BLACK WARRIOR MINERALS, INC.
ATTACHMENT III-B-5(b)

SEABOARD MINE
P-3937 REVISION R-5
TUSCALOOSA COUNTY, ALABAMA

BY
PERC ENGINEERING CO., INC.
P.O. BOX 1712
JASPER, ALABAMA 35502

OCTOBER 14, 2014

PERC
ENGINEERING CO., INC.

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October 14, 2014

Mr. Michael Harrison, P.E.
Alabama Surface Mining Commission
Post Office Box 2390
Jasper, Alabama 35502-2390

RE: Black Warrior Minerals, Inc.
Seaboard Mine
P- 3937 Revision R-5

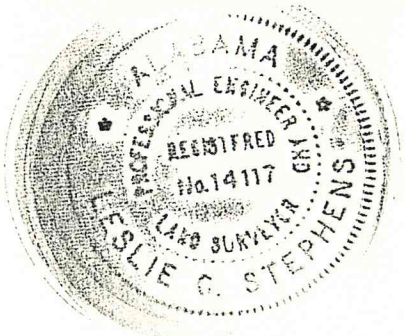
Dear Michael:

I hereby certify the attached detailed design plans for Primary Road 2P for the above referenced mine are in accordance with the Regulations of the Alabama Surface Mining Commission as adopted by Act 81-435 of December 18, 1981 and amended to date, and are true and correct to the best of my knowledge and belief.

If you have any questions or required additional information, please feel free to call.

Sincerely,
PERC Engineering Co., Inc.

Leslie G. Stephens, P.E., P.L.S.
Alabama Registration No. 14117-E



SPECIFICATIONS FOR THE CONSTRUCTION, MAINTENANCE AND RECLAMATION OF PRIMARY ROADS

1. Primary roads shall be designed by or under the direction of a registered professional engineer in accordance with the Alabama Surface Mining Commission rules and regulations and prudent engineering practice.

2. Each roadway embankment will be designed and constructed so as to have a minimum static safety factor of 1.3.

3. To the extent possible, roads will be located on ridges or on the most stable available slopes to prevent or minimize erosion, downstream sedimentation and flooding in an effort to prevent adverse effects to fish, wildlife and related environmental values.

4. To the extent possible, roads will be located above the sediment basins to be constructed for the mining operation in an effort to control or prevent additional contributions of suspended solids to stream flow or runoff outside the permit area and to comply with State and Federal water quality standards applicable to receiving waters and avoid the alteration of the normal flow of water in streambeds or drainage channels while preventing or controlling damage to public or private property. Where it is not possible or is impractical to locate roads in this manner, sediment control devices such as silt fencing, hay bale check dams and rock filter check dams will be used as necessary to maintain water quality. No fording of intermittent or perennial streams will be conducted unless specifically approved by the Alabama Surface Mining Commission as temporary routes to be used during road construction.

5. Prior to construction, the roadway will be cleared, grubbed and will have the topsoil removed. The clearing limits will be kept to the minimum necessary to accommodate the roadbed and associated ditch construction.

6. Roads will be constructed of suitable compacted subgrade material. The material will be free of sod, roots, stones over 12 inches in diameter, and other objectionable materials. The material will be placed and spread over the entire fill area, starting at the lowest point in layers not to exceed 12 inches in thickness. The material will be compacted to 95 percent of the density, based on standard proctor as outlined in ASTM.

7. Primary roads will have a minimum width of eighteen feet and a maximum width necessary to accommodate the largest equipment traveling the road.

8. Roadbeds will be cut to consolidated non-erodible material or will be surfaced with durable non-toxic, non-acid forming substances. The wearing surface will consist of durable sandstone, chert, crushed limestone, crushed concrete, crushed asphalt, red rock, ironore refuse, gravel, or other durable non-toxic, non-acid forming material approved by the Regulatory Authority. The wearing surface will be placed on the roadbed to a depth of four inches.

9. No sustained grades will exceed ten percent unless deemed necessary, in which case appropriate sediment control facilities will be constructed. If grades in excess of fifteen percent are required, cross drains, ditch relief drains and road drainways will be located at a minimum distance of three-hundred feet.

10. Roads will be constructed so as to have adequate drainage utilizing ditches, culverts, cross drains and ditch relief drains designed to safely pass the peak runoff from a ten year, six hour precipitation event. Drainage pipes and culverts shall be installed as designed and will be maintained in a free and operating condition to prevent and control erosion at inlets and outlets. Culverts have been designed to support the load of the heaviest equipment to travel the road and are based on the Handbook of Steel Drainage and Highway Construction Products by the American Iron and Steel Institute and the equipment specifications. Drainage ditches will be constructed and maintained in accordance with the approved design to prevent uncontrolled drainage over the road surface and embankment. Roads will not be located in the channel of an intermittent or perennial stream unless specifically approved by the Alabama Surface Mining Commission. Additionally, no relocation and/or alteration of an intermittent or perennial stream will be done unless specifically approved by the Alabama Surface Mining Commission. In the event that it becomes evident that any drainage structures including culverts, bridges and/or low water crossings will be required in order to cross an intermittent or perennial stream, the structure will be designed and constructed in accordance with Alabama Surface Mining Commission requirements and prudent engineering practice and the approval of the design(s) will be acquired prior to the commencement of construction. Hay bale check dams and silt fences will be used at strategic locations when necessary to control sediment runoff. Immediately upon completion of construction, the side slopes of the road embankments and/or cuts will be fertilized, seeded with annual and perennial grasses and mulch will be added to aid in the prevention of erosion and to enhance seed germination. The seed mix will consist of, but is not limited to, some combination of the following species: bermuda grass, fescue, lespedeza, rye grass, brown top millet, clover and vetch. The particular species to be planted will vary with the planting season at the time of seed application. Upon completion of construction of each phase of the roadway the construction will be certified to the Alabama Surface Mining Commission as having been done in accordance with the approved plans for the roadway and associated facilities.

11. Routine maintenance will be required to assure that the road continually meets performance standards and will consist of periodic grading, resurfacing, dust suppression and maintenance of sediment control facilities. Dust suppression will consist of the application of water, chemical binders and/or other dust suppressants. No oil will be utilized in this process. Spot seeding, fertilizing and mulching will be performed as necessary to improve vegetative cover on roadway slopes. A road damaged by a catastrophic event shall be repaired as soon as practicable after the damage has occurred.

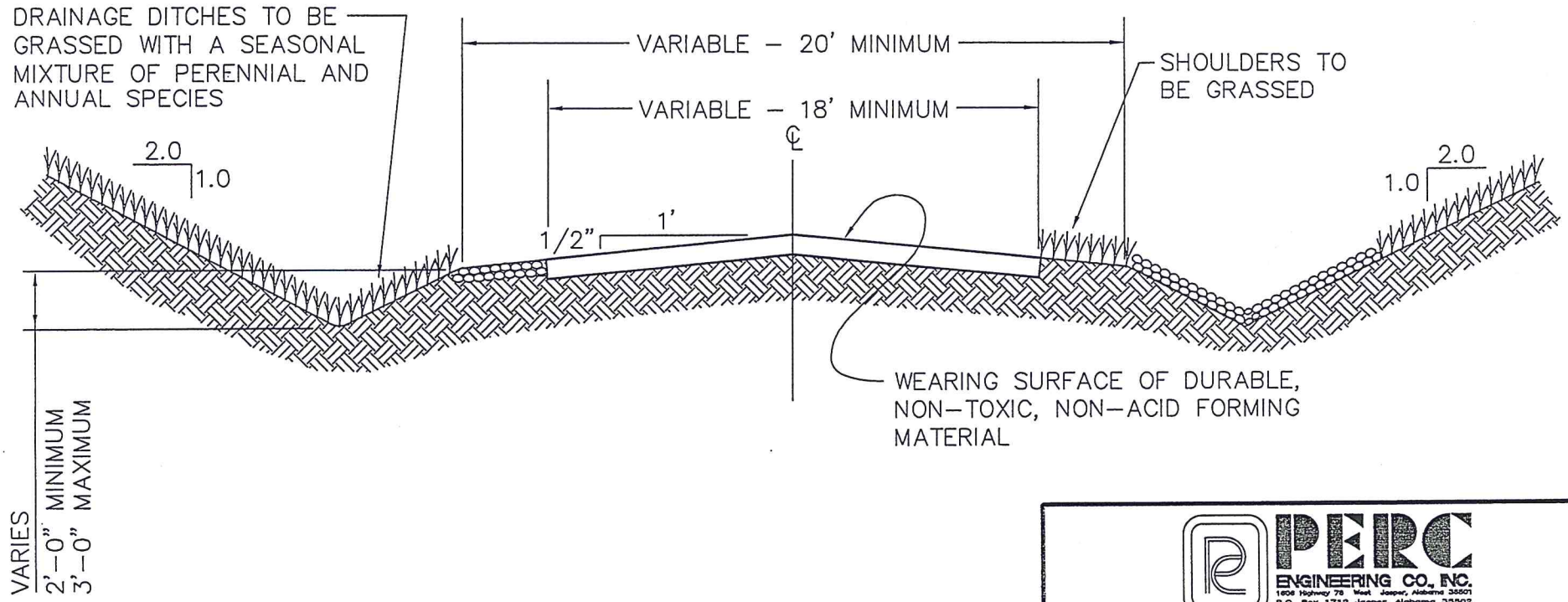
12. Roads not to be retained as part of the post mine land use shall be reclaimed in accordance with the approved reclamation plan for this permit as soon as practicable after they are no longer needed as part of the mining and reclamation operation, using the following procedures:

    a. The road will be closed to traffic.
    b. All bridges, culverts and other drainage structures not approved as part of the post mine land use will be removed.
    c. All road surfacing materials that are not compatible with the post mine land use or revegetation requirements will be properly disposed of on-site or removed from the site for re-use.
    d. Roadway cut and fill slopes shall be regraded and reshaped to be compatible with the post mine land use and to compliment the natural drainage pattern of the surrounding terrain.
    e. The natural drainage patterns shall be protected from surface runoff and erosion utilizing the installation of dikes and/or cross drains as necessary.
    f. The roadbed shall be ripped or scarified as necessary, the topsoil or substitute or approved growing medium shall be replaced and revegetated in accordance with the approved reclamation plan for this permit.

13. The drawings and data contained in the specific design plans illustrate typical roadbed configurations for primary roads as well as site specific design of drainage structures, stability analysis and ditch sections.

TYPICAL HAUL ROAD
CUT SECTION

NO SCALE



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(205) 384-8553 Office (205) 384-4491 Fax

TYPICAL CUT SECTION
PRIMARY HAUL ROAD

DRAWN BY: K.D.P. DWG. NAME: TYPHAULC	DATE: 2–3–97
APPROVED BY: S.R.I.	SCALE: NONE

ATTACHMENT III.–B.–5.

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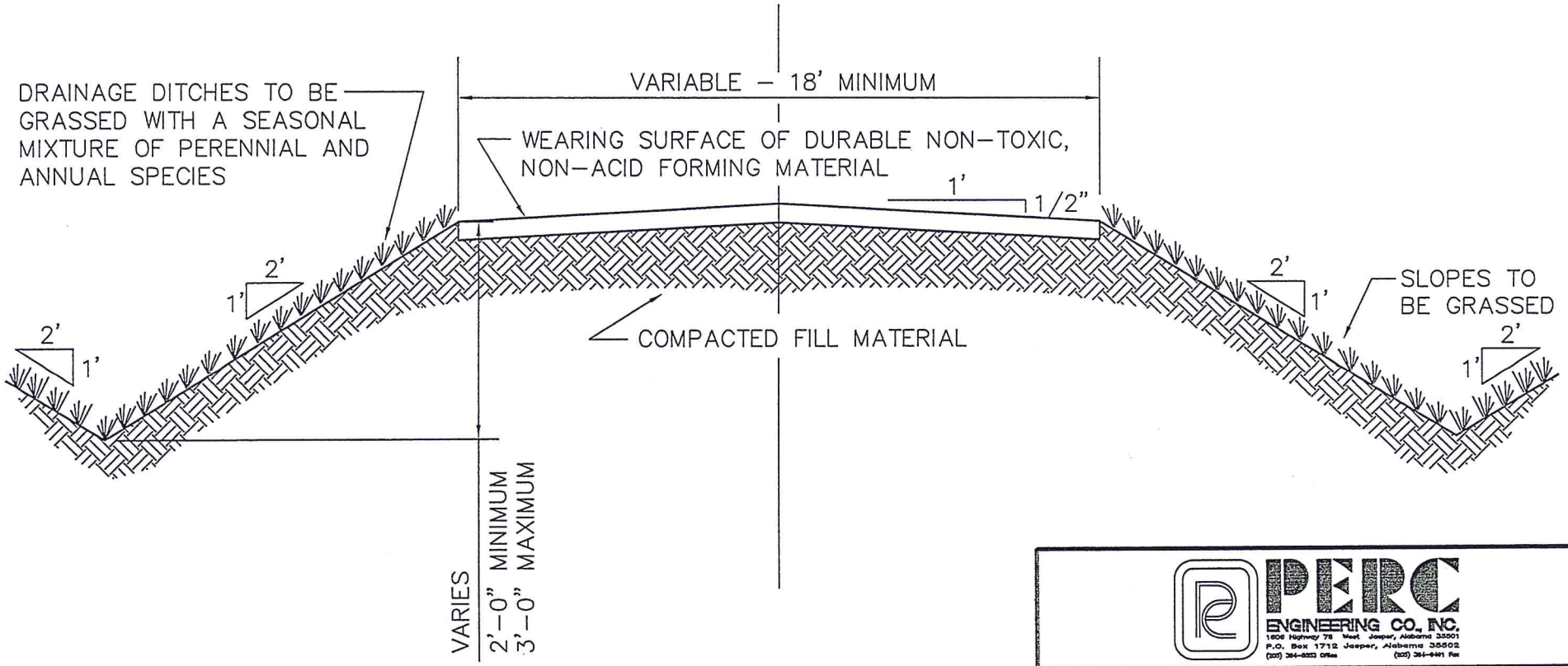
TYPICAL HAUL ROAD
FILL SECTION

NO SCALE



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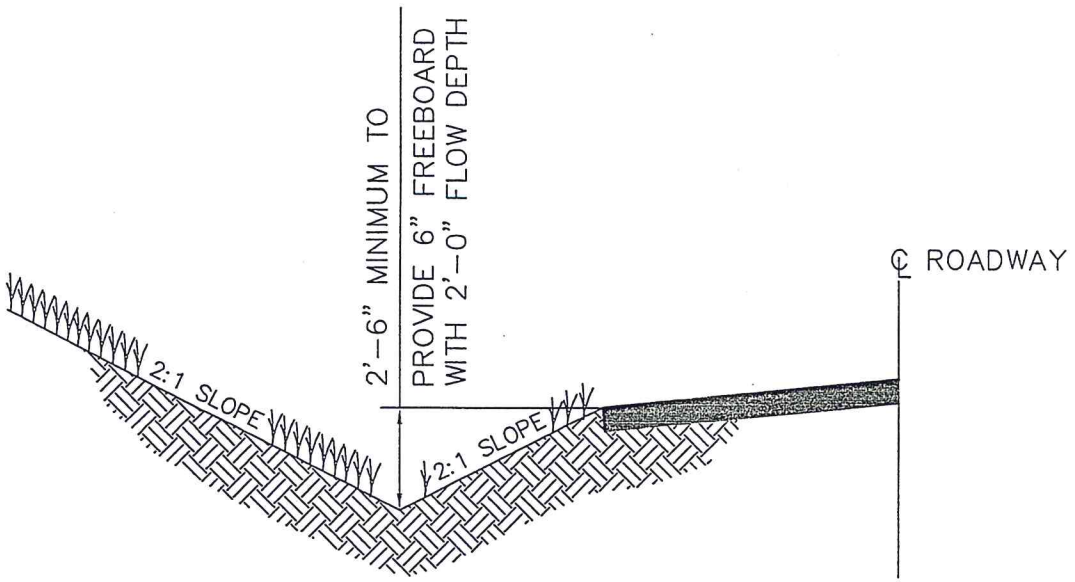
TYPICAL FILL SECTION
PRIMARY HAUL ROAD

DRAWN BY: K.D.P. DWG. NAME: TYPHAULF	DATE: 2–3–97
APPROVED BY: S.R.I.	SCALE: NONE

ATTACHMENT III.–B.–5.

K:\S\TYPHAULF 02/03/97 16:01



MINIMUM DITCH GRADIENT = 1%

MAXIMUM DITCH GRADIENT = 5%

DITCH CHANNEL TO BE VEGETATED WITH A MIXTURE OF BERMUDA GRASS, FESCUE, AND LESPEDEZA TO CONFORM TO CLASS "D" RETARDANT CLASS.

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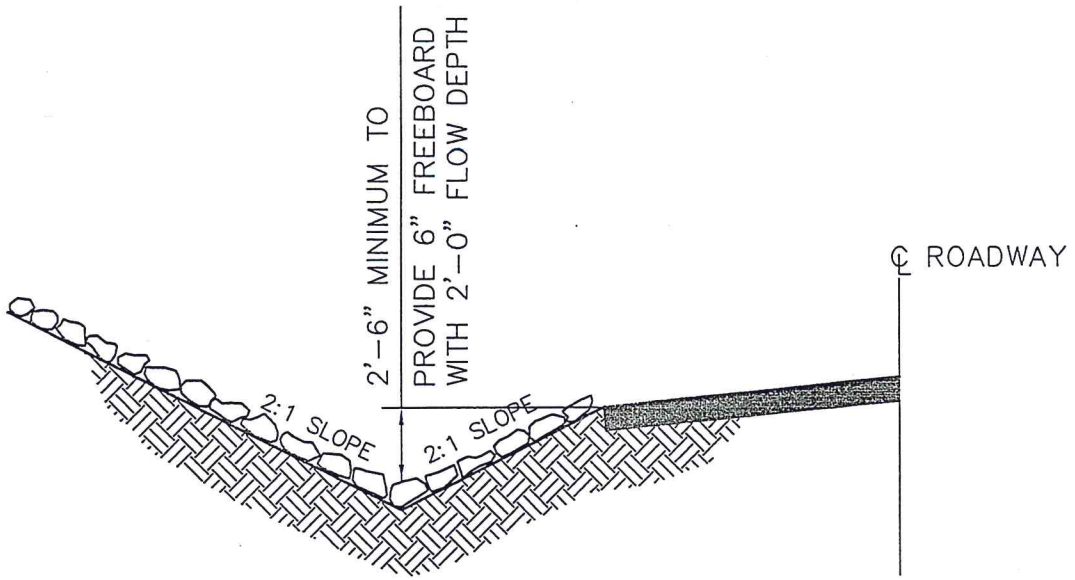
TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: K.D.P. DWG. NAME: PRIMROAD	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE

K:\S\PRIMROAD 02/04/97 08:36



DITCH GRADIENT 5% TO 10%

DITCH CHANNEL TO BE LINED WITH NON-ERODIBLE NON-TOXIC, NON-ACID FORMING SANDSTONE OR LIMESTONE RIP-RAP. THE RIP-RAP WILL BE "CLASS 1" RIP-RAP AND HAVE A MINIMUM THICKNESS OF 12".

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TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: S.D.M.	DATE: 11/8/2011
DWG. NAME: PRIMRD1	
APPROVED BY: L.G.S.	SCALE: NONE

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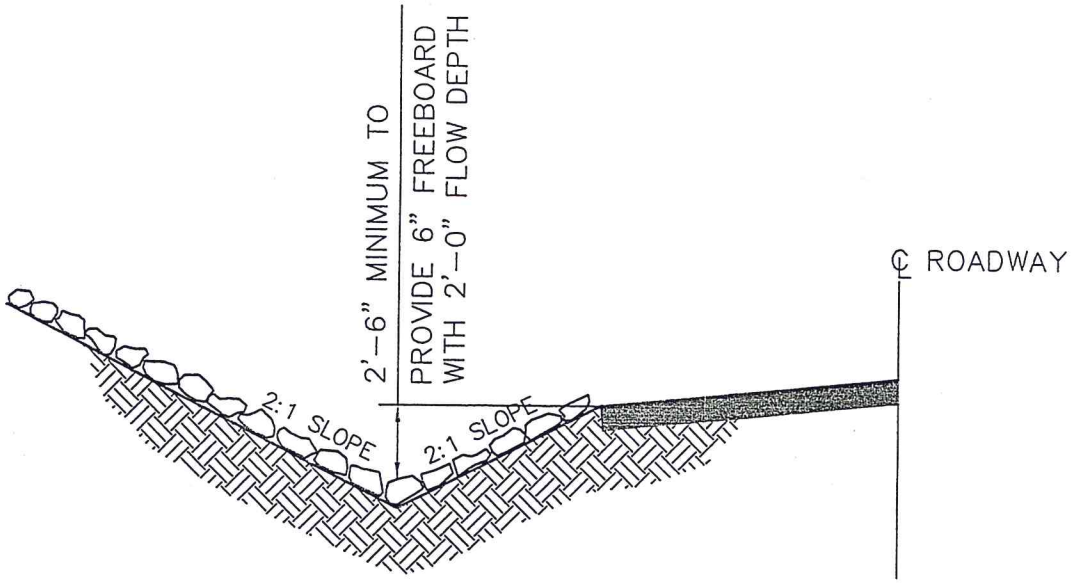

DITCH GRADIENT 11% TO 17%

DITCH CHANNEL TO BE LINED WITH NON-ERODIBLE NON-TOXIC, NON-ACID FORMING SANDSTONE OR LIMESTONE RIP-RAP. THE RIP-RAP WILL BE "CLASS 2" RIP-RAP AND HAVE A MINIMUM THICKNESS OF 16".

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TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: S.D.M. DWG. NAME: PRIMRD2	DATE: 11/8/2011
APPROVED BY: L.G.S.	SCALE: NONE

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NOTES

1) Due to there being no significant cut or fill section, no stability analysis is required.

STRIP MINE

NE 1/4 of SE 1/4

WATER TANK

PR2P 0+00

PR2P 11+00

500

NW 1/4 of SW 1/4

NE 1/4 of SW 1/4

SE 1/4 of SW 1/4

SW 1/4 of SW 1/4

SE 1/4 of SE 1/4

Y TAURUS 90-21-08-05-01#1653
57-C
TERSON COAL DEGASIFICATION WELL
ATUS: PR

300'

TOWNSHIP 20 SOUTH
TOWNSHIP 21 SOUTH

32 33 4

17%

14%

25%

40%

30%

100' SETBACK

100' TYPICAL SETBACK

ESCARPMENT LINE

BWMSMMW1

BWMSMMW2

PR1P 60+05

PS5P 58+13

021P

022P

020P

NW 1/4 of NW 1/4

NE 1/4 of NW 1/4

SW 1/4 of NW 1/4

SE 1/4 of NW 1/4

ROAD

GAS AND WATER PIPELINES & POWER LINES

GSPC-TAURUS 90-21-08-04-03#1651
8515-C
PETERSON COAL DEGASIFICATION WELL
STATUS: PR

Scale: 1" = 500'

N

NE 1/4 of SE 1/4

NW 1/4 of SW 1/4

NE 1/4 of SW 1/4

LEGEND

- PERMIT BOUNDARY
- DRAINAGE DIVIDE
- DIVERSION
- P-3728 PERMIT BOUNDARY
- 700 SURFACE CONTOUR
- 001 SETTLING BASIN
- NATURAL DRAINAGE COURSE
- INTERMITTENT STREAM
- PERENNIAL STREAM
- GAS WELL
- COAL STOCKPILE (SEE NOTE)
- PUBLIC ROAD
- PRIVATE ROAD
- TRAIL/DIRT ROAD
- PRIMARY ROAD
- ANCILLARY ROAD
- RAILROAD

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ATTACHMENT III-B-5
BLACK WARRIOR MINERALS, INC.
SEABOARD MINE
P-3937 / REVISION R-5
PRIMARY ROAD 2P
LOCATION MAP

DRAWN BY: S.W.L.	DATE: 10/14/2014
DWG. NAME: SBR5PRLM	
APPROVED BY: L.G.S.	SCALE: 1"=500'

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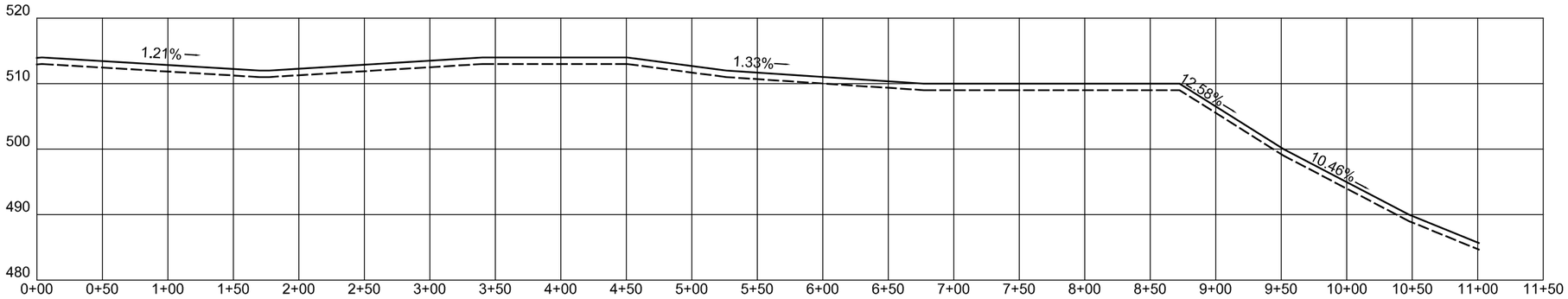

HORIZONTAL SCALE 1" = 100'
VERTICAL SCALE 1" = 20'

LEGEND

———— PROPOSED GRADE

– – – – – – – EXISTING GRADE

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BLACK WARRIOR MINERALS, INC.
SEABOARD MINE P-3937 REVISION R-5
PRIMARY ROAD 2P PROFILE

DRAWN BY: S.W.L. DWG. NAME: 10–AND–2FOOT	DATE: 10/14/2014
APPROVED BY: L.G.S.	SCALE: 1"=100'

\\Perc600\gerc_eng\Leslie Stephens\Black Warrior\Seaboard\R-5\10-AND-2FOOT.dwg 10/14/14 11:49