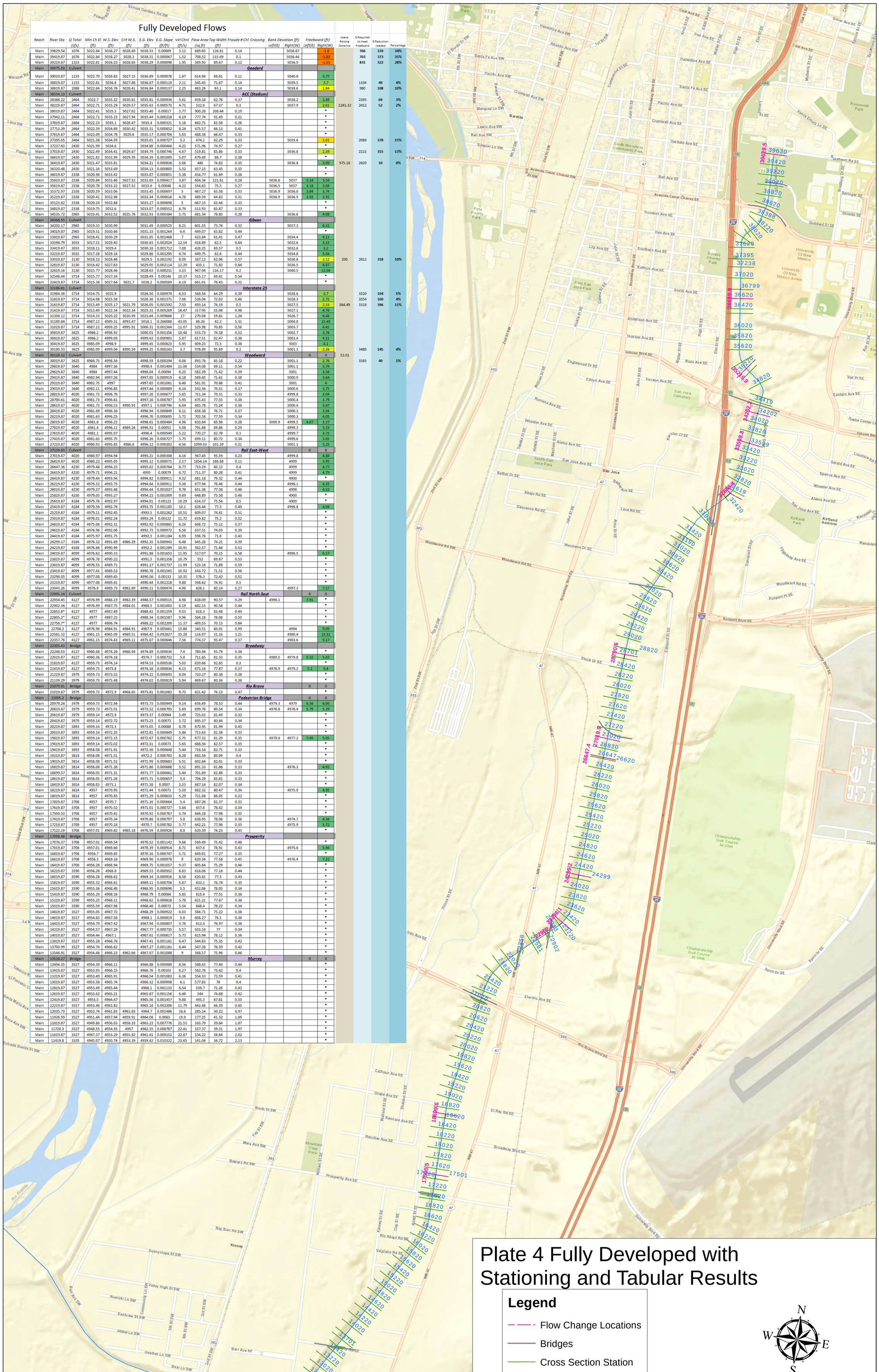
Fully Developed Flows

Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Crossing	Bank Elevation (ft) Left(E)	Bank Elevation (ft) Right(W)	Freeboard (ft) Left(E)	Freeboard (ft) Right(W)	Leeve Raising Distance	Q Required to meet Freeboard	Q Reduction needed	Percentage
Main	39629.54	1076	5022.84	5038.27	5028.69	5038.33	0.00009	3.12	689.85	126.81	0.14			5036.67		-1.6		706	370	34%
Main	39419.87	1076	5022.84	5038.27	5028.3	5038.31	0.000067	1.52	708.52	115.69	0.1			5036.44		-1.83		703	373	35%
Main	39219.87	1153	5022.81	5038.23	5028.65	5038.29	0.000098	1.95	589.95	89.67	0.12			5036.9		-1.33		831	322	28%
Main	39075.03	Culvert										Goodard								
Main	39019.87	1153	5022.79	5036.83	5027.15	5036.89	0.000078	1.87	614.94	69.61	0.11			5040.6		3.77				
Main	38819.87	1153	5022.81	5036.8	5027.88	5036.87	0.000119	2.11	545.43	71.67	0.14			5039.5		2.7		1104	49	4%
Main	38619.87	1088	5022.84	5036.76	5028.41	5036.84	0.000137	2.25	483.26	63.1	0.14			5038.6		1.84		980	108	10%
Main	38554.13	Culvert										ACC (Stadium)								
Main	38388.22	2464	5022.7	5035.32	5030.81	5035.81	0.000936	5.61	439.18	62.78	0.37			5038.2		2.88		2395	69	3%
Main	38219.87	2464	5022.71	5035.29	5029.57	5035.63	0.000573	4.71	522.8	67.37	0.3			5037.9		2.61	1241.32	2412	52	2%
Main	38019.87	2464	5022.41	5035.3	5027.62	5035.46	0.00017	3.77	900.28	108.44	0.19					*				
Main	37942.11	2464	5022.71	5035.23	5027.94	5035.44	0.000218	4.19	777.74	91.49	0.21					*				
Main	37819.87	2464	5022.23	5035.1	5028.47	5035.4	0.000321	5.18	662.71	83.58	0.26					*				
Main	37713.39	2464	5022.39	5034.69	5030.42	5035.31	0.000852	8.24	475.57	66.13	0.41					*				
Main	37619.87	2464	5022.09	5034.78	5029.6	5035.17	0.000704	5.05	488.38	66.47	0.33					*				
Main	37395.05	2464	5021.38	5034.59		5035.01	0.000727	5.2	474.1	62.29	0.33			5035.6		1.01		2086	378	15%
Main	37237.63	2430	5021.99	5034.6		5034.88	0.000466	4.25	571.96	74.97	0.27					*				
Main	37019.87	2430	5022.49	5034.41	5029.87	5034.74	0.000746	4.67	519.81	85.86	0.33			5036.8		2.39		2115	315	13%
Main	36619.87	2430	5021.82	5033.99	5029.59	5034.39	0.001009	5.07	479.49	88.7	0.38					*				
Main	36419.87	2430	5021.47	5033.81		5034.21	0.000838	5.06	480	74.82	0.35			5036.8		2.99	975.18	2420	10	0%
Main	36330.48	2430	5021.16	5033.69		5034.13	0.000805	5.32	457.15	63.45	0.35					*				
Main	36019.87	2338	5020.98	5033.42		5033.87	0.000851	5.38	434.77	61.69	0.36					*				
Main	35819.87	2338	5020.84	5033.46	5027.52	5033.69	0.000417	3.87	604.34	121.61	0.26		5036.6	5037	3.14	3.54				
Main	35619.87	2338	5020.78	5033.32	5027.52	5033.6	0.00048	4.22	554.63	75.5	0.27		5036.5	5037	3.18	3.68				
Main	35372.97	2338	5020.59	5033.06		5033.45	0.000697	5	467.27	63.58	0.33		5036.9	5036.8	3.84	3.74				
Main	35219.87	2338	5020.41	5032.98		5033.34	0.000616	4.78	489.59	64.83	0.31		5036.9	5036.9	3.92	3.92				
Main	35123.82	2338	5020.24	5032.88		5033.27	0.000698	5	467.15	63.44	0.33					*				
Main	34819.87	2338	5019.75	5032.6		5033.07	0.000552	6.74	513.93	65.87	0.33					*				
Main	34535.72	2965	5019.41	5032.52	5025.76	5032.93	0.000384	5.75	681.34	78.85	0.28			5036.6		4.08				
Main	34368.55	Culvert										Gibson								
Main	34202.17	2965	5019.33	5030.99		5031.49	0.000525	6.21	601.55	73.74	0.32			5037.3		6.31				
Main	34019.87	2965	5019.51	5030.66		5031.33	0.001264	6.6	449.07	63.82	0.44					*				
Main	33819.87	2965	5018.41	5030.29		5031.05	0.001468	7	423.84	61.41	0.47			5034.4		4.11				
Main	33598.79	3033	5017.31	5029.45		5030.63	0.002024	12.54	418.89	62.5	0.64			5032.6		3.15				
Main	33419.87	3033	5018.11	5029.4		5030.18	0.001712	7.08	428.25	69.57	0.5			5032.6		3.2				
Main	33219.87	3033	5017.28	5029.16		5029.86	0.001295	6.74	449.75	62.6	0.44			5034.8		5.64				
Main	33019.87	3130	5018.32	5028.48		5029.5	0.002192	8.09	387.12	62.06	0.57			5030.6		2.12	200	2812	318	10%
Main	32819.87	3130	5016.42	5027.83		5029.05	0.002114	12.29	435.1	71.83	0.64			5036.5		8.67				
Main	32619.16	3130	5015.77	5028.46		5028.63	0.000231	3.23	967.94	116.17	0.2			5040.5		12.04				
Main	32548.44	3714	5015.77	5027.34		5028.49	0.00146	10.37	515.17	69.61	0.54					*				
Main	32419.87	3714	5015.38	5027.64	5021.7	5028.2	0.000589	6.19	661.01	76.43	0.32					*				
Main	32186.81	Culvert										Interstate 25								
Main	31984.36	3714	5014.75	5025.9		5026.56	0.000974	6.53	568.56	64.29	0.39			5028.6		2.7		3520	194	5%
Main	31819.87	3714	5014.08	5025.58		5026.36	0.001371	7.06	526.04	72.02	0.46			5028.3		2.72		3554	160	4%
Main	31619.87	3714	5013.49	5025.17	5021.79	5026.05	0.001592	7.53	493.14	74.19	0.5			5027.5		2.33	364.49	3318	396	11%
Main	31419.87	3714	5013.49	5022.34	5022.34	5025.31	0.005269	16.47	317.95	55.08	0.98			5027.1		4.76				
Main	31308.12	3714	5014.33	5020.22	5020.99	5023.84	0.009666	17	270.08	59.81	1.24			5026.7		6.48				
Main	31189.84	3714	4987.13	4989.31	4993.47	5018.1	0.266088	43.05	86.26	42.2	5.31			5004.8		15.49				
Main	31019.87	3714	4987.13	4999.25	4995.91	5000.31	0.001564	11.07	529.98	70.85	0.56			5003.7		4.45				
Main	30819.87	3625	4986.2	4998.92		5000.01	0.001356	10.48	533.73	74.18	0.52			5002.7		3.78				
Main	30619.87	3625	4986.2	4999.09		4999.63	0.000903	5.87	617.51	82.47	0.38			5003.4		4.31				
Main	30419.87	3625	4985.09	4998.9		4999.45	0.000823	5.95	609.23	72.5	0.36			5003		4.1				
Main	30180.33	3625	4985.09	4999.04	4990.54	4999.25	0.000243	3.7	978.89	95.69	0.2			5001.3		2.26		3480	145	4%
Main	30128.32	Culvert										Woodward			0	0	52.01			
Main	30019.87	3625	4984.75	4998.34		4998.59	0.000294	4.06	893.76	85.18	0.22			5001.1		2.76		3585	40	1%
Main	29819.87	3640	4984	4997.36		4998.4	0.001404	11.06	534.08	69.11	0.54			5001.1		3.74				
Main	29619.87	3640	4984	4997.44		4998.04	0.00094	6.25	582.39	71.42	0.39			5001		3.56				
Main	29419.87	3640	4982.94	4997.26		4997.85	0.000919	6.18	589.45	71.61	0.38			5000.9		3.64				
Main	29219.87	3640	4982.75	4997		4997.65	0.001061	6.48	561.91	70.88	0.41			5001		4				
Main	29019.87	3640	4982.11	4996.85		4997.44	0.000889	6.14	592.36	70.51	0.37			5000.6		3.75				
Main	28819.87	4020	4981.73	4996.76		4997.26	0.000677	5.65	711.34	79.31	0.33			4999.8		3.04				
Main	28700.61	4020	4981.73	4996.61		4997.16	0.000787	5.95	675.43	77.55	0.36			5000.4		3.79				
Main	28619.87	4020	4981.73	4996.53	4990.93	4997.1	0.000796	6.04	665.78	75.24	0.36			5000.4		3.87				
Main	28419.87	4020	4981.69	4996.36		4996.94	0.000849	6.11	658.38	76.71	0.37			5000.3		3.94				
Main	28219.87	4020	4981.63	4996.25		4996.76	0.000695	5.72	702.58	77.59	0.34			5000.3		4.05				
Main	28019.87	4020	4981.6	4996.23		4996.61	0.000484	4.96	810.64	85.98	0.28		5000.9	4999.5	4.67	3.27				
Main	27819.87	4020	4981.4	4996.11	4989.24	4996.51	0.00052	5.08	791.68	89.86	0.29			4999.3		3.19				
Main	27619.87	4020	4981.1	4995.97		4996.4	0.000549	5.22	770.27	82.78	0.3			4999.7		3.73				
Main	27419.87	4020	4981.63	4995.75		4996.26	0.000727	5.75	699.11	80.72	0.34			4999.6		3.85				
Main	27219.87	4020	4980.93	4995.85	4986.8	4996.12	0.000202	4.56	1099.03	101.39	0.21			5001.1		5.25				
Main	27159.83	Culvert										Rail East-West			0	0				
Main	27019.87	4020	4980.97	4994.94		4995.21	0.000308	4.16	967.45	95.59	0.23			4999.8		4.86				
Main	26819.87	4020	4980.22	4995.05		4995.12	0.000071	2.17	1854.14	166.68	0.11			4999		3.95				
Main	26647.36	4230	4979.48	4994.23		4995.02	0.000764	8.77	719.29	80.15	0.4			4999		4.77				
Main	26619.87	4230	4979.71	4994.21		4995	0.00079	8.72	711.37	80.28	0.41			4999		4.79				
Main	26419.87	4230	4979.44	4993.94		4994.82	0.000911	9.32	681.18	79.32	0.44			4900		*				
Main	26219.87	4230	4979.32	4993.75		4994.64	0.000911	9.38	677.94	78.46	0.44			4998.1		4.35				
Main	26019.87	4230	4979.37	4993.48		4994.44	0.001027	9.76	651.38	77.38	0.46			4998		4.52				
Main	25819.87	4230	4979.05	4993.27		4994.23	0.001009	9.69	648.89	75.58	0.46			4900		*				
Main	25619.87	4184	4979.76	4992.97		4994.01	0.00122	10.29	614.37	75.56	0.5			4900		*				
Main	25419.87	4184	4979.56	4992.76		4993.75	0.001185	10.1	626.44	77.3	0.49			4996.8		4.04				
Main	25219.87	4184	4979.11	4992.45		4993.5	0.001262	10.51	609.07	74.61	0.51					*				
Main	25019.87	4184	4976.01	4992.24		4993.24	0.00122	11.72	639.82	75.2	0.52					*				
Main	24819.87	4184	4975.06	4992.31		4992.92	0.000865	6.26	668.72	75.12	0.37					*				
Main	24619.87	4184	4976.96	4992.06		4992.73	0.000972	6.56	637.51	74.03	0.39					*				
Main	24419.87	4184	4975.97	4991.75		4992.5	0.001184	6.99	598.76	71.8	0.43					*				
Main	24299.17	4184	4976.32	4991.69	4986.29	4992.35	0.000943	6.48	645.28	74.21	0.39					*				
Main	24219.87	4184	4976.66	4990.99		4992.2	0.001289	10.91	582.57	71.66	0.52					*				
Main	24019.87	4099	4976.62	4990.33		4991.88	0.001653	11.95	517.07	70.15	0.58			4996.5		6.17				
Main	23819.87	4099	4976.78	4990.22		4991.5	0.001358	10.79	552	69.67	0.53					*				
Main	23619.87	4099	4976.55	4989.71		4991.17	0.001737	11.99	523.18	71.89	0.59					*				
Main	23419.87	4099	4977.41	4989.53		4990.78	0.001565	10.92	543.72	71.51	0.56					*				
Main	23298.05	4099	4977.08	4989.45		4990.56	0.00133	10.35	576.3	72.42	0.52					*				
Main	23219.87	4099	4977.08	4989.41		4990.44	0.001218	9.88	598.62	74.91	0.5					*				
Main	23043.26	4099	4976.9	4989.73	4982.69	4990.11	0.000474	4.96	826.1	80.14	0.27			4997.3		7.57				
Main	22991.14	Culvert										Rail North Sout			0	0				
Main	22954.45	4127	4976.99	4988.19	4982.39	4988.57	0.000515	4.98	828.09	90.57	0.29		4996.1		7.91	*				
Main	22902.36	4127	4976.99	4987.75	4984.01	4988.5	0.001003	8.19	682.15	90.58	0.44					*				
Main	22853.8*	4127	4977	4987.49		4988.43	0.001259	9.03	616.3	83.48	0.49					*				
Main	22805.2*	4127	4977	4987.23		4988.34	0.001587	9.96	564.18	78.08	0.55					*				
Main	22756.7*	4127	4977	4986.74		4988.22	0.002209	11.37	489.53	70.13	0.64					*				
Main	22708.2	4127	4976.96	4984.91	4984.91	4987.9	0.005661	15.88	340.51	60.01	0.99			4994		9.09				
Main	22581.32	4127	4961.15	4965.09	4969.51	4984.42	0.092827	35.28	116.97	31.16	3.21			4980.4		15.31				
Main	22357.76	4127	4961.15	4974.43	4969.11	4975.07	0.000646	7.56	774.57	95.47	0.37			4983.6		9.17				
Main	22305.43	Bridge										Broadway								
Main	22248.03	4127	4960.68	4974.26	4968.94	4974.89	0.000636	7.6	780.94	93.79	0.36					*				
Main	22019.87	4127	4960.36	4974.18		4974.7	0.000732	5.8	711.65	81.33	0.35		4980.5	4979.8	6.32	5.62				
Main	21819.87	4127	4959.73	4974.14		4974.53	0.000536	5.03	820.66	92.65	0.3					*				
Main	21419.87	4127	4959.73	4973.8		4974.38	0.000836	6.13	673.16	77.87	0.37		4978.9	4979.2	5.1	5.4				
Main	21219.87	3979	4959.73	4973.52		4974.22	0.000693	8.04	710.27	80.38	0.38					*				
Main	21139.29	3979	4959.73	4973.48		4974.02	0.000819	5.94	669.67	80.36	0.36					*				
Main	21079.01	Bridge										Rio Bravo			0	0				
Main	21019.87	3979	4959.73	4972.9	4968.65	4973.81	0.001083	9.73	621.42	76.13	0.47					*				
Main	21005.2	Bridge										Pedestrian Bridge			0	0				
Main	20979.24	3979	4959.73	4972.94		4973.73	0.000949	9.14	658.49	78.53	0.44		4979.3	4979	6.36	6.06				
Main	20819.87	3979	4959.73	4973.01		4973.52	0.000705	5.69	699.76	80.54	0.34		4978.8	4978.4	5.79	5.39				
Main	20619.87	3979	4959.14	4972.9		4973.37	0.00064	5.49	725.02	81.49	0.32					*				
Main	20419.87	3979	4959.14	4972.72		4973.23	0.00073	5.72	695.37	80.84	0.34					*				
Main	20219.87	3893	4959.14	4972.3		4973.05	0.00088	8.78	670.95	81.99	0.43					*				
Main	20019.87	3893	4959.14	4972.35		4972.81	0.000649	5.46	713.63	82.38	0.33					*				
Main	19819.87	3893	4959.14	4972.15		4972.67	0.000762	5.75	677.32	81.29	0.35		4979.6	4977.2	7.45	5.05				
Main	19619.87	3893	4959.14	4972.02		4972.51	0.00073	5.65	688.56	82.57	0.35					*				
Main	19419.87	3893	4958.08	4971.91		4972.36	0.000648	5.44	716.16	82.71	0.33					*				
Main	19219.87	3814	4958.08	4971.51		4972.2	0.000763	8.28	683.56	80.09	0.4					*				
Main	19019.87	3814	4958.08	4971.52		4971.99	0.000683	5.51	692.64	82.01	0.33					*				
Main	18819.87	3814	4958.08	4971.38		4971.86	0.000688	5.52	691.33	81.86	0.33			4976.3		4.92				
Main	18699.57	3814	4958.05	4971.31		4971.77	0.000661	5.44	701.69	82.88	0.33					*				
Main	18619.87	3814	4958.05	4971.26		4971.71	0.000657	5.4	706.29	83.81	0.33					*				
Main	18419.87	3814	4958.05	4971.1		4971.58	0.0007	5.55	687.16	82.07	0.34					*				
Main	18219.87	3814	4957	4970.95		4971.44	0.00071	5.59	682.32	80.47	0.34			4975.9		4.95				
Main	18019.87	3814	4957	4970.85		4971.29	0.000633	5.29	721.06	86.05	0.32					*				
Main	17819.87	3708	4957	4970.7		4971.16	0.000664	5.4	687.26	81.37	0.33					*				
Main	17619.87	3708	4957	4970.52		4971.01	0.000727	5.64	657.6	78.42	0.34					*				
Main	17500.53	3708	4957	4970.41		4970.92	0.000767	5.74	646.18	77.98	0.35					*				
Main	17419.87	3708	4957	4970.34		4970.86	0.000797	5.8	638.95	78.06	0.36			4974.7		4.36				
Main	17219.87	3708	4957	4970.18		4970.7	0.000782	5.77	642.21	77.96	0.35			4975.9		5.72				
Main	17122.19	3708	4957.01	4969.82	4965.18	4970.59	0.000926	8.8	620.39	74.23	0.43					*				
Main	17098.48	Bridge										Prosperity								
Main	17076.37	3708	4957.01	4969.54		4970.52	0.001142	9.66	569.49	75.42	0.48					*				
Main	17019.87	3708	4957.01	4969.66		4970.39	0.000914	8.71	637.6	78.91	0.43			4975.6		5.94				
Main	16819.87	3708	4956.7	4969.65		4970.16	0.000747	5.71	649.01	77.27	0.35					*				
Main	16619.87	3708	4956.3	4969.18		4969.96	0.000978	9	620.36	77.58	0.45			4976.4		7.22				
Main	16419.87	3708	4956.28	4968.94		4969.75	0.001057	9.37	605.64	75.29	0.46					*				
Main	16219.87	3590	4956.28	4968.8		4969.53	0.000952	8.83	616.06	77.16	0.44					*				
Main	16019.87	3590	4956.28	4968.62		4969.34	0.000916	8.58	620.81	77.5	0.43					*				
Main	15819.87	3590	4955.32	4968.61		4969.11	0.000756	5.67	633.1	76.74	0.35					*				
Main	15619.87	3590	4955.36	4968.48		4968.95	0.000696	5.5	652.86	78.05	0.34					*				
Main	15419.87	3590	4955.29	4968.26		4968.79	0.00084	5.83	615.4	77.51	0.36					*				
Main	15219.87	3590	4955.25	4968.11		4968.62	0.000818	5.78	621.21	77.67	0.36					*				
Main	15019.87	3590	4955.59	4967.98		4968.46	0.00072	5.54	648.4	78.22	0.34					*				
Main	14819.87	3527	4955.05	4967.72		4968.29	0.000922	6.03	584.71	75.22	0.38					*				
Main	14619.87	3527	4954.65	4967.58		4968.1	0.000819	5.8	608.27	76.1	0.36					*				
Main	14419.87	3527	4954.79	4967.42		4967.94	0.000807	5.76	612.4	76.97	0.36					*				
Main	14219.87	3527	4954.57	4967.29		4967.77	0.000735	5.57	633.16	77	0.34					*				
Main	14019.87	3527	4954.44	4967.1		4967.61	0.000817	5.73	615.94	78.12	0.36					*				
Main	13819.87	3527	4955.28	4966.76		4967.41	0.001161	6.47	544.83	75.35	0.42					*				
Main	13700.99	3527	4954.74	4966.62		4967.27	0.001181	6.44	547.26	76.39	0.42					*				
Main	13546.91	3527	4954.48	4966.23	4962.66	4967.07	0.001088	9	568.57	75.96	0.46					*				
Main	13518.27	Bridge										Murray			0	0				
Main	13494.35	3527	4954.39	4966.11		4966.88	0.000989	8.56	588.63	77.46	0.44					*				
Main	13419.87	3527	4953.93	4966.15		4966.76	0.00103	6.27	562.76	73.62	0.4					*				
Main	13219.87	3527	4953.49	4965.91		4966.54	0.001083	6.36	554.33	73.59	0.41					*				
Main	13019.87	3527	4953.58	4965.74		4966.32	0.000998	6.1	577.83	78	0.4					*				
Main	12819.87	3527	4953.49	4965.44		4966.1	0.001133	6.54	539.7	71.26	0.42					*				
Main	12619.87	3527	4953.62	4965.21		4965.87	0.001156	6.48	544	74.68	0.42					*				
Main	12419.87	3527	4953.5	4964.47		4965.56	0.001457	9.88	493.3	67.81	0.53					*				
Main	12219.87	3527	4953.48	4963.82		4965.18	0.002206	11.79	442.48	66.39	0.65					*				
Main	12035.73	3527	4952.74	4961.83	4961.83	4964.7	0.001486	16.6	285.14	50.22	0.97					*				
Main	11928.59	3527	4951.44	4957.94	4959.91	4964.08	0.0063	19.9	177.25	41.32	1.69					*				
Main	11819.87	3527	4949.86	4956.03	4958.33	4963.23	0.007776	21.53	163.79	39.64	1.87					*				
Main	11720.3	3527	4948.55	4954.55	4957	4962.35	0.008787	22.41	157.37	39.31	1.97					*				
Main	11619.87	3527	4947.37	4953.29	4955.82	4961.41	0.009152	22.87	154.22	38.64	2.02					*				
Main	11419.8	3335	4945.07	4950.74	4953.39	4959.42	0.010322	23.65	141.04	36.72	2.13					*