

CONSTRUCTION SPECIFICATIONS

Morgan Highwall #46

PRESTON COUNTY, WEST VIRGINIA

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ABANDONED MINE LANDS AND RECLAMATION

July 2016

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I. SPECIAL PROVISIONS

I. LOCATION / SITE DESCRIPTION

The subject project is located in Preston County, West Virginia near the community of Albright. The project is located off of County Rt. 22 Coal Lick Road.

The AML problems to be addressed at this site include:

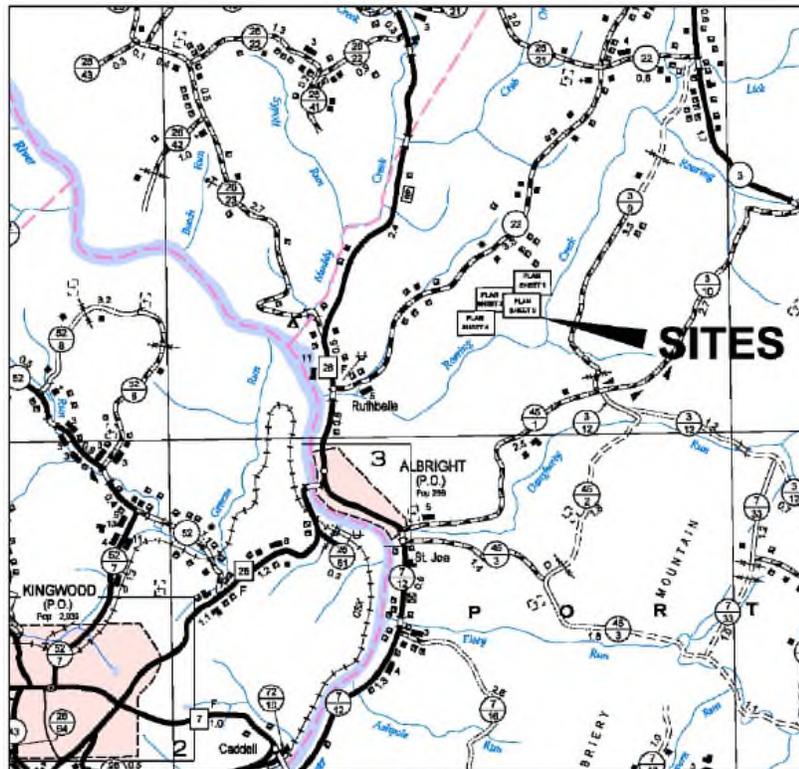
- Mine Drainage
- Dangerous Highwall

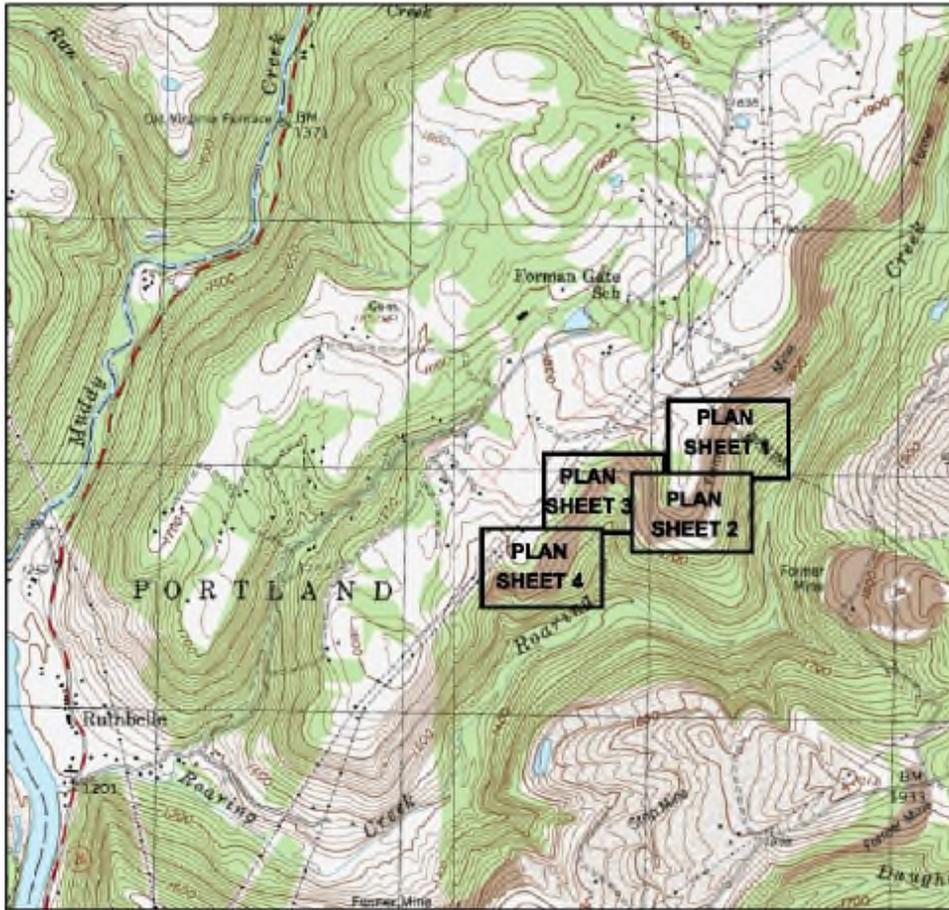
Directions to site:

From Kingwood, take Rt. 26 North to County Route 22 Coal Lick Road just north of Albright. Turn right on Coal Lick Road (CR 22) and drive approximately 2.1 miles to Black Bear Road. Turn right and drive approximately 0.3 miles to the mine bench. Project is to the right on the mine bench.

The GPS location is as follows: 39° 31' 05.5" 79° 36' 45.3"

Preston County Highway Map and Newburg Quadrangle





USGS VICINITY MAP
NEWBURG QUADRANGLE

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, and associated Materials;
- Providing sediment control;
- Construction and installation of support areas, and maintenance of access roads to the site;
- Backfilling dangerous highwall;
- Construction and installation of drainage control items;
- Installation of underdrain;
- Revegetation

The Contractor shall also be responsible for surveying, including establishing construction baseline, measuring and developing all completed quantities on the job, and the 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 on the plans, 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) indemnify and hold harmless the WVDEP for Contractor's action for any injury or damages whatsoever resulting from the use of the property.

The Contractor also shall submit a borrow/disposal 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 for 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 Provisions Section III (Borrow/Disposal Areas) 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 Sections 4.3.8 of these Specifications. Wood may be burned in conformity with Sections 4.3.7 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 Provisions Section III of these Specifications.

V. PERMITS, LICENSES AND FEES

The Contractor shall procure all 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: Water Quality Certification from WVDEP and burning permits from WVDNR and WVDEP Office of Air Quality. A copy of the permit/permits as procured shall be furnished to the Owner prior to initiation of the work under this Contract. The WVDEP will obtain the Permits (MM 109 Form) from WVDOH and NPDES from WVDEP. Contractor shall be responsible for any Stream Activity Permits necessary to complete the project work.

VI. NPDES STORMWATER REQUIREMENTS

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

of the contract, the Contractor shall complete a Co-Applicant #1 signature page and submit the completed form to WVDEP-AML prior to scheduling a Pre-Construction Conference.

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

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

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



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 be 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".



Earl Ray Tomblin
Governor



Randy C. Huffman
Cabinet Secretary



Robert Rice
Chief

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



77 1/4"

17 1/4"

1 1/8"



15 3/4"

Earl Ray Tomblin
Governor

7 7/8"



Randy C. Huffman
Cabinet Secretary

7 7/8"



Robert Rice
Chief

3"

8 5/8"

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

18"

2 1/4"

6"

73 7/8"

36"

36"

48"

6"

96"



STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Office of Abandoned Mine Lands & Reclamation

Earl Ray Tomblin
Governor

48"



Randy C. Huffman
Cabinet Secretary



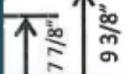
Robert Ride
Chief

Project Cost: \$XXX,XXX.00
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Project Name:
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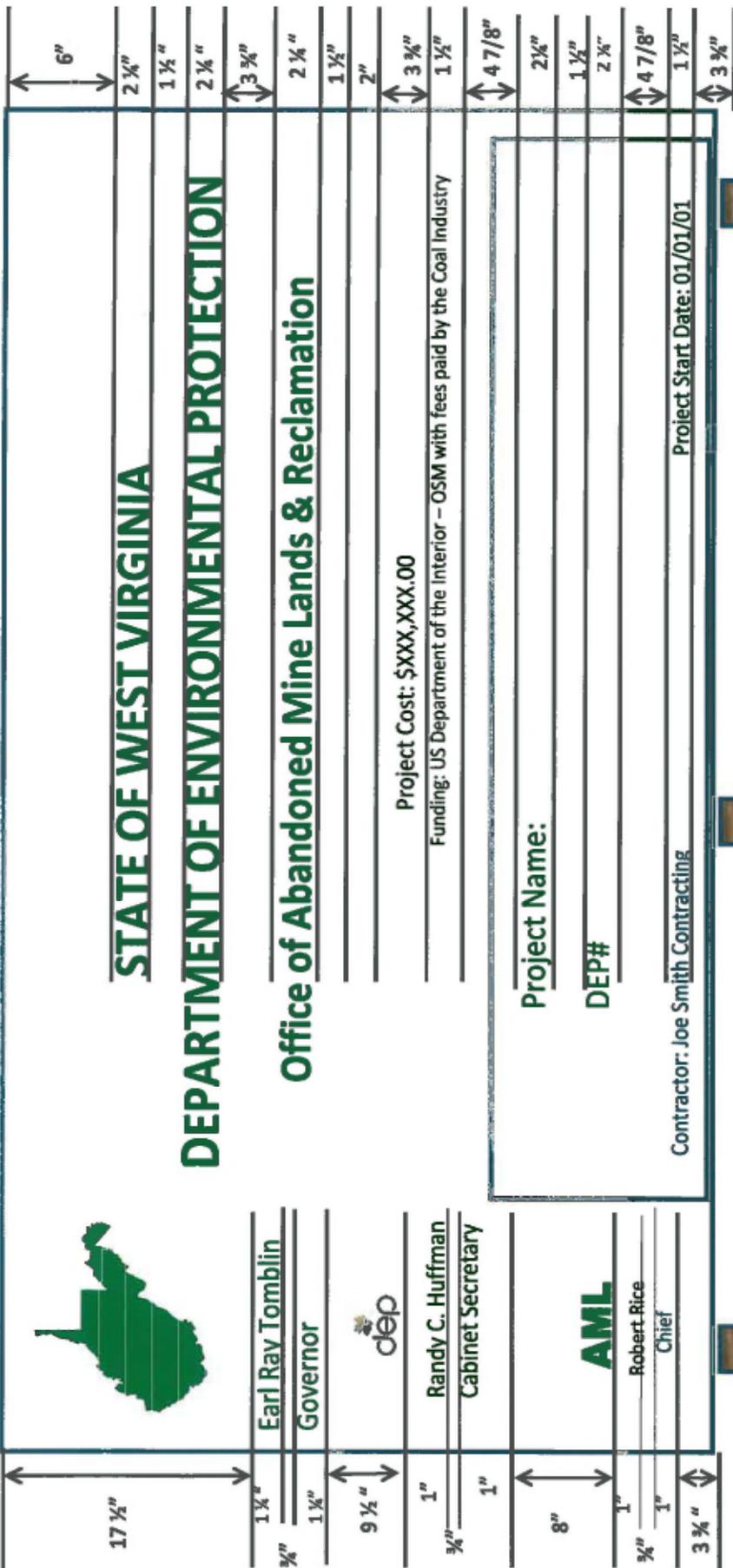


5 1/4"

7 7/8"

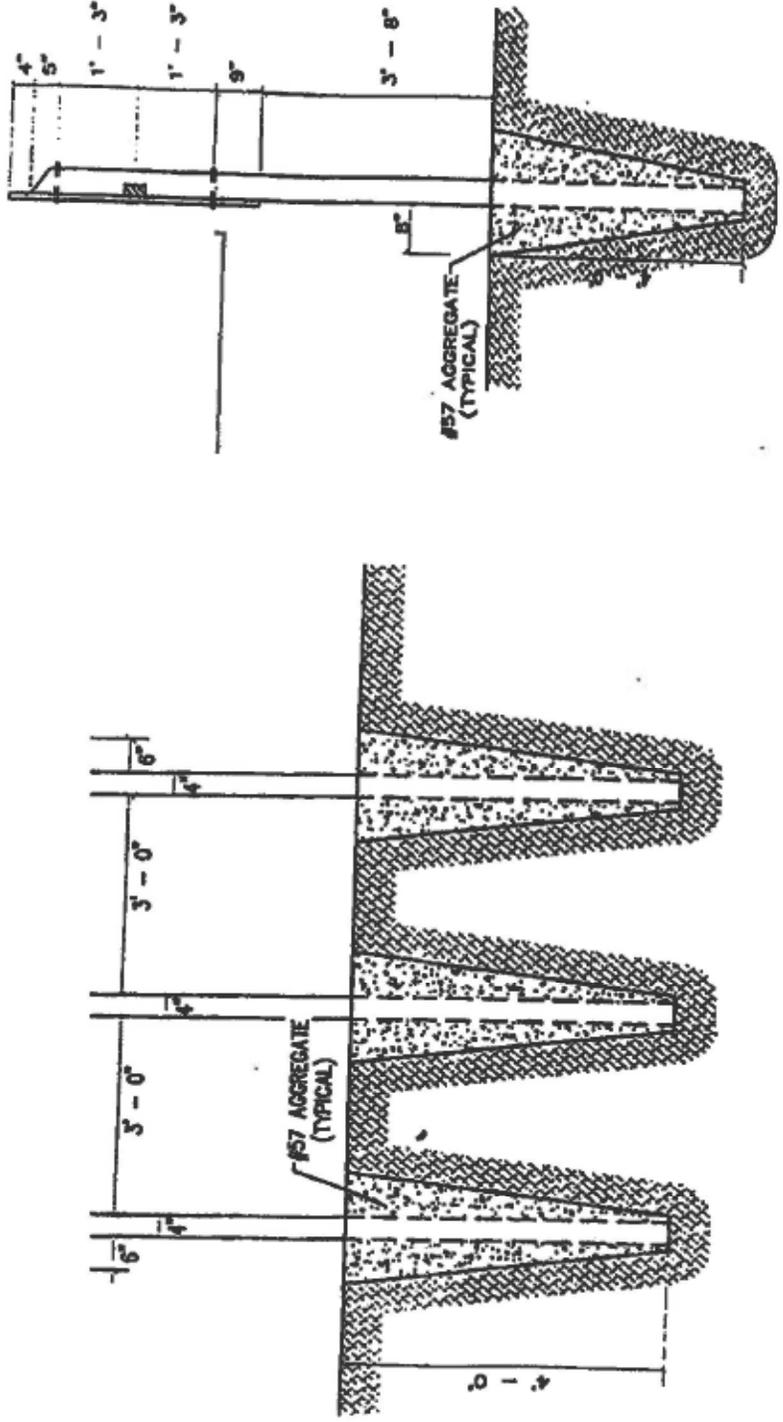
9 3/8"

81 3/8"



Notes:

1. Sign board to be $\frac{3}{4}$ " 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 site, installation and removal of the project sign, and for the establishment of the Contractor's DEP approved facilities necessary to begin work on a substantial phase of the contract. It shall also include all demobilization activities. All equipment and material storage areas are to be approved by the WVDEP.

1.2 Method of Measurement

The method of measurement for determining the mobilization and demobilization work done as described above will be on a lump sum basis, with partial payments as listed below.

1.3 Basis of Payment

The bid for Mobilization 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:

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.

The final one-half of the amount bid shall be released upon submittal and approval of as built drawings on the final payment estimate.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the Contract.

No deduction will be made, nor will any increase be made, in the lump sum mobilization 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 be more than 10% of the "TOTAL AMOUNT BID" for the project.

2.0 CONSTRUCTION LAYOUT

2.1 Description

This item consists of furnishing, placing, replacing and maintaining construction layout stakes, baseline stations, primary control points and any disturbed property location monuments as necessary for the proper performance of the work under this contract. It further consists of determining the exact units of measure for payment. It also consists of checking and making any field adjustments to the plan grades and elevations that may be necessary due to the wide variability of coal refuse shrinkage factors when compacted.

Additionally, this item also includes the generation of cross-sections of the site indicating pre and post-construction lines for submission to the WVDEP. "As-Built" Drawings, including the Reclamation Plan and any others specifically requested by the WVDEP, shall be provided to the WVDEP prior to the Final Inspection Meeting. "As Built" plans are to be submitted in hard copy format for approval. As Built plans shall be certified by WV Registered Professional Engineer or Licensed Land Surveyor. After approval has been given, the contractor shall submit the approved plans on a CD in Adobe (pdf) and AutoCAD format.

2.2 Materials

Conventional survey stakes, flagging, drafting media, etc.

2.3 Construction Methods

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.

The Contractor shall provide a field work force and shall set all additional stakes 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. The Contractor shall be responsible for having the layout staking work conform to the lines, grades, elevations, and dimensions called for on the Plans. The Contractor shall furnish a copy of his survey records for checking by the WVDEP 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 WVDEP and the acceptance of all or any part of it shall not relieve the Contractor of his responsibility to secure the proper dimensions, grades, and elevations.

The Contractor shall exercise care in the preservation of existing stakes and bench marks, including existing property line markers, and shall have them reset at his

expense when any are damaged, lost, displaced, or removed. The Contractor shall use primary control points for re-establishing baseline stations wherever previously surveyed stations have been destroyed or removed. At a minimum, the Contractor shall confirm the location of existing baseline stations by field survey of each station's relationship to a suitable primary control point. Should any discrepancies be found, primary control points shall supersede any existing baseline stations.

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 approved by, a Registered Professional Engineer or Licensed Land Surveyor.

The Contractor shall provide the WVDEP existing ground line cross-sections and notes for acceptance prior to any earthwork activities and as-built ground line cross-sections and notes as soon as practical after the completion of construction. Failure to do so could either preclude any future alteration to the total amount bid for earthwork and/or retard the final installment payment for earthwork.

Acceptable cross-sections shall be drawn or reproduced on bond paper and at the same scale provided in the design drawings. Each sheet shall be lightly gridded to match the cross sections in the design drawings and shall contain station numbers, elevations, baseline offset distances, cross-section lines and types, date, responsible parties and a legend shall be clearly illustrated. Cross sections which do not encompass all areas of both earthwork excavation and fill placement shall be considered incomplete without exception

All survey notes, calculations, sections, plans, or other documents produced pursuant hereto shall be certified as correct by a Registered Professional Engineer or Licensed Land Surveyor. The WVDEP shall be allotted sufficient time to reasonably review submitted cross-sections and investigate any and all discrepancies, throughout the course of construction. Unacceptable and/or incomplete cross-sections shall be returned to the Contractor for necessary revision. No earthwork, nor any other directly related work item, shall be initiated prior to the WVDEP's acceptance of a complete set of pre-construction cross-sections. Costs incurred by the Contractor from the delay of any construction activities required by the WVDEP to recover, review and investigate project cross-sections as described herein shall be the sole responsibility of the Contractor.

"As-Built" Drawings, including the Reclamation Plan and any others specifically requested by the WVDEP, shall be provided to the WVDEP prior to the Final Inspection Meeting. The As-Built shall include two discs each of the plans in PDF and AutoCAD 2007+ format on CD-ROM or DVD and one paper copy of the plans with the same size and scale as contained on the original plans. The As-Built shall include the following:

- The As-Built shall show all pay items remaining on site post construction.

- The As-Builts shall show all horizontal and vertical dimensions of all installed components (i.e. pipes, drop inlets, mine seals, drainage channels, splash pads and manholes) as well as surveyed locations of the installed structures.
- Cut-fill sections shall have the area of the section marked by the section for easier calculation.
- The As-Builts shall have the lines on the plans shown in either color or line type to distinguish between our original plan lines, the contractor's original survey lines and the final grade lines. This will apply for all cross sections on the project.
- All waste and borrow areas shall be shown on the As-Builts.
- As-Builts must show total quantities for all items on the project. The format shall be in tabular form.
- All work completed by the Licensed Land Surveyor on the As-Builts must be certified by the Licensed Land Surveyor as to completeness and accuracy of the submittal.

2.4 Method of Measurement

There shall be no measurement of this item as it is lump sum. Payment will be for furnishing, setting, maintaining, and resetting the stakes, when necessary; for furnishing all engineering personnel, equipment, materials, and all incidentals thereto; and for providing the WVDEP pre and post-construction ground line cross-sections and "as-built" drawings as described herein.

2.5 Basis of Payment

This item shall be paid at the bid lump sum price. The amount shall not exceed five percent (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 item amount regardless of decreases or increases in the final total contract amount or for any other cause.

2.6 Pay Item

Item 2.0, "**Construction Layout**", per lump sum. Cannot be more than 5% of the "**Total Amount Bid**" for the project.

3.0 QUALITY CONTROL

3.1 Description

This work shall consist of assuring the materials supplied and the work performed is in conformance with these specifications.

3.2 Applicable Publications

Work shall comply with, but not be limited to, the provisions of the following codes, standards and specifications:

ASTM C-31	“Making and Curing Concrete Test Specimens in the Field”
ASTM C-39	“Compressive Strength of Cylindrical Concrete Specimens”
ASTM C-88	“Sodium Sulfate Soundness”
ASTM D-698	“Test for Moisture-Density Relations of Soils And Soil-Aggregate Mixtures, Using 5.5 lb. Hammer and 12 in. Drop”.
ASTM D-1556	“Test for Density of Soil in-place by the Sandcone Method”.
ASTM D-2922	“Test for Density of Soil & Soil Aggregate In-place by Nuclear Methods”.
ASTM D-3017	“Test for Moisture Content of Soil & Soil Aggregate in-place by Nuclear Methods”.
EPA-600/2-76-184	Handbook for Soil and Water Analysis.

3.3 Submittals

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

The Contractor shall submit at least two (2) copies of the results of all tests conducted on materials requiring testing. As a minimum, these tests will include moisture content and density tests of the soil in accordance with the provisions of ASTM D-698 (Standard Proctor), in-place field density tests by ASTM D-1556 or ASTM D-2922, Sodium Sulfate Soundness Tests on stone for the riprap material in accordance with ASTM C-88, compressive strength tests on grout and concrete in accordance

with ASTM C-39, and soil tests to determine the lime and nutrient requirements of the areas to be revegetated.

3.4 Construction Methods

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 by the WVDEP.

Testing for compaction, aggregate, grout, soil nutrient and lime requirements, etc., shall be performed as required by these specifications or as requested by the WVDEP in writing. The WVDEP 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.

The Contractor shall be responsible to perform laboratory tests of the backfill, coal refuse, and mine spoil, to identify the compaction requirements, the standard proctor density and to determine their use as cover and fill materials. In addition, field density tests shall be performed in accordance with these construction specifications. All test results shall be submitted to the WVDEP for approval of compaction criteria prior to compaction of the fill and after fill compaction to verify that the required compaction is obtained.

Only new and first class materials which conform to the requirements of these Specifications shall be used unless specified otherwise. When requested by the WVDEP, the Contractor shall furnish a written statement of the origin, composition, and manufacturer of any or all materials (manufactured, produced, or grown) that are to be used in the work. The sources of supply of each material used shall be approved by the WVDEP before delivery is started. If, at any time, sources previously approved fail to produce materials acceptable to the WVDEP, the Contractor shall furnish materials from other approved sources.

3.5 Method of Measurement

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

3.6 Basis of Payment

The quantity of work done will be paid at the bid lump sum price for this item, which price and payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner; including the furnishing of all labor, materials, tools, equipment, supplies and incidentals necessary to complete the work.

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

3.7 Pay Item

Item 3.0, “**Quality Control**”, per lump sum. Cannot be more than 3% of the **Total Amount Bid** for the project.

4.0 SITE PREPARATION

4.1 Description

Work performed under this section shall include clearing and grubbing, access roadway construction, access roadway rehabilitation, removal and disposal of all trees, stumps, shrubs and any other vegetation, wood, debris, abandoned mining structures and garbage of any nature from the limits of the areas of construction and any other areas as approved by WVDEP. This work shall also include the preservation from injury to all vegetation, utilities or other objects to remain.

Roads shall be protected as per notes on the attached plans. Stone consisting of a four (4) inch layer of Class I Aggregate shall be placed on disturbed access roads at the completion of the construction as shown on the attached plans or directed by the WVDEP.

4.2 Materials

4.2.1 Tree Wound Dressing

Trunk damage to trees shall be painted with Tree-kote or an equal antiseptic and waterproof paint with an asphaltic base. This paint shall not contain coal-tar creosote, turpentine or other materials harmful to plants or animals.

4.2.2 Road Restoration Stone

Road restoration stone shall consist of Class I Aggregate as defined by WVDOT Specifications.

4.3 Construction Methods

4.3.1 Clearing and Grubbing

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

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

Install perimeter erosion and sediment controls (BMP's) prior to clearing and grubbing. These controls shall be approved by the WVDEP inspector before clearing and grubbing begins. 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.

All stumps, roots, buried logs and brush shall be removed. Grass, however, may be incorporated into the resoiling material. Tap roots 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.

Cleared and grubbed areas shall be worked such that positive drainage is provided to prevent ponding of water.

All organic material shall be burned on site pending the contractor securing the necessary permits, however, burning of the combustible material will not be permitted within close proximity to coal seams, structures, or on or near coal refuse. 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 approval. All timber 8" in diameter and larger at stump height shall be cut prior to clearing and grubbing operations. Timber shall be topped with branches removed and stacked and stockpiled in an appropriate manner in an accessible location approved by 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.

All other materials generated from required clearing and grubbing operations shall be removed and disposed of by the Contractor. All garbage, tires, construction debris, mining debris, mining structures, etc., within the limits of construction, shall be disposed at a licensed landfill. Weigh ticket as receipts for this material will be required.

4.3.2 Access Roads

Existing site access roads shall provide safe, all-weather access to the site. These existing roads, including paved roads, shall be maintained during construction and left in an equal or improved state of repair after construction.

Construction of the access roads that require access interruption are to be coordinated with residents and utility companies and kept to a minimum. The Contractor is responsible for locating and avoiding all underground and

overhead utilities and constructions during access road upgrading and maintenance.

It shall be the sole responsibility of the Contractor to correctly locate and avoid all underground, on-ground, and overhead utilities, facilities and other structures and constructions, and for that purpose, shall employ all necessary precautions and methods to insure avoidance of and damage to such constructions. 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 Division I, Section 1.15, Utilities and Other Obstructions, of the Special Provisions for more information on utilities.

Road restoration stone shall consist of Class I Aggregate as defined by WVDOT Specifications. The stone shall be placed and compacted in a four inch layer as indicated in the attached plans at the completion of construction in the specific area of the project. The contractor shall be solely responsible for maintaining roads and driveways during construction.

4.3.3 NEPA Compliance Schedule

The West Virginia Department of Environmental Protection has determined that off-site disposal (or borrow) may be required to complete reclamation on this site. Since the most effective location has not been determined, the following procedures will be observed relative to selection and utilizing any disposal (or borrow location).

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

No disposal (or borrow) 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.

Disposal (or borrow) site operations will not cause a significant encroachment within the base floodplain (E.O. 11988: Floodplain Management). Disposal (or borrow) 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.

No disposal (or borrow) operations will occur in wetland areas which are designated by appropriate agencies. Disposal (or borrow) site operations will be consistent with any approved plans governing ambient air quality.

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

Documentation: Copies of disposal (borrow) site approvals, and concurrences will be submitted to the Department of Environmental Protection prior to the commencement of reclamation activities.

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

4.3.4 Debris Removal

Trash, garbage, railroad ties, roofing shingles, tires plastic, metal and other unsuitable material shall be disposed of by the Contractor at his/her own responsibility and expense outside the work limits in an approved landfill, as approved by the Engineer, unless otherwise directed.

Concrete, foundation ruins, bricks, stone and cinder blocks, if encountered will be incorporated into the fill shall be of size less than two feet in any dimension and shall be buried at least one foot below finished grade in locations approved by the WVDEP. Hollow core cinder blocks shall be crushed prior to incorporation into the fill.

In the area where structures and buildings are demolished and removed, the removal operation shall extend to 1 foot below finished grade. The areas shall then be regraded as necessary to blend into adjacent finished grades. Regrading 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 Site Preparation

The method of measurement for site preparation will be on a lump sum basis. Clearing and Grubbing, Stockpiling timber, removal of trees, shrubs, equipment, garbage, tires, junk, demolition of structures, debris removal, access road construction, access road rehabilitation will not be measured but will be considered incidental to the site preparation operations. In addition, storage and restoration of plantings shall also be considered as part of the clearing and grubbing.

4.4.2 Road Restoration

The contractor is responsible for maintenance of roads during construction. Road restoration stone placed at the completion of the project shall be paid per ton.

4.5 Basis of Payment

4.5.1 Site Preparation

The quantity of work done will be paid at the contract lump sum bid for this item, which price and payment shall be full compensation for doing all the work herein prescribed in a workmanlike and acceptable manner; including the furnishing of all labor, materials, tools, equipment, supplies, and incidentals necessary to complete the work. No deduction will be made, nor will any increase be made, in the lump sum site preparation amount regardless of decreases or increases in the final total contract amount or for any other cause.

4.5.2 Road Restoration

Road restoration stone placed at the completion of the project shall be measured and paid per ton delivered and placed under bid item “Road Restoration”.

4.6 Pay Item

Item 4.1, “Site Preparation”, per lump sum. Cannot be more than 10% of the Total Amount Bid for the project.

Item 4.2, “Road Restoration Stone”, 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 Straw Wattles, Sediment Control Barrier (e.g. silt fence or super silt fence) structures, and Stabilized Construction Entrances as designated in the Drawings. Sediment control shall be placed on regraded outslope areas concurrent with construction and prior to revegetation. Additional quantities may be added at the discretion of the WVDEP.

The CONTRACTOR shall be given a NPDES Permit with an approved erosion and sediment control plan at the pre-construction meeting. This plan shall include measures to be utilized for temporary and permanent sediment and erosion control. This plan shall also include the measures as outlined herein. The NPDES approved plan **does not** relieve the CONTRACTOR of his/her 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.

NOTE: Sediment Control Measures shall be required on the perimeter of the project site for sediment control in accordance with the NPDES requirements. The silt fence for sediment control shall be place before any construction work begins. This fence shall remain and be maintained during the entire construction process.

The following are the minimum requirements of the NPDES Permit and/or the NPDES BMP Manual.

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 fourteen 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 14 days from when activities ceased, (e.g., the total time period that construction activity is temporarily halted is less than 14 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.

EROSION & SEDIMENT CONTROL CONSTRUCTION SEQUENCE

- Install stabilized construction entrance as shown on site plans.
- Install perimeter sediment control devices as shown on site plans.
- Clear and grub site.
- Provide sediment control for any topsoil stockpiles.
- Commence rough grading of site. Continue to maintain and inspect all erosion and sediment controls.
- Install additional erosion and sediment controls as shown on site plans.
- Fine grade site.
- Permanently seed and mulch all disturbed areas within 7 days of reaching final grade and install erosion control wattles.
- Upon completion of project including adequate stabilization, remove all remaining erosion and sediment controls.

5.2 Materials

- 5.2.1** Sediment Control Barriers: silt fencing and super silt fencing materials and installation shall meet all applicable requirements of the manufacturer's specifications.

Even with the specific prior approval of the WVDEP, the use of silt fence shall be limited to relatively flat areas and the toe of selected slopes.

- 5.2.2** Stabilized Construction Entrances shall consist of coarse 3-6 inch stone over a geotextile fabric.
- 5.2.3** Erosion Control Wattles: Straw wattles or approved equals, shall be installed at locations shown on the plans. Straw wattles shall be 12 inches in diameter and 25 feet in length. Straw wattles shall consist of an internal fill material of straw and an exterior encasement of a heavy duty biodegradable knitted cylindrical tube.
- 5.2.4** Stone Check Dams: Stone check dams shall be required at the locations as shown on the plans. The stone check dams shall be constructed with 3"-6" stone.
- 5.2.5** Modified Super Silt Fence: Priority One Silt Saver Silt Fence. The BSRF® Priority 1 green band or equal is a 36" wide, non-woven spun-bond polyester fabric with an internal scrim. The system utilizes wood stakes and a specific method of attachment.

5.3 Maintenance

- 5.3.1** During the course of the project, sediment control barriers 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.

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

Wheels on all vehicles shall be cleaned to remove sediment prior to entrance onto public rights-of-way. If washing is required, it shall be done on an area stabilized with stone and which drains into approved sediment trapping device. If the street is washed, precautions must be taken to prevent muddy water from running into waterways or storm sewers.

- 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.

5.4 Installation

5.4.1 Sediment Control Barrier:

Silt Fence: Fence posts shall be a minimum of 48" long driven 16" minimum into the ground. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

Super Silt Fence: Chain link fence shall be constructed in accordance with manufacturer's specifications. Chain link fence shall be fastened securely to the posts with wire ties or staples. Posts need not be set in concrete. The filter fabric shall be fastened to the chain link fence with ties every 24" at the top and mid-section. Fabric and fence shall be embedded 12", minimum, into the ground. A 6" minimum overlap shall be provided where two sections of fabric adjoin. The overlapped fabric shall be folded together and attached to the chain link fence. 4" by 4" pressure treated posts may be substituted for metal fence posts with the approval of the engineer.

5.4.2 Stabilized Construction Entrance: A stabilized construction entrance shall be required at the access point of the construction site. The stabilized construction entrance shall consist of filter fabric and a minimum of six (6) inches of 3" to 6" stone. The stone entrance shall be a minimum of seventy (70) foot long and twelve (12) foot in width. This stone construction access must conform to the detail drawings shown in the plans.

5.4.3 Stone Check Dams: Shall be installed in constructed channel per the sequence of construction. The top of dam shall have a low center section and with the same width as the channel bottom and 6” lower than the outer edges. The stone check dams with sediment traps shall have the upstream side of the rock covered in filter fabric. The filter fabric shall be Mirafi 140 N or equal. Standard stone check dams shall be removed after the first growing season and the channel brought up to the lines and grades as depicted in the channel profile and stabilized with erosion control matting per the typical detail for vegetated channels.

5.4.4 Wattle Installation: A trench shall be excavated to a depth of 1/3 of the diameter of the wattle. Lay the first Straw Wattle snugly in the excavated trench. **No daylight should be seen under the Wattle.** Pack soil from trenching against the Wattle on the uphill side. When installing running lengths of Straw Wattles, butt the second Wattle tightly against the first. **DO NOT overlap the ends.** Stake the Straw Wattles at each end and four foot on center. For example:

A 25 foot Wattle uses 6 stakes

A 20 foot Wattle uses 5 stakes

A 12 foot Wattle uses 4 stakes

Stakes should be driven through the middle of the Wattle, leaving 2 - 3 inches of the stake protruding above the Wattle. A heavy sediment load will tend to pick the Wattle up and could pull it off the stakes if they are driven down too low. It may be necessary to make a hole in the Wattle with the pick end of your mattock in order to get the stake through the straw. When Straw Wattles are used for flat ground applications, drive the stakes straight down; when installing Wattles on slopes, drive the stakes perpendicular to the slope.

Drive the first end stake of the second Wattle at an angle toward the first Wattle in order to help abut them tightly together. If you have difficulty driving the stake into extremely hard or rocky slopes, a pilot bar may be needed to begin the stake hole.

5.4.5 Priority One Silt Saver Silt Fence installation specification: Four foot stakes are driven to a depth which allows 24” of fabric to be above ground. The fabric is stretched along the perimeter of the stakes and pulled tightly and held in place with bonding strips. The bonding strips (typically 1”x3/8”x 24”) are attached to the stake with staples. The remaining fabric is now tucked into the trench forming a “J” and when filled with dirt create a ground bite. With its firm attachment to each post, the load is now spread to the total linear strength of all posts within the system.

5.5 Removal

Upon completion of the project (as determined by the Regional Engineer) including adequate stabilization, all temporary erosion and sediment controls shall be removed

from the site, including but not limited to water breaks, water break outlet protection, check dams and silt fencing. The site should be left with a clean/neat appearance and any disturbed areas shall be revegetated. Rock outlet protection for permanent drainage structures shall not be removed once the project is complete.

5.6 Method Of Measurement

- 5.6.1** The method of measurement for “Super Silt Fence” installation and maintenance in conformance with the specifications and accepted by the WVDEP shall be on a per linear foot basis to include stakes, all necessary materials, supplies, labor and equipment for installation and maintenance including sediment removal and disposal.
- 5.6.2** 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 linear foot basis to include stakes, all necessary materials, supplies, labor and equipment for installation and maintenance including sediment removal and disposal.
- 5.6.3** The method of measurement for “Straw Wattles” installation and maintenance in conformance with the specifications and accepted by the WVDEP shall be on a per linear foot basis to include all stakes/staples, all necessary materials, supplies, labor and equipment for installation and maintenance including repairing any damaged slopes as described under the maintenance section.
- 5.6.4** The method of measurement for “Stabilized Construction Entrance” installation and maintenance in conformance with the specifications and accepted by the WVDEP shall be on per ton and shall be based upon weigh tickets from the commercial supplier of the stone that is delivered and placed at the locations identified on the plan drawings. This item shall include all necessary materials, stabilized fabric, supplies, labor and equipment for installation and maintenance including periodic top dressing with additional stone and removal at completion of the project work.
- 5.6.5** The method of measurement for “Stone Check Dam” installation and maintenance in conformance with the specifications and accepted by the WVDEP shall be on per each and shall include all necessary materials, supplies, labor and equipment for installation and maintenance including sediment removal/disposal and removal of stone check dams after the first growing season.
- 5.6.6** Any additional sediment control, i.e. sumps etc., installed by the contractor to meet any applicable State or Federal Law or Regulation shall be the Contractor's sole responsibility and all costs pursuant thereto shall be born fully by the Contractor. This also includes the removal and disposal of sediment from the existing Sediment Basins. However, any additional sediment control approved by the WVDEP prior to placement shall be included for measurement.

5.6.7 The method of measurement for “Priority One Silt Saver Silt Fence” or approved equal installation and maintenance in conformance with the specifications and accepted by the WVDEP shall be on a per linear foot basis to include stakes, all necessary materials, supplies, labor and equipment for installation and maintenance including sediment removal and disposal.

5.7 Basis Of Payment

5.7.1 Super Silt Fence payment shall be based on 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.

5.7.2 Silt Fence payment shall be based on 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.

5.7.3 Straw Wattles payment shall be based on 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, slope repair and disposal.

5.7.4 Stabilized Construction Entrances payment shall be based on 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 including periodic top dressing with additional stone and removal at completion of the project work.

5.7.5 Stone Check Dams shall be based on 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/disposal and removal of stone check dams after the first growing season.

5.7.6 Priority One Silt Saver Silt Fence or equal payment shall be based on 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 Items

Item 5.1, “Super Silt Fence”, per linear foot.

Item 5.2, “Silt Fence”, per linear foot.

Item 5.3, “Straw Wattles”, per linear foot.

Item 5.4, “Stabilized Construction Entrance”, per ton.

Item 5.5, “Stone Check Dam”, per each.

6.0 REVEGETATION

6.1 Description

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.

No areas outside the limits of construction shall be disturbed without prior approval 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 revegetated 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 10-20-20 grade of uniform composition and furnished in standard containers. These containers, in accordance with applicable state and federal laws, must be clearly marked with the following information:

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

Fertilizer shall be applied at a minimum rate of 1,000 lbs./acre. Fertilizer shall be applied immediately to all areas reaching final grade.

6.2.2 Lime

The lime to be used will be an agricultural grade pulverized limestone containing a minimum of 75% total carbonates or calcium carbonate equivalent. Fineness will be such that no less than 70% will pass through a #100 sieve and 100% will pass through a #20 sieve.

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 hydro seeding mixture when the rate will be ten times the recommended rate.

6.2.3.1 Temporary Seed Mixture

All stockpiles or other disturbed areas which will require further disturbance in which the additional disturbance will be delayed for a period of two (2) 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
	-----lbs/acre-----			
Annual Ryegrass (Lolium multiflorum)	40	40		
German Millet * (Setaria italica)	40			
Cereal Rye (Secale cereale)			170	

*Do not use Japanese Millet

All areas to be temporarily seeded which are to be re-disturbed shall be fertilized with 500 lbs./acre of 10-20-20. All areas reaching final grade to be temporarily seeded shall be fertilized according to Section 6.2.1. Lime shall be applied according to Section 6.2.2 and mulched according to Section 6.2.4.

6.2.3.2 Lawn Seed Mixture

Existing lawn areas disturbed by construction shall be reseeded using the following mixture:

Rate lb/1000	Seed sq. ft. Variety	Minimum 0% Purity	Specifications %Total Germination
0	Red Fescue (Pennlawn)	9	85
0	Kentucky	8	75
0	Merion Bluegrass	9	75
0	Annual Ryegrass*	9	85

*Use Annual Ryegrass only in mixtures seeded after August 1 and prior to May 15.

6.2.3.3 Permanent Seed Mixture

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

Variety of Seed *	SPRING	FALL
	3/15 - 5/15	8/15 - 10/15
	-----lbs/acre-----	
Orchardgrass (Dactylis glomerata)	30	30
Birdsfoot Trefoil (1) (Lotus corniculatus)	15	15
Red Clover (Trifolium pratense)	10	10
Annual Ryegrass (2) (Lolium multiflorum)	25	25
Spring Oats or	35	0
Winter Wheat	0	90

(1) Herbaceous legumes must be treated with the appropriate bacterium before

seeding. On areas which are steeply sloping (steeper than 1.7:1) or slide prone, substitute Crown vetch (*Coronilla varia*) at 20 lbs./acre for Birdsfoot Trefoil.

- (2) Use Annual Ryegrass only in mixtures seeded after August 1 and before May 1.

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

***For shaded areas add the following quantity of seed to the standard mix:**

Lawn Seed Mixture Add 4 lbs/1000ft² of Red Fescue.

Permanent Seed Mixture Add 3 lbs/acre of White Clover
Add 10 lbs/acre of Perennial Rye Add 10
lbs/acre of Blue Grass
Add 50 lbs/acre Cover Grain (Wheat or Rye)

6.2.4 Mulch Material

Mulching procedures shall take place immediately following seeding. Mulch material shall consist of 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. **(No baled grass hay shall be used in yard areas.)** The straw mulch shall be anchored with 100 gallons/acre asphalt emulsion or 750 lbs./acre wood cellulose fiber.

6.2.4.2 Wood Cellulose Fiber

Wood cellulose fiber may be used only on slopes steeper than 2H: 1V at a rate of 1,500 lbs. /acre. 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 the (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. Wood cellulose shall only be used on areas that have been approved by WVDEP.

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

6.2.5 Water

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

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 with a minimum of 1 ½” grouser depth or scarifying by other approved methods.
- 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 hydro seeding methods where feasible. Any seed left in hydro seeder overnight shall be re-inoculated before that seed shall be applied. Other methods of seed application may be utilized for site-specific reasons when approved by the WVDEP.
- a. Apply and incorporate fertilizer during seedbed preparation.
 - b. Apply fertilizer in hydro seeding mixture following seedbed preparation.

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

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, re-fertilizing, re-liming, re-seeding, and re-mulching erosion gullies and all bare areas.

6.3.8 Lime rate shall be formulated from soil test results. In the absence of soil testing, a **rate of seven (7) tons per acre** will serve as a preferred minimum.

6.3.9 Satisfactory soil is considered to be reasonably free of subsoil, clay clumps, stones and other objects over four (4) inches in one dimension, and shall be free of objectionable material.

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

6.3.10.1 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.

6.3.10.2 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 6.3.10.1.

6.4 Method of Measurement

The method of measurement for re-vegetation will be per plan view acre. Payment to include all temporary seeding, lime, fertilizer, seed and mulch for the first seeding only. Subsequent seeding will not be measured or paid for but will be considered incidental to initial seeding.

The Contractor shall be paid only for those areas disturbed and re-vegetated during operations necessary for completion of the work. The quantity shall not include areas disturbed for storage facilities and staging areas unless prior approval was obtained from the WVDEP. No payment shall be made for any seeding conducted after the final inspection; this work is considered warranty.

6.5 Basis of Payment

6.5.1 Payment will be made at the contract per acre 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.

6.6 Pay Items

Item 6.0 “Revegetation”, per plan view acre

7.0 DRAINAGE STRUCTURES

7.1 Description

Work in this Section shall be performed in accordance with the Plans and as specified herein. The work shall include, but is not limited to, the following:

- a. Installation of temporary site drainage, at the discretion of the Contractor or as directed by the WVDEP. All drainage structures shall be constructed from the downstream point up. A plan for constructing ditches shall be submitted to WVDEP for approval prior to commencing this work.
- b. Installation of permanent surface drainage systems.

Permanent drainage items include drainage channels, low water crossings, and underdrains with cleanouts and conveyance pipes if determined necessary. Work performed under this item shall consist of furnishing all labor, equipment and materials necessary to construct the drainage structures shown on the drawings

7.2 Materials

7.2.1 Excavated Material

Shall consist of in place natural ground and rock. All excavation shall be considered incidental to placement of drainage structures.

7.2.2 Riprap for Ditches

This material shall consist of sound, durable limestone from a WVDEP approved source. Dolomitic limestone and Shale shall not be used on this project.

All rock riprap used throughout the project site shall consist of locally available, commercially purchased, calcareous stone meeting the following requirements. The rock riprap required for the drainage channels shall have a calcium carbonate equivalency of 70% or greater. 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. A certification on calcium carbonate equivalency and sodium sulfate soundness test shall be submitted to the WVDEP prior to delivery.

Riprap gradation for Ditches shall be per standard details on attached plans.

7.2.3 Grout

Grout to be used in the grouted riprap ditches shall consist of a mixture of one part Sulfate Resistant Type II 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 mortar shall be Type II sulfate resistant non shrink Portland cement meeting the requirements of ASTM C150. Admixtures and/or pozzolon may be used with the approval of the Engineer

The minimum required compressive strength of the grout shall be 2000 psi @ 28 days. All testing shall be the responsibility of the contractor as part of Section 3 of these specifications. Two sets (4 cylinders) of test cylinder per day shall serve as a minimum. Grout test cylinders shall be made and tested in general accordance with ASTM C-31 and C-39 respectively. One cylinder shall be tested at 7 days age, one test cylinder shall be tested at 14 days age, one test cylinder shall be tested at 28 days age and one cylinder shall be held as a spare. Minimum testing shall be one test per day and every fifty (50) cubic yards thereafter.

7.2.4 Geotextile

Geotextile shall consist of Thrace-LINQ 140EX, or Engineer approved equal. The geotextile shall be free of any chemical treatment or coating which reduces permeability, and shall be inert to chemicals found in the soil and water at the site. The geotextile shall be furnished in a protective wrapping which shall protect the geotextile from ultraviolet radiation and from abrasion due to shipping and handling. Immediately following receipt of geotextile on the job site, the geotextile liner shall be inspected and stored in a clean dry area where it will not be subject to mechanical damage or exposure to moisture or direct sunlight. The geotextile shall not be exposed to sunlight for a period of greater than two weeks.

7.2.5 Level Spreader

Level spreaders shall consist of riprap as specified in Section 7.2.2.

7.3 Construction Methods

7.3.1 Ditches

7.3.1.1 All Drainage structures shall be constructed as shown on the Plans or as directed by WVDEP. The ditches shall be excavated to the

lines and grades shown on the Plans. Final grading shall be performed to eliminate any irregularities in the grade which might impound water.

7.3.1.2 The excavation shall be done in a safe and careful manner. Construction shall begin at the outlet end so that ponding and wet excavation conditions can be held to a minimum. Excavation should be as close to the neat line installation detailed as possible.

7.3.1.3 Compacted earth fill necessary shall be placed in twelve (12) inch loose lifts and compacted. The soil shall be tested in accordance with the provisions of ASTM D 698 (Standard Proctor). The acceptable compaction for the top two (2) feet of fill immediately beneath the drainage structure shall be 95% as determined by this testing. The moisture content shall be ± 3 percent from optimum at the time compactive effort is applied. The frequency of compaction tests shall be as approved by the WVDEP Representative; however a minimum of one compaction test per day or one test per every 500 lineal feet of drainage channel is required. Fill foundation areas shall be stripped of sod and topsoil, and the top eight inches scarified and compacted prior to placement of the fill. Fill benches shall be constructed to allow placement of fill in horizontal layers. Fill bench construction or fill foundation preparation will be considered incidental to the construction of drainage structures.

7.3.1.4 The channels shall be constructed to the approximate line, grade, and templates as shown on the plans or as directed by the WVDEP. Excess material from channel and pipe trench excavation that is suitable for soil cover may be segregated, stockpiled and utilized to supplement "Revegetation" operations. Otherwise, excess material from ditch and pipe trench excavation will be required to be disposed of by the Contractor in an offsite disposal area obtained by the Contractor in accordance with Section VIII of the Special Provisions for these specifications. Sections of channels that are cut to rock shall not require lining but shall be paid the appropriate size channel. The rock placement in the backfilled channel shall be uniformly graded and placed in the depths that are shown on the plans. It is not the intent of the rock placement to fill all voids in the riprap fill with small stone but to leave the rock face irregular to provide splash points to slow the water down as it flows through the channel.

7.3.1.5 Prior to placement of the grout on the riprap, Riprap shall be free of sticks, leaves, soil, trash and debris prior to placing the 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.

Cure the grout for at least 3 days by keeping it continuously wet, or applying a transparent membrane curing compound.

A set of four (4) compressive strength test cylinders shall be taken in AM and PM during installation or as directed by the engineer. One seven-day, one fourteen day, one twenty-eight day and one 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 WVDEP. Grout specified on the basis of compressive strength will be considered satisfactory if the average of all 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, bench aprons or on a cold joint 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. The grout keys required on the grouted channel or bench aprons shall be incidental to the channel construction.

7.3.2 Level Spreader

The level spreader shall be constructed per the attached drawing details using riprap as specified above.

7.3.3 Low Water Crossings

The low water crossings will be constructed by grading the location to the general shape indicated on the drawings. Riprap selected for the low water crossings shall be comprised of mostly rectangular shapes. Pipe sizing if

required shall be per WVDEP approval. Placement of the riprap for the low water crossings may involve some handwork. The contractor shall place the riprap in such a manner as to provide a drivable surface. After the placement of the riprap, the riprap shall either be grouted or receive a surface layer of Class 1 Aggregate as indicated on the drawings to create a smooth driving surface.

7.4 Method of Measurement

7.4.1 Type I Riprap Ditch

The method of measurement for the 8' x 2' Triangular Type I Riprap Ditch shall be per linear foot (Slope Distance) and include the cost of excavation, waste disposal, riprap, and all other items necessary for proper construction.

7.4.2 Type II Grouted Riprap Ditch

The method of measurement for the 8' x 2' Triangular Type II Grouted Riprap Ditch shall be per linear foot (Slope Distance) and include the cost of excavation, waste disposal, riprap, grout, and all other items necessary for proper construction.

7.4.3 Type III Riprap Ditch

The method of measurement for the 12' x 3' Triangular Type III Riprap Ditch shall be per linear foot (Slope Distance) and include the cost of excavation, waste disposal, riprap, grout, and all other items necessary for proper construction.

7.4.4 Type IV Grouted Riprap Ditch

The method of measurement for the 12' x 3' Triangular Type IV Grouted Riprap Ditch shall be per linear foot (Slope Distance) and include the cost of excavation, waste disposal, riprap, grout, and all other items necessary for proper construction.

7.4.5 Level Spreader

The method of measurement for level spreaders shall be per each including excavation and riprap placement as required by the drawings.

7.4.6 Low Water Crossing:

The method of measurement for the Type I Low Water Crossings will be paid per each and include the excavation, riprap, and Class 1 Aggregate, pipe or grout if specified.

7.5 Basis of Payment

7.5.1 Type I Riprap Ditch

Payment shall be per linear foot of 8'x2' 'Deep Triangular Type I Riprap Ditch acceptably constructed.

7.5.2 Type II Grouted Riprap Ditch

Payment shall be per linear foot of 8'x2' 'Deep Triangular Type II Grouted Riprap Ditch acceptably constructed.

7.5.3 Type III Riprap Ditch

Payment shall be per linear foot of 12' x 3' 'Deep Triangular Type III Riprap Ditch acceptably constructed.

7.5.4 Type IV Grouted Riprap Ditch

Payment shall be per linear foot of 12'x 3' 'Deep Triangular Type IV Grouted Riprap Ditch acceptably constructed.

7.5.5 Level Spreader

The basis of payment for the level spreaders shall be per each installed and accepted.

7.5.6 Low Water Crossing:

The basis of payment for the Type I Low Water Crossing shall be per each and include the excavation, riprap and Class 1 Aggregate, pipe or grout if specified.

7.6 Pay Items

Item 7.1 "Type I Riprap Ditch", per linear foot

Item 7.2 "Type II Grouted Riprap Ditch", per linear foot

Item 7.3 "Type III Riprap Ditch", per linear foot

Item 7.4 "Type IV Grouted Riprap Ditch", per linear foot

Item 7.5 "Level Spreader", per each

Item 7.6 "Low Water Crossing", per each

8.0 UNCLASSIFIED EXCAVATION

8.1 Description:

Work performed under this section shall consist of furnishing all labor and equipment necessary to excavate and redeposit this material to the grades and in the areas indicated on the drawings. The approximate quantities of material have been determined and are shown on the bid schedule.

8.2 General

8.2.1 Material Removal

Material removal (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, grades and cross-sections. Payment shall be based on cubic yards of excavation.

The reclamation approach described in these Contract Documents is intended to provide a lasting, stable configuration. Although the Project incorporates previously proven slope stabilization techniques, the Contractor is required to exercise care to avoid intermediate site conditions which may result in unstable situations during the construction process.

The Contractor must utilize material removal techniques which are generally considered to be conducive to retaining slope stability, including but not limited to working the slopes from the top to the bottom to preclude undermining and maintaining the work areas in a fashion which will not induce instability. Additionally, slopes once disturbed shall be brought to the design template as soon as practicable and shall be protected in accordance with Section 5.0 and 6.0 of these Technical Specifications, if applicable. The conditions set forth in this sub-section shall firmly apply until the WVDEP has accepted the area where material has been removed as being satisfactorily complete. The WVDEP may not accept any area as to being satisfactorily complete if an adjacent work area remains in a condition which may cause damage to the subject area.

8.2.2 Material Placement

Material placement shall consist of performing all operations in connection with the placing of all materials in fill areas (to include preparation of surface, spreading and compaction) to the lines and grades shown on the Drawings. No burning refuse (defined as greater than 140°F) and/or no combustible material shall be placed in fill areas.

All areas where material is to be placed shall be constructed to the lines, grades and cross-sections indicated on the drawings, unless otherwise approved by the WVDEP.

The Contractor shall maintain and protect areas where material is to be placed in a satisfactory condition at all times until final completion and acceptance of all work under the Contract. If in the opinion of the WVDEP the hauling equipment causes horizontal shears or slickened sides, rutting, quaking, heaving, cracking or excessive deformation where material is placed, the Contractor shall limit the type, load or travel speed of the hauling equipment on the areas where material is placed. During material placement the Contractor shall remove from the areas of fill any material which the WVDEP considers objectionable and shall also dispose of such material and refill the areas as approved, all at no additional cost to the WVDEP.

The Contractor shall have satisfied himself by personal visit to the site or by such other means as he may have chosen, as to the actual conditions and requirements of the work. No allowance will be made for any claim that the bid was based upon incomplete information as to the nature and character of the site, the work involved, or for materials of an unexpected character found in excavations.

All Contractors and perspective bidders must receive permission from the Landowner before obtaining any subsurface samples and/or test borings holding WVDEP harmless against any injury or damage whatsoever resulting from this use of the property.

8.3 Construction Methods

8.3.1 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.

No material shall be placed in any area until the area has been cleared, grubbed, and stripped as specified; and the surface has been approved by the WVDEP. The Contractor shall keep the area free from water or

unacceptable materials after placement operations have started. All slopes shall be benched before fill material is placed. Where benching is not required the areas to receive fill shall be scarified before placement of fill.

The Contractor shall place material in areas of fill in a controlled manner in horizontal lifts extending the entire length and width of the area where material is to be placed. The thickness of each lift shall not exceed twelve (12) inches before compaction. No fill material shall be placed on frozen material, and no frozen material shall be used as fill material. Rocks larger than 12-inch diameter shall not be incorporated in fill material.

Compaction to a minimum of 90 percent of the maximum dry density as determined by the standard proctor test, ASTM D 698, shall be obtained utilizing available spreading and hauling equipment or compacting equipment. Field density testing shall be by sand cone method (ASTM D 1556) or by nuclear gauge method (ASTM D 2922). Tests shall be performed at a frequency approved by the Engineer. One lot (5 tests) per day during fill placement shall serve as a minimum. Testing shall be performed by an independent testing company. The cost will be the Contractor's responsibility as part of the Quality Control Item.

All fill material used for the project shall contain sufficient moisture to achieve the required compaction. The moisture content shall be ± 3 percent from optimum at the time the compactive effort is applied.

Drainage structures shall be constructed to the lines and grades as shown on the plan sheets and/or cross-sections. All excavation necessary for construction of these structures shall be incidental to the construction of each drainage structure and included in the unit bid cost item for each drainage structure.

The Contractor shall make every reasonable effort to construct the project uniformly. No payment will be made for any earthwork performed outside the construction limits approved by the WVDEP. No extra material shall be removed or placed outside of these limits without permission.

Material removal carried below the indicated depths, except when approved by the WVDEP, shall be replaced with material satisfactory to the WVDEP. Additional payment will not be made for unauthorized material removal nor for any backfilling necessitated thereby.

The Contractor shall select equipment of such type, size, and quantity to perform the work efficiently and within the requirements set forth in these Specifications. If it is determined that these Specifications are not being met due to inappropriate equipment, the Contractor shall change his equipment as necessary to bring the work into compliance with the Specifications.

The Contractor shall select compaction equipment that will produce the specified density. Compaction equipment that produces a sealed, slick

surface will not be permitted. All compaction equipment must be approved by the WVDEP prior to use. If a sealed, slick surface develops during compaction of the fill, the surface shall be scarified to a depth of 4 inches prior to placement of the next lift.

8.4 Method of Measurement

8.4.1 Excavation

The method of measurement for excavation shall be by the cubic yard, which shall be the material actually moved and disposed of as herein described, measured in its original location and determined from the certified cross-sections by the method of average end areas or surface to surface modeling using the tin method. No separate payment will be made for ditch, underdrain, or any other incidental work referred to under “Unclassified Excavation”, or any regrading or excavation where there are no cross-sections.

8.5 Basis of Payment

8.5.1 Excavation

Basis of payment includes material excavated, transporting, backfilling and regarding or disposal and special handling of material excavated to achieve the final grades will be by the unit price bid for “Unclassified Excavation”.

8.6 Pay Items

Item 8.1, “Unclassified Excavation”, per cubic yard.

9.0 Reserved

10.0 SUBSURFACE DRAINAGE STRUCTURES

10.1 Description

Work in this Section shall be performed in accordance with the Plans and as specified herein. The work shall include, but is not limited to, the following:

- a. Installation of permanent subsurface drainage systems.

Permanent subsurface drainage items include underdrains with cleanouts and conveyance pipes if determined necessary. Work performed under this item shall consist of furnishing all labor, equipment and materials necessary to construct the drainage structures shown on the drawings

10.2 Materials

10.2.1 Geotextile

Geotextile shall consist of Thrace-LINQ 140EX, or Engineer approved equal. The geotextile shall be free of any chemical treatment or coating which reduces permeability, and shall be inert to chemicals found in the soil and water at the site. The geotextile shall be furnished in a protective wrapping which shall protect the geotextile from ultraviolet radiation and from abrasion due to shipping and handling. Immediately following receipt of geotextile on the job site, the geotextile liner shall be inspected and stored in a clean dry area where it will not be subject to mechanical damage or exposure to moisture or direct sunlight. The geotextile shall not be exposed to sunlight for a period of greater than two weeks.

10.2.2 Stone for Underdrains

Stone for the Underdrains shall consist of 3” to 6” Non-Calcareous stone from a WVDEP approved source. The stone shall have a maximum weighted loss of 12% when subjected to five (5) cycles of the sodium sulfate soundness test as determined by ASTM C-88.

10.2.3 Pipe for Underdrains

The pipe for the underdrains shall be 12” I.D. SDR 35 PVC pipe with 1” perforations, and fittings. Pipe fittings shall be produced by the pipe manufacturer or as specified by the pipe manufacturer to result in proper installation. The Contractor shall join the pipes in a method approved by the Engineer.

10.2.4 Conveyance Pipe

The conveyance pipe shall be 12" I.D. SDR 35 PVC non-perforated pipe. The Contractor shall provide all necessary pipe fittings required for a proper installation.

10.2.5 Cleanouts

Cleanout pipe shall be 8" I.D. non-perforated SDR 35 PVC pipe and fittings. Cleanouts shall be protected at the ground surface with a protective cover consisting of Catalog Number 1564 as manufactured by East Jordan Iron Works, or approved equal. Cleanouts shall be installed in maximum 200 foot intervals. The protective cover shall be surrounded by a concrete pad.

10.3 Construction Methods

10.3.1 Underdrains

10.3.1.1 Underdrains shall be constructed at the location designated on the plans and in areas directed 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 depressions. Excavated material shall be stockpiled and dried. The backfill is to be made with this material if the WVDEP deems this material as 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 #1 non calcareous 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, 3" to 6" 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.

10.3.1.5 Cleanouts shall be provided on all underdrains at the locations shown on the Drawings spaced no more than 200 feet. Cleanouts shall be installed in accordance with the Cleanout Detail so that cleanout can be performed up gradient. The cast iron frame, cover, and concrete pad shall be installed flush with the ground surface

10.3.2 Conveyance Pipe

A minimum 4 inch bedding layer of select backfill and bedding shall be placed in the bottom of the trench. The conveyance pipe shall be firmly embedded in the bedding material. After placement of the pipe, soil backfill shall be placed in maximum 12” lifts and compacted to 95% of its Standard Proctor Density.

10.4 Method of Measurement

10.4.1 Underdrain

The method of measurement for the Underdrain shall be per linear foot, measured along the centerline of the pipe in the trench, and include the cost of excavation, waste disposal, rock, pipe and fittings, cleanouts, filter fabric, conveyance pipe, cleanouts and all other items necessary for proper construction.

10.4.2 Underdrain Conveyance Pipe

The method of measurement for the Underdrain Conveyance Pipe shall be per linear foot, measured along the centerline of the pipe in the trench, and include the cost of excavation, waste disposal, rock, pipe and fittings, and all other items necessary for proper construction.

10.5 Basis of Payment

10.5.1 Underdrain

Payment shall be per linear foot of Underdrain acceptably constructed.

10.5.2 Underdrain Conveyance Pipe

Payment shall be per linear foot of Underdrain Conveyance Pipe acceptably constructed.

10.5 Pay Items

Item 10.1 “Underdrain”, per lineal foot

Item 10.2 “Underdrain Conveyance Pipe”, per lineal foot

11.0 UTILITIES

11.1 Description

This work shall consist of all necessary measures to relocate, maintain and protect all utilities within the limits of work specified herein and on the construction drawings.

The contractor shall notify the utility in writing at least fifteen (15) but preferably thirty (30) days prior to the time work within the area will be done.

The Contractor shall be responsible for making all necessary arrangements and/or performing all necessary work to the satisfaction of the affected utility company and/or the West Virginia Department of Highways in connection with any disturbances within their right-of-way or services.

The Contractor shall be solely responsible for locating all utilities within the limits of work. All damage made to existing utilities by the Contractor shall be the sole responsibility of the Contractor. In the event damage does occur, the Contractor shall notify the affected utility and the WVDEP immediately and make or have made all necessary repairs and bear the expenses thereof and resulting damage caused thereby.

The Contractor shall obtain right-of-entry and/or any necessary permits for repairs or relocation.

Utility Companies Contacts

Miss Utility of West Virginia 1 -800-245-4848

11.2 Materials

All materials used for utility related disturbance shall be in accordance with these specifications or as indicated by the affected utility.

11.3 Construction Methods

All work shall be in accordance with these specifications or in accordance with those methods as indicated by the affected utility.

11.4 Method of Measurement

The Contractor will not bid on utility work but will be reimbursed the actual approved paid invoice cost. The Contractor shall submit an estimate for utility relocation to the WVDEP for approval from the utilities affected by the proposed reclamation will be reimbursed.