WEST VIRGINIA

DEPARTMENT OF ENVIRONMENTAL PROTECTION

OFFICE OF ABANDONED MINE LANDS AND RECLAMATION

COUNTY

OF

Harrison

NAME OF PROJECT

Shinns Run Portals

N O T I C E

ALL PAPERS BOUND WITH OR ATTACHED TO

THE BID FORM ARE A NECESSARY PART

THEREOF AND MUST NOT BE DETACHED

PROJECT SPECIFICATION BOOK

INDEX

ARTICLE I - DEFINITIONS

ARTICLE I - DEFINITIONS

1.0 **"Bidder" refers to the person, firm, or company offering to furnish the work called for by the specifications herein.**

2.0 **"Chief" shall mean the Chief of the West Virginia Department of Environmental Protection's, Office of Abandoned Mine Lands & Reclamation.**

3.0 **"Regional Engineer or Engineer" refers to the head of the Construction Group of the Office of Abandoned Mine Lands & Reclamation of the West Virginia Department of Environmental Protection in each regional office.**

4.0 **"Construction Supervisor" refers to the regional supervisor of the West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands & Reclamation Construction Inspectors.**

5.0 **"Contract" refers to a purchase order placed by the West Virginia Department of Administration on behalf of the Department of Environmental Protection and accepted by the Contractor together with these specifications and all other documents incorporated therein by reference.**

6.0 **"Contract Documents" consist of all of the articles, sections, and attachments to the contract, including Information for Bidders, General Conditions, General Requirements, Special Conditions, drawings, specifications, all addenda issued prior to execution of the contract, and change orders and other written modifications issued after execution of the contract and executed by both parties to the contract.**

7.0 **"Contractor" refers to the person, firm or company contracting with the West Virginia Department of Environmental Protection to furnish the work called for in the contract.**

8.0 **"Cabinet Secretary" refers to the Cabinet Secretary of the West Virginia Department of Environmental Protection.**

9.0 **"DEP" means the West Virginia Department of Environmental Protection.**

10.0 **"Design Engineer" shall mean the representative of the Office of Abandoned Mine Lands & Reclamation's Engineering Section or the Architect/Engineering consulting firm, whichever designed the project.**

11.0 **"Inspector" shall refer to DEP's Inspector, who monitors all construction operations at the project site.**

12.0 **"Project" shall mean the Abandoned Mine Lands Project described and referred to by the specifications herein.**

13.0 **"Sub-contractor" refers to the person, firm or company contracting directly with the Contractor and not with DEP to furnish the Contractor with any portion of the work called for by the contract.**

ARTICLE I - DEFINITIONS

14.0 "Work" shall be understood to mean and include any and all of the labor, supervision, services, materials, machinery, equipment, tools, supplies and facilities called for by and required to complete the contract.

15.0 "Stabilization Measures" as noted in Section 5 Vegetative Practices shall be understood to mean and include any/all measures necessary for preventing erosion & sediment to the project site. This may include seeding and mulching, mulching without seed, silt fence, wattles. Check dikes, sumps or any other method required to stabilize a site that work has stopped for a time exceeding fourteen (14) days.

ARTICLE II - GENERAL CONDITIONS

ARTICLE II – GENERAL CONDITIONS

Sections Included:

ARTICLE II - GENERAL CONDITIONS

1.0 ENUMERATION OF CONTRACT DOCUMENTS

1.1 Drawings

Construction drawings (24) for the reclamation of the project as prepared by for the West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation, 601 57th Street, SE, Charleston, West Virginia 25304-2345, Telephone (304) 926-0485.

1.2 Specifications

See Index

1.3 Addenda

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

2.0 CORRELATION OF DOCUMENTS

2.1 The intent of the contract documents is to include all labor, materials, equipment, operations and transportation necessary for the proper execution and completion of the work. The contract documents are complementary and what is required by one is required by all.

2.2 The Contractor shall carefully study and compare the contract documents and shall at once report to DEP any error, inconsistency or omission it may discover. Contractor shall not proceed with the work affected by such error, inconsistency, or omission until resolved to the satisfaction of itself and DEP.

2.3 The drawings and specifications are correlative and shall be accepted and used as a whole and not separately. Should any item be omitted from the drawings and be included in the specifications, and be required to complete the work under the contract, it shall be executed as if shown on both and contained in both; except that it is not intended that items or work not applicable or required be provided unless it is consistent therewith and reasonably inferable therefrom as being necessary to produce the intended results.

2.4 In case of disagreement or conflict between drawings and specifications, or inconsistencies, errors, or if omissions be discovered in the drawings and specifications, or if in any part the meaning of either or both shall be considered obscure or uncertain, the Chief or his/her authorized

representative shall be immediately notified thereof. No work so affected by such circumstances shall proceed until the Chief or his/her authorized representative renders a decision and/or interpretation thereon. Large scale drawing details shall take precedence over drawings of lesser scale. Words and abbreviations which have well known technical or trade meanings are used in the contract documents in accordance with such recognized meanings.

3.0 EXAMINATION OF PREMISES

3.1 Before submitting proposals for the work, each bidder will be held to have examined the premises and satisfied itself as to the existing conditions under which it will be obliged to operate, or that will in any manner affect the work under the contract. Bidders shall have become familiar with the drawings and specifications and have compared them with existent conditions.

3.2 By executing the contract, Contractor represents that it has visited the site, familiarized itself with the local conditions under which the work is to be performed, and correlated its observations with the contract documents. No allowance will subsequently be made by reason of neglect or error on the part of the Contractor for failing to inform itself of the requirements and conditions contained herein.

4.0 MATERIALS & WORKMANSHIP

4.1 All installed materials and equipment shall be new, and all materials, equipment, and workmanship shall be of kind and type specified, and in all cases, be of good quality. Contractor shall, if required, furnish satisfactory evidence as to kind and quality of its materials, equipment and workmanship.

4.2 The Contractor shall provide and pay for all labor, materials, equipment operations, tools, construction equipment, and machinery, transportation, water, heat, utilities, and other facilities and services necessary for the proper execution and completion of the work. The Contractor at all times shall supply sufficient skilled and other labor necessary to adequately fulfill the requirements of the drawings and specifications, and provide for expeditious and practicable execution of the work to its completion.

4.3 The installation or application of all devices and materials shall be in accordance with the manufacturer's installation application data, shop drawings and instructions, unless otherwise provided herein.

5.0 GUARANTEE & MAINTENANCE

5.1 The materials and workmanship affected by the Contractor are subject to the guarantee established by custom of the respective trades. In the absence

of a trade guarantee custom or a special guarantee provision, the work, both as to the materials and workmanship, shall upon acceptance of final inspection by the Contractor be considered guaranteed by the Contractor for one (1) year from the date of the acceptance of the work. Neither the final acceptance nor the final payment shall relieve the Contractor of responsibility for negligence or faulty materials, and for defects appearing within the guarantee period shall be remedied at the expense of the Contractor upon written notice.

5.2 During the one-year guarantee period, the Contractor will maintain the project to the conditions existing at the date of the acceptance of the work. Any failures due to the negligence or workmanship of the Contractor in any of the work which develop during the guarantee period shall be corrected by the Contractor at its expense.

5.3 The one-year guarantee period shall not be construed as being an extension of the performance time allotted for work under the contract.Failure to perform warranty work shall extend performance time until work is completed and accepted

5.4 Guarantees concerning revegetation may be further defined in the technical specifications contained herein.

6.0 SUPERVISION & CONSTRUCTION PROCEDURES

6.1 The Contractor shall supervise and direct the work, using its best skill and attention. It shall be responsible for all construction means, methods, techniques, and procedures, coordinating all portions of the work, and for cooperating with appropriate DEP personnel and with other contractors in every way possible.

6.2 The Contractor shall be responsible to DEP for the acts and omissions of its employees, its subcontractors and their agents or employees, and other persons performing any of the work under a contract with the Contractor.

6.3 The Contractor will be supplied with three (3) copies of the plans and specifications. It shall have available on the work site at all times one (1) copy of said plans and specifications. Additional copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

7.0 PERMITS, LAWS, REGULATIONS, & RIGHTS OF ENTRY

7.1 The WVDEP-AML has obtained a Construction Storm Water General Permit for this project from WVDEP Division of Water and Waste Management (WVDEP DWWM). The registration for this reclamation project will be modified to include the Contractor as Co-Applicant #1, with the WVDEP-AML being Co-Applicant #2. As such, the Contractor shall assume responsibility for compliance with the terms and conditions of the permit including modifications and any future correspondence such as registration renewal invoices, inspection reports, and notices of violation shall be forwarded to the Contractor. Upon award of the contract, the Contractor shall complete a Co-Applicant #1 signature page and submit the completed form to WVDEP-AML prior to scheduling a Pre-Construction Conference.

Upon receipt of the completed form, WVDEP-AML will request the WVDEP DWWM to modify the existing NPDES registration for this project to make the Contractor the Co-Applicant #1 to the permit.

The WVDEP DWWM will notify the Contractor and WVDEP-AML when the successful transfer of registration under WV/NPDES Storm Water Construction General Permit (No.WV0115924) is completed. A Notice to Proceed will not be issued until the contractor signs the co-applicant form and submits to the Office of Abandoned Mine Lands.. Once the transfer has been completed, the WVDEP will continue to be responsible for any modification fees and annual renewal fees incurred up until the date of the final inspection of the project that occurs after completion of construction activities at the site. The Contractor shall be responsible for any and all costs associated with violations and fines assessed against the project that are a result of the Contractor's negligence, carelessness, or failure to install permanent controls as part of the work as scheduled.

The Contractor shall apply for a Notice of Termination (NOT) from WVDEP DWWM via the Construction Storm Water website http://www.dep.wv.gov/Programs/stormwater/csw/Documents/Construction upon completion of construction activities at the site. The NOT shall be issued by WVDEP DWWM upon completion of the project. The Contractor will continue to be bound by the terms and conditions of the permit until the NOT has been approved by WVDEP DWWM. Once the project is complete, the Contractor will still bear responsibility for the NPDES registration until a NOT is received from the WVDEP DWWM.

7.2 **The Contractor shall comply with all laws, ordinances, rules, orders and regulations relating to the performance of the work, the protection of adjacent property, the maintaining of passageways, guard fences, or other protective facilities.**

7.3 **All applicable Federal and State laws and regulations, municipal ordinances, and the rules and regulations of all public authorities having jurisdiction over construction of the project shall apply to the contract throughout, and are incorporated herein by reference.**

7.4 **DEP shall be responsible for obtaining all construction rights of entry for the project unless otherwise provided for in the Construction Specifications.**

7.5 **The Contractor agrees to indemnify and hold harmless the DEP from all liability and/or damages resulting from the Contractor's use of property for which the Contractor was to obtain rights of entry for borrow, disposal, access or other purposes. Said indemnification shall include, but is not limited to, liability and damages resulting from the Contractor's failure to obtain any or not all the right of entry; failure to utilize appropriate language in the right of entry agreements; or failure to obtain the permission and signatures of all persons or entities holding a legal interest in the subject property(ies) covered by the rights of entry.**

7.6 **All right of entry agreements the Contractor obtains for borrow, disposal, access or other purposes for this project shall include a provision requiring the property owner to indemnify and hold harmless the DEP for the Contractor's actions and any injury or damages whatsoever resulting from the Contractor's use of the property.**

Co-Applicant #1 Signature Page

Co-Applicant#1: _____

New and/or Modification of NPDES Storm Water of Construction Project Name:_____

BY COMPLETING AND SUBMITTING THIS APPLICATION, I HAVE REVIEWED AND UNDERSTAND AND AGREE TO THE TERMS AND CONDITIONS OF THE GENERAL PERMIT ISSUED ON DECEMBER 05, 2012. I UNDERSTAND THAT PROVISIONS OF THE PERMIT ARE ENFORCEABLE BY LAW, VIOLATION OF ANY TERM AND CONDITION OF THE GENERAL PERMIT AND /OR OTHER APPLICABLE LAW OR REGULATIONS CAN LEAD TO ENFORCEMENT ACTION.

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED ON THIS FORM AND ALL ATTACHMENTS AND THAT, BASED ON MY INQUIRING OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION. THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT.

_____ _____

(CO- APPLICANT #1 SIGNATURE) DATE

Print Name:_____

Print Title: _____

Address: _____

City: _____State:_____ Zip:_____

Telephone Number: (_____)_____-_____

Email: _____

FEIN: _____

8.0 SAFETY REQUIREMENTS

8.1 Particular attention is directed to the "West Virginia Safety Code for Building Construction" as published by the West Virginia Department of Labor. Observance of and compliance with said laws, regulations and codes shall be solely with and without qualification the responsibility of the Contractor.

8.2 The Contractor, subcontractors, other contractors and all employees and workers shall comply with the provisions of the Occupational Safety and Health Act 29 CRF 1926. The Contractor shall be held liable to DEP for any health and safety infractions, on the Contractor's part, which cause DEP to receive a citation and/or fine from any local, State or Federal agency. Actual costs involved will be paid by the Contractor to the satisfaction of DEP.

9.0 PROTECTION OF PERSONS & PROPERTY

9.1 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work.

9.2 Safety of Persons and Property: The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection, preventing damage, injury, or loss to:

(a) All employees on the work, and all other persons who may be affected thereby;

(b) All the work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor, or any of its subcontractors or their employees or subcontractors; and

(c) Other property on the site or adjacent thereto, including, but not limited to, paving, roadways, structures, utilities and permanent property boundaries, monuments or markers not designated for removal, or relocation, or replacement in the course of construction. Any damage to these items shall be repaired or replaced at the expense of the Contractor and to the satisfaction of DEP.

9.3 The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any public authority, bearing on the safety of persons or property, or their protection from damage, injury, or loss.

9.4 The Contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable and adequate safeguards for safety and protection. It shall post danger signs and provide other warnings as required against hazards and dangers to persons and property.

9.5 In case of an emergency which threatens injury, loss of life and/or damage to property, the Contractor will be permitted to act, without prior instruction from the Regional Engineer, in a diligent manner. It shall notify the Construction Supervisor immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted to the Construction Supervisor for verification and approval by the Regional Engineer.

The amount of reimbursement claimed by the Contractor for work arising out of any emergency situation shall be determined by the Chief or his/her authorized representative.

9.6 The Contractor shall be responsible for the verification of existing utilities that may be affected by its work in the project area. It shall be held responsible for any damage to and for maintenance and protection of existing utilities and structures during the performance of the work.

10.0 INSURANCE & WORKER'S COMPENSATION

10.1 Contractor's and Subcontractor's Public Liability, Vehicle Liability and Property Damage Insurance.

The Contractor shall maintain insurance as follows:

(a) Contractor's Public Liability Insurance and Comprehensive Vehicle Liability Insurance shall be in an amount not less than $2,000,000.00 for bodily injury and property damage for each occurrence and not less than $2,000,000.00 aggregate. Additional named insured: Richard Mackey, 1101 New Hampshire Ave., N.W., Apt. 103, Washington, D.C. 20037.

The required insurance must be written by a company or companies licensed to do business in West Virginia at the time the policy is issued and the policy must be countersigned by a licensed resident agent. Any property owner requiring additional insured shall be added to this policy.

(b) Contractor shall either (1) require each of the subcontractors to procure and to maintain, during the life of its subcontract, subcontractor's Public Liability and Property Damage Insurance of the type and in the same amounts as specified in paragraph (a) above, or (2) insure the activities of its subcontractors in its own policy.

Contractor agrees to indemnify and hold harmless DEP from all liability for personal injury, including death resulting therefrom, and against all liability for property damage sustained by any person or persons, including persons employed by Contractor or subcontractors, which is caused in whole or in part by an act or omission, negligent or otherwise, of the Contractor, its agents, servants, or employees, and to assume the defense of any action brought by such persons to recover damages, and to pay all costs and expenses, including attorney's fees, incurred by DEP as result thereof.

Each party to the contract shall promptly notify the other of the assertion of any claim against which such party is held harmless pursuant to this Section, shall give such other party the opportunity to defend any such claim, and shall not settle any such claim without approval of the indemnifying party.

10.2 Proof of Carriage of Insurance.

The Contractor shall provide DEP, before work commences, with certificates issued by the insurance company or companies issuing the insurance policies required by this Section. The certificates shall show the type, amount, class of operations covered, effective dates, and dates of expiration of such policies. Such certificates shall provide that written notice shall be given to DEP prior to expiration, cancellation, or modification of any such policy, and shall contain substantially the following representation: "The insurance covered by this certificate will not be canceled, or materially modified or altered, except after ten (10) days written notice has been verified as received by the West Virginia Department of Environmental Protection".

10.3 Worker's Compensation Insurance.

All employees of the Contractor, and of subcontractors engaged in the work of this contract, shall be covered by West Virginia Worker's Compensation Insurance. Certificates shall be provided to DEP by the Contractor and subcontractors showing compliance with the Worker's Compensation Laws of West Virginia.

11.0 LABOR LAWS, ORDINANCES, WAGES, AND OTHER CONDITIONS

11.1 The Contractor shall obey and abide by all laws of the State of West Virginia, particularly with respect to the carrying out of public improvements.

The Contractor shall not pay less than the established prevailing minimum wage rate for each particular class of employment in the county in which the work is being performed. This rate shall include and and all time an employee is on the project.

11.2 During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.
Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice, to be provided by the contracting officer, setting forth the provisions of this nondiscrimination clause.

(b) Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color or national origin.

(c) Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, a notice, to be provided by the agency contracting officer, advising the labor union or worker's representative of the Contractor's commitments under Section 202 of Presidential Executive Order #11246 of September 24, 1965 (hereinafter "Executive Order #11246"), as amended by Presidential Executive Order #11375 and supplemented by U.S. Department of Labor regulations 41 CFR Part 60 and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) Contractor will comply with all provisions of Executive Order #11246, and with all of the applicable rules, regulations, and relevant orders of the U.S. Secretary of Labor (hereinafter "Secretary of Labor").

(e) Contractor will furnish all information and reports required by Executive Order #11246, and by the applicable rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders. These provisions shall also apply to DEP or employees of the Federal Government or their designated representatives for the purpose of making audits, examinations, excerpts, or transcriptions.

(f) In the event of the Contractor's noncompliance with these nondiscrimination clauses, this contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order #11246, and such other sanctions may be imposed and remedies invoked as provided in Executive Order #11246, or by rules, regulations, or orders of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of these paragraphs (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order #11246, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontractor or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request DEP to enter into such litigation to protect the interests of DEP.

(h) Copeland "Anti-Kickback" Act. Contractor or Subcontractor shall comply with the Copeland "Anti-Kickback" Act (18 USC 874) as supplemented in U.S. Department of Labor regulations (29 CFR Part 3). Said Act provides that each Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public works, to give up any part of the compensation to which it is otherwise entitled. The Contractor shall report all suspected or reported violations to DEP.

(i) Clean Air & Water Acts. Should the amount of this contract exceed one-hundred thousand dollars ($100,000.00), compliance will be required with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 USC 1857[h]), Section 508 of the Clean Water Act (33 USC 1368), Presidential Executive Order #11738, and Federal Environmental Protection Agency regulations (40 CFR Part 15), which prohibit the use under non-exempt Federal contracts, grants or loans of facilities included on the EPA List of Violating Facilities. Contractor shall report violations to DEP and to the U.S. EPA Assistant Administrator for Enforcement (EN-329).

(j) Energy Policy & Conservation Act. The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act, Public Law 94-163.

(k) Access to Records. DEP, the U.S. Department of Interior's Office of Surface Mining Reclamation & Enforcement, and the U.S.Comptroller General or their duly authorized representatives shall have access to any books, papers, and records of the Contractor which are directly pertinent to that specific contract, for the purpose of making audits, examinations, excerpts, and transcriptions.

(l) Maintenance of Records. The Contractor shall maintain all required records for three (3) years after DEP processes final payments and all other pending matters are closed.

(m) Termination of Contract by DEP. This contract may be cancelled in whole or in part in writing by the Director of Purchasing, without prejudice to any other right or remedy it may have, provided that the contractor is given not less than thirty (30) calendar days written notice, (delivered by certified mail, return receipt requested) of intent to terminate.

(n) Legal Remedies. Unless otherwise provided by law or elsewhere in this contract, all claims, counter-claims, disputes and other matters in question between DEP and the Contractor arising out of, or relating to, this contract or the breach of it will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State of West Virginia.

11.3 Wages.

Attention is called to the prevailing rates of wages to be paid for labor on public improvements in Harrison County, West Virginia, as determined by the West Virginia Department of Labor. A copy of wage rates shall be posted in a conspicuous location on the job site. It is the responsibility of the Contractor to pay the wage rate in effect when the project was bid. The Contractor is to maintain and have available for inspection by DEP, upon request, certified copies of its payrolls.

The contractor/subcontractors shall pay the higher of the U.S. Department of Labor Davis-Bacon Act or the WV Prevailing wage rate as established for various county, pursuant to West Virginia Code 21-5A, Et, Seq. and 42CSR7 Rules & Regulations for the WV Prevailing Wage Act. For prevailing wage rates, please refer to http://www.sos.wv.gov

12.0 SUBCONTRACTORS

12.1 Unless otherwise required by the contract documents, the Contractor, as soon as practicable after award of the contract, shall furnish DEP in writing the names of subcontractors (including those who are to furnish materials or equipment fabricated to special design) proposed for performing portions of the work.

12.2 DEP reserves the right to disapprove any proposed subcontractor whose record of performance does not establish its experience, competence, and financial ability to perform the work for which it is proposed. Nothing contained in the contract documents shall create any contractual relation between any subcontractor and DEP.

13.0 TIME

13.1 The date of commencement of work is the date established in a written "Notice to Proceed" issued by DEP to the Contractor. The date of completion shall be the date that DEP finds the work acceptable under the contract documents and the contract fully performed.

13.2 Delays & Extensions of Time.

(d) It is agreed that if the Contractor should be unavoidably delayed in fulfilling its obligations under this contract by acts of Providence or general strikes, or by Court injunctions, or by stopping of the work by DEP because of any Contractor toward final completion of the work hereunder, DEP may require the Contractor to prepare an itemized estimate of the amount of work performed, and material and equipment stored under the contract since the date of the last preceding estimate and Application for Payment. DEP may request that the Contractor submit such estimate along with supporting documentation in the form of certified payrolls, material invoices, weight slips, and Applications for Payment. Contractor is to maintain and have available such records for inspection by DEP upon request.

13.3 Progress Schedule.

The Contractor, immediately after being awarded the contract, shall prepare and submit, for DEP's information, an estimated progress schedule for the work. Such progress schedule shall be related to the entire project to the extent required by the contract documents, and shall provide for expeditious and practicable execution dates of the various stages of construction and may be revised as required by conditions of work, subject to DEP's approval.

14.0 PAYMENTS & COMPLETION

14.1 Contract Sum.

The contract sum as stated in the Contractor's executed Contract Acceptance Form, including any authorized adjustment(s) thereto, is the total amount payable by DEP to the Contractor for the performance of the work under the contract documents.

14.2 Schedule of Values.

Before submitting its first Application for Payment, the Contractor shall submit to DEP a schedule of values allocated to the various portions of the work, prepared in such form and supported by such data to substantiate its accuracy, as DEP may require. This schedule shall be used only as a basis for the Contractor's Applications for Payment.

14.3 Progress Estimates, Applications for Payment.

(d) On the fifteenth (15th) and thirtieth (30th) day of each month during which progress has been made on the work under the contract by the Contractor toward final completion of the work hereunder, DEP may require the Contractor to prepare an itemized estimate of the amount of work performed since the date of the last preceding estimate and Application for Payment. DEP may request that the Contractor submit such estimate along with supporting documentation in the form of certified payrolls (not to include social security numbers), material invoices, weight slips, and Applications for Payment. Contractor is to maintain and have available such records for inspection by DEP upon request.

(b) Upon approval by DEP of the Application and Certificate for Payment, DEP shall, as soon thereafter as practicable, process for the Contractor as a progress payment a sum equal to the contract value of the work performed since the last preceding estimate and Application for Payment, in accordance with Paragraphs 14.4 and 14.5 of this Section, less the aggregate of previous payments.

© No Certificate for a progress payment, nor any progress payment, shall constitute acceptance or be deemed or construed as acceptance of any part of the work not in accordance with the contract documents.

(d) The Contractor warrants and guarantees that title to all work, materials, and equipment covered by an Application for Payment, whether incorporated in the project or not, will pass to DEP upon the receipt of such payment by the Contractor, free and clear of all liens, claims, security interests or encumbrances, and that no work, materials, or equipment covered by an Application for Payment will have been acquired by the Contractor or by any other person performing the work at the site or furnishing materials and equipment for the project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the Contractor or otherwise imposed by the Contractor or such other person.

(c) The cost or credit to DEP resulting from a change in the work shall be determined in one or both of the following ways:

(i) By mutual acceptance of a lump sum properly itemized.

(ii) By unit prices stated in the contract documents or subsequently agreed upon.

(d) If none of the methods set forth in 16.1(c) above is agreed upon, or the work to be performed is agreed by DEP and Contractor to be of such nature that it cannot be estimated in advance with sufficient exactness for mutual agreement, then DEP may direct the Contractor to perform the work by change order in accordance with the following provisions, and the Contractor shall promptly proceed with the work:

(i) The work shall then be performed for an amount equal to the actual and necessary net cost to the Contractor for material and labor cost necessarily used therein, including all taxes and delivery costs for materials, all required extra costs on labor, plus cost for superintendents, power, use of tools, equipment, plant, plus the Contractor's normal charge under the contract for overhead and profit. The Contractor shall keep and present to DEP for inclusion in the change order complete itemized accounting for all materials, complete identified time and payment records for all employees, and workmen actually performing the work covered by the change order, the cost accounting of work performed by subcontractors for work covered by the change order. DEP reserves the right to require verifications of all costs covered under the change order.

(ii) The amount of credit to be allowed by the Contractor to DEP for any deletion or change which results in a net decrease in the contract sum will be the actual net cost. When both additions and credits covering related work or substitutions are involved in one change, the allowance for overhead and profit shall be figured only on the basis of the increase, if any, with respect to that change.

16.2 The Chief is the only individual who can execute a change order committing DEP to the expenditure of public funds. No person other than the Chief or his/her authorized representative can make any changes to the terms, conditions, contract clauses, or other stipulations of this contract.

The Contractor shall not accept any instructions issued by any person other than the Chief or his/her authorized representative regarding changes in the work under the contract which affect the contract sum and/or contract time. No information, other than that which may be contained in an authorized modification to this contract, duly issued by the Chief or his/her authorized representative, which may be received from any person employed by DEP or otherwise, shall be considered grounds for deviation from any stipulation of the contract.

14.4 Payments Withheld.

The Regional Engineer or his representive may decline to approve an estimate or Application for Payment, to the extent necessary to protect DEP from loss because of:

(b) Unsatisfactory, unrepresentative, and unverified amounts and items included in progress estimates of Paragraph 14.3(a) above.

(ii) Unfulfilled provisions of Paragraphs 14.3(d) above.

(iii) Defective work not remedied.

(iv) Unsatisfactory performance of the work by the Contractor.

(v) Failure of the Contractor to make payments properly to subcontractors, or for labor, materials, or equipment.

(vi) Reasonable doubt that the remaining work can be completed for the unpaid balance of the contract sum.

(vii) Reasonable indication that the work will not be completed within the contract time for completion.

(viii) Third party claims filed, or reasonable evidence indicating probable filing of such claims.

(ix) Damage to another contractor.

When the above grounds under 14.4 (i)-(ix) are removed, payment shall be approved for the amounts that were withheld because of them.

14.5 Final Completion & Final Payment.

(b) Upon notice from the Contractor that the work is ready for final inspection, the Construction Supervisor will promptly make such inspection. If the Construction Supervisor upon his/her inspection finds the work acceptable under the contract documents and the contract fully performed, the Contractor shall submit a Final Estimate Application and Certificate for Payment to DEP for processing. Also, final quantity calculations shall be submitted to DEP by the Contractor prior to final inspection conference.

(b) Final payment to the Contractor will be processed by DEP upon fulfillment of the provisions of the contract documents and the conditions thereof.

(c) **The processing of final payment and the processing of payment of retained percentage shall constitute a waiver of all claims by DEP except those arising from:**

(i) **Unsettled liens.**

(ii) **Faulty or defective work appearing after final completion.**

(iii) **Failure of the work to comply with requirements of the contract documents.**

(iv) **Terms of any special warranties required by the contract documents.**

(v) **Affidavate of Payment**

(d) **The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment. No payment, however, final or otherwise, shall operate to release the Contractor or its sureties from any obligation under the contract documents, or the Performance Bond, and the Labor and Material Payment Bond. (See 15.1 below.)**

14.6 Application for Payment Forms.

Bound herewith on the preceeding pages are sample Application and Certificate for Payment forms which the Contractor shall use in the submittal of progress estimate Applications for Payment to DEP.

DEPARTMENT OF ENVIRONMENTAL PROTECTION / OFFICE OF ABANDONED MINE LANDS & RECLAMATION

AML-7
Revised 5/09

APPLICATION AND CERTIFICATE FOR PAYMENT

Project Name: _____

Contractor: _____

Address: _____

ATTN (AML&R Inspector): _____

Application No: _____

Application Date: _____

Performance Period From: _____ To: _____

CHANGE ORDER SUMMARY

Change Order Number	Approved (date)	Additions $+	Deductions $-

Application is made for payment, as shown below, in connection with contract. Continuation Sheet is attached. The present status of the account for this contract is as follows:

ORIGINAL CONTRACT SUM $_____

Net Change by Change Orders $_____

CONTRACT SUM TO DATE $_____

TOTAL COMPLETED & STORED TO DATE $_____
(Column "G" on Continuation Sheet)

LESS PREVIOUS CERTIFICATES FOR PAYMENT $_____

CURRENT PAYMENT DUE $_____

Items listed hereon conform to specification, were received & are approved for payment.

Date: Signed: _____, Inspector

PO#:

P#:

Office/App

FEIN/SS#: _____

Date

FIMS Vendor #_____

FUND	FY	ORG	ACT	OBJ CODE	GRANT #	PROJECT #
8708	20		130	830		

% COMPLETE: Total Completed & Stored to Date / Contract Sum to Date ---------- x 100 = _____

Contractor: _____
Original Signature (Blue Ink)

DEPARTMENT OF ENVIRONMENTAL PROTECTION / OFFICE ABANDONED MINE LANDS & RECLAMATION

AML-7A
Revised 6/00

CONTINUATION SHEET OF APPLICATION AND CERTIFICATE FOR PAYMENT

Project Name:__________________________________ Application No:__________

Page ___ of ___ pages

BID SCHEDULE PER CONTRACT				UNITS THIS APPLICATION	TOTAL COMPLETED AND STORED TO DATE	
ITEM # **A**	DESCRIPTION **B**	UNITS **C**	UNIT BID PRICE **D**	UNITS **E**	UNITS **F**	COST **G=(DxF)**
					SUBTOTAL OR TOTAL	

15.0 SURETY BONDS

15.1 The Contractor shall provide and deliver to DEP's Buyer at the Purchasing Division of the Department of Administration at the time of execution of the contract, and prior to the performance of the work, satisfactory surety bonds in an amount of not less than one hundred percent (100%) of the contract sum which shall include a Performance Bond and Labor and Material Payment. An increase in the Surety Bond will be required to equal any increases to the contract amount created by a change order.

Bond, with sureties acceptable to DEP's Buyer, for the faithful fulfillment of the contract within the time specified. Said bonds shall also save and hold harmless DEP from all liens and claims arising out of the work. The Contractor shall pay for the bonds.

15.2 In the event that the surety on any contract or payment bond given by the Contractor becomes insolvent, or is placed in the hands of a receiver, or has its right to do business in this State revoked as provided by law, the Cabinet Secretary may at his/her election, withhold payment or any estimate until the Contractor shall give a good and sufficient bond in lieu of the bond so executed by such surety.

15.3 Attorneys-in-Fact who execute surety bonds issued pursuant to this Section must provide with each such bond a certified and properly executed Power of Attorney.

15.4 All performance bonds shall be in effect throughout the one-year guarantee period set out in Section 5.0. Bonds will be released upon completion of the guarantee period and acceptance of the project by DEP.

16.0 CHANGES IN THE WORK

16.1 Change Orders

(a) DEP, without invalidating the contract, may order or the Contractor may request changes in the work within the general scope of the contract consisting of additions, deletions, or other revisions, the contract sum and the contract time being adjusted accordingly. All such changes in the work shall be authorized by change order, and shall be executed under the applicable conditions of the contract documents.

(b) A change order is a written order to the Contractor, properly executed as to form, issued after the execution of the contract, authorizing a change in the work or an adjustment in the contract sum or contract time. The contract sum or contract time may be changed only by a change order. A change order issued to the Contractor indicates its agreement therewith, including the adjustment in the contract sum or contract time set forth therein.

16.3 Minor Changes in the Work.

Notwithstanding the requirements of Section 16.2 above, the Regional Engineer or his/her authorized representative shall have authority to order minor changes in the work not involving an adjustment in the contract sum or an extension of the contract time and not inconsistent with the intent of the contract documents. Such changes may be affected by field order or by other written order. Such changes shall be binding on DEP and the Contractor. The Contractor shall carry out such written orders promptly.

16.4 Omissions.

DEP may omit any item or items in the contract, provided that the notice of intent to omit such item or items is given to the Contractor before any material has been purchased or labor involved has been performed, and such omission shall not constitute grounds of any claim for damages or loss of anticipated profits. DEP may omit any item or items shown the estimate, at any time, by agreeing to compensate the Contractor for the reasonable expense already incurred and to take over at actual cost any unused material purchased in good faith for use for the item or items omitted.

17.0 UNCOVERING & CORRECTION OF WORK

17.1 Uncovering of Work.

(a) If any work should be covered contrary to the request of DEP, it must, if required by DEP, be uncovered for its observation and be replaced at the Contractor's expense.

(b) If any other work has been covered which DEP has not specifically requested to observe prior to being covered, DEP may request to see such work and it shall be uncovered by the Contractor. If such work is found to be in accordance with the contract documents, the cost of uncovering and replacement shall, by appropriate change order, be charged to DEP. If such work is found not to be in accordance with the contract documents, the Contractor shall pay such costs unless it is found that such condition was caused by a separate contractor employed by DEP and in that event DEP shall be responsible for the payment of such costs.

17.2 Correction of Work.

The Contractor shall promptly correct all work rejected by DEP as defective or as failing to conform to the contract documents whether observed before or after final completion and whether or not fabricated, installed or completed. The Contractor shall bear all cost of correcting such rejected work. All such defective or

non-conforming work shall be removed from the site if necessary, and the work shall be corrected to comply with the contract documents at no cost to DEP. If the Contractor fails to correct such defective or non-conforming work, DEP may correct it in accordance with Section 17.3 below or Section 11.2(m) of these General Conditions.

17.3 Acceptance of Non-Conforming Work.

If DEP prefers to accept non-conforming work, it may do so instead of requiring its removal and correction, in which case a change order will be issued to reflect an appropriate reduction in the contract sum, or, if the amount is determined after final payment, it shall be paid by the Contractor.

18.0 ASSIGNMENT OF CONTRACT

Contractor shall not assign or transfer this contract or sublet it as a whole without having first obtained the written consent of DEP to do so; and it is likewise agreed that the Contractor shall not assign legally or equitably any of the moneys payable to it under the contract, or its claim thereto, without having first obtained the written consent of DEP to do so.

OMB #1029-0119
Expiration Date: 1/31/16

AML CONTRACTOR INFORMATION FORM

You must complete this form for your AML contracting officer to request an eligibility evaluation from the Office of Surface Mining to determine if you are eligible to receive an AML contract. This requirement applies to contractors and their sub-contractors and is found under OSM's regulations at 30 CFR 874.16. When possible, please type your information onto this form to reduce errors on our end. NOTE: Signature and date this form is signed must be recent (within the last month) to be considered for a current bid

Part A: General Information

Business Name: _____ Tax Payer ID No.: _____
Address: _____
City: _____ State: _____ Zip Code: _____ Phone: _____
Fax No.: _____ E-mail address: _____

Part B: Legal Structure

( ) Corporation ( ) Sole Proprietorship ( ) Partnership ( ) LLC
( ) Other (please specify) _____

Part C: Certifying and updating information in the Applicant/Violator System (AVS). Select only one of the following options, follow the instructions for that option, and sign below.

I, _____*, have the express authority to certify that:*
(print name)

1. _____Information on the **attached** Entity Organizational Family Tree (OFT) from AVS is accurate, complete, and up-to-date. If you select this option, you **must** attach an Entity OFT from AVS to this form. Sign and date below and do not complete Part D.

2. _____Part of the information on the **attached** Entity OFT from AVS is missing or incorrect and must be updated. If you select this option, you **must** attach an Entity OFT from AVS to this form. Use Part D to provide the missing or corrected information. Sign and date below and complete Part D.

3. _____Our business currently is not listed in AVS. If you select this option, you must provide all information required in Part D. Sign and date below and complete Part D.

_____ _____ _____
Date Signature Title

IMPORTANT! In order to certify in Part C to the accuracy of existing information in AVS, you must obtain a copy of your business' Entity OFT. To obtain an Entity OFT, contact the AVS Office, toll-free, at 800-643-9748 or from the AVS website at https://avss.osmre.gov.

Part D.

Contractor's Business Name: ______________________________

If the current Entity OFT information for your business is incomplete or incorrect in AVS, or if there is no information in AVS for your business, you must provide all of the following information as it applies to your business. Please make as many copies of this page as you require.

- Every officer (President, Vice President, Secretary, Treasurer, etc.);
- All Directors;
- All persons performing a function similar to a Director;
- Every person or business that owns 10% or more of the voting stock in your business;
- Every partner, if your business is a partnership;
- Every member and manager, if your business is a limited liability company; and
- Any other person(s) who has the ability to determine the manner in which the AML reclamation project is being conducted.

Name ______________________ Position/Title ______________
Address ______________________ Telephone # ______________
______________________ % of Ownership ______________
Begin Date: ______________________ Ending Date: ______________

Name ______________________ Position/Title ______________
Address ______________________ Telephone # ______________
______________________ % of Ownership ______________
Begin Date: ______________________ Ending Date: ______________

Name ______________________ Position/Title ______________
Address ______________________ Telephone # ______________
______________________ % of Ownership ______________
Begin Date: ______________________ Ending Date: ______________

Name ______________________ Position/Title ______________
Address ______________________ Telephone # ______________
______________________ % of Ownership ______________
Begin Date: ______________________ Ending Date: ______________

PAPERWORK REDUCTION STATEMENT

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501) requires us to inform you that: Federal Agencies may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. This information is necessary for all successful bidders prior to the distribution of AML funds, and is required to obtain a benefit.

Public reporting burden for this form is estimated to range from 15 minutes to 1 hour, with an average of 22 minutes per response, including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. You may direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Office of Surface Mining Reclamation and Enforcement, Room 202 SIB, Constitution Ave., NW, Washington, D.C. 20240.

ARTICLE III - GENERAL REQUIREMENTS

ARTICLE III - GENERAL REQUIREMENTS

Sections Included:

ARTICLE III - GENERAL REQUIREMENTS

1.0 SUMMARY OF THE WORK

This Article briefly outlines and describes the work to be performed and is not intended to limit the faithful execution of the contract documents.

1.1 The scope of the work for this project, without attempting to restrict or limit the contractor's responsibility, consists of furnishing all plant, labor, materials, and equipment to construct abandoned mine drainage control structures described in the drawings and these specifications. The work shall include, but not be limited to, the following:

Installation of eight wet/modified mine seals; 16" bore and jack mine seal installation; installation of seep collector and underdrain subsurface drains; construction of gabion basket stream bank protection and slope protection; construction of riprap and grouted riprap drainage control channels; installation of 60" bored and jacked drainage system beneath Co Rt 131; excavation of overburden above deep mine works and replacement with riprap fill material; road repair; re-grading of the site and associated placement of soil cover material over re-graded areas, mine seals, etc.; and miscellaneous items such as traffic control, temporary stream crossing installation, re-vegetation, and other such related work.

ARTICLE III - GENERAL REQUIREMENTS

2.0 QUALITY STANDARDS, APPROVALS

2.1 Not withstanding reference in the specifications or on the drawings to any article, item, product, material, equipment, or system by name, brand, make, or manufacturer, such reference shall be intended and interpreted as establishing a standard of quality, and shall not be taken, regarded, or construed as limiting competition.

2.2 Any article, item, product, material, equipment, or system which will perform adequately and satisfactorily the duties imposed by the general design will be considered equally acceptable to that specified or referenced, providing the article, item, product, material, equipment, or system so proposed is equal in quality, substance, design, manufacture, function and performance as that specified or referenced, and adjudged and determined to be so in the opinion of the Construction Supervisor and is approved by him/her. The approval of the Regional Engineer is required before purchase and installation.

2.3 Approvals.

Where the term "of approved manufacture" appears in the specifications, or an "approved" or "approved as equal" article or item is referred to, it shall mean that the article, item, workmanship, or material must meet the approval of the Construction Supervisor.

3.0 SUPERINTENDENTS, COORDINATION

3.1 Superintendents.

The Contractor shall employ and keep a competent superintendent and assistants who shall be capable of effective communication as required on the job at all times and who shall give efficient supervision to the work, using his/her best skill and attention, and shall have knowledge and control of all trades. The superintendent shall be acceptable to the Construction Supervisor and shall not be changed without the Construction Supervisor's knowledge and consent. The Contractor also shall see that each respective sub-contractor provides a competent foreman for each trade.

3.2 Coordination.

The Contractor and each sub-contractor shall coordinate the work and operations and shall cooperate with and assist each other on the job for the successful execution of the work within trade jurisdictional rulings. Each shall study all drawings and specifications and shall perform all work which properly comes under jurisdiction of the trade he/she represents.

4.0 PROJECT MEETINGS AND CONFERENCES

4.1 The following meetings shall be scheduled and held prior to commencement of the project and during execution of the work. DEP will schedule such

meetings and advise all parties concerned by written notice of the date, time, and location of such meetings.

(a) Pre-Bid Conference. Conference with Engineer, bidders and appropriate DEP personnel as necessary, and others directly concerned for explanation of bidding and contract documents, project site familiarization as required, and for answering questions pertinent to the project. Attendance by bidders is mandatory in order to be eligible to bid on the project.

A date and time will be set for the on-site mandatory Prebid Conference. All interested parties are required to attend this meeting. Failure to attend the mandatory pre-bid shall result in disqualification of the bid. No one person may represent more than one bidder.

An attendance sheet will be made available for all potential bidders to complete. This will serve as the official document verifying attendance at the mandatory pre-bid. Failure to provide your company and representative name on the attendance sheet will result in disqualification of the bid. The State will not accept any other documentation to verify attendance. The bidder is responsible for ensuring they have completed the information required on the attendance sheet. The Purchasing Division and the state agency will not assume any responsibility for a bidder's failure to complete the pre-bid attendance sheet. In addition, we request that all potential bidders include their e-mail address and fax number.

All potential bidders are requested to arrive prior to the starting time for the pre-bid. Bidders who arrive after the pre-bid conference has ended will not be permitted to sign the attendance sheet or bid on the project work.

(b) Pre-Construction Conference. Conference with Engineer, appropriate DEP personnel, Contractor, Sub-Contractors, and others directly concerned, after award of the contract and prior to commencement of construction, for discussion of the project, contract documents, scheduling, and for resolving questions concerning project execution and administration as required.

(c) Project Meetings. Meetings shall be held at periodic intervals throughout the construction contract period for discussion of matters pertinent to the execution and administration of the project. The Regional Engineer, Construction Engineer, Construction Supervisor, Inspector, Contractor and/or its Superintendent, Subcontractors, Project Foremen, as required, and others directly concerned, as necessary, shall attend the meetings.

5.0 AUTHORITY & DUTIES OF INSPECTORS

5.1 The Inspector, as the Regional Engineer's authorized representative, is authorized to make minor field changes to the plans and specifications that do not involve an increase or decrease in the contract sum or an increase or decrease in the contract time. The Inspector shall be authorized to inspect all work done, all material furnished, payroll records of personnel, material invoices and relevant data and records of the work, and the preparation, fabrication, or manufacture of the materials to be used. The Inspector is not authorized to revoke, alter, or waive any requirements of the plans and specifications that result in an increase or decrease in the amount of compensation due the Contractor or an increase or decrease in the contract time. The Inspector is authorized to call to the attention of the Contractor any failure of the work or materials to conform to the plans and specifications. The Inspector shall have the authority to reject materials or suspend the work until any questions at issue can be referred to and decided by the Regional Engineer.

5.2 The Inspector shall in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the work by the Contractor. Any advice which the Inspector may give the Contractor shall in no way be construed as binding the Regional Engineer in any way, or releasing the Contractor from fulfilling all of the terms of the contract.

5.3 If a problem arises that that the contractor will not correct and the Contractor refuses to suspend operations on verbal order, the Inspector shall issue a written order giving the reason for ordering the work to stop. After placing the order in the hands of the person in charge, the Inspector shall immediately leave the job, and the Contractor shall cease all operations.

6.0 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

6.1 Definitions.

(a) "Shop drawings" are drawings, diagrams, schedules, and other data, prepared for the project by the Contractor, Sub-contractor, manufacturer, or supplier, to illustrate and/or install some portion of the work.

(b) "Product data" are illustrative data, brochures, schedules, catalog cuts, charts, informative material and specifications to illustrate materials, articles, items, or products for use in some portion of the work.

(c) "Samples" are physical examples which show and illustrate materials, finishes, equipment or workmanship of products proposed for use in some portion of the work.

6.2 Submittals.

(a) The Contractor shall review, approve, and submit to the Reginal Engineer with reasonable promptness, and in such sequence to cause no delay in the work, all shop drawings, product data, and samples required by the contract documents.

(b) No shop drawings, product data, or samples shall be submitted to the Regional Engineer except by the Contractor, who shall, before submission, verify all materials, check all details, measurements, verify all field measurements and field construction conditions, and other job coordination requirements. Upon review, check, and approval by the Contractor, the Contractor shall place its stamp of approval thereon before submitting to the Regional Engineer.

(c) The Contractor shall not be relieved of responsibility for any deviation from the requirements of the contract documents by the Regional Engineer's approval of shop drawings, product data, or samples, nor shall it be relieved of responsibility for errors or omissions therein.

(d) Shop drawings, product data, and samples shall be submitted in sufficient number for all approvals, with a minimum of two (2) copies or samples being retained by the Regional Engineer, and a number of copies and samples being retained by the Contractor as required for the execution of its work.

(e) No portion of the work requiring submission of a shop drawing, product data, or sample shall be commenced until the submittal has been approved by the Regional Engineer. All such portions of the work shall be in accordance with approved submittals.

(f) Shop drawings, product data, and samples shall be submitted for work, systems, articles, items, and equipment as specified. Other additional shop drawings, product data, and samples as may be requested for the work by the Regional Engineer shall be submitted to him/her for approval.

7.0 MEASUREMENTS, MANUFACTURER'S DIRECTIONS

7.1 Measurements.

Before ordering any material, product, article, or doing any work, the Contractor shall take all necessary measurements at the project and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the drawings. The Regional Engineer shall be notified of any differences found and work shall not proceed thereon until the Regional Engineer has rendered a decision.

7.2 Manufacturers' Directions.

All manufactured articles, items, products, material, and equipment shall be applied, installed, connected, erected, used, cleaned, conditioned and put into operation or use as directed by the manufacturer's printed instructions, unless specified otherwise herein. The Contractor shall be responsible for obtaining all such instructions.

7.3 Measurement of Quantities.

The Contractor shall be responsible for providing all necessary volumetric and weight measurement equipment necessary to measure quantities accurately for payment of contract unit items, and said equipment shall be subject to the Regional Engineer's approval. Volume and weight measurements shall be submitted to the Regional Engineer for approval.

8.0 LINES, LEVELS, GRADES, LAYOUT

8.1 Lines, Levels, Grades.

(a) Control points have been established in the field and are shown on the plans whereby the Contractor can properly control the work contracted for under these specifications. Such stakes and markings which the Engineer may have set for either his/her own guidance shall be scrupulously preserved by the Contractor, or its employees.

If any action by the Contractor should result in the destruction of such stakes or markings, an amount equal to the cost of replacing same may be deducted from subsequent estimates due the Contractor at the discretion of the Construction Supervisor. The Contractor shall satisfy itself as to the accuracy of all measurements before constructing any permanent structure and shall not take advantage of any errors which may have been made in laying out the work. Should any discrepancies become evident between the plans and the Contractor's field survey, the Contractor shall immediately notify the Inspector. If these discrepancies will create a change in any item in the Contractor's accepted final bid, the DEP reserves the right to re-design or negotiate. Should the Contractor fail to make notification of these discrepancies, DEP will not be held liable for any changes in the original quantities.

(b) The Contractor shall make all field measurements necessary for its work and shall be responsible for the accuracy of all dimensions, lines, levels, and grades. If a survey is required, it shall be performed at the expense of the Contractor. All survey work shall be performed by a West Virginia Licensed Land Surveyor who shall certify as to the accuracy of the survey to DEP.

9.0 DOCUMENTS, SHOP DRAWINGS, ETC., AT THE SITE

9.1 The Contractor shall maintain at the project site for DEP one (1) record copy of all drawings, specifications, addenda, change orders, and other modifications, in good order, marked currently to record all changes made during construction, and all approved shop drawings, product data, and samples, properly filed and referenced. All such documents and samples shall be delivered to the Construction Supervisor upon completion of the work.

9.2 The Contractor shall furnish the Inspector in writing two (2) sets of daily reports showing all personnel (by classification), equipment, and tools engaged in the work, for use in accounting records.

9.3 The Contractor shall be responsible for submitting a daily activity summary which shall be used to report progress of the various construction activities performed at the subject site. The summary report shall be submitted to the Inspector on a weekly basis on the prescribed forms. Processing invoices may be delayed if summary reports are not submitted.

10.0 STORAGE OF MATERIALS

10.1 The Contractor, under and with the approval, supervision, and direction of DEP, shall assume full charge of the area or areas of the project premises allocated for the storage of materials and equipment as required, allocating the necessary site space to any sub-contractor(s) for storage sheds and space for the storage of materials and equipment. Such arrangement of storage facilities

shall be orderly, convenient, shall not obstruct movement on the site, the work of others, or construction operations. All storage sheds, enclosures, and facilities shall fully protect the stored materials. The Contractor shall arrange with appropriate landowner(s) for any storage areas located outside of the project limits and such storage areas shall also be subject to DEP's approval.

10.2 All materials subject to damage by moisture, water, or weather shall be fully protected. All flammable, toxic, and explosive materials shall be safely stored in conformity with applicable safety requirements of State and Federal regulations and safety standards of the National Fire Protection Association.

11.0 PROTECTION OF WORK; DAMAGES

11.1 Protection and Replacement of Work.

(a) The Contractor shall protect its work from damage of any kind until completion of construction. Each contractor or sub-contractor shall adequately protect all preceding work from damage caused by it or its work. Should any part of the construction be subject to freezing or exposure to the elements, the same shall be fully protected to prevent damage.

(b) The Contractor and each sub-contractor shall provide protection against weather, frost, freezing, storms, and heat, to maintain all work, materials, installations, and equipment safe from injury and damage. The Contractor shall provide temporary covering and closures in the construction as required to protect it from damage by weather, until permanent construction provides such protection.

(c) Damaged or defective work must be replaced; all other work injured or damaged in the replacing of such work or in any way incidental thereto must be brought back to its original condition or replaced by the Contractor performing the work, without additional cost to DEP.

11.2 Damages to Existing Work.

All masonry damage, glass breakage, and other damage caused to existing buildings and appurtenances by the Contractor or by other contractors in the performance of work shall be properly replaced or repaired at the option of DEP, without additional cost to DEP.

12.0 TEMPORARY FACILITIES

12.1 Utilities

(a) General. All concerned with providing temporary utilities for use on the project are advised to determine locations of sources of supply and the conditions under which services can be brought to points of use on the site.

(b) Drinking Water. The Contractor shall arrange for drinking water and containers to be provided on the site.

(c) Utility Connections. The Contractor is to furnish power, gas, compressed air and any other utilities required for its own use during construction. The Contractor shall remove all temporary wiring, switches, lights, piping and connections to service facilities used during construction. Such connections shall not be made without approval of the Inspector.

(d) Temporary Supports. The Contractor shall provide such temporary supports as may be required during construction, including those necessary to ensure the stability of the proposed excavation.

(e) Equipment. The Contractor shall furnish all special apparatuses, welding machines, air compressors, hoisting equipment, tools, implements, cartage, scaffolding, ladders, planks, acetylene gas, oxygen gas, expendable materials, temporary light and heat, construction materials, shims and all other materials that may be required for the proper execution of the work.

(f) Temporary Buildings. The Contractor will furnish, place, and equip, at its own expense, and as it deems necessary, any portable construction building(s) such as a trailer, storage sheds or chemical sanitary facilities. These portable facilities must be within the designated project limits; otherwise, the Contractor is solely responsible for making necessary arrangements with the proper landowner when the buildings are set up outside of the project limits. The type and number of buildings are subject to the approval of the Inspector. All written instructions, orders, and other communication delivered to the temporary construction office set up on the site shall be considered as having been delivered to the Contractor itself. The Contractor shall provide and pay for its own fire protection, watchman, temporary utility hookups, etc. The Contractor will promptly remove from the project any office facilities, equipment or materials when so instructed by the Inspector.

(g) Sanitation Facilities. The Contractor shall provide and pay for adequate temporary toilet facilities for personnel during the project construction period. Toilets shall be of types approved by DEP and the State Division of Health, and situated only in approved locations. The Contractor shall be responsible for operation and sanitary maintenance of the temporary toilets and shall have them removed upon completion of construction.

13.0 CONSTRUCTION SIGN

13.1 Work Required.

The work to be performed under this Section consists of providing all labor, material and equipment necessary to install a project sign as indicated on the detail included herein and as specified herein.

13.2 Materials.

(a) Sign face shall be 3/4" Marine Exterior plywood or aluminumor composite material. Posts and cross-brace shall be No. 2 Grade Pine or Fir, kiln dried and pressure treated.

(b) Hardware:

(1) All hardware shall be manufactured from good, commercial-quality material and meet all applicable ASTM standards.

(2) Spikes and nails shall be common wire-type and shall meet AISI steel specifications 1010 or 1020.

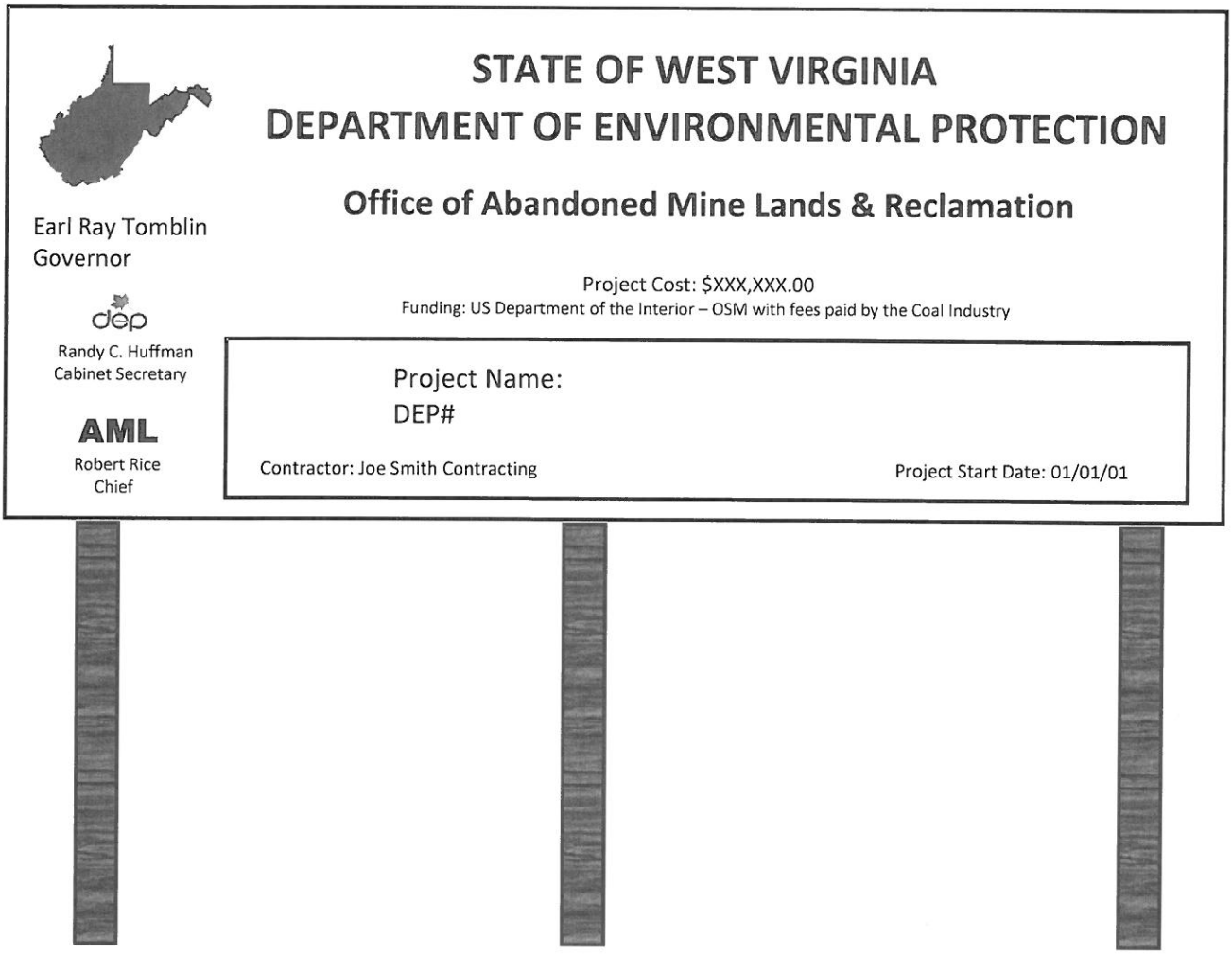
(3) All hardware shall be hot-dip galvanized in accordance with ASTM A-153.

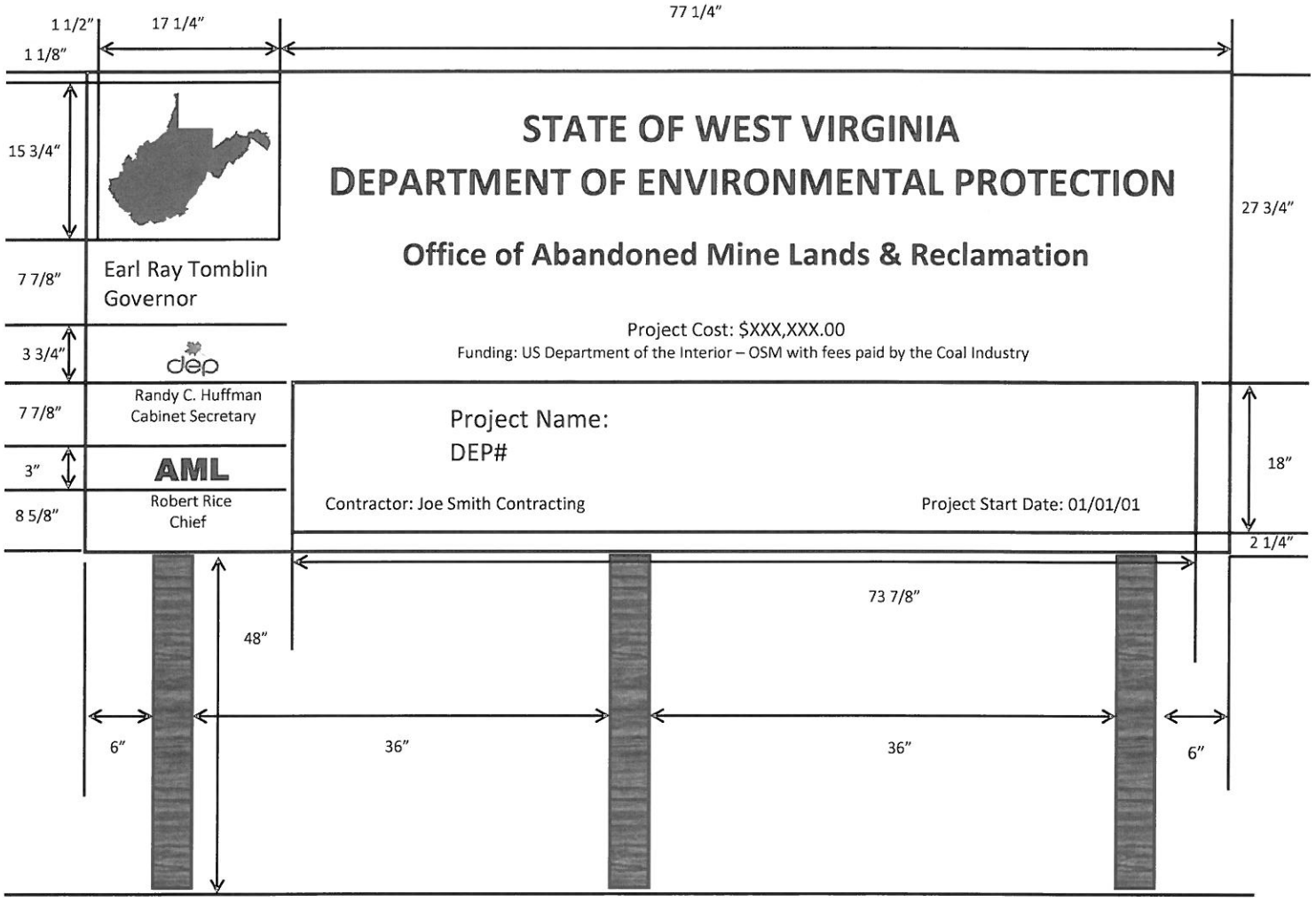
13.3 Execution.

(a) Project Sign. The sign board shall be cut to the dimensions shown on the detail herein. The sign shall painted with one (1) coat of primer and two (2) coats of white enamel. All exterior cut edges shall be smooth sanded prior to painting. All edges shall be double primed. The letters, border and strips shall be painted as shown on the detail drawing. Posts and cross-brace shall be painted with two (2) finished coats of brown enamel.

The Contractor shall bolt the sign to posts and provide required cross-bracing. The posts and sign shall be erected and posts set in gravel base, as shown on the drawings. One (1) sign is required and is to be located at the discretion of the Inspector.

(b) Payment. Payment for the work which shall include installation of the project sign shall be part of the lump-sum bid for "Mobilization".


STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Abandoned Mine Lands & Reclamation
Earl Ray Tomblin
Governor
dep
Randy C. Huffman
Cabinet Secretary
AML
Robert Rice
Chief
Project Cost: $XXX,XXX.00
Funding: US Department of the Interior – OSM with fees paid by the Coal Industry
Project Name:
DEP#
Contractor: Joe Smith Contracting
Project Start Date: 01/01/01


1 1/2"
1 1/8"
17 1/4"
77 1/4"
15 3/4"
27 3/4"
7 7/8"
3 3/4"
7 7/8"
3"
8 5/8"
18"
2 1/4"
48"
73 7/8"
6"
36"
36"
6"
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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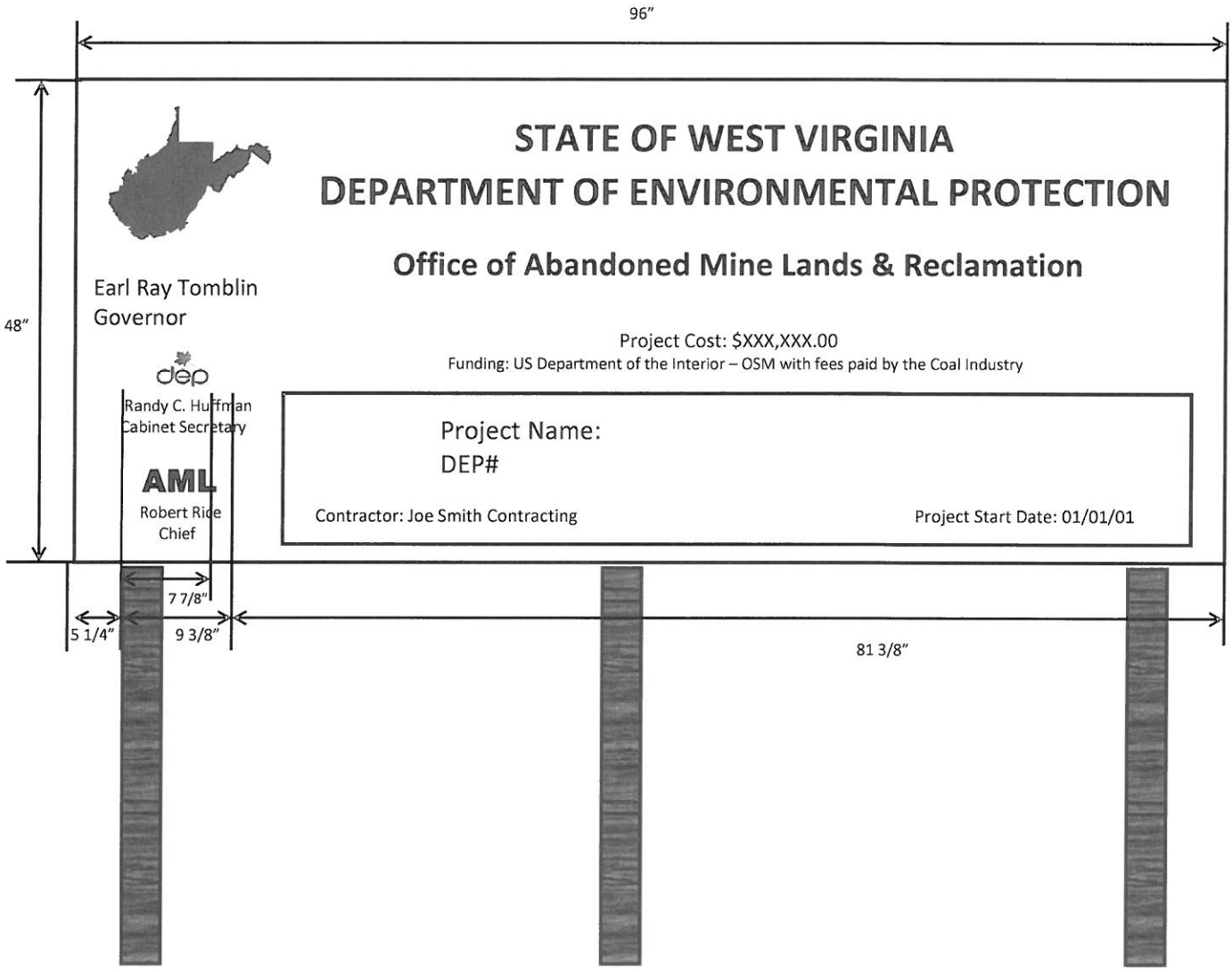
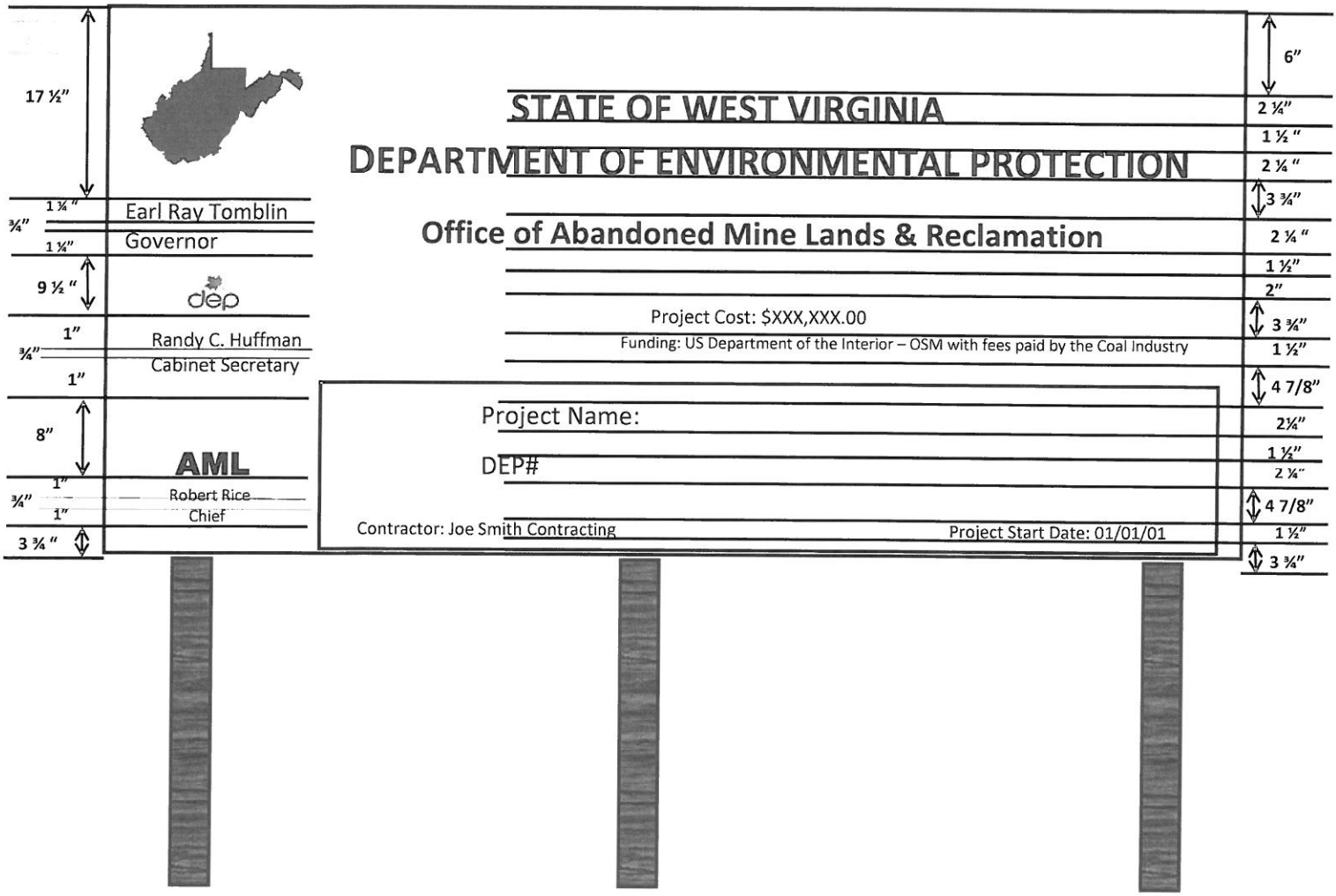
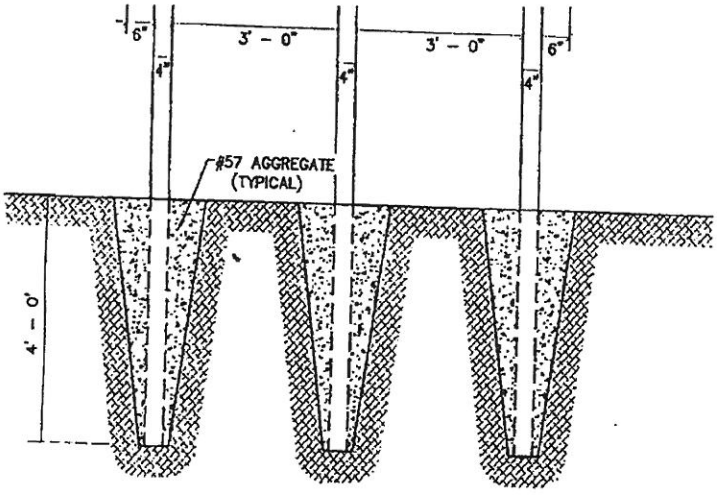
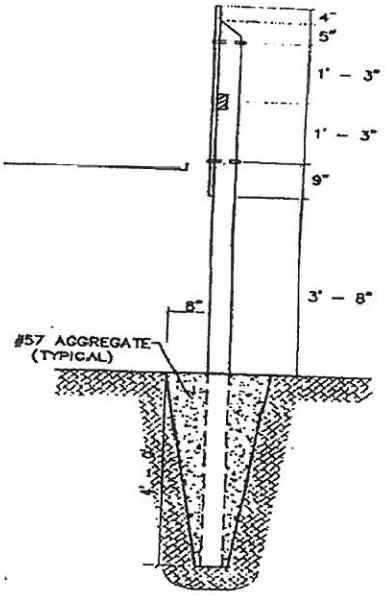

96"
48"
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Abandoned Mine Lands & Reclamation
Earl Ray Tomblin
Governor
Project Cost: $XXX,XXX.00
Funding: US Department of the Interior – OSM with fees paid by the Coal Industry
dep
Randy C. Huffman
Cabinet Secretary
AML
Robert Rice
Chief
Project Name:
DEP#
Contractor: Joe Smith Contracting
Project Start Date: 01/01/01
7 7/8"
5 1/4"
9 3/8"
81 3/8"


17 ½"
1 ¼ "
¾"
Earl Ray Tomblin
1 ¼"
Governor
9 ½ "
dep
1"
¾"
Randy C. Huffman
1"
Cabinet Secretary
8"
AML
1"
¾"
Robert Rice
1"
Chief
3 ¾ "
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Abandoned Mine Lands & Reclamation
Project Cost: $XXX,XXX.00
Funding: US Department of the Interior – OSM with fees paid by the Coal Industry
Project Name:
DEP#
Contractor: Joe Smith Contracting
Project Start Date: 01/01/01
6"
2 ¼"
1 ½ "
2 ¼ "
3 ¾"
2 ¼ "
1 ½"
2"
3 ¾"
1 ½"
4 7/8"
2¼"
1 ½"
2 ¼"
4 7/8"
1 ½"
3 ¾"

Notes:

1. Sign board to be ¾" by 4'X 8' marine plywood.
2. Sign board color is to be white and letter colors are to be dark green and sized as shown on the detail.
3. 2"X 4" treated cross brace let into posts.
4. Mount sign to posts using 3/8"X 5" galvanized carriage bolt.
5. Posts are to be treated 4"X 4"X 12' and panted brown.
6. Location determined by WVDEP.





14.0 CLEANING & FINAL CLEAN-UP

14.1 Housekeeping - Periodic Cleaning.

The Contractor shall at all times keep the construction site free of accumulations of waste materials and rubbish caused by its operations. Periodically during the progress of the work, and also when directed to do so by DEP, the Contractor shall remove, or cause to be removed by sub-contractors responsible, accumulated waste materials, rubbish, and debris, and leave the construction area in good order.

14.2 Final Clean-Up.

The Contractor at all times shall dispose of all debris and waste resulting from work at the Contractor's dump site. The Contractor shall not put or spill any materials into any drainage system which would pollute area streams or waterways. The Contractor shall be liable for any stream pollution caused directly or indirectly by its own employees or those of it sub-contractors.

14.3 Final.

Should disputes arise between Contractor and separate contractors, or sub-contractors as to responsibilities for cleaning-up, and refusals to do so result therefrom, DEP may hold final payment until the cleanup work is completed.

15.0 TESTING.

15.1 When Testing Required.

Testing shall be performed as required by the specifications or ordered by the Regional Engineer. The Regional Engineer will determine the need, location, extent, and time of any testing herein specified, or in addition to that which is herein specified.

15.2 Payment for Testing.

The Contractor shall select an independent testing laboratory or utilize a laboratory run by the Contractor, to perform all testing for compaction, concrete, and soils as specified herein. All laboratory reports must be signed by a registered civil professional engineer. The Contractor shall be responsible for testing payments as an incidental to the various items of the bid schedule. If the Contractor allows work to proceed beyond a testing point resulting in the disassembly of structures or the uncovering of work for testing, payment for such will be the responsibility of the Contractor at no extra cost to DEP.

16.0 PROJECT COMPLETION - CERTIFICATES

16.1 **All certificates of testing, quality, compliance, and performance, as required, requested, and/or specified, shall be delivered to DEP upon delivery or completion of the work covered by the certificates.**

16.2 **All certificates of approval, compliance, and completion as required by codes, inspection and regulatory agencies, and local, State and Federal governmental authorities, shall be delivered to DEP upon completion of the work and inspections covered by such certificates.**

16.3 **The contractor shall submit to the WVDEP as built drawings certified by a Licensed Land Surveyor identifying all changes occurring on the project. The drawings shall be of professional quality. Unsuitable drawings will be returned for revisions. These drawings shall be approved by WVDEP prior to scheduling a Final Inspection.**

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF ABANDONED MINE LANDS & RECLAMATION

Report for Week Ending:_____ Project Name:_____

By:_____ Location:_____

Title:_____ Contractor:_____

DATE	**Daily Activity Summary**
Sunday	**NO WORK**
Monday	Weather:_____*F Conditions:_____
Tuesday	Weather:_____*F Conditions:_____
Wednesday	Weather:_____*F Conditions:_____
Thursday	Weather:_____*F Conditions:_____
Friday	Weather:_____*F Conditions:_____
Saturday	Weather:_____*F Conditions:_____

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF ABANDONED MINE LANDS & RECLAMATION

WEEKLY QUANTITY SUMMARY

REPORT BY:_____ FOR WEEK ENDING:_____

PAY ITEM	UNITS	QUANTITY PERFORMED

ATTACH ANY SHEETS APPLICABLE TO THIS WEEKS WORK AND CHECK APPROPRIATE BOX.

Change Orders	☐
Field Changes	☐
Test Results	☐
Explanation of Work Stoppages Not Due to Weather	☐
Other (Explain)	☐

OFFICE OF ABANDONED MINE LANDS & RECLAMATION
USE ONLY

Initials

Project Superintendent: _____

Construction Inspector: _____

Date: _____/_____/_____

ARTICLE IV – SPECIAL CONDITIONS

ARTICLE IV - SPECIAL CONDITIONS

Sections Included:

ARTICLE IV - SPECIAL CONDITIONS

1.0 USE OF MINORITY, WOMEN'S, & SMALL BUSINESS ENTERPRISES

1.1 Should the Contractor intend to sublet a portion of the work on this project, it shall seek out and consider minority, women's, and small business enterprises as potential sub-contractors. The Contractor shall contact minority, women's, and small businesses to solicit their interest, capability, and prices, and shall retain proper documentation to substantiate such contacts.

1.2 The Contractor will sign and provide the enclosed Minority, Women's and Small Business Affirmative Action Certification to DEP along with the name(s) of any subcontractor(s) it submits for approval.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONSTRUCTION CONTRACTOR'S
MINORITY, WOMEN'S AND SMALL BUSINESS
AFFIRMATIVE ACTION CERTIFICATION

We, _____, the undersigned, Construction Contractor on the Abandoned Mine Lands & Reclamation construction contract herein, intending to sub-contract a part of our contract work under Requisition No. _____, hereby certify as follows:

1) **We will include qualified small, minority and women's businesses on solicitation lists;**

2) **We will assure that small, minority and women's businesses are solicited whenever they are potential sources;**

3) **We will, when economically feasible, divide total requirements into smaller tasks or quantities so as to permit maximum small, minority and women's business participation.**

4) **Where our requirements permit, we will establish delivery schedules which will encourage participation by small, minority and women's businesses.**

5) **We will utilize the services and assistance of the Small Business Administration, the Office of Minority Business Enterprise of the Department of Commerce and the Community Services Administration as required.**

   We understand that we may obtain the information required under the foregoing provisions from the Governor's Office of Community & Industrial Development's Small Business Development Center, 1115 Virginia Street, East, Charleston, West Virginia 25301, Phone 304/348-2960.

6) **We will submit this certification to the Construction Supervisor when we submit proposed subcontractors for approval.**

7) **We agree that all documentation relative to affirmative action taken by us to seek out and consider the use of minority, women's and small business enterprises as sub-contractors shall be made available for inspection by representatives of the West Virginia Department of Environmental Protection and the U.S. Office of Surface Mining Reclamation and Enforcement;**

8) **This certification is an integral part of our proposal for the construction contract.**

Signed this _____ day of _____, 20___ .

_____
Signature of Authorized Representative

_____
Title

ARTICLE IV - SPECIAL CONDITIONS

2.0 EROSION & SEDIMENT CONTROL

The manual entitled "West Virginia Department of Enviromental Sediment Contol Design Manual BMP", 2006, is incorporated herein by reference as a guide for erosion and sediment control, except that where any provision of said manual is in conflict with any special erosion and sediment control provision set out and contained in this specification book and/or in the plans for this project, the plans and/or specification book shall prevail and be followed.

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB
0348-0046

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. Type of Federal Action:	2. Status of Federal Action:	3. Report Type:
☐ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	☐ a. bid/offer/application b. initial award c. post-award	☐ a. initial filing b. material change **For Material Change Only:** year _____ quarter _____ date of last report _____

4. Name and Address of Reporting Entity:	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime:
☐ Prime ☐ Subawardee Tier _____, *if known*: **Congressional District**, *if known*: 4c	 **Congressional District**, *if known*:
6. Federal Department/Agency:	**7. Federal Program Name/Description:** CFDA Number, *if applicable*: _____
8. Federal Action Number, *if known*:	**9. Award Amount**, *if known*: $
10. a. Name and Address of Lobbying Registrant (*if individual, last name, first name, MI*):	**b. Individuals Performing Services** (*including address if different from No. 10a*) (*last name, first name, MI*):
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____
Federal Use Only:	Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employeeof a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizationallevel below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

ASSURANCE REQUIREMENT REGARDING EQUAL EMPLOYMENT OPPORTUNITY FOR VENDORS, SUPPLIERS AND CONTRACTORS ENGAGED IN COMMERCIAL TRANSACTIONS WITH THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

We, _____, the undersigned, desiring to avail ourselves of the benefits of engaging in commercial transactions with the West Virginia Department of Environmental Protection, hereby agree that:

1) **All employment and personnel practices under this contract, Requisition No. _____, will be conducted without regard to race, sex, religion or national origin;**

2) **We will include in all recruitment advertisements the following wording:**

   "An Equal Opportunity Employer"; and

3) **We will provide the Chief of the Abandoned Mine Lands and Reclamation Division or his/her authorized representative, upon request, documentation that will enable him/her to judge the extent of our compliance with the requirements of Governor's Executive Order No. 4-65, of December 15, 1965.**

Signed this ____ day of _____, 20___.

_____

Signature of Authorized Representative

_____

Title

ARTICLE IV - SPECIAL CONDITIONS

3.0 GOVERNMENT-WIDE DEBARMENT & SUSPENSION REQUIREMENTS

U. S. Department of the Interior

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion

Lower Tier Covered Transactions

---

1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transaction," "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principal", "proposal", and "voluntarily excluded", as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction originated.

6. The prospective lower tier participant further agrees by submitting this proposal, that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Non procurement List (Tel.#).

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 6 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

U. S. Department of the Interior

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion

Lower Tier Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 43 CFR Part 12, Section 12.510, Participants' responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160-19211). For assistance in obtaining a copy of the regulations, contact the U.S. Department of the Interior, Acquisition and Assistance Division, Office of Acquisition and Property Management, 18th and C Streets, N.W., Washington D.C. 20240.

(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

_____

Name and Title of Authorized Representative

_____

Signature **Date**

ARTICLE IV - SPECIAL CONDITIONS

Instructions for Certification Regarding Lobbying

1. **This certification and a disclosure form should be filed by each person as required, with each submission that initiates agency consideration of such person for: (1) award of a Federal contract, grant, or cooperative agreement exceeding $100,000 or (2) an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.**

2. **This certification and a disclosure form should be filed by each person as required, upon receipt by such person of (1) a Federal contract, grant, or cooperative agreement exceeding $100,000, or (2) a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000, unless such person previously filed a certification, and a disclosure form, if required, at the time agency consideration was initiated.**

3. **Any person who requests or receives from a person referred to in paragraphs (1) and (2) above: (1) a subcontract exceeding $100,000 at any tier under a Federal contract; (2) a subgrant, contract, or subcontract exceeding $100,000 at any tier under a Federal grant; (3) a contract or subcontract exceeding $100,000 at any tier under a Federal loan exceeding $150,000; or (4) a contract or subcontract exceeding $100,000 at any tier under a Federal cooperative agreement, shall file a certification, and a disclosure form, as required, to the next tier above.**

4. **All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the person referred to in paragraphs(1) or (2) above. That person shall forward all disclosure forms to the appropriate Bureau/Office within the Department of the Interior.**

5. **Any certification or disclosure form filed under paragraph (4) above shall be treated as a material representation of fact upon which all receiving tiers shall rely. All liability arising from an erroneous representation shall be borne solely by the tier filing that representation and shall not be shared by any tier to which the erroneous representation is forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification or disclosure, respectively. If a person fails to file a required certification or disclosure, the United States may pursue all available remedies, including those authorized by Section 1352, title 31, U.S. Code.**

U. S. Department of the Interior
CERTIFICATION REGARDING LOBBYING

This certification is required by Section 1352, title 31, U. S. Code, entitled "Limitation on use of appropriated funds to influence certain Federal contracting and financial transactions."

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

Certification for Contracts, Grants, Loans, and Cooperative Agreements

---

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. To obtain a Standard Form LLL, contact DEP or the U.S. Office of Surface Mining, 603 Morris Street, Charleston, WV 25301, phone number 347-7158.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature _____ **Date** _____

ARTICLE V - WAGE AND HOUR INFORMATION

PREVAILING WAGE RATES

can be obtained by contacting:

WV Division of Labor
Capitol Complex
Bldg. 6, Room 749B
Charleston, WV 25305

Phone: (304) 558-7890

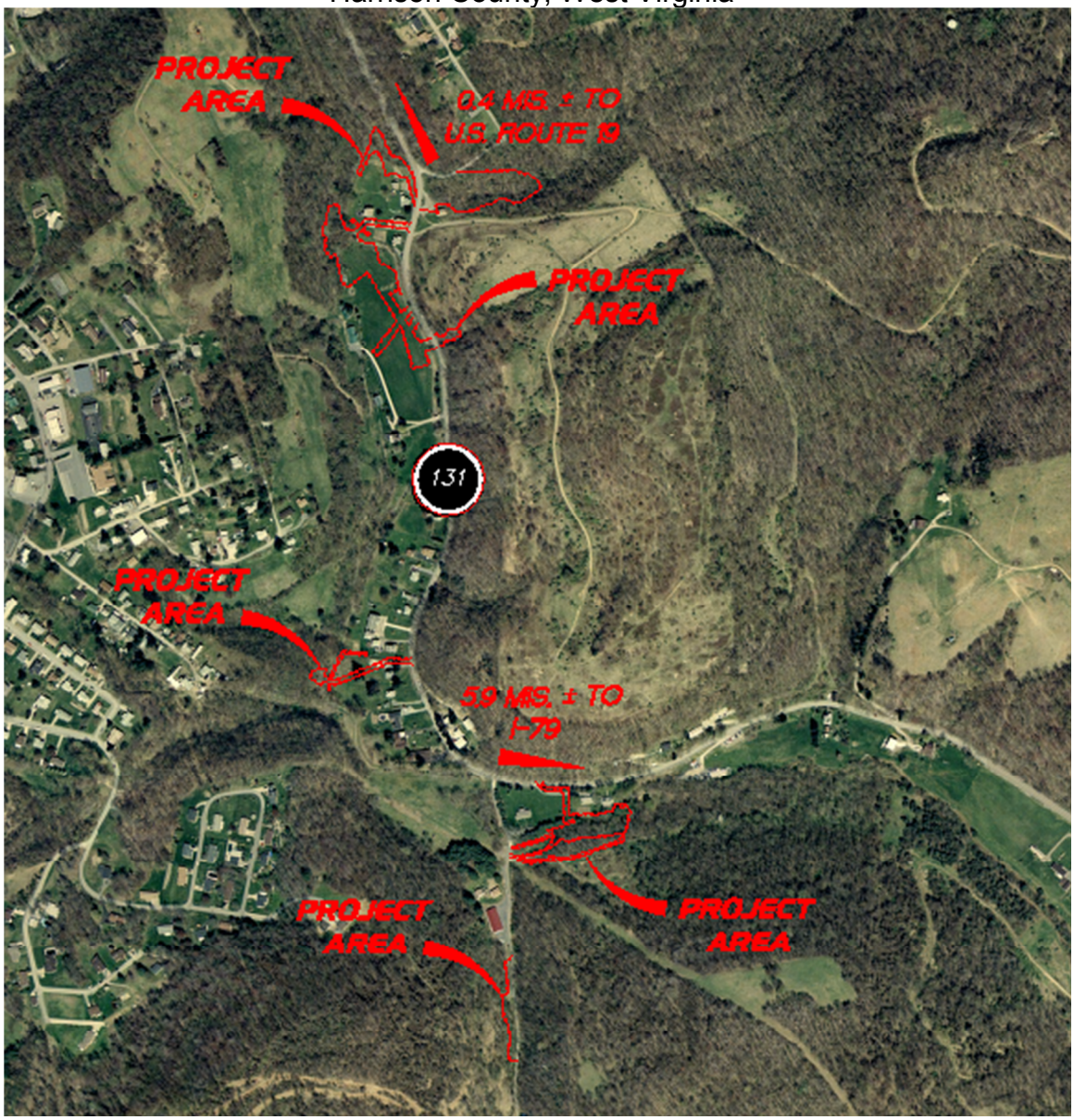
Website: www.sos.wv.gov

ARTICLE VI - CONSTRUCTION SPECIFICATIONS

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
99 Cambridge Place
Bridgeport, WV 26330
Ph. (304) 933-3119 Fax (304) 933-3327 www.cecinc.com

SPECIFICATIONS FOR
SHINNS RUN PORTALS – P.O. NUMBER DEP16070

Near Shinnston, Clay (Outside) District
Harrison County, West Virginia



Submitted To:
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF ABANDONED MINE LANDS
101 Cambridge Place
Bridgeport, West Virginia 26330

March 2014
Rev. March 2015
Final August 2015

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PAGE

I. SPECIAL PROVISIONS

II. TECHNICAL SPECIFICATIONS

BID SCHEDULE

SHINNS RUN PORTALS

SPECIAL PROVISIONS

1. LOCATION/SITE DESCRIPTION

Shinns Run Portals abandoned mine lands reclamation project begins along West Virginia Route 131 approximately 0.4 miles south of the intersection with U.S, Route 19 in Shinnston West Virginia. This northernmost site extends along both sides of West Virginia Route 131 for approximately 800 feet. A non-contiguous site is located approximately 1,450 feet along West Virginia Route 131 from the southern extents of the northernmost project area. Thence, continuing approximately 650 feet south along West Virginia Route 131 to the intersection with Harrison County Route 13/6, two (2) other non-contiguous sites are located along said Harrison County Route 13/6. One site is located approximately 350 feet and the other is located approximately 0.2 miles off West Virginia Route 131. The abandoned mine lands problems are associated with Consol Coal Company Mine Number 51, circa 1910 to 1940's.

The northernmost problem area is located east and west of West Virginia Route 131. One of the problem areas east of West Virginia Route 131 is located behind a red barn and consists of nine (9) subsidence features. The subsidence features appear to be associated with collapsed entryways that crossed the unnamed tributary under very low overburden cover resulting in two (2) deep depressions that capture stream flow from the unnamed tributary and divert the flow into the abandoned mine works. The upstream collapsed area is located within 350 feet of occupied homes and approximately 15 to 20 feet above the coal pavement. The bedrock overburden has separated approximately 5 to 10 feet above the top of the coal seam resulting in a six feet (6') high by 20 foot wide opening that diverts stream flow into the collapsed abandoned mine works. The downstream collapsed area is located approximately 250 feet from occupied homes and forms a ground depression approximately 24 feet wide, 60 feet long, and 10 feet deep and approximately 8 feet above the coal pavement. Since the Pittsburgh coal seam in this area appears to be approximately 10 feet thick, this depression area could have been a small surface mine area with all of the coal removed from below. A plugged 30" box culvert is reportedly located along the downstream end of this depression. The depression captures storm runoff that slowly seeps into the abandoned mine works. Seven (7) other subsidence features can be found at various locations in close proximity to these two (2) prominent features.

A non-contiguous problem area located in the northernmost problem area is located east and west of West Virginia Route 131 approximately 600 feet south of the red barn. This problem area is located in a steep gorge projecting east from the roadway. The deeply incised hollow intersects the abandoned mine works with a partially collapsed entryway projecting east and a collapsed cross-cut projecting to the northeast. The partially open entryway is located within 350 feet of occupied homes and discharges approximately 75 to 125 gallons per minute of AMD. The AMD flows to a newly installed 18" CPP pipe crossing beneath West Virginia Route 131 and discharges directly into Shinns Run. Shinns Run where the discharge has eroded Shinns Run downstream right descending

bank causing a small slip that extends to the edge of the road shoulder. The slip and edge of Shinns Run are located within seventeen feet (17') of and eight feet (8') lower than the west edge of West Virginia Route 131 pavement, presenting a hazard to traffic traveling the road.

The remaining portion of the northern problem area is located west of West Virginia Route 131 and Shinns Run and directly across the road and stream from the red barn and deep incised hollow. Three (3) low laying wet areas and a collapsed, discharging mine portal are present in this area. The low lying wet areas are associated with mine drainage emanating from the hillside and have formed small ditchlines in the landowner's yard and are a continuous nuisance to the landowner while maintaining his yard. In addition, the collapsed mine portal continuously discharges AMD into Shinns Run.

Another problem site is located approximately 1,450 feet along West Virginia Route 131 from the southern extents of the northernmost project area. This problem area is located west of West Virginia Route 131, through a landowner's yard, across and directly adjacent to the west edge of Shinns Run at the bottom of a steeply sloping hillside. One (1) partially collapsed entryway discharges approximately 60 to 80 gallons per minute of AMD directly into Shinns Run. The open, discharging entryway is located within 300 feet of occupied homes with toys and a sand box observed directly across Shinns Run from the entryway.

Continuing approximately 650 feet south along West Virginia Route 131 to the intersection with Harrison County Route 13/6, two (2) other non-contiguous sites are located along said Harrison County Route 13/6. One site is located approximately 350 feet and the other is located approximately 0.2 miles off West Virginia Route 131. The first encountered problem area consists of five (5) collapsed or partially collapsed deep mine entryways located along the south bank and adjacent to Shinns Run, some of which are discharging AMD. The upstream partially collapsed entryway is located within 125 feet of occupied homes and continuously discharges AMD to Shinns Run. A mobile home located near the southeast intersection of Harrison County Route 13/6 with Shinns Run bridge appears to be located approximately 10 feet above the coal pavement and 120 feet from the downstream-most collapsed mine opening. Numerous AMD seeps discharging from the hillside are located directly behind the home. The landowner has constructed a drainage ditch approximately five feet from the back of his home that is covered with milk crates and plastic bread trays and conveys the AMD discharges around his home to Shinns Run and beneath his home through two (2) 10" steel pipes discharging into Shinns Run.

The farthest problem area along Harrison County Route 13/6 from West Virginia Route 131 consists of an apparent subsidence feature located in a constructed road ditch that diverts stream flow into the abandoned deep mine works located just 20 to 29 feet in elevation below the ditch flowline. Bedrock standing near vertical in the ditchline lends evidence that subsidence may capture the roadway ditch flows and divert the flow into the abandoned deep mine works. Seven (7) entryways and numerous cross-cuts cross beneath the roadway ditch.

Directions to the Site:

The Shinns Run Portals abandoned mine lands reclamation project may be accessed by exiting Interstate Number 79 at the Shinns Run Road/Shinnston Exit 125. Turn north along West Virginia Route 131 and travel approximately 0.4 miles to the intersection with Harrison County Route 73/73. Bear west (left) keeping on West Virginia Route 131 for approximately 5.8 miles to the intersection with Harrison County Route 13/6 and the beginning of the south project area. Problem areas project south for approximately 0.2 miles along Harrison County Route 13/6; and continue approximately 0.5 miles along West Virginia Route 131.

2. REFERENCE SPECIFICATIONS/DEFINITIONS

All references to "Owner" in these Specifications shall mean West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation (WVDEP).

All reference to "Engineer" in these Specifications shall mean the Owner's Engineer or authorized representative.

All reference to "ASTM" shall mean the American Society of Testing and Material Specifications, Latest Edition unless otherwise noted.

All reference to "AASHTO Specifications" shall mean the Standard Specifications for Transportation Materials and Methods of Sampling and Testing by the American Association of State Highway and Transportation Officials, latest edition, and all subsequent addenda thereto.

All reference to "WVDOH Standard Specifications" shall mean State of West Virginia Department of Transportation, Division of Highways Standard Specifications for Roads and Bridges, adopted 2010, and all-subsequent addenda thereto.

All references to "WVDOT "Manual on Traffic Control for Streets and Highway" shall be the West Virginia Department of Transportation, Division of Highways latest addition (2006 edition, dated March 2006) and all subsequent addenda thereto.

All references to the "Contractor" shall be understood to mean the successful bidder and or firm or corporation undertaking the execution of the work under the terms of these Specifications.

All reference to "OSHA" shall be understood to mean The Occupational Safety and Health Administration and the standards set in the Occupational Safety and Health Act of 1970.

All reference to "refuse" and/or "mine spoil" shall be understood to mean all coal refuse, shale, sandstone and other rock fragments that were generated and disposed of as such within the project area during mining and processing of coal.

All reference to "AMD" shall be understood to mean all acid mine drainage discharges from the project site.

All reference to "OSM" and/or "OSMRE" shall be understood to mean Office of Surface Mining Reclamation and Enforcement.

3. SCOPE OF WORK

The work covered by these Special Provisions and Technical Specifications consists of furnishing all labor, plant, power, equipment and supplies, and performing all

operations necessary for the completion of the project. The Contractor shall perform all operations necessary for:

- mobilization and demobilization of necessary and sufficient sized equipment to the project area to complete the project within stated timeframes;

- survey and construction layout of grading, facilities, constructions, and appurtenances shown on the Plans;

- site preparation including clearing and grubbing at the site and removing cleared and grubbed material to an off-site disposal area; upgrading and maintaining existing roadways, driveways, and other existing access roads; and removing all and any type debris, trash, and garbage;

- installation and maintenance of sediment and erosion control devices in compliance with the approved NPDES permit;

- construction of temporary access roads, buried line protection pads at all project road crossings, and temporary timber bridge stream crossings;

- regrading of the site to lines and grades shown on the Plans, including breaking and burying surface and buried boulders; and installation of straw wattles on regraded areas at locations shown on the plans to prevent rills and gullies;

- installation of eight (8) wet or modified mine seals. Acid mine drainage treatment during mine pool dewatering and construction activities. Bore and jack two (2) sixteen inch (16") steel casings to carry two (2) twelve (12) inch SDR-35 conveyance pipes from Mine Seal Number Seven.

- construct four (4) seep collector drains and one (1) underdrain, as well as other subsurface drains as excavation conditions warrant;

- construct stone filled gabion basket stream bank protection and stone filled gabion basket slope protection;

- installation of riprap lined and grouted riprap lined drainage channels to control surface and ground water runoff;

- install a forty eight inch (48") HDPE pipe and construct an upstream and downstream concrete headwall. Bore and jack a sixty inch (60") steel pipe to carry a portion of the forty eight inch (48") HDPE pipe beneath WV Route 131;

- set-up, operation, and maintenance of a temporary traffic control system;

- placement of soil cover material over regraded slopes, on-site coal refuse, and exposed coal seams;

- construction of other incidentals shown on the plans and herein specified; and

- revegetation of project disturbed areas.

The Contractor also shall be responsible for surveying, including establishing construction baselines, measuring and developing all completed quantities on the job, and for ordering, purchase and delivery of any and all materials required for construction or required for development of support areas. The Contractor shall perform all other operations as incidental to the project as specified herein.

4. BIDDERS TO EXAMINE LOCATION

Prospective bidders are required to examine the locations of the proposed work and to determine, each in their own way, the difficulties which may be encountered in the prosecution of the same. The submission of a bid shall be prima facie evidence that such examination and determinations have been made by the Bidder. No claims for additional compensation will be considered by the Owner based on obstructions or conditions at the location of the work, which may add to the difficulties or costs of construction, even though such obstructions or conditions are not shown on the contract plans or indicated in the other construction documents. Prospective bidders are advised that should they deem it necessary to obtain any subsurface samples of test borings etc., at the site, they should obtain their own permission from the landowners.

5. SCHEDULE OF WORK

Before commencing work on this project, the Contractor shall prepare and submit a schedule of construction activities for approval by the Owner.

The Contractor shall provide adequate supervision, labor, tools, equipment, and materials to prosecute the work energetically and complete the work within the time specified.

It is the intention not to delay the work for the checking of lines or grades, but if necessary, working operations shall be suspended for such reasonable time as the Engineer may require for that purpose. No special compensation shall be paid for the cost to the Contractor for any of the work or delay occasioned by checking lines and grades, by making other necessary measurements, or by inspection.

The Contractor's work hours for this project shall be from 7:00 a.m. to 7:00 p.m. Monday through Saturday. Work on Sunday and major holidays, as defined by the Engineer, will not be allowed on this project.

6. MEASUREMENT OF QUANTITIES

The Contractor shall be responsible for providing all necessary volumetric, dimension, and weight measurement equipment necessary to prosecute the work as shown on the Construction Drawings and to accurately determine quantities for payment of Contract Bid Items as approved by the Engineer. Such measurements and equipment shall be subject to the approval of the Engineer for use in this project.

7. BORROW (DISPOSAL) AREAS

All borrow (disposal) areas must be approved by WVDEP. Should the Contractor decide to obtain and utilize any borrow areas outside of construction limits, or move material from one property owner to another unless designated, the Contractor shall be responsible to obtain from the property owner(s) of the borrow areas, all necessary rights of entry, including rights of entry for WVDEP and OSMRE for inspection purposes. The said rights of entry agreement must state that the property owner(s) agree to indemnify and hold harmless the WVDEP from all liability and/or damages resulting from the contractor's use of property for which the contractor was to obtain rights of entry for borrow, disposal, access or other purposes. Said indemnification shall include, but is not limited to, liability and damages resulting from the contractor's failure to obtain any or not all the rights of entry; failure to obtain the proper rights of entry; failure to utilize appropriate language in the rights of entry agreements; or failure to obtain permission and signature of all persons or entities holding a legal interest in the subject property(ies) covered by the rights of entry.

The Contractor shall also submit a borrow area reclamation plan for prior approval by WVDEP. The Contractor shall observe the following NEPA compliance schedule relative to selecting and utilizing any off site borrow areas and or any waste disposal areas.

a. No borrow (disposal) site operations will affect a site listed in, eligible, or proposed to be listed in the National Register of Historic Places.

b. No borrow (disposal) operations will be located within one-quarter mile of any Federally listed established or prospective component of the National Wild and Scenic River System under 16 USC 1274 and 1276.

c. Borrow (disposal) site operations will not cause a significant encroachment within the base floodplain (CE.O. 11988: Floodplain Management).

d. Borrow (disposal) site operations will not be located in or affect a critical habitat of a Federally listed endangered or threatened species under 16 USC 1531, et. seq.

e. No borrow (disposal) operations will occur in wetland areas which are designated by appropriate agencies.

f. Borrow (disposal) site operations will be consistent with any approved plans governing ambient air quality.

g. Adherence to these mitigation measures does not relieve the Contractor of the obligation or responsibility to obtain any other Federal, State, or local approvals required to use borrow (disposal) areas and conduct such activities.

h. Documentation: Copies of borrow (disposal) site approvals and concurrences will be submitted to the WVDEP prior to the commencement of reclamation activities.

i. Site Monitoring: Borrow (disposal) activities will be monitored by the State to ensure compliance with contractual requirements, applicable Federal, State, and local laws, and any permit conditions.

8. DISPOSAL OF UNSUITABLE MATERIAL

All waste areas shall be obtained in accordance with **Special Provisions Section 7** of these specifications. All unsuitable materials (wood, trash, debris, and garbage) as determined by the Engineer, shall be wasted by the Contractor, at his/her expense, outside the limits of work conforming to the requirements of the applicable sub-sections of **Section 4.0** of these Specifications.

Coal, coal refuse, black or dark gray shales, and exposed coal seams and other similar potentially toxic (acidic) materials shall be soil covered on-site in accordance with these Specifications.

All cleared and grubbed material shall be removed to an off-site disposal area. The Contractor shall observe the NEPA compliance schedule relative to selecting and utilizing any off-site disposal areas in accordance with **Special Provisions Section 7** of the Specifications.

9. INTERPRETATION OF APPROXIMATE ESTIMATE OF QUANTITIES

The estimate of quantities of work to be done and/or materials to be furnished under the Special Provisions and Technical Specifications, as shown on the Contract Bid Schedule, is approximate and is given only as a basis of calculation upon which the award of the Contract is to be made. WVDEP reserves the right to increase or decrease any or all of the quantities of work or to omit any of them, as it may deem necessary.

10. SAFETY

All regulations of the Occupational Safety and Health Act of 1970 (**OSHA**) are in effect for this Contract. WVDEP shall not be liable for any citations received by the Contractor as a result of failure to comply with applicable **OSHA** standards. Compensation is to be included in the various items of the Contract for the expense involved in complying with these standards. In addition, the Contractor shall comply with **Section 107.7** of the **WVDOH Standard Specifications** regarding public convenience and safety. The Contractor shall comply with **OSHA Regulation**

29CFR1926 Subpart P for excavation of trenches associated with pipe, culvert, subsurface drains, mine seal installations, and similar constructions. The Contractor shall also protect pedestrian and vehicular traffic around excavations and trenches in compliance with the **U.S. Federal Highway Administration Manual of Uniform Traffic Control Devices** and the **WVDOT "Manual on Traffic Control for Streets and Highway"** 2006 edition, dated March 2006. The Contractor will be required to comply with all WVDOH rules, regulations, weight limits, and speed limits associated with and posted on West Virginia Route 131 and Harrison County Route 13/6, as well as other public roads used by the Contractor to access the project. The Contractor will be required to coordinate his operations with landowners and provide unrestricted access to them at all times. At the discretion of the Engineer, the Contractor will be required to employ flag persons along West Virginia Route 131 and Harrison County Route 13/6 to direct traffic while hauling materials on and off site and other constructions. The Contractor will also be required to keep driveways, West Virginia Route 131, Harrison County Route 13/6, and other existing access roads used during construction of the project free of fugitive dust and clean of mud and other debris from the job site deposited by construction and other vehicles entering or leaving the project area.

11. REGULATIONS

All appropriate Municipal, County, State, and Federal Regulations shall apply to this Contract. It shall be the Contractor's sole responsibility to be aware of these regulations and to comply with them. WVDEP shall not be liable for any citations received by the Contractor. The Contractor shall keep the existing roads open and safe to the public and vehicular traffic at all times and shall provide appropriate barriers and warning devices as directed by the Engineer.

12. LAWS TO BE OBSERVED

The Contractor shall at all times, observe, comply with, and post as required all Federal, State, and local laws, ordinances, and regulations in any manner affecting the conduct of the work or applying to employees on the project as well as all orders or decrees which have been or may be promulgated or enacted by any legal bodies or tribunals having authority or jurisdiction over the work, materials, employees, or Contract. The Contractor shall protect and indemnify WVDEP and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree whether by the Contractor or by the Contractor's employees.

13. PERMITS, LICENSES AND FEES

The WVDEP shall provide the NPDES Stormwater permit from the Division of Water and Waste Management, WVDOH Encroachment permits (if required), a Water Quality Certification from the Division of Water and Waste Management, and an ACOE Regional permit (if required). The Contractor shall procure all other permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work. Permits required for this project may include but are not

limited to: Stream Activity Permit from the State of West Virginia, Department of Commerce, Division of Natural Resources, Office of Lands and Streams, Building 3, Room 643, 1900 Kanawha Boulevard East, Charleston, West Virginia 25305-0665; and burning permits from local and state governmental agencies including the West Virginia Division of Air Quality (North Central Regional Office, 2031 Pleasant Valley Road, Suite #1, Fairmont, WV 26554-9295, 304-368-3910) and West Virginia Division of Forestry (required during forest fire season – March 1 to May 31 and October 1 to December 31) contact Tim Casto, West Virginia Division of Forestry, Fire Forester, P.O. Box 40, Farmington, WV 26571 – 304-825-6983 or 304-382-9786 (Cell). A copy of the permits as procured shall be furnished to the Owner prior to initiation of the work under this Contract.

14. ELECTRICITY, WATER SUPPLY AND SANITARY FACILITIES

There are no available supplies at the site of electricity and water and, additionally, there are no sanitary facilities. Arrangements for electric service, water supply and sanitary facilities shall be made by the Contractor, and all costs for such arrangements shall be borne by the Contractor at no additional cost to the Department.

15. UTILITIES AND OTHER OBSTRUCTIONS

The Contractor shall be solely responsible to correctly locate all existing active underground and overhead utilities at the project sites and take precautions to avoid damage to them. Any existing utility lines damaged by the Contractor shall be replaced by the Contractor or repaired at no cost to the Owner. The Contractor shall notify the utility companies likely to be affected well in advance and before beginning any work within the project sites. In the event of damage to the existing utilities or other facilities, the Contractor shall notify the affected utility Owner(s) and the Engineer immediately and make, or have made, all necessary repairs and bear the expense thereof and resulting damaged caused thereby. It shall be the responsibility of the Contractor to arrange for relocating the utility lines, where required and as directed by the Engineer, in accordance with the guidelines set forth by the utility company, prior to beginning construction. The Contractor will be reimbursed for actual charges invoiced by the Utility Company, except for utilities that are subject to regulation by the Public Service Commission, in which case, payment will be made directly to the affected utility by the WVDEP. Prior to any utility relocation work, the Contractor shall submit a cost estimate of work to be accomplished to WVDEP for approval. The utility companies (and WVMIS) must be contacted by the Contractor at least one week prior to commencement of construction activities for the purpose of field locating and marking utility owned facilities within the project area.

The project areas are located in a densely populated area with numerous overhead and buried public and private utilities located within and adjacent to the project area. The Contractor will be required to pad several buried utility lines located in the project areas before crossing them. The name, address, and phone number of the WVMIS Utility location service and of the utility companies are as follows:

WVMIS
1-800-245-4848

UTILITY LISTING	
Name/Address	**Telephone Number**
First Energy Corp. (Mon Power), 1310 Fairmont Ave., P.O. Box 1392 Fairmont, WV 26555	(800) 255-3443 Ext. 04908
Frontier, A Citizens Communication Company, 300 Bland Street Bluefield, WV 24701	(888) 535-4421
Lumberport-Shinnston Gas Company Inc., 1 Energy Lane, Lumberport, WV 26386	(304) 584-4545
Dominion Hope, Dominion Transmission, Rte. 2, Box 145, Bridgeport, WV 26330	(304) 627-3096 (304) 641-9048
Enervest, 300 Capitol Street, Suite 200, Charleston, WV 25301	(304) 539-2796
Equitable Gas, 500 Oakmound Drive, Clarksburg, WV 26301	(800) 400-4271
City of Shinnston, 1253 East Avenue, Shinnston, WV 26431	(304) 592-2121 (304) 592-6017 (304) 669-6955

16. SITE CLEANUP

Before the project shall be considered as having been satisfactorily completed, the Contractor shall clean and remove, from the project site, all surplus and discarded materials, and equipment and shall further remove all debris and objectionable materials of any kind from areas used or disturbed by the construction operations within or within sight of the project area.

17. ROCK BLASTING

All blasting operations shall be conducted in strict accordance with applicable State and Federal laws relating to rock blasting and the storage and use of explosives. The contractor shall maintain and keep in full force and effect blasting insurance to protect and indemnify the Owner and/or his agents or representative from claims for damages and shall defend all suits at law. The Contractor shall submit to the Owner a request for permission to blast rock, a reclamation plan for the area to be disturbed, and proof of blasting insurance coverage prior to initiating blasting operations. Failure to obtain approval for blasting prior to initiating the work will result in no payment for items utilizing this rock. No blasting is anticipated on this project.

18. TEMPORARY ACCESS ROADS

The Contractor shall construct and maintain temporary access roads for convenient access to the various parts of the work, and for other necessary purposes incidental to the performance of this Contract. The location of access roads shall be approved by the Engineer prior to construction. No separate payment for construction and maintenance of such roads will be made. The Contractor shall erect such temporary fences or guards as may be necessary to keep unauthorized persons away from the work. Grading and surfacing of temporary access roads, excavations, fills and embankments for purposes of construction, or for convenience, beyond the limits of ordered excavations and all temporary fences and guards, shall be provided by the Contractor and shall be maintained in good condition. The Contractor shall be required to maintain all roads used by the hauling equipment in a dust controlled condition. Upon completion, the Contractor shall return the disturbed areas to the approximate original condition, as approved by the Engineer, and reestablish vegetation in accordance with **Section 6.0** of these specifications.

The contactor shall be required to obtain a right of entry agreement from any property owner(s) prior to the utilization or construction of any access outside of the construction limits shown on the plans. Such agreement shall require the property owner(s) to indemnify and hold WVDEP harmless from any and all injuries or damages, whatsoever, resulting from the Contractor's use of the property.

Should the Contractor decide to utilize any access off county roads other than those shown on the plans, he shall modify the approved NPDES permit and obtain necessary permits from the West Virginia Department of Highways to work in their right-of-way all at his own expense.

19. TRAFFIC CONTROL

The Contractor shall maintain and protect traffic, protect the work in progress, protect adjacent property from excess dust resulting from the construction and maintain traffic through, around, or adjacent to the construction area. All materials used for traffic control shall be in accordance with the **WVDOT "Manual on Traffic Control for Streets and Highway"** 2006 edition, dated March 2006. The Contractor shall submit the Traffic Control Plan to the West Virginia Division of Highways District Four Permit Supervisor (Ms. Denise Ronco), I-79 & Meadowbrook Road, Clarksburg, West Virginia 26302-2570, (304) 842-1575, for approval prior to submitting a copy of the operational plan to the WVDEP for approval prior to its implementation. The Contractor will be required to comply with all WVDOT rules, regulations, weight limits, and speed limits associated with and posted on West Virginia Route 131 and Harrison County Route 13/6, as well as other public roads used by the Contractor to access the project. The Contractor will be required to coordinate his operations with landowners and provide unrestricted access to them at all times. At the discretion of the Engineer, the Contractor will be required to employ flag persons along West Virginia Route 131 and Harrison County Route 13/6 to direct traffic while hauling materials on and off site and other constructions. The Contractor will also be required to keep driveways, West Virginia

Route 131, Harrison County Route 13/6, and other existing access roads used during construction of the project free of fugitive dust and clean of mud and other debris from the job site deposited by construction and other vehicles entering or leaving the project area.

20. SITE CONDITIONS AND ENVIRONMENTAL PROTECTION

Conditions at the site shall be examined by the Contractor, and the Contractor shall assume responsibility as to the contours and the character of the earth, rock, water and other items that may be encountered during the excavation and filling operations.

The Contractor shall be responsible for controlling and handling water encountered during construction, including dewatering of mine pools for mine seal installations, by providing equipment and labor to insure safe and proper construction. The Contractor shall submit a plan to the WVDEP at the pre-construction meeting for approval. The WVDEP's approval of this plan does not relieve the Contractor of his responsibility for controlling water.

The Contractor shall be responsible for the operation and maintenance of any required diversion or pumping facilities for removing ground water from work areas during the progress of the work under this Contract.

The Contractor shall be responsible for furnishing all materials, equipment, labor and incidentals necessary for the installation of silt barriers and check dams as designated in the drawings. Sediment control shall be placed on regraded areas concurrent with construction and prior to revegetation.

The Contractor shall be responsible for implementing the measures called for in the NPDES Stormwater permit provided by the WVDEP for erosion and sediment control. Sediment control measures shall be in-place and operational prior to any disturbance occurring in the project area. The WVDEP's approval of this plan does not relieve the Contractor of his responsibility to be in compliance with any laws and/or permits.

The Contractor shall take any necessary steps to prevent erosion or silting problems from occurring and to minimize pollution or sedimentation of the stream. If any such problems develop, the Contractor shall be responsible to take immediate corrective action.

The Contractor shall be responsible for the repair or replacement of streets or driveways (blacktop, gravel & concrete), trees, shrubs, fences, and any other physical features that are disturbed by construction which were not included in the proposed scope of work for the project to original condition or better at his own expense. The Contractor will be required to regrade, maintain, and repair access roads in and near the project area and top existing roadway surfaces after construction operations are complete, but before demobilization operations, with compatible materials that existed upon mobilization operations. All existing access roads shall be maintained with materials compatible with those existing, repaired with compatible material as exists, and left in a condition equal to

or better than existed at the time of mobilization activities. At a minimum, constructed access roads and existing access roads used for construction shall be upgraded and maintained to provide all-weather access to construct the project as specified and shown on the plans.

The Contractor shall be responsible for the replacement of any existing boundary or corner markers disturbed by construction activities.

21. CONTROL AND REVIEW OF WORK BY THE ENGINEER

All services rendered by the Engineer consist of professional opinions and recommendations made in accordance with generally accepted engineering practice. Under no circumstances is it the intent of the Engineer to directly control the physical activities of the Contractor or the Contractor's workmen's accomplishment of work on this project.

The presence of the Department's Field Representative and/or Engineer at the site is to provide the Department a continuing source of professional advice, opinions and recommendations based upon the Field Representative's and/or Engineer's observations of the Contractor's work and does not include any superintending, supervision or direction of the actual work of the Contractor or the Contractor's workmen.

Any construction review of the Contractor's performance conducted by the Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, or near the construction site.

22. CITATION OF OTHER SPECIFICATIONS

Whenever the Specifications for this Contract refer to the specifications of any society, institute, association or government organization, then such specifications cited shall become a part of this Contract as if written in full. Commonly used abbreviations have the following meanings:

ASTM - American Society for Testing Materials

ASA - American Standards Association

AWWA - American Water Works Association

AASHTO - American Association of State Highway and Transportation Officials

ACI - American Concrete Institute

WVDOT - West Virginia Department of Transportation

WVDOH - West Virginia Division of Highways

Where reference is made to a specification, it shall be the latest revision at the time called for bids, except as noted on the Plans or elsewhere herein.

23. NPDES STORMWATER PERMIT GUIDELINES

VEGETATIVE PRACTICES

Except as noted below, stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven (7) days after the construction activity in that portion of the site has permanently ceased.

- Where the initiation of stabilization measures by the fourth day after construction activity temporarily or permanently ceases or is precluded by snow cover, stabilization measures shall be initiated as soon as conditions allow.

- 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 halted is less than 21 days) then stabilization measures do not have to be initiated on that portion of the site by the seventh day after construction activities have temporarily ceased.

Areas where the seed has failed to germinate adequately (uniform perennial vegetative cover with a density of 70%) within 30 days after seeding and mulching must be reseeded immediately, or as soon as weather conditions allow.

Diversions must be stabilized prior to becoming functional.

MAINTENANCE & INSPECTION

At a minimum, all erosion and sediment controls on the site will be inspected at least once every seven (7) calendar days and within 24 hours after any storm event of greater than 0.5 inches of rain per 24-hour period.

All controls should be cleaned out when sediment reaches one half the sediment capacity of that control.

Inspection and maintenance records must be kept onsite.

EROSION & SEDIMENT CONTROL CONSTRUCTION SEQUENCE

1. Install stabilized construction entrance as shown on site plans.

2. Install perimeter sediment control devices as shown on site plans.

3. Clear and grub site.

4. Provide sediment control for any topsoil stockpiles.

5. Install additional erosion and sediment controls as shown on site plans.

6. Commence rough grading of site. Continue to maintain and inspect all erosion and sediment controls.

7. Fine grade site.

8. Install additional erosion and sediment controls as shown on site plans.

9. Permanently seed and mulch all disturbed areas within seven (7) days of reaching final grade.

10. Upon completion of the project, including adequate stabilization, remove all remaining erosion and sediment controls.

I. TECHNICAL SPECIFICATIONS

1.0 MOBILIZATION AND DEMOBILIZATION

1.1 DESCRIPTION

This work shall consist of the performance of construction preparatory operations, including the movement of personnel and equipment to the project sites and for the establishment of the Contractor's offices, buildings and other facilities including the construction of all temporary access roads as necessary to begin work on a substantial phase of the contract. The location of Contractor's office (if established) shall be approved by the Owner. It shall also include all demobilization activities involving the removal from the sites of all plant, equipment, supplies, and personnel after completion of the work including cleanup of all rubbish and waste materials generated during the construction of this project; and restoration of any damage to existing site improvements resulting from the Contractor's activities at the site; and installation of the project sign.

1.2 METHOD OF CONSTRUCTION

The Contractor shall comply with **Special Provision 5, Schedule of Work**. The Contractor shall provide adequate supervision, labor, tools, equipment, and materials to prosecute the work energetically and complete the work within the time specified.

The Contractor's work hours for this project shall be from 7:00 a.m. to 7:00 p.m. Monday through Saturday. Work on Sunday and major holidays, as defined by the Engineer, will not be allowed on this project.

The Contractor shall maintain and protect traffic, protect the work in progress, protect adjacent property from excess dust resulting from the construction and maintain traffic through, around, or adjacent to the construction area. The Contractor shall comply with **OSHA Regulation 29CFR1926 Subpart P** for excavation of trenches associated with pipe, culvert, subsurface drains, mine seal constructions, and similar constructions. The Contractor shall also protect pedestrian and vehicular traffic around excavations and trenches in compliance with the **U.S. Federal Highway Administration Manual of Uniform Traffic Control Devices** and the **WVDOT "Manual on Traffic Control for Streets and Highway"** 2006 edition, dated March 2006. The Contractor will be required to comply with all WVDOT rules, regulations, weight limits, and speed limits associated with and posted on West Virginia Route 131 and Harrison County Route 13/6, as well as other public roads used by the Contractor to access the project. The Contractor will be required to coordinate his operations with landowners and provide unrestricted access to them at all times. At the discretion of the Engineer, the Contractor will be required to employ flag persons along West Virginia Route 131 and Harrison County Route 13/6 to direct traffic while hauling materials on and off site and other constructions. The Contractor will also be required to keep driveways, West Virginia Route 131, Harrison County Route 13/6, and other existing access roads used during construction of the project free of fugitive dust and

clean of mud and other debris from the job site deposited by construction and other vehicles entering or leaving the project area.

1.3 METHOD OF MEASUREMENT

The method of measurement for Mobilization and Demobilization shall include all costs associated with mobilization and demobilization to perform tasks shown on the plans and herein specified.

1.4 BASIS OF PAYMENT

The bid for Mobilization and Demobilization shall be a lump sum and cannot be more than 5% of the "**TOTAL AMOUNT BID**" for the project. The Contractor will not be paid until he has submitted and received approval for paper (hard copies) and two (2) copies of a cd-rom with all "as-built" plans, in accordance with **Specification Section 2.3.6**.

Partial payments for Mobilization and Demobilization will be as follows:

(a) One-half of the amount bid will be released to the Contractor with the first estimate payable, not less than 15 days after the start of work at the project site.

(b) The final one-half of the amount bid shall be released with the estimate payable after the work is accepted by the WVDEP and the Contractor has submitted and received approval for paper (hard copies) and two (2) copies of a cd-rom with all "as-built" plans, in accordance with **Specification Section 2.3.6**.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided for by the Contract. No deduction will be made nor will any increase be made, in the lump sum mobilization and demobilization item amount regardless of decreases or increases in the final total contract amount or for any other cause.

1.5 PAY ITEM

Item 1.0, "**Mobilization and Demobilization**" per lump sum. Cannot be more than 5% of the TOTAL AMOUNT BID for the project.

2.0 CONSTRUCTION LAYOUT STAKES

2.1 DESCRIPTION

This item consists of furnishing, placing, and maintaining construction layout stakes necessary for the proper performance of the work under this contract, including borrow areas. It shall further consist of determining the exact units of measure for payment. It also consists of checking and making any field adjustment to the plan alignment, grades and elevations as considered necessary by the Owner or dictated by planned excavations. Additionally, this item shall also include the preparation of **"As-Built"** Plans including the (Borrow/Disposal Area) Reclamation Plan and any others specifically requested by the Owner. All **"As-Built"** Plans shall be provided prior to the Final Inspection Meeting. Upon receipt and approval of the **"As-Built"** Plans by the Owner, the final one-half of the amount bid for **Item 1.0, "Mobilization and Demobilization"** will be released.

2.2 MATERIALS

Conventional survey stakes, hubs, batter boards, flagging, templates, straightedges and other devices necessary for laying out all parts of the work. Paper and computer media required for various submittals.

2.3 METHOD OF CONSTRUCTION

2.3.1 The Contractor shall be responsible for the proper layout of the work. The Owner will provide the Contractor with survey information regarding the baselines and the existing surface features shown on the construction drawings. The Contractor shall make all calculations involved and shall furnish and place all layout stakes.

2.3.2 The Contractor shall provide field forces and shall set all additional stakes as needed, such as offset stakes, reference point stakes, slope stakes, grade stakes, stakes for drainage, or other structures, supplementary bench marks, and any other horizontal or vertical controls necessary to secure a correct layout of the work including the re-establishment of the survey and construction baselines (as necessary), and shown on the construction drawings. The Contractor shall also perform any necessary cross-section surveying of the existing ground surface at the intervals shown within the construction drawings, provide an overlay of the surveyed cross-sections plotted atop the cross-sections shown on the construction drawings, and submit the same to the Owner for comparison prior to initiating earthwork.

2.3.2.1 The original grade line and proposed final grade line shall be included on all sections. Incomplete cross-sections will be returned to the Contractor for necessary additions.

2.3.2.2 Cross-sections, which do not encompass all areas of both earthwork excavation (including borrow excavation) and fill placement shall be considered incomplete without exception.

2.3.2.3 In addition to existing and final grade cross sections, the Contractor will be required to cross section the top of the 12" Ø riprap fill placed behind the red barn in the northernmost project area as shown on the plan cross sections. These sections shall be used to verify the quantity of placed 12" Ø riprap and provide a balanced cut/fill final quantity.

2.3.3 The Contractor shall be responsible for assuring the layout staking work is in conformance to the lines, grades, elevations, dimensions, and locations shown on the construction drawings or as required by the Owner. The Contractor shall furnish a copy of his/her survey records for checking by the Owner and for the Owner's permanent file. These records shall be furnished as they are completed during the progress of the work.

2.3.4 Any inspection or checking of the Contractor's layout by the Owner and the acceptance of all or any part of it shall not relieve the Contractor of his/her responsibility to secure the proper dimensions, grades, and elevations of the several parts of the work.

2.3.5 The Contractor shall exercise care in the preservation of stakes and benchmarks, including existing property corners and property line markers, and shall have them reset at his/her expense when any are damaged, lost, displaced or removed. The Contractor shall use competent personnel and suitable equipment for the layout work required and shall provide that it be done under the supervision of, or directed by, a Registered Professional Civil Engineer or Registered Professional Surveyor licensed in the State of West Virginia. The Contractor will be required to establish references to found corners and markers and reset each corner or marker in its original location prior to demobilization operations. If the property corner or marker cannot be re-established in its original location (falls in a ditch, road, etc.), then surveyed offsets shall be set to that property corner or marker. The surveyed offsets shall be set along each property line going into and out of the subject corner or marker and at an even distance from the subject corner or marker. The Contractor shall supply the landowner with a plat developed and signed by a West Virginia Licensed Professional Land Surveyor and suitable for recording in the Courthouse and meeting the requirements of **Article 30-13A** of the West Virginia Code**.**

2.3.6 **"As-Built"** Plans shall be provided to the Owner at the Final Inspection Meeting.

2.3.6.1 Hard (paper) copies of all **"As-Built"** Plans shall be submitted to the Owner at this meeting. Hard copies shall be the same size, scale, and clarity as the sections contained in the Plans.

2.3.6.2 Two (2) copies of a cd-rom with all **"As-Built"** Plans shall also be submitted to the Owner at this meeting. The electronic versions of all **"As- Built"** Plans shall be in AutoCad Release 2010 format as well as "PDF" format.

2.3.6.3 The final one-half of the amount bid for **Item 1.0 Mobilization and Demobilization** will not be made until all **"As-Built"** plans, as specified, have been submitted and approved.

2.3.6.4 **"As-Built"** plans shall include the horizontal and vertical location of all buried components depicted on the plans and herein specified.

2.3.6.4.1 **"As-Built"** plans shall include the vertical and horizontal locations of all installed pipes and appurtenances.

2.3.6.4.2 In addition, **"As-Built"** plans shall show the vertical and horizontal location of any and all mine seal constructions and subsurface (seep collector and underdrain) drains, including top and bottom of coal seam, inverts of mine seal conveyance pipes, bottom of subsurface drain, pipe inverts, and top of buried subsurface drain installed.

2.3.6.5 The contractor will be responsible for field surveying the areal extent of revegetation efforts to determine the "plan view" acreage. The revegetation boundary shall be reviewed in the field and approved by the Engineer prior to survey operations. The surveyed boundary shall be plotted onto the construction plan view sheets with an area calculation provided and submitted to the Engineer for approval and payment.

2.4 METHOD OF MEASUREMENT

The Method of Measurement for furnishing, setting, maintaining, and resetting stakes when necessary, and for furnishing all engineering personnel, equipment, materials, and all incidentals thereto, shall be by the lump sum bid for "**Item 2.0, Construction Layout Stakes**". The lump sum payment also shall include the cost for providing the Owner with the areal extent of revegetation, pre-, post-, and during-construction ground line cross-sections for all disturbed or regraded areas, as detailed in these specifications, including borrow areas, and "**As-Built**" Plans as described herein. The lump sum price shall also include surveying and resetting property corners, property line markers, and existing fence lines and fence corners. Said lump sum bid cannot be more than 5% of the "TOTAL AMOUNT BID" for the project.

2.5 BASIS OF PAYMENT

The quantity of surveying, sectioning, and layout work done will be paid at the contract lump sum price bid for this item. Said lump sum bid cannot be more than 5% of the "TOTAL AMOUNT BID" for the project. No deduction will be made nor will any increase be made in the lump sum "**Item 2.0, Construction Layout Stakes"** amount regardless of decreases or increases in the final total contract amount or for any other cause.

2.6 PAY ITEM

Item 2.0, "Construction Layout Stakes", per lump sum. Cannot be more than 5% of the "TOTAL AMOUNT BID" for the project.

3.0 QUALITY CONTROL

3.1 DESCRIPTION

This work shall consist of testing for verification that the materials supplied and the work performed are in accordance with these specifications.

3.2 MATERIALS

3.2.1 The Contractor shall submit a minimum of two (2) copies of shop drawings, catalog cuts and material certifications (as applicable) to the Owner of all off-site materials to be incorporated into the work. Written approval from the Owner will be required prior to incorporation of these items into the work.

3.2.2 The Contractor shall submit at least two (2) copies of the results of all tests conducted on in-situ material, on-site materials used in construction, as well as commercially purchased materials and concrete and grout. At a minimum, these tests will include moisture content & density tests of the soil in accordance with the provisions of **ASTM D698** (Standard Proctor); field density tests following compaction; soil tests to determine the lime and nutrient requirements of the areas to be revegetated; gradation (size), durability (soundness), fizz, and acid base (calcium carbonate equivalency) requirements for purchased or onsite borrowed and commercially purchased riprap and aggregate; compressive strength test for grout in accordance with **ASTM C109**; and compressive strength test for concrete in accordance with **ASTM C31 & C39**. Three (3) specimens are required for each concrete or grout test. Five (5) in-field compaction tests comprise a "Lot".

3.3 METHOD OF CONSTRUCTION

3.3.1 The Contractor shall furnish the services of his own testing laboratory or select an independent testing laboratory, as long as the laboratory is AASHTO accredited (AAP) for physical properties testing of supplied materials. The laboratory for chemical testing of soils shall be a State approved laboratory. The Owner must approve all laboratories used.

3.3.2 Testing for compaction and soil classification; soil nutrient and lime requirements for soil; and compressive strength tests for concrete and grout; shall be performed as required by these specifications and/or ordered by the Owner in writing. The Owner will determine the locations and time of any testing herein specified and the need and extent of any testing in addition to that herein specified.

3.3.3 The contractor shall be responsible for performing laboratory tests of the coal refuse, mine spoil, and any natural soil to identify the compaction requirements for use as fill and cover material, respectively. In addition, field density tests shall be performed in accordance with the construction specifications. Five (5) in-field compaction tests shall be completed at sites chosen by the Engineer and comprise a "Lot". All test results shall be submitted to the

Owner for approval of compaction criteria prior to fill compacting, as well as after fill compaction to verify that the required compaction is obtained.

3.3.4 Rock riprap shall have a maximum weighted loss of thirty percent and aggregate shall have a maximum weighted loss of twelve percent when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials (**AASHTO**) **T-104**.

3.3.5 Stone shall have a maximum weighted loss of twelve percent (12%) when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials **(AASHTO) T-104**. Non-calcareous stone shall exhibit a fizz of 0 when subjected to dilute hydrochloric acid. A laboratory certification of soundness and fizz shall be submitted to the Owner prior to delivery of the stone to the project site.

3.3.6 Calcareous stone and riprap (limestone) used on this project shall be laboratory tested for calcium carbonate equivalency (acid-base accounting) by a State approved laboratory. Laboratory results from a commercial supplier will suffice; otherwise the Contractor will be required to perform the test prior to delivery of the stone or riprap to the project site. All calcareous stone or riprap (limestone) to be used on this project must exhibit a calcium carbonate equivalency of 70% or greater. The Contractor shall submit test results to the Engineer for approval prior to delivery of the stone or riprap to the site.

3.3.7 Grout to be used in the grouted riprap ditches shall consist of a mixture of one part Type II sulfate resistant Portland cement and three parts sand, using water to produce a workable consistency. The amount of water shall be as approved or as designated by the WVDEP. Admixtures and/or pozzolan may be used with the approval of the WVDEP. The grout shall exhibit a compressive strength of 2,000 pounds per square inch at 28 days with specimens made and tested according to the provisions of **ASTM C 31** and **C 39**. Three (3) specimens are required for each concrete or grout test in accordance with **Section 601.4.4** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. Grout mix designs to be used by the Contractor shall be submitted to the Owner for review and approval. The proposed design mix and sufficient test data using proposed sources of the mix components to verify strength parameters shall be supplied to the Owner for approval prior to use in the Project. All testing shall be the responsibility of the Contractor.

3.3.8 The Contractor must submit two (2) copies of shop drawings and necessary engineering calculations for all cast-in-place concrete structures for approval prior to placing any forms or pouring concrete. At a minimum, engineering calculations shall show load calculations, reinforcing calculations, and drawings sufficient to

show calculation and construction details. Concrete used for all cast-in-place structures shall be 4,000 psi concrete formed, placed, and cured in accordance with the requirements of **Section 601** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010 and **Supplemental Specifications** Dated January 1, 2003. Cement used in the mixture shall be Type II sulfate resistant Portland cement meeting the requirements of ASTM C150 (Type II cement not Type I cement). Deformed bars used for reinforcing concrete shall be epoxy coated meeting the requirements of **Section 709** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010 and **Supplemental Specifications** Dated January 1, 2012.

3.3.9 Only new and first class materials, which conform to the requirements of these Specifications, shall be used unless specified otherwise. When requested by the Owner, the Contractor shall furnish a written statement of the origin, composition, and manufacturer of any or all materials (manufactured or produced) that are to be used in the work. The Owner shall approve the sources of supply of each material used before delivery is started. If, at any time, sources previously approved fail to produce materials acceptable to the Owner, the Contractor shall furnish materials from other approved sources. The State Department of Transportation has a web site listing all approved sources and products at www.transportation.wv.gov/highways/pages/listings .

3.3.10 Failure to submit required tests will result in non-payment of the items requiring testing.

3.4 METHOD OF MEASUREMENT

The method of measurement for determining the quantity of quality control work done as described above will be on a lump sum basis.

3.5 BASIS OF PAYMENT

The quantity of quality control work done will be paid at the contract lump sum price bid for this item. Said lump sum bid cannot be more than 2% of the "TOTAL AMOUNT BID" for the project. No deduction will be made nor will any increase be made in the lump sum "**Quality Control**" item amount regardless of decreases or increases in the final total contract amount or for any other cause.

3.6 PAY ITEM

Item 3.0, "Quality Control", per lump sum. Cannot be more than 2% of the TOTAL AMOUNT BID for the project.

4.0 SITE PREPARATION

4.1 DESCRIPTION

4.1.1 Clearing & Grubbing

Work performed under this section shall include the removal and disposal of all trees, stumps and root balls, shrubs and any other vegetation, wood, debris, garbage of any nature from those areas specified below and/or shown on the plans and/or any other areas as approved or directed by the Owner.

This work shall also include the preservation from injury to all vegetation, utilities or other objects to remain, as well as all other ancillary work as described.

4.1.2 Demolition of Structures

This work shall consist of complete demolition and removal of such buildings, mining related structures and equipment, existing ruins and foundation structures, concrete pads, and existing drainage conveyances and facilities as are specifically designated on the Plans for removal. Boulders, structures, concrete pads, and foundation ruins shall be broken in accordance with **Specification 4.2.11 and 4.2.14** and buried in the deepest portion of fill areas. Broken pieces shall not be consolidated in one area, but shall be dispersed throughout fill areas to ensure compaction requirements are achieved. No buildings and no foundations or mining related equipment was observed during initial investigations. However, buried ruins or other structures or debris, including abandoned mining equipment, may exist and be encountered during excavation operations. All on-site garbage (as well as all other debris of any type and quantity), mining equipment, and metal structures encountered shall be removed from the site to an off-site disposal area in accordance with **Special Provision 7** or to a Landfill approved by the State to accept this type debris. The Contractor is advised to perform a thorough site reconnaissance to quantify all garbage designated for removal prior to submitting his bid.

4.1.3 Access Road Rehabilitation

The Contractor will be required to improve and maintain existing access roads into all-weather access roads for the duration of the project. Existing access road up-grading shall consist of minor regrading and capping the roadway surface with crushed stone and separation fabric (as directed by the Owner). All existing access roads shall be left in a condition equal to or better than existed at the time of mobilization (see **Specification 11.0 Pavement Repair**), and shall be repaired and maintained during construction (except when culvert, ditch and road construction are being performed) to the satisfaction of the Owner. Resurfacing and/or stabilization stone for access road upgrading and maintenance will be incidental to the cost of the work described herein for any road required for

construction entry, as deemed necessary by the Owner, to facilitate site travel. All travel and upgrading operations performed on existing access roads shall be confined to the width of the existing road. The Owner shall be the sole authority in determining the need for repair and maintaining existing access roads and the sole authority for approval of satisfactory repair/upgrade operations. All upgrading, maintenance, and repair during construction operations shall be considered incidental to **Item 4.1 "Site Preparation"**.

Final grading, revegetation, stabilization and providing final drainage control for existing access roads shall be in accordance with **Specification 11.0 Pavement Repair** and performed as directed and approved by the Owner after reclamation operations for the project have been completed.

Other access roads not shown on the construction plans built to gain access to travel between, or otherwise required for equipment /vehicular site access shall be kept to a minimum and only constructed where necessary upon approval from the Owner. Contractor constructed travel routes not designated on the Plans, shall be reclaimed to approximate original contours and revegetated according to **Specification 6.0 Revegetation** and upon completion of the construction activities or as deemed necessary by the WVDEP, with associated costs being considered incidental to this project. Any additional access shall require the Contractor to obtain written permission from the respective landowner. The State Department of Transportation has a web site listing all approved sources and products at: www.transportation.wv.gov/highways/pages/listings .

4.1.3.1 Crushed stone for access road construction and existing access road and driveway upgrading, maintenance, and repair during construction activities shall be crusher run limestone. Crusher run stone shall be that commonly purchased from suppliers, calcareous, and shall meet the gradation and quality requirements in **Table 704.6.2A** for **Class 1 Aggregate** in **Section 704** of the **WVDOH Standard Specifications Roads and Bridges**, Adopted 2010**.** Aggregate shall have a maximum weighted loss of twelve percent when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials (**AASHTO**) **T-104**.

4.1.3.2 Separation fabric shall be placed on a prepared subgrade prior to placement of surfacing or resurfacing stone. Separation fabric shall be woven and meet the requirements of **Section 715.11.8** of the **WVDOH Standard Specifications Roads and Bridges**, Adopted 2010, such as Mirafi 600X or approved equal**.**

4.1.3.3 **Class "B" Concrete.** Concrete used for existing access road, driveway maintenance and repair shall be 4,000 psi Class "B" concrete placed and cured in accordance with the requirements of **Section 601** of

the **WVDOH** **Standard Specifications for Roads and Bridges**, Adopted 2010 and **Supplemental Specifications** Dated January 1, 2012. Cement used in the mixture shall be Type II sulfate resistant Portland cement meeting the requirements of ASTM C150 (Type II cement not Type I cement). **Reinforcing Bars.** Deformed bars used for reinforcing concrete shall be epoxy coated and meet the requirements of **Section 709** of the **WVDOH** **Standard Specifications for Roads and Bridges**, Adopted 2010 and **Supplemental Specifications** Dated January 1, 2012.

4.1.3.4 A minimum of 5½ inches of Hot Mix Asphalt (HMA) shall be used for asphalt repair sections of existing access roads and driveways. Four inches (4") of HMA Base 1 Coarse and one and one-half inches (1½") of Wearing 1 Coarse will be required. The HMA shall comply with **Specification Section 401** of the **WVDOH** **Standard Specifications for Roads and Bridges**, Adopted 2010. The HMA shall be placed in two inch (2") lifts, compacted, and placed to blend into existing asphalt grades surrounding the repair area.

4.1.3.5 The amount and effectiveness of final grading of constructed access roads, designated to remain, will require the approval of the Owner.

4.1.4 Temporary Access Road Construction

4.1.4.1 Temporary Access Roads shall be constructed to the lines and grades shown on the plans. In addition, the Contractor will be required to construct and maintain Temporary Stream Crossings in locations to the lines and grades shown on the plans. Temporary access roads shall be constructed of 1 ½" crusher run stone and separation fabric as shown on the plans and meeting the requirements of **Specification 4.1.3**. Temporary Access Roads and stream crossings shall be removed once all reclamation activities using the road are complete and with the approval of the Engineer. The footprint of these constructions shall be regraded and revegetated in accordance with **Specification 6.0**.

4.1.4.2 Temporary Stream Crossings shall consist of 4.0 foot wide by 24 foot long by 1.0 foot thick hardwood timber mats and 1 ½" crusher run stone, meeting the requirements of **Specification 4.1.3,** for abutment leveling and footing.

4.1.4.3 Temporary Access Road construction will cross over several buried lines including gas lines, water lines, and sewer lines. Where these crossings occur, the Contractor will be required to construct Line Protection Pads as shown on the plans and herein specified. Line Protection Pads consist of sufficient one inch thick by eight foot by four foot (1" x 8' x 4') steel plates to protect the buried line across the entire road width; separation fabric; and topped with crushed stone meeting the requirements of **Specification 4.1.3.**

4.1.4.4 Class "B" Bedding shall consist of select random material free from organic materials, coal, coal refuse, and particles larger than 3" in any dimension. Class "B" Bedding will require the approval of the Engineer prior to use.

4.1.5 Materials and Equipment Storage

Material storage areas within the Contractor's Work Limits shall require the approval of the Owner. Material storage areas outside the Contractor's Work Limits will require permission from the respective landowner in accordance with **Special Provision 7**.

4.2 METHOD OF CONSTRUCTION

4.2.1 The Contractor shall comply with all Special Provisions, with particular attention to Special **Provision V, Schedule of Work** and **Special Provision X, Safety**.

4.2.2 The Contractor shall maintain and protect traffic, protect the work in progress, protect adjacent property from excess dust resulting from the construction and maintain traffic through, around, or adjacent to the construction area. The Contractor shall comply with **OSHA Regulation 29CFR1926 Subpart P** for excavation of trenches associated with pipe, culvert, subsurface drains, mine seal constructions, and similar constructions. The Contractor shall also protect pedestrian and vehicular traffic around excavations and trenches in compliance with the **U.S. Federal Highway Administration Manual of Uniform Traffic Control Devices** and the **WVDOT "Manual on Traffic Control for Streets and Highway"** 2006 edition, dated March 2006. The Contractor will be required to comply with all WVDOT rules, regulations, weight limits, and speed limits associated with and posted on West Virginia Route 131 and Harrison County Route 13/6, as well as other public roads used by the Contractor to access the project. The Contractor will be required to coordinate his operations with landowners and provide unrestricted access to them at all times. At the discretion of the Engineer, the Contractor will be required to employ flag persons along West Virginia Route 131 and Harrison County Route 13/6 to direct traffic while hauling materials on and off site and other constructions. The Contractor will also be required to keep driveways, West Virginia Route 131, Harrison County Route 13/6, and other existing access roads used during construction of the project free of fugitive dust and clean of mud and other debris from the job site deposited by construction and other vehicles entering or leaving the project area.

4.2.3 The Contractor's work hours for this project shall be from 7:00 a.m. to 7:00 p.m. Monday through Saturday. Work on Sunday and major holidays, as defined by the Engineer, will not be allowed on this project.

4.2.4 The specific areas to be cleared and grubbed are as shown on the contract drawings and are generally described as, but not limited to, those specific areas of excavation, backfill, soil borrow or drainage structure installation.

4.2.5 The Contractor shall clear the site within the limits of the areas to be regraded. The Owner shall exercise control over clearing and shall designate all trees, plants and other objects to be removed or to remain.

4.2.6 Clearing and grubbing shall be completed prior to initiation of earthwork operations only to the extent necessary to complete the work. The Contractor shall confine his operations strictly to required areas. If he clears and grubs beyond the required areas, whether knowingly or accidentally, he shall, at his expense, replant and otherwise restore all areas outside the limit lines to a condition equal to that existing prior to start of work.

4.2.7 All timber eight (8) inches in diameter and larger at stump height shall be saw cut prior to grubbing operations. Timber shall be topped with the branches removed and stacked and stockpiled in an appropriate manner in an accessible location approved by the WVDEP on the property from which it was cut. Timber to be stockpiled shall not be pushed down by equipment prior to being cut nor can it be indiscriminately shoved into a stockpile.

4.2.8 All stumps, roots, buried logs and brush shall be removed. Grass, however, may be incorporated into the resoiling material. Taproots and other projections over 1-½ inches in diameter shall be grubbed out to a depth of at least ten (10) inches below the planned subgrade or slope elevation. All holes remaining after the grubbing operation shall have the sides broken down to flatten out the slopes, and shall be filled with suitable materials, moistened and properly compacted.

4.2.9 Cleared and grubbed areas shall be worked such that positive drainage is provided to prevent ponding of water except for the purpose of sediment control structures as approved by the Owner.

4.2.10 All organic material resulting from clearing and grubbing operations shall be removed from the sites and disposed of in accordance with **Special Provision 8 – Disposal of Unsuitable Material** and **Section 4.2.11** of these specifications. Other debris, including stumps and tree root balls, shall also be removed from the site in accordance with **Special Provision 8 – Disposal of Unsuitable Material** and **Section 4.2.11**. Should the Contractor decide to obtain and utilize any disposal areas outside of construction limits, the Contractor shall be responsible to obtain from the property owner(s) of the disposal areas, all necessary rights of entry, including rights of entry for WVDEP and OSMRE for inspection purposes in accordance with **Special Provision 7 Borrow (Disposal) Areas**. Disposal of organic material other than a landfill will require the Contractor to adhere to all State, Federal, and Local Regulations and Ordnances and obtain all necessary permits and bear the

expense thereof, including associated fees in accordance with **Special Provision 13 – Permits, Licenses, and Fees**.

4.2.11 All other materials generated from required clearing and grubbing operations or designated for removal on the plans shall be removed and disposed of by the Contractor. All garbage, construction debris, mining debris, etc., shall be disposed of in approved waste areas or landfills approved by the State to accept the type of waste or debris to be deposited.

4.2.11.1 It shall be the responsibility of the Contractor to obtain, at no expense to the Owner, all necessary waste and borrow areas or landfills for the disposal of waste materials in accordance with any applicable local, state, and/or federal regulations including compliance with NEPA requirements (See **Section 7** for NEPA Compliance Schedule). All waste and borrow areas must be approved by the Owner and, the Contractor must provide a reclamation plan for approval. In addition, for all waste and borrow areas outside the construction limits, the Contractor must obtain from the property owner a right-of-entry agreement in which the property owner indemnifies and holds the WVDEP and OSMR harmless from any injury or damages whatsoever resulting from the use of the property.

4.2.11.2 The Contractor may be required to submit proof the landfill is indeed permitted to accept the type of debris or waste to be deposited. The Contractor is required to visit the site and decide for their self the nature and quantity of garbage to be removed prior to submitting his bid.

4.2.11.3 The landowner maintains an equipment storage area in the vicinity of Seep Collector Number Four installation.

4.2.11.3.1 The Contractor will be required to enter into an agreement with the landowner to temporarily move stored equipment from the construction area. The landowner may wish to have some of the material in this storage area discarded and deposited in a landfill in accordance with the specification.

4.2.11.3.2 The Contractor may also be required to move the equipment back to its original location.

4.2.11.3.3 Should the Contractor damage any item while moving or returning it to the storage area, he shall notify the Engineer and landowner immediately and repair, replace,

or otherwise compensate the landowner to his and the Engineer's satisfaction.

4.2.11.3.4 The Contractor will be required to have the signed agreement approved by the Engineer prior to commencing any work to remove or return items to the storage area.

4.2.12 It shall be the sole responsibility of the Contractor to correctly locate and avoid all underground, on-ground, and overhead utilities, facilities and other structures and constructions, and for that purpose, shall employ all necessary precautions and methods to insure avoidance of and damage to such constructions. The Contractor shall be required to work in close proximity to overhead and underground private and public utilities and constructions and facilities. See "**Special Provisions**", **Section 15 "Utilities and Other Obstructions"** of these specifications for additional information.

4.2.13 Buildings, mining related structures, existing ruins and foundations, shall be removed. The removal operation shall extend 1-foot below finished grade, which operation shall include removal of concrete slabs or any other type of floors and/or walls resting upon the ground. Basement floors shall be shattered. Pits, trenches, holes or basements shall be backfilled. No mining related equipment was observed during initial investigations. However, buried ruins or other structures or debris, including abandoned mining equipment, may exist and be encountered during excavation operations. Abandoned mining equipment and all metal encountered shall be removed from the site to an off-site disposal area in accordance with **Special Provision 7** or to a landfill approved by the Owner to accept this type debris. The Owner shall be the sole judge as to what is to be buried and what is to be removed from the site. Areas where structures and buildings are removed shall be graded to provide positive drainage so surface runoff will not pool or impound as directed by the Owner.

4.2.14 Coal and/or refuse spillage, concrete, cinder blocks, and foundation ruins shall be excavated, specially handled in accordance with these Specifications, and/or removed from the site. Boulders, cut stone structures, concrete pads and blocks, and foundation ruins shall be broken and buried in the deepest portion of fill areas. Broken pieces shall be of size less than 2 feet in any dimension and not be consolidated in one area, but shall be dispersed throughout fill areas to ensure compaction requirements are achieved. Coal and/or refuse shall be buried beneath 12", minimum, of soil capable of supporting vegetation.

4.2.15 Trash, garbage, tires, plastic, metal, automobile parts or debris, household appliances, treated lumber, and other unsuitable material resulting from demolition or existing on-site shall be disposed of by the Contractor at his/her own responsibility and expense outside the work limits in a landfill, as approved by the Owner, unless otherwise directed. Bricks, concrete blocks, cut

stone, and concrete foundations shall be disposed as per **Section 4.2.14** of these specifications.

4.2.16 Offsite disposal will be necessary and offsite borrow may be necessary, the Contractor shall observe the NEPA Compliance Schedule as per **Section 7** of the **Special Provisions**.

4.2.17 Existing site access roads are narrow driveways that shall be upgraded and maintained to provide safe, all-weather access to the Temporary Constructed Access Roads for reclamation of the project as planned. The Contractor is responsible for locating and avoiding all underground and overhead private and public utilities, including existing culverts, piping, downspouts, etc. and other obstacles including landowner constructions, facilities, lawn ornaments, plants, shrubs, trees, etc. during access road grading, upgrading, and maintenance.

4.2.17.1 Existing access roads utilized by the Contractor shall be graded to a smooth surface, maintained in a dust free condition, and upgraded as required or directed by the Owner with crusher run stone and separation fabric meeting the requirements of **Specification 4.3.1**.

4.2.17.2 Existing access road upgrading will involve preparing existing profile grades through regrading, removing potholes and soft spots, as well as compaction of the regraded subgrade prior to placement of separation fabric and topping with crusher run stone meeting the requirements of **Specification 4.1.3**.

4.2.17.3 Final grading, revegetation, stabilization and providing final drainage control for existing access roads shall be in accordance with **Specification 11.0 Pavement Repair** and performed as directed and approved by the Owner after all reclamation operations for the project have been completed.

4.2.17.4 The Contractor is advised the access to be used for construction of Mine Seal Six, Underdrain Two, and Seep Collector Three and Four crosses over a buried sewer line that will require padding in accordance with **Specification 4.2.20**.

4.2.18 The Contractor will be required to construct Temporary Access Roads as shown on the plans across landowner's yards to reach proposed construction areas.

4.2.18.1 Temporary Access Road construction may involve removing and refilling soft spots to the satisfaction of the Engineer. Soft material removed shall be temporarily stockpiled to dry and used as final cover over areas requiring regrading after removal of the temporary road. Material used to replace soft material will require the approval of the Engineer. Otherwise, no excavation operations and only minor filling are required to construct Temporary Access Roads. For the

most part, Temporary Access Roads shall be constructed atop existing yard grades.

4.2.18.2 The Contractor shall place separation fabric, meeting the requirements of **Specification 4.3.1**, across the entire length and width of the Temporary Access Road alignment. Next, 3", minimum, of 1½" crusher run stone, also meeting the requirements of **Specification 4.1.3**, shall be placed atop the laid separation fabric.

4.2.18.3 The Contractor will be required to maintain and repair temporary access roads with specified materials to the satisfaction of the Engineer for the duration of the construction operations utilizing the road.

4.2.18.4 After all operations utilizing the temporary road are complete and with the approval of the Engineer, the Contractor shall remove and discard all components of the temporary road. All stone and fabric shall be removed from the yard areas and discarded offsite to the satisfaction of the Engineer.

4.2.18.5 The Contractor will be required to prepare the surface lying beneath the temporary access road footprint. Preparation may involve scarifying compacted areas and filling ruts and low lying areas to blend into surrounding grades and ensure positive drainage towards Shinns Run. The Engineer shall approve the regraded, prepared surface prior to application of fertilizer, lime, lawn seed mixture, and mulch in accordance with **Specification 6.0**.

4.2.19 The Contractor will be required to construct temporary stream crossings to access planned construction sites located across Shinns Run. The temporary stream crossings shown on the plans may be moved to alternate NEARBY locations with the approval of the Engineer. The Contractor shall develop and submit a plan to the Engineer for approval for the location and number of temporary stream crossings to be installed for reclamation of the project as planned.

4.2.19.1 Temporary crossings shall be constructed of timber mats meeting the requirements of **Specification 4.1.4** and 1 ½" crusher run stone meeting the requirements of **Specification 4.1.3**.

4.2.19.2 The Contractor shall provide a level compacted base for the abutment support. Construction of the base will require minor regrading and compaction of the subgrade to the satisfaction of the Engineer. 1½" crusher run stone shall be placed to aid in construction of the level base. Excavated materials shall be stockpiled nearby to be used to reclaim the excavations to blend into the surrounding grades prior to revegetation. The Contractor shall have sufficiently sized equipment to reach across Shinns Run to perform these operations.

4.2.19.3 After the Engineer approves the abutment bases, the Contractor shall place a timber mat parallel with stream flow on the prepared abutment bases for support of the temporary crossing. Approach grades from the Temporary Access Road to the Temporary Crossing grade shall be constructed of 1 ½" crusher run stone as shown on the plans.

4.2.19.4 Sufficient Timber mats shall then be placed atop the timber mat abutment to allow construction access to the other side of Shinns Run. Timber mats shall be anchored and abutted tightly to minimize sediment infiltration to Shinns Run. The Engineer shall approve the constructed bridge prior to use. If in the opinion of the Engineer undue sediment is infiltrating Shinns Run, the Contractor shall cease operations and perform corrective action to the satisfaction of the Engineer before continuing construction operations.

4.2.19.5 Sediment control structures (silt fence) shall be installed and abutted tightly against the upstream and downstream edge of the timber mat crossings.

4.2.19.6 The temporary crossing shall be inspected daily to ensure abutments are handling crossing loads, sediment is not infiltrating the creek, and the crossing timber mats have not been damaged. Settling abutments or damaged timber mats shall be repaired or replaced to the satisfaction of the Engineer and prior to subsequent use.

4.2.19.7 Accumulated sediment shall be removed from the temporary crossing surface, abutments, and approaches within 24 hours of inspection or as directed by the Engineer.

4.2.19.8 After all construction operations using the Temporary Stream Crossing are complete and with the approval of the Engineer, the Contractor shall remove and discard all installed components of the crossing, including all accumulated sediment, construction debris, the timber mats, and 1 ½" crusher run stone. The abutment excavations shall be filled with material removed and the abutment footprints prepared for revegetation in accordance with **Specification 4.2.18** and **Specification 6.0**.

4.2.20 Existing and Temporary Access Roads utilized for construction of the project will cross over several buried utilities at locations shown on the plans. The Contractor will be required to pad these crossings to the satisfaction of the utility owner and the Engineer.

4.2.20.1 Prior to construction of the Temporary Access Road or using the driveway access to Mine Seal Six, Underdrain Two, and Seep Collector Three and Four, the Contractor shall contact the utility company to have the exact location of the line marked in the field. Other buried line protection pads shall be placed by aligning the pad

site with the apparent direction of the buried utility as viewed from the discharge point or surface manifestation of the utility.

4.2.20.2 Prior to placing protection pad components, the Contractor shall remove all organic debris and rocks from the protection pad footprint to the satisfaction of the Engineer. The protection pad footprint area shall be graded to provide a uniform slope or level grade for pad placement. The Contractor shall place separation fabric meeting the requirements of **Specification 4.1.3** atop the existing ground to cover the entire footprint of the pad.

4.2.20.3 The Contractor shall place sufficient one inch thick by eight foot by four foot steel plates on the prepared subgrade centered on the located buried line to provide sufficient road crossing width as shown on the plans. The steel plates shall be placed perpendicular to and extend four feet (4') each side of the located buried line.

4.2.20.4 Next, the Contractor shall place Class "B" Bedding select backfill, meeting the requirements of **Specification 4.1.4**, or 1 ½" crusher run stone, meeting the requirements of **Specification 4.1.3**, atop the steel plates to achieve a minimum clearance of four feet (4') between existing grades and the finished road crossing. The top of the backfill shall extend four feet (4.0') either side of the buried line(s).

4.2.20.5 The sideslopes perpendicular to the roadway of the backfill over the buried lines shall be 2H:1V leaving a 20 foot roadway surface for construction access.

4.2.20.6 Entrance and exit slopes ramping up to the four foot (4') cover atop the protected buried line shall be constructed at a 5H:1V slope, maximum, or flatter.

4.2.20.7 The Contractor will be required to maintain and repair line protection pads with specified materials to the satisfaction of the Engineer for the duration of the construction operations utilizing the pad crossing.

4.2.20.8 After all equipment using the buried line protection pad and all reclamation work is complete, the Contractor shall remove and discard the pad components in accordance with **Specification Section 4.2.11** and to the satisfaction of the Owner. The protection pad footprint shall be prepared and revegetated in accordance with **Specification 4.2.18** and **Specification 6.0**.

4.2.21 Landowner planted shrubs, flowers, trees, and other landscape improvements and constructions exist within and in close proximity to the project work limits and traveled ways to the project sites. The Contractor is advised to walk the project area and become familiar with all obstructions located within and near excavation operations and Contractor's Work Limits prior to submitting his bid. Several landowner constructions, including garages, outbuildings, homes and

appurtenances, planters, posts, water wells, sewer systems, concrete pads, fences, and other improvements, facilities, constructions are located within and directly adjacent to project work limits. Unless designated for removal/replacement on the plans, these constructions shall not be disturbed.

4.2.21.1 The Contractor shall notify the Engineer and affected property owner immediately should he disturb or damage any landowner constructions, facilities, improvements, and make or have made all necessary repairs and bear the expense thereof and resulting damage caused thereby. All such repairs shall be made to the satisfaction and approval of the Engineer and the landowner.

4.2.21.2 Should the Contractor decide to temporarily or permanently move obstructions, he shall enter into an agreement with the affected landowner and have said agreement approved by the Engineer prior to its implementation.

4.2.21.3 The Contractor shall avoid damage to plants, shrubs, trees, and landscape constructions. In the event of damage the Contractor shall notify the affected Owner(s) and the Engineer immediately and make, or have made, all necessary repairs and bear the expense thereof and resulting damaged caused thereby to the satisfaction of the resident and Engineer. All shrubs, flowers, trees, and other landscaping plants and constructions damaged, disturbed, displaced, or removed by the Contractor in performing this work as planned and specified shall be replaced with compatible nursery stock plantings and constructions and approved by the landowner and the Owner prior to replacement.

4.2.21.4 Should the Contractor excavate or impede upon the drip edge of any landscape tree or plant, that tree or plant shall be replaced with compatible nursery stock trees or plants. Drip edge is defined as the outer boundary of the area where rain falls to the ground from the tree or plant.

4.2.22 No fences are scheduled for demolition on this project. However, there are several fences and posts located within and near the project work limits. The Contractor shall notify the Engineer and affected property owner immediately should he disturb or damage any landowner fences or fence posts and make or have made all necessary repairs and bear the expense thereof and resulting damage caused thereby. All such repairs shall be made to the satisfaction and with the approval of the Engineer and the landowner. Damaged fence lines or posts shall be replaced with newly purchased compatible materials as exists and constructed in as "as good as" or "better than" its existing condition.

4.3 METHOD OF MEASUREMENT

4.3.1 There is no method of measurement for Site Preparation as it is a lump sum bid limited to less than 7% of the total amount bid. All costs associated with Site Preparation operations, including; timber cutting and grubbing;

discarding and off-site disposal of cleared and grubbed and other organic materials; off-site disposal of garbage and items designated by the Owner to be removed from the site shall be included in and considered incidental to the lump sum bid for **Item 4.1 "Site Preparation"**.

4.3.2 The method of measurement for replacing all shrubs, flowers, trees, and other landscaping plants and constructions damaged, disturbed, displaced, or removed by the Contractor in performing this work as planned and specified shall be considered incidental to and included in the lump sum price bid for **Item 4.1 "Site Preparation".**

4.3.3 There is no method of measurement for moving landowner equipment from storage areas and returning the moved items back to the storage area. Or for providing and entering into an agreement with the landowner to move items, or costs associated with repairing damage, replacement, or compensation to the landowner for damaged items as all costs associated with these tasks shall be considered incidental to and included in the lump sum price bid for **Item 4.1 "Site Preparation"**.

4.3.4 There is no method of measurement for repair or replacement of fence lines or posts as all costs associated with repairing and replacing and installation of fence lines or posts constructed with newly purchased compatible materials and installed to an "as good as" or "better than" its existing condition shall be shall be considered incidental to and included in the lump sum price bid for **Item 4.1 "Site Preparation"**.

4.3.5 There is no method of measurement for repair of public roads and leaving said roads in equal to or better than condition than existed upon mobilization operations. All costs associated with this work, including all regrading, crushed stone, concrete, asphalt, filling and compacting, and separation filter fabric, as directed and approved by the Owner, shall be borne by the Contractor and at no cost to the State.

4.3.6 There is no method of measurement for upgrading, repairing, or maintaining existing access roads to all weather construction access roads during construction operations. The method of measurement for upgrading, repairing, or maintaining existing access roads shall be incidental to and included in the lump sum price bid for **Item 4.1, "Site Preparation"**. The method of measurement for repairing existing access roads prior to demobilization operations shall be in accordance with **Specification 11.0**.

4.3.7 The method of measurement for constructing and removing temporary access roads shall be per linear foot for **Item 4.2 "Temporary Access Road"** measured on a "one-time basis" along the centerline of the constructed road in the presence of the Engineer and submitted for payment. There is no method of measurement for removing the Temporary Access Road as all costs associated with this task shall be considered incidental to and included in the unit price bid for **Item 4.2**

"Temporary Access Road". Temporary access road measurements shall end at the beginning and continue at the end of all buried line protection pads as shown on the details in the plans and herein specified. All costs associated with this work, including minor filling, compaction, separation fabric, crushed stone, repair and maintenance of the roads during construction to the satisfaction of the Engineer, removing and discarding the temporary road components and blending the areas into surrounding grades, and providing positive drainage as directed and approved by the Owner shall be considered incidental to and included in the unit price bid for **Item 4.2 "Temporary Access Road"**.

4.3.8 The method of measurement for constructing temporary stream crossings shall be lump sum for **Item 4.3 "Temporary Stream Crossings"**. All costs associated with this work, including: placing, moving, and removing the Temporary Crossings; abutment base construction including minor excavation/filling, compaction, crushed stone placement; timber mats; inspection, maintenance, repair of damaged or displaced components, sediment removal; and removal and reclamation of the crossing footprint as specified and any other incidentals required to construct, move, and remove the temporary crossings to the satisfaction of the Engineer shall be considered incidental to and included in the lump sum price bid for **Item 4.3 "Temporary Stream Crossings"**.

4.3.9 The method of measurement for padding buried utility lines at all road crossings shall be lump sum for **Item 4.4 "Line Protection Pads"**. All costs associated with this work, including: placing, moving, and removing the Line Protection pads; minor excavation/filling prior to protection pad construction, compaction of the subgrade; purchase and placement of separation fabric, steel plates, crushed stone or Class B backfill, and roadway surface crushed stone as shown on the plans; maintenance, repair of damaged or displaced components; and removal and reclamation of the crossing footprint as specified and any other incidentals required to construct, move, and remove the line protection pads to the satisfaction of the Engineer and the utility shall be considered incidental to and included in the lump sum price bid for **Item 4.4 "Line Protection Pads".**

4.4 BASIS OF PAYMENT

4.4.1 All costs associated with Site Preparation operations, including; existing access road upgrading, repair, and maintenance, timber cutting and grubbing; removing and discarding organic materials to off-site disposal; off-site disposal of garbage and items designated by the Owner to be removed from the site shall be included in and considered incidental to the lump sum bid for **Item 4.1 "Site Preparation"**

4.4.2 **Item 4.1 "Site Preparation"** shall be paid at the lump sum price bid. The amount shall not exceed 7% of the "TOTAL AMOUNT BID". Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor,

materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

No deduction will be made, nor will any increase be made, in the lump sum bid for **Item 4.1 "Site Preparation"** amount regardless of decreases or increases in the final total contract amount or for any other cause

4.4.3 All costs associated with constructing, moving, and removal of the Temporary Access Road as shown on the plans and herein specified shall be paid at the unit price bid per linear foot for **Item 4.2 "Temporary Access Road".** Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

4.4.4 All costs associated with constructing, moving, and removal of the Temporary Stream Crossings as shown on the plans and herein specified shall be paid at the lump sum price bid for **Item 4.3 "Temporary Stream Crossing".** Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

4.4.5 All costs associated with constructing, moving, and removal of buried utility line protection pads as shown on the plans and herein specified shall be paid at the lump sum price bid **Item 4.4 "Line Protection Pads".** Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

4.4 PAY ITEMS

Item 4.1, "Site Preparation", per lump sum. Cannot be more than 7% of the "Total Amount Bid" for the project.

Item 4.2, "Temporary Access Road", per linear foot.

Item 4.3, "Temporary Stream Crossings", per lump sum.

Item 4.4, "Line Protection Pads", per lump sum.

5.0 EROSION AND SEDIMENT CONTROL

5.0 DESCRIPTION

This item shall consist of furnishing all materials, equipment, labor and incidentals necessary for the installation of Silt Fence, Super Silt Fence, and Stone Construction Entrances for sediment and erosion control as shown on the Plans and in the approved NPDES permit. Straw wattles shall also be placed on regraded outslope areas concurrent with construction and prior to revegetation in locations shown on the plans. Additional quantities may be added at the discretion of the Owner.

The Contractor shall submit an erosion and sediment control plan to the owner at the pre-construction meeting for approval. This plan shall include measures to be utilized for temporary and permanent erosion and sediment control. This plan shall also include the measures contained in the approved NPDES permit, measures herein specified, and measures shown on the plans. The Owner's approval of this plan does not relieve the Contractor of his responsibility to be in compliance with any and all permits. All costs associated with meeting the Federal and/or State Regulations shall be the sole responsibility of the Contractor. The Contractor shall comply with the approved NPDES permit; train his personnel to be familiar with all permit requirements; and keep a copy at the job site at all times.

5.1 MATERIALS

5.1.1 Silt Fence: Silt fence materials and installation shall meet all applicable requirements of **Section 715.11.5** and **Section 642.6** of the West Virginia Division of Highways **Standard Specifications for Roads and Bridges,** Adopted 2010**.**

5.1.1.1 Non-woven filter fabric shall be purchased in a continuous roll. Fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6-months construction life at temperatures ranging from 0 to 120 degrees Fahrenheit. Preferred fabrics are Mirafi 100X, Exxon GTF, or approved equal.

5.1.1.2 Stakes shall consist of 2" by 2" oak or 2" by 4" pine and a minimum length of five feet (5'). Fasteners shall be heavy duty one-inch (1") staples or tie wires.

5.1.1.3 If steel posts (standard "U" or "T" section) are used for silt fence construction they shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of five feet (5').

5.1.1.4 "Geofab", "Envirofence", or approved equal are preferred prefabricated units.

5.1.2 Super Silt Fence shall consist of fabric mounted against 48-inch high chain link fence meeting the requirements of **Section 712** of the West Virginia

Division of Highways **Standard Specifications for Roads and Bridges,** Adopted 2010.

5.1.2.1 The fabric shall meet the requirements of **Section 5.1.1**.

5.1.2.2 The posts shall be 2½" diameter by 72" long and meet the requirements of **Section 709.46** of the West Virginia Division of Highways **Standard Specifications for Roads and Bridges,** Adopted 2010. 4" by 4" by 72" treated posts may be substituted for steel posts with the approval of the Engineer.

5.1.2.3 Wire ties or staples to connect the chain link fence to the posts and the fabric to the chain link fence shall be approved by the Engineer.

5.1.3 Straw Wattles shall be installed at locations shown on the plans and in the approved NPDES permit application. Straw Waddles or approved equal shall be a standard size of 9 inches diameter by 25 feet in length. Straw wattles shall consist of an internal fill material of straw and an exterior encasement of a heavy duty biodegradable knitted cylindrical tube.

5.1.4 Crushed stone used for Stone Construction Entrances shall be 3" to 6" limestone. 3" to 6" stone shall be that commonly purchased from suppliers and shall range in size from 3-inches minimum to 6-inches maximum diameter with no more than 10% by weight less than 3 inches and no more than 50% by weight greater than 4". Aggregate shall have a maximum weighted loss of twelve percent when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials (**AASHTO**) **T-104**.

5.1.5 Separation fabric used for Stone Construction Entrances shall be placed on a prepared subgrade prior to placement of stone. Separation fabric shall be woven and meet the requirements of **Section 715.11.8** of the **WVDOH Standard Specifications Roads and Bridges**, Adopted 2010, such as Mirafi 600X or approved equal. The State Department of Transportation has a web site listing all approved sources and products at: www.transportation.wv.gov/highways/pages/listings.

5.1.6 Pipes used for Stone Construction Entrances shall be 15" WVDOH required minimum diameter) or 24" in diameter highway grade high-density polyethylene pipes (HDPE), as shown on the plans, with corrugated exterior and smooth interior walls such as N12 pipes manufactured by Advanced Drainage Systems, Inc., or approved equal. Pipe installations and backfilling shall comply with **Section 604** of the **WVDOH Standard Specifications Roads and Bridges**, Adopted 2010.

5.1.7 Rock Check Dams may be installed to assist in Erosion Control; however these dams may not replace any of the controls shown on the plans or in the approved NPDES permit. Stone for Rock Check Dams shall have a d_{50} of 4-inches. The d_{50} stone shall range in size from 3-inches minimum to 6- inches maximum diameter with no more than 10% by weight less than 3 inches and no more than 50% by weight greater than 4". Stone shall have a maximum weighted loss of twelve percent when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials **(AASHTO) T-104**.

5.1.8 Straw or hay bales used for Erosion Control shall not replace any of the controls shown on the plans or in the approved NPDES permit. Straw or hay bale dikes shall be placed on contour. The bales shall be standard size square bales consisting of hay or straw bound with a natural fiber twine. The bales shall meet all applicable requirements of **Section 715.27.1** of the West Virginia Division of Highways **Standard Specifications for Roads and Bridges**, Adopted 2010 pertaining to ingredients. Each bale shall weigh minimum of 50 pounds. Stakes: The stakes shall consist of 1" X 2" stakes, 36 inches in length made from suitable hardwoods. Other methods of anchoring may be used if specifically approved by the Owner.

5.2 INSTALLATION

5.2.1 The Contractor shall comply with **Special Provisions Section 23. NPDES Stormwater Permit Guidelines** and the approved NPDES permit for this project.

5.2.2 The height of silt fence above original ground shall be 16", minimum, and shall not exceed 36". Filter fabric shall be purchased in a continuous roll and cut to length to minimize joints. When joints are unavoidable, the silt fence shall be joined together at a support post by twisting the fence ends or last post of each run around each other and securely sealed. A trench 4" by 4" shall be excavated on the uphill side of the posts. The fabric shall be fastened securely to the uphill side of the posts and extend into the trench. Do not staple fabric to trees. The 4" by 4" trench shall be backfilled and compacted atop the fabric to eliminate under-piping. The end of fabric runs shall be turned slightly uphill to prevent runoff from going around. Silt fence shall be installed along the contour of the land with no section exceeding 5% slope in twenty feet (20'). Silt fence shall be overlapped a minimum of 10 feet (as measured from a line perpendicular to the land contour at each end of the silt fence and as shown on the Plans) where silt fence is stepped up or down hill to better follow the contour of the land or provide coverage for regrade areas

5.2.3 Super Silt Fence shall be installed in a manner similar to Silt Fence. Chain link fence shall be installed securely to the posts with wire ties or staples. The

fabric shall be attached to the chain link fence with ties spaced every 24" at the top and mid-section of the fence. A trench 12" by 12" shall be excavated on the uphill side of the posts. The fabric and fence shall be fastened securely to the uphill side of the posts and extend 12", minimum, into the trench. The 12" by 12" trench shall be backfilled and compacted against the fabric and fence to eliminate under-piping. Where two sections of fence join, they shall overlap 6", minimum, and the fabric folded.

5.2.4 Straw wattles shall be installed according to manufacturer's recommendations and placed end to end along the contour at the locations shown on the Plans and approved NPDES permit or as directed and approved by Owner.

5.2.4.1 Lines of straw wattles shall be overlapped a minimum of 10 feet (as measured from a line perpendicular to the land contour at each end of the line of wattles as shown on the Plans) where wattles are stepped up or down hill to better follow the contour of the land or provide coverage for regrade areas.

5.2.4.2 Straw wattles shall be embedded into the soil 2" to 3", as shown on the plans, to prevent under-piping. Excavated soil shall be placed on the uphill side of the installation from the anchor trench and foot-tamp compacted against the wattle. Adjacent wattles should be tightly abutted.

5.2.4.3 Straw wattles shall be anchored with 36" stakes spaced every 3 to 4 feet driven through the middle of the wattle. In addition, a stake shall be placed within 12" of each end of the wattle. The stakes shall be driven perpendicular to the ground line, and with a minimum of 18 inches of ground penetration. In areas where sediment control barriers cross existing drains, more than one row of wattles or installation of straw/hay bales may be required to adequately prevent downstream sediment pollution. Also, additional staking may be required to anchor the straw wattles against concentrated storm runoff. The number of straw wattles and anchoring required in concentrated flow areas shall be at the discretion and direction of the Owner.

5.2.4.4 Straw wattles shall not be removed but shall remain in place after all construction activities are complete.

5.2.5 Stone Construction Entrances shall be built to the lines and grades shown on the plans.

5.2.5.1 Prior to fabric and stone installation, the subgrade shall be prepared by removing all objectionable material to the satisfaction of the Owner. In the event coal refuse is encountered such material will be undercut a minimum of 12" and replaced with onsite suitable compacted material prior to placing fabric and stone. The subgrade shall then be proof

rolled to insure compaction has been achieved to the satisfaction of the Owner.

5.2.5.2 If in the opinion of the Owner the subgrade is unsuitable, the Contractor will be required to undercut the subgrade a minimum of 2.0 feet and place compacted suitable on-site fill material, as approved by the Owner, in 6" lifts back to subgrade elevations. In addition, some filling may be required after removing all objectionable material to bring the subgrade to proper elevations depicted on the Plans.

5.2.5.3 Subgrade fill material shall be compacted to at least 95% of Standard Proctor maximum dry density at a moisture content of not less than 2% below nor greater than 3% above optimum. Testing frequency and locations shall be directed and approved by the Owner.

5.2.5.4 Stone Construction Entrances will require excavating existing grades 3", minimum, as shown on the plans. Excavated material shall be taken to an onsite disposal area approved by the Engineer. Once excavation is complete to the satisfaction of the Owner, separation fabric meeting the requirements of **Specification Section 5.1.5** shall be placed in the excavation. Fabric shall be placed the full length and width of the excavation as shown on the plans.

5.2.5.5 Six inches (6") of 3" to 6" stone meeting the requirements of **Specification Section 5.1.4** shall be installed in the excavation atop the fabric. If in the opinion of the Owner, 3" to 6" stone placement has caused displacement or damage to the underlying separation fabric or sub-base, the Contractor shall remove the 3" to 6" stone and repair the displacement or damage and/or replace the fabric and 3" to 6" stone to the satisfaction of the Owner. All costs associated with the removal of 3" to 6" stone and necessary repair work shall be borne by the Contractor and at no cost to the Owner.

5.2.5.6 Either a pipe or berm mound shall be installed at each Stone Construction Entrance.

5.2.5.6.1 Berm mounds shall be 0.7 ft., minimum, above the placed 6" layer of 3" to 6" stone with a 3.0 foot, minimum, level top and 5 horizontal to 1 vertical slopes coming into and out of the berm mound as shown on the plans.

5.2.5.6.2 Pipes meeting the requirements of **Specification 5.1.6** and as shown on the plans shall be excavated, installed, and backfilled in accordance with **Section 604** of the **WVDOH Standard Specifications Roads and Bridges**, Adopted 2010.

5.3 MAINTENANCE

5.3.1 During the course of the project, sediment and erosion control structures shall be maintained in sound condition and accumulations of silt that may threaten the effectiveness of the structure shall be removed. Silt removed from the sediment and erosion control structures shall be taken to a disposal area approved by the Engineer.

5.3.2 Erosion and sediment control devices, including silt fence, super silt fence, straw wattles, etc. shall be inspected at a minimum once every seven calendar days and within 24 hours after any storm event greater than 0.5 inches per 24 hour period. Check to see if water has flowed around the edges of the structure. Replace and repair erosion and sediment control devices as necessary to maintain the correct height and configuration. Sediment should be removed from behind the erosion and sediment control devices when it has accumulated to one half of the original height of the structure.

5.3.3 Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. If the fence is not installed on the contour (perpendicular to the flow of the water) both of these conditions can occur.

5.3.4 Should the fabric on a silt fence decompose or become ineffective prior to the end of the project and the barrier still is necessary, the fabric shall be replaced promptly.

5.3.5 Sediment deposits should be removed after each storm event. Deposits must be removed when deposits reach approximately one-half the height of the barrier. If any section of a sediment control structure is knocked down during a rain event (because it was installed in an area of concentrated flow), then other measures such as a sediment trap and diversion, or super silt fence must be installed.

5.3.6 Stone Construction Entrances shall be maintained in a condition that will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of- way must be removed immediately.

5.3.7 Stone Construction Entrance inspection and necessary maintenance should be provided daily but at a minimum every seven days and after every rain of 0.5 inches or greater.

5.3.8 Wheels on all vehicles shall be cleaned to remove sediment prior to entrance onto public rights-of-way. If washing is required, it shall be done on an area stabilized with stone and which drains into approved sediment trapping device.

If the street is washed precautions must be taken to prevent muddy water from running into waterways or storm sewers.

5.4 REMOVAL

All sediment control devices installed for this project, except for straw wattles and other installations designated to remain by the Engineer, shall be removed when 75% vegetative cover is achieved or as directed by the Engineer. Removed fabric, fencing, and posts shall be discarded in accordance with **Specification Section 4.2.11**. Accumulated sediment shall be deposited and revegetated in areas designated by the Engineer. Stone Construction Entrances shall be removed or left in place at the discretion of the Engineer.

5.4.1 Prior to demobilization operations, the Contractor will be required to regrade and repair all Stone Construction Entrances designated to remain, to the satisfaction of the Engineer. Topping of the 3" to 6" stone with crusher run stone, meeting the requirements of **Specification 4.1.3**, will be required to provide a smooth traveled way for the public or landowner.

5.4.2 The Contractor will be required to remove and discard all accumulated sediment, stone, and fabric from Stone Construction Entrances designated for removal by the Engineer. Installed pipes may or may not be removed and discarded at the direction of the Engineer. All disturbed areas shall be regraded to original contours and revegetated in accordance with **Section 6.0** of these specifications.

5.5 METHOD OF MEASUREMENT

5.6.1 The method of measurement for Silt Fence and Super Silt Fence installation and maintenance in conformance with the specifications and accepted by the Owner shall be a "one-time" basis per linear foot to include fabric, fencing, posts, ties or staples, trenching, backfilling, maintenance, and structure installation and removal including all necessary materials, supplies, labor and equipment for installation, maintenance, and removal including accumulated sediment removal and disposal.

5.6.2 The method of measurement for Straw Wattles shall be a "one-time" basis per linear foot installed and approved by the Engineer. The linear foot bid shall include all straw wattles, stakes, construction, and maintenance including all necessary materials, supplies, labor and equipment for installation and maintenance including sediment removal and disposal.

5.6.3 Silt Fence, Super Silt Fence, or Straw Wattles displaced, destroyed, or removed by the Contractor, accumulated sediment, or flowing water shall be reinstalled in their original location and effectiveness and at the expense of the Contractor. No measurement is required for these reinstalled components.

5.6.4 The method of measurement for Stone Construction Entrances shall be per each installed and approved by the Engineer. The unit price bid per each shall be full compensation for constructing the Stone Construction Entrances as shown on the plans and herein specified, including excavation; discarding excavated material; compaction; undercutting, filling, and compaction (if required); fabric; stone; pipes; maintenance; regrading and placing crusher run stone prior to demobilization operations to provide a smooth traveled surface; removal and discarding components; all as specified herein and shown on the plans.

5.6.5 Any additional sediment control, i.e. silt fence, super silt fence, straw wattles, stone check dams, sumps etc., installed by the contractor to meet any applicable State or Federal Law or Regulation shall be the Contractor's sole responsibility and all costs pursuant thereto shall be born fully by the Contractor. However, any additional Silt Fence, Super Silt Fence, or straw wattles approved by the Owner, prior to placement, shall be included for measurement.

5.7 BASIS OF PAYMENT

The quantity of work completed will be paid at the contract unit price bid, which price and payment shall be full compensation for all materials, labor, equipment, and incidentals necessary to perform the work. Additionally, payments shall constitute full compensation for any required maintenance, sediment or erosion control replacement, sediment removal, and disposal.

5.8 PAY ITEM

Item 5.1, "**Silt Fence**", per linear foot.

Item 5.2, "Straw Wattles", per linear foot.

6.0 REVEGETATION

6.1 DESCRIPTION

This work shall include all operations incidental to the establishment of vegetation cover within the limits of construction as shown on the plans and any other areas directed and approved by the Owner. This work also includes the furnishing and the application of fertilizer, agricultural limestone and mulch and the furnishing and sowing of seed, all in accordance with these specifications and as designated herein.

No areas outside the limits of construction shall be disturbed without prior approval from the Owner in order to ensure that right-of-entry has been obtained.

Any areas disturbed by the Contractor outside the limits of construction shall be revegetated with all costs attributed to the Contractor and at no expense to the Owner.

6.2 MATERIALS

6.2.1 Fertilizer

The commercial fertilizer to be used shall consist of 10-20-20 grade of uniform composition and furnished in standard containers. These containers, in accordance with applicable state and federal laws, must be clearly marked with the following information:

a. Weight
b. Name of Plant Nutrients
c. Guaranteed Nutrients Percentages

Fertilizer shall be applied at a minimum rate of 1,000 lbs/acre. Fertilizer shall be applied immediately to all areas reaching final grade by one of the two following methods:

a. Apply and incorporate fertilizer during seedbed preparation.
b. Apply fertilizer in hydro seeding mixture following seedbed preparation.

6.2.2 Limestone

The lime to be used will be an agricultural grade pulverized limestone containing a minimum of 10% $MgCO_3$ and not less than 75% total carbonates. Fineness will be such that no less than 75% will pass through a #100 sieve and 100% will pass through a #10 sieve.

Lime rate shall be formulated from soil test results. In the absence of soil testing, a rate of three (3) tons per acre will serve as a preferred minimum.

Lime shall be applied immediately to all areas requiring seeding and reaching final grade by one of the two methods listed in **Section 6.2.1**, "**Fertilizer**".

6.2.3 Seed Mixtures

The variety of grass and legume seed furnished for the project shall bear a tag, in accordance with applicable state and federal laws, with the following information listed:

1. Lot Number
2. Seed Producers Name
3. Percent Purity
4. Percent Germination
5. Date of Germination Testing
6. Weed Seed Content (should be <0.25% by weight)

All leguminous seed shall be inoculated with the specified strain of rhizobia that shall be a pure culture of bacteria selected for maximum vitality. No rhizobia shall be used which has passed the expiration date on each package. The inoculant shall be applied at five times the recommended rate except when used in a hydroseeding mixture when the rate will be ten times the recommended rate.

6.2.3.1 Temporary Seed Mixture:

All stockpiles or other disturbed areas which will require further disturbance in which the additional disturbance will be delayed for a period of three (3) weeks or longer shall be vegetated according to the following guidelines.

TEMPORARY SEED MIXTURE				
	SPRING 3/15 – 5/15	SUMMER 5/15 – 8/15	FALL 8/15 – 10/15	WINTER 10/15 – 11/15
Variety of Seed	---------- lbs. / acre ----------			
Annual Ryegrass (Lolium multiflorum)	40		40	
German Millet* (Setaria italica)		40		
Cereal Rye (Secale cereale)				170
*Do not use Japanese Millet				

All areas to be temporarily seeded that are to be re-disturbed shall be fertilized with 500 lbs/acre of 10-20-20. All areas reaching final grade to be temporarily seeded shall be fertilized according to **Section**

6.2, Lime shall be applied according to **Section 6.2.2,** and mulch applied according to **Section 6.2.4**. *Outside the designated seeding season, permanent seed mixture, meeting the requirements of* ***Section 6.2.3.2****, may be substituted for Temporary Seed Mixture on areas that have reached final grade and will not be disturbed again, but only with the approval of the Engineer. Provided that any area failing to establish vegetation, as determined by the Engineer, shall be re-seeded (with permanent seed mixture), re-limed, re-fertilized, and re-mulched at no additional cost to the WVDEP and approved by the Engineer.*

6.2.3.2 Permanent Seed Mixture:

Permanent vegetation shall be established on all areas reaching final grade or other areas not likely to be disturbed by further construction activities. Any areas that reach final grade between May 15 - August 15 or October 15 - November 15 shall be seeded with the appropriate temporary seed mixture according to **Section 6.2.3.1**. These areas shall then be reseeded with a permanent seed mixture, without Annual Ryegrass, during the next defined seeding period according to this section. The actual date of permanent seeding will require the Owner's approval.

PERMANENT SEED MIXTURE	SPRING 3/15 – 5/15	FALL 8/15 – 10/15
Variety of Seed *	---------- lbs./acre ----------	
Orchardgrass (Dactylis glomerata)	30	85
Birdsfoot Trefoil[1] (Lotus corniculatus)	15	85
Red Clover (Trifolium pretense)	10	85
Annual Ryegrass[2] (Lolium multiflorum)	25	85
Rye Grass or Winter Wheat	35 0	0 90

[1] Herbaceous legumes must be treated with the appropriate bacterium before seeding. *On areas that are steeply sloping (steeper than 1.7:1), slide prone, swales, or drainage conveyance structures substitute Crownvetch (Coronilla varia) at 20 lbs./acre for Birdsfoot Trefoil.*

[2]Use Annual Ryegrass only in mixtures seeded after August 15 and before May 15.

*Use only certified "blue tag" seed. Seed-rate suggested is for pure live seed (PLS) in lbs/acre.

6.2.3.3 Lawn Seed Mixtures.

Lawn seed mixtures and hand raking will be required on this Project. Existing lawn or mowed areas shall be hand raked and reseeded using the following mix:

LAWN SEED MIXTURE			
Rate of Application	Seed Variety	Minimum Specifications	
---lbs. / 1,000 ft.^{2} ----		% Purity	% Total Germination
0.45	Red Fescue (Pennlawn)	98	85
0.90	Kentucky Bluegrass	85	75
0.70	Merion Bluegrass	90	75
0.20	Annual Ryegrass*	95	85
* Use Annual Ryegrass only in mixtures seeded after August 15 and May 15.			

6.2.4 Mulch Material

Mulching procedures shall take place immediately following seeding operations. Mulch material shall consist of baled straw mulch or wood cellulose fiber. However, wood cellulose fiber may be used only on slopes steeper than 2H:1V at a rate of 1,500 lbs/acre.

6.2.4.1 Straw

Straw mulch shall include baled wheat or oats straw to be used on lawn areas, with baled grass hay used elsewhere. The Contractor will be required to provide documentation that the straw is indeed weed-free. Straw mulch shall be dry and reasonably free of weeds, seeds, sticks, or other foreign material. Straw mulch shall be applied at a rate of 2 tons/acre. The straw mulch shall be anchored with 100 gallons/acre asphalt emulsion or 750 lbs/acre wood cellulose fiber.

6.2.4.2 Wood Cellulose Fiber

Wood cellulose fiber may be used only on slopes steeper than 2H:1V at a rate of 1,500 lbs/acre. The appropriate mulch for use with the hydraulic application of seed, fertilizer, and lime shall consist of wood cellulose fiber. It shall be processed in such a manner that it will contain no growth or germination inhibiting factors and shall be dyed green. It shall be manufactured in such a manner that:

6.2.4.2.1 after addition and agitation in slurry tanks with fertilizers, lime seeds, and water, the fibers in the material will become uniformly suspended to form a homogeneous slurry, and

6.2.4.2.2 the material, when hydraulically sprayed on the ground, will form a blotter-like ground cover impregnated uniformly with seed and will allow rainfall to percolate to the underlying soil.

6.2.4.2.3 Wood cellulose shall only be used on areas that have been approved by Owner. The wood cellulose fiber shall be supplied in packages having a gross weight not to exceed 100 pounds. Weight specifications of this material from suppliers, and for all applications, shall refer only to air-dry weight of the fiber material. Air- dry weight is based on the normal weight standard of the Technical Association of the Pulp and Paper Industry for Wood Cellulose and is considered equivalent to 10 percent moisture. Each package of the cellulose fiber shall be marked by the manufacturer to show the air-dry weight content.

6.2.5 Water

Water shall be reasonably free of injurious and other toxic substances harmful to plant life. The source of water is subject to the approval of the Owner.

6.3 METHOD OF CONSTRUCTION

6.3.1 All revegetation activities shall be conducted immediately following completion of final grading so as to utilize the fine soil material as a seedbed before this material is lost via subsequent rainfall.

6.3.2 On sites where appropriate equipment can operate, the seedbed shall be prepared by breaking up surface crusts and loosening the soil material to a minimum of three (3) inches. Disking, harrowing, cultipacking, or other acceptable tillage operations may be used to prepare the seedbed. On sites where appropriate equipment cannot operate, the seedbed shall be prepared by "tracking in**"** with a dozer or scarifying by other approved methods. Rocks larger than six (6) inches in diameter, weeds, and other debris that will interfere with seeding or maintenance shall be removed or disposed of as directed and approved by the Owner. Seedbed preparation shall be suspended when soil moisture conditions are not suitable for the preparation of a satisfactory seedbed as determined by Owner.

6.3.3 Lawn areas or areas being mowed shall be hand raked. Rocks larger than two inches (2") in diameter, trash, weeds, and other debris that will interfere with seeding or maintenance shall be removed or disposed of as directed and approved by the Owner. After broadcasting or otherwise applying the seed mixture, the surface of the seedbed shall be raked, culti- packed, or very lightly brush dragged to insure seed contact with soil. Seedbed preparation shall be suspended when soil moisture conditions are not suitable for the preparation of a satisfactory seedbed as determined by Owner.

6.3.4 Seedbed preparation and seeding shall take place progressively as various regraded areas are brought to final grade.

6.3.5 All seeding operations shall be performed immediately following seedbed preparation in such a manner that the seed is applied in the specified quantities uniformly on the designated areas.

6.3.6 Seed Application shall consist of approved hydroseeding methods where feasible. Any seed left in hydroseeder overnight shall be re-inoculated before that seed shall be applied. Other methods of seed application may be utilized for site-specific reasons when approved by the Owner.

6.3.7 Any area failing to establish a vegetative cover stand due to weather or adverse soil conditions shall be reseeded, re-limed, re-fertilized and re-mulched as directed and approved by the Owner.

6.3.8 The Contractor shall maintain all seeded areas until final acceptance of the project. All areas shall be protected from any further equipment traffic and any damaged areas shall be repaired and reseeded. Maintaining seeded areas shall consist of watering, refilling, re-fertilizing, re-liming, reseeding, and re-mulching erosion gullies and all bare areas.

6.3.9 A second and third seeding will be applied as needed, or as directed and approved by the Owner.

6.3.9.1 Second Step Seeding

The second step seeding will take place during the first defined seeding period following the initial seeding. No payment shall be made for second step seeding, this work is part of the contract if completed before the final inspection or shall be considered warranty if completed after the final inspection. The following shall be used as a guide for second step application.

6.3.9.1.1 For areas with less than a 50 percent stand or subject to severe erosion, apply the complete amount of seed, fertilizer, lime, and mulch as specified.

6.3.9.1.2 For areas with over 50 percent stand apply one half the original fertilizer, lime and seed. If erosion is a problem, apply one half of the original mulch specified in **Section 6.2.4.**

6.3.9.2 Third Step Seeding

The third step seeding process shall consist of spot applications on areas not showing a satisfactory stand. The seeding shall take place at the next defined seeding period following the second step application. The quantity of material to be used shall be determined on the same basis as the second step application in **Section 6.3.9.1**.

6.4 METHOD OF MEASUREMENT

There shall be no distinction made for measurement or payment between lawn seed mixture application areas and permanent seed mixture application areas as determined by the Engineer. The method of measurement for **Item 6.0 "Revegetation"** shall be per "Plan View" acre calculated in accordance with **Specification 2.3.6.5**. The Engineer shall approve the areal extent of revegetation prior to field survey operations necessary to outline the area where vegetation, lime, fertilizer, and mulch were placed.

6.5 BASIS OF PAYMENT

6.5.1 Payment will be made at the Contract unit price bid for these items, which price and payment shall be full compensation for doing all the work herein described in a workmanlike and acceptable manner; including the furnishing of all labor, materials, tools, equipment, supplies and incidentals as necessary to complete the work. To include payment for all seeding (i.e. – temporary, first and second seeding). No additional payment will be made for second or third step seeding.

6.5.2 Temporary seeding will be considered incidental to this Specification and no separate measurement or payment will be made for temporary seeding. There will be no separate payment for maintaining seeded areas. No payment will be made for seeding after the final inspection. All work performed after the final inspection will be done under warranty.

6.6 PAY ITEMS

Item 6.0, "Revegetation", per "plan view" acre.

7.0 DRAINAGE STRUCTURES

7.1 DESCRIPTION

This work shall consist of furnishing all labor, equipment and materials necessary to construct drainage structures shown on the drawings. Drainage structures shown include but are not limited to drainage ditches, pipes, gabion basket stream bank protection, gabion basket slope protection, and associated appurtenances.

7.2 MATERIALS

7.2.1 Two (2) differing sizes of stone or rock riprap will be required on this project. All stone or rock riprap shall consist of hard durable commercially purchased limestone. Stone for filling of gabion baskets shall be 3" to 6" stone. The stone shall range in size from 3-inches minimum to 6-inches maximum diameter with no more than 10% by weight less than 3 inches and no more than 50% by weight greater than 4 inches. Rock riprap for Ditches/Channels shall have a d_{50} of 12-inches. The rock riprap shall range in size from 3-inches minimum to 18-inches maximum diameter with no more than 10% by weight less than 2 inches and no more than 50% by weight greater than 12".

7.2.1.1 The Contractor should be aware that no provisions have been made to obtain stone or rock riprap on site. All stone or rock riprap used throughout the project site shall consist of locally available, commercially purchased, calcareous stone (except as noted otherwise) meeting the following requirements. The stone or rock riprap shall have a calcium carbonate equivalency of 70%, or greater, such as limestone rock. The stone or rock riprap shall have a maximum weighted loss of thirty percent (30%) when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (ASTM C88-99a Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials **(AASHTO) T-104**. The use of on-site rock materials for riprap may be permitted with prior approval from the WVDEP in special circumstances. In order to be considered for use as riprap, the rock shall be subjected to laboratory testing and is required to be certified by the testing laboratory as calcareous and non-acid producing. A certification on calcium carbonate equivalency and sodium sulfate soundness test shall be submitted to the WVDEP prior to use or delivery.

7.2.1.2 There are no provisions for obtaining stone or rock riprap on-site. All borrow (disposal) areas for rock must be approved by WVDEP and shall meet the quality requirements of **Specification 7.2.1**. Should the Contractor decide to obtain and utilize any borrow areas outside of construction limits, or move material from one property owner to another (unless designated), the Contractor shall be responsible to

obtain (from the property owner(s) of the borrow areas) all necessary rights of entry, including rights of entry for the Owner and OSMRE for inspection purposes. The said rights of entry agreement must state that the property owner(s) indemnify and hold harmless the Owner and OSMRE for Contractor's action for any injury or damages whatsoever resulting from the use of the property. The Contractor also shall submit borrow or waste area reclamation plans for prior approval by the Owner. The Contractor shall observe the NEPA compliance schedule outlined in **Section 7** of the **Special Provisions** relative to selecting and utilizing any off site borrow areas and or any waste disposal areas.

7.2.1.3 Stone shall be used for the filling of gabion baskets. Rock riprap (non-grouted) shall be required in the construction and installation of Ditch Numbers Two and Six.

7.2.2 Grout to be used in the grouted riprap ditches shall consist of a mixture of one part Type II sulfate resistant Portland cement and three parts sand, using water to produce a workable consistency. The amount of water shall be as approved or as designated by the WVDEP. Admixtures and/or pozzolan may be used with the approval of the WVDEP. The grout shall exhibit a compressive strength of 2,000 pounds per square inch at 28 days with specimens made and tested according to the provisions of **ASTM C 31** and **C 39** and **Section 3.0** of these Specifications. Three (3) specimens are required for each concrete or grout test in accordance with **Section 601.4.4** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. Grout mix designs to be used by the Contractor shall be submitted to the Owner for review and approval. The proposed design mix and sufficient test data using proposed sources of the mix components to verify strength parameters shall be supplied to the Owner for approval prior to use in the Project. All testing shall be the responsibility of the Contractor.

7.2.2.1 Rock Riprap used for construction of grouted riprap ditches shall comply with **Specification Section 7.2.1.**

7.2.2.2 Grouted Rock Riprap will be required in the construction and installation of Ditch Numbers One and associated grout key, Two, Three, Four, Five, Seven, Eight, and the grout key to be constructed along the length of Ditch Number One as shown on the plans.

7.2.3 The pipe to be used on this project consist of highway grade high-density polyethylene pipes (HDPE) with corrugated exterior and smooth interior walls such as N12 pipes manufactured by Advanced Drainage Systems Inc., or approved equal. Culvert Number One shall require 48" diameter HDPE pipe.

7.2.4 Bedding and backfilling of pipes, headwalls, and concrete slabs shall be select backfill or 1 ½" crusher run.

7.2.4.1 Select backfill material shall be free of particles greater than 3" in any direction, readily compactable, and free from coal, coal refuse, organic debris, and approved by the Engineer prior to use.

7.2.4.2 1 ½" crusher run stone shall meet the gradation and quality requirements of Class 1 Aggregate in Table 704.6.2A of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010; Backfilling operations shall comply with **Section 604.8** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. Class 1 Aggregate may be crushed limestone or sandstone.

7.2.4.3 All stone shall consist of particles of clean, hard, tough, durable rock and free from adherent coating and meet the requirements of **Section 703.1** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. Stone shall have a maximum weighted loss of twelve percent (12%) when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (ASTM C88-99a Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials **(AASHTO) T-104**.

7.2.5 Concrete headwalls shall be constructed on the upstream and downstream end of Culvert Number One.

7.2.5.1 4,000 psi concrete meeting the requirements of **Specification Section 601** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010, shall be used for all poured in place concrete. Cement used in the mixture shall be Type II sulfate resistant Portland cement meeting the requirements of ASTM C150 (Type II cement not Type I cement). All concrete mix designs to be used by the Contractor shall be submitted to the Engineer for review and approval. The proposed design mix and sufficient test data using proposed sources of the mix components to verify strength parameters shall be supplied to the Engineer for approval prior to use in the Project.

7.2.5.2 Deformed bars used for reinforcing concrete shall be epoxy coated and meet the requirements of **Section 709** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2000 and **Supplemental Specifications** Dated January 1, 2003.

7.2.5.3 All poured in place concrete be placed, formed, finished, and cured in accordance with **Section 601** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010.

7.2.6 Trash Racks shall be mounted on the upstream and downstream ends of Culvert Number One (48" HDPE pipe). The trash racks shall be constructed of structural plastic meeting the dimensions shown on the plans, such as StormRax™ available from Plastic Solutions, Inc., Winchester, VA. (877) 877-5727 (www.plastic-solution.com)or approved equal. Grid Material is 1 1/2" thick with 5/8" webbing 6" on center. 3/8" X 3" anchor bolts (available from the manufacturer) shall be used to mount the trash rack to the concrete headwalls. The resin used for Structural Plastic Trash Racks is glass reinforced HDPE (High Density Polyethylene). Virgin material must be used to insure that all of the expected mechanical properties are maintained throughout the life of the Trash Rack. The glass content must not cause the material to become brittle even in cold temperatures (-0 degrees F).

7.2.7 Wire baskets commonly referred to as Gabion Baskets and Reno Mattress' such as those available from Maccaferri Gabions, or approved equal, shall be stone filled and placed as stream bank protection and slope protection in Mine Seal Numbers 1, 2, 3, 4, 5, and 6 construction. Baskets sizes required are: 9-feet by 3-feet by 3-feet; 6-feet by 3-feet by 3-feet; 4.5-feet by 3-feet by 3-feet and 9-feet by 6-feet by 0.75 feet. Baskets shall be placed in areas and at the lines and grades shown on the plans and filled with 3" to 6" stone meeting the requirements of **Specification 7.2.1**. Baskets shall be manufactured with double twisted hexagonal mesh made with zinc coated annealed mild steel wire. Baskets shall be fabricated in such a manner that the sides, ends, lid and diaphragms can be assembled at the construction site into rectangular baskets of the sizes shown on the plans. Gabions shall be of single unit construction. The base, ends, and sides shall either be woven or welded into a single unit or one edge of these members connected to the base section of the gabion in such a manner that strength and flexibility at the point connection is at least equal to that of the mesh. Baskets shall be divided by diaphragms, of the same mesh and gage as the body of the gabions, into cells whose lengths do not exceed the horizontal width. The gabion shall be furnished with the necessary diaphragms secured in proper position on the base section in such a manner that no additional tying at this juncture will be necessary. All perimeter edges shall be securely selvedged, bound, or welded so that the joints formed have approximately the same strength as the body of the mesh. In addition, connecting wires, lacing wire, and fasteners to connect and seal the baskets shall be obtained from the same manufacturer.

7.2.8 Filter Fabric used for drainage structures shall be non-woven and as specified in **Section 715.11.4** of the WVDOH **Standard Specifications for Roads and Bridges**, Adopted 2010 for subsurface drainage such as Geotex 401 manufactured by Advanced Drainage Systems, Inc. or approved equal**.** The State Department of Transportation has a web site listing all approved sources and products at: www.transportation.wv.gov/highways/pages/listings.

7.2.9 Separation fabric shall be woven and meet the requirements of **Section 715.11.8** of the **WVDOH Standard Specifications Roads and Bridges**, Adopted 2010, such as Mirafi 600X or approved equal.

7.3 METHOD OF CONSTRUCTION

7.3.1 The Contractor shall comply with **Special Provision 5, Schedule of Work**. The sequence of operations shall be at the discretion of the Contractor. However, at a minimum, water shall not be allowed to enter into or pool in constructed ditches, installed pipes, subsurface drains, or wet mine seal installations until all components have been installed and are operational, curing times have been achieved, and the constructions have been approved by the Owner. Work shall proceed downstream to upstream, bringing the site to grade and installing drainage control structures.

7.3.1.1 Some drainage conveyances will be constructed in designed Contractor constructed fill areas. In these areas, the fill shall be compacted in accordance with **Specification 8.5.3.5** and brought to final grade elevations shown on the Plans and in the cross sections. The subgrade of the ditch shall then be excavated into the compacted fill to template dimensions and to accept required lining components.

7.3.1.2 In addition, some drainage conveyances will be constructed across unconsolidated mine spoil areas or along existing drainage ditches or streams.

7.3.1.2.1 Prior to drainage conveyance component (rock riprap or grouted rock riprap) installation, the subgrade shall be prepared by removing objectionable material (including existing riprap, iron precipitate and soft, unconsolidated material) to the satisfaction of the Owner. In the event coal refuse is encountered such material will be undercut a minimum of 12" and replaced with onsite suitable compacted material, approved by the Owner, prior to installing the lining. The subgrade shall then be proof rolled to insure compaction has been achieved to the satisfaction of the Owner.

7.3.1.2.2 If in the opinion of the Owner the subgrade is unsuitable, the Contractor will be required to undercut the subgrade a minimum of 2.0 feet and place compacted suitable on-site fill material, as approved by the Owner, in 6" lifts back to subgrade elevations. In addition, some filling may be required after removing all objectionable material (including existing riprap, iron precipitate and soft, unconsolidated material) to bring the subgrade to proper elevations depicted on the Plans.

7.3.1.2.3 Subgrade fill material shall be compacted to at least 95% of Standard Proctor maximum dry density at a moisture content of not less than 2% below not greater than 3% above optimum. Testing frequency and locations shall be directed and approved by the Owner.

7.3.2 The ditches shall be constructed to the lines, grades, and templates shown on the plans or as directed and approved by the Owner. Ditches shall be rock riprap lined or grouted rock riprap lined as shown on the plans.

7.3.2.1 Ditches that receive rock riprap lining (non-grouted) include Ditch Numbers Two and Six. Riprap shall be placed in accordance with **Section 218.3.2** of the WVDOH **Standard Specifications for Roads and Bridges**, Adopted 2010.

7.3.2.1.1 The riprap stone furnished on the project shall be certified by the supplier as meeting or exceeding the requirements for size, gradation, durability, and calcium carbonate equivalency as established by these specifications.

7.3.2.1.2 Where ditches are to receive rock riprap lining, the subgrade shall be excavated so that the final grades, riprap size, thickness, and dimensions will agree with those on the plans. Riprap ditch subgrades shall be prepared in accordance with **Specification Section 7.3.1**. Riprap linings shall be placed so top of riprap in ditches blends to adjacent, final grades. Riprap linings shall not be indiscriminately placed atop final grades.

7.3.2.1.3 Riprap shall be placed to its required thickness without damaging or displacing the underlying subgrade. Some hand placing of riprap may be required around pipes inlets, and sediment control devices.

7.3.2.1.4 Riprap shall be installed at an elevation 1.0 foot, minimum (unless otherwise noted on the Plans), above the top of all pipes (either installed or existing) and on both the inlet (upstream) and outlet (downstream) ends of the pipes. The 1.0 foot, minimum, cover requirement shall transition to normal ditch depths ten feet (10') from the upstream and downstream ends of the pipe as shown on the plan profiles.

7.3.2.2 Ditches that receive grouted rock riprap lining include Ditch Number One and associated grout key, Ditch Number Two, Ditch Number Three, Ditch Number Four, Ditch Number Five, Ditch Number Seven, and Ditch Number Eight. Grouted riprap shall be applied in

accordance with and comply with **Section 218.3 and Section 501.14** of the WVDOH **Standard Specifications for Roads and Bridges**, Adopted 2010.

7.3.2.2.1 Where ditches are to receive grouted rock riprap, the subgrade shall be excavated so that the final grades, grouted riprap size, thickness, and dimensions will agree with those on the plans. Grouted riprap linings shall be placed so top of grouted riprap in ditches blends to adjacent, final grades. Grouted riprap linings shall not be indiscriminately placed atop final grades. Grouted riprap ditch subgrades shall be prepared in accordance with **Specification Section 7.3.1**.

7.3.2.2.2 Riprap shall be placed to its required thickness without damaging or displacing the underlying subgrade. Some hand placing of riprap may be required around pipes, inlets, and sediment control devices.

7.3.2.2.3 Grouted riprap shall be installed at an elevation 1.0 foot, minimum, above the top of all pipes (either installed or existing) and on both the inlet (upstream) and outlet (downstream) ends of the pipes. The 1.0 foot, minimum, cover requirement shall transition to normal ditch depths ten feet (10') from the upstream and downstream ends of the pipe as shown on the plan profiles.

7.3.2.2.4 Prior to grout placement the riprap shall be free of trash, debris, dirt, sticks, limbs, leaves or other objectionable material as determined by the Engineer. The Engineer shall approve the riprap prior to grout application. Grout, where required to be placed on riprap, shall be applied as soon as possible after placement of riprap. The stone shall be thoroughly wet immediately before grout is applied. As soon as grout is deposited on the surface it shall be thoroughly worked into the joints to achieve 100 percent penetration. The stones shall then be brushed so that their top surfaces are exposed. The grout shall be protected from running water to prevent damage until sufficiently cured.

7.3.2.2.5 Curing shall be accomplished by one of two means. A liquid membrane-forming compound for curing concrete may be sprayed on the brushed grouted surface. Curing compounds shall conform to the requirements of **Section 707.9** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. Alternately, the grouted surface may be covered with white polyethylene sheeting (film) for curing

concrete immediately after the stones have been brushed. The sheeting shall conform to the requirements of **Section 707.10** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. Grouting of riprap channels shall not be initiated unless adequate materials for curing the grouted channels are available on-site. Curing by liquid membrane-forming compound shall be left for 72 hours prior to introduction of water. Likewise, grouted riprap shall remain covered for 72 hours prior to sheeting removal and introduction of water.

7.3.2.3 Grouted keys will be required where riprap lined ditches change to grouted riprap lined ditches or as shown on the plan.

7.3.2.3.1 The grouted riprap key shall be as dimensioned on the Plans extending 3.0 feet, minimum, from the downstream bottom of the proposed ditch lining and installed at the locations shown on the plans.

7.3.2.3.2 After excavating the Grout Key to the dimensions shown on the plans, place grout in the excavation to the channel subgrade prior to placing the riprap. Riprap shall then be placed to the lines and grades shown on the plans.

7.3.2.3.3 Grout keys excavated in coal refuse shall be undercut a minimum of 12" and replaced with 12" of onsite suitable compacted material, approved by the Owner, prior to installing the grout key components.

7.3.2.3.4 A grout key shall be constructed along the right descending edge of Ditch Number One as shown on the plans.

7.3.2.3.4.1 The Contractor shall not excavate, damage, or compromise in any way the existing grouted riprap found in this area. Should the Contractor damage the existing grouted riprap in any way, he shall repair or have repaired the grouted riprap and any damage caused thereby to the satisfaction of the Engineer. The Contractor is advised soil nails are present in the existing grouted riprap area and shall not be disturbed.

7.3.2.3.4.2 This grout key will form a transition from installed components of Ditch One and the existing grouted riprap slope. The Contractor shall add sufficient grout at the interface between installed Ditch One components with the existing grouted riprap to

provide an impermeable seal to the satisfaction of the Engineer.

7.3.2.3.4.3 Excess excavated material shall be buried, soil covered, disposed of onsite, and revegetated in an area approved by the Engineer.

7.3.2.4 The Contractor shall prepare one set of cylinders for every twenty (20) cubic yards of grout applied to ditches for compressive testing in accordance with **Specification Section 7.2.2**. For ditches that receive less than twenty (20) cubic yards of grout, prepare one set of cylinders, minimum, per ditch. Three (3) specimens are considered one set of cylinders in accordance with **Section 601.4.4** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010.

7.3.2.5 Excess material from ditch excavation shall be disposed of on-site. Sections of ditches that are cut to rock shall not require rock riprap lining or grouted rock riprap lining.

7.3.2.6 Ditches that intercept existing drain pipes (existing road drains, subsurface drains, etc.) shall provide outlets for those intercepted drains. Outlets shall consist of compatible piping materials as exists and the Contractor shall ensure water emanating from these pipes safely and completely enters the constructed ditch and to the satisfaction of the Owner.

7.3.3 Culvert Number One shall be watertight and installed in accordance with **Section 604** of the WVDOH **Standard Specifications for Roads and Bridges**, Adopted 2010 and as detailed in these Specifications and on the construction plans. Trenches for pipes shall comply with dimensions depicted on the plans.

7.3.3.1 Class 1 stone in accordance with **Specification 7.2.4** shall be used for leveling and bedding of Culvert Number One. Class 1 stone shall be placed to the depths shown on the Plans and placed under, around, or over pipes as shown on the Plans. Class "B" bedding meeting the requirements of **Specification 7.2.4** shall be used to backfill the pipe. The subgrade shall be prepared by proof-rolling to the satisfaction of the Engineer prior to placement of the bedding or pipe.

7.3.3.1.1 Prior to leveling stone placement, the subgrade of the pipe trench shall be prepared in accordance with **Specification 7.3.1**. If in the opinion of the Engineer the subgrade is unsuitable, the Contractor will be required to undercut the subgrade a minimum of 2.0 feet and place compacted suitable

fill material, as approved by the Engineer, in 6" lifts back to subgrade elevations.

7.3.3.1.2 Subgrade fill material shall be compacted to at least 95% of Standard Proctor maximum dry density at a moisture content of not less than 2% below nor greater than 3% above optimum. Testing frequency and locations shall be directed and approved by the WVDEP.

7.3.3.2 Pipe backfill operations shall comply with **Section 604.8** of the WVDOH **Standard Specifications for Roads and Bridges**, Adopted 2000. Backfill material shall be the best select, suitable random material found on-site and free from particles larger than 3" and approved by the Engineer. Backfill material shall be placed in 4" loose lifts and compacted to at least 95% of Standard Proctor maximum dry density at a moisture content of not less than 2% below nor greater than 3% above optimum. Testing shall be at a frequency approved by the WVDEP. At a minimum, one test per side of pipe will be required at a location designated by the Engineer.

7.3.3.3 Culvert Number One extends beneath West Virginia Route 131 in the alignment of Ditch Number Seven. Culvert Number One consists of the installation of 48" diameter HDPE pipe meeting the requirements of **Specification 7.2.3**.

7.3.3.4 The Owner will complete and have approved the MM109 WVDOH permits required for installation of Culvert Number One. However, a bond shall be posted in accordance with the WVDOH permit requirements. The Contractor shall be required to complete the MM109 permit approval process by submitting and bearing the cost of the bond and signing any necessary paperwork. A copy of the approved MM109 permit shall be provided to the Engineer prior to any work being performed to install Culvert Number One.

7.3.3.5 The centermost portion of Culvert Number One installation shall require boring and jacking a 60" diameter steel pipe beneath West Virginia Route 131 in accordance with **Specification 12.0** and as shown on the plans. The 48" HDPE Culvert Number One shall be inserted through the bored and jacked pipe and connected to open-cut trench excavation installation of the upstream and downstream reaches of Culvert Number One.

7.3.3.6 Reportedly there is an existing 30" box culvert located near the upstream invert of Culvert Number One installation. This box culvert has been plugged on the downstream end and may be beneath fill material on the upstream end.

7.3.3.6.1 Should the 30" box culvert be encountered during excavation operations, the contractor will be required to permanently plug the 30" box culvert.

7.3.3.6.2 First, the Contractor shall cut-off the existing 30" box culvert at a point approved by the Engineer. The cut shall be uniform, result in a smooth remaining edge, and perpendicular to the alignment of the box culvert. The Engineer shall approve the cutting method and cut face prior to proceeding with the plug installation.

7.3.3.6.3 Next, the Contractor shall fabricate bulkheads to contain the permanent plug. One bulkhead shall be cut to snugly fit inside the 30" box culvert. Another bulkhead shall be cut that will conform to the outside dimension of the 30" box culvert. The two bulkheads shall be connected together with sufficient all-thread bolts to withstand applied pressure of poured concrete and so that a distance of 3.0 feet, minimum, exists between the two bulkheads. The bulkhead structure shall then be inserted into the 30" box culvert.

7.3.3.6.4 The Contractor shall provide support against the outside bulkhead to hold it in-place. The Contractor shall then cut a hole in the top of the 30" box culvert approximately halfway between the constructed bulkheads to allow insertion of the plug.

7.3.3.6.5 Next, the Contractor shall insert 4,000 psi concrete meeting the requirements of **Specification 7.2.5** into the hole until the box culvert is filled to top outside edge. Care shall be taken to not separate the concrete mixture during placement. The Contractor shall hand spade the concrete to ensure air pockets have been eliminated, compaction achieved, and the culvert is completely filled and sealed to the satisfaction of the Engineer.

7.3.3.6.6 Lastly, the end of the existing 30" box culvert shall be buried beneath a minimum of 3.0 feet of compacted backfill cover.

7.3.3.7 Trench excavation exceeding five (5) feet in depth shall be supported with suitable shoring or sides of the excavation shall be cut to stable slopes as recommended in the OSHA Publication *"Excavating and Trenching Operations"*, **OSHA 2226** and approved by the Engineer to prevent caving, slipping or cracking of the sides to protect workmen from any injury. Any shoring installed shall be removed with backfilling of the trench.

7.3.3.7.1 Excavation of the trench for Culvert Number One shall conform to the dimensions shown on the plans. The Contractor shall excavate and provide sufficient room to perform boring and jacking operations beneath West Virginia Route 131. It is recommended that both the upstream and downstream bore and jack pits be excavated and open while performing the boring and jacking operation.

7.3.3.7.2 Upstream pipe trench excavation operations shall stop along the alignment of Culvert Number One at a point where the pit downstream slope (toward West Virginia Route 131) will toe-out to leave the existing West Virginia Route 131 ditch line to divert uphill water from the excavation as shown on the plans.

7.3.3.7.3 Downstream pipe trench excavation operations shall stop along the alignment of Culvert Number One at a point where the upstream pit slope (towards West Virginia Route 131) will not compromise stability of the steep roadway outslope. The resultant pits would result in an approximate 150 foot long boring and jacking operation.

7.3.3.7.4 Class 1 stone shall be placed to the depths shown on the Plans and placed under, around, or over pipes as shown on the cross sections. Remaining pit and pipe backfill operations shall be compacted excavated materials to the lines and grades shown on the plans.

7.3.3.8 The Contractor will be required to construct concrete headwalls on the upstream and downstream end of the 48" HDPE Culvert Number One to the lines and grades shown on the plans. The Contractor will also be required to construct trash racks on the upstream and downstream end of the 48" HDPE pipe.

7.3.3.8.1 The concrete headwalls may be pre-fabricated or poured in-place. Concrete and reinforcement shall meet the requirements of **Specification 7.2.5**. Pre-fabricated headwalls shall be obtained from a WVDOH approved source. The Contractor shall submit drawings for approval to the Engineer for pre-fabricated headwalls prior to purchase and placement. Drawings shall detail the mix of concrete used; spacing, size, and type of reinforcement used; and field connection details to provide water-tight joining of the pre-fabricated headwall and the installed 48" diameter HDPE pipe.

7.3.3.8.2 All poured in place concrete be placed, formed, finished, and cured in accordance with **Section 601** of the **WVDOH**

Standard Specifications for Roads and Bridges, Adopted 2010. Concrete shall be allowed to cure for a minimum of seven (7) days or until 70% of the specified strength for the concrete has been attained.

7.3.3.8.3 The subgrade of the headwall footing shall be prepared in accordance with **Specification 7.3.1**. 1 ½" crusher run stone shall be used to provide a level base for the headwall footing.

7.3.3.8.4 Poured in-place headwalls shall be constructed in two steps. First, the footer of the headwall shall be formed and poured to the lines and grades shown on the plans. A 4" wide keyway shall be provided to provide a watertight joining of the footer with the wall. Vertical reinforcing bars as shown on the plans shall be placed, secured to footer bars, and project out of the footer pour to connect the wall of the headwall with the footer. The concrete interface between the footer and the wall shall not be finished but shall be left in a rough state for better adhesion. The concrete shall be allowed to cure for a minimum of seven (7) days or until 70% of the specified strength for the concrete has been attained prior to wall construction.

7.3.3.8.5 Next, the headwall walls shall be formed and poured to the lines and grades shown on the plans. The concrete shall be allowed to cure for a minimum of seven (7) days or until 70% of the specified strength for the concrete has been attained prior to backfilling operations.

7.3.3.8.6 Backfilling around the pre-manufactured or cast in-place headwall shall comply with **Section 212** of the WVDOH **Standard Specifications for Roads and Bridges**, Adopted 2010. Backfill material shall be select, suitable on-site material meeting the requirements of **Specification 7.2.4** and resulting from excavation operations and as directed and approved by the Engineer. Care shall be taken not to displace or disturb the headwall from the intended installation site or elevation. Backfilling shall be brought up uniformly around the structure to avoid distortional stress. If in the opinion of the Engineer backfilling operations have caused damage or displaced the headwall, the Contractor shall remove the headwall, re-prepare the subgrade, and reset the structure and complete backfilling operations to the satisfaction of the Engineer and at no cost to the State.

7.3.3.8.7 The Contractor shall install structural plastic trash racks meeting the dimensions shown on the plans and in accordance with **Specification 7.2.6**. The structural plastic trash racks shall be attached to the concrete headwall with 3/8" by 3" anchor bolts after curing and in accordance with the manufacturer's recommendations.

7.3.4 The Contractor will be required to provide stream bank protection at Mine Seal Numbers One, Two, Three, Four, Five, and Six construction sites in the form of purchased, placed, and filled wire baskets meeting the requirements of **Specification 7.2.7**.

7.3.4.1 Excavation for Mine Seal Numbers One, Two, Three, Four, Five, and Six sloping conveyance pipes will be in close horizontal and vertical proximity to the edge of water in Shinns Run. As such, stream bank protection will be required to ensure these conveyance pipes are not compromised by high flows.

7.3.4.2 All six (6) stream bank protection sites have the same number and sized wire baskets proposed to be installed. Two (2) 9-foot by 3-foot by 3-foot; eight (8) 6-foot by 3-foot by 3-foot; and five (5) 4.5-foot by 3.0-foot by 3.0-foot baskets are required at each site and shall be installed to the lines and grades shown on the mine seal cross sections in the plans.

7.3.4.3 The elevation of the sloping conveyance pipe from each mine seal at the edge of the water in Shinns Run shall determine the excavation limits for each stream bank protection package. The conveyance pipe shall be centered in the stream bank protection package and inserted into the center elevation of the second row of baskets as shown on the mine seal cross sections in the plans.

7.3.4.4 The foundation for the baskets shall be level, free of surface irregularities, loose material, and vegetation. The foundation shall be prepared in accordance with **Specification 7.3.1**.

7.3.4.5 The baskets shall be assembled in accordance with the manufacturer's recommendations. Lacing wire and ring connectors or a combination of both shall be used to connect internal components of the baskets and adjacent baskets together all in accordance with manufacturer's recommendations. Internal connecting wires shall also be placed at 1.0 foot layers of stone during filling operation in accordance with manufacturer's recommendations. Lids shall also be closed in accordance with manufacturer's recommendations.

7.3.4.6 Baskets shall be filled in accordance with manufacturer's recommendations with 3" to 6" stone meeting the requirements of **Specification 7.2.1.** Baskets shall be filled in stages. In no instance shall any basket cell be filled higher than 1-foot above the adjoining basket. Baskets shall be overfilled 1" to allow for settling. Some hand placing of

stone may be required to ensure voids are filled and to provide a professional looking surface along the exposed stream-side face.

7.3.4.7 1 ½" crusher run stone, meeting the requirements of **Specification 7.2.4,** shall be used to backfill the placed wire baskets. Backfill material shall be placed and compacted behind basket walls simultaneous with the level of stone placed in the baskets. Excess excavated material shall be used to backfill the mine seal installations and around the baskets to the satisfaction of the Engineer.

7.3.4.8 Separation fabric meeting the requirements of **Specification 7.2.8** shall be placed at the interface of the 1 ½" crushed stone backfill with excavated soil backfill.

7.3.5 The Contractor will be required to provide slope protection at Mine Seal Numbers One, Two, Three, Four, Five, and Six construction sites in the form of purchased, placed, and filled wire baskets (Reno Mattress) meeting the requirements of **Specification 7.2.6.**

7.3.5.1 All six (6) slope protection sites shall have the same number and sized baskets to be installed. Four (4) 9-foot by 6-foot by 0.75-foot baskets are required at each mine seal installation site and shall be installed to the lines and grades shown on the Mine Seal Cross Sections in the plans.

7.3.5.2 The foundation for the baskets shall be level, free of surface irregularities, loose material, and vegetation. The foundation shall be prepared in accordance with **Specification 7.3.1.**

7.3.5.3 The baskets shall be assembled in accordance with the manufacturer's recommendations. Lacing wire and ring connectors or a combination of both shall be used to connect internal components of the baskets and adjacent baskets together all in accordance with manufacturer's recommendations. Lids shall also be closed in accordance with manufacturer's recommendations.

7.3.5.4 Baskets shall be filled in accordance with manufacturer's recommendations with 3" to 6" stone meeting the requirements of **Specification 7.2.1.** Baskets shall be filled in stages. Baskets shall be overfilled 1" to allow for settling. Some hand placing of stone may be required to ensure voids are filled and to provide a professional looking surface along the exposed stream-side face. Baskets on slopes should be filled from the bottom up.

7.3.5.5 Backfill material shall be placed and compacted around the wire basket edges simultaneously at the same level as the stone fill in the basket. Excess excavated material shall be used to backfill the mine seal installations and around the baskets to the satisfaction of the Engineer.

7.3.6 The Contractor will be required to stabilize subsidence features by excavating and installing Subsidence Socks as shown on the plans and as directed by the Engineer.

7.3.6.1 The Contractor in conjunction with the Engineer shall delineate the outer boundary of the subsidence feature.

7.3.6.2 The Contractor shall excavate the suspected subsidence area to the satisfaction of the Engineer. At a minimum excavation shall extend three feet (3') in all directions beyond the delineated boundary of the subsidence feature. In no instance shall the Contractor excavate existing constructions designated by the Engineer to remain, such as existing grouted riprap slopes. Excavation operations shall extend 3.5 feet, minimum, beneath existing grades or as directed by the Engineer.

7.3.6.3 Loose material shall be removed from the excavation and any voids encountered below excavation limits shall be completely filled with 12" diameter riprap meeting the requirements of **Specification Section 7.2.1.**

7.3.6.4 Line the entire excavation with filter fabric meeting the requirements of **Specification Section 7.2.8** and maintaining a 12", minimum, overlap at all joints.

7.3.6.5 The Contractor shall carefully place 2.0 feet, minimum, of 12" diameter riprap, complying with **Specification Section 7.2.1**, atop the filter fabric. If in the opinion of the Engineer, riprap placement has caused displacement or damage to the underlying filter fabric or riprap placed below, then the Contractor shall remove the riprap and repair the displacement or damage and/or replace the fabric and riprap to the satisfaction of the Engineer. All costs associated with the removal of riprap and necessary repair work shall be borne by the Contractor and at no cost to the Owner.

7.3.6.6 After riprap thickness has been achieved, the Contractor shall wrap the filter fabric completely around the riprap support layer with overlaps of 12", minimum, at every joint. Ditch Number One construction can proceed as planned or the remaining portion of the excavation filled with excavated materials with the top 12" being onsite soils capable of supporting vegetation.

7.3.6.7 Excess excavated material shall be buried, soil covered, disposed of onsite, and revegetated in an area approved by the Engineer.

7.4 METHOD OF MEASUREMENT

7.4.1 The method of measurement for riprap lined ditches or grouted riprap lined ditches shall be on a linear foot basis measured along the flowline of the ditch. Transition areas into and out of pipes to achieve 1.0 foot of riprap or grouted riprap cover over top of existing or placed pipes shall be paid at the

unit rate bid for the ditch in which it is located. Where two ditches intersect, the lineal footage of the intersecting ditch shall end at the first top encountered edge of the intersected ditch to eliminate double measurements of installed components. The unit price shall include excavation of any and all nature, purchase and placement of rock riprap lining, grouted riprap lining, curing, and "pump-around" or other diversion to achieve curing times, and all equipment and labor necessary for satisfactory installation as shown on the plans and detailed in these specifications.

7.4.2 The method of measurement for the grout key to be constructed along the right descending edge of Ditch Number One shall be paid at the linear foot price bid for **Item 7.9 "Ditch Number One Grout Key"**. The unit price shall include excavation of any and all nature, purchase and placement of rock riprap lining, grouted riprap lining, curing, and "pump-around" or other diversion to achieve curing times, placement of excess excavated materials, other incidentals necessary to construct the key as planned, and all equipment and labor necessary for satisfactory installation as shown on the plans and detailed in these specification.

Otherwise, there is no method of measurement for grouted riprap keys. Grout key excavation and installation as shown on the plans and herein specified shall be considered incidental to the grouted portion of the ditch where it is located and constructed.

7.4.3 The method of measurement for installation of the 48" Ø HDPE Culvert Number One shall be per linear foot measured along the top of the pipe along its entire length including through the bored and jacked pipe and paid at the price bid for **Item 7.7 "48" Ø HDPE Culvert Number One"**. The unit price shall include the cost of the pipe, necessary couplers, trench excavation including bore and jack pad excavation, 1 ½" crusher run stone and Class "B" Backfill, backfilling to the lines and grades shown on the plans, and other incidentals required for installation as shown on the Plans and detailed in these Specifications. All costs associated with the boring and jacking beneath West Virginia Route 131 shall be included in and considered incidental to **Item 12.1 "60" Steel Pipe Boring and Jacking"**.

7.4.4 The method of measurement for the concrete headwalls shall be per each constructed and approved and paid at the unit price bid for "**Item 7.8 Concrete Headwalls"**. The unit price shall include the cost of subgrade preparation including compaction, undercutting and filling (if required), and 1 ½" crusher run stone; forming of the footers and walls; purchase and placement of reinforcing bars; concrete and pouring the footers and walls; curing, backfilling, and other incidentals required to construct the headwalls as shown on the plans and herein specified.

7.4.5 The method of measurement for installing the structural plastic trash racks shall be per each purchased, installed, approved by the Engineer and paid at the unit price bid for "**Item 7.9 Trash Racks"**. The unit price shall include the cost of

purchasing and installing the trash racks in accordance with the manufacturer's recommendations and approved by the Engineer and other incidentals required to construct the trash racks as shown on the plans and herein specified.

7.4.6 The method of measurement for purchase, placement, filling, and backfilling of wire baskets (gabion baskets and Reno mattress) shall be per cubic yard for **Item 7.10 "Stone Filled Wire Baskets"**. The unit price shall include the cost of excavation, basket foundation preparation including compaction, foundation undercutting and filling (if required) with 1 ½" crusher run stone; purchase, placement, and filling of wire baskets to the satisfaction of the Engineer, 3" to 6" stone for wire basket filling, backfilling, and other incidentals required to construct stream bank protection and slope protection as shown on the plans and herein specified.

7.4.7 The method of measurement for installing and constructing subsidence socks shall be per each paid at the unit price bid for **Item 7.11 "Subsidence Sock"**. The unit price shall include the cost of excavation, 12" diameter riprap, filter fabric, backfilling, onsite disposal of excess excavated materials, and other incidentals required to install and construct subsidence socks as shown on the plans and herein specified.

7.5 BASIS OF PAYMENT

Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

7.4 PAY ITEMS

Item 7.1 "1.0 Ft. Deep "Vee" Shaped Grouted Riprap Ditch", per linear foot

Item 7.2 "1.5 Ft. Deep "Vee" Shaped Grouted Riprap Ditch", per linear foot

Item 7.3 "2.0 Ft. Deep "Vee" Shaped Riprap Ditch", per linear foot

Item 7.4 "2.0 Ft. Deep "Vee" Shaped Grouted Riprap Ditch", per linear foot

Item 7.5 "4.0 Ft. Wide by 2.0 Ft. Deep "Flat Bottom" Shaped Grouted Riprap Ditch", per linear foot

Item 7.6 "4.0 Ft. Wide by 3.0 Ft. Deep "Flat Bottom" Shaped Grouted Riprap Ditch", per linear foot

Item 7.7 "48" Ø HDPE Culvert Number One", per linear foot

Item 7.8 "Concrete Headwalls", per each

Item 7.9 "Trash Racks", per each

Item 7.10 "Ditch Number One Grout Key", per linear foot

Item 7.11 "Stone Filled Wire Baskets", per cubic yard

Item 7.12 "Subsidence Sock", per each

8.0 UNCLASSIFIED EXCAVATION

8.1 DESCRIPTION

This work shall consist of excavating, transporting, stockpiling, placing and compacting refuse, soil, rock or other materials encountered in the grading of the project area and any other indicated incidental work.

8.2 MATERIALS

8.2.1 Fill material for embankments shall be considered a mixture of soil or rock or soil and rock commingled with coal refuse encountered during excavation operations. For purposes of payment only, no distinction shall be made between soil, rock, refuse, or other material encountered, as all shall be deemed Unclassified Excavation. Top soil encountered during clearing and grubbing operations or in excavation operations shall be stockpiled and used as a final cover at final grades.

8.2.2 Riprap for riprap fill shall consist of hard durable sandstone as specified and shown on the Plans and shall have a d_{50} of 12-inches. The rock shall range in size from 3-inches minimum to 18-inches maximum diameter with no more than 10% by weight less than 2 inches and no more than 50% by weight greater than 12". Sandstone shall be non-calcareous and exhibit a fizz of 0.

8.2.2.1 The Contractor should be aware that no provisions have been made to obtain rock on site. All rock riprap used throughout the project site shall consist of locally available, commercially purchased meeting the following requirements. All riprap shall consist of particles of clean, hard, tough, durable rock and free from adherent coating and meet the requirements of **Section 703.1** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. The rock riprap shall have a maximum weighted loss of thirty percent (30%) when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (ASTM C88-99a Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate, as modified by the American Association of State Highway and Transportation Officials **(AASHTO) T-104**. The use of on-site rock materials for riprap may be permitted with prior approval from the WVDEP in special circumstances. Non-calcareous stone shall exhibit a fizz of 0 when subjected to dilute hydrochloric acid. A laboratory certification of soundness and fizz shall be submitted to the Owner prior to delivery.

8.2.2.2 There are no provisions for obtaining riprap on-site. All borrow (disposal) areas for riprap must be approved by WVDEP. Should the Contractor decide to obtain and utilize any borrow areas outside of construction limits, or move material from one property owner to another (unless designated), the Contractor shall be responsible to obtain (from

the property owner(s) of the borrow areas) all necessary rights of entry, including rights of entry for the Owner and OSMRE for inspection purposes. The said rights of entry agreement must state that the property owner(s) indemnify and hold harmless the Owner and OSMRE for Contractor's action for any injury or damages whatsoever resulting from the use of the property. The Contractor also shall submit borrow or waste area reclamation plans for prior approval by the Owner. The Contractor shall observe the NEPA compliance schedule outlined in **Section 7** of the **Special Provisions** relative to selecting and utilizing any off site borrow areas and or any waste disposal areas.

8.3 BORROW/DISPOSAL AREA

There are no designated disposal areas shown on the plans. There are no designated soil borrow areas shown on the plans. Soil cover shall be obtained as detailed in **Section 8.4** of this **Specification**. No separate payment or measurement shall be made for soil cover required unless off-site borrow areas become necessary, in which case payment shall be included in **"Unclassified Excavation"** quantities, otherwise, soil cover shall be considered incidental . It is anticipated that material encountered during excavation operations shall produce sufficient suitable soil material for use as soil cover in the project area. However, if off-site borrow/disposal areas should be necessary to provide for material shortages or if excess material disposal is other than an approved landfill, then the Contractor is responsible for locating these areas and obtaining right-of-entry agreements in which the property owner indemnifies and holds the Owner and OSMRE harmless from any injury or damage whatsoever resulting from the Contractor's use of the property. All prospective Contractors and Bidders must obtain their own permission from the landowner for any subsurface tests, borings, or pits. The Contractor shall be held responsible for compliance with all NEPA requirements and shall provide proof of such compliance to the Owner. The Contractor shall submit a reclamation plan to the Owner and must obtain approval for said plan prior to any disturbance to the disposal/borrow site. Generally the material required to construct fills to the lines and grades shown on the plans comes from nearby excavations such as mine seal excavation, subsurface drain excavation, subsidence excavations, etc. In no instance shall the Contractor move material from one property to another without the express written consent of the Engineer.

8.4 SOIL COVER

This work consists of covering all areas reaching final grade with a one foot (1') thick layer of suitable soil material capable of supporting vegetation. The soil cover material shall be obtained in conjunction with clearing and grubbing operations, regrading and/or drainage feature and other planned excavations and as directed and approved by the Owner. Topsoil encountered during excavation operations shall be stockpiled and used as a general cover of the site at final grade and a soil cover for encountered coal refuse, exposed coal seams, bedrock, and specified buried materials at final grade elevations. Areas reaching final grade in exposed coal or coal refuse shall be undercut a minimum of 12 inches with a minimum of 12" of soil

material placed over the exposed coal or refuse to the lines and grades shown on the plans. Excavation of soil cover shall be as per **Section 8.5.2**. It is anticipated an adequate amount of soil cover will be available to cover the sites. The Contractor is responsible for securing a borrow area outside the Contractor's Work Limits in the event that adequate soil material is not available on site and at no additional cost to Owner. If, during the course of construction, the need for off-site borrow areas becomes evident, the Contractor shall obtain prior approval from the Owner for such borrowing and the borrow area must comply with NEPA regulations and **Special Provision Number 7** of these specifications. The Contractor shall obtain Right-of-Entry Agreements for any soil, clay, or rock borrow areas outside the construction limits that also provide for entry by the Owner and OSM for inspection purposes, and with such agreements stating that the property owner(s) indemnifies and holds the Owner and OSM harmless from injury or damage whatsoever resulting from the use of the property.

8.5 METHOD OF CONSTRUCTION

8.5.1 The Contractor shall comply with all special provisions, with particular attention to **Special Provision 5, Schedule of Work** and **Special Provision 10, Safety.**

8.5.1.1 The Contractor shall maintain and protect traffic, protect the work in progress, protect adjacent property from excess dust resulting from the construction and maintain traffic through, around, or adjacent to the construction area. The Contractor shall comply with **OSHA Regulation 29CFR1926 Subpart P** for excavation of trenches associated with pipe, culvert, subsurface drains, mine seal constructions, and similar constructions. The Contractor shall also protect pedestrian and vehicular traffic around excavations and trenches in compliance with the **U.S. Federal Highway Administration Manual of Uniform Traffic Control Devices** and the **WVDOT "Manual on Traffic Control for Streets and Highway"** 2006 edition, dated March 2006. The Contractor will be required to comply with all WVDOT rules, regulations, weight limits, and speed limits associated with and posted on West Virginia Route 131 and Harrison County Route 13/6, as well as other public roads used by the Contractor to access the project. The Contractor will be required to coordinate his operations with landowners and provide unrestricted access to them at all times. At the discretion of the Engineer, the Contractor will be required to employ flag persons along West Virginia Route 131 and Harrison County Route 13/6 to direct traffic while hauling materials on and off site and other constructions. The Contractor will also be required to keep driveways, West Virginia Route 131, Harrison County Route 13/6, and other existing access roads used during construction of the project free of fugitive dust and clean of mud and other debris from the job site deposited by construction and other vehicles entering or leaving the project area.

8.5.1.2 The Contractor's work hours for this project shall be from 7:00 a.m. to 7:00 p.m. Monday through Saturday. Work on Sunday and major holidays, as defined by the Engineer, will not be allowed on this project**.**

8.5.1.3 The sequence of operations shall be at the discretion of the Contractor. However, at a minimum, water shall not be allowed to enter into or pool in constructed ditches, pipes, mine seals, bore and jack pits, or subsurface drains until all components have been installed and are operational and the construction has been approved by the Owner. Work shall proceed downstream to upstream, bringing the site to grade and installing drainage control structures. The Contractor shall comply with sequence of operations outlined in **Special provision 23, NPDES Stormwater Permit Guidelines** and the approved NPDES Permit in regards to controlling sediment and erosion from the project and to protect the local environment.

8.5.2 Excavation

8.5.2.1 Material excavation shall consist of the required removal of materials from areas shown and the sloping and finishing of the areas to the required lines and grades depicted on the construction drawings. The slopes may be varied only by permission of the Owner. Any excavation beyond planned grades will not be paid for unless prior authorization is obtained from the Owner. Slopes shall be trimmed neatly to present a uniform surface, free from hollows and protrusions and loose or overhanging rocks. The tops of all slopes shall be rounded to form a smooth, uniform transition to existing ground. Areas cut to grade in exposed coal refuse or coal shall be undercut one foot (1.0') below final grades shown on the reclamation plans with final grades achieved by placing one foot (1.0') of soil cover atop the undercut areas.

8.5.2.2 The Contractor will be required to perform excavation operations for the installation of mine seals, subsurface drains, drainage conveyances, subsidence excavations, etc. excess excavation from these operations shall be utilized to bring the project areas to the grade shown on the plans. In no instance shall the Contractor move material from one property to another without the express written consent of the Engineer.

8.5.2.2.1 Excess excavated material from the installation of Mine Seal Numbers One, Two, Three, Four, Five, and Six shall be used to backfill around gabion baskets and Reno mattress' to the lines and grades shown on the plans. The amount of excavation available from each mine opening is undeterminable and the Contractor may be required to supply borrow materials to properly regrade and soil cover the seals as shown on the plans.

8.5.2.2.2 Excess excavated material from the installation Mine Seal Numbers Seven and Eight shall be used to regrade the seals to the lines and grades shown on the plans. The Contractor may be required to supply borrow materials to properly regrade and soil cover the seals as shown on the plans.

8.5.2.2.3 The area encompassed by Baseline Number One consists of nine (9) apparent subsidence features in close proximity to each other. The subsidence features appear to be associated with collapsed entryways that crossed the unnamed tributary under very low overburden cover with two (2) large, deep depressions capturing stream flow from the unnamed tributary and diverting the flow into the abandoned mine works. The Contractor will be required to excavate this area to the coal pavement level as shown on Baseline One Cross Sections.

8.5.2.2.3.1 Excavated material shall be temporarily stockpiled nearby and used to backfill the area to the lines and grades around Baseline One as shown on the plans.

8.5.2.2.3.2 In no instance shall the Contractor remove or excavate solid coal or coal pillars.

8.5.2.2.3.3 Contractor excavations reaching the coal pavement and not encountering solid blocks of coal shall be filled with material excavated and compacted in accordance with **Specification 8.5.3.5**.

8.5.2.2.3.4 At the discretion of the Engineer, Contractor excavations discovering seeps emanating from the north hillside or the south hillside shall be reconnected across the excavated area with 12" Ø riprap, meeting the requirements of **Specification 8.2.2**. The 12" riprap fill shall have a 10-foot wide top, a height of 5.0-feet, with angle of repose sideslopes, and covered with filter fabric, meeting the requirements of **Section 9.2.2**, as shown on the plans.

8.5.2.2.3.5 At the discretion of the Engineer, Contractor excavations discovering open or collapsed portals along the north or south hillside shall be reconnected across the excavated area with 12" Ø riprap. The 12" Ø riprap shall be sized to match the height and width of openings discovered with angle of repose sideslopes and filter fabric extending along the sides and top

of the placed riprap. The contractor will be required to excavate collapsed openings sufficiently to attain 6.0-feet, minimum, of roof contact with the placement of the 12" Ø riprap. Similarly, the Contractor will be required to place 12" Ø riprap into open entryways to attain the required 6.0-foot of roof contact.

8.5.2.2.3.6 Once excavation operations uncover solid coal running across the excavation area, the Contractor shall not excavate solid coal. Rather, the intent is to place fill of 12" Ø riprap in coal seam voids to create a solid foundation for the construction of Ditch Number Seven to prevent future subsidence resulting in future stream flow capture.

8.5.2.2.3.7 12" Ø riprap shall be placed in mine seam voids to a point 1.0 ft, minimum, above the top of the coal seam. Filter fabric shall be placed atop the 12" Ø riprap and extend 2.0-feet in all directions beyond the footprint of the placed riprap. Compacted excess excavated materials shall then be placed above the 12" Ø riprap to the subgrade of Ditch Number Seven. Ditch Number Seven shall then be constructed to the lines and grades shown on the plans.

8.5.2.3 The Contractor will be required to remove constructed Temporary Access Roads after all reclamation operations using the road are complete. The Contractor shall then prepare the footprint of the Temporary Access Road for revegetation. This task may require scarifying compacted materials and minor grading to smooth out ruts and heaves. To complete this task, soiling material from an offsite borrow area may be required to fill depressions to blend into surrounding grades and properly drain to the satisfaction of the Engineer.

8.5.2.4 The reclamation approach described in these construction specifications and shown on the plans is intended to provide a lasting, stable configuration. The Contractor is required to exercise care to avoid conditions which may result in unstable conditions during the construction process. The Contractor shall be responsible for protecting residences, businesses and their constructions from damage. The Contractor must utilize material removal techniques, which are generally considered to be conducive to retaining slope stability. Additionally, disturbed slopes shall be brought to the design template as soon as practical and shall be protected in accordance with **Specification Section 6.0, "Revegetation"**.

8.5.3 Material Placement

8.5.3.1 All excavated materials shall be moved and deposited as shown on the plans and detailed in these specifications. Off-site disposal areas (if necessary) shall comply with **Specification Section 8.3** and **Special Provision 7**. Every effort has been made to estimate quantities as accurately as possible, however, the amount of earthwork estimated is for information purposes only and the Owner in no way guarantees the quantities listed. Field adjustments to elevations, lines, and grades may be required to correctly construct this project as shown on the plans. Such adjustments shall be made by the Contractor at no additional costs to the Owner. The Owner reserves the right to increase or decrease any or all of the quantities of work or to omit any of them, as it may deem necessary.

8.5.3.2 Depositing and compacting fill in layers shall be started at the lowest point in the fill below grade, at the bottom of ravines and at the toe of the slope on side hill fills. Prior to fill placement, existing foundation for the embankment will be proof-rolled and approved by the Owner, with all unsuitable material, as determined by the Owner, removed.

8.5.3.3 Excavated material shall be placed in embankments in successive layers not to exceed one foot (1') in thickness before compaction. The layers shall be constructed approximately horizontal. Each layer, before starting the next, shall be leveled and smoothed by means of power driven graders, dozers, or other suitable equipment with adequate weight, capacity, and power to do the work. Layers shall be extended across the entire fill at the level of deposition unless otherwise authorized by the Owner. Each layer, before starting the next, shall be compacted.

8.5.3.4 Fill materials to be used in any area of embankment or fill placement shall be free from trash, debris, frozen soil, organic material or other foreign material. No burning refuse (defined as greater than 140º F) and/or combustible material shall be placed in fill areas. No burning refuse was observed during initial investigations.

8.5.3.5 Embankment fill and embankment subgrade materials shall be compacted to at least 90% of Standard Proctor maximum dry density at a moisture content of not less than 2% below or greater than 3% above optimum. Testing shall be at a frequency approved by the Owner. One lot per day per fill area shall serve as a minimum. A lot consists of five (5) compaction test in accordance with **Section 3.3.3**. Testing frequency and locations shall be directed and approved by the Owner.

8.5.3.6 Embankment fill material that does not contain sufficient moisture to be compacted to the requirements specified herein shall receive applications of water necessary for compaction. Water shall be applied

with suitable sprinkling devices and shall be thoroughly incorporated into the material that is to be compacted. Embankment fill material that contains excess moisture shall be dried prior to compaction. Sufficient discing equipment shall be continuously available at the site and shall be used to add water or remove excess moisture from fill materials.

8.5.3.7 If in the opinion of the WVDEP the hauling equipment causes horizontal shears or slicken slides, rutting, quaking, heaving, cracking, or excessive deformation where material is placed, the Contractor shall limit the type, load or travel speed of the hauling equipment on areas where the material is placed. During material placement, the Contractor shall remove from the areas of fill any material the Owner considers objectionable and shall dispose of such material and refill the area as directed and at no additional cost to the Owner. The Contractor shall select compaction equipment that will produce the specified density. Compaction equipment that produces a sealed, slick surface will not be allowed in fill areas. Should fill areas become sealed with a slick surface, the Contractor will be required to scarify the surface to a depth of four inches (4") prior to placement of the next lift.

8.5.3.8 At the close of each day's work, or when work is to be stopped for a period of time, the entire surface of the compacted fill shall be sealed by a method approved by the Owner. If, after a prolonged rainfall, the surface of embankments is too wet and plastic to work properly, the top material shall be removed to expose firm material. Ruts in the surface of any layer shall be suitably filled or eliminated by grading before compaction.

8.5.3.9 Coal, coal refuse, and black or dark gray shales, acidic materials, and other potentially toxic materials were not observed, but may be encountered during excavation operations.

8.5.3.9.1 Areas cut to grade in exposed coal or coal refuse shall be undercut one foot (1.0') below final grades shown on the reclamation plans with final grades achieved by placing one foot (1.0') of soil cover atop the undercut areas.

8.5.3.9.2 Coal and coal refuse, black or dark gray shales, acidic material, and other on-site similar materials to be buried shall not be placed within one feet (1'), minimum, vertically of any coal seam and shall be compacted and placed beneath a cap of twelve inches (12"), minimum, of soil cover (capable of supporting vegetation) and proposed final grades depicted on the plans.

8.5.3.9.3 Coal and coal refuse, black or dark gray shales, acidic material, and other on-site similar materials shall not be

buried or placed beneath or within twenty five feet (25.0') of constructed or existing drainage conveyances.

8.5.3.10 12" riprap fill shall be placed in accordance with **Specification 8.5.2.2.3** and as shown on the plans.

8.5.3.11 The regrading plan shall be conducted in a manner such that topsoil encountered and stockpiled shall be uniformly spread over the entire final graded area. The soil cover shall not be compacted to the specifications stated for fill compaction, but shall be placed in a manner to allow for proper establishment of vegetation as described in the seedbed preparation, **Specification Section 6.0 "Revegetation"**, portion of these specifications. The required soil amendments are to be incorporated into this top-dressing material while it is in a loose state, to facilitate proper mixing of these materials within the soil matrix. The soil cover shall then be prepared by tracking-in with a dozer perpendicular to the slope. The Owner may require that the soil cover be scarified prior to seeding if compaction is considered excessive or if rills develop. All disturbed areas will be revegetated according to **Specification Section 6.0, "Revegetation"**.

8.5.3.12 The Contractor will be required to remove constructed Temporary Access Roads after all reclamation operations using the road are complete. The Contractor shall then prepare the footprint of the Temporary Access Road for revegetation. This task may require scarifying compacted materials and minor grading to smooth out ruts and heaves. To complete this task, soiling material from an offsite borrow area may be required.

8.6 METHOD OF MEASUREMENT

8.6.1 The method of measurement for unclassified excavation shall be per cubic yard of excavation (cut) defined by proposed final grades and cross sections shown on the plans and herein specified**.** Unclassified excavation shall only be measured in the area covered by Baseline One and offsite borrow areas (if applicable). All other cut and/or fill operations depicted on the plans and herein specified shall be considered incidental to the construction being built or to all other costs associated with this project. The unit price bid for **Item 8.1 "Unclassified Excavation"** shall include excavating, placing excavated material, stockpiling, and placement of all topsoil, soil, and soil covering operations (unless specified otherwise) and excavated materials as shown on the plans, breaking of boulders and placing boulders in fill areas, and special handling, undercutting at final grades and soil covering, burying, and entombing of coal, coal refuse, and black or dark gray shale.

8.6.2 Soil cover shall be obtained as detailed in **Specification Section 8.4**. No measurement shall be required unless off-site borrow areas become necessary, in which case payment shall be included in **Item 8.1 "Unclassified Excavation"**,

otherwise, soil cover shall be considered incidental. It is anticipated that material encountered during excavation operations shall produce sufficient suitable soil material for use as soil cover.

8.6.3 The method of measurement for placing 12" Ø riprap fill in coal seam voids in the area covered by Baseline Number One shall be paid at the unit price bid per ton for **Item 8.2 "12" Ø Riprap Fill"** from certified weight tickets submitted to and approved by the Engineer. The unit price bid shall include filter fabric, purchase, transportation, placement, necessary grading, compaction, and other incidentals required to place the riprap fill as shown on the plans and herein specified.

8.6.4 There is no method of measurement for finding and developing an Owner approved off-site borrow area or soil borrow area (if required) as all costs associated with this task including necessary reclamation plans, all permits and any delays occasioned by permit work and approvals, sediment and erosion control, backfilling, and revegetation shall be included in and considered incidental to **Item 8.1, "Unclassified Excavation"**.

8.6.5 Excavation of material required to construct mine seals, construct ditches and ditch lining materials; to install pipes and excavate and backfill bore and jack pits and headwalls; to install subsurface drains and clean outs; to install subsidence socks, and to excavate and fill around wire baskets (gabion baskets and Reno mattress') shall not be included for payment in this Item, but shall be considered incidental to the construction where they are located.

8.6.6 Excavation and placement of materials for undercutting beneath drainage ditches, pipes and headwalls shall not be included for payment in this Item, but shall be included in the unit price bid for the drainage ditch, pipe, head walls, or wire baskets installed.

8.6.7 Excavation and placement of materials to upgrade, repair, and maintain access roads and driveways during construction operations shall not be included for payment in this Item, but shall be considered incidental to **Item 4.1 "Site Preparation"**. All costs associated with repairing/resurfacing existing access roads used during construction operations shall be as specified in **Section 11.0**.

8.6.8 Undercutting of exposed coal refuse at final grades (if applicable) shall not be submitted for payment but shall be considered incidental to **Item 8.1 "Unclassified Excavation"**.

8.7 BASIS OF PAYMENT

8.7.1 Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

8.7.2 Payment for material excavated to achieve final grades will be paid by the unit price bid for **Item 8.1, "Unclassified Excavation"** in the area of Baseline One only, which shall include excavation, regrading, and filling of excavated materials throughout the entire project areas as well as off-site disposal (if required) as shown on the plans and herein specified. Soil cover shall be obtained as detailed in **Specification Section 8.4** of these **Specifications**. No separate payment shall be required unless off-site borrow areas become necessary, in which case payment shall be included in **Item 8.1 "Unclassified Excavation**", otherwise, soil cover shall be considered incidental to unclassified excavation. It is anticipated that material encountered during excavation operations shall produce sufficient suitable soil material for use as soil cover.

8.7.3 Payment for 12" Ø riprap fill placement shall be paid at the unit price bid for **Item 8.2, "12" Ø Riprap Fill"** for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

8.8 PAY ITEM

Item 8.1, "Unclassified Excavation", per cubic yard

Item 8.2, "12" Ø Riprap Fill", per ton

9.0 MINE SEALS

9.1 DESCRIPTION

This work shall consist of dewatering the existing mine pool(s); excavating mine seal locations; placing filter fabric and non-calcareous leveling stone inside the mine and leveling stone outside the mine, installing piping systems; installing gravel bulkheads into competent openings; similar gravel bulkheads along the bottom of existing highwalls centered upon mine discharges and collapsed openings; installing separation fabric and best on-site "clayey material" outby stone bulkheads; and backfilling the opening and highwall to the lines and grades shown on the plans. Materials shall conform to those listed below. The length of 12-inch diameter pipes and associated clean-outs may vary based on the conditions encountered at the time of construction excavation and final grades that are achieved. The maximum run allowable of pipe from a mine seal without installation of a cleanout shall be 100 feet.

9.2 MATERIALS

9.2.1 **Stone.** Stone shall consist of sound, durable Class1 Aggregate and 3" to 6" non-calcareous crushed sandstone such as that commercially available from Cranesville Stone, Inc. (304) 789-6516, J.F. Allen (304-630-2002), or Laurel Aggregates (724-465-5099) or approved equal**.** Class 1 Aggregate shall meet the gradation and quality requirements in **Table 704.6.2A** and **Section 704** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. All stone shall consist of particles of clean, hard, tough, durable rock and free from adherent coating and meet the requirements of **Section 703.1** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. 3" to 6" non-calcareous stone shall have a d_{50} of 4-inches. The non- calcareous d_{50} stone shall be durable and range in size from 3-inches minimum to 6-inches maximum diameter with no more than 10% by weight less than 3 inches and no more than 50% by weight greater than 4". Stone shall have a maximum weighted loss of twelve percent (12%) when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (ASTM C88-99a Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials (AASHTO) T-104. Non-calcareous stone shall exhibit a fizz of 0 when subjected to dilute hydrochloric acid. A laboratory certification of soundness and fizz shall be submitted to the Owner prior to delivery.

3" to 6" non-calcareous crushed sandstone shall be obtained for gravel bulkheads and to level the pipes in Wet Mine Seals, Modified Mine Seals, and Subsurface Drains as shown on the plans.

Class 1 (1½") Crusher Run Stone may be used to level and backfill mine seal conveyance pipes which are located outside the mine. Class 1 (1½") aggregate shall meet the gradation requirements in **Table 704.6.2A** and **Section 704** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted

2010. Class 1 (1½") Crusher Run Stone may be limestone or sandstone and shall meet above mentioned other quality requirements.

9.2.2 **Separation and Filter Fabric**. Woven Separation Fabric shall be as specified in **Section 715.11.8** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010 for subsurface drainage such as Mirafi 600X or approved equal**.** Filter fabric shall be non-woven and as specified in **Section 715.11.4** of the **WVDOH Standard Specifications for Roads and Bridges, Adopted 2010**, such as Mirafi 160N or approved equal.

9.2.3 **Pipe.** Wet and Modified Mine Seal Outlet Pipes (two required per seal), which are located inside the mine, extend for a total distance of 28 feet each, as shown on the plans, and shall consist of custom perforated and solid 12 inch diameter PVC SDR35 pipes. The Wet Mine Seal riser component (with 18" Ø SDR35 Hubbed Cap, perforated stub and associated perforated end cap (gasketed and screwed in-place) shall also be custom perforated 12-inch diameter PVC SDR35 pipes. The Modified Mine Seal cross-over pipe (one required per seal) shall be a custom perforated 12 inch diameter SDR35 PVC pipe. Wet and Modified Mine Seal Conveyance Pipes (two required per seal) extend from the end of the 28 foot long mine seal outlet pipes to the receiving drainage structure and are solid 12 inch diameter SDR35 PVC pipes.

9.2.4 Animal guards constructed of stainless steel bolts, nuts, and washers shall be constructed and installed on the downstream end of each conveyance pipe, as detailed on the plans, the same day as the pipe is installed.

9.2.5 12" Inline Cleanouts, if required, shall consist of a 12" by 12" by 8" 45º wye fitting; solid 8" diameter PVC SDR35 pipe; an 8" 45º SDR35 PVC bend; an East Jordan Iron Works Model 1564 frame and cover; and 4,000 psi concrete to be placed around the frame and cover as shown on the plans. 4,000 psi concrete shall meet the requirements of **Specification 4.1.3.3**. Cleanouts extend from the conveyance pipes to final grades shown on the plans**.**

9.2.6 Wet Mine Seals also require an anchor plate (two required per seal) consisting of 16" by 16" by ½" grade 50 steel plate with 3/8" u-bolts as shown on the plans.

9.2.7 **Soda Ash Briquettes.** Soda ash briquettes commonly used in the treatment of acid mine drainage and purchased by the skid in 50 pound bags.

9.2.8 The "best clayey material available" is defined as on-site material having the most clay content, highest plasticity index, readily forms into a ball when squeezed in the hand, and free from rocks larger than 2" in any dimension as determined by visual examination by and approved by the Engineer

9.3 METHOD OF CONSTRUCTION

9.3.1 The Contractor shall submit a Dewatering Plan to the Owner for approval prior to beginning excavation and installation operations for any mine seal. Dewatering operations will be required to dewater mine pools as well as pit ponds. Excavation of the mine openings shall proceed in a manner that will control the release of the mine pool.

9.3.1.1 Wet and Modified Mine Seals will require excavation into the mine entries/collapsed portals for proper installation of planned components. The Contractor shall perform this work after taking all necessary precautions with regard to control and treatment of the impounded water, with all work being performed at the risk of the Contractor. The WVDEP accepts no responsibility or liability for any related construction activities. Mine pool reduction may be provided from above with a well-point system or a similar dewatering scheme approved by the Engineer.

9.3.1.2 The Contractor shall be solely responsible for any damages caused by dewatering through an un-controlled release of water. In an effort to control sudden surges from dewatering operations, the Contractor will be required to provide constant supervision over the process and have sufficient sized equipment and overburden material stockpiled near the dewatering excavation pits to quickly install an embankment of sufficient height, width, and density to shut-off the flow from dewatering operations if deemed necessary by the Owner or as conditions warrant. The Contractor is advised Shinns Run is in close proximity to Mine Seal Numbers One, Two, Three, Four, Five and Six and 13 feet ± of water was discovered in Borehole Number One (above Mine Seal One) and Borehole Number Two (next to Mine Seal Five).

9.3.1.3 The Contractor will be required to install and operate a water treatment system to maintain the dewatering discharge between pH 6.0 and 9.0. Preliminary investigations found AMD with a pH of 6.8, alkalinity of 259 mg/l, iron 4.17 ppm, aluminum 2.42 ppm, and manganese 0.47 ppm. The method of controlling pH shall be soda ash briquettes. In no instance will chemicals that may cause imminent danger to the public, such as Caustic Soda or Anhydrous Ammonia, be used as a component of the Contractor's plan.

9.3.1.4 The Contractor's Dewatering Plan shall include procedures for using existing drainage ditches and conveyances for discharge of treated acid mine drainage. Prior to discharge through these existing ditches and conveyances, the contractor will be required to inspect and improve anticipated flow paths to ensure discharges do not overtop existing pipes or ditches. To this purpose, the Contractor will be required to clean-out all existing culverts or pipes anticipated to carry treated discharges to the satisfaction of the Owner. The Contractor will also be required to clean-

out existing ditchlines that are too shallow or filled with sediment and precipitate to prevent and eliminate overtopping. All cleaned-out materials shall be removed from the site to a landfill permitted to accept this type waste or buried onsite beneath 12" of soil cover in areas approved by the Engineer. In addition, the Contractor will be required to clean-out all ditches, pipes, or culverts after their use for conveying treated acid mine drainage to the satisfaction of the Owner.

9.3.2 Mine Seal installations require excavation into the open, partially open, or collapsed entries or portals for proper installation. The opening shall be cleaned of debris and overburden to the satisfaction of the Owner with all work being performed at the risk of the Contractor. The Owner accepts no responsibility or liability for any related construction activities or associated risks and subsequent accidents with any mine seal installations. The Contractor is advised Mine Seal Numbers One, Two, Three, Four, Five, and Six are located in close proximity to Shinns Run and along steeply sloping near vertical slopes towards the stream, leaving limited room for excavation operations, water treatment, temporary stockpiles, and material storage.

9.3.2.1 The Contractor shall implement the approved dewatering plan and completely dewater the mine pool prior to beginning excavation of the openings for installation of Mine Seal components. The openings shall be cleaned of all debris to the satisfaction of the Engineer.

9.3.2.2 Wet and Modified Mine Seals are detailed on the Plans. Wet Mine Seals are preferred over Modified Mine Seals and shall be installed at all proposed mine seal installations shown on the plans. Should the contractor demonstrate to the satisfaction of the Owner that excavation of the collapsed portal area is futile, only then will Modified Mine Seals be installed, and only if approved by the Owner.

9.3.2.3 For Wet Mine Seals, once the opening has been excavated to the satisfaction of the Owner, filter fabric and a 6" layer of 3" to 6" non-calcareous stone, complying with **Specification Section 9.2.1** and **9.2.2**, shall be placed to level and bed pipes. Two (2) runs of custom perforated and/or solid pipe 28 feet in length with custom perforated risers 3 feet in height, custom perforated or solid stubs 1 foot to 3 feet in length, gasketed perforated end cap screwed in- place, and attached trash racks (18" SDR35 PVC Hubbed Cap) with steel stability plates attached, conforming to **Specification 9.2.3** and **9.2.4**, shall be placed in each opening as shown on the plans. The 18" diameter custom perforated (as shown on the plans) hubbed end cap shall be secured to the top of all riser pipes to act as trash rack to keep debris from clogging risers. Custom perforations in the 28 feet of wet mine seal outlet pipes shall end 2.5 feet, minimum, inside the anticipated outby toe of the completed stone bulkhead as shown on the plans. The spacing between the wet mine seal outlet pipes shall be 3 feet to 6 feet with an equal distance

maintained outby the wet mine seal outlet pipes and the coal ribs. This spacing shall be maintained throughout the installation. The stone bulkhead will be constructed with non-calcareous 3" to 6" stone, meeting the requirements of **Specification 9.2.1**, so that no gaps exist between the coal pavement (bottom), ribs (sides), and roof (top). The outside of the stone bulkhead shall be covered with filter fabric and then compacted "best on-site clayey material" available placed atop the filter fabric to the dimensions shown on the plans, and the site backfilled to the lines and grades shown on the plans. The "best on-site clayey material" (meeting the requirements of **Specification 9.2.8**) seal shall be three feet (3.0') thick, minimum, at the bottom as shown on the plans. In no instance will workman be allowed in the openings under un-supported roof or unventilated entryways. The Contractor shall adhere to OSHA Regulation 29 CFR Part 1926 during all excavation and trenching activities.

9.3.2.4 For Modified Mine Seals, the concentrated mine drainage flow emanating from the collapsed portal area shall be located and become the lowest point and center of the stone bulkhead. The stone bulkhead shall extend from apparent collapsed coal entry rib to collapsed coal entry rib and an additional ten feet (10.0'), minimum, in each direction along the bottom of the highwall from the edge of the collapsed coal entry rib. From these two outermost points, the bottom of the highwall and stone bulkhead shall be graded to slope to the outlet pipes. Filter fabric, meeting the requirements of **Specification 9.2.2**, shall be placed along the bottom of the highwall prior to stone bulkhead placement to provide a clean work environment and support bulkhead stone. A 6" layer of 3" to 6" non-calcareous stone, complying with **Specification Section 9.2.1**, shall be placed as pipe bedding atop the filter fabric and shall extend outside the mine opening a distance equal to the anticipated angle of repose of the completed stone bulkhead as shown on the plans. The perforated pipes and connectors shall be placed at the center, lowest point in the bulkhead as shown on the plans. The Contractor shall excavate into the collapsed entryway as far as possible and place piping components as far into the collapsed entryway as possible. Two (2) runs of 12 inch diameter custom perforated and/or solid PVC pipe 28 feet in length, conforming to **Specification 9.2.3**, are required per installation. Custom perforations in this 28 feet of wet mine seal outlet pipes shall end 2.5 feet, minimum, inside the anticipated outby toe of the completed stone bulkhead as shown on the plans. A 12 inch diameter SDR35 PCV 90º elbow shall be installed in the end of each custom perforated pipe to be inserted into the opening and a custom perforated length of 12 inch SDR35 PCV cross-over pipe shall be inserted into the elbows to connect the pipes together. The length of the perforated crossover pipe shall be 3 feet to 6 feet with an equal distance maintained between the runs of pipe and the coal ribs. This spacing shall be maintained throughout the

installation. Prior to backfilling the piping components, the Contractor shall obtain the approval of the piping installation from the Engineer. A stone bulkhead constructed of 3" to 6" stone will be placed atop the pipes and as shown on the plans and extend a minimum of three feet (3.0') outby the highwall (as measured at the top elevation of the bulkhead) so that no gaps exist between the coal pavement (bottom), the top of the apparent opening, and the existing highwall. The entire outside of the stone bulkhead shall be covered with filter fabric and then "best on-site clayey material" available, meeting the requirements of **Specification 9.2.8**, placed atop the fabric to the dimensions shown on the plans and the site backfilled to the lines and grades shown on the plans. The "best on-site clayey material" seal shall be 1.0 foot (1.0') thick, minimum, at the top of the seal and three feet (3.0') thick, minimum, at the bottom as shown on the plans. In no instance will workman be allowed to work at the bottom of unsupported, unstable highwalls. The Contractor shall adhere to **OSHA Regulation 29 CFR Part 1926** during all excavation and trenching activities**.**

9.3.2.5 Wet Mine Seal Conveyance Pipes shall extend from the 28 foot long Mine Seal Outlet Pipes to constructed receiving drainage structure. Mine Seal Outlet Pipes shall be custom perforated and solid and Wet Mine Seal Conveyance Pipes shall be solid. All pipes shall be installed at a minimum grade of 2 percent discharging 1.0-foot minimum above the drainage structure invert or as approved by the Engineer. There is no pay item for Mine Seal Outlet Pipes (perforated or solid pipes 28 feet long each) as all costs shall be included in the per each price bid for **Item 9.1, "Mine Seals"**.

9.3.2.6 The Contractor will be required to utilize excess stockpiled excavated material to backfill the installed and approved mine seal and accompanying wire baskets (where constructed) to the lines and grades shown on the plan and to the satisfaction of the Engineer. The Contractor is advised borrow material (particularly soil cover) may be necessary at some installations to complete the backfilling of the seal and wire baskets to the lines and grades shown on the plans.

9.3.3 During initial investigations for this Project, three (3) piezometer monitoring wells were installed at Borehole Numbers One, Two, and Ten. These monitoring wells shall be removed and abandoned by a person who has been certified by the State of West Virginia in accordance with **47CSR59, "Monitoring Well Regulations"** and prior to earth moving operations. This certification is required for closing of wells in the State of West Virginia and includes construction, installation, alteration and/or abandonment of monitoring wells and select boreholes. The costs for removal and abandonment of the monitoring wells shall be included in and considered incidental to installation of mine seals or all other costs associated with this project.

9.4 METHOD OF MEASUREMENT

9.4.1 For purposes of estimating the cost of this project, one-half of mine seals at collapsed openings with seepage are designated as Wet and the other half designated as Modified. Each has been designed to contain approximately the same quantities and involve similar construction effort and therefore shall be bid as a homogeneous item with no distinction made between the two. However, in actuality one type installation may be required more than the other type installation and the Contractor may wish to take this into consideration prior to submitting his bid. Wet Mine Seals shall be paid under **Item 9.1, "Mine Seals"** and measured per mine seal installed (either Wet or Modified) and shall include all excavation of any and all nature, dewatering, stone, separation fabric, impervious soil blanket, wet mine seal outlet piping systems, anchors, backfilling of the installed and approved seals to the lines and grades shown on the plans, and all or any other necessary components or tasks required to complete the seal installation as shown on the plans and detailed in these specifications. Mine Seal Conveyance Piping systems connected to the end of the Mine Seal Outlet Piping System and extending to the receiving ditch shall be paid at the unit price bid for **Item 9.2 "Mine Seal Conveyance Pipes"**. Furnishing and placement of the pipe and fittings, animal guards, backfilling, and minor grading, including all ancillary materials and operations required to construct the Wet or Modified Mine Seals, will not be measured, but shall be considered incidental to this construction.

9.4.2 Wet Mine Seal Conveyance Pipes shall be measured from the end of installed Wet Mine Seal Outlet Pipes to the proposed outfall at the receiving drainage structure. A wet mine seal outlet pipe installation consists of two (2) outlet pipes. Each outlet pipe shall be measured along the centerline, summed together, and submitted for payment under **Item 9.2, "Mine Seal Conveyance Pipes"**. Costs shall include trench excavation of any and all nature, leveling stone, furnishing and placement of the pipe and fittings, any necessary cleanouts, compacted on-site backfill, and minor grading, animal guards, and all ancillary materials and operations required to construct the conveyance pipes, will not be measured, but shall be considered incidental to this construction. The contractor is advised the estimate of Mine Seal Conveyance Pipes may change as conditions encountered in the field dictate.

9.4.3 Soda Ash Briquettes used in the mine dewatering and treatment process shall be measured per 50# bag used and paid at the unit rate bid per bag for **Item 9.3, " Soda Ash Briquettes".** Costs associated with the dewatering and treatment process, including the Contractor's Dewatering Plan, and all other operations associated with dewatering including cleaning out existing pipes and ditches before and after treatment operations, discharging treated water, and implementation of the Contractor's approved dewatering plan shall be considered incidental to the unit price bid for **Item 9.3, "Soda Ash Briquettes"**.

9.4.4 There is no method of measurement for closing boreholes installed during the investigation phase of this project. Rather all costs associated with closing and abandoning installed monitoring wells shall be considered incidental to and included in all other costs associated with this project.

9.5 BASIS OF PAYMENT

Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans. Contractor assumes all accountability for loss and damages caused from flooding of the project work limits while the project is under construction.

9.6 PAY ITEMS

Item 9.1 "Mine Seals", per each.

Item 9.2 "Mine Seal Conveyance Pipes", per linear foot.

Item 9.3 "Soda Ash Briquettes", per bag.

10.0 SUBSURFACE DRAINS

10.1 DESCRIPTION

The Contractor will be required to construct and install two (2) differing types of Subsurface Drains as dimensioned on the plans or as located by the Owner as field conditions warrant. Materials shall conform to those listed below. Seep Collector subsurface drains shall be dimensioned 3.0 feet by 3.0 feet with 8" diameter pipes and Underdrain subsurface drains shall be dimensioned 4.0 feet by 4.0 feet with 12" diameter pipes. The length of the 8-inch diameter pipes or 12-inch diameter pipes and associated inline clean-outs may vary based on the conditions encountered at the time of construction excavation and final grades that are achieved. The maximum run allowable of conveyance pipe from a mine seal or subsurface drain without installation of a cleanout shall be 100 feet.

10.2 MATERIALS

10.2.1 Stone. Stone for subsurface drains shall have a d_{50} of 4-inches. The non-calcareous d_{50} stone shall be durable and range in size from 3-inches minimum to 6-inches maximum diameter with no more than 10% by weight less than 3 inches and no more than 50% by weight greater than 4". The stone shall consist of non-calcareous crushed sandstone such as that commercially available from Cranesville Stone, Inc. (304) 789-6516, J.F. Allen, or Laurel Aggregates (724-564-5099) or approved equal**.** Crushed stone shall consist of particles of clean, hard, tough, durable rock, free from adherent coating and meeting the requirements of **Section 703.1** of the **WVDOH Standard Specifications**. Stone shall have a maximum weighted loss of twelve percent (12%) when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials **(AASHTO) T-104**. Non-calcareous stone shall exhibit a fizz of 0 when subjected to dilute hydrochloric acid. A laboratory certification of soundness and fizz shall be submitted to the Owner prior to delivery.

10.2.2 Subsurface drain pipes shall consist of custom perforated (as shown on the plans) and solid 8 inch diameter PVC SDR35 pipes with necessary 8 inch diameter connectors and custom perforated (as shown on the plans) and solid 12 inch diameter PVC SDR35 pipes with necessary 12 inch diameter connectors as required to complete the installations or as deemed necessary by the Owner.

10.2.3 Animal guards consisting of stainless steel bolts, nuts, and washers, as detailed on the plans, shall be constructed and installed the same day as the pipe is placed and on the downstream end of the outlet pipe as detailed on the plans.

10.2.4 Clean-outs, if required, shall be spaced every 100 feet along the alignment of the drain or as shown on the plans. Inline Cleanouts shall consist of a 12" by 12" by

8" wye fittings and/or 8" by 8" by 8" 45º wye fittings, solid 8" diameter PVC SDR35 grade pipe, 8" 45º bend, East Jordan Iron Works 1564 frame and cover and 4,000 psi concrete to be placed around the frame and cover as shown on the plans and extending from the conveyance pipe to final grades shown on the plans. 4,000 psi concrete shall meet the requirements of **Specification 4.1.3.3**.

10.2.5 Filter Fabric used for Subsurface Drains shall be non-woven and as specified in **Section 715.11.4** of the WVDOH **Standard Specifications for Roads and Bridges**, Adopted 2010, for subsurface drainage such as Mirafi 160N or approved equal**.**

10.2.6 The "best clayey material available" is defined as on-site material having the most clay content, highest plasticity index, readily forms into a ball when squeezed in the hand, and free from rocks larger than 2" in any dimension as determined by visual examination by and approved by the Engineer.

10.3 METHOD OF CONSTRUCTION

10.3.1 The Contractor shall be required to construct and install subsurface drains in the locations and to the lines and grades shown on the plans. Additional subsurface drain footages may be added to the contract as conditions warrant during excavation operations to collect and divert encountered groundwater to constructed drainage structures as designated and approved by the Owner.

10.3.1.1 The Seep Collector subsurface drains are three foot (3.0') wide and three foot (3.0') high with custom perforated (as shown on the plans) and solid 8" diameter SDR35 PVC pipes. The subsurface drains are installed as shown on the plans and as excavation conditions warrant and designated and approved by the Engineer.

10.3.1.2 The Underdrain subsurface drains are four foot (4.0') wide and four foot (4.0') high with custom perforated (as shown on the plans) and solid 12" diameter SDR35 PVC pipes. The subsurface drains are installed as shown on the plans and as excavation conditions warrant and designated and approved by the Engineer.

10.3.1.3 Trench width for the subsurface drains shall be as indicated on the typical details provided in the plans. Trenching will involve excavation of in-place material including soil and rock.

10.3.1.4 Prior to component placement, the trench subgrade shall be prepared in accordance with **Specification 7.3.1**. Once the trench is excavated and prepared for component placement to the satisfaction of the Owner, filter fabric meeting the requirements of **Specification Section 10.2.5** shall be placed in the trench bottom and along the side of the trench opposite the seep inflow. Sufficient fabric shall be placed to fully cover the trench bottom width, downhill side of the

trench, and the trench top width to include overlap dimensions as shown on the plans.

10.3.1.5 Trenches exceeding five (5) feet in depth shall be supported in compliance with OSHA requirements. The Contractor shall adhere to **OSHA Regulation 29 CFR Part 1926** during all excavation and trenching activities. Trench bottom shall be cleared of any loose debris and any standing water.

10.3.1.6 Four inches (4") of 3" to 6" stone meeting the requirements of **Specification Section 10.2.1** shall be installed in the trench atop the fabric. Perforated pipes meeting the requirements of **Specification Section 10.2.2** shall be installed atop the 4" layer of 3" to 6" stone. 12" diameter custom perforated SDR35 PVC pipes will be required for Underdrain installations and 8" diameter custom perforated SDR35 PVC pipes will be required for Seep Collector installations. In addition, custom perforated 12" SDR35 PVC end caps shall be installed on the upstream end of the piping system in Underdrains and custom perforated 8" SDR35 PVC end caps shall be installed on the upstream end of the piping system in Seep Collectors. If in the opinion of the Owner, 3" to 6" stone placement or pipe placement has caused displacement or damage to the underlying filter fabric or sub-base, the Contractor shall remove the pipe and 3" to 6" stone and repair the displacement or damage and/or replace the fabric and 3" to 6" stone or pipe to the satisfaction of the Owner. All costs associated with the removal of 3" to 6" stone and pipe and necessary repair work shall be borne by the Contractor and at no cost to the Owner.

10.3.1.7 After rock drain thickness has been achieved, the Contractor shall wrap the filter fabric completely around the rock drain with overlaps of 12", minimum, at every joint.

10.3.1.8 The Contractor shall then place sufficient compacted fill material on top of the subsurface drain to elevations and grades shown on the Plans or as directed by the Owner. At a minimum, a 1.0 foot clearance (or as shown on the plans) shall be maintained between the top of the subsurface drain and revegetated final grades.

10.3.2 For subsurface drains longer than 100 feet, or as shown on the plans; or at the direction of the Owner, the Contractor will be required to install a cleanout along the drain alignment. Cleanouts shall consist of 45º "wyes" extending from the perforated or solid subsurface drain pipe to finished grade. The "wye" alignment shall project along the flow of the pipe so cleaning operations will be concentrated at the downstream end of any potential plug. Cleanouts in Underdrains shall be constructed of a solid 12" by 12" by 8" PVC SDR35 Wyes, 8" by 8" 45˚ elbows, and 8" solid SDR35 PVC pipes and connectors and shall project to finished grades and be capped with a 8" PVC SDR35 screw cap, frame, cover, and concrete as shown on the plans. Cleanouts in Seep Collectors

shall be constructed of a solid 8" by 8" by 8" PVC SDR35 Wyes, 8" by 8" 45˚ elbows, and 8" solid SDR35 PVC pipes and connectors and shall project to finished grades and be capped with a 8" PVC SDR35 screw cap, frame, cover, and concrete as shown on the plans

10.3.3 Perforated pipes shall end 5.0 feet, minimum, from the end of 3" to 6" stone placement. From this point to the drainage structure receiving the drain discharge, solid 12" PVC SDR35 drain pipes will be installed in Underdrains and solid 8" PVC SDR35 drain pipes shall be installed in Seep Collectors.

10.3.3.1 Drain pipes shall be installed and backfilled with the "best on-site clayey material" available meeting the requirements of **Specification 10.2.6**. The outlet elevation of the pipe shall be 1.0 foot, minimum, above the flow line of the receiving drainage structure or as shown on the plans or as approved by the Engineer.

10.3.3.2 Trench excavation exceeding five (5) feet in depth shall be supported with suitable shoring or sides of the excavation shall be cut to stable slopes as recommended in the OSHA Publication *"Excavating and Trenching Operations"*, **OSHA 2226** and approved by the Engineer to prevent caving, slipping or cracking of the sides to protect workmen from any injury. Any shoring installed shall be removed following backfilling the trench.

10.3.4 Animal guards, meeting the requirements of **Specification 10.2.3** and as shown on the plans, shall be installed on the outlet pipe the same day as the pipe is placed and as shown on the Plans.

10.4 METHOD OF MEASUREMENT

10.4.1 The method of measurement for Seep Collector subsurface drains shall be per linear foot for **Item 10.1, "Seep Collector"** and measured along the top centerline of the installed drain for payment, which shall include all excavation and backfilling (with stone or soil), stone, filter fabric, custom perforated SDR35 PVC piping and five feet (5.0') of solid SDR35 PVC piping extending to the end of the stone placement as shown on the plans or herein specified and directed by the Owner. Where two Seep Collectors and/or Underdrains intersect, the lineal footage of the intersecting subsurface drain shall end at the first edge encountered of the intersected subsurface drain to eliminate double measurements of installed components. Trench excavation, furnishing and placement of the perforated and solid pipe and fittings, compacted on-site backfill, and minor grading, including all ancillary materials and operations required to construct the subsurface drains, will not be measured, but shall be considered incidental to this construction.

10.4.2 The method of measurement for Underdrain subsurface drains shall be per linear foot for **Item 10.2, "Underdrain"** and measured along the top

centerline of the installed drain for payment, which shall include all excavation and backfilling (with stone or soil), stone, filter fabric, custom perforated SDR35 PVC piping and five feet (5.0') of solid SDR35 PVC piping extending to the end of the stone placement as shown on the plans or herein specified and directed by the Owner. Where two Underdrain and/or Seep Collectors intersect, the lineal footage of the intersecting subsurface drain shall end at the first edge encountered of the intersected subsurface drain to eliminate double measurements of installed components. Trench excavation, furnishing and placement of the perforated and solid pipe and fittings, compacted on-site backfill, and minor grading, including all ancillary materials and operations required to construct the subsurface drains, will not be measured, but shall be considered incidental to this construction.

10.4.3 The method of measurement for 8" diameter Solid Seep Collector Drain Pipes shall be measured from the end of installed stone in the Seep Collector subsurface drain to the proposed outfall at the receiving drainage structure and paid at the linear foot bid for **Item 10.3 "8" Ø Solid SDR35 PVC Drain Pipe"**. Animal guards shall be included in and considered incidental to the unit price bid for **Item 10.3 "8" Ø Solid SDR35 PVC Drain Pipe".** Costs shall include trench excavation of any and all nature, leveling stone, furnishing and placement of the pipe and fittings, compacted on-site backfill, and minor grading to blend into surrounding grades, animal guards, and all ancillary materials and operations required to construct the drain pipes, will not be measured, but shall be considered incidental to this construction. The contractor is advised the estimate of drain pipes may change as conditions encountered in the field dictate.

10.4.4 The method of measurement for 12" diameter Solid Underdrain Drain Pipes shall be measured from the end of installed stone in the Underdrain subsurface drain to the proposed outfall at the receiving drainage structure and paid at the linear foot bid for **Item 10.4 "12" Ø Solid SDR35 PVC Drain Pipe"**. Animal guards shall be included in and considered incidental to the unit price bid for **Item 10.4 "12" Ø Solid SDR35 PVC Drain Pipe".** Costs shall include trench excavation of any and all nature, leveling stone, furnishing and placement of the pipe and fittings, compacted on-site backfill, and minor grading to blend into surrounding grades, animal guards, and all ancillary materials and operations required to construct the drain pipes, will not be measured, but shall be considered incidental to this construction. The contractor is advised the estimate of drain pipes may change as conditions encountered in the field dictate.

10.4.5 The method of measurement for 8" Inline Cleanouts shall be per each for **Item 10.5 "8" Inline Cleanouts"** installed and approved by the Engineer. The unit price bid shall include excavation, furnishing and placement of the pipe and fittings as detailed on the plans, placing and concreting the frame and cover, compacted on- site backfill, and minor grading, including all ancillary

materials or operations required to construct the cleanouts as shown on the plans and herein specified.

10.4.6 The method of measurement for 12" Inline Cleanouts shall be per each for **Item 10.6 "12" Inline Cleanouts"** installed and approved by the Engineer. The unit price bid shall include excavation, furnishing and placement of the pipe and fittings as detailed on the plans, placing and concreting the frame and cover, compacted on- site backfill, and minor grading, including all ancillary materials or operations required to construct the cleanouts as shown on the plans and herein specified.

10.5 BASIS OF PAYMENT

Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

10.6 PAY ITEM

Item 10.1 **"Seep Collector"**, per linear foot

Item 10.2 **"Underdrain"**, per linear foot

Item 10.3 **"8" Ø Solid SDR35 PVC Drain Pipe "**, per linear foot

Item 10.4 **"12" Ø Solid SDR35 PVC Drain Pipe "**, per linear foot

Item 10.5 **"8" Inline Cleanout "**, per each

Item 10.6 **"12" Inline Cleanout "**, per each

11.0 PAVEMENT REPAIR

11.1 DESCRIPTION

This work shall consist of repairing, resurfacing, or replacing private access roads utilized by the Contractor to gain access to the various parts of the project sites. Access roads needed for construction entry include driveways and any other access, whatsoever, deemed necessary by the Engineer, for construction activities or access. In addition, the Contractor shall repair or resurface any public road damaged by construction activities associated with this project.

11.2 MATERIALS

11.2.1 Repair, resurfacing, and/or replacement of access shall be completed with compatible materials as exist and as directed and approved by the Engineer.

11.2.2 Existing graveled areas, accesses, or roads shall be repaired, resurfaced, and/or replaced with 1 ½" crusher run stone commonly purchased from suppliers, calcareous, and shall meet the gradation and quality requirements in **Table 704.6.2A** for **Class 1 Aggregate** in **Section 704** of the **WVDOH Standard Specifications Roads and Bridges**, Adopted 2010**.** Aggregate shall have a maximum weighted loss of twelve percent when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – **ASTM C88** (Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate), as modified by the American Association of State Highway and Transportation Officials (**AASHTO**) **T-104.**

11.2.3 Separation fabric shall be placed on a prepared subgrade prior to placement of surfacing or resurfacing stone. Separation fabric shall be woven and meet the requirements of **Section 715.11.8** of the **WVDOH Standard Specifications Roads and Bridges**, Adopted 2010, such as Mirafi 600X or approved equal.

11.2.4 Concrete areas, accesses, or roads shall be repaired, resurfaced, and/or replaced with 4,000 psi Class "B" concrete placed and cured in accordance with the requirements of **Section 601** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010 and **Supplemental Specifications** Dated January 1, 2012. Cement used in the mixture shall be Type II sulfate resistant Portland cement meeting the requirements of ASTM C150 (Type II cement not Type I cement). **Reinforcing Bars.** Deformed bars shall be epoxy coated or 10 gauge steel wire mesh to be used for reinforcing concrete shall meet the requirements of **Section 709** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010 and **Supplemental Specifications** Dated January 1, 2012.

11.2.5 Asphalt areas, accesses, or roads shall be repaired, resurfaced, and/or replaced with a minimum of 5½ inches of Hot Mix Asphalt (HMA). Four inches (4") of

HMA Base 1 Coarse and one and one-half inches (1½") of Wearing 1 Coarse will be required. The HMA shall comply with **Specification Section 401** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. The HMA shall be placed in two inch (2") lifts, compacted, and placed to blend into existing asphalt grades surrounding the repair area.

11.3 METHOD OF CONSTRUCTION

11.3.1 The Contractor shall be required to repair/resurface/replace any access utilized to gain access to the various parts of the project areas. Repair/resurfacing/replacement of access shall be completed after all reclamation operations using the area or road are complete, but prior to demobilization operations. The Engineer shall be the sole judge if an access requires repair, resurfacing, or replacement**.**

11.3.2 Prior to repairing/resurfacing/replacing any access, the Contractor shall repair or replace the underlying subbase and subgrade to the satisfaction of the Engineer. Defective pavement and unstable surfacing materials shall be removed to a stable base. This may mean removal of some of the subbase material.

11.3.2.1 The repair/resurface/replace area shall be squared-up prior to introduction of gravel, asphalt, or concrete. The squared-up area shall encompass the entire repair area, extend to the ends of cracks or edge of uneven settled or sloping surrounding surfaces, and apparent associated weak, compromised areas as directed and determined by the Engineer. The square outer edge of the proposed repair area shall be marked on the existing road surface. Asphalt and concrete repair areas shall be saw-cut along the line marked. Gravel areas shall be excavated to the satisfaction of the Engineer. The resultant edges of the squared-up area should result in sound, near vertical walls.

11.3.2.2 Should the damaged area encroach upon the subgrade material located beneath the road surface subbase, the subgrade shall be prepared by removing objectionable material (including organic material, soft spots, etc.) to the satisfaction of the Engineer.

11.3.2.3 If in the opinion of the Engineer, the subgrade is unsuitable, the Contractor will be required to undercut the subgrade a minimum of 1.0 feet and place compacted suitable on-site fill material, as approved by the Engineer, in 6" lifts back to subbase elevations.

11.3.2.4 After successful repair and with the Engineer's approval of the subgrade, the Contractor shall place separation fabric, meeting the requirements of **Specification 11.2.3**, across the length and width of the repair area.

11.3.2.5 In the case of graveled areas, 6", minimum, of crushed stone, meeting the requirements of **Specification 11.2.2**, shall be placed and compacted in the repair/resurface/replace area to surrounding grade elevation to the satisfaction of the Engineer. Fill the pothole with crushed stone to within 3 inches of the top of the hole. Tamp the gravel down into the hole to the satisfaction of the Engineer. Fill the remaining pothole crushed stone, mound the crushed stone 3 inches above the surface of the driveway, and tamp it down. Rake over the pothole with a garden rake to blend the patch in with the rest of the driveway.

11.3.2.6 In the case of asphalt or concrete areas, 6", minimum, of crushed stone, meeting the requirements of **Specification 11.2.2**, shall be placed and compacted in the repair/resurface/replace area to surrounding subbase elevations to the satisfaction of the Engineer. Prior to crushed stone placement, separation fabric meeting the requirements of **Specification 11.2.3** shall be placed atop the subgrade.

11.3.3 Asphalt repair/resurface/replace areas shall be prepared in accordance with **Specification 11.3.2** prior to paving. Asphalt shall be placed, compacted, and cooled in accordance with **Section 401** of the **WVDOH Standard Specifications for Roads and Bridges**, Adopted 2010. The Engineer shall be the sole judge if existing asphalt areas can be repaired or if the entire area/driveway should be overlaid or replaced.

11.3.3.1 Asphalt repairs shall be conducted when weather conditions are favorable. Occasional light sprinkles should not be cause to shut down operations. However, a steady downpour, either light or heavy, should result in cessation of paving activities.

11.3.3.2 Four inches (4") of HMA Base 1 Coarse and one and one-half inches (1½") of Wearing 1 Coarse, meeting the requirements of **Specification 11.2.5** shall be placed and compacted in the repair/resurface/replace area to the satisfaction of the Engineer.

11.3.3.3 Apply a tack coat of asphalt to the vertical sides of the hole to assure a good bond and seal between old and new pavements. The tack rate should be 0.2 to 0.8 gallon per square yard of applied tack.

11.3.3.4 The HMA Base 1 Coarse shall be placed in two inch (2") lifts and compacted. The 1 ½" of Wearing Coarse 1 shall be placed atop the base coarse to blend into surrounding grade elevations to the satisfaction of the Engineer. Asphalt mixes must be placed and compacted before they cool to 185^{o} F. After the intermediate lifts of the patch have been compacted sufficiently, the surface lift can be

completed. Take special care to ensure that it is compacted to be even and flush with the surrounding surface, so it provides a good riding surface.

11.3.3.5 Small patch projects can be compacted with a vibrating plate compactor, while a roller works best on large patches. Compaction shall start as soon as the HMA can be compacted without displacement and continue until all compaction marks have disappeared.

11.3.3.5 Should the repair area stick-up from surrounding yard grades, the Contractor will be required to place shoulder stone, meeting the requirements of **Specification 11.2.2**, to the satisfaction of the Engineer to provide access onto and off of the placed asphalt repair/resurface/replacement area.

11.3.3.6 Potholes and loose, broken asphalt areas shall be repaired prior to complete asphalt overlay or replacement operations. The surface shall be clean and dry prior to overlay placement. A tack coat shall be applied prior to overlay placement. The overlay shall be compacted and the final surface smooth to the satisfaction of the Engineer.

11.3.3.7 Should the Engineer determine the asphalt area is too broken or cracked, he shall direct the Contractor to replace the entire road surface.

11.3.3.7.1 Prior to complete road surface replacement, broken and damaged asphalt and subbase materials shall be removed and disposed of in accordance with **Specification 4.2.11**.

11.3.3.7.2 The subgrade of the new asphalt area shall be prepared in accordance with **Specification 11.3.2**.

11.3.3.7.3 Asphalt shall be meet the requirements of **Specification 11.2.5** and placed as detailed on the plans or directed by the Engineer.

11.3.3.7.4 Should the repair area stick-up from surrounding yard grades, the Contractor will be required to place shoulder stone, meeting the requirements of **Specification 11.2.2**, to the satisfaction of the Engineer to provide access onto and off of the placed asphalt repair/resurface/replacement area.

11.3.4 Concrete repair/resurface/replace areas shall be prepared in accordance with **Specification 11.3.2** prior to placing concrete. The Engineer shall be the sole judge if existing concrete areas can be repaired or if the entire area/driveway should be replaced.

11.3.4.1 For concrete repairs, begin breaking the concrete in the center of the removal area and move outward towards the removal area outline. Be careful not to damage or chip the surrounding concrete surface during removal operations. Undercut the repair area so the base of the hole is bigger than the top of the hole.

11.3.4.2 If possible do not damage or remove encountered reinforcing steel or wire mesh, rather remove all adhered concrete and leave the reinforcement in-place for repair reinforcement. Otherwise, cut and place steel wire mesh for reinforcement of concrete where the total thickness exceeds 3". Place the steel wire mesh with 1" clearance from the bottom of the concrete being poured.

11.3.4.3 Paste the sides and bottom of the hole with a concrete bonding agent and allow it to dry until it is tacky prior to pouring concrete.

11.3.4.4 Place concrete into the pothole and trowel it into place, pressing firmly to pack the hole completely full. Concrete shall not be dropped from a height exceeding 36". Mound the surface of the patch slightly above the level of the surrounding concrete and then tamp it firmly down with the back of the shovel. If necessary, add more concrete and tamp again to pack the hole densely.

11.3.4.5 After the freshly-poured concrete has been brought to surrounding grades, it shall be floated with a wooden float to produce a surface free from irregularities. The final surface shall be obtained by troweling with a steel trowel or hand float and brushing lightly with a light weight brush in a transverse direction so as to produce a uniform gritty surface of the proper texture. All edges and joints shall be rounded to one-fourth inch (1/4").

11.3.4.6 Existing expansion joints removed during pothole replacement shall be reinstalled with compatible material as exists to the satisfaction of the Engineer.

11.3.4.7 Should the Engineer determine the concrete area is too broken or cracked, he shall direct the Contractor to replace the entire road surface.

11.3.4.7.1 Prior to complete road surface replacement, broken and damaged concrete and subbase materials shall be removed and disposed of in accordance with **Specification 4.2.11.**

11.3.4.7.2 The subgrade of the new concrete area shall be prepared in accordance with **Specification 11.3.2.**

11.3.4.7.3 All poured in place concrete be placed, formed, finished, and cured in accordance with **Section 601** of the **WVDOH <u>Standard Specifications for Roads and Bridges</u>**, Adopted 2010. Concrete shall be allowed to cure for a minimum of seven (7) days or until 70% of the specified strength for the concrete has been attained. 10 gauge steel wire mesh shall be placed with 1" clearance from the bottom of the concrete being poured.

11.3.4.7.4 Should the repair area stick-up from surrounding yard grades, the Contractor will be required to place shoulder stone, meeting the requirements of **Specification 11.2.2**, to the satisfaction of the Engineer to provide access onto and off of the placed asphalt repair/resurface/replacement area.

11.4 <u>METHOD OF MEASUREMENT</u>

11.4.1 The Method of Measurement for repairing/resurfacing/replacing existing gravel areas shall be per ton by certified and Engineer approved truck weights for **Item 11.1 "Road Repair Crushed Stone"**. The unit price bid shall include the cost of subgrade preparation including compaction, undercutting and filling (if required), separation fabric, purchase and placement of 1 ½" crusher run stone, shoulder stone (if required), and other incidentals necessary to repair/resurface/replace existing graveled areas as directed by the Engineer and shown on the plans and herein specified.

11.4.2 The Method of Measurement for repairing/resurfacing/replacing existing asphalt areas shall be per ton by certified and Engineer approved truck weights for **Item 11.2 "Road Repair Asphalt"**. The unit price bid shall include the cost of subgrade preparation including compaction, undercutting and filling (if required), subbase preparation including compaction, undercutting and filling (if required), separation fabric, purchase and placement of 1 ½" crusher run stone, placement, compaction, and purchase of asphalt, shoulder stone (if required), and other incidentals necessary to repair/resurface/replace existing asphalt areas as directed by the Engineer and shown on the plans and herein specified.

11.4.3 The Method of Measurement for repairing/resurfacing/replacing existing concrete areas shall be per cubic yard by certified and Engineer approved truck tickets **for Item 11.3 "Road Repair Concrete"**. The unit price bid shall include the cost of subgrade preparation including compaction, undercutting and filling (if required), subbase preparation including compaction, undercutting and filling (if required), separation fabric, purchase and placement of 1 ½" crusher run stone, placement, compaction, and purchase of concrete and reinforcing, shoulder stone (if required), and other incidentals necessary to repair/resurface/replace existing

concrete areas as directed by the Engineer and shown on the plans and herein specified.

11.5 BASIS OF PAYMENT

Payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner, including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work as specified and shown on the plans.

11.6 PAY ITEMS

Item 11.1 **"Road Repair Crushed Stone"**, per ton

Item 11.2 **"Road Repair Asphalt"**, per ton

Item 11.3 **"Road Repair Concrete"**, per cubic yard

12.0 HORIZONTAL BORING

12.1 DESCRIPTION

12.1.1 The work includes all labor, machinery, construction equipment and appliances required to perform in a good workmanlike manner all boring of steel pipe casings and installation of carrier pipes therein. All bores will be accomplished by dry mechanical bore unless otherwise pre-approved by the Engineer**.** The overall work scope shall include, but not be limited to, boring pits and equipment, sheeting, steel casing pipe, skid, steel straps, installation of the carrier pipe within the casings, miscellaneous appurtenances to complete the entire work as shown on the plans.

12.2 MATERIALS

12.2.1 60" diameter steel pipe with a minimum wall thickness of 0.625" and meeting the requirement of ASTM A252, Grade 3 with a minimum yield strength of 45,000 psi.

12.2.2 16" diameter steel pipe with a wall thickness of 0.375" and meeting the requirement of ASTM A252, Grade 3 with a minimum yield strength of 45,000 psi.

12.2.3 Bracing and shoring material to provide stable slopes as recommended in the OSHA Publication "Excavating and Trenching Operations", OSHA 2226 and approved by the Engineer. Provide all structures, safety equipment, and professional services required to provide for the health and safety of the general public and of personnel involved in pipe boring.

12.2.4 Grout conforming to **Specification 7.2.2**

12.2.5 Augering fluids shall use a mixture of bentonite clay, or other approved stabilizing agent, mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and stabilization, as necessary. Vary the fluid viscosity to best fit the soil conditions encountered. Do not use other chemicals or polymer surfactant in the drilling fluid without written consent of the Engineer. Certify in writing to the Engineer that any chemicals to be added are environmentally safe and not harmful or corrosive to the facility. Identify the source of water for mixing the drilling fluid.

12.3 EQUIPMENT

12.3.1 Contractor shall utilize equipment and methods designed to install pipe and/or casing as shown on the plans. Operation of equipment shall be performed by qualified personnel, experienced in this type of work. Selected equipment shall be capable of accurate alignment and grade control and shall protect against

subsidence or other disturbance of ground, existing utilities, existing road surface, and existing structures.

12.3.2 Suitable grout pump, pipes or tubes for grouting the annular space between the casing pipe and the bore wall.

12.3.3 Welding equipment to field weld the casing pipes with complete penetration (butt welded), single-bevel groove type joints in accordance with the requirements of ANSI/AWWA C206.

12.3.4 Survey equipment and personnel to set-up the boring machine and means to control the line and grade to follow plan lines and grades. In addition, the Contractor shall perform a pre-construction survey of the road ditch and road and reference the survey to project control points. The location of surveyed points shall be marked and road movement monitored daily during boring and jacking operations. Operations shall cease if the road surface movement is greater than ¼".

12.4 CONSTRUCTION METHODS

12.4.1 Three (3) boring and jacking operations will be conducted on this project. Two (2) boring and jacking operations shall be constructed from one pit. Boring and jacking operations shall in no way interfere with traffic movement or stream flows.

12.4.1.1 The Contractor shall excavate the mine opening to install and construct Mine Seal Number Seven located on the east side of West Virginia Route 131 and Shinns Run. A receiving bore and jack pit shall be constructed on the east side of West Virginia Route 131 during excavation operations for installation of this seal. Movement of traffic and traffic control will be required throughout this installation and boring and jacking operations in accordance with **Specification Section 13**.

12.4.1.2 The Contractor shall excavate an accompanying bore and jack pit to be located west of Shinns Run and along the horizontal and vertical alignment of mine seal conveyance pipes originating from Mine Seal Number Seven as shown on the plans. Two (2) 12" diameter SDR35 PVC conveyance pipes originating from the installation of Mine Seal Number Seven shall be inserted through 16" steel pipes bored and jacked beneath West Virginia Route 131.

12.4.1.3 Two (2) 16" diameter steel pipes, meeting the requirements of **Specification 12.2**, shall be bored and jacked beneath West Virginia Route 131 from across Shinns Run. The bored and jacked 16" steel casing pipe shall be suspended on supports to span Shinns Run so all

cuttings end up in the bore and jack pit and not in Shinns Run. The 16" steel casing pipe shall be supported in the bore and jack pit on the west side of Shinns Run and supported at a location developed by the Contractor on the east side of Shinns Run, but west of West Virginia Route 131. The supports shall be set to lines and grades to provide positive drainage from Mine Seal Number Seven.

12.4.1.4 **U**pon completion of the boring and jacking operations, the 16" steel casing pipes shall be cut-off on the east side of Shinns Run at a location approved by the Engineer. The two (2) 12" diameter SDR35 PVC pipes shall be inserted through the bored and jacked pipes; connected to the mine seal conveyance pipes originating from Mine Seal Seven installation; and provide a 1.0 foot, minimum, outfall above Shinns Run or at an elevation approved by the Engineer.

12.4.1.5 The third boring and jacking operation shall carry the 48" diameter HDPE Culvert Number One beneath West Virginia Route 131. A bore and jack pit and receiving pit shall be excavated and constructed along with excavation operations required for the installation of Culvert Number One.

12.4.1.6 Cuttings from boring and jacking operations shall be disposed of onsite beneath 1.0 foot of soil cover in locations approved by the Engineer.

12.4.1.7 Bore and jack pits shall be backfilled in 1.0 foot (1') compacted lifts with temporary stockpiled material that was removed to construct the pit to approximate original contours as shown on the plans.

12.4.2 The Contractor shall provide all structures, safety equipment, and professional services required to provide for the health and safety of the general public and of personnel involved in pipe boring and jacking work. The Contractor shall place fencing, lights, signs, as necessary to protect surrounding public and private property, adjacent buildings, roads, drives, sidewalks, drains, sewers, utilities, trees, structures, and appurtenances from damage due to pipe boring and jacking work. The Contractor shall inspect pit excavations daily to ensure any structural support system installed has not been compromised. Responsibility and payment for correction of such damage and any incidental damage caused thereby shall be borne by the Contractor and at no cost to the WVDEP. The Contractor shall construct a safety barrier fence around all bore and jack pits and receiving pits five feet (5') or greater in depth. It shall be the responsibility of the Contractor to design the shoring or other means of supporting the trench and excavation sides to prevent failure. Excavation stability and safety, as with all other safety aspects of this project, are the Contractor's responsibility, with the WVDEP accepting no responsibility or liability for damages or injuries whatsoever arising from work described herein.

12.4.3 The Contractor shall develop and supply a Boring and Jacking Plan to the Engineer for approval prior to implementing any boring and jacking or incidental operations. The plan shall include:

12.4.3.1 Map or sketch showing the location of the bore pit and receiving pit.

12.4.3.2 An indication of where the leading edge of the casing is to be located with respect to the line and grade, and the intervals for checking line and grade during installation. Maintain a record of progress at the job site.

12.4.3.3 Equipment of adequate size and capability to install the product, and include the equipment manufacturer's information for all power equipment used in the installation.

12.4.3.4 The means for controlling line and grade.

12.4.3.5 The means for centering the cutting head inside the borehole.

12.4.3.6 Provide a means for preventing voids by assuring the rear of the cutting head shall not advance in front of the leading edge of the casing by more than 1/3 times the casing diameter. In unstable conditions, such as granular soil, loose or flowable materials, the cutting head is retracted into the casing a distance that permits a balance between pushing pressure, pipe advancement and soil conditions.

12.4.3.7 Adequate casing lubrication with a bentonite slurry, or other approved technique.

12.4.3.8 An adequate band around the leading edge of the casing to provide extra strength in loose unstable materials when the cutting head has been retracted into the casing to reduce skin friction as well as provide a method for the slurry lubricant to coat the outside of the casing.

12.4.3.9 A plan to bore and jack the two (2) wet mine conveyance pipes beneath West Virginia Route 131 from across Shinns Run. The plan shall detail how the Contractor will support the boring casing on each side of the creek, project the correct line and grade across Shinns Run, and ensure cuttings do not enter Shinns Run.

12.4.3.10 The Contractors plan shall contain provisions to grout the annulus between the casing and the inserted pipe for approximately 24" upstream and downstream from the ends of the bored and jacked casing.

12.4.4 The Contractor will be required to correctly locate all existing utilities prior to beginning boring and jacking operations.

12.4.5 The hole is to be bored mechanically, using pilot hole. An approximate 2-inch hole shall be bored the entire length of the crossing and shall be checked for line and grade in the receiving pit. This pilot hole shall serve as the centerline of the larger diameter hole to be bored. The length of bore may be extended for the convenience of the Contractor and at no cost to the WVDEP.

12.4.6 Once the jacking procedure has begun, it should be continued without stopping until the leading edge of the casing has reached the receiving pit. Any pipe that cannot be repaired to its original condition to the satisfaction of the Engineer, shall be removed and replaced.

12.4.7 The use of water or other fluids in connection with the boring operation will be permitted only to the extent to lubricate cuttings, jetting will not be permitted. In unconsolidated soil formations, a gel-forming colloidal drilling fluid consisting of at least 10 percent of high-grade carefully processed bentonite may be used to consolidate cuttings of the bit, seal the walls of the hole, and furnish lubrication for subsequent removal of cuttings and installation of the pipe immediately thereafter.

12.4.8 Bored installations shall have a bored hole diameter essentially the same as the outside diameter of the casing pipe to be installed. Lengths of casing pipe shall be as long as practical for site conditions. Joints between sections shall be completely welded in accordance with AWS recommended procedures. Prior to welding joints, the Contractor shall ensure that both ends of the casing sections being welded are square.

12.4.9 The boring and jacking operations shall be done simultaneously with correct line and grade carefully maintained for the casing. Holes for casing shall be bored with an auger mounted inside the pipe with the auger extending a short distance beyond the lead end of the pipe to preclude caving.

12.4.10 Excavation shall be performed entirely within the jacking head and no excavation in advance thereof shall be permitted. Every effort shall be made to avoid any loss of earth outside the jacking head.

12.4.11 If after completion of the casing pipe, there is more than one inch (1") clearance between the outside of the casing pipe barrel and the wall of the bore, grouting of these voids will be required. If during construction of the bore, a cave-in occurs within the bore, grouting of the voids between the conduit and the walls of the bore will be required throughout the length of the bore. Contractor may choose to furnish casing pipe with 2-inch diameter threaded grout holes or nipples at centerline and crown for pressure grouting. If after completion of the tunnel there

are sags in invert of the liner that exceed 0.2 feet of a straight line projected through the tunnel, grout the invert to eliminate the sags.

12.4.12 Carrier pipe may be pushed or pulled through the completed casing pipe. HDPE pipe shall be butt-welded and fused joints to prevent separation while pulling or pushing. The pressure of sliding carrier pipe into the casing shall not be applied directly to carrier pipe. A plank, timber, or other material acceptable to the Engineer shall be placed over the pipe end, during pushing, to protect it from damage. The movement of the pipe string and the pulling load on the polyethylene pipe shall be monitored and a weak link device shall be used to ensure that the pipe is not damaged during installation. The Contractor shall allow a 24-hour relaxation period for pipe installed by directional drilling before fusing additional pipe to the pulled in pipe.

12.4.13 Should misalignment occur during boring jacking operations, the Contractor shall be responsible for abandoning the hole, backfilling and sealing the misaligned hole with grout, and drilling a new hole at the desired alignment and grade. No payment shall be made for misaligned holes.

12.5 METHOD OF MEASUREMENT

12.5.1 There is no method of measurement for excavating and backfilling bore pits or receiving pits as all costs associate with these tasks shall be included in and considered incidental to the mine seal or carrier pipe the boring conveys. The incidental cost shall include excavation of any and all nature; backfilling the pits to the lines and grades shown on the plans or to approximated original contours; fill compaction; all equipment and labor necessary; and any other incidentals necessary for excavation or filling as shown on the plans and detailed in these specifications.

12.5.2 There is no method of measurement for shoring or bracing jack and bore pits or receiving pits; for installing safety devices; for protecting the public from harm; or for surveying or otherwise ensuring lines and grades have been attained and existing structures or facilities have not been damaged as all costs associated with this task shall be included in and considered incidental to all other costs associated with this project.

12.5.3 The method of measurement for surveying and maintain the lines and grades for boring and jacking operations shall be per lump sum for the price bid for **Item 2.0, "Construction Layout Stakes".**

12.5.4 The method of measurement for boring pilot holes shall be at the unit price bid per linear foot for **Item 12.1 "Pilot Holes**. The unit price bid shall include the cost of furnishing all labor, materials, tools and equipment required for installing the holes, removing all cuttings and maintaining the holes open and clean until replaced with bored and jacked casing pipe.

12.5.2 The method of measurement for boring and jacking 16" diameter steel pipes shall be per linear foot at the unit price bid for **Item 12.2 "16" Ø Steel Pipe Boring and Jacking"**. The unit price bid shall be full compensation for furnishing and boring and jacking 16" diameter steel pipes; cribbing for supporting and guiding the 16" bored pipes; cutting off casing pipes; disposing of cuttings; grout, bentonite mixture/slurry, all materials, labor, tools, equipment, and other incidentals necessary to complete the work as shown on the plans and herein specified. Inserted 12" SDR35 PVC pipe costs shall be included in and considered incidental to **Item 9.2, "Mine Seal Conveyance Pipe"**.

12.5.3 The method of measurement for boring and jacking the 60" diameter steel pipe shall be per linear foot at the unit price bid for **Item 12.3 "60" Ø Steel Pipe Boring and Jacking"**. The unit price bid shall be full compensation for furnishing and boring and jacking the 60" diameter steel pipe; cribbing for supporting and guiding the 60" bored pipe; disposing of cuttings; grout, bentonite mixture/slurry; all materials, labor, tools, equipment, and other incidentals necessary to complete the work as shown on the plans and herein specified. The inserted 48" HDPE pipe costs shall be included in and considered incidental to **Item 7.7, "48" Ø HDPE Culvert Number One"**.

12.6 BASIS OF PAYMENT

The work performed and materials furnished as specified herein, measured as provided above, shall be paid for at the contract unit price bid per linear foot of jacking, boring or drilling, which price shall be full compensation for furnishing all materials (except carrier pipes), labor, materials, tools, equipment, supplies and incidentals necessary to complete the work as specified and shown on the plans, including excavation, grouting, backfilling, restoration to original ground conditions, and disposal of surplus materials.

12.7 PAY ITEMS

Item 12.1, "Pilot Holes", per linear foot

Item 12.2, "16" Ø Steel Pipe Bored and Jacked", per linear foot

Item 12.3, "60" Ø Steel Pipe Bored and Jacked", per linear foot

13.0 TRAFFIC CONTROL

13.1 DESCRIPTION

This work shall consist of all necessary measures to maintain traffic, to protect traffic, and to move traffic through, around, or adjacent to construction operations; to protect the work in progress; and to protect adjacent property from excess dust resulting from the construction operations in accordance with these specifications or as directed by WVDEP.

13.2 MATERIALS

13.2.1 All material used for traffic control shall be in accordance with the current WV Division of Highways Manual **"Manual on Temporary Traffic Control for Streets and Highways"**, 2006 edition. And the **"Manual on Rules and Regulations for Constructing Driveways on State Road Rights-of-Way"**, May, 2004.

13.2.2 Signs with Type "B" lights and signals associated with Case "A3" and "D5B" as detailed in the **"Manual on Temporary Traffic Control for Streets and Highways"**, 2006 edition.

13.2.3 Portable Traffic Signals or flagmen with communication devices; temporary pavement marking tape; Type III Barricades; Drums; and signs as shown and dimensioned on the plans.

13.3 CONSTRUCTION METHODS

13.3.1 The WVDEP has submitted and obtained conditional approval for an MM109 permit to control and protect traffic through, around, and adjacent to the work areas. The conditional plan is based upon **Case D5B** as detailed in the West Virginia **"Manual on Traffic Control for Streets and Highways, 2006 Edition** and as shown on the plans. The Contractor will be required to post any bonds required by the WVDOH to obtain final approval of the proposed traffic control plan. The Traffic Control Plans shall be implemented during the installation of Mine Seal Number Seven; Ditch Numbers Three, Four, and Five; and the 16" Ø Steel Pipe Bore and Jack operation. All traffic control devises shall meet the requirements found in West Virginia **"Manual on Traffic Control for Streets and Highways, 2006 Edition.**

13.3.2 Signs, signals, and other traffic control devices shall be properly maintained for cleanliness, visibility, and correct positioning all to the satisfaction of the Engineer. Signs or devices that have lost legibility shall be removed and replaced as directed by the Engineer and at no cost to the State.

13.3.3 The Contractor will be required to provide flagmen while accessing driveways and other construction access points along West Virginia Route 131 as shown on the plans.

13.3.3.1 The Contractor shall supply a flagman in each direction from the construction access point along West Virginia Route 131. Flagmen shall wear high visibility clothing, stop/slow hand signaling devices, and in sight of each other or in constant communication with each other. The flagmen shall be spaced 500 feet in each direction from the construction access point toward and facing oncoming traffic.

13.3.3.2 In addition, a "Flagger Ahead" sign shall be positioned 500 feet beyond the flagger and facing oncoming traffic. The "Flagger Ahead" sign shall comply with **Specification 13.2.1**.

13.3.4 Case D5B as detailed in the West Virginia **"Manual on Traffic Control for Streets and Highways, 2006 Edition** provides guidance for two (2) differing scenarios.

13.3.4.1 Portable traffic signals may be used or flagmen with high visibility clothing and stop/slow hand signaling devices may be used if they are in sight of each other or in constant communication. It is at the discretion of the Contractor which method is employed. However, 24 hour, 7 days a week traffic control may be required.

13.3.4.1.1 The preferred method of controlling traffic is with portable signals as shown in **Case D5B** and on the plans. All installed signs shall have Type "B" lights mounted on top.

13.3.4.1.2 The Contractor shall be responsible for the maintenance of the traffic signal system in place for this project. The responsibility shall begin with the initialization of the work and continue until Wet Mine Seal Seven; Ditch Numbers Three, Four, and Five; and the 16" Ø Steel Pipe is Bored and Jacked beneath West Virginia Route 131 and connected to the Mine Seal Conveyance Pipe from Mine Seal Seven are constructed and all are approved by the Engineer. Maintenance shall be include but not be limited to the repair of acts of vandalism, as well as normal wear and burn out. Items to be maintained and/or repaired shall include controllers, cabinets, detectors, signal heads, support posts and any other equipment or miscellaneous items in place for this signal installation.

13.3.4.1.3 Signal timing information will be furnished by the Division of Highways and may not be changed or modified without the approval of the Division of Highways.

13.3.4.1.4 If due to equipment failures or other reasons the signal must be put on flash or shut down. The contractor is required to furnish or compensate the flaggers or law enforcement officers required to control traffic. If traffic control is borne by contractor personnel and is in line with their normal working duties no additional compensation may be required. In no case shall the signal system be down for more than 24 hours unless approved by the engineer or otherwise stated in the plans.

13.3.5 All installations of portable traffic signals shall comply with **Case D5B** and with the following minimum specifications.

13.3.5.1 Standard controller demand with tbc (time based coordination) and conflict monitor.

13.3.5.2 Must be hardware from controller to signal heads. (radio or wireless are not acceptable).

13.3.5.3 No manual control over length of amber time.

13.3.5.4 Standard 12' signal heads and lamps.

13.3.5.5 Minimum horizontal signal face separation of 8 feet.

13.3.5.6 One signal head mounted a minimum of 15 feet over approach roadway and the other a minimum of 8 feet above the roadway.

13.3.5.7 Power supply shall be by power company service or generator.

13.3.5.8 Generator power supply shall have a battery backup if generator should fail.

13.3.5.9 The general guidelines are that the high/low signal should be placed on the same side of the road that the driver must stop. This may require the trailer with signals to be placed behind the guardrail or some method to place the trailer off the roadway.

13.3.6 Traffic control will likely shut-down the northbound lane of West Virginia Route 131. A small slip and steep drop-off exists along the southbound lane of West Virginia Route 131 near the installation of West Mine Seven. Therefore, the Contractor should mark the outside edge of southbound Route 131 with traffic

cones to alert drivers and shall allow sufficient room for vehicular traffic to pass to the satisfaction of the Engineer.

13.3.7 All signs shall be post mounted if the closure time exceeds three days. The bottom of post mounted signs shall be installed six feet (6') above the edge of pavement.

13.3.8 Minimum advance sight distance on all signals shall be as specified in Section 40.15 of West Virginia **"Manual on Traffic Control for Streets and Highways, 2006 Edition**, exact location of all signal heads and other traffic control measures shall be as shown on the plans or as directed by the engineer.

13.3.9 Flashing warning lights and/or flags shall be used to call attention to the warning signs.

13.3.10 It is anticipated traffic control while working around Mine Seal Seven will take several days. Portable traffic signals will allow traffic control during daytime and nighttime operations. If flaggers are used, the contractor will be required to close all pits, trenches, etc. and provide for two-way traffic during nighttime hours. The next work day, the Contractor will be required to re-implement the traffic control plan prior to continuing work.

13.3.11 The Contractor will also be required to repair any road damage caused by working in the right-of-way and/or on the road surface of West Virginia Route 131 to the satisfaction of the Engineer and the WVDOH. Repair work shall comply with **Specification 11.0**. The Engineer shall be the sole judge if repair is required and the type of repair required.

13.4 METHOD OF MEASUREMENT

The method of measurement for Traffic Control shall be per lump sum for **Item 13.0 "Traffic Control"**. The lump sum price shall include all labor and materials, including: necessary flagpersons, signs, posts for sign mounting, Type "B" lights, signals with power supply, flashing warning lights, flags, wireless communication devices, Type III Barricades, barrels, traffic cones, setting up and removing all traffic control constructions, placing and removing temporary pavement markers, closing all open pits for nighttime two-way traffic (if required), securing, maintenance of traffic control structures during construction, placing a bond (if required by the WVDOH), repairing Contractor caused damage to the road surface or right-of-way of West Virginia Route 131, and any other incidentals required for movement of traffic as shown on the plans, herein specified, or dictated by the WVDOH.

13.5 BASIS OF PAYMENT

The work performed and materials furnished as specified herein, measured as provided above, shall be paid for at the contract lump sum price bid for Traffic Control, which price shall be full

compensation for furnishing all labor, materials, tools, equipment, supplies and incidentals necessary to control and move traffic as specified and shown on the plans.

13.6 PAY ITEMS

Item 13.0, "Traffic Control", per lump sum

BORE LOGS

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinns Run Portals**
Harrison County, West Virginia

Project Number: **W13111**

BORING NO.
B-1

Location: Offset:
Surface El.: ---

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Depth, feet	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Silt and Clay %
0	Brown **SANDY CLAY** with rock fragments				
5	- some gray clay (6.0 - 8.0 ft.)				
10	- auger refusal on sandstone @ 10.8 ft. 10.8				
	Gray **SANDSTONE**	100	59		
15		96	86		
20	- lost drilling water return @ 22.5 ft. 22.5	92	84		
	VOID 25.4	52	32		
25	Gray **SANDSTONE** 28.3				
30	**VOID**				

PL(%) NM(%) LL(%)
SPT bpf
10 20 30 40

Completion Depth:	**38.0 ft.**
Date Boring Started:	**6/19/13**
Date Boring Completed:	**6/19/13**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks:

Depth to Water @ 24 hrs.: ---

BASIC NGE LOG W13111 LOGS.GPJ NGELOG.GDT 6/21/13

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinns Run Portals**
Harrison County, West Virginia

Project Number: **W13111**

BORING NO.
B-1

Location: Offset:
Surface El.: ---

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Silt and Clay %
			VOID	5	0		
35				68	16		
			37.0 Gray **CLAYSTONE** 38.0				
			Bottom of Test Boring @ 38.0 ft.				
40			Piezometer set @ 38.0 ft. w/10 ft. screen				
45							
50							
55							
60							

PL(%) NM(%) LL(%)
SPT bpf
10 20 30 40

Completion Depth:	**38.0 ft.**
Date Boring Started:	**6/19/13**
Date Boring Completed:	**6/19/13**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks:

Depth to Water @ 24 hrs.: ---

BASIC NGE LOG W13111 LOGS.GPJ NGELOG.GDT 6/21/13

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinns Run Portals**
Harrison County, West Virginia

Project Number: **W13111**

BORING NO.
B-2

Location: Offset:
Surface El.: ---

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Silt and Clay %
0			Brown **SILTY CLAY** with rock fragments				
10			- gray @ 11.0 ft.				
12.5			Gray **SANDSTONE**				
15			- auger refusal @ 15.0 ft.	93	83		
20				100	88		
25				100	100		
30							

PL(%) NM(%) LL(%)
SPT bpf
10 20 30 40

Completion Depth:	**48.0 ft.**
Date Boring Started:	**6/19/13**
Date Boring Completed:	**6/19/13**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks:

Depth to Water @ 24 hrs.: ---

BASIC NGE LOG W13111 LOGS.GPJ NGELOG.GDT 6/21/13

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinns Run Portals**
Harrison County, West Virginia

Project Number: **W13111**

BORING NO.
B-2

Location: Offset:
Surface El.: ---

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	Silt and Clay %
35			Gray **SANDSTONE**	100	86		
				100	82		
			38.0				
40			**COAL**	100	0		
			- lost drilling water return @ 43.0 ft.				
45				100	10		
			47.2				
			Gray **CLAYSTONE**				
			48.0				
			Bottom of Test Boring @ 48.0 ft.				
50			Piezometer set @ 48.0 ft. w/10 ft. screen				
55							
60							

PL(%) NM(%) LL(%)
SPT bpf
10 20 30 40

Completion Depth:	**48.0 ft.**
Date Boring Started:	**6/19/13**
Date Boring Completed:	**6/19/13**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks:

Depth to Water @ 24 hrs.: ---

BASIC NGE LOG W13111 LOGS.GPJ NGELOG.GDT 6/21/13

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.
B- 3

Location: Offset:

Surface El.: **923.8 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
920	5			Brown **SILTY CLAY** with rock fragments and limestone gravel, dry to moist									
915	10												
910	15			- FILL -									
905	20			- w/coal refuse from 20.0 ft.									
900	25			26.0									
				Bottom of Test Boring @ 26.0 ft.									
895	30												
890	35												

Completion Depth:	**26.0 ft.**
Date Boring Started:	**1/26/15**
Date Boring Completed:	**1/26/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Boring was noted to be dry during drilling operations and at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.
B- 4

Location: Offset:

Surface El.: **924.1 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
920	5			Brown **SILTY CLAY** with rock fragments and coal refuse, moist									
915	10			- gray, w/creek gravel (8.0 - 10.0 ft.) - silty to sandy from 10.0 ft.									
910	15			- FILL - - w/coal refuse and sandstone fragments (19.0 - 20.0 ft.)									
905	20			- hard to auger from 22.0 ft.									
				23.0									
900	25			Bottom of Test Boring @ 23.0 ft									
895	30												
890	35												

Completion Depth:	**23.0 ft.**
Date Boring Started:	**1/26/15**
Date Boring Completed:	**1/26/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Boring was noted to be dry during drilling operations and at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.
B- 5

Location: Offset:

Surface El.: **923.9 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
				LIMESTONE AGGREGATE 3.0									
920	5			Brown **SILTY to SANDY CLAY** with rock fragments and coal refuse									
915	10			- brown and gray, sandy, w/sandstone fragmetns (8.0 - 10.0 ft.) - reddish brown, w/creek gravel (10.0 - 15.0 ft.) - FILL -									
910	15			- brown and gray (15.0 - 18.0 ft.) 18.0									
905	20			Bottom of Test Boring @ 18.0 ft.									
900	25												
895	30												
890	35												

Completion Depth:	**18.0 ft.**
Date Boring Started:	**1/26/15**
Date Boring Completed:	**1/26/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Boring was noted to be dry during drilling operations and at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.
B- 6

Location: Offset:

Surface El.: **924.6 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
920	5			Brown **SILTY to SANDY CLAY** with rock fragments and coal refuse									
915	10			- mostly refuse (10.0 - 15.0 ft.)									
910	15			- gray and brown from 17.8 ft.									
905	20			20.0									
				Bottom of Test Boring @ 20.0 ft.									
900	25												
895	30												
890	35												

Completion Depth:	**20.0 ft.**
Date Boring Started:	**1/26/15**
Date Boring Completed:	**1/26/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Boring was noted to be dry during drilling operations and at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.

B- 7

Location: Offset:

Surface El.: **926.6 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
925	0			Brown **SILTY to SANDY CLAY** with rock fragments and coal refuse									
920	5			- brown and gray from 8.0 ft.									
915	10			- FILL -									
910	15												
905	20			20.0 Bottom of Test Boring @ 20.0 ft.									
900	25												
895	30												
	35												

Completion Depth:	**20.0 ft.**
Date Boring Started:	**1/26/15**
Date Boring Completed:	**1/26/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Boring was noted to be dry during drilling operations and at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.
B- 8

Location: Offset:

Surface El.: **929.9 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
925	5			Brown **SILTY to SANDY CLAY** with rock and coal fragments									
				- hard augering, w/boulders (1.0 - 5.0 ft.)									
920	10			- hard augering, w/boulders (13.0 - 16.0 ft.)									
915	15			- FILL -									
910	20			- w/coal refuse (20.5 - 23.0 ft.)									
				- hard to auger from 23.0 ft., gray sandy clay w/sandstone fragments									
905	25			25.0									
				Bottom of Test Boring @ 25.0 ft.									
900	30												
895	35												

Completion Depth:	**25.0 ft.**
Date Boring Started:	**1/26/15**
Date Boring Completed:	**1/26/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Boring was noted to be dry during drilling operations and at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.
B- 9

Location: Offset:

Surface El.: **932.1 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
930	0			Brown **SANDY CLAY** with rock and coal fragments									
				- hard augering, boulder (3.0 - 4.0 ft.)									
	5												
925													
	10												
920				- hard augering (13.0 - 14.8 ft.)									
	15			- FILL -									
915													
	20												
910				- very soft augering, blackish-brown silty clay w/diesel odor (22.5 - 26.0 ft.)									
	25												
905				- gray, w/sandstone fragments from 28.0 ft.									
	30			30.0									
900				Bottom of Test Boring @ 30.0 ft.									
	35												

Completion Depth:	**30.0 ft.**
Date Boring Started:	**1/26/15**
Date Boring Completed:	**1/26/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Boring was noted to be dry during drilling operations and at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.
B-10

Location: Offset:

Surface El.: **933.6 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
930	5			Brown to blackish brown **SANDY CLAY** with rock and coal fragments									
925	10			- hard augering (12.5 - 13.5 ft.) - very soft augering (13.5 - 24.0 ft.)									
920	15			- FILL - - w/coal refusel (17.0 - 20.0 ft.)									
915	20												
910	25			- gray, w/sandstone fragments from 25.0 ft.									
				28.0									
905	30			Bottom of Test Boring @ 28.0 ft. Piezometer installed w/10 ft. screen									
900	35												

Completion Depth:	**28.0 ft.**
Date Boring Started:	**1/27/15**
Date Boring Completed:	**1/27/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Boring was noted to be dry during drilling operations and at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

NGE Environmental & Geotechnical Engineering Solutions

Project Name: **Shinn's Run Portals II**
Harrison County, West Virginia

Project Number: **W15015**

BORING NO.
B-12

Location: Offset:

Surface El.: **922.5 ft.**

Split Spoon | Shelby Tube | Rock Core | Bag Sample

Elevation	Depth, feet	Sample Type	Symbol / USCS	MATERIAL DESCRIPTION	Recovery %	RQD	Penetration Blows / 6 inches	HCSI	Moisture %	Silt and Clay %	Sand %	Liquid Limit	Plasticity Index
920	0			Brown **SANDY CLAY** with rock and coal fragments									
	5			- hard to auger (5.5 - 6.0 ft.) and (9.0 - 10.5 ft.)									
915													
	10			- w/numerous sandstone fragments (10.0 - 15.0 ft.)									
910				- wet @ 12.5 ft.									
	15												
905													
	20			- hard to auger from 17.5 ft. 20.0									
				Bottom of Test Boring @ 20.0 ft.									
900													
	25												
895													
	30												
890													
	35												

Completion Depth:	**20.0 ft.**
Date Boring Started:	**1/27/15**
Date Boring Completed:	**1/27/15**
Engineer/Geologist:	**CEM**
Driller:	**NGE**

Remarks: **Water was noted at a depth of 12.5 ft. during drilling operations and 11.0 ft at boring completion.**

Depth to Water @ 24 hrs.: **---**

WVDOT LOG W15015 BORING LOGS.GPJ NGELOG.GDT 2/23/15

Novel Geo-Environmental

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

SHINNS RUN PORTALS (Page 1 of 2)

Requisition #: _____ DEP _____

Contractor' Bid Sheet

Company Name: _____

Address: _____

_____

The DEP reserves the right to request additional information and supporting documentation regarding Unit Prices, when the Unit Price appears to be unreasonable.

ITEM NO.	QUANTITY		DESCRIPTION	UNIT PRICE	AMOUNT
1.0	Lump Sum		Mobilization and Demobilization (Cannot be more than 5% of TOTAL AMOUNT BID)	$	$
2.0	Lump Sum		Construction Layout Stakes (Cannot be more than 5% of TOTAL AMOUNT BID)	$	$
3.0	Lump Sum		Quality Control (Cannot be more than 2% of TOTAL AMOUNT BID)	$	$
4.1	Lump Sum		Site Preparation (Cannot be more than 7% of TOTAL AMOUNT BID)	$	$
4.2	2,100	L.Ft.	Temporary Access Road	$	$
4.3	Lump Sum		Temporary Stream Crossings	$	$
4.4	Lump Sum		Line Protection Pads	$	$
5.1	2,500	L.Ft.	Silt Fence	$	$
5.2	1,800	L.Ft.	Straw Wattles	$	$
6.0	7	Acs.	Revegetation (Per Plan View Acre)	$	$
7.1	15	L.Ft.	1.0 Ft. Deep "Vee" Shaped Grouted Riprap Ditch	$	$
7.2	20	L.Ft.	1.5 Ft. Deep "Vee" Shaped Grouted Riprap Ditch	$	$
7.3	90	L.Ft.	2.0 Ft. Deep "Vee" Shaped Riprap Ditch	$	$
7.4	600	L.Ft.	2.0 Ft. Deep "Vee" Shaped Grouted Riprap Ditch	$	$
7.5	380	L.Ft.	4.0 Ft. Wide by 2.0 Ft. Deep "Flat Bottom" Shaped Grouted Riprap Ditch	$	$
7.6	500	L.Ft.	4.0 Ft. Wide by 3.0 Ft. Deep "Flat Bottom" Shaped Grouted Riprap Ditch	$	$
7.7	311	L.Ft.	48" Ø HDPE Culvert Number One	$	$
7.8	2	Ea.	Concrete Headwalls	$	$
7.9	2	Ea..	Trash Racks	$	$
7.10	375	L.Ft.	Ditch Number One Grout Key	$	$
7.11	250	C.Yds.	Stone Filled Wire Basket	$	$
7.12	1	Ea.	Subsidence Sock	$	$
8.1	10,000	C.Yds.	Unclassified Excavation	$	$
8.2	6,700	Tn.	12" Ø Riprap Fill	$	$
9.1	8	Ea.	Mine Seals	$	$
9.2	900	L.Ft.	Mine Seal Conveyance Pipe	$	$
			SUB - TOTAL:	**$**	

SHINNS RUN PORTALS (Page 2 of 2)

Requisition #: _____ DEP _____

Contractor' Bid Sheet

Company Name: _____

Address: _____

_____

The DEP reserves the right to request additional information and supporting documentation regarding Unit Prices, when the Unit Price appears to be unreasonable.

ITEM NO.	QUANTITY		DESCRIPTION	UNIT PRICE	AMOUNT
9.3	250	Bags	Soda Ash Briquettes	$	$
10.1	660	L.Ft.	Seep Collector	$	$
10.2	375	L.Ft.	Underdrain	$	$
10.3	270	L.Ft.	8" Ø Solid SDR35 PVC Drain Pipe	$	$
10.4	140	L.Ft.	12" Ø Solid SDR35 PVC Drain Pipe	$	$
10.5	5	Ea.	8" Inline Cleanout	$	$
10.6	5	Ea.	12" Inline Cleanout	$	$
11.1	300	Tn.	Road Repair Crushed Stone	$	$
11.2	100	Tn.	Road Repair Asphalt	$	$
11.3	50	C.Yds.	Road Repair Concrete	$	$
12.1	250	L.Ft.	Pilot Holes	$	$
12.2	100	L.Ft.	16" Ø Steel Pipe Bored and Jacked	$	$
12.3	150	L.Ft.	60" Ø Steel Pipe Bored and Jacked	$	$
13.0	Lump Sum		Traffic Control	$	$
			Sub-Total From Page One	**$**	
			GRAND-TOTAL (Page 1 + Page 2)	**$**	

Authorized Signature: _____ Date: _____