

(200)  
R290  
70.803

Table I  
Comparison of predictions and findings in the Straight Creek  
Tunnel pilot bore, Colorado

	Predicted	Findings
Geologic measurements (Predictions based on 4.0 percent outcrop)		
Rock type (percentage of tunnel length):		
Granite-----	75.0	75.4
Metasedimentary rock-----	25	23.8
Diorite dikes-----	+	.8
Fracture density (percentage of tunnel length):		
<0.1 ft - 0.5 ft-----	40.1	38.7
0.5 ft - 1 ft-----	49.3	42.6
>1 ft-----	10.6	18.7
Faults and shear zones (percentage of tunnel length)-----	51	49
Faults, principal ranges in trend or attitude		
(Surface, >5 ft wide; tunnel, >1 ft wide):		
Strike-----	N. 20°-50° E.	N. 45° E., N. 20° E.
Dip-----	75° NW. or SE.	75° SE. 40°-60° SE.
Joints, principal range and average attitude:		
Strike-----	180°	180°
Dip-----	45°-90°	8°-90°
Average dip-----	60°	45°
Foliation, principal range:		
Strike-----	N.-N. 30 E.	N. 10°-60° E.
Dip-----	60°-90° SE. or NW.	10°-50° SE.
Statistical maxima-----		
Strike-----	N. 15° E.	N. 45° E.
Dip-----	65° SE. or 70° NW.	30° SE.
Strike-----	N. 30° E.	
Dip-----	75° NW.	
Average dip-----	60°	30°
Engineering measurements		
Rock loads (psf):		
Predictions calculated from Terzaghi (1945) on 10.5- x 11.5-ft tunnel-----	5900	
Predictions recalculated from Terzaghi (1945) on 13- x 13-ft tunnel-----	6970	
Calculate maximum stable geologic rock load from measurements in pilot bore, 13 x 13 ft-----		6300
Average final swell pressure (psf) of altered rock and gouge-----	1/ 2233	2/ 1727
Ground water (gpm):		
Maximum initial flow from any section-----	1000	750
Maximum flow from portal-----	,500	800
Flow at portal 2 weeks after completion of pilot bore-----	300	130
Engineering practices (Predictions based on length of 8050; findings based on length of 8350)		
Set spacing (percent of tunnel length):		
1-ft centers-----	1.6	2
2-ft centers-----	23	22
3-ft centers-----	40	30
5-ft centers-----	35	20.9
Invert struts-----	1.4	8
Total number of sets-----	2691	2059
Total number of invert-----	113	210
Lagging and blocking (percentage of tunnel length):		
100-67-----	1731	1456
66-34-----	3659	2447
33-0-----	2660	4447
Feeler holes (linear feet)-----	2905	9816
Grout (linear feet of tunnel)-----	403	0
Cost		
Bid of Mid Valley, Inc.---- \$1,300,000 (rounded)		
Actual cost----- 1,400,000 (rounded)		

1/ 6 samples

2/ 29 samples