WEST VIRGINIA

DEPARTMENT OF ENVIRONMENTAL PROTECTION

OFFICE OF ABANDONED MINE LANDS AND RECLAMATION

COUNTY

OF

BOONE

NAME OF PROJECT

RIDGEVIEW (DUNLAP) 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

Construction Specifications

Ridgeview (Dunlap) Portals

Boone County, West Virginia

Prepared for:

West Virginia Department of Environmental Protection
Office of Abandoned Mine Lands and Reclamation
601 57th Street SE
Charleston, WV 25304

Prepared by:

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400 Tracy Way, Suite 200
Charleston, WV 25311

December 15, 2015

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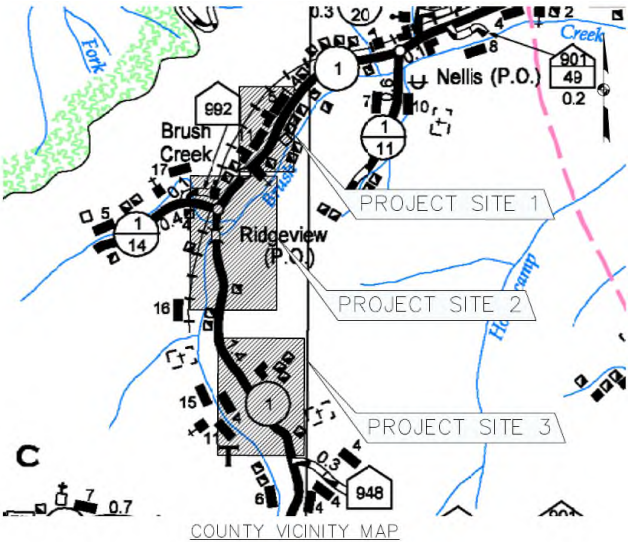
I. SPECIAL PROVISIONS

I. LOCATION/SITE DESCRIPTION

The **Ridgeview (Dunlap) Portals** project is located along Brush Creek in Boone County, West Virginia, near the town of Ridgeview. This project consists of three sites along Boone County Route 1. This project includes installation of wet mine/modified wet mine seals, dry seals, bat gates, and drainage conveyances for these mine portals.

Directions to Project Site:

From Charleston, take I-64 West toward Huntington.
Take Exit 58A for US-119 South, toward Oakwood Rd/Logan.
Stay in right lane, travel approximately 0.4 miles, merge onto US-119 South to Logan.
Travel approximately 23.5 miles, turn left onto Camp Creek Rd. (CR 6).
Travel approximately 5.4 miles, turn left at stop sign onto Ridgeview Nellis Rd (CR 1).
Travel approximately 2.0 miles to the project site.



II. SCOPE OF WORK

The work covered by the 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:

- Clearing and grubbing at the site, and removal or burning of debris, trash, tree roots, garbage and associated materials;
- Construction and installation of support areas and maintenance of access roads to the site;
- Construction and installation of drainage control items including channels, underdrains, culverts, and low-water crossings;
- Re-grading of two small ponds on Site 3, near portal 13;
- Installation of wet/modified mine seals, dry seals, bat gates, and animal guards;
- Providing sediment control;
- Revegetation of the disturbed areas:
- Placement of lime, fertilizer, seed and mulch and establishing vegetation on all areas re-graded and disturbed during construction; and
- Final site cleanup.

The Contractor also shall be responsible for surveying, including establishing construction baseline, 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 program as specified herein.

III. 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 also shall 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.

IV. DISPOSAL OF UNSUITABLE MATERIAL

All waste areas shall be obtained in accordance with Special Provision 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. Wood may be burned in conformity with the applicable sub-sections of Sections 4.0 of these Specifications.

The Contractor shall observe the NEPA compliance schedule relative to selecting and utilizing any off-site disposal areas in accordance with Special Provision 7 of these Specifications.

V. PERMITS, LICENSES AND FEES

The West Virginia Department of Environmental Protection will pay the fee for and obtain the NPDES Permit for this project. 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 not be limited to: 404 Permit from the US Army Corps of Engineers, Water Quality Certification from WVDEP and Stream Activity Permit from Public Land Corporation and burning permit from W.V. Division of Forestry and WVDEP Office of Air Quality. A copy of the permits as procured shall be furnished to the Owner prior to initiation of the work under this Contract.

VI. 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 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 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 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 entrances 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. Commence rough grading of site. Continue to maintain and inspect all erosion and sediment controls.
6. Install additional erosion and sediment controls as shown on site plans.
7. Fine grade site.
8. Permanently seed and mulch all disturbed areas within 7 days of reaching final grade.
9. Upon completion of project including adequate stabilization, remove all remaining erosion and sediment controls.

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: _____

VII. CONSTRUCTION SIGN

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.

2. Materials.

(a) Sign face shall be 3/4" Marine Exterior plywood or aluminum or 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.

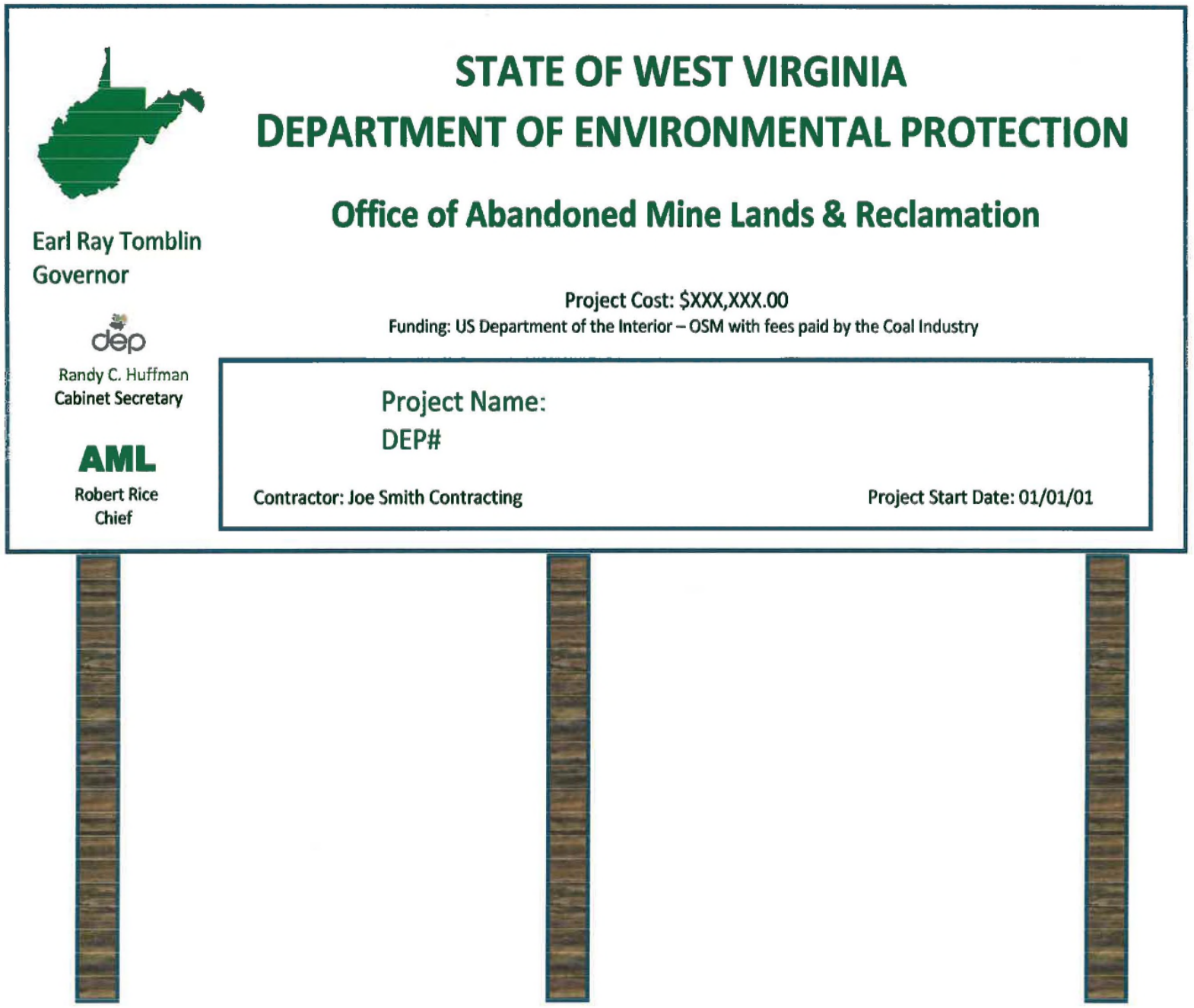
(3) All hardware shall be hot-dip galvanized in accordance with ASTM A-153.

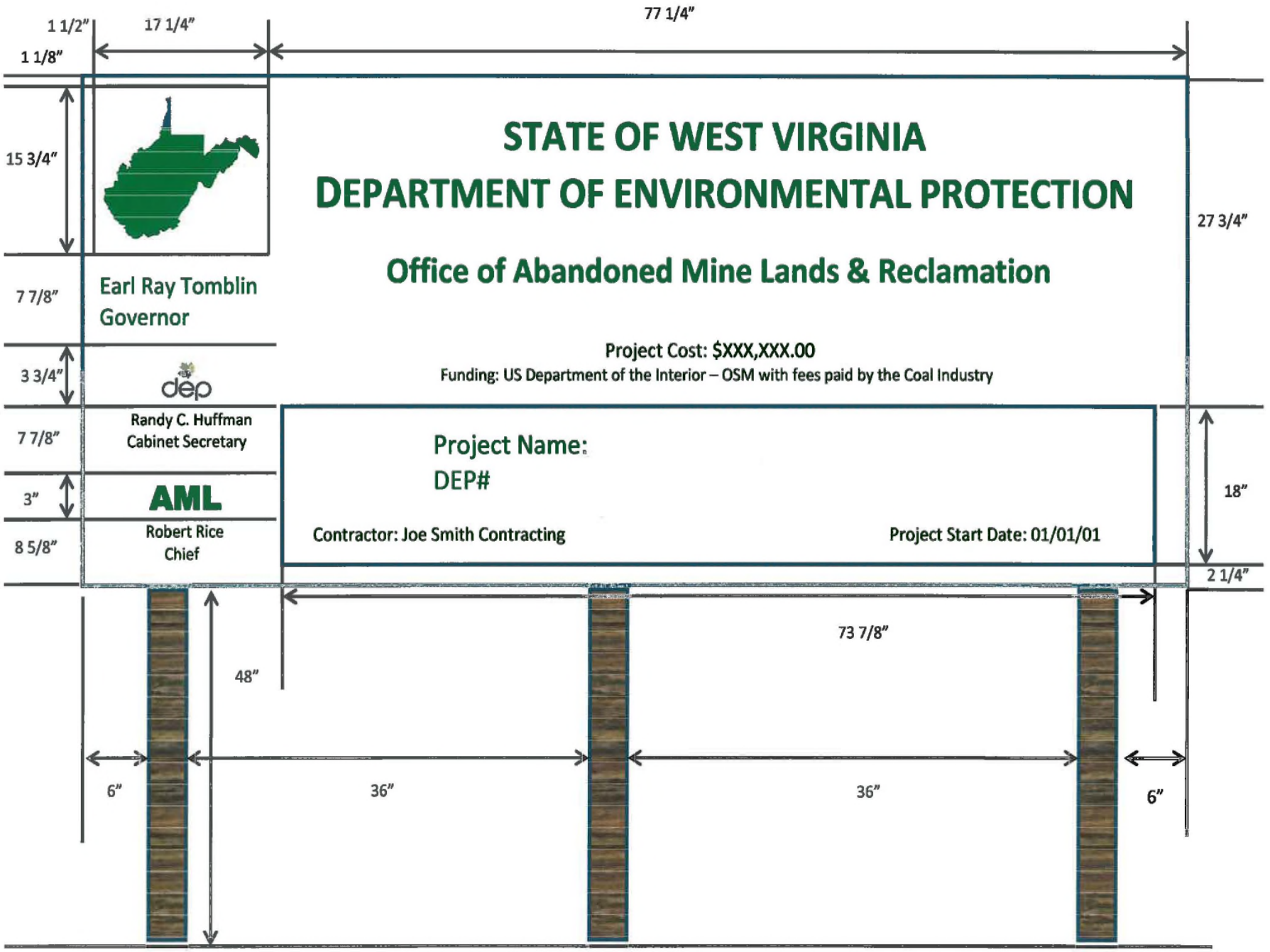
3 Execution.

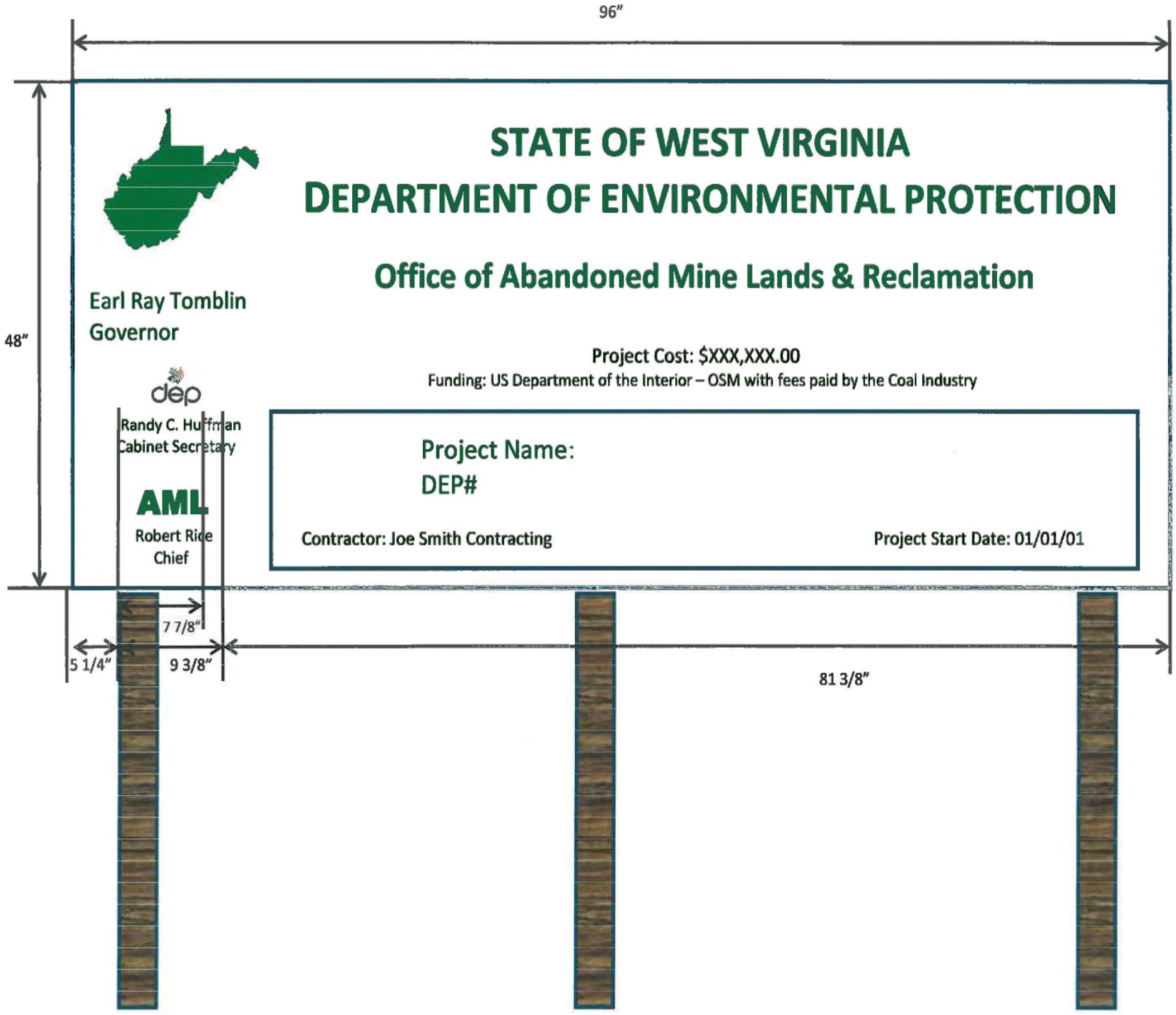
(a) Project Sign. The sign board shall be cut to the dimensions shown on the detail herein. The sign shall painted with one (1) coat of primer and two (2) coats of white enamel. All exterior cut edges shall be smooth sanded prior to painting. All edges shall be double primed. The letters, border and 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"
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Abandoned Mine Lands & Reclamation
7 7/8"
Earl Ray Tomblin
Governor
Project Cost: $XXX,XXX.00
Funding: US Department of the Interior – OSM with fees paid by the Coal Industry
3 3/4"
dep
7 7/8"
Randy C. Huffman
Cabinet Secretary
Project Name:
DEP#
18"
3"
AML
8 5/8"
Robert Rice
Chief
Contractor: Joe Smith Contracting
Project Start Date: 01/01/01
2 1/4"
73 7/8"
48"
6"
36"
36"
6"


96"
48"
STATE OF WEST VIRGINIA
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Office of Abandoned Mine Lands & Reclamation
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Randy C. Huffman
Cabinet Secretary
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Project Name:
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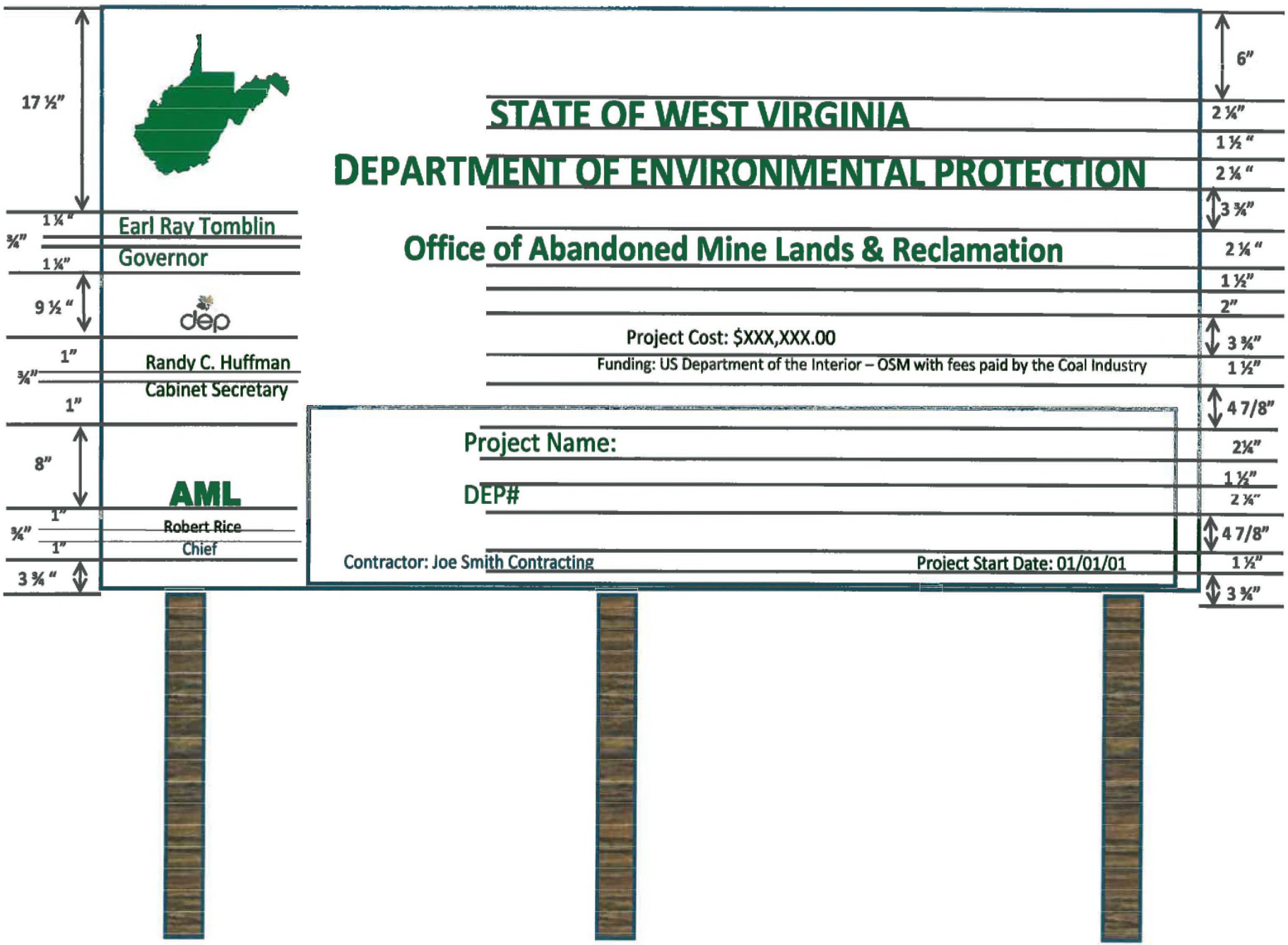
Project Start Date: 01/01/01
7 7/8"
5 1/4"
9 3/8"
81 3/8"


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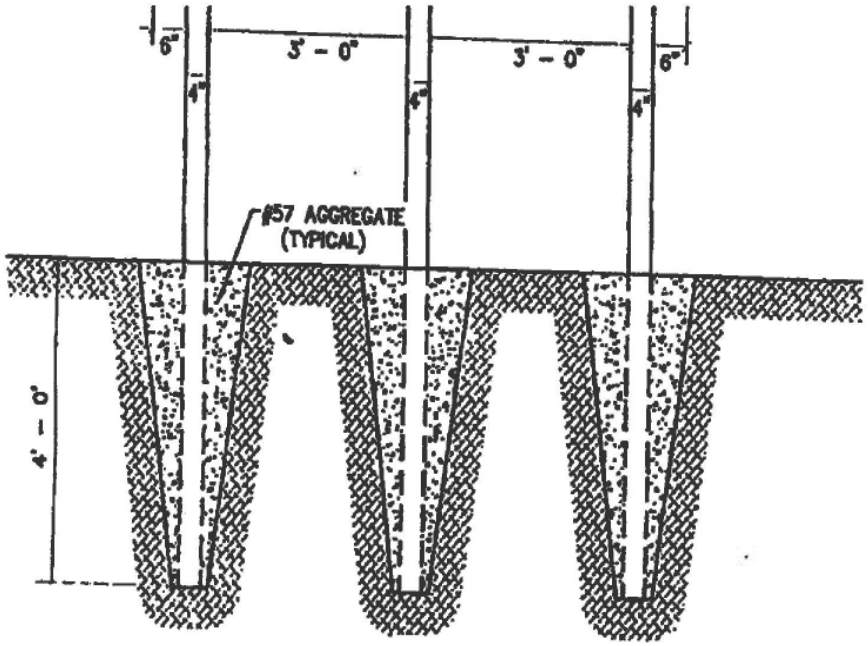
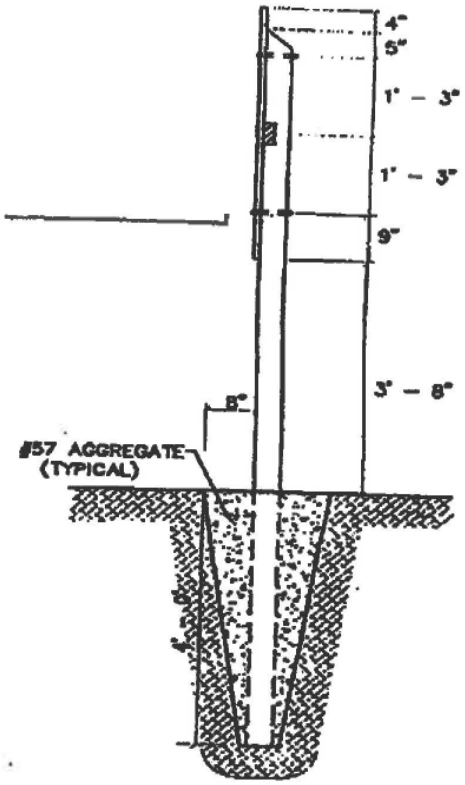
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Abandoned Mine Lands & Reclamation
Project Cost: $XXX,XXX.00
Funding: US Department of the Interior – OSM with fees paid by the Coal Industry
Project Name:
DEP#
Contractor: Joe Smith Contracting
Project Start Date: 01/01/01
6"
2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





II. 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 to be established shall be approved in writing by WVDEP. It also shall 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. The location of all equipment and material storage areas shall be approved in writing by the WVDEP. This work shall also include installation of the project sign. Failure to meet these requirements will result non-payment of Item 1.0, "Mobilization and Demobilization".

1.2 Method of Measurement

The method of measurement will be a lump sum.

1.3 Basis of Payment

The bid for Mobilization and Demobilization shall be a lump sum and cannot be more than 10% of the "TOTAL AMOUNT BID" for the project. Partial payments 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 when all “As-Built” drawings are submitted and approved by WVDEP.

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.

1.4 Pay Item

Item 1.0 “Mobilization and Demobilization” per lump sum. Cannot exceed 10% 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 Engineer. Additionally, this item shall also include the preparation of "As-Built" Plans including the Reclamation Plan and any others specifically requested by the Division of Environmental Protection. All of these "As-Built" Plans shall be provided prior to the Final Inspection Meeting. The final one-half of the mobilization/demobilization will not be processed until the as-built drawings are submitted to the WVDEP for written approval.

2.2 Materials

Conventional survey stakes, hubs, batter boards, flagging, templates, straightedges and other devices necessary for laying out all parts of the work.

2.3 Construction Methods

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), as shown on the Construction Drawings. The Contractor shall also perform any necessary cross-section

surveying of the existing ground surface at the intervals and locations shown within the Construction Drawings, provide an overlay of the surveyed cross-sections on the cross-sections shown on the Construction Drawings, and submit the same to the Engineer for comparison and written approval prior to initiating earthwork. Incomplete cross-sections will be returned to the Contractor for necessary additions. Cross-sections, which do not encompass all areas of both earthwork excavation (including borrow excavation) and fill placement shall be considered incomplete without exception. The Contractor shall also include the locations of baselines used showing cross section locations on a copy of the reclamation plan when submitting cross sections.

2.3.3 The Contractor shall not initiate earthwork activities until receiving written approval from the WVDEP for the submitted cross sections. Earthwork activities performed prior to such approval will result in non-payment of these excavation items.

2.3.4 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 Engineer. The Contractor shall furnish a copy of his/her survey records for checking by the Engineer and for the Owner's permanent file. These records shall be furnished as they are completed during the progress of the work.

Any inspection or checking of the Contractor's layout by the Engineer 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 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 Licensed Land Surveyor registered in the State of West Virginia.

2.4 Method of Measurement

Measurement and payment for furnishing, setting, maintaining, and resetting the stakes when necessary, and for furnishing all engineering personnel, equipment, materials, and all incidentals thereto, shall be by the lump sum bid for "Construction Layout Stakes". The lump sum payment also shall include the cost for providing the Engineer pre-and post- construction ground line cross-sections for all disturbed or re-graded areas including borrow areas and “As-Built” Plans and any required interim cross-sections as described herein. 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 "Construction Layout Stakes" item amount regardless of decreases or increases in the final total contract amount or for any other cause.

2.5 Basis of Payment

The bid for Construction Layout Stakes shall be a lump sum and 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 "Construction Layout Stakes" item amount regardless of decreases or increases in the final total contract amount or for any other cause.

This item will be paid according to the following schedule: up to fifty percent of the total bid amount of this item will be released for payment when all required layout work is complete. The remaining fifty percent will be paid on the final invoice once the as-builts are submitted and approved.

2.6 Pay Item

Item 2.0, "Construction Layout Stakes", per lump sum. Cannot exceed 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 to the Engineer of all offsite materials to be incorporated into the work. Written approval from the Engineer 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, concrete and grout to be used in this project. As 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 re-vegetated, compressive strength test for grout in accordance with ASTM C109, and for concrete in accordance with ASTM C31 & C39.

3.3 Construction Methods

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 under the direct supervision of a Registered Professional Civil Engineer. The laboratory must be approved in writing by the WVDEP.

3.3.2 Testing for compaction, soil nutrient and lime requirements for soil; compressive strength tests for concrete and grout; shall be performed as required by these specifications and/or ordered by the Engineer in writing. The Engineer will determine the locations and time of any testing herein specified and the need and extent of any testing in addition to that which is herein specified at no additional cost to the WVDEP.

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 their use as fill and cover material, respectively. In addition, field density tests shall be performed in accordance with the Construction Specifications. All test results shall be submitted to the Engineer for written approval of compaction criteria (proctor) prior to compacting the fill and after fill compaction (percent compaction, moisture content) to verify that the required compaction is obtained. One point proctors will not be acceptable.

3.3.4 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 sources of supply of each material used shall be approved by the Engineer in writing 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.

3.3.5 Failure to perform and submit required tests to the WVDEP will result in non-payment of those items requiring tests.

3.4 Method of Measurement

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

3.5 Basis of Payment

3.5.1 The quantity of work performed will be paid at the contract lump sum price bid for this item. Said lump sum bid cannot be more than 3% of the "TOTAL AMOUNT BID" for the project, which price and payment shall be full compensation for doing all the work herein prescribed in a workmanlike and

acceptable manner; including furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work.

3.5.2 No deduction will be made, nor will any increase be provided in the lump sum "Quality Control" bid 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 exceed 3% of the TOTAL AMOUNT BID for the project.

4.0 SITE PREPARATION

4.1 Description

Work performed under this section shall include the rehabilitation of the access road at Site 1, rehabilitation of the access road at Site 2, the construction of an access road at Site 3, removal of existing ruins and foundation structures, removal and disposal of all trees, stumps, 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 in writing by WVDEP.

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

This work shall also consist of complete demolition and removal of such buildings, mining related structures and equipment, existing ruins and foundation structures, concrete pads, walls, pavement. and existing drainage conveyances and facilities including corrugated metal pipe, rock, and walls located within the construction limits as are specifically designated on the Plans for removal or as directed by the WVDEP if within the construction limits and not shown on the Plans. Boulders, pads, walls, and foundation ruins shall be broken in accordance with Specification Section 4.3.14 and buried in the deepest portion of the fill areas as directed by the WVDEP. Broken pieces shall not be consolidated in one area, but shall be dispersed throughout fill areas to ensure compaction requirements are achieved. Masonry walls, foundations, and concrete slabs may be present and will require demolition and disposal. Buried ruins, structures, other debris, including abandoned mining equipment, may exist and be encountered during excavation operations.

All onsite garbage (as well as any other debris of any type and quantity encountered), mining equipment, and metal structures or items encountered shall be removed from the site to an off-site disposal area in accordance with Special Provisions Section 7 or to a landfill approved by the State of West Virginia to accept this type of debris.

The Contractor is advised to perform a thorough site reconnaissance to quantify all garbage and debris within the construction limits whether designated on the plan or not, for removal prior to submitting his or her bid.

4.2 Borrow/Disposal Area

An off-site borrow/disposal area may be required to provide for material shortages or excess material disposal. The Contractor is responsible for locating this area and obtaining right-of-entry agreements in which the property owner indemnifies and holds DEP/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 (See Special Provision 7) requirements and shall provide proof of such compliance to the WVDEP. The Contractor shall submit a reclamation plan to the WVDEP and must obtain approval for said plan prior to any disturbance to the disposal site.

4.3 Construction Methods

4.3.1 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 mine seal installation, excavation, backfill, soil borrow, access road, or drainage structure installation.

4.3.2 The Contractor shall clear the site within the limits of the areas to be re-graded. The WVDEP shall exercise control over clearing and shall designate all trees, plants and other objects to be removed or to remain.

4.3.3 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.

4.3.4 Existing site access roads shall provide safe, all-weather access to the site. These existing roads, including stoned and paved roads, shall be maintained during construction and left in a better than or equal to condition. The Contractor is responsible for locating and avoiding all underground and overhead utilities and constructions during access road grading and maintenance.

4.3.5 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 in writing 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.

4.3.6 All stumps, roots, buried logs and brush shall be removed. Grass, however, may be incorporated into the re-soiling 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.

4.3.7 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 sumps as approved in writing by the WVDEP.

4.3.8 All organic material shall be burned completely to ash on site or otherwise removed from the site and disposed of in a manner approved in writing by the WVDEP. Burning of the combustible material will not be permitted on or near refuse, mine portals or within close proximity to coal seams or utilities. The Contractor shall obtain all permits and licenses required prior to burning the material. A plan showing the location of material to be burned and all fire control measures to be implemented, including copies of permits and

licenses shall be submitted to the WVDEP's representative at the site for written approval.

4.3.9 All other materials generated from required clearing and grubbing operations 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. It shall be the responsibility of the Contractor to obtain, at no expense to the WVDEP, 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 Special Provision 7 for NEPA Compliance Schedule). All waste and borrow areas must be approved by the WVDEP in writing 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 harmless from any injury or damages whatsoever resulting from the use of property.

4.3.10 It shall be the sole responsibility of the Contractor to correctly located 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. In the event damage does occur, the Contractor shall notify the affected Owner and the WVDEP immediately and make or have made all necessary repairs and bear the expense thereof and resulting damage caused thereby. See "Special Provisions", Section 15, "Utilities", of these specifications for more information on utilities.

4.3.11 Stone to be placed for "Access Road Rehabilitation" shall conform to the requirements for Class 1 Aggregate as described in Table 704.6.2A and Section 704.6 of the WVDOH Standard Specifications for Roads and Bridges, Adopted 2010.

The Access Road Rehabilitation at Site 1 will entail clearing as necessary to allow access to the site. A 4-inch layer of stone will be required.

After final reclamation has been completed, the access road utilized at Site 2 will be covered with a 4-inch layer of stone, the limits of road to be rehabilitated are shown on the plans. This item is to be paid by the tonnage used and verified by certified weigh tickets.

4.3.12 Upon completion of the reclamation, the Constructed Access Road at Site 3 shall be returned to original or better condition.

4.3.13 Buildings, mining related structures, existing ruins and foundation structures, shall be removed to one (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. Coal and/or refuse spillage, concrete, cinder blocks, and foundation ruins shall be excavated and/or removed and incorporated into an approval and fill, as approved by the Engineer, unless otherwise directed.

4.3.14 In the area where structures and buildings are demolished and removed, the removal operation shall extend to one (1) foot below finished grade. The area shall then be re-graded as necessary to blend into adjacent finished grades. Re-grading shall be such that all areas are free draining and surface runoff will not pool or impound as directed by the Engineer.

4.4 Method of Measurement

4.4.1 There shall be no measurement of Site Preparation as it is a lump sum.

4.4.2 The method of measurement for the Constructed Access Road is per lineal foot. Any incidental items to construct the road, ie. excavation, crusher run stone, separation fabric, etc. shall be considered incidental to Item 4.2, “Constructed Access Road”, per lineal foot.

4.4.3 The method of measurement for access road rehabilitation at Sites 1 & 2 shall be on a per tonnage basis and verified by certified weigh tickets. It is to

include all required re-grading, and purchase and placement of aggregate. Any clearing and grubbing, removal of buildings, mining related structures, existing ruins and foundation structures etc., is considered incidental to Item 4.1, “Site Preparation”.

4.5 Basis of Payment

This item shall be paid at the bid lump sum price. The amount shall not exceed 10% of the TOTAL AMOUNT BID for each 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 incidental necessary to complete the work.

No deduction will be made, nor will any increase be made, in the lump sum clearing and grubbing amount regardless of decreases or increases in the final total contract amount or for any other cause.

Any clearing and grubbing shall be paid incidental to Item 4.1, “Site Preparation”.

The removal of buildings, mining related structures, existing ruins and foundation structures etc. shall be paid incidental to Item 4.1, “Site Preparation”.

Payment for stone for the Access Road Rehabilitation at Sites 1 & 2 will be based per ton and verified by certified weigh tickets.

4.6 Pay Items

Item 4.1, “Site Preparation”, per lump sum. Cannot exceed 10% of the Total Amount Bid.
Item 4.2, “Constructed Access Road”, per lineal foot.
Item 4.3, “Access Road Rehabilitation”, per ton.

5.0 EROSION AND SEDIMENT CONTROL

5.1 Description

This item shall consist of furnishing all materials, equipment, labor and incidentals necessary for the installation of silt fence, stabilized construction entrances and stone check dams as designated in the Drawings. Stabilized Construction Entrances shall be installed prior to any excavation activities, in locations shown on the plans. In addition, sediment control shall be placed on re-graded outslope areas concurrent with construction and prior to revegetation. Additional quantities may be added at the discretion of the WVDEP.

The CONTRACTOR shall submit an erosion and sediment control plan to the WVDEP at the pre-construction meeting for written approval. This plan shall include measures to be utilized for temporary and permanent erosion and sediment control. This plan shall also include the measures as outlined herein. The WVDEP's written 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.

5.2 Materials

5.2.1 Silt Fence: Silt fence materials and installation shall meet all applicable requirements of Section 642.6.5 of the West Virginia Division of Highways Standard Specifications for Roads and Bridges, Adopted 2010.

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 1 to 120 degrees Fahrenheit. Preferred fabrics are Mirafi 100x, Exxon GTF, or approved equal.

Stakes shall consist of 2 inch by 2 inch oak or 2 inch by 4 inch pine and a minimum length of 4 feet. Fasteners shall be heavy duty 1 inch staples or tie wires.

If steel posts (standard “U” or “T” section) are used for silt fence construction they shall have a minimum weights of 1.33 pounds per linear foot and a minimum length of 4 feet.

5.2.2 Stabilized Construction Entrance: Stabilized construction entrances shall be utilized on this project in the locations shown on the plans as per the detail.

5.2.3 Stone Check Dams: Stone check dams shall be constructed as shown on the plans. The dams shall follow the detail shown on the plans.

5.3 Maintenance

During the course of the project, sediment control structures shall be maintained in sound condition and accumulations of silt, which may threaten their effectiveness, shall be removed. Silt removed from the sediment control structures shall be taken to an approved disposal area.

Sediment control structures shall be inspected at a minimum of once every 7 calendar days and within 24 hours after any storm event greater than 0.5 inches per 24 hour period. Any required repairs or maintenance shall be made immediately.

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.

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

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 a sediment trap and diversion, or super silt fence must be installed.

5.4 Installation

5.4.1 Silt fence shall be installed at locations shown on the plans per the detail. Posts for the silt fence shall penetrate the ground a minimum of 14 inches into the ground.

The height of silt fence above original ground shall be 16 inches, minimum, and shall not exceed 34 inches. Filter fabric shall be purchased in a continuous roll and cut 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 inches by 4 inches shall be excavated on the uphill side of the posts. The fabric shall be fastened securely to the uphill side of the posts and extended into the trench. Do not staple fabric to trees. The 4 inch by 4 inch 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 percent slope in 20 feet.

5.4.2 Stabilized construction entrances shall be installed at locations shown on the plans per the detail.

5.4.3 Stone check dams shall be constructed at locations shown on the plans per the detail.

5.5 Method of Measurement

5.5.1 The method of measurement for silt fence installation and maintenance in conformance with the specifications and accepted by the WVDEP shall be on a per lineal foot basis to include all necessary materials, supplies, labor and equipment for installation and maintenance including sediment removal and disposal.

5.5.2 The method of measurement for stabilized construction entrance installation and maintenance in conformance with the specifications and accepted by the WVDEP shall be paid per each entrance installed as shown on the plans. It shall include all necessary materials, supplies, labor and equipment for installation and maintenance including sediment removal and disposal.

5.5.3 The method of measurement for stone check dam shall be paid per each dam installed as shown on the plans. It shall include all necessary materials, supplies, labor and equipment for installation and maintenance including sediment removal and disposal.

5.7 Basis of Payment

The quantity of work completed will be paid at the contract unit price bid for the following items, 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 removal and disposal.

5.8 Pay Item

Item 5.1, "Silt Fence", per lineal foot.
Item 5.2, "Stabilized Construction Entrance", per each.
Item 5.3, "Stone Check Dam", per each.

6.0 REVEGETATION

6.1 Description

1) This work shall cover all operations incidental to the establishment of vegetation within the limits of construction as shown on the Drawings and any other areas as approved by the WVDEP. 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. This work shall also include the placement of soil cover.

No areas outside the limits of construction shall be disturbed without prior approval in writing from the WVDEP in order to ensure that Right-of-Entry has been obtained.

Any areas outside the limits of construction, disturbed by the Contractor shall be re-vegetated by the Contractor at no expense to the WVDEP.

6.2 Materials

6.2.1 Fertilizer

The commercial fertilizer to be used shall consist of 10-20-10 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 beyond 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 5 tons per acre will serve as a preferred minimum.

Lime shall be applied immediately to all areas requiring seeding reaching final grade by 1 of the 2 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, which 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 Mixtures

All stockpiles and 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:

VARIETY OF SEED	Spring 3/15-5/15	Summer 5/15-8/15	Fall 8/15-10/15	Winter 10/15-11/15
Annual Ryegrass (Lolium Multiflorum)	40 lbs/ac		40 lbs/ac	
German Millet * (Setaria Italica)		40 lbs/ac		
Cereal Rye (Secale Cereale)				170 lbs/ac

***Do Not Use Japanese Millet**

All areas to be temporarily seeded which are to be redisturbed 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 6.2.1. Lime shall be applied according to Section 6.2.2 and mulch according to Section 6.2.4.

6.2.3.2 Permanent Seed Mixtures

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 which reach final grade between May 31-August 15 or October 15-November 15 shall be seeded with the appropriate temporary seed mixture according to section 6.2.3.1. The 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 Department's approval.

- Lawn Seed Mixture -

Rate (lb/1000 sq ft)	Seed Variety	Minimum Specifications % Purity	% Total Germination
0.45	Red Fescue (Pennlawn)	98	85
0.90	Kentucky Bluegrass	85	75
0.70	Meriona Bluegrass	90	75
0.20	Annual Ryegrass *	95	85

- Use Annual Ryegrass only in mixture seeded after August 15 and before May 15.

- Permanent Seed Mixture –

VARIETY OF SEED *	**SPRING 3/15 – 5/15**	**FALL 8/15 – 10/15**

Orchard grass (Dactylis glomerata)	30 lbs/ac.	30 lbs/ac.
Birdsfoot Trefoil (1) (Lotus corniculatus)	15 lbs/ac.	15 lbs/ac.
Red Clover (Trifolium pretense)	10 lbs/ac.	10 lbs/ac
Annual Ryegrass (2) (Lolium multiforum)	25 lbs/ac.	25 lbs/ac.
Spring Oats Or Winter Wheat	35 lbs/ac. 0 lbs/ac.	0 lbs/ac. 90 lbs/ac.

1. Herbaceous legumes must be treated with the appropriate bacterium before seeding. On areas which are steeply sloping (Steeper than 1.7:1), slide prone, swales or drainage conveyance structures substitute Crownvetch (Coronilla variea) 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.

6.2.4 Mulch Material

Mulching procedures shall take place immediately following seeding. Mulch material shall consist erosion matting, straw, or wood cellulose fiber.

6.2.4.1 Straw

Straw mulch shall include baled wheat or oats straw or baled grass hay. Straw mulch shall be dry and reasonably free of weed, 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 shall be used only on slopes steeper than 2H:1V at a rate of 1,500 lbs/acre. A 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 (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 (2) the material, when hydraulically sprayed on the ground, will form a blotter-like ground cover impregnated uniformly with seed, will allow rainfall to percolate to the underlying soil.

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.

6.2.4.3 Water

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

6.2.5 Soil Cover

Soil cover shall consist of a one (1) foot thick layer of suitable soil material capable of supporting required vegetation. Soil cover shall be incidental to revegetation.

6.3 Construction Methods

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. Lawn areas are to be hand raked. Rocks larger than six (6) inches in diameter or two (2) inches diameter in lawn areas, trash, weeds and other debris that will interfere with seeding or maintenance shall be removed or disposed of as approved in writing by the WVDEP. Seedbed preparation shall be suspended when soil moisture conditions are not suitable for the preparation of a satisfactory seedbed as determined by WVDEP.

6.3.3 Seedbed preparation and seeding shall take place progressively as various re-graded areas are brought to final grade.

6.3.4 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.

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

6.3.6 Any area failing to establish a vegetative stand due to weather or adverse soil conditions shall be reseeded, relimed, refertilized and remulched as approved by the WVDEP in writing.

6.3.7 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, refertilizing, reliming, reseeding, and remulching erosion gullies and all bare areas.

6.3.8 A second and third seeding will be applied as needed, or as approved by the WVDEP in writing.

6.3.8.1 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.

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

b. 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.

6.3.8.2 Third Step Seeding

The third step seeding 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 6.3.8.1.

6.4 Method of Measurement

The method of measurement for revegetation shall be per plan view acre.

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. Payment for seeding includes all seeding (i.e. – temporary, first and second seeding). No additional payment will be made for second or third seeding.

6.5.2 Temporary seeding will be incidental to the seeding item 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.

6.5.3 This work shall also include the placement of soil cover.

6.6 Pay Item

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 the drainage structures shown on the drawings. Drainage structures shown include but are not limited to channels, culverts, and pipes. Permanent drainage items include drainage channels, riprap aprons (splash pads), drive throughs, riprap bank protection, and underdrains as approved by the Engineer.

This work shall also consist of cleaning an existing ditch at Site 3 as shown in the plans.

7.2 Materials

7.2.1 Stone

The Contractor should be aware that no provisions have been made to obtain rock on site. The rock riprap shall have a maximum weighted loss of thirty percent 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 non-acid producing. A certification on calcium carbonate equivalency and sodium sulfate soundness test shall be submitted to the WVDEP prior to delivery.

If rock borrow areas located outside the construction limits should be necessary to provide for items requiring rock, then the Contractor is responsible for locating these areas and obtaining right of entry agreements, in accordance with Special Provision 7, in which the property owner

indemnifies and holds WVDEP/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 WVDEP.

The Contractor shall submit a reclamation plan to the WVDEP and must obtain approval for said plan prior to any disturbance to the disposal site.

Riprap for Ditches shall range in nominal diameter from 3 inches to 18 inches, with 50% of the rock 12 to 18 inches, 35% of the rock 6 to 12 inches, and 15% of the rock 3 to 6 inches.

Rock for the temporary stream crossing shall consist of the size, gradation, and quality required for rock riprap with sufficient small rock to choke off the voids to create a passable access for traffic.

7.2.2 Pipes

HDPE Pipes: The pipes shall consist of corrugated, smooth wall interior high density polyethylene pipe, such as Hancor's Hi-Q pipe, or approved equal, in accordance with Section 714.19 of the WVDOT Standard Specifications for Roads and Bridges, Adopted 2010.

Steel Casing Pipes: The pipes shall consist of steel, smooth wall interior pipe in accordance with Section 718.12 of the WVDOT Standard Specifications for Roads and Bridges, Adopted 2010.

7.2.3 Pipe Bedding

Pipe bedding for the temporary 24" HDPE pipe under the Constructed Access Road shall consist of fine aggregate meeting the requirements of Section 704.6 of the WVDOT Standard Specifications for Roads and Bridges, Adopted 2010, except that the gradation shall meet the

requirements of Section 702.6 of the WVDOT Standard Specifications for Roads and Bridges, Adopted 2010.

7.2.4 Filter Fabric

Filter fabric for the underdrain shall consist of Terra Tex No. 4 or an approved equal.

7.2.5 Grout

Grout to be used in the grouted riprap channels 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.

The minimum required compressive strength of the grout shall be 2,000 psi at 28 days. All testing shall be the responsibility of the contractor as part of Section 3.0 of these Technical Specifications.

7.3 Construction Methods

7.3.1 Channels

The channels shall be constructed to the approximate line, grade and template as shown on the plans or as directed by the WVDEP. The channels shall be lined with rock riprap or grouted rock riprap as shown on the drawings. Excess material from ditch and pipe trench excavation that is suitable for soil cover may be segregated, stockpiled and utilized to support “Re-vegetation” operations. Otherwise, excess material from ditch and pipe trench excavation will be required to be disposed of by the Contractor in an off-site disposal area obtained by the Contractor in accordance with Section 8 of the Special Provisions of these specifications. Sections of ditches that are cut to rock shall not require rock riprap but shall be paid the appropriate size riprap ditch.

7.3.2 Riprap

Grouted riprap and riprap shall be placed and constructed as shown on the plans.

7.3.3 Pipes

The location, type and size of pipe shall be installed as shown on the drawings.

The trench for the pipes shall be excavated to the template shown on the drawings. However, depending on field conditions, the WVDEP may vary the alignment. All trench excavation shall follow the appropriate Occupational Safety and Health Administration (OSHA) trench excavation guidelines. The Contractor shall take precautions to insure the safety of his personnel, WVDEP personnel, or the general public.

The bedding and backfill material shall be placed in loose lifts not exceeding eight (8) inches and each lift compacted by use of WVDEP approved hand tampers. The material above the pipes shall be compacted by WVDEP mechanical tampers. Compaction of the material shall not be to less than 95% of maximum dry density as determined in accordance with ASTM D-698. Contractor shall use special care in placing and compacting the backfill material to avoid damaging or moving the pipe. Frequency of density tests shall be one test per lift.

The Contractor shall, at all times, maintain the trench excavation dry by pumping or other approved methods. No pipe shall be permitted to be installed in a trench in which any amount of water flows or is pooled.

The inlet and outlet of pipes used as culverts under roads shall be protected with the same relative material used for channel protection.

7.3.4 Splash Pads

The splash pads shall be installed at the location and template shown on the drawings.

7.3.5 Grout

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.

Curing of the grout shall be by spraying with a fine mist of water every 2 hours during daylight hours for a period of 3 days, or grout may be cured as specified in Section 218.3.3 of the WVDOH Standard Specifications for Roads and Bridges, Adopted 2010.

A set of four (4) compressive strength test cylinders shall be taken per truckload of grout. One seven day, two twenty eight day and on reserve cylinder are required. The sampling for strength tests shall be in accordance with ASTM C 172.

Cylinders for acceptance tests shall be molded and cured in accordance with ASTM C 31. Cylinders shall be tested in accordance with ASTM C 39.

The acceptability of the grout will be determined by laboratory tests and/or visual inspection as required by the Department. Grout specified on the basis of compressive strength will be considered satisfactory if the average of all the strength test results equal or exceed the specified strength and no individual strength test falls below the required strength by more than 200 psi.

A grout key shall be installed at the upstream end of each of the grouted riprap channels or section of grouted riprap channel to direct the flow of water into the channel and prevent undercutting of the grouted riprap. The grout key shall be installed to the dimensions depicted by the typical detail in the plans.

7.3.6 Stream Bank Protection

Stream Bank Protection shall be placed at locations shown on the Drawings or as approved by the Engineer. Stone placement shall include preparing the subgrade to receive the stone. The stone shall be firmly bedded on the slopes in such a manner that the individual pieces abut each other. The excavation required on the Drawings and preparation of the bank for placement of the riprap shall be considered incidental to the stream bank protection.

7.3.7 Temporary Stream Crossing

The temporary stream crossings shall be in the location and detail as shown on the drawings. The stream crossings shall be maintained throughout the project to allow access. The stream crossing shall be removed at the completion of construction.

7.4 Method of Measurement

7.4.1 Ditches

The method of measurement for construction of riprap and/or grouted riprap ditches will be on a linear foot basis and shall include excavation, disposal of material, and purchase and installation of fabric and rock, grout keys and grouted rock.

7.4.2 Pipe

The method of measurement for installation of the pipe will be on a linear foot basis and shall include all required excavation, and purchase and placement of pipe, fittings and connections, concrete inlet and outlet protection, roadway repair and backfill.

7.4.3 Splash Pads

The method of measurement for installation of the splash pads will be per each installed and shall include the purchase and placement of the rock.

7.4.4 Stream Bank Protection

The method of measurement for installation of the stream bank protection will be on a linear foot basis and shall include excavation, disposal of material, and purchase and installation of fabric and rock.

7.5 Basis of Payment

The quantity of work completed will be paid at the contract unit price bid for the following items, which price and payment shall be full compensation for all materials, labor, equipment and incidentals necessary to perform the work.

This cost of cleaning the existing ditch at Site 3 as shown in the plans shall be paid incidental to work performed in this section.

7.6 Pay Items

Item 7.1, “Riprap Vee Channel”, per linear foot
Item 7.2 “Riprap 2’ Trapezoidal Channel”, per linear foot
Item 7.3, “Grouted Riprap Vee Channel”, per linear foot
Item 7.4, “Grouted Riprap 2’ Trapezoidal Channel”, per linear foot
Item 7.5, “Splash Pad”, per each
Item 7.6, “Temporary Stream Crossing”, per each
Item 7.7, “Channel Road Crossing”, per each
Item 7.8, “12” I.D. HDPE Pipe”, per linear foot
Item 7.9, “24” I.D. HDPE Pipe”, per linear foot
Item 7.10, “18” I.D. Steel Casing Pipe”, per linear foot
Item 7.11, “Stream Bank Protection”, per linear foot.

8.0 UNCLASSFIED EXCAVATION

8.1 Description

This work shall consist of excavating, transporting, stockpiling, placing and compacting coal refuse, mine spoil, soil, rock, or other materials encountered in the grading for this project, and any other incidental work. It should be noted that, at this time, there is no line item on the bid sheet for unclassified excavation. The unclassified excavation for this project is expected to be minimal. Minimal excavation is expected and it should be considered incidental to the particular item in question (portals, channels, regrading of two small ponds at Site 3, etc). The two small ponds at site 3 shall be re-graded such that positive drainage is provided to prevent ponding of water. There is a separate line item on the bid sheet for "Constructed Access Road".

8.2 Materials

The intent of this project is to completely balance the earthwork associated with the regrading of the highwalls. Excavated material cannot be moved from one property owner to another without prior authorization from the WVDEP.

No burning refuse (defined as greater than 140°F) and/or no combustible material shall be placed in fill areas.

8.3 Borrow/Disposal Areas

The project site area should contain sufficient borrow to cover all sites with the required soil cover. However, if additional borrow areas are needed it shall be the responsibility of the Contractor to obtain such areas, at no expense to the WVDEP, and in accordance with any applicable local, state, and/or federal regulations including compliance with NEPA requirements (See Special Provision Section 7 for NEPA Compliance Schedule). All additional borrow areas must be approved by the WVDEP and the Contractor must provide a reclamation plan for approval. In addition, for all additional borrow areas outside the construction limits, or located inside construction limits requiring movement of soil from one property owner to another, the

Contractor must obtain from the property owner a right-of-entry agreement in which the property owner indemnifies and holds the WVDEP harmless from any injury or damages whatsoever resulting from the use of property.

8.4 Soil Cover

The regrading plan shall be conducted in a manner such that a 12-inch thick layer of soil material is uniformly spread over any areas of exposed refuse resulting from the regrading operation and any exposed refuse within the construction limits that is not being regraded shall be covered with a one foot thick layer of suitable soil material as depicted in the Plans. Regrading shall be to the lines and grades shown in the Plans and the final grade line includes the one foot thick layer of soil cover.

8.5 Construction Methods

8.5.1 Excavation

Material excavation shall consist of the required removal of materials from the areas shown and the sloping and finishing of the areas to the required lines and grades as shown on the drawings. The slopes may be varied only by permission of the WVDEP. Any excavation beyond planned grades will not be paid for unless prior authorization is obtained from the Engineer. 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 the existing ground. Areas cut to grade in refuse are to be undercut one foot below the final grades shown on the reclamation plan with final grades achieved with soil cover material.

The reclamation approach described in these construction specifications 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 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 Section 6.0, “Revegetation”.

8.5.2. Material Placement

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 hills fills. Prior to fill placement, existing foundation for the embankment will be proof-rolled and all unsuitable material, as determined by the WVDEP, will be removed.

Excavated material shall be placed in embankments in successive layers not to exceed one (1) foot 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 WVDEP. Each layer, before starting the next, shall be compacted.

Fill materials to be used in any area of an embankment shall be free from trash, debris, frozen soil, organic material or other foreign material.

Embankment fill and embankment subgrade material shall be compacted to at least 90% 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. One test per day during fill placement shall serve as a minimum.

Embankment fill material which 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

which is to be compacted. Embankment fill material which 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.

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 WVDEP. If, after a prolonged rainfall, the top surface of the 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. The disturbed areas will be revegetated according to Section 6.0, "Revegetation".

8.6 Method of Measurement

The method of measurement for soil cover shall be per plan view acre.

8.7 Basis of payment

Payment for re-grading the two small ponds at Site 3, refuse and other material excavated to achieve the final grade shall be incidental to "Revegetation", per plan view acre.

8.8 Pay Items

Incidental to Item 6.0, "Revegetation", per plan view acre

9.0 MINE SEALS

9.1 Description

This work shall consist of dewatering the existing mine pool, excavating the mine openings, installing gravel bulkhead wet mine seal, modified wet seal, and backfilling the openings of the lines and grades shown. There are wet/modified wet seal, dry mine seals, and bat gate details illustrated on the plans. They shall be constructed in accordance with the typical details at the locations shown in the plans. Materials shall conform to those listed below. The length of the 12-inch diameter pipes and associated clean-outs may vary based on the conditions revealed at the time of the construction and the final grades that are achieved. The maximum run allowable of conveyance pipe without installation of cleanouts shall be 100 feet.

This work shall also consist of filling the existing 2.5' Diameter Stand Pipe at Site 1 with 3"-6" stone, to the top of the pipe.

This work shall also consist of installing an animal guard on the concrete box at Site 3 behind the Miller's residence on Bartram Lane.

9.2 Materials

9.2.1 Stone

The bulkhead stone for wet and modified mine seals shall consist of sound, durable 3" to 6" non-calcareous stone such as that commercially available. 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 (12) percent when subjected to five (5) cycles of the Sodium Sulfate Soundness Test – ASTM C88 (ASTM C99-99a 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 WVDEP prior to delivery.

In addition, sufficient 3” to 6” non-calcareous crushed stone shall be obtained to level the pipe in the wet and/or modified mine seals as shown on the Plans.

9.2.2 Filter Fabric (Geotextile)

Geotextile for the mine seals shall be Thrace-LINQ 140 EX or an Engineer approved equal. Geotextile shall be installed in locations as shown on the Plans or as directed by the Engineer. The geotextile shall be free of any chemical treatment or coating which reduced permeability and shall be inert to chemicals found in the soil and water at this time.

The geotextile shall be furnished in a protective wrapping which shall protect the fabric from abrasion due to shipping and handling. Immediately following receipt of the geotextile on the job site, it shall be inspected and stored in a clean, dry area where it will not be the subject to mechanical damage. The geotextile shall not be exposed to sunlight for a period of greater than two (2) weeks.

9.2.3 Pipe

Discharge pipe for the bulkhead seal shall consist of perforated and non-perforated 12-inch diameter SDR 35 PVC or an approved equal as shown on the plans.

9.2.4 Bat Gate

The bat gates shall conform to the detail drawings as shown on the plans. The bat gates shall be made of HDPE hot welded material. Contractor will submit shop drawings for approval by WVDEP prior to installation.

9.2.5 Bat Gate Pipe

The bat gate pipes shall be HDPE corrugated, smooth wall interior high density polyethylene pipe, such as ADS's Hi-Q pipe, or approved equal.

9.3 Construction Methods

The Contractor is advised that abandoned mine workings could contain impounded water that may require treatment. Any water discharged during mine seal installation shall meet minimum effluent standards as set forth by West Virginia Surface Mining Regulations. The Contractor is also advised that abandoned mine workings could contain dangerous gases such as methane and blackdamp. The Contractor shall be responsible for safety when working around mine openings.

9.3.1 Excavation of the mine opening shall proceed in a manner which will control the release of the mine pool. The opening shall be cleaned of debris to the satisfaction of the Engineer. Once the opening has been cleaned, filter fabric shall be placed on the mine floor and a 6-inch layer of stone shall be placed as pipe bedding. The pipes with risers shall be attached to steel plates and placed in the openings as shown on the attached Plans. The Gravel Bulkhead will be constructed and covered with one layer of Filter Fabric and compacted clay and soil cover as shown on the Plans. Solid pipe shall extend from the mine seal to a riprap channel discharging one foot above the invert of the channel. All pipes shall have a minimum grade of 2 percent.

9.3.2 A Dewatering Plan shall be submitted and approved by the Engineer prior to any work taking place. The Contractor shall install and operate a water treatment system utilizing soda ash briquettes in a manner approved by the engineer to maintain a pH between 6.0 and 9.0 in all water above base flow while dewatering mine. The Contractor shall be solely responsible for any damages caused by dewatering activities.

9.3.3 The wet mine seals and modified mine seals will require excavation into the mine entries/collapsed portals for proper installation. 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. A dewatering plan shall be submitted to the WVDEP for approval prior to seal construction, with pool reduction possibly being provided from above with a well-point system or a similar dewatering scheme.

Construction of wet mine seals and modified mine seals shall be in accordance with the plan details. Filter fabric shall separate all aggregate/soil interfaces. The clay seal and pipe outlet trenches shall be compacted in accordance with Section 7.3.3 of these specifications. The Contractor shall adhere to OSHA Regulation 29 CFR Part 1926 during all excavation and trenching activities.

9.3.4 Any monitoring wells or piezometers which have been left on this project for whosoever's use must be removed and abandoned by a person who has been certified by the State of West Virginia in accordance with 47CSR59, "Monitoring Well Regulations". This certification is necessary for any person to operate in the State of West Virginia and includes construction, installation, alteration and/or abandonment of any monitoring wells and select boreholes. The costs for removal and abandonment shall be considered as incidental to mine seal installations on the project.

9.3.5 Wet Mine Seal

A wet mine seal shall be constructed at the mine portals as indicated on the Reclamation Plan.

9.3.5.1 Excavation

Construction of the standard wet mine seal shall begin by excavation of any soil cover, mine gob, or roof-fall material to uncover the mine opening sufficiently to place the mine seal. Excavation shall continue until the void is encountered

with competent roof material or to the satisfaction of the WVDEP. The contractor shall place any required roof support in accordance with all Federal and State regulations when installation of the mine seal requires working inside the opening.

9.3.5.2 Geotextile

Geotextile fabric shall be placed on the mine floor beneath the gravel bedding, and between the soil cover backfill and gravel.

9.3.5.3 Pipe Installation

Two 12 inch diameter perforated PVC pipes shall be installed upon the 6 inch thick gravel bedding. The mine seal pipes shall maintain a minimum 2 percent slope. The pipes shall have 90 degree elbows with pipe skimmers on the interior ends. The pipes shall be extended to drain to a constructed ditch. The outlet of each drain pipe shall be fitted with an animal guard as shown of the plans.

9.3.5.4 Bulkhead Installation

3” to 6” non-calcareous stone shall be placed in the mine portal to cover the 12” diameter PVC pipes. The gravel bulkhead shall be the width and height of the mine entry. Roof contact shall ideally be a minimum of 6 lineal feet into the mine.

9.3.5.5 Soil Cover

A minimum 1 foot clay soil cover shall be placed over the geotextile and gravel bulkhead as shown on the plans. The soil cover shall be compacted by tracking with construction

equipment. The slope on the outer face shall be 2 horizontal to 1 vertical.

9.3.6 Modified Wet Mine Seal

A modified mine seal shall be constructed if competent roof rock is not encountered during excavation of the mine opening. Modified wet mine seals shall be constructed similar to standard wet mine seals, but with modification of the amount of excavation and backfilling. Also, in a modified seal, the pipes shall be connected with U-shaped connections on the ends of the pipes that extend into the mine.

9.3.7 Dry Seal

The Contractor shall install dry seals including the stone bulkhead and any other incidentals necessary to properly construct the portals as shown on the Drawings. The Contractor shall excavate the mine portals to expose the portals to the extent necessary to construct the proper dry seal or as approved by the Engineer. The Engineer shall determine the final location of the in-place dry seals.

The opening shall be cleaned of debris to the satisfaction of the Engineer. Once the opening has been cleaned, the gravel bulkhead shall be placed. The excavation shall include the making of the key way to support the gravel bulkhead. The gravel bulkhead shall consist of 3-inch to 6-inch stone 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 compacted soil material.

9.3.8 Bat Gate

The Contractor shall install bat gates as shown on the Drawings or as directed by the Engineer.

The Contractor shall dewater the mine as outlined in Section 9.3.8, Dewatering Operations. The Contractor shall excavate the mine portals to expose the portals to the extent necessary to construct the proper wet seal, or as approved by the Engineer. The
Engineer shall determine the final location of the in-place bat gates.

Once the opening has been excavated to the satisfaction of the Engineer, geotextile and 3-inch to 6-inch stone shall be placed as pipe bedding. The bedding stone shall extend two (2) times the entryway opening height, as approved by the Engineer, plus six (6) feet into the opening and from coal rib to coal rib. The pipe culvert shall be perforated as shown on the Drawings and placed into the mine opening.

Sufficient joints of pipe culverts shall be inserted into the entryway to a distance of two (2) times the entryway opening height, as determined by the Engineer. The stone bulkhead shall consist of 3-lnch to 6-inch stone 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 geotextile and the 1-foot minimum of compacted "best on-site clayey material" available, as approved by the Engineer, placed atop the geotextile. The site is then backfilled to the lines and grades shown on the Drawings.
A bat gate shall be installed in the pipe culvert as shown on the Drawings. The bat gates shall be constructed as shown on the Drawings and to the satisfaction of the Engineer.

In the absence of surveys conducted to determine if bats are utilizing an open portal, it shall be assumed that bats are present. If the presence of bats is assumed, than bat gates shall only be installed between May 1 and August 31 to avoid disturbing hibernating bats. However, there may be an opportunity to finish gate installation between September 1 and October 1 , if the weather is warm enough that bats have not begun to hibernate and the construction equipment will not block the portal entrance at night when bats will be exiting to forage.

9.3.9 Dewatering Operation

It is very possible that the portals have a blowout potential. The contractor shall check the level of impounded water prior to performing dewatering. 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 and Engineers accept no responsibility or liability for any type of personal or property injury which may result during excavation or other work activities. A dewatering plan shall be submitted to the WVDEP for approval prior to mine seal installation.

Drainage of any pooled water inside the mine shall be performed in a controlled manner as needed to facilitate the construction and to slowly relieve any built-up head conditions, to prevent a sudden release of water of “blowout” downstream and to prevent excessive erosion. Pumping or other Engineer approved methods may be required for dewatering. The contractor is also cautioned of the possibility of flowable iron oxide and aluminum precipitate discharging from the mine. The contractor shall exercise extreme caution in dewatering the mine.

Treatment of pooled water inside the mine may be required to achieve effluent limits for pH, iron, aluminum or other parameters regulated by the state. The contractor shall be responsible for meeting any and all effluent limits established by the appropriate regulatory agencies.

If required, as determined by the engineers, the contractor shall provide a treatment system that may include soda ash briquettes for adjusting pH and a sump for settling iron and aluminum precipitates. The application rate of soda ash briquettes shall be as directed by the engineer based on the pH and metals analyses by the contractor.

Soda Ash used to neutralize mine acid drainage shall be supplied in 50# bags of briquettes. The purity of the Soda Ash shall be clearly marked on the container. Soda Ash supplied for neutralization shall be 98% Sodium Carbonate.

9.3.10 Potential Gases and Oxygen Deficiency

The excavations may contain methane or other gases which may be combustible or otherwise harmful to people nearby. Furthermore the air around the mine entries may be oxygen deficient. The contractor must have equipment capable of detecting the presence of toxic and combustible gases and the absence of oxygen in the excavation, and must have personnel trained in the use of such equipment. If any of these conditions are encountered, the contractor must have equipment available either to permit personnel to work in the condition encountered, or to change the condition by removing any gases or blowing breathable air into the excavation. Work cannot proceed until the Engineer is satisfied that the working conditions near the mine entries are safe.

Approval by the Engineer of the Contractor's procedures down not relieve the Contractor of responsibility for site safety.

9.4 Method of Measurement

9.4.1 Mine Seals

The method of measurement for determining the quantity of work done for mine seal construction as described above, including dewatering, will be on a per mine seal basis.

The cost for the mine seals shall include the cost of all items necessary to complete the seal, including exaction, backfilling, stone, soil and any other item required for a proper seal. Mine seal conveyance pipe used shall be included in the cost of the mine seal.

9.5 Basis of Payment

9.5.1 Mine Seals

The quantity of work done will be paid at the contract unit price bid for the type of mine seal constructed, 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. Mine seal conveyance pipe used shall be included in the cost of the mine seal.

The cost for installing the bulkhead stone in the existing 2.5 foot diameter Stand Pipe at Site 1 shall be considered as incidental to mine seal installations on the project.

This cost for installing an animal guard on the concrete box at Site 3 behind the Miller's residence on Bartram Lane shall be considered as incidental to mine seal installations on the project.

9.5.2 Acid Mine Drainage Treatment

The basis of payment for the acid mine drainage treatment shall be per certified weight slips of material delivered and used at the site per 50 pound bag of soda ash briquettes.

9.6 Pay Items

Item 9.1, "Wet/Modified Mine Seal", per each.
Item 9.2, "Dry Mine Seal", per each.
Item 9.3, "Bat Gate", per each.
Item 9.4, "Soda Ash Briquettes", per 50 lb. bag

10.0 SUB-SURFACE DRAINS

10.1 Description

This work shall consist of constructing subsurface drains to control seepage at the locations and to the dimensions shown on the plans. This shall also consist of additional underdrains as required and approved by the WVDEP during construction. The underdrains are to be constructed in accordance with the typical plan detail. Pipe clean-outs may be installed if lengths exceed 100 feet or whenever required by the WVDEP.

10.2 Materials

10.2.1 Stone for underdrain shall consist of sound, durable 3" to 6" inch non-calcareous stone such as that commercially available. 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 for Roads and Bridges, Adopted 2010. Stone shall have a maximum weighted loss of twelve (12) percent when subjected to five 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 WVDEP prior to delivery.

10.2.2 Filter fabric for the underdrain shall be non-woven type, meeting the requirements of Section 715.11 of the January 2015 Supplemental Specification of the WVDOH Standard Specifications for Roads and Bridges, Adopted 2010.

10.2.3 Pipe shall consist of perforated 12-inch diameter PVC SDR 35 grade within the underdrain and solid 12-inch diameter PVC SDR 35 grade from the underdrain to the riprap channel. Clean outs shall consist of necessary

wye fittings and connections compatible with SDR 35 PVC pipe. End caps shall consist of 12-inch diameter PVC SDR 35 grade.

10.3 Construction Methods

10.3.1 Underdrains

10.3.1.1 Underdrains, if determined necessary, will be constructed at the location designated and approved by WVDEP. The dimensions of the underdrains shall be as shown on the Drawings. The trench shall be relatively smooth and free of sharp protrusions, and depression. Excavated material shall be stockpiled and dried. The backfill is to be made with this material if the WVDEP deems this material acceptable. Excavation shall be made by cutting a trench into the ground to the elevation where the underdrain is to be placed. A portion of the underdrains may require excavation through rock. No blasting will be allowed.

10.3.1.2 All trenches will be filled in at the end of each day's work with no trench open overnight. Water must be removed until the water level is below the area to be excavated.

10.3.1.3 The geotextile shall be placed in the trench prior to stone placement. The geotextile shall be placed in such a manner as to cover the bottom and sides of the trench. Excess material shall be provided to be folded over the stone and provide a 1 foot overlap.

10.3.1.4 A minimum 4 inch bedding layer of AASHTO #1 Stone shall be placed in the bottom of the trench. The underdrain pipe shall be firmly embedded in the bedding material. The perforated pipe shall be placed with the perforations down. After placement of the pipe, the stone shall be placed until the underdrain is filled to the required depth. The stone for the underdrains shall be placed in such a manner so as to avoid

damaging the geotextile. The contractor shall limit the drop height of stone to minimize the likelihood of damages. Any damages resulting from the placement of stone shall be repaired by the contractor at his own expense and to the satisfaction of the WVDEP.

10.3.2 Trench width for the sub-surface 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.

10.3.3 Trench exceeding five (5) feet in depth shall be supported in compliance with OSHA requirements. Trench bottom shall be cleared of any loose debris and any standing water.

10.3.4 Filter fabric shall be installed in the trench as shown on the Construction Drawings. The aggregate shall be placed carefully to prevent puncturing, tearing or shifting of the filter fabric. The filter fabric shall not be installed over the ends of the sub-surface drains where the rock shall daylight directly into existing or modified drainage ways.

10.3.5 Animal guards shall be constructed and installed on the downstream end of each outlet pipe as detailed on the Plans. These guards will be installed the same day to prevent animal entry during non-work time.

10.3.6 End caps shall be installed on the upstream end of the SDR 35 PVC pipe within the sub-surface drain.

10.4 Method of Measurement

The method of measurement for constructing underdrain shall be on a linear foot basis measure along the centerline of the underdrain. Excavation necessary to construct the underdrain; furnishing and placement of filter fabric, aggregate, erosion control matting (where required), conveyance pipe, cleanouts, and all other work necessary for the acceptable installation of the underdrain will not be measured but shall be considered incidental to the construction of the respective underdrains. The cost of these incidental items shall be included in the unit price

bid for aggregate underdrains.

10.5 Basis of Payment

The basis of payment for the underdrain shall be per lineal foot of pipe installed and accepted.

10.6 Pay Items

Item 10.0, “Underdrain”, per linear foot

APPENDIX A – WATER SAMPLE TEST RESULTS

Bio-Chem Testing, Inc. Environmental Laboratory

5 Weatheridge Drive
Hurricane, WV 25526

Phone: (304) 757-8954
Fax: (304) 757-9676

P.O. Box 634
Teays, WV 25569

Web Site: www.biochemtesting.com
e-mail: info@biochemtesting.com

LABORATORY ANALYSIS REPORT

Mead & Hunt
400 Tracy Way Suite 200
Charleston, WV 25311
Attn: Jamie Bumgarner
Mead & Hunt
1
Ridgeview Portals
Water Samples

Laboratory Number:	1504153-01
Sample Identification	1
Sampled By:	Client
Date/Time Sampled	05/07/2015 11:15
Date/Time Received	05/08/2015 11:04
Sample Type	GRAB
Client Information	

PARAMETER	RESULT	NOTE	MDL	UNITS	METHOD	DATE OF ANALYSIS	TIME OF ANALYSIS	ANALYST
Metals by EPA 200 Series Methods								
Aluminum	8.10		0.020	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Calcium	127		0.2	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Iron	1.47		0.02	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Lead	<0.000711		0.000711	mg/L	EPA200.8Rev5.4-1994	05/12/2015	10:31	BS
Magnesium	69.7		0.2	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Manganese	3.14		0.003	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Potassium	9.2		0.5	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Sodium	22.8		0.5	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Wet Chemistry								
Acidity (Hot)	66		5	mg/L	SM2310B(4a)-1997	05/14/2015	13:18	HS
Alkalinity	<5		5	mg/L	SM2320B-1997	05/14/2015	8:46	HS
Bicarbonate Alkalinity	<5		5	mg/L	SM2320B	05/14/2015	8:46	HS
Carbonate Alkalinity	<5		5	mg/L	SM2320B	05/14/2015	8:46	HS
Chloride	10.7		0.625	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Nitrate as N	<0.600		0.600	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Orthophosphate	<0.00400		0.00400	mg/L	SM4500P-E-1999	05/08/2015	16:49	NM
pH	3.95		-	pH Units	SM4500H+-B-2000	05/14/2015	8:46	HS
Specific Conductance	1280		-	umhos/cm	EPA120.1Rev-1982	05/08/2015	11:30	BS
Sulfate as SO4	664		1.00	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Turbidity, NTU	11		-	NTU	EPA180.1Rev2.0-1993	05/08/2015	19:00	HS

Method Reference: USEPA: Methods for Chemical Analysis of Water and Waste.
SM: Standard Methods for the Examination of Water and Wastewater.
SW: Test Methods for Evaluating Solid Waste.

Respectfully Submitted:

MAY 18 2015

Mukesh Shah

Bio-Chem Testing, Inc. Environmental Laboratory

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LABORATORY ANALYSIS REPORT

Mead & Hunt
400 Tracy Way Suite 200
Charleston, WV 25311
Attn: Jamie Bumgarner
Mead & Hunt
2
Ridgeview Portals
Water Samples

Laboratory Number:	1504153-02
Sample Identification	2
Sampled By:	Client
Date/Time Sampled	05/07/2015 12:30
Date/Time Received	05/08/2015 11:04
Sample Type	GRAB
Client Information	

PARAMETER	RESULT	NOTE	MDL	UNITS	METHOD	DATE OF ANALYSIS	TIME OF ANALYSIS	ANALYST
Metals by EPA 200 Series Methods								
Aluminum	18.5		0.020	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Calcium	117		0.2	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Iron	1.00		0.02	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Lead	0.004025		0.000711	mg/L	EPA200.8Rev5.4-1994	05/12/2015	10:31	BS
Magnesium	75.9		0.2	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Manganese	3.24		0.003	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Potassium	8.5		0.5	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Sodium	31.9		0.5	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Wet Chemistry								
Acidity (Hot)	150		5	mg/L	SM2310B(4a)-1997	05/14/2015	13:18	HS
Alkalinity	<5		5	mg/L	SM2320B-1997	05/14/2015	8:46	HS
Bicarbonate Alkalinity	<5		5	mg/L	SM2320B	05/14/2015	8:46	HS
Carbonate Alkalinity	<5		5	mg/L	SM2320B	05/14/2015	8:46	HS
Chloride	10.7		0.625	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Nitrate as N	<0.600		0.600	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Orthophosphate	0.00930		0.00400	mg/L	SM4500P-E-1999	05/08/2015	16:49	NM
pH	3.45		-	pH Units	SM4500H+-B-2000	05/14/2015	8:46	HS
Specific Conductance	1520		-	umhos/cm	EPA120.1Rev-1982	05/08/2015	11:30	BS
Sulfate as SO4	778		1.00	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Turbidity, NTU	11		-	NTU	EPA180.1Rev2.0-1993	05/08/2015	19:00	HS

Method Reference: USEPA: Methods for Chemical Analysis of Water and Waste.
SM: Standard Methods for the Examination of Water and Wastewater.
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LABORATORY ANALYSIS REPORT

Mead & Hunt
400 Tracy Way Suite 200
Charleston, WV 25311
Attn: Jamie Bumgarner
Mead & Hunt
3
Ridgeview Portals
Water Samples

Laboratory Number:	1504153-03
Sample Identification	3
Sampled By:	Client
Date/Time Sampled	05/07/2015 14:30
Date/Time Received	05/08/2015 11:04
Sample Type	GRAB
Client Information	

PARAMETER	RESULT	NOTE	MDL	UNITS	METHOD	DATE OF ANALYSIS	TIME OF ANALYSIS	ANALYST
Metals by EPA 200 Series Methods								
Aluminum	0.060		0.020	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Calcium	57.6		0.2	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Iron	0.66		0.02	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Lead	<0.000711		0.000711	mg/L	EPA200.8Rev5.4-1994	05/12/2015	10:31	BS
Magnesium	26.4		0.2	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Manganese	0.099		0.003	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Potassium	3.3		0.5	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Sodium	10.4		0.5	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Wet Chemistry								
Acidity (Hot)	<5		5	mg/L	SM2310B(4a)-1997	05/14/2015	13:18	HS
Alkalinity	64		5	mg/L	SM2320B-1997	05/14/2015	8:46	HS
Bicarbonate Alkalinity	64		5	mg/L	SM2320B	05/14/2015	8:46	HS
Carbonate Alkalinity	<5		5	mg/L	SM2320B	05/14/2015	8:46	HS
Chloride	2.83		0.625	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Nitrate as N	<0.090		0.090	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Orthophosphate	<0.00400		0.00400	mg/L	SM4500P-E-1999	05/08/2015	16:49	NM
pH	7.24		-	pH Units	SM4500H+-B-2000	05/14/2015	8:46	HS
Specific Conductance	561		-	umhos/cm	EPA120.1Rev-1982	05/08/2015	11:30	BS
Sulfate as SO4	204		1.00	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Turbidity, NTU	74		-	NTU	EPA180.1Rev2.0-1993	05/08/2015	19:00	HS

Method Reference: USEPA: Methods for Chemical Analysis of Water and Waste.
SM: Standard Methods for the Examination of Water and Wastewater.
SW: Test Methods for Evaluating Solid Waste.

Respectfully Submitted:

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MAY 18 2015

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LABORATORY ANALYSIS REPORT

Mead & Hunt
400 Tracy Way Suite 200
Charleston, WV 25311
Attn: Jamie Bumgarner
Mead & Hunt
4
Ridgeview Portals
Water Samples

Laboratory Number:	1504153-04
Sample Identification	4
Sampled By:	Client
Date/Time Sampled	05/07/2015 16:00
Date/Time Received	05/08/2015 11:04
Sample Type	GRAB
Client Information	

PARAMETER	RESULT	NOTE	MDL	UNITS	METHOD	DATE OF ANALYSIS	TIME OF ANALYSIS	ANALYST
Metals by EPA 200 Series Methods								
Aluminum	0.070		0.020	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Calcium	58.8		0.2	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Iron	0.66		0.02	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Lead	<0.000711		0.000711	mg/L	EPA200.8Rev5.4-1994	05/12/2015	10:31	BS
Magnesium	27.2		0.2	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Manganese	0.076		0.003	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Potassium	3.4		0.5	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Sodium	10.6		0.5	mg/L	EPA200.7Rev4.4-1994	05/15/2015	8:54	CW
Wet Chemistry								
Acidity (Hot)	<5		5	mg/L	SM2310B(4a)-1997	05/14/2015	13:18	HS
Alkalinity	63		5	mg/L	SM2320B-1997	05/14/2015	8:46	HS
Bicarbonate Alkalinity	63		5	mg/L	SM2320B	05/14/2015	8:46	HS
Carbonate Alkalinity	<5		5	mg/L	SM2320B	05/14/2015	8:46	HS
Chloride	2.77		0.625	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Nitrate as N	<0.090		0.090	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Orthophosphate	<0.00400		0.00400	mg/L	SM4500P-E-1999	05/08/2015	16:49	NM
pH	7.39		-	pH Units	SM4500H+-B-2000	05/14/2015	8:46	HS
Specific Conductance	569		-	umhos/cm	EPA120.1Rev-1982	05/08/2015	11:30	BS
Sulfate as SO4	197		1.00	mg/L	EPA300.0Rev2.1-1993	05/08/2015	7:26	BS
Turbidity, (NTU)	7.0		-	NTU	EPA180.1Rev2.0-1993	05/08/2015	19:00	HS

Method Reference: USEPA: Methods for Chemical Analysis of Water and Waste.
SM: Standard Methods for the Examination of Water and Wastewater.
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Respectfully Submitted:

Mukesh Shah

MAY 18 2015

APPENDIX B – BID SCHEDULE

RIDGEVIEW (DUNLAP) PORTALS

Contractor's Bid Sheet

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.	Description	Unit	Quantity	Unit Price	Price
1.0	Mobilization & Demobilization (Lump Sum)	LS	1	$	$
	(Cannot exceed 10% of Total Amount Bid)				
2.0	Construction Layout (Lump Sum)	LS	1	$	$
	(Cannot exceed 5% of Total Amount Bid)				
3.0	Quality Control (Lump Sum)	LS	1	$	$
	(Cannot exceed 3% of Total Amount Bid)				
4.1	Site Preparation (Lump Sum)	LS	1	$	$
	(Cannot exceed 10% of Total Amount Bid)				
4.2	Constructed Access Road (per linear foot)	LF	180	$	$
4.3	Access Road Rehabilitation (per ton)	TN	500	$	$
5.1	Silt Fence (per linear foot)	LF	2,000	$	$
5.2	Stabilized Construction Entrance (per each)	EA	5	$	$
5.3	Stone Check Dam (per each)	EA	17	$	$
6.0	Revegetation (per plan view acre)	AC	12	$	$
7.1	Riprap Vee Channel (per linear foot)	LF	730	$	$
7.2	Riprap 2' Trap. Channel (per linear foot)	LF	224	$	$
7.3	Grouted Riprap Vee Channel (per linear foot)	LF	430	$	$
7.4	Grouted Riprap 2' Trap. Channel (per linear foot)	LF	103	$	$
7.5	Splash Pad (per each)	EA	16	$	$
7.6	Channel Road Crossing (per each)	EA	5	$	$
7.7	Temporary Stream Crossing (per each)	EA	4	$	$
7.8	12" I.D. HDPE Pipe (per linear foot)	LF	58	$	$
7.9	24" I.D. HDPE Pipe (per linear foot)	LF	30	$	$
7.10	18" I.D. Steel Casing Pipe (per linear foot)	LF	40	$	$
7.11	Stream Bank Protection (per linear foot)	LF	25	$	$
9.1	Wet/Modified Mine Seal (per each)	EA	20	$	$
9.2	Dry Mine Seal (per each)	EA	2	$	$
9.3	Bat Gate (per each)	EA	1	$	$
9.4	Soda Ash Briquettes (per 50 lb. bag)	BAG	100	$	$
10.0	Underdrain (per linear foot)	LF	51	$	$
	TOTAL				$