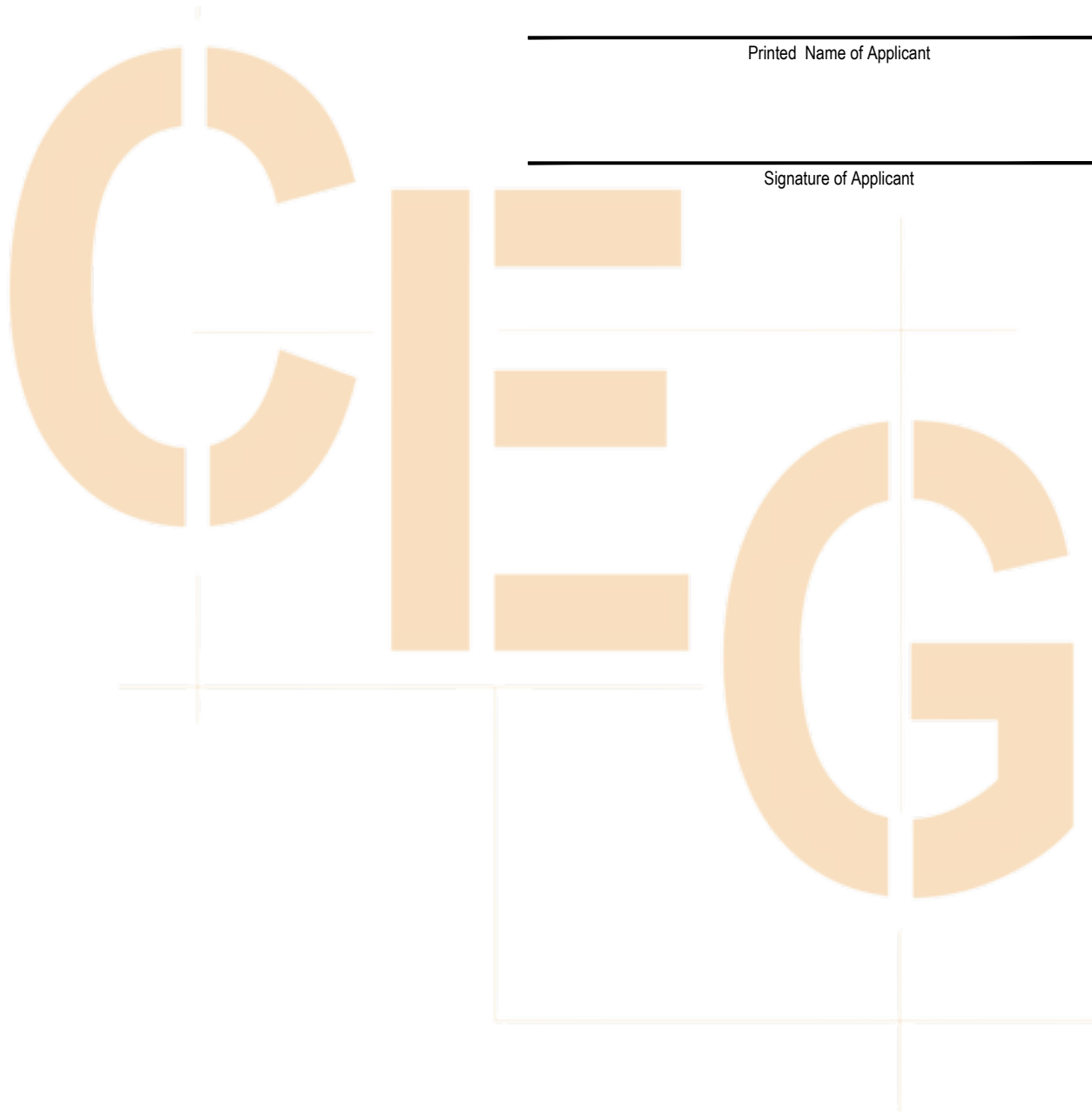


MISSISSIPPI DEPARTMENT OF TRANSPORTATION
COMPLETION OF WORK CERTIFICATION

This permit requires that the named applicant submit the following certification with signature(s) and insure proper filing with MDOT's District Permit Department before the permit is closed and all associated bonds are released:

Permit Representative's signature(s) acknowledges the following:

We/(I), certify that the requirements of this permit including Attachment A (MND-002 Rev. 2-2004) have been constructed as stated in the approved final permit. Furthermore, no work performed as an exercise of the approved permit, has been relocated or altered without such change being shown on an approved revision of the permit or approved addenda thereto.



Printed Name of Applicant

Signature of Applicant

Sheet No.: 3 of 13

Permit No.: _____

REVISIONS			
APPLICANT		MDOT	
DATE	BY	DATE	BY

SPECIAL NOTES - STIPULATIONS

NO EQUIPMENT OR PARKING WITHIN 30' OF THE EDGE OF PAVEMENT

All Permits with earth disturbing activities must contact Mississippi 811 before beginning work.

Please contact Gary Langley, M-F, 7A.M. to 4P.M., for locating MDOT facilities (Traffic Signals, Street Lighting, High Mast Light, Fiber) before work begins on this permit @ 662-401-5765 or 662-840-5148

Contact Neal Criswell at 662-401-5745 or 662-842-1122 48 hours before starting work on this permit. Stop work on this permit if an Culturally Sensitive items are uncovered in the scope of this project and call Neal.

In regards to this wetland site only, the Permit Holder is not required to hold a Department of the Army permit. The Permit Holder shall clearly mark area and may bore through the area without popping up. Permit Holder cannot use any machinery that may disturb the soil, change the bottom elevation, or place any fill material in this area. If the Corps of Engineers discovers through a site inspection that the Permit Holder has violated any of these conditions then the Permit Holder will be subject to enforcement for violation of section 404 of the Clean Water Act.

Worker Visibility

Code of Federal Regulations CFR 23 Part 634 final rule adopted November 24, 2006 becomes effective November 24, 2008. The rule requires that "All workers within the right-of-way of a Federal-aid highway who are exposed either to traffic (vehicles using the highway for the purpose of travel) or to construction equipment within the work area shall wear high-visibility safety apparel". High-visibility safety apparel is defined in the CFR as "personnel protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage, and that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled American National Standard for High-Visibility Safety Apparel and Headwear. "All Workers on Mississippi State Highway right-of-way shall comply with this Federal Regulation."

The applicant accepts the responsibility for the safety of the traveling public and his/her workers and agrees to furnish, place, and maintain traffic control devices, if required, in accordance with Part VI of the manual of Uniform Traffic Control Devices (MUCTD), Current Edition, as a minimum. A special traffic control plan is included in this application if special traffic control details are required.

All grading, landscaping, filling or otherwise altering the ground conformation shall be done by using BMPs according to the terms of the permit and all disturbed areas shall be re-sodded or seeded, fertilized, and watered as directed by the District Engineer.

BEST MANAGEMENT PRACTICES (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

The applicant agrees to assume the responsibility for obtaining any and all necessary storm water permits from the Mississippi Department of Environmental Quality (MDEQ) prior to beginning any work on state maintained highway right of way.

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Permit No.: _____

REVISIONS			
APPLICANT		MDOT	
DATE	BY	DATE	BY

Vegetation Schedule

All soil preparation, fertilizing, sprigging, seeding and work applied to same shall in accordance with the following procedure and schedule:

SHAPE AREA. Shape all areas to typical cross section and dress same as required by permit.

SPREAD FERTILIZER AND PREPARE SEED BED. The required fertilizer and agricultural limestone shall be spread uniformly over the area to be top seeded. After the fertilizer and limestone has been spread, the area shall be thoroughly pulverized and the fertilizer incorporated in the top four (4) inches of the graded areas.

KIND AND QUANTITY OF FERTILIZER. Fertilizer and agricultural limestone shall be applied at the following rates:

Combination Fertilizer 13-13-13 800 lbs. per acre

Agricultural Limestone 2 tons per acre

SEEDING AND/OR SODDING. Seeding and/or sodding is required on disturbed areas specified in the permit or by a representative of the Department. All areas should receive seeding as follows:

Common Bermuda 15 lbs. per acre year round

Bahia 30 lbs. per acre year round

Fescue (Ky.31) 20 lbs. per acre August 1-April 1

Crimson Clover 15 lbs. per acre August 1-April 1

No crimson clover or bahia grass is to be planted in the Delta and no Bahia grass is to be planted in city sections.

MULCH. All areas shall be covered with a baled straw (oat, wheat, rice barley, etc.) at the rate of 1.5 to 2.0 tons per acre. The mulch shall be dry and free of weeds. The mulch shall be spread and anchored in such a manner as to give a uniform cover over the entire area.

REFERTILIZATION. Sixty (60) days after the grass has been planted, vegetation areas shall receive additional fertilizer. Refertilization shall be applied at the rate of 500 lbs. of 13-13-13 per acre or 250 lbs. of ammonium nitrate per acre when deemed necessary by the Department.

MAINTENANCE. The permittee shall maintain the grassed areas in a satisfactory manner until a good growth is assured and final acceptance is made by the Department. Maintenance work shall include watering (when necessary), restoring the replacing grass, filling washes and mowing, if necessary.

SATISFACTORY GROWTH. When grass or grasses have overlapping growth, the area shall be considered to have satisfactory growth.

Application and Plan for Proposed _____
 _____ on Highway No. 145 in PRENTISS County as,
 submitted by XXXXXX of 1018 Highland Colony Pkwy., Suite 340
 (Applicant) of Ridgeland, MS 39157

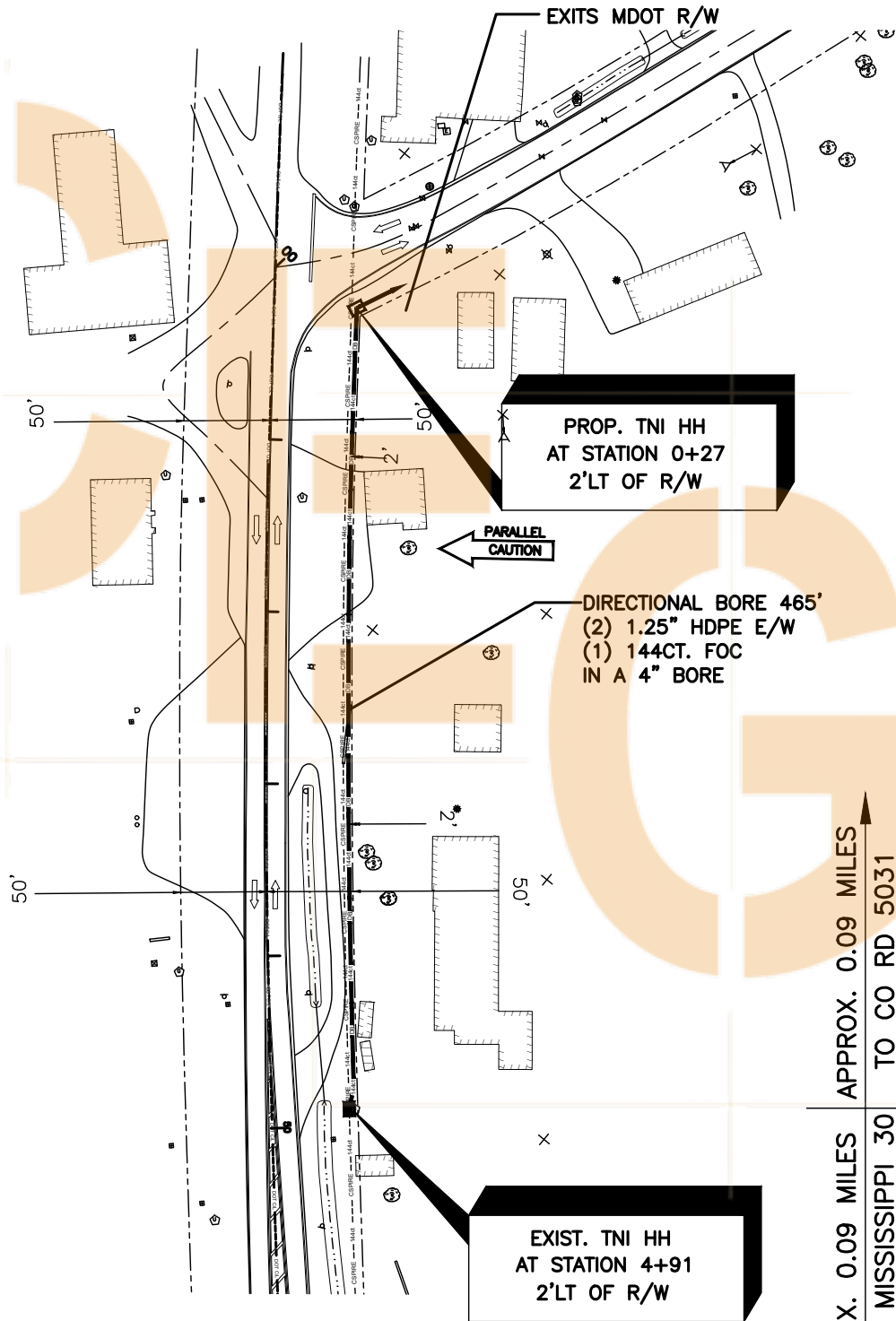
Sheet No. 5 of 13

Project No. N/A

Permit No. _____

NOTE TO CONSTRUCTION
 A MINIMUM DEPTH OF 48" WILL BE MAINTAINED AT ALL TIMES.
 MAINTAIN 48" MINIMUM DEPTH BELOW ALL DRAINAGE STRUCTURES AND PAVED SURFACES UNLESS OTHERWISE NOTED.

Scale: 1" = 100'



NOTE:
 ALL BRUSH AND DEBRIS TO BE REMOVED FROM R/W DAILY.

ALL BORE PITS AND EXCAVATION AREAS THAT WILL BE OPEN MORE THAN 12 HOURS MUST HAVE SILT FENCING TO PREVENT EROSION.

DRILLING FLUID WILL BE CONTAINED AND REMOVED DAILY

(Note: Indicate the location of this sketch and reference it accurately to the nearest culvert or bridge and also to the nearest town. Show distance of a structure from the center of the road and from the right-of-way line, or depth of an underground line. The Mississippi Department of Transportation's standard agreement must be executed by the applicant before application is approved).

REVISIONS			
APPLICANT		MDOT	
DATE	BY	DATE	BY

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Permit No.: _____

**CALL MISSISSIPPI 811
BEFORE WORK STARTS**

REVISIONS			
APPLICANT		MDOT	
DATE	BY	DATE	BY

Applicant agrees to assume full responsibility for safeguarding and directing traffic in accordance with the Manual Uniform Control Devices (MUTCD) during this work. All signs and traffic control devices are to be removed from roadway when not in use.

In accordance with the Code of Federal Regulations (CFR) Part 23 - Rule - 634.3--- All workers within the right of way of a Federal-aid highway wo are exposed either to traffic (vehicles using the highway for purposes of travel) and/or to construction equipment within the work area shall wear high-visibility safety apparel. High-visibility safety apparel is the which meets the Performance Class 3 of ANSI/ISEA 107-2004 "American National Standard for High-Visibility Safety Apparel and Headwear."

All sod disturbed by the proposed work is to be replaced by applicant and maintained for sufficient length of time to ensure a living and growing sod.

The Mississippi Department of Transportation does not purport to grant permission for, or to become party to any work that will change the flow of existing water on or off State property or to change the disposition of floodwaters.

As a condition for the approval of this permit application, the applicant agrees to perform work as shown on the application, make any necessary repairs of damages to the right-of-way, roadway slopes, shoulders, or pavement, all to the satisfaction of the Department of Transportation Commission and to save the Commission harmless as to all claims arising from work performed under this permit.

It is understood and agreed that any encroachments on adjoining property owners will be secured with easements from said property owners.

The applicant is to give the Permit Department of the MS Department of Transportation notice **forty-eight (48) hours** in advance the time the actual work is begun. Our telephone number is 601-683-3771.

It is expressly agreed that no equipment and/or materials will be laid out and/or stored within 30 feet of the edge of pavement.

A copy of the approved plan is to be kept at the site of the work at all times during construction.

The applicant agrees to assume the responsibility for obtaining any and all necessary permits from any other regulating entity prior to beginning any work on state maintained right of way. This can include entities such as but not limited to the municipality, county, MS State Department of Environmental Quality (DEQ) and the United States Corps of Engineers.

The permitted area is subject to inspection by the Mississippi Department of Transportation to ensure compliance with the provisions of the erosion control plan included in this permit.

Inclement weather conditions may require work to be postponed until work can be performed without unnecessary damage to the right-of-way.

The applicant agrees to ensure that any disturbed areas that are not permanently stabilized, and are not scheduled for any activity to take place for 14 days or more, and are seeded within seven (7) days of the disturbance.

All open excavation (bore pits, splice pits, etc.) left overnight shall be encircled with barricade to prevent accidental entry while construction is idle. Work shall be scheduled in a manner to minimize the amount of time pits are left open.

Vehicles and equipment shall not be parked at **ANYTIME** on the shoulder of the highway. Tracking of mud or debris onto roadway **WILL NOT BE ALLOWED**. Any Violation of the stated requirements shall result in a stop work order.

Sheet No.: TYP-002 of 13

Permit No.: _____

REVISIONS			
APPLICANT		MDOT	
DATE	BY	DATE	BY

Vegetation Schedule

All soil preparation, fertilizing, sprigging, seeding and work applied to same shall be in accordance with the following procedure and schedule:

- SHAPE AREA.** Shape all areas to typical cross section and dress same as required by the permit.
- SPREAD FERTILIZER AND PREPARE SEED BED.** The required fertilizer and agricultural limestone shall be spread uniformly over the area to be top seeded. After the fertilizer and limestone has been spread, the area shall be thoroughly pulverized and the fertilizer incorporated in the top four (4) inches of the graded areas.
- KIND AND QUANTITY OF FERTILIZER.** Fertilizer and agricultural limestone shall be applied at the following rates:

Combination Fertilizer	13-13-13	800 lbs. per acre
Agricultural Limestone		2 tons per acre

- SEEDING AND/OR SODDING.** Seeding and/or sodding is required on disturbed areas specified in the permit or by a representative of the Department. All areas should receive seeding as follows:

Combination Bermuda	15 lbs. per acre	year around
Bahia	30 lbs. per acre	year around
Fescue (KY 31)q	20 lbs. per acre	August 1-April 1
Crimson Clover	15 lbs. per acre	August 1-April 1

No crimson clover or bahia grass is to be planted in the Delta and no Bahia grass is to be planted in city sections.

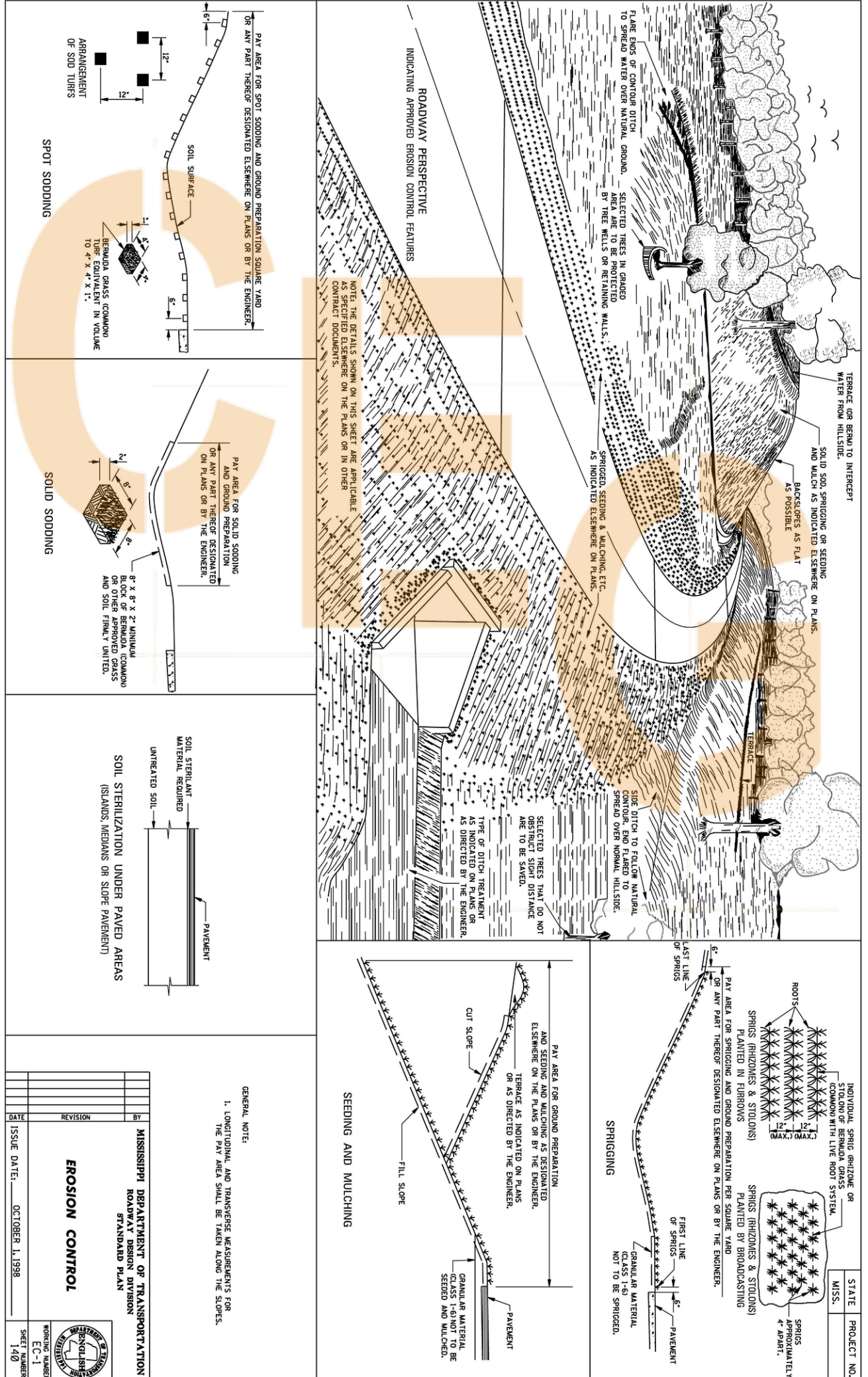
- MULCH.** All areas shall be covered with a baled straw (oat, wheat, rice, barley, etc.) at the rate of 1.5 to 2.0 tons per acre. The mulch shall be dry and free of weeds. The mulch shall be spread and anchored in such a manner as to give a uniform cover over the entire area.
- REFERTILIZATION.** Sixty (60) days after the grass has been planted, vegetated areas shall receive additional fertilizer. Refertilization shall be applied at the rate of 500 lbs. of 13-13-13 per acre or 250 lbs. of ammonium nitrate per acre when deemed necessary by the Department.
- MAINTENANCE.** The permittee shall maintain the grassed areas in a satisfactory manner until a good growth is assured and final acceptance is made by the Department. Maintenance work shall include watering (when necessary), restoring the replacing grass, filling washes, and mowing, if necessary.
- SATISFACTORY GROWTH.** When grass or grasses have overlapping growth, the area shall be considered to have satisfactory growth.

The Maintenance Division will keep the above vegetation schedule on the MDOT Intranet system. The District may download the vegetation schedule file and select and print the portion that is applicable to the specific permit on Form MND-005, Supplemental Form for Additional Sheets for MND-001, MND-002, and MND-004 or on Form MND-003, Attachment A, Application for Permit to Construct Utility Lines Along or Across State Highways for Holders of Master Agreements. The vegetative schedule will be updated by the Maintenance Division, as necessary, when the District advises the Maintenance Division of a specific need for a modification. The District may modify the vegetation schedule as listed on the MDOT Intranet system to fit the needs for the type of work involved and location thereof. However, it is recommended that the format be followed to maintain uniformity throughout the State.

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Permit No.: _____

REVISIONS			
APPLICANT		MDOT	
DATE	BY	DATE	BY



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Permit No.: _____

REVISIONS			
APPLICANT		MDOT	
DATE	BY	DATE	BY

IMPORTANT NOTE:

WORKER VISIBILITY

CODE OF FEDERAL REGULATIONS CFR 23 PART 634 FINAL RULE ADOPTED NOVEMBER 24, 2006 BECOMES EFFECTIVE NOVEMBER 24, 2008.

THE RULE REQUIRES THAT "ALL WORKERS WITHIN THE RIGHT-OF-WAY OF A FEDERAL -AID HIGHWAY WHO ARE EXPOSED EITHER TO TRAFFIC (VEHICLES USING THE HIGHWAY FOR THE PURPOSE OF TRAVEL) OR TO CONSTRUCTION EQUIPMENT WITHIN THE WORK AREA SHALL WEAR HIGH-VISIBILITY SAFETY APPAREL."

HIGH VISIBILITY SAFETY APPAREL IS DEFINED IN THE CFR AS "PERSONNEL PROTECTIVE SAFETY CLOTHING THAT IS INTENDED TO PROVIDE CONSPICUITY DURING BOTH DAYTIME AND NIGHTTIME USAGE, AND THAT MEETS THE PERFORMANCE CLASS 2 OR 3 REQUIREMENTS OF THE ANSI/ISEA 107-2004 PUBLICATION ENTITLED AMERICAN NATIONAL STANDARD FOR HIGH-VISIBILITY SAFETY APPAREL AND HEADWEAR."

ALL WORKERS ON MISSISSIPPI STATE HIGHWAY RIGHT-OF- WAY SHALL COMPLY WITH THIS FEDERAL REGULATION.

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Permit No.: _____

REVISIONS			
APPLICANT		MDOT	
DATE	BY	DATE	BY

GENERAL CONSTRUCTION NOTES:

1. THIS PERMIT GIVES THE APPLICANT PERMISSION FOR ONLY THAT WORK SHOWN ON THE HIGHWAY RIGHT-OF-WAY.
2. THE APPLICANT IS TO NOTIFY THE MDOT REPRESENTATIVE FORTY-EIGHT (48) HOJURS (2 WORKING DAYS) PRIOR TO BEGINNING WORK. CONTACT INFORMATION IS PROVIDED ON THE PERMIT APPROVAL LETTER INCLUDED WITH THE PERMIT.
3. THE APPLICANT IS TO CONTACT THE MISSISSIPPI ONE-CALL SYSTEM FORTY-EIGHT (48) HOURS (2 WORKING DAYS) PRIOR TO ANY EXCAVATION. MOCS CAN BE CONTACTED AT 1-800-227-6477 (TOLL FREE), 601-362-4374 (JACKSON AREA), OR 811 (NORMAL AIRTIME CHARGES MAY APPLY).
4. ANY DEVIATION FROM THIS PERMIT SHALL REQUIRE PRIOR MDOT APPROVAL PRIOR TO MAKING CHANGES.
5. IF A MAILBOX IS TO BE PLACED ON HIGHWAY RIGHT-OF-WA, IT SHALL BE CONSTRUCTED TO MDOT SPECIFICATIONS. (AVAILABLE ON REQUEST)
6. ALL WORK PERFORMED ON STATE HIGHWAY RIGHT-OF-WAY WILL BE PERFORMED WHEN THE RIGHT-OF-WAY IS DRY. TO PREVENT UNNECESSARY DAMAGE TO SAID RIGHT-OF-WAY.
7. THE APPLICANT SHALL NOT INTERFERE WITH OR HINDER TRAFFIC DURING THIS OPERATION.
8. THE APPLICANT SHALL TAKE PROPER PRECAUTIONS NOT TO ENDANGER THE TRAVELING PUBLIC.
9. ONLY THE DIRECTOR OF THE DEPARTMENT OF TRANSPORTATION CAN APPROVE THE CLOSING OF A STATE MAINTAINED HIGHWAY.
10. ALL ACCESS TO PROPOSED WORK SITE WILL BE MADE FROM OFF RIGHT-OF-WAY AND NOT FROM ROADWAY.
11. THE RIGHT-OF-WAY OF STATE MAINTAINED HIGHWAYS WILL NOT BE USED FOR PARKING, STORAGE, DISTRIBUTION, OR ANY OTHER PURPOSE, NOT INTENDED BY THIS PERMIT.
12. THE APPLICANT WILL INSURE ALL DIRT, MUD OR DEBRIS PLACED OR FALLING ON PAVEMENT AS A RESULT OF THIS OPERATION WILL BE REMOVED IMMEDIATELY.
13. THE DRAINAGE DITCH SHALL BE LEFT IN AS GOOD, IF NOT BETTER CONDITION THAN PRIOR TO BEGINNING CONSTRUCTION.
14. ANY AREA TO BE DISTURBED OR GRADED ON THE RIGHT-OF-WAY WILL BE FERTILIZED, MULCHED, SEEDED OR SODDED IN ACCORDANCE WITH MDOT SPECIFICATIONS. APPLICANT WILL BE RESPONSIBLE FOR ALL EROSION AND DRAINAGE UNTIL SUFFICIENT VEGETATION GROWTH HAS BEE ESTABLISHED.
15. AS A CONDITION FOR THE APPROVAL OF THIS PERMIT; THE APPLICANT AGREES TO ASSUME RESPONSIBILITY FOR OBTAINING ANY AND ALL NECESSARY STORM WATER PERMITS FROM THE MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY (MDEQ). PRIOR TO BEGINNING ANY WORK ON STATE MAINTAINED HIGHWAY RIGHT-OF-WAY.
16. THE PERMITTED AREA IS SUBJECT TO INSPECTION AND ANY ASSOCIATED RECORDS MAY BE REQUESTED BY MDOT TO ENSURE COMPLIANCE WITH THE PROVISIONS OF THE PERMIT AND THE EROSION CONTROL PLAN PREPARED FOR THE MDEQ SMALL CONSTRUCTION GENERAL PERMITS MSR15.
17. THE APPLICANT AGREES TO ENSURE THAT ANY DISTURBED AREAS THAT ARE NOT PERMANENTLY STABILIZED, AND ARE NOT SCHEDULED FOR ANY ACTIVITY TO TAKE PLACE FOR THIRTY (30) DAYS OR MORE, ARE SEEDED WITHIN SEVEN (7) DAYS OF THE DISTURBANCE.

TREE REMOVAL NOTES:

18. TREE VALUE WILL BE CUT ON STATE HIGHWAY RIGHT-OF-WAY AS A RESULT OF THIS OPERATION, UNLESS SPECIFICALLY ALLOWED BY THIS PERMIT.
19. TREES ARE OF LITTLE VALUE DUE TO SIZE AND SMALL AMOUNT OF TREES, AS DETERMINED BY MDOT REPRESENTATIVE.
20. ALL TREES WILL BE CUT TO WITHIN 2" OF GROUND LEVEL OR STUMPS MUST BE PUSHED OUT AND RIGHT-OF-WAY TO BE REPAIRED IMMEDIATELY.
21. ALL TREES, STUMPS, BUSHES AND UNDERGROWTH CUT AS A RESULT OF THIS OPERATION WILL BE REMOVED FROM RIGHT-OF-WAY.

UTILITY NOTES:

22. ALL ROADS, RAMPS, OR DRIVES CROSSED BY THIS UTILITY LINE WILL BE RESTORED TO THE SATISFACTION OF THE ADJACENT PROPERTY OWNER.
23. ALL TRENCHES SHALL BE BACK FILLED AND THOROUGHLY TAMPED IN LIFTS NOT ESCEEDING SIX (6) INCHES, EACH LIFT BEING COMPACTED TO A DENSITY EQUAL TO OR EXCEEDING THAT OF THE ADJACENT MATERIAL.
24. ALL BORE LOCATIONS ADJACENT TO BOX CULVERTS, CROSS DRAINS, DRAINAGE STRUCTURE AND DRAINAGE CHANNELS MUST BE A MINIMUM OF THREE FEET (36") BELOW THE ORIGINAL FLOW LINE OF THE STRUCTURE OR CHANNEL. IF THE EXISTING FLOW LINE IS BELOW THE ORIGINAL FLOW LINE, THE BORE MUST BE A MINIMUM OF THREE FEET (36") BELOW EXISTING GROUND LEVEL.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
JACKING, DRY BORING, BORING WITH DRILLING FLUID,
TUNNELING AND DIRECTIONAL BORING

NOTICE:

Before jacking, dry boring, boring with drilling fluid, tunneling or directional boring is begun, written approval must be obtained from the District Engineer on the method to be used. The District Engineer reserves the right to require a change in the method when, due to soil conditions or other reasons, the desired results are not being obtained.

Before any jacking, dry boring, boring with drilling fluid, tunneling or directional boring is begun, the District Engineer will be advised, in writing, whether the work will be performed by the applicant's forces or by contract and, if by contract, the name of the contractor.

Jetting will not be permitted.

Any overcutting exceeding the tolerances set forth in this document shall be filled immediately with flowable fill or other approved materials.

The applicant shall be responsible for correction of any distortion caused by his/her operation on any road, street, frontage road, ramp, conventional highway, partially controlled highway, fully controlled access highway and/or roadway cross-section. The method of correction shall be approved by the District Engineer.

Failure to comply with the requirements for jacking, dry boring, boring with drilling fluid, tunneling, and/or directional boring operations or failure to comply with the approved permit requirements shall be cause for canceling the permit.

The applicant, by signing this document, certifies that the design and type of materials and method of operations are of the industry standard where the industry standard is indicated below.

JACKING

JACKING will be accomplished as follows:

Pushing or jacking of casing or carrier pipes under the highway larger than three and one half (3-1/2) inches in diameter is prohibited. All casing or carrier pipe will be of strength sufficient to withstand the stress resulting from jacking pressures.

DRY BORING

DRY BORING will be accomplished as follows:

For pipes greater than eight (8) inches in diameter, the maximum diameter of the borehole shall be the outside diameter of the casing or carrier pipe plus two (2) inches (Pipe O.D. + 2"). For pipes less than or equal to eight (8) inches in diameter, the maximum diameter of the borehole shall be the outside diameter of the casing or carrier pipe plus one (1) inch (Pipe O.D. + 1").

Water bearing sands and muck soils will be well pointed as necessary prior to commencing the bore.

All bores will be accomplished with the auger inside the casing or carrier pipe with the cutting edges positioned just ahead of the pipe except as follows:

- (1) Dry boring with the auger not inside the casing or carrier pipe may be permitted in bores eight (8) inches or less in diameter in dense consolidated soils.
- (2) Dry boring with the auger not inside the casing or carrier pipe may be permitted in bores three (3) inches or less in diameter in loose sandy soils or other soils which easily cave or spall.

Care should be exercised at all times to keep the auger properly positioned within the casing or carrier pipe and to maintain sufficient forward pressure upon the casing or carrier pipe to quickly run through any pockets of loose soil.

All boring with or without the auger inside the casing or carrier pipe will be carefully observed for comparison between the amount of cuttings removed from the hole and the diameter of the bore, together with the distance the auger has traveled in the bore. An excessive amount of cuttings removed from the bore indicates caving or spalling of the bore wall, in this case, the bore shall be stopped until a method for completing the bore acceptable to the Mississippi Department of Transportation has been agreed upon.

An acceptable fluid may be introduced by gravity flow approximately three (3) feet back of the forward end of the casing or carrier pipe to lubricate the cuttings in order to facilitate the removal thereof; however, the excessive use of such fluid causing undue flow back and erosion of the bore is prohibited.

BORING WITH DRILLING FLUID

Boring with Drilling Fluid will be accomplished as follows:

The maximum diameter of the borehole shall be the outside diameter of the casing or carrier pipe plus two inches (Pipe O.D. + 2") with an open type bit that leaves the cuttings in place.

The design and type of drilling fluid and the method used for the boring with drilling fluid work shall be of the industry standard.

Drilling fluid is used to lubricate the cutters or reamers, consolidate the cuttings into plugs of appropriate length, seal the wall of the bore to form a filter cake in order to prevent cave-ins or spalling, maintain the arch, and lubricate the bore for easy removal of masses or plugs of cuttings from the bore by using compressed air and for the installation of the casing or carrier pipe immediately thereafter. The excessive use of drilling fluid that causes undue flow back and erosion of the bore may be a violation of the approved method and, pending a Department evaluation, be cause for canceling the permit.

When boring in sandy subsoils, fine sands, water-bearing sands, or any solid which easily spalls or caves, the bores entrance will be plugged or dammed in order to retain both the drilling fluid and the cuttings within the bore until the time immediately before the casing or carrier pipe is installed. Water bearing sands and mucky soils will be pointed as necessary prior to commencing the bore. When drilling through dense consolidated soils, the cuttings may be partially removed from the hole in approximately three (3) foot plugs by the use of compressed air or by retraction of the cutter or reamer. No cutter or reamer larger than three (3) inches in diameter shall have holes therein larger than five sixteenth (5/16) inches in diameter through which drilling fluid is forced during boring.

TUNNELING

Tunneling will be accomplished by the following methods:

First, using jacking equipment where the pipe is aimed and jacked ahead as the earth is excavated by hand or with the aid of mechanical tools just ahead of the pipe end, OR

Second, when enough opening for the tunnel is excavated ahead, the tunnel liner plates are bolted together to extend the liner until it is complete.

In both methods, the pipe or tunnel must be of sufficient size to permit entry, excavating ahead, and disposal of the material through the pipe or tunnel. Excavation around the pipe or liner should be the minimum necessary for jacking or working clearances.

The pipe specifications used in the tunneling method of the crossing installation shall comply with the same specifications for pipe used for jacking and boring.

The tunnel liner plate or section specifications shall be fabricated of galvanized steel of the proper gauge and section modulus to withstand the live load and fill height. In acid soil areas, the liner will be required to be asphalt coated. If used as a cross drain, a paved invert may be required.

All pipe or liner tunneled will be fitted with grout vents and grout pumped into the voids around the pipe or liner at not less than 45 psi. The design and spacing of the vents, the grout mixture and method used for filling the void between the finished tunnel and outline of the excavation shall be of the industry standard.

DIRECTIONAL BORING

Directional boring will be accomplished by the following method::

A pilot hole is drilled beginning at a prescribed angle from horizontal and continues across the obstruction along a design profile made of straight tangents and long radius arcs.

Once the pilot hole is made, the casing or carrier line can be pulled through. The casing or carrier line is prefabricated on the bank opposite the drilling rig. A reamer is attached to the drill string and then connected to the casing or carrier line pull head via a swivel. The swivel prevents any translation of the reamer's rotation into the casing or carrier line string allowing for a smooth pull in to the drilled hole. The drilling rig then begins the pullback operation, rotating and pulling on the drill string and once again circulating high volumes of drill slurry. The pull back continues until the reamer and casing or carrier line returns to the drilling rig.

The design and type of drilling slurry and method used for the drilling operation shall be of the industry standard.

Signed: _____
Name of Party Signing Application

Title

Date

Field Inspection By: _____ 20 _____

Approved:

Deputy Executive Director/Chief Engineer

By: _____ 20 _____

Installation Inspection By: _____ 20 _____