

CDM MINING & EQUIPMENT, LLC

MASSEYLINE MINE, P-3971

ALABAMA SURFACE MINING COMMISSION

SURFACE COAL MINING PERMIT APPLICATION

PART III - B

Engineering Plans

Prepared by:

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B. Engineering Plans

All cross sections, maps and plans related to operations, reclamation and structures must comply. Plans, appropriate calculations and conclusions shall be presented in a clear and logical sequence and shall take into account all applicable factors necessary to evaluate the proposed plan or design. (780.10)

1. Existing Structures. (780.12, 786.21)

- (a) Describe each existing structure to be used, its location, current condition, approximate dates of construction and evidence (including relevant monitoring data) showing whether or not the structure meets the performance standards and demonstrate whether or not the use of existing structures will pose a significant harm to the environment of public health or safety.

Not Applicable

- (b) If an existing structure requires modification or reconstruction to meet the performance standards, attach a compliance plan which includes design specifications, construction schedule, monitoring procedures, and evidence that the risk of harm to the environment or public health or safety is not significant during modification or reconstruction.

Not Applicable

2. Ponds, impoundments, banks, dams, and embankments. (780.25)

- (a) Submit a general plan for each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam or embankment to be located within the proposed permit area. (780.25(a)(1))

See [Attachment III-B-2-A](#)

- (b) Submit detailed design plans for each sedimentation pond (780.25(a)(2)(3)) (816.46) to be constructed on the increment you currently propose to mine. If the sediment pond is to remain as a permanent water impoundment, design plans shall also comply. (816.49)

See [Attachment III-B-2-A](#)

- (c) Submit detailed design plans which comply for each temporary or permanent water impoundment (780.25(a)(2&3)) (816.49) to be constructed on the increment you currently propose to mine.

See [Attachment III-B-2-A](#)

2. Ponds, impoundments, banks, dams, and embankments. (780.25) (Cont'd)

- (d) Submit detailed design plans, which comply for each coal processing waste bank to be constructed on the increment you currently propose to mine. (780.25(a)(2&3)) (816.81-816.85)

NONE PROPOSED

- (e) Submit detailed design plans which comply for each coal processing waste dam and embankment to be constructed on the increment which you currently propose to mine. (780.25(a)(2&3)) (816.91-816.93)

NONE PROPOSED

GENERAL ENGINEERING PLANS

GENERAL ENGINEERING PLAN CERTIFICATION STATEMENT

I, Jerry W. Williams, a registered professional engineer, hereby certify that the information, cross-sections, data, maps, etc., contained in this general plan in Attachment III-B-2-A is true and correct to the best of my knowledge and belief.

TASK Engineering Management Inc.

Jerry W. Williams, P.E.
Alabama Reg. No. 12739

Date

ATTACHMENT III-B-2-A

GENERAL PLAN - SEDIMENT BASINS

The general plan for Masseyline Mine consists of constructing twelve (12) sediment basins (001, 001A, 002, 003, 004, 005, 006, 007, 008, 009, 010 and 011). These basins will be designed and constructed to the specifications of the Regulatory Authority and with proper on-going maintenance by the operator will be adequate to control all surface runoff for the entire life of the proposed surface mine.

Detailed design plans for Sediment Basins 001 and 003 will be submitted during the review process of the Regulatory Authority. Upon written approval from the Alabama Surface Mining Commission, Sediment Basins 001 and 003 will be constructed and certified to the Regulatory Authority prior to any disturbance in their respective drainage areas.

Detailed design plans for all remaining sediment basins will be submitted to the Regulatory Authority prior to disturbance within their respective drainage areas. Upon written approval of these detailed design plans from the Regulatory Authority, all sediment basins will be constructed and certified to the Regulatory Authority prior to any mining disturbance within their respective drainage areas. See [Watershed Map](#) and [NPDES Permit Map](#) for watershed drainage patterns and basin locations.

General design data (basin locations, property descriptions and drainage areas) for all sediment basins are included. See attached (General Design Data Table) and watershed map for locations of sediment basins and preliminary hydrologic information. All sediment basins are proposed as temporary and detailed removal plans will be submitted and approved by the Regulatory Authority prior to a Phase II bond release.

Geologic investigations of the proposed mine site indicate typical Pottsville formations of Pennsylvanian age with alternating sequences of sandstone and shales with sandstone streaks and minor formations of bituminous coal and underclays (fireclays). The coal seams to be mined by CDM Mining & Equipment, LLC at the Masseyline Mine are the Lick Creek, Jefferson and the Black Creek. Substantial underground mining operations have been conducted on the Black Creek seam by the Bradford Mine that was historically owned and operated by the Alabama By-Products Corporation. To minimize any unintended problems relating to subsidence on any of the proposed sediment structures, the underground mine works have been mapped and are shown on the permit map. No sediment structure is proposed over existing underground works and there will be no effects of subsidence on any of the proposed sediment structures. The geology of the site is relatively simple with the homoclinal structure of the Warrior Coal Field due to the uplift of the Murphree Valley anticline and the narrow synclinal trough along the eastern edge of the Warrior Field resulting in a gentle upward fold along the immediate outcrop strata. In the event a localized fault is encountered during construction of any sediment structures, construction will halt and the Regulatory Authority notified. New plans and/or additional stability studies will be performed prior to commencement construction activities.

ATTACHMENT III-B-2-A

GENERAL PLAN - SEDIMENT BASINS CONT'D

All surface drainage from the proposed mining area drains to Gurley Creek and/or unnamed tributaries of Gurley Creek.

All diversions are temporary and will be graded and vegetated. (See Diversion Ditch and Diversion Berm Design and Construction Specifications).

Proposed sediment basins are located in Jefferson County, Alabama and as shown on the Trafford USGS Quadrangle.

See [Watershed Map](#) and [NPDES Permit Map](#) for subwatershed drainage areas and basin locations.

GENERAL DESIGN DATA

Sediment Basin	Location	Drainage Area Acres
001P	NE/NW Section 25, T14S, R2W	60.67
001AP	SE/NW Section 25, T14S, R2W	553.26
002P	SW/SW Section 24, T14S, R2W	13.95
003P	NE/NW Section 25, T14S, R2W	11.58
004P	SW/NE Section 25, T14S, R2W	7.07
005P	SE/NE Section 25, T14S, R2W	8.71
006P	SE/NE Section 25, T14S, R2W	2.72
007P	NE/SE Section 25, T14S, R2W	13.22
008P	SE/SE Section 25, T14S, R2W	6.16
009P	SE/SE Section 25, T14S, R2W	24.78
010P	NE/NE Section 36, T14S, R2W	9.73
011P	NE/NE Section 36, T14S, R2W	13.62

ATTACHMENT III-B-2-A
SEDIMENT BASIN CONSTRUCTION SPECIFICATIONS

Sediment basins (temporary or permanent) will be designed and constructed using the following as minimum specifications:

EMBANKMENT REQUIREMENTS

- 1) The minimum width of the top of the embankment structure will be under no circumstance be less than twelve (12') feet.
- 2) Front and back slopes of the embankment structure will be no steeper than the slopes listed on the detailed design sheet.
- 3) The foundation area of the embankment structure will be cleared and grubbed of all organic matter with no surface slope steeper than 1v:1h. The entire wet area, as measured from the upstream toe of the embankment to the normal pool level, will be cleared of trees and large brush.
- 4) The embankment structure shall be constructed with a cutoff trench along the centerline of the structure to anchor the core which will be constructed of relatively impervious material.
- 5) The foundation and abutments for the embankment structure will be designed and constructed to be stable under normal construction and operating conditions, with a minimum static safety factor of 1.5 and a minimum seismic safety factor of 1.2, at normal pool level with a steady seepage saturation condition.
- 6) Construction of the embankment structure shall be undertaken only when the moisture content of fill materials will permit satisfactory compaction. The embankment material will be placed in layers of twelve (12") inches or less and compacted to ninety-five (95%) percent of the standard proctor density, per ASTM requirements. The embankment construction material will be free of sod, roots, stumps, rocks, etc., which exceed six (6") inches in diameter.
- 7) The final embankment structure height will be a minimum of five (5%) percent higher than the approved design height to allow for settling over the life of the embankment.
- 8) All sediment basins shall be equipped with a primary decant system and a secondary emergency decant system. All primary decant systems will be equipped with a device and/or constructed to ensure subsurface withdrawal is the standard de-watering system to prevent discharge of floating solids.
- 9) For sediment basins built in series, the combined total decant system for each shall be designed to accommodate the entire contributing drainage area.

ATTACHMENT III-B-2-A (cont.)

- 10) The height of the embankment structure for both temporary and permanent sediment basin impoundments will be a minimum of one (1') foot above the maximum water runoff elevation from a Ten (10) Year - Twenty-four (24) Hour or a Twenty-five Year - Six (6) Hour precipitation event (whichever is greater).
- 11) Point source discharge embankment structures shall be constructed with abutments keyed into undisturbed virgin ground if possible. If undesirable materials are encountered and this cannot be achieved, additional design and construction specifications will be submitted to the Regulatory Authority in the Detailed Basin Design Plans.
- 12) The embankment structure and adjacent areas disturbed during construction will be seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure site stabilization. Hay dam, silt fences, rock check dams, etc. will be installed, as required for additional erosion prevention measures.

DISCHARGE STRUCTURE REQUIREMENTS

- 1) Primary spillways for sediment basins will be designed to accommodate the anticipated peak runoff from a Ten (10) Year - Twenty-four (24) Hour precipitation event. The combination primary and secondary (emergency) spillway system will be designed to safely accommodate the anticipated peak runoff from a Twenty-five (25) Year - Six (6) hour precipitation event. Sediment basins proposed in the drainage course of a public water supply will be equipped with spillway systems designed and constructed to adequately carry the runoff from a Fifty (50) Year - Twenty-four (24) Hour precipitation event.
- 2) When pipe is utilized as the primary spillway, said pipe shall be installed according to Class "C" pipe installation for embankment structure.
- 3) When pipe is utilized as the primary spillway, a splash pad or riprap velocity dissipater may be required under the discharge of said pipe where necessary to insure that the discharge does not erode the embankment structure.
- 4) Secondary (emergency) spillways shall be trapezoidal, open channels and constructed in consolidated, non-erodible material and planted with a mixture of both annual and perennial grasses being predominantly fescue and bermuda. In the event that the spillway cannot be constructed in said consolidated, non-erodible material, the spillway will be lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).
- 5) Sediment basins utilizing a single spillway system shall be an open channel constructed in consolidated, non-erodible material and lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plan for Spillway Lining).
- 6) The primary spillway will be designed and constructed with an apparatus to eliminate floating solids from leaving the impoundment. Such apparatus will consist of a ninety (90°) degree elbow for pipe spillways and a skimmer system for an open channel spillway.

ATTACHMENT III-B-2-A (cont.)

INSPECTION, MAINTENANCE AND CERTIFICATION REQUIREMENTS

- 1) A qualified registered professional engineer or other qualified person under the direction of a professional engineer shall conduct regular inspections during the construction of sediment basins. Upon completion of construction, said sediment basin will be certified, by a qualified registered professional engineer, to the Regulatory Agency as having been constructed in accordance with the approval detailed design plans.
- 2) Sediment basins will be inspected for stability, erosion, excessive leakage, etc. two (2) times a month until removal of the structure or until a Phase III Bond release.
- 3) Sediment basins shall be inspected quarterly for structural weakness, instability, erosion, or other hazardous conditions and maintenance performed as necessary. Annual inspections will be performed by a qualified registered professional engineer or other qualified person under the direction of a professional engineer, the results of which shall be reported, including any reports or modifications, in accordance with 880-X-10C-.20[1(j)] of the Alabama Surface Mining Regulations.
- 4) Maintenance repairs shall be conducted immediately and shall be on-going during the life of the mine or until the basin is removed or until a Phase III Bond release. Standard on-going anticipated maintenance shall include repairing rills and gullies, repairing slope failures, re-seeding areas of failed and/or spillways, etc. Hazardous conditions observed during inspections will be reported immediately to the Regulatory Authority for further consultation or instruction.
- 5) Accumulated sediment will be removed from each sediment basin when the sediment level reached the maximum allowable sediment volume (pond storage elevation) as set forth in the detailed design plans.

ATTACHMENT III-B-2-A (cont.)

BASIN REMOVAL REQUIREMENTS

- 1) All sediment basins constructed during mining operations and not being left as permanent water impoundments shall, upon completion of mining, reclamation, stabilization and effluent standards compliance, be removed in the following manner:

Upon written approval from the Regulatory Authority of the basin removal plans, the the impoundment will be dewatered in a controlled manner by either pumping or siphoning. Upon successful dewatering, a determination will be made as to the level of retained sediment in the basin. Upon determining the retained sediment level, a permanent channel will be cut into the embankment down to the retained sediment level on the side of the embankment deemed most suitable to reach natural ground without encountering prohibiting rock. The embankment material removed from the newly constructed channel will be spread and compacted over the previous impoundment (wet area) to prevent erosion and insure restabilization. The newly constructed channel will be of adequate design (width, depth and grade) to cause all surface drainage to travel across this area as sheet flow with low flow velocities to minimize the possibility of erosion. Also, where deemed necessary, hay dams will be strategically located across the width of the channel to retain sediment and slow the water velocity down to a favorable rate. Where anticipated discharge velocities require further attention, energy dissipaters such as rock check dams, concrete flumes, sacrete bags, etc. will be installed or constructed at the exit section of the newly constructed permanent channel. Upon removal of the embankment section, the remaining embankment material will be graded to the approximate original contour. All disturbed areas will be graded in such a manner to insure slope stability, successful restabilization and to minimize erosion. All disturbed areas will be seeded, fertilized and mulched in accordance with the approved Reclamation Plan (Part IV-C-5). No slope existing or created in the removal of the basin will be left on a grade that may slip or slough.

ATTACHMENT III-B-2-A (cont.)

PERMANENT WATER IMPOUNDMENT REQUIREMENTS

- 1) Prior to a request for a Phase II Bond Release, all sediment basins being left as permanent water impoundments will have supplemental data submitted to the Regulatory Authority concerning water quality, water quantity, size, depth, configuration, post mining land use, etc.
- 2) Final grading slopes of the entire permanent water impoundment are will not exceed a slope of 2 Horizontal to 1 Vertical to provide for safety and access for future water users.

TYPICAL DRAWINGS FOR EMBANKMENT TYPE BASINS

[Typical Pond Plan View](#)

[Typical Embankment Cross Section](#)

[Typical Clay Liner](#)

3. Diversions (780.29, 816.43, 816.44)

Are diversions of overland flow or stream channel diversions proposed?

(X) YES () NO

If yes, complete the following:

(a) Is the diversion to be permanent? () YES (X) NO

(b) Describe in detail the proposed diversion and include plans, maps and cross-sections.
(816.43, 816.44)

See [Attachment III-B-3, Watershed Map](#), and [Typical Diversion Ditch Cross Section](#)

(c) If diversions are temporary, enclose plans for removal including a timetable and plans for restoration of vegetation, channel characteristics, etc.

See [Attachment III-B-3](#)

(d) Enclosed approvals of the other governmental agencies where required.

NOT REQUIRED

ATTACHMENT III-B-3
DIVERSION DITCH AND DIVERSION BERM
DESIGN AND CONSTRUCTION SPECIFICATIONS

- 1) Temporary diversions will be designed and constructed to pass safely the peak runoff from a Two (2) Year - Six (6) Hour precipitation event.
- 2) To protect fills and property and to avoid danger to public health and safety, permanent diversions will be designed and constructed to safely channel the peak runoff from a Ten (10) Year - Six (6) Hour precipitation event. Permanent diversions shall be constructed with gently sloping banks that are stabilized by vegetation.
- 3) Diversions shall be designed, constructed, and maintained in a manner which prevents additional contributions of suspended solids to stream flow and to runoff outside the permit area, to the best extent possible and using the best technology currently available. Appropriate sediment control measures for these diversions may include, but not be limited to, maintenance of appropriate gradients, channel lining, revegetation, roughness structures, and detention basins.
- 4) No diversion shall be located so as to increase the potential for landslides. No diversions shall be constructed on existing landslides, unless approved by the Regulatory Authority.
- 5) When no longer needed, each temporary diversion shall be removed and the affected land regraded, topsoiled, and revegetated in accordance with Rules 880-X-10C-.10, 880-X-10C-.11, 880-X-10C-.52 thru 880-X-10C-.58, 880-X-10C-.60 and 880-X-10C-.62.
- 6) Channel linings, for diversions with slopes of three (3%) percent or less, will consist of a mixture of both annual and perennial grasses being predominantly fescue and bermuda. Channel linings, for diversions with slopes greater than three (3%) percent, will consist of riprap or other non-erodible material or cut into non-erodible material.
- 7) Adequate freeboard will be provided for protection for transition of flow and critical areas such as swales and curves along the entire diversion length.
- 8) At discharge points, where diversions intersect with natural streams or exit velocities of the diversion are greater than that of the receiving streams, energy dissipaters will be installed when deemed necessary.
- 9) Topsoil removed from the diversion area (if required) will be handled in accordance with Rules 880-X-10C-.07 thru 880-X-10C-.11.
- 10) Excess material excavated in the construction of the diversion, not needed for diversion channel geometry or the regrading of the channel, will be disposed of in accordance with Rule 880-X-10C-.36.

ATTACHMENT III-B-3 (Cont'd)

- 11) Diversions will not be designed or constructed to divert water into underground mines without written approval from the Regulatory Authority.
- 12) Energy dissipaters shall be installed, when required, at discharge points where natural streams and exit velocity of diversion ditch flow is greater than that of the receiving stream.
- 13) The entire area in which a diversion berm is proposed will be cleared and grubbed of all organic material, scarified, and no surface slopes will be left steeper than 1V:1H.
- 14) Diversion berms will be constructed with desirable material, free of sod, stones, roots, limbs, etc. over six (6") inches in diameter. The material will be spread in layers no greater than twelve (12") inches in thickness and compacted to ninety-five (95%) percent of the standard proctor density, as outlined a ASTM, until the design height is reached.
- 15) Upon completion of construction of diversion ditches or diversion berms, all disturbed areas will be seeded with a mixture of both annual and perennial grasses, fertilized, and mulched in order to minimize erosion and ensure restabilization.
- 16) All diversions (berms or ditches) will be examined quarterly for erosion, instability, structural weakness, or other hazardous conditions and maintenance performed as necessary.

4. Disposal of excess spoil. (780.35, 816.71)

() YES (X) NO

If yes, complete the following:

- (a) Show on a map the location of all proposed fills and provide cross-sections of the proposed site and the design of the disposal structures.
- (b) Include the results of the geotechnical investigation showing:
 - (1) A description of physical characteristics of bedrock and geologic conditions in the disposal area; and
 - (2) A determination of possible adverse affects from subsidence due to past, present or future underground mining.
 - (3) Location of springs, seeps or other ground water observed or anticipated in the disposal area;
 - (4) A technical description of the rock to be used in construction of rock chimney cores or rock drainage blankets, if applicable;
 - (5) Results of stability analysis including strength parameters, pore pressure and long term seepage conditions; and
 - (6) Engineering design assumption, calculations, and any alternatives considered.
- (c) Describe the construction, operation, maintenance and removal (if applicable) of the structure.
- (d) Include a surface water drainage and control plan for the fill.
- (e) Are rock-toe buttresses or keyway cuts to be used?

() YES (X) NO

If yes, describe or show:

- (1) The number, location and depth of testing borings or pits used pits used in describing subsurface conditions; and
- (2) Engineering specifications used in the design.

5. Transportation Facilities (780.33, 780.37)

See [Primary Road Map](#). Detailed Design Plans (hardcopies) for Primary Roads PR-01, PR-02 and PR-03 will be submitted during the review period.

- (a) Describe the measures to be taken to ensure the interest of the public and landowners affected are protected if disturbance within 100 feet of the right-of-way or relocation of a public road is proposed.
 - (1) Appropriate warning signs will be posted along the road right-of-way a minimum of five hundred (500') feet from the entrance of the proposed disturbance.
 - (2) Appropriate advertisements, informing the public and affected landowners, will be run in the local newspaper prior to any disturbance within the one hundred (100') feet setback of the relocation of any public road right-of-way.
 - (3) All safety requirements of the appropriate Federal, State, County, or Local governments, concerning public health and safety, will be followed.
 - (4) In areas where disturbance is proposed within one hundred (100') feet of the road right-of-way, earthen berms, guard rails, or barricades will be constructed as necessary to prevent accidental entrance into the mine area and to prevent safety hazards.
- (b) Describe any unique design, feature, or structure which is necessary for the road to meet the performance standards (Subchapter K) using any necessary maps, plans or cross-sections.

See [Attachment III-B-5](#)

- (c) Describe, in detail, the measures to be taken during constructions, maintenance and use of the transportation facilities to prevent damage to fish and wildlife and their habitat; public and private property; and erosion, siltation, and pollution of water.
- (1) To ensure environmental protection and safety appropriate for their planned duration and use, including consideration of the type and size of equipment used, the design and construction or reconstruction of roads shall incorporate appropriate limits for grade, width, surface materials, surface drainage control, culvert placement, culvert size, and any necessary design criteria established by the Regulatory Authority.
 - (2) Control or prevent erosion, siltation and the air pollution attendant to erosion, including road dust as well as dust occurring on other exposed surfaces, by vegetating or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices;
 - (3) All roads shall be maintained throughout their life to meet the performance standards specified by the Regulatory Authority.
 - (4) Any road damaged by a catastrophic event, such as a flood or earthquake, shall be repaired as soon as practical after the damage has occurred.
 - (5) A road not to be retained for use under an approved post-mining land use shall be reclaimed in accordance with the approved reclamation plan immediately after it is no longer needed for mining and reclamation operations.

ATTACHMENT III-B-5

DESIGN, CONSTRUCTION, MAINTENANCE AND RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS

LOCATION

- 1) Ancillary roads will be located on ridges or high areas or on the most stable available slopes so as to control and prevent erosion, siltation, flooding, and adverse impacts to fish and wildlife, or their habitat and related environmental values, to the extent possible.
- 2) No part of any ancillary road will be located in the channel of an intermittent or perennial stream without written approval from the Regulatory Authority. (880-X-10C-.12 thru 880-X-10C-.14, 880-X-10C-.28).
- 3) Roads shall be located to minimize downstream sedimentation and flooding. If at all possible, ancillary roads will be located upstream of sediment basins to prevent, control and minimize additional contributions of suspended solids to stream flow or runoff outside the permit area, the violation of applicable State or Federal water quality standards, seriously altering the normal flow of water in stream-beds or drainage channels, and damage to all public or private property.
- 4) In instances where it is not possible to locate ancillary roads in the above manner, sediment control will be achieved by the use of silt fences, rock check dams, hay bale berms, etc.

DESIGN REQUIREMENTS

- 1) Ancillary roads will be designed, constructed, reconstructed and maintained to have adequate drainage control structures to safely pass the peak runoff anticipated from a Ten (10) Year - Six (6) Hour precipitation event.

CONSTRUCTION REQUIREMENTS

- 1) Prior to construction, the foundation area of the roadbed will be cleared and grubbed of all organic material and the topsoil will be removed. The disturbed area will be kept to the minimum necessary to accommodate the roadbed and/or associated drainage ditch construction.
- 2) Roads will be constructed of suitable subgrade material, free of sod, roots, stumps, etc., and will not contain rocks which will exceed twelve (12") inches in diameter. The road construction material will be placed in layers of twelve (12") inch maximum thickness and compacted to ninety-five (95%) percent of the standard proctor density, as set forth in ASTM.

ATTACHMENT III-B-5 (Cont'd)

- 3) The minimum top width of ancillary roads will under no circumstance be less than ten (10') feet and will be of maximum width necessary to facilitate the largest equipment using the road.
- 4) Roadbeds for ancillary roads will cut into consolidated, non-erodible material or will be surfaced with sufficiently durable, non-toxic, non-acid forming material as needed for the anticipated duration and frequency of use of the road. Because of the short term duration and infrequency of use of most ancillary roads, sufficiently durable mine overburden material from the mine site will be used for surfacing material, placed and compacted on the roadbed surface a minimum depth of four (4") inches. In instances where ancillary roads are proposed for an extended duration or heavy usage is anticipated, then durable, non-toxic, non-acid forming material, such as chert crushed limestone, redrock, and/or crushed sandstone will be placed and compacted on the roadbed surface a minimum depth of four (4") inches.
- 5) Ancillary roads will be constructed with no sustained grades of ten (10%) percent, unless unavoidable. If unavoidable, sediment control facilities such as silt fences, hay dams and/or rock check dams will be installed at strategic locations to prevent erosion and insure stability. Grades greater than fifteen (15%) percent will require ditch relief drains, cross over drains and road drainways at a minimum of three hundred (300') feet apart.

DRAINAGE AND SEDIMENT CONTROL REQUIREMENTS

- 1) Ancillary roads will be constructed, reconstructed, and maintained to have adequate drainage control, using structures such as, but not limited to bridges, culverts, drainage pipes, ditches, cross drains, and ditch relief drains designed to safely pass the peak runoff anticipated from a Ten (10) Year - Six (6) Hour precipitation event. All drainage control structures will be designed and constructed in such a manner whereas, to allow a free and operating conditions to prevent, control, and minimize erosion at the inlets and outlets.
- 2) Culverts shall be designed, installed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road. All culverts or drainage pipes with diameters of forty-eight (48") inches or less will be covered with a minimum of one (1') foot and the maximum cover will not exceed fifty-seven (57') feet of desirable compacted material. All culverts or drainage pipes with diameters greater than forty-eight (48") inches will be covered with a minimum of two (2') feet and the maximum cover will not exceed forty-one (41') feet of desirable compacted material.
- 3) Culverts and drainage pipes will be designed and installed with adequate freeboard to prevent overtopping of the embankment.

ATTACHMENT III-B-5 (Cont'd)

- 4) Drainage pipes and culverts shall be installed/constructed to avoid plugging or collapse and erosion at inlets and outlets.
- 5) Drainage ditches, cross drains, and ditch relief drains will be constructed and maintained, as needed, to prevent, uncontrolled surface drainage over the road surface and roadway embankment.
- 6) Drainage ditches will be constructed with no sustained grades greater than five (5%) percent, unless unavoidable. If ditches must be constructed with grades in excess of five (5%) percent, drainage ditches will be lined with suitable liner material, such as, riprap, concrete, asphalt or durable rock, to prevent erosion and insure stabilization.
- 7) Sediment control will be achieved by the use of silt fences, rock check dams, hay bale berms, etc. in strategic locations, where necessary.
- 8) Upon completion of construction of ancillary roads, the side slopes of the roadway cut and fill sections, including all borrow areas formed in the construction, areas used for disposal of excess material, ditches, etc. will be seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure restabilization. Grass mixtures will include, but not limited to, fescue, bermuda, rye grass, browntop millet, clover and sericea.

INSPECTION AND MAINTENANCE REQUIREMENTS

- 1) Routine inspections and maintenance (such as regrading, resurfacing, maintenance of sediment control structures, spot replanting, and dust control) will be conducted regularly during the life of each road to ensure that each road continually meets design and performance standards.
- 2) Dust control will be achieved by the periodic application of water, chemical binders and/or other dust suppressants.
- 3) Any road damaged by a catastrophic event, such as a flood, or earthquake, will be repaired as soon as is practicable after the damage has occurred.
- 4) A road shall be maintained throughout its life to meet the performance standards of this part and any additional criteria specified by the Regulatory Authority.

ATTACHMENT III-B-5 (Cont'd)

REMOVAL AND RECLAMATION REQUIREMENTS

All roads not to be retained under an approved post-mining land use will be removed and reclaimed in accordance with the approved grading and reclamation plans as soon as practicable after it is no longer needed for mining and reclamation purposes. The removal and reclamation will include:

- 1) Closing the road to traffic;
- 2) Removing all bridges, culverts, drainage pipes, and other drainage control structures, unless otherwise approved as part of the post-mining land use;
- 3) Removing and/or otherwise disposing of road surfacing materials, that are not compatible with the post-mining land use and revegetation requirements, onsite or removed and stored for re-use;
- 4) Reshaping and regrading cut and fill slopes as necessary to be compatible with the post-mining land use and to compliment the natural drainage pattern of the surrounding terrain;
- 5) Protecting the natural drainage patterns by installing dikes or cross drains as necessary to control surface runoff and erosion.
- 6) Scarifying or ripping the roadbed, replacing topsoil or substitute material, and revegetating the entire disturbed area in accordance with the approval reclamation plan.

TYPICAL ROADBED CONFIGUARATION

See attached [Typical Ancillary Road Drawing](#) for an illustration of the typical roadbed configurations.

ATTACHMENT III-B-5 (Cont'd)

**DESIGN, CONSTRUCTION, MAINTENANCE, AND
RECLAMATION SPECIFICATION FOR PRIMARY ROADS**

LOCATION

- 1) Primary roads will be located on ridges or high areas or on most stable available slopes so as to control and prevent erosion, siltation, flooding, and adverse impacts to fish and wildlife, or their habitat and related environmental values, to the extent possible.
- 2) No part of any primary road will be located in the channel of an intermittent or perennial stream without written approval from the Regulatory Authority. (880-X-10C-.12 thru 880-X-10C-.14, 880-X-10C-.28).
- 3) If at all possible, all primary roads will be located upstream of sediment basins to prevent, control and minimize additional contributions of suspended solids to stream flow or runoff outside the permit area, the violation of applicable State or Federal water quality standards, seriously altering the normal flow of water in stream-beds or drainage channels, and damage to all public or private property.
- 4) In instances where it is not possible to locate primary roads in the above manner, sediment control will be achieved by the use of silt fences, rock check dams, hay bale berms, etc.

DESIGN REQUIREMENTS

- 1) Primary roads will be designed by or under the direct supervision of a qualified registered Professional Engineer experienced in the design and construction of roads, in accordance with the ASMC rules and regulations, and current, prudent engineering practices. No Primary Road grade will be steeper than seventeen (17%) percent.
- 2) All primary roadway embankments will be designed and constructed to be stable under normal construction and operating conditions, with a minimum static safety factor of 1.3.
- 3) All primary roads will be designed, constructed, reconstructed and maintained to have adequate drainage control structures to safely pass the peak runoff anticipated from a Ten (10) Year - Six (6) Hour precipitation event.

ATTACHMENT III-B-5 (Cont'd)

CONSTRUCTION REQUIREMENTS

- 1) The foundation area of the roadbed will be cleared and grubbed of all organic material and the topsoil will be removed. The disturbed area will be kept to the minimum necessary to accommodate the roadbed and/or associated drainage ditch construction.
- 2) The road construction material will be suitable subgrade material, free of sod, roots, stumps, etc., and will not contain rocks which exceed twelve (12") inches in diameter. The road construction material will be placed in layers (12 inch maximum thickness) and compacted to ninety-five (95%) percent of the standard proctor density, as set forth in ASTM.
- 3) The minimum top width of primary roads will under no circumstances be less than eighteen (18') feet and will be a maximum width necessary to facilitate the largest equipment using road.
- 4) All slopes (cut and fill) will be no steeper than 2 horizontal to 1 vertical, unless specified otherwise in the detail design.
- 5) Roadbeds will be cut into consolidated, non-erodible material or will be surfaced with durable, non-toxic, non-acid forming material. In most instances, durable sandstone overburden material from the mine site will be used for surfacing material. In instances where durable sandstone overburden material from the site is not available or suitable, then durable, non-toxic, non-acid forming material, such as chert, crushed limestone, redrock, and/or crushed sandstone will be hauled in from off site, placed and compacted on the roadbed surface a minimum depth of four (4") inches.
- 6) Primary roads will be constructed with grades as shown on the Detailed Primary Road Design Plans as approved by ASMC. No Primary Road grade will be steeper than seventeen (17%) percent.

ATTACHMENT III-B-5 (Cont'd)

DRAINAGE AND SEDIMENT CONTROL REQUIREMENTS

- 1) Primary roads will be constructed, reconstructed, and maintained to have adequate drainage control, using structures such as, but not limited to bridges, culverts, drainage pipes, ditches, cross drains, and ditch relief drains designed to safely pass the peak runoff anticipated from a Ten (10) Year - Six (6) Hour precipitation event. All drainage control structures will be designed and constructed in such a manner whereas, to allow free and operating conditions to prevent, control, and minimize erosion in the inlets and outlets.
- 2) Culverts shall be designed, installed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road and to provide adequate support for the load of the largest equipment using the road. For design purposes, "H-20" (live load + impact) will be used. All culverts or drainage pipes with diameters of forty-eight (48") inches or less will be covered with a minimum of one (1') foot and the maximum cover will not exceed fifty-seven (57') feet of desirable compacted material. All culverts or drainage pipes with a diameter greater than forty-eight (48") inches will be covered with a minimum of two (2') feet and the maximum cover will not exceed forty-one (41') feet of desirable compacted material. See Detailed Primary Road Design Plans for actual depth of material proposed above each culvert or drainage pipe.
- 3) Culverts and drainage pipes will be designed and installed to allow adequate freeboard to prevent overtopping of the embankment.
- 4) Drainage pipes and culverts will be installed/constructed to avoid plugging or collapse and erosion at inlets and outlets.
- 5) Drainage ditches, cross drains, and ditch relief drains will be constructed and maintained to prevent uncontrolled surface drainage over the road surface and roadway embankment. Trash racks and debris basins shall be installed in the drainage ditches where debris from the drainage area may impair the functions of drainage and sediment control structures.
- 6) Drainage ditches will be constructed with no sustained grades greater than five (5%) percent, unless unavoidable. In the event ditches must be constructed with grades in excess of five (5%) percent, drainage ditches will be lined as specified on the Primary Road Detailed Design Plans.
- 7) Sediment control will be achieved by the use of silt fences, rock check dams, hay bale berms, etc. in strategic locations, to prevent excessive siltation to the receiving streams.
- 8) Upon completion of construction of all roads, the side slopes of the roadway cut and fill sections, including all borrow areas formed in the construction, areas used for disposal of excess material, ditches, etc. will be seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure restabilization. Grass mixtures will include, but not limited to, fescue, bermuda, rye grass, browntop millet, clover and sericea.

ATTACHMENT III-B-5 (Cont'd)

INSPECTION AND MAINTENANCE REQUIREMENTS

- 1) Routine inspections and maintenance (such as regrading, resurfacing, maintenance of sediment control structures, spot replanting, and dust control) will be conducted regularly during the life of each road to assure that each road continually meets design and performance standards.
- 2) Dust control will be achieved by the periodic application of water, chemical binders and/or other dust suppressants.
- 3) Any road damaged by a catastrophic event, such as a flood, or earthquake, will be repaired as soon as it is practicable after the damage has accrued.

CERTIFICATION REQUIREMENTS

- 1) The design and construction or reconstruction of primary roads shall be under the supervision of a qualified Registered Professional Engineer based on current, prudent engineering practices and any design criteria established by the Regulatory Authority. Primary roads will be designed by or under the direct supervision of a qualified Registered Professional Engineer experienced in the design and construction of roads, in accordance with the ASMC rules and regulations, and current, prudent engineering practices. Each design will be certified by a Registered Professional Engineer as being designed in accordance with the Regulations of the Alabama Surface Mining Commission, Chapter 880-X-10.
- 2) Upon the completion of the construction of each section of the primary road, as set forth in the detailed design plans, the construction will be certified by a Registered Professional Engineer, to the Alabama Surface Mining Commission, as being constructed in accordance with the approved detailed design plans.
- 3) In the event that a primary road is mined through in the mining process and must be reconstructed, the newly constructed primary road will be reconstructed to the minimum design criteria within the detailed design plans and the construction will be certified by a registered Professional Engineer, to the Alabama Surface Mining Commission, as being constructed in accordance with the approved detail design plans.

ATTACHMENT III-B-5 (Cont'd)

REMOVAL AND RECLAMATION REQUIREMENTS

- 1) All primary roads which are not mined through and remain after the completion of mining may be left as permanent roads for landowners access, if there is no opposition by said landowner.
- 2) All primary roads which are not mined through and remain after the completion of mining which are not to be retained as permanent for landowner access will be removed and reclaimed in accordance with the approved grading and reclamation plans as soon as practicable after it is no longer needed for mining and reclamation purposes. This removal and reclamation will include:
 - a) Closing the road to traffic
 - b) Removing all bridges, culverts, drainage pipes, and other drainage control structures, unless otherwise approved as part of the post mining land use;
 - c) Removing and/or otherwise disposing of road surfacing materials, that are not compatible with the post-mining land use and revegetation requirements, onsite or removed and stored for re-use;
 - d) Reshaping and regrading cut and fill slopes as necessary to be compatible with the post-mining land use and to compliment the drainage pattern of the surrounding terrain;
 - e) Protecting the natural drainage patterns by installing dikes or cross drains as necessary to control surface runoff and erosion;
 - f) Scarifying or ripping the roadbed, replacing topsoil or substitute material, and revegetating the entire disturbed area in accordance with the approved reclamation plan.

TYPICAL ROADBED CONFIGURATION

See attached [Typical Primary Road Drawing](#) for an illustration of the typical roadbed configurations.