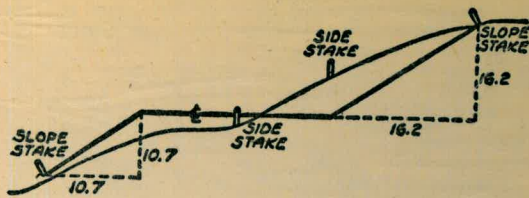


BLACK CANYON TUNNEL.  
PERSONNEL #2.  
(EQUIPMENT IN BACK.)

W 845-F





DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING  
SLOPE 1 TO 1. ROADWAY OF ANY WIDTH

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0
1	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	1
2	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	2
3	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	3
4	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	4
5	5.00	5.10	5.20	5.30	5.40	5.50	5.60	5.70	5.80	5.90	5
6	6.00	6.10	6.20	6.30	6.40	6.50	6.60	6.70	6.80	6.90	6
7	7.00	7.10	7.20	7.30	7.40	7.50	7.60	7.70	7.80	7.90	7
8	8.00	8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	8
9	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	9
10	10.00	10.10	10.20	10.30	10.40	10.50	10.60	10.70	10.80	10.90	10
11	11.00	11.10	11.20	11.30	11.40	11.50	11.60	11.70	11.80	11.90	11
12	12.00	12.10	12.20	12.30	12.40	12.50	12.60	12.70	12.80	12.90	12
13	13.00	13.10	13.20	13.30	13.40	13.50	13.60	13.70	13.80	13.90	13
14	14.00	14.10	14.20	14.30	14.40	14.50	14.60	14.70	14.80	14.90	14
15	15.00	15.10	15.20	15.30	15.40	15.50	15.60	15.70	15.80	15.90	15
16	16.00	16.10	16.20	16.30	16.40	16.50	16.60	16.70	16.80	16.90	16
17	17.00	17.10	17.20	17.30	17.40	17.50	17.60	17.70	17.80	17.90	17
18	18.00	18.10	18.20	18.30	18.40	18.50	18.60	18.70	18.80	18.90	18
19	19.00	19.10	19.20	19.30	19.40	19.50	19.60	19.70	19.80	19.90	19
20	20.00	20.10	20.20	20.30	20.40	20.50	20.60	20.70	20.80	20.90	20
21	21.00	21.10	21.20	21.30	21.40	21.50	21.60	21.70	21.80	21.90	21
22	22.00	22.10	22.20	22.30	22.40	22.50	22.60	22.70	22.80	22.90	22
23	23.00	23.10	23.20	23.30	23.40	23.50	23.60	23.70	23.80	23.90	23
24	24.00	24.10	24.20	24.30	24.40	24.50	24.60	24.70	24.80	24.90	24
25	25.00	25.10	25.20	25.30	25.40	25.50	25.60	25.70	25.80	25.90	25
26	26.00	26.10	26.20	26.30	26.40	26.50	26.60	26.70	26.80	26.90	26
27	27.00	27.10	27.20	27.30	27.40	27.50	27.60	27.70	27.80	27.90	27
28	28.00	28.10	28.20	28.30	28.40	28.50	28.60	28.70	28.80	28.90	28
29	29.00	29.10	29.20	29.30	29.40	29.50	29.60	29.70	29.80	29.90	29
30	30.00	30.10	30.20	30.30	30.40	30.50	30.60	30.70	30.80	30.90	30
31	31.00	31.10	31.20	31.30	31.40	31.50	31.60	31.70	31.80	31.90	31
32	32.00	32.10	32.20	32.30	32.40	32.50	32.60	32.70	32.80	32.90	32
33	33.00	33.10	33.20	33.30	33.40	33.50	33.60	33.70	33.80	33.90	33
34	34.00	34.10	34.20	34.30	34.40	34.50	34.60	34.70	34.80	34.90	34
35	35.00	35.10	35.20	35.30	35.40	35.50	35.60	35.70	35.80	35.90	35
36	36.00	36.10	36.20	36.30	36.40	36.50	36.60	36.70	36.80	36.90	36
37	37.00	37.10	37.20	37.30	37.40	37.50	37.60	37.70	37.80	37.90	37
38	38.00	38.10	38.20	38.30	38.40	38.50	38.60	38.70	38.80	38.90	38
39	39.00	39.10	39.20	39.30	39.40	39.50	39.60	39.70	39.80	39.90	39
40	40.00	40.10	40.20	40.30	40.40	40.50	40.60	40.70	40.80	40.90	40
41	41.00	41.10	41.20	41.30	41.40	41.50	41.60	41.70	41.80	41.90	41
42	42.00	42.10	42.20	42.30	42.40	42.50	42.60	42.70	42.80	42.90	42
43	43.00	43.10	43.20	43.30	43.40	43.50	43.60	43.70	43.80	43.90	43
44	44.00	44.10	44.20	44.30	44.40	44.50	44.60	44.70	44.80	44.90	44
45	45.00	45.10	45.20	45.30	45.40	45.50	45.60	45.70	45.80	45.90	45
46	46.00	46.10	46.20	46.30	46.40	46.50	46.60	46.70	46.80	46.90	46
47	47.00	47.10	47.20	47.30	47.40	47.50	47.60	47.70	47.80	47.90	47
48	48.00	48.10	48.20	48.30	48.40	48.50	48.60	48.70	48.80	48.90	48
49	49.00	49.10	49.20	49.30	49.40	49.50	49.60	49.70	49.80	49.90	49
50	50.00	50.10	50.20	50.30	50.40	50.50	50.60	50.70	50.80	50.90	50

Distance of slope stake from side or shoulder stake for any width roadway, slope 1 to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.



TABLE XIII—CORRECTIONS FOR TANGENTS AND EXTERNALS

These corrections are to be added to the approximate values, found by dividing the tangent, or external, for a 1° curve (Table VIII) by the degree of curve, in order to obtain the true tangents, or externals. Intermediate values may be obtained by interpolation.

FOR TANGENTS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.34	.38	.42	.46
15°	.04	.10	.14	.19	.24	.29	.34	.39	.45	.51	.53	.58	.63	.68
20°	.06	.13	.19	.26	.32	.39	.45	.51	.58	.65	.72	.79	.84	.90
25°	.08	.16	.24	.33	.40	.49	.58	.67	.75	.83	.90	.99	1.06	1.14
30°	.10	.19	.29	.39	.49	.59	.69	.79	.89	.99	1.09	1.20	1.29	1.39
35°	.11	.22	.34	.47	.58	.69	.79	.81	.92	1.04	1.29	1.42	1.54	1.66
40°	.13	.26	.40	.53	.67	.80	.93	1.06	1.20	1.34	1.49	1.64	1.79	1.94
45°	.15	.30	.44	.60	.76	.91	1.06	1.21	1.37	1.52	1.70	1.87	2.04	2.21
50°	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.54	1.72	1.91	2.10	2.29	2.48
55°	.19	.38	.57	.76	.95	1.14	1.32	1.52	1.72	1.92	2.14	2.35	2.56	2.77
60°	.21	.42	.63	.84	1.05	1.27	1.49	1.71	1.94	2.17	2.38	2.60	2.83	3.07
65°	.23	.46	.69	.93	1.16	1.40	1.64	1.88	2.13	2.38	2.63	2.88	3.13	3.39
70°	.25	.51	.76	1.02	1.28	1.54	1.80	2.06	2.33	2.60	2.88	3.16	3.44	3.72
75°	.27	.56	.83	1.12	1.40	1.69	1.98	2.27	2.57	2.87	3.16	3.47	3.78	4.09
80°	.30	.61	.91	1.22	1.53	1.84	2.15	2.46	2.78	3.10	3.44	3.78	4.12	4.46
85°	.33	.66	1.00	1.33	1.68	2.02	2.36	2.70	3.05	3.40	3.77	4.14	4.55	4.89
90°	.36	.72	1.09	1.45	1.83	2.20	2.57	2.94	3.32	3.70	4.10	4.50	4.91	5.32
95°	.39	.79	1.19	1.55	2.00	2.40	2.80	3.20	3.61	4.02	4.40	4.98	5.38	5.83
100°	.43	.88	1.30	1.74	2.18	2.62	3.06	3.50	3.95	4.40	4.88	5.37	5.85	6.34
110°	.51	1.03	1.56	2.08	2.61	3.14	3.67	4.21	4.76	5.31	5.86	6.43	7.01	7.60
120°	.62	1.25	1.93	2.52	3.16	3.81	4.45	5.11	5.77	6.44	7.12	7.80	8.50	9.22

FOR EXTERNALS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.001	.003	.004	.006	.007	.008	.009	.011	.012	.014	.015	.017	.018	.020
15°	.003	.007	.010	.014	.018	.023	.027	.029	.032	.035	.039	.043	.047	.051
20°	.006	.011	.017	.022	.028	.034	.038	.045	.051	.057	.063	.070	.076	.083
25°	.009	.018	.027	.036	.046	.056	.065	.074	.083	.093	.106	.120	.127	.135
30°	.013	.025	.038	.051	.065	.078	.090	.103	.116	.129	.149	.170	.179	.188
35°	.018	.035	.054	.072	.086	.109	.131	.153	.175	.197	.213	.230	.247	.264
40°	.023	.046	.070	.093	.117	.141	.172	.203	.234	.265	.277	.290	.315	.341
45°	.030	.060	.093	.119	.153	.184	.216	.254	.289	.325	.351	.378	.411	.445
50°	.037	.075	.116	.151	.189	.227	.266	.305	.345	.384	.425	.467	.508	.550
55°	.046	.093	.142	.188	.236	.283	.332	.381	.420	.479	.530	.582	.641	.700
60°	.056	.112	.168	.225	.283	.340	.398	.457	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.771	.845	.922	1.01
70°	.080	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.266	.353	.440	.528	.618	.707	.797	.887	.977	1.07	1.18	1.29
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1.20	1.34	1.47	1.62	1.78	1.91
90°	.149	.299	.450	.603	.756	.910	1.07	1.22	1.38	1.54	1.70	1.87	2.03	2.20
95°	.174	.350	.522	.706	.885	1.06	1.25	1.43	1.62	1.80	1.99	2.18	2.38	2.58
100°	.200	.401	.604	.809	1.01	1.22	1.43	1.64	1.85	2.06	2.28	2.50	2.73	2.96
110°	.268	.536	.806	1.08	1.35	1.63	1.91	2.20	2.48	2.76	3.05	3.35	3.66	3.96
120°	.360	.721	1.08	1.45	1.82	2.19	2.57	2.95	3.33	3.72	4.11	4.50	4.91	5.32

WAGE RATES IN EFFECT:

SUPERINTENDENT: 175.00 WEEK. SALARY.  
 OFFICE MANAGER: 600.00 MONTH. "  
 SHIFTER. (FOREMAN) 125.00 WEEK. "  
 HEAD MECHANIC 125.00 " "  
 NIGHT " 2.65 HOUR.  
 MOTOR (DINNEY) OPER. 2.50 "  
 MUCKER OPER. 2.88 "  
 MINER 2.42 "  
 CHUCK TENDER. 2.21 "



BLACK CANYON TUNNEL - PERSONNEL, CONT'D.  
BOOK TWO.

REMARKS.  
FRANK CLARY. SUPT. FOR SNEA CO.  
ERNIE ARNISON.  
MARK WOOLSTENHULME & JOHN MASON.  
JOE MURILLO & RAY GARCIA.  
PAT Mc FADDEN & MAX SCHMELING.  
GEO. GARCIA & LARRY MURILLO.  
Wrs. YOGEL, RUDY AMES, FRANK JONES, JOHNN GARCIA & <sup>JOE GARCIA.</sup>  
MANUEL RUIZ & JULIAN (ROY) AMES.  
F.N. TODD, STEEL SUPT. FOR ROTHERFORD-SMOURYE CO.

F.N. TODD ON 000 YRS. TODAY.

MR. PENNINGTON ARRIVED ON THE JOB ABOUT 3 P.M.

DATE:	NO.	JOB.	HRS.
Nov. 27, 53	1	SUPERINTENDENT	8.0
	1	OFFICE MANAGER.	8.0
	2	MECHANICS	16.0
	2	SHIFTERS	16.0
	2	MUCKER OPERATORS	16.0
	2	DINKEY OPERATORS	16.0
	5	MINERS	40.0
	2	CHUCK TENDERS	16.0
	4	STEEL WORKERS (SUB. CONTR.)	32.0
Nov. 30.		SAME AS 11-27 EXCEPT:	
	6	STEEL WORKERS	48.0
Dec. 1.		SAME AS 11-27 EXCEPT:	
	1	STEEL SUPT.	4.0
	5	STEEL WORKERS	40.0
Dec. 2.		SAME AS 11-27 EXCEPT:	
"	"	" " " "	
	1	PROJECT MANAGER	2.0
	3	STEEL WORKERS	24.0



MR. PENNINGTON LEFT AT 11 A.M. FOR L.A.

STEEL SUPT. SET  $\frac{3}{8}$ " PLATE RING AT N. PORTAL TODAY.

COMPLETED STEEL PLACING AT N. END TODAY.

DATE:	NO.	JOB.	HRS.
DEC. 3, '53.	1	PROJECT MGR.	8.0
	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	2	MECHANICS	16.0
	2	SHIFTERS	16.0
	2	MUCKER OPERATORS	16.0
	2	DINKEY "	16.0
	5	MINERS	40.0
	2	CHUCK TENDERS	16.0
	1	STEEL SUPT.	6.0
	3	" WORKERS	24.0
DEC. 4, '53.		SAME AS 12-3 EXCEPT:	
	NO	PROJECT MGR.	
	NO	STEEL SUPT.	
	2	STEEL WORKERS	16.0
DEC. 7.		SAME AS 12-3 EXCEPT:	
	NO	PROJECT MGR. TIME	
	NO.	STEEL SUPT. TIME.	
	NO.	STEEL WORKERS TIME.	



FRANK CLARY'S LAST DAY AS SUPT. TRANSFERRED TO  
CATALCO TUNNEL JOB AT LAKE MATHEWS.

NOTE: J. MURILLO TWO HRS. LATE TONITE. ON SALARY.

JULIAN AMES QUIT TONITE AS CHUCK TENDER.

FINAL ALIGNMENT OF STEEL AT N. END. COMPLETED TODAY.

OSCAR BENSON REHIRED AS SUPT. TODAY.

MR. PENNERBOHM CAME IN AT 1 P.M.

" " LEFT AT 10 A.M.

DATE:	NO.	JOB.	HRS.
DEC. 8, '53	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	2	MECHANICS	16.0
	2	SHIFTERS	16.0
	2	MUCKER OPERATORS	16.0
	2	DINKEY "	16.0
	5	MINERS	40.0
	2	CHUCK TENDERS	16.0
	2	STEEL WORKERS - SUB. CONTR.	16.0
DEC. 9.		SAME AS 12-8 EXCEPT:	
	1	CHUCK TENDER	8.0
	NO	STEEL WORKERS. TIME.	
DEC. 9.	1	PROJECT MGR.	4.0
" 10.	1	" "	2.0
DEC. 10.		SAME AS 12-9 EXCEPT	
	NO	STEEL WORKERS TIME.	
DEC 11		Same as 12-9	
		No. project Mgr.	



LARRY MORILLO, DINKEY OPER. LAID OFF TONITE.  
 PAT Mc FADDEN, MUCKER OPER. LAID OFF TONITE.

MR. RENNERTON ON JOB ALL DAY.

SCHMELING CHANGED TO DINKEY OPER.

MR. RENNERTON LEFT AT NOON TODAY.

NOTE: FOLLOWING MEN LAID OFF AT END OF WORK  
 DEC. 18; 2ND SHIFT DROPPED AFTER TODAY.

J. MORILLO - SHIFTER, J. MARSON, MECH. -  
EFFECTIVE 12-21.  
 RATING OF FOLLOWING MEN CHANGED AS SHOWN  
 G. GARCIA - OPER. TO C.T.; RUDY AMES, F. JONES,  
 W. YOGEL, JOHN & JOE GARCIA - MINERS TO C.T.'s.

DATE:	NO.	JOB.	HRS.
DEC. 14, '55	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	2	MECHANICS	16.0
	2	SHIFTERS	16.0
	2	MUCKER OPERATORS	16.0
	2	DINKEY "	16.0
	5	MINERS	40.0
	1	CHUCK TENDER	8.0
DEC. 15.		SAME AS ABOVE.	
" 16		" " " AND	
	1	PROJECT MGR.	8.0
" 17.		EXCEPT NO MUCKER OPER. SAME AS 12-14, AND	
	1	PROJECT MGR.	4.0
" 18.		SAME AS 12-14 EXCEPT	
" "	NO	MUCKER OPERATORS	



NOTE: ALL MEN ON DAY SHIFT NOW 8 AM - 4<sup>30</sup> PM  
PERSONNEL OF F.W. CASE CO. GUNITE CREW  
LISTED IN GUNITE DATA BOOK.

C.T.'s: GEO., JOHN AND JOE GARCIA, RUDY AMES,  
FRANK JONES, Wm. YOGEL AND MANUEL RUIZ.

TEAM GIVEN TWO HOURS OFF THIS AFTERNOON.

RAY GARCIA ABSENT. SCHMELING ACTING SHIFT BOSS.

12-28: MR. BENNERDORN ARRIVED 5 PM. TODAY.

MR. BENNERDORN ON JOB ALL DAY TODAY.

FRANK JONES QUIT AT END OF SHIFT TODAY.

MR. BENNERDORN ON JOB ALL DAY TODAY.

CREW WORKED FULL SHIFT TODAY - NO  
TIME OFF THIS AFTERNOON.

DATE:	NO.	JOB.	HRS.
DEC. 21.	1	SUPT. - O. BENSON	8.0
	1	OFFICE MGR. - ARNISON	8.0
	1	MECH. - WOOLSTEHNULTZ	8.0
	1	SHIFTER - RAY GARCIA	8.0
	1	DINKEY OPERATOR <sup>THA SCHMELING.</sup>	8.0
	7	CHUCK TENDERS	56.0
DEC. 22		SAME AS ABOVE.	
" 23		" " "	
" 24		" " " EXCEPT:	
	NO	SHIFTER TODAY.	
DEC. 28.		SAME AS 12-21.	
" 29.		" " " " AND	
	1	PROJECT MGR.	8.0
DEC. 30.		SAME AS 12-21 AND	
	1	PROJECT MGR	8.0
DEC. 31.		SAME AS 12-21 EXCEPT.	
	6	CHUCK TENDERS	48.0



WORKING HOURS: 8 A.M. TO 4:30 P.M.

NOTE: SHEA CO. EMPLOYEES ONLY LISTED IN  
THIS BOOK - SEE GUNITE DATA BOOK FOR  
CASE CO. MEN.

GEO. AND JOE GARCIA, CHUCK TENDERS, ABSENT TODAY.

MR. RENNEDOMI ON JOB ALL DAY.

MR. RENNEDOMI LEFT AT NOON TODAY.

GEO. GARCIA WORKING AS A MINER TODAY - DRILLING.

GEO. GARCIA MINER TODAY. DRILLING PLUG HOLES.

GEO. GARCIA AND RUDY AMES MINERS TODAY. GEO  
DRILLING PLUG HOLES. RUDY MAKING UP PRIMERS.

1954.

DATE:	NO.	JOB.	WRS.
JAN. 4, '54	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	MECHANIC	8.0
	1	SHIFTER	8.0
	1	DINKEY OPERATOR	8.0
	4	CHUCK TENDERS	32.0
JAN. 5.		SAME AS JAN. 4, EXCEPT:	
	1	PROJECT MANAGER	8.0
	6	CHUCK TENDERS	48.0
JAN. 6.		SAME AS JAN. 4, EXCEPT:	
	1	PROJECT MANAGER	4.0
	1	MINER	8.0
	5	CHUCK TENDERS	40.0
JAN. 7.		SAME AS JAN. 4, EXCEPT:	
	1	MINER	8.0
	5	CHUCK TENDERS	40.0
JAN. 8.		SAME AS JAN. 4, EXCEPT:	
	2	MINERS	16.0
	4	CHUCK TENDERS	32.0



LOADING AND SHOOTING ABOUT 200 PLUGS IN  
S. END REINFORCED SECTION FOR TRIMMING TO  
"R" LINE. REMOVED AND REPLACED LIGHTS, WATER,  
AIR LINE AND SOME RAILS. MAX SCHMELING AND  
GEO. GARCIA MINERS, RUDY AMES, C.T.

NOTE: WENT ON TWO-SHIFT BASIS AGAIN TODAY  
IN ORDER TO SPEED UP COMPLETION OF WORK.

M. SCHMELING, MOTORMAN, AND JOHN GARCIA ON NITES.

GEO. SICKLER STARTED WORK AS NITE SHIFT MGR.

GEO. GARCIA CHANGED FROM MINER TO MOTORMAN TODAY.

RUDY AMES, C.T., ABSENT TODAY.

LEE RUIZ REHIRED AS MOTORMAN TODAY. - DAYS.

RUDY AMES CHANGED TO MINER TODAY. DRILLING.

JULIAN AMES, M.J. LACHAPPA, AND E.B. ATHEY

STARTED AS CHUCK TENDERS TODAY.

DATE:	No.	JOB.	HRS.
JAN. 9, '54.	1	SUPT.	8.0
SATURDAY.	1	OFFICE MGR.	6.0
OVERTIME.	1	SHIFTER (RAY GARCIA)	8.0
	2	MINERS	16.0
	1	CHUCK TENDER	8.0
JAN. 11, '54	1	SUPT.	10.0
	1	OFFICE MGR.	12.0
	1	SHIFTER	8.0
	2	MECHANICS	16.0
	2	DINKEY OPERATORS	16.0
	4	CHUCK TENDERS.	32.0
JAN. 12, '54	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	SHIFTER	8.0
	2	MECHANICS	16.0
	3	DINKEY OPERATORS	24.0
	1	MINER.	8.0
	7	CHUCK TENDERS	56.0



MR. PENNINGTON ON JOB ALL DAY. LEFT 4:30 P.M.

1 MOTOR HAULING MATERIAL IN; 1 MOTOR <sup>ON DAYS.</sup> REMOVING MUCK  
RUDY AMES DRILLING PLUS HOLES IN HIGH SPOTS IN FLOOR.

DISCONTINUED USE OF 2ND. MOTOR ON DAY SHIFT. LEE

RUIZ CHANGED FROM MOTOR MAN TO MINER.

M. J. LA CHAPPA ABSENT TODAY. - QUIT.

E. G. ATHEY ABSENT TODAY - ~~WILL BE~~ TERMINATED.

DATE:	NO.	JOB:	HRS.
JAN. 13, '54	1	PROJECT MANAGER	8.0
	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	SHIFTER	8.0
	2	MECHANICS	16.0
	3	DINKEY OPERATORS	24.0
	1	MINER	8.0
	7	CHUCK TENDERS	56.0
JAN. 14.		SAME AS JAN. 13, EXCEPT:	
	NO	PROJECT MGR. TIME.	
	2	DINKEY OPERATORS	16.0
	2	MINERS	16.0
	6	CHUCK TENDERS	48.0
JAN. 15.		SAME AS JAN. 13, EXCEPT:	
	NO	PROJECT MGR. TIME.	
	2	DINKEY OPERATORS	16.0
	2	MINERS	16.0
	5	CHUCK TENDERS	40.0



JOE GARCIA AND MANUEL RUIZ, C.Ts., ABSENT TODAY.

RAIN: SCHMELING DID NOT WORK TONITE.

" JOHN GARCIA, C.T., DID NOT WORK TONITE.

MR. PENNERDORN ON JOB ALL DAY.

MANUEL RUIZ AND E.B. ATHEY WORKED FOR CASE CO.

SUPT. AND OFFICE MGR. ON JOB ALL DAY,  
GETTING ELECTRICIANS TO REPAIR  
LIGHT PLANT.

DATE:	NO.	JOB.	HRS.
JAN. 18, '54	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	2	MECHANICS	16.0
	1	SHIFTER	8.0
	2	MOTORMEN	16.0
	2	MINERS	16.0
	4	CHUCK TENDERS	32.0
JAN. 19, '54		SAME AS 1/18 EXCEPT:	
	1	MOTORMAN	8.0
	5	CHUCK TENDERS	40.0
JAN. 20, '54		SAME AS 1/18 EXCEPT:	
	6	CHUCK TENDERS	48.0
JAN. 21, '54		SAME AS 1/18 EXCEPT:	
	1	PROJECT MANAGER	8.0
	6	CHUCK TENDERS	48.0
JAN. 22.		SAME AS 1/18.	
JAN. 23	1	SUPT.	8.0
SAT.	1	OFFICE MGR.	6.0



SCHMELING DID NOT WORK TONITE - RAIN.

JOHN GARCIA, C.T., DID NOT WORK TONITE.

JULIAN AMES SICK. E.B. ATHEY QUIT AS OF 1-21.

26TH. LEE RUIZ, MINER, AND MANUEL RUIZ, C.T.

LAI D OFF AT END OF SHIFT TODAY.

NOTE: RAY GARCIA CHANGED FROM SHIFTER TO FOREMAN TODAY. CUT IN PAY FROM 125.00 TO 106.00.

MR. RENNEDOHM ON JOB ALL DAY, TODAY.

MAX SCHMELING QUIT AS MOTORMAN TONITE.

ROBT. AMES HIRED AS MOTORMAN, STARTING FEB. 1ST.

DATE:	NO.	JOB,	HRS.
JAN. 25, '54	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	SHIFTER	8.0
	2	MECHANICS	16.0
	1	MOTORMAN	8.0
	2	MINERS	16.0
	3	CHUCK TENDERS	24.0
JAN. 26, '54		SAME AS 1/25 EXCEPT:	
	2	MOTORMEN	16.0
	4	CHUCK TENDERS	32.0
JAN. 27,		SAME AS 1/25 EXCEPT:	
	2	MOTORMEN	16.0
	1	MINER	8.0
JAN. 28.		SAME AS 1/25 EXCEPT:	
	1	PROJECT MANAGER	8.0
	1	MINER	8.0
	2	MOTORMEN	16.0
JAN. 29.		SAME AS 1/25 EXCEPT:	
	2	MOTORMEN	16.0
	1	MINER.	8.0



NOTE: SEE "GUNITE LINING DATA" BOOK FOR CASE CO. MEN.

JOB WENT TO THREE SHIFT BASIS TODAY.

DAY SHIFT WORKS FROM 8:00 A.M. TO 4:30 P.M.

SWING " " " 4:30 P.M. " MIDNITE.

NITE " " " MIDNITE " 7:30 A.M.

ALL SHIFTS PAID FOR 8 HRS. WORK. UNION RULES  
MAKE THESE HOURS MANDATORY FOR THE CONT'R.

OTIS H. KILE STARTED AS MECH. ON NITE SHIFT.

LEE RUIZ, MOTORMAN, AND MANUEL RUIZ, C.T., STARTED

MR. PENNERDAM ON JOB ALL DAY.

MR. PENNERDAM ON JOB 7 A.M. TO NOON.

FEB. 1954  
SHEA CO. PERSONNEL.

FEB. 1.	1	SUPT. - BENSON	8.0
	1	OFFICE MGR. - ARNESON	8.0
	1	FOREMAN - RAY GARCIA	8.0
	3	MECHANICS	24.0
	3	MOTORMEN	24.0
	1	MINER	8.0
	4	CHUCK TENDERS	32.0
		TONITE ON NITE SHIFT.	
FEB. 2.		SAME AS FEB. 1.	
FEB. 3.		SAME AS FEB. 1, AND.	
	1	PROJECT MANAGER	8.0
FEB. 4.		SAME AS FEB. 1, AND	
	1	PROJECT MANAGER	5.0
FEB. 5.	1	SUPT.	8.0
	1	FOREMAN	8.0
	1	OFFICE MGR	8.0
	2	MECHANICS	16.0
	2	MOTORMEN	16.0
	1	MINER	8.0
	3	CHUCK TENDERS	24.0



NOTE: THE WEEK STARTED AT MIDNITE SUNDAY  
AND WILL END AT MIDNITE FRIDAY, THIS WEEK.

NITE SHIFT WORKS FROM MIDNITE TO 7:30 A.M.

DAY " " " 8 A.M. TO 4:30 P.M.

SWING " " " 4<sup>30</sup> A.M. TO MIDNITE.

A MECHANIC, MOTORMAN AND PUMP MAN  
WORKS ON EACH SHIFT, REST WORK ON DAY SHIFT.

\* LEE RUIZ ABSENT ON NITE SHIFT - CASE CO. MAN MAN

DATE:	NO.	JOB.	HRS.
FEB. 8, '54	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	FOREMAN	8.0
	3	MECHANICS	24.0
	2*	MOTORMEN	16.0
	1	MINER	8.0
	4	CHUCK TENDERS	32.0
		MOTOR.	
FEB. 9.		SAME AS 2/8 EXCEPT:	
	3	MOTORMEN	24.0
FEB. 10.		SAME AS 2/8 EXCEPT:	
	3	MOTORMEN	24.0
FEB. 11.		SAME AS 2/8 EXCEPT:	
	3	MOTORMEN	24.0
FEB. 12.		SAME AS 2/8 EXCEPT:	
	3	MOTORMEN	24.0
FEB 15:		SAME AS 2/8 EXCEPT:	
	2	MECHANICS	16.0
	3	CHUCK TENDERS	24.0

NO WORK ON GRAVEYARD SHIFT TODAY - WORK  
STARTED AT 8 A.M.



DATE:	NO.	JOB.	HRS:
FEB. 16, '54	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	FOREMAN	8.0
	3	MECHANICS	24.0
	3	MOTORMEN	24.0
	1	MINER	8.0
	4	CHUCK TENDERS	32.0
FEB. 17.		SAME AS 2/16, AND:	
	1	PROJECT MANAGER	8.0
FEB. 18.	1	SUPT.	10.0
	1	OFFICE MGR.	8.0
	1	FOREMAN	10.0
	2	MECHANICS	18.0
	2	MOTORMEN	18.0
	1	MINER	10.0
	3	CHUCK TENDERS	28.0
	1	SUPT.	10.0
	1	FOREMAN	10.0
	5	STEEL WORKERS	50.0

NOTE: RAY GARCIA'S PAY REDUCED FROM FOREMAN <sup>TODAY</sup> TO MINER.

MR. PENNERBOHM ON JOB ALL DAY.

NOTE: DAY SHIFT WORKED 10 HOURS TODAY,

REMOVING RAILROAD FROM S. END OF TUNNEL,  
AND HAULING IN REINFORCING STEEL, ETC.

ROBT. ANGEL LAID OFF AS MOTORMAN AT END OF WORK  
ON FEB. 17TH.

LEE RUIZ LAID OFF AS MOTORMAN AT END OF WORK

FEB. 18TH. MANUEL RUIZ LAID OFF AS C.T. FEB. 18TH.

RUTHERFORD-SMOURYE CO - STEEL SUB. CONTR.

PLACING STEEL IN S. END. 8 A.M. TO 6:30 P.M.



SHER CO. MEN ASSISTING STEEL WORKERS  
IN MOVING STEEL INTO S. END OF TUNNEL  
AND REMOVING RAILROAD, BY 30 FT. SECTIONS,  
AS STEEL IS HAULED IN.

RUTHERFORD-SIKOURYE CO. SUB. CONTR. PLACING  
STEEL IN S. END.

SHER CO. REMOVED LAST OF TRACKS FROM  
TUNNEL AND OUT OF APPROACH CUT.

GEO. GARCIA LAID OFF AS MOTORMAN, AT NOON TODAY.

RUTHERFORD-SIKOURYE CO. SUB. CONTR. PLACING  
STEEL IN S. END. WORKED 8 A.M. TO 8 P.M.

DATE:	No.	JOB.	Hrs.
FEB. 19, '54	1	SUPT.	10.0
	1	OFFICE MGR.	8.0
	1	FOREMAN	10.0
	1	MECHANIC	10.0
	1	MINER	10.0
	1	MOTORMAN	10.0
	2	CHUCK TENDERS	20.0
	1	SUPT.	10.0
	1	FOREMAN	10.0
	5	STEELWORKERS	50.0
FEB. 20.	1	SUPT.	4.0
SATURDAY.	1	FOREMAN	4.0
	1	MECHANIC	4.0
	1	MINER	4.0
	1	MOTORMAN	4.0
	2	CHUCK TENDERS	8.0
	1	SUPT.	12.0
	1	FOREMAN	12.0
	6	STEELWORKERS	72.0



DATE:	NO.	JOB.	HRS.
FEB. 22, '54	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	FOREMAN	8.0
	2	MECHANICS	16.0
	3	CHUCK TENDERS	24.0
	3	STEEL WORKERS	24.0
FEB. 23,	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	3	MECHANICS	24.0
	1	MINER (FOREMAN)	8.0
	3	CHUCK TENDERS	24.0
	3	STEEL WORKERS	6.0
FEB. 24:	1	PROJECT MGR.	2.0
	1	SUPT.	8.0
	1	OFFICE MGR.	12.0
	3	MECHANICS	24.0
	1	MINER (FOREMAN)	8.0
	2	CHUCK TENDERS	16.0

RUTHERFORD-  
SHOUYE Co.

RUTHERFORD  
SHOUYE Co.

NOTE: RAY GARCIA ACTING FOREMAN IS PAID AS A MINER.

NOTE: RUDY AMES RATE WAS CHANGED FROM MINER TO  
CHUCK TENDER OF FEB. 17 - I WAS SO INFORMED TODAY.

NOTE: ONE MECH. ON EACH SHIFT, WATCHING AIR  
COMPRESSORS AND GENERATOR AND PUMPS.

RUDY AMES, C.T., LAID OFF AT END OF WORK TODAY.

STEEL WORKERS ON JOB 8 AM. TO 10 AM. ONLY. CLEANUP.

MR. PENNERSOHN ARRIVED ABOUT 2:30 P.M.



MR. RENNEDOM LEFT ABOUT 2:30 P.M.

O.H. HILE, MECH., QUIT AT END OF WORK TODAY.

RAY GARCIA, FOREMAN, ABSENT TODAY.

DATE:	NO.	JOB.	HRS.
FEB. 25, '54	1	PROJECT MGR.	6.0
	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	3	MECHANICS	24.0
	1	MINER (FOREMAN)	8.0
	2	CHUCK TENDERS	16.0
FEB. 26		SAME AS 2/25 EXCEPT:	
	NO	PROJECT MGR. TIME.	
MARCH 1.	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	2	MECHANICS	16.0
	2	CHUCK TENDERS	16.0
MARCH 2.	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	MINER (FOREMAN)	8.0
	2	MECHANICS	16.0
	2	CHUCK TENDERS	16.0



MR. PENNEROHM ON JOB ALL DAY, TODAY.

Geo. SICKLER, SWING SHIFT MECH., LAID OFF TONITE  
AT 4:30 P.M. PAID 2 HRS. SHOW-UP TIME.

CARL ERICKSON AND DAVE TOLMOJOFF HIRED TODAY.

ERICKSON & TOLMOJOFF LAID OFF TONITE.

DATE:	NO.	JOB.	HRS:
MARCH 3, '54	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	MINER (FOREMAN)	8.0
	2	MECHANICS	16.0
	2	CHUCK TENDERS	16.0
MARCH 4.		SAME AS 3/3 AND:	
	1	PROJECT. MGR.	8.0
MARCH 5.		SAME AS 3/3 EXCEPT:	
	2	MECHANICS	10.0
MARCH 8.	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	MECHANIC	8.0
	1	MINER (FOREMAN)	8.0
	4	CHUCK TENDERS	32.0
MARCH 9.		SAME AS 3/8.	
MARCH 10.		SAME AS 3/8.	



DATE:	No.	JOB.	HRS.
MARCH 11.	1	SUPT.	8.0
	1	OFFICE MGR.	8.0
	1	MECHANIC	8.0
	1	MINER (FOREMAN)	8.0
	2	CHUCK TENDERS	16.0
MARCH 12.		SAME AS 8/11.	



SEE "GONITE" BOOK FOR CASE CO. RECORD.

NOTE: ALSO USING A 500 COMPRESSOR OWNED BY  
CASE CO. HOURED IN TANDUM WITH SHEA CO. COMP'S.

LARGE PISTON PUMP USED FOR WATER SUPPLY FOR  
GUNITING, PUMPING FROM BOTTOM OF TUNNEL.

10:30 - 11:30 P.M.  
SHUT DOWN 365 COMPRESSOR (HR. TO REPLACE FILTERS.  
DAY AND SWINE SHIPT, <sup>STARTED</sup> USING BLOWER AGAIN FOR VENT <sup>ILLATION.</sup>  
DRILLING PIN HOLDS AT S. END.

BLOWER NOT USED BY GRAVEYARD SHIPT - TOO COLD.  
DRILLING PIN HOLDS AT S. END.

WORKING FROM 8 A.M. TO MIDNIGHT.

PUMPING FROM WATER TANK FOR GUNITING WORK.  
LARGE PISTON PUMP REMOVED FROM TUNNEL TODAY.

SHEA CO. EQUIPMENT USED,  
CONTINUED FROM EQUIPMENT BOOK #2.

DATE:	NO.	EQUIPMENT.	HOURS.
FEB. 10, '54.	1.	3/4 TON TRUCK	8.0
	2	AIR COMPRESSORS	48.0
	1	ELECT. GENERATOR	24.0
	1	AIR LOCOMOTIVE	24.0
	1	WATER PRESSURE PUMP	24.0
	2	SLUDGE PUMPS	48.0
FEB. 11, '54		SAME AS ABOVE, EXCEPT:	
	2	AIR COMPRESSORS	47.0
	1	AIR BLOWER	16.0
	1	ROCK DRILL	8.0
FEB. 12, '54		SAME AS 2/10, AND:	
	1	AIR BLOWER	16.0
	1	ROCK DRILL	8.0
FEB. 15, '54.	1	3/4 TON TRUCK	8.0
	2	AIR COMPRESSORS, 315 & 365	92.0
	1	ELECT. GENERATOR	16.0
	1	ELECT. WATER PUMP	16.0
	1	AIR LOCOMOTIVE	16.0
	1	SLUDGE PUMP	16.0



L PUMPING WATER FROM TANK FOR GUNITE.

PUMPED DOWN WATER BACK OF DIKE AT 169+00.

L STARTED PLACING STEEL AT 8 A.M. WORK 10 HRS TODAY.

L DISCONTINUED USE OF THIS COMPRESSOR <sup>TEMPORARILY.</sup> ~~PERMANENTLY.~~

L ALL WORK SHUT DOWN AT 6:30 P.M. TODAY.

L HAULING STEEL INTO TUNNEL ON FLAT CARS.  
USING TUNNEL WATER FOR GUNITE WORK.

L PUMPING WATER FROM BEHIND DIKE, MIDNITE TO 6 A.M.

WORKED 8 A.M. TO 6:30 P.M. PLACING STEEL.

L HAULING STEEL INTO TUNNEL AND RAILS OUT.

DATE:	NO.	EQUIPMENT.	HRS.
FEB. 16, '34	1	$\frac{3}{4}$ TON TRUCK	8.0
	2	AIR COMPRESSORS	48.0
	1	ELECT. GENERATOR	24.0
	1	AIR LOCOMOTIVE	24.0
	1	ELECT. WATER PUMP	24.0
FEB. 17, '34		SAME AS ABOVE, AND:	
	1	SLUDGE PUMP	8.0
FEB. 18.	1	$\frac{3}{4}$ TON TRUCK	10.0
	1	AIR COMPRESSOR, 365 C.F.M.	7.5
	1	AIR COMPRESSOR 315 C.F.M.	18.5
	1	ELECT. GENERATOR	18.5
	1	AIR LOCOMOTIVE	18.5
	1	WATER PRESSURE PUMP	6.0
FEB. 19.	1	$\frac{3}{4}$ TON TRUCK	10.0
	1	AIR COMPRESSOR	10.5
	1	ELECT. GENERATOR	10.5
	1	AIR LOCOMOTIVE	10.0



STEEL WORKERS TIEING STEEL TAIL TO T. JOIN.  
 USED TO RUN LOCOMOTIVE. SHER CO. WORKED EARLY TO  
 LIGHTS IN TUNNEL AND YARD. NOON.  
 REMOVED LAST OF RAILS TO STOCKPILE ON QUAY.  
 STARTED GUNITING AGAIN AT 6 P.M. TODAY.

DAY SHIFT USING BLOWPIPE TO REMOVE MUCK FROM BOTTOM.  
 PUMPING WATER OUT OF TUNNEL INTO 36" DRAIN PIPE.  
 DOZER USED TO MOVE EQUIPMENT AND CLEAN UP.

GUNITING AROUND THE CLOCK.  
 DISCONTINUED USING 365 COMPRESSOR AT END OF WORK  
 AT MIDNIGHT - EARLY IN NEED OF OVERHAUL.  
 DOZER USED BY CASE CO. TO STOCKPILE SAND WITH.

NOTE: CASE CO. 500 COMPRESSOR STILL BEING USED  
 TO AUGMENT AIR SUPPLY FOR GUNITING WORK. SEE  
 "GUNITING" BOOK FOR DAYS USED.

DATE:	NO.	EQUIPMENT:	HRS:
FEB. 20, '54	1	3/4 TON TRUCK	12.0
	1	AIR COMPRESSOR	4.0
	1	ELECT. GENERATOR	12.5
	1	AIR LOCOMOTIVE	4.0
FEB. 22.	1	3/4 TON TRUCK	8.0
	1	ELECT. GENERATOR	16.0
	2	AIR COMPRESSORS 315 & 365.	32.0
	1	AIR DRIVEN WATER PUMP	16.0
	1	D-8 DOZER	4.0
FEB. 23.	1	3/4 TON TRUCK	8.0
	1	ELECT. GENERATOR	24.0
	2	AIR COMPRESSORS	48.0
	1	WATER PUMP	24.0
	1	D-8 DOZER	2.0
FEB. 24.		SAME AS FEB. 23 EXCEPT.	
	NO	D-8 DOZER TIME.	
	1	315 AIR COMPRESSOR	24.0



WORKING AROUND THE CLOCK, GUNITING.

PUMPING WATER FROM BEHIND DIKE IN TUNNEL  
FOR GUNITING. SURPLUS WATER DUMPED IN 36" DRAIN.

CASE CO. REMOVING REBOUND FROM TUNNEL TODAY.

CASE CO. MEN GUNITING 8 A.M. TO MIDNITE, AND  
REMOVING REBOUND MIDNITE TO 7:30 A.M.

USING COMPRESSOR ON NITE SHIFT TO CUT OUT REBOUND.

DATE:	No.	EQUIPMENT.	Hrs.
FEB. 25, '54	1	$\frac{3}{4}$ TON TRUCK	8.0
	1	ELECT. GENERATOR	24.0
	1	315 AIR COMPRESSOR	24.0
	1	WATER PUMP, AIR DRIVEN	24.0
FEB. 26.		SAME AS FEB. 25.	
FEB. 27	1	ELECT. GENERATOR	8.0
MARCH 1.	1	$\frac{3}{4}$ TON TRUCK	8.0
	1	AIR COMPRESSOR, 315 C.F.M.	16.0
	1	ELECT. GENERATOR	16.0
	1	WATER PUMP	16.0
MARCH 2.	1	$\frac{3}{4}$ TON TRUCK	8.0
	1	ELECT. GENERATOR	24.0
	1	AIR COMPRESSOR	16.0
	1	WATER PUMP	16.0
MARCH 3.		SAME AS MARCH 2ND.	
MARCH 4.	1	AIR COMPRESSOR	24.0
		REMAINDER SAME AS MARCH 2ND.	
MARCH 5.			



	DATE:	NO.	EQUIPMENT:	hrs.
ALL GUNITE PLACING COMPLETED AT 4:30 P.M. TODAY. FINISHERS WORKED UNTIL 5:30 P.M. NO 6	MARCH 5, '54	1	$\frac{3}{4}$ TON TRUCK	8.0
		1	ELECT. GENERATOR	18.0
		1	315 AIR COMPRESSOR	18.0
		1	WATER PUMP	8.0
FINISHER & INSPECTOR WORKING IN TUNNEL.	MARCH 6.	1	ELECT. GENERATOR	7.0
DRILLING GROUT HOLES IN S. END. PUMPING WATER OUT OF TUNNEL INTO 26" DRAIN.	MARCH 8.	1	ELECT. GENERATOR	8.0
		1	AIR COMPRESSOR, 315 C.F.M.	9.0
		1	$\frac{3}{4}$ TON TRUCK	8.0
		1	SWEDISH DRILL	5.0
		1	SLURGE PUMP	8.0
GROUTING IN S. END. PUMPING WATER FROM TANK FOR GROUTING. PUMPING WATER OUT OF TUNNEL INTO 26" DRAIN.	MARCH 9.	1	$\frac{3}{4}$ TON TRUCK	8.0
		1	AIR COMPRESSOR	8.0
		1	ELECT. GENERATOR	9.0
		2	PISTON PUMPS	16.0
		1	ELECT. WATER PUMP	8.0
		1	SLURGE PUMP	8.0



COMPLETED GROUTING AT 1:30 P.M.

PUMPING WATER FROM TANK FOR GROUTING.

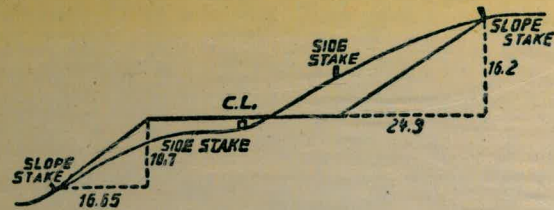
PUMPING WATER OUT OF TUNNEL INTO 36" DRAIN.

DOZER LOADING EQUIPMENT AND CLEANING UP.

DISCONTINUED LIGHTS AT 11 A.M. ALL WORK IN  
TUNNEL COMPLETED.

DATE:	NO.	EQUIPMENT.	HRS.
MARCH 10, '54	1	$\frac{3}{4}$ TON TRUCK	8.0
	1	AIR COMPRESSOR	8.0
	1	ELECT. GENERATOR	8.0
	2	PISTON GROUT PUMPS	10.0
	1	ELECT. WATER PUMP	5.0
	1	SLUDGE PUMP	8.0
MARCH 11.	1	$\frac{3}{4}$ TON TRUCK	8.0
	1	D-8 DOZER	4.0 <del>8.0</del>
	1	ELECT. GENERATOR	3.0





### DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE  $1\frac{1}{2}$  TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	2
3	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85	3
4	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85	7
8	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85	9
10	15.00	15.15	15.30	15.45	15.60	15.75	15.90	16.05	16.20	16.35	10
11	16.50	16.65	16.80	16.95	17.10	17.25	17.40	17.55	17.70	17.85	11
12	18.00	18.15	18.30	18.45	18.60	18.75	18.90	19.05	19.20	19.35	12
13	19.50	19.65	19.80	19.95	20.10	20.25	20.40	20.55	20.70	20.85	13
14	21.00	21.15	21.30	21.45	21.60	21.75	21.90	22.05	22.20	22.35	14
15	22.50	22.65	22.80	22.95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24.15	24.30	24.45	24.60	24.75	24.90	25.05	25.20	25.35	16
17	25.50	25.65	25.80	25.95	26.10	26.25	26.40	26.55	26.70	26.85	17
18	27.00	27.15	27.30	27.45	27.60	27.75	27.90	28.05	28.20	28.35	18
19	28.50	28.65	28.80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30.00	30.15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31.50	31.65	31.80	31.95	32.10	32.25	32.40	32.55	32.70	32.85	21
22	33.00	33.15	33.30	33.45	33.60	33.75	33.90	34.05	34.20	34.35	22
23	34.50	34.65	34.80	34.95	35.10	35.25	35.40	35.55	35.70	35.85	23
24	36.00	36.15	36.30	36.45	36.60	36.75	36.90	37.05	37.20	37.35	24
25	37.50	37.65	37.80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39.00	39.15	39.30	39.45	39.60	39.75	39.90	40.05	40.20	40.35	26
27	40.50	40.65	40.80	40.95	41.10	41.25	41.40	41.55	41.70	41.85	27
28	42.00	42.15	42.30	42.45	42.60	42.75	42.90	43.05	43.20	43.35	28
29	43.50	43.65	43.80	43.95	44.10	44.25	44.40	44.55	44.70	44.85	29
30	45.00	45.15	45.30	45.45	45.60	45.75	45.90	46.05	46.20	46.35	30
31	46.50	46.65	46.80	46.95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48.00	48.15	48.30	48.45	48.60	48.75	48.90	49.05	49.20	49.35	32
33	49.50	49.65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51.00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52.50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54.00	54.15	54.30	54.45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55.50	55.65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57.45	57.60	57.75	57.90	58.05	58.20	58.35	38
39	58.50	58.65	58.80	58.95	59.10	59.25	59.40	59.55	59.70	59.85	39
40	60.00	60.15	60.30	60.45	60.60	60.75	60.90	61.05	61.20	61.35	40
41	61.50	61.65	61.80	61.95	62.10	62.25	62.40	62.55	62.70	62.85	41
42	63.00	63.15	63.30	63.45	63.60	63.75	63.90	64.05	64.20	64.35	42
43	64.50	64.65	64.80	64.95	65.10	65.25	65.40	65.55	65.70	65.85	43
44	66.00	66.15	66.30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
45	67.50	67.65	67.80	67.95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69.00	69.15	69.30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
47	70.50	70.65	70.80	70.95	71.10	71.20	71.40	71.55	71.70	71.85	47
48	72.00	72.15	72.30	72.45	72.60	72.75	72.90	73.05	73.20	73.35	48
49	73.50	73.65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

THE NATIONAL BLANK BOOK COMPANY

HOLYOKE



MASSACHUSETTS

NEW YORK

CHICAGO

BOSTON

SAN FRANCISCO