

DCNO

3565

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

DEVIL CANYON FEASIBILITY ESTIMATE

Contract NO. 5225.

Work Order NO. 2

Diversified Engineers & Constructors, Inc.
P. O. Box 730
Litchfield Park, Arizona 85340 247

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Access Adits 20H x 15W

ITEM NO. 332.32A SHEET OF PAGE 22

JOB Devil Canyon

BID QUANTITY 1.220 UNIT L.F. TAKE OFF QUANTITY 700 EST BY A. Lee DATE

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
Excavation	700		35 ⁹⁶ 249874							35 ⁹⁶ 249874
Supplies	700			117 ⁷⁶ 117430						117 ⁷⁶ 117430
Supports	700							48 ² 173251		48 ² 173251
Equipment	700				17 ⁹⁶ 86778	98 ⁹⁶ 19212	15 ⁸³ 88085			17 ⁹⁶ 86778 98 ⁹⁶ 19212 15 ⁸³ 88085
	700	L.F.	35 ⁹⁶ 249874	117 ⁷⁶ 117430	17 ⁹⁶ 86778	98 ⁹⁶ 19212	15 ⁸³ 88085	48 ² 173251		117 ⁹⁶ 755123
	1.220	L.F.	35 ⁹⁶ 435491	147 ⁷⁶ 204467	151 ⁹⁶ 231	98 ⁹⁶ 120731	15 ⁸³ 153513	48 ² 502706		1171 ⁹⁶ 1548339

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION ACCESS ADITS 20' H. X 15' W. ITEM NO. 32A SHEET 1 OF 221

FORM 2

QUANTITY 1,220

UNIT LF.

EST. BY

JOB DEVIL CANYON

CK'D BY

DATE

TAKE OFF

1-630'

1-610'

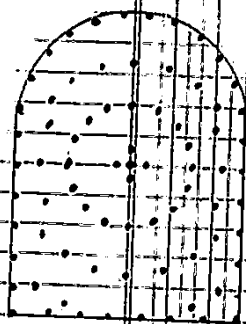
1240 LF.

IN ROCK

1-400'

1-300'

700 LF.



32 PERIMETER HOLES

40 PATTERN

1 BURN

4 RELIEF

77 HOLES

DRILL 12 FT. & BULL 10 FT.

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION		ITEM NO.	SHEET 2 OF	PAGE 222
QUANTITY		UNIT	EST. BY	CK'D BY
DATE				
<u>DRILLING</u>				
USE 3 DRILL JOY HYDRAULIC JUMBO.				
	RETRACT & SETUP	0.80	MINUTES	
	DRILL	2.20	"	
		3.00	MIN./HOLE	
<u>77 HOLES</u>				
	3 DRILLS = 25.67 (8)			77.01 MINUTES
CHANGE BITS EVERY 9 HOLES				
	77			
	3 = 25.67 (0.25)			6.42 "
				83.43 MINUTES
<u>83.43 MINUTES</u>				
	50 MIN. HOUR			1.77 HOURS
<u>LOAD & SHOOT</u>				
	BRING UP EXPLOSIVES			50 MINUTES
	LOAD HOLES			
	77 @ 8 (M.H.) (5 MEN)			
	60 MIN. HOUR			96.6 "
	MOVE OUT			50 "
				101.6 MINUTES
				60 = 1.69 HOURS
<u>TRUCKING</u>				
USE ST 13 SCOOP TRAILS				
HAUL AT 5 M.P.H.				
RETURN AT 10 M.P.H.				
<u>CYCLE TIME</u>				
	LOAD	0.50	MINUTES	
	HAUL	3.41	"	
	DUMP & TURN	1.00	"	
	RETURN	1.71	"	
		6.62	MIN./CYCLE	

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION		ITEM NO.	SHEET 3 OF	PAGE 222
QUANTITY	UNIT	EST. BY	JOB	DATE
50 MINUTE HOUR				
$6.62 \text{ MIN. / CYCLE} = 7.55 (11) = 83 \text{ CU. YDS. BULK PER HOUR}$				
$102.40 (1.45) = 148.48 \text{ CU. YDS. BULK}$				
$83 \text{ CU. YDS. / HOUR} = 179 \text{ HOURS}$				
SUPPLIES				
DRILL STEEL	64180 LF.	820		12936
EXPLOSIVES 7168 C.Y. C. 4.5	32256 LB.	150		48384
DETONATORS 5320 ± 5% LOSS	540 EA.	120		5660
AIR & WATER LINES	700 LF.	12.00		8400
VENT LINE	700 LF.	30.00		21000
LIGHT & ELECTRIC LINES	700 LF.	5.00		3500
FOUL WEATHER GEAR	7000 MH.	2.50		17500
				110430
SUPPORTS				
ALLOW 24.23 PER CU. YD. OF				
ROCK EXCAVATION				
				173681

ENGINEERING
COMPUTATIONS

Date.....
Dr..... Ch.....
Ref.....

1. Drill In & Out.	1.27
2. Load & Shoot.	1.69
3. Smoke Time.	0.50
4. Muck Time.	1.79
5. Supports (average time/rd.).	0.50
6. Services (average time/rd.).	0.25
Sub Total Mins. Per Round.	6.50
Lost Time @ <u>10</u> %	65
Total Hours Per Round/Cycle.	7.15
Crew Hours Worked Per Day.	20
Rounds Per Day.	2.80
Peak L. F. Per Day.	28

TURN UNDER

L. F.	L. P. / Day	W / Days
-------	-------------	----------

200

26

2

Total Work Days
Total L. F.
Ave. L. F. Per Day

27

200

2599

225

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC. East Plaza Circle Litchfield Park, Arizona					ENGINEERING COMPUTATIONS	
Company <u>ALASKA POWER AUTHORITY</u> Location <u>DEVIL CANYON</u> Description <u>ACCESS ROAD 20' H. X 15' W.</u>					Date Dr Ch Ref	
Rate Per/Hr	Labor Classification	Shift 1	Shift 2	Shift 3	Total Men/Req'd	Total Cost/Hr.
34.67	SHIFTERS	1	1		2	73.34
35.56	DRILLERS	3	3		6	213.36
34.84	TENDERS	3	3		6	209.04
35.86	POWDERMEN	1	1		2	71.92
31.28	TORMAN	1	1		2	62.56
31.28	DUMPMAN	1	1		2	62.56
41.58	ELECTRICIAN	1	1		2	83.16
38.80	MUCKER OPERATOR	1	1		2	77.60
35.97	DIGGER OPERATOR	1	1		2	71.94
Total		13	13		26	925.46
Cost Per/Day.....						9254.60
Cost Per M/Hr. Average						35.59
Cost Per M/Day Average						355.95
Total L. F. Or Cu. Yds.						700
Production						25.93
Total Days Required						27
Total Cost - No. Days X Cost/Day						249874.20
Cost Per/L. F.						356.96
Cost Per/Cu. Yd.						
Total Man Days.....						702
Total Man Hours						7020

[illegible]

OPERATION ENGINEERS & CONSTRUCTORS,
Outlet Access Shaft 20' Diameter

ITEM NO. 332.32B SHEET OF PAGE 227
JOB Devil Canyon

BID QUANTITY	UNIT	TAKE OFF QUANTITY
375	L.F.	

EST. BY A. Lee DATE

[illegible]

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION OUTLET ACCESS SHAFT

ITEM NO 322 SHEET 1 OF PAGE 22A

20' 6"

JOB DEVIL CANYON

QUANTITY 375 UNIT LF

EST. BY

CK'D BY

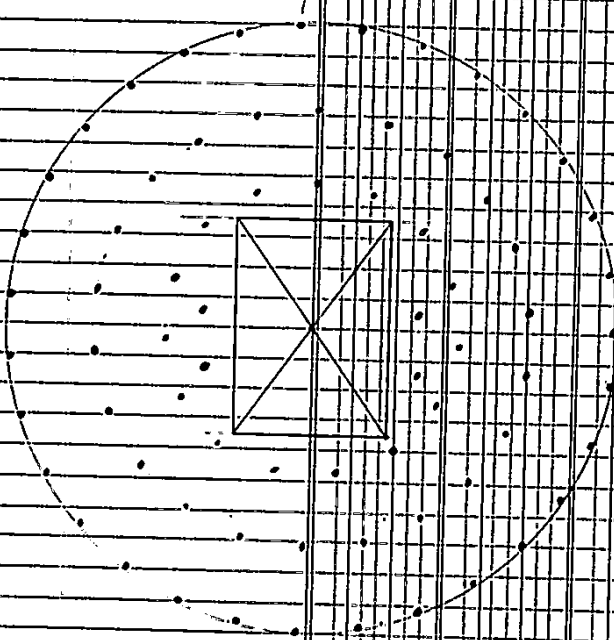
DATE

FORM 2

TAKEOFF = 270 LF

METHOD

DRIVE RAISE, SLASH DOWN



PERIMETER HOLES = 31

PATTERN HOLES = 41

72 HOLES

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 2 OF PAGE 229

JOB

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

FORM 2

RAISE

DRIVE RAISE WITH ALIAR...
BLAST HOLES AT 3 SE / HOLE
PLUS 1 BURN AND 3 RELIEF
HOLES = 16 HOLES
DRILL 10 FT. PULL 8 FT.

375

B = 47 ROUNDS.

RAISE CYCLE

LOAD TROLLEY & CLIMBER (3 MEN)	10 MINUTES
TRAVEL TO FACE = 188 LF @ 40 / MIN.	5 "
SCALE LOOSE MATERIAL & HOOK UP	60 "
INSTALL GUIDERAIL & VENT PIPE	60 "
SURVEY - CHECK ON DIRECTION	10 "
DRILL ROUND - 2 DRILLS 16 HOLES - 5 MIN / HOLE	40 "
EXPLOSIVES BROUGHT UP BY 3RD MAN	5 "
LOAD HOLES 16 C.B. (M.H.) (3 MEN)	40 "
TRAVEL TO BOTTOM - SAME AS TO FACE	5 "
PARK UNIT & BLAST	15 "
SMOKE	30 "
	100 MINUTES
	10 4/5 HOURS

MUCKING

1.8 CU. YDS. / L.F. (8) = 10.4 CU. YDS. / ROUND
USE ST 4A SCODR TRAM
HAUL DISTANCE = 1500 LF

CYCLE TIME

LOAD	0.50 MINUTES
HAUL	3.41 "
DUMP & TURN	1.00 "
RETURN	1.71 "
	6.62 MIN. / CYCLE

50 MINUTE HOUR

6.62 MIN. / CYCLE = 7.55 CYCLES (3.5) = 26.43 CU. YDS. / HOUR
10.4 (1.45)
26.43 = 0.57 HOURS.

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC. East Plaza Circle Litchfield Park, Arizona ENGINEERING COMPUTATIONS																			
Company <u>ALASKA POWER AUTHORITY</u> Location <u>DEVIL CANYON</u> Description <u>OUTLET ALIAS SHAFT</u>	Date _____ Dr. _____ Ch. _____ Ref. _____																		
CYCLES																			
1. Drill in & Out	<u>4.67</u>																		
2. Load & Shoot	<u> </u>																		
3. Smoke Time	<u> </u>																		
4. Muck Time	<u> </u>																		
5. Supports (average time/rd.)	<u> </u>																		
6. Services (average time/rd.)	<u> </u>																		
Sub Total Hrs. Per Round	<u>6.67</u>																		
Lost Time @ <u>10</u> %	<u> </u>																		
Total Hours Per Round/Cycle	<u>7.33</u>																		
Crew Hours Worked Per Day	<u>20</u>																		
Rounds Per Day	<u>2.75</u>																		
Peak L. F. Per Day	<u>2.75</u>																		
PRODUCTION	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">L. F.</th> <th style="width: 50%;">L. F. /Day</th> <th style="width: 50%;">W/Days</th> </tr> </thead> <tbody> <tr> <td><u>SET UP</u></td> <td></td> <td></td> </tr> <tr> <td><u>375</u></td> <td><u>31.12</u></td> <td><u>5</u> <u>12</u></td> </tr> <tr> <td colspan="2"> Total Work Days </td> <td style="text-align: right;"><u>1700</u></td> </tr> <tr> <td colspan="2"> Total L. F. </td> <td style="text-align: right;"><u>375</u></td> </tr> <tr> <td colspan="2"> Ave. L. F. Per Day </td> <td style="text-align: right;"><u>22.06</u></td> </tr> </tbody> </table>	L. F.	L. F. /Day	W/Days	<u>SET UP</u>			<u>375</u>	<u>31.12</u>	<u>5</u> <u>12</u>	Total Work Days		<u>1700</u>	Total L. F.		<u>375</u>	Ave. L. F. Per Day		<u>22.06</u>
L. F.	L. F. /Day	W/Days																	
<u>SET UP</u>																			
<u>375</u>	<u>31.12</u>	<u>5</u> <u>12</u>																	
Total Work Days		<u>1700</u>																	
Total L. F.		<u>375</u>																	
Ave. L. F. Per Day		<u>22.06</u>																	

ENGINEERING COMPUTATIONS

Company ALASKA POWER AUTHORITY
Location DEVIL CANYON
Description OUTLET ACCESS SHALT

Date
Dr Ch
Ref

[illegible]

Cost Per/Day.....	1.9	678.00
Cost Per M/Hr. Average.....		678.00
Cost Per M/Day Average.....		25.44
Total L. F. Or Cu. Yds.....		354.42
Production.....		375
Total Days Required.....		22.96
Total Cost = No. Days X Cost/Day.....		17
Cost Per/L. F.....		114478.00
Cost Per/Cu. Yd.....		385.27
Total Man Days.....		323
Total Man Hours.....		3230

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 5 OF PAGE 222

JOB

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

FORM 2

SUPPLIES

DRILL STEEL

7520 LF

0.20

150.4

EXPLOSIVES 488 CY. @ 4.5

2196 LB.

1.50

329.4

DETONATORS 752 EA. + 5% LOSS

790 EA.

1.00

790

AIR & WATER LINES

375 LF

12.00

4500

FAN LINE

375 LF

20.00

7500

LIGHT & ELECTRIC LINES

375 LF

5.00

1875

FOUL KLEATER GEAR

3030 MM.

2.50

8075

27538

SUPPORTS

ALLOW 18.30 PER CU. YD. OF

EXCAVATION

8930

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION		ITEM NO.	SHEET 6 OF	PAGE 233
QUANTITY	UNIT	EST. BY	CK'D BY	DATE
<u>SLASH DOWN</u>				
DRILL 10 L.F. & ROLL B.C.F.				
20' Ø	=	11.64		
RAISE	=	1.307		
10.34 CU. YDS. (Ø) = 82.72 CU. YDS. SOLID				
<u>DRILLING</u>				
USE SINKERS (FIGURE 4)				
DRILL SPEED AT 12 MINUTES PER HOLE				
72 (12)	=	864 MINUTES		
50 MIN. HOUR	=	17.28 HOURS		
MOVE DRILLS IN & OUT				
4 SINKERS	=	4.32 HOURS		
	=	1.00 "		
	=	5.32 HOURS		
<u>LOAD & SHOOT</u>				
BRING IN EXPLOSIVES				
LOAD HOLES				
72 @ 8 (M.H. (5 MEN)				
60 MINUTE HOUR				
MOVE OUT				
		90.0		
		50		
		100.0 MINUTES		
		6.0		
		= 1.67 HOURS		
<u>CLEAN SHOT</u>				
ALLOW 1 1/2 HOURS				
<u>MUCKING</u>				
82.72 (1.45)	=	120 CU. YDS. BULK		
120				
26.43	=	4.54 HOURS		

ENGINEERING COMPUTATIONS

Date
Dr. Ch.
Ref.

CYCLES

- | | |
|-------------------------------------|-------|
| 1. Drill In & Out. | _____ |
| 2. Load & Shoot | _____ |
| 3. Smoke Time. | _____ |
| 4. Muck Time. | _____ |
| 5. Supports (average time/rd.) | _____ |
| 6. Services (average time/rd.) | _____ |
| Sub Total Hrs. Per Round. | _____ |
| Lost Time @ <u>10</u> % | _____ |
| Total Hours Per Round/Cycle. | _____ |
| Crew Hours Worked Per Day. | _____ |
| Rounds Per Day. | _____ |
| Peak L.F. Per Day. | _____ |

PRODUCTION	L. F.	L. F./Day	W. Days
	375	13.52	28
Total Work Days			28
Total L. F.			375
Ave. L. F. Per Day			13.52

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
East Plaza Circle
Litchfield Park, Arizona

**ENGINEERING
COMPUTATIONS**

Company ALASKA POWER AUTHORITY
Location PAYNE CANYON
Description SLASH-OUTLET ACCESS SHAFT

Date
Dr Ch
Ref

Rate Per/Hr.	Labor Classification	Shift 1	Shift 2	Shift 3	Total Men/Req'd	Total Cost/Hr.
36.67	SHIFTER	1	1		2	73.34
35.56	DRILLERS	4	4		8	284.48
34.00	TENDERS	2	2		4	139.36
35.95	POWDERMAN	1	1		2	71.90
35.56	MINERS	2	2		4	142.24
31.28	TORMAN	1	1		2	62.56
38.00	MIXER OPERATORS	1	1		2	76.00
41.68	ELECTRICIAN	1	1		2	83.36
37.88	OPERATOR	1	1		2	75.76
35.09	OILER	1	1		2	70.18
35.97	DOZER OPERATOR	1	1		2	71.94
31.28	DUMPMAN	1	1		2	62.56
Total		17	17		34	1215.00

Cost Per/Day..... 1215.00
Cost Per M/Hr. Average 35.74
Cost Per M/Day Average 357.35
Total L. F. Or Cu. Yds. 375
Production..... 13.62
Total Days Required 28
Total Cost - No. Days X Cost/Day 9402.00
Cost Per/L. F. 907.20
Cost Per/Cu. Yd.
Total Man Days..... 952
Total Man Hours 9520

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO

SHEET 9 OF

PAGE 236

QUANTITY

UNIT

EST. BY

JOB

CK'D BY

DATE

FORM 2

SUPPLIES

DRILL STEEL

EXPLOSIVES 3878 C 4M

DETONATORS 2734 + 5% LOSS

AIR & WATER LINES

FAN LINE

LIGHT & ELECTRIC LINES

FOUL WEATHER GEAR

QUANTITY

UNIT

TOTAL

27340 LF.

0.20

5472

15512 LB.

1.50

23268

2873 EA.

1.00

2873

375 LF.

12.00

4500

375 LF.

20.00

7500

375 LF.

5.00

1875

7520 M.H.

2.50

23800

69788

SUPPORTS

ALLOW 18.30 PER CU. YD. OF
EXCAVATION.

70967

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION EQUIPMENT SUMMARY ITEM NO. 332-328 SHEET OF PAGE 232

JOB DEVIL CANYON

BID QUANTITY 375 UNIT LF TAKE OFF QUANTITY 270 EST. BY DATE

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
<u>RAISE</u>										
1- ALLIANCE GROUNDHOG	340	MRS			865	2941	5214	18068	718	27113
3- FANS	1020	"			389	2768	283	2397	2397	859
1- ST4A MUCKER	340	"			1896	6446	1123	3747	2105	7157
1- 500 KWI GENERATOR	340	"			3285	11169	1232	4189	3218	10928
1- FLATBED	340	"			401	1563	417	1418	1104	3754
1- PICKUP	340	"			240	8126	097	320	571	1741
1- D7 DOZER	340	"			2404	8174	1723	5858	2257	7671
<u>SLASH</u>										
4- SINKERS	2240	"			365	8176	046	1030	127	2845
1- 1200 CFM COMPRESSOR	560	"			1763	9872	1107	6199	298	16402
1- ST4A MUCKER	560	"			1896	10618	1102	6171	2105	11788
1- 50T TRUCK CRANE	560	"			112	8075	1700	4520	235	13179
3- FANS	1680	"			389	6525	283	3747	2105	3747
1- 500 KWI GENERATOR	560	"			3285	18396	1232	6879	3218	17798
1- FLATBED	560	"			401	2246	417	2335	1104	6192
1- PICKUP	560	"			240	1344	097	543	571	3197
1- D7 DOZER	560	"			2404	12462	1723	9649	2257	12639
	375	LF			30275	113602	27146	132301	23270	124763
										35091
										320666

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Portals - Rock Excavation

ITEM NO. 332.32D SHEET OF PAGE 232

JOB Devil Canyon

BID QUANTITY 16,500 UNIT S.Y. TAKE OFF QUANTITY

EST BY A. Lee DATE _____[illegible]

CONSTRUCTION

CONSTRUCTION

EQUIPMENT

EQUIPMENT

EQUIPMENT

1000

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

TUNNEL CONCRETE SLABS

ITEM NO. 324

SHEET 1 OF

PAGE 241

FORM 2

QUANTITY 3,200

UNIT C.Y.

EST. BY

JOB

CK'D BY

DATE

W

11 (5)

TAKEOFF

2120 L.F. HORIZONTAL IN ROCK

1550 L.F. INCLINED IN ROCK

200 L.F. HORIZONTAL IN ROCK

432

316

59

807 CUYD.

OPERATION Portal Concrete

ITEM NO. 332.325 SHEET OF PAGE 242

JOB Devil Canyon

BID QUANTITY 40

UNIT C.Y.

~~TAKE OFF QUANTITY~~

EST BY

Also

DATE _____

QUANTITY		UNIT	EST. BY		DATE		CONSTRUCTION LABOR & INSURANCE		CONSTRUCTION SUPPLIES		EQUIPMENT REPAIR LABOR		EQUIPMENT RENT		EQUIPMENT SUPPLIES		PERMANENT MATERIALS		SUB-CONTRACTS		TOTAL DIRECT COST	
SAME AS ITEM 331-124			40	CY	MTB	7073	29 ⁹³	1158	17 ¹⁴	146	19 ³⁵	778	20 ³⁴	814	64 ³⁸	2575	15 ²⁴	200	54 ¹⁹	1372	55	

OPERATION Miscellaneous Metalwork

ITEM NO. 332.328 SHEET _____ OF _____ PAGE 243

108 **Devil Canyon**

BID QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]

JOB NAME DEVIL CANYON

-DATE

-SHEET _____ OF _____

UNIT TAKE-OFF

222

[illegible]

245

DATE _____

-SHEET _____ OF _____

UNIT TAKE-OFF

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Architectural

ITEM NO. 332.329

— SHEET — OF — PAGE 246

JOB Devil Canyon

BID QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY

EST. BY, A. Lee DATE 11/1/68

[illegible]

OPERATION Mechanical - Elevator Overhead ITEM NO. 332.32E SHEET OF PAGE 207
Crane, & Miscellaneous JOB Devil Canyon

OPERATION Mechanical - Elevator Overhead ITEM NO. 332.32E SHEET OF PAGE 267

Crane, 6 Miscellaneous	108	Devil Canyon
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BID QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY _____ EST BY A. Lee DATE _____

[illegible]

248

DATE _____

SHEET _____ **OF** _____

UNIT TAKE-OFF

[illegible]

DIVERSIFIED ENGINEERS & CONS OPERATION Dam Instrumentation

ITEM NO. 332.33 SHEET _____ OF _____ PAGE 249

Devil Canyon

BID QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]

0 0 3 5 6 5

OPERATION Excavation - Common

OPERATION

ITEM NO. 332.411 SHEET _____ OF _____ PAGE 256

108 Devil Canyon

BID QUANTITY 1 145 000 UNIT C.Y. TAKE OFF QUANTITY _____ EST. BY A. LEE DATE _____

[illegible]

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION SADDLE DAM - EXCAVATION ITEM NO. 932 SHEET 1 OF 1 PAGE 251

QUANTITY 1,145,000 UNIT CU. YDS. EST. BY COINMAN JOB DEVIL CANYON

FORM 2

CK'D BY

DATE

TWO THINGS CAN BE DONE WITH THIS MATERIAL -

- 1- HAUL TO WASTE.
- 2- SELECTIVELY EXCAVATE ASSUMING THAT SOME OF THE MATERIAL WILL BE SUITABLE FOR IMPERVIOUS CORE.

TO BE ON THE SAFE SIDE, HAUL ALL MATERIAL TO WASTE.

METHOD

DOZE MATERIAL DOWN ABUTMENTS TO F.E.L., TRUCK HAUL TO DISPOSAL.

USE 992 F.E.L. & 727 END SPILLS.

HAUL DISTANCE - SAY 5000 LF.

12 CU. YD. BUCKET AT 85% EFFICIENCY = 10 CU. YDS.

LOADER CYCLE

LOAD	0.15	SECONDS
BACK & TURN	0.10	"
FORWARD & DUMP	0.10	"
BACK & TURN	0.10	"
FORWARD	0.10	"

0.55 SECONDS / CYCLE

50 MINUTE HOUR

55 SECONDS / CYCLE = 55 (10) = 550 CU. YDS. / HOUR

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION		ITEM NO.	SHEET <u>2</u> OF <u>PAGE 252</u>
QUANTITY	UNIT	EST BY	CK'D BY
FORM 2			DATE
<u>TRUCK CYCLE</u>			
LOAD	6.42 MINUTES		
HAUL 10 MPH	5.68 "		
DUMP & TURN	1.50 "		
RETURN 15 MPH	3.79 "		
SPOT	1.00 "		
18.39 MIN./CYCLE			
<u>50 MINUTE HOUR</u>			
18.39 MIN./CYCLE = 2.72 (60) = 163.00 X 0.5 = 81.50			
<u>SSD</u>			
163 = 3.37 (SAY 4 TRUCKS + 1 SPARE)			
<u>SPREAD</u>			
1- 992 F.E.L.		LABOR	EQUIPMENT SUPPLIES
2- DB FEED CATS R/L = 322.86		40.06	75.00 70.37
2- DB DUMP CATS		80.12	51.82 67.70
4- 777 END SPILLS		80.12	51.82 67.70
1- " " " - SPARE		120.20	240.00 299.76
1- PICKUP			10.00
1- F.E.L. OPERATOR		2.40	0.97 5.71
4- CAT OPERATORS		38.04	
4- TEAMSTERS		143.88	
1- DUMPMAN		150.64	
1- 4 MAN		31.28	5.00
		39.59	
COST PER HOUR		726.29	479.61 523.24
COST 2498 HOURS		1814272	1198066 1307054
<u>SUMMARY</u>			
DIRECT LABOR		TOTAL	UNIT PRICE
SUPPLIES		1007168	0.98
REPAIR LABOR		12490	0.01
EQUIPMENT		804504	0.70
EQUIP. SUPPLIES		1198066	1.05
		1294564	1.13
		4319392	3.77

[illegible]

DIVERSIFIED CONSTRUCTORS, INC.
EXCAVATION

OPERATION ROCK EXCAVATION
SADDLE DAM
QUANTITY 201

SADDLE DAM

ITEM NO. 332-41A SHEET 1 OF PAGE 254
JOB DEVIL CANINE

QUANTITY 301,000 UNIT C.U. YOS. EST. BY

JOB DEVIL CANYON OF _____
CK'D BY _____

CK'D BY _____
DATE _____

FORM 2

SAME UNIT COST AS MAIN DRAIN.

DIVERSIFIED CONSTRUCTORS, INC.

332.

ITEM NO. 418 SHEET 1 OF

PAGE 256

OPERATION IMPERVIOUS CORE

JOB DEVIL CANYON

QUANTITY 313,500 UNIT C.Y.

EST. BY

CK'D BY

DATE

FORM 2

THERE IS NO INFORMATION AS
TO WHERE POSSIBLE BORROW
AREAS ARE OR COULD BE
LOCATED. WE FEEL OUR WATANA
ESTIMATE IS REALISTIC. IT HAS
MUCH LARGER QUANTITIES AND
HIGHER PRODUCTION THAN COULD
BE REALISED ON THIS SADDLE
DAM. TO PLAY IT SAFE AND
STILL BE IN THE BALL PARK, WE
WATANA UNIT PRICES PLUS 30.1%

003565

OPERATION Fine Filter

ITEM NO 332.41C SHEET OF PAGE 27

108 **Devil Canyon**

BID QUANTITY 231.000 UNIT C.Y. TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]

OPERATION Coarse Filter

OPERATION

ITEM NO

332. 41D

— SHEET

— On

PA

25

— 108

Devil Canyon

EST BY

A. Lee

DATE

BID QUANTITY

193,000

UNIT

C.Y.

TAKE OFF QUANTITY

EST BY

A. Lee

DATE

[illegible]

OPERATION Riprap

ITEM NO. 332.41E SHEET OF PAGE 259

JOB Devil Canyon

BID QUANTITY 174.500 UNIT C.Y. TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]

OPERATION: Shell Fill - U/S

ITEM NO. 332.41F SHEET OF PAGE 260

108 Devil Canyon

EST. BY A. Lee DATE _____

BID QUANTITY 534,000 UNIT C.Y. TAKE OFF QUANTITY

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
Shell Fill - D/ S

ITEM NO. 332.41G SHEET OF PAGE 261

108 Devil Canyon

Job _____ A. Lee

BID QUANTITY 345,000 UNIT C.Y. TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

BID QUANTITY		UNIT		EST. BY		DATE		CONSTRUCTION LABOR & INSURANCE		CONSTRUCTION SUPPLIES		EQUIPMENT REPAIR LABOR		EQUIPMENT RENT		EQUIPMENT SUPPLIES		PERMANENT MATERIALS		SUB-CONTRACTS		TOTAL DIRECT COST		
345,000		C.Y.		A. Lee				1260150		200300		224450		810750		1076400						4378050		
PER DETAIL A.S. - 332.41B				345,000	CY	967		1260150	174	200300	181	224450	233	810750	313	1076400							1269	4378050

0 0 3 5 6 5

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
Drill & Grout Consolidation

ITEM NO 332.413 SHEET OF PAGE 100

Devil Canyon

BID QUANTITY 57,500 UNIT L.F. TAKE OFF QUANTITY _____ EST BY A. Lee DATE _____

BID QUANTITY 57,500 UNIT L.F. TAKE OFF QUANTITY

EST BY A. Lee

DATE _____

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION

Dental Concrete

ITEM NO

332.414

SHEET

OF

PAGE 264

JOB

Devil Canyon

EST. BY A. Lee

DATE

BID QUANTITY 7,100

UNIT C.Y.

TAKE OFF QUANTITY

OPERATION		JOB		DATE		EST. BY		TOTAL											
DEVIL CANYON		Devil Canyon				A. Lee		DIRECT COST											
BID QUANTITY		UNIT		TAKE OFF QUANTITY		CONSTRUCTION		EQUIPMENT		EQUIPMENT		EQUIPMENT		PERMANENT		SUB-CONTRACTS		TOTAL	
						LABOR & INSURANCE		REPAIR LABOR		RENT		SUPPLIES		MATERIALS				DIRECT COST	
		QUANTITY		UNIT															
FURNISH CONCRETE		7171	CY.	1120	80315	041	2746	766	51730	665	17627	723	55122	3500	250715			2855	192229
PLACE CONCRETE		7171	CY.	1542	114577	084	4024	120	7605	106	7401	266	17075					218	151862
CONCRETE WASTE		71	CY.																
FABRICATE & ERECT FORMS		28400	SF.	2524	71684	396	112464	063	17872	139	57116	099	28116					3221	714764
STRIP & CLEAN FORMS		28400	SF.	323	71732	010	2740	017	4128	023	6522	023	6248					395	112180
FORM HARDWARE		28400	SF.			075	21300											015	21300
FOUNDATION PREPARATION		10011	SF.	215	21524	013	1301	020	2002	014	1602	034	3404					288	29832
		7,100	CY.	1437	1020764	2063	14666	1743	22257	1428	102972	1581	112275	3541	250715			2455	1732272

BID QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY _____ EST BY A. Lee DATE _____

[illegible]

UNIT TAKE-OFF

DATE _____

SHEET _____ OF _____

[illegible]

DIVERSIFIED CONSTRUCTORS, INC.

UNION TAKE-OFF

268

JOB NAME DEVIL CANYON

DATE _____

SHEET

OF

[illegible]

UNIT: TAKE-OFF

DATE _____ SHEET _____ OF _____

[illegible]

270

DATE _____ SHEET _____ OF _____

[illegible]

✓

UNIT TAKE-OFF

DATE _____ SHEET _____ OF _____

DESCRIPTION		DATE		SHEET		OF		UNIT TAKE-OFF			
		MATERIAL						LABOR		SHIPPING	
SIZE	QUANTITY	MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.		
Ring Follower Gates (7)	LS										
RING FOLLOWER GATES	90"	3	50000-		150000-	200	600				
" " "	102"	4	73000-		300000-	250	1000				
HYDRAULIC UNITS	7	13000-			108000-	40	280				
HYDRAULIC PIPING SYSTEM	7	60000-			420000-	120	840				
TOTAL THIS SHEET					590000-		2720				

272

DATE

SHEET _____ OF _____

UNIT TAKE-OFF

[illegible]

273

DATE

-SHEET _____ OF _____

UNIT TAKE-OFF

[illegible]

TITLE : DEVIL CANYON FEASIBILITY ESTIMATE

CONTRACT #5225 WORK ORDER #2 VOL. II

AUTHOR: DIVER

FICHE 1 OF 4

DATE : 860109

DOCUMENT NO. 3565



OPERATION Common Excavation - Approach 6 Control Structure

ITEM NO. 332.521 SHEET _____ OF _____ PAGE 214

JOB Devil Canyon

EST. BY A. Lee DATE _____

0 0 3 5 6 5

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION COMMON EXCAVATION

ITEM NO. 521

SHEET

OF

PAGE 275

APPROACH STRUCTURE & CONTROL STRUCT. JOB DEVIL CANYON

QUANTITY 73,000

UNIT CU. YDS.

EST. BY

CK'D BY

DATE

FORM 2

USE SAME SPREAD AND
PRODUCTION AS WATANA.

SUMMARY

DIRECT LABOR

SUPPLIES

REPAIR LABOR

EQUIPMENT

EQUIP. SUPPLIES

TOTAL

UNIT PRICE

89790

1.23

730

0.01

54250

0.75

69350

0.95

711540

0.98

986160

9.92

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION: Common Excavation - Chute & Flip

ITEM NO. 332.522 SHEET OF PAGE 276

Bucket

JOB **Devil Canyon**

BID QUANTITY 107.000 UNIT C.Y. TAKE OFF QUANTITY _____ EST. BY A. L. DATE _____

[illegible]

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
OPERATION Rock Excavation - Approach

OPERATION

ENGINEERS & CONSTRUCTORS
Rock Excavation - Approach

ITEM NO. 332.52B

- SHEET _____ OF _____ PAGE 2A

JOB Devil Canyon

EST. BY ALM

DATE

SAFIR UNIT PRICES AS ITEM 332, 312

OPERATION Rock Excavation - Control Structure

OPERATION Rock Excavation - Control Structure

ITEM NO. 332.52B SHEET OF PAGE 279

JOB Devil Canyon

EST BY A. Lee DATE _____

BID QUANTITY 230,000 UNIT C.Y. TAKE OFF QUANTITY

ACTIVITY		UNIT	TAKE OFF QUANTITY	EST BY	DATE		QUANTITY		UNIT	CONSTRUCTION LABOR & INSURANCE		CONSTRUCTION SUPPLIES		EQUIPMENT REPAIR LABOR		EQUIPMENT RENT		EQUIPMENT SUPPLIES		PERMANENT MATERIALS		SUB-CONTRACTS		TOTAL DIRECT COST			
SAME AS ITEM 332.52B							230,000	LY	523	1202900	192	441600	274	130200	125	425500	261	600500							1455	2300500	
</																											

OPERATION Rock Excavation-Chute & Flip Bucket

ITEM NO.

332.52C

— SHEET

OF

PAGE

280

— JOB

Devit Canyon

BID QUANTITY 819,000

UNIT C.Y.TAKE OFF QUANTITY

EST. BY

A. Lee

DATE

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Horizontal Drain Tunnel 10 x 10

ITEM NO. 332.42D SHEET OF PAGE 281

Devil Canyon

JOB

EST. BY A. Lee

BID QUANTITY 430

UNIT C.Y.

TAKE OFF QUANTITY

EST. BY

A. Lee

DATE _____

[illegible]

OPERATION

ITEM NO. 332.52E SHEET _____ OF _____ PAGE 22

JOB Devil Canyon

BID QUANTITY 670

UNIT 1.D

TAKE OFF QUANTITY

EST BY

Alma

DATE _____

[illegible]

OPERATION Drill & Grout - Consolidation

ITEM NO. 332.523 SHEET OF PAGE 43

MOB **Devil Canyon**

BID QUANTITY 22.000 UNIT L.F. TAKE OFF QUANTITY

EST. BY A. Lee DATE _____

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Piers (incl. Side Piers)

ITEM NO. 332.52F SHEET OF PAGE 284

JOB Devil Canyon

BID QUANTITY 35.800 UNIT C.Y. TAKE OFF QUANTITY 27590 EST. BY A. Lee DATE

BID QUANTITY		35.800		UNIT		C.Y.		TAKE OFF QUANTITY		12590		EST. BY		A. Lee		DATE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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RID QUANTITY	UNIT	C.Y.	TAKE OFF QUANTITY	EST. BY	A. Lee	DATE												
	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST								
FURNISH CONCRETE	162	CY	1120	1814	041	66	766	1741	66	1077	729	1252	3500	6670	1940	1111210		
PLACE CONCRETE	156	CY	1189	1855	050	78	198	300	266	415	243	379				1940	3027	
WASTE CONCRETE	6	CY																
FABRICATE FORMS	2390	SF	447	10683	300	71	710	007	167	023	550	014	335			291	18705	
ERECT FORMS	4779	SF	732	34782	021	1004	035	1673	061	2915	051	2724				906	43278	
STRIP & CLEAN FORMS	4779	SF	321	15341	010	478	018	860	030	1434	028	1338				407	19451	
FORM HARDWARE	4779	SF			075	3584										075	3584	
CONCRETE FINISH	3936	SF	078	3857	008	315	066	226	008	315	009	354				159	50717	
CONCRETE CURE	156	CY	216	327	034	53	000	12	003	5	008	30				200	4317	
CONSTRUCTION JOINT PREPARATION	281	SF	108	303	007	210	010	28	008	22	017	48				150	421	
REINFORCING STEEL	23400	LB											025	5850	015	350	040	93610
	156	CY	443	14172	31	12768	2195	4517	4316	6733	4112	6460	7340	11570	2208	3510	7354	114680
	300	CY	443	133023	31	24552	2995	8685	4316	12948	4112	12423	7340	22152	2208	6150	7354	720533

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Guide Walls

ITEM NO. 332.52H SHEET 286 OF 286
Devil Canyon

JOB

EST BY A. Lee

DATE

BID QUANTITY 23,000

UNIT C.Y.

TAKE OFF QUANTITY 24495

EST BY

A. Lee

DATE

BID QUANTITY		UNIT		TAKE OFF QUANTITY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
OPERATION Slab

ITEM NO. 332.521 SHEET OF PAGE 281
JOB Devil Canyon
EST. BY A. Lee DATE

BID QUANTITY 13,500 UNIT C.Y. TAKE OFF QUANTITY 13137

			EST. BY		DATE													
	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE		CONSTRUCTION SUPPLIES		EQUIPMENT REPAIR LABOR		EQUIPMENT RENT		EQUIPMENT SUPPLIES		PERMANENT MATERIALS		SUB-CONTRACTS		TOTAL DIRECT COST	
FURNISH CONCRETE	13176	CY	11 ²⁰	147571	0 ⁴¹	3402	766	100728	65	87420	7 ²³	101850	35 ⁰⁰	461760			20 ²⁵	704531
PLACE CONCRETE	13137	CY	7 ⁰²	104045	0 ²³	4335	128	16815	127	23252	16 ²	21282					12 ²²	165729
WASTE CONCRETE	39	CY																
OVERBREAK CONCRETE	-0-																	
AGGREGATE BASE	5899	CY	2 ⁴⁰	11460	0 ⁰⁸													
FABRICATE FORMS	5399	SF	4 ⁴⁷	24134	3 ⁰⁰													
ERECT FORMS	26997	SF	73 ⁴	198158	0 ²¹	16197	0 ²⁷	378	0 ²³	1742	0 ⁴	156				20 ²²	479577	
STRIP & CLEAN FORMS	26997	SF	3 ²³	87200	0 ¹⁰	2700	0 ¹⁷	4589	0 ²³	6209	0 ²⁷	5739				2 ²⁹	227304	
FORM HARDWARE	26997	SF			0 ¹⁵	20248										5 ²⁵	104657	
FOUNDATION PREPARATION	115211	SF	2 ¹⁵	247704	0 ¹²	14777	0 ²⁰	23042	0 ¹⁴	18434	0 ²⁴	39172				0 ²⁵	203048	
CONCRETE FINISH	115211	SF	0 ⁰⁸	112707	0 ⁰⁸	7217	0 ⁰⁴	6713	0 ⁰⁸	7217	0 ⁰⁹	10267				2 ⁷⁸	343329	
CONCRETE CURE	13137	CY	2 ¹⁴	28276	0 ²⁴	1467	0 ⁰⁸	1051	0 ⁰²	274	0 ¹⁹	2096				1 ²⁹	144623	
CONSTRUCTION JOINT PREPARATION	13820	SF	1 ⁰⁸	14726	0 ⁰⁷	767	0 ¹⁰	1382	0 ⁰⁸	1106	0 ¹⁷	2349				2 ⁰⁰	36784	
REINFORCING STEEL	1313700	LB.														1 ⁵⁰	20720	
													0 ²⁵	328475	0 ¹⁵	197055	0 ²⁰	525410
	13137	CY	16 ¹⁴	1137621	6 ⁸⁰	89370	1 ¹²	230169	1 ¹²	225372	20 ⁶	270832	46 ¹²	578070	1 ⁵	197655	230 ⁴⁵	3426499
	14520	CY	13 ¹³	1257730	6 ⁸⁰	98600	1 ¹²	254040	1 ¹²	248675	20 ⁶	278415	46 ¹²	769035	1 ⁵	217500	220 ¹⁴	334425

OPERATION Ogee

ATCM NO. **332.52J**

SHEET

OF

PAGE 28

Devil Canyon

JOB

A. Lee

DATE _____

BID QUANTITY 24,800

UNIT C.Y.

TAKE OFF QUANTITY 23676

EST. BY

A. Lee

DATE

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Flip Bucket

ITEM NO. 332.52K SHEET OF PAGE 289

JOB Devil Canyon

RID QUANTITY 7,000 UNIT C.Y. TAKE OFF QUANTITY 5838 EST. BY A. Lee DATE

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST								
FURNISH CONCRETE	6007	CY.	1120	67226	0.41	2463	745	46014	625	29747	723	46434	3500	21023.15	18681	1123181		
PLACE CONCRETE	6001	CY.	792	41528	0.23	1730	128	1681	177	10822	122	9422			129	77533		
WASTE CONCRETE	6	CY.																
CONCRETE OVERBREAK	163	CY.																
ERECT FORMS	1973	SF.	4.47	18917	3.00	5710	0.01	139	0.23	454	0.14	246			791	15606		
STRIP & CLEAN FORMS	9860	SF.	734	12312	0.21	2071	0.34	2252	0.46	4526	0.44	4022			279	86165		
FORM HARDWARE	9860	SF.	323	21248	0.10	786	0.13	1676	0.23	2268	0.22	2165			395	52717		
CONCRETE FINISH	4781	SF.	0.98	11615	0.08	392	0.06	287	0.08	382	0.08	130			129	8166		
CONCRETE CURE	6001	CY.	214	12762	0.34	2240	0.08	1180	0.23	180	0.19	1140			280	16103		
CONSTRUCTION JOINT PREPARATION	8745	SF.	1.08	9145	0.07	613	0.10	216	0.08	704	0.12	1427			150	13119		
FOUNDATION PREPARATION	8739	SF.	215	18789	0.13	1136	0.20	1148	0.14	1571	0.31	2771			298	21012		
POINT & PATCH	9860	SF.	0.78	11691	0.06	372	0.05	173	0.06	572	0.01	690			102	10052		
REINFORCING STEEL	583800	LB.											0.21	115750	0.15	87570	0.40	255520
	5838	CY.	18.10	281417	1.38	25546	10.74	62744	10.46	61075	11.92	69657	61.0	356175	15.0	79570	61.2	744328
	7000	CY.	19.20	221400	1.38	30660	10.70	15180	10.46	123210	11.92	83510	61.0	427070	15.0	105000	14.2	1132040

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Drain Gallery Concrete Slab

ITEM NO. 332.52L

SHEET OF PAGE 28

JOB Devil Canyon

RID QUANTITY 400

UNIT C.Y.

TAKE OFF QUANTITY 606

EST BY

A. Lee

DATE

			QUANTITY		UNIT	CONSTRUCTION LABOR & INSURANCE		CONSTRUCTION SUPPLIES		EQUIPMENT REPAIR LABOR		EQUIPMENT RENT		EQUIPMENT SUPPLIES		PERMANENT MATERIALS		SUB-CONTRACTS		TOTAL DIRECT COST		
FURNISH CONCRETE						693	CY.	11.20	776.2	0.41	21.4	766	53.08	66	24608	73	53.57	35.00	242.55		68.5	17551.4
PLACE CONCRETE						689	CY.	11.89	817.2	0.50	34.5	1.22	1325	266	1933	243	1674				19.6	13326.7
WASTE CONCRETE						4	CY.															
OVERBREAK CONCRETE						83	CY.															
FABRICATE FORMS						566	SF.	8.95	506.6	325	12.10	0.15	85	0.47	26.6	0.28	158			13.10	7411.5	
ERECT FORMS						226.3	SF.	7.34	1661.2	0.21	17.5	0.84	169	0.46	1041	0.44	276			8.79	15989.1	
STRIP & CLEAN FORMS						226.3	SF.	3.23	720.9	0.10	22.6	0.17	39.5	0.23	52.0	0.23	159			3.95	8738.8	
FORM HARDWARE						226.3	SF.			0.75	16.77								0.75	1167.7		
CONCRETE FINISH						3756	SF.	0.98	369.1	0.08	20.0	0.04	22.5	0.08	30.0	0.09	32.8			1.29	2180.4	
CONSTRUCTION JOINT PREPARATION						967	SF.	1.08	105.4	0.07	6.2	0.10	9.7	0.08	7.7	0.17	16.4			1.50	1115.0	
FOUNDATION PREPARATION						4485	SF.	2.15	964.2	0.13	56.3	0.20	29.7	0.16	21.9	0.34	152.5			2.98	13326.6	
CONCRETE CURE						689	CY.	2.16	1428.8	0.34	23.4	0.08	5.5	0.03	21	0.19	131			2.80	1721.9	
SHOTCRETE						3926	SF.	5.34	2076.5										1.80	2096.5		
REINFORCING STEEL						60600	LB										0.25	1515.0	0.15	5090	0.40	7021.0
						606	CY.	13.19	7176.0	9.93	615.2	15.08	91.44	15.48	938.4	17.8	10941	65.02	3740.5	15.2	9090	1656.16
						400	CY.	13.19	5376.4	7.98	377.2	15.08	6032	15.48	619.2	17.8	7152	65.02	2600.8	15.2	6000	1093.10

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
10' Rockbolts

ITEM NO. 332.526 SHEET OF PAGE 292

ITEM NO. Devil Canyon

BID QUANTITY 6,520 UNIT EA TAKE OFF QUANTITY

EST. BY A. Lee DATE 11/1/68

OPERATION		ITEM NO.		JOB		DATE		EST. BY		TAKE OFF QUANTITY		CONSTRUCTION LABOR & INSURANCE		CONSTRUCTION SUPPLIES		EQUIPMENT REPAIR LABOR		EQUIPMENT RENT		EQUIPMENT SUPPLIES		PERMANENT MATERIALS		SUB-CONTRACTS		TOTAL DIRECT COST		
10' ROCKDOLLS				Devil Canyon				A. Lee																				
6,520		EA																										
SAME AS KIATANA												6520	EA	22.4	144353	124	1124510.00	25320	3.66	28863	7.66	47535	19.20	190284			7405	482616

003565

OPERATION Drain Holes

OPERATION

ITEM NO. 332.527 SHEET _____ OF _____ PAGE 291

JOB Devil Canyon

BID QUANTITY 59.400 UNIT L.F. TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]

EST. BY		DATE		TAKE OFF QUANTITY		CONSTRUCTION LABOR & INSURANCE		CONSTRUCTION SUPPLIES		EQUIPMENT REPAIR LABOR		EQUIPMENT RENT		EQUIPMENT SUPPLIES		PERMANENT MATERIALS		SUB-CONTRACTS		TOTAL DIRECT COST	
SUB CONTRACT - MECHANICAL				1	LS.													LS.	1341655	LS.	1341655
" " - ELECTRICAL				1	LS.													LS.	150000	LS.	150000
				1	LS.													LS.	1491655	LS.	1491655

295

UNIT TAKE-OFF

DATE _____

SHEET _____ OF _____

DATE _____ SHEET _____ OF _____		UNIT TAKE-OFF											
DESCRIPTION	SIZE	QUANTITY	MATERIAL				LABOR		SHIPPING				
			MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.			
Gate Equipment		3 ea											
TAINTER GATES - INCL HYDRAULIC HOIST CYLINDER & HYDRAULIC SYSTEM	70'x40'	3	22500				67500	500	1500				
HYDRAULIC UNITS.		3	25000 -				75000	48	144				
" PIPING		3					12000 -		240				
TOTAL THIS SHEET							160000 -		1884				

29%

UNIT TAKE-OFF

DATE

—SHEET

OF

DESCRIPTION		DATE _____ SHEET _____ OF _____									
		MATERIAL					LABOR		SHIPPING		
SIZE	QUANTITY	MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.		
Stoplog Guides	70'x2x3 420'	3 sets	50-			8400	4	1680			
TOTAL THIS SHEET						8400-		1680			

298

DATE

-SHEET _____ OF _____

UNIT TAKE-OFF

[illegible]

OPERATION Common Excavation

ITEM NO. 332.611 SHEET OF PAGE 299

JOB Devil Canyon

BID QUANTITY 97.600 UNIT C.Y. TAKE OFF QUANTITY

ESL BY A. Lee DATE _____

[illegible]

OPERATION Approach - Rock Excavation

ITEM NO. 332.612 SHEET OF PAGE 300

BID QUANTITY 216,200 UNIT C.Y. TAKE OFF QUANTITY

JO8 Devil Canyon

EST. BY A. Lee DATE 11/1/68

[illegible]

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
FURNISH CONCRETE	42523	CY	1120	11743	766	32572	643	282778	723	1380
PLACE CONCRETE	42440	CY	786	11005	132	56031	226	95914	203	1380
WASTE CONCRETE	83	CY								
CONCRETE OVERBREAK	750	CY								
FABRICATE FORMS	32768	SF	880	281258	329	107907	015	49715	049	1203
EJECT FORMS	163800	SF	732	1199016	021	31372	035	57330	061	906
STRIP & CLEAN FORMS	163800	SF	321	525718	010	16320	018	29414	030	407
FORM HARDWARE	163800	SF			075	122250				075
CONCRETE FINISH	10089	SF	078	50117	028	907	026	605	028	123
PAINT & PATCH	163800	SF	078	127764	025	7839	025	9170	026	150
CONSTRUCTION JOINT PREPARATION	12299	SF	128	12233	027	761	010	1230	028	288
FOUNDATION PREPARATION	40147	SF	215	86216	013	5217	020	7029	016	280
CONCRETE CURE	42440	CY	216	91270	034	10430	028	33515	023	423
REINFORCING STEEL	4169000	LB								
DEE ROCK ANCHORAGE	1751	EA	221	38767	174	52470	022	17545	066	423
	41690	CY	1653	31706915	832	347066	1223	512470	1366	425350
	37900	CY	1653	2900497	832	315523	1223	465791	1366	561500

OPERATION 1" x 15' Rockbolts

ITEM NO. 332.615

SHEET _____ OF _____ PAGE 302

Devil Canyon

JOE

EST. BY A. Lee

DATE _____

BIO QUANTITY 150

UNIT EA

TAKE OFF QUANTITY

EST BY

DATE _____

[illegible]

OPERATION

JOB

Devil Canyon

- SHEET

OF

PAGE 303

BID QUANTITY

UNIT 1.5.

TAKE OFF QUANTITY

ESI BY

DATE _____

QUANTITY		UNIT	TAKE OFF QUANTITY	JOB	EST. BY	DATE	PAGE 303				
				Devil Canyon							

304

UNIT TAKE-OFF

DATE

-SHEET _____ OF _____

[illegible]

305

DATE

-SHEET ____ OF ____

UNIT TAKE-OFF

[illegible]

300

UNIT TAKE-OFF

DATE

SHEET _____ OF _____

DATE		SHEET		OF		UNIT TAKE-OFF			
DESCRIPTION		MATERIAL				LABOR		SHIPPING	
SIZE	QUANTITY	MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.
Bulkhead Gates & Followers 40'x25'	1 set				100000		360		
TOTAL THIS SHEET					100000 -		360		

307

DATE

SHEET _____ **OF** _____

UNIT TAKE-OFF

[illegible]

003565

DIVERSIFIED CONSTRUCTORS, INC.

JOB NAME: DEVIL CANYON

UNIT TAKE-OFF

DATE

SHEET OF

309

DESCRIPTION

MATERIAL

LABOR

SHIPPING

Miscellaneous electrical

SIZE

QUANTITY

MATERIAL LIST PRICE

MATERIAL SUB TOTAL

DISC.

MATERIAL EXTENSION

LABOR UNIT

TOTAL HOURS

UNIT WT.

TOTAL WT.

I.S.

BY ELECTRICAL ESTIMATOR

TOTAL THIS SHEET

Intake Building

OPERATION

ITEM NO. 332.61D SHEET _____ OF _____ PAGE 316

Devil Canyon

BID QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]

OPERATION Rock Excavation

ITEM NO. 332.711 SHEET OF PAGE 34

JOB Devil Canyon

RID QUANTITY 153.800 UNIT C.Y. TAKE OFF QUANTITY 161029 EST. BY A. L. DATE 10/1/80

[illegible]

OPERATION **Concrete**

ITEM NO. 332.714 SHEET OF PAGE 312

Devil Canyon

BID QUANTITY 1,300 UNIT C.Y. TAKE OFF QUANTITY 1483 EST BY A. Lee

DATE _____

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

ITEM NO. 332.717 SHEET OF PAGE 318

Drain Holes

ITEM NO.

SHEET

OF

PAGE

DE **312**

__ JOB

Devil Canyon

BID QUANTITY

13.650

UNIT 1. E

TAKE OFF QUANTITY

EST. BY

Also

PAID

JOB		EST. BY		DATE					
BID QUANTITY	UNIT	TAKE OFF QUANTITY	EST. BY		DATE				
13.650	L.F.		A. Lee						
QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
136.50	L.F.	37.128	28.00	16.350	6.870	11.739			73.983
SAME AS 332.527									

0 0 3 5 6 5

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
OPERATION Vent Shaft Excavation (16')

ITEM NO. 332.712 SHEET OF PAGE 214

JOB Devil Canyon

EST. BY A. Lee DATE

BID QUANTITY 850 UNIT L F TAKE OFF QUANTITY

JOB		EST. BY		DATE											
Down Canyon		A. Lee													
BID QUANTITY		UNIT		TAKE OFF QUANTITY											
850		1 E													
		QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST				
EXCAVATION - RALSC		850	LF	71.12	145503						71.12 145503				
EXCAVATION - SLASH		850	LF	911.07	774409						911.07 774409				
SUPPLIES		850	LF		144.81	165657					144.81 165657				
SUPPORTS		850	LF						180.74	153376	180.74 153376				
EQUIPMENT		850	LF			38.17	219443	174.15	148028	244.225	772.24 613696				
		850	LF	1082.25	919912	174.89	165657	258.17	219443	174.15	148028	244.225	180.74	153376	772.24 1852641

0 0 3 5 6 5

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION VENT SHAFT 16' Ø

ITEM NO. 712 SHEET 1 OF PAGE 315

QUANTITY 850 UNIT L.F. EST. BY

JOB DEVIL CANYON

CK'D BY DATE

METHOD

RAISE EXCAVATE 5' X 7'
SLASH DOWN

BLAST HOLES Ø 3.5" E. / HOLE
PLUS 1 BURN & 3 RELIEF
HOLES = 16 HOLES

DRILL 10 FT. & PULL 8 FT.

RAISE CYCLE

LOAD TROLLEY & CLIMBER

TRAVEL TO FACE - 42.5 FT. Ø 40' DIA.

SCALE LOOSE MATERIAL & HOOK UP

INSTALL GUIDE RAIL & VENT PIPE

SURVEY - CHECK ROTATION

DRILL POUND - 16 HOLES - 2 DRILLS - 5 MIN. / HOLE

EXPLOSIVES BROUGHT UP BY 3RD MAN

LOAD HOLES - 16 Ø 3.5" / MIN. (3 MEN.)

TRAVEL TO BOTTOM - SAME AS TO FACE

PARK UNIT & BLAST

SMOKE

10 MINUTES

11 "

12 "

13 "

14 "

15 "

16 "

17 "

18 "

19 "

20 "

21 "

22 "

23 "

24 "

25 "

26 "

27 "

28 "

29 "

30 "

31 "

32 "

33 "

34 "

35 "

36 "

37 "

38 "

39 "

40 "

41 "

42 "

43 "

44 "

45 "

46 "

47 "

48 "

49 "

50 "

51 "

52 "

53 "

54 "

55 "

56 "

57 "

58 "

59 "

60 "

61 "

62 "

63 "

64 "

65 "

66 "

DURATION = 850

8 = 106 ROUNDS

20 HRS WORKED

5.12 HRS. / ROUND = 3.91 ROUNDS / DAY

106

3.91 = 27 DAYS

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
East Plaza Circle
Litchfield Park, Arizona

ENGINEERING
COMPUTATIONS

Company ALASKA POWER AUTHORITY
Location DEVIL CANYON
Description SURGE CHAMBER VENT. SHRETT.

Date
DrCh
Ref

Rate Per/Hr	Labor Classification	Shift 1	Shift 2	Shift 3	Total Men/Req'd	Total Cost/Hr.
SAME AS POWERHOUSE ACCESS SHRETT						
Total		8	7		15	538.90

Cost Per/Day..... 5,389.00
 Cost Per M/Hr. Average 35.93
 Cost Per M/Day Average 359.27
 Total L. F. Or Cu. Yds. 850
 Production 31.28
 Total Days Required 27
 Total Cost - No. Days X Cost/Day 145,503.00
 Cost Per/L. F. 171.18
 Cost Per/Cu. Yd.
 Total Man Days..... 40.5
 Total Man Hours 4050

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION	ITEM NO.	SHEET 3 OF	PAGE 317
QUANTITY	UNIT	EST. BY	CK'D BY
DATE			
SLASH DOWN			
16' Ø = 50 L.F. PERIMETER LESS 5 L.F. RAISE = 45 L.F.			
45			
2 = 23 PERIMETER HOLES			
16' Ø AREA = 201 S.F. LESS 35 S.F. RAISE = 166 S.F.			
166			
3.5 = 47 AREA OR PATTERN HOLES			
TOTAL 70 HOLES			
DRILLING			
USE SINKERS (FIGURE #)			
DRILL SPEED AT 12 MINUTES / HOLE			
70 (12) = 840 MINUTES			
50 MIN HOUR = 16.80 HOURS			
4 DRILLS = 4.20 HOURS			
MOVE IN & OUT			1.00
			5.20 HOURS
LOAD & SHOOT			
BRING IN EXPLOSIVES			5.0 MINUTES
LOAD HOLES			
70 @ 8 / M.H. (4 MEN)			
60 MINUTE HOUR			110.0
MOVE OUT			5.0
			120.0
			6.0
			2.0 HOURS
CLEAN SHOT			
ALLOW 1 1/2 HOURS			

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
East Plaza Circle
Litchfield Park, Arizona

ENGINEERING
COMPUTATIONS

Company ALASKA POWER AUTHORITY
Location DEVIL CANYON
Description VENT. SHAFT

Date.....
Dr.....Ch.....
Ref.....

CYCLES

1. Drill In & Out.....	5.20
2. Load & Shoot.....	2.00
3. Smoke Time.....	0.25
4. Muck Time..... (CLEAN SHOT)	1.50
5. Supports (average time/rd.).....	0.50
6. Services (average time/rd.).....	1.25
Sub Total Hrs. Per Round.....	10.70
Lost Time @ 10 %.....	1.07
Total Hours Per Round/Cycle.....	11.77
Crew Hours Worked Per Day.....	20.0
Rounds Per Day.....	1.70
Peak L. F. Per Day.....	13.60

PRODUCTION

L. F.	L. F. /Day	W/Days
-------	------------	--------

850	13.60	63
-----	-------	----

Total Work Days
Total L. F.
Ave. L. F. Per Day

63
850
13.49

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO

SHEET 12 OF

PAGE 320

QUANTITY

UNIT

EST BY

CK'D BY

DATE

FORM 2

SUPPLIES

DRILL STEEL

EXPLOSIVES - 1330 C.Y. @ 4.54

DETONATORS - 9116 + 5% LOSS

AIR & WATER LINE

FAN LINE

LIGHTS & ELECTRIC LINES

FOUL WEATHER GEAR

QUANTITY

UNIT

TOTAL

91160 LB.

0.20

18232

28485 LB.

1.50

42728

9572 EA.

1.00

9572

850 LF.

12.00

10200

850 LF.

20.00

17000

850 LF.

5.00

4250

25470 LBS.

2.50

63675

165287

SUPPORTS

ALLOW \$24.23 PER CU. YD.

OF ROCK EXCAVATION

6330 CU. YDS.

153376

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC. ITEM NO. _____ SHEET 7 OF 20 PAGE 20
 OPERATION EQUIPMENT SUPPLY JOB DEVIL CANYON

OPERATION EQUIPMENT DEVIL CANYON
SURGE SHAFT JOB

BID QUANTITY 850 UNIT LF TAKE OFF QUANTITY _____ EST. BY _____ DATE _____
 CONSTRUCTION _____ CONSTRUCTION _____

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Excavation - Inclined - 24" Diameter

ITEM NO. 332.811 SHEET OF PAGE 32

JOB Devil Canyon

EST. BY A. Lee DATE

BID QUANTITY 2,550 UNIT C.Y. T. E OFF QUANTITY

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
EXCAVATION - RAISE	2550	LF	1796 ²³	458065						1796 ²³ 458065
EXCAVATION - SLASH	2550	LF	179 ²⁷	3404939						179 ²⁷ 3404939
SUPPLIES	2550	LF		248 ²³ 815559						248 ²³ 815559
SUPPORTS	2550	LF						44 ²³ 1035542		44 ²³ 1035542
EQUIPMENT	2550	LF			988900 ²⁴	627919	48 ²³ 1066557			988900 ²⁴ 627919 48 ²³ 1066557
	2550	LF	386300 ²⁴	815559 ²⁷	988900 ²⁴	627919	48 ²³ 1066557	44 ²³ 1035542		386300 ²⁴ 815559 ²⁷ 988900 ²⁴ 627919 48 ²³ 1066557 44 ²³ 1035542

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION Excavation - Inclined ITEM NO. 811 SHEET 1 OF 1 PAGE 323

24' Ø

JOB DAHL CANYON

QUANTITY 2550

UNIT L.F.

EST. BY

CK'D BY

DATE

FORM 2

TAKEDOFF

4 RUNS AT 600 L.F. = 2400 L.F.

USE 2550 L.F. = 637.5' / EACH.

METHOD

RAISE 5' x 7'

SLASH DOWN

BLAST HOLES @ 9 S.F. / HOLE

PLUS 1 BURN & 3 RELIEF HOLES

16 HOLES

DRILL 10 FT. & PULL 3 FT.

RAISE CYCLE

LOAD TROLLEY & CLIMBER

10 MINUTE 5

TRAVEL TO FACE 319 FT. @ 40 FPM

8

SCALE LOOSE MATERIAL & HOOK-UP

60

INSTALL GUIDE RAIL & VENT. PIPE

60

SURVEY - CHECK ROTATION

10

DRILL ROUND = 16 HOLES = 2 DRILLS - 5 MIN. / HOLE

40

EXPLOSIVES - BROUGHT UP BY 3RD MAN

5

LOAD HOLES = 16 @ 2 / M.H. (31 MEN)

10

TRAVEL TO BOTTOM - SAME AS TO FACE

8

PARK UNIT & BLAST

30

SHOKE

30

301

60

5.02 HOURS

DURATION = 638

B = 20 (4) = 320 ROUNDS

20 HOURS MARKED

5.02 HRS. / ROUND = 3.98 ROUNDS / DAY

320

3.98 = 80.4 DAYS + 4 TURN UNDER = 85 DAYS

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC. East Plaza Circle Litchfield Park, Arizona					ENGINEERING COMPUTATIONS	
Company <u>ALASKA POWER AUTHORITY</u> Location <u>DEVIL CANYON</u> Description <u>24" DIAMETER PENSTOCK</u> <u>RAISE</u>					Date Dr Ch Ref	
Rate Per/Hr	Labor Classification	Shift 1	Shift 2	Shift 3	Total Men/Req'd	Total Cost/Hr.
SAME AS POWERHOUSE ACCESS SHEET						
Total		8	7		15	538.90
Cost Per/Day.....					<u>5,389.00</u>	
Cost Per M/Hr. Average					<u>35.93</u>	
Cost Per M/Day Average					<u>359.27</u>	
Total L. F. Or Cu. Yds.					<u>2550</u>	
Production					<u>31.84</u>	
Total Days Required					<u>85</u>	
Total Cost - No. Days X Cost/Day					<u>458065.00</u>	
Cost Per/L. F.					<u>179.63</u>	
Cost Per/Cu. Yd.					<u>1275</u>	
Total Man Days.....					<u>12750</u>	
Total Man Hours					<u>12750</u>	

DIVERSIFIED CONSTRUCTORS, INC.

ITEM NO.

SHEET 3 OF PAGE 325

OPERATION

JOB

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

FORM 2

SLASH DOWN

24' ϕ = 75.4 L.F. PERIMETER LESS S.L.F. RAISE = 79.4 LF

70.4

2 = 35.2 = 35 PERIMETER HOLES

24' ϕ AREA = 452 S.F. LESS 35 S.F. RAISE = 417 SF

417

35 = 119 PATTERN HOLES

TOTAL = 154 HOLES

DRILLING

USE SINKERS (FIGURE 5)

DRILL SPEED AT 12 MINUTES / HOLE

154 (12) = 1848 MINUTES

50 MIN. HOUR = 30.9

5 DRILLS

7.39 HOURS

100 "

9.39 HOURS

MOVE IN & OUT

LOAD & SHOOT

BRING IN EXPLOSIVES

50 MINUTES

LOAD HOLES

154 @ 8 MIN. (5 MEN)

193.0

60 MINUTE HOUR

50

MOVE OUT

203.0 MINUTES

60 = 3.38 HOURS

CLEAN SHOT

ALLOW 2 HOURS

4 326

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC. East Plaza Circle Litchfield Park, Arizona		ENGINEERING COMPUTATIONS	
Company <u>ALASKA POWER AUTHORITY</u> Location <u>DEVIL CANYON</u> Description <u>24" Ø INCLINED PENSTOCK</u> <u>SLASH</u>		Date..... Dr.....Ch..... Ref.....	
CYCLES			
1. Drill in & Out.....		<u>8.39</u>	
2. Load & Shoot.....		<u>3.38</u>	
3. Smoke Time.....		<u>0.25</u>	
4. Muck Time..... <u>CLEAN SHOT</u>		<u>2.00</u>	
5. Supports (average time/rd.).....		<u>0.50</u>	
6. Services (average time/rd.).....		<u>1.25</u>	
Sub Total Hrs. Per Round.....		<u>15.77</u>	
Lost Time @ <u>10</u> %.....		<u>1.58</u>	
Total Hours Per Round/Cycle.....		<u>17.35</u>	
Crew Hours Worked Per Day.....		<u>20.0</u>	
Rounds Per Day.....		<u>1.15</u>	
Peak L. F. Per Day.....		<u>9.20</u>	
PRODUCTION	L. F.	L. F./Day	W/Days
	2550	9.20	277
Total Work Days			<u>277</u>
Total L. F.			<u>2550</u>
Ave. L. F. Per Day			<u>9.20</u>

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 6 OF PAGE 328

JOB

FORM 2

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

	QUANTITY	UNIT	EST. BY	CK'D BY	DATE
<u>SUPPLIES</u>					
DRILL STEEL	542300	LF.			106440.
EXPLOSIVES 4273.8 CY. @ 4.5#	192321	LB.			284482
DETONATORS 54230 (1.05 LOSS)	56942	EA.			56942
AIR & WATER LINE	2550	LF.			30600.
FAN LINE	2550	LF.			51000.
LIGHTS & ELECTRIC LINES	2550	LF.			12750.
FOUL WEATHER GEAR	106930	M.Y.			267925
					815559.
<u>SUPPORTS</u>					
ALLO. N. 24.23 PER CU. YD. OF					
ROCK EXCAVATION					
4273.8 CY.					1055542

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Excavation - Inclined - 20' Diameter

ITEM NO. 332-81A SHEET OF PAGE 331

JOB Devil Canyon

EST. BY A. Lee DATE

BID QUANTITY 200 UNIT L.D. TAKE OFF QUANTITY

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
EXCAVATION	200	L.F.	451.38	90275						451.38 90275
SUPPLIES	200	L.F.		171.92 38383						171.92 38383
SUPPORTS	200	L.F.						158.71 31741		158.71 31741
EQUIPMENT	200	L.F.			11.61 34335	147.31 27731	181.56 36370			500.48 100636
	200	L.F.	451.38	90275	171.92 38383	147.31 27731	181.56 36370	158.71 31741		1006.36 261035

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION EXCAVATION- INCLINED
20' Ø

ITEM NO 332- SHEET 1 OF 1 PAGE 331

JOB DEVIL CANYON

QUANTITY 200 UNIT L.F. EST BY

CK'D BY DATE

FORM 2

TAKE OFF = 4 C 70 L.F. = 280 L.F.

PERIMETER HOLES @ 2' C-C = 31

AREA HOLES @ 1 PER 4.5 S.F. = 70
101 HOLES

DRILLING -

DRILL 12 FT. & PULL 10 FT.

101 HOLES

3 DRILLS = 21 (3)

CHANGE BITS EVERY 3 HOLES

101

3 = 21 (25)

109 MINUTES

50 MIN. HOUR =

DRILLING CYCLE TIME

MOVE UP & HOOK UP JUMBO

SCALE

DRILL OUT

UNHOOK

LOAD & SHOOT

BRING UP EXPLOSIVES

LOAD HOLES

10 L.C. 8/11 M.H. (SHEEN)

60 MINUTES

MOVE OUT

101 MINUTES

8 "

109 MINUTES

2.8 HOURS

50 MINUTES

50 "

130.0 "

50 "

146 MINUTES

50 MIN. HOUR =

2.98 HOURS

50 MINUTES

127.0 "

50 "

137.0 MINUTES

60 = 2.28 HOURS

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO

SHEET 2 OF PAGE 332

QUANTITY

UNIT

EST. BY

JOB

CK'D BY

DATE

FORM 2

MUCKING

11.64 (10) (1.45) = 169 CU. YDS.

USE ST. 13 SCOOP TRAILS AT

11 CU. YDS. / CYCLE

HAUL DISTANCE = 2000 LF

169

11 = 15 CYCLES

CYCLE TIME

LOAD 0.50 MINUTES

HAUL 4.55 "

DIAM. TURN 1.00 "

RETURN 2.28 "

8.33 (15)

50 MIN. HOUR

2.50 HOURS

2 UNITS = 1.25 HOURS

SUPPLIES

DRILL STEEL

EXPLOSIVES 2328 CY. @ 4.5 #

DETONATORS 2020 (1.05 LOSS)

AIR & WATER LINES

VENT. LINE

LIGHT & ELECTRIC LINES

FOUL WEATHER GEAR

QUANTITY UNIT TOTAL

24240 LF. 0.20 4848

10470 LB. 1.50 15714

2121 EA. 1.00 2121

200 LF. 12.00 2400

200 LF. 30.00 6000

200 LF. 5.00 1000

2520 M.H. 2.50 6300

38383

191.92

SUPPORTS

ALLOW 24.23 PER CU. YD. OF

EXCAVATION

31741

158.71

333

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC. East Plaza Circle Litchfield Park, Arizona		ENGINEERING COMPUTATIONS	
Company <u>ALASKA POWER AUTHORITY</u> Location <u>DEVIL CANYON</u> Description <u>PENSTOCK 20" Ø</u>		Date..... Dr.....Ch..... Ref.....	

CYCLES

1. Drill In & Out.....	<u>2.92</u>
2. Load & Shoot.....	<u>2.28</u>
3. Smoke Time.....	<u>0.50</u>
4. Muck Time.....	<u>1.25</u>
5. Supports (average time/rd.).....	<u>0.50</u>
6. Services (average time/rd.).....	<u>0.25</u>
Sub Total Hrs. Per Round.....	<u>7.70</u>
Lost Time @ <u>10</u> %.....	<u>1.70</u>
Total Hours Per Round/Cycle.....	<u>8.40</u>
Crew Hours Worked Per Day.....	<u>20.0</u>
Rounds Per Day.....	<u>2.38</u>
Peak L. F. Per Day.....	<u>23.8</u>

PRODUCTION	L. F.	L. F. /Day	W/Days
Total Work Days Total L. F. Ave. L. F. Per Day	200	23.8	<u>9</u> <u>200</u> <u>22.22</u>

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION EQUIPMENT SUMMARY

ITEM NO

SHEET 5 OF PAGE 335

PENSTOCK 20' Ø

JOB

DATE

BID QUANTITY UNIT TAKE OFF QUANTITY

EST BY

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
1-3 DRILL JUMBO	180	HRS			5088	7158	1800	1640	4202	15640
3- FANS	540	"			389	2101	235	1269	235	1269
1-500 KW GENERATOR	180	"			2285	5712	1232	2218	324	5735
2- PUMPS	360	"			240	864	027	97	183	659
2-5T 13 SCRAP TRAILERS	360	"			2665	10819	3800	12610	2892	14015
1- PICKUP	180	"			240	132	097	1715	571	1028
1- FLAT BED	180	"			401	722	417	751	1104	1937
1 D7 DOZER	180	"			2484	4327	1722	2101	2257	4062
	200	LF			1161	34325	447	2993	1115	36370

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

ITEM NO. 332.812 SHEET OF PAGE 324

JOB Devil Canyon

EST. BY A. Lee

BID QUANTITY 950 UNIT L.F. TAKE OFF QUANTITY

OPERATION Drill & Grout Consolidation

ITEM NO. 332.813 SHEET OF PAGE 337

OPERATION

Devil Canyon

JOB Devil Canyon
A. LEE

BID QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY _____ EST BY A. L. L. DATE _____

0 0 3 5 6 5

0 0 3 5 6 5

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Steel Lined Incline 15' Concrete
Penstock Liner

ITEM NO 332.81B SHEET OF PAGE 33

JOB Devil Canyon

EST BY A. Lee DATE

BID QUANTITY 200 UNIT L.F. TAKE OFF QUANTITY

Penstock Liner			JOB		Devil Canyon		EST. BY		A. Lee		DATE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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UNIT TAKE-OFF

DATE _____

SHEET _____ OF _____

JOB NAME		DEVIL CANYON		DATE		SHEET					
DESCRIPTION		MATERIAL					LABOR		SHIPPING		
		SIZE	QUANTITY	MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.
Steel lined Incl. 15' Conc Penst, Liner			200ft								
@ 3/8" x 45 x 15.3 = 172,000 lbs.			250'	1.2			172,000-				
HANDLING - UNLOADING & SETTING				--			--	10.	860		
FIELD JOINTS			25					80	2000		
TEMPORARY SPIDERS ETC							10,000-		-		
							<u>182,000-</u>		<u>2860</u>		
X 4 UNITS							4		4		

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Penstock Concrete Liner - Horizontal

ITEM NO 332.815

SHEET OF PAGE 341

15' I.D.

JOB

Devil Canyon

BID QUANTITY 950

UNIT L.F.

TAKE OFF QUANTITY

EST. BY

A. Lee

DATE

BID QUANTITY		950		UNIT		L.F.		TAKE OFF QUANTITY		EST. BY		A. Lee		DATE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Penstock Concrete Plug

ITEM NO. 332.815 SHEET OF PAGE 342

JOB Devil Canyon

BID QUANTITY 10,000 UNIT C.Y. TAKE OFF QUANTITY 6050

EST. BY A. Lee DATE

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
FURNISH CONCRETE	7330	CY	1172	85761 0.11	2005 722	56148 645	48715 723	56661 3500		5088710
PLACE CONCRETE	7310	CY	771	56360 0.42	2076 0.10	4386 0.53	3874 133	9722		77412
WASTE CONCRETE	20	CY								
OVERBREAK CONCRETE	1260	CY								
FABRICATE FORMS	1000	SF	1173	11730 3.42	2420 0.19	190 0.62	620 0.37	370		16530
ERECT FORMS	1000	SF	724	1340 0.21	210 0.21	340 0.46	160 0.24	440		8190
STRIP & CLEAN FORMS	1000	SF	323	3230 0.10	100 0.17	170 0.23	230 0.23	220		3950
FORM HARDWARE	1000	SF		675	750					750
FOUNDATION PREPARATION	45320	SF	213	97438 0.13	5892 0.20	9064 0.16	7251 0.34	15409		135054
	6050	CY	1183	762059 7.1	16447 1.61	70273 10.1	61180 12.6	82832 12.4		149356
	10000	CY	1183	433100 7.1	77100 1.61	116100 10.1	101100 13.6	136800 12.4		1238200

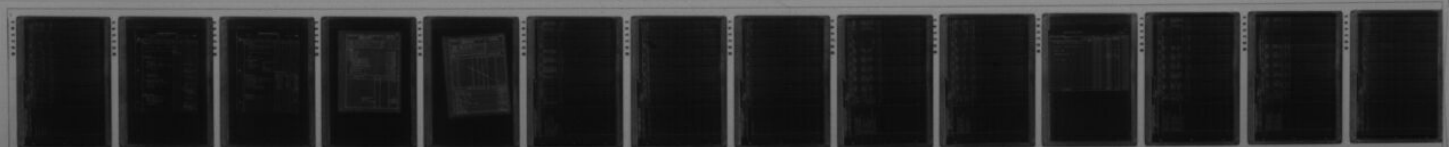
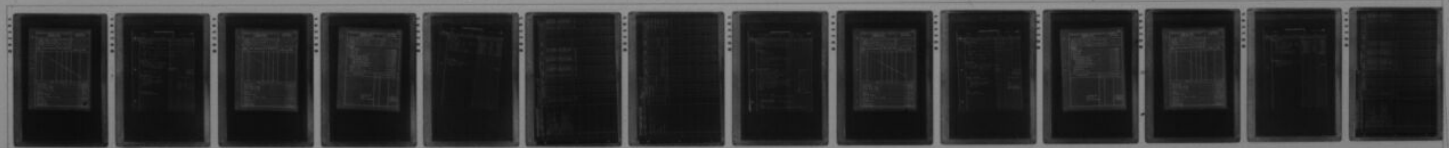
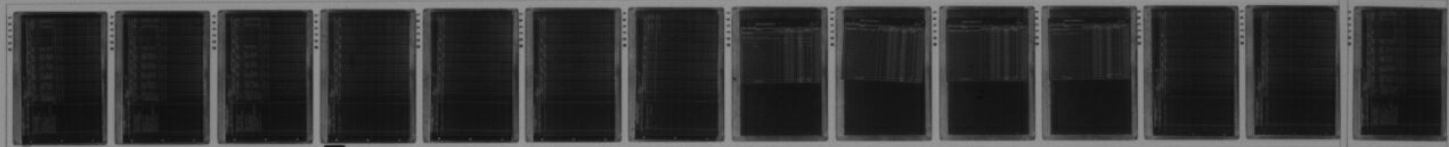
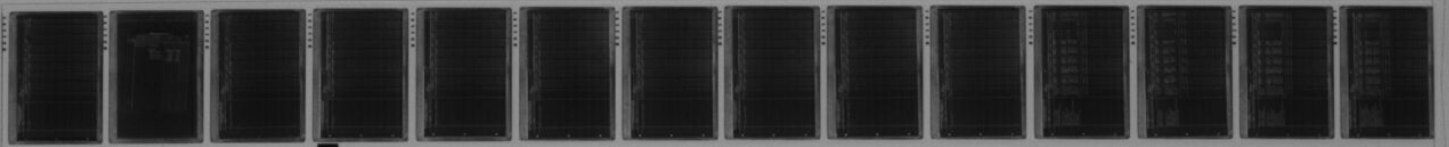
OPERATION Steel Liner

ITEM NO. 332.818 SHEET OF PAGE 343

 JOB Devil Canyon

BIG QUANTITY 2.000 UNIT TON TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]



UNIT TAKE-OFF

JOB NAME DEVIL CANYON

DATE _____

SHEET OF

DESCRIPTION	MATERIAL					LABOR		SHIPPING		
	SIZE	QUANTITY	MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.
Steel Liner		2000Ton	75/16			300000-				
LABOR @ 15 M/HRS TON								30,000		
NOTE NO STEEL LINER SHOWN IN PENSTOCK: STEEL LINER SHOWN IN MAIN DAMM OUTLETS BUT NOT 2000 TONS										
TOTAL THIS SHEET						3,000,000-		30,000		

0035565

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION

Tunnel Excavation - 42'

ITEM NO.

332.911

SHEET

OF

PAGE 245

JOB

Devil Canyon

EST. BY

A. Lee

DATE

BID QUANTITY 6.730

UNIT L.F.

TAKE OFF QUANTITY

QUANTITY

UNIT

CONSTRUCTION
LABOR & INSURANCE

CONSTRUCTION
SUPPLIES

EQUIPMENT
REPAIR LABOR

EQUIPMENT
RENT

EQUIPMENT
SUPPLIES

PERMANENT
MATERIALS

SUB-CONTRACTS

TOTAL
DIRECT COST

EXCAVATION

SUPPLIES

SUPPORTS

EQUIPMENT

6.730

LF

7343368

539.11

3628186

3131707

3608856

8367491

10019991

6.730

LF

7343368

539.11

3628186

3131707

3608856

8367491

10019991

6.730

LF

7343368

539.11

3628186

3131707

3608856

8367491

10019991

6.730

LF

7343368

539.11

3628186

3131707

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8367491

10019991

6.730

LF

7343368

539.11

3628186

3131707

3608856

8367491

10019991

6.730

LF

7343368

539.11

3628186

3131707

3608856

8367491

10019991

003565

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION TUNNEL EXCAVATION 42' Ø ITEM NO. 911 SHEET 1 OF 346

JOB DEVIL CANYON

QUANTITY 6730 UNIT C.F. EST. BY _____ CK'D BY _____ DATE _____

FORM 2

TAKE OFF = 6760

METHOD

HEAD & BENCH

DRILL HOLES

UPPER = 119 HOLES

LOWER = 85 "

204 HOLES

UPPER DRIFT

119 DRILL HOLES

DRILL 12 FT / PULL 10 FT

USE 3 DRILL HYDRAULIC

TUMBO AT 3 MINUTES / HOLE

119

3 = 39.67 (3) =

119 MINUTES

CHANGE BITS EVERY 3 HOLES

119

3 = 39.67 (.25) =

12 MINUTES

129 MINUTES

129 MINUTES

50 MIN. HOUR =

2.58 HOURS

DRILLING CYCLE TIME

MOVE UP & HOOK UP TUMBO

50 MINUTES

SCALE

50 "

DRILL OUT

1550 "

UNHOOK

50 "

1700 MINUTES

40 = 2.83 HOURS

LOAD & SHOOT

BRING UP EXPLOSIVES

50 MINUTES

LOAD HOLES

119 C.B./M.H. (SMEN)

60 MIN. HOUR

1490 "

MOVE OUT

50 "

1590 MINUTES

40 = 2.45 HOURS

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION		ITEM NO.	SHEET <u>2</u> OF <u>PAGE 347</u>
QUANTITY	UNIT	EST. BY	DATE
<u>MUCKING</u>			
25.66 (1.0) (1.45)	= 372 CU. YDS.		
USE ST. 13 SCOOP TRAMS.			
11 CU. YDS. / CYCLE BULK			
HAUL AT 5 MPH	372		
RETURN AT 10 MPH	11	34 CYCLES	
<u>CYCLE TIME</u>			
LOAD	0.50 MINUTES		
HAUL	8.82 "		
DUMP & TURN	1.00 "		
RETURN	4.41 "		
	14.73 MIN. / CYCLE (34)		
	50 MINUTE HOUR	= 10.02 HOURS	
		4 UNITS = 2.51 HOURS	
<u>BENCH</u>			
8.5 HOLES			
8.5			
3 = 28.3 (3)			
CHANGE BITS EVERY 3 HOLES			85 MINUTES
8.5			
3 = 28.3 (.25)			7 "
92 MINUTES			92 MINUTES
50 MIN. HOUR			1.84 HOURS
<u>DRILLING CYCLE TIME</u>			
MOVE UP & HOOK UP JUMBO			50 MINUTES
SCALE			50 "
DRILL OUT			110.0 "
UNHOOK			50 "
			125.0 MINUTES
			60 = 2.08

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION		ITEM NO.	SHEET 3 OF	PAGE 348
QUANTITY	UNIT	EST. BY	CK'D BY	DATE
<u>LOAD & SHOOT</u>				
BRING UP EXPLOSIVES				50 MINUTES
LOAD HOLES				
BS @ 81 MIN. (SMEN)				
LOADING HOUR				106.0 "
MAKE OUT				50 "
116.0 MINUTES				
20. = 1.93 HOURS				
<u>MUCKING</u>				
SAME AS HEADING				
251 HOURS				
<u>SUPPLIES</u>				
DRILL STEEL	QUANTITY	UNIT	TOTAL	
EXPLOSIVES 345336 L.Y. C.Y.S.	1647504 LF.	0.20	329501	
DETONATORS 137292 EA. + 5% LOSS	1554012 LBS	1.50	2331018	
AIR & WATER LINES	174157 EA.	1.00	174157	
VENT LINES	6730 LF.	12.00	80760	
LIGHT & ELECTRIC LINES	6730 LF.	30.00	201900	
EQUIL WEATHER GEAR	6730 LF.	5.00	33650	
	102880 H.N.	2.50	507200	
			3628186	
<u>SUPPORTS</u>				
ALLOW #24.23 /CU.Y.O. OF				
EXCAVATION. - 345336 L.Y.				6307491

ENGINEERING COMPUTATIONS

Date.....
Dr.....Ch.....
Ref.....

<u>CYCLES</u>		
1. Drill In & Out.		2.83
2. Load & Shoot		2.65
3. Smoke Time.		0.50
4. Muck Time.		2.51
5. Supports (average time/rd.).		0.50
6. Services (average time/rd.).		0.25
Sub Total Hrs. Per Round.		9.24
Lost Time @ <u>12</u> %.		0.92
Total Hours Per Round/Cycle.		10.16
Crew Hours Worked Per Day.		20.0
Rounds Per Day.		1.97
Peak L. F. Per Day.		19.70

PRODUCTION	L. F.	L. F. /Day	W/Days
TURN UNDER	6730	19.70	2.0 342.0
Total Work Days			346
Total L. F.			6730
Ave. L. F. Per Day			19.45

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
East Plaza Circle
Litchfield Park, Arizona

ENGINEERING
COMPUTATIONS

Company ALASKA POWER AUTHORITY...
Location DEVIL CANYON...
Description TAILRACE TUNNEL...

Date
Dr Ch
Ref

Rate Per/Hr	Labor Classification	Shift 1	Shift 2	Shift 3	Total Men/Req'd	Total Cost/Hr.
<i>SAME AS BUS TUNNELS EXCEPT</i>						
		14	14		28	1003.06
38.80	KICKER OPERATORS	2	2		4	155.20
	Total	16	16		32	1158.26

Cost Per/Day..... 1158.26
Cost Per M/Hr. Average 36.80
Cost Per M/Day Average 361.96
Total L. F. Or Cu. Yds. 6730
Production 10.62
Total Days Required 634
Total Cost - No. Days X Cost/Day 734328.40
Cost Per/L. F. 1091.14
Cost Per/Cu. Yd. 10288
Total Man Days..... 202880
Total Man Hours

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION

EQUIPMENT SUPPLY

JOB

ITEM NO. 332-911

SHEET

OF

PAGE 352

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION EQUIPMENT SUPPLY

ITEM NO. 352-911

SHEET OF

PAGE 352

JOB

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
Portal Rock Excavation

ITEM NO. **332.913**

OF PAGE **254**

OPERATION

JOB

Devil Canyo.

EST. BY

DATE

BID QUANTITY

21,000

UNIT **C.Y.**

TAKE OFF QUANTITY

QUANTITY

UNIT

CONSTRUCTION
LABOR & INSURANCE

CONSTRUCTION
SUPPLIES

EQUIPMENT
REPAIR LABOR

EQUIPMENT
RENT

EQUIPMENT
SUPPLIES

PERMANENT
MATERIALS

SUB-CONTRACTS

TOTAL
DIRECT COST

SAID AS ITEM 332-21A.

21,000 C.Y.

549

115270 221

140290 241

50410 121

27250 205

43050

1353

284130

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Tailrace Tunnel Concrete - 38' I.D.

ITEM NO. 332.914

SHEET 35 OF 35

JOB Devil Canyon

BID QUANTITY 6.730 UNIT L.F. TAKE OFF QUANTITY

EST BY A. Lee DATE

	QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
EURNISH CONCRETE	79402	CY	11 ²⁰ 889 802	0 ⁴¹ 32 455	7 ⁶⁶ 608 219	6 ⁶³ 528 023	7 ²³ 613 777	35 ⁰⁰ 2 779 070		1265 54509.46
PLACE CONCRETE 2264	79065	CY	7 ²¹ 609 591	0 ⁴² 33 207	0 ⁶⁰ 47 439	0 ⁵³ 41 904	13 ³ 105 156			1059 63729.7
WASTE CONCRETE	337	CY								
QUICKBREAK CONCRETE	16421	CY								
FABRICATE FORMS	4775	SF	11 ⁹³ 569 66	3 ⁴² 16 531	0 ¹⁹ 70 702	0 ²² 276 1	0 ²⁷ 1 767			1653 7893.2
ERECT FORMS	803427	SF	7 ³⁴ 5 897 154	0 ²¹ 10 872	0 ³⁴ 273 163	0 ⁴⁶ 369 576	0 ⁴⁴ 353 508			329 706712.3
STRIP & CLEAN FORMS	803427	SF	3 ²³ 259 506	0 ¹⁰ 10 343	0 ¹⁷ 136 583	0 ²³ 184 788	0 ²² 176 754			325 3173 53.7
FORM HARDWARE	803427	SF		0 ⁷⁵ 602 570						0 ⁷³ 602 570
CONSTRUCTION JOINT PREPARATION	42285	SF	1 ⁰⁸ 45 668	0 ⁰⁷ 2 960	0 ¹⁰ 4 229	0 ⁰⁸ 358 3	0 ¹⁷ 7 181			150 63428
ROCK CLEANUP	888024	SF	2 ¹⁵ 1 909 252	0 ¹³ 11 544	0 ²⁰ 17 260	0 ¹⁴ 142 284	0 ²⁷ 351 928			298 26463.12
CONCRETE CURE	79065	CY	2 ¹⁴ 170 180	0 ³⁴ 26 882	0 ⁰⁸ 63 250	0 ⁰³ 2372	0 ¹⁹ 15022			280 72135.1
REINFORCING STEEL	3132192	LB						0 ²⁵ 183 048	0 ¹⁵ 169829	0 ⁴⁰ 175297.7
	6730	L.F.	1805 ¹³ 12173782	160 ³² 1079011	116 ⁴⁰ 1754072	127 ⁴⁶ 1275097	130 ⁰⁰ 1575100	54 ⁷⁸ 356218	47 ¹¹ 169227	103 ¹¹ 2122940.3

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
OPERATION Portal Concrete

OPERATION Portal Concrete

ITEM NO. 332.91A SHEET OF PAGE 38

JOB Devil Canyon

BID QUANTITY 750

UNIT C.Y.

TAKE OFF QUANTITY

EST. BY

DATE _____

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Portal Rockbolts 1" x 15'

ITEM NO. 332.915 SHEET OF PAGE 357

108 Devil Canyon

RID QUANTITY 100 UNIT EA TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

ITEM NO. 332.91C SHEET OF PAGE 356
JOB Devil Canyon

OPERATION Training Students JOB _____

EST. BY A. Lee DATE

BID QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY

[illegible]

359



DATE

SHEET _____ OF _____

[illegible]

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Turbines & Governors

ITEM NO. 333.11 SHEET OF PAGE 3/4

JOB Devil Canyon

BID QUANTITY 8 UNIT EA TAKE OFF QUANTITY _____ EST. BY A. L. DATE _____

[illegible]

DIVERSIFIED CONSTRUCTORS, INC.

26

JOB NAME DEVIL CANYON

DATE

SHEET OF

UNIT TAKE-OFF

DESCRIPTION	MATERIAL						LABOR		SHIPPING		
	SIZE	QUANTITY	MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.	
Turbines and Governors		4 ea									
UNLOAD, HAUL STORE & HAUL TURBINES & GOVERNORS.		4	2250000			90000000 - 25,000	100,000				
INSTALL SPART TUBE LINER											
SPIDER & MISC BRACING FOR LINER											
INSTALL SPIRAL CASE & BRACING											
INSTALL TEST HEAD & TEST BARREL											
HYDRO SPIRAL CASE											
TEST EQUIPMENT											
INSTALL PIT LINER											
TEMP SPIDER & BRACING FOR PIT LINER											
INSTALL - TURBINE, RUNNERS, WILKIE GATES, HEAD COVER SERVOMOTORS, GOVERNORS, GUIDE BEARING & SHAFT											
PIPING SYSTEMS - HYDRAULICS, GREASE, AIR AND COOLING WATER SYSTEMS.											
TOTAL THIS SHEET						9,000,000 -	100,000				

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
Generators & Exciters

OPERATION

Generators & Exciters

ITEM NO. 333.21

- SHEET _____ OF _____ PAGE 342

JOB Devil Canyon

EST. BY A. Lee

- DATE

[illegible]

OPERATION Accessory Electrical Equipment

ITEM NO 334.

- SHEET ____ OF ____ PAGE 365

JOB Devil Canyon

~~BID QUANTITY~~ - 1

UNIT L.S.

TAKE OFF QUANTITY

EST BY

A. Lee

DATE _____

[illegible]

OPERATION Miscellaneous Power Plant Equipment

OPERATION Miscellaneous Power Plant Equipment ITEM NO. 335 SHEET OF PAGE 2/4

_____ 108 Devil Canyon

R/O QUANTITY 1 UNIT L.S. TAKE OFF QUANTITY _____ EST. BY A. Lee DATE _____

[illegible]

26-

UNIT TAKE-OFF

DATE _____ SHEET _____ OF _____

DESCRIPTION		DATE		SHEET		OF		UNIT TAKE-OFF			
SIZE	QUANTITY	MATERIAL				LABOR		SHIPPING			
		MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.		
Auxiliary Systems - Underground											
Station Water Systems											
	LS										
COLD WATER INTAKE STRAINER		4	10200 -			42000 -	12	48			
COLD WATER PUMP		4	18200 -			72000 -	48	192			
HOSE STATIONS		36	75 -			2700 -	4	144			
PIPE VALVES & FITTINGS		1 LOT				102000 -		8000			
HOT WATER TANKS & SYSTEM		1 LOT				25000 -		300			
WATER TREATMENT PLANT		1				75000 -		400			
TOTAL THIS SHEET						341700 -		9084			



DATE

SHEET _____ OF _____

DESCRIPTION		DATE _____ SHEET _____ OF _____									
		MATERIAL					LABOR		SHIPPING		
SIZE	QUANTITY	MATERIAL LIST PRICE	MATERIAL SUB TOTAL	DISC.	MATERIAL EXTENSION	LABOR UNIT	TOTAL HOURS	UNIT WT.	TOTAL WT.		
Fire Protection Systems											
Fire Protection Systems											
LS											
<u>GENERATORS</u>											
	4	25000			100000-	400	1600				
<u>TRANSFORMER GALLERY</u>											
	3	20000-			60000-	300	900				
TOTAL THIS SHEET					160000-		2500				

UNIT TAKE-OFF

368

JOB NAME DEVIL CANYON

DATE

SHEET _____ OF _____

[illegible]

369

UNIT TAKE-OFF

DATE _____

SHEET _____ **OF** _____

[illegible]

271

DATE _____

-SHEET

08

UNIT TAKE-OFF

[illegible]

JOB NAME DEVIL CANYON

DATE

- SHEET _____ OF _____

UNIT TAKE-OFF

37

[illegible]

[illegible]

OPERATION Site Roads

ITEM NO. 336.12 SHEET OF PAGE 373

Devil Canyon

JOB

by A. Lee

DATE _____

BID QUANTITY 7 UNIT ML. TAKE OFF QUANTITY

EST. BY

001

DATE:

EQUIPMENT
REPAIR LABOR

**EQUIPMENT
RENT**

**EQUIPMENT
SUPPLIES**

PERMANENT MATERIALS

SUB-CONTRACTS

**TOTAL
DIRECT COST**

QUANTITY

UNIT

**CONSTRUCTION
BOB & INSURANCE**

**CONSTRUCTION
SUPPLIES**

EQUIPMENT
REPAIR LABOR

**EQUIPMENT
RENT**

**EQUIPMENT
SUPPLIES**

PERMANENT MATERIALS

SUB-CONTRACTS

**TOTAL
DIRECT COST**

SUB-CONTRACT.

7

M.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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SUPPLIES

REPAIRS	
---------	--

[illegible][illegible][illegible]

24500.00

24.5000

003565

BID QUANTITY		3	UNIT	MI.	TAKE OFF QUANTITY		EST. BY	A. Lee	DATE		CONSTRUCTION LABOR & INSURANCE		CONSTRUCTION SUPPLIES		EQUIPMENT REPAIR LABOR		EQUIPMENT RENT		EQUIPMENT SUPPLIES		PERMANENT MATERIALS		SUB-CONTRACTS		TOTAL DIRECT COST	
SUB CONTRACT					3	MI.																		12000000	12000000	

003565

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION Road Maintenance - Cantwell to Watana

ITEM NO. 336.1a

SHEET

OF

PAGE 371

JOB Devil Canyon

EST. BY A. Lee

DATE

BID QUANTITY 650 M-YR UNIT

TAKE OFF QUANTITY

CONSTRUCTION LABOR & INSURANCE

CONSTRUCTION SUPPLIES

EQUIPMENT REPAIR LABOR

EQUIPMENT RENT

EQUIPMENT SUPPLIES

PERMANENT MATERIALS

SUB-CONTRACTS

TOTAL DIRECT COST

QUANTITY

UNIT

CONSTRUCTION LABOR & INSURANCE

CONSTRUCTION SUPPLIES

EQUIPMENT REPAIR LABOR

EQUIPMENT RENT

EQUIPMENT SUPPLIES

PERMANENT MATERIALS

SUB-CONTRACTS

TOTAL DIRECT COST

SUB CONTRACT

650 M-YR

5029.550

5029.550

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
Transmission Plant

OPERATION

ITEM NO. 350-359 SHEET OF PAGE 377

JOB Devil Canyon

EST. BY A. Lee DATE

BID QUANTITY 1

UNIT L.S.

TAKE OFF QUANTITY

QUANTITY

UNIT

CONSTRUCTION
LABOR & INSURANCE

CONSTRUCTION
SUPPLIES

EQUIPMENT
REPAIR LABOR

EQUIPMENT
RENT

EQUIPMENT
SUPPLIES

PERMANENT
MATERIALS

SUB-CONTRACTS

TOTAL
DIRECT COST

L.S. 12/13/000 L.S. 12/13/000

SUB CONTRACT

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
General Plant

ITEM NO. _____

JOB _____

A. 100 DATE

BID QUANTITY 1 UNIT L.S. TAKE OFF SHEET 1

QUANTITY	UNIT
----------	------

**CONSTRUCTION
AND INSURANCE**

SUPPLIES

REPAIR LABOR

EQUIPMENT

SUPPLIES

PERMANENT MATERIALS

SUB-CONTINENT

DIRECT COST

INCLUDED IN DIRECT COSTS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
Construction Camps & Permanent Village

ITEM NO. (63) .1-5 SHEET OF PAGE 27

DIVERSIFIED ENGINEERS & CONSTRUCTION
Construction Camps & Permanent Village

OPERATION CONSTRUCTION JOB 100 DATE 1-1-68
BY A. Lee

OLD QUANTITY 1 UNIT 15 TAKE OFF QUANTITY

QUANTITY	UNIT
----------	------

CONSTRUCTION
LABOR & INSURANCE

**CONSTRUCTION
SUPPLIES**

EGG	REPAIR LABOR
-----	--------------

	RENT

[illegible][illegible]

LS. #173217

1	LS	132	11

SUB-CONTRACT

003565

OPERATION

ITEM NO.

(63) .6

SHEET

OF

PAGE 2

380

108

Devil Canyon

100

EST. BY

DATE

BID QUANTITY 1,059,290 UNIT MD TAKE OFF QUANTITY

EST. BY

1998

CONSTRUCTION

**CONSTRUCTION
SUPPLIES**

**EQUIPMENT
REPAIR LABOR**

EQUIPMENT
RENT

**EQUIPMEN
SUPPLIES**

**PERMANENT
MATERIAL**

SUB-CONTRACT

**TOTAL
DIRECT CO**

SUB-CONTRACT

QUANTITY

105929.0710.

**CONSTRUCTION
LABOR & INSURANCE**

**CONSTRUCTION
SUPPLIES**

**EQUIPMENT
REPAIR LABOR**

EQUIPMENT
RENT

**EQUIPMEN
SUPPLIES**

**PERMANENT
MATERIAL**

SUB-CONTRACT

**TOTAL
DIRECT CO**

003565

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
Camp Power

ITEM NO. (63) .72 SHEET OF PAGE 382
JOB Devil Canyon
BY A. Lee DATE CONSTRUCTION

JOB _____
BY A. Lee

EST. NO.		CO.
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LABOR & ...	
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214520

10/10/10

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DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

OPERATION

Plant

ITEM NO.

(63) . 81

SHEET

OF

PAGE 314

JOB

Devil Canyon

EST. BY

A. Lee

DATE

BID QUANTITY

1

UNIT

L.S.

TAKE OFF QUANTITY

QUANTITY

UNIT

CONSTRUCTION
LABOR & INSURANCE

CONSTRUCTION
SUPPLIES

EQUIPMENT
REPAIR LABOR

EQUIPMENT
RENT

EQUIPMENT
SUPPLIES

PERMANENT
MATERIALS

SUB-CONTRACTS

TOTAL
DIRECT COST

L.S. 1,500,000

L.S. 1,500,000

SUB-CONTRACT

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
Operation

ITEM NO. (63) 82 SHEET OF PAGE

OPERATION Operation

— JOB

Devil Canyon

DAI

RUN QUANTITY 1.870 UNIT DAYS TAKE OFF QUANTITY

ESI BY



100

DAI

CONSTRUCTION
LABOR & INSURANCE

**CONSTRUCTION
SUPPLIES**

EQUIPMENT
REPAIR LABOR

**EQUIPMENT
RENT**

**EQUIPMENT
SUPPLIES**

PERMANENT
MATERIALS

SUB-CONTRACTS

**TOTAL
DIRECT COST**

240	427500
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2500	4075.00
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OPERATION Mitigation

OPERATION

ITEM NO. (68)

SHEET ____ OF ____

PAGE 380

JOB Devil Canyon

A. Lee

DATE _____

BID QUANTITY 1

1

UNIT L.S.

TAKE OFF QUANTITY

EST. BY

		QUANTITY	UNIT	CONSTRUCTION LABOR & INSURANCE	CONSTRUCTION SUPPLIES	EQUIPMENT REPAIR LABOR	EQUIPMENT RENT	EQUIPMENT SUPPLIES	PERMANENT MATERIALS	SUB-CONTRACTS	TOTAL DIRECT COST
		1	LS.							U.S. \$300,000	U.S. \$300,000

DIVERSIFIED CONSTRUCTORS

HOURLY EQUIPMENT OPERATING COSTS

JOB _____ CONT. NO. _____ SHEET _____ OF _____ PAGE _____
 LABOR: H. D. MECHANIC _____ PER HR. _____
 MECH. HELPER _____ PER HR. _____
 P. R. TAX & INS. _____
 OVERTIME _____
 SUPPLIES: DIESEL FUEL _____ PER GAL. _____
 GASOLINE _____ PER GAL. _____
 BUTANE _____ PER GAL. _____
 ELECT. POWER _____ PER KWH. _____

TYPE OF EQUIPMENT	Model or Capacity	GENERATOR 300 KW	GENERATOR 500 KW	CRANE TOWER PM 3000	AIR WATER BLASTER 100 K.N.	AIR TANK 8"	PUMP 4"	PUMP 2"	BATCH PLANT	AGGREGATE PLANT	HYD. 2 DRILL Jcy	HYD. 3 DRILL Jcy	AIR 8 DRILL MOUNTED	FANS "AIR"	ALL MAX RAISE
Horsepower															
Fuel or Power Consumption per hr.		16.3	18.0		8.4	2.8	1.9	0.91							
New Cost															
Shipping Weight															
OPERATION HOURS	This Period To Date														
REPAIR	M.H./Hour	0.44	0.82	0.34	0.37	0.75	0.16	0.11	0.06	0.10	1.20	0.51	1.27		
LABOR COST	Operator														
	Oil														
	Repair & Service	17.63	32.85	13.58	14.82	30.05	6.41	4.41	2.40	28.04	48.07	32.50	50.88	51.23	8.65
	Total														
RENTAL OR DEPRECIATION	New	2.78	12.32	54.53	12.32	8.22	0.59	0.50	0.27	28.01	22.03	11.99	48.00	53.66	2.35
	Used														53.14
SUPPLIES & EXPENSE	Cost Per Hour														
	Fuel or Power	32.82	25.20	6.36	11.16	0.92	5.92	2.66	1.27						
	Oil & Grease	3.02	3.78	1.34	1.76	0.57	0.40	0.19	2.51	1.42					
	Repair Parts	0.87	3.16	13.72	11.31	9.93	1.16	0.37	8.48	13.75					
	Cable & Teeth														
	Tires & Tubes				0.32										
	Outside Repairs														
	Shop Costs														
	Total	27.11	32.4	21.42	25.15	10.85	5.67	3.85	1.83	10.99	28.51	8.55	42.02	41.66	2.35
TOTAL HOURLY COST															7.98
TYPE OF EQUIPMENT	Model or Capacity	SUBTRACTOR	STOPPER	SCOOP TRAM ST. 13	SCOOP TRAM ST. 4A										
Horsepower															
Fuel or Power Consumption per hr.															
New Cost															
Shipping Weight															
OPERATION HOURS	This Period To Date														
REPAIR	M.H./Hour	0.63		0.75											
LABOR COST	Operator														
	Oil														
	Repair & Service	25.15	3.65	30.05	18.96										
	Total														
RENTAL OR DEPRECIATION	New	7.51	0.46	38.00	11.02										
	Used														
SUPPLIES & EXPENSE	Cost Per Hour														
	Fuel or Power														
	Oil & Grease														
	Repair Parts														
	Cable & Teeth														
	Tires & Tubes														
	Outside Repairs														
	Shop Costs														
	Total	9.27	1.27	38.93	21.05										
TOTAL HOURLY COST															

*Note: Cost to be included under Labor Subdivisions to be Exclusive of payroll taxes and ins. and overtime, or actual percentage of same indicated in space at top of sheet.

DIVERSIFIED CONSTRUCTORS

JOB: SUSPENSION BRIDGE
 LABOR: H. O. MECHANIC 36.42 PER HR.
 MECH. HELPER 10.00 PER HR.
 P. R. TAX & INS. 0.50
 OVERTIME 10 %

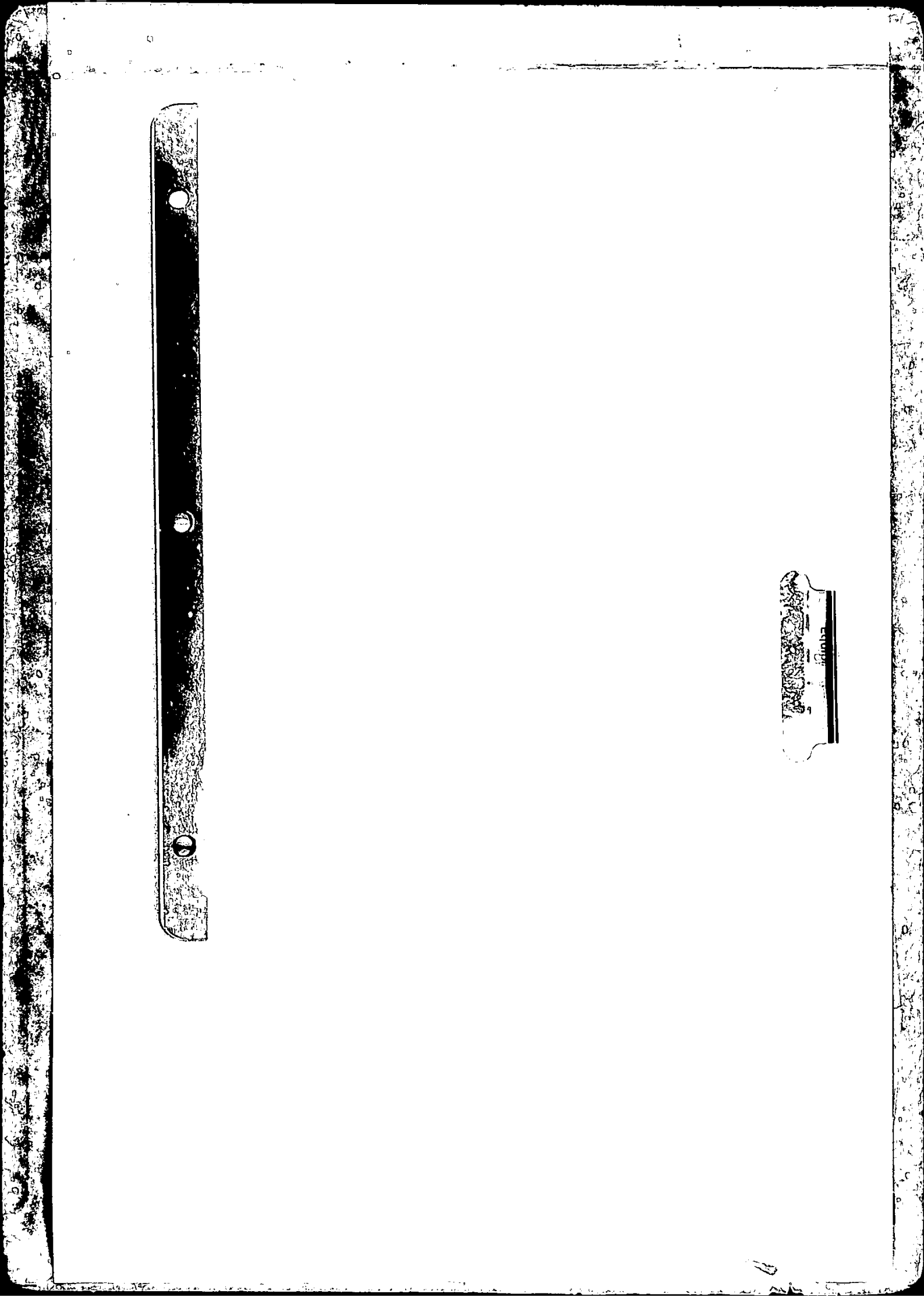
HOURLY EQUIPMENT OPERATING COSTS

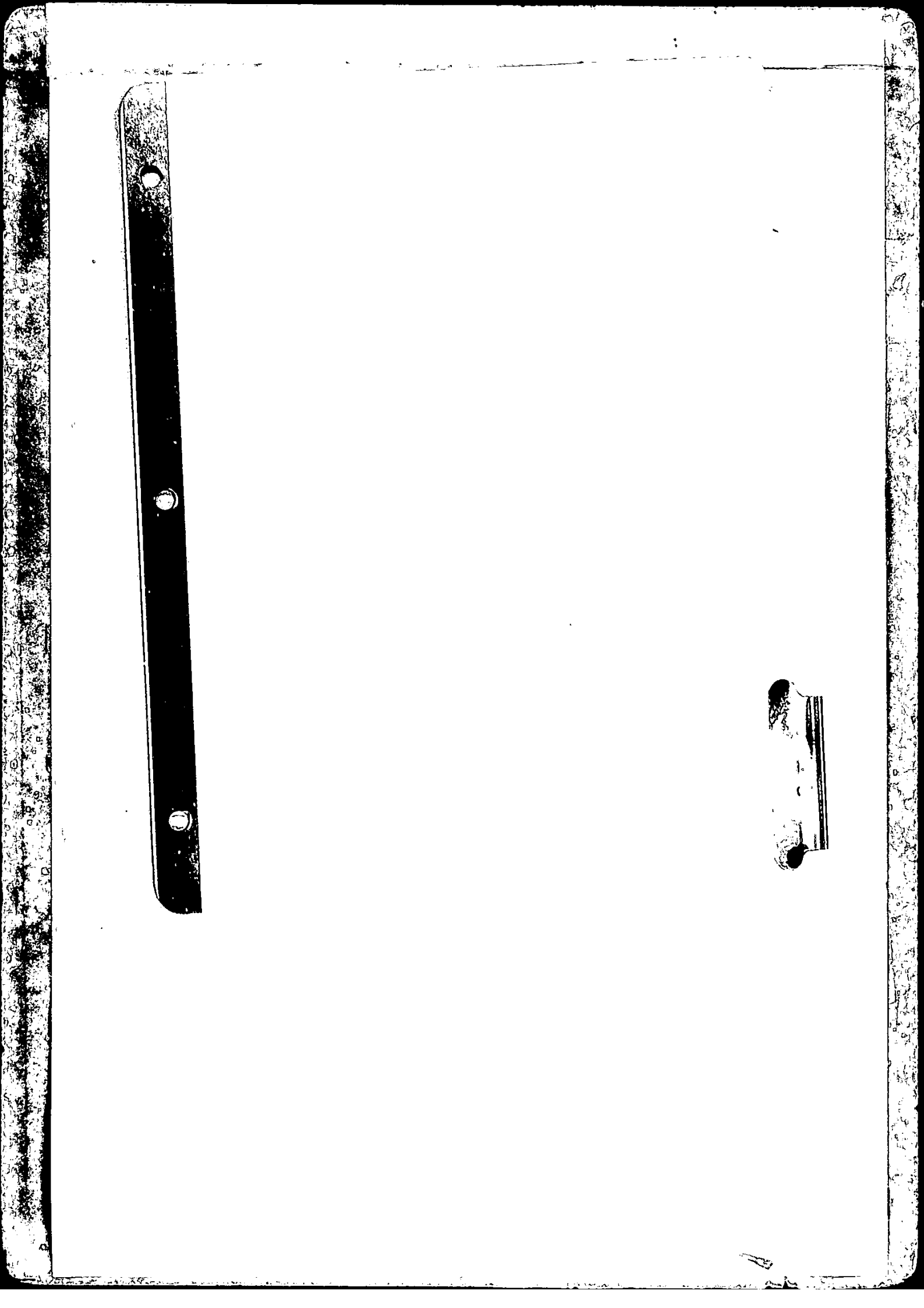
CONT. NO. 1-40 SHEET 1 OF 1 PAGE
 SUPPLIES: DIESEL FUEL 1.40 PER GAL.
 GASOLINE 1.40 PER GAL. DATE
 BUTANE 1.40 PER GAL.
 ELECT. POWER 1.40 PER KWH. BY 1.40

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TYPE OF EQUIPMENT	Model or Capacity	CRANE 14 T	CRANE 50 T	CRANE 100 T	CRANE 150 T	BACKHOE 12 CY	BACKHOE 2 1/2 CY	BACKHOE 3 1/2 CY	LOADER 966	LOADER 988	LOADER 992	PATROL No. 14	1 1/2 IN. WAY END DUMP 10 CY	BOTTOM DUMP 20 CY	END SPILL 769	END SPILL 777
Horsepower																
Fuel or Power Consumption per hr.		5.4	7.7	9.9	11.9	12.9	21.5	3.0	7.8	12.4	20.9	6.3	6.0	8.4	10.0	27.3
New Cost																
Shipping Weight																
OPERATION HOURS	This Period															
	To Date															
	Repair M.H./Hour	0.39	0.36	0.63	0.15	0.15	1.0	0.35	0.40	0.15	1.0	0.27	0.34	0.55	0.55	0.75
LABOR COST	Operator															
	Other															
	Repair & Service	15.62	14.42	25.24	30.05	30.05	40.06	14.02	16.02	30.05	40.06	14.82	13.62	22.03	22.03	30.05
	Total															
RENTAL OR DEPRECIATION	New	11.19	17.00	25.00	42.77	17.50	27.09	5.43	17.80	33.00	75.00	17.93	9.62	10.37	31.50	60.00
	Used															
	Cost Per Hour															
SUPPLIES & EXPENSE	Fuel or Power	1.56	10.78	13.86	16.66	13.06	30.10	4.20	10.92	17.36	29.26	5.62	8.40	11.76	14.00	36.23
	Oil & Grease	1.36	1.94	2.49	3.00	2.17	3.4	0.63	1.62	2.60	4.39	1.32	1.26	1.76	2.10	5.73
	Repair Parts	5.82	9.63	9.24	14.81	11.17	17.69	3.42	11.20	19.05	32.17	7.89	3.23	3.30	12.00	22.60
	Cable & Teeth															
	Tires & Tubes	1.06	1.22	1.87	1.87			0.32	2.89	6.84	11.55	1.48	1.30	1.94	4.31	8.19
	Outside Repairs															
	Shop Costs															
	Total	15.80	23.57	27.46	36.34	31.40	51.40	8.87	26.63	45.85	77.37	19.81	14.19	18.16	32.41	74.94
TOTAL HOURLY COST																
TYPE OF EQUIPMENT	Model or Capacity	WATER TRUCK 5 M.G.	WATER TRUCK 10 M.G.	CO. BOY FLAT W/ TRACTOR 100 T	FLAT BED 5 T	Pick-up 3 1/2 T	SERVICE TRUCK	COMPRESSOR 150 CFM	COMPRESSOR 600 CFM	COMPRESSOR 1200 CFM	CONDENSATOR 400	WELDER 300 AMP. W/ DOZER	TRACTOR W/ DOZER 0.7	TRACTOR W/ DOZER 0.8	TRACTOR W/ DOZER 0.9	CONCRETE PUMP
Horsepower																
Fuel or Power Consumption per hr.		7.2	13.2	5.6	5.6	3.3	4.4	4.3	7.4	15.6	7.4	3.7	8.2	12.3	16.8	13.4
New Cost																
Shipping Weight																
OPERATION HOURS	This Period															
	To Date															
	Repair M.H./Hour	0.30	0.61	0.35	0.10	0.06	0.08	0.12	0.28	0.44	0.15	0.05	0.60	1.0	1.20	0.52
LABOR COST	Operator															
	Other															
	Repair & Service	12.02	24.44	14.02	4.01	2.40	3.20	4.81	11.22	17.62	6.01	2.00	7.40	40.06	18.07	12.82
	Total															
RENTAL OR DEPRECIATION	New	6.30	30.00	11.00	4.17	0.87	4.92	1.86	6.61	11.07	9.81	0.81	17.23	25.91	47.86	9.37
	Used															
	Cost Per Hour															
SUPPLIES & EXPENSE	Fuel or Power	10.05	18.48	7.84	7.84	4.62	6.16	6.02	10.36	21.84	10.36	5.18	11.48	17.22	23.52	18.76
	Oil & Grease	1.51	2.77	1.18	0.94	0.55	0.92	0.72	1.55	3.28	1.24	0.52	1.15	1.72	2.35	2.81
	Repair Parts	2.50	4.59	2.77	1.92	0.44	2.43	1.07	3.04	4.17	4.94	0.68	9.94	14.91	20.37	4.32
	Cable & Teeth															
	Tires & Tubes	3.82	7.01	2.28	0.34	0.10	0.11				0.75	0.04				0.12
	Outside Repairs															
	Shop Costs															
	Total	17.91	32.85	14.07	11.04	5.71	9.62	7.81	14.95	29.29	17.29	6.47	22.57	33.85	46.24	26.01
TOTAL HOURLY COST																

*Note: Cost to be included under Labor Subdivisions to be Exclusive of payroll taxes and ins. and overtime, or actual percentage of same indicated in space at top of sheet.





DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

Page

Sheet

1 of 10

WAGE RATES FOR ESTIMATE

Date

Project SUSITNA - DEVIL CANYON

TYPE & INSURANCE @ 22.5%

Classification	Rate					
	current to 7.1.82					USE
LABORERS						
General: Common	17.20					31.28
Air Tool Operator	17.48					31.69
Dumpman	17.20					31.28
Pipelayer - Metallic Culy.	18.03					32.52
Non - Metal.	18.03					32.52
Concrete: Concrete Laborer	17.21					32.18
Vibrator Operator	17.81					32.18
Sandblaster	18.03					32.52
Gunite - Nozzleman	18.03					32.52
Gun tender	17.20					31.28
Rockwork: High scaler	18.25					32.84
Jackhammer	17.81					32.18
Wagon Drill	18.25					32.84
Chuck Tender	17.81					32.18
Diamond Drill						
Powder Foreman	19.44					35.05
Powderman	18.49					33.19
Powderman Helper	18.03					32.52
Riprapman-Hand Placed	17.20					31.28
Under Ground: (Free Air)						
Shifter	20.82					26.67
Powderman	20.24					25.95
Miner - Mucker	17.59					24.24
Driller	20.08					25.56
Chuck Tender	17.39					24.24
Timberman	18.25					32.84

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DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

WAGE RATES FOR ESTIMATE

Page 2 of 10
Sheet
Date

Project

Classification	Rate				
	current to				
	11.82				655
	17.03				31.00
Foreman					
	1.55				
Health & Welfare	3.25				
Pension	0.15				
Vacation	0.05				
Industry Advancement	0.20				
Apprenticeship	5.20				
TOTAL FRINGE	0.48				
Travel Time					
Subsistence					
OPERATING ENGINEERS					
Tractor-Crawler W/Attachments-					35.97
Over 50HP.	20.47				
-Rubber Tired W/Attachments-					35.91
- Earth Mover	20.47				35.00
- Farm Type	17.12				
CRANES, ETC:					
Cable Way					37.84
Whirley Crane	21.72				39.91
Truck Crane-Under 100T	22.12				37.64
Truck Crane-Over 100T	21.72				
R. T. Crane					
Overshot Loader					
Hoist-Single Drum					25.97
Hoist-2 or More Drums					
Power Shovel or Dragline	20.47				

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
WAGE RATES FOR ESTIMATE

Page _____
Sheet 3 of 10
Date _____

Project _____

Classification	Rate					<u>Use</u>
	current 19- 1.1.82					
Motor Grader-No. 12 & Under						35.97
Motor Grader-Over No. 12	20.47					38.10
Smooth Roller-Finish Work	21.90					35.97
-Other Work	20.47					35.15
Elevating Grader	19.92					35.69
Trenching Machine	20.26					35.97
Crushing Plant	20.47					
Blower Operator-Cement						35.69
Concrete Batch & Mix	20.28					35.97
Front End Loader-Under 5 CY	20.47					38.04
-Over 5 CY	21.86					
Refrigeration Plant						35.69
Conveyor Operator	20.28					35.00
Air Compressor-Portable	19.82					
-Stationary						
-Two or More						35.00
Water Pump	19.82					36.42
Pumpcrete or Grout Pump	20.77					35.97
Churn Drill or Diamond Drill	20.47					36.42
H.D. Mechanic or Welder	20.77					35.09
Oiler	19.86					
Fireman						35.69
Dinkey Locomotive	20.28					36.80
Mucking Machine-Under Grnd.	22.37					
Foreman	22.90					39.59
Health & Welfare	1.50					
Pension	3.25					
Vacation						
Industry Advancement	0.05					

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
WAGE RATES FOR ESTIMATE

Page
Sheet 4 of 10
Date

Project

Classification	Rate					USE
	current 19- 7.1.82					
Apprenticeship	0.15					
TOTAL FRINGES	4.95					
Travel Time	0.56					
Subsistence						
TEAMSTERS						
Pickups & Flatracks to 3/4 T	17.06					32.84
Flatracks SAXIE T to	17.06					32.84
DAVE T to	17.65					33.72
T to						
T to						
Over						
Dump Trucks C to 10 CY	17.65					33.72
10 CY to 20 CY	18.01					34.26
20 CY to 40 CY	18.58					35.11
40 CY to 60 CY	19.44					36.39
60 Over 100 CY	20.30					37.66
Bottom Dump 0 to 10 CY	17.65					33.72
10 CY to 20 CY	18.01					34.26
20 CY to 40 CY	18.58					35.11
40 CY to 60 CY	19.44					36.39
60 Over 100 CY	20.30					37.66
Water Truck SAXIE to Gal.	17.06					32.84
DAVE Over Gal.	17.65					33.72
Transit Mix Trucks to 7 CY	18.01					34.26
To Over 12 CY	18.58					35.11
Oil Distributor Truck	18.01					34.26
A-Frame & Cherry Picker	17.06					32.84
Semi-Truck & Trailer	17.65					33.72

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
WAGE RATES FOR ESTIMATE

Page
Sheet 5 of 10
Date

Project

Classification	Rate					
	Current to-					USE
Lowboy	21.82					
Concrete Haul	18.01					34.76
Warehouseman	17.65					33.72
	17.06					32.84
Foreman						36.59
	19.58					
Health & Welfare						
Pension	2.14					
Vacation	4.10					
Industry Advancement	0.70					
Apprenticeship	0.05					
EMPLOYEE SERVICE	0.30					
Travel Time TOTAL FRINGES	0.15					
Subsistence	6.94					
TRAVEL TIME						
	0.52					
CARPENTERS:						
Journeyman						
Foreman	19.92					23.71
	22.42					37.03
Health & Welfare						
Pension	0.90					
Vacation	2.25					
Industry Advancement						
Apprenticeship	0.05					
TOTAL FRINGES	0.35					
Travel Time	3.55					
Subsistence	1.51					
MILLWRIGHTS:						
Journeyman						
	20.48					24.80

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DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.

WAGE RATES FOR ESTIMATE

 Page
 Sheet 6 of 10
 Date

Project

Classification	Rate					
	current to- 7-1-82					USE
Foreman	23.42					39.18
Health & Welfare						
Pension						
Vacation						
Industry Advancement						
Apprenticeship						
TOTAL FRINGES	2.86					
Travel Time	0.53					
Subsistence						
PILE DRIVERS:						
Journeyman	20.24					34.54
Foreman	23.42					39.58
Health & Welfare						
Pension						
Vacation						
Industry Advancement						
Apprenticeship						
TOTAL FRINGES	4.10					
Travel Time	0.53					
Subsistence						
CEMENT FINISHERS:						
Journeyman	18.87					33.36
Foreman	21.16					36.46
Health & Welfare	1.55					
Pension	2.00					

DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
WAGE RATES FOR ESTIMATE

Page 395
Sheet 7 of 10
Date

Project

Classification	Rate				
	current to 7.1.82				USE
Vacation					
Industry Advancement	0.05				
Apprenticeship	0.15				
TOTAL FRINGES	4.45				
Travel Time	0.52				
Subsistence					
IRON WORKERS:					
Reinforcing	21.72				27.16
Structural	21.72				37.86
Foreman	23.12				40.82
Health & Welfare	1.60				
Pension	2.00				
Vacation					
Industry Advancement	0.05				
Apprenticeship	0.20				
TOTAL FRINGES	4.95				
Travel Time	0.59				
Subsistence					
BOILERMAKERS:					
Journeyman	23.07				39.12
Foreman	25.07				42.11
Health & Welfare	1.30				
Pension	2.25				
Vacation					
Industry Advancement					

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DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
WAGE RATES FOR ESTIMATE

Page _____
 Sheet 8 of 10
 Date _____

Project _____

Classification	Rate				
	current to:				<u>USE</u>
	7.1.82				
Apprenticeship	0.04				
TOTAL FRINGES	3.59				
Travel Time	0.61				
Subsistence					
ELECTRICIANS:					
Journeyman	26.15				41.58
Foreman	27.15				46.05
GROUNDMAN	22.15				38.60
Health & welfare	1.65				
Pension	3.00				
Vacation					
Industry Advancement	0.15				
Apprenticeship	0.25				
TOTAL FRINGES	5.05				
Travel Time	0.59				
Subsistence					
PLUMBERS & STEAMFITTERS:					
Journeyman					
Foreman					
Health & Welfare					
Pension					
Vacation					
Industry Advancement					
Apprenticeship					
Travel Time					

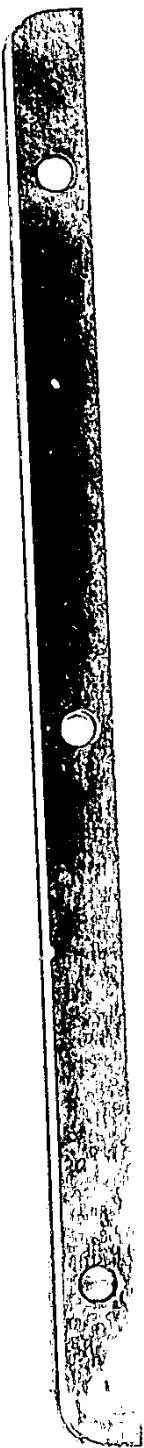
DIVERSIFIED ENGINEERS & CONSTRUCTORS, INC.
WAGE RATES FOR ESTIMATE

Page _____
Sheet 10 of 10
Date _____

Project

Quotations





DIVERSIFIED CONSTRUCTORS, INC.

SHEET 1 OF 21 PAGE 399

OPERATION CREW COMPOSITION AND ITEM NO. JOB SUSITNA - DEVIL CANYON

PRODUCTION

CK'D BY

DATE

QUANTITY	UNIT	EST. BY	LABOR	EQUIPMENT	SUPPLIES
FABRICATE FORMS			134.84	10.00	8.50
SPREAD			93.84		7.50
4 CARPENTERS			34.21		
3 LABORERS			4.73		
1 SAWMAN			18.72		1.98
1/8 OPERATOR			1.95	1.40	2.86
1/2 4 MAN			1.20	0.49	4.00
1/8 HYDRA CRANE			1.50	3.00	
1/2 PICKUP				14.89	24.84
1 MISC.			290.99		
COST PER HOUR					
TOTAL			284.34		
SUBTOTAL			16.00		
DIRECT LABOR			4.65		
SURPLIES			14.89		
REPAIR LABOR			8.84		
EQUIPMENT			330.72		
EQUIP. SUPPLIES					
PRODUCTION					
STRAIGHT PANELS			16	S.F. PER CREW	CARPENTER HOUR
CURVED PANELS			6	"	"
DRAFT TUBES			2	"	"
COLUMNS & PIERS			8	"	"
BEAMS			10	"	"
MISCELLANEOUS			4	"	"
FORM LUMBER AT WEIGHTED					
AVERAGE COST OF 2.75 / S. F.					

DIVERSIFIED CONSTRUCTORS, INC.

SHEET 2 OF 21 PAGE 400

OPERATION		ITEM NO.		JOB		DATE	
QUANTITY	UNIT	EST BY		CK'D BY		DATE	
FORM 2		DIRECT LABOR	SUPPLIES	REPAIR LABOR	EQUIPMENT	EQUIP. SUPPLIES	
64 STRAIGHT PANELS		4.47	3.00	0.07	0.23	0.14	
			7.91				
24 CURVED PANELS		11.93	3.42	0.19	0.62	0.37	
			16.53				
8 DRAFT TUBES		25.79	4.75	0.58	1.86	1.11	
			44.09				
32 COLUMNS & PIERS		8.95	3.25	0.15	0.47	0.28	
			13.10				
40 BEAMS		7.16	3.15	0.12	0.37	0.22	
			11.02				
16 MISCELLANEOUS		17.90	3.75	0.29	0.93	0.55	
			23.42				

003565

DIVERSIFIED CONSTRUCTORS, INC.

SHEET 3 OF 21 PAGE 401

OPERATION	QUANTITY	UNIT	EST. BY	ITEM NO.	JOB	DATE
FORM 2						
				LABOR	EQUIPMENT	SUPPLIES
<u>ERECT FORMS - TOWER CRANE</u>						
6. CARPENTERS	207.26					10.00
3. LABORERS	93.84					
1/2. OPERATOR	18.92					
1/2. OILER	17.55					
1/2. TOWER CRANE	15.66			28.66		24.27
1/2. GENERATOR	8.82			1.39		13.56
1/2. PICKUP	1.20			0.49		2.86
1/2. MAN	18.72					
COST PER HOUR				376.95	30.54	50.69
<u>PRODUCTION</u>						
FIGURE A WEIGHTED AVERAGE						
OF 8 S.F. PER CARPENTER						
MIN HOUR OR 4.8 S.F. PER						
CREW HOUR						
<u>SUMMARY</u>				TOTAL	UNIT PRICE	
DIRECT LABOR				351.29	7.32	
SUPPLIES				10.00	0.21	
REPAIR LABOR				25.16	0.53	
EQUIPMENT				30.54	0.64	
EQUIP. SUPPLIES				40.69	0.85	
				458.18	9.55	

DIVERSIFIED CONSTRUCTORS, INC.

SHEET 4 OF 21 PAGE 402

OPERATION	ITEM NO	JOB	DATE
QUANTITY	UNIT	EST. BY	CK'D BY
FORM 2			
ERECT FORMS - TRUCK CRANE			
6 CARPENTERS			
3 LABRERS			
1/2 OPERATOR			
1/2 OILER			
1/2 4MAN			
1/2 TRUCK CRANE			
1/2 PICKUP			
COST PER HOUR			
PRODUCTION			
FIGURE A WEIGHTED AVERAGE			
OF B.S.E. PER CARPENTER			
MANHOUR OR 4B.S.E. PER CREW			
HOUR			
SUMMARY			
DIRECT LABOR			
SUPPLIES			
REPAIR LABOR			
EQUIPMENT			
EQUIP. SUPPLIES			
TOTAL			
UNIT PRICE			

DIVERSIFIED CONSTRUCTORS, INC.

SHEET 5 OF 21 PAGE 403

OPERATION	QUANTITY	UNIT	EST. BY	ITEM NO	JOB	DATE
FORM 2						
				LABOR	EQUIPMENT	SUPPLIES
STRIP FORMS - TOWER CRANE				187.68		10.00
6 LABORERS				17.42		
2 CARPENTERS				18.92		
1/2 OPERATOR				17.55		
1/2 OILER				17.00		
1/2 4 MAN				15.66	28.66	24.22
1/2 TOWER CRANE				8.82	1.37	13.56
1/2 GENERATOR				1.20	0.49	2.86
1/2 PICKUP				334.25	30.54	50.69
COST PER HOUR						
PRODUCTION						
FIGURE A WEIGHTED AVERAGE						
PRODUCTION OF 16 S.F. PER						
LABOR MAN HOUR OR 96 S.F. PER						
CREW HOUR						
SUMMARY				TOTAL	UNIT PRICE	
DIRECT LABOR				308.57	3.21	
SUPPLIES				10.00	0.10	
REPAIR LABOR				25.68	1.27	
EQUIPMENT				30.54	0.32	
EQUIP. SUPPLIES				40.69	0.42	
				415.48	4.32	

DIVERSIFIED CONSTRUCTORS, INC.

ITEM NO. SHEET 6 OF 21 PAGE 404

OPERATION	QUANTITY	UNIT	EST BY	JOB	CK'D BY	DATE
FORM 2						
				LABOR	EQUIPMENT	SUPPLIES
<u>STRIP FORMS - TRUCK CRANE</u>						
6- LABORERS				187.68		10.00
2- CARPENTERS				67.42		
1/2- OPERATOR				19.96		
1/2- OILER				17.55		
1/2- HELPER				17.00		
1/2- TRUCK CRANE				15.02	21.39	18.17
1/2- PICKUP				1.20	0.49	2.86
COST PER HOUR				325.83	21.88	31.23
<u>PRODUCTION</u>						
FIGURE A WEIGHTED AVERAGE						
PRODUCTION OF 16 S.F. PER						
LABOR MANHOUR OR 96 S.F.						
PER CREW HOUR						
<u>SUMMARY</u>				TOTAL	UNIT PRICE	
DIRECT LABOR				305.61	3.23	
SUPPLIES				10.00	0.10	
REPAIR LABOR				16.22	0.17	
EQUIPMENT				21.88	0.23	
EQUIP. SUPPLIES				21.03	0.22	
				378.74	3.95	

DIVERSIFIED CONSTRUCTORS, INC.

SHEET 7 OF 21 PAGE 405

OPERATION		ITEM NO.	JOB		DATE
QUANTITY	UNIT	EST. BY	CK'D BY		
FORM 2					
		LABOR	EQUIPMENT	SUPPLIES	
FINISH CONCRETE					
	2 FINISHERS	46.72		10.00	
	1 FINISHER HELPER	37.18			
	1/2 FINISHER 4 MAN	18.38			
	1/2 PICKUP	1.20	0.49	2.86	
	1 MISC.	5.50	9.00	8.50	
	COST PER HOUR	123.98	9.49	21.36	
PRODUCTION					
FIGURE A WEIGHTED AVERAGE					
PRODUCTION OF 120 S.F. PER					
CREW HOUR.					
SUMMARY		TOTAL	UNIT PRICE		
DIRECT LABOR		117.28	0.98		
SUPPLIES		10.00	0.08		
REPAIR LABOR		1.70	0.06		
EQUIPMENT		9.49	0.08		
EQUIP. SUPPLIES		11.36	0.09		
		151.83	1.29		
POINT & PATCH					
FIGURE 80% OF CONCRETE					
FINISH UNIT PRICES.					
SUMMARY		UNIT PRICE			
DIRECT LABOR		0.78			
SUPPLIES		0.06			
REPAIR LABOR		0.05			
EQUIPMENT		0.06			
EQUIP. SUPPLIES		0.07			
		1.02			

DIVERSIFIED CONSTRUCTORS, INC.

ITEM NO.

SHEET 8 OF 21 PAGE 46

OPERATION

JOB

QUANTITY

UNIT

EST BY

CK'D BY

DATE

FORM 2

	LABOR	EQUIPMENT	SUPPLIES
CONSTRUCTION JOINT CLEANUP			
1- AIR WATER BLASTER	14.82	12.32	25.15
1- NOZZLE MAN	32.52		
1- HOSE TENDER	31.28		
2- CLEANUP MEN	12.56		10.00
1- OPERATOR	35.00		
COST PER HOUR	176.18	12.32	35.15
PRODUCTION			
FIGURE A WEIGHTED AVERAGE			
PRODUCTION OF 150 S.F. PER			
CREW HOUR			
SUMMARY	TOTAL	UNIT PRICE	
DIRECT LABOR	161.36	1.08	
SUPPLIES	10.00	0.07	
REPAIR LABOR	14.82	0.10	
EQUIPMENT	12.32	0.08	
EQUIP. SUPPLIES	25.15	0.17	
	223.65	1.50	
ROCK CLEANUP			
SAID SPREAD AS CONSTRUCTION			
JOINT CLEANUP			
PRODUCTION			
75 S.F. PER CREW HOUR			
SUMMARY	UNIT PRICE		
DIRECT LABOR	2.15		
SUPPLIES	0.18		
REPAIR LABOR	0.20		
EQUIPMENT	0.16		
EQUIP. SUPPLIES	0.34		
	2.98		

DIVERSIFIED CONSTRUCTORS, INC.

ITEM NO

SHEET 9 OF 21 PAGE 207

OPERATION

JOB

QUANTITY

UNIT

EST BY

CK'D BY

DATE

FORM 2

	LABOR	EQUIPMENT	SUPPLIES
PLACE CONCRETE - TOWER CRANE	31.32	57.32	18.54
1- TOWER CRANE	17.63	278	27.11
1- GENERATOR	3.78	1.07	3.78
2- CONCRETE BUCKETS	2.40	0.98	5.72
1- PICKUP	2.20	3.30	2.75
1- MISC.	37.84		
1- OPERATOR	35.10		
1- OILER	128.72		10.00
4- LABORERS	34.00		
1- 4 MAN	292.99	70.45	87.90
COST PER HOUR			
PRODUCTION AT 40 CU. YDS. PER HOUR			
SUMMARY	TOTAL	UNIT PRICE	
DIRECT LABOR	235.06	5.89	
SUPPLIES	10.00	0.25	
REPAIR LABOR	57.33	1.43	
EQUIPMENT	70.45	1.76	
EQUIP. SUPPLIES	87.90	2.20	
	461.34	11.53	
PRODUCTION AT 30 CU. YDS. PER HOUR			
SUMMARY	TOTAL	UNIT PRICE	
DIRECT LABOR		7.86	
SUPPLIES	(AS ABOVE)	0.33	
REPAIR LABOR		1.91	
EQUIPMENT		2.35	
EQUIP. SUPPLIES		2.93	
		15.38	

DIVERSIFIED CONSTRUCTORS, INC.

SHEET 10 OF 21 PAGE 108

OPERATION		ITEM NO.	DATE	
QUANTITY	UNIT	EST BY	CK'D BY	DATE
FORM 2				
		LABOR	EQUIPMENT	SUPPLIES
PLACE CONCRETE - MISC. STRUCTURES				
1- 150' I	CRANE	30.05	42.77	36.34
2-	CONCRETE BUCKETS	3.78	6.07	3.78
1-	PICKUP	2.40	0.97	5.71
1-	MISC.	2.20	9.30	2.75
1-	OPERATOR	399.1		
1-	OILER	35.09		
4-	LABORERS	128.72		10.00
1-	4 MAN	34.00		
COST PER HOUR		276.15	53.11	58.58
PRODUCTION AT 40 CU. YDS. PER HOUR				
SUMMARY		TOTAL	UNIT PRICE	
DIRECT LABOR		237.72	5.94	
SUPPLIES		10.00	0.25	
REPAIR LABOR		38.43	0.96	
EQUIPMENT		53.11	1.33	
EQUIP. SUPPLIES		48.58	1.21	
		387.84	9.69	
PRODUCTION AT 30 CU. YDS. PER HOUR				
SUMMARY		TOTAL	UNIT PRICE	
DIRECT LABOR			7.92	
SUPPLIES		(AS ABOVE)	0.33	
REPAIR LABOR			1.28	
EQUIPMENT			1.77	
EQUIP. SUPPLIES			1.62	
			12.92	

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION		ITEM NO.	SHEET 11 OF 21 PAGE 109	
QUANTITY	UNIT	EST. BY	CK'D BY	DATE
FORM 2				
PRODUCTION AT 20 CU. YDS. PER HOUR				
SUMMARY		TOTAL	UNIT PRICE	
DIRECT LABOR			11.89	
SUPPLIES		(AS)	0.50	
REPAIR LABOR		SHEET	1.92	
EQUIPMENT		(10)	2.06	
EQUIP. SUPPLIES			2.43	
			19.40	
PRODUCTION AT 10 CU. YDS. PER HOUR				
SUMMARY		TOTAL	UNIT PRICE	
DIRECT LABOR			23.77	
SUPPLIES		(AS)	1.00	
REPAIR LABOR		SHEET	3.84	
EQUIPMENT		(10)	5.31	
EQUIP. SUPPLIES			4.86	
			38.78	

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 12 OF 21 PAGE 110

JOB

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

FORM 2

		LABOR	EQUIPMENT	SUPPLIES
PLACE CONCRETE- PUMP/CRETE				
1- CONCRETE PUMP		12.82	9.37	26.01
1- MISC.		2.15	5.50	8.25
1- PICKUP		2.40	0.97	5.71
1- OPERATOR		36.42		
5- LABORERS		160.90		12.50
1- 4MAN		34.00		
COST PER HOUR		249.29	15.84	52.47
PRODUCTION				
FIGURE 30 CU.YDS. PER HOUR				
SUMMARY		TOTAL	UNIT PRICE	
DIRECT LABOR		231.37	7.71	
SUPPLIES		12.50	0.42	
REPAIR LABOR		12.97	0.60	
EQUIPMENT		15.84	0.53	
EQUIP. SUPPLIES		39.97	1.33	
		317.60	10.59	

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 13 OF 21 PAGE 111

JOB

FORM 2

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

OVERBREAK

TOTAL

ITEM	DESCRIPTION	NEAT	WASTE	TOTAL	POUR RATE
332.114	CONCRETE - 1ST STAGE	31,800	636	32436	30 1051
115	" - 2ND STAGE				
1124	PORTALS CONCRETE	600	30	630	20 32
1125	TUNNEL SLAB CONCRETE	4,030	202	4232	20 212
1126	PENSTOCK ADIT. PLUG CONCRETE	10,000	200	10200	30 340
884LF 1134	CONCRETE LINING 20' Ø	3,144	1,048	4192	30 140
1134	BUS TUNNEL SLAB CONCRETE	800	40	840	20 42
1164	CONCRETE SLAB	2,810	70	2880	30 96
1325LF 1174	CONCRETE LINING 7.5' Ø	1,464	931	2395	20 120
1465LF 332.214	CONCRETE LINING 30' Ø	10,109	4409	14518	30 484
215	TUNNEL PLUG CONCRETE	3,000	150	3150	30 105
216	PORTAL CONCRETE	5,750	575	6325	20 316
332.314	ARCH DAM CONCRETE	1,201,500	37038	1238538	20 61927
315	LEFT THRUST BLOCK	75,500	1888	77388	100 774
"	RIGHT THRUST BLOCK	30,000	750	30750	60 512
324	CONCRETE SLAB	3,200	160	3360	30 112
325	PORTAL CONCRETE	40	4	44	20 2
332.414	DENTAL CONCRETE	7,100	-0-	7100	20 355
332.525	PIERS & SLOE PIERS	35,800	895	36695	30 1223
526	DECK	300	5	305	20 15
524	GUIDE WALLS	23,000	575	23575	30 786
522	SLAB	14,500	363	14863	30 495
525	OGEE	24,800	620	25420	30 847
52K	FLIP BUCKET	70,000	175	70175	40 1754
52L	DRAIN GALLERY SLAB	400	10	410	20 21
332.614	CONCRETE	37,900	148	38048	40 951
332.714	CONCRETE	1,300	741	2041	20 102
2 2550LF 332.814	PENSTOCK	13,056	5329	18385	30 613
3' 200 818	"	814	306	1120	30 37
3' 950 815	"	5966	1492	7458	30 249
816	PENSTOCK PLUG	10,000	200	10200	40 255
6730 332.914	CONCRETE LINING 38' Ø	31,227	2340	33567	30 1119
91A	PORTAL CONCRETE	750	30	780	20 39
	TOTALS	1,677,660	77440	1755100	18798
	AVERAGE RATE OF POUR =			93.37 CU. YDS. / HOUR	

DIVERSIFIED CONSTRUCTORS, INC.

SHEET 14 OF 21 PAGE 412

OPERATION	QUANTITY	UNIT	EST. BY	ITEM NO.	JOB	CK'D BY	DATE
FORM 2							
18798 HOURS.							
10 : 1880 DAYS.							
CONCRETE CURE							
1. PICKUP	2.40						
2. LABORERS	1436						
COST PER HOUR	14.76						
1880 DAYS - POURING							
" " - SETUP FOR CURE							
" " - REMOVE							
5640 DAYS (10) = 56400 HOURS.							
PER CU. YD.	SUMMARY		COST/HOUR	HOURS	TOTAL		
2.16	DIRECT LABOR		1436	56400	3229904		
0.34	SUPPLIES		10.00	"	56400		
0.08	REPAIR LABOR		2.40	"	135360		
0.03	EQUIPMENT		0.97	"	54798		
0.19	EQUIP. SUPPLIES		5.71	"	322044		
2.80			83.44		4706016		

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 15 OF 21 PAGE 413

JOB

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

FORM 2

DRILLING & SETTING ROCK BOLTS
ASSUME 6 FEET INTO ROCK
USE AIR TRAC AT 45 L.F./HOUR

50 MINUTE HOUR

45 L.F./HOUR = 1.11 L.F./MINUTE (6) = 6.66 (SAY
7 MINUTES DRILL TIME PER
HOLE)

CYCLE TIME 6'

	6'	10'
SET-UP	1.50 MINUTES	1.50 MINUTES
DRILL	7.00 "	11.00 "
RETRACT	1.00 "	1.00 "
MOVE	2.00 "	2.00 "
	11.50 MIN./HOLE	15.50 MIN./HOLE

50 MINUTE HOUR

11.50 MIN./HOLE = 4.35 HOLES/HOUR

50 MINUTE HOUR

15.50 MIN./HOLE = 3.23 HOLES/HOUR

SPREAD

	LABOR	EQUIPMENT	SUPPLIES
1- AIR TRAC	30.05	8.22	10.85
1- 600 CENT COMPRESSOR	11.22	6.61	14.95
1- PICKUP	2.40	0.97	5.71
1- DRILLER	32.04		
1- CHUCKTENDER	30.18		
1- ROCK BOLTER	31.88		

COST PER HOUR

	TOTAL	UNIT PRICE	UNIT PRICE	UNIT PRICE	UNIT PRICE
SUMMARY					
DIRECT LABOR	96.30	22.14	3.69	29.80	2.98
SUPPLIES	7.50	1.74	0.29	2.30	0.23
REPAIR LABOR	43.67	10.82	1.67	13.50	1.35
EQUIPMENT	15.80	3.66	0.61	4.90	0.49
EQUIP. SUPPLIES	31.51	7.26	1.21	9.80	0.98
PERM. MATERIAL		17.52	2.92	29.20	2.92
	194.78	62.34	10.39	89.50	8.95
		6 FOOT		10 FOOT	

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION CONCRETE & AGGREGATE ITEM NO. 16 OF 21 PAGE 414
PRODUCTION JOB

QUANTITY UNIT EST. BY CK'D BY DATE

FORM 2

CONCRETE

FROM SHEET 13 - 1,755,100 CONCRETE YARDS

AGGREGATE

GRADATION OF RAW MATERIAL
UNKNOWN. HERE AGAIN AS
AT WATANA AND IN TALKS
WITH CHARLIE CRADDOCK AND
WITH HIS OPTIMISM - THINKS
WE WILL PROCESS 1.5 CUBIC
YARDS TO GET 1 CUBIC YARD
OF SPECIFICATION MATERIAL.
AGAIN, TO PLAY IT SAFE
FIGURE A 2:1 RATIO.

1755100 (1.3) (2) (1.62) =
7392491 TONS

FIGURE PLANT CAPACITY
AT 250 TONS PER HOUR =
29570 HOURS

SPREAD

LABOR EQUIPMENT SUPPLIES

<u>1- PLANT</u>	<u>154.89</u>	<u>100.67</u>	<u>101.30</u>
<u>2- DB DOZERS</u>	<u>80.12</u>	<u>51.82</u>	<u>67.70</u>
<u>1- DRAGLINE</u>	<u>30.05</u>	<u>42.77</u>	<u>36.34</u>
<u>1- 98B FEL, R/L = 323.55</u>	<u>30.05</u>	<u>33.00</u>	<u>45.85</u>
<u>2- 769 END SPILLS</u>	<u>44.06</u>	<u>13.00</u>	<u>14.82</u>
<u>1- 300 AMP WELDER</u>	<u>2.00</u>	<u>0.81</u>	<u>6.42</u>
<u>1- PICKUP</u>	<u>2.40</u>	<u>0.97</u>	<u>5.71</u>
<u>1- PLANT OPERATOR</u>	<u>35.97</u>		
<u>1- PLANT OILER</u>	<u>35.09</u>		
<u>1- FEL OPERATOR</u>	<u>38.04</u>		
<u>2- DOZER OPERATORS</u>	<u>71.94</u>		
<u>2- TEAMSTERS</u>	<u>70.22</u>		
<u>2- PLANT LABORERS</u>	<u>62.56</u>		<u>10.00</u>
<u>1- DRAGLINE OPERATOR</u>	<u>35.97</u>		
<u>1- DRAGLINE OILER</u>	<u>35.09</u>		
<u>1- 410A/N</u>	<u>39.59</u>		

COST PER HOUR 748.02 293.04 338.04

COST 29,570 HOURS 22118951 8665193 9995843

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 17 OF 21 PAGE 215

JOB

QUANTITY

UNIT

EST. BY

CK'D BY

DATE _____

FORM 2

FORM 2		C.Y. CONCRETE	TON
<u>SUMMARY</u>	<u>TOTAL</u>	<u>UNIT PRICE</u>	<u>UNIT PRICE</u>
DIRECT LABOR	125515.77	7.15	1.70
SUPPLIES	2957.00	2.17	0.84
REPAIR LABOR	95673.74	5.45	1.29
EQUIPMENT	86651.93	4.94	1.17
EQUIP. SUPPLIES	97001.43	5.53	1.31
	407799.87	23.24	5.51

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 18 OF 21 PAGE 16

JOB

FORM 2

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

PLANT ERECTION

SUPPLIES (ALLOW.)

315226

ALLOW 150 HOURS TO SET UP

100 HOURS TO TEAR DOWN = 250 HOURS

SPREAD

LABOR EQUIPMENT SUPPLIES

1-100' CRANE

25.24

2500

29.46

1-LO BOY

14.02

11.00

14.07

1-DB OAZER R/L = 87.72

40.06

259.1

388.5

3-300 AMP WELDERS

6.00

243

19.26

1-PICKUP

2.40

0.97

5.71

1-CRANE OPERATOR

37.84

1- " OILER

35.09

1-TEAMSTER

34.26

1-OAZER OPERATOR

35.97

2-PLANT OPERATORS

71.94

2-PLANT OILERS

70.18

3-H.D. MECHANICS

109.26

2-LABORERS

22.56

10.00

1-4MAN

39.59

COST PER HOUR

584.41

65.81

110.55

COST 250 HOURS.

146.123

16.328

27588

C.Y. CONCRETE 1/TN. 100.00

SUMMARY

TOTAL

UNIT PRICE UNIT PRICE

DIRECT LABOR

124.173

0.27

0.02

SUPPLIES

31.7726

0.18

0.04

REPAIR LABOR

21.930

0.01

0.01

EQUIPMENT

16.328

0.01

0.01

EQUIP. SUPPLIES

25088

0.02

0.01

505.245

0.29

0.09

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 19 OF 21 PAGE 419

JOB

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

FORM 2

TOTAL AGGREGATE COST

SUMMARY

TOTAL

CONCRETE

AGGREGATE

C.Y.

TON

UNIT PRICE

UNIT PRICE

DIRECT LABOR

126757.50

7.22

1.72

SUPPLIES

613426

8.35

2.08

REPAIR LABOR

9589304

5.44

1.30

EQUIPMENT

8181521

4.95

1.18

EQUIP. SUPPLIES

9725231

5.55

1.32

41285232

23.53

5.60

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION CONCRETE PRODUCTION

ITEM NO ALL SHEET 20 OF 21 PAGE 419

QUANTITY

UNIT

EST. BY

JOB DEVIL CANYON

CK'D BY

DATE

FORM 2

SHEET 14 - 18,798 HOURS PLANT OPERATION

AVERAGE HOURLY PRODUCTION = 98.37 CU. YDS.

SPREAD

1- PLANT
1- 98B FEL R/L 195.76
1- 300 AMP WELDER
1- 500 KW GENERATOR
4- REOIMIX TRUCKS
2- LEGAL END SPILLS
1- PICKUP
1- PLANT OPERATOR
1- " OILER
1- " LABORER
1- FEL OPERATOR
6- TEAMSTERS

LABOR EQUIPMENT SUPPLIES

46.74 46.19 1032
30.05 33.00 4585
2.00 0.81 1.92
32.85 12.32 32.14
54.48 30.18 5276
27.24 19.24 28.38
2.40 0.97 6.21

COST PER HOUR

659.35 151.51 196.58

COST 18,798 HOURS

10138701 2848085 3732907

STANDBY TIME

1- PLANT OPERATOR
1- " OILER
1- " LABORER

35.69
35.09
31.28

COST PER HOUR

102.04

COST 1312 HOURS

133903

SUMMARY

DIRECT LABOR
SUPPLIES
REPAIR LABOR
EQUIPMENT
EQUIP. SUPPLIES

TOTAL UNIT PRICE
6592708 3.93
93990 0.06
3179896 2.19
2848085 1.70
3638917 2.17
16553596 10.05

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION
ITEM NO. SHEET 21 OF 21 PAGE 419
JOB
FORM 2 QUANTITY UNIT EST. BY CK'D BY DATE

CONCRETE PLANT SETUP & TEAR
DOWN

USE SAME SPREAD AS SHEET
18, AND ALLOW 100 HOURS TO
SETUP AND 70 HOURS TO TEAR
DOWN.

COST PER HOUR

COST 170 HOURS

LABOR	EQUIPMENT	SUPPLIES
8441	6531	110.35
99350	11103	18760

SUMMARY

DIRECT LABOR
SUPPLIES
REPAIR LABOR
EQUIPMENT
EQUIP. SUPPLIES

TOTAL
84438
1700
14912
11103
17060
129213

TOTAL CONCRETE PRODUCTION

SUMMARY

DIRECT LABOR
SUPPLIES
REPAIR LABOR
EQUIPMENT
EQUIP. SUPPLIES

TOTAL	RED. MIX UNIT PRICE	AGGREGATE UNIT PRICE
6677146	3.98	11.20
95690	8.06	241
3694808	2.20	766
2859188	1.70	645
3655977	2.18	773
16982809	10.12	3865

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION PLACE CONCRETE

ITEM NO.

SHEET 1 OF 3 PAGE 420

CABLEWAY

JOB DEVIL CANYON

FORM 2

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

FIGURE ON PLACING MAIN
DAM, THRUST BLOCKS &
RAILWAY CONTROL STRUCTURE
WITH CABLEWAY.

ARCH DAM CONCRETE

131,553.8

201

6568

LEFT THRUST BLOCK

77,888

100

774

RIGHT THRUST BLOCK

30,750

80

2460

PIERS & SIDE PIERS

36,695

80

2935

DECK

505

20

101

OGEE

25,420

80

2034

149,496

151.27

9811

PLANT

TRACKAGE

413000

TRAVELING TAIL TOWER

250000

HEAD TOWER

180000

CABLE, ALL

500000

CARRIAGE

85000

POWER UNIT - HOIST & TRAVEL

125000

" " - TAIL TOWER

125000

AUTOMATION

85000

1775000

FIGURE SALVAGE AT 30%

531900

COST TO J.O.B

1241100

COST PER HOUR PLACING

116.50

COST PER HOUR CUBIC YARDS

1.86

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION	ITEM NO.	SHEET	OF	PAGE
JOB				
QUANTITY	UNIT	EST. BY	CK'D BY	DATE
PLANT ERECTION & DISMANTLE				
FIGURE SAME SPREAD AS SETTING UP AGGREGATE PLANT, EXCEPT, ADD 4 MORE LABORERS				
COST PER HOUR	LABOR	EQUIPMENT	SUPPLIES	
	709.53	25.31	110.35	
ALLOW 516 HOURS TO ERECT AND 258 HOURS TO DISMANTLE				
COST 774 HOURS	549,766	50,550	85,411	
SUMMARY				
	TOTAL	UNIT PRICE		
DIRECT LABOR	48,128.1	0.33		
SUPPLIES	7,740	0.01		
REPAIR LABOR	6,789.5	0.05		
EQUIPMENT	50,550	0.03		
EQUIP. SUPPLIES	7,767.1	0.05		
	685,137	0.47		
PLANT OPERATION				
	LABOR	EQUIPMENT	SUPPLIES	
1- 500 KVI GENERATOR	32.85	12.32	22.14	
1- 300 KVI GENERATOR	17.63	2.78	20.11	
1- PICKUP R/L = 59.1.19	2.10	0.97	5.71	
2- CONCRETE BUCKETS	6.31	10.14	6.31	
1- CABLEWAY OPERATOR	39.91			
2- " OILERS	70.18			
1- ELECTRICIAN	41.58		10.00	
COST PER HOUR	210.86	26.21	81.27	
COST 9811 HOURS	206,874.7	257,146	79,734.0	

003565

DIVERSIFIED CONSTRUCTORS, INC.

OPERATION

ITEM NO.

SHEET 3 OF 3 PAGE 422

JOB

FORM 2

QUANTITY

UNIT

EST. BY

CK'D BY

DATE

SUMMARY

TOTAL

UNIT PRICE

DIRECT LABOR

1488.034

1.03

SUPPLIES

98.110

0.07

REPAIR LABOR

580.713

0.40

EQUIPMENT

257.146

0.18

EQUIP. SUPPLIES

129.130

0.48

3123.133

2.16

PLACING CONCRETE - CABLEWAY

SPREAD

LABOR

EQUIPMENT

SUPPLIES

1. BUCKETMAN

31.69

2. VIBRATOR MEN

14.36

3. SPADERS

14.36

5.00

1. 4 MAN

34.00

COST PER HOUR

194.41

5.00

COST 98.11 HOURS

1907.357

49.85

COST PER CU. YD.

1.32

0.83

PLACING CONCRETE - CABLEWAY - SUMMARY

SUMMARY

TOTAL

UNIT PRICE

DIRECT LABOR

3876.072

2.66

SUPPLIES

154.905

0.11

REPAIR LABOR

1486.008

0.45

EQUIPMENT

1545.796

1.07

EQUIP. SUPPLIES

776.801

0.84

7005.782

4.85

