PERC
ENGINEERING CO., INC.

Telephone: (205) 384-5553
Facsimile: (205) 295-3114 - Main Building
(205) 295-3115 - Water Lab
Web Address: www.percengineering.com

November 16, 2004

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

RE: Birmingham Coal & Coke Company, Inc.
Shannon Mine
P-3859

Dear Michael:

I hereby certify that Primary Road No. 1P from stations 0+00 to 3+40 located in the SE 1/4 of the SE 1/4 of Section 2, Township 20 South, Range 6 West, Jefferson County, Alabama, for the above referenced mine was constructed in accordance with the approved ASMC design plans with the exception of the addition of a drainage structure, DS1P 1+50, as per field inspection. Attached is detailed information regarding drainage Structure DS1P 1+50.

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

Sincerely,
PERC Engineering Co., Inc.

Steven R. Ingle, P.E.
AL Reg. No. 18213

ALABAMA REGISTERED NO. 18213 PROFESSIONAL ENGINEER STEVEN R. INGLE

PERC
ENGINEERING CO., INC.

Telephone: (205) 384-5553
Facsimile: (205) 295-3114 - Main Building
(205) 295-3115 - Water Lab
Web Address: www.percengineering.com

June 16, 2006

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

RE: Twin Pines Coal Company, Inc.
Shannon Mine
P-3859

Dear Michael::

I hereby certify that Primary Road No. 3P from stations 0+00 to 1+50 located in the NE 1/4 of the NE 1/4 of Section 9, Township 20 South, Range 6 West, Tuscaloosa County, Alabama, for the above referenced mine was constructed in accordance with the approved ASMC design plans to the minimum design specifications, as per field inspection.

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

Sincerely,
PERC Engineering Co., Inc.

Steven R. Ingle, P.E.
AL Reg. No. 18213

ALABAMA REGISTERED NO. 18213 PROFESSIONAL ENGINEER STEVEN R. INGLE

BIRMINGHAM COAL & COKE COMPANY, INC.

ATTACHMENT III-B-5(b)

SHANNON MINE

P-3859

JEFFERSON AND TUSCALOOSA COUNTIES, ALABAMA

BY

PERC ENGINEERING CO., INC.

P.O. BOX 1712

JASPER, ALABAMA 35502

OCTOBER 11, 2004

PERC
ENGINEERING CO., INC.

Telephone (205) 384-5553
Facsimile (205) 295-3114 - Main Building
(205) 295-3115 - Water Lab
Web Address www.percengineering.com

October 11, 2004

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

RE: Birmingham Coal & Coke Company, Inc.
Shannon Mine
P-3859

Dear Michael:

I hereby certify the attached detailed design plans for Primary Haulroads 1P, 3P, 4P,5P, 6P, 7P, 8P, and 9P for the above referenced mine are in accordance with current prudent engineering practices and the Regulations of the Alabama Surface Mining Commission 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.

Steven R. Ingle, P.E.
Alabama Registration No. 18213

Applicant: Birmingham Coal & Coke Company, Inc.
Mine Name: Shannon Mine
Permit Number: P-3859

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 and will have a minimum width of ten feet and a maximum width necessary to accommodate the largest equipment traveling the road.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

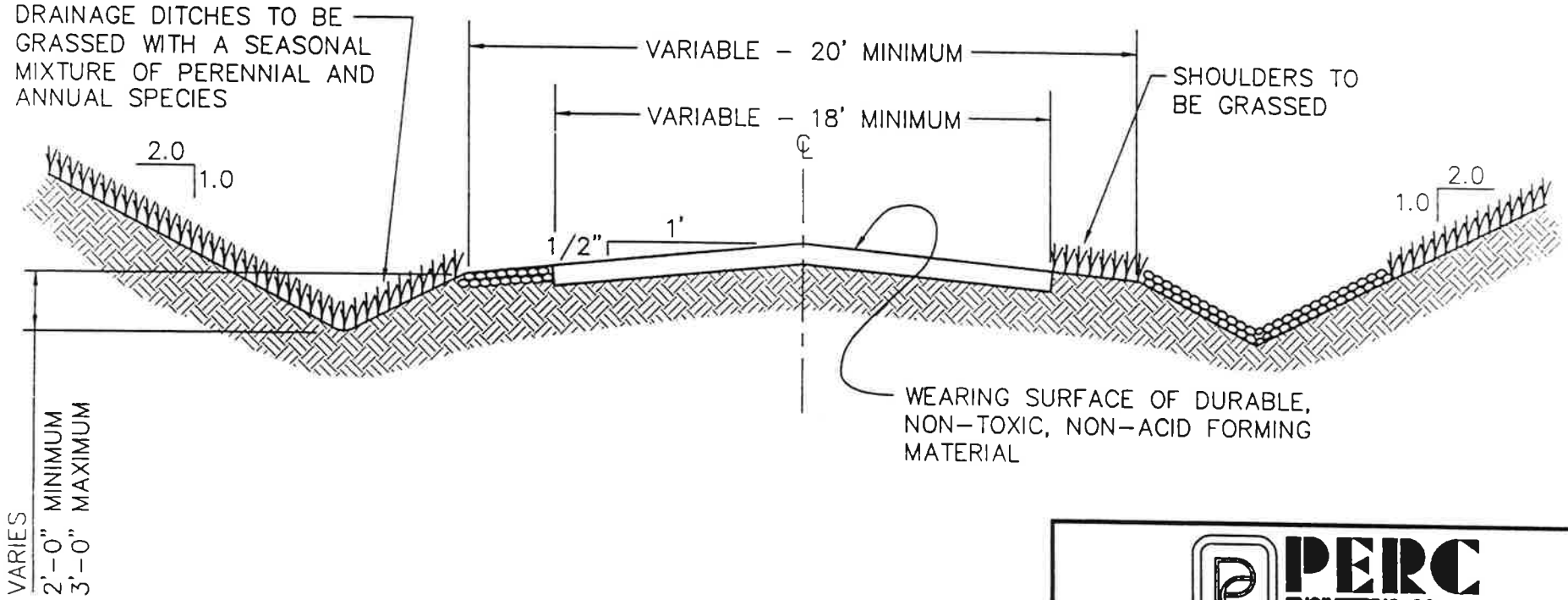
    e. The natural drainage patterns shall be protected from surface runoff and erosion utilizing the installation of dikes and/or cross drains as necessary.

    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.

12. 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



PERC ENGINEERING CO., INC.

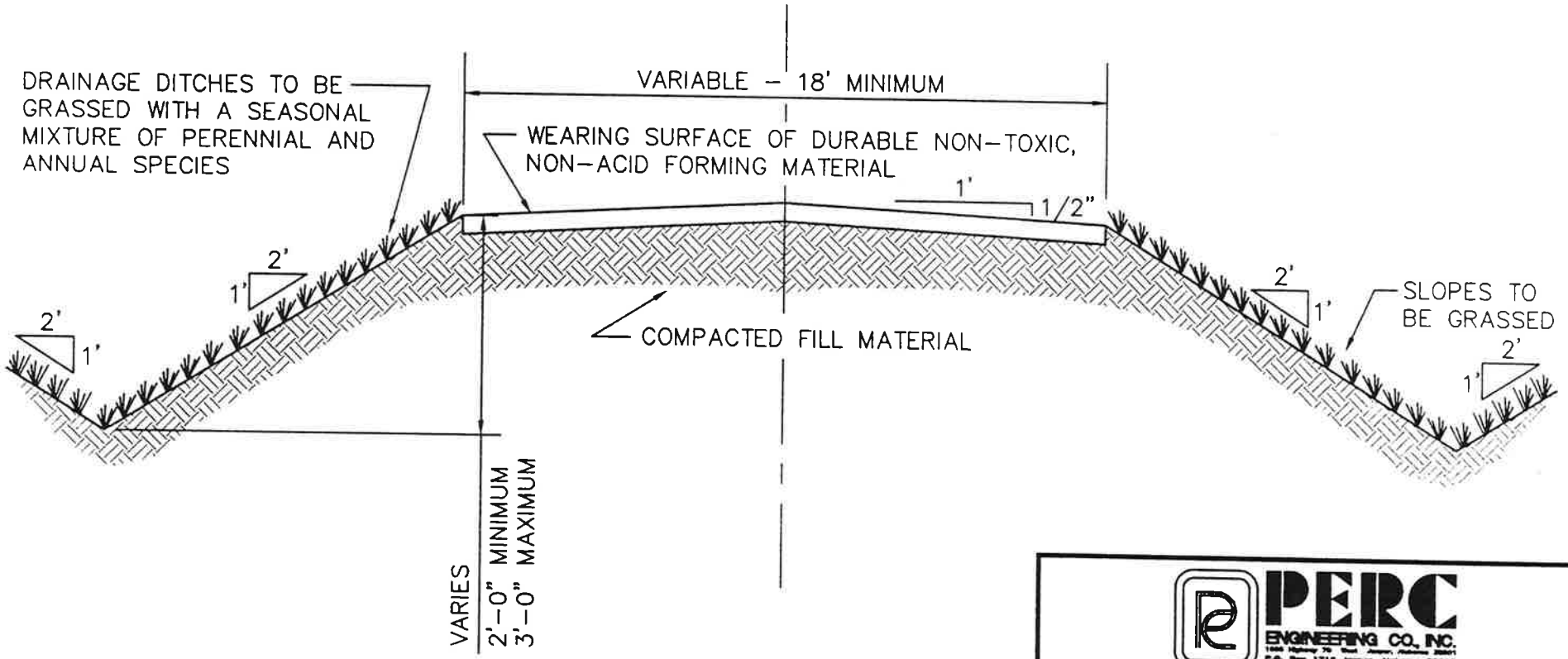
TYPICAL CUT SECTION
PRIMARY HAUL ROAD

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

ATTACHMENT III.–B.–5.

TYPICAL HAUL ROAD
FILL SECTION

NO SCALE

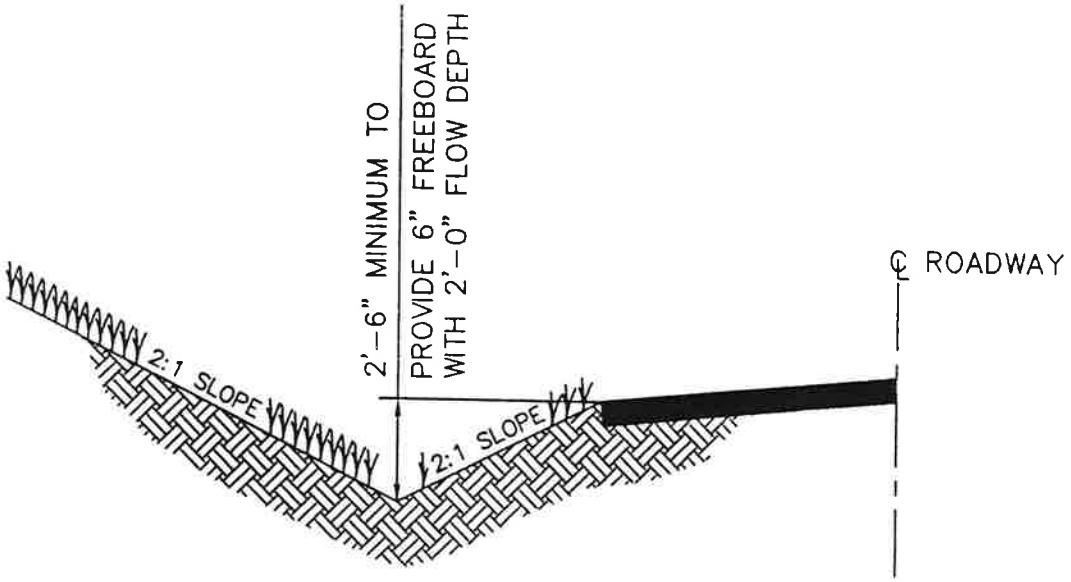


PERC ENGINEERING CO., INC.

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.



MINIMUM DITCH GRADIENT = 1%

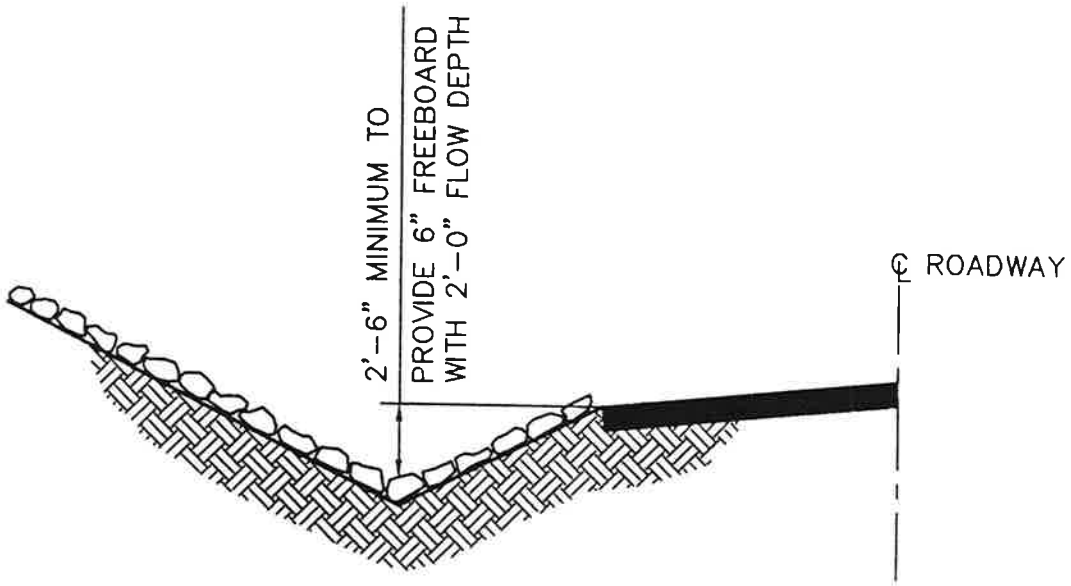
MAXIMUM DITCH GRADIENT = 5%

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

PERC ENGINEERING CO., INC.

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



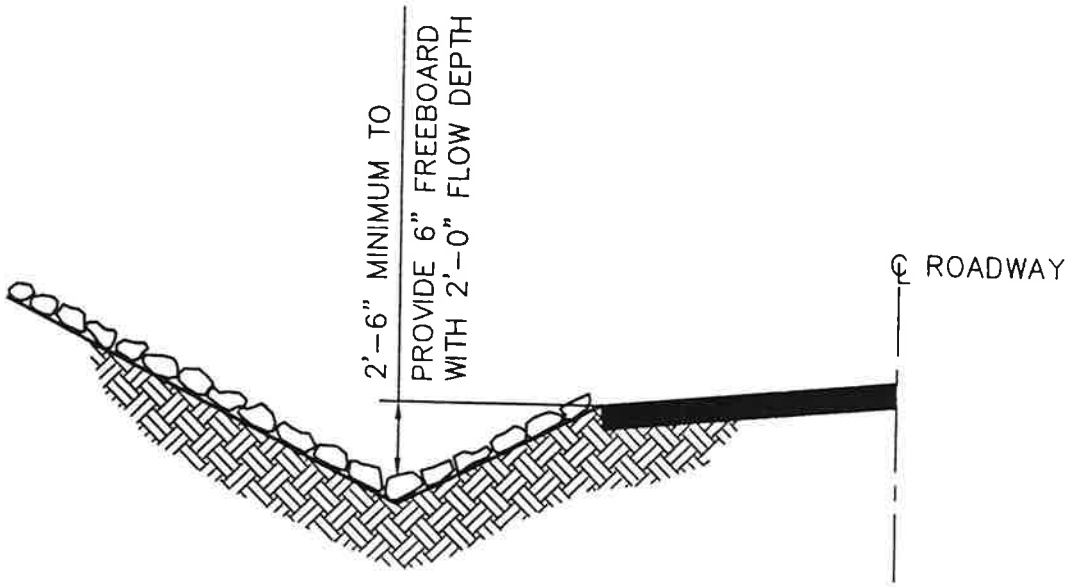
DITCH GRADIENT 5% TO 10%

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".

PERC ENGINEERING CO., INC.

TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: K.D.P. DWG. NAME: PRIMRD1	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE



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".

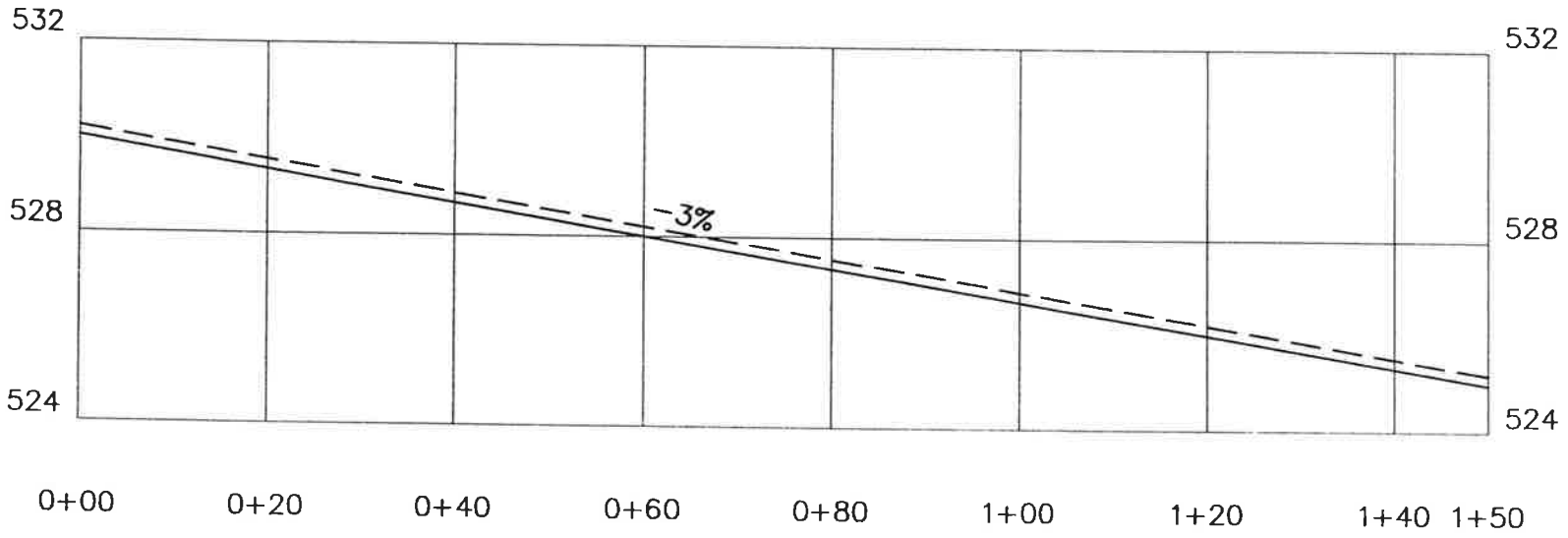
PERC ENGINEERING CO., INC.

TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: K.D.P. DWG. NAME: PRIMRD2	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE

NOTES

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



ROAD 3P

——— EXISTING GRADE

– – – – PROPOSED FINISH GRADE

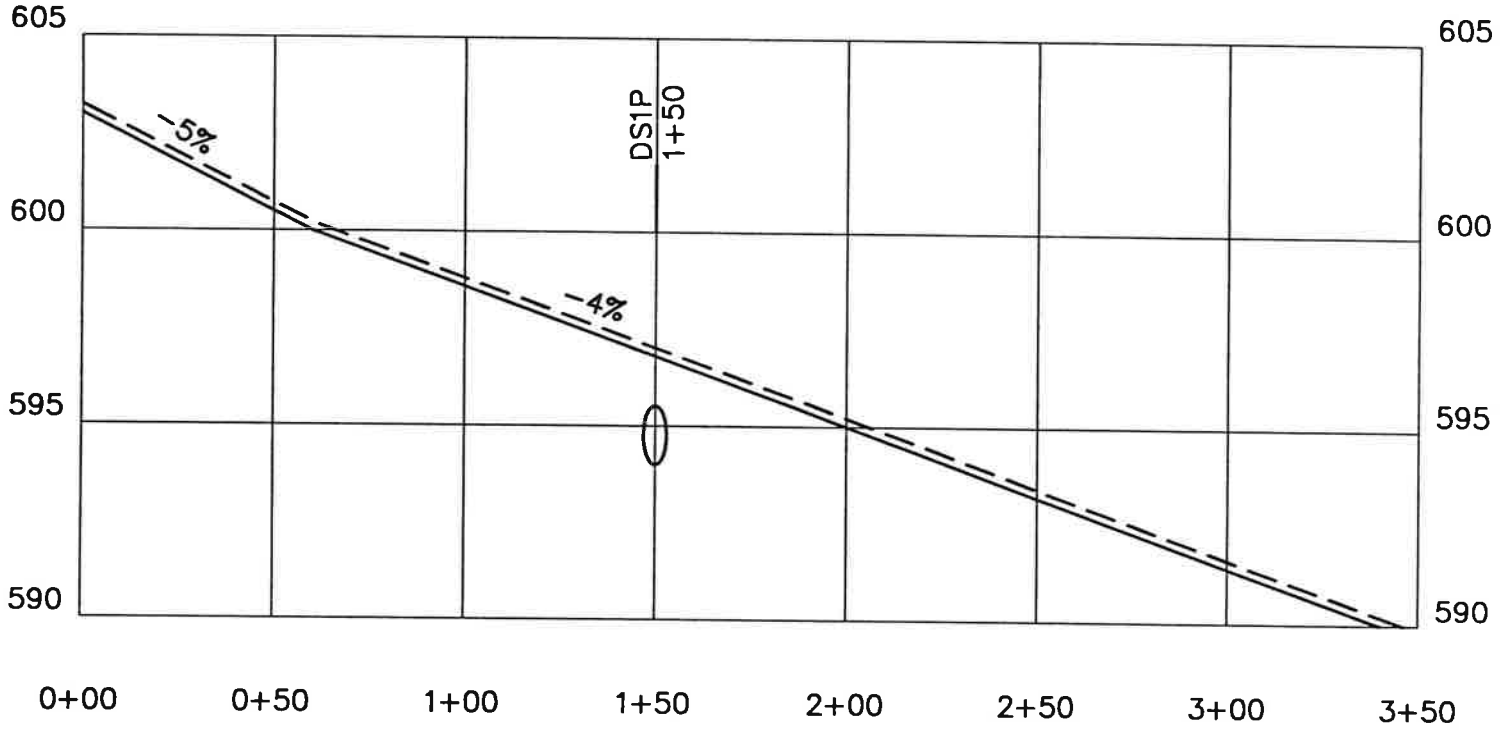
NOTES:

1. FINISHED GRADES SHOWN HEREON MAY VARY FROM BETWEEN 0% AND 17%.
2. SEE INDIVIDUAL CROSS SECTION SHEETS FOR SPECIFIC DRAINAGE STRUCTURE INFORMATION.

PERC ENGINEERING CO., INC.

BIRMINGHAM COAL & COKE CO., INC.
SHANNON MINE
P-3859
HAULROAD PROFILE

DRAWN BY: C.M.O. DWG. NAME: BCSHRP3P	DATE: 10-12-04
APPROVED BY: S.R.I.	SCALE: AS NOTED



ROAD 1P

——— EXISTING GRADE

– – – – PROPOSED FINISH GRADE

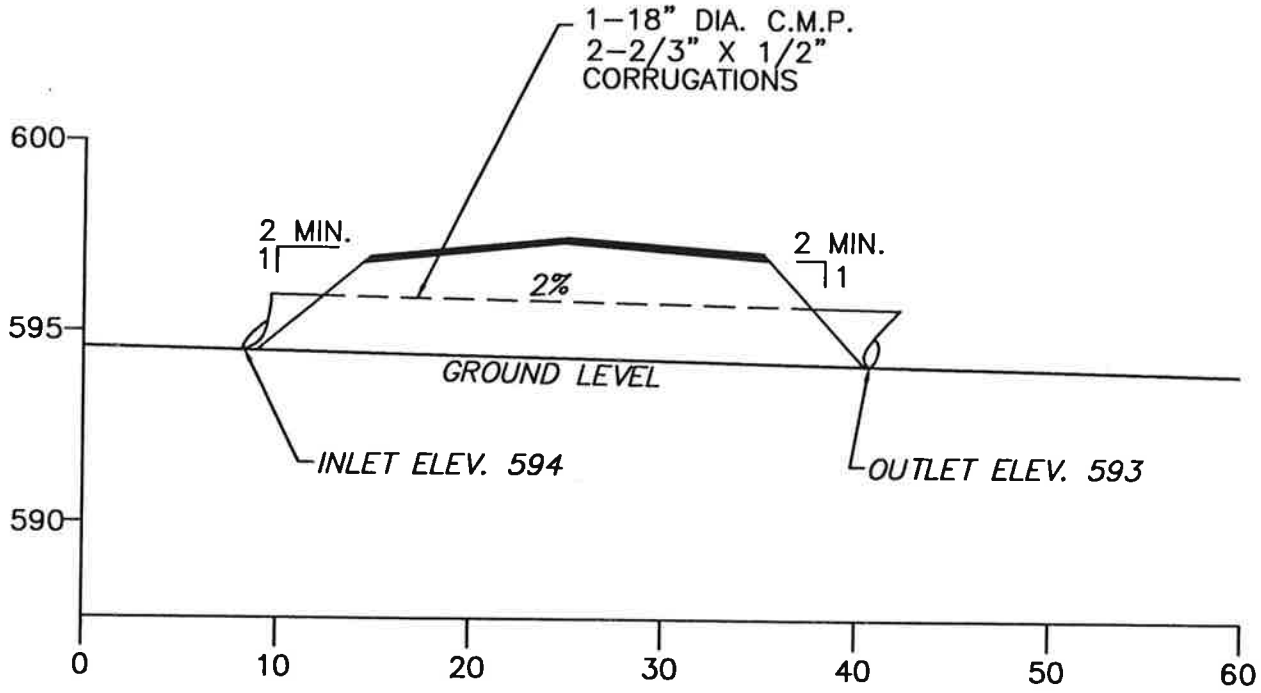
NOTES:

1. FINISHED GRADES SHOWN HEREON MAY VARY FROM BETWEEN 0% AND 17%.
2. SEE INDIVIDUAL CROSS SECTION SHEETS FOR SPECIFIC DRAINAGE STRUCTURE INFORMATION.

PERC ENGINEERING CO., INC.

BIRMINGHAM COAL & COKE COMPANY, INC.
SHANNON MINE
P-3859
HAULROAD PROFILE

DRAWN BY: P.T.O. DWG. NAME: BCSHRP1P	DATE: 11-16-04
APPROVED BY: S.R.I.	SCALE: AS NOTED



Hydraulics Information

Drainage Area = 2.0 Acres
10 YR.–6 HR., Q = 3.1 C.F.S.
Maximum Water Elev. = 595
Minimum Fill Elev. = 596.5
Maximum Allowable Cover 18" C.M.P. = 166'
Minimum Allowable Cover 18" C.M.P. = 1'
Wall Thickness = 0.064"
Minimum Freeboard = 1'

PERC
ENGINEERING CO., INC.
1806 Highway 78 West Jasper, Alabama 35501
P.O. Box 1712 Jasper, Alabama 35502
(205) 384-5653 Office (205) 384-9481 Fax

BIRMINGHAM COAL & COKE COMPANY, INC.
SHANNON MINE
P-3859
HAUL ROAD CROSS SECTION
DS1P 1+50

DRAWN BY: P.T.O. DWG. NAME: BCSMHRXS	DATE: 11–16–04
APPROVED BY: S.R.I.	SCALE: AS NOTED

Birmingham Coal & Coke Company, Inc.
Shannon Mine
P-3859
Drainage Structure DS1P 1+50

4.3 Inches, 10 Year - 6 Hour

SCS 6 Hour Event

SRI

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

General Information

Storm Information:

Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.1510
1.00	0.3440
1.50	0.5810
2.00	0.9890
2.50	2.5800
3.00	3.0100
3.50	3.3540
4.00	3.5910
4.50	3.8060
5.00	3.9780
5.50	4.1500
6.00	4.3000

Peak 30-minute Intensity: 3.182 in/hr

Structure Networking:

Type	Stru #	(flows Into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Drainage Structure DS1P 1+50

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	2.000	2.000	3.06	0.26

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	2.000	0.075	0.000	0.000	70.000	S	3.06	0.256
	Σ	**2.000**						**3.06**	**0.256**

Birmingham Coal & Coke Company, Inc. Shannon Mine P-3859 Drainage Structure DS1P 1+50

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev	Entrance Loss Coefficient	Tailwater Depth (ft)
18.00	100.00	2.00	0.0240	594.01	0.90	0.00

Detailed Discharge Table

Elevation	Straight Pipe (cfs)	Combined Total Discharge (cfs)
594.00	0.000	0.000
594.01	0.000	0.000
594.50	(3)>1.079	1.079
595.00	(3)>3.094	3.094
595.50	(2)>5.177	5.177
596.00	(5)>7.977	7.977
596.50	(6)>8.914	8.914
597.00	(6)>9.595	9.595
597.50	(6)>10.209	10.209
598.00	(6)>10.802	10.802
598.50	(6)>11.361	11.361
599.00	(6)>11.892	11.892
599.50	(6)>12.404	12.404
600.00	(6)>12.892	12.892

Twin Pines Coal

May 5, 2009

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

RE Twin Pines Coal Company, Inc.
Shannon Mine
P-3859

Dear Michael:

I hereby certify that Primary Road 6P from stations 18+00 to 89+00 located in NW 1/4 of the NE 1/4, the E ½ of the NW 1/4, the SW 1/4 of the NW 1/4, and the NW 1/4 of the SW 1/4 of Section 1, and the N ½ of the SE 1/4 and the SW 1/4 of the SE 1/4 of Section 2, Township 20 South, Range 6 West, Jefferson County, Alabama, for the above referenced mine was constructed in accordance with the approved ASMC design plans to the minimum design specifications.

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

Sincerely,

Steven R. Ingle, P.E.
AL Reg. No. 18213

ALABAMA REGISTERED NO. 18213 PROFESSIONAL ENGINEER STEVEN R. INGLE

MAY 2009 RECEIVED SURFACE MINING COMMISSION

74 Industrial Parkway • P.O. Box 621 • Jasper, Alabama 35502 • Phone 205-295-0995 • Fax 205-295-0799

TWIN PINES COAL COMPANY, INC.

ATTACHMENT III-B-5(b)

SHANNON MINE

P-3859

JEFFERSON AND TUSCALOOSA COUNTIES, ALABAMA

BY

TWIN PINES COAL COMPANY, INC.

74 INDUSTRIAL PARKWAY

JASPER, ALABAMA 35501

MARCH 25, 2009

Twin Pines Coal

March 25, 2009

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

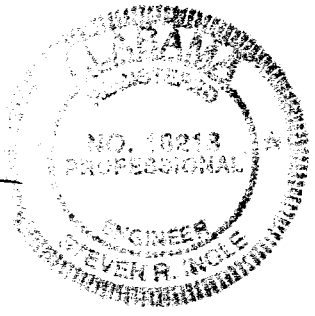
RE: Twin Pines Coal Company, Inc.
Shannon Mine
P- 3859

Dear Michael:

I hereby certify the attached detailed design plans for Primary Road 6P Extension for the above referenced mine are in accordance with current prudent engineering practices and the Regulations of the Alabama Surface Mining Commission 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.



Steven R. Ingle, P.E.
Alabama Registration No. 18213

74 Industrial Parkway • P.O. Box 621 • Jasper, Alabama 35502 • Phone 205-295-0995 • Fax 205-295-0799

Applicant: Twin Pines Coal Company, Inc.
Mine Name: Shannon Mine
Permit Number: P- 3859, Revision R-12

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.

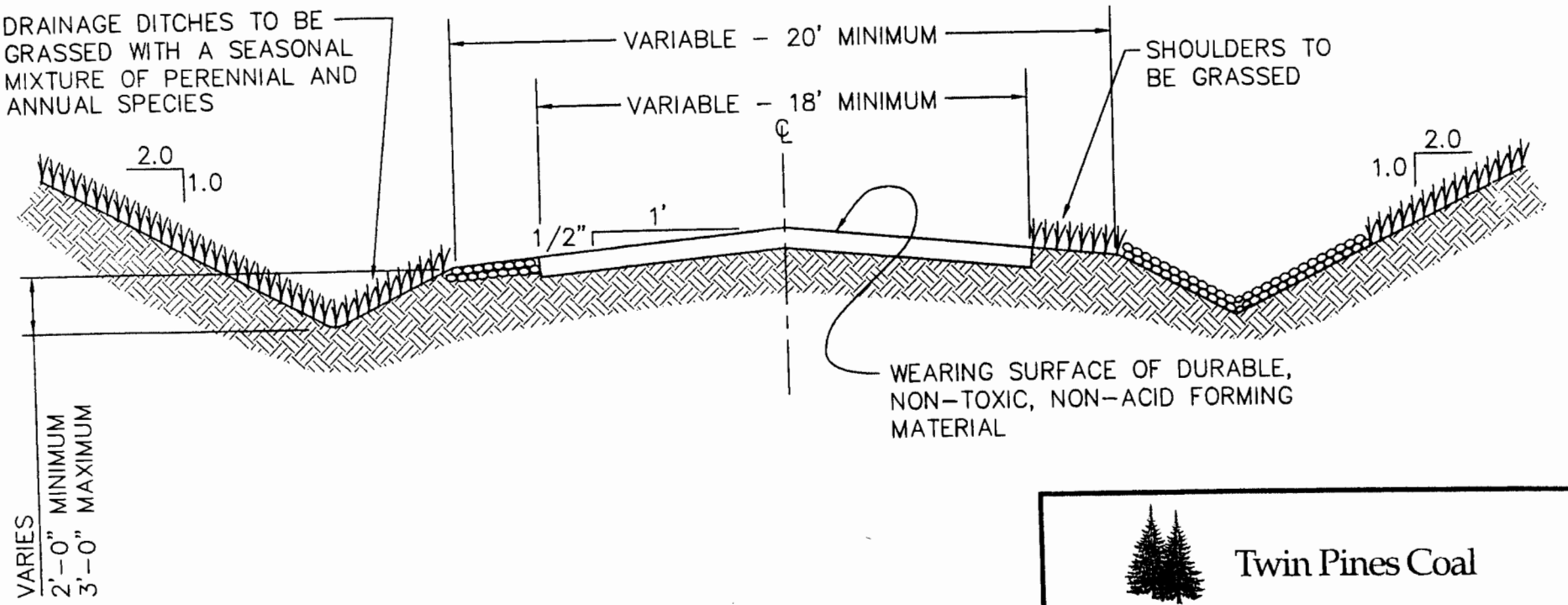
12. Roads not to be retained as part of the post mine land use shall be reclaimed in accordance with the approved reclamation plan for this permit as soon as practicable after they are no longer needed as part of the mining and reclamation operation, using the following procedures:

    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



Twin Pines Coal

TYPICAL CUT SECTION
PRIMARY HAUL ROAD

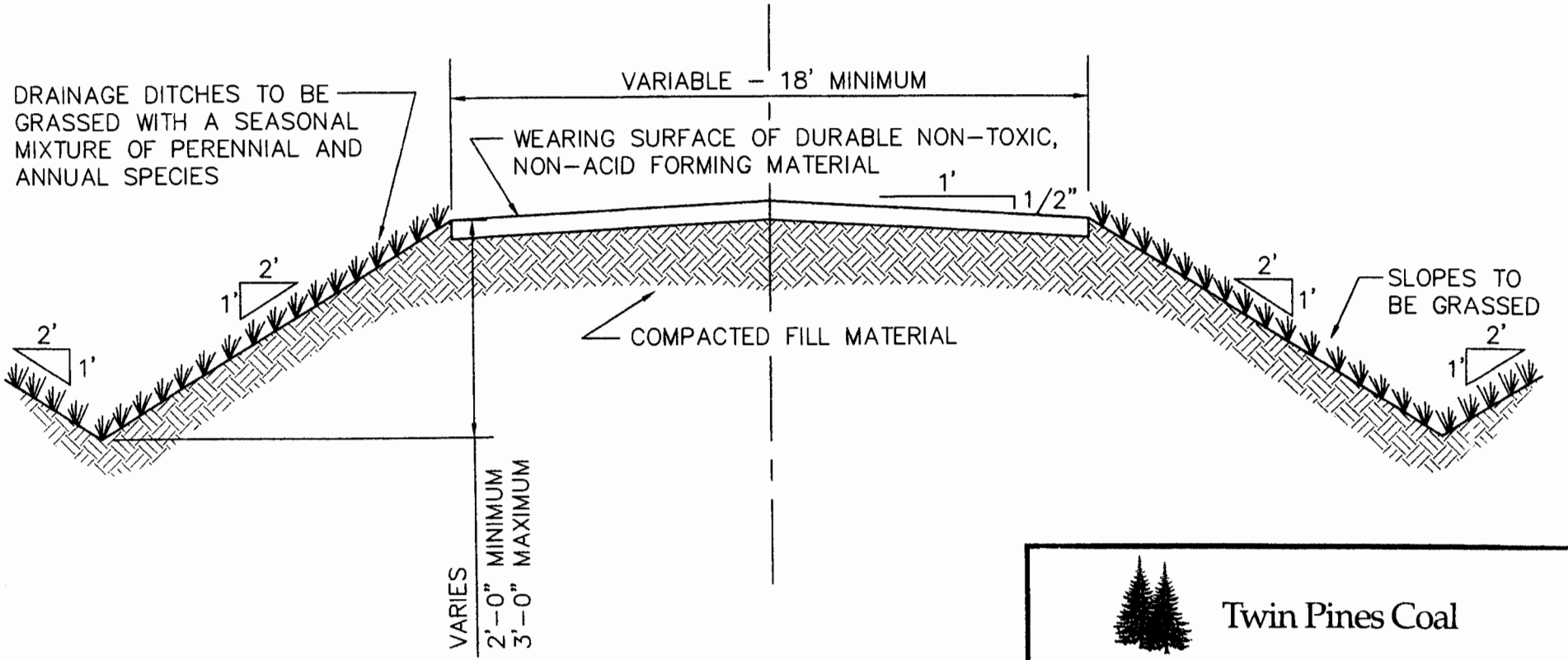
DRAWN BY: K.D.P. DWG. NAME: TYPHAULC	DATE: 2-3-97
APPROVED BY: S.R.I.	SCALE: NONE

ATTACHMENT III.-B.-5.

C:\S\TYPHAULC 02/03/97 15:56

TYPICAL HAUL ROAD
FILL SECTION

NO SCALE



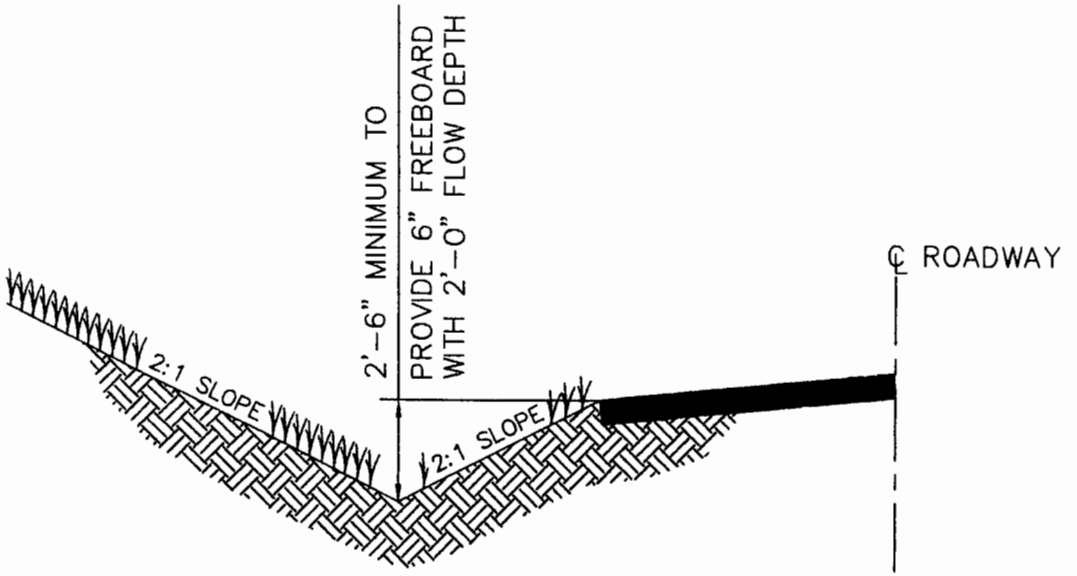
Twin Pines Coal

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%

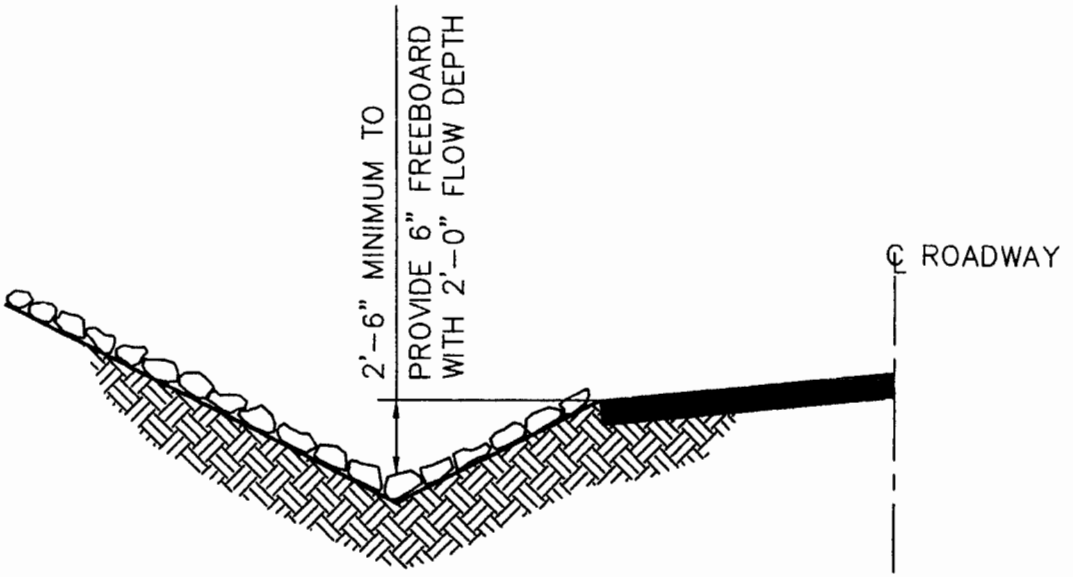
DITCH CHANNEL TO BE VEGETATED WITH A MIXTURE OF BERMUDA GRASS, FESCUE, AND LESPEDEZA TO CONFORM TO CLASS "D" RETARDANT CLASS.

Twin Pines Coal

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%

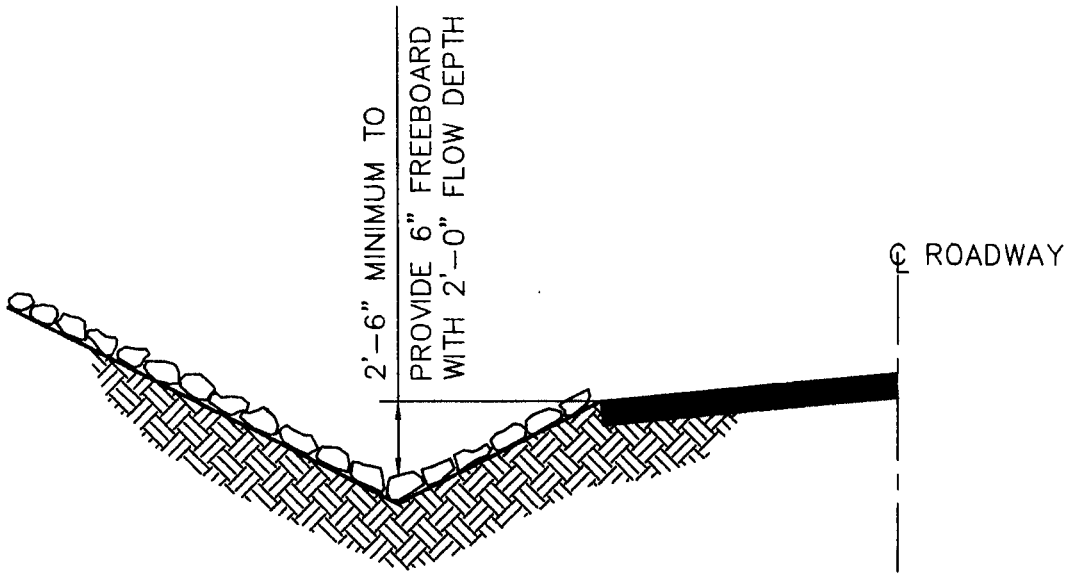
DITCH CHANNEL TO BE LINED WITH NON-ERODIBLE NON-TOXIC, NON-ACID FORMING SANDSTONE OR LIMESTONE RIP-RAP. THE RIP-RAP WILL BE "CLASS 1" RIP-RAP AND HAVE A MINIMUM THICKNESS OF 12".

Twin Pines Coal

TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: K.D.P. DWG. NAME: PRIMRD1	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE

K:\AS\PRIMRD1 02/04/97 08:31



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".

Twin Pines Coal

TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

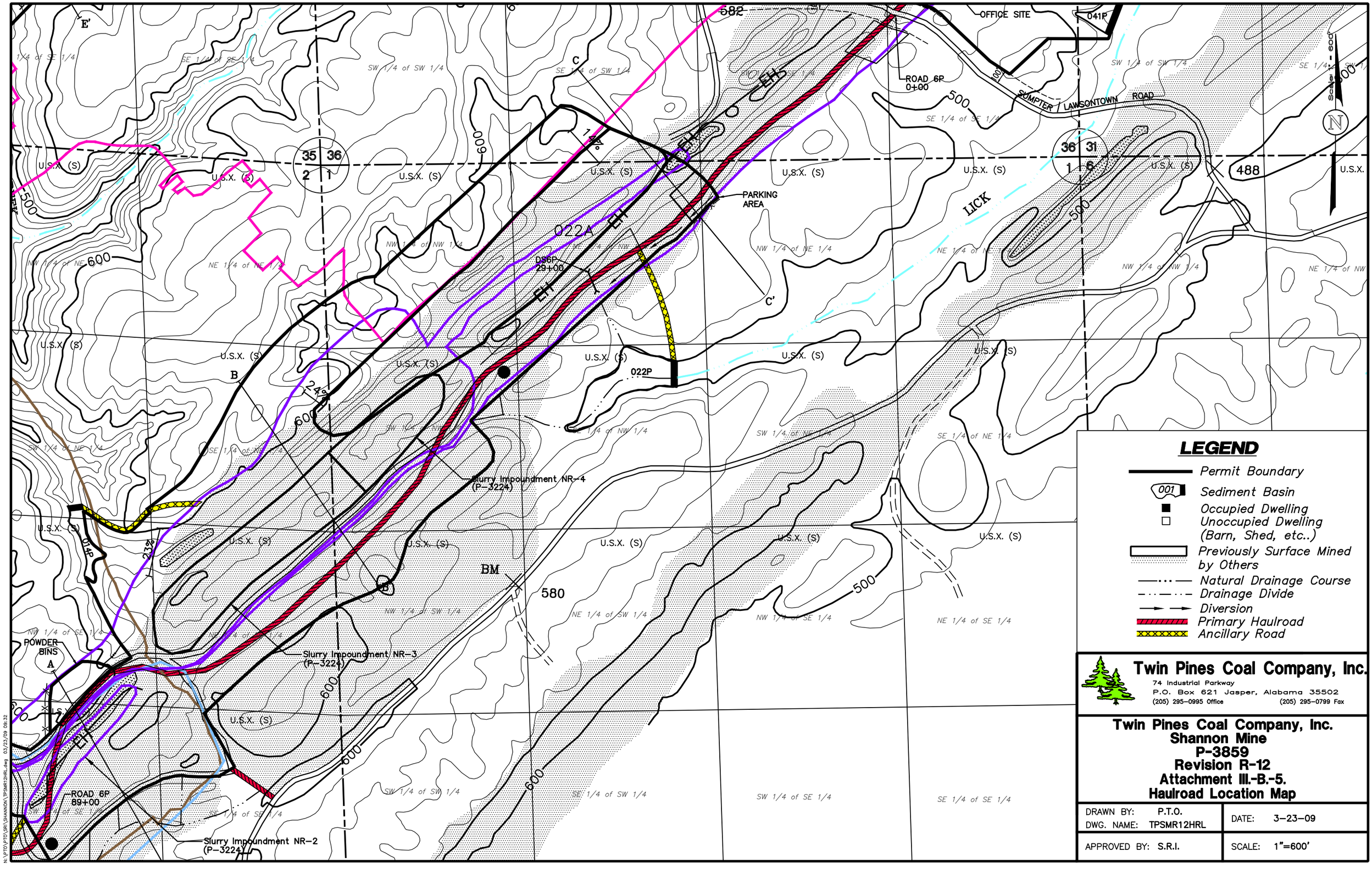
DRAWN BY: K.D.P. DWG. NAME: PRIMRD2	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE

K:\S\PRIMRD2 02/04/97 08:33

NOTES

1) Due to a request for Phase I Bond Release of Increment No. 1, Revision R-12 requests to extend a section of road 6P, which was an existing road that has been in existence for several years.

2) Drainage Structure DS6P 29+00 is the primary spillway of Basin 022A. Basin 022A is a totally incised structure, therefore no stability analysis is required for the structure.



LEGEND

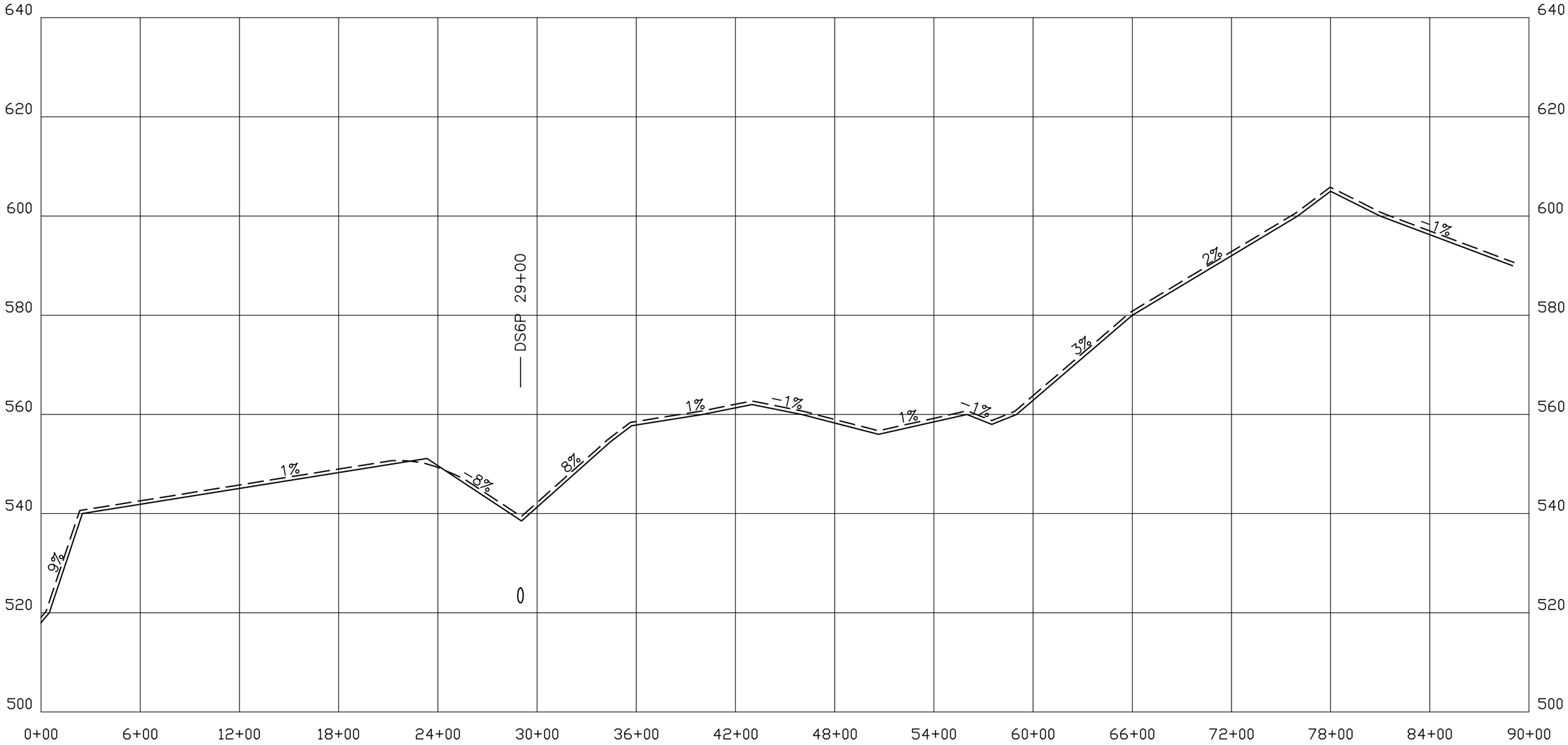
- Permit Boundary
- 001 Sediment Basin
- Occupied Dwelling
- Unoccupied Dwelling (Barn, Shed, etc..)
- Previously Surface Mined by Others
- Natural Drainage Course
- Drainage Divide
- Diversion
- Primary Haulroad
- Ancillary Road

Twin Pines Coal Company, Inc.
74 Industrial Parkway
P.O. Box 621 Jasper, Alabama 35502
(205) 295-0995 Office (205) 295-0799 Fax

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Revision R-12
Attachment III.-B.-5.
Haulroad Location Map

DRAWN BY: P.T.O.	DATE: 3-23-09
DWG. NAME: TPSMR12HRL	
APPROVED BY: S.R.I.	SCALE: 1"=600'

N:\PTO\PTO\SRI\SHANNON\TPSMR12HRL.dwg 03/23/09 09:32



PRIMARY ROAD 6P

1"=600' HORZ.
1"=20' VERT.

——— *EXISTING GRADE*
— — — *PROPOSED FINISHED GRADE*

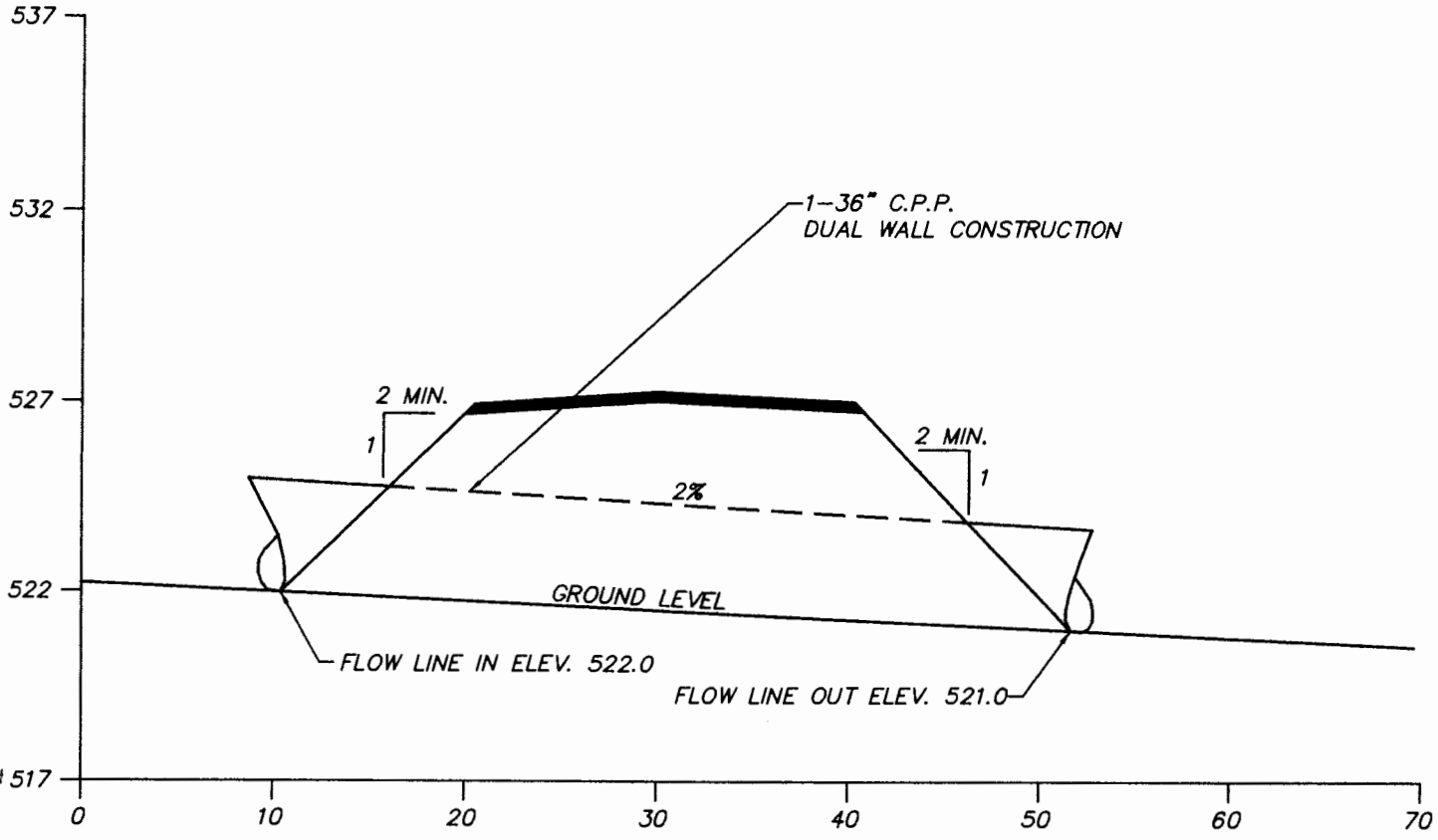
NOTE: 1.) *FINISHED GRADES SHOWN HEREON MAY VARY FROM BETWEEN 0% AND 17%.*
2.) *SEE INDIVIDUAL CROSS SECTION SHEETS FOR SPECIFIC DRAINAGE STRUCTURE INFORMATION.*

Twin Pines Coal Company, Inc.
74 Industrial Parkway
P.O. Box 621 Jasper, Alabama 35502
(205) 295–0995 Office (205) 295–0799 Fax

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Primary Road 6P
Profile

DRAWN BY: P.T.O. DWG. NAME: TPSM6PPR	DATE: 3–23–09
APPROVED BY: S.R.I.	SCALE: AS NOTED

N:\FTO\PTO\SR\SHANNON\TPSM6PPR.dwg 03/25/09 10:47



HYDRAULICS INFORMATION

DRAINAGE AREA = 148.0 ACRES
10 YR.–6YR., Q = 5.1
MAXIMUM WATER ELEV. = 522.9
MINIMUM FILL ELEV. = 527.0
MAXIMUM ALLOWABLE COVER 36" C.P.P. = 50'
MINIMUM ALLOWABLE COVER 36" C.P.P. = 24"
WALL THICKNESS = .064
MINIMUM FREEBOARD = 1'

Twin Pines Coal Company, Inc.
74 Industrial Parkway
P.O. Box 621 Jasper, Alabama 35502
(205) 295–0995 Office (205) 295–0799 Fax

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Haulroad Cross-Section
DS6P 29+00

DRAWN BY: P.T.O. DWG. NAME: TPSMDS6P29+00	DATE: 3–25–09
APPROVED BY: S.R.I.	SCALE: AS NOTED

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Basin 022A/
Drainage Structure DS6P 29+00

4.3 Inches, 10 Year-6 Hour,

SCS 6 Hour

SRI

General Information

Storm Information:

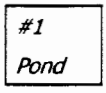
Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.1510
1.00	0.3440
1.50	0.5810
2.00	0.9890
2.50	2.5800
3.00	3.0100
3.50	3.3540
4.00	3.5910
4.50	3.8060
5.00	3.9780
5.50	4.1500
6.00	4.3000

Peak 30-minute Intensity: 3.182 in/hr

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Basin 022A/Drainage Structure DS6P 29+00



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	In	148.000	148.000	267.43	29.87
	Out			5.06	13.50

Structure Detail:

Structure #1 (Pond)

Basin 022A/Drainage Structure DS6P 29+00

Pond Inputs:

Initial Pool Elev:	522.00 ft
Initial Pool:	1172.83 ac-ft

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
36.00	400.00	2.00	0.0190	522.00	0.90	0.00

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
525.00	10.00	2.00:1	2.00:1	15.00

Pond Results:

Peak Elevation:	522.85 ft
Dewater Time:	5.52 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
450.00	2.370	0.000	0.000	
450.50	2.484	1.213	0.000	
451.00	2.600	2.484	0.000	
451.50	2.719	3.814	0.000	
452.00	2.841	5.204	0.000	
452.50	2.965	6.655	0.000	
453.00	3.092	8.170	0.000	
453.50	3.222	9.748	0.000	
454.00	3.354	11.392	0.000	
454.50	3.490	13.103	0.000	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
455.00	3.627	14.882	0.000	
455.50	3.767	16.731	0.000	
456.00	3.911	18.650	0.000	
456.50	4.056	20.642	0.000	
457.00	4.205	22.707	0.000	
457.50	4.356	24.847	0.000	
458.00	4.509	27.063	0.000	
458.50	4.666	29.357	0.000	
459.00	4.825	31.729	0.000	
459.50	4.986	34.182	0.000	
460.00	5.151	36.716	0.000	
460.50	5.318	39.333	0.000	
461.00	5.487	42.034	0.000	
461.50	5.660	44.821	0.000	
462.00	5.835	47.695	0.000	
462.50	6.012	50.656	0.000	
463.00	6.193	53.708	0.000	
463.50	6.376	56.850	0.000	
464.00	6.561	60.084	0.000	
464.50	6.750	63.411	0.000	
465.00	6.941	66.834	0.000	
465.50	7.134	70.353	0.000	
466.00	7.331	73.969	0.000	
466.50	7.530	77.684	0.000	
467.00	7.731	81.499	0.000	
467.50	7.936	85.416	0.000	
468.00	8.143	89.435	0.000	
468.50	8.352	93.559	0.000	
469.00	8.565	97.788	0.000	
469.50	8.779	102.124	0.000	
470.00	8.997	106.568	0.000	
470.50	9.218	111.121	0.000	
471.00	9.440	115.786	0.000	
471.50	9.666	120.562	0.000	
472.00	9.894	125.452	0.000	
472.50	10.125	130.457	0.000	
473.00	10.359	135.578	0.000	
473.50	10.595	140.817	0.000	
474.00	10.834	146.174	0.000	
474.50	11.076	151.651	0.000	
475.00	11.320	157.250	0.000	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
475.50	11.501	162.955	0.000	
476.00	11.682	168.751	0.000	
476.50	11.866	174.638	0.000	
477.00	12.050	180.617	0.000	
477.50	12.237	186.689	0.000	
478.00	12.424	192.854	0.000	
478.50	12.613	199.113	0.000	
479.00	12.804	205.467	0.000	
479.50	12.995	211.917	0.000	
480.00	13.189	218.463	0.000	
480.50	13.383	225.106	0.000	
481.00	13.580	231.846	0.000	
481.50	13.777	238.685	0.000	
482.00	13.976	245.624	0.000	
482.50	14.177	252.662	0.000	
483.00	14.378	259.800	0.000	
483.50	14.582	267.040	0.000	
484.00	14.786	274.382	0.000	
484.50	14.992	281.827	0.000	
485.00	15.200	289.375	0.000	
485.50	15.409	297.027	0.000	
486.00	15.619	304.784	0.000	
486.50	15.831	312.647	0.000	
487.00	16.045	320.616	0.000	
487.50	16.259	328.692	0.000	
488.00	16.475	336.875	0.000	
488.50	16.693	345.167	0.000	
489.00	16.912	353.568	0.000	
489.50	17.132	362.079	0.000	
490.00	17.354	370.701	0.000	
490.50	17.577	379.434	0.000	
491.00	17.802	388.278	0.000	
491.50	18.028	397.236	0.000	
492.00	18.256	406.307	0.000	
492.50	18.485	415.492	0.000	
493.00	18.715	424.791	0.000	
493.50	18.947	434.207	0.000	
494.00	19.180	443.738	0.000	
494.50	19.415	453.387	0.000	
495.00	19.651	463.153	0.000	
495.50	19.888	473.038	0.000	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
496.00	20.127	483.042	0.000	
496.50	20.367	493.165	0.000	
497.00	20.609	503.409	0.000	
497.50	20.853	513.775	0.000	
498.00	21.097	524.262	0.000	
498.50	21.343	534.872	0.000	
499.00	21.591	545.606	0.000	
499.50	21.840	556.463	0.000	
500.00	22.090	567.446	0.000	
500.50	22.320	578.548	0.000	
501.00	22.551	589.766	0.000	
501.50	22.783	601.099	0.000	
502.00	23.017	612.549	0.000	
502.50	23.251	624.116	0.000	
503.00	23.487	635.801	0.000	
503.50	23.724	647.603	0.000	
504.00	23.962	659.525	0.000	
504.50	24.202	671.566	0.000	
505.00	24.442	683.727	0.000	
505.50	24.684	696.008	0.000	
506.00	24.927	708.411	0.000	
506.50	25.171	720.935	0.000	
507.00	25.416	733.582	0.000	
507.50	25.663	746.351	0.000	
508.00	25.911	759.245	0.000	
508.50	26.159	772.262	0.000	
509.00	26.409	785.404	0.000	
509.50	26.661	798.672	0.000	
510.00	26.913	812.065	0.000	
510.50	27.167	825.585	0.000	
511.00	27.422	839.232	0.000	
511.50	27.678	853.007	0.000	
512.00	27.935	866.910	0.000	
512.50	28.193	880.942	0.000	
513.00	28.453	895.103	0.000	
513.50	28.714	909.395	0.000	
514.00	28.976	923.817	0.000	
514.50	29.239	938.371	0.000	
515.00	29.503	953.056	0.000	
515.50	29.769	967.874	0.000	
516.00	30.035	982.825	0.000	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
516.50	30.303	997.910	0.000		
517.00	30.573	1,013.129	0.000		
517.50	30.843	1,028.483	0.000		
518.00	31.114	1,043.972	0.000		
518.50	31.387	1,059.597	0.000		
519.00	31.661	1,075.359	0.000		
519.50	31.936	1,091.258	0.000		
520.00	32.212	1,107.295	0.000		
520.50	32.490	1,123.471	0.000		
521.00	32.768	1,139.785	0.000		
521.50	33.048	1,156.239	0.000		
522.00	33.329	1,172.833	0.000		Spillway #1
522.50	33.611	1,189.568	2.224	91.04*	
522.85	33.809	1201.364	5.064	41.50	Peak Stage
523.00	33.895	1,206.445	6.287		
523.50	34.179	1,223.463	11.541		
524.00	34.465	1,240.624	17.776		
524.50	34.752	1,257.928	24.832		
525.00	35.040	1,275.376	32.640		Spillway #2
525.50	35.293	1,292.960	44.086		
526.00	35.547	1,310.670	88.971		
526.50	35.802	1,328.507	140.260		
527.00	36.057	1,346.471	201.567		
527.50	36.314	1,364.564	274.300		
528.00	36.571	1,382.785	357.083		
528.50	36.830	1,401.135	450.353		
529.00	37.089	1,419.615	555.794		
529.50	37.349	1,438.224	673.759		
530.00	37.610	1,456.964	804.545		
530.50	37.872	1,475.834	948.445		
531.00	38.135	1,494.836	1,105.727		
531.50	38.399	1,513.970	1,276.746		
532.00	38.664	1,533.235	1,461.812		
532.50	38.929	1,552.633	1,661.221		
533.00	39.196	1,572.165	1,875.205		
533.50	39.463	1,591.829	2,104.132		
534.00	39.732	1,611.628	2,348.294		
534.50	40.001	1,631.561	2,607.980		
535.00	40.271	1,651.629	2,883.406		
535.50	40.542	1,671.833	3,174.912		
536.00	40.814	1,692.172	3,482.777		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
536.50	41.087	1,712.647	3,807.268	
537.00	41.361	1,733.259	4,148.615	
537.50	41.636	1,754.008	4,507.085	
538.00	41.911	1,774.895	4,882.960	
538.50	42.188	1,795.920	5,276.492	
539.00	42.466	1,817.083	5,687.925	
539.50	42.744	1,838.386	6,117.450	
540.00	43.023	1,859.827	6,565.353	
540.50	43.303	1,881.409	7,031.871	
541.00	43.584	1,903.131	7,517.233	
541.50	43.867	1,924.994	8,021.663	
542.00	44.149	1,946.998	8,545.338	
542.50	44.433	1,969.143	9,088.524	
543.00	44.718	1,991.431	9,651.437	
543.50	45.004	2,013.861	10,234.290	
544.00	45.290	2,036.435	10,837.280	
544.50	45.578	2,059.152	11,460.590	
545.00	45.866	2,082.013	12,104.450	
545.50	46.155	2,105.018	12,769.060	
546.00	46.446	2,128.168	13,454.610	
546.50	46.737	2,151.464	14,161.310	
547.00	47.029	2,174.905	14,889.320	
547.50	47.322	2,198.493	15,638.830	
548.00	47.616	2,222.227	16,410.050	
548.50	47.910	2,246.109	17,203.160	
549.00	48.206	2,270.138	18,018.340	
549.50	48.503	2,294.315	18,855.770	
550.00	48.800	2,318.640	19,715.580	

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
450.00	0.000	0.000	0.000
450.50	0.000	0.000	0.000
451.00	0.000	0.000	0.000
451.50	0.000	0.000	0.000
452.00	0.000	0.000	0.000

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
452.50	0.000	0.000	0.000
453.00	0.000	0.000	0.000
453.50	0.000	0.000	0.000
454.00	0.000	0.000	0.000
454.50	0.000	0.000	0.000
455.00	0.000	0.000	0.000
455.50	0.000	0.000	0.000
456.00	0.000	0.000	0.000
456.50	0.000	0.000	0.000
457.00	0.000	0.000	0.000
457.50	0.000	0.000	0.000
458.00	0.000	0.000	0.000
458.50	0.000	0.000	0.000
459.00	0.000	0.000	0.000
459.50	0.000	0.000	0.000
460.00	0.000	0.000	0.000
460.50	0.000	0.000	0.000
461.00	0.000	0.000	0.000
461.50	0.000	0.000	0.000
462.00	0.000	0.000	0.000
462.50	0.000	0.000	0.000
463.00	0.000	0.000	0.000
463.50	0.000	0.000	0.000
464.00	0.000	0.000	0.000
464.50	0.000	0.000	0.000
465.00	0.000	0.000	0.000
465.50	0.000	0.000	0.000
466.00	0.000	0.000	0.000
466.50	0.000	0.000	0.000
467.00	0.000	0.000	0.000
467.50	0.000	0.000	0.000
468.00	0.000	0.000	0.000
468.50	0.000	0.000	0.000
469.00	0.000	0.000	0.000
469.50	0.000	0.000	0.000
470.00	0.000	0.000	0.000
470.50	0.000	0.000	0.000
471.00	0.000	0.000	0.000
471.50	0.000	0.000	0.000
472.00	0.000	0.000	0.000

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
472.50	0.000	0.000	0.000
473.00	0.000	0.000	0.000
473.50	0.000	0.000	0.000
474.00	0.000	0.000	0.000
474.50	0.000	0.000	0.000
475.00	0.000	0.000	0.000
475.50	0.000	0.000	0.000
476.00	0.000	0.000	0.000
476.50	0.000	0.000	0.000
477.00	0.000	0.000	0.000
477.50	0.000	0.000	0.000
478.00	0.000	0.000	0.000
478.50	0.000	0.000	0.000
479.00	0.000	0.000	0.000
479.50	0.000	0.000	0.000
480.00	0.000	0.000	0.000
480.50	0.000	0.000	0.000
481.00	0.000	0.000	0.000
481.50	0.000	0.000	0.000
482.00	0.000	0.000	0.000
482.50	0.000	0.000	0.000
483.00	0.000	0.000	0.000
483.50	0.000	0.000	0.000
484.00	0.000	0.000	0.000
484.50	0.000	0.000	0.000
485.00	0.000	0.000	0.000
485.50	0.000	0.000	0.000
486.00	0.000	0.000	0.000
486.50	0.000	0.000	0.000
487.00	0.000	0.000	0.000
487.50	0.000	0.000	0.000
488.00	0.000	0.000	0.000
488.50	0.000	0.000	0.000
489.00	0.000	0.000	0.000
489.50	0.000	0.000	0.000
490.00	0.000	0.000	0.000
490.50	0.000	0.000	0.000
491.00	0.000	0.000	0.000
491.50	0.000	0.000	0.000
492.00	0.000	0.000	0.000

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
492.50	0.000	0.000	0.000
493.00	0.000	0.000	0.000
493.50	0.000	0.000	0.000
494.00	0.000	0.000	0.000
494.50	0.000	0.000	0.000
495.00	0.000	0.000	0.000
495.50	0.000	0.000	0.000
496.00	0.000	0.000	0.000
496.50	0.000	0.000	0.000
497.00	0.000	0.000	0.000
497.50	0.000	0.000	0.000
498.00	0.000	0.000	0.000
498.50	0.000	0.000	0.000
499.00	0.000	0.000	0.000
499.50	0.000	0.000	0.000
500.00	0.000	0.000	0.000
500.50	0.000	0.000	0.000
501.00	0.000	0.000	0.000
501.50	0.000	0.000	0.000
502.00	0.000	0.000	0.000
502.50	0.000	0.000	0.000
503.00	0.000	0.000	0.000
503.50	0.000	0.000	0.000
504.00	0.000	0.000	0.000
504.50	0.000	0.000	0.000
505.00	0.000	0.000	0.000
505.50	0.000	0.000	0.000
506.00	0.000	0.000	0.000
506.50	0.000	0.000	0.000
507.00	0.000	0.000	0.000
507.50	0.000	0.000	0.000
508.00	0.000	0.000	0.000
508.50	0.000	0.000	0.000
509.00	0.000	0.000	0.000
509.50	0.000	0.000	0.000
510.00	0.000	0.000	0.000
510.50	0.000	0.000	0.000
511.00	0.000	0.000	0.000
511.50	0.000	0.000	0.000
512.00	0.000	0.000	0.000

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
512.50	0.000	0.000	0.000
513.00	0.000	0.000	0.000
513.50	0.000	0.000	0.000
514.00	0.000	0.000	0.000
514.50	0.000	0.000	0.000
515.00	0.000	0.000	0.000
515.50	0.000	0.000	0.000
516.00	0.000	0.000	0.000
516.50	0.000	0.000	0.000
517.00	0.000	0.000	0.000
517.50	0.000	0.000	0.000
518.00	0.000	0.000	0.000
518.50	0.000	0.000	0.000
519.00	0.000	0.000	0.000
519.50	0.000	0.000	0.000
520.00	0.000	0.000	0.000
520.50	0.000	0.000	0.000
521.00	0.000	0.000	0.000
521.50	0.000	0.000	0.000
522.00	0.000	0.000	0.000
522.50	(3)>2.224	0.000	2.224
523.00	(3)>6.287	0.000	6.287
523.50	(3)>11.541	0.000	11.541
524.00	(3)>17.776	0.000	17.776
524.50	(3)>24.832	0.000	24.832
525.00	(3)>32.640	0.000	32.640
525.50	(3)>40.983	3.103	44.086
526.00	(5)>47.696	41.275	88.971
526.50	(5)>53.790	86.470	140.260
527.00	(5)>59.261	142.306	201.567
527.50	(5)>64.270	210.030	274.300
528.00	(5)>67.412	289.670	357.083
528.50	(6)>68.968	381.384	450.353
529.00	(6)>70.398	485.395	555.794
529.50	(6)>71.794	601.965	673.759
530.00	(6)>73.168	731.377	804.545
530.50	(6)>74.520	873.925	948.445
531.00	(6)>75.815	1,029.912	1,105.727
531.50	(6)>77.105	1,199.641	1,276.746
532.00	(6)>78.396	1,383.416	1,461.812

Elevation (ft)	Straight Pipe (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
532.50	(6)>79.682	1,581.539	1,661.221
533.00	(6)>80.894	1,794.311	1,875.205
533.50	(6)>82.106	2,022.025	2,104.132
534.00	(6)>83.319	2,264.976	2,348.294
534.50	(6)>84.531	2,523.449	2,607.980
535.00	(6)>85.677	2,797.729	2,883.406
535.50	(6)>86.820	3,088.092	3,174.912
536.00	(6)>87.963	3,394.814	3,482.777
536.50	(6)>89.105	3,718.163	3,807.268
537.00	(6)>90.213	4,058.402	4,148.615
537.50	(6)>91.293	4,415.792	4,507.085
538.00	(6)>92.374	4,790.586	4,882.960
538.50	(6)>93.455	5,183.038	5,276.492
539.00	(6)>94.535	5,593.390	5,687.925
539.50	(6)>95.563	6,021.887	6,117.450
540.00	(6)>96.588	6,468.765	6,565.353
540.50	(6)>97.613	6,934.257	7,031.871
541.00	(6)>98.638	7,418.595	7,517.233
541.50	(6)>99.660	7,922.002	8,021.663
542.00	(6)>100.635	8,444.703	8,545.338
542.50	(6)>101.610	8,986.915	9,088.524
543.00	(6)>102.584	9,548.853	9,651.437
543.50	(6)>103.559	10,130.730	10,234.290
544.00	(6)>104.534	10,732.750	10,837.280
544.50	(6)>105.466	11,355.120	11,460.590
545.00	(6)>106.396	11,998.050	12,104.450
545.50	(6)>107.325	12,661.730	12,769.060
546.00	(6)>108.254	13,346.360	13,454.610
546.50	(6)>109.183	14,052.130	14,161.310
547.00	(6)>110.090	14,779.230	14,889.320
547.50	(6)>110.978	15,527.860	15,638.830
548.00	(6)>111.865	16,298.190	16,410.050
548.50	(6)>112.753	17,090.410	17,203.160
549.00	(6)>113.641	17,904.700	18,018.340
549.50	(6)>114.529	18,741.240	18,855.770
550.00	(6)>115.382	19,600.200	19,715.580

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	40.000	0.126	0.056	0.310	70.000	S	26.94	3.448
	2	73.000	0.128	0.000	0.000	81.000	F	144.50	13.926
	3	35.000	0.000	0.000	0.000	100.000	S	112.30	12.498
	Σ	**148.000**						**267.43**	**29.872**

PERC
ENGINEERING CO., INC.

Telephone: (205) 384-5553
Facsimile: (205) 295-3114 - Main Building
(205) 295-3115 - Water Lab
Web Address: www.percengineering.com

June 16, 2006

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

RE: Twin Pines Coal Company, Inc.
Shannon Mine
P-3859

Dear Michael::

I hereby certify that Primary Road No. 10P from stations 0+00 to 80+75 located in the SW 1/4 of the SE 1/4 and the S ½ of the SW 1/4 of Section 2; the S ½ of the SE 1/4 of Section 3; the N ½ of the NE 1/4 and the N ½ of the NW 1/4 of Section 10; and the N ½ of the NW 1/4 of Section 11; all within Township 20 South, Range 6 West, Jefferson County, Alabama, for the above referenced mine was constructed in accordance with the approved ASMC design plans to the minimum design specifications, as per field inspection.

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

Sincerely,
PERC Engineering Co., Inc.

Steven R. Ingle, P.E.
AL Reg. No. 18213

ALABAMA REGISTERED NO. 18213 PROFESSIONAL ENGINEER STEVEN R. INGLE

TWIN PINES COAL COMPANY, INC.

ATTACHMENT III-B-5(b)

SHANNON MINE

P-3859

JEFFERSON AND TUSCALOOSA COUNTIES, ALABAMA

BY

PERC ENGINEERING CO., INC.

P.O. BOX 1712

JASPER, ALABAMA 35502

MAY 22, 2006

PERC
ENGINEERING CO., INC.

Telephone: (205) 384-5553
Facsimile: (205) 295-3114 - Main Building
(205) 295-3115 - Water Lab
Web Address: www.percengineering.com

May 22, 2006

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

RE: Twin Pines Coal Company, Inc.
Shannon Mine
P- 3859

Dear Michael:

I hereby certify the attached detailed design plans for Primary Road 10P for the above referenced mine are in accordance with current prudent engineering practices and the Regulations of the Alabama Surface Mining Commission 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.

Steven R. Ingle, P.E.
Alabama Registration No. 18213

ALABAMA REGISTERED NO. 18213 PROFESSIONAL ENGINEER STEVEN R. INGLE

Applicant: Twin Pines Coal Company, Inc.
Mine Name: Shannon Mine
Permit Number: P- 3859, Revision R-5

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

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

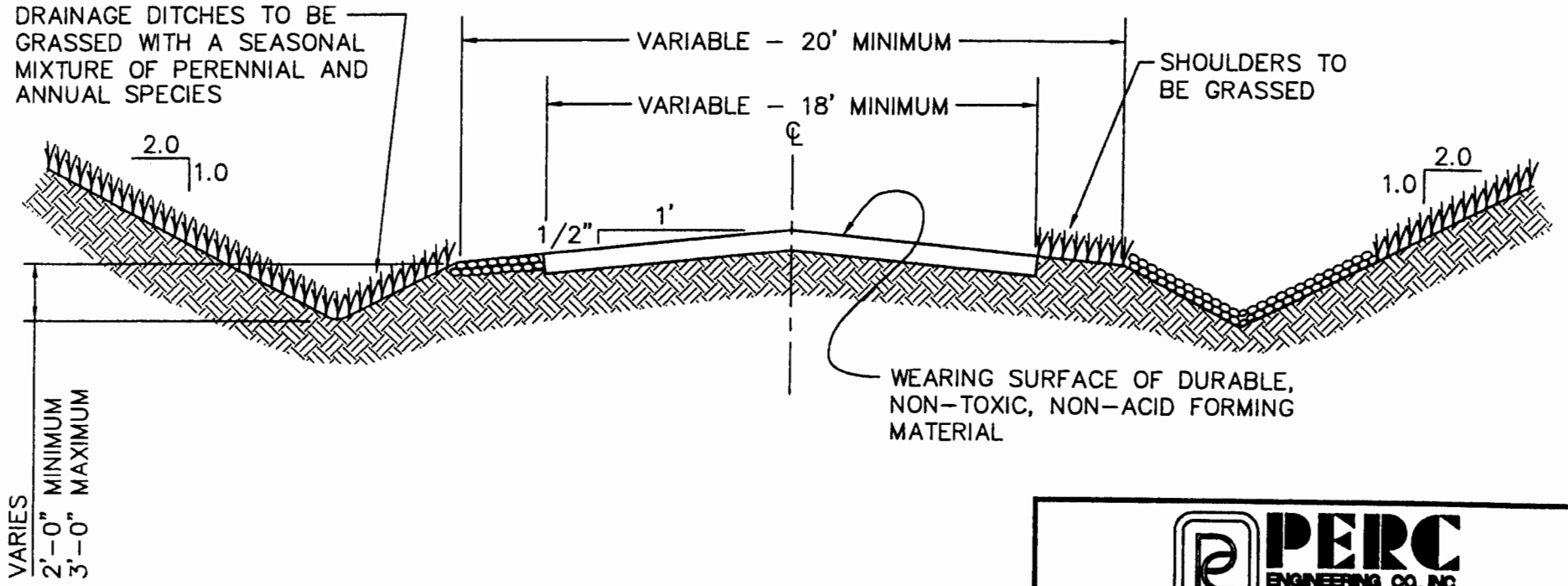
    e. The natural drainage patterns shall be protected from surface runoff and erosion utilizing the installation of dikes and/or cross drains as necessary.

    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.

12. 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



PERC ENGINEERING CO., INC.

TYPICAL CUT SECTION
PRIMARY HAUL ROAD

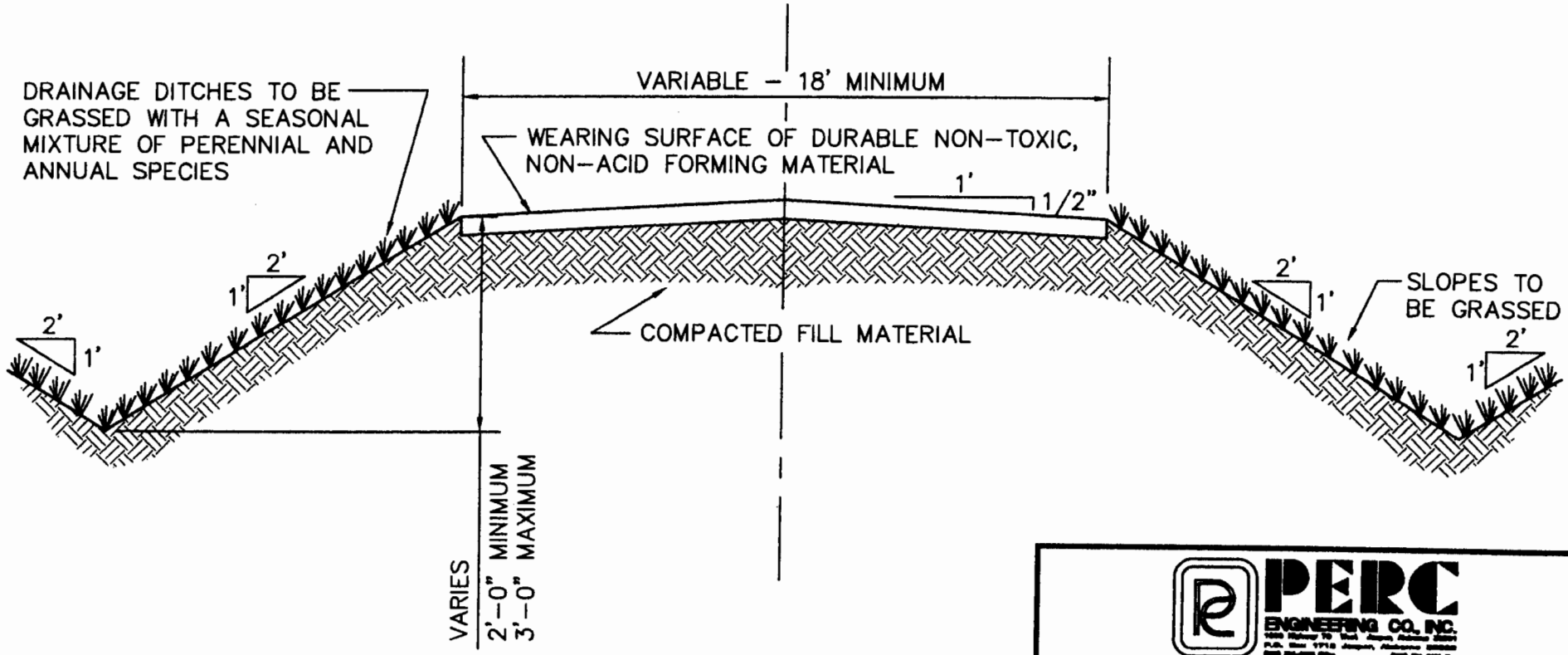
DRAWN BY: K.D.P. DWG. NAME: TYPHAULC	DATE: 2–3–97
APPROVED BY: S.R.I.	SCALE: NONE

ATTACHMENT III.–B.–5.

K:\ST\TYPHAULC 02/03/97 13:56

TYPICAL HAUL ROAD
FILL SECTION

NO SCALE



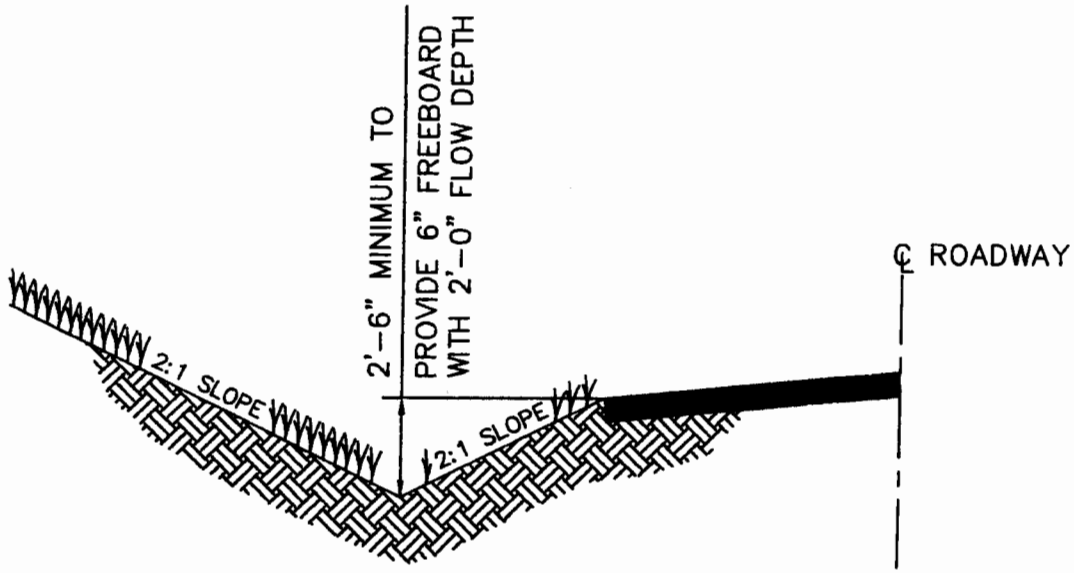
PERC ENGINEERING CO. INC.

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:\STYPHAULF 02/03/97 16:01



MINIMUM DITCH GRADIENT = 1%

MAXIMUM DITCH GRADIENT = 5%

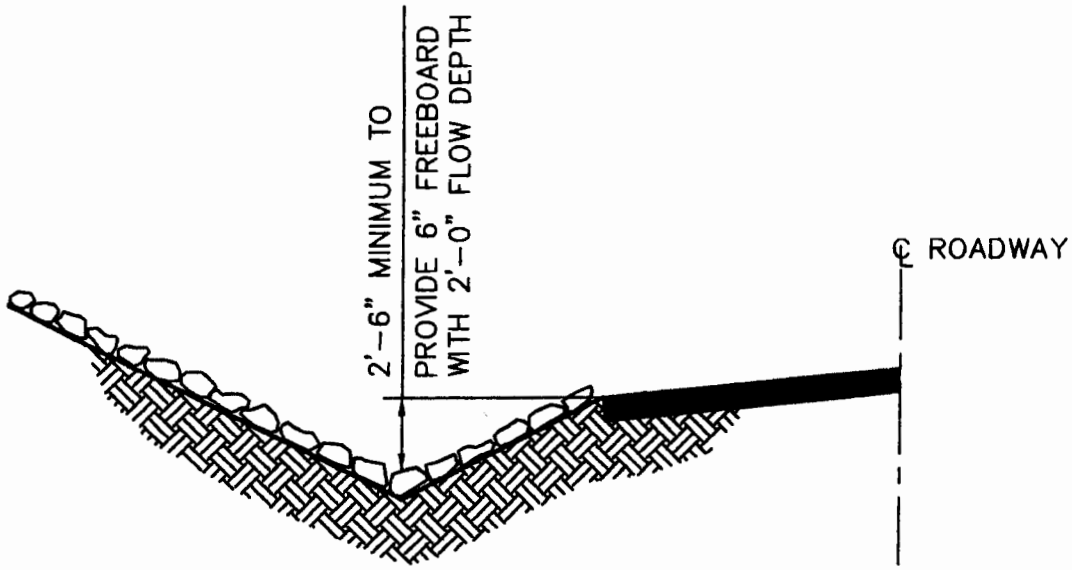
DITCH CHANNEL TO BE VEGETATED WITH A MIXTURE OF BERMUDA GRASS, FESCUE, AND LESPEDEZA TO CONFORM TO CLASS "D" RETARDANT CLASS.

PERC ENGINEERING CO., INC.

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 08:35



DITCH GRADIENT 5% TO 10%

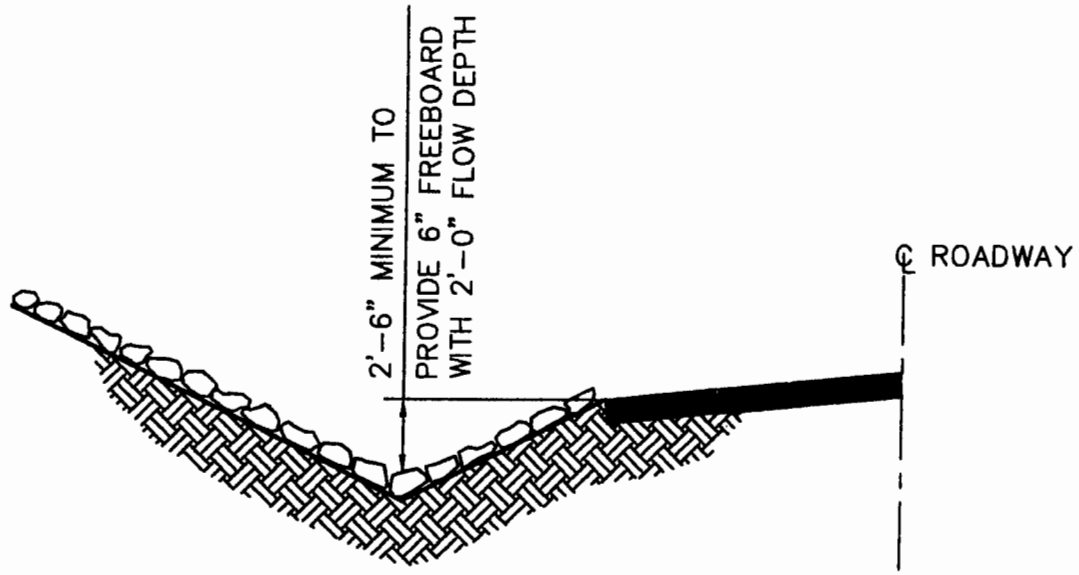
DITCH CHANNEL TO BE LINED WITH NON-ERODIBLE NON-TOXIC, NON-ACID FORMING SANDSTONE OR LIMESTONE RIP-RAP. THE RIP-RAP WILL BE "CLASS 1" RIP-RAP AND HAVE A MINIMUM THICKNESS OF 12".

PERC ENGINEERING CO., INC.

TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: K.D.P. DWG. NAME: PRIMRD1	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE

K:\SV\PRIMRD1 02/04/97 06:31



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".

PERC ENGINEERING CO., INC.

TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: K.D.P. DWG. NAME: PRIMRD2	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE

K:\S\PRIMRD2 02/04/97 08:33

NOTES

1) Due to there being no significant cuts, fills, crossings, no stability analysis for the proposed roads are required.

C:\CMG\SR\TPSMR5HR.dwg 05/23/06 07:58

PERMIT AREA

SCALE: 1" = 500'
CONTOUR INTERVAL = 20'

Base Map – Abernant & McCalla Alabama United States Geological Survey Quadrangle Map.

LEGEND

- Haulroad
- Ancillary Road
- Impounded Water
- R — R — Roadside Ditch

MAY 2006
RECEIVED
SURFACE MINING
COMMISSION

TOWNSHIP 19 SOUTH
TOWNSHIP 20 SOUTH

JEFFERSON COUNTY
TUSCALOOSA COUNTY

S.E. BELCHER, JR. (FEE)

JULIA F. CRAWFORD (S)
CHESTER GAY HOWTON (S)
LINDA BURCHFIELD HOGUES (S)
JASON HOSMER (S)
NEIL BROADDOCK (S)
HUGH W. & PEGGY HOSMER

JOHNS ROAD
LOUISVILLE AND NASHVILLE RAILROAD
WELLER ROAD
NASHVILLE
SHANNON MINE
POWDER BINS
MUD CREEK

MATCHLINE 2 of 2
MATCHLINE 1 of 2

ATTACHMENT III-B-5
HAULROAD LOCATION MAP
TWIN PINES COAL COMPANY, INC.
SHANNON MINE
P-3859 / REVISION R-5

Part of Sections 1, 2, 9, 10, & 11, Township 20 South, Range 6 West, Part of Sections 25, 35 & 36, Township 19 South, Range 6 West, Part of Section 31, Township 19 South, Range 5 West, Jefferson and Tuscaloosa Counties, Alabama

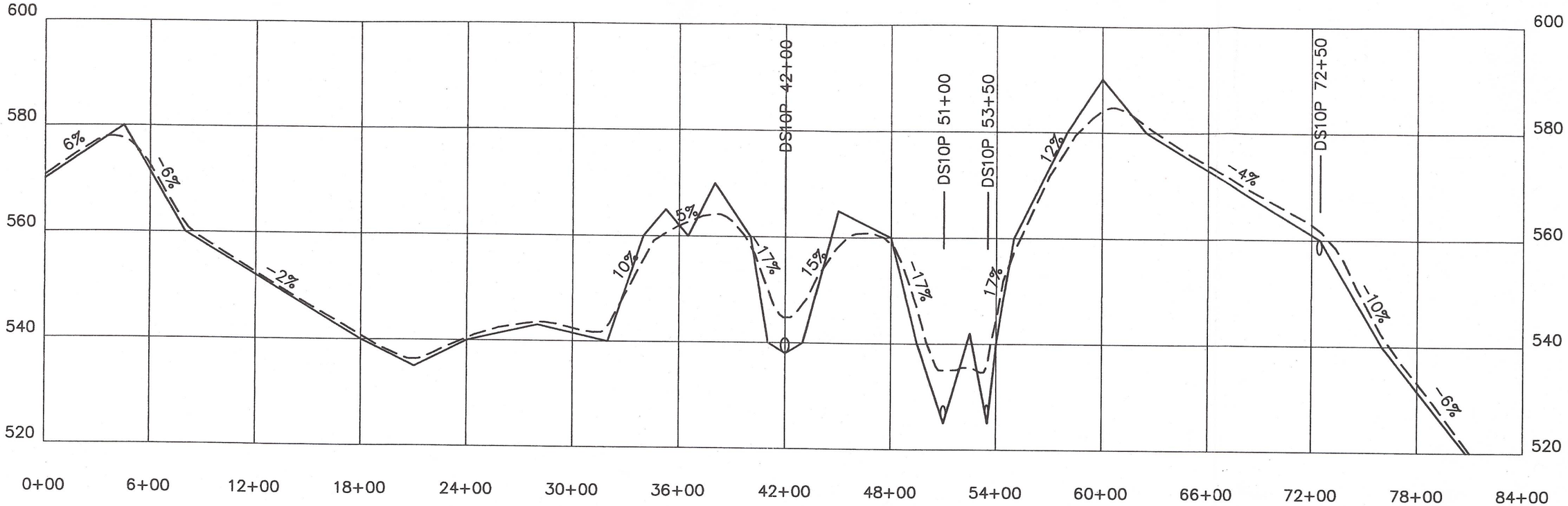
REVISIONS

NO.	DATE	NATURE OF REVISION
1		
2		
3		
4		
5		
6		

Initial Map Date: May 11, 2006

TPSMR5HR.DWG

PERC
ENGINEERING CO., INC.
1606 Hwy. 78 West Jasper, AL 35501/P.O. Box 1712–35502
(205) 384–5553 Office (205) 384–9491 Fax



ROAD 10P

——————— EXISTING GRADE

— — — — PROPOSED FINISH GRADE

NOTES:

1. FINISHED GRADES SHOWN HEREON MAY VARY FROM BETWEEN 0% AND 17%.
2. SEE INDIVIDUAL CROSS SECTION SHEETS FOR SPECIFIC DRAINAGE STRUCTURE INFORMATION.

PERC ENGINEERING CO., INC.
1806 Highway 78 West Jasper, Alabama 35501
P.O. Box 1712 Jasper, Alabama 35502
(205) 384-5553 Office (205) 384-9491 Fax

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Haulroad Profile

DRAWN BY: C.M.O. DWG. NAME: TPSHR10P	DATE: 5-23-06
APPROVED BY: S.R.I.	SCALE: AS NOTED

C:\CMO\SR\TPSHR10P.dwg 06.08.15

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Drainage Structure DS10P 42+00

4.3 Inches, 10 Year - 6 Hour

SCS 6 Hour Event

SRI

General Information

Storm Information:

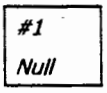
Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.1510
1.00	0.3440
1.50	0.5810
2.00	0.9890
2.50	2.5800
3.00	3.0100
3.50	3.3540
4.00	3.5910
4.50	3.8060
5.00	3.9780
5.50	4.1500
6.00	4.3000

Peak 30-minute Intensity: 3.182 in/hr

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Drainage Structure DS10P 42+00



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	13.000	13.000	18.17	1.52

Structure Detail:

Structure #1 (Null)

Drainage Structure DS10P 42+00

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	13.000	0.075	0.000	0.000	68.000	M	18.17	1.515
	$\sum$	**13.000**						**18.17**	**1.515**

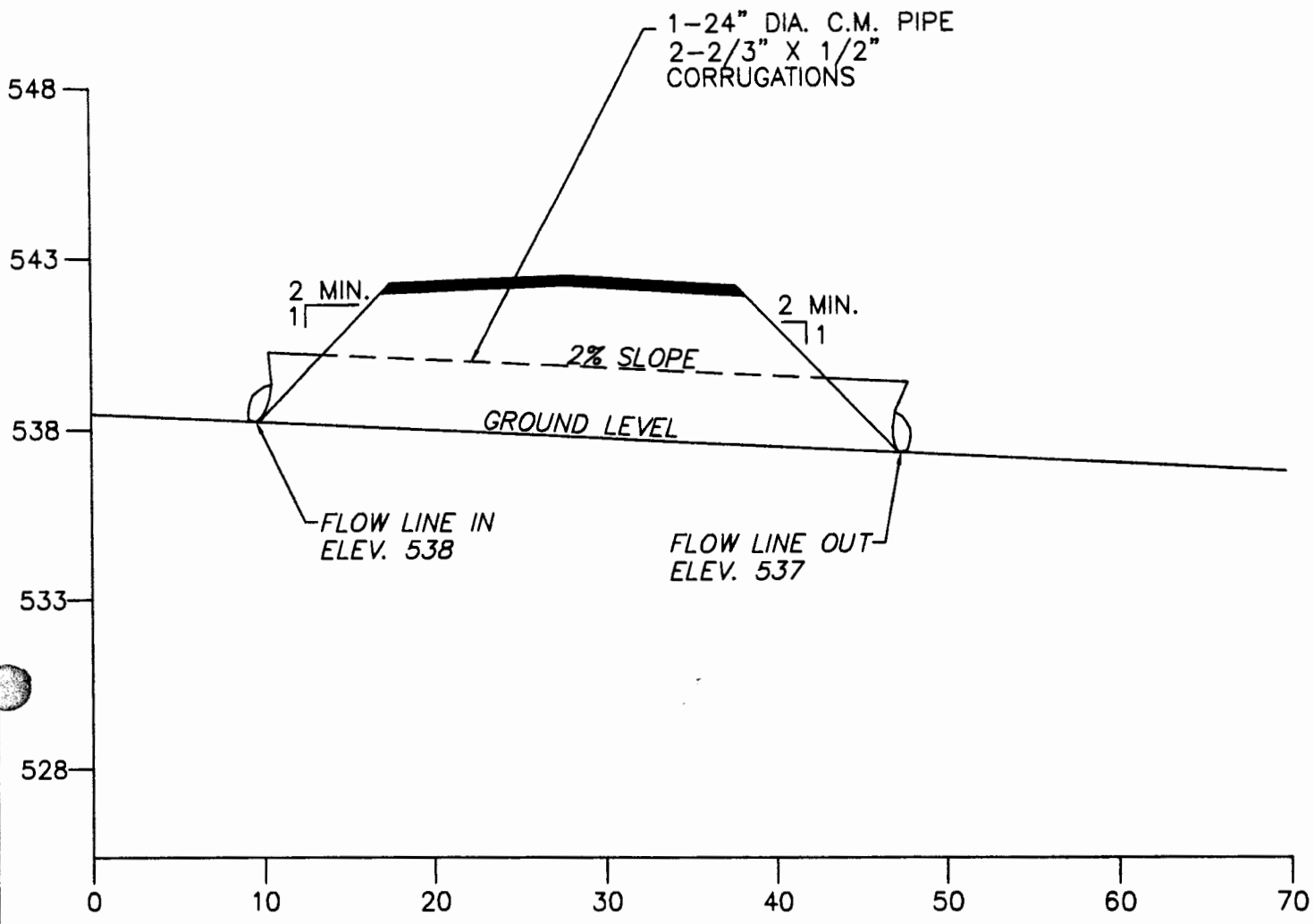
Twin Pines Coal Company, Inc. Shannon Mine P-3859
Drainage Structure DS10P 42+00

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev	Entrance Loss Coefficient	Tailwater Depth (ft)
24.00	100.00	2.00	0.0240	538.01	0.90	0.00

Detailed Discharge Table

Elevation	Straight Pipe (cfs)	Combined Total Discharge (cfs)
538.00	0.000	0.000
538.01	0.000	0.000
538.50	(3)>1.443	1.443
539.00	(3)>4.125	4.125
539.50	(3)>7.617	7.617
540.00	(3)>11.757	11.757
540.50	(1)>14.130	14.130
541.00	(6)>18.390	18.390
541.50	(6)>19.790	19.790
542.00	(6)>21.064	21.064
542.50	(6)>22.263	22.263
543.00	(6)>23.389	23.389
543.50	(6)>24.487	24.487
544.00	(6)>25.507	25.507
544.50	(6)>26.519	26.519
545.00	(6)>27.463	27.463
545.50	(6)>28.401	28.401
546.00	(6)>29.290	29.290
546.50	(6)>30.165	30.165
547.00	(6)>31.012	31.012
547.50	(6)>31.831	31.831
548.00	(6)>32.648	32.648
548.50	(6)>33.419	33.419
549.00	(6)>34.189	34.189
549.50	(6)>34.940	34.940
550.00	(6)>35.667	35.667



Hydraulics Information

Drainage Area = 13.0 Acres
10 YR.-6 HR., Q = 18.2 C.F.S.
Maximum Water Elev. = 541
Minimum Fill Elev. = 542
Maximum Allowable Cover 24" C.M.P. = 124'
Minimum Allowable Cover 24" C.M.P. = 1'
Wall Thickness = 0.064"
Minimum Freeboard = 1'

PERC ENGINEERING CO., INC.

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Haul Road Cross Section
DS10P - 42+00

DRAWN BY: P.T.O. DWG. NAME: TPSM10PX	DATE: 5-22-06
APPROVED BY: S.R.I.	SCALE: AS NOTED

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Twin Pines Coal Company, Inc.

Shannon Mine

P-3859

Drainage Structure DS10P 51+00

4.3 Inches, 10 Year - 6 Hour

SCS 6 Hour Event

SRI

General Information

Storm Information:

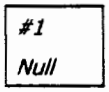
Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.1510
1.00	0.3440
1.50	0.5810
2.00	0.9890
2.50	2.5800
3.00	3.0100
3.50	3.3540
4.00	3.5910
4.50	3.8060
5.00	3.9780
5.50	4.1500
6.00	4.3000

Peak 30-minute Intensity: 3.182 in/hr

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Drainage Structure DS10P 51+00



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	68.000	68.000	44.18	8.69

Structure Detail:

Structure #1 (Null)

Drainage Structure DS10P 51+00

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	68.000	0.185	0.000	0.000	70.000	S	44.18	8.691
	Σ	**68.000**						**44.18**	**8.691**

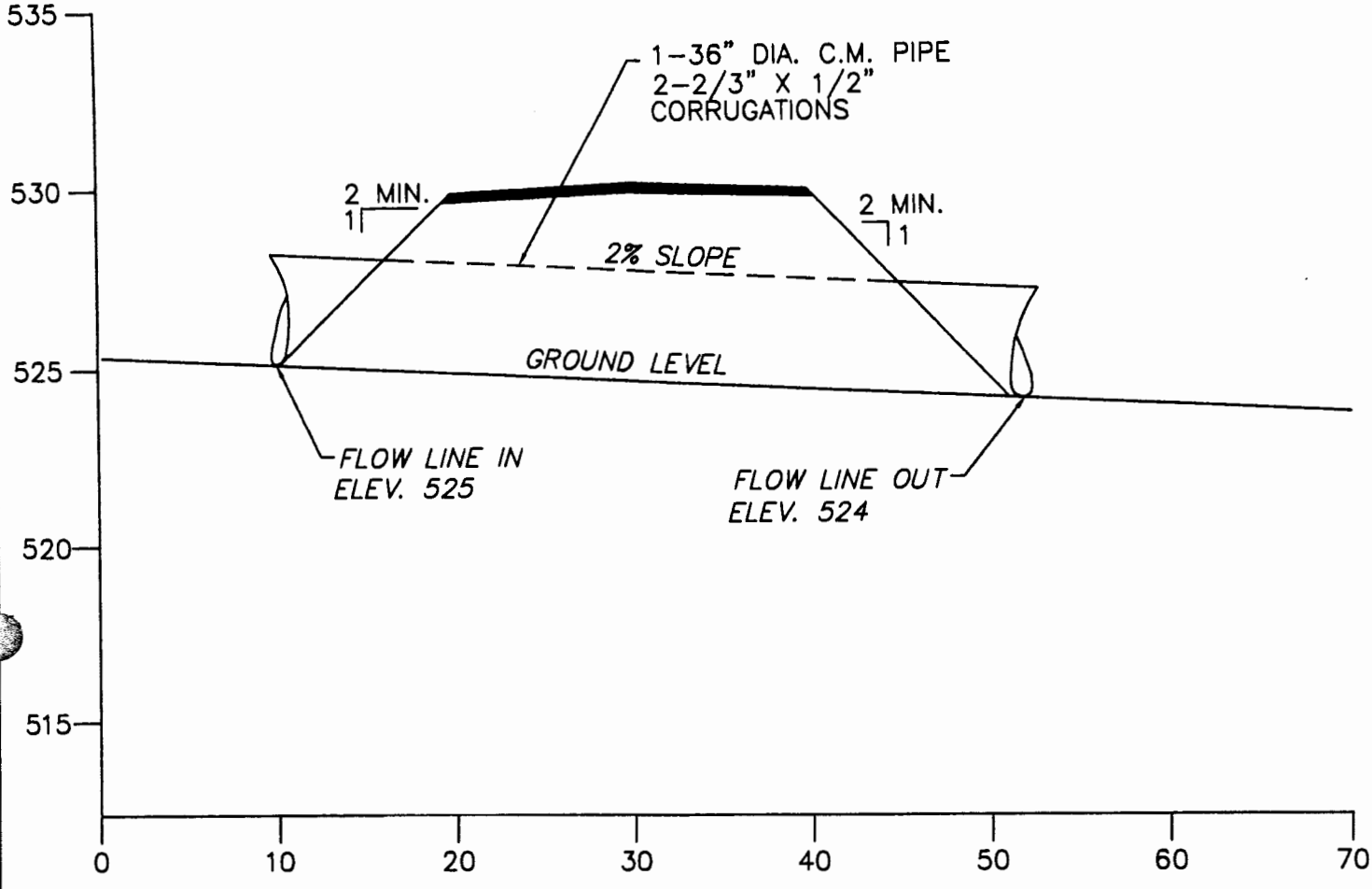
Twin Pines Coal Company, Inc. Shannon Mine P-3859
Drainage Structure DS10P 51+00

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev	Entrance Loss Coefficient	Tailwater Depth (ft)
36.00	100.00	2.00	0.0240	525.01	0.90	0.00

Detailed Discharge Table

Elevation	Straight Pipe (cfs)	Combined Total Discharge (cfs)
525.00	0.000	0.000
525.01	0.000	0.000
525.50	(3)>2.156	2.156
526.00	(3)>6.194	6.194
526.50	(3)>11.427	11.427
527.00	(3)>17.643	17.643
527.50	(3)>24.682	24.682
528.00	(3)>32.477	32.477
528.50	(3)>40.856	40.856
529.00	(5)>47.566	47.566
529.50	(5)>53.533	53.533
530.00	(6)>57.185	57.185



Hydraulics Information

Drainage Area = 68.0 Acres
10 YR.-6 HR., Q = 44.2 C.F.S.
Maximum Water Elev. = 528.7
Minimum Fill Elev. = 529.7
Maximum Allowable Cover 36" C.M.P. = 83'
Minimum Allowable Cover 36" C.M.P. = 1'
Wall Thickness = 0.064"
Minimum Freeboard = 1'

PERC ENGINEERING CO., INC.

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Haul Road Cross Section
DS10P - 51+00

DRAWN BY: P.T.O. DWG. NAME: TPSM10PX	DATE: 5-22-06
APPROVED BY: S.R.I.	SCALE: AS NOTED

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Twin Pines Coal Company, Inc.

Shannon Mine

P-3859

Drainage Structure DS10P 53+500

4.3 Inches, 10 Year - 6 Hour

SCS 6 Hour Event

SRI

General Information

Storm Information:

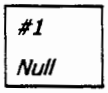
Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.1510
1.00	0.3440
1.50	0.5810
2.00	0.9890
2.50	2.5800
3.00	3.0100
3.50	3.3540
4.00	3.5910
4.50	3.8060
5.00	3.9780
5.50	4.1500
6.00	4.3000

Peak 30-minute Intensity: 3.182 in/hr

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Drainage Structure DS10P 53+50



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	16.000	16.000	24.51	2.04

Structure Detail:

Structure #1 (Null)

Drainage Structure DS10P 53+50

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	16.000	0.115	0.000	0.000	70.000	S	24.51	2.045
	$\sum$	**16.000**						**24.51**	**2.045**

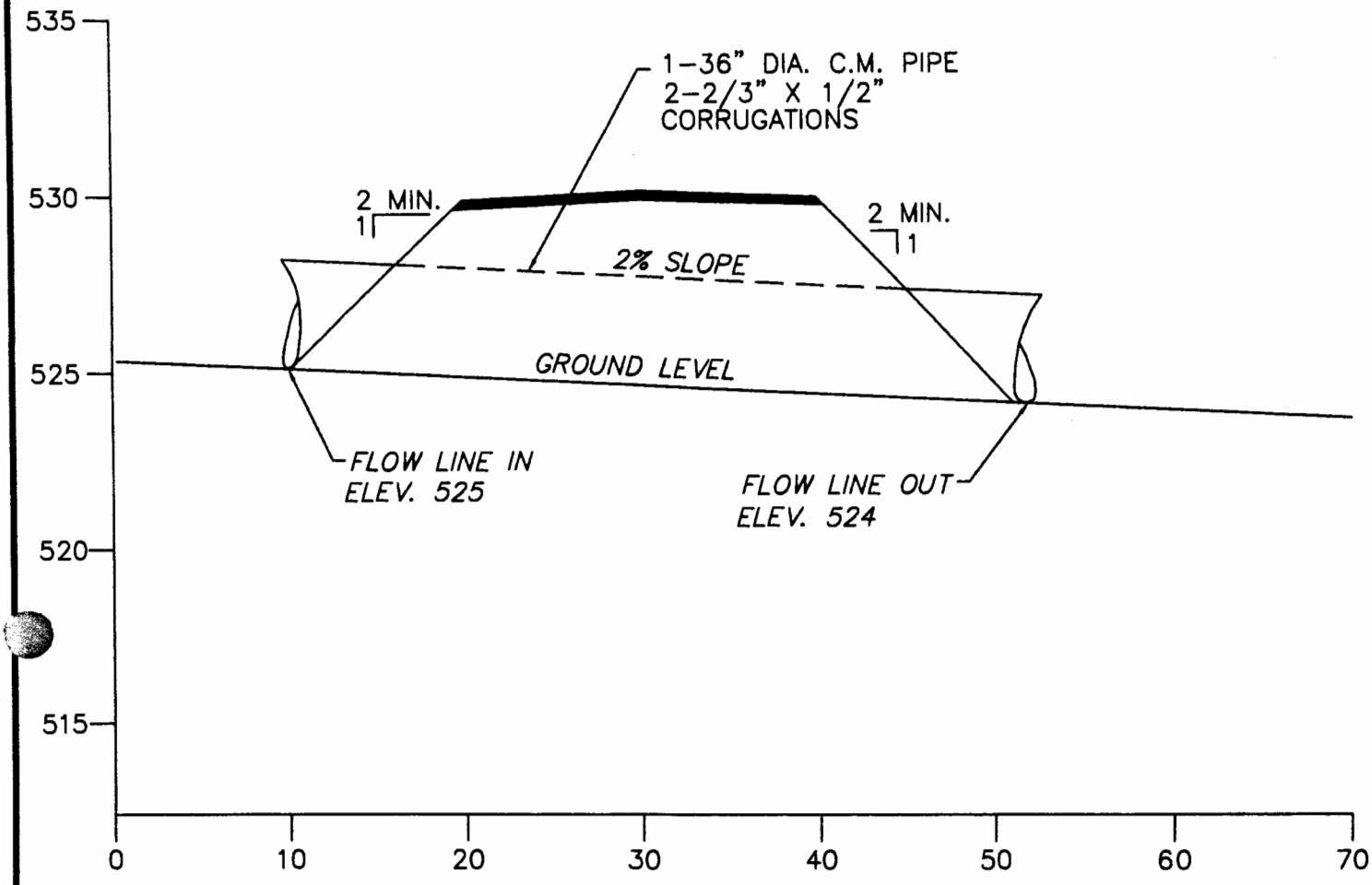
Twin Pines Coal Company, Inc. Shannon Mine P-3859
Drainage Structure DS10P 53+50

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev	Entrance Loss Coefficient	Tailwater Depth (ft)
36.00	100.00	2.00	0.0240	525.01	0.90	0.00

Detailed Discharge Table

Elevation	Straight Pipe (cfs)	Combined Total Discharge (cfs)
525.00	0.000	0.000
525.01	0.000	0.000
525.50	(3)>2.156	2.156
526.00	(3)>6.194	6.194
526.50	(3)>11.427	11.427
527.00	(3)>17.643	17.643
527.50	(3)>24.682	24.682
528.00	(3)>32.477	32.477
528.50	(3)>40.856	40.856
529.00	(5)>47.566	47.566
529.50	(5)>53.533	53.533
530.00	(6)>57.185	57.185



Hydraulics Information

Drainage Area = 16.0 Acres
10 YR.-6 HR., Q = 24.5 C.F.S.
Maximum Water Elev. = 527.5
Minimum Fill Elev. = 528.5
Maximum Allowable Cover 36" C.M.P. = 83'
Minimum Allowable Cover 36" C.M.P. = 1'
Wall Thickness = 0.064"
Minimum Freeboard = 1'

PERC ENGINEERING CO., INC.

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Haul Road Cross Section
DS10P - 53+50

DRAWN BY: P.T.O. DWG. NAME: TPSM10PX	DATE: 5-22-06
APPROVED BY: S.R.I.	SCALE: AS NOTED

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Twin Pines Coal Company, Inc.

Shannon Mine

P-3859

Drainage Structure DS10P 72+50

4.3 Inches, 10 Year - 6 Hour

SCS 6 Hour Event

SRI

General Information

Storm Information:

Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.1510
1.00	0.3440
1.50	0.5810
2.00	0.9890
2.50	2.5800
3.00	3.0100
3.50	3.3540
4.00	3.5910
4.50	3.8060
5.00	3.9780
5.50	4.1500
6.00	4.3000

Peak 30-minute Intensity: 3.182 in/hr

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Drainage Structure DS10P 72+50

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	7.000	7.000	9.79	0.82

Structure Detail:

Structure #1 (Null)

Drainage Structure DS10P 72+50

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	7.000	0.065	0.000	0.000	68.000	M	9.79	0.816
	Σ	**7.000**						**9.79**	**0.816**

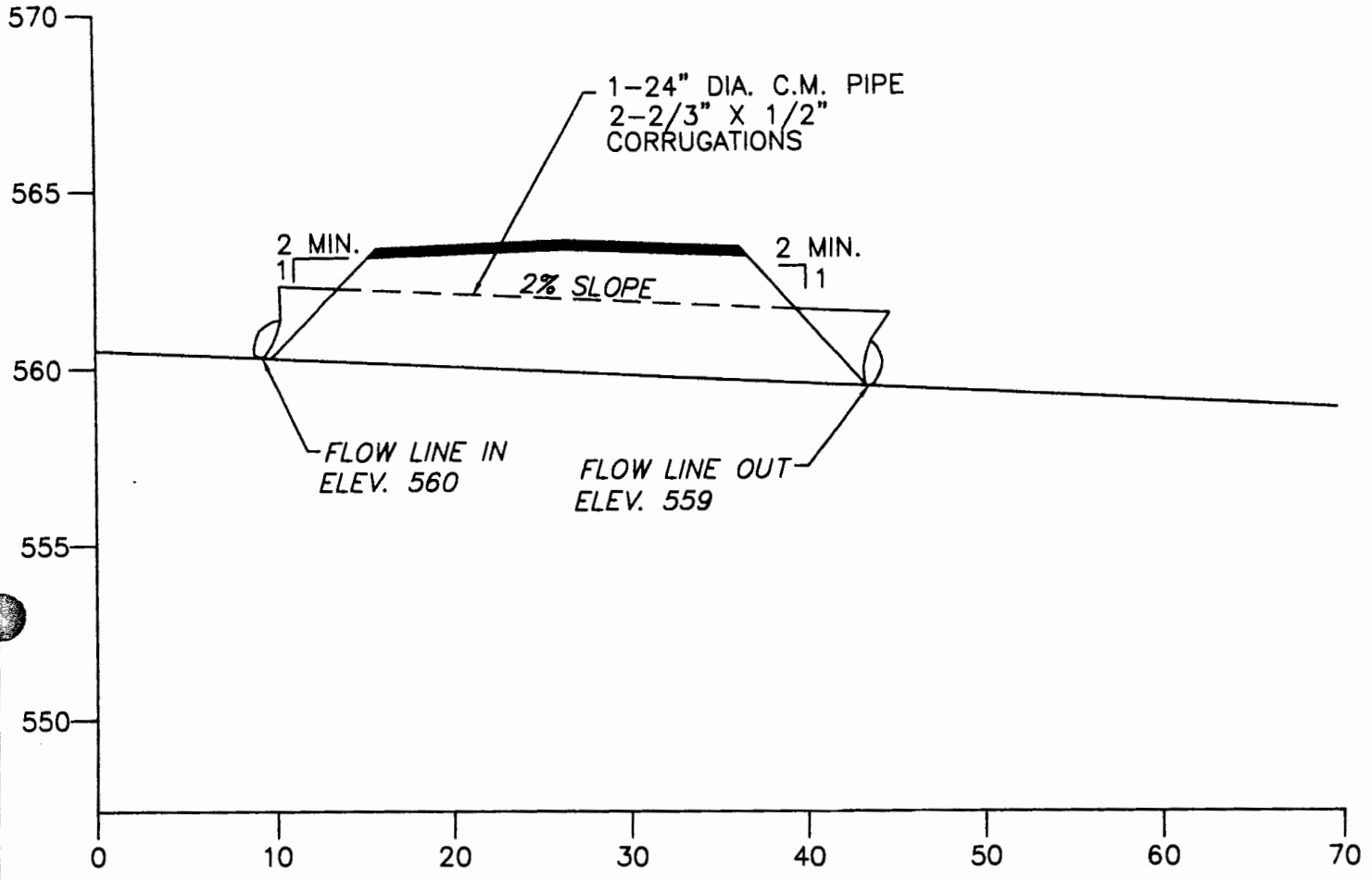
Twin Pines Coal Company, Inc. Shannon Mine P-3859
Drainage Structure DS10P 72+50

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev	Entrance Loss Coefficient	Tailwater Depth (ft)
24.00	100.00	2.00	0.0240	560.01	0.90	0.00

Detailed Discharge Table

Elevation	Straight Pipe (cfs)	Combined Total Discharge (cfs)
560.00	0.000	0.000
560.01	0.000	0.000
560.50	(3)>1.443	1.443
561.00	(3)>4.125	4.125
561.50	(3)>7.617	7.617
562.00	(3)>11.757	11.757
562.50	(1)>14.130	14.130
563.00	(6)>18.390	18.390
563.50	(6)>19.790	19.790
564.00	(6)>21.064	21.064
564.50	(6)>22.263	22.263
565.00	(6)>23.389	23.389



Hydraulics Information

Drainage Area = 7.0 Acres
10 YR.-6 HR., Q = 9.8 C.F.S.
Maximum Water Elev. = 561.8
Minimum Fill Elev. = 563
Maximum Allowable Cover 24" C.M.P. = 124'
Minimum Allowable Cover 24" C.M.P. = 1'
Wall Thickness = 0.064"
Minimum Freeboard = 1'

PERC ENGINEERING CO., INC.

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Haul Road Cross Section
DS10P - 72+50

DRAWN BY: P.T.O. DWG. NAME: TPSM10PX	DATE: 5-22-06
APPROVED BY: S.R.I.	SCALE: AS NOTED

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Twin Pines Coal

September 7, 2010

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

RE Twin Pines Coal Company, Inc.
Shannon Mine
P-3859

Dear Michael:

I hereby certify that Primary Road 12P from stations 0+00 to 1+50 located in NE 1/4 of the NE 1/4 of Section 9, Township 20 South, Range 6 West, Tuscaloosa County, Alabama, for the above referenced mine was constructed in accordance with the approved ASMC design plans to the minimum design specifications, as per field inspection.

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

Sincerely,

Steven R. Ingle, P.E.
AL Reg. No. 18213

74 Industrial Parkway • P.O. Box 621 • Jasper, Alabama 35502 • Phone 205-295-0995 • Fax 205-295-0799

TWIN PINES COAL COMPANY, INC.

ATTACHMENT III-B-5(b)

SHANNON MINE

P-3859

TUSCALOOSA COUNTY, ALABAMA

BY

TWIN PINES COAL COMPANY, INC.

P.O. BOX 621

JASPER, ALABAMA 35502

JULY 24, 2010

Twin Pines Coal

July 24, 2010

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

RE: Twin Pines Coal Company, Inc.
Shannon Mine
P- 3859

Dear Michael:

I hereby certify the attached detailed design plans for the modification of Primary Road No. 12P for the above referenced mine are in accordance with current prudent engineering practices and the Regulations of the Alabama Surface Mining Commission 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,
Twin Pines Coal Company, Inc.

Steven R. Ingle, P.E.
Alabama Registration No. 18213

ALABAMA REGISTERED NO. 18213 PROFESSIONAL ENGINEER STEVEN R. INGLE

74 Industrial Parkway • P.O. Box 621 • Jasper, Alabama 35502 • Phone 205-295-0995 • Fax 205-295-0799

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.

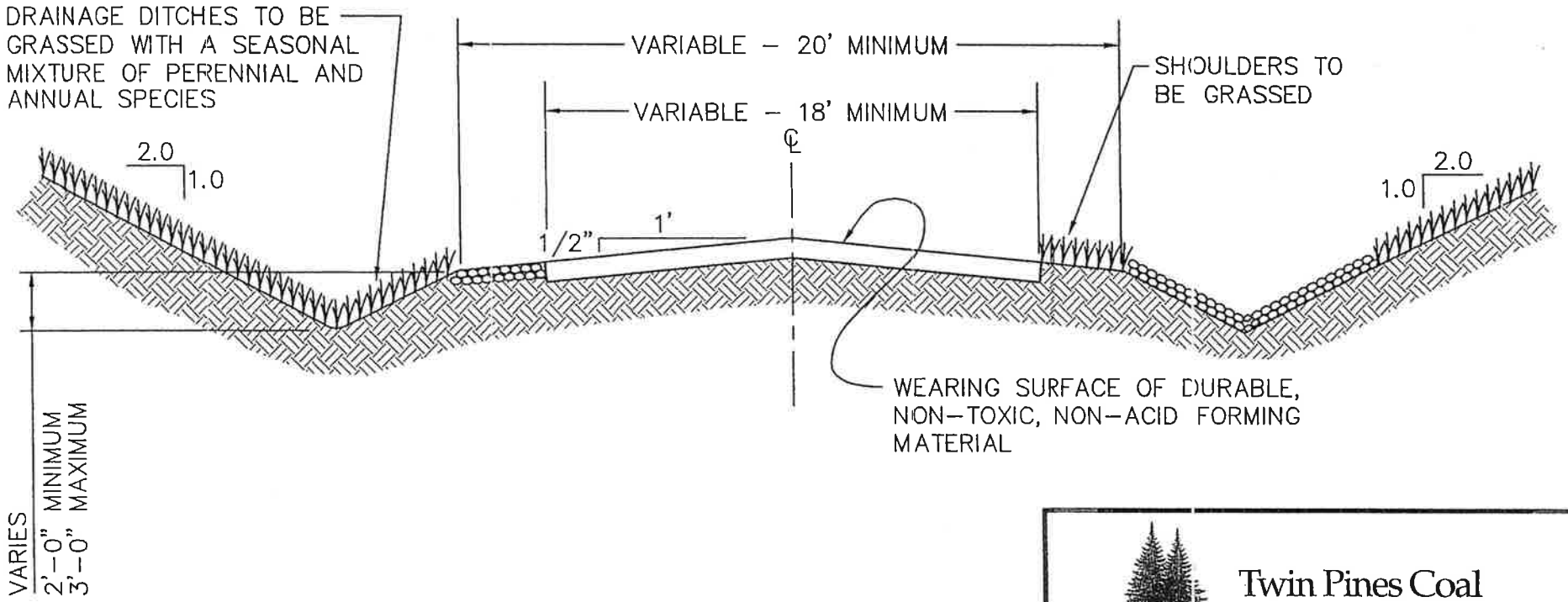
12. Roads not to be retained as part of the post mine land use shall be reclaimed in accordance with the approved reclamation plan for this permit as soon as practicable after they are no longer needed as part of the mining and reclamation operation, using the following procedures:

    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. For roadbed configurations see attached Typical Primary Road Drawings.

TYPICAL HAUL ROAD
CUT SECTION

NO SCALE



Twin Pines Coal

TYPICAL CUT SECTION
PRIMARY HAUL ROAD

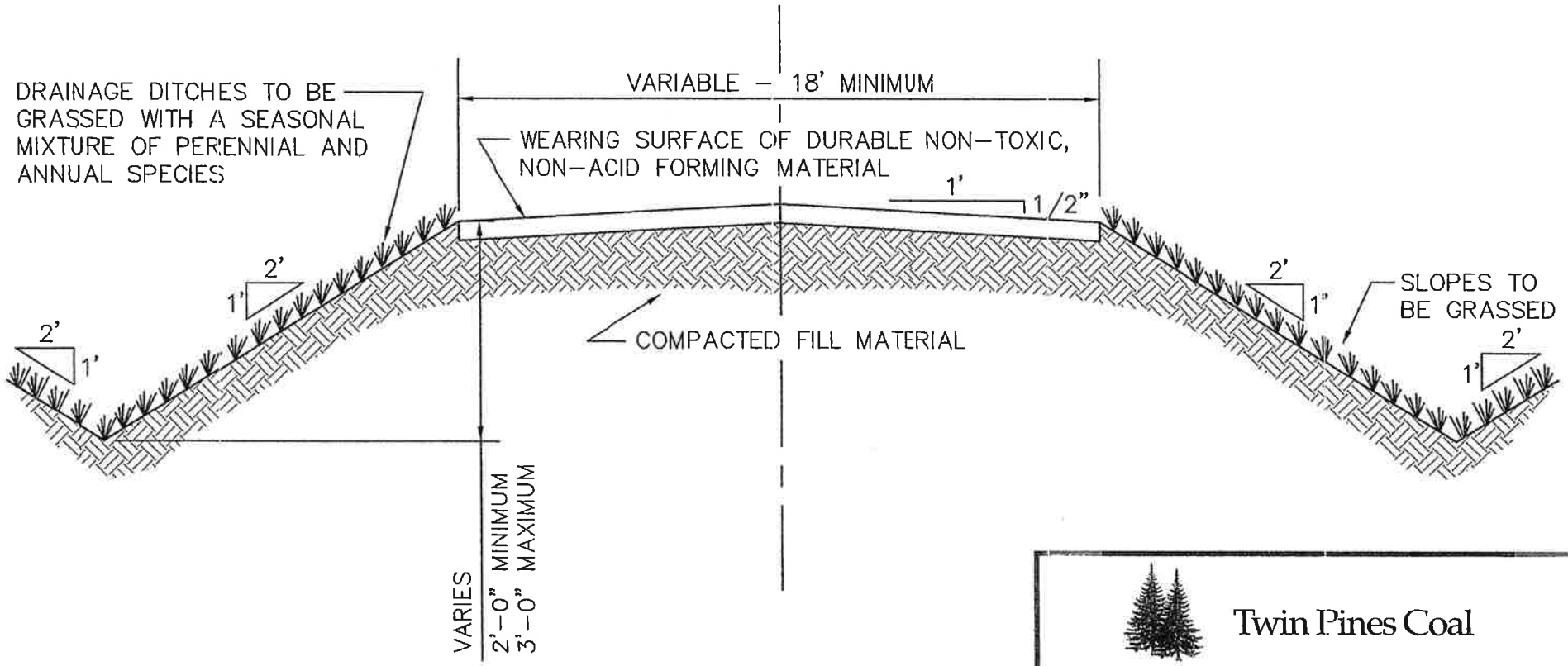
DRAWN BY: K.D.P. DWG. NAME: TYPHAULC	DATE: 2–3–97
APPROVED BY: S.R.I.	SCALE: NONE

ATTACHMENT III.–B.–5.

K:\S\TYPHAULC 02/03/97 15:56

TYPICAL HAUL ROAD
FILL SECTION

NO SCALE



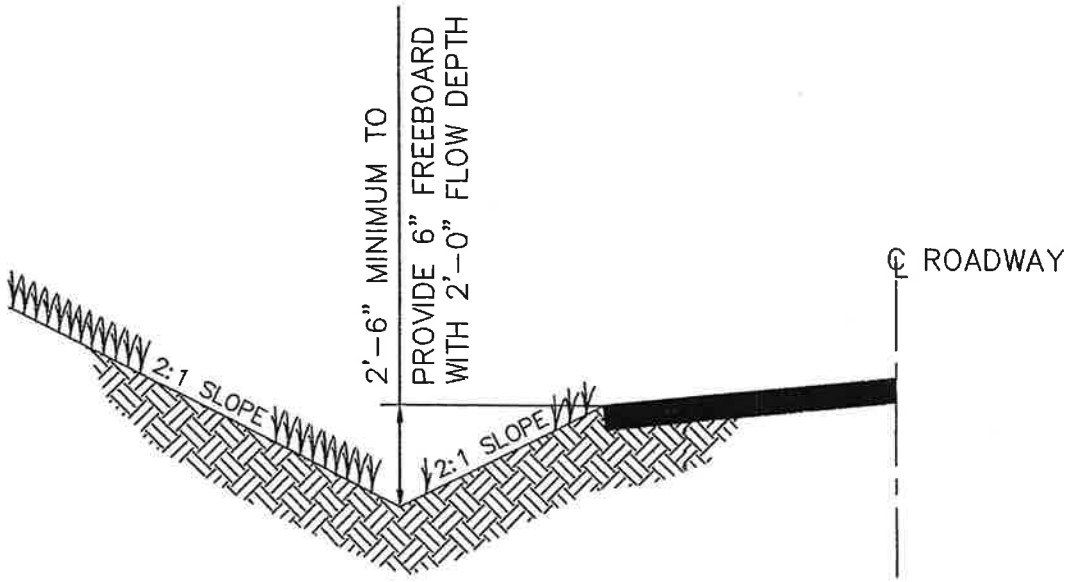
Twin Pines Coal

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%

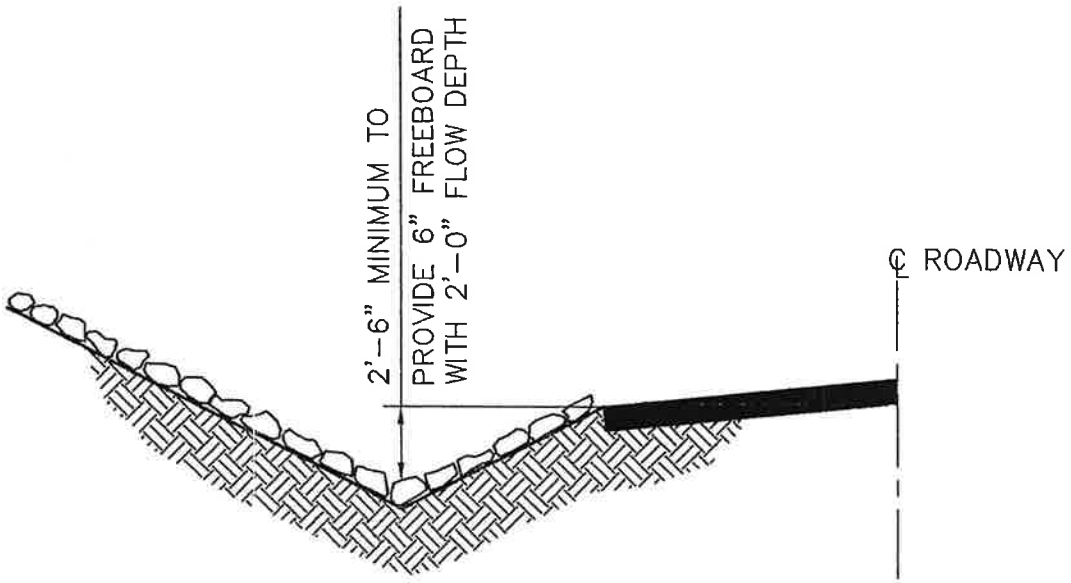
DITCH CHANNEL TO BE VEGETATED WITH A MIXTURE OF BERMUDA GRASS, FESCUE, AND LESPEDEZA TO CONFORM TO CLASS "D" RETARDANT CLASS.

Twin Pines Coal

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:\SVS\PRIMROAD 02/04/97 08:36



DITCH GRADIENT 5% TO 10%

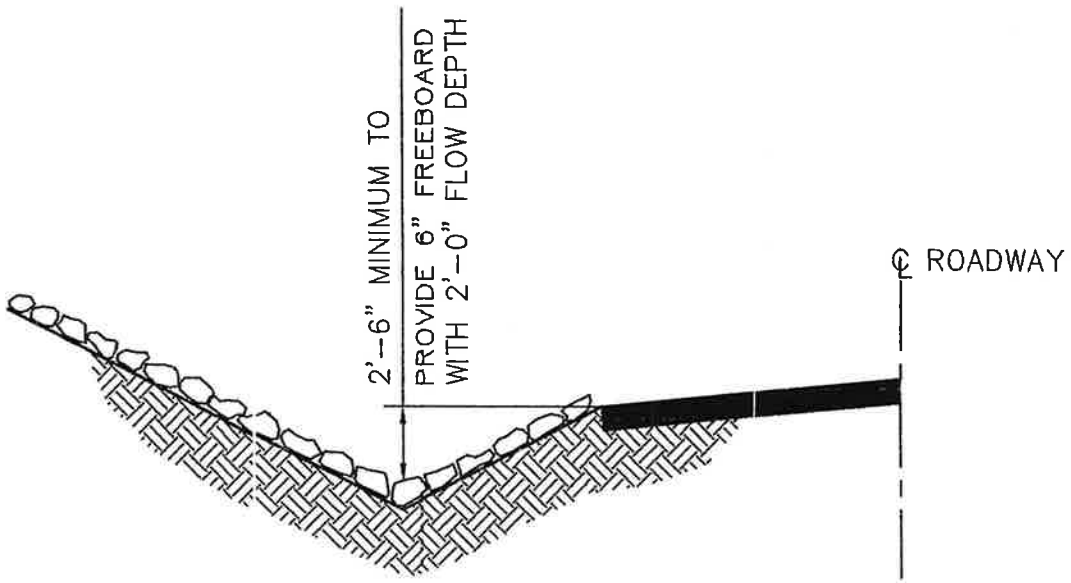
DITCH CHANNEL TO BE LINED WITH NON-ERODIBLE NON-TOXIC, NON-ACID FORMING SANDSTONE OR LIMESTONE RIP-RAP. THE RIP-RAP WILL BE "CLASS 1" RIP-RAP AND HAVE A MINIMUM THICKNESS OF 12".

Twin Pines Coal

TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: K.D.P. DWG. NAME: PRIMRD1	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE

K:\SVPRIMRD1 02/04/97 08:31



DITCH GRADIENT 11% TO 17%

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

Twin Pines Coal

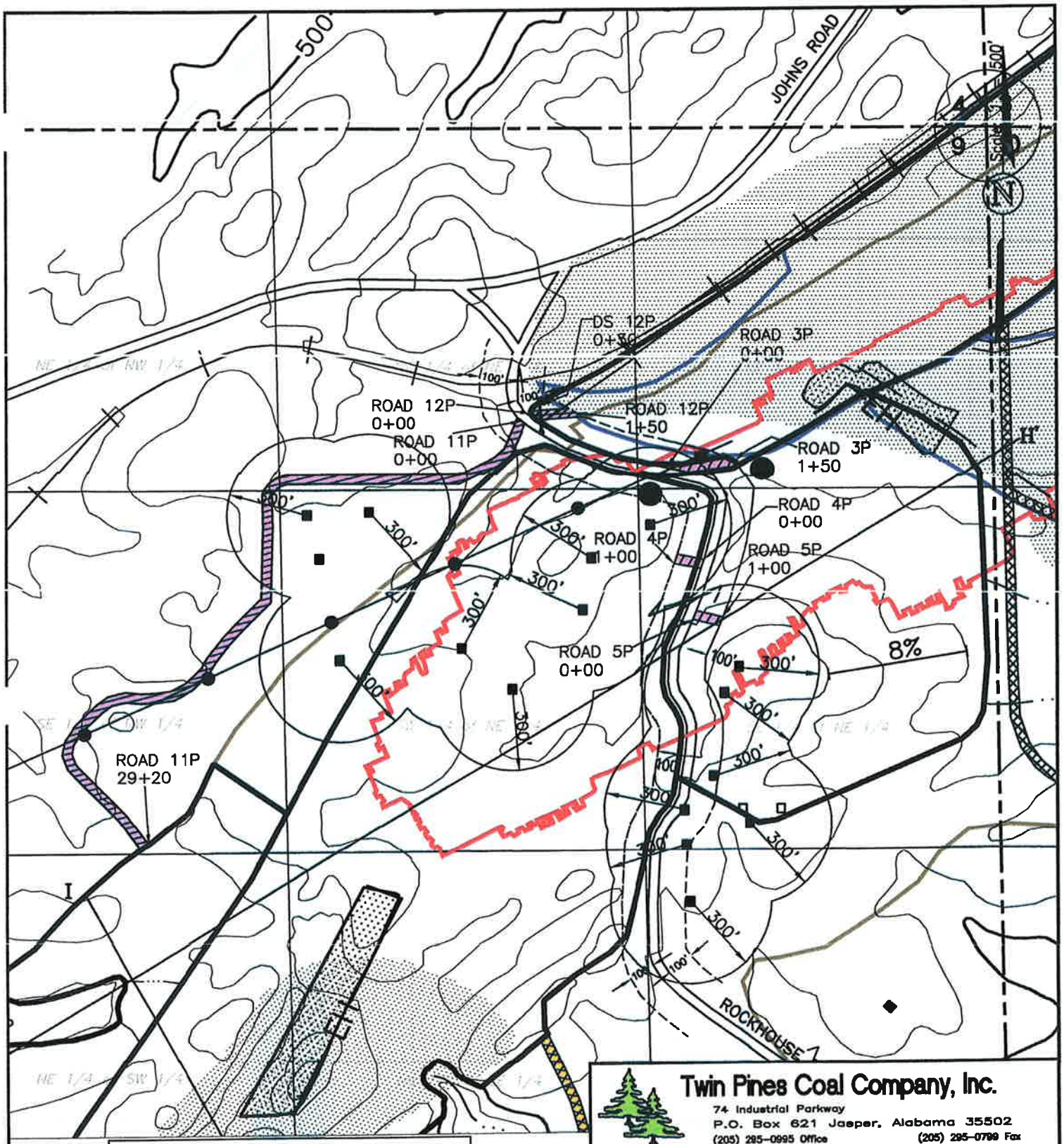
TYPICAL PRIMARY ROADWAY DITCH CROSS SECTION

DRAWN BY: K.D.P. DWG. NAME: PRIMRD2	DATE: 2-4-97
APPROVED BY: R.E.P.	SCALE: NONE

K:\SVPRIMRD2 02/04/97 08:33

NOTES

1) Due to there being no significant cuts, fills, crossings, no stability analysis for the proposed roads are required.



LEGEND

- Permit Boundary
- B — Sediment Basin
- DS 12P 0+30 — Drainage Structure
- Primary Haulroad
- Ancillary Road

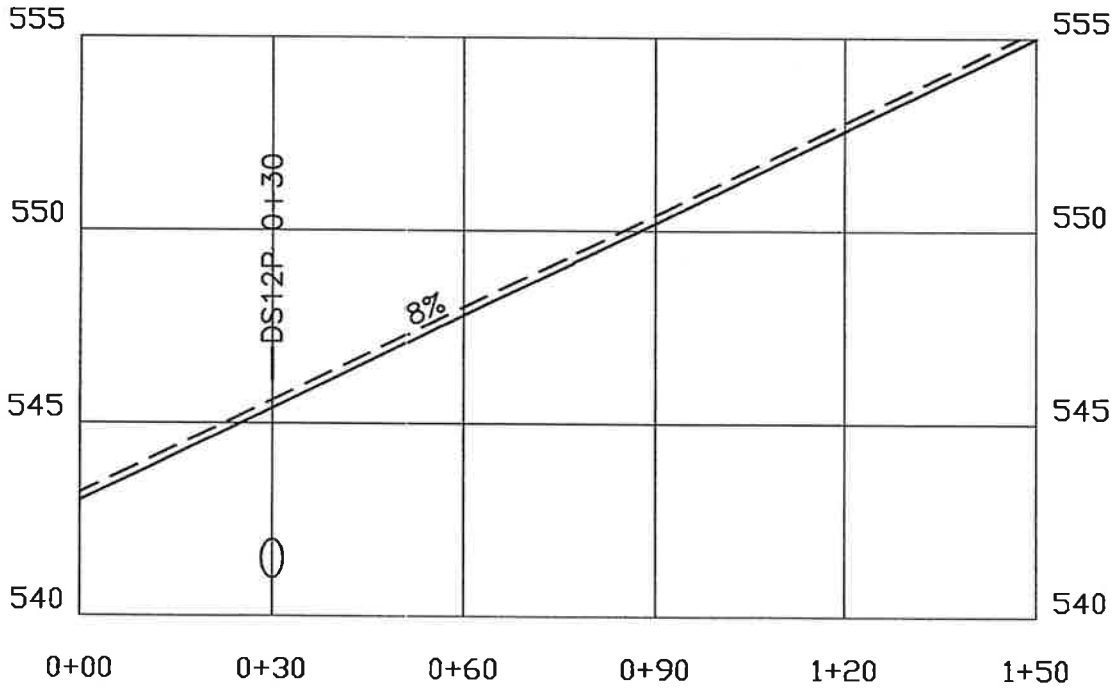
Twin Pines Coal Company, Inc.
74 Industrial Parkway
P.O. Box 621 Jasper, Alabama 35502
(205) 295-0995 Office (205) 295-0799 Fax

Attachment III-B-5 Haulroad Location Map
Twin Pines Coal Company, Inc.
Shannon Mine, P-3859
Revision R-15

DRAWN BY: P.T.O. DWG. NAME: TPSMHR15	DATE: 7-22-10
APPROVED BY: S.R.I.	SCALE: 1"=500'

dwg. 07/29/10 07:15

N:\PTO\PTO\SR\SHANNON\



Primary Road No. 12P

1"=30' HORZ.
1"=5' VERT.

——— EXISTING GRADE
- - - - - - PROPOSED GRADE

NOTE:
1: FINISHED GRADES SHOWN HEREON MAY MAY VARY FROM BETWEEN 0% AND 17%.
2: SEE INDIVIDUAL CROSS SECTIONS SHEETS FOR SPECIFIC DRAINAGE STRUCTURE INFORMATION.

Twin Pines Coal Company, Inc.
74 Industrial Parkway
P.O. Box 621 Jasper, Alabama 35502
(205) 295-0995 Office (205) 295-0799 Fax

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Primary Road No. 12P Profile

DRAWN BY: P.T.O. DWG. NAME: TPSMPR12PR	DATE: 7-22-10
APPROVED BY: S.R.I.	SCALE: AS NOTED

Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Drainage Structure DS12P 0+30

4.3 Inches, 10 Year-6 Hour,

SCS 6 Hour

SRI

General Information

Storm Information:

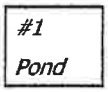
Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.1510
1.00	0.3440
1.50	0.5810
2.00	0.9890
2.50	2.5800
3.00	3.0100
3.50	3.3540
4.00	3.5910
4.50	3.8060
5.00	3.9780
5.50	4.1500
6.00	4.3000

Peak 30-minute Intensity: 3.182 in/hr

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Drainage Structure DS12P 0+30



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	In	0.500	0.500	1.14	0.10
	Out			1.14	0.10

Structure Detail:

Structure #1 (Pond)

Drainage Structure DS12P 0+30

Pond Inputs:

Initial Pool Elev:	541.01 ft
Initial Pool:	0.00 ac-ft

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
12.00	100.00	2.00	0.0240	541.01	0.90	0.00

Pond Results:

Peak Elevation:	541.42 ft
Dewater Time:	0.14 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

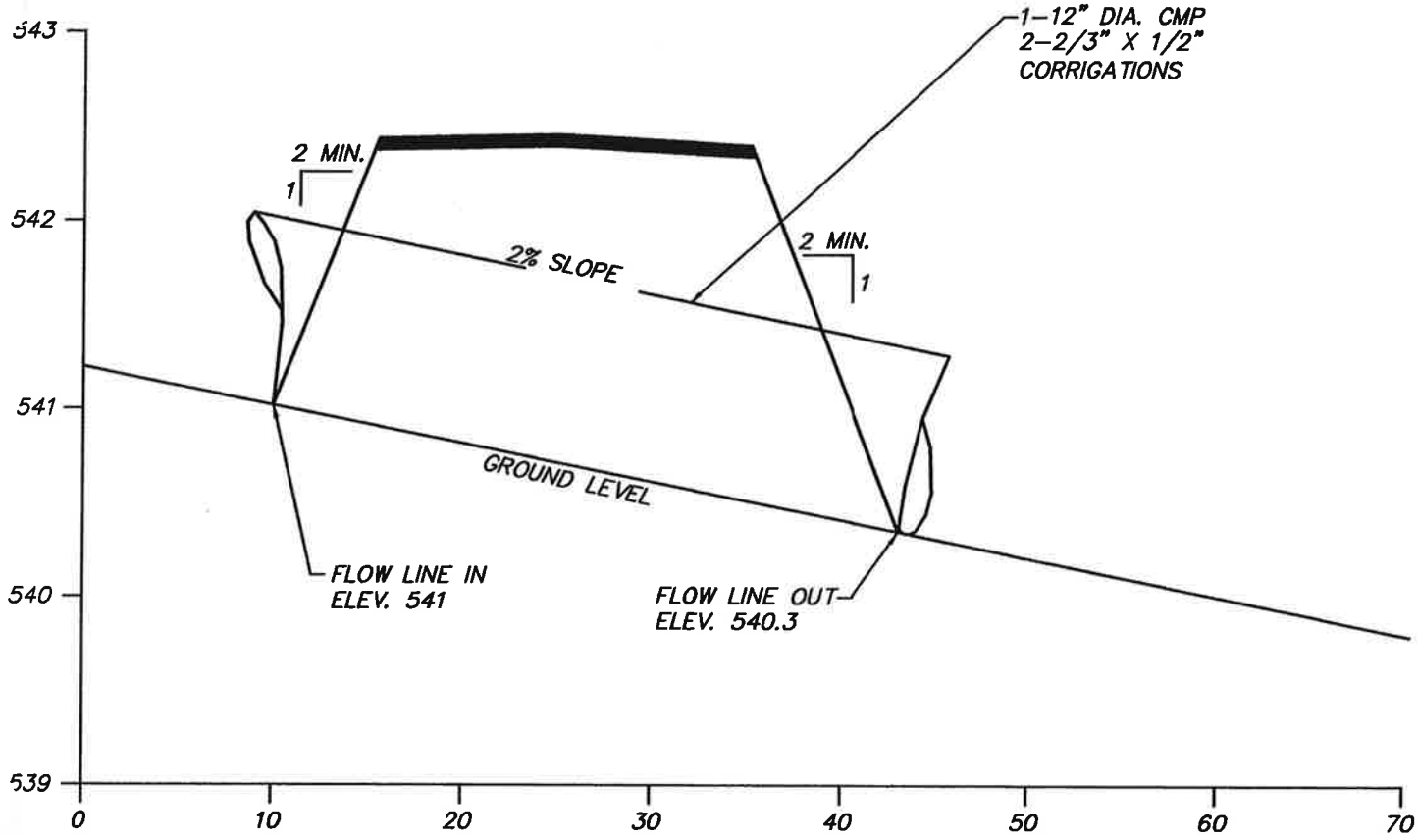
Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
541.00	0.000	0.000	0.000		
541.01	0.000	0.000	0.000		Spillway #1
541.42	0.000	0.000	1.143	3.45	Peak Stage
541.50	0.000	0.000	1.370		
542.00	0.000	0.000	1.773		
542.50	0.000	0.000	2.791		
543.00	0.000	0.000	3.147		
543.50	0.000	0.000	3.383		
544.00	0.001	0.001	3.616		
544.50	0.001	0.001	3.821		
545.00	0.001	0.001	4.027		

Detailed Discharge Table

Elevation (ft)	Straight Pipe (cfs)	Combined Total Discharge (cfs)
541.00	0.000	0.000
541.01	0.000	0.000
541.50	(1)>1.370	1.370
542.00	(1)>1.773	1.773
542.50	(3)>2.791	2.791
543.00	(6)>3.147	3.147
543.50	(6)>3.383	3.383
544.00	(6)>3.616	3.616
544.50	(6)>3.821	3.821
545.00	(6)>4.027	4.027

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	0.500	0.055	0.000	0.000	81.000	F	1.14	0.098
	Σ	**0.500**						**1.14**	**0.098**



HYDRAULICS INFORMATION

DRAINAGE AREA = 0.5 ACRE
10 YR.–6YR., Q = 1.1
MAXIMUM WATER ELEV. = 541.4
MINIMUM FILL ELEV. = 542.4
MAXIMUM ALLOWABLE COVER 12" C.M.P. = 248'
MINIMUM ALLOWABLE COVER 12" C.M.P. = 1'
MINIMUM FREEBOARD = 1'

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Twin Pines Coal Company, Inc.
Shannon Mine
P-3859
Haulroad Cross-Section
DS12P 0+30

DRAWN BY: P.T.O. DWG. NAME: TPSMDS12P0+30	DATE: 7–29–10
APPROVED BY: S.R.I.	SCALE: AS NOTED