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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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Governor

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355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

November 3, 1992

Mr. Robert Hagen, Director
Office of Surface Mining
Reclamation and Enforcement
505 Marquette N.W., Suite 1200
Albuquerque, New Mexico 87102

Dear Mr. Hagen:

Re: Abatement Plan, PacifiCorp, Des-Bee-Dove Mine, ACT/015/017-92C, Folder #2,
Emery County, Utah

Enclosed please find the updated plan for the lower belted road drainage.

Sincerely,

A handwritten signature in cursive script, reading "Pamela Grubaugh-Littig".

Pamela Grubaugh-Littig
Permit Supervisor

pgl
Enclosure

cc: Bill Malencik, PFO

DES BEE DOVE LOWER BELTED ROAD DRAINAGE

To help reduce the recent erosion on the Junction Road fillslope between STA 156+00 and 161+00 the following plan has been designed.

To divert the road runoff from the fillslope area, used mine belting will be installed along the existing guard rail. The installation would be as depicted on Figure 2.

To handle the diverted runoff and direct the flow into a natural channel, a designed rip-rap channel and culvert would be constructed and installed. These designs and cross-sections are shown on Figures 3 and 4. The culvert will have a metal collar at the inlet according to permit packet 5-1 drawing 19 of 38. Outlet velocity control will be accomplished by construction of a 4' x 10' rock gabion energy dissipator of 18" angular rock. The angular rock will be contained by wire mesh.

Flow calculations, designs and drawings are as follows:

DES BEE DOVE LOWER BELTED ROAD DRAINAGE DESIGN

1. Area = 1.35 Acres (Figure 1)
2. Time of Concentration
 - a. Hydraulic Length - 1000 ft.
 - b. Average Slope - 7%
 - c. Velocity - 5.3 fps (Exhibit A)
 - d. Time of Concentration - .05 hr.
3. Curve Number
 - 80% at 98
 - 20% at 87
 - Weighted Average - 96 (Exhibit B)

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APPROVED Mining & Reclamation Plan
Approved, Division of Oil, Gas & Mining

by ACT/015/017-92c JM date 11/3/92

4. Design Flow

4.07 cfs (Table 1)

10 yr./6 hr. Storm Event

5. Guard Rail Belting Installation

Figure 2

Length - Approx. 600 ft.

To Divert Road Runoff Away From Fillslope.

6. Channel Design

Figure 3

Rip-rap Sizing Calculation

Rip-rap Gradation

% smaller than given size by weight

70-100	14"
50-70	12"
35-50	9"
2-10	3"

Length - Approx. 270 ft.

7. Culvert Design

Figure 4

Length - Approx. 80 ft.

8. Erosion Protection

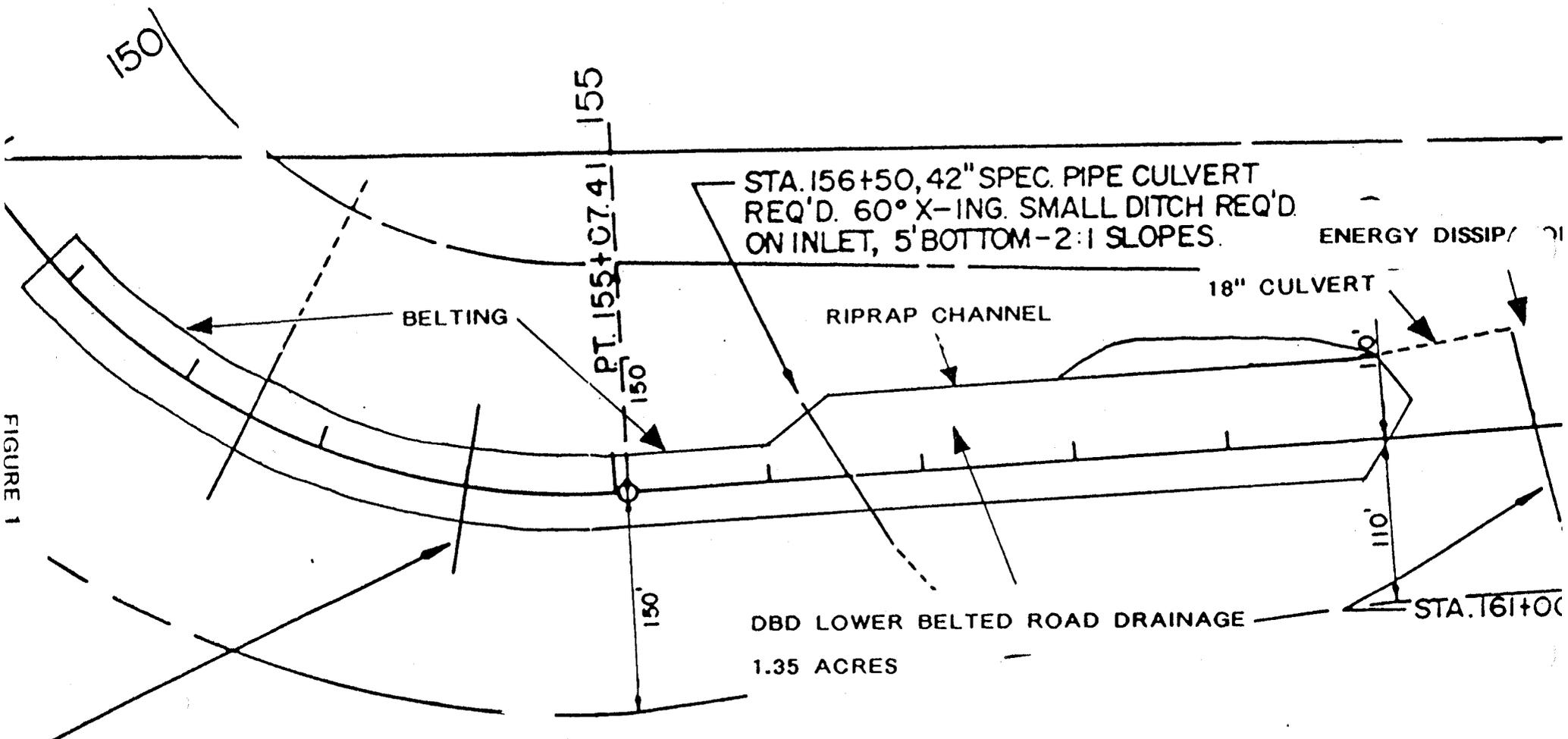
Energy Dissipator - Rock Gabion, 4' x 10' of 18" angular rock. (See Fig. 4)

Angular rock will be contained by wire mesh.

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ATL 15102 - 020. TM date 11/3/92



150

155
PT. 155+07.41
150

STA. 156+50, 42" SPEC. PIPE CULVERT
REQ'D. 60° X-ING. SMALL DITCH REQ'D.
ON INLET, 5' BOTTOM-2:1 SLOPES.

ENERGY DISSIP/

18" CULVERT

BELTING

RIPRAP CHANNEL

DBD LOWER BELTED ROAD DRAINAGE

1.35 ACRES

110'

STA. 161+00

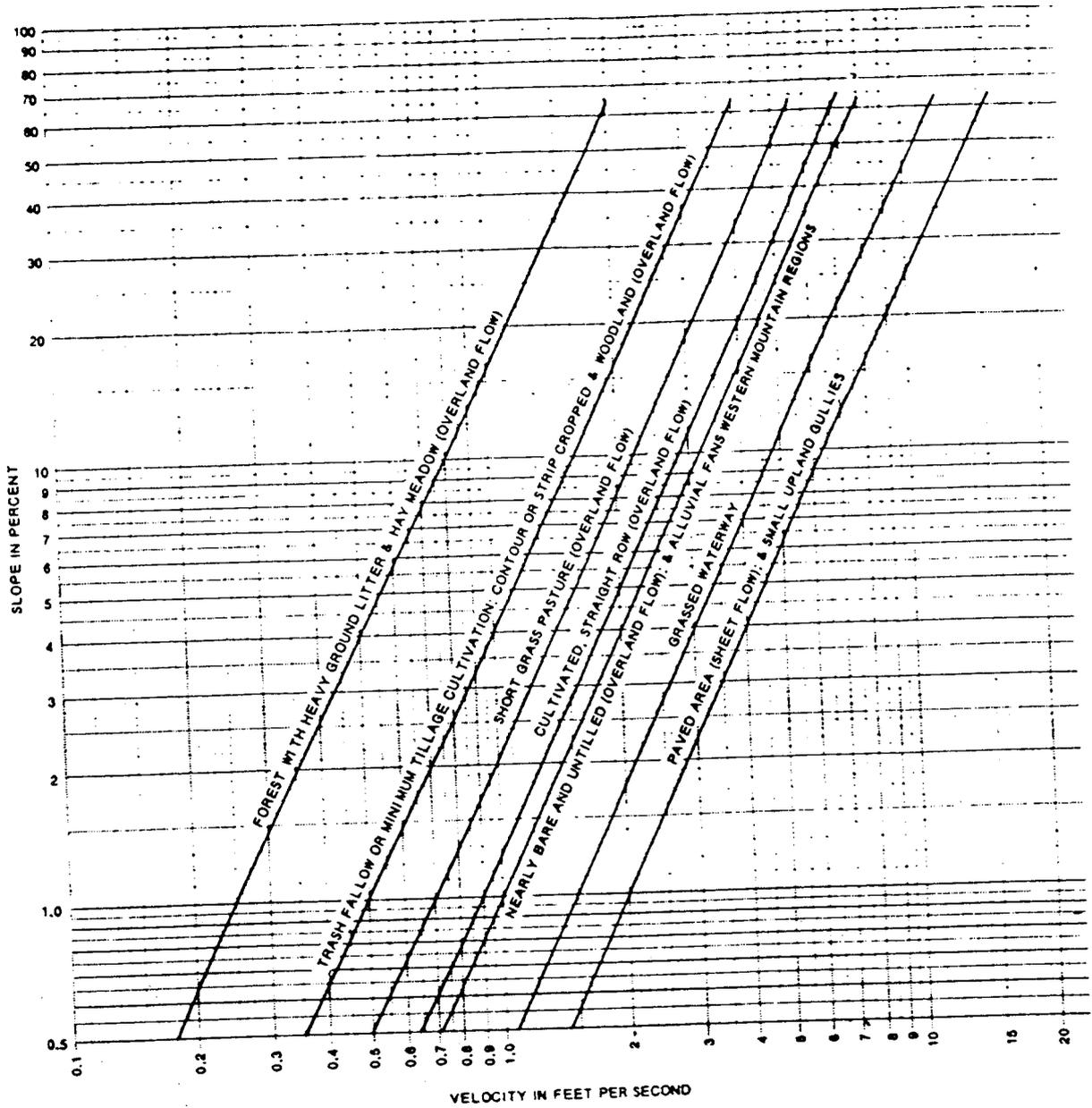
STA. 154+00, 42" SPEC. PIPE CULVERT
REQ'D 90° X-ING.

SCALE 1"=100'

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FIGURE 1



FROM "NEH" SECTION 4

Figure 15.2.—Velocities for upland method of estimating T_c

AMENDMENT TO

IMPROVED Mining & Reclamation Plan
 approved, Division of Oil, Gas & Mining

by ACT 1015107-92C TM date 11/3/92

Table 9.1.--Runoff curve numbers for hydrologic soil-cover complexes
(Antecedent moisture condition II, and $I_a = 0.2 S$)

Land use	Cover		Hydrologic soil group			
	Treatment or practice	Hydrologic condition	A	B	C	D
Fallow	Straight row	----	77	36	91	94
Row crops	"	Poor	72	81	88	91
	"	Good	67	78	85	89
	Contoured	Poor	70	79	84	88
	"	Good	65	75	82	86
	"and terraced	Poor	66	74	80	82
	" " "	Good	62	71	78	81
Small grain	Straight row	Poor	65	76	84	88
		Good	63	75	83	87
	Contoured	Poor	63	74	82	85
		Good	61	73	81	84
	"and terraced	Poor	61	72	79	82
		Good	59	70	78	81
Close-seeded legumes <u>1/</u> or rotation meadow	Straight row	Poor	66	77	85	89
	" "	Good	58	72	81	85
	Contoured	Poor	64	75	83	85
	"	Good	55	69	78	83
	"and terraced	Poor	63	73	80	83
	"and terraced	Good	51	67	76	80
Pasture or range		Poor	68	79	86	89
		Fair	49	69	79	84
		Good	39	61	74	80
	Contoured	Poor	47	67	81	88
	"	Fair	25	59	75	83
	"	Good	6	35	70	79
Meadow		Good	30	58	71	78
Woods		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	25	55	70	77
Farmsteads		----	59	74	82	86
Roads (dirt) <u>2/</u> (hard surface) <u>2/</u>		----	72	82	87	89
		---	74	84	90	92

1/ Close-drilled or broadcast.
2/ Including right-of-way.

FROM "NEH" SECTION 4

AMENDMENT 10
 APPROVED Mining & Reclamation Plan
 Approved, Division of Oil, Gas & Mining
 ACT 1015/017-02C TMA date 11/3/97

INPUT SUMMARY
FOR W.S.: DBD LOWER BELTED ROAD DRAINAGE

STORM:	WATERSHED:
DISTRIBUTION =SCS TYPE 2	LAND SLOPE = 0.0000 PCT
PRECIP.DEPH = 1.20 IN	CURVE NUMBER = 96.00
DURATION = 6.00 HR	CHANNEL LENGTH = 0.00 FT
NUMBER OF LINES = 915	TIME OF CONC. = 0.0500 HR
	AREA = 1.35 AC
	D = 0.0067 HR

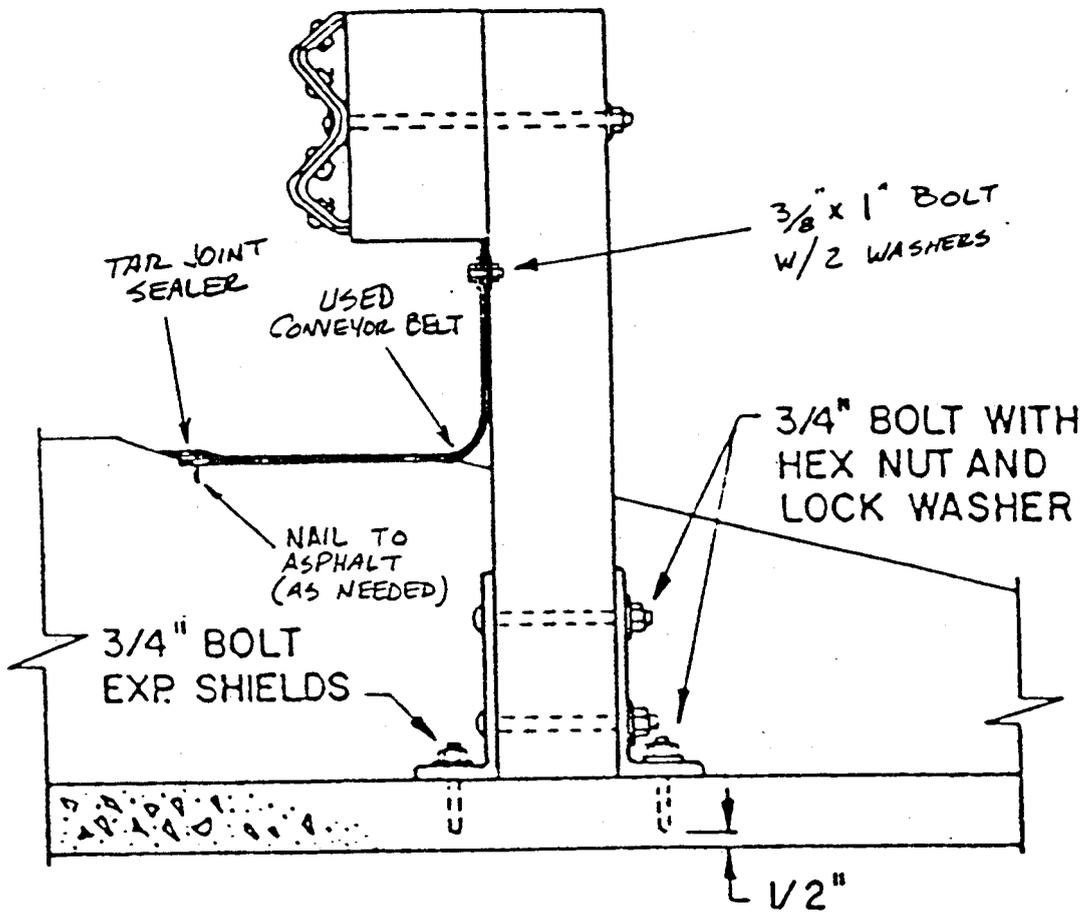
OUTPUT SUMMARY

RUNOFF DEPTH = 0.8121 IN
INITIAL ABSTRACTION = 0.0833 IN
PEAK FLOW = 4.07 CFS (2.9903 IFH)
AT T = 3.13 HRS

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by ACT/05/07-92C TM date 11/3/92



TYPICAL GUARD RAIL

BELTING INSTALLATION

AMENDMENT TO

APPROVED Mining & Reclamation Plan
Approved, Division of Oil, Gas & Mining

BY ACT/OS-D7-92C, TW date 11/3/92

RIPRAP SIZING

RIPRAP SIZING FOR TRAPEZOIDAL DITCHES

ENTER LISTED PARAMETERS

1. FLOW RATE (CFS) 4.07
2. CHANNEL SLOPE .06
3. BOTTOM WIDTH (FT) 1.5
4. SIDE SLOPE .50
5. PHI ANGLE 42
6. SPECIFIC GRAVITY OF RIPRAP 2.65

DESIRED SAFETY FACTOR FOR CHANNEL BOTTOM 1
DESIRED SAFETY FACTOR FOR CHANNEL BANKS 1

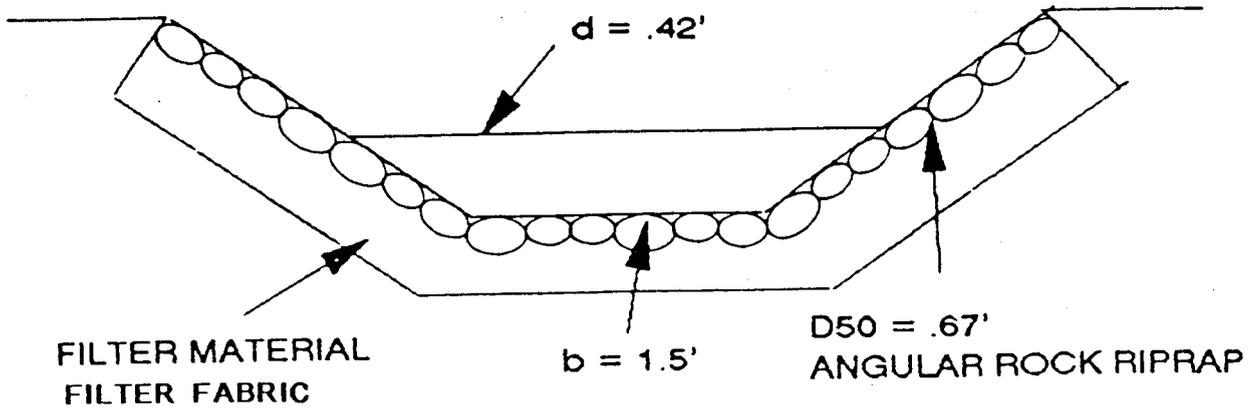
VELOCITY	DEPTH	DSO	S.F. STM	S.F. BANK
4.433	.427	.6716	1.806	1

AMENDMENT TO

APPROVED Mining & Reclamation Plan
Approved, Division of Oil, Gas & Mining

by ACT/015/017-920 TMsate 11/3/92

DES-BEE-DOVE MINE
CHANNEL AT
STA 156 TO 161



Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: DBD CHANNEL AT 156

Comment: CHANNEL AT STA 156 TO 161

Solve For Depth

Given Input Data:

Bottom Width.....	1.50 ft
Left Side Slope..	1.50:1 (H:V)
Right Side Slope.	1.50:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0600 ft/ft
Discharge.....	4.07 cfs

Computed Results:

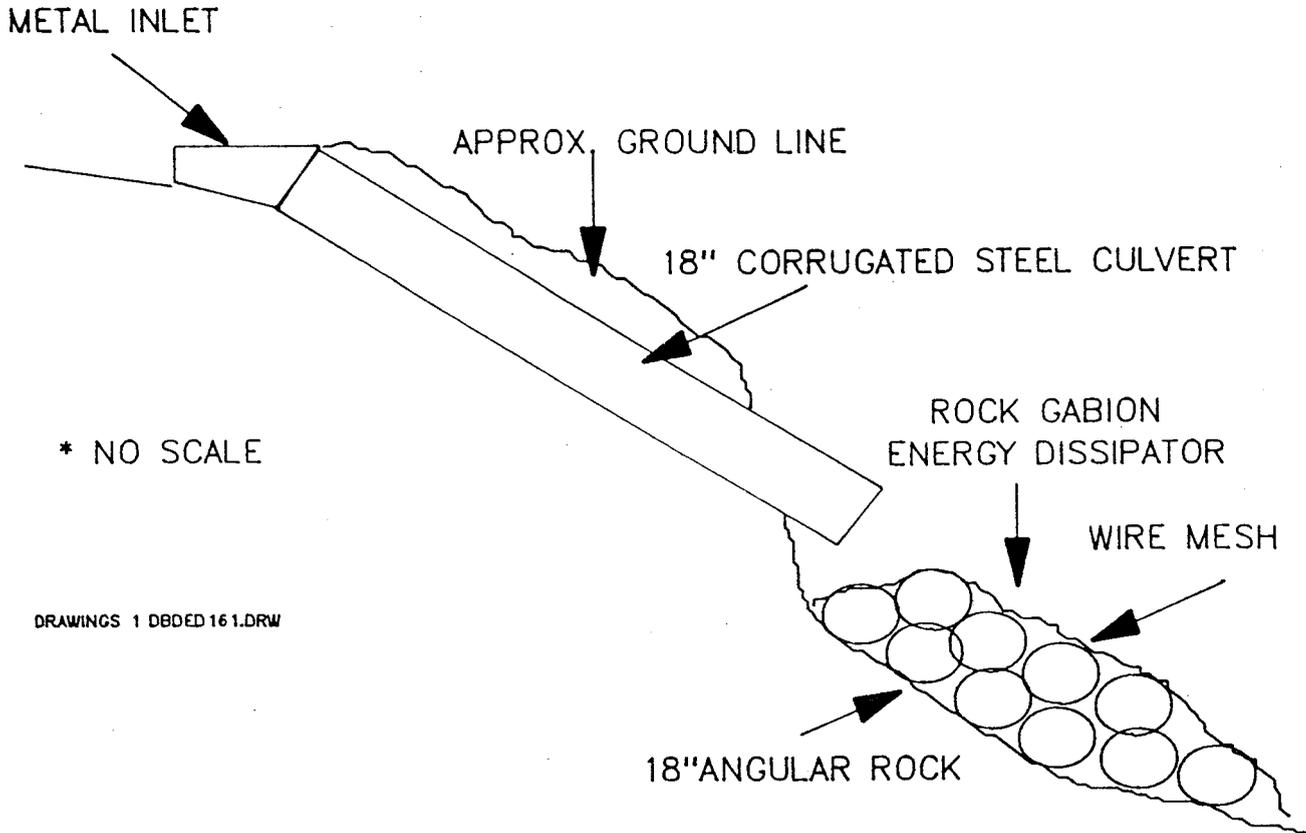
Depth.....	0.42 ft
Velocity.....	4.60 fps
Flow Area.....	0.88 sf
Flow Top Width...	2.75 ft
Wetted Perimeter.	3.00 ft
Critical Depth...	0.51 ft
Critical Slope...	0.0280 ft/ft
Froude Number....	1.43 (flow is Supercritical)

AMENDMENT TO

APPROVED Mining & Reclamation Plan
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by ACT/15/10/17-9/10/TM date 11/3/02

DBD CULVERT ROAD DRAINAGE AT STA 161



* NO SCALE

DRAWINGS 1 DBDED161.DRW

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: DBD CULVERT AT 161

Comment: ROAD DRAINAGE CULVERT AT STA 161 OUTLET.

Solve For Actual Depth

Given Input Data:

Diameter.....	1.50 ft
Slope.....	0.4000 ft/ft
Manning's n.....	0.014
Discharge.....	4.07 cfs

Computed Results:

Depth.....	0.26 ft
Velocity.....	19.75 fps
Flow Area.....	0.21 sf
Critical Depth....	0.77 ft
Critical Slope....	0.0063 ft/ft
Percent Full.....	17.40 %
Full Capacity.....	61.69 cfs
QMAX @.94D.....	66.36 cfs
Froude Number.....	8.18 (flow is Supercritical)

Open Channel Flow Module, Version 3.21 (c) 1990
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

FIGURE 4

AMENDMENT TO

APPROVED Mining & Reclamation Plan
Approved, Division of Oil, Gas & Mining

by ACT/ais/cj7 g/c TMS date 11/3/92

*Route to Tom for
review
then file ACT/015/017 #2
920*

One Utah Center
201 South Main, Suite 2100
Salt Lake City, Utah 84140-0021
(801) 220-2000



October 29, 1992

RECEIVED

NOV 02 1992

DIVISION OF
OIL GAS & MINING

Ms. Pamela Grubaugh-Littig
Permit Supervisor
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

RE: ABATEMENT DEFICIENCIES FOR NOV 91-20-2-1, PART 1, PACIFICORP,
DES-BEE-DOVE MINE, ACT/015/017

Dear Pamela:

In response to the October 1, 1991 letter from Tom Munson, we re-submit Part 1 of the NOV abatement with the deficiencies addressed. For ease of understanding, the deficiency will be presented in bold, followed by the changes or additional explanation required to address the deficiency.

- 1. **The operator failed to provide a gradation for his riprap. Provide the D100 and D20 sizes for the channel design.**

Riprap gradation has been added to the drainage design.

- 2. **The installation of the culvert does not include any design specifics for the installation of the culvert (i.e., buried or installed on the surface, headwall dimensions).**

This information is shown in Fig. 4. The inlet to the culvert is a standard flared metal end-section. The culvert will be buried approximately 12" as shown.

- 3. **The rock impact basin is described as a 4' by 10' basin of 1.5' angular rock. The operator must provide calculations regarding the depth of the basin.**

The operator commits to a rock gabion energy dissipator with the same dimensions. The angular rock in the dissipator will be contained by wire mesh.

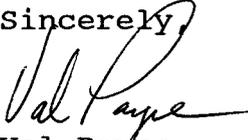
- 4. **The operator must submit a map of appropriate scale (1"=100") which shows the location of the watershed, channel, culvert and rock lined basin.**

The scale and energy dissipator has been added to Fig. 1. The watershed, channel and culvert were previously shown on Fig. 1.

The Division's timely response to this deficiency submittal is requested to allow installation before winter weather arrives.

If there are any questions, please call Guy Davis or me at 653-2312.

Sincerely,

A handwritten signature in cursive script that reads "Val Payne". The signature is written in dark ink and is positioned above the typed name.

Val Payne
Sr. Environmental Engineer

cc. J. Blake Webster

A:N912021.DEF