

54

TRANSIT

398

W78

Best Quality

TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100.00	0.44	100.00	0.87	99.99	1.31	89
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	88
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	87
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	86
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	85
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	84
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	83
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	82
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	81
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	80
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	79
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	78
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	77
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	76
14	97.03	24.19	96.92	24.92	96.81	25.04	96.70	25.46	75
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	74
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.52	73
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	72
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	71
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	70
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	69
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	68
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	67
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	66
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	65
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	64
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	63
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	62
28	88.29	46.95	88.09	47.33	87.88	47.72	87.67	48.10	61
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	60
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	59
31	85.72	51.50	85.49	51.88	85.26	52.23	85.04	52.62	58
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	57
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	56
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	55
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	54
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	53
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	52
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	51
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	50
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	49
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	48
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	47
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	46
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	45
45	70.71	70.71							
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
	DEGREES.	¼ DEGREE.	½ DEGREE.	¾ DEGREE.	DEGREES.	¼ DEGREE.	½ DEGREE.	¾ DEGREE.	

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Area unit
B sec
B13700 to 52
5.6 x 4.4 x 4.0
Sg sec

B sec area 2.115
7.4 x 4.3 x 3.1
4.7 x 3.3
Pc B to B13730
7.11.11.11
4.4 x 4.0

Crocker Quality

TRANSIT BOOK



No. _____

MICROFILMED

JAN 6 1965

MANUFACTURED BY

H. S. CROCKER CO.
SAN FRANCISCO AND SACRAMENTO
CALIFORNIA

Index

Upper to Lower Stay Pipeline "A" 1-3

Earth & Rock in Dulzura Conduit	4-
390-398+50	4-6
337-390	6-12
398+50-415	13-14
277+75-326+50	15-18
428-555	19-22
247-268	23-24
B82+35-116+60	25-39
Flume 12 1/2 Post lengths	75
Extension	40-47
Settling Basin	48
Cottonwood Section	49
P.C. Branch	50-51
Tunnel 15 to Tunnel 3 N.	53-60
Morena Movements	52
"	61
Phone data	62-64
Morena Movements:	65
" Evaporating Pan	66
Tunnel #1 drain	67
" #2 "	69

APR 1 1982

MICROFILMED

Sta AR AL Mag

5.74°-30'W

99+00

5.51° 30' E

105+00

112° 00'

5.7° 00' E

109+70 45° 00'

5.11° 00' W

114+68 17° 40'

121+00 P.O.T.

5.24° 00' E

124+00

40° 40'

5.26° 00' E

128+00 3° 40'

5.21° 00' E

132+00 5° 00'

137+00 Ref.

2

Sta.	$\Delta R.$	ΔL	Mag.
159+59		79° 00'	S.60°00'E.
158+59	P.O.T.		
157+59	21° 00'		S.19°00'W.
156+59	21° 20'		S.5°30'E
155+59	13° 20'		S.23°30'E
154+59	2° 20'		S.37°00'E
153+59	23° 00'		S.39°00'E
152+59	43° 20'		S.67°30'E
151+72		76° 20'	N.74°30'E
150+72	P	8° 30'	S.29°30'E
150+31	P.O.T.		
144+35	P.O.T.		

3

Sta. A R. A L. Mag.

166+79.5

Center of screen. at base of tower

166+45 86° 35' 51° 00' W.

166+15 P.O.T.

161+59 6° 00' S. 86° 30' E

160+59 70° 20' S. 80° 00' E

4 Earth & Rock in Dulzura Conduit

Sta	Area	Earth Vds	Rock Vds	C.	£	C
398+50	5.67	Page 13		1.5		1.5
		18.38				
398	14.19			3.2		3.2
397+75	21.56			4.4		4.4
+50	21.56	} 66.20		4.4		4.4
+25	21.56			4.4		4.4
397	21.56			4.4		4.4
+75	21.56	} 39.92		4.4		4.4
+50	21.56			4.4		4.4
			12.60			
+25	5.67			1.5		1.5
		5.06				
396	5.23			1.4		1.4
		12.39				
+75	21.56			4.4		4.4
+50	21.56	} 59.88		4.4		4.4
+25	21.56			4.4		4.4
395	21.56			4.4		4.4
		214.43				

Brush

Brush

Brush

5

	Area	Earth Yds	Rock Yds				
+75	21.56	39.92			4.4	4.4	
+50	21.56	14.10			4.4	4.4	
+25	8.91	8.01			2.2	2.2	
394	8.42	7.25			2.1	2.1	
+75	7.47	5.98			1.9	1.9	
+50	5.23	3.89			1.4	1.4	
+25	3.19	2.09			0.9	0.9	
390	1.34				0.4	0.4	
+75		8.55					
			Area Exc Yds				
+50	7.9		7.9		2.0	2.0	2.0
		8.2		6.0			
+25	9.9		5.2		1.4	2.4	1.4
		14.5		3.1			
392	21.56				0.0	4.4	4.4
		19.9					0.0
+75	21.56				0.0	4.4	4.4
		19.9					0.0
+50	21.56				0.0	4.4	4.4
		19.9					0.0
		171.79					

Flume 16

6

	Area	Yds	Area	Yds
+25	21.56	19.9	.32	
391	21.56	19.9	.32	
+75	21.56	19.9	.65	1.9
+50	21.56	11.9	3.58	1.6
+25	4.18		0.0	14.4

390

Ph. 12

71.6

	0.1	44	44	0.1
20' swal	0.1	44	44	0.1
	0.2	44	44	0.2
	1.0	44	44	1.0
	0.0	0.9	1.4	0.0

	+75	1.34			0.4	0.4
			1.78 ✓			
	+50	2.43			0.4	1.0
			4.13 ✓			
	+25	6.55			1.0	2.5
			14.02 ✓			
341	23.75				4.4	5.0
			8.79 ✓			
	+70	0.0		End F. 14	0.0	0.0
	+50	0.0	1.47 ✓	F14.10' destroyed	0.0	0.0
	+40	7.94	1.47 ✓	Footings 20yd	2.0	2.0
340+30	0.0				0.0	0.0
	+60	0.0		F 14 5' W S out	0.0	0.0
			3.11 ✓			
339	2.81			Flume 14	0.8	0.8
			1.91 ✓			
	+75	1.34	1.20 ✓		0.4	0.4
	+50	1.34			0.4	0.4
	+25	0.0	.62 ✓		0.0	0.0
338	0.0			End F. 13	0.0	0.0
	+75	0.0			0.0	0.0
	+65		2.82 ✓	Flume 13 12' destroyed	1.6	1.6
	+50	6.10				
			6.27 ✓	Solid Rock		
	+25	7.47			1.9	1.9
			11.65 ✓			
337	17.72				3.5	3.8
			56.42 2.82			

		13.65
349	7.94	
		18.94
+50	12.53	
		16.79
+25	23.75	
		12.764
348	3.58	
		32.87
+50	31.92	
		41.66
347	12.08	
		34.09
+50	23.75	
		47.07
346	27.09	
		45.03
+50	21.56	
		27.39
345	7.94	
		5.33
+75	3.58	
		7.83
344	2.06	
		5.00
343	.65	
		3.66
342	1.34	
	313.23	1.28

		Brush
2.0	2.0	
		Brush
2.8	3.0	
		Brush
4.4	5.0	
1.0	1.0	
5.5	6.0	
3.0	3.0	
4.4	5.0	
5.0	5.5	
4.4	4.4	
2.0	2.0	
1.0	1.0	
0.6	0.6	
0.2	0.2	
0.4	0.4	

		39.47				
+25	27.09				5.0	5.5
		33.13				
356	6.10				1.6	1.6
		6.88				
+50	1.34				0.4	0.4
		4.53				
355	3.58				1.0	1.0
		11.64				
+75	21.56				4.4	4.4
		21.20				
+25	1.34				0.4	0.4
		14.22				
354	29.42				5.0	6.1
		69.19	3.			Brush 3yd s rock
353	7.94				2.0	2.0
		34.59				
+50	29.42				5.0	6.0
		30.55				
352	3.58				1.0	1.0
		155.15				
351	39.70				7.0	7.0
		91.85	10.0			Boulders, 75 yds
350	9.90				2.4	2.4
		29.13				10 yd s rock
+50	21.56				4.4	4.4
		39.92				
349+25	21.56				4.4	4.4
		426.32	168.15			

30 concrete b/s.

		34.81			
370	9.40			2.3	2.3
		52.55			
369	18.98			4.0	4.0
		75.07			
368	21.56			4.4	4.4
		82.52			
367	23.00		30' S wall broken	4.5	4.8
		97.07			
366	29.42			5.5	5.5
		118.77			
365	34.72			6.0	6.5
		104.22			Brush
364	21.56			4.4	4.4
		48.07			
363	4.40			1.2	1.2
		8.15			
362	0.0			0.0	0.0
		29.22			
361	15.35			3.4	3.4
		29.60			
360	.65			0.2	0.2
		1.20			
359	0.0			0.0	0.0
		1.20			
358	.65			0.2	0.2
		3.68			
357	1.34			0.4	0.4
		665.13	8.00		8yd sRock

371+49

371+01

376+22

375+72

374+50

0.0

38.62

45.00

374+82

373+65

374

41.72

157.11

373

43.12

115.00

372

18.98

52.55

371

9.40

363.28

45.00

F 15.45' out

F 15 50' out

F 15.140' out

0.0

0.0

7.4

7.5

7.6

7.8

4.0

4.0

2.3

2.3

15 yds rock

Brush

Page 6 2.23

390 .65

2.40

399 .65

25.71 77.13

388 54.90

25.62 76.86

725 21.56

3.58 10.75

397 9.40

21.22

396 2.06

3.81

385 0.0

1.18

384 .65

6.35

775 13.08

22.78

383 3.58

6.29

382+05 0.0

121.17 164.74

0.2 0.2

0.2 0.2

8.0 9.0
~~5.5~~ ~~6.0~~

4.4 4.4

2.3 2.3

0.6 0.6

0.0 0.0

0.2 0.2

3.0 3.0

0 1.0

End of F15 0.0 0.0

L Rock 75%

L Rock 75%

Brush

		19.77 ✓	59.34 ✓
408	18.98		
		13.27 ✓	40.11 ✓
407	9.90		
		8.25 ✓	24.78 ✓
406	7.94		
		26.81 ✓	
405	6.55		
		18.74 ✓	
404	3.58		
		3.64 ✓	

+43	0.0		
-----	-----	--	--

403	0.0		
		1.99 ✓	

+95	21.56		
		36.47 ✓	

+50	22.21		
		55.83 ✓	

402	7.94		
		25.37 ✓	

401	5.67		
		21.00 ✓	

400	5.67		
		21.00 ✓	

399	5.67		
		10.50 ✓	

398+50	5.67		
--------	------	--	--

Page 4	262.74	124.23	
--------	--------	--------	--

2 Rock 75%

4.0 4.0

2.4 2.4

2.0 2.0

1.7 1.7

1.0 1.0

End F.17

0.0 0.0

0.0 0.0

F.17 48' destroyed 4.4 4.4

4.5 4.5

2.0 2.0

1.5 1.5

1.5 1.5

1.5 1.5

1.5 1.5

415	0.0		
		18.22	
414	9.90		
		34.81	
413	8.91		
		34.81	
412	9.90		
		36.66	
411	9.90		
		53.48	
410	18.98		
		39.56	39.55
409	23.75		
		217.54	39.55

00	00	
		Brush
2.4	2.4	
2.2	2.2	
2.4	2.4	
2.4	2.4	
4.0	4.0	
4.4	5.0	5.9 L Rock

Sta.	Area	Yds. earth	Yds. Rock
		61.41 ✓	

371	18.98		
-----	-------	--	--

		75.07 ✓	
--	--	---------	--

310	21.56		
-----	-------	--	--

		24.07 ✓	24.06 ✓
--	--	---------	---------

+50	29.42		
-----	-------	--	--

		36.92 ✓	36.91 ✓
--	--	---------	---------

299	50.32		
-----	-------	--	--

Tunnel 5 ? (water) 2'

+45	1.34		
-----	------	--	--

		2.38 ✓	
--	--	--------	--

293	1.34		
-----	------	--	--

		49.18 ✓	21.07 ✓
--	--	---------	---------

292	26.60		
-----	-------	--	--

		52.08 ✓	22.32 ✓
--	--	---------	---------

291	3.58		
-----	------	--	--

		80.04 ✓	
--	--	---------	--

290	39.65		
-----	-------	--	--

		80.04 ✓	25.00 ✓
--	--	---------	---------

289	3.58		
-----	------	--	--

		25.30 ✓	
--	--	---------	--

+50	23.75		
-----	-------	--	--

		45.78 ✓	
--	--	---------	--

288	25.65		
-----	-------	--	--

		26.22 ✓	6.55 ✓
--	--	---------	--------

287+75	45.14		
--------	-------	--	--

		558.49	135.91
--	--	--------	--------

44' 55 12' NS

4.0	4.0
-----	-----

4.4	4.4
-----	-----

25' s wall broken	5.5	5.5
-------------------	-----	-----

Tunnel 5 S	8.0	8.5
------------	-----	-----

Tunnel 5 N	0.4	0.4
------------	-----	-----

0.4	0.4
-----	-----

Patch

6.0	6.0
-----	-----

1.0	1.0
-----	-----

15' B. wall broken	6.0	7.0
--------------------	-----	-----

25' S. wall broken	1.0	1.0
--------------------	-----	-----

4.4	5.0
-----	-----

5.0	5.0
-----	-----

TAS

7.4	7.4
-----	-----

50% Rock

50% Rock

30% Rock

Brush

20% Rock

2 boulders 25yd rock

Brush

		18.70 ✓	
313	00		12.00 ✓
<hr/>			
+50	00		
		7.80 ✓	
310	8.42		
		55.51 ✓	
309	21.56		
		47.51 ✓	
+05	5.67		
		.52 ✓	
<hr/>			
308	00		
<hr/>			
+50	00		
		16.95 ✓	3.00 ✓
307	21.56		
		24.99 ✓	74.97 ✓
306	37.82		
		24.99 ✓	74.97 ✓
<hr/>			
305	21.56		
		39.57 ✓	6.98 ✓
304	3.58		
		9.11 ✓	
303	1.34		
		3.72 ✓	
+25	1.34		
		7.19 ✓	
302	14.19		
		256.56	171.92

	00	00	
15' slabbing broken		12 yd rock	
<hr/>			
	00	00	
	2.0	2.2	
35' s. side bottom out			
	4.4	4.4	
	1.0	2.0	
<hr/>			
	00	00	
<hr/>			
308 + 07.5	00	00	
307 to 308 + 05			
307 + 83.5 ?	4.4	4.4	15% rocks
	4.4	8.0	75% rock
306	60' fill L side		
305	4.4	4.4	15% rock
305	60' fill L side		
	1.0	1.0	
70' fill L side			
	0.4	0.4	
35' fill L side			
	0.4	0.4	
			Brush
	3.2	3.2	
			Brush

+40	0.0	2.00
+35	21.56	
		22.95
325	13.08	43.48
324	10.41	21.74
323	1.34	5.00
322	1.34	3.65
321	.65	3.65
320	1.34	48.66
319	24.94	48.66
318	1.34	37.63
317	18.98	38.96
316	2.06	1.57
+75	1.34	31.80
315	21.56	58.63
314	7.94	
		368.28 ✓

0.0	0.0
4.4	4.4
2.0	4.0
1.0	4.0
0.4	0.4
0.4	0.4
0.2	0.2
0.4	0.4
4.4	5.4
0.4	0.4
4.0	4.0
0.6	0.6
0.4	0.4
4.4	4.4
2.0	2.0

Brush

Brush

Brush

Brush

Sta	Area	Yds. Earth	Yds. Rocks
	Page 7	36.37	
+50	21.56	21.87	4.4
326	2.06	6.30	0.6
335	1.34	6.00	0.4
334	2.06	10.44	0.6
333	3.58	9.11	1.0
332	1.34	3.72	0.4
+25	1.34	10.60	0.4
331	21.56	45.11	4.4
330	2.71	8.00	0.8
329	1.34	5.00	0.4
328	1.34	20.81	0.4
327	9.90	18.33	2.4
326	0.0	201.96	0.0

Sta	Area	Yds. Earth	Yds. Rock			
466	3.58	14.77 ✓		20.1 new footing	1.0	1.0
465	4.40	19.88 ✓		35' N wall destroyed	1.2	1.2
464	6.10	23.41 ✓			1.6	1.6
463	6.55	24.88 ✓			1.7	1.7
462	6.90	25.55 ✓			1.9	1.8
461	6.90	27.48 ✓			1.8	1.8
460	7.94	7.35 ✓			2.0	2.0
459+50	00				00	00
<hr/>						
457+80				N wall destroyed	45'	
457+35						
<hr/>						
430	00	6.62 ✓			0.0	0.0
429	3.58	6.62 ✓			1.0	1.0
428	00	156.56			0.0	0.0

Brush
"
Brush
Brush

		16.29				Brush
480	4.40				1.2	1.2
		16.29				
479	4.40				1.2	1.2
		14.77				
478	3.58				1.0	1.0
		16.29				
477	5.23				1.4	1.4
		14.88				
476	2.91				0.8	0.8
		11.81				
475	3.58				1.0	1.0
		13.26				
474	3.58				1.0	1.0
		13.26				
473	3.58				1.0	1.0
		13.26				
472	3.58				1.0	1.0
		13.26				
471	3.58				1.0	1.0
		16.29				
470	5.23				1.4	1.4
		16.29				
469	3.58				1.0	1.0
		13.26				
468	3.58				1.0	1.0
		13.26				
467	3.58				1.0	1.0
		13.26	215.73 ✓			

524	13.08	
		16.94 ✓
+50	5.23	
		4.83 ✓
533	00	

3.0	3.0
1.4	1.4
0.0	0.0
0	

FL 22

1 footing

+50	00	
		1.24 ✓
499	1.34	
		6.34 ✓
498	2.06	
		2.29 ✓
497+30	00	

00	00
0.4	0.4
0.6	0.6

8' NW wall cracked 00

+50	00	
		2.24 ✓
484	2.43	
		11.15 ✓
483	3.58	
		14.77 ✓
482	4.40	
		16.29 ✓
481	4.40	
		76.09

00	00
0.7	0.7
1.0	1.0
1.2	1.2
1.2	1.2

Brush
Brush
Brush
Brush

Tunnel 6 N 130.00 ✓

130 yd ex

542

3.00 ✓

22' N wall destroyed

30' fill side 3 yd ex.

541

534+50 00

0.0

0.0

12.11 ✓

145.11

Sta	Area	East	Rock
		35.10	37.00 ✓
253	4.91	15.51 ✓	
252	3.58	6.66 ✓	
+50	3.58	23.18 ✓	
251	21.56	23.95 ✓	23.96 ✓
+40	21.56	11.30 ✓	11.30 ✓
+25	59.84	19.84 ✓	18.84 ✓
250	21.56	29.13 ✓	
+50	9.90	29.13 ✓	
249	21.56	23.95 ✓	
+70	21.56	26.28 ✓	26.28 ✓
+35	59.54	29.64 ✓	29.65 ✓
248	31.98	51.59 ✓	51.59 ✓
247	23.75		

7' s wall

1.0

Boulder 6x15x11

37 yd

1.6

1.0

1.0

1.0

1.0

4.4

4.4

4.4

4.4

7.0

8.4

4.4

4.4

2.4

2.4

16' s wall ✓

4.4

4.4

4.4

4.4

7.4

8.0

20' s wall ✓

5.4

6.0

32' ditch dest,
Tunnel 35

4.4

5.0

Water 3.2

268

266	54.42	92.92	104.92
+87			

Tunnel under boulder

265 45.94

68.38 78.38

264 27.92

68.38 68.38

263 45.94

102.74 102.74

262 65.02

86.05 86.06

261 27.92

45.81 52.81

260 21.56

99.45 60.00

259 32.16

49.74 49.74

258 21.56

39.92 39.93

257 21.56

79.85 300.00

256 21.56

52.65 52.68

255 35.34

36.04 36.04

254 3.58

17.04 17.04

253+50 33.22

Tunnel 4N 44 44

22' ditch dest,

NW wall? 7.0 8.0

65' SW wall 12 yd boulder

6.0 7.5

10 yd boulder

5.0 5.0

18' SW

6.0 7.5

8.0 9.0

18' SW

12' NW wall 5.0 5.0

75' SW wall

4.4 4.4

8 yd boulder

5.4 5.4

60 yds boulder

15' SW

4.4 4.4

4.4 4.4

large mass of boulders 300 yds rock

4.4 4.4

46' SW

5.4 6.0

12' S wall 1/2

1.0 1.0

5.0 6.0

24.

area Earth Rock
Barrett Section

	area	Earth	Rock		
		12.22 ✓			
70B	4.80			1.0	1.0
		20.98 ✓			
71	6.43			1.3	1.3
		16.11 ✓			
72	2.27			0.5	0.5
		7.54 ✓			
73	1.80			0.4	0.4
		6.66 ✓			
74	1.80			0.4	0.4
		5.00 ✓			
75	.88			0.2	0.2
		5.00 ✓			
76	1.80			0.4	0.4
		6.66 ✓			
77	1.80			0.4	0.4
		6.66 ✓			
78	1.80			0.4	0.4
		6.66 ✓			
79	1.80			0.4	0.4
		6.66 ✓			
80	1.80			0.4	0.4
		7.54 ✓			
81	2.27			0.5	0.5
		7.54 ✓			
82	1.50			0.4	0.4
		2.33 ✓			
B82+35	1.80			0.4	0.4

30' ditch destroyed 0.4

Send P.C Bridge 0.4

Sta	Area	Earth	Rods		
B +50	5.88	4.90 ✓		1.2	1.2
55+95	00		Flume 2	00	00
58+15	00	2.77 ✓	Flume 2, ok	00	00
59	.88	3.25 ✓		0.2	0.2
60	.88	3.25 ✓		0.2	0.2
61	.88	15.63 ✓		0.2	0.2
62	7.57	16.48 ✓	18' W wall	1.5	1.5
63	1.33	12.33 ✓	9' W wall	0.3	0.3
+50	12.00	11.11 ✓	13' W wall	2.0	2.5
64	00	1.63 ✓		0.0	0.0
65	.88	3.25 ✓		0.2	0.2
66	.88	3.25 ✓		0.2	0.2
67	.88	3.25 ✓		0.2	0.2
68	.88	5.00 ✓		0.2	0.2
B 69	1.80		30' N wall	0.4	0.4

		3.25 ✓			
B 43	1.88			0.2	0.2
		3.25 ✓			
44	1.88			0.2	0.2
		3.25 ✓			
45	1.88			0.2	0.2
		5.00 ✓			
46	1.80			0.4	0.4
		7.54 ✓			
47	2.27			0.5	0.5
		37.77 ✓			
48	18.13			3.1	3.1
		25.81 ✓	W wall?		
+ 70	1.80			0.4	0.4
		11.92 ✓			
49	19.72		21' W wall ✓	3.0	3.4
		41.63 ✓			
50	2.76			0.6	0.6
		8.44 ✓			
51	1.80			0.4	0.4
		6.66 ✓			
52	1.80			0.4	0.4
		23.50 ✓			
53	10.90			1.0	3.1
		23.51 ✓			
54	1.80		30' W wall ✓	0.4	0.4
		8.44 ✓			
B 55	2.76			0.6	0.6
		8.00 ✓			

		14.90 ✓			
B 28	4.80			1.0	1.0
		15.85 ✓			
29	3.76			0.8	0.8
		15.85 ✓			
30	4.90			1.0	1.0
		10.51 ✓			
31	.88			0.2	0.2
		6.77 ✓			
32	2.76			0.6	0.6
+15		24.74 ✓	Flume 4		
33	10.60			2.0	2.0
		26.59 ✓			
34	3.76		25' W Wall	0.8	0.8
		11.16 ✓			
35	2.27			0.5	0.5
		9.31 ✓			
36	2.76			0.6	0.6
		28.31 ✓			
37	12.53		42' W Wall	1.2	3.4
		28.31 ✓			
38	2.76			0.6	0.6
		3.06 ✓			
38+60	00			0.0	0.0
41	00		Flume 3	0.0	0.0
		1.63 ✓			
B 42	.88			0.2	0.2

11	21.12	19.55	58.67	? wall	Full		
12	21.12	176.26	25.42	? wall	Full	75% R	
13+30	21.12			Tunnel 1/16 S	Full	75% R	sq. sec
19+60	9.36	11.85		Tunnel 1/16 N	1.8	1.8	Water
20	5.98	10.66			1.2	1.2	
+25	1.80	8.88			0.4	0.4	
21	17.40	9.80			2.0	3.0	
+25	3.76	11.87		Flume 5 S	0.8	0.8	
22	4.80	17.77			1.0	1.0	
23	4.80	18.76		Flume 5 N	1.0	1.0	
24	5.33	16.83			1.1	1.1	
25	3.76	13.92			0.8	0.8	
26	3.76	12.96			0.8	0.8	
B27	3.25			18' W Wall	0.7	0.7	

9	29.12			5.0	5.6	60% Rock
8	19.1	22.17	33.24	0.2	0.2	
		2.25				
+75	.81			0.2	0.2	
		10.13				
7	21.12			4.4	4.4	
		55.24				
6	9.71			2.0	2.0	
5+90=0+00B		16.55				
0+60	2.46			Tunnel $\frac{3}{16}$ S	0.6	0.6
1		9.09				
B ₁ +80	1.63			Tunnel $\frac{3}{16}$ N	0.4	0.4
		1.51				
2	1.63			0.4	0.4	
		6.04				
3	1.63			0.4	0.4	
		6.04				
4	1.63			0.4	0.4	
		6.04				
5	1.63			0.4	0.4	
		7.57				
B ₆	2.46			Tunnel $\frac{1}{8}$ S	0.6	0.6
	?					
9+75	21.12			Tunnel $\frac{1}{8}$ N		
		4.94	14.88			
B ₁₀	21.12			? wall	Full	79% R
		19.55	58.67			

+26	6.40		
		12.74 ✓	
19	21.12		
		125.80 ✓	377.42 ✓
18	21.12		
		19.55 ✓	58.67 ✓
17	21.12		
		90.79 ✓	272.39 ✓
16+50	47.12		
		6.54 ✓	19.64 ✓
16+80	00		
15	00		
		1.50 ✓	
14	.81		
		1.50 ✓	
+75	2.46		
		32.75 ✓	
13	21.12		
		30.64 ✓	10.21 ✓
+75	67.12		
		32.37 ✓	10.79 ✓
12	26.12		
		127.48 ✓	
11	21.12		
		68.39 ✓	
+25	28.12		
		14.94 ✓	
10	4.17		
		24.66 ✓	36.99 ✓

Tunnel 1/2 N	1.5	1.5	
	4.4	4.4	+ 4.25 yd
? wells	4.4	4.4	75% R
	4.4	4.4	+ 300 yd 75% R
Road X 90' dest	7.0	6.70	75% R
36' part dest	0.0	0.0	
	0.0	0.0	
	0.2	0.2	
Flume C	0.6	0.6	
	4.4	4.4	25% R
	9.0	9.0	25% R
	5.0	5.0	
	4.4	4.4	+ 40 yd
	5.0	5.4	
	1.0	1.0	

34	00		
		1,50 ✓	
33	.81		
		4,50 ✓	
32	1.63		
		50.70 ✓	33,80 ✓
31	44.00		
		64.00 ✓	42.66 ✓
30	13.60		
		75.42 ✓	
29	27.12		
		118.96 ✓	
28	37.12		
		48.26 ✓	48.26 ✓
+50	67.12		
		43.63 ✓	43.63 ✓
27	27.12		
		17.03 ✓	
+80	18.86		
		51.09 ✓	
+20	2.712		
		19.30 ✓	19.31 ✓
26	77.12		
		68.22 ✓	98.22 ✓
+25	21.12		
		12.08 ✓	
25	5.05		
		121.91 ✓	
24+95			

	00	01	
	0.2	0.2	
Fl.7 N	0.4	0.4	
			40% R
	5.0	8.5	
10' N wall			
	3.0	3.0	
	5.0	5.0	
	6.0	6.0	
	9.0	9.0	50% Rock
8 Walls 2.5'S 12' N			
	5.0	5.0	
Tunnel 5/8 S	4.0	4.0	
Tunnel 5/8 N	5.0	5.0	
	10.0	10.0	50% R + 30yd R
	44	44	
10' S on Wall			
	1.2	1.2	
Tunnel 1/2 S	3.6	1.0	

	Area	Earth	Rock
52	8.71		
		16.31 ✓	
51	00		
<hr/>			
+20	00		
		35.92	14.37 ✓
49	97.00		
		48.94	19.57 ✓
+75	8.71		
		31.57	10.43 ✓
48	21.12		
		51.10 ✓	17.03 ✓
47	15.67		
		47.35 ✓	
46	9.90		
		7.33	7.33 ✓
45+20	00		
<hr/>			
40	00		
		12.09 ✓	
+25	8.71		
		5.00 ✓	
39	1.63		
		4.50 ✓	
38	1.81		
		1.00 ✓	
37+35	00		

Funnel $\frac{3}{4}$ S	2.0	2.0	End of sq sec
F19 S Tunnel $\frac{3}{4}$ Noo	00	00	
F19 N	00	00	
27' S Wall NW wall badrack			
	100	4.0	40% R
	2.0	2.0	
	4.4	4.4	25% R
	3.4	3.4	
	1.5	3.0	
27' N Wall dest			25% R
F18 S	00	00	
80' out			
F18 N	00	00	
	2.0	2.0	
	0.4	0.4	
W wall badrack			
	0.2	0.2	
F17 S	00	00	

Sta.	Area	Earth	Rock
		82.52	82.52
63	21.56	21.85	40.78
62	7.94	19.20	
61	2.43	17.26	
60	6.90	19.44	
59	3.58	23.27	
+50	21.56	23.27	
58	3.58	10.44	
+50	2.06	21.87	
57	21.56	21.40	
+50	1.34	8.59	
56	7.94	33.98	
55	10.41	24.91	
54	3.58	46.55	
53	21.56	56.05	

50% R

8 B walls 22' 5 1/4" N

44	44	+ 8 yd R 60% R
20	20	
0.7	0.7	
1.8	1.8	
1.0	1.0	
4.4	4.4	
1.0	1.0	
0.6	0.6	
4.4	4.4	
0.4	0.4	
2.0	2.0	
2.5	2.5	
1.0	1.0	
4.4	4.4	

Sta.	Area	Earth	Rock
		15.05 ✓	60.20 ✓
+50	59.72	11.74 ✓	46.94 ✓
75	3.58	6.63 ✓	
74	0.6	6.63 ✓	
73	3.58	46.54 ✓	
72	21.56	79.95 ✓	
71	21.56	13.90 ✓	41.73 ✓
+50	38.52	13.90 ✓	41.73 ✓
70	21.56	59.87 ✓	19.98 ✓
69	21.56	49.61 ✓	
68	5.23	30.67 ✓	30.68 ✓
67	27.92	29.16 ✓	29.17 ✓
66	3.58	46.54 ✓	
65	21.56	82.52 ✓	82.52 ✓
64	67.56		

? wall	8.0	8.0	80% R
	1.0	1.0	
24' S side & bottom	0.0	0.0	
	1.0	1.0	
	4.4	4.4	
	4.4	4.4	
	6.0	6.0	75% R
10' S wall	4.4	4.4	25% R
	4.4	4.4	
	1.4	1.4	
	5.0	5.0	50% R
X S wall 25'	1.0	1.0	
	4.4	4.4	
2 B walls 36' S 5' N	9.0	9.0	50% R
15' S W 20' N			

Sta	Area	Earth	Rock			
		9.09 ✓	81.87 ✓			
88	39.52				6.0	6.0
		111.26 ✓				
87	21.56				4.4	4.4
		94.88 ✓	94.89 ✓			50% R
86	80.92				10.0	10.0
		474.4 ✓	142.33 ✓	40' S 12' N		75% R
85	21.56				4.4	4.4
		19.96 ✓	59.89 ✓	2' W Wall		75% R
84	21.56				4.4	4.4
		18.81 ✓	56.44 ✓			
+50	59.72			30' W 5' W	8.0	8.0
		18.81 ✓	56.44 ✓	5' E W		75% R
83	21.56				4.4	4.4
		39.92 ✓	43.92 ✓	22' s wall		50% R
82	21.56				4.4	4.4
		32.07 ✓	39.07 ✓	18' s wall		50% R
81	13.08				3.0	3.0
		30.85 ✓				7 yd Boulder
80	3.58				1.0	1.0
		11.81 ✓				
79	2.81				0.8	0.8
		19.90 ✓				
78	7.94				2.0	2.0
		21.33 ✓		2' s wall		
77	3.58				1.0	1.0
		46.54 ✓		24' s wall		
76	21.56				4.4	4.4

Sta	Area	Earth	Rock
		50.54 ✓	
98	14.76	23.78 ✓	23.79 ✓
97	10.93	35.99 ✓	35.99 ✓
96	27.92	17.88 ✓	53.45 ✓
+50	49.12	14.39 ✓	43.20 ✓
95	13.08	23.14 ✓	7.71 ✓
94	3.58	28.81 ✓	
93	11.98	46.40 ✓	
92	13.08	19.46 ✓	19.46 ✓
91	7.94	33.20 ✓	
+50	27.92	37.50 ✓	
90	12.53	19.27 ✓	
+25	1.34	10.60 ✓	
89	21.56	7.52 ✓	62.73 ✓
88+50	59.72		

3.3	3.0	50% R
2.6	2.6	50% Rock
5.0	5.0	75% R
7.0	2.0	75% R
3.0	3.0	25% R
1.0	1.0	
2.8	2.8	
3.0	3.0	50% R
2.0	2.0	
5.0	5.0	
2.9	2.9	
0.4	0.4	
4.4	4.4	
7.0	9.0	90% R

9 walls

5' s wall

F/10 ✓

16' s wall

50' S 15 20' N

Sta	Area	Earth	Rock
		32.07 ✓	32.08 ✓
111	21.56	17.58 ✓	52.77 ✓
+50	54.42	43.02 ✓	43.04 ✓
110	3.952	77.96 ✓	
109	3.58	9.11 ✓	
108	1.34	5.00 ✓	
107	1.34	6.30 ✓	
106	2.06	7.63 ✓	
105	2.06	7.63 ✓	
104	2.06	10.44 ✓	
103	3.58	46.55 ✓	
102	21.56	91.63 ✓	
101	27.92	22.90 ✓	68.73 ✓
100	21.56	31.56	31.58 ✓
99	12.53		

5 Walls S

50' SWall

+50
1/ sec

5q/ sec

30' S Wall 12' NW

44	44	
7.5	7.5	75% Rock
6.0	6.0	50% Ro
1.0	1.0	
0.4	0.4	
0.4	0.4	
0.6	0.6	
0.6	0.6	
0.6	0.6	
0.6	0.6	
1.0	1.0	
4.4	4.4	
5.0	5.0	75% R
4.4	4.4	50% R
2.9	2.9	

Sta Area Earth Rock

Sta	Area	Earth	Rock
+60	59.72	90.24 ✓	90.25 ✓
116	21.56	23.27 ✓	23.27 ✓
115	3.58	23.27 ✓	
+50	21.56	25.61 ✓	
114	6.10	17.93 ✓	
113	2.58	11.64 ✓	11.64 ✓
+50	21.56	16.03 ✓	16.04 ✓
112	13.08		

Tunnel / V	8.0	8.0	
Postal	covered	covered	50% R
	4.4	4.4	
			50% R
	1.0	1.0	
	4.4	4.4	
	1.6	1.6	
	1.0	1.0	
			50% R
	4.4	4.4	
			50% Rock
	3.0	3.0	

81

pe small

Extension

40

Sta Area Earth Rock

329		
+33	To 66	
328		
320+60		
316	.65	
		3.66
315	1.33	
		1.87
+62	1.33	
314	5.47	7.51
313+29		
310		3.61
307+80		
307	.98	
		3.63
306	.98	
+50	00	.90

diverting dam and flume 12
33' steel gate 4 footings 3 stringers 4 post

flume 12
drop

flume 11
Three footings flume etc

Flume 11
drop

02

04

04

ditch dest

1.5

End of Flume 10 1/2 full sand

1 footing flume etc

begin flume 10 1/3 full sand

03

03

00

Sta

+71

292+29

297+93

290+86

290+41

288+76

289+50

286+37

286+05

294+27

283+93

279+13

Lower Dam ok

42' destroyed ditch

End of Flume 9

63' iron needed Trestle ok

begin fl. 9

drop
Road crossing

End Fl 8

129' FL dest. entirely 289+12 to 290+41

begin flume 8

drop

end flume 7

ok

begin flume 7

drop

End flume 6

ok

begin flume 6

drop

end flume 5

99' destroyed

begin flume 5

282+67 to 283+65

Sta Area Earth Rock

275+90			along gate	
			end of flume #	
			128' dest entirely	271+09 to 272+37
269+66			begin flume #	
			drop	
269+30	6.30			1.7
To		458.22		
230	0.0			0.0
228	5.47			1.5
To		53.65		
223	0.0			4.0
215	0.0			0.0
		160.78		
213	43.40			7.0
		912.77		
203	5.89			1.6
		109.07		
193	0.0		25' s wall out	0.0
		32.00		
184	1.92			0.5
		131.27		
				Large tree across ditch

Sta	Area	Earth	Rock		
194+50	12.30				3.0
		660.55 ✓			
170	12.30				3.0
		126.20 ✓			
165	1.33			20' wall	0.4
		7.43 ✓		32' "	
162+70	1.65				0.2
		9.53 ✓			
158+74	1.65				0.2
158+63	0.0			end flume 3	0.0
158+21				end break	
				211'	
156+10				begin break	
				3 spans to cracked and rebuilt	
151+10				begin flume 3	
149+70	0.0				0.0
		2.00 ✓		drop	
148+75	19.30				4.0
		42.89 ✓		covered section full	
147	12.30				3.00
		58.52 ✓			
145	3.50				1.0
		6.50 ✓			
142	1.67				0.5
		6.50 ✓			

much shift 600' N beam

covered section.

covered section

end flume 3

end break

211'

begin break

3 spans to cracked and rebuilt

begin flume 3

drop

covered section full

Sta	Area	Earth	Rock		
139	3.50				1.0
		19.44 ✓			
136	0.0				0.0
					Tree across ditch
131	0.0				0.0
		26.51 ✓			
130+25	19.30			drop	4.0
12		307.22 ✓		covered section full	
125	12.30				3.0
		257.96 ✓			
118	7.60				2.0
		65.77 ✓			
114+80	3.50				1.0
		20.44 ✓	10.00	? walls	? Rock
114+50	33.30				6.0
		35.89 ✓	10.00		
114	5.47				1.5
		23.92 ✓			
112	.99				0.3
		39.44 ✓			
99	.65				0.2
		17.68 ✓			
98	3.50				1.0
		9.55 ✓			
97	1.67				0.5
		18.55 ✓			
94	1.67				0.5

Sta Area Earth Rock

Sta	Area	Earth Rock	
		29.11 ✓	50' s wall & bottom
93+25	19.30		4.0
		24.35 ✓	
90	33.30		6.0
		84.44 ✓	
92	12.30		3.0
		26.33 ✓	
91	1.92		0.6
		7.11 ✓	
89	0.0		0.0
		0.0	
84	0.0		0.0
		3.55 ✓	
83+50	1.92		0.6
		2.07 ✓	
80	.32		0.1
		2.00 ✓	
81+19	.32		0.1
		52.39 ✓	
80+04	3.12		0.9
		165.62 ✓	
77	26.30		5.0
		214.44 ✓	
74	12.30		3.0
		131.63 ✓	
70	5.47		1.6
		76.11 ✓	
			Siphon full

Sta Area Earth Rock

65	2.75	37.77 ✓
60	1.33	21.48 ✓
55	.99	1.57 ✓

54+10	00	
53+05		

46

40+98

47+88

39+92

39+80

24+76

21+95

20+97

0.8
0.4
0.3
0.0
30' N Wall + bottom
3' flume 1/2 sand & water

end arch
begin arch
10 footings out flume included
end flume 2

begin flume 2
12' m wall + bottom & 2 sides
end arch

begin arch

end flume 1
1/2

begin flume 1

Sta Area Earth Rock

20+80			
17+08			60.00 ✓
16+40			
11+73	3.50	15.00 ✓	3.00 ✓
11	7.60	20.55 ✓	3.00 ✓
10	3.50	17.00 ✓	
9	99	1.00 ✓	
7+50	00	1.55 ✓	
7	1.92	4.79 ✓	
6	.65	14.14 ✓	
00	.65		

47.

end arch

65 arch broken in

Boulders

begin arch 1.0

20' N wall

2.0

3yd boulder

3yd Rock

1.0

0.3

0.0

0.6

0.2

0.2

Settling Basin

48

90 x 65 x 4

866 yds

32' SW cor out ←

30' N end out ←

Cottonwood Section

49

Sta	Area	Earth	Rock
C 29+33	78.0	394.22	
29	78.0		
28	78.0		
		245.70	
27	54.68		
		196.03	
26	45.78		
		152.77	
25	36.72		
		120.77	
24	28.50		
		79.77	
23	14.58		
		43.44	
22	8.88		
		23.88	
21	4.02		
		70.93	
15	2.31		
		31.18	
11	1.90		
		33.44	
5	1.11		
		16.44	
C 1	1.11		
		2.05	
C 00	0.0		

19.0

10.0

10.0

8.0

7.0

6.0

5.0

3.0

2.0

1.0

0.6

0.5

0.3

0.2

0.0

70' N wall

44' N wall

25' N wall

Pine Creek Branch

50

Sta	Area	Earth	Rock		
27	17.74				3.5
		65.70		100' W wall	
26	17.74				3.5
		59.85		70' ditch dest	
25	14.58				3.0
		59.85		56' W wall	
24	17.74				3.5
		328.52			
19	17.74				3.5
		394.22			
13	17.74				3.5
		59.85			
12	14.58				3.0
		27.09	9.02		2590R
11	4.92				1.2
		17.17	1.90		1090R
10	5.38				1.3
		47.33			
7	3.14				0.8
		32.42			
4	2.70			75 sq ft W wall	0.6
		7.80			
3	1.51			40 sq ft W wall	0.4
		8.30			
1	.73				0.2
		2.70			
P.O+00	00				0.0

Sta Area Earth Rock

P.C. Bridge

B0+40

1+62

122' odt remaining spans have to be rebuilt

+72 19.07

12.71 38.14

30 19.07

17.65 52.98

29 19.07

52.98 17.65

28 19.07

68.15

65' W wall

3.7

Head Gate

75% Rock

17' Wall

3.7

75% R

100' W Wall

3.7

25% R

75' W Wall

3.7

Recession, Morena Dam

Clear West Wind

May 9 1916 Water 145,50

Settlement.

Pier	Erect	Reversed	Average	2.14	157.34	155.20	B.M.S end
1	.652	.700				4.97	152.37
2	.700	.745				5.00	152.34
3	.725	.750				5.00	152.34
4	.752	.800				5.03	152.31
5	.915	.950				5.18	152.26
6	1.050	1.080				5.15	152.19
7	1.080	1.110				5.25	152.09
8	1.110	1.140				5.27	152.07
9	1.100	1.140	2.95	155.02		5.27	152.07
10	1.101	1.150				3.03	151.99
11	1.150	1.20				3.04	151.98
12	1.090	1.190				3.02	152.00
13	1.095	1.120				2.99	152.03
14	1.040	1.070				2.97	152.05
15	.903	.951				2.84	152.08
16	.870	.900				2.89	152.13
17	.780	.800				2.85	152.17
18	.750	.751				2.72	152.30
19	.690	.700				2.65	152.37
20	.645	.645				2.68	152.34

Sta	Area	Earth	Rock			
		17.35	17.35			
142	5.67				1.5	
		31.50	94.52	35' S Wall	12' N wall	75% R.
139+50	21.56				4.4	
		15.90	47.71			75% R.
138	1.34				0.4	
		84.81				
136	21.56				4.4	
		27.81	83.45	16' Slating between	16' SW	75% R.
135	38.52				6.0	
		21.50	64.53	60' Slating between		75% R.
134	7.94				2.0	
1		83.00				
+75	27.92			Slating	5.0	
		27.48	27.49			50% R.
102+15	21.56			F. 11	4.4	
		51.90		Full sand		
+50	21.56			F. 11	4.4	
		4.91	14.72			
+35	49.12				7.0	75% R.
		11.62	34.97			
131	32.62				4.5	75% Rock
		33.05	33.06			
130	13.08				3.0	50% R.
		26.32	26.33		3	
129	15.35				3.4	50% Rock
		16.41	49.25			
128+45	49.32			Tunnel 15 sec	7.0	75% Rock

Sta	Area	Earth	Rock
		20.98 ✓	20.89 ✓
157	19.98		39.96 ✓
156	2.06		10.44 ✓
155	3.58		13.26 ✓
154	3.58		6.63 ✓
153	0.0		
152	0.0		6.63 ✓
151	3.58		30.852 ✓
150	13.08		14.02 ✓ 14.02 ✓
149	2.06		1.50 ✓
149+61	0.0		
147+19	0.0		21.11 ✓ 21.11 ✓
145	10.41		10.78 ✓ 10.79 ✓
144	1.34		13.35 ✓ 13.35 ✓
143	13.08		

20' S Wall ✓

50% Rock

4.0

0.6

1.0

1.0

0.0

0.0

1.0

3.0

50% R

Tunnel 1 1/2

0.6

Flume 2
50' out ✓

0.0

Flume 2

0.0

2.5

50% R

0.4

3.0

50% R

Sta Area Earth Rock

Sta	Area	Earth	Rock	
		21.94 ✓		
170	3.58			1.0
		14.77 ✓		
169	4.40			1.2
		48.07 ✓		
168	21.56			4.4
		99.16 ✓		
725	49.12			7.0
		9.18 ✓ 24.54 ✓	? work	7.5% R
167	21.56			4.4
		24.41 ✓ 24.42 ✓		50% R
166	4.81			1.3
		15.53 ✓		
165	3.58			1.0
		16.00 ✓ 5.33 ✓		
164	7.94			2.0 25% R
		19.46 ✓ 19.46 ✓		
163	13.08			3.0 50% R
		15.42 ✓ 15.43 ✓		
162	3.58		2.00 ✓	1.0 2yd boulder
161				1.0
160		53.03 ✓		1.0
159				1.0
158	3.58			1.0

Sta	Area	Earth	Rock		
		6.62 ✓	6.62 ✓		
182	3.58	49.79 ✓	49.79 ✓	1.0	50% Rock
181	49.12	195.48 ✓	195.48 ✓	7.0	
180	162.0	152.60 ✓	152.60 ✓	-14.0	
179	2.81	19.90 ✓		0.8	
178	7.94	15.37 ✓	16.14 ✓	2.0	
+75	38.52	15.77 ✓	47.32 ✓	6.0	75% R
177	6.90	27.48 ✓		1.8	
176	7.94	19.90 ✓		2.0	
175	2.81	66.70 ✓		0.8	
174	38.22	101.44 ✓		5.5	
173	21.56	79.85 ✓		4.4	
172	21.56	79.85 ✓		4.4	
171	21.56	90.80 ✓		4.4	
+25	43.82			6.5	12' S Wall

Sta Area Earth Rock

		7.71	23.14		
191	3.58				1.0
		19.14	57.45		
+75	162.0				14.00
		73.30	219.92		
190	49.12				7.0
		79.19	54.58		
+60	49.12				7.0
		79.02	59.77		
189	2.06				0.6
		7.63			
188	2.06				0.6
		10.93			
+75	21.56				4.4
		21.24	63.73		
+50	162				14.0
		42.49	127.47		
187	21.56				4.4
		10.93			
+75	2.06				0.6
		5.73			
186	2.06				0.6
		10.44			
185	3.58				1.0
		17.92			
184	6.10				1.6
		17.92			
183	3.58				1.0

~~20' 21' SW~~

Tunnel 13/40

~~Tunnel 13/40~~

" "

21' SW

50' berm zone

20% Rock

25% R

Sta Area Earth Rock

		13.25 ✓	
205	3.58		1.0
		13.25 ✓	
204	3.58		1.0
		13.25 ✓	
203	3.58		1.0
		13.25 ✓	
202	3.58		1.0
		13.25 ✓	
201	3.58		1.0
		13.25 ✓	
200	3.58		1.0
		10.44 ✓	
199	2.06		0.6
		7.63 ✓	
198	2.06		0.6
		10.44 ✓	
197	3.58		1.0
		10.44 ✓	
196	2.06		0.6
		18.50 ✓	
195	7.94		2.0
		38.92 ✓	
194	13.08		3.0
		48.44 ✓	
193	13.08		3.0
		48.44 ✓	
192	13.08		3.0

759.0 R

<u>310'</u>		<u>45,000</u> ✓
+65	2.06	6.78 ✓
217	3.58	46,55 ✓
216	21.56	130,51 ✓
215	49.12	97,59 ✓
214	3.58	66.18 ✓
213	32.16	70,03 ✓
212	5.67	13,00 ✓
211	1.34	5,00 ✓
<u>2110</u>	<u>1.34</u>	<u>42,40</u> ✓
209	21.56	43,74 ✓
208	2.06	7,63 ✓
207	2.06	7,63 ✓
206	2.06	10,44 ✓
205	3.58	

Tunnel 2 N	0.6
	1.0
	4.4
	7.0
42' s wall	1.0
	5.4
	1.5
	0.4
50' berm	0.4
	4.4
26' s wall	0.6
	0.6
	0.6
	1.0

247+65

(1890)

710 13.08

4.844

228 13.08

50.484

227 14.19

54.70 ✓

226 15.35

69.22 ✓

225 21.56

84.77 ✓

224 27.92

103.40 ✓

223 27.92

123.03 ✓

222 39.52

142.66 ✓

221 38.52

40.57 ✓

250+75 49.12

Tunnel 1's

Tunnel 2 N 3.0

3.0

3.2

3.4

4.4

5.0

5.0

6.0

6.0

Tunnel 2 S 7.0

Recession Morona Dam

Clear West Wind Aug 14 1916

Water 146.56

Settlement

Kneashan
Swenson

61

Pier No	Erect.	Reversed	Average	0.67	155.87	155.20	B M Send
1	8 1/8 ✓	8 9/8 ✓	.6927			3.50	152.37
2	8 5/8 ✓	9 ✓	.7344			3.54	152.33
3	8 6/8 ✓	9 1/8 ✓	.7448			3.58	152.32
4	9 1/2 ✓	9 6/8 ✓	.8021			3.57	152.30
5	11 1/8 ✓	11 1/2 ✓	.9427			2.61	152.26
6	12 6/8 ✓	13 ✓	1.0729			3.69	152.18
7	13 ✓	13 1/2 ✓	1.1458			3.79	152.08
8	13 4/8 ✓	13 5/8 ✓	1.1302			3.80	152.07
9	13 4/8 ✓	13 6/8 ✓	1.1354	245	154.52	3.80	152.07
10	13 7/8 ✓	14 6/8 ✓	1.1427			2.52	152.00
11	14 ✓	14 7/8 ✓	1.2031			2.54	151.98
12	13 5/8 ✓	14 6/8 ✓	1.1873			2.52	152.06
13	13 ✓	14 ✓	1.1250			2.50	152.02
14	12 1/2 ✓	13 ✓	1.0625			2.47	152.05
15	17 3/8 ✓	12 1/2 ✓	.9948			2.45	152.07
16	10 7/8 ✓	11 7/8 ✓	.9479			2.40	152.12
17	9 3/8 ✓	10 1/2 ✓	.8281			2.35	152.17
18	9 1/8 ✓	10 ✓	.7968			2.22	152.30
19	7 3/8 ✓	9 5/8 ✓	.7031			2.15	152.37
20	7 4/8 ✓	9 ✓	.6875			2.18	152.34

Telephone Line

Chula Vista to Lower Otay

Kneeshaw
8-20-16

6-2

D 817 Canby National Ave & 3rd St

818 Chula Vista

19 854 02925

20 55 X

21 56 * Buck arm

22 57 27 Poles To Citys.

8 31 58 No 1

32 59

33 60

34 61

35 62

36 63

37 64

38 65

39 66

40 567

41-35 X

42 X

43 X

44 X

45 02916

46 17

47 X

48 19

49 20

50 21

51 22

52 23

8 63 24

Pole V₁ 125 129 135 136 22 2 103

1 X ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

2

3 dead
drop

4

5 double arm

6 " "

7

8

9

10

11

12

13

14 X ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ dead
wire ✓

15 X ✓ ✓ ✓ ✓ ✓ ✓ X ✓

16 X ✓ ✓ ✓ ✓ ✓ ✓ X ✓

17 X ✓ ✓ ✓ ✓ ✓ ✓ ✓ X

18 X ✓ ✓ ✓ ✓ ✓ ✓ ✓ X

19 X ✓ ✓ ✓ ✓ ✓ ✓ ✓ X

20

21

22 dead
drop

23

24

25

26

27 dead

28

16 pin pony Arm

double arm

" "

		128	129	103				
29	X	✓	✓	✓	✓	✓	✓	X
30	X	✓	✓	✓	✓	✓	✓	X
31	X	✓	✓	✓	✓	✓	✓	X
32	X	✓	✓	✓	✓	✓	✓	X
33	127	129	135	136	dead end			
34								10 pin arm
35								
36								
42					dead drop			
45					drop			
66					drop			
77					dead drop			
97					drop			
101	dead end							dead end
102	"	129						123 new pole
189					drop			
181					drop	dead end		
182								6 pin arm
199 = Old 194								
203 = " 198								
204 new pole								to Dunbar Buck arm
213 = old 206					drop			

Line to Dunbar
1763 to 1886

L.T. Co drop at 1829
L.T. Co line 1887 to 1890

102 to 198 new poles
199 to 203 old "
204 to 210 new "
211 to 213 old "
214 new
215 216 old
217 218 new
219 227 old
228 247 new
248 264 old
265 new
266 old = 250 old remaining

103 Line
to 101
199 to 228
250 to 346
417 to 516
No poles on Polo Farm Line

Russian woman Dan
 . Sept 10 1916 Kuyshov, Vlad.
 West wind.

65

R.P. No	Normal	Range	Mean	Feet	Incr. Decr.				Tnc	Dec
					0.76	155.96		155.20		
1	11 ³ / ₁₆ "	8 ⁵ / ₁₆	8 ³ / ₃₂	0.6745			3.59	152.37	-	-
2	8 ⁵ / ₁₆	9 ³ / ₁₆	8 ²⁹ / ₃₂	0.7422			3.63	.33	-	-
3	8 ⁶ / ₁₆	9 ³ / ₁₆	9 ¹ / ₁₆	0.7552			3.62	.34		.02
4	9 ⁵ / ₁₆	10	9 ²¹ / ₃₂	0.8047			3.66	.30	-	-
5	11 ³ / ₁₆	11 ³ / ₄	11 ¹⁵ / ₃₂	0.9557			3.71	.25	.01	
6	12 ¹ / ₁₆	13 ¹ / ₁₆	13 ⁵ / ₃₂	1.0964			3.79	.17	.01	
7	13 ³ / ₁₆	13 ¹¹ / ₁₆	13 ¹⁷ / ₃₂	1.1276			3.88	.08	-	-
8	13 ³ / ₁₆	14	13 ¹³ / ₁₆	1.1172			2.90	.06	.01	
9	13 ³ / ₄	14	13 ¹ / ₈	1.1563			3.91	152.05	.02	
10	14	14 ³ / ₈	14 ³ / ₁₆	1.1823	2.77	154.76	3.97	151.99	.01	
11	14 ³ / ₈	14	14 ³ / ₁₆	1.1823			2.78	.98	-	-
12	14 ⁷ / ₁₆	15 ¹ / ₁₆	14 ¹² / ₁₆	1.2292			2.77	.99	.01	
13	13 ¹⁵ / ₁₆	14 ⁷ / ₁₆	14 ³ / ₁₆	1.1823			2.75	152.01	.01	
14	13 ¹ / ₁₆	13 ¹ / ₂	13 ⁹ / ₃₂	1.1068			2.72	.04	.01	
15	11 ¹³ / ₁₆	12 ³ / ₈	12 ³ / ₃₂	1.0078			2.69	.07	-	-
16	11 ³ / ₁₆	11 ⁷ / ₈	11 ¹⁷ / ₃₂	0.9609			2.65	.11	.01	
17	9 ¹⁵ / ₁₆	10 ¹ / ₂	10 ³ / ₃₂	0.8516			2.60	.16	.01	
18	9 ³ / ₁₆	10 ¹ / ₈	9 ¹ / ₈	0.8125			2.46	.30	-	-
19	8 ³ / ₁₆	9 ⁹ / ₁₆	9	0.75			2.40	.36	.01	
20	8 ¹ / ₁₆	8 ¹⁵ / ₁₆	8 ¹ / ₂	0.7083			2.43	152.33	.01	

Morena Evaporating Pan
Temp outlet 53° at 4-30 P.M. 9-10-16

Area = 33.811 sq.ft. Corners .2 radius

Depth per gallon = .04744 inch.

4.63	in
4.64	in
4.65	in
4.66	in
4.65	in
4.63	in
4.62	in
4.59	in
4.59	in
4.62	in
4.65	in
4.65	in
4.63	in
4.62	in

Temp at Settling Basin 8-30 am 9-11-16
57°

at Sta 184 D.C.E	58°	9-20 am	
" Lower Hammer	58°	9-35 "	"
" Upper "	57°	9-50 "	"
" Lower Otay	66°	10- "	9-13-16
" Bonita Y	65 1/2°	10-30 "	9-15-16
" 30+ Bnd	69°	4-43 "	"

Tunnel 1. N. Drain 9-16-16
Otay-S.D. Pipeline

Sta	+	HI	-	Elev
	1.53	101.53		100.00
20+40			5.77	95.76
20				
19	1.52	101.45	1.60	99.93
18			1.23	100.22
17	1.42	101.71	1.16	100.29
16			1.55	100.16
15	1.79	101.88	1.62	100.09
14			1.53	100.35
13	1.26	101.58	1.66	100.22
12			1.23	100.35
11	1.17	101.59	1.16	100.42
11+27			4.22	97.37
11	3.95	101.30	4.24	97.35
12	3.15		4.10	97.20
13	4.41	101.48	4.23	97.07
12+50			4.47	97.01
13+50			4.44	97.04
14			4.53	96.95
14+50			4.58	96.90
15	4.55	101.36	4.67	96.81
15+50			4.70	96.66
16			4.95	96.41
16+50			4.94	96.42
17			5.13	96.23
17+50			5.30	96.06
18	5.10	101.28	5.18	96.18
18+50			5.20	96.08

Top of drain at N Portal

Top of drain at sumph

" " "

Tunnel #1 Drain (cont)

68

Sta	+	H.I	-	Elev
19		101.28	5.23	96.05
19+50			5.30	95.98
20			5.42	95.86
20+40			5.51	95.77

Tunnel 2 Drain
9-16-16

Sta	+	H.I.	-	Elev.	Grade	Cut
19	1.59	101.59		100.00	92.82	7.18
+75			1.75	99.84	.90	6.94
+50			1.74	99.85	.98	6.87
18.25			1.82	99.77	93.06	6.71
18.75			1.73	99.86	.15	6.71
+75			1.72	99.87	.23	6.64
+50			1.77	99.82	.31	6.51
+25			1.75	99.84	.40	6.44
17			1.54	100.04	.49	6.55
+75			1.66	99.93	.57	6.36
+50			1.77	99.82	.65	6.17
+25			1.77	99.82	.73	6.09
16			1.72	99.87	.82	6.05
+75			1.59	100.00	.90	6.10
+50			1.59	100.00	.98	6.02
+25			1.62	99.97	94.06	5.91
15	1.96	101.87	1.62	99.97	.15	5.82
+75			1.78	100.09	.23	5.86
+50			1.95	99.92	.31	5.61
+25			1.89	99.98	.40	5.58
14			1.89	99.98	.49	5.49
+75			2.02	99.85	.57	5.28
+50			1.72	100.15	.65	5.50
+25			1.75	100.12	.73	5.39
13			1.65	100.22	.82	5.40
+75			1.35	100.52	.90	5.62
+50			1.24	100.63	94.98	5.65

Tunnel #2 Drain (cont.)

70

Sta	+	H.I.	-	Elev	Grade	cut
+25		101.87	1.24	100.63	95.06	5.57
12			1.21	100.66	.15	5.51
+75			1.64	100.23	.23	5.00
+50			1.52	100.35	.31	5.04
+25			1.56	100.31	.40	4.91
11			1.92	99.95	.49	4.46
+75			1.60	100.27	.57	4.70
+50			1.31	100.56	.65	4.91
+25			1.47	100.40	.73	4.67
10			1.46	100.41	.82	4.59
+75			1.82	100.05	.90	4.15
9+50			1.89	99.98	95.98	4.00

19	0.05	100.05		100.00	92.82	7.18
19+25			0.15	99.90	92.73	7.17
19+50			0.40	99.65	92.65	7.00

Recession Moreno Dam
 Oct 31, 1916. Wueste, Cornell, Swenson
 Dry, clear day, light west wind

Settlement Moreno Dam
 Oct 31, 1916. Wueste, Cornell
 Dry, clear day, light west wind 71

RP No	Normal	Recess	mean	Feet	Inc. Dec.	BM	106	15626	15520	15520	Elev	as per Sept 10	as per Sept 10
												200	200
17.10													
1 24.06	7 ¹⁵ / ₁₆	8 ¹ / ₂	8 ²³ / ₃₂	.1849	¹ / ₃₂	"1			389 ¹ / ₂	152.36 ¹ / ₂		0.00 ¹ / ₂	
2 24.30	8 ³ / ₁₆	9 ¹ / ₈	8 ²³ / ₃₂	.7318	⁴ / ₃₂	"2	248	154.8 ¹ / ₂	392 ¹ / ₂	152.33 ¹ / ₂			0.00 ¹ / ₂
3 24.66	8 ¹ / ₂	9 ³ / ₁₆	8 ²¹ / ₃₂	.7370	² / ₃₂	"3			244 ¹ / ₂	152.34			
4 24.10	9 ¹ / ₃₂	9 ¹ / ₃₂	9 ²³ / ₃₂	.7865	¹ / ₃₂	"4	274	155.04 ¹ / ₂	248	152.30 ¹ / ₂			0.00 ¹ / ₂
5 24.70	10 ¹ / ₁₆	11 ³ / ₄	11 ¹ / ₃₂	.9349	⁸ / ₃₂	"5			278 ¹ / ₂	152.26			0.01
6 25.35	12 ³ / ₁₆	13 ⁹ / ₁₆	12 ³ / ₃₂	1.0625	¹³ / ₃₂	"6	246	154.64 ¹ / ₂	296 ¹ / ₂	152.18			0.01
7 25.10	12 ⁹ / ₁₆	13 ⁵ / ₈	13 ³ / ₃₂	1.0911	¹⁴ / ₃₂	"7			255 ¹ / ₂	152.09			0.01
8 24.26	13 ¹ / ₁₆	13 ¹⁵ / ₁₆	13 ¹¹ / ₁₆	1.1406	¹⁵ / ₃₂	"8	265	154.3	257	152.07 ¹ / ₂			0.01 ¹ / ₂
9 24.30	13	14 ³ / ₈	13 ¹¹ / ₁₆	1.1406	¹⁶ / ₃₂	"9			264 ¹ / ₂	152.08 ¹ / ₂			0.03 ¹ / ₂
10 24.10	13 ¹ / ₁₆	14 ⁹ / ₁₆	13 ¹³ / ₁₆	1.1510	¹⁷ / ₃₂	"10	252	154.52	273	152.00			0.01
11 24.55	13 ³ / ₈	15 ¹ / ₈	14 ¹ / ₄	1.1875	¹⁸ / ₃₂	"11			253	151.99			
12 24.50	13 ¹ / ₁₆	15 ¹ / ₄	14 ¹¹ / ₃₂	1.1953	¹⁹ / ₃₂	"12	267	154.67	252	152.00			0.02
13 24.52	12 ³ / ₄	14 ¹ / ₂	13 ⁵ / ₈	1.1354	²⁰ / ₃₂	"13			265	152.02			0.01
14 24.55	11 ³ / ₄	13 ⁵ / ₈	12 ¹¹ / ₁₆	1.0573	²¹ / ₃₂	"14	282 ¹ / ₂	154.8 ¹ / ₂	262	152.05			0.01
15 24.58	10 ¹ / ₂	12 ³ / ₁₆	11 ¹¹ / ₃₂	.9453	²² / ₃₂	"15			280	152.07 ¹ / ₂			0.00 ¹ / ₂
16 24.15	10	11 ¹ / ₄	10 ³ / ₈	.8854	²³ / ₃₂	"16	298	155.11	274 ¹ / ₂	152.13			0.02
17 24.13	9 ¹ / ₂	10	9 ³ / ₄	.9125	²⁴ / ₃₂	"17			293	152.18			0.02
18 24.75	9	9 ¹ / ₂	9 ¹ / ₄	.7708	²⁵ / ₃₂	"18	282	155.13	290	152.31			0.01
19 23.51	8 ¹ / ₄	8 ³ / ₄	8 ¹ / ₂	.7083	²⁶ / ₃₂	"19			274 ¹ / ₂	152.38 ¹ / ₂			0.02 ¹ / ₂
20	7 ¹ / ₂	8	7 ³ / ₄	.6458	²⁷ / ₃₂	"20	265	155.00	278	152.35			0.02
481.29 ✓						"15	246	154.53	293	152.07 ✓			
975						"10	292 ¹ / ₂	154.9 ¹ / ₂	253	152.00 ✓			
						"5	412	156.37 ¹ / ₂	267	152.25 ¹ / ₂ ✓			
						BM			117	155.20 ¹ / ₂ ✓			

Flume 5 D.C.E.

5	pc	6x6-16	SIE
10	"	3x8-18	SIE ✓
16	"	3x6-12	✓
10	"	2x6-18	✓
5	"	2x6-14	✓
15	"	3x4-14	✓
6	"	1x12-16	✓
5	"	2x3-12	✓

Flume 8

3		6x6-16	✓
4		6x6-12	✓
16		3x5-18	SIE ✓
16		3x6-12	✓
10		2x6-14	✓
8		2x3-12	✓
24		3x4-14	✓
9		1x12-16	✓

Flume 12

2		6x6-14	✓
2		6x6-16	✓
4		3x8-18	SIE ✓
4		3x6-12	✓
1		2x6-14	✓
4		2x6-18	✓
2		2x3-12	✓
3		1x12-16	✓

63x4-14

Flume 4

73

10	pc	6x6-20	✓
4	"	6x6-16	✓
2	"	6x6-14	✓
18	"	3x8-18	SIE ✓
40	"	2x6-16	✓
16	"	2x6-12	✓
15	"	2x3-12	✓
26	"	3x4-14	✓
10	"	1x12-16	✓
20			

Flumma 12

74

12	14	□		0
			15.4	
12	14	□	4	0
16	16	□		0
			12.4	
22	24	□		4
			10.5	
24	24	□	14	
22		□	11.5	

Levels for Monona Tramway
5-foot addition

Dec 9 1916

Wm. H. Harris

Flume 12 1/2

75

308-07.5

99.91

Run	177	156.97	15520	15							
* 1			2.53	15444	-	0.06	3.8	93.96	97.59.1	94.90	2.8
* 2			5.77	151.20	-	3.30					
* 3			6.74	150.23	-	4.27					
* 4			6.81	150.16	-	4.34	10.4	87.42	97.60.2	91.40	6.4
* 5	462	154.82	6.77	150.20	-	4.30					
* 6			4.58	150.24	-	4.26					
* 7			4.57	150.25	-	4.25	15.0	83.0	97.61.3	88.42	9.45
* 8			4.64	150.18	-	4.32					
* 9			4.79	150.03	-	4.47					
* 10			4.84	149.98	-	4.52	13.8	74.2	97.62.4	86.1	11.5
* 11			4.89	149.93	-	4.57					
* 12			4.99	149.83	-	4.67					
* 13			4.85	149.97	-	4.53	12.1	85.9	97.63.5	89.8	8.1
* 14			4.93	149.89	-	4.61					
* 15			5.07	149.75		4.95					
* 16	5.26	153.22	4.96	149.86		4.64	10.9	87.1	97.64.6	89.6	6.2
* 17			5.31	149.91		4.59					
* 18			5.26	149.96		4.54					
* 19			5.24	149.98		4.52	7.9	90.0	97.65.7	97.6	7.9
* 20			4.93	150.29		4.21					
* 21			4.98	150.24		4.26					
* 22			4.96	150.26		4.24					
* 23			4.93	150.29		4.21					
* 24			3.61	151.61		2.89					
Bm Spillway			7.14	148.08		148.08					

14.75 ✓

18.87 ✓

100.0.8

Carpenters on F15, To 4-7

Break #1	5.00	9 x 4.00	(30 1/2 x .75
#2	3 x 5.00	12 x 4.00	30 1/2 x .3125
#3	2 x 5.00	2 x 4.00	40 x .3125

76
Teams between Gap cut & F15
Apr 6 2 hrs 2 hours 3 min

3.1 x 4.8 x 6.6

3.2 x 4.6 x 6.6

67

Sta 55. Elev. 138.32

Extension 3.2 x 3 x 5

P.C. + Cottonwood 3.6 x 3.7 x 6.7

15167

15234

15667

15522

125