DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1.

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be 30.6+(20—16)÷2 or 2 ft. added to 30.6 =32.6. For slopes of 1 on 1½ see inside of back cover.

#712

556.15
240/651

5426
207
55635

1-62

Daily Work Notes Grossmont Tunnel

alice.

FINAL LEVELS AND CHAINING. P. 62

Drill Holes 10/15/62 P. 70

EL MONTE SECT. II, EAST PORTAL, PIPE CONNECTION AND ELEV.S, P. 74

alice

3-4-47
Cloudy-Cool

Nelson
Phillips
Bar 9837

	4.90	54.35			B.M. 49.45
476+26			G.R.	Grade	
569			4.52	49.83	
LT			4.43		
RT			4.45		
			+2.30	56.65	
CK 562			+2.22	56.57	
776+56					
575	4.34	53.79			49.45
			G.R	Grade	
			3.95	49.84	
LT			3.93		
RT			3.87		
			+2.84	56.63=56.59	
CK 569			+2.83	56.62	
476+97					
583	4.18	53.63			49.45
			G.R	Grade	
			3.77	49.86	
LT			3.86		
RT			3.88		
			+2.88	56.51	
			+3.00	56.63	

Set mon #7 sta 474+37
2"x24" steel pipe Redwood Plug
with copper Tack.

3-5-47
Cloudy-Rain

Nelson
Phillips
Bar 9837

49.45
4.34
5319
9.84
395

49.84
-6.75
56.59

97
23
1674
32
5348

53.63
49.86
378
63
177

49.45
4.02
53.63

3-7-47
Clear-Warm
Same Party

8022

	4.09	53.54			49.45
477+33 589			3.67	49.87	
Lt			3.66		
TOP			3.12	56.66	
Set B.M.			3.89	49.65	
476+10 BM	4.30	53.95		49.65	
477+68 596			4.07	49.88	
	4.65	53.54			548.89
CK BM	4.27	53.29	4.52	49.02	=49.02
	4.39	53.78	3.90	49.39	49.38
	4.47	53.69	4.56	49.22	
CK B.M			4.21	49.48	=49.45
CK BM			4.02	49.67	=49.65
	3.66	53.33			
⌀602 477+92			3.44	49.89	
Lt			3.21		
Rt			3.48	56.81	=56.64
			3.29		

3-7-47
Clear-warm
Same Party

53.54
9.87
3.67
54

49.87
6.75
62

53.54
3.89
49.65

Set B.M. 476+10 Lt side
Elev 49.65

3-8-47 DARBY

Cloudy - Cool.

6.00
2.07
3.93

6.00
1.70
4.30

3-10-47
Clear-warm Same Party
B.M Sta 462+00

49.67
3.66
53.33
49.89
3.44

St BM North edg Pipe Mon # 7 474+37

CK B.M bet Ribs 449 & 550

CK BM 476+10 Lt side use 49.67

49.89
6.75
64

					B M 49.67
	4.67	54.34			
# 612 478+42			G.R. 4.44	Grade 49.90	
Lt			4.22		
R T			4.20		
			+2.60	56.94 =	56.65
CK 602			+2.47	56.81	
# 609			+2.40	56.74	
	4.21	53.88			49.67
479+08 625			G.R. 3.96	Grade 49.92	
Lt			3.84		
R T			3.79		
			+2.86	56.74	
			4.26	49.62	
					B.M. 49.62
	4.63	54.25			
638			G.R. 4.31	Grade 49.94	
Lt			4.32		
R T			4.42		
			2.35	56.60 =	56.69

3-12-47
clear-Hot same party

$$\begin{array}{r} 28.20 \\ .032 \\ \hline 564 \\ 846 \\ \hline 902 \end{array}$$

49.90
6.75
65

$$\begin{array}{r} 29 \\ .032 \\ \hline 58 \\ 87 \\ \hline 928 \end{array}$$

53.88
49.92
396

3-14-47
Clear-Hot
Same Party

49.92
675
5667

Set B.M Lt side 478+90 ±
EL 549.62

3-17-47
cloudy-warm
Same Party

49.94
6.75
56.69

54.25
9.94
4.31

	4.38	54.00			49.62
647					
480+18			G.R:	Grade	
			4.04	49.96	
Lt			3.89		
Rt			3.96		
			+2.74	56.74	
CK					
638			+2.62	56.62	
	4.11	53.73			49.62
480+53					
654			3.76	49.97	
Lt			3.66		
Rt			3.69		
			+2.99	56.72	
CK 647			+2.99	56.72	
	4.30	53.92			49.62
480+87					
661			3.94	49.98	
Lt			3.93		
Rt			3.88		
			+2.84	56.76	
654			+2.80	56.72	

3-18-47
Cloudy - cool
Same Party

49.62	.632	
4.38	30	
54.00	960	
49.46	54.00	49.96
4 54	49.46	4.04
	4 54	00
49.97		
3.76		49.97
53 73		6.75
		56.72

3-19-47
cloudy - Rainy
Same Party.

49.98	
3.94	
53 92	

3-20-47
cloudy - cool

Set MON #8 2½ x 30" steel Pipe Redwood PLUG & headless #21 STA 477+75 ℄

					B.M. 49.62
	4.10	53.72			
668 481+23			G.R. 3.73	Grade 49.99	
Lt			3.67		
Rt			3.61		
			+3.02	56.74	
set B.M.			4.01	49.71	
	4.45	54.07	✓		B.M 49.62
Set B.M.			4.51	49.56	
T.P	4.64	54.10	4.61	49.46	
CK BM			4.87	49.23 = 49.22	
BM.	4.26	53.97		49.71	
680 481+83			G.R. 3.96	50.01	
Lt			3.79		
Rt	No-				
	3.98	53.69			B.M 49.71
685 482+08			3.67	50.02	
Lt			3.50		

3-21-47
cloudy-cool same party

BM Lt side 481+06
Elev 49.71

south edge Mon #8

B.M. Mon #7

3-28-47
Cloudy-COOL same Party

B.M
49.71

4.25 53.96

#691
82+39 G.R 3.93 Grade 50.03

Lt 3.85

Rt 3.89

+2.78 56.74

3-31-47 Bliss Barragon
Phillips

BM 4.63 54.34 49.71

#702
482+94 G.R. 4.29 50.05

Lt 3.78

Rt 3.74

+2.91

4/1/47

4.61 54.32 49.71

#708
483.24 G.R 4.26 50.06

Lt 4.16

Rt 4.15

+2.49

5432

Set BM			4.06	50.26	
				4/2/47	Bliss Leonard Barrapan
BM	4.43	54.69		50.26	
#715					
483+59			4.62	50.07	
Lt			4.52		
Rt			4.48		
			+2.15		
		Check Levels		4/2/47	
	3.895	54.155		50.26	
TP	5.40	54.88	4.665	49.490	
			5.65	49.24	
#721	4.05	54.33		5028	Corrected
483+82.5			4.25	5008	
Lt			4.07		
Rt			4.07		
			+2.62		

Lt Side #83+07 Between P.I. 704+705

BM #7.

				4/4/47	
	4.24	54.52		50.28	Bliss Leonard Phillips
#727					
484+00			GR. 4.93	GP. 50.09	
Lt			4.29		
Rt			4.27		
			+2.49		
				4/7/47	Bliss Leonard Phillips
BM	4.10	54.38		50.28	
Set BM	4.65	54.57	4.46	49.92	
#790					
484+85			GR. 4.45	50.11	
Lt			4.38		
Rt			4.35		
			+2.31		

Lt Sid - 484+78 Between Ribs 738+739

4/8/47
Bliss
Leonard
Phillips

BM	4.71	54.63		49.92	
#745					
485+10			4.51	50.12	
Lt			4.33		
Rt			4.35		
			+2.31	56.94	

4/10/47

BM	4.23	54.51		50.28	
#754					
485+61			G. Rod 4.38	450.13	
Lt			4.22		
Rt			4.27		
			+2.43	56.94	

4/11/47

BM	4.36	54.28		49.92	
#760					
485+91			G.R. 4.14	550.14	
Lt			4.02		
Rt			3.97		
			+2.66	56.94	

4/14/47
Bliss
Leonard
Phillips

BM				
	4735	554655		549.92
#770				
486+36			4.95	Grade 550.16
Lt			4.29	
Rf			4.31	
+			+2.43	557.14
				4/15/47
BM	467	55459		549.92
#776				
486+66				550.17
Lt			4.39	
Rf			4.30	
			+2.97	557.06

				4/16/47
	4.88	554.80		549.92
BM	4.605	554.74	4.66	550.14
# 784				
487+06			4.56	550.18
Lt			4.40	
Rt			4.41	
			+235	557.09
				4/17/47
# 791				
	4.34	554.48		550.14
487+41			4.29	550.19
Lt			4.15	
Rt			4.16	
			+250	556.98
BM	4.48	554.62		550.14
				4/18/47
# 799				
487+81				550.20
Lt			4.29	
Rt			4.24	
			+238	

4/20/47
B/155 Leonard Phillips

BM	4.48	554.62		550.14	
#810					
488+36			4.40	550.22	
Lt			4.23		
Rt			4.24		
			+2.54	557.16	

Bench Levels from East 4/20/47

Portal to

	10.98	553.91		542.93	
			5.19		
TP	3.90	553.74	4.07	549.84	
TP	4.40	553.61	4.53	549.21	
TP	4.825	553.815	4.62	548.99	
TP	4.27	554.005	4.08	549.735	MON 10.
TP	5.085	554.00	5.05	548.915	

554.00

14

T-P

#91 549.09

15
2 9
99

4/22/97
Bliss
Leonard
Phillips

BM	4.15	554.29		550.14	
#819					
488+81			4.06	550.23	
Lt			4.03		
Rt			4.04		
			+2.76	557.05	
					4/23/97
BM	4.205	554.345		550.14	
#823					
489+01			4.10	450.24	
Lt			4.05		
Rt			4.04		
			+2.73	457.07	
Set BM			460	449.745	
TP	4.45	454.59	4.205	450.14	
TP	+4.49	454.59	4.49	450.10	
TP	3.84	453.63	4.80	449.79	
Check BM			4.06	449.57	
				449.56	Record
				.01 error	

Between Pits	822+823	489+00	steel pin
So Side Mon #8			

Bliss
Leonard
Phillips
4/24/47

BM	4.54	454.29		449.75	
# 831					
489+41			4.04	50.25	
Lt			3.91		
Rt			3.92		
			+2.86	457.15	
BM	466	454.41		449.75	4/25/47
Rib # 839			G.R.		
489+82			4.14	450.27	
Lt			3.99		
Rt			3.99		
			+2.76	457.17	
					4/28/47
BM	457	454.32		449.75	
# 850					
490+37			4.04	450.28	
Lt			3.99		
Rt			4.01		
			+2.75	457.07	

5/1/47
Bliss
Leonard
Phillips

BM	4.31	454.06		449.75	
Set BM	4.535	454.605	3.99	450.07	
#864					
491+19			4.29	450.31	
Lt			4.20		
Rt			4.16		
			+2.61	457.21	
					S/
BM	4.46	454.53		450.07	
#870					
491+55			4.21	450.32	
Lt			4.12		
Rt			4.15		
			+2.63	457.16	

491+00 Between Rib

			GRod		
BM.	4.80	554.87		550.07	
#880					
492+15			4.53	550.34	
Lt			4.39		
Rt			4.55		
			+2.31	557.18	
BM.	4.88	554.95		550.07	5/6/47
#885					
492+46			4.60	550.35	
Lt			4.58		
Rt			4.58		
			+2.20	557.15	
					5/7/47
	5.21	555.28		550.07	
#					
492+64			4.93	550.35	
Lt			4.83		
Rt			4.87		
			+1.93	557.21	

					5/8/47
BM	4.97	555.04		550.07	
Set BM	4.42	554.31	5.15	549.89	
#895					
493+06			3.94	550.37	
	Lt		3.83		
	Rt		3.88		
			+2.92	557.23	
					5/9/47
BM	5.04	554.93		549.89	
#901					
493+42			4.55	550.38	
Lt			4.40		
Rt			4.44		
+			+2.34	557.27	
					5/14/47
BM	4.67	554.56		549.89	
#903					
493+90			4.16	550.90	
Lt			3.97		
Rt			4.10		
			+2.71		

Setting Rebar @ 94+ 8.00

5/15/47

BM	4.77	554.66		549.89	
#915					
494+26			4.25	550.41	
Lt			4.12		
Rt			4.14		
			+2.65	557.31	
	4.82	554.71		549.89	
#922					
494+68			4.29	550.42	
Lt			4.11		
Rt			4.15		
			+2.63	457.34	
	5.14	555.03		549.89	
#933					
495+35			4.59	550.44	
Lt			4.51		
Rt			4.55		
			+2.24		

				5/20/47	
				Bliss	
BM	5.03	554.92		549.89 Leonard	
				Fahy	
#939					
495+71			4.46	550.46	
Lt			4.44		
Rt			4.38		
			+2.36	557.28	
				5/21/47	
BM	4.39	554.28		549.89	
Set BM.	4.93	554.81	4.40	549.88	
#944					
496+01			4.34	550.47	
Lt			4.25		
Rt			4.16		
			+2.56	557.37	
				5/22/47	
	5.17	555.02		549.85	
#950					
496+38			4.54	550.48	
Lt			4.41		
Rt			4.49		
			+2.30	557.32	

Bliss Leonard Fahy 5/23/47

	+	⌀	−	G.P.	Grade
BM	5.08	554.94			549.86
#956					
496+74				4.45	550.49
Lt			4.21		
Rt			4.18		
			+2.58	557.52	
				5/26/47	
					Bliss Leonard Fahy Nichols
BM.	5.14	555.00		549.86	
#967					
497+40			4.49	550.51	
Lt			4.29		
Rt			4.24		
			+2.47	557.47	
				5/27/47	
BM	5.37	555.23		549.86	
#973			4.71		
497+76				550.52	
Lt			4.48		
Rt			4.53		
			+2.26		

BM Corrected 5/23/47

	+	ELEV.	−	GRADE
B.M. STA 497+55 Set BM		555.23	5.00	
			5.00	550.23

5-28-47.

SET LINE AT RIBS #975 & 978.

SET GRADE AT RIB #979 FROM #973

5-29-47 BLISS LEONARD FAMY NIENOW.

B.M. # 984	5.28	555.46		550.23
498+86			4.92	550.54
LT.			4.86	
RT.			4.84	
CENTER	1.92			

5-31-47 - KLITSCH

SET LINE AT RIBS 986 & 989.

SET GRADE AT RIB 989

BETWEEN RIBS 969 AND 970.

RW DARBY

	+	℄	− G.ROD,	GRADE	6-2-47 LEONARD NIENOW FAHY
B.M. #996	4.59	554.82		550.23	
499+15			4.25	550.57	
LT.			4.16		
RT.			4.15		
℄	2.59				
				6-3-47	LEONARD NIENOW FAHY.
B.M. #1002	+4.80	555.03		550.23	
499+51			4.45	550.58	
LT.			4.26		
RT.			4.31		
℄	2.46				
SET B.M. 499+38			-4.71	550.32	
			6-4-47.		LEONARD NIENOW FAHY.
1008 499+87	+4.66	℄ 554.98	4.39	550.59	
LT.			4.18		
RT.			4.24		
℄	2.53				

Set only 1 ℄ grad due to oil smoke from Grillo blotting out visibility in head.

1" STEEL ROD, LT. SIDE OF TUNNEL.

	+	℄	G. Rod −	GRADE	6-5-47 LEONARD NIENOW FAHY.
B.M.				550.32	
CORRECTED B.M. FROM MON #10.				550.39	
1014 500+27	+4.83	555.22	4.62	550.60	
L.T.			4.30		
R.T.			4.35		
℄	2.44				
				6-6-47.	
CHECK BM's FROM MON. #10				TO STA 499+38	
MON #10. B.M.	+4.29	554.03		549.74	STEEL ROD IN CONC. MON.
MON #11. B.M.			-4.40	549.63	STEEL ROD IN CENTER.
	+4.90	554.53			
STA. 496+00 B.M.			-4.60	549.93	STEEL ROD ON LEFT EDGE
	+5.14	555.07			
STA 497+56 B.M.			-4.76	550.31	
	+4.74	555.05			
MON. #12 B.M.			-4.80	550.25	STEEL ROD ON ℄ BETWEEN RIBS 965-966 STA. 497+31.
	+4.80	555.05.			
B.M. STA. 499+38			4.65	550.40	

	+	H.I.	− G. Rod	GRADE
6-6-47 LEONARD NIENOW FAHY.				
B.M. Sta. 499+38				550.40
1019 500+57	4.80	555.20	-4.59	550.61
Lt.			-4.37	
Rt.			-4.44	
℄	2.34			
6-7-47 KLITSCH				
SET LINE @ RIBS 1023				
SET GRADE @ RIB 1024				
6-9-47. LEONARD, NIENOW, FAHY.				
B.M.	+4.62	555.02		550.40
#1030 501+17			-4.39	550.63
Lt.			-4.25	
Rt.			-4.25	
℄	+2.51			
6-10-47 LEONARD, NIENOW, FAHY,				
B.M. Sta. 499+38				550.40
	+4.55	554.95		
SET B.M. STA. 501+00			-4.61	550.34

½" STEEL ROD, LT. SIDE, BETWEEN RIBS

	+	H.I.	G. Rod.	GRADE	6-10-47 LEONARD NIENOW FAHY.
B.M. AT STA. 501+00.				550.34	
1037 501+52.	4.42	554.76	-4.12	550.64	
LT.			-4.00		
RT.			-3.97		
℄.	+2.76				
				6-11-47.	
				LEONARD, NIENOW, FAHY.	
B.M. 1044 501+87	+4.58	554.92	4.27	550.65	
LT.			4.14		
RT.			4.12		
℄.	+2.64				
				6-12-47	
				LEONARD, NIENOW, FAHY.	
B.M. 1050 502+18	+4.60	554.94		550.34	
			-4.28	550.66	
LT.			-4.06		
RT.			-4.20		
℄.	+2.87				
CHECK.			6-16-47	LEONARD, NIENOW.	
B.M.'s.	+4.61	554.35		549.74	MON #10.
	+5.25	554.88	-4.72	549.63	MON #11.
	+4.87	555.13	-4.62	550.26	MON #12.
			-4.78	550.35	STA. 501+00

CHECK ON NEW STEEL, ℄ 2.47		H.I.	GRADE ROD	ELEV. ON 27 FOOT BLOCKS	
RIB No.		554.94	4.28	LEFT.	RIGHT
1047	+3" +2.69			+13/4" -4.13 +1 1/2	+1 1/2" -4.16 +1 3/4"
1048	+2" +2.62			-4.15 +4"	-4.13 +2"
1049	+4" +2.88			-3.96 +3"	-4.12 +1"
1050	+5" +2.87			-4.06 +3"	-4.20 CR.
1051	+4" +2.81			-4.06 +1 1/2"	-4.29 +2"
105R	CANT GET.			-4.19	-4.10
				LEONARD. 6-12-47	

STA.	+	H.I.	−	GRADE. 6-13-47	B.M.'s.
				LEONARD, NIENOW, FAHY.	
STA 501. B.M. 1059 502+63	+4.56	554.89			550.34
			4.22	550.67	
LT.			4.02		
RT.			4.06		
℄.	+2.73				
				6-16-47	
				LEONARD, NIENOW, FAHY.	
STA 501+00 B.M.					CORRECTED 550.35
		X			
	+4.73	555.08			
SET B.M.	STA. 503+00		-4.67		550.41

STA.	+	H.I.	G.ROD.	GRADE	B.M.'s
				6-16-47.	
B.M. #1072	+4.63	555.04			550.41
503+28			4.34	550.70	
LT.			4.18		
RT.			4.19		
℄	+2.59				
				6-17-47	
			LEONARD, NIENOW, FAHY.		
B.M. 1079	STA. 503+00				550.41
503+63	+4.48	554.89	-4.18	550.71	
LT.			-3.95		
RT.			-4.03		
℄	+2.77				
				6-18-47	
			LEONARD, NIENOW,	FAHY.	
B.M. 1086	+4.70	555.11			550.41
503+98			-4.39	550.72	
LT.			-4.28		
RT.			-4.26		
℄	+2.53				

~~SET STEEL ROD FOR NEW ℄ MON. AT STA. 501+95±, BETWEEN RODS 1045 - 1046.~~

NO GOOD - TOO MANY ROCKS. N.L.

USE FOR B.M.

STA.	+	H.I.	G.ROD.	GRADE	B.M.'s.
			—	6-19-47	
			LEONARD, NIENOW,		FAHY.
B.M. #1092	STA. 503.				550.41
504+29	+4.64	555.05	-4.32	550.73	
LT.			-4.18		
RT.			-4.15		
℄	+2.59			557.64	
				6-20-47	
			BLISS, LEONARD, FAHY.		
BM #1099	4.59	555.00		550.41	
504+64			4.26	550.74	
LT			4.14		
RT			4.10		
℄			+2.60	557.60	
				6-21-47	
				DARBY	
				KLITSCH	

LINE RIB 1104

GRADE RIB 1105

6-23-47
BLISS, LEONARD, FAHY.

	+	H.I.	−	GRADE.	
BM	4.56	554.97		550.41	
Set BM					
#1109					
505+14			4.21	550.76	
Lt			4.09		
Rt			4.12		
℄			+2.62	553.59	
	CHECK B.M.'s		FROM	6-24-47 MON. #10.	
B.M.	+4.34	554.08		549.74	MON #10.
"			-4.45	549.63	" #11.
	+6.03	555.66			
"			-5.40	550.26	MON. #12
	+5.49	555.75			
SET B.M. STA 501+95:			-5.70	550.05	B.M.
	+4.96	555.01			
			-4.60	550.41 = 550.41	CHECK B.M.
SET B.M. STA 505+00:			-4.59	550.42	B.M.

BETWEEN MRS 1045-46.
DRILL ROD BETWEEN TRACKS STA 501+95

STA. 505+00
½" STEEL ROD ON LT. SIDE.

STATION & RIB NO.	+	H.d.	−	GRADE. 550.47	6-24-47 LEONARD FRAY R.M.
# 1112 505+29	+4.49	554.91	4.15	550.76	
Lt.			-3.97		
Rt.			-4.00		
E.	+2.71				
BM	4.63	555.05		550.42	
~~# 1113~~ ~~505+64~~					
505+64			-4.27	550.78	
Lt			-4.13		
Rt			-4.13		
			+2.60	557.65	
BM	4.70	555.12		550.42	
R.S. # 1126					
505+99			4.34	550.78	
Lt			4.19		
Rt			4.16		
			+2.55	557.67	

6/27/47.

	5.08	555.50		550.42
# 1133				
506+34			4.70	550.80
Lt			4.57	
Rt			4.54	
			+2.16	557.64

6/30/47.

BM	4.77	555.19		550.42
Set BM			4.79	550.40
R16 # 1146				
507+00.			4.37	550.82
Lt			4.27	
Rt			4.27	
			+2.46	557.65

7/1/47

BM	4.76	555.16		550.40
R15 1154 #				
507+40			4.33	550.83
Lt			4.21	
Rt			4.15	
			+2.54	557.70

Between ribs 1146 & 1147 506+96 +-

7-2-47
LEONARD, FAHY.

Sta.	+	H.I.	G.Rod. −	
B.M.				550.40
#1161				
507+75	5.12	555.52	-4.68	550.84
Lt.			4.44	
Rt.			4.59	
E.	+2.20			
				7/3/47
	4.92	555.32		550.40
#1169				
508+15			4.47	550.85
Lt.			4.37	
Rt			4.39	
			+2.40	557.72
				7/8/47
BM	5.01	555.41		550.40
#1183				
508+85			4.53	550.88
Lt			4.36	
Rt			4.38	
			+2.35	

7/14/47

B.M.	5.08	555.48		550.40
Set BM	4.40	555.08	4.80	550.68
#1220				
510+71			4.14	550.94
Lt			4.11	
Rt			4.11	
			℄ 2.65	552.73

510+50+-

7/15/47

BM	4.59	555.27		550.68
#1228				
511+12			4.32	550.95
Lt			4.22	
Rt			4.18	
			℄ 2.55	552.82

7/15/47

	4.90	55558		550.68
RB # 1235				
511+47			4.62	550.96
Lt			4.47	
Rt			4.47	
			4.29	555.87

7/16/47

BM	4.85	555.53		550.68
# 1424				
511+82			4.56	550.97
Lt			4.34	
Rt			4.43	
			4.237	551.80

7/16/47

	4.93	55561		550.68
RB # 1251				
512+27			4.63	550.98
Lt			4.31	
Rt			4.33	
			4.241	

	5.26	555.94		550.68
Rb # 1256				
512+52 =				550.99
Lf			4.79	
Rf			4.81	
			+1.96	557.90
T.P.	4.70	559.34	1.30	554.64
Check BM of Portal			2.72	556.62
				556.53
				0.09 error

Bliss Leonard Fahy 7/22/47

Check Levels + Alignment of East Tunnel Portal Ribs - East

Theoretic ℄ Tunnel Portal Alignment Ribs

Rib #	Sta	Spring Line Lt	Spring Line Rt	Alignment Lt	Alignment Rt
Callahan steel — 16	449+52.5	3.70	3.66		0.01
Callahan steel — 15	+57.7	3.73	3.56		0.00
Callahan steel — 14	+62.5	3.74	3.51		0.05
Gothic — 13	+67.2	3.79	3.52	0.10	
" — 12	+72.5	3.79	3.56	0.04	
" — 11	+76.6	3.82	3.57	0.05	
" — 10	+80.5	3.83	3.56	0.06	
" — 9	+84.8	3.79	3.50	0.02	
" — 8	+88.8	3.77	3.58	0.01	
" — 7	+92.8	3.78	3.54	0.03	
" — 6	+96.8	3.77	3.56	0.03	
" — 5	450+00.8	3.77	3.55	0.02	
" — 4	04.8	3.74	3.55		0.02
" — 3	+08.8	3.71	3.63		0.07
" — 2	+12.8	3.70	3.68		0.10
" — 1	+16.8	3.73	3.64		0.08
Standard Grasshopper steel #1	+20.8	3.79	3.65		0.02

+ BM 533

+ 553.62

Elev Ribs Invert Elev

Elev BM 548.29

Elev Ribs Invert Elev	
+2.52	556.14
+2.44	556.06
+2.35	555.97
+2.22	555.84
+2.17	555.79
+2.14	555.76
+2.15	555.77
+2.13	555.75
+2.15	555.77
+2.10	555.72
+2.05	555.67
+2.01	555.63
+2.04	555.66
+2.05	555.67
+2.02	555.64
+1.95	555.57
+1.73	555.35

Note: Elevations at crown of Gothic ribs are at bottom of butt plate. A.R.

Invert Elevations East Tunnel

BM	+ 4.98	℄ 55327 ✓ Left	−	Elev 548.29
See page 38 For Stations				
−16 Lt			3.98	549.29
−15			4.07	549.20
−14			4.15	549.12
−13			4.28	548.99
−12			4.23	549.04
−11			4.24	549.03
−10			4.21	549.06
−9			4.19	549.08
−8			4.20	549.07
−7			4.24	549.03
−6			4.31	548.96
−5			4.29	548.98
−4			4.27	549.00
−3			4.22	549.05
−2			4.25	549.02
−1			4.32	548.95
#1			4.30	548.97

Portal Rods East of Theoretical Portal

	+ 4.98	℄ 55327 Right	−	Elev 548.29
−16			4.11	549.16
−15			4.23	549.04
−14			4.29	548.98
−13			4.35	548.92
−12			4.43	548.84
−11			4.43	548.84
−10			4.40	548.87
−9			4.57	548.70
−8			4.45	548.82
−7			4.55	548.72
−6			4.61	548.66
−5			4.66	548.61
−4			4.63	548.64
−3			4.62	548.65
−2			4.65	548.62
−1			4.63	548.64
#1			4.78	548.49

8/13-5
Leonard
Fahr
7/22/47

X Sections East Tunnel Portal

Steel Pin N Side Tunnel Portal 449+50 +-

BM	11.48	561.31 ✓		549.83	
449+50					
TP.	12.73	573.54 ✓	0 50	560.81 ✓	
+52.5					
+63					
+80					
+93					
450					
+23	True Portal				
TP	7.90	581.04 ✓	0 40	573.14 ✓	
+39					
TP	9 11	587.95 ✓	2 20	578 84 ✓	

Lt		℄		Rt	
		561.3			
561.1 +11.9 16'	549.7 +0.5 5'	549.2 12.1 573.5	551.0 +1.8 7'	568.6 +19.4 16'	
562.8 +6.3 17'	562.6 +6.1 13	556.5 00 8.0	556.5 17.0	552.8 -3.7 4	554.3 -2.7 7	556.5 00 8	568.6 +12.1 15'
562.7 +5.5 17	561.8 +4.6 12	557.2 00 2.7	557.2 16.3	560.7 +3.5 12	567.2 +10.0 17	Levelout	
565.1 +1.6 20	563.5 00 3'	561.5 -2.0 5	563.5 10.0	569.0 +5.5 10	573.2 9.7 17	577.8 +14.3 22	578.1 14.6 25
566.9 00 20	565.2 -1.7 11	563.4 -3.5 7	566.9 6.6	572.9 +6.0 10	579.2 +12.3 20		580.6 13.7 25
567.0 -2.0 20	565.9 -3.1 13'	564.5 -4.5 8'	569.0 4.5	574.5 +5.5 10	581.2 +12.2 20		582.5 +13.5 25
	569.1 -4.0 20	567.8 -5.3 10'	573.1 0.4 581.0	579.6 +6.5 10	584.3 +11.2 16		586.8 +13.7 25
		581.2 +3.5 13'	577.7 3.3	583.2 +5.5 10	592.2 +14.5 25		
			586.1 1.9	589.9 +3.8 10	595.1 +9.0 25		

Good all round!

Spring Line

	Lt	Rt
241	3.77	~~3.85 2.85~~ 3.61 ~~2.61~~
42	3.43	
43	3.63	~~3.64 2.64~~ 3.64
44	~~3.64 2.64~~ 3.65	3.68 2.68
45	~~2.65~~	2.63
46	2.66	2.61
47	2.74	2.58
48	2.67	2.60
49	2.72	2.64
50	2.68	2.60
51	2.67	2.64
52	2.72	2.62
53	2.73	2.53
54	2.73	2.55
55	2.70	2.58
56	2.75	2.59
57	2.64	2.68
58	2.63	2.69

Note: Use 3.± instead of 2.± EE

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R.16 Elevations

	tor −1.89	↑ 554.26	− or +	Elev 556.15	
241			+2.02	556.28	556.09
42			+2.04	556.30	"
43			+2.04	556.30	"
44			+2.02	556.28	"
45			+2.02	556.28	"
46			+2.08	556.34	"
47			+2.10	556.36	556.10
48			+2.18	556.44	"
49			+2.17	556.43	"
50			+2.11	556.37	"
51			+2.11	556.37	"
52			+2.09	556.35	"
53			+2.11	556.37	556.11
54			+2.20	556.46	"
55			+2.23	556.49	"
56			+2.23	556.49	"
57			+2.05	556.31	"
58			+2.10	556.36	"

	Lt	± 554.26	Rt
259	2.62		2.70
60	2.68		2.66
61	2.66		2.67
62	2.71		2.63
63	2.68		2.65
64	2.75		2.65
65	2.72		2.71
66	2.70		2.69
67	2.75		2.64
68	2.81		2.59
69	2.72		2.64
70	2.84		2.56
71	2.71		2.63
72	2.73		2.68
73	2.72		2.68
74	2.60		2.72
75	2.64		2.65
76	2.74		2.60

42

	+or-	± 554.26	+or-		
259			+2.09	556.33	556.11
260			+2.13	556.39	556.12
261			+2.08	556.34	"
62			+2.10	556.36	"
63			+2.13	556.39	"
64			+2.02	556.28	"
65			+2.08	556.34	"
66			+2.06	556.32	556.13
67			+2.02	556.28	"
68			+2.00	556.26	"
69			+2.05	556.31	"
270.			+2.00	556.26	" OK to Here
T.P.	566	554.57	5.34	548.92	548.9 (Record 0.01 Off
71			+1.77	556.34	" corrected to above BM
72			+1.72	556.29	556.14
73			+1.75	556.32	"
74			+1.77	556.34	"
75			+1.82	556.39	"
76			+1.80	556.37	"

	Lt	Rt
277	2.72	2.71
78	2.70	2.71
79	2.65	2.73
80	2.53	2.82
81	2.48	2.87
82	2.50	2.81
83	2.58	2.73
84	2.68	2.63
85	2.67	2.72
86	2.57	2.82
87	2.57	2.81
88	2.52	2.83
89	2.67	266
90	2.78	259
91	2.72	2.63
92	2.74	2.69
93	2.72	2.71
94	2.78	2.60

	-or+	55457	-or+		
277			+1.77	556.34	556.14
78			+1.76	556.33	556.15
79			+1.86	556.43	"
280			+1.81	556.38	"
81			+1.83	556.40	"
82			+1.84	556.41	"
83			+1.86	556.43	"
84			+1.82	556.39	"
85			+1.83	556.40	556.16
86			+1.82	556.39	"
87			+1.92	556.49	"
88			+1.98	556.55	"
89			+1.86	556.43	"
290			+1.84	556.41	"
91			+1.88	556.45	556.17
92			+1.83	556.40	"
93			+1.82	556.39	"
94			+1.85	556.42	"

	3.67 Lt.	3.67 Rt.
295	2.74	2.62
96	2.70	2.67
97	2.74	2.71
98	2.70	2.66
99	2.61	2.68
300	2.67	2.65
01	2.69	2.64
02	2.69	2.63
03	2.60	2.75
04	2.58	2.77
05	2.71	2.65
06	2.80	2.61
07	2.77	2.60
08	2.71	2.68
09	2.77	2.63
310	2.77	2.60
11	2.72	2.62
12	2.71	2.71

Note A
Begin Calif Switch on S. Side

	+ or -	℄ 554.57	+ or -	Elev	44.
295			+1.93	556.50	556.17
96			+1.84	556.41	"
97			+1.77	556.34	556.18
98			+1.90	556.47	"
99			+1.86	556.43	"
300			+1.86	556.43	"
01			+1.72	556.29	"
02			+1.79	556.36	"
03			+1.80	556.37	556.19
04			+1.80	556.37	"
05			+1.81	556.38	"
06			+1.83	556.40	"
07			+1.90	556.47	"
08			+1.78	556.35	"
09			+1.67	556.24	556.20
310			+1.66	556.23	"
TP	-1.80	~~554.77~~ 554.39	~~+1.64~~ 1.62	~~556.21~~ 556.19	"
11			+1.97	556.36	"
12			+1.92	556.31	"

		Lt	Rt
3	13		2.64
	14		2.64
	15		2.65
	16		2.68
	17		2.68
	18		2.56
	19		2.55
	20		2.60
	21		2.61
	22		2.60
	23		2.59
	24		2.65
Bad Calif Switch	25	2.76	2.67
	26	2.84	2.68
	27	2.68	2.70
	28	2.71	2.74
	29	2.59	2.65
	30	2.51	2.60

	tor-	↑ ~~554.44~~ 554.39	tor-	Elev	45.
313			+1.96	556.35	556.20
14			+1.93	556.32	"
15			+1.88	556.27	"
16			+1.94	556.33	556.21
17			+1.90	556.29	"
18			+1.80	556.19	"
19			+1.66	556.05	"
320			+1.63	556.02	"
21			+1.61	556.00	"
22			+1.68	556.07	556.22
23			+1.67	556.06	"
24			+1.59	555.98	"
25			+1.58	555.97	"
26			+1.78	556.17	"
27			+1.99	556.38	"
28			+1.90	556.29	556.23
29			+2.00	556.39	"
330			+1.97	556.36	"

	Lt		Rt
3.31	2.55		2.55
32	2.70		2.57
33	2.75		2.53
34	2.67		2.51
35	2.70		2.49
36	2.66		2.56
37	2.62		2.66
38	2.55		2.73
39	2.53		2.71
340	2.55		2.67
341	2.66		2.65
42	2.74		2.63
43	2.71		2.52
44	2.69		2.53
45	2.80		2.56
46	2.84		2.54
47	2.80		2.56
48	2.78		2.57

	tor-	~~554.44~~ 554.39	tor-	Elev	46
331			+2.04	556.43	556.23
32			+1.88	556.27	"
33			+1.78	556.17	"
34			+1.74	556.13	"
35			+1.90	556.29	556.24
36			+2.00	556.39	"
37			+2.04	556.43	"
38			+1.95	556.34	"
39			+1.91	556.30	"
340			+1.92	556.31	"
41			+1.92	556.31	"
42			+2.02	556.41	"
43			+2.05	556.44	556.25
44			+2.07	556.46	"
45			+2.05	556.44	"
46			+2.13	556.52	"
47			+2.30	556.69	"
49			+2.22	556.61	"

	Lt		Rt
349	2.78		2.68
350	2.76		2.67
51	2.81		2.68
52	2.72		2.73
53	2.64		2.60
54	2.59		2.49
55	2.76		2.50
56	2.73		2.57
57	2.72		2.54
58	2.81		2.53
59	2.71		2.61
360	2.53		2.68
61	2.65		2.69
62	2.73		2.65
63	2.60		2.62
64	2.55		2.71
65	2.61		2.78
66	2.53		2.52

	for	↑ ~~554.64~~ 554.39	for	Elev	
349			+1.98	556.37	556.25
350			+2.03	556.42	556.26
51			+1.94	556.33	"
52			+1.76	556.15	"
53			+1.74	556.13	"
54			+1.84	556.23	"
55			+1.87	556.26	"
56			+2.00	556.39	"
57			+1.88	556.27	"
58			+1.87	556.26	556.27
59			+2.01	556.40	"
360		554.32	+2.12	556.51 556.45	"
T.P.	−2.13	~~554.38~~	+2.06 ~~+2.10~~	~~556.51~~	
61			+2.12	556.44	"
62			+2.05	556.37	"
63			+2.08	556.40	"
64			+2.02	556.34	"
65			+1.89	556.21	"
66			+1.88	556.20	556.28

	Lt		Rt
367	2.78		2.64
68	2.68		2.67
69	2.70		2.57
370	2.78		2.54
71	2.80		2.55
72	2.78		2.67
73	2.78		2.65
74	2.74		2.70
75	2.69		2.62
76	2.67		2.65
77	2.65		2.63
78	2.77		2.62
79	2.85		2.65
380	2.73		2.76
81	2.69		2.63
82	2.68		2.63
83	2.67		2.61
84	2.62		2.58

	+or-	~~554.38~~ 554.32	+or-	Elev	
367			+1.82	556.14	556.28
68			+1.97	556.29	"
69			+1.95	556.27	"
370			+1.95	556.27	"
71			+1.97	556.29	"
72			+1.96	556.28	"
73			+1.96	556.28	556.29
74			+1.96	556.28	"
75			+2.05	556.37	"
76			+2.13	556.45	"
77			+2.18	556.50	"
78			+2.08	556.40	"
79			+2.04	556.36	"
380			+2.16	556.48	"
81			+2.23	556.55	556.30
82			+2.19	556.51	"
83			+1.99	556.31	"
84			+2.02	556.34	"

	Lt	Rt
385	2.60	2.60
86	2.49	2.70
87	2.52	2.65
88	2.49	2.52
89	2.62	2.56
390	2.57	2.46
91	2.57	2.49
92	2.64	2.58
93	2.68	2.50
94	2.57	2.47
95	2.50	2.52
96	2.45	2.51
97	2.47	2.57
98	2.55	2.57
99	2.60	2.61
400	2.67	2.67
01	2.62	2.64
02	2.75	2.65

	+or-	~~554.38~~ 554.32	+or-	Elev	
385			+2.07	556.39	556.30
86			+2.12	556.44	"
87			+2.16	556.48	"
88			+2.11	556.43	556.31
89			+2.13	556.45	"
390			+2.30	556.62	"
91			+2.25	556.57	"
92			+2.18	556.50	"
93			+2.15	556.47	"
94			+2.12	556.44	"
95			+2.17	556.49	"
96			+2.25	556.57	556.32
97			+2.20	556.52	"
98			+2.30	556.62	"
99			+2.16	556.48	"
400			+2.15	556.47	"
01			+2.27	556.59	"
02			+2.13	556.45	"

	Lt		Rt		for-	K 554.32	for-	Elev	50
403	2.63		2.57				+2.14	556.46	556.32
04	2.65		2.51				+2.00	556.32	556.33
05	2.53		2.52				+1.96	556.28	"
06	2.67		2.65				+2.20	556.52	"
07	2.70		2.66				+2.21	556.53	"
08	2.56		2.85				+2.18	556.50	"
09	2.63		2.73				+2.14	556.46	"
410	2.68		2.67				+2.11	556.43	556.34
11	2.67		2.68				+2.17	556.49	"
12	2.62		2.69				+2.21	556.53	"
13	2.56		2.80				+2.21	556.53	"
14	2.65		2.72				+2.22	556.54	"
15	2.68		2.63				+2.25	556.57	"
16	2.65		2.70				+2.22	556.54	"
17	2.64		2.62				+2.30	556.62	"
18	2.77		2.55				+2.25	556.57	"
19	2.71		2.60				+2.26	556.58	556.35
420	2.72		2.62				+2.16	556.48	"

	Spring Line Lt	Rt			Rib Elevs + or −	Δ ~~554.38~~ 554.32	+ −	Elev	51.
4/21	2.66	2.69					+2.18	556.50	556.35
22	2.67	2.70					+2.21	556.53	"
23	2.55	2.80					+2.11	556.43	"
24	2.59	2.73					+2.13	556.45	"
25	2.69	2.64		Mon #6			+2.23	556.55	"
Check BM							−4.87	549.45 ~~549.51~~	Record 549.44

Bliss
King
Leonard

Spring Line Grades

8/22/47

					IX I.W. Points 556.62
BM.	1.48	558.10			
TP	4.18	555.21	7.07	551.03	
R.& H.				Elev Grade	Gr. Rod
" 1256				554.0	1.21
1250				553.99	1.22
1245				553.98	1.23
1240				553.97	1.24
1235				553.96	1.25
T.P.	4.47	555.15	4.53	550.68	
1230				553.95	1.20
1225				553.95	1.20
1220				553.94	1.21
1215				553.93	1.22
1210				553.92	1.23
1205				553.91	1.24
1200				553.90	1.25
1194				553.90	1.25

Finals for Concrete Construction

† 555.15

R.& H.			Grade	Grade Rod
1190			553.89	1.26
1185			553.88	1.27
1180			553.87	1.28
1175			553.87	1.28
1170			553.86	1.29
1165			553.85	1.30
T.P.	4.71	555.11	4.75	550.40
1160			553.84	1.28
1155			553.83	1.29
1150			553.83	1.29
1145			553.82	1.30
T.P.	4.61	555.05	4.67	550.44
1140			553.81	1.24
1135			553.80	1.25
1130			553.79	1.26
1125			553.79	1.26

Rib #	+	⊼	−	Elev G.	G. Rod
		555.05			
1120				553.78	1.27
1115				553.77	1.28
1110				553.76	1.29
T.P.	−2.39	555.15	2.49	552.54	
1105				553.75	1.40
1100				553.75	1.40
1095				553.74	1.41
1090				553.73	1.42
1085				553.72	1.43
T.P	4.98	554.99	5.14	550.01	
1080				553.71	1.28
1075				553.70	1.29
1070				553.70	1.29
1065				553.69	1.30
1060				553.68	1.31
1055				553.67	1.32
Check BM			4.98	550.01	

8/25/47
Bliss
Leonard
Foley

Rib #	+	⊼	−	Elev.	
BM	5.22	555.23		550.01	
				Elev Grade	G. Rod
1050				553.66	1.57
1045				553.66	1.57
1040				553.65	1.58
1035				553.64	1.59
1030				553.63	1.60
T.P Mon #13	5.08	555.16	5.15	550.08	
Check Mon IV BM			4.93	550.23	Record 550.23
1025				553.62	1.54
1020				553.61	1.55
1015				553.61	1.55
1010				553.60	1.56
1005				553.58	1.58
1000				553.58	1.58
995				553.57	1.59
990				553.56	1.60
985				553.55	1.61

Rib	+	↑	−	Elev G	G. Rod
		555.16			
980				553.54	1.62
975				553.53	1.63
BM Monitor TP.	4.84	555.07	4.93	550.23	
970				553.52	1.55
965				553.51	1.56
960				553.50	1.57
955				553.49	1.58
950				553.48	1.59
945				553.47	1.60
940				553.46	1.61
Monitor TP on BM	3.97 ~~4.64~~	554.20	4.96	550.23	
935				553.45	0.75
930				553.44	0.76
925				553.43	0.77
920				553.42	0.78
915				553.41	0.79
T.P.	4.19	554.23	4.16	550.04	
910				553.40	0.83

Rib #	+	↑ 554.23	−	Elev G.	Gr. Rod
905				553.39	0.84
900				553.38	0.85
895				553.37	0.86
890				553.36	087
885				553.35	088
880				553.34	0.89
875				353.33	0.90
Monitor check BM			4.61	549.62	
870				553.32	0.645
65				533.31	0.655
60				553.30	0.665
55				553.29	0.675
50	3.015	553.965	+3.23	556.98	
		553.75		553.29	0.675
45				553.29	0.47
40				553.27	0.48
35				553.26	0.49
30				553.25	0.50
25				553.25	050
		553.75			

	401	553 75		549.74	
820				553.24	051
15				553.23	052
10				553.22	053
05				553.21	054
800				553.21	054
795				553.20	0.55
	4.32 ~~4.41~~	554.06		549.74	
790				553.19	0.87
85				553.18	0.88
80				53.17	0.89
T.P.	−3.13	553.76	+2.83	556.89	
75				53.17	0.59
70				53.16	0.60
65				53.15	0.61
60				53.14	0.62
55				53.13	0.63
50				53.12	0.64
45				53.12	0.64

		↑ 553.76			
740				553.11	0.65
T.P.	3.65	553.16	+3.05	556.81	
735				553.10	0.06
30				53.09	0.07
25				53.08	0.08
20				53.08	0.08
15				53.07	0.09
10				53.06	0.10
05				53.05	0.11
700				553.04	0.12
695				53.04	0.12
90				53.03	0.13
T.P.	-3.63	553.10	+3.57	556.73	
85				53.02	0.08
80				53.01	0.09
75				553.00	0.10
70				552.99	0.11
65				52.98	0.12
60				52.97	0.13

		553.10			
655				552.97	0.13
650				96	0.14
645				96	0.14
640				95	0.15
T.P.	-3.09	553.60	+3.54	556.69	
635				94	0.66
630				93	0.67
625				92	0.68
14/X/47 4.00 PM	3.61	553.19	4.02	549.315	℄ Mon #8
				549.58 ←	Record
620				552.91	0.27
615				552.91	0.28
610				90	0.29
605				89	0.30
600				88	0.31
T.P.	3.65	553.23	-3.61	549.58	
595				88	0.35
590				87	0.36
585				86	0.37
580				85	0.38

		↑ 553.23			
575				552.84	0.39
570				.84	0.39
565				.83	040
560				.82	041
555				81	042
550				80	0.43
T.P.	-3.54	553.22	+3.53	556.76	
545				80	0.42
540				79	0.48
535				78	044
530				77	045
525				76	0.46
520				76	046
515				75	0.47
510				74	0.48
505				73	0.49
500				72	0.50
495				72	050
T.P.	-3305	553.280	+3365	556.585	
490				71	051

		↑ 553.28			
485				552.70	0.58
480				.69	059
475				.68	060
470				.67	061
465				.67	0.61
460				.66	0.62
455				.65	063
450				.64	0.64
445				.64	0.64
TP	-324	553.41	+3.37	556.65	
440				.63	0.78
435				.62	079
430				.61	080
425				.61	080
420				552.60	081
415				59	082
410				58	083
405				58	083
400				57	084

		↑ 553.41			
395				552.56	0.85
390				56	0.85
385				55	0.86
380				55	0.86
375				54	0.87
370				53	0.88
365				53	0.88
P.I.B. T.P. 360	-2.65	553.77	+3.01	556.42	
	-2.635	553.755	+2.62	556.39	Mean 44
Check B.M.			4.79	548.965	
				548.91 .05	Record Note Level Run back To Mon 8 Diff 0.03.
11/30/47					
	4.83	553.74		548.91	
TP	4.08 X	553.32	4.50	549.24	

X Note B.M. Wire error. Grade was compensated for 0.05 Diff

365				552.48	0.84
360				552.48	0.84
355				552.48	0.84

		↑ 553.32			
350				552.48	0.84
345				552.47	0.85
340				552.47	0.85
335				552.46	0.86
330				552.46	0.86
325				552.45	0.87
TP	3.85	553.09	4.08	549.24	
320				552.45	0.64
315				552.44	0.65
310				552.44	0.65
305				552.43	0.66
300				552.43	0.66
295				552.42	0.67
290				552.41	0.68
285				552.41	0.68
280				552.40	0.69
T.P.	4.35	553.26	4.19	548.90	
				548.91	Record + 0.01 Forefeet
275				552.39	0.87

		↑ 553.26			
270			552.38		0.88
265			.37		089
260			.37		0.89
255			.36		0.90
250			.35		0.91
245			.34		0.92
240			.33		093
235			.32		0.93
230			.32		094
TP.	3.95	552.78		4.43	548.83
225			.31		047
220			552.30		0.48
215			.29		049
210			.29		049
205			.28		050
200			.27		0.51
195			.26		0.52
190			25		0.53
185			25		0.53

		↑ 552.78			
180			55224		0.54
175			23		0.55
170			22		0.56
165			21		0.57
					Mon #3
Chcar BM	4.22	552.94		4.06	548.72
~~Set BM~~					crown of Tr 16 165
Set BM				339	548.39
160			55221	0.73	
155			20	0.74	
150			19	075	
145			18	076	
140			18	076	
135			17	077	
TP.	3.60	552.51	4.03	548.91	
130			16	035	
125			15	036	
120			15	036	

552.51

15			552.14	0.37
10			13	0.38
05			13	0.38
100			12	0.39
95			11	0.40
90			11	0.40
85			10	0.41
TP	3.79	552.65	3.65	548.86
CheckBM	4.09	552.37	4.37	548.28
TP	4.72	552.99	4.10	548.27
80			551.97 5520	0.98
75	G. Break 453+11		551.89	1.08
70			551.89	1.10
65			551.88	1.11
60			551.88	1.11
TP	4.29	552.56	4.72	548.27
55			551.87	0.69
50			551.86	0.70
45			551.86	0.70

552.56

	Grade Break			
42	451+88.5		551.85	0.71
40			551.80	0.76
35			551.70	0.86
	Grade change			
32	451+50		551.64	0.92
30			551.63	0.93
25			551.63	0.93
20			551.62	0.94
T.P.	4.24	552.51	4.29	548.27
15			551.62	0.89
10			551.61	0.90
5			551.61	0.90
1			551.60	0.91
-5			551.60	0.91
-10			551.59	0.92
-13			551.58	0.93
-14	Portal 449+63		551.58	

Mon # 450+28.97

Bliss Leonard Baker 11/22/47

Pin 2' East of East Portal on Line

BM Elev Pin 4' Below S. Line + 2' East of Portal	5.33	5536	54828	Steel Pin 25+ West of Sta 21
		6.03	54758	
			551.58	Sp. Line Portal
			4.00	Below

LEONARD BAKER 1-16-48

SET B.M. ON BOTTOM OF LADDER, IN AIR VENT - WEST END GROSSMONT TUNNEL.

	+	H.I.	−	ELEV.
B.M.				589.97
	+1.06	591.03		
			-4.08	586.95*
			-29.73	
SET. B.M.				557.22

CHAINED INSIDE LENGTH OF TUNNEL;

1st CHAINING: EAST PORTAL 449+62.45, USING

2nd " " " " " "

3rd " " " " " "

CHECKED WEST PORTAL FROM STA. 511+00 PLUMB-BOB DOWN AIR VENT AT 512+74.27

at 449+61

61

*

JUNE 15, 1951: SET NEW B.M. ON TOP OF AIR VENT AT W. END OF GROSSMONT TUNNEL. LEONARD, T. KING, WILLIAMS. RO

B.M. (HUB 50' RT. STA. 511+74.65)		589.97	
	+1.76	591.73	
SET B.M. ON TOP OF STEEL PLATE	-3.79	587.94.	PAINTED YELLOW ON PLATE.

NOTE: TOP OF AIR VENT HAS BEEN RAISED TO PROVIDE MORE VENT SPACE THAN ORIGINAL DESIGN.

HUB 50' RT. STA. 511+74.65 PAGE 44, F.B. 694.

TOP OF DOOR SILL ON AIR VENT.

CHAINED MEASUREMENT FROM SILL TO BOTTOM OF LADDER.

BOTTOM OF NORTH LEG OF STEEL LADDER IN VENT.

2ND & 3RD CHAINING WITH 200' CHAIN. 1-20-48.

1ST CHAINING WITH 100' CHAIN; JAN. 16, 1948

100 ft. CHAIN, WEST PORTAL = 512+53 45

200 ft. " " " = 512+53 20

200 ft. " " " = 512+53 13

ON SURFACE, BY LOWERING A END OF PIPE FITTER INTO TUNNEL PORTAL AND MEASURING BACK 195.7. PORTAL = 512+54 70

EAST PORTAL = 449+62.48 — JAN. 16, 1948. LEONARD-BAKER.

USED NEW BERGER TRANSIT AS LEVEL.

FINAL GRADES IN GROSSMONT TUNNEL.

	+	H.I.	−	ELEV.	
B.M.				542.98	SPIKE IN POLE.
	10.93	553.86			
449+62.60 T.P.			-5.32	548.54	END OF CONCRETE TRANSITION
449+67.3			-5.24	548.62	POINT.
					Jan 19, 1948.
	+4.33	552.95			LEONARD-BAKER
450+00			-4.32	548.63	
+47.1			4.32	548.63	JOINT
+87.1			4.27	548.68	"
451+00			4.30	548.65	
+47.1			4.31 E.	548.64	
			4.30 W.	548.65	JOINT
452+00			4.07	548.88	
			4.04 E.	548.91	
+07			4.03 W.	548.92	JOINT
			4.13 E	548.82	
+47.2			4.14 W	548.81	"
453+00			4.06	548.89	

NOTE: WHERE JOINTS ARE UNEVEN, READINGS WERE TAKEN ON BOTH SIDES. E = EAST SIDE & W = WEST SIDE, OF JOINT.

	+	H.I. 552.95	−	ELEV.	
453+47.3			3.88	549.07	JOINT
454+00			3.81	549.14	
+49.3			3.79	549.16	JOINT
455+00			3.69	549.26	
+49.4			3.64	549.31	JOINT
456+00			3.52	549.43	
T.P. 456+50			-3.48	549.47	
	+4.06	553.53			
456+67.5			4.14	549.39	JOINT
457+00			4.20	549.33	
+50			4.22	549.31	

	+	⊼ 553.53	−	ELEV.	
			4.22 E	549.31	
457+67 6/			4.21 W	549.32	JOINT
458+00			4.19	549.34	
+50			4.07	549.46	
			4.06 E	549.47	
+67 6/			4.04 W	549.49	JOINT
459+00			4.01	549.52	
+50			4.06	549.47	
			4.15 E.	549.38	
+67 1/			4.14 W.	549.39	JOINT
460+00			4.18	549.35	
+50			4.09	549.44	
			4.14 E.	549.39	
+67 8/			4.12 W.	549.41	JOINT
461+00			4.17	549.36	
+50			4.12	549.41	
			4.03 E.	549.50	
+67 8/			4.01 W.	549.52	JOINT

	+	H.I. 553.53	−	ELEV.	
462+00			4.10	549.43	
T.P.					
+50			4.05	549.48	
	3.97	553.45			
			3.94 E	549.51	
+67 9/			3.92 W	549.53	JOINT
463+00			3.97	549.48	
+50			3.96	549.49	
			3.95 E.	549.50	
+67 9/			3.93 W.	549.52	JOINT
464+00			3.98	549.47	
+50			3.99	549.46	
			3.98 E.	549.47	
+68			3.96 W.	549.49	JOINT
465+00			4.01	549.44	
			3.95 E.	549.50	
+48			3.94 W.	549.51	JOINT
466+00			3.99	549.46	
			3.89 E.	549.56	
+48 1/			3.87 W.	549.58	JOINT

	+	H.d.	−	ELEV.	
		553.45			
467+00			3.97	549.48	
			3.88 E.	549.57	
+48 1			3.87 W.	549.58	JOINT
468+00			3.90	549.55	
+48 2			3.85	549.60	JOINT
T.P.					
+50			3.85	549.60	
	+3.90	553.50			
469+00			3.92	549.58	
			3.91 E.	549.59	
+48 2			3.89 W.	549.61	JOINT
470+00			3.92	549.58	
+48 2			3.85	549.67	JOINT
471+00			3.93	549.57	
+48 2			3.93	549.57	JOINT
472+00			3.92	549.58	
			3.85 E	549.65	
+48 3			3.84 W.	549.66	JOINT

	+	H.d.	−	ELEV.	
		553.50			
473+00			3.87	549.63	
			3.77 E.	549.73	
+48 3			3.76 W.	549.74	JOINT
474+00			3.80	549.70	
			3.75 E.	549.75	
+48 3			3.74 W.	549.76	
T.P.					
+50			3.74	549.76	
	+3.98	553.74			
475+00			4.00	549.74	
			3.98 E.	549.76	
+48 3			3.96 W.	549.78	JOINT
476+00			4.00	549.74	
			3.97 E	549.77	
+48 3			3.95 W.	549.79	JOINT
477+00			4.00	549.74	
			3.92 E.	549.82	
+48 4			3.91 W.	549.83	JOINT
478+00			3.90	549.84	
			3.82 E.	549.92	
+48 4			3.81 W.	549.93	JOINT

	+	H.I. 553.74	−	ELEV.	
479+00			3.90	549.84	
+48 4			3.84	549.90	JOINT
480+00			3.80	549.94	
			3.84E	549.90	
+48 5			3.82W.	549.92	JOINT
T.P.					
+50			3.83	549.91	
	+4.01	553.97			
481+00			3.99	549.93	
			3.96E.	549.96	
+48 5			3.94W.	549.98	JOINT
482.00			3.97	549.95	
			3.93E.	549.99	
+48 5			3.92W.	550.00	JOINT
483.00			3.97	549.95	
			3.94E.	549.98	
+48 5			3.92W.	550.00	
484.00			3.92	550.00	
			3.91E.	550.01	
+48 5			3.90W.	550.02	JOINT

	+	H.I. 553.97	−	ELEV.	
485+00			3.89	550.08	
			3.89E.	550.08	
+28 5			3.88W.	550.09	JOINT
+50			3.88	550.09	
486.00			3.80	550.17	
			3.80E.	550.17	
+08 5			3.78W.	550.19	JOINT
T.P.					
+50			3.80	550.17	
	+3.99	554.11			
			3.97E	550.14	
+88 6			3.95W.	550.16	JOINT
487+00			3.99	550.12	
+50			3.99	550.12	
			3.97E.	550.14	
+68 6			3.95W.	550.16	JOINT
488+00			3.98	550.13	
48 6			3.97	550.14	JOINT
489+00			3.99	550.12	

	+	H.I.	−	ELEV.	
		554.11			
			3.94E.	550.17	
489+78 6			3.92W.	550.19	JOINT
+50			3.97	550.14	
490+00			3.93	550.18	
			3.94E.	550.17	
+08 6			3.92W.	550.19	JOINT.
+50			3.89	550.22	
			3.90E.	550.21	
+88 6			3.89W.	550.22	JOINT
491+00			3.89	550.22	
			3.90E.	550.21	
+48 7			3.88W.	550.23	JOINT
492+00			3.83	550.28	
			3.81E.	550.30	
+28 7			3.79W.	550.32	JOINT
T.P.					
+50			3.81	550.30	
	+4.00	554.30			
493+00			3.98	550.32	
			3.97E.	550.33	
+08 7			3.96W.	550.34	JOINT

	+	H.I.	−	ELEV.	
		554.30			
493+50			4.02	550.28	
			3.99E.	550.31	
+88 7			3.98W.	550.32	JOINT
494+00			3.98	550.32	
+50			3.98	550.32	
			3.94E	550.36	
+68 7			3.92W.	550.38	JOINT.
495+00			3.97	550.33	
			3.96E.	550.34	
+28 7			3.94W.	550.36	JOINT
+50			3.95	550.35	
			3.88E.	550.42	
+88 8			3.86W.	550.44	JOINT.
496+00			3.87	550.43	
			3.91E.	550.39	
+48 8			3.90W.	550.40	JOINT
497+00			3.90	550.40	
			3.90E.	550.40	
+08 8			3.87W.	550.43	JOINT
+50			3.84	550.46	

	+	H.I.	−	ELEV.	
		554.30			
			3.83E.	550.47	
497+68			3.82W.	550.48	JOINT
T.P.					
498+00			3.82	550.47	
				Jan. 20, 1948	
	+3.94	554.41		LEONARD-BAKER	
			3.93E.	550.49	
+28			3.92W.	550.49	JOINT
+50			3.91	550.50	
			3.95E.	550.46	
+89			3.94W.	550.47	JOINT
499+00			3.95	550.46	
			3.95E.	550.46	
+48			3.93W.	550.48	JOINT
500+00			3.92	550.49	
			3.92E.	550.49	
+08			3.90W.	550.51	JOINT
+50			3.94	550.47	
			3.89E.	550.52	
+69			3.87W.	550.54	JOINT
501+00			3.92	550.49	
			3.85E.	550.56	
+28			3.86W.	550.55	JOINT

	+	H.I.	−	ELEV.	
		554.41			
501+50			3.88	550.53	
			3.83E.	550.58	
+89			3.81W.	550.60	JOINT
502+00			3.84	550.57	
+49			3.80	550.61	JOINT
T.P.					
502+00			3.81	550.60	
	3.96	554.56			
			3.97E.	550.59	
+09			3.95W.	550.61	JOINT
+50			3.93	550.63	
			3.91E.	550.65	
+69			3.88W.	550.68	JOINT
504+00			3.92	550.64	
			3.93E	550.63	
+29			3.90W.	550.66	JOINT
+50			3.91	550.65	
			3.92E.	550.64	
+89			3.90W.	550.66	JOINT
505+00			3.91	550.65	

	+	H. I.	−	ELEV.	
		554.66			
			3.90 E.	550.66	
505+49			3.88 W.	550.68	JOINT
			3.87 E.	550.69	
+89			3.86 W.	550.70	"
506+00			3.86	550.70	
			3.83 E.	550.74	
+29			3.80 W.	550.76	JOINT
+50			3.80	550.76	
+69			3.78	550.78	JOINT
507+00			3.82	550.74	
+09			3.81	550.75	JOINT
			3.78 E.	550.78	
+49			3.77 W.	550.79	"
+89			3.78	550.78	"
T.P. 508+00			3.76	550.80	
	+3.93	554.73			
			3.91 E.	550.82	
+29 1/2			3.90 W.	550.83	JOINT
+50			3.90	550.83	
+69 1/2			3.90	550.83	JOINT

	+	H.I.	−	ELEV.	
		554.73			
609+00			3.92	550.81	
			3.92 E.	550.81	
+09 1/2			3.89 W.	550.84	JOINT
			3.95 E.	550.78	
+49 1/2			3.93 W.	550.80	"
			3.91 E.	550.82	
+89 1/2			3.90 W.	550.83	"
510+00			3.89	550.84	
			3.88 E.	550.85	
+29 1/2			3.86 W.	550.87	JOINT
+50			3.88	550.85	
+69 1/2			3.89	550.84	JOINT
511+00			3.85	550.88	
+09 1/2			3.84	550.89	JOINT
			3.84 E.	550.89	
+49 1/2			3.82 W.	550.91	"
+89 1/2			3.82	550.91	"
512+00			3.80	550.93	
			3.82 E.	550.91	
+29 1/2			3.81 W.	550.92	

	+	H.I. 554.73	−	ELEV.	
512+49			3.81	550.92	TRANS. POINT
+53½			3.45	551.28	END.
					SEE PAGE 61.
CHECK B.M.	+2.45			557.18 = 557.22	
				.04 LOW.	

NOTE: SEE CHAINING INFORMATION ON PAGE 61, THIS BOOK.

10/15/47 Drill Hole Stations

Bliss
Leonard
Baker

512+48 N	511+65 S
+47 N	+57 N
+46 S	+55 N
+32 N	+50 N
+24 S	508+33 N
+17 N	507+98 S
+16 S	+93 N
+10 S	+83 S
+02 N	+53 N
511	+13 S
+95 S	+12 S
+87 N	506+73 N
+86 N	505+41 . Overhead ¢
+80 S	+40 " "
+79 S	+40 " "
+72 N	+08 " "

BM.	4.40	552.68		548.28	
449+63			invert SL.	548.58 551.58	1.10
#6 – 8 449+88				548.59 551.59	1.09
FR. & L. 450+23				548.60 551.60	1.08
#7 450+50				548.61 551.61	1.07
#14 450+75				548.62 551.62	1.06
#20 451				548.63 551.63	1.05
#26 +25				548.63 551.63	1.05
#30 +40				548.63 551.63	1.05

552.68

#37 451+50	invert SL.	548.69 551.69	0.99
#38 +75		548.82 551.82	0.86
#45 452+10		548.96 551.96	0.72
#50 +20		549.06 552.06	0.62

FEB. 2, 1948
LEONARD - BAKER

ELEV. FOR BLOW-OFF AT EAST PORTAL OF GROSSMONT TUNNEL.

	+	H.I.	−	ELEV.	FILL OR CUT
B.M.	12.57	555.50		542.93	
DITCH OPP. BLOW OFF			-6.4	549.1	
PIPE CENTER BLOW OFF			-10.2	545.3	FILL 4.3

EL MONTE PIPE LINE, SECTION TWO.

PROFILE ON TOP OF PIPE, AT PIPE JOINTS, EAST PORTAL GROSSMONT TUNNEL.

STA. OF JOINT	+	H.I.	−	ELEV.	Bot. Pipe
B.M.	12.66	555.61 ✓		542.95	
449+62.48	TUNNEL PORTAL		0.88	554.73 ✓	547.94
449+40			1.17	554.44 ✓	547.65
449+30.30			1.69	553.92 ✓	547.13

STA. OF JOINT	+	H.I. 555.61	−	ELEV.	
449+14.20			2.85	553.26 ✓	546.47
448+99.60			3.62	551.99 ✓	545.20
448+83.50			4.81	550.80 ✓	544.01
448+67.50			6.13	549.48 ✓	542.69
448+51.40			7.71	547.90 ✓	541.11
448+35.60			9.13	546.48 ✓	539.69

EQUATION: 448+32.06 AHEAD = 439+48.32 BACK.

439+31.50			9.91	545.70 ✓	538.91
439+22.60	CENTER MANHOLE		10.20	545.41 ✓	538.62
439+19.60	CENTER BLOW OFF		10.30	545.31 ✓	538.52

STA OF JOINT	+	H.I. 555.61	−	ELEV.	Bot. Pipe
437+15[7]			10.44	545.17 ✓	538.38
437+00			10.06	545.55 ✓	538.76
436+84			9.71	545.90 ✓	539.11
436+68			9.25	546.36 ✓	539.57
436+52			8.78	546.83 ✓	540.04
436+36[1]			8.23	547.38 ✓	540.59
436+20[65]			6.40	549.21 ✓	542.42
436+04[75]			4.51	551.10 ✓	544.31
435+88[85]			2.65	552.96 ✓	546.17

STA. OF JOINT	+	H.I. 555.61	−	ELEV.	Bot. Pipe
437+72.95			1.19	554.42 ✓	547.63
437+56.95			0.15	555.46 ✓	548.67
T.P.	+6.49	561.48	-0.62	554.99 ✓	
437+40[95]			5.53	555.95 ✓	549.16
437+24[95]			5.00	556.48 ✓	549.69
437+08[95]			4.93	556.55 ✓	549.76
436+92[55]	END		4.93	556.55 ✓	549.76
T.P.			-7.58	553.90 ✓	
	+0.97	554.87			
B.M.			-11.94	542.93 ✓	CHECK

512 63
449+63
00
63

35
32
70
105
11120

587

588
103
577.7

583.1
103
543.4

7.58
559.90
561.48
566.99
4.49

353 28
3.825
349.455

160

588

625 512+55 14 vert
at junction

53.60
52.94
0.66

66.97 if .15 ft
5
66.97 East of Portal

450+28.97 66.97
66.97
449+62.00