

**BIRMINGHAM COAL & COKE CO., INC.**

**KNIGHT MINE**

**ALABAMA SURFACE MINING COMMISSION**

**SURFACE MINING PERMIT APPLICATION**

**P A R T   I I I**

Prepared by:

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**PART III - OPERATION PLAN**

**A. General Operation Information**

1. Describe the type and method of coal mining procedures and major equipment to be used. (780.11)

[See Attachment III-A-1](#)

- |               |                          |
|---------------|--------------------------|
| 1 Track-hoe   | 1 Blast hole drill       |
| 2 Rock trucks | 1 Fuel and service truck |
| 2 Dozers      | 2 Loaders                |

2. Describe the sequence and timing of increments to be mined (as shown on permit map) over the total life of the permit. (780.11)

See [Permit Map](#) and [Operation Plan Map](#).

The timing increments are as follows:

<u>Increment No.</u>	<u>Acres</u>	<u>Dates</u>	
		<u>From</u>	<u>To</u>
1	102.0	Effective Date *	12 Months After
2	42.0	End of Inc. 1	12 Months After
3	31.0	End of Inc. 2	12 Months After
6	3.0	Effective Date *	Life of Mine

\* The Effective Date depends on the date of issuance of permit.

The sequence of mining operations will be generally as follows:

- 1) Construction of sediment control structures
- 2) Clearing and grubbing
- 3) Topsoil removal, if required
- 4) Overburden drilling and blasting
- 5) Overburden removal
- 6) Coal Recovery
- 7) Grading
- 8) Revegetation

## **OPERATION PLAN**

The surface mining method of area and contour mining will be used at this mine site. Preparation will consist of removing timber, topsoil removal (if required), drilling and blasting of overburden, overburden removal, coal removal, regrading, topsoil replacement (if required), and revegetation. See [Operation Plan Map](#).

### **INCREMENT NO. 1**

Increment No. 1 will be bonded and mined as follows:

Mining will commence in Increment No. 1 (with the dozer/loader/trackhoe unit) along the old abandoned highwall located at the southern most point of Increment No. 1 in the NW/NW of Section 5, Township 9 South, Range 10 West in Winston County, Alabama. Mining will advance to the northwest along the existing roadway with cuts generally aligned from southwest to northeast. Material will be spoiled to the southeast off coal into the previously mined area below the highwall. Mining will then advance into the next cut. Mining will continue in this manner advancing to the northwest with material to be spoiled to the southeast into subsequent open pits until mining is completed in Increment No. 1.

An Operation Plan map is submitted showing the alignment and direction of mining.

Only the Bear Creek Coal Seam will be mined in Increment No. 1.

### **INCREMENT NO. 2**

Increment No. 2 will be bonded and mined as follows:

Mining will commence in Increment No. 2 (with the dozer/loader/trackhoe unit) along the previously mined area and fully reclaimed highwall located in the NE/NE of Section 6, Township 9 South, Range 10 West in Winston County, Alabama. Mining will advance to the west with cuts generally aligned from south to north. Material will be spoiled to the east off coal into the previously mined area. Mining will then advance into the next cut. Mining will continue in this manner advancing to the west with material to be spoiled to the east into subsequent open pits until mining is completed in Increment No. 2.

An Operation Plan map is submitted showing the alignment and direction of mining.

Only the Bear Creek Coal Seam will be mined in Increment No. 2.

### **INCREMENT NO. 3**

Increment No. 3 will be bonded and mined as follows:

Mining will commence in Increment No. 3 (with the dozer/loader/trackhoe unit) located at the southeastern most point of Increment No. 3 in the NE/NE of Section 6, Township 9 South, Range

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10 West in Winston County, Alabama. Mining will advance to the northwest with cuts generally aligned from southwest to northeast. Spoil material from initial cuts from Increment No. 3 will be hauled to Increment No. 2 to provide material for reclaiming the final highwall. Mining will then advance into the next cut. Mining will continue in this manner advancing to the northwest with material to be spoiled to the southeast into subsequent open pits until mining is completed in Increment No. 3.

An Operation Plan map is submitted showing the alignment and direction of mining.

Only the Bear Creek Coal Seam will be mined in Increment No. 3.

3. Attach a narrative explaining the construction modification, use, maintenance, and removal of the following facilities: (780.11)

(a) Coal removal, handling, storage, cleaning and transportation structures and facilities;

See [Attachment III-A-3](#), Part III-A-5 & [Part III-B-5](#)

(b) Spoil, coal mine waste and non-coal mine waste removal, handling, storage, transportation and disposal structures and facilities;

See **Attachment III-A-3** & [III-B-2-A](#) & Part III-B-5. Attachment III-B-4

(c) Mine facilities; and

See **Attachment III-A-3**

(d) Water pollution control facilities.

See **Attachment III-A-3** & **III-B-2-A**

4. Describe the means to be used to maximize the use and conservation of coal reserves in the permit area. (780.18, 816.59)

The Applicant uses current mining practices in order to maximize the use and conservation of the coal reserves.

Some of the measures are:

A) Mining the deepest seam that is economically feasible.

B) Rehandling overburden in order to maximize coal recovery that would normally be lost in the toe of the spoil.

C) Processing and blending coal that in its "raw" condition would not have a market.

5. Describe measures to be taken to ensure that all debris, acid-forming and toxic-forming materials and materials constituting a fire hazard are disposed of in accordance with 816.89 and 816.103; include contingency plans to prevent sustained combustion of such material. (780.18).

At this mine site, if acid or toxic forming material is encountered, it will be buried in the pit, a minimum of one hundred-fifty (150') feet away from the highwall, a minimum of thirty (30') feet up from the pit floor, and a minimum of fifty (50') feet away from a major drain. This acid or toxic forming material will be covered with a minimum of four (4') feet of the best available non-acid, non-toxic and non-combustible forming material.

For areas such as coal stockpiles, the following measures will be performed: After all coal is removed and the coal stockpile is no longer needed the base material will be removed and placed in the final pit, a minimum of one hundred-fifty (150') feet away from the highwall, a minimum of thirty (30') feet up from the pit floor, and a minimum of fifty (50') feet away from a major drain. This acid or toxic forming material will be covered with a minimum of four (4') feet of the best available non-acid, non-toxic and non-combustible forming material.

Any material such as oil, grease, rags etc. that may present a fire hazard will be properly disposed of in an approved landfill.

Any non-coal waste will be disposed of at approved off-site landfills, which meet all applicable local, state and federal requirements.

**III-A-3 (a): COAL REMOVAL, HANDLING, STORAGE, CLEANING  
AND TRANSPORTATION AND FACILITIES**

Coal removal will occur as described in the Operations Plan (Part III-A-1). Once uncovered, the coal will be broken by loader and loaded on trucks for shipment to an offsite location. No coal processing or cleaning will be necessary.

All coal not shipped will be stockpiled onsite for future shipment. Areas for coal stockpiles will be carefully selected as to minimize contamination of the surface and groundwater in the area. Coal stockpiles will be constructed on hilltops or ridge tops to prevent any unnecessary surface drainage from entering the stockpile area. When it is not possible to place the coal stockpiles on high ground, diversions will be constructed around the coal stockpile in manner as to divert all offsite drainage away from the coal stockpile. Diversions will be constructed as outlined in Part III-B-3 of this application. Prior to the construction of the coal stockpile, the area will be cleared and grubbed of all organic material, removing and protecting all topsoil in accordance with Rules 880-X-10C-.07 thru 880-X-10C-.11, if necessary. The coal stockpile subgrade will be graded in such a manner as to shape the stockpile area to a slope (1% - 3%) to provide adequate drainage and minimize infiltration. Upon completion of the subgrade, a relatively impervious pad will be constructed using a clay material (with a permeability coefficient of  $1 \times 10^{-6}$  cm/sec or less) placed in six (6") inch lifts and compacted to ninety-five (95%) percent of the standard proctor density, a minimum of two (2') feet in thickness above the subgrade. Upon completion of the impervious clay pad, a pad will be constructed made of compacted coal of desired thickness to carry the weight of loading and transportation equipment. All surface runoff from the coal stockpile will routed through an approved sediment basin prior to leaving the permit area where chemical treatment may be added as necessary to meet all State and Federal water quality limits. The coal stockpiles and diversions needed for coal stockpiles will be maintained until removal. After all coal is removed and the coal stockpile is no longer needed the base material will be removed and placed in the final pit, a minimum of one hundred-fifty (150') feet away from the highwall, a minimum of thirty (30') feet up from the pit floor, and a minimum of fifty (50') feet away from a major drain. This acid or toxic forming material will be covered with a minimum of four (4') feet of the best available non-acid, non-toxic and non-combustible forming material. After the base material has been removed the disturbed areas for the coal stockpiles will be regraded to the approximate original contour and revegetated in accordance with the approved Reclamation Plan (IV-C-5).

Any material such as oil, grease, rags etc. that may present a fire hazard will be properly disposed of in an approved landfill. Any non-coal waste will be disposed of at approved off-site landfills, which meet all applicable local, state and federal requirements.

All transportation facilities such as haul roads, access roads, etc. will be constructed and maintained to meet minimum design criteria including but not limited to the following: Existing roads in adequate condition will be used if possible to eliminate additional disturbance. New roads will be located on ridges or the most suitable slopes available for stability. The minimum width necessary for the proposed roads will be cleared, grubbed and all topsoil removed (if

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**ATTACHMENT III-A-3**

required) and stockpiled for protection. Roadbeds will be constructed by compacting desirable backfill material in lifts to form an adequate sub-grade. The road bed will then be capped with a minimum of four (4) inches of compacted base material such as gravel, crushed stone, rock, chert or other suitable material (as approved by the Regulatory Authority) sufficient for its intended use. Routine maintenance will be required to maintain the surface of roads such as periodic grading and resurfacing may be required in the course of mining to keep the roads in adequate condition. All roads, existing or created for use in this mining operation, will have adequate sediment control facilities, such as silt fences, hay bale berms, and/or excavated sediment trap sumps constructed where deemed necessary to effectively catch and control sediment from these disturbed areas. All materials used in the construction of the transportation facilities will be non-toxic and non-combustible. Where needed, drainage control structures will be placed below the sub-grade, using prudent engineering practices to design and construct said structures. Drainage control for the transportation facilities will be accomplished by the use of drainpipes, ditches, cross drains and ditch relief drains. No sustained grades of ten (10%) percent will be constructed unless unavoidable, at which time 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 drain ways at a minimum of three (350') hundred fifty feet apart. All disturbed areas adjacent to the newly constructed road will be revegetated in accordance with the approved Reclamation Plan (Part IV-C-5) immediately following construction. Routine vegetative maintenance will be administered when necessary to maintain a vegetative cover. Maintenance of drainage control facilities including cleaning of road ditches, removal of sediment from structures and minor repairs may be required periodically. When roads are not to be left permanently, at landowners request, roads will be removed in the following manner: the base material will be hauled offsite and disposed of in an appropriate manner, with the sub-grade and drainage control ditches being plowed up and regraded to the approximate original contour. The original drainage courses will be re-established by regrading and reshaping to blend with the surrounding area. To prevent erosion and provide long term stability, terraces, cross drains, berms, etc. will be constructed, where deemed necessary. Sediment control measures for all disturbed areas created or existing in the construction or use of proposed or existing haul roads will include but not be limited to the construction or installation of hay dams, silt fences, rock check dams, etc. and will be constructed or installed in strategic locations as deemed necessary on site. These sediment control facilities will be constructed or installed promptly following the construction of said haul roads, access roads, etc. All disturbed areas will be revegetated in accordance with the approved Reclamation Plan (IV-C-5). Haulroads and all routes of travel will be maintained with water and/or other materials to minimize fugitive dust emissions. Dust suppression will consist of the application of water, chemical binders and/or other dust suppressants.

See [Part III-B-5](#) for the primary and ancillary road layout, design, construction, maintenance requirements and specifications.



**III-A-3 (b): SPOIL, COAL MINE WASTE AND NON-COAL MINE  
WASTE REMOVAL, HANDLING, STORAGE, TRANSPORTATION  
AND DISPOSAL STRUCTURES AND FACILITIES**

No coal mine waste will be present at this mining facility. No excess spoil disposal areas will be necessary at this mining facility. All non-coal mine waste will be transported by truck to the nearest applicable landfill.

**III-A-3 (c): MINE FACILITIES**

There will be no mine facilities at this site other than a portable office which will most probably consist of one trailer for parts, equipment, maintenance and supply storage and fuel tanks mounted on trucks, and two Type 2 portable magazines for storing explosives. Changes and maintenance such as enlargement and additions to these facilities may occur from time to time as deemed necessary by mine superintendent. There is a possibility that during the life of the permit an equipment maintenance shop may be constructed at this site. If this decision is made the building will be located within the permitted and bonded area, generally these buildings are constructed of sheet metal covering a wooden frame built around poles and are erected in a manner that will facilitate disassembly and relocation to another site after equipment is removed from the area. Any modification or addition to the structure would be of similar construction. Periodic maintenance including painting and winterizing will be done either by contractors or mine personnel. All these facilities are portable and will be transported onsite at the beginning of operations and transported offsite upon completion of operations. All areas disturbed by these facilities will be regraded to the approximate original contour and revegetated in accordance with the approved Reclamation Plan (IV-C-5).

**III-A-3 (d): WATER POLLUTION CONTROL FACILITIES**

Sedimentation basins constructed during mining operations are to collect sediment from the disturbed area during the actual mining phase and during the reclamation and restabilization phase. All basins will be constructed, prior to any disturbance in its respective drainage area, under the supervision of a qualified Registered Professional Engineer or by a qualified person under his direct supervision. Upon completion of construction the basin will then be certified to the Regulatory Authority as having been constructed in accordance with the approved design plan. Areas where embankments are to be built will be cleared and grubbed with the topsoil removed and stockpiled (if required). The basins will be constructed by bringing desirable material in and compacting it in lifts until the construction specifications are met. Drainage structures will be installed as per design plans with any necessary erosion control and/or stabilization procedures such as riprap, concrete, drop structures, energy dissipaters, etc. being implemented as deemed necessary by the project engineer. Upon completion of construction the entire disturbed area will be revegetated in accordance with the approved Reclamation Plan (IV-C-5).

## **MODIFICATIONS**

No modification plans are necessary due to the basin(s) being proposed. If during mining operations it is necessary to modify any or all of the sedimentation basins, modification plans will be submitted to the Regulatory Authority for approval. Upon written approval of the modification plans by the Regulatory Authority the basin(s) will be modified in accordance with the approved plans.

## **MAINTENANCE**

Semi-monthly inspections of each basin will be made for erosion, instability, proper functioning, etc. until the removal of said basin(s) or until Phase III Bond Release. Minor signs of erosion, instability, improper functioning, etc. will be repaired immediately. Standard anticipated maintenance will include repairing rills and gullies, repairing slope failures, re-seeding areas of failed or scarce vegetation, cleaning out or removing debris obstructing pipes and/or spillways to allow proper functioning, etc. Hazardous conditions observed during inspections will be reported to the Regulatory Authority for further consultation or instructions. All basins will be examined quarterly for weakness, instability, excessive erosion, etc. with maintenance performed as necessary. Formal inspections will be made annually with any reports or modifications being filed with the Regulatory Authority along with a certification that the basin has been maintained in accordance with the approved plans and 880-X-10C-.20 [l(j)] of the Alabama Surface Mining Regulations. Sediment will be removed from the basin when the accumulated sediment exceeds the sediment removal volume as set forth on the approved detailed design plans.

## **REMOVAL**

All sedimentation basins constructed during mining operations, not being left as permanent water impoundments, upon completion of mining, reclamation, restabilization and effluent standards compliance, will be removed in the following manner:

Upon written approval from the Regulatory Authority of the basin removal plans, 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 in sheet flow, minimizing 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

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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 (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.

6. Give a description, including appropriate cross-sections and maps, of measures to be used to seal or manage mine openings, bore holes, wells and other openings within the proposed permit area. (780.18, 816.13-816.15)

Mine openings within the permit area (other than blast holes) will be eliminated in the following methods:

- 1) Exploration Holes - Exploration holes will be backfilled with the drill cuttings and capped with two (2) feet of clay.

[SEE ATTACHMENT III-A-6-1](#)

- 2) Monitoring Wells - Groundwater monitoring wells will be cased using PVC pipe of equal diameter of the drilling bit used. This casing will extend a minimum depth equal to the depth necessary to reach competent rock material to prevent filling of the well. The casing depth may vary depending upon the depth of the aquifer being targeted for monitoring. Groundwater monitoring wells may be temporarily sealed using a PVC cap of equal diameter as casing requires.

[SEE ATTACHMENT III-A-6-2](#)

Groundwater monitoring wells will be sealed at the time of abandonment with a concrete cap (2.0'x2.0'x.5').

[SEE ATTACHMENT III-A-6-2](#)

- 3) Mine Openings - Old works (abandoned underground mines) which may be encountered during the mining operation will be eliminated by the following process: Prior to the backfilling or shooting of the final highwall all mine openings will be sealed with a clay material having a permeability ranging between 0.00001 and 0.000001 cm/sec. This clay material will be compacted in six (6) inch lifts to ninety-five (95%) percent of the standard proctor density, a minimum of five (5) feet above the top of the opening.

[SEE ATTACHMENT III-A-6-3](#)

- 4) Gas & Oil Wells – Gas & Oil wells (Plugged and abandoned) which may be encountered during the mining operation will be re-sealed by the following: After coal removal in the general area of the well, the remaining casing will be squared up and a device used to detect the presence/absence of gas. If gas is present, the area of flow will be sealed by placing concrete or secrete to a depth of 25 feet and a 3/8 inch steel plate welded across all casing stubs. If gas is not present, a 3/8 inch steel plate will be welded across all casing stubs. A written report of the re-sealing process used on each plugged and abandoned well and its location will be submitted to the ASMC and Alabama Oil and Gas Board. Within thirty (30) days.

[SEE ATTACHMENT III-A-6-4](#)

- 5) Gas & Oil Wells – Gas & Oil wells (Unplugged) which may be encountered during the mining operation will be temporarily sealed and restored by the following process: The owner of the well will submit a temporary abandonment and restoration plan to the Alabama Oil and Gas Board for approval. It will be sealed for temporary abandonment prior to mine-thru operations and restored thereafter in accordance with the approved plan.

[SEE ATTACHMENT III-A-6-4](#)

7. Give a description of steps to be taken to comply with applicable water quality laws, regulations and health and safety standards. (780.18)

Water Quality Laws - All disturbed surface drainage from the proposed mining area will be routed through an approved sediment structure for monitoring and treatment purposes. Monitoring and Reporting will take place as set forth in the approved Monitoring Plan (III-D & III-E) and NPDES requirements. When necessary, drainage will be chemically treated for pH or Iron with hydrated lime or caustic soda. Other treatment such as floating silt fences or flocculation bricks may be administered for Total Suspended Solids. These measures will be taken to remain in compliance NPDES requirements. Health & Safety Standards - Applicable approvals will be received prior to the construction of any sanitary absorption lines for bathhouses and offices. MSHA guidelines and regulations will be followed in all operations.

Certification and training of all mine personnel will be current and updated by attending MSHA classes at the Walker Technology School, in Sumiton, Alabama.

All dust, noise, and other required control test will be current and performed by certified MSHA personnel.

All records are maintained at the mine and are available for inspection.

8. Is surface mining to be conducted within 500 feet of an underground mine? (780.27, 816.79)  
( ) Yes (XX) No

If yes, describe measures to be used to comply with Section 816.79. Attach a map showing the location and extent of known workings in accordance with 780.14(a) (13).

**B. Engineering Plans.**

All cross sections, maps and plans related to operations, reclamation and structures must comply with Section 780.10. Plans, appropriate calculation 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.

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 of Subchapter K or Subchapter B, whichever is more stringent and demonstrate whether or not the use of existing structures will pose a significant harm to the environment or public health or safety.

Not Applicable

- (b) If an existing structure requires modification or reconstruction to meet the performance standards, attach a compliance plan that 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 which complies with Section 780.25 (a)(1) for each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam or embankment to be located within the proposed permit area. [See Attachment III-B-2-A](#)

- (b) Submit detailed design plans, which comply with Sections 780.25(a)(2)(3) and 816.46, for each sedimentation pond 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 with Section 816.49. [See Attachment III-B-2-A](#)

- (c) Submit detailed design plans which comply with Sections 780.25(a) (2&3) and 816.49, for each temporary or permanent water impoundment to be constructed on the increment you currently propose to mine. [See Attachment III-B-2-A](#)

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

None Proposed

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

None Proposed

**GENERAL ENGINEERING PLAN CERTIFICATION STATEMENT**

I, J. David McGehee, 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.

**DSM Design Group, LLC.**

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J. David McGehee, P.E.

Alabama Reg. No. 18496

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Date

## **GENERAL PLAN**

The general plan consists of constructing twelve (12) sediment basins (033, 034, 036, 037, 037A, 038, 041, 042, 043, 045, 046 & 047). These basins will be adequate to control all surface runoff for the remainder of the mine life.

Detailed design plans for sediment basins 038 & 041 are provided. These basins are necessary to begin the project and capture disturbance from initial cuts in Increment No.1.

Please see attached Detailed Design Plan for Basin [038](#) & [041](#).

Detailed design plans for sediment basins that are in spoil material (038, 046 & 047) shall have at a minimum 1' of clay liner.

Detailed design plans for sediment basins (034, 036, 037, 037A, 038, 042, 043, 045, 046 & 047) will be submitted to the regulatory authority and upon written approval from them will be constructed and certified to the Regulatory Authority prior to disturbance in their drainage areas. General design data for all sediment basins is enclosed. See attached data and Watershed Map for the sediment basin location and preliminary hydrologic information. All sediment basins are proposed as temporary impoundments. Detailed basin removal plans will be submitted to the regulatory authority prior to a request for Phase II bond release and upon written approval from them will be graded and revegetated. (See attached data and watershed map for basin location and preliminary hydrologic information.)

Geologic investigations of the area indicate alternating sequences of sandstone and shale with sandstone streaks and minor amounts of bituminous coal and underclay. The coal to be mined by Birmingham Coal & Coke Company, Inc. will be the Bear Creek coal seam.

All surface drainage from the proposed mining area drains into unnamed tributaries to Bear Creek.

No underground mines exist within or adjacent to the permit area, therefore, no adverse effect on surface structures is anticipated due to underground mine subsidence.



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**GENERAL DESIGN DATA**

<b>SEDIMENT BASIN</b>	<b>LOCATION</b>	<b>DRAINAGE AREA ACRES</b>
033P	SE/SE of Section 31 T8S, R10W	15
034P	NE/SE of Section 31 T8S, R10W	9
036P	NW/SW of Section 32 T8S, R10W	15
037P	SW/SW of Section 32 T8S, R10W	18
037AP	NW/SW & SW/SW of Section 32 T8S, R10W	11
038P	NW/NW of Section 5 T9S, R10W	18
041P	NE/NE of Section 6 T9S, R10W	15
042P	NE/NE of Section 6 T9S, R10W	18
043P	SW/SE & SE/SE of Section 31 T8S, R10W	14
045P	NW/NE of Section 6 T9S, R10W	7
046P	NE/NE of Section 6 T9S, R10W	16
047P	NE/NE of Section 6 T9S, R10W	19

See [Watershed Map](#).

The NPDES permit ([AL0074373](#)) was effective 03/01/2012. Please see the attached 1000' scale [USGS NPDES Permit Map](#). All basins are located on the Kinlock Springs U.S.G.S. Quadrangle.

## **SEDIMENT BASIN CONSTRUCTION SPECIFICATIONS**

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

### **1. EMBANKMENT REQUIREMENTS**

- A) The minimum width of the top of the embankment will under no circumstance be less than twelve (12) feet.
- B) The embankment will have a minimum front and back slope no steeper than the slopes listed on the detailed design sheet.
- C) The foundation area of the embankment will be cleared and grubbed of all organic matter with no surface slope steeper than 1 horizontal to 1 vertical.
- D) A core will be constructed in a cutoff trench along the centerline of the embankment. The cutoff trench will be of suitable depth and width to attain relatively impervious material.
- E) The embankment construction material will be free of sod, roots, stumps, rocks, etc., which exceed six (6") inches in diameter. 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, as set forth in ASTM.
- F) The embankment, foundation and abutments 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 steady seepage saturation conditions.
- G) The actual constructed height of the embankment will be a minimum of five (5%) percent higher than the design height to allow for settling over the life of the embankment.
- H) The design embankment height for both temporary and permanent impoundments will be a minimum of one (1) foot above the maximum water level anticipated from a 10 Year - 24 Hour or a 25 Year - 6 Hour precipitation event (whichever is greater).
- I) For embankments constructed as point source discharges, the embankment will be constructed and abutments keyed into undisturbed, virgin, ground if at all possible. In the event that this can not be achieved, additional design and construction specifications will be submitted in the Detailed Basin Design Plans.
- J) The embankment and all areas disturbed in the construction of the embankment will be seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure restabilization. Hay dams, silt fences, rock check dams, etc. will be installed, where deemed necessary, as additional erosion prevention methods.

## **SEDIMENT BASIN CONSTRUCTION SPECIFICATIONS**

### **2. DISCHARGE STRUCTURE REQUIREMENTS**

- A) The primary spillway will be designed to adequately carry the anticipated peak runoff from a 10 Year - 24 Hour precipitation event. The combination primary and secondary (emergency) spillway system will be designed to safely carry the anticipated peak runoff from a 25 Year - 6 Hour precipitation event. When sediment basins are proposed in the drainage course of a public water supply, the spillway system will be designed and constructed to adequately carry the runoff from a 50 Year - 24 Hour precipitation event.
- B) Channel linings, for secondary (emergency) spillways will be a trapezoidal open channel constructed in consolidated, nonerodible material and planted with a mixture of both annual and perennial grasses being predominantly fescue and bermuda. In the event that the spillway can not be constructed in consolidated, nonerodible material the spillway will be lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).
- C) When consisting of pipe, the primary spillway will be installed according to Class "C" pipe installation for embankment bedding.
- D) Sediment basins with a single spillway system, such as a skimmer board, will be a trapezoidal open channel constructed in consolidated, nonerodible material and lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).
- E) The primary spillway will be designed and constructed with device to eliminate floating solids from leaving the impoundment. This device will consist of a turned down elbow when using pipe or a skimmer system when using an open channel spillway.
- F) When necessary, to prevent erosion of the embankment or discharge area, a splash pad of riprap, durable rock, sacrete, etc. will be installed at the discharge end of the primary spillway.
- G) The combined spillway systems, for sediment basins constructed in series, will be designed to adequately accommodate the entire drainage area.

### **3. INSPECTION, MAINTENANCE AND CERTIFICATION REQUIREMENTS**

- A) Inspections will be conducted regularly during construction of the sediment basin by a qualified registered professional engineer or other qualified person under the direction of a professional engineer. Upon completion of construction, the sediment basin will be certified, by a qualified registered professional engineer, to the Regulatory Authority as having been constructed in accordance with the approved detailed design plans.
- B) Sediment basins will be inspected semi-monthly for erosion, instability, etc., until the removal of the structure or until a Phase III Bond Release is granted.

**3. INSPECTION, MAINTENANCE AND CERTIFICATION REQUIREMENTS**

- C) Sediment basins will be examined quarterly for structural weakness, instability, erosion, slope failure, or other hazardous conditions.
- D) If during the above described periodic inspections, it is determined that there exists signs of structural weakness, instability, erosion, slope failure, improper functioning, or other hazardous conditions, these will be repaired immediately.
- E) Standard anticipated maintenance will include repairing rills and gullies, repairing slope failures, re-seeding areas of failed or scarce vegetation, cleaning out or removing debris obstructing pipes and/or spillways to allow proper functioning, etc. Standard maintenance discovered during the above described periodic inspections will be performed immediately. Hazardous conditions observed during inspections will be reported immediately to the Regulatory Authority for further consultation or instructions.
- F) Retained sediment will be removed from each sediment basin when the accumulated sediment reaches the maximum allowable sediment volume as set forth in the detailed design plans.
- G) Formal inspections will be made annually, by a qualified registered professional engineer or other qualified person under the direction of a professional engineer, including any reports or modifications, in accordance with 880-X-10C-.20[1(j)] of the Alabama Surface Mining Regulations.

**4. BASIN REMOVAL REQUIREMENTS**

- A) Upon completion of mining, reclamation, restabilization and effluent standards being met, each sediment basin not proposed as a permanent water impoundment will be dewatered in a controlled manner by either pumping or siphoning. Upon successful dewatering, a determination will be made as to the retained sediment level in the basin. After determining the retained sediment level, a 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 this newly constructed channel will be spread and compacted over the previous impoundment (wet area) area to prevent erosion and ensure restabilization. The newly constructed channel will be of adequate width (minimum 30 feet) and sloped to a grade (approximately 1% to 3%) which will cause all surface drainage to travel across this area in sheet flow, minimizing the possibility of erosion. Also, where necessary, hay dams will be installed in strategic locations across the width of the channel to retain sediment and slow the water velocity to a favorable rate. Upon removal of the embankment section, all disturbed areas will be graded in such a manner to ensure slope stability, successful restabilization and to minimize erosion. All disturbed areas will be seeded with a mixture of annual and perennial grasses, fertilized and mulched. No slope, existing or created in the removal of the sediment basin, will be left on a grade that will slip or slough.

**5. PERMANENT WATER IMPOUNDMENT REQUIREMENTS**

- A) 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, postmining land use, etc.
  
- B) Final grading slopes of the entire permanent water impoundment area 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**

**BIRMINGHAM COAL & COKE CO. INC.  
KNIGHT MINE, P-39--\_\_**

3. Diversions [780.29, 816.43, 816.44]

Are diversions of overflow or stream channel diversions proposed?

(XX) Yes ( ) No

If yes, complete the following:

- (a) Is the diversion to be permanent? ( ) Yes (XX) No
- (b) Describe in detail the proposed diversion and include plans, maps and cross-sections that comply with 816.43 and 816.44.

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

See attached: Detailed Design Plans for [Diversion D-038](#)

Detailed Design Plans for Diversion D-038 are provided as a riprap lined channel (as opposed to a vegetated channel) to eliminate the risk associated with vegetation establishment in previously mined terrain with spoil laden soils.

- (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) Enclose approvals of other governmental agencies where required.

Not Required

**DIVERSION DITCH AND DIVERSION BERM  
DESIGN AND CONSTRUCTION SPECIFICATIONS**

- 1) Temporary diversions will be designed and constructed to adequately carry the runoff from a 2 Year - 6 Hour precipitation event.
- 2) Permanent diversions will be designed and constructed to adequately carry the runoff from a 10 Year - 6 Hour precipitation event.
- 3) Permanent diversions will be designed and constructed with gently sloping banks stabilized with appropriate vegetation.
- 4) All diversions will be designed, constructed and maintained, using the best technology currently available, whereas additional contribution of suspended solids to stream-flow and to runoff outside the permit area is prevented.
- 5) Maintenance of appropriate gradient, channel lining, revegetation, roughness structures, detention basins, etc. will be used, when necessary, as sediment control measures for these diversions.
- 6) Diversions will not be constructed on existing land slides nor be located so as to increase the potential for land slides.
- 7) Temporary diversions will be removed and the affected area regraded, topsoiled (if required) and revegetated in accordance with Rules 880-X-10C-.10, 880-X-10C-.11, 880-X-10C-.52 thru 880-X-10C-.57 and 880-X-10C-.58, 880-X-10C-.60 and 880-X-10C-.62, when no longer needed.
- 8) Channel linings, for diversions with slopes of five (5%) 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 five (5%) percent, will consist of riprap or other non-erodible material or cut into non-erodible material.
- 9) Adequate freeboard will be provided for protection for transition of flows and critical areas such as swales and curves along the entire diversion length.
- 10) 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.

**DIVERSION DITCH AND DIVERSION BERM  
DESIGN AND CONSTRUCTION SPECIFICATIONS  
(continued)**

- 11) Topsoil removed from the diversion area (if required) will be handled in accordance with Rules 880-X-10C-.07 thru 880-X-10C-.11.
- 12) 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.
- 13) Diversions will not be designed or constructed to divert water into underground mines without written approval from the Regulatory Authority.
- 14) 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.
- 15) Diversion berms will be constructed with desirable material, free of sod, stones, roots, limbs, etc. over six (6") inches in diameter. This 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 in ASTM, until the design height is reached.
- 16) 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.
- 17) 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)

Are excess spoil fills proposed?

( ) Yes. (XX) 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 design of the disposal site.
  
- (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 sores or rock drainage blankets, if applicable;
  - (5) Results of stability analyses including strength parameters, pore pressures and long term seepage conditions; and
  - (6) Engineering design assumptions, 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  No

If yes, describe or show:

(1) The number, location and depth of test borings or test 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](#). Please see the attached detailed design plans for [Primary Road No. 1 and Primary Road No. 2](#). Also see attached detailed design plans for [Primary Road No. 3 and Primary Road No. 4](#).

- (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 (500') hundred 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 or 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 of 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 construction, 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.

Silt fences, hay filter dams, dust control on roads, vegetation, diversion ditches and other prudent practices will be utilized in controlling runoff. Cut and fill slopes created by road construction shall be grassed to insure stabilization and prevent erosion.

**DESIGN, CONSTRUCTION, MAINTENANCE, AND  
RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS**

**1. LOCATION**

- A) 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.
- B) 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, in accordance with 880-X-10C-.12 thru 880-X-10C-.14 and 880-X-10C-.28.
- C) 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.
- D) 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.

**2. DESIGN REQUIREMENTS**

- A) Ancillary roads will be designed, constructed, reconstructed and maintained to have adequate drainage control structures to safely pass the peak runoff anticipated from a 10 year, 6 hour precipitation event.

**3. CONSTRUCTION REQUIREMENTS**

- A) 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.
- B) 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.
- C) 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.

**DESIGN, CONSTRUCTION, MAINTENANCE, AND  
RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS  
(Con't.)**

- D) Roadbeds for ancillary roads will be 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 hauled in from off site, as approved by the Regulatory Authority and be placed and compacted on the roadbed surface a minimum depth of four (4) inches .
- E) 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.

**4. DRAINAGE AND SEDIMENT CONTROL REQUIREMENTS**

- A) 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 10 year, 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.
- B) Culverts and drainage pipes will be designed and installed to provide adequate support for the load of the largest equipment 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.
- C) Culverts and drainage pipes will be designed and installed to allow adequate freeboard to prevent overtopping of the embankment.
- D) 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.
- E) 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.

**DESIGN, CONSTRUCTION, MAINTENANCE, AND  
RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS  
(Con't.)**

- F) Sediment control will be achieved by the use of silt fences, rock check dams, hay bale berms, etc. in strategic locations, where necessary.
- G) 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 be limited to, fescue, bermuda, rye grass, browntop millet, clover and sericea.

**5. INSPECTION AND MAINTENANCE REQUIREMENTS**

- A) 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.
- B) Dust control will be achieved by the periodic application of water, chemical binders and/or other dust suppressants.
- C) 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.

**6. REMOVAL AND RECLAMATION REQUIREMENTS**

- A) All roads not to be retained under an approved postmining 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. This 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 postmining land use;
  - 3. Removing and/or otherwise disposing of road surfacing materials, that are not compatible with the postmining 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 postmining 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;

**DESIGN, CONSTRUCTION, MAINTENANCE, AND  
RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS  
(Con't.)**

6. Scarifying or ripping the roadbed, replacing topsoil or substitute material, and revegetating the entire disturbed area in accordance with the approved reclamation plan.

**7. TYPICAL ROADBED CONFIGURATION**

- A) See [attached typical ancillary road drawing](#) for an illustration of the typical roadbed configurations.

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

**1. LOCATION**

- A) Primary 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.
- B) 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, in accordance with 880-X-10C-.12 through 880-X-10C-.14 and 880-X-10C-.28.
- C) 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.
- D) 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.

**2. DESIGN REQUIREMENTS**

- A) 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.
- B) 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.
- C) 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 10 year, 6 hour precipitation event.



### **3. CONSTRUCTION REQUIREMENTS**

- A) 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.
- B) 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.
- C) The minimum top width of primary roads will under no circumstance be less than eighteen (18) feet and will be of maximum width necessary to facilitate the largest equipment using the road.
- D) All slopes (cut and fill) will be no steeper than 2 horizontal to 1 vertical, unless specified otherwise in the detailed design.
- E) 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, as approved by the Regulatory Authority and be placed and compacted on the roadbed surface a minimum depth of four (4) inches.
- F) Primary roads will be constructed with grades as shown on the Detailed Primary Road Design Plans. No Primary Road grade will be steeper than seventeen (17) percent.

#### **4. DRAINAGE AND SEDIMENT CONTROL REQUIREMENTS**

- A) 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 10 year, 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.
  
- B) Culverts and drainage pipes will be designed and installed to provide adequate support for the load of the largest equipment using the road. For design purposes, "H-20" (live load + impact) was 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 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. See Detailed Primary Road Design Plans for actual depth of material proposed above each culvert or drainage pipe.
  
- C) Culverts and drainage pipes will be designed and installed to allow adequate freeboard to prevent overtopping of the embankment.
  
- D) 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.
  
- E) 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 as shown on the Primary Road Detailed Design Plans.
  
- F) 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.
  
- G) 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 be limited to, fescue, bermuda, rye grass, browntop millet, clover and sericea.

## **5. INSPECTION AND MAINTENANCE REQUIREMENTS**

- A) 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.
- B) Dust control will be achieved by the periodic application of water, chemical binders and/or other dust suppressants.
- C) 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 occurred.

## **6. CERTIFICATION REQUIREMENTS**

- A) 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.
- B) 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.
- C) 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 detailed design plans.

## 7. REMOVAL AND RECLAMATION REQUIREMENTS

- A) All primary roads which are not mined through and remain after the completion of mining may be left as permanent roads for landowner access, if there is no opposition by said landowner.
- B) 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:
  - 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 approved reclamation plan.

## 8. TYPICAL ROADBED CONFIGURATION

- A) See attached [typical primary road drawing](#) for an illustration of the typical roadbed configurations.