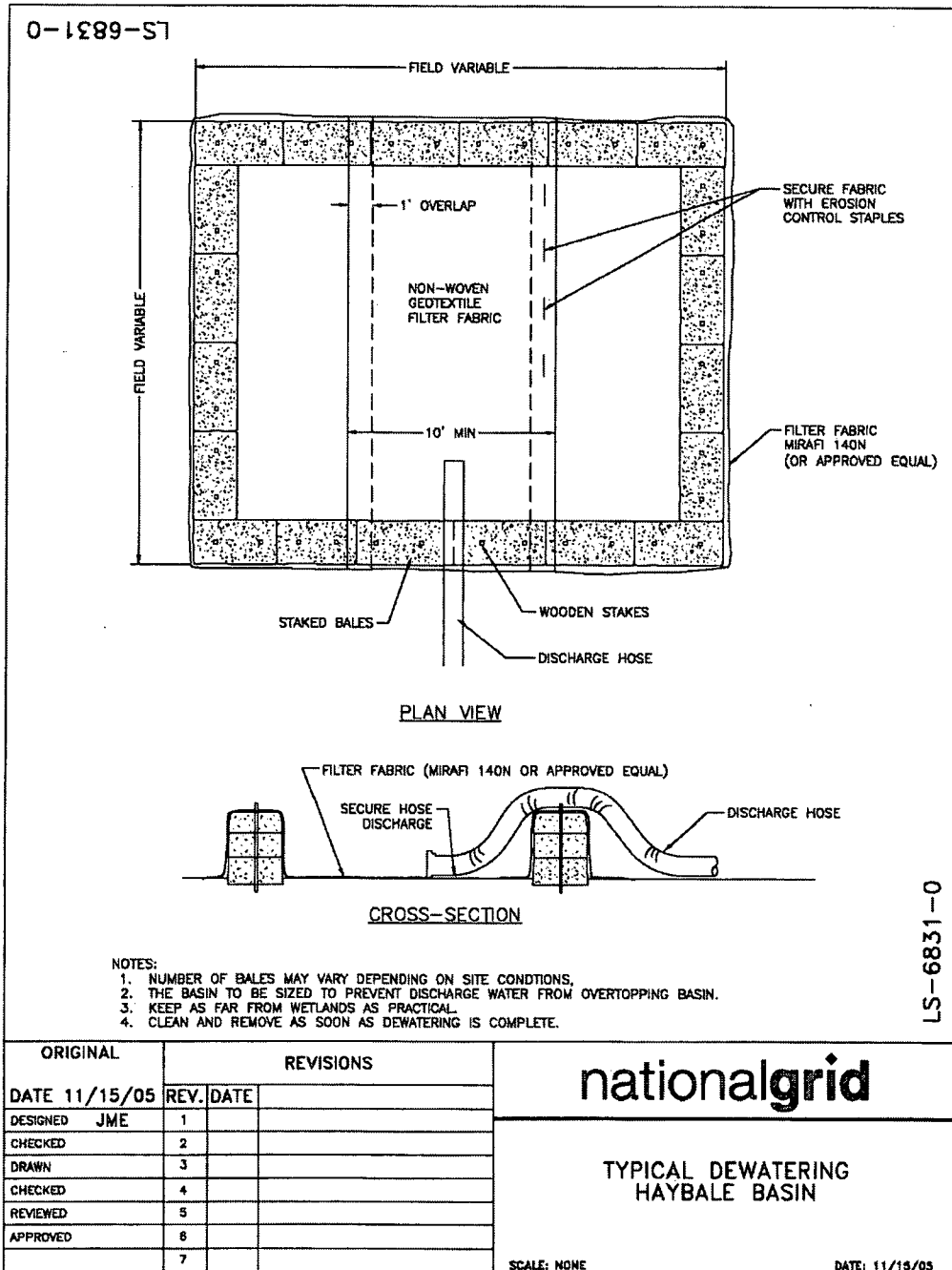
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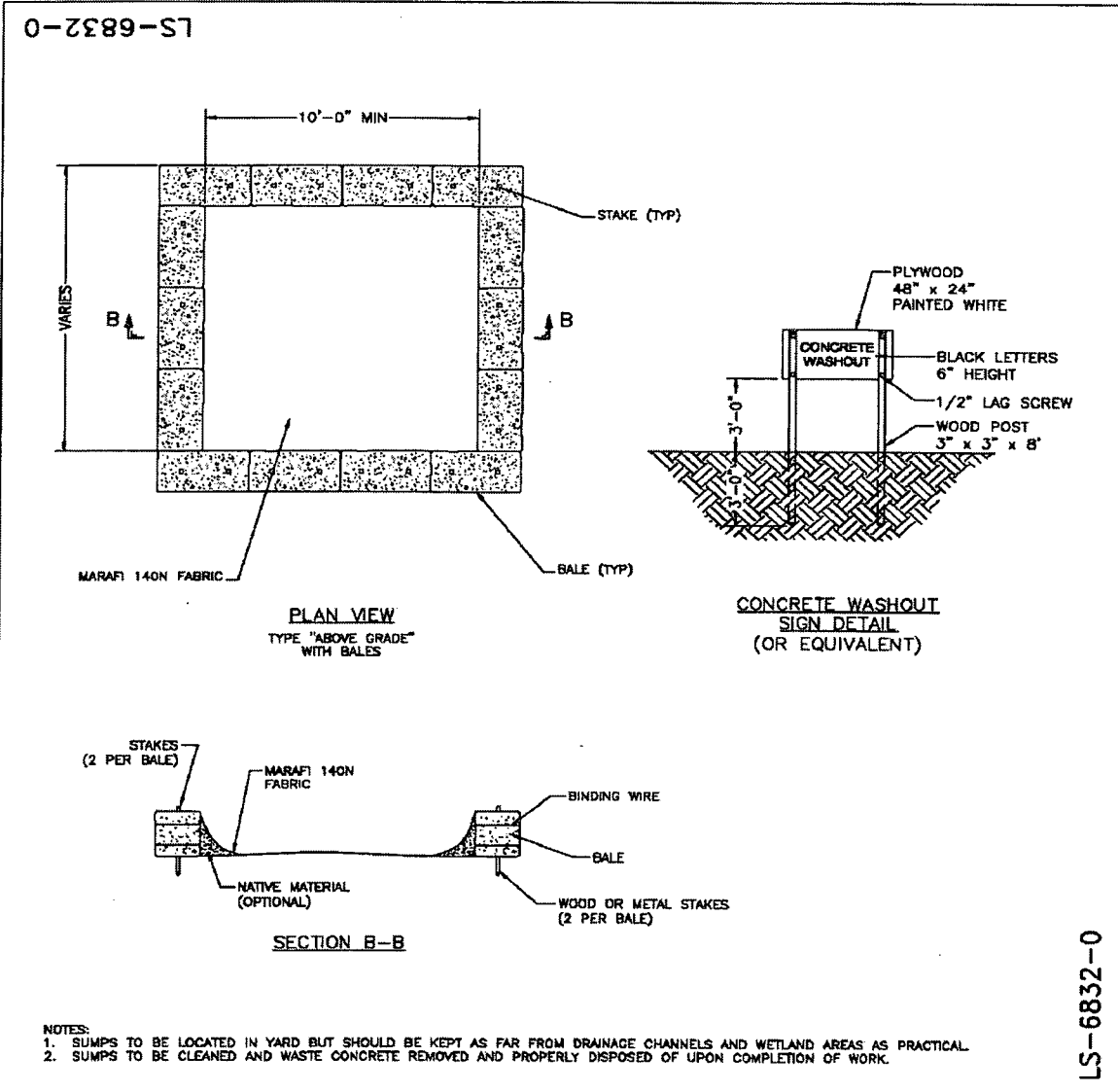
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**SUBJECT**

**ROW Access, Maintenance and Construction  
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**Reference**

**EP No. 3 – Natural Resource  
Protection (Chapter 6)**



ORIGINAL	REVISIONS	
DATE 11/15/05	REV.	DATE
DESIGNED JME	1	
CHECKED	2	
DRAWN	3	
CHECKED	4	
REVIEWED	5	
APPROVED	6	
	7	

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