

HATHA-EBASSO
Sustained Joint Venture
Document Number

107

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DOCUMENT CONTROL

(J)

UNIT PRICES - BACKUP CALCULATIONS

DEVIL CANYON - UNIT COSTS

LABOR, EQUIPMENT, MATERIALS:

Saddle Dam

Joint Grouting

Misc. Costs

(J) Labor, Equipment, Materials

Saddle Dam

J4



Calculations

SUBJECT: Item #

Devil Canyon

Saddle Dam

SUSITNA

JOB NUMBER D5700.09

FILE NUMBER

SHEET 1. OF

BY RBC JGA Jan DATE 27/82

APP DATE

EXCAVATION

1. Overburden removal: Use same unit cost as for Main Dam at Watana, (overburden removal below 1470 ft). Haul length similar.
2. Rock excavation: Use same rock excavation unit cost as Watana Spillway, (Upper chute Area IF)

Description	Labour	Material	Equipment	TOTAL
Overburden				
Excavation and Haul	0.987	—	2.645	3.632
(Page 11 → Summary Sheets/Watana)				
Rock (Area IF)				
Drill, blast and haul 1.5 miles	4.468	4.264	5.326	14.018
Surface Preparation				
Horizontal	0.38	0.04	0.25	0.67
Checked by Ed Beal				

NOTES:

J5



Calculations

SUBJECT: Item # 331.412
 Devil Canyon
 Saddle Dam

SUSITNA

JOB NUMBER D5700.09

FILE NUMBER _____

SHEET 2. OF _____BY RDC Jan DATE 27/82

APP _____ DATE _____

FILL

1. Rip Rap: same as Watana, upstream
2. Rock Fill: • rock fill, shell upstream, shell downstream all from same source at Watana dam, essentially waste rock.

Description	Labour	Material	Equipment	TOTAL
Rip Rap	2.845	—	5.100	7.945
Rock fill [Haul place + compact]				
• Rock fill (Estimated)				
• Rock shell upstream	0.934	—	2.180	3.114
• Rock shell downstream				
Drill and Blast as for Main (Chute) Spillway	11636	16368	7620	35624
Watana ~ Excavation of Waste Rock / Area (Vol = 3884)	1612	—	500	2112
	13248	16368	8120	37736
	31435	4.244	2.105	9.784
TOTAL	4.369	4.244	4.285	12.898
Drill and blast costs charged against the spillway. [As per F.Toth 2/2/82]				

NOTES:

J6



Calculations

SUBJECT: Item # 331.412
 Devil Canyon
 Saddle Dam

SUSITNA

JOB NUMBER D5700.09
 FILE NUMBER _____
 SHEET 3 OF _____
 BY RDC Jan DATE 27/82
 APP _____ DATE _____

Coarse and Fine Filter:

Description	Labour	Material	Equipment	TOTAL
1. Coarse Filter				
(a) Haul, place and compact (4 miles)	0.956	-	2.459	3.415
(b) Coarse Filter U/S Fill material	1.819	0.019	4.516	6.354
+ 10% proc. aggr	0.52	0.05	1.00	1.57
(c) Road Maintenance	0.079	0.0002	0.137	0.216
	3.374	0.069	8.112	11.555
2. Fine Filter				
(a) Haul, Place and compact (4 miles)	0.956	-	2.459	3.415
(b) Fine filter D/S Fill material	1.724	0.010	4.160	5.894
22% proc. aggr.	1.153	0.106	2.204	3.463
(c) Road Maintenance	0.079	0.0002	0.137	0.216
	3.912	0.116	8.960	12.988

NOTES:

ACRES

SUSITNA

331.412

FILE NUMBER _____

SHEET 4. OF

BY ^{RDC}RGH JAN DATE 27/82

APP DATE

Volume = 313,500 cy.

[illegible]

NOTES :

AGERS

SUSITNA

SUBJECT: Item # 332.611

Devil Canyon

Power Intakes Excavation / Rock

JOB NUMBER P5700 . 0A

FILE NUMBER

SHEET 5 OF

BY RDC ~~_____~~ 182

APP: _____ DATE: _____

Assumptions: Drill, blast, haul 1.5 miles and dump (no spread or compact).

REVISED

18 Feb 1982

See Sheet 5R.

[illegible]

NOTES:

ES

SUSITNA

JOB NUMBER D5700.DA

FILE NUMBER

SHEET 5R OF _____

BY RDC Feb DATE 18/82

APP _____ DATE _____

Drill and Blast costs as for Wataana Item# 332.521
"Control Structure ~ Structural Rock Excavation"

Reference Sheet 32 R

[illegible]

NOTES :

J10



Calculations

SUBJECT: DEVIL CANYON
SADDLE DAM.

JOB NUMBER P570000

FILE NUMBER

SHEET OF

BY DATE

APP DATE

EXCAVATION -

TAKE-OFF MADE 22/1/82

OVERBURDEN (below) = 1,145,000 - CYD. SAME AS WATANA ALLUVIUM EXCAV.

ROCK (below 1475) = 301,000 CY SAME AS WATANA KEYWAY

ROAD BASE = 3,500 CY

Surface Preparation = Area =

DAM FILL

Rip-rap = 174,500 CY WATANA

Rock fill = 126,351 -- From spillway + plowing,

Shell U/S = 534,000 CY

D/S = 344,900 --

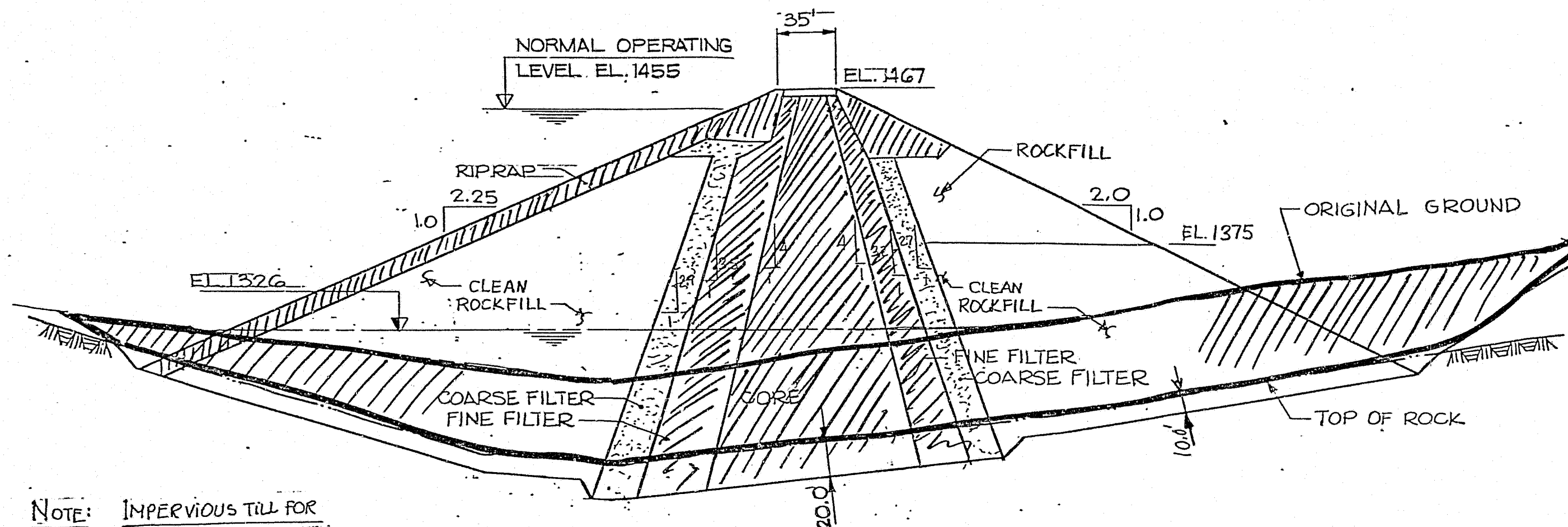
COARSE FILTER = 1,930,000 CY

FINE FILTER = 231,000 CY

} WATANA

CORE = 313,500 CY HAULED FROM WATANA BORROW PIT "D"

J11



NOTE: IMPERVIOUS TILL FOR
CORE WILL BE OBTAINED FROM
WATANA DAM BORROW AREA
"D". HAUL DISTANCE 37.5 MILE

DEVIL CANYON SADDLE DAM
MAXIMUM HEIGHT SECTION

SCALE: 0 60 120 FEET

RECEIVED JAN 15 1982

AGRS

J12



Calculations

SUBJECT: DEVIL CANYON
SADDLE DAM

JOB NUMBER P570009
FILE NUMBER _____
SHEET 1 OF _____
BY _____ DATE _____
APP RDC Feb DATE 2/82

Haul - Core Material

✓ RGA 2/1/82

Volume = 313,500 cy

HAUL CORE MAT'L FROM BORROW PIT "D" WATANA.

EQUIPMENT

34. 45T HAULER	113.00	3842.00
1 - SCT BACKHOE		260.00
4 - 45T STANDBY	65.00	260.00
1 - SERVICE TR.		30.00
1 - FUEL TR.		28.00
4 - 4x4 PICKUP	20.00	80.00
1 - 1ST. CRANE	35.00	35.00
1 - TOW TRUCK		35.00
4 - 1T. TRUCK	20.00	80.00
12 - LIGHT PLANT	4.50	54.00
2 - D7 W. RAKE	90.00	180.00
2 - D8 SS BLADE	162.00	324.00
4 - 166 GRADER	71.00	284.00
2 - FARM TRAILER ^{W. DIZ.}	45.80	91.60
4 - SELF PROP ^{COMP} 25T	58.00	232.00
2 - TOWED 1ST. WHEEL	45.00	90.00
1 - WATER TR.		25.00

5930.60 x 1254 = \$ 5930.60 ✓
7,436,972.-

HAUL DISTANCE 37.5 MILE

AU. GRADE 7%.

USING 45T HAULERS (300c)
SCT BACKHOE

LOAD = 3.0 MIN

TURN = 1.5 --

TRAVEL = 90.0 --

TRAVEL = 20.0 -- EIGHT BANK
3.5 MILE TO LEFT BANK

DUMP = 1.0

TURN = 1.0

RETURN = 85.0

$\frac{201.5 \text{ MIN}}{60} = 3.36 \text{ HRS}$

$50 \div 201.5 = 0.25 \text{ LOAD/UNIT/HR}$

$0.25 \times 30 = 7.5 \text{ CY/HR.} \checkmark$

$50 \div 3 = 17 \frac{1}{3} \times 30 = 500 \text{ CY/HR.} \checkmark$

$500 \div 7.5 = 67 \text{ UNITS} \checkmark$

USING 34 UNITS + 4 STANDBY

THE BACKHOE PROD. = 250 CY/HR.
OF 3.5 LOAD/HR.

$313,500 \div 250 = 1,254 \text{ HRS} \checkmark$

63 DAYS OR 2.5 MOS.

000107

J13



Calculations

SUBJECT: DEVIL CANYON
SADDLE DAM

JOB NUMBER PS70009
FILE NUMBER _____
SHEET 2. OF _____
BY _____ DATE _____
APP RDC Feb DATE 1/82

Haul - Core Material

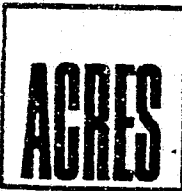
✓ RGA 2/1/82

- LABOUR -

8 FOREMAN	38.06	114.18
34 HAULER OP	35.58	1209.72
18 OPERATOR	36.96	665.28
1 GRADERMAN	31.76	31.76
2 FLAGMAN	30.54	61.08
2 - FIELD MECH	39.17	78.34
4 - TRUCK DR.	31.76	127.04
	2287.20	

X 1254. = 2,868,400.-

J14



Calculations

SUBJECT: Devil Canyon
Rock Haul & Place

JOB NUMBER P570009
FILE NUMBER
SHEET 3 OF
BY DATE
APP RDC 3/1/82 DATE 1/82

Rock Haul and Place

EQUIPMENT

1 - SET SHOVEL		130.00	
4 - 4ST HAULER	113.00	525.00	452.00
3 - D-9 DOZER	175.00	350.00	525.00
2 - VIB. COMPACTOR	64.00	128.00	
1 - PICKUP 4x4	20.00	20.00	
1 - WATER TRUCK	26.00	26.00	
6 - PIT LIGHT	4.50	27.00	

1308.00 x 10 = ✓

= 12060. -

LABOR

1 - FOREMAN		38.31	
1 - GRADEMAN		31.43	
1 - SHOVEL OP.		36.96	
3 - DOZ. OP.	36.96	110.88	
2 - VIB. OP.	36.96	73.92	
4 - 4ST HAUL. DEV.	35.58	142.32	
1 - TR. DEV.		33.47	
1 - LIGHT. OP.		31.85	
2 - FLAGMAN	30.54	61.08	

560.22 x 10 = ✓

= 5602.2 -

✓ RDC 2/1/82.

HAUL DISTANCE 1/2 MILE
(2650 ft)

PRODUCTION = 6000 CY/HOUR.

+10%	12% 1750	-6%
100		600
+600	6%	+2% 1750
		-10%

Cycle

USING: 4ST ROCK HAULERS,
SET HYDRA SHOVEL.

SPOT & TURN = 1.0

LOAD = 2.5

+10% = 0.8

+2% = 2.0

-6% = 0.5

TURN & DUMP = 1.2

+6% = 0.5

+2% = 1.5

-10% = 0.5

TOTAL 10.5 MIN ✓

SHOVEL PROD = 50 ÷ 2.5 = 20 ✓

50 x 30 = 600 CY/HOUR ✓

50 ÷ 10.5 = 4.76 LOAD/HOUR

143 CY/HOUR/UNIT 600 ÷ 4.76 =

4. UNIT ✓

	LAB.	MATL	EQ	TOTAL
			13,080	18,682
	5602.20		12,060	17,662
U/C	0.934		2.180	3.114
			2.010	2.944

NOTE THE DRIVING & PLACING COST IS IN THE SPIRIT WAY
EXC. 14

(J) LABOR, EQUIPMENT, MATERIALS:
JOINT GROUTING

J17



Calculations

 SUBJECT: DEVIL CANYON

 JOB NUMBER _____
 FILE NUMBER _____
 SHEET _____ OF _____
 BY R. Lang DATE 19 Feb 82
 APP _____ DATE _____

Allow. 25% additional cost for rework.
Per J. Plummer.

Reference Sheet 3 This Section

	Labor	Material	Equipment		Total
			Own.	Oper.	
L.S.	1,090,000	375,000	79,000	96,000	1,640,000

REVISED COST w/ 25%	1,362,000	469,000	99,000	120,000	2,050,000
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ESTIMATE REVISED FEB-19-82 print out #73

R. Lang.

19 Feb. 1922

John.

The backup for Joint Granting does not
include an allowance for the contractor granting
two or three times. It is based on quantities
of materials required to complete the work.

I feel that any re-work would and should
be covered in the Contingency Allowance of the estimate.

I have not adjusted Frank's prices.

"If" you and John Lawrence want additional
cost to be included I recommend it be based
on a % of the present cost.

Eg. Say 25% of cost for each time the
contractor will repeat this activity.

Please let me know how you want this to
be adjusted.

R. Lang ¹⁸ Jan. 21/22
± present cost

J 19

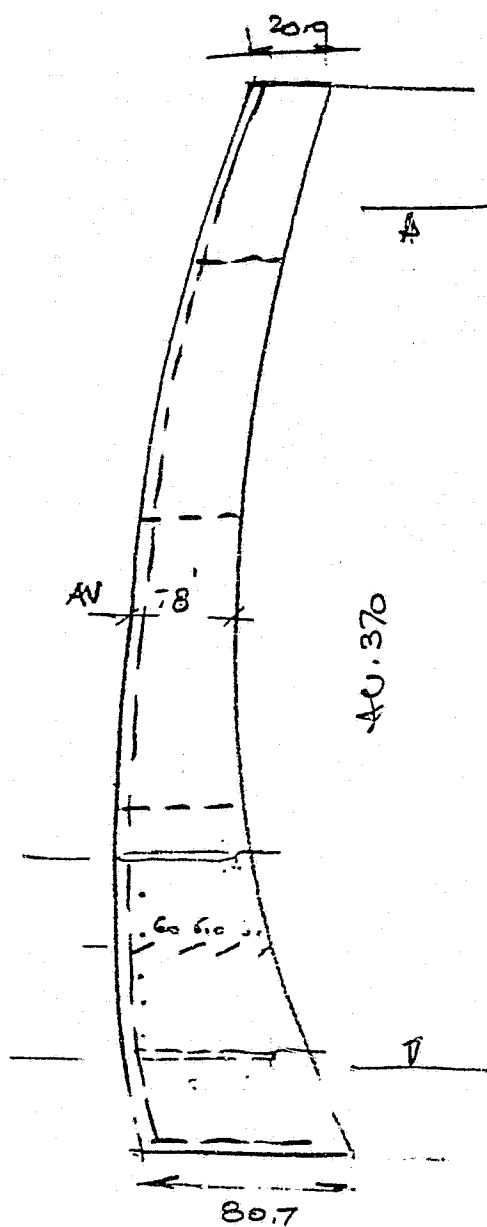


Calculations

SUBJECT: Devil Canyon

JOINT GROUTING

JOB NUMBER PS70009
FILE NUMBER
SHEET ① OF
BY DATE
APP RDC Feb DATE 2/82



$H = 643'$
 $AV \cdot W = 800'$
 $600 \div 10 = 60 \text{ Horiz FEEDER LINE } \checkmark$

25 JOINTS $\approx 28,860 \text{ ft}$
13 REECS IN EA. JOINT.

$13 \times 370 \times 25 = 120,250 \text{ ft} \cdot \checkmark$
 $+ 15\% \quad 18,037 \checkmark$
138,287 $\phi 1\frac{1}{2}$ TUBING $\checkmark$

FEED $\phi 1\frac{1}{2} = 370 \div 6.5 \times 78 \times 25 = 111,000 \text{ ft} \cdot \checkmark$

	M.	LAB	EQU.	
$1\frac{1}{2}''$	.65	2.30	0.10	
138,500	90,500 39,700	318,500 317,400	13,800 13,800	$0.765 \text{ in} \times 12 = 9.18 \text{ in}$ $1728 \div 9.18 = 188 \text{ ft} = 1 \text{ cu ft.}$ 757 cu ft. 28 cu yd
$1\frac{1}{2}''$	2.00	3.50	0.56	
111,000	222,000	388,500	62,160	$1.766 \text{ in} \times 12 = 21.2 \text{ in.}$ $81 \text{ ft} = 1 \text{ cu ft.}$ 963 cu ft. gravel 36 cu yd.

GROUTING

LABOR

1-FOREMAN	35.31	$\checkmark$
6-LAB	30.95	185.70 $\checkmark$
2-op	33.40	66.80 $\checkmark$
1-CEM MANS	33.40	$\checkmark$

$321.21 \times 1100 = 353,331 \checkmark$

EQUIPMENT

1-TRUCK	25.00	$\checkmark$
1-4X4 PICKUP	20.00	
1-GROUT MIX	15.50	
1-600 CFM COMP.	27.00	

$87.50 \times 1100 = 96,250 \checkmark$

MAT'L

SAND = 40" x 100 =	4000	$\checkmark$
CEM = 65" x 180 =	11,700	$\checkmark$
	<u>15,700</u>	

7
0
0
1
0
7

J20



Calculations

SUBJECT: Devil Canyon
Joint Grouting

JOB NUMBER PS70009
FILE NUMBER
SHEET 2 OF
BY DATE
APP RDC Feb DATE 2/82

METAL SEAL

$$25 \times 370 = 9250 \text{ VERT} + 13800 \text{ HORIZ} = 23050$$

	M	LAB	TOTAL	EQ
U/C	2.00	130	3.42	0.12
	46,100	29,965	78,531	2650
	46,100	29,965	75,531	2766

JOINT GROUTING & METAL SEAL

DESCRIPTION		LAB	MAT'L	EQ	TOTAL	NOTES
1/2" φ	138,500 ft	317,400 318,550	89,700 20,725	13,800 13,850	420,900 422,425	LIGHT WEIGHT AW TUBING.
1 1/2" φ	111,000 ft	388,500	222,000	62,160	672,660	LIGHT WEIGHT AW TUBING.
GROUT	2064 cft.	353,331	15,700	96,250	465,281	1:1 MIX
METAL JOINT	23,050 ft	29,965	46,100	2766 2,650	75,531 78,715	S. STEEL 90CA 18 Z REP.
TOTAL COST =		1,089,196	373,500	174,860	1,637,556	

J21



Calculations

SUSITNA

SUBJECT: Devil Canyon
Joint Grouting

JOB NUMBER P.5700

FILE NUMBER

SHEET 3, OF

BY RDC Feb DATE 2/82

APP

DATE

Grout tube diameters / areas

$$\begin{aligned} \frac{1}{2}'' \text{ dia : } \text{area} &= \pi r^2 = \pi (0.25)^2 = 0.196 \text{ in}^2 \\ \times 12 &= 2.356 \text{ in}^3 \quad 1728 \div 2.356 \Rightarrow 733 \text{ lin ft} = 1 \text{ cu. ft} \\ [757 \text{ cu. ft} &= 28 \text{ cu. yd.}] \end{aligned}$$

$$\begin{aligned} 1\frac{1}{2}'' \text{ dia : } \text{area} &= \pi (0.75)^2 = 1.767 \text{ in}^2 \times 12 = 21.206 \text{ in}^3 \\ 1728 \div 21.206 &\Rightarrow 81 \text{ lin ft} = 1 \text{ cu. ft} \end{aligned}$$

Summary of Joint Grouting and Metal Seal

Description	Quantity	Labour	Material	Equipment	Total	Notes
$\frac{1}{2}'' \text{ } \phi$	138 500	318,550	90,025	13,850	422,425	
$1\frac{1}{2}'' \text{ } \phi$	111 000	388,500	222,000	62,160	672,660	
Grout	2064 cu ft	353,331	15,700	96,250	465,281	
Metal Joint	23,030 ft	29,965	46,100	2,766	78,831	
TOTAL COST		1090,346	373,825	175,026	1,639,197	

FORM NO. 152 REV. 1

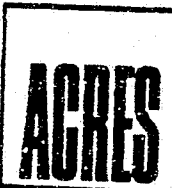
Lump Sum Cost = \$1,639,197

21

Say \$1,640,000.

(J) LABOR, EQUIPMENT, MATERIALS
MISC. COSTS.

I 23



Calculations

SUBJECT: SUSITNA HYDRO

DEWATERING. ✓

Devil Canyon

JOB NUMBER P570000

FILE NUMBER

SHEET ① OF

BY DATE

APP RDC Feb DATE 8/82

DURATION:

I STAGE 30 DAYS

II STAGE = 22 MOS.

INITIAL DRAW DOWN

EQUIPMENT

8 - 8" 50HP pump	7.50	60.00
2 - 4" 25HP pump	3.00	6.00
1 - pickup		20.00
1 - 600HP CEU		40.00

 DURATION $30 \times 24 =$
 $= 720 \text{ hrs.}$
 $126.00 \times 720 = \$90,720$

LABOUR

2 - OPERATOR	31.85	63.70
1/2 MECH	39.17	19.59
1/2 ELECT.	40.23	20.12
2 - LAB	30.95	61.90

 $165.31 \times 720 = 119,023$

MAT'L

LAB	MAT'L	EQ	TOTAL
119,023	279,400	90,720	489,143

2500' 8" pipe @ 50 = 125,000

1000' 6" pipe @ 40 = 40,000

REMOVAL = 56,000

 FOOTVALVE $8 \times 1450 = 11,600$

 " " $2 \times 1050 = 2,100$

 CHECKVALVE $8 \times 1200 = 9,600$

 " " $2 \times 1150 = 2,300$

 G.V. " $8 \times 1300 = 10,400$

 G.V. " $2 \times 1200 = 2,400$

 STARTERS $10 \times 1000 = 10,000$

 MOTOR CONT. $10 \times 200 = 2,000$

 HOT CONTROLS $10 \times 500 = 5,000$

 WIRING. $24 = 3000$

279,400

J24



Calculations

SUBJECT:

Devil Canyon

JOB NUMBER PS70009

FILE NUMBER

SHEET (2) OF

BY DATE

APP RDC Feb DATE 8/82

Dumping

DURATION 21 HRS
 $21 \times 30.5 \times 24 = 15,372 \text{ Hrs}$

EQUIPMENT

2 - 6" pump 50HP	4.50	9.00	✓
2 - 4" pump 25HP	3.00	6.00	✓
1 - 4x pickup		20.00	✓
1 - 200 kw Gen		15.60	✓
		50.60	✓

 $15,372 \times 50.60 = \$777,823.00$
LABOR

1- OPERATOR	31.85	✓	
1/2 - MECH	39.17	19.59	✓
1/2 - ELECTRIC	40.23	20.12	
1- LAB		30.95	
		102.57	x

 $102.57 \times 15,372 = \$1,575,784.00$
MAT'L

1200' 6" pipe 40 =	48,000	✓
1200' 4" pipe 36 =	43,200	✓
Removal =	32,000	
2 - 6" Foot. 2x1050 =	2100	✓
2 - 4" Foot. 2x650 =	1300	✓
2 - 6" GV 2x1200 =	2400	✓
2 - 4" GV 2x800 =	1600	✓
2 - CHU 6" 2x1200 =	2400	✓
2 - CHU 4" 2x700 =	1400	✓
4 STARTER 4x1000 =	4000	✓
4 MOTOR CONT 4x200 =	800	✓
4 MOT. CONT 4x500 =	2000	✓
WIRING	2000	✓

 $143,200$

LAB	MAT'L	EQ	TOTAL
1,575,784	143,200	777,823	2,496,807



Calculations

WATAWA.

SUBJECT: UNDERGROUND DEWATERING

JZE
JOB NUMBER P570009
FILE NUMBER _____
SHEET ① OF _____
BY _____ DATE _____
APP _____ DATE _____

- EQUIPMENT -

1 - 6" ϕ CENT. PUMP $8.50 \times 30,660 =$
 $\$260,610$ ✓

DURATION:

3.5 YEARS

$3.5 \times 365 \times 24 = 30,660 \text{ HRS.}$

- LAB -

OPERATOR IS INCH. OF THE UNDERGROUND VENTILATION.

MAT'L

LAB	MAT'L	EQ.	TOTAL
	128,150	260,610	388,760

3000' 6" ppe 40 = 120,000
1 - CHU = 1300
1 CU = 1250
1 - FOOTU. = 1450
1 - STARTER = 1000
1 - FLOAT. COIL = 1300
1 - MOT. CONTR. = 600
1 - MOT. COIL = 250
WIRING = 1000
\$128,150 -

126



Calculations

SUSITNA ~ WATANA

SUBJECT: Production Rates ~ Principal Operations

NOTES:

1. Production Rates in cubic yards / hour, unless otherwise noted
2. * denotes production of equipment coated equals that of production required (scheduled)

JOB NUMBER P. 5700
 FILE NUMBER _____
 SHEET 1 OF _____
 BY ROC Frb DATE 4/82
 APP _____ DATE _____

Description	Production	
Service spillway (Exc. overburden) (Exc. rock)	1200 (cy/hour) 260	
Emergency spillway (Exc. overburden) (Exc. rock)	1200 260	
11a (Chute) spillway (Exc. overburden) (Exc. rock)	1200 260	
Borrow area D (Exc. overburden) (Exc. fill)	1200 720	
Borrow area E (Exc. overburden) (Exc. gravel)	2100 4000	
<u>Main Dam</u>		
Excavation alluvium (above 1470') (below 1470')	600 3060	
Excavation rock (above 1470') (below 1470')	280 900	
<u>Processing</u>		
Gravel for dam	2870	
U/S dam fill	2100	
D/S dam fill	2870	
Conc. aggregate	650	
<u>Placing</u>		
Filters (Coarse and Fine)	2100	
Core	720	
Rip rap (U/S : D/S)	110 : 175	
Surface Preparation	1500 SF/hr	
Rock from other sources (haul + dump)	1000	

000107

J27



Calculations

DEVIL CANYON

SUBJECT: SUSITNA HYDRO

DENSTOCK CENTER GROUP, INC.

JOB NUMBER	PS70009
FILE NUMBER	
SHEET	1 OF
BY	DATE
APP RDC Feb	DATE 9/82

Spillway Tunnel

CONTACT AREA $103.62 \times 3300 = 341,946$ $40.82 \times 1440 = 58,781$ $103.62 \times 275 = 28,500$

Steel lined

TOTAL STEEL LINING CONTACT AREA

58,781
28,500
87,281

DENSTOCKS (6)

CONTACT AREA
 $47.1 \times 1200 = 56,520$

DIA = 15.0 ft.
L = 200 ft.
PTW 1200

EQUIPMENT

- 1- 4x4 20.00
- 1- HYRA LIFT & PLATFORM 45.50
- 1- GROUT MIX & PUMP 55.00
- 1- 600 CFM COMP. 27.00

Production
2500' / SHIFT
23 SHIFTS

$147.50 \times 10 = 1475. - \times 23 = 33,925$

LABOR

- 1- FOREMAN 38.15
- 4- LABORER 31.43 125.72
- 1- CEM. 34.93
- 2- GROUT MAN 32.62 65.28
- 1- CRANE OP 36.22
- 1- MIXER OP 33.62
- 1- COMP. OP 33.62

MAT'L

SAND 3600 @ 25. - 9000 -
CEM 290 x 135 - 39150
48,150

$364.54 \times 10 = 3645.4 \times 23 = 83,844. -$

LAB	MAT'L	EQ.	TOTAL
84,525	48,150	33,925	166,600
1.50	0.88	0.60	2.96

FORM NO. 152 REV. 1

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