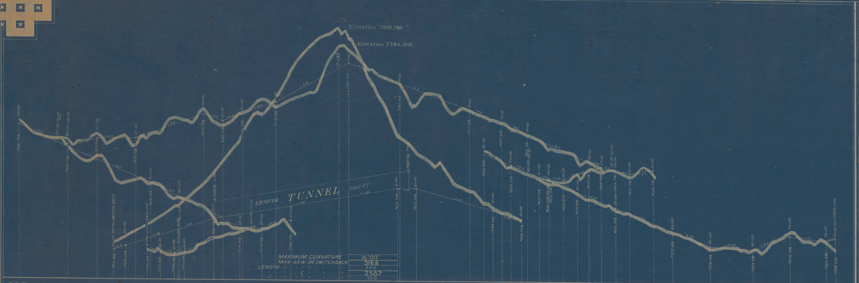


MAXIMUM CURVATURE	16°00'
MAX. GR. W. ON SWITCHBACK	316.8
LENGTH " "	700
" " E " "	258.7
" " " "	300

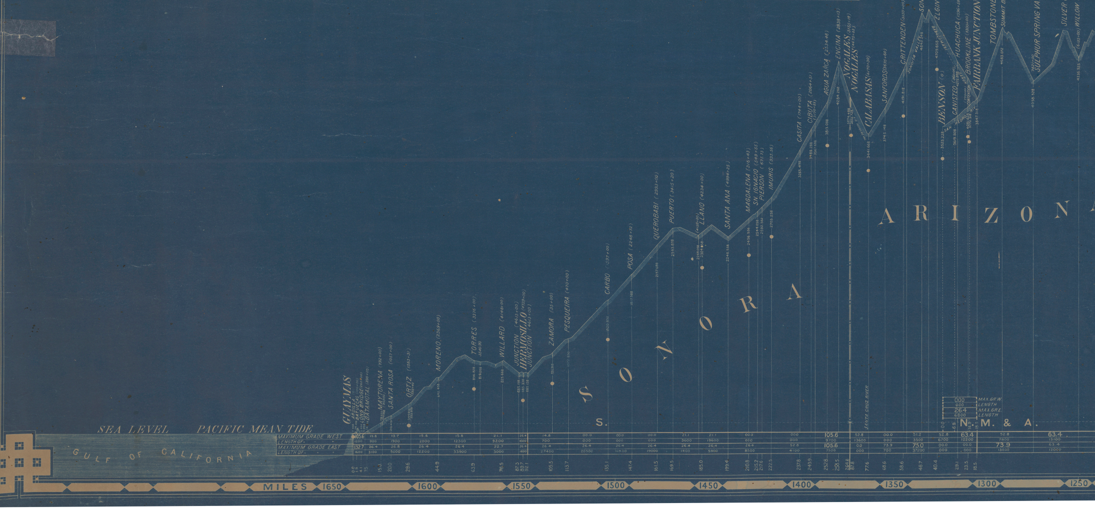
R.L. Engle
Locating Engineer

HORIZONTAL SCALE 400 FT. TO 1 INCH

Profile of Main Line and Switch-Back over Raton Mountain

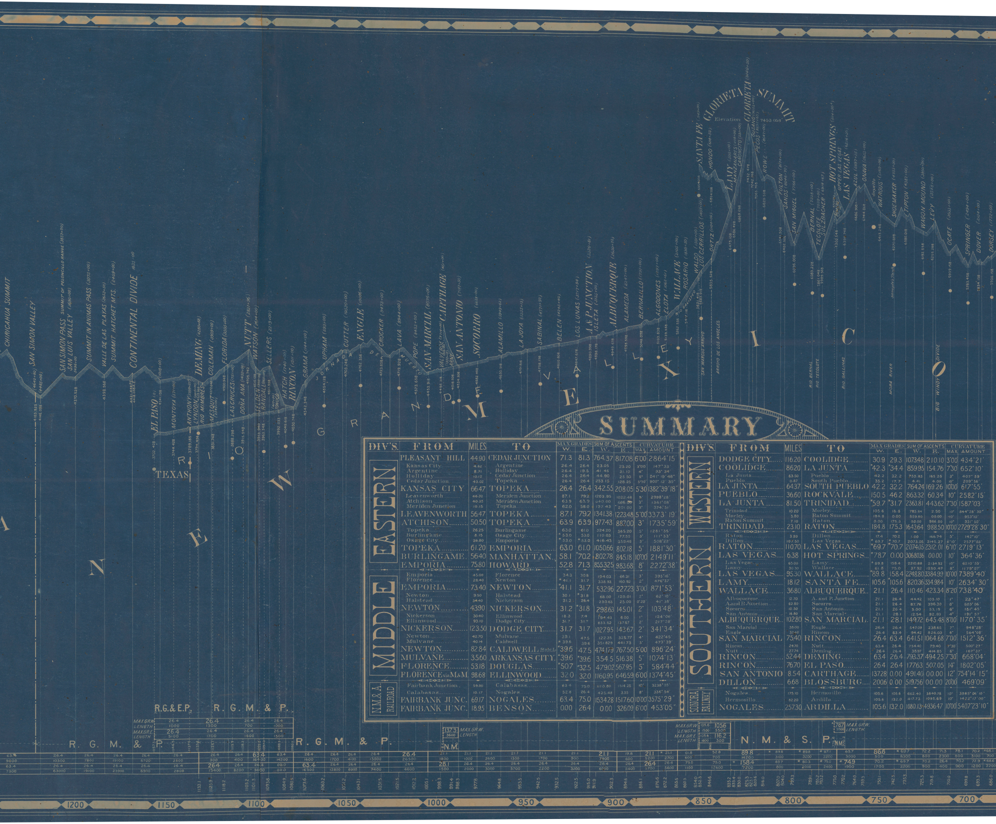
VERTICAL SCALE 40 FT TO 1 INCH

J.D. Burr
Assistant Engineer



0.00	MAX. GR. W.
0.00	LENGTH
26.4	MAX. GR. E.
6800	LENGTH

MAXIMUM GRADE WEST	105.6	15.8	13.7	15.8	15.8	21.1	26.4	14.8	00.0	00.0	00.0	21.1	21.1	00.0	00.0	105.6	52.8	00.0	51.2	52.8	63.4	52.8	63.4
LENGTH OF " "	1200	900	1900	2000	12300	9200	1600	700	000	000	000	3600	19600	000	000	9700	13600	000	3500	6700	10200	7800	13100
MAXIMUM GRADE EAST	132.7	26.4	26.8	26.4	26.4	22.7	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	52.8	105.6	0.0	73.9	75.0	00.0	00.0	73.9	63.4
LENGTH OF " "	1600	3100	5000	12200	33900	3000	1600	27400	20500	10400	19000	1400	5900	8500	4100	7500	000	700	37200	000	.000	13800	12000



CHIRICAHUA SUMMIT
SAN SIMON VALLEY
SAN SIMON PASS
SAN LUIS VALLEY
SUMMIT OF PELONCILLO RANGE
SUMMIT IN ANIMAS PASS
VALLE DE LAS PLAYAS
SUMMIT HATCHET MTS.
CONTINENTAL DIVIDE
EL PASO
MONTOYA
ANTHONY
LYNDON
RIO MIMBRES
DEMING
COLEMAN
MESQUIT
FLORIDA
LAS CRUCES
DOÑA ANA
NUTT
WATSON
SELDEN
RANDALL
SELLERS
HATCH
RINCON
GRAMA
UPHAM
CUTTER
ENGLE
CROCKER
LAVA
POPE
SAN MARCIAL
VALVERDE
CARTHAGE
SAN ANTONIO
SOCORRO
ALAMILLO
LA JOYA
SABINAL
BELEN
LOS LUNAS
A.&P. JUNCTION
ISLETA
ALBUQUERQUE
ALAMEDA
BERNALILLO
ALGODONES
ELOTA
WALLACE
ROSARIO
WALDO
LOS CERRILLOS
ORTIZ
SANTA FE
HONDO
LAMY
CANONCITO
GLORIETA
GLORIETA SUMMIT
Elevation
ROWE
PECOS
FULTON
SANDS
SAN MIGUEL
BERNAL
TECOLOTE
SULZBACHER
ROMERO
HOT SPRINGS
UPPER LAS VEGAS
LAS VEGAS
AZUL
ONAVA
WATROUS
SHOEMAKER
TIPTON
WAGON MOUND
LEVY
OCATE
SPRINGER
DOVER
DORSEY
JORNADA DEL MUERTO
RIO GRANDE
VALLEY
SAN MARCOS ARROYO
ARROYO DE LOS ANGELES
RIO BERNAL
RIO TECOLOTE
RIO GALLINAS
MORA RIVER
BIG WIND DIVIDE
TEXAS
NEW MEXICO
R.G.&E.P.
R.G.M.&P.
N.M.&S.P.
N.M.
MAX.GR.W.
LENGTH
MAX.GR.E.
1200
1150
1100
1050
1000
950
900
850
800
750
700

SUMMARY

DIV'S.	FROM	MILES	TO	MAX GRADES W.	MAX GRADES E.	SUM OF ASCENTS W.	SUM OF ASCENTS E.	CURVATURE MAX.	CURVATURE AMOUNT
EASTERN	PLEASANT HILL	44.90	CEDAR JUNCTION	71.3	81.3	764.37	817.08	6°00′	2864°15′
	Kansas City	4.62	Argentine	26.4	26.4	23.05	23.20	3°00′	147°33′
	Argentine	8.71	Holliday	26.4	19.5	41.45	31.10	4°	93°34′
	Holliday	10.12	Cedar Junction	26.4	26.4	44.90	25.50	5°	241°19′48″
	Cedar Junction	43.02	Topeka	26.4	26.4	233.15	128.25	5°30′	900°12′30″
	KANSAS CITY	66.47	TOPEKA	26.4	26.4	342.55	208.05	5°30′	1382°39′18″
	Leavenworth	46.32	Meriden Junction	87.1	79.2	1203.95	1022.48	5°	2998°28′
	Atchison	40.35	Meriden Junction	63.9	63.9	640.00	686.00	3°	1361°08′
	Meriden Junction	10.15	Topeka	62.0	58.0	137.43	*201.00	3°	374°51′
	LEAVENWORTH	56.47	TOPEKA	87.1	79.2	1341.38	1223.48	5°00′	3373°19′
	ATCHISON	50.50	TOPEKA	63.9	63.9	977.43	887.00	3°	1735°59′
	Topeka	26.25	Burlingame	63.0	61.0	524.20	365.20	5°	1261°35′
	Burlingame	8.15	Osage City	*53.0	53.0	110.03	77.50	3°	111°33′
	Osage City	26.80	Emporia	*53.0	*53.0	416.43	359.48	3°	508°22′
	TOPEKA	61.20	EMPORIA	63.0	61.0	1050.66	802.18	5°	1881°30′
	BURLINGAME	56.40	MANHATTAN	58.1	*70.2	802.78	845.18	10°00′	2149°11′
	EMPORIA	75.80	HOWARD	52.8	71.3	855.325	983.68	8°	2272°38′
MIDDLE	Emporia	45.00	Florence	34.3	30.8	194.03	66.31	3°	395°16′
	Florence	28.40	Newton	*41.1	31.7	338.93	160.92	2°	476°37′
	EMPORIA	73.40	NEWTON	*41.1	31.7	532.96	227.23	3°00′	871°53′
	Newton	9.50	Halstead	30.1	*31.8	68.00	120.01	2°	62°10′
	Halstead	34.40	Nickerson	31.2	26.4	230.63	25.00	0°20′	41°38′
	NEWTON	43.90	NICKERSON	31.2	*31.8	298.63	145.01	2°	103°48′
	Nickerson	30.40	Ellinwood	18.3	7.4	194.43	6.00	1°	124°06′
	Ellinwood	93.10	Dodge City	31.7	31.7	833.52	137.67	2°	217°28′
	NICKERSON	123.50	DODGE CITY	31.7	31.7	1027.95	143.67	2°	341°34′
	Newton	42.70	Mulvane	39.1	47.5	122.35	325.77	4°	422°45′
	Mulvane	40.14	Caldwell	*39.6	39.6	351.829	441.73	5°	473°39′
	NEWTON	82.84	CALDWELL State L.	*39.6	47.5	474.179	767.50	5°00′	896°24′
	MULVANE	35.60	ARKANSAS CITY	*39.6	*39.6	354.5	516.38	5°	1074°13′
	FLORENCE	53.18	DOUGLAS	*50.7	*32.5	479.02	567.95	5°	584°44′
	FLORENCE via M.&M.	98.68	ELLINWOOD	32.0	32.0	1160.95	646.59	6°00′	1374°45′
N.M.&A. RAILROAD	Fairbank Junction	59.00	Calabasas	63.4	75.0	1110.80	1514.25	10°	3238°35′
	Calabasas	10.17	Nogales	52.8	26.4	425.48	3.35	8°	336°54′
	FAIRBANK JUNC.	69.17	NOGALES	63.4	75.0	1534.28	1517.60	10°00′	3575°29″
	FAIRBANK JUNC.	18.95	BENSON	0.00	26.4	0.00	326.09	6°00′	453°05″

DIV'S.	FROM	MILES	TO	MAX GRADES W.	MAX GRADES E.	SUM OF ASCENTS W.	SUM OF ASCENTS E.	CURVATURE MAX.	CURVATURE AMOUNT
WESTERN	DODGE CITY	116.20	COOLIDGE	30.9	29.3	1073.48	210.10	3°00′	434°21′
	COOLIDGE	86.20	LA JUNTA	*42.3	*34.4	859.95	154.76	7°30′	652°10′
	La Junta	63.50	Pueblo	42.2	32.2	759.83	165.26	3°	407°59′
	Pueblo	0.87	South Pueblo	35.2	17.7	4.41	4.00	10°	209°56′
	LA JUNTA	64.37	SOUTH PUEBLO	42.2	32.2	764.24	169.26	10°00′	617°55′
	PUEBLO	36.60	ROCKVALE	150.5	46.2	863.32	60.34	10°	2582°15′
	LA JUNTA	81.50	TRINIDAD	*59.7	*31.7	2363.81	443.62	7°30′	1587°03′
	Trinidad	10.20	Morley	105.6	18.8	783.84	2.50	10°	844°28′30″
	Morley	5.80	Raton Summit	184.8	0.00	859.80	00.00	10°	953°10′
	Raton Summit	7.10	Raton	0.00	175.3	00.00	986.00	10°	931°50′
	TRINIDAD	23.10	RATON	184.8	175.3	1643.64	988.50	10°00′	2729°28′30″
SOUTHERN	Raton	3.20	Dillon	17.4	70.2	1.00	166.74	5°	142°10′
	Dillon	107.50	Las Vegas	*69.7	*70.7	2073.05	2145.27	6°10′	2577°03′
	RATON	110.70	LAS VEGAS	*69.7	*70.7	2074.05	2312.01	6°10′	2719°13′
	LAS VEGAS	6.38	HOT SPRINGS	*78.7	0.00	3068.036	00.00	10°	364°36′
	Las Vegas	65.00	Lamy	*89.8	158.4	2210.88	2134.52	10°	6210°33′
	Lamy	30.30	Wallace	61.8	75.0	37.92	1250.47	8°	1179°07′
	LAS VEGAS	95.30	WALLACE	*89.8	158.4	2248.80	3384.99	10°00′	7389°40′
	LAMY	18.12	SANTA FE	105.6	*105.6	820.36	334.984	10°	2634°30″
	WALLACE	36.80	ALBUQUERQUE	21.1	26.4	110.46	423.34	8°20′	738°40′
	Albuquerque	12.70	A. and P. Junction	21.1	26.4	44.42	103.10	1°	23°47′
	A. and P. Junction	62.80	Socorro	21.1	26.4	87.76	396.30	8°	803°06′
	Socorro	10.50	San Antonio	21.1	26.4	5.00	53.15	6°	151°45′
	San Antonio	16.80	San Marcial	21.1	28.1	12.54	92.93	4°	191°57′
	ALBUQUERQUE	102.80	SAN MARCIAL	21.1	28.1	149.72	645.48	8°00′	1170°35′
	San Marcial	38.00	Engle	26.4	26.4	547.09	238.65	7°	948°28′
	Engle	37.40	Rincon	26.4	63.4	94.42	826.03	6°	564°08′
	SAN MARCIAL	75.40	RINCON	26.4	63.4	641.51	1064.68	7°00′	1512°36′
	Rincon	24.70	Nutt	63.4	26.4	754.40	79.40	7°30′	500°27′
	Nutt	27.74	Deming	26.4	26.4	38.97	414.85	6°	167°37′
	RINCON	52.44	DEMING	63.4	26.4	793.37	494.25	7°30′	668°04′
	RINCON	76.70	EL PASO	26.4	26.4	177.63	507.05	14°	1802°05′
	SAN ANTONIO	8.54	CARTHAGE	137.28	0.00	491.40	00.00	12°	754°14′15″
	DILLON	6.68	BLOSSBURG	200.6	0.00	519.756	00.00	20°00′	469°09′
SONORA RAILWAY	Nogales	175.10	Hermosillo	105.6	105.6	662.40	3840.78	10°	3985°06′10″
	Hermosillo	82.20	Ardilla	105.6	132.0	417.73	1095.69	10°	1422°17′00″
	NOGALES	257.30	ARDILLA	105.6	132.0	1080.13	4936.47	10°00′	5407°23′10″

Profile OF THE ATCHISON TOPEKA AND SANTA

RAILROAD SYSTEM

COMPILED IN THE OFFICE of the CHIEF ENGINEER AT TOPEKA KANSAS

JANUARY FIRST 1884

HORIZONTAL SCALE 20 MILES TO 1 INCH

VERTICAL SCALE 400 FT TO 1 INCH

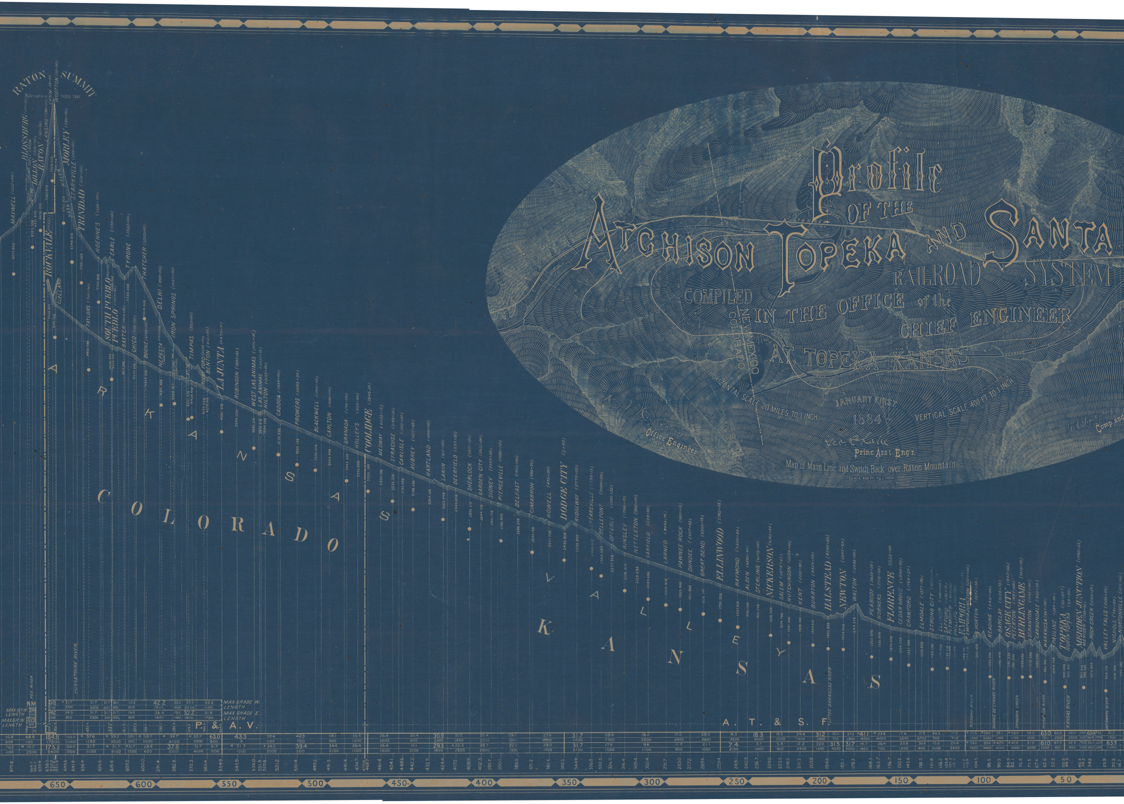
Office Engineer

Princ. Ass't. Eng'r.

Comp. and

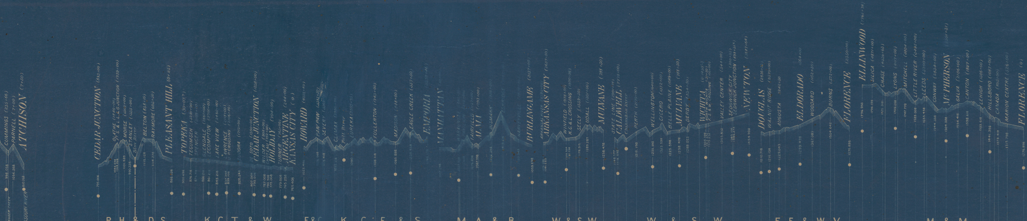
Map of Main Line and Switch-Back over Raton Mountain

SCALE 400 FT. TO 1 INCH



A.T.&S.F.R.R.

EASTERN BRANCHES



P. H. & D. S.

K. C. T. & W.

E&C.

K. C. E. & S.

M. A. & B.

W. & S. W.

W. & S. W.

F. E. & W. V.

M. & M.

63.9	60.7	MAXIMUM GRADE WEST
200	1500	LENGTH OF
407	* 52.8	MAXIMUM GRADE EAST
300	2900	LENGTH OF

P. H. & D. S.

68.3	69.4	62.8	71.3
700	1800	2600	700
70.6	66.0	81.3	43.7
1100	1200	1400	500

K. C. T. & W.

26.4	26.4	26.4	26.4	264	26.4	26.4	26.4
1700	1500	1100	1000	3000	800	1000	2500
26.4	26.4	26.4	17.4	26.4	26.4	16.2	264
800	1500	900	1600	1100	900	1500	1700

E&C. K. C. E. & S.

39.6	50.2	44.9	52.8	44.9	35.4	50.2	49.6
2700	800	800	500	200	3400	1100	500
50.2	*39.6	44.9	50.2	50.2	38.0	44.9	71.3
700	3300	1200	1000	1000	1000	500	300

M. A. & B.

39.6	58.1	58.1	58.1	58.1	58.1
400	1800	2800	500	14000	4400
70.2	*70.2	70.2	70.2	70.2	70.2
1200	6700	1200	1000	12100	1400

W. & S. W.

39.6	39.6	50.2	42.2
2600	6400	300	900
48.6	39.1	39.6	50.2
300	3600	3400	600

W. & S. W.

39.6	39.6	42.8	37.5	39.1	5.0	9.2
7700	9800	500	1000	4400	2100	2300
39.6	39.6	39.6	41.2	42.2	13.7	47.5
3800	3100	4400	400	1000	2200	1200

F. E. & W. V.

42.0	31.7	*31.7	46.2	51.1	50.7
500	1800	2000	400	700	1300
31.7	*31.7	31.7	39.6	33.0	35.4
1300	1500	2700	400	1000	1300

M. & M.

32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
3500	1600	26600	3200	7800	2800	5800	11500	6500
32.0	32.0	32.0	32.0	32.0	32.0	32.0	29.0	23.0
3000	4400	6900	7800	2000	3900	2200	2200	3300

10.7 6.4 0.0 44.9 34.4 32.8 28.6 25.3 16.3 11.5 0.0 66.5 62.3 59.0 54.5 51.2 46.5 39.9 32.8 24.8 23.5 17.3 15.1 13.4 7.0 4.6 0.0 75.8 67.3 63.2 56.2 47.0 32.5 19.8 10.6 0.0 56.4 45.2 42.0 37.0 33.8 25.5 18.1 8.5 0.0 36.8 35.6 22.8 20.9 14.9 10.0 0.0 82.8 80.5 68.9 59.0 53.7 48.6 42.7 37.9 27.1 16.5 10.1 9.9 0.0 53.9 48.9 42.7 29.9 22.6 11.0 0.0 98.7 92.5 86.2 78.3 72.3 66.4 60.8 53.9 47.6 40.1 34.3 26.5 20.7 15.5 10.2 0.0

0 MILES

EXPLANATIONS

MAX. CURVATURE does not include curves embraced within yard limits.

WEST on all branches (except those east of Topeka) means from Main line, East toward Main line

MAX. GRADES between terminal stations are indicated by heavy figures and are compensated (reduced) on curves as follows; .06' per 100' per degree of curve on grades not exceeding 0.8' per 100' —— .05' per 100' per degree of curve on grades exceeding 0.8' but not exceeding 2.0 per 100' —— .04' per 100' per degree of curve on grades exceeding 2.0 per 100'. .... (Rule adopted 1883 is .06' up to .6' per 100' —— .05' from .6' to 1.6' per 100' inclusive —— .04' from 1.6' per 100' upward.)

MAX. GRADES given include curvature, except where (on some of the earlier constructed lines on which grades were not compensated) the curve covers so short a part of the grade as not to materially affect train-service; such grades are marked by an * and will be understood to exceed slightly the grades given.

WATER STATIONS are shown thus ●

ELEVATIONS are top of rail, taken at profile stations indicated in brackets (generally at east end of depot); are given just below the surface line and are carried to thousandths - not to indicate that track is kept so truly to the original grades but in order that the results given may be correct within themselves to the extent of the information at hand.

ELEVATIONS east of Continental Divide are above Atlantic "mean tide" and are figured from U. S. Bench on face south abutment Missouri River Bridge (H. & S.J.R.R.) at Kansas City-St Louis Directrix (428.29 by Gardner '75) + 341.394 (by W.B.K. 11-2-82) = 769.684.

ELEVATIONS west of Continental Divide are above Pacific "mean tide" at Guaymas taken 0.676 feet (by T.J.S. 2-9-83) below Guaymas "mean high tide"

ELEVATION at Atchison (via Topeka) compares +0.006' with elevation taken from U.S. Bench at Atchison

ELEVATION at Emporia Junction compares +0.180' with Elevation carried from Topeka via N. Topeka and Junction City.

ELEVATION at La Junta, carried from Emporia Junction via Junction City and Kit Carson is 4065.128, which as near as can be determined (now that the K.P. has no depot or track at La Junta) checks with elevation given.

ELEVATION at Deming compares with S.P. mean tide elevations from Frisco (Pt. Pt. H.W. datum -1.799 by N.G. 10-20-83) - 0.062, — A&P corrected (-56.30 W.A.D. 5-13-84) compares -2.04 with S.P. at Colorado River

Atlantic Elevation at Continental Divide compares with Pacific Elevation of same point -3.390'

MILEAGE next above lower border is "Operating Mileage"; That given in Mileage Table is certified length of Main Track.

WORKING PROFILE CORRECTIONS

	FROM MILE	TO MILE	CORRECTION
ATCHISON TO STATE LINE	0.0	6.26	+688.268
	6.26	49.51	+636.268
	49.51	112.11	+785.698
	112.11	292.40	+795.898
	292.40	352.49	+1995.898
	352.49	462.90	+1997.898
	462.90	463.38	+1999.198
	463.38	470.58	+1997.998
ST. LINE TO S. PUEBLO	470.58	535.75	+1997.998
	535.75	591.10	+1997.008
	591.10	618.81	+1995.328
	618.45	619.27	+4555.358
N. PUEBLO TO ROCKVALE	618.81	632.70	+4562.268
	632.70	640.60	+4562.338
	640.60	642.00	+4562.868
NORTH Y	642.00	652.26	+4562.528
CHANDLER CR.	651.86	655.40	+4562.528
OAK GR.	652.46	654.78	+4562.128
LA JUNTA TO DEMING	554.51	555.57	+1997.008
	555.57	587.44	+ 290.008
	587.44	617.81	+ 291.008
	617.81	633.30	+ 39.308
	633.30	651.95	+ 38.708
	651.95	670.92	+ 38.708
	670.92	679.70	+ 38.208
	679.70	682.40	+ 38.358
	682.40	724.20	+ 38.158
	724.20	745.00	+ 39.558
	745.00	793.55	+ 40.048
	793.55	824.10	+ 39.508
	824.10	851.15	+ 38.008

	FROM MILE	TO MILE	CORRECTION
LA JUNTA TO DEMING CONTINUED	851.15	871.58	+ 37.318
	871.58	874.68	+ 37.918
	874.68	946.06	+ 38.678
	946.06	956.70	+ 37.678
	956.70	966.77	+ 38.678
	966.77	1047.68	+ 35.358
	1047.68	1085.90	+ 37.748
	1085.90	1134.59	- 53.352
RINCON TO EL PASO	1080.80	1137.70	+ 36.548
	1137.70	1157.60	+ 76.428
DEMING TO FAIRBANK JUNC.	FROM STATION 0	TO STATION 1835+00	- 54.862
	1835+00	4642+80	- 51.472
	4642+80	9038+04	- 51.472
BENSON TO NOGALES	FROM MILE 0.0	TO MILE 87.8	- 4.682
GUAYMAS TO NOGALES	0.0	10.00	- 98.542
	10.00	40.05	- 102.042
	40.05	55.05	- 100.542
	55.05	155.10	- 101.942
	155.10	195.10	- 102.942
	195.10	220.00	- 103.442
	220.00	228.20	- 103.312
	228.20	258.75	- 103.712
	258.75	260.00	- 104.712
DILLON TO BLOSSBURG	0.0	5.95	+ 38.708
	0.0	0.55	+ 6590.630
SEELY CAÑON	0.55	0.73	+ 6590.536
LAS VEGAS TO HOT SPR'GS	770.20	776.60	+ 40.048

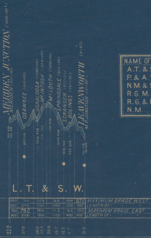
	FROM MILE	TO MILE	CORRECTION
LAMY TO SANTA FE	855.10	853.32	+ 38.008
SAN ANTONIO TO CARTHAGE	0.0	8.54	+ 36.153
FLORENCE TO DOUGLAS	0.0	29.30	+ 1094.498
	29.30	53.48	+ 1003.068
PLEAS. HILL TO CEDAR JUN.	0.0	33.40	+ 504.028
	33.40	44.70	+ 503.028
FLORENCE TO ELLINWOOD	0.0	30.95	+ 796.398
	30.95	47.90	+ 798.858
	47.90	98.44	+ 793.858
KANSAS C'Y TO TOPEKA	0.0	29.25	+ 669.008
	29.25	40.46	+ 731.448
	40.46	66.21	+ 751.218
NEWTON TO CALDWELL	0.0	0.50	+ 795.898
	0.50	27.10	+ 1207.898
	27.10	27.80	+ 1209.598
	27.80	82.84	+ 25.598
MULVANE TO ARK. CITY	0.0	24.70	+ 25.598
	24.70	36.82	+ 26.598
EMPORIA TO HOWARD	0.0	3.91	+ 1055.368
	3.91	21.95	+ 905.688
	21.95	75.53	+ 950.118
BURLINGAME TO MANHATTAN	0.0	56.61	+ 762.698
LEAVENWORTH TO MERIDEN JUNC.	0.0	29.19	+ 678.438
	29.19	46.36	+ 794.768

To find elevation of top of rail at any point, add the above correction (algebraically) to the subgrade — bottom of tie, as given on working profile.

A. A. Robinson
Gen'l. Sup't. & Chief Eng'r.

CERTIFIED MILEAGE

NAME OF ROAD	LENGTH	NAME OF ROAD	LENGTH	NAME OF ROAD	LENGTH
A.T. & S.F.	470.578	N.M. & A..	87.784	M. A. & B..	56.620
P. & A.V. ..	282.105	SONORA..		W. & S.W..	128.230
N.M. & S.P.	372.095	P. H. & D.S.	44.890	F. E. & W.V.	53.590
R.G. M. & P.	186.078	K. C. T. & W.	66.254	M. & M. ...	98.610
R.G. & E.P.	20.148	K. C. E. & S.	64.000	L.T. & S.W.	46.568
N.M.	21.912	E. & C.	12.160		


MERIDEN JUNCTION (1002+99.6)
MERIDEN (950+00)
OSAWKEE (512+00)
OSKALOOSA (1482+00)
McINTOSH (344+00)
McLOUTH (1008+00)
SPRINGDALE (834+00)
STRANGER (672+50)
BOLINGS (461+75)
LEAVENWORTH (4+67)
M.P. JUNCTION (21+99')
962.408
992.758
895.518
1006.438
1141.438
1174.438
1049.438
878.748
925.309
792.938
780.938
45.8
45.0
37.0
28.0
25.3
20.8
15.7
12.2
8.7
0.0

L. T. & S. W.

69.3	76.6	77.9	76.6	68.4	**87.1**	MAXIMUM GRADE WEST
1300	2700	1700	1400	1200	900	LENGTH OF " "
76.6	**79.2**	76.6	71.3	76.6	79.2	MAXIMUM GRADE EAST
900	2100	1300	1100	400	600	LENGTH OF " "

SEA LEVEL   ATLANTIC MEAN TIDE