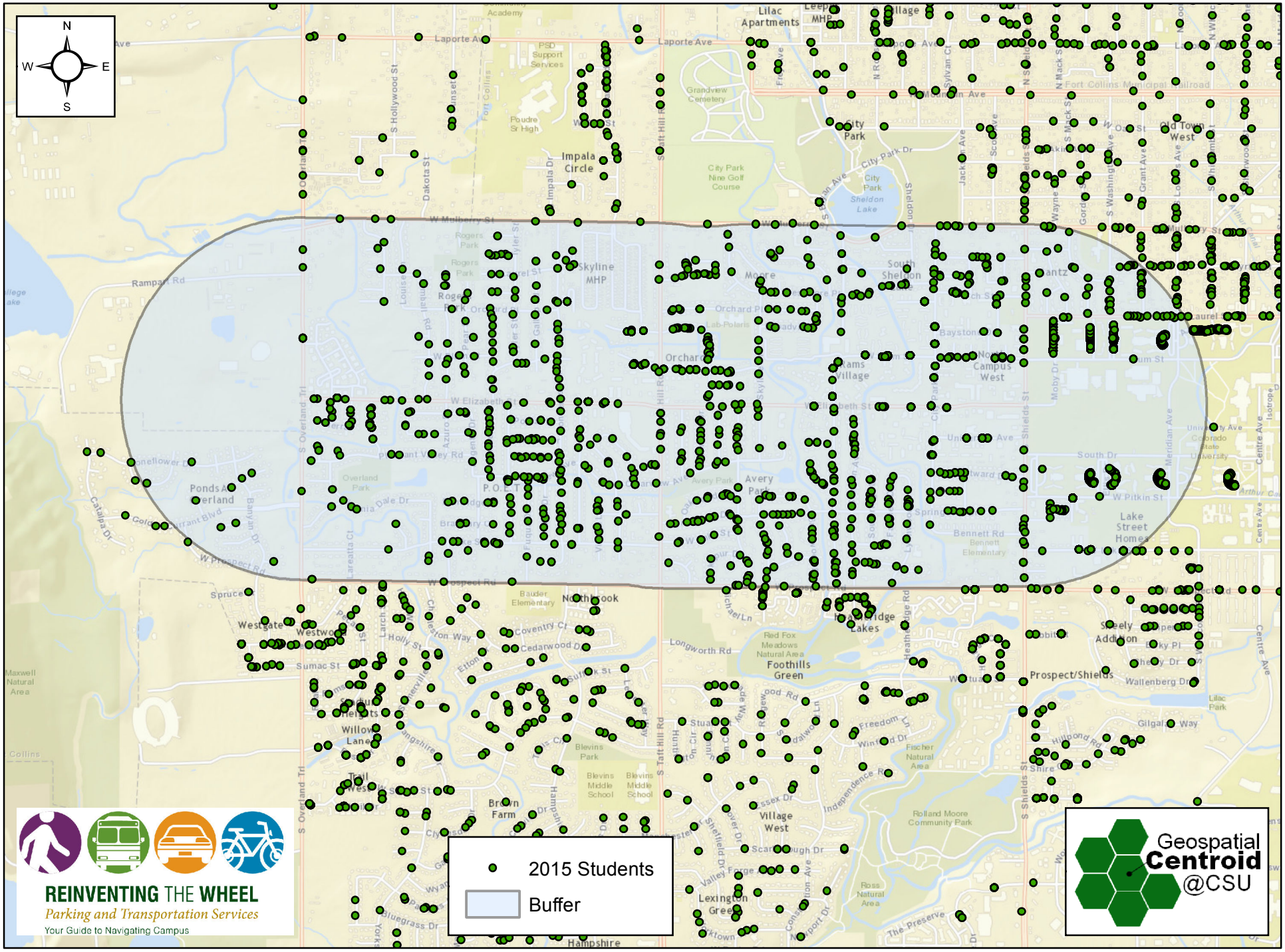
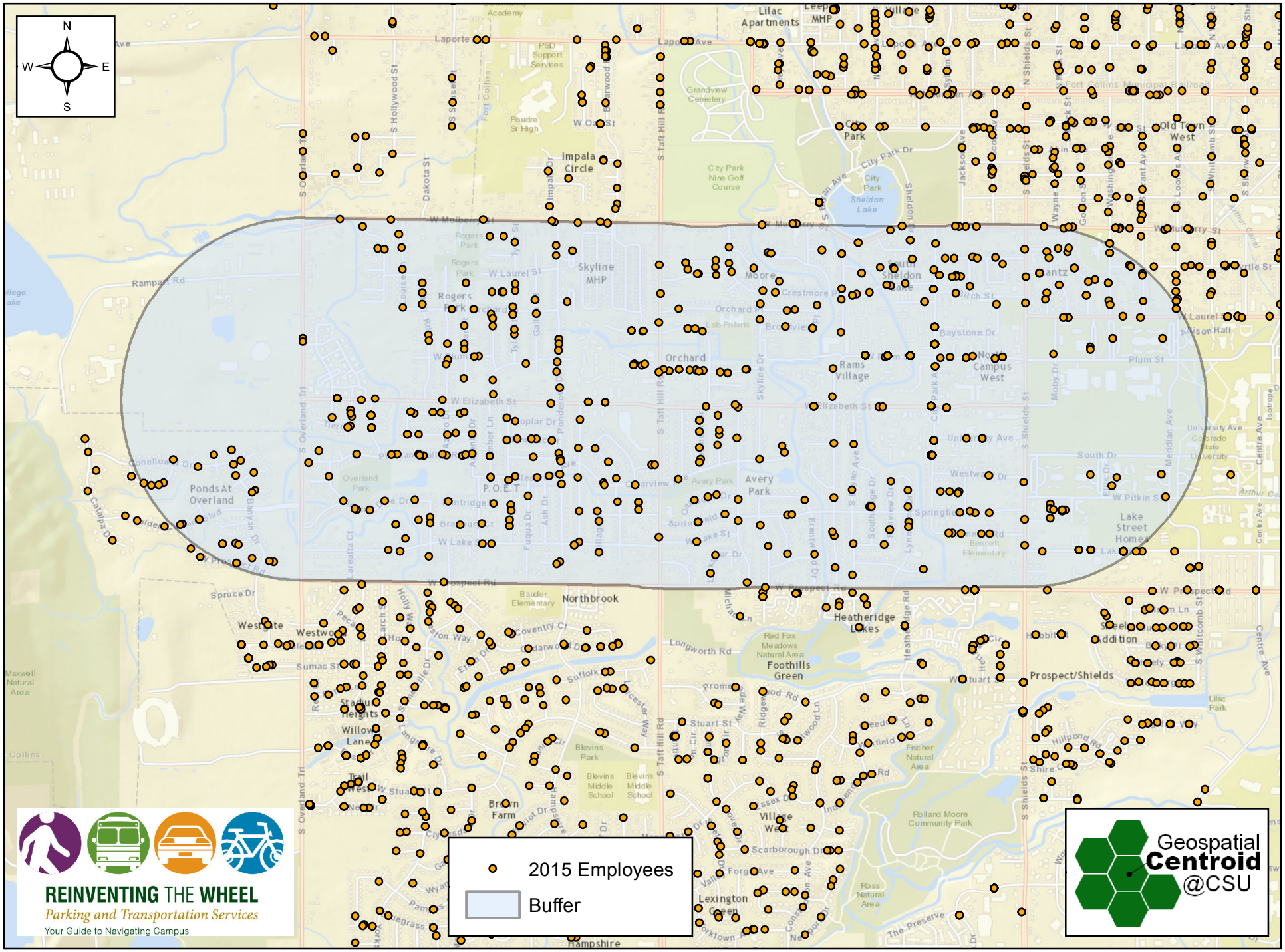
APPENDIX A: CSU STUDENT AND EMPLOYEE RESIDENCE DATA

5,098 Students within West Elizabeth Study Area



Date: 7/14/2015

835 Employees within West Elizabeth Study Area



Date: 7/14/2015

APPENDIX B: TRAFFIC OPERATIONS CALCULATIONS

MOTORIZED VEHICLE DELAY AND LEVEL OF SERVICE

Vissim Post-Processor **WCAP W Elizabeth St**
Average Results from 10 Runs **Existing**
Volume and Delay by Movement **AM Peak Hour**

Intersection 2 **Shields St/W Laurel St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn							
	Through	719	710	98.8%	6.7	1.8	A	87
	Right Turn	413	410	99.2%	9.1	1.7	A	68
	Subtotal	1,132	1,120	98.9%	7.6	1.5	A	155
SB	Left Turn	130	133	102.3%	24.8	4.7	C	61
	Through	667	659	98.8%	11.8	1.1	B	143
	Right Turn							
	Subtotal	797	792	99.4%	14.0	1.3	B	204
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn	128	124	97.0%	45.7	4.9	D	104
	Through							
	Right Turn	61	58	94.9%	9.1	1.8	A	10
	Subtotal	189	182	96.3%	34.4	3.0	C	114
Total		2,118	2,094	98.9%	12.0	1.1	B	472

Intersection 3 **Shields St/W Plum St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	13	13	96.2%	8.0	7.0	A	2
	Through	1,064	1,057	99.4%	3.2	1.2	A	61
	Right Turn	37	39	104.3%	4.2	2.2	A	3
	Subtotal	1,114	1,108	99.5%	3.3	1.1	A	66
SB	Left Turn	13	13	100.8%	25.7	14.6	C	6
	Through	764	756	98.9%	5.5	0.6	A	77
	Right Turn	18	17	93.3%	6.3	3.7	A	2
	Subtotal	795	786	98.8%	5.9	0.7	A	85
EB	Left Turn	51	51	100.6%	59.8	14.9	E	56
	Through	25	32	126.0%	61.7	8.9	E	36
	Right Turn	34	34	98.5%	51.7	13.6	D	32
	Subtotal	110	116	105.7%	58.0	11.3	E	124
WB	Left Turn	17	18	104.7%	39.2	24.2	D	13
	Through	18	26	143.3%	41.1	10.2	D	19
	Right Turn	17	17	98.2%	10.2	6.4	B	3
	Subtotal	52	60	116.0%	33.2	8.4	C	35
Total		2,071	2,071	100.0%	9.4	1.1	A	310

Intersection 4 **Shields St/W Elizabeth St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	140	142	101.1%	27.9	6.6	C	72
	Through	851	841	98.8%	13.1	1.7	B	202
	Right Turn	54	55	101.5%	11.9	3.6	B	12
	Subtotal	1,045	1,038	99.3%	15.1	1.9	B	286
SB	Left Turn	24	24	97.9%	39.9	16.3	D	17
	Through	653	647	99.1%	7.4	2.2	A	88
	Right Turn	138	137	98.9%	3.3	0.7	A	8
	Subtotal	815	807	99.0%	7.7	2.0	A	114
EB	Left Turn	258	263	101.8%	42.9	4.8	D	206
	Through	27	27	100.4%	44.0	8.9	D	22
	Right Turn	296	294	99.4%	32.9	10.9	C	177
	Subtotal	581	584	100.5%	38.3	3.2	D	406
WB	Left Turn	15	14	92.7%	41.6	29.7	D	11
	Through	5	5	92.0%	17.8	25.0	B	1
	Right Turn	5	5	94.0%	8.4	15.5	A	1
	Subtotal	25	23	92.8%	37.8	23.9	D	13
Total		2,466	2,452	99.4%	18.3	1.3	B	819

Intersection 5 **Shields St/Lake St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Total Delay (sec/veh) Average	Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn							
	Through	1,178	1,182	100.4%	3.1	0.7	A	68
	Right Turn	154	150	97.1%	3.7	1.4	A	10
	Subtotal	1,332	1,332	100.0%	3.2	0.7	A	78
SB	Left Turn	123	116	94.1%	37.7	7.5	D	80
	Through	768	752	97.9%	5.2	1.0	A	72
	Right Turn							
	Subtotal	891	868	97.4%	9.6	2.2	A	151
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn	61	61	100.3%	46.3	3.3	D	52
	Through							
	Right Turn	37	35	94.6%	5.1	1.0	A	3
	Subtotal	98	96	98.2%	33.1	2.9	C	55
Total		2,321	2,296	98.9%	7.4	1.2	A	285

Intersection 6 **Shields St/Prospect** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Total Delay (sec/veh) Average	Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	56	53	95.4%	25.6	6.2	C	25
	Through	946	940	99.4%	23.9	3.2	C	412
	Right Turn	136	133	97.6%	17.1	2.6	B	42
	Subtotal	1,138	1,126	99.0%	23.2	3.1	C	479
SB	Left Turn	145	153	105.3%	38.1	10.6	D	107
	Through	630	602	95.6%	7.2	1.3	A	80
	Right Turn	54	55	101.1%	2.5	0.6	A	2
	Subtotal	829	810	97.7%	13.2	2.9	B	189
EB	Left Turn	241	241	99.8%	171.5	47.8	F	756
	Through	713	727	101.9%	151.0	37.8	F	2,011
	Right Turn	152	145	95.1%	109.7	36.5	F	291
	Subtotal	1,106	1,112	100.5%	149.9	38.9	F	3,058
WB	Left Turn	71	71	99.9%	55.7	8.0	E	72
	Through	233	237	101.7%	41.7	5.1	D	181
	Right Turn	145	147	101.1%	32.4	6.7	C	87
	Subtotal	449	455	101.2%	41.1	4.7	D	341
Total		3,522	3,503	99.4%	66.8	14.0	E	4,067

Intersection 8 **City Park Ave/W Elizabeth St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Percent	Total Delay (sec/veh) Average	Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	24	27	110.4%	20.2	8.1	C	10
	Through	33	35	106.1%	20.4	2.5	C	13
	Right Turn	35	36	101.7%	9.3	2.9	A	6
	Subtotal	92	97	105.5%	16.8	3.3	B	29
SB	Left Turn	34	36	105.0%	26.8	8.1	C	18
	Through	32	33	104.1%	0.6	0.5	A	0
	Right Turn	18	25	136.1%	8.0	1.4	A	4
	Subtotal	84	94	111.3%	12.5	4.3	B	22
EB	Left Turn	53	52	97.5%	7.5	2.3	A	7
	Through	441	441	100.0%	5.2	1.1	A	42
	Right Turn	66	68	102.7%	7.5	1.3	A	9
	Subtotal	560	561	100.1%	5.7	1.0	A	59
WB	Left Turn	30	30	99.7%	13.0	4.4	B	7
	Through	160	159	99.1%	4.5	2.0	A	13
	Right Turn	45	42	93.6%	2.5	1.8	A	2
	Subtotal	235	231	98.1%	5.2	1.8	A	22
Total		971	982	101.1%	7.6	1.0	A	131

Vissim Post-Processor **WCAP W Elizabeth St**
Average Results from 10 Runs **Existing**
Volume and Delay by Movement **AM Peak Hour**

Intersection 9 **Constitution Ave/W Elizabeth St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	3	3	106.7%	7.4	7.2	A	0
	Through	4	4	87.5%	11.9	12.5	B	1
	Right Turn	20	20	102.0%	4.9	1.1	A	2
	Subtotal	27	27	100.4%	7.4	2.2	A	3
SB	Left Turn	36	38	105.3%	22.8	5.3	C	16
	Through	9	9	101.1%	26.1	8.1	C	4
	Right Turn	32	38	117.8%	8.5	3.0	A	6
	Subtotal	77	85	110.0%	16.7	3.3	B	26
EB	Left Turn	26	24	92.3%	5.5	2.4	A	2
	Through	499	497	99.7%	4.2	1.2	A	38
	Right Turn	5	5	108.0%	2.4	2.7	A	0
	Subtotal	530	527	99.4%	4.3	1.2	A	41
WB	Left Turn	2	2	75.0%	1.3	2.9	A	0
	Through	150	153	101.7%	3.2	1.9	A	9
	Right Turn	15	22	144.7%	5.8	2.9	A	2
	Subtotal	167	176	105.3%	3.5	1.7	A	11
Total		801	814	101.7%	6.0	1.2	A	82

Intersection 11 **Taft Hill Rd/W Elizabeth St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	51	49	95.3%	16.6	5.1	B	15
	Through	739	740	100.2%	19.5	2.0	B	265
	Right Turn	111	105	94.3%	18.2	2.0	B	35
	Subtotal	901	894	99.2%	19.2	2.0	B	314
SB	Left Turn	91	94	103.7%	23.6	5.0	C	41
	Through	547	550	100.5%	13.8	1.4	B	139
	Right Turn	47	48	102.1%	12.5	4.6	B	11
	Subtotal	685	692	101.1%	15.0	1.5	B	191
EB	Left Turn	121	122	100.8%	32.3	5.1	C	72
	Through	239	243	101.5%	44.9	3.2	D	200
	Right Turn	153	154	100.6%	17.8	4.8	B	50
	Subtotal	513	519	101.1%	33.9	3.6	C	322
WB	Left Turn	100	98	98.3%	29.4	2.5	C	53
	Through	109	116	106.3%	30.7	3.6	C	65
	Right Turn	32	33	103.4%	5.9	2.0	A	4
	Subtotal	241	247	102.6%	27.4	2.7	C	122
Total		2,340	2,352	100.5%	22.1	1.9	C	949

Intersection 12 **Overland Trail/W Elizabeth St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	4	4	97.5%	3.0	1.9	A	0
	Through	455	447	98.2%	0.5	0.1	A	4
	Right Turn	69	68	98.1%	0.9	0.1	A	1
	Subtotal	528	519	98.2%	0.6	0.1	A	6
SB	Left Turn	33	38	115.2%	7.7	1.9	A	5
	Through	272	282	103.5%	0.4	0.1	A	2
	Right Turn	10	10	103.0%	0.4	0.2	A	0
	Subtotal	315	330	104.7%	1.2	0.3	A	8
EB	Left Turn	11	12	108.2%	9.5	4.0	A	2
	Through	1	1	100.0%	0.7	2.1	A	0
	Right Turn	1	1	60.0%	1.0	2.1	A	0
	Subtotal	13	14	103.8%	9.3	4.0	A	2
WB	Left Turn	51	56	109.0%	23.0	8.6	C	23
	Through	4	4	95.0%	6.1	6.0	A	0
	Right Turn	65	64	98.5%	15.2	6.1	C	18
	Subtotal	120	123	102.8%	19.0	7.6	C	42
Total		976	985	101.0%	3.2	1.0	A	57

Intersection 2 **Shields St/W Laurel St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn							
	Through	858	840	97.9%	6.9	2.0	A	107
	Right Turn	428	422	98.5%	8.9	1.7	A	69
	Subtotal	1,286	1,261	98.1%	7.6	1.7	A	176
SB	Left Turn	99	96	97.3%	48.6	10.1	D	86
	Through	971	932	96.0%	17.5	1.9	B	298
	Right Turn							
	Subtotal	1,070	1,028	96.1%	20.7	2.1	C	384
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn	497	495	99.5%	65.5	11.3	E	594
	Through							
	Right Turn	154	151	97.8%	38.1	12.3	D	105
	Subtotal	651	645	99.1%	59.7	11.3	E	699
Total		3,007	2,935	97.6%	24.0	3.3	C	1259

Intersection 3 **Shields St/W Plum St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	70	62	88.6%	129.0	63.7	F	147
	Through	1,205	1,189	98.6%	3.8	0.6	A	82
	Right Turn	56	60	107.0%	3.2	1.6	A	3
	Subtotal	1,331	1,310	98.5%	10.2	5.2	B	232
SB	Left Turn	18	16	90.0%	38.0	13.3	D	11
	Through	1,390	1,354	97.4%	8.7	3.4	A	216
	Right Turn	60	57	95.5%	6.6	2.8	A	7
	Subtotal	1,468	1,427	97.2%	9.0	3.3	A	234
EB	Left Turn	59	54	92.0%	70.3	18.8	E	70
	Through	23	26	113.5%	73.5	23.4	E	35
	Right Turn	61	59	97.0%	73.1	25.6	E	79
	Subtotal	143	140	97.6%	72.7	20.6	E	185
WB	Left Turn	56	50	90.0%	64.7	40.5	E	60
	Through	24	28	117.1%	63.1	25.7	E	33
	Right Turn	22	20	90.0%	27.5	12.7	C	10
	Subtotal	102	98	96.4%	56.6	32.9	E	102
Total		3,044	2,976	97.8%	14.0	3.6	B	754

Intersection 4 **Shields St/W Elizabeth St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	273	252	92.4%	122.8	43.6	F	568
	Through	1,001	983	98.2%	39.2	21.5	D	707
	Right Turn	57	57	100.7%	28.5	17.6	C	30
	Subtotal	1,331	1,292	97.1%	54.0	25.7	D	1305
SB	Left Turn	10	8	82.0%	40.9	27.7	D	6
	Through	1,067	1,036	97.1%	25.4	6.8	C	483
	Right Turn	430	412	95.7%	16.5	4.9	B	125
	Subtotal	1,507	1,456	96.6%	23.1	6.0	C	614
EB	Left Turn	324	326	100.7%	59.2	6.7	E	354
	Through	48	46	95.8%	63.9	11.7	E	54
	Right Turn	379	355	93.7%	60.8	19.7	E	396
	Subtotal	751	727	96.9%	60.7	10.3	E	804
WB	Left Turn	61	63	103.3%	41.0	10.4	D	47
	Through	36	35	96.9%	46.5	8.9	D	30
	Right Turn	6	4	73.3%	13.0	14.7	B	1
	Subtotal	103	102	99.3%	43.0	6.9	D	78
Total		3,692	3,578	96.9%	41.7	8.6	D	2801

Intersection 5 **Shields St/Lake St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn							
	Through	1,268	1,261	99.4%	2.8	0.5	A	65
	Right Turn	52	51	98.8%	2.8	1.3	A	3
	Subtotal	1,320	1,312	99.4%	2.8	0.5	A	68
SB	Left Turn	92	90	97.4%	40.0	9.2	D	66
	Through	1,360	1,300	95.6%	16.1	5.6	B	384
	Right Turn							
	Subtotal	1,452	1,389	95.7%	17.6	5.6	B	450
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn	117	117	99.8%	48.8	8.6	D	104
	Through							
	Right Turn	157	155	98.7%	8.1	1.7	A	23
	Subtotal	274	272	99.2%	26.6	5.3	C	127
Total		3,046	2,973	97.6%	12.2	3.1	B	645

Intersection 6 **Shields St/Prospect** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	160	159	99.1%	53.1	4.6	D	154
	Through	908	901	99.2%	34.5	5.0	C	570
	Right Turn	137	135	98.5%	22.9	3.4	C	57
	Subtotal	1,205	1,195	99.1%	35.9	4.3	D	781
SB	Left Turn	218	220	101.0%	55.3	14.2	E	223
	Through	1,080	1,015	94.0%	23.7	6.1	C	441
	Right Turn	179	170	94.9%	14.4	5.6	B	45
	Subtotal	1,477	1,405	95.1%	28.0	5.8	C	709
EB	Left Turn	158	154	97.4%	57.5	6.2	E	162
	Through	396	395	99.7%	41.2	3.7	D	298
	Right Turn	159	163	102.2%	19.4	2.6	B	58
	Subtotal	713	711	99.8%	39.5	3.0	D	518
WB	Left Turn	196	181	92.2%	111.4	12.8	F	369
	Through	637	624	97.9%	97.5	13.1	F	1115
	Right Turn	254	251	98.9%	98.8	12.2	F	455
	Subtotal	1,087	1,056	97.1%	100.2	12.1	F	1939
Total		4,482	4,367	97.4%	50.6	3.1	D	3948

Intersection 8 **City Park Ave/W Elizabeth St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	155	155	100.0%	34.4	10.7	C	98
	Through	107	106	99.3%	24.9	6.9	C	49
	Right Turn	87	87	100.5%	20.3	9.0	C	33
	Subtotal	349	349	99.9%	28.1	9.2	C	179
SB	Left Turn	73	74	100.7%	23.1	9.5	C	31
	Through	101	103	101.8%	2.8	2.0	A	5
	Right Turn	51	56	109.6%	13.9	3.0	B	14
	Subtotal	225	232	103.2%	12.1	4.9	B	51
EB	Left Turn	61	60	98.0%	18.7	3.7	B	21
	Through	508	501	98.6%	7.9	0.6	A	72
	Right Turn	96	96	99.5%	10.3	1.3	B	18
	Subtotal	665	656	98.7%	9.3	0.7	A	111
WB	Left Turn	89	84	94.8%	28.2	5.3	C	44
	Through	491	463	94.3%	9.5	1.0	A	80
	Right Turn	77	73	94.7%	9.9	1.7	A	13
	Subtotal	657	620	94.4%	12.0	1.2	B	137
Total		1,896	1,857	98.0%	14.5	2.4	B	477

Intersection 9 **Constitution Ave/W Elizabeth St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	2	2	85.0%	6.3	11.8	A	0
	Through	26	25	94.2%	22.8	8.8	C	10
	Right Turn	35	35	98.6%	6.7	3.5	A	4
	Subtotal	63	61	96.3%	13.2	3.2	B	15
SB	Left Turn	36	36	100.6%	25.4	8.2	C	17
	Through	22	20	90.9%	20.4	7.4	C	7
	Right Turn	74	81	108.8%	12.6	2.6	B	19
	Subtotal	132	137	103.6%	17.1	3.3	B	43
EB	Left Turn	47	46	98.5%	26.3	14.4	C	22
	Through	531	524	98.7%	5.8	1.1	A	56
	Right Turn	6	7	115.0%	3.2	3.1	A	0
	Subtotal	584	578	98.9%	7.4	1.8	A	78
WB	Left Turn	39	40	103.3%	8.5	3.4	A	6
	Through	622	586	94.2%	8.8	3.7	A	95
	Right Turn	47	52	111.5%	10.2	4.2	B	10
	Subtotal	708	679	95.9%	8.9	3.5	A	111
Total		1,487	1,454	97.8%	9.0	2.3	A	247

Intersection 11 **Taft Hill Rd/W Elizabeth St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	136	131	96.0%	33.9	4.4	C	81
	Through	577	578	100.2%	20.6	2.2	C	219
	Right Turn	129	125	97.1%	17.0	2.8	B	39
	Subtotal	842	834	99.0%	22.3	1.8	C	339
SB	Left Turn	106	107	100.8%	47.3	14.7	D	93
	Through	768	747	97.3%	32.7	6.9	C	448
	Right Turn	84	86	101.9%	34.6	9.1	C	54
	Subtotal	958	939	98.1%	34.5	7.6	C	595
EB	Left Turn	162	158	97.5%	56.9	19.1	E	165
	Through	305	308	100.8%	47.2	6.4	D	266
	Right Turn	121	115	95.0%	27.9	8.5	C	59
	Subtotal	588	580	98.7%	46.2	10.0	D	490
WB	Left Turn	178	164	92.2%	53.6	17.8	D	161
	Through	319	308	96.4%	41.4	9.8	D	233
	Right Turn	77	75	97.3%	10.3	4.2	B	14
	Subtotal	574	547	95.2%	41.4	10.2	D	409
Total		2,962	2,900	97.9%	34.3	4.0	C	1832

Intersection 12 **Overland Trail/W Elizabeth St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS	Total Person Delay (min)
NB	Left Turn	2	2	95.0%	3.4	4.6	A	0
	Through	322	319	99.0%	0.5	0.1	A	3
	Right Turn	83	80	96.9%	1.1	0.2	A	2
	Subtotal	407	401	98.6%	0.6	0.1	A	4
SB	Left Turn	73	75	102.7%	4.5	1.1	A	6
	Through	537	539	100.3%	0.6	0.1	A	5
	Right Turn	7	9	125.7%	0.7	0.4	A	0
	Subtotal	617	622	100.9%	1.0	0.2	A	12
EB	Left Turn	2	3	140.0%	8.4	11.2	A	0
	Through							
	Right Turn	3	3	96.7%	2.5	2.6	A	0
	Subtotal	5	6	114.0%	7.5	10.0	A	1
WB	Left Turn	69	67	97.1%	26.8	7.0	D	33
	Through	5	6	124.0%	8.0	7.2	A	1
	Right Turn	67	64	96.1%	10.3	2.5	B	12
	Subtotal	141	138	97.6%	18.1	3.9	C	46
Total		1,170	1,167	99.7%	3.1	0.6	A	63

TRANSIT INTERSECTION DELAY

AM PEAK HOUR

Vissim Post-Processor **Transit** **AM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 2 **Shields St/W Laurel St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through							
	Right Turn	2	101	2	100.0%	0.0	0.0	0.0
	Subtotal	2	101	2	100.0%	0.0	0.0	0.0
SB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn	2	19	2	100.0%	52.8	5.1	4.2
	Through							
	Right Turn							
	Subtotal	2	19	2	100.0%	52.8	5.1	4.2
Total		4	120	4	100.0%	35.2	3.4	4.2

Intersection 3 **Shields St/W Plum St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through	2	101	2	100.0%	0.0	0.0	0.0
	Right Turn	3	205	3	100.0%	11.5	9.0	9.8
	Subtotal	5	306	5	100.0%	11.5	9.0	9.8
SB	Left Turn							
	Through	2	19	2	100.0%	16.4	2.9	1.3
	Right Turn							
	Subtotal	2	19	2	100.0%	16.4	2.9	1.3
EB	Left Turn							
	Through	6	490	6	100.0%	78.6	40.5	160.4
	Right Turn							
	Subtotal	6	490	6	100.0%	78.6	40.5	160.4
WB	Left Turn	2	16	2	100.0%	92.4	6.6	6.2
	Through	8	58	8	100.0%	55.0	36.0	13.3
	Right Turn							
	Subtotal	10	74	10	100.0%	67.4	22.9	19.4
Total		23	889	23	100.0%	51.5	15.9	191.0

Intersection 4 **Shields St/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through	2	101	2	100.0%	43.2	29.0	18.2
	Right Turn							
	Subtotal	2	101	2	100.0%	43.2	29.0	18.2
SB	Left Turn							
	Through	2	19	2	100.0%	0.0	0.0	0.0
	Right Turn	2	16	2	100.0%	0.0	0.0	0.0
	Subtotal	4	35	4	100.0%	0.0	0.0	0.0
EB	Left Turn	3	205	3	100.0%	45.8	32.0	39.1
	Through							
	Right Turn							
	Subtotal	3	205	3	100.0%	45.8	32.0	39.1
WB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
Total		9	341	9	100.0%	29.7	13.1	57.3

Vissim Post-Processor **Transit** **AM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 5 **Shields St/Lake St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn Through Right Turn	2	243	2	100.0%	0.0	0.0	0.0
	Subtotal	2	243	2	100.0%	0.0	0.0	0.0
SB	Left Turn Through Right Turn	2	25	2	100.0%	3.4	3.3	0.4
	Subtotal	2	25	2	100.0%	3.4	3.3	0.4
EB	Left Turn Through Right Turn							
	Subtotal							
WB	Left Turn Through Right Turn							
	Subtotal							
Total		4	268	4	100.0%	2.2	2.2	0.4

Intersection 6 **Shields St/Prospect**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn Through Right Turn	2	103	2	100.0%	55.1	9.3	23.6
	Subtotal	2	103	2	100.0%	55.1	9.3	23.6
SB	Left Turn Through Right Turn	2	25	2	100.0%	0.0	0.0	0.0
	Subtotal	2	25	2	100.0%	0.0	0.0	0.0
EB	Left Turn Through Right Turn	2	139	2	100.0%	171.5	47.8	99.3
	Subtotal		139					99.3
WB	Left Turn Through Right Turn							
	Subtotal							
Total		4	267	4	100.0%	36.7	6.2	123.0

Intersection 8 **City Park Ave/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn Through Right Turn							
	Subtotal							
SB	Left Turn Through Right Turn	6	154	6	100.0%	30.3	10.0	19.4
	Subtotal	6	154	6	100.0%	30.3	10.0	19.4
EB	Left Turn Through Right Turn	3	201	3	100.0%	18.2	10.6	15.2
	Subtotal	3	201	3	100.0%	18.2	10.6	15.2
WB	Left Turn Through Right Turn	2	16	2	100.0%	15.3	9.2	1.0
	Subtotal	2	16	2	100.0%	15.3	9.2	1.0
Total		11	371	11	100.0%	23.6	6.8	35.7

Vissim Post-Processor **Transit** **AM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 9 **Constitution Ave/W Elizabeth St**

Direction	Movement	Demand		Served Volume (vph)		Total Delay (sec/veh)		Total Person Delay (min)
		Volume (vph)	Riders (pp4h)	Average	Percent	Average	Std. Dev.	
NB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
SB	Left Turn							
	Through							
	Right Turn	2	12	2	100.0%	12.4	10.0	0.6
	Subtotal	2	12	2	100.0%	12.4	10.0	0.6
EB	Left Turn							
	Through	3	196	3	100.0%	26.5	29.7	21.7
	Right Turn							
	Subtotal	3	196	3	100.0%	26.5	29.7	21.7
WB	Left Turn							
	Through	2	19	2	100.0%	19.9	9.8	1.6
	Right Turn	6	198	6	100.0%	12.6	5.4	10.4
	Subtotal	8	217	8	100.0%	15.0	5.3	12.0
Total		13	425	13	100.0%	17.0	8.1	34.2

Intersection 11 **Taft Hill Rd/W Elizabeth St**

Direction	Movement	Demand		Served Volume (vph)		Total Delay (sec/veh)		Total Person Delay (min)
		Volume (vph)	Riders (pp4h)	Average	Percent	Average	Std. Dev.	
NB	Left Turn							
	Through	1	38	1	100.0%	19.5	2.0	3.1
	Right Turn							
	Subtotal		38					3.1
SB	Left Turn							
	Through	1	9	1	100.0%	13.8	1.4	0.5
	Right Turn							
	Subtotal		9					0.5
EB	Left Turn							
	Through	4	160	4	100.0%	85.2	13.4	56.8
	Right Turn							
	Subtotal	4	160	4	100.0%	85.2	13.4	56.8
WB	Left Turn							
	Through	4	29	4	102.5%	46.4	16.1	5.6
	Right Turn							
	Subtotal	4	29	4	102.5%	46.4	16.1	5.6
Total		8	236	8	101.3%	60.0	14.2	66.0

Intersection 12 **Overland Trail/W Elizabeth St**

Direction	Movement	Demand		Served Volume (vph)		Total Delay (sec/veh)		Total Person Delay (min)
		Volume (vph)	Riders (pp4h)	Average	Percent	Average	Std. Dev.	
NB	Left Turn							
	Through							
	Right Turn	2	26	2	100.0%	0.0	0.0	0.0
	Subtotal	2	26	2	100.0%	0.0	0.0	0.0
SB	Left Turn	2	7	2	100.0%	12.6	8.9	0.4
	Through							
	Right Turn							
	Subtotal	2	7	2	100.0%	12.6	8.9	0.4
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn	2	65	2	100.0%	0.0	0.0	0.0
	Through							
	Right Turn	2	16	2	100.0%	64.8	26.8	4.3
	Subtotal	4	81	4	100.0%	64.8	26.8	4.3
Total		8	114	8	100.0%	31.0	10.8	4.7

PM PEAK HOUR

Vissim Post-Processor **Transit** **PM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 2 **Shields St/W Laurel St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through							
	Right Turn	2	19	2	100.0%	0.0	0.0	0.0
	Subtotal	2	19	2	100.0%	0.0	0.0	0.0
SB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn	2	73	2	100.0%	96.2	48.1	29.2
	Through							
	Right Turn							
	Subtotal	2	73	2	100.0%	96.2	48.1	29.2
Total		4	92	4	100.0%	64.1	32.1	29.2

Intersection 3 **Shields St/W Plum St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through	2	18	2	100.0%	0.0	0.0	0.0
	Right Turn	3	62	3	100.0%	4.6	5.1	1.2
	Subtotal	5	80	5	100.0%	4.6	5.1	1.2
SB	Left Turn							
	Through	2	73	2	100.0%	18.8	15.1	5.7
	Right Turn							
	Subtotal	2	73	2	100.0%	18.8	15.1	5.7
EB	Left Turn							
	Through	6	211	6	100.0%	116.6	51.6	102.5
	Right Turn							
	Subtotal	6	211	6	100.0%	116.6	51.6	102.5
WB	Left Turn	2	90	2	100.0%	120.3	37.5	45.1
	Through	8	795	8	100.0%	64.3	28.1	212.9
	Right Turn							
	Subtotal	10	885	10	100.0%	83.0	28.2	258.1
Total		23	1,249	23	100.0%	64.8	12.4	367.5

Intersection 4 **Shields St/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through	2	18	2	100.0%	74.3	24.1	5.6
	Right Turn							
	Subtotal	2	18	2	100.0%	74.3	24.1	5.6
SB	Left Turn							
	Through	2	73	2	100.0%	0.0	0.0	0.0
	Right Turn	2	90	2	100.0%	0.0	0.0	0.0
	Subtotal	4	163	4	100.0%	0.0	0.0	0.0
EB	Left Turn	3	62	3	100.0%	48.0	34.4	12.4
	Through							
	Right Turn							
	Subtotal	3	62	3	100.0%	48.0	34.4	12.4
WB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
Total		9	243	9	100.0%	40.8	16.3	18.0

Vissim Post-Processor **Transit** **PM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 5 **Shields St/Lake St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through	2	124	2	100.0%	0.0	0.0	0.0
	Right Turn							
	Subtotal	2	124	2	100.0%	0.0	0.0	0.0
SB	Left Turn							
	Through	2	75	2	100.0%	29.4	15.5	9.2
	Right Turn							
	Subtotal	2	75	2	100.0%	29.4	15.5	9.2
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
Total		4	199	4	100.0%	19.6	10.3	9.2

Intersection 6 **Shields St/Prospect**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through	2	26	2	100.0%	0.0	0.0	0.0
	Right Turn							
	Subtotal	2	26	2	100.0%	0.0	0.0	0.0
SB	Left Turn							
	Through	2	75	2	100.0%	35.6	39.9	11.1
	Right Turn							
	Subtotal	2	75	2	100.0%	35.6	39.9	11.1
EB	Left Turn	2	99	2	100.0%	57.5	6.2	23.7
	Through							
	Right Turn							
	Subtotal		99					23.7
WB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
Total		4	200	4	100.0%	23.8	26.6	34.8

Intersection 8 **City Park Ave/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
SB	Left Turn							
	Through							
	Right Turn	6	365	6	100.0%	76.5	11.0	116.3
	Subtotal	6	365	6	100.0%	76.5	11.0	116.3
EB	Left Turn							
	Through	3	71	3	100.0%	27.9	10.1	8.2
	Right Turn							
	Subtotal	3	71	3	100.0%	27.9	10.1	8.2
WB	Left Turn							
	Through	2	90	2	100.0%	15.2	5.0	5.7
	Right Turn							
	Subtotal	2	90	2	100.0%	15.2	5.0	5.7
Total		11	526	11	100.0%	49.0	6.9	130.3

Vissim Post-Processor **Transit** **PM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 9 **Constitution Ave/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
SB	Left Turn							
	Through							
	Right Turn	2	199	2	100.0%	43.2	18.1	35.8
	Subtotal	2	199	2	100.0%	43.2	18.1	35.8
EB	Left Turn							
	Through	3	74	3	100.0%	27.0	13.2	8.3
	Right Turn							
	Subtotal	3	74	3	100.0%	27.0	13.2	8.3
WB	Left Turn							
	Through	2	88	2	95.0%	27.6	26.6	10.1
	Right Turn	6	316	6	98.3%	16.7	8.8	22.0
	Subtotal	8	404	8	97.5%	20.6	7.9	32.1
Total		13	677	13	98.5%	27.6	6.3	76.2

Intersection 11 **Taft Hill Rd/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through		14	1	100.0%	20.6	2.2	1.2
	Right Turn							
	Subtotal		14					1.2
SB	Left Turn							
	Through		13	1	100.0%	32.7	6.9	1.8
	Right Turn							
	Subtotal		13					1.8
EB	Left Turn							
	Through	4	71	4	92.5%	106.7	26.6	31.6
	Right Turn							
	Subtotal	4	71	4	92.5%	106.7	26.6	31.6
WB	Left Turn							
	Through	4	261	4	100.0%	50.5	24.5	54.9
	Right Turn							
	Subtotal	4	261	4	100.0%	50.5	24.5	54.9
Total		8	359	8	96.3%	81.8	18.0	89.4

Intersection 12 **Overland Trail/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Demand Riders (pp4h)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn							
	Through							
	Right Turn	2	59	2	100.0%	0.0	0.0	0.0
	Subtotal	2	59	2	100.0%	0.0	0.0	0.0
SB	Left Turn	2	6	2	100.0%	12.1	6.8	0.3
	Through							
	Right Turn							
	Subtotal	2	6	2	100.0%	12.1	6.8	0.3
EB	Left Turn							
	Through							
	Right Turn							
	Subtotal							
WB	Left Turn	2	55	2	95.0%	12.1	25.4	2.8
	Through							
	Right Turn	2	7	2	100.0%	57.1	4.9	1.7
	Subtotal	4	62	4	97.5%	57.8	4.5	4.4
Total		8	127	8	98.8%	29.7	4.8	4.7

BICYCLE INTERSECTION DELAY

AM PEAK HOUR

Vissim Post-Processor **Bicycle** **AM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 2 **Shields St/W Laurel St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn						
	Through	10	23	232.0%	8.3	3.9	1.4
	Right Turn	5	4	82.0%	0.1	0.5	0.0
	Subtotal	15	27	182.0%	7.1	3.1	1.4
SB	Left Turn	15	12	77.3%	16.8	11.1	4.2
	Through	4	3	65.0%	2.6	5.6	0.2
	Right Turn						
	Subtotal	19	14	74.7%	15.1	9.2	4.4
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	5	4	78.0%	34.4	31.6	2.9
	Through						
	Right Turn						
	Subtotal	5	4	78.0%	34.4	31.6	2.9
Total		39	45	116.4%	12.3	4.5	8.6

Intersection 3 **Shields St/W Plum St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Delay (min)
NB	Left Turn						
	Through	14	12	84.3%	6.7	10.4	1.6
	Right Turn	5	4	82.0%	0.0	0.0	0.0
	Subtotal	19	16	83.7%	6.7	10.4	1.6
SB	Left Turn	3	3	86.7%	7.9	13.5	0.4
	Through	5	3	60.0%	0.1	0.4	0.0
	Right Turn	1	1	90.0%	0.0	0.0	0.0
	Subtotal	9	7	72.2%	4.4	6.7	0.4
EB	Left Turn	1	1	100.0%	8.4	26.5	0.1
	Through	140	138	98.6%	36.0	3.2	84.0
	Right Turn	2	2	90.0%	8.8	16.1	0.3
	Subtotal	143	141	98.5%	35.9	3.2	84.4
WB	Left Turn						
	Through	7	4	55.7%	19.5	27.5	2.3
	Right Turn						
	Subtotal	7	4	55.7%	19.5	27.5	2.3
Total		178	167	93.9%	31.8	3.1	88.7

Intersection 4 **Shields St/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Delay (min)
NB	Left Turn	1	1	80.0%	3.1	6.4	0.1
	Through	6	12	196.7%	3.4	4.2	0.3
	Right Turn	9	9	102.2%	0.4	1.0	0.1
	Subtotal	16	22	136.3%	2.5	2.7	0.5
SB	Left Turn	4	4	87.5%	12.6	16.5	0.8
	Through	2	0	15.0%	0.0	0.0	0.0
	Right Turn	1	1	110.0%	0.0	0.0	0.0
	Subtotal	7	5	70.0%	10.4	15.5	0.8
EB	Left Turn	8	7	87.5%	29.2	31.0	3.9
	Through	112	140	125.0%	45.5	12.7	85.0
	Right Turn	2	2	100.0%	17.3	29.7	0.6
	Subtotal	122	149	122.1%	45.1	12.7	89.5
WB	Left Turn	3	2	66.7%	26.1	31.1	1.3
	Through	6	6	95.0%	37.4	28.2	3.7
	Right Turn	5	4	82.0%	0.7	1.1	0.1
	Subtotal	14	12	84.3%	28.1	18.7	5.1
Total		159	188	117.9%	38.3	10.2	95.9

Vissim Post-Processor **Bicycle** **AM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 5 **Shields St/Lake St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Delay (min)
NB	Left Turn						
	Through	11	12	107.3%	6.7	10.4	1.2
	Right Turn	52	67	128.5%	0.6	0.8	0.5
	Subtotal	63	79	124.8%	1.1	1.0	1.7
SB	Left Turn	1	1	80.0%	0.5	1.7	0.0
	Through	6	4	63.3%	5.1	8.1	0.5
	Right Turn						
	Subtotal	7	5	65.7%	5.6	7.9	0.5
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	8	7	90.0%	44.9	23.6	6.0
	Through						
	Right Turn	7	5	72.9%	7.2	7.8	0.8
	Subtotal	15	12	82.0%	34.7	21.4	6.8
Total		85	96	112.4%	5.4	2.6	9.0

Intersection 6 **Shields St/Prospect**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Delay (min)
NB	Left Turn						
	Through	41	54	131.0%	15.7	5.5	10.7
	Right Turn						
	Subtotal	41	54	131.0%	15.7	5.5	10.7
SB	Left Turn	1	1	110.0%	5.9	9.7	0.1
	Through	13	9	71.5%	2.1	4.7	0.5
	Right Turn						
	Subtotal	14	10	74.3%	3.1	4.7	0.6
EB	Left Turn	22	25	113.2%	62.9	20.9	23.1
	Through	10	15	149.5%	85.8	36.8	14.3
	Right Turn	4	7	166.3%	55.8	36.8	3.7
	Subtotal	36	68	189.2%	75.5	16.8	41.1
WB	Left Turn						
	Through	1	0	0.0%	0.0	0.0	0.0
	Right Turn						
	Subtotal	1	0	0.0%	0.0	0.0	0.0
Total		92	132	143.7%	44.3	7.1	52.4

Intersection 8 **City Park Ave/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Delay (min)
NB	Left Turn						
	Through	6	7	110.0%	16.0	13.1	1.6
	Second Right						
	Subtotal	27	29	105.6%	7.5	2.9	1.6
SB	Left Turn	6	8	126.7%	17.4	15.0	1.7
	Through	2	3	135.0%	0.7	1.7	0.0
	Second Right						
	Subtotal	8	10	128.8%	12.4	13.9	1.8
EB	Left Turn	2	1	50.0%	0.2	0.7	0.0
	Through	93	116	124.5%	11.0	2.7	17.0
	Second Right						
	Subtotal	97	130	134.3%	10.8	2.5	17.0
WB	Left Turn						
	Through	3	3	106.7%	4.0	7.0	0.2
	Second Right						
	Subtotal	6	5	88.3%	3.4	5.7	0.2
Total		138	174	126.4%	10.3	2.6	20.6

Vissim Post-Processor **Bicycle** **AM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 9 **Constitution Ave/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Delay (min)
NB	Left Turn	1	1	60.0%	0.0	0.0	0.0
	Through	1	0	30.0%	0.0	0.0	0.0
	Right Turn	5	3	50.0%	2.1	1.8	0.2
	Subtotal	7	3	48.6%	2.1	1.8	0.2
SB	Left Turn	1	6	600.0%	17.6	10.8	0.3
	Through	1	6	560.0%	18.5	10.1	0.3
	Right Turn						
	Subtotal	2	23	1160.0%	20.1	8.1	0.6
EB	Left Turn	1	1	120.0%	2.0	5.4	0.0
	Through	62	61	98.5%	12.1	6.4	12.5
	Right Turn						
	Subtotal	63	62	98.9%	12.0	6.5	12.6
WB	Left Turn						
	Through	3	3	103.3%	1.2	2.6	0.1
	Right Turn						
	Subtotal	3	3	103.3%	1.2	2.6	0.1
Total		75	92	122.7%	12.72	4.4	13.4

Intersection 11 **Taft Hill Rd/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Delay (min)
NB	Left Turn						
	Through	4	4	90.0%	11.9	16.8	0.8
	Right Turn	2	2	85.0%	8.4	14.5	0.3
	Subtotal	6	5	88.3%	13.8	12.8	1.1
SB	Left Turn	2	2	90.0%	4.7	13.7	0.2
	Through	1	1	50.0%	0.0	0.0	0.0
	Right Turn						
	Subtotal	3	2	76.7%	4.7	13.7	0.2
EB	Left Turn						
	Through	57	57	99.3%	35.6	9.4	33.8
	Right Turn						
	Subtotal	57	57	99.3%	35.6	9.4	33.8
WB	Left Turn	2	1	25.0%	4.6	14.4	0.2
	Through						
	Right Turn	1	2	150.0%	0.7	1.4	0.0
	Subtotal	3	2	66.7%	3.7	9.5	0.2
Total		69	66	95.9%	30.7	7.5	35.2

Intersection 12 **Overland Trail/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Delay (min)
NB	Left Turn						
	Through	14	15	105.0%	0.0	0.1	0.0
	Right Turn						
	Subtotal	14	15	105.0%	0.0	0.1	0.0
SB	Left Turn						
	Through	5	5	100.0%	0.0	0.0	0.0
	Right Turn						
	Subtotal	5	5	100.0%	0.0	0.0	0.0
EB	Left Turn	1	1	120.0%	0.8	1.7	0.0
	Through						
	Right Turn						
	Subtotal	1	1	120.0%	0.8	1.7	0.0
WB	Left Turn	1	0	0.0%	0.0	0.0	0.0
	Through	1	1	120.0%	3.9	9.7	0.1
	Right Turn	3	0	0.0%	0.0	0.0	0.0
	Subtotal	5	1	24.0%	3.9	9.7	0.1
Total		25	22	88.4%	0.8	1.7	0.1

PM PEAK HOUR

Vissim Post-Processor **Bicycle** **PM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 2 **Shields St/W Laurel St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn						
	Through	3	4	126.7%	9.6	11.6	0.5
	Right Turn	5	4	82.0%	0.5	0.9	0.0
	Subtotal	8	8	98.8%	6.8	7.9	0.5
SB	Left Turn	1	0	0.0%	0.0	0.0	0.0
	Through	1	0	0.0%	0.0	0.0	0.0
	Right Turn						
	Subtotal	2	0	0.0%	0.0	0.0	0.0
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	6	5	81.7%	31.8	32.9	3.2
	Through						
	Right Turn	7	7	95.7%	13.4	13.6	1.6
	Subtotal	13	12	89.2%	28.2	20.3	4.7
Total		23	20	84.8%	17.7	9.4	5.3

Intersection 3 **Shields St/W Plum St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn	1	2	240.0%	143.0	171.5	2.4
	Through	7	5	71.4%	3.4	6.3	0.4
	Right Turn	3	1	26.7%	1.7	5.3	0.1
	Subtotal	11	8	74.5%	87.2	114.6	2.9
SB	Left Turn						
	Through	5	3	64.0%	1.2	2.5	0.1
	Right Turn	2	2	90.0%	0.7	1.5	0.0
	Subtotal	7	5	71.4%	1.5	1.7	0.1
EB	Left Turn	1	2	150.0%	9.9	21.9	0.2
	Through	36	35	97.5%	37.2	11.8	22.3
	Right Turn						
	Subtotal	37	37	98.9%	36.2	11.9	22.5
WB	Left Turn	2	2	100.0%	25.9	53.7	0.9
	Through	119	118	98.7%	45.6	17.9	90.4
	Right Turn						
	Subtotal	121	120	98.8%	46.4	20.2	91.2
Total		176	169	96.2%	43.81	11.0	116.68

Intersection 4 **Shields St/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn	2	2	85.0%	24.1	39.5	1
	Through	9	5	55.6%	3.4	6.3	0.5
	Right Turn	5	4	82.0%	0.9	2.7	0.1
	Subtotal	16	11	67.5%	18.7	31.3	1.4
SB	Left Turn	1	1	120.0%	26.8	47.5	0.4
	Through	3	2	60.0%	1.1	1.9	0.1
	Right Turn	3	2	76.7%	1.3	2.2	0.1
	Subtotal	7	5	75.7%	25.8	47.7	0.6
EB	Left Turn	1	1	140.0%	26.8	35.6	0.4
	Through	12	12	95.8%	47.0	19.0	9.4
	Right Turn	1	1	130.0%	1.7	2.6	0.0
	Subtotal	14	14	101.4%	43.0	16.9	9.9
WB	Left Turn	3	3	96.7%	19.3	26.4	1.0
	Through	102	101	98.9%	44.8	5.5	76.1
	Right Turn	1	1	100.0%	0.0	0.0	0.0
	Subtotal	106	105	98.9%	43.9	5.2	77.1
Total		143	135	94.5%	40.1	5.4	88.9

Vissim Post-Processor **Bicycle** **PM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 5 **Shields St/Lake St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn						
	Through	9	5	55.6%	9.2	12.1	1.4
	Right Turn						
	Subtotal	9	5	55.6%	9.2	12.1	1.4
SB	Left Turn						
	Through	7	6	90.0%	8.0	13.6	0.9
	Right Turn						
	Subtotal	7	6	90.0%	8.0	13.6	0.9
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	8	7	86.3%	40.8	26.6	5.4
	Through						
	Right Turn	7	6	90.0%	5.3	8.7	0.6
	Subtotal	15	13	88.0%	27.6	18.7	6.1
Total		31	25	79.0%	17.8	9.9	8.4

Intersection 6 **Shields St/Prospect**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn	1	0	0.0%	0.0	0.0	0
	Through	25	22	86.0%	25.8	10.5	10.7
	Right Turn	1	2	150.0%	0.0	0.0	0.0
	Subtotal	27	23	85.2%	24.7	10.1	10.7
SB	Left Turn						
	Through	15	13	84.7%	20.0	16.3	5.0
	Right Turn						
	Subtotal	15	13	84.7%	20.0	16.3	5.0
EB	Left Turn	9	7	77.8%	48.4	36.2	7.3
	Through	2	2	95.0%	27.5	31.6	0.9
	Right Turn						
	Subtotal	11	9	80.9%	50.1	28.8	8.2
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		53	45	84.2%	28.8	8.6	23.9

Intersection 8 **City Park Ave/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn	3	3	90.0%	5.4	11.1	0
	Through	9	8	93.3%	14.9	6.1	2.2
	Right Turn	4	5	115.0%	2.7	4.7	0.2
	Subtotal	16	16	98.1%	14.5	6.7	2.7
SB	Left Turn	5	5	98.0%	15.8	14.2	1.3
	Through	8	9	106.3%	0.4	0.4	0.0
	Right Turn	1	1	60.0%	1.0	1.7	0.0
	Subtotal	14	14	100.0%	7.9	6.5	1.4
EB	Left Turn	1	1	130.0%	8.2	15.1	0.1
	Through	29	33	113.1%	16.4	5.0	7.9
	Right Turn	1	1	110.0%	0.3	0.9	0.0
	Subtotal	31	35	113.5%	16.4	5.3	8.1
WB	Left Turn	10	11	110.0%	16.5	12.6	2.8
	Through	88	86	97.4%	11.7	4.9	17.2
	Right Turn	15	14	92.7%	5.1	6.4	1.3
	Subtotal	113	111	97.9%	11.7	4.9	21.2
Total		174	176	100.9%	12.8	2.8	33.4

Vissim Post-Processor **Bicycle** **PM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Intersection 9 **Constitution Ave/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn						
	Through	2	2	85.0%	0.0	0.0	0.0
	Right Turn	2	2	120.0%	1.9	2.1	0.1
	Subtotal	4	4	102.5%	1.5	1.6	0.1
SB	Left Turn	3	2	80.0%	5.5	10.4	0.3
	Through	12	13	108.3%	18.4	12.9	3.7
	Right Turn	11	12	104.5%	2.7	7.1	0.5
	Subtotal	26	27	103.5%	10.5	5.9	4.5
EB	Left Turn	1	1	90.0%	5.9	17.6	0.1
	Through	38	41	106.6%	14.0	3.0	8.9
	Right Turn						
	Subtotal	39	41	106.2%	14.3	2.6	9.0
WB	Left Turn						
	Through	69	68	98.7%	8.3	3.7	9.6
	Right Turn	4	3	80.0%	2.8	8.4	0.2
	Subtotal	73	71	97.7%	8.3	3.7	9.7
Total		142	144	101.2%	10.1	2.6	23.3

Intersection 11 **Taft Hill Rd/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn	1	1	70.0%	5.9	12.5	0
	Through	2	1	50.0%	10.7	17.6	0.4
	Right Turn	2	2	80.0%	9.7	14.2	0.3
	Subtotal	5	3	66.0%	14.5	16.2	0.8
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	47	48	101.1%	32.6	9.5	25.5
	Right Turn						
	Subtotal	47	48	101.1%	32.6	9.5	25.5
WB	Left Turn						
	Through	47	45	94.7%	44.6	12.3	34.9
	Right Turn	1	2	150.0%	1.6	5.1	0.0
	Subtotal	48	46	95.8%	44.5	12.4	35.0
Total		100	97	96.8%	36.4	7.1	61.3

Intersection 12 **Overland Trail/W Elizabeth St**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Person Delay (min)
NB	Left Turn						
	Through	44	44	99.8%	0.8	0.6	0.6
	Right Turn	4	3	82.5%	0.0	0.0	0.0
	Subtotal	48	47	98.3%	0.7	0.6	0.6
SB	Left Turn						
	Through	29	29	100.0%	0.1	0.2	0.0
	Right Turn						
	Subtotal	29	29	100.0%	0.1	0.2	0.0
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	9	7	74.4%	6.4	2.4	1.0
	Through						
	Right Turn	3	3	83.3%	3.3	3.6	0.2
	Subtotal	12	9	76.7%	6.6	2.3	1.1
Total		89	85	96.0%	1.3	0.7	1.7

CROSSWALK INTERSECTION DELAY

AM PEAK HOUR

Vissim Post-Processor **Crosswalk** **AM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Shields St/W Laurel St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
37	34	91.4%	46.2	8.0	26.0

Shields St/W Plum St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
106	107	101.3%	51.7	6.6	92.6

Shields St/W Elizabeth St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
90	90	100.3%	53.0	3.9	79.7

Shields St/Lake St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
54	54	99.3%	48.6	10.0	43.4

Shields St/Prospect

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
68	66	96.6%	51.8	10.8	56.8

Ped Crossing/W Elizabeth St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
1	1	90.0%	0.0	0.0	0.0

City Park Ave/W Elizabeth St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
36	36	101.1%	19.9	5.7	12.1

Constitution Ave/W Elizabeth St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
9	9	103.3%	16.1	13.1	2.5

Ped Signal/W Elizabeth St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
2	2	90.0%	10.4	15.7	0.3

Taft Hill Rd/W Elizabeth St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
17	16	91.8%	33.8	8.8	8.8

Overland Trail/W Elizabeth St

Demand Volume (pph)	Served Volume (pph) Average	Percent	Total Delay (sec/person) Average	Std. Dev.	Total Person Delay (min)
2	2	100.0%	0.5	1.6	0.0

PM PEAK HOUR

Vissim Post-Processor **Crosswalk** **PM Peak**
Average Results from 10 Runs
Volume and Delay by Movement

Shields St/W Laurel St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
64	62	96.9%	60.8	9.9	62.8

Shields St/W Plum St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
157	152	96.5%	57.7	10.6	145.6

Shields St/W Elizabeth St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
162	159	98.3%	57.0	9.4	151.2

Shields St/Lake St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
25	23	93.6%	52.7	40.3	20.5

Shields St/Prospect

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
71	71	100.4%	68.8	13.1	81.7

Ped Crossing/W Elizabeth St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
15	16	105.3%	1.0	1.6	0.3

City Park Ave/W Elizabeth St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
239	236	98.5%	29.4	2.7	115.3

Constitution Ave/W Elizabeth St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
40	40	100.0%	21.1	5.6	14.1

Ped Signal/W Elizabeth St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
4	4	87.5%	21.6	16.1	1.3

Taft Hill Rd/W Elizabeth St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
50	51	101.0%	44.8	5.3	37.7

Overland Trail/W Elizabeth St

Demand	Served Volume (pph)		Total Delay (sec/person)		Total Person
Volume (pph)	Average	Percent	Average	Std. Dev.	Delay (min)
12	11	90.0%	0.8	1.4	0.2

ADDITIONAL VALIDATION AND TRAVEL TIME DATA

PM Peak Green Time Validation using Modeled and Measured Phase Green Times by Intersection

Shields/Prospect

Phase	Measured	Modeled	Delta	% Delta
1	12	10	-2	17%
2	46	49	3	7%
3	12	11	-1	8%
4	28	29	1	4%
5	16	12	-4	25%
6	42	47	5	12%
7	8	7	-1	13%
8	32	31	-1	3%

Shields/Lake

Phase	Measured	Modeled	Delta	% Delta
2	92	91	-1	1%
5	4	6	2	50%
6	86	89	3	3%
8	17	16	-1	6%

Shields/Elizabeth

Phase	Measured	Modeled	Delta	% Delta
1	17	13	-4	24%
2	42	45	3	7%
4	20	20	0	0%
5	1	4	3	300%
6	62	60	-2	3%
8	19	22	3	16%

Shields/Plum

Phase	Measured	Modeled	Delta	% Delta
2	85	82	-3	4%
4	24	25	1	4%
6	85	82	-3	4%
8	24	25	1	4%

Shields/Laurel

Phase	Measured	Modeled	Delta	% Delta
2	85	81	-4	5%
5	4	7	3	75%
6	78	76	-2	3%
8	24	27	3	13%

Elizabeth/City Park

Phase	Measured	Modeled	Delta	% Delta
2	17.5	17	-0.5	3%
4	32	32	0	0%
6	17.5	17	-0.5	3%
8	32	32	0	0%

Elizabeth/Constitution

Phase	Measured	Modeled	Delta	% Delta
2	9.5	10	0.5	5%
4	40	43	3	8%
6	9.5	10	0.5	5%
8	40	43	3	8%

Elizabeth/Taft Hill

Phase	Measured	Modeled	Delta	% Delta
1	8	7	-1	13%
2	36.5	39	2.5	7%
3	7	7	0	0%
4	24	24	0	0%
5	5	6	1	20%
6	40.5	42	1.5	4%
7	6	6	0	0%
8	25	25	0	0%

Existing Peak Hour Segment Vehicle Travel Time Validation

Roadway	Roadway Segment	Period	Travel Time		Absolute Difference	Percent Difference
			VISSIM	Blue Tooth		
Shields	NB Prospect to Mulberry	AM	147.8	N/A	N/A	N/A
		PM	175.1	156	19.1	12%
	SB Mulberry to Prospect	AM	139.0	N/A	N/A	N/A
		PM	175.4	180	-4.6	-3%
Elizabeth	EB Taft Hill to Constitution	AM	65.4	54	11.4	21%
		PM	68.1	55	13.1	24%
	EB Constitution to Shields	AM	101.4	86	15.4	18%
		PM	122.1	112	10.1	9%
	WB Shields to Constitution	AM	71.8	67	4.8	7%
		PM	80.6	73	7.6	10%
	WB Constitution to Taft Hill	AM	96.8	71	25.8	36%
		PM	104.4	86	18.4	21%

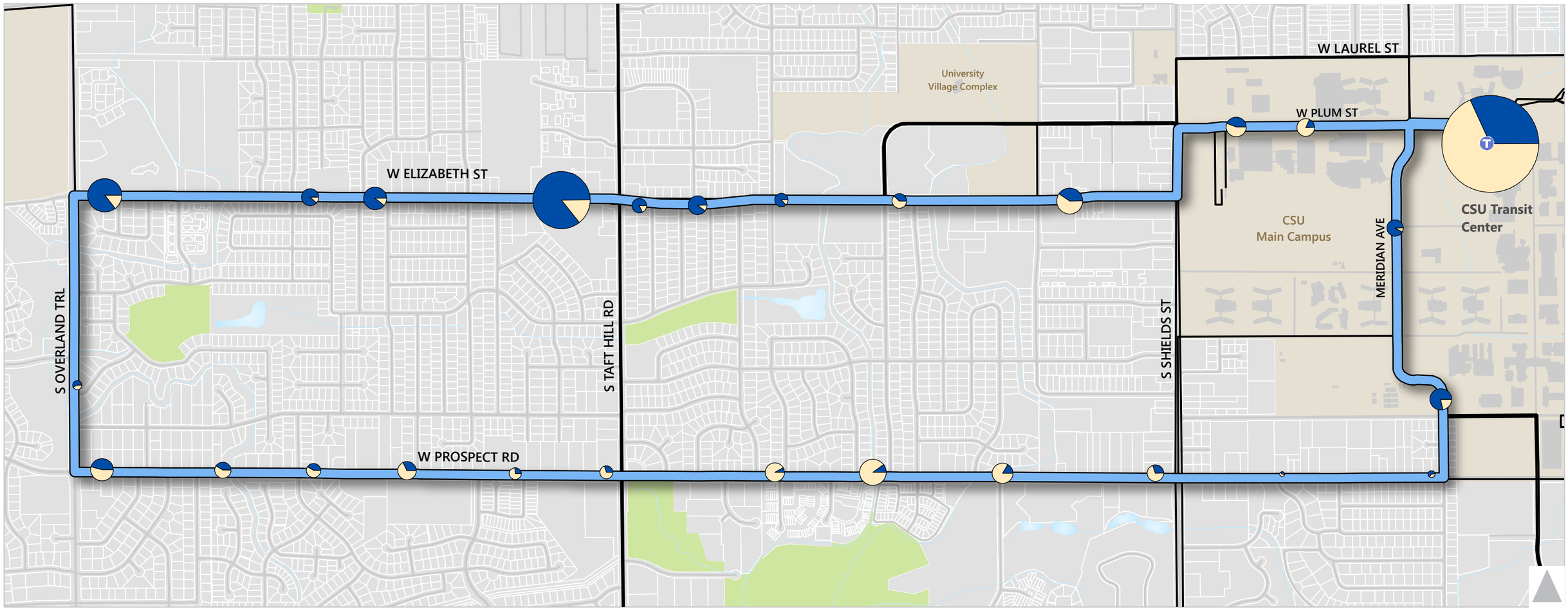
Transit Travel Time along Elizabeth St by Segment		
Segment	Travel Time including dwell time (sec)	
	AM	PM
WB Shields City Park	42.1	41.9
WB City Park to Taft	211.4	205.1
WB Taft Hill to Overland	265.4	265.0
WB Shields to Overland	**518.9**	**511.9**
EB Overland to Taft Hill	249.2	254.0
EB Taft Hill to City Park	221.5	218.7
EB City Park to Shields	110.6	110.7
EB Overland to Shields	**581.4**	**583.5**

APPENDIX C: TRANSFORT ROUTE PROFILES

ROUTE 2

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan



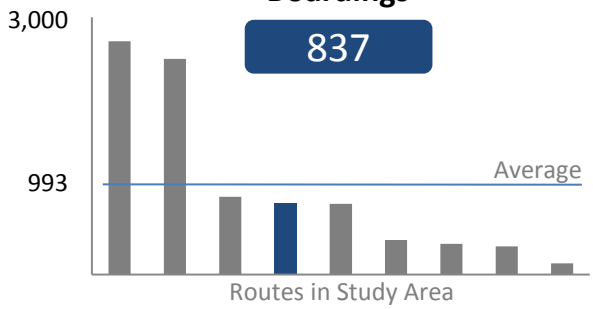
Route 2 Daily Ridership

TMD

Route 2

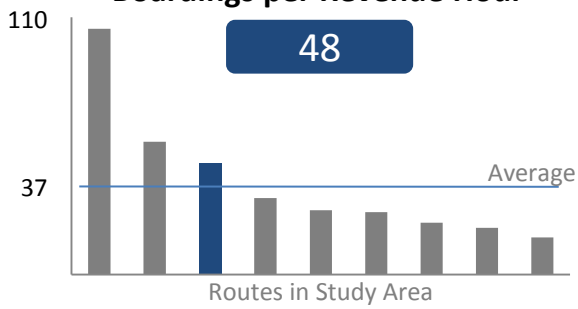
Service every **20/30 minutes peak, 30 minutes off-peak**
Hours of operation: **6:22 AM - 10:00 PM, Monday - Saturday**

Average Weekday Boardings



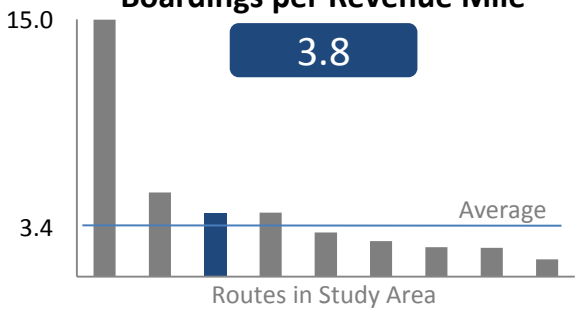
Saturday
325

Average Weekday Boardings per Revenue Hour



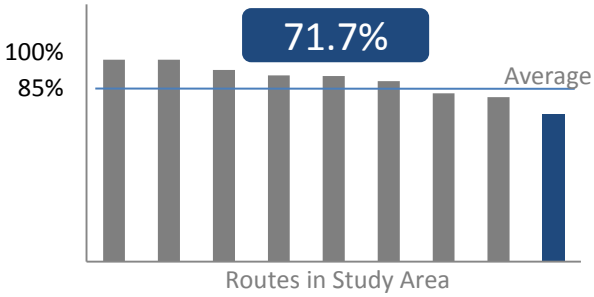
Saturday
21

Average Weekday Boardings per Revenue Mile



Saturday
1.6

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	AM Peak	Midday	PM Peak	PM	Late Night
2	12	11	8	6	N/A

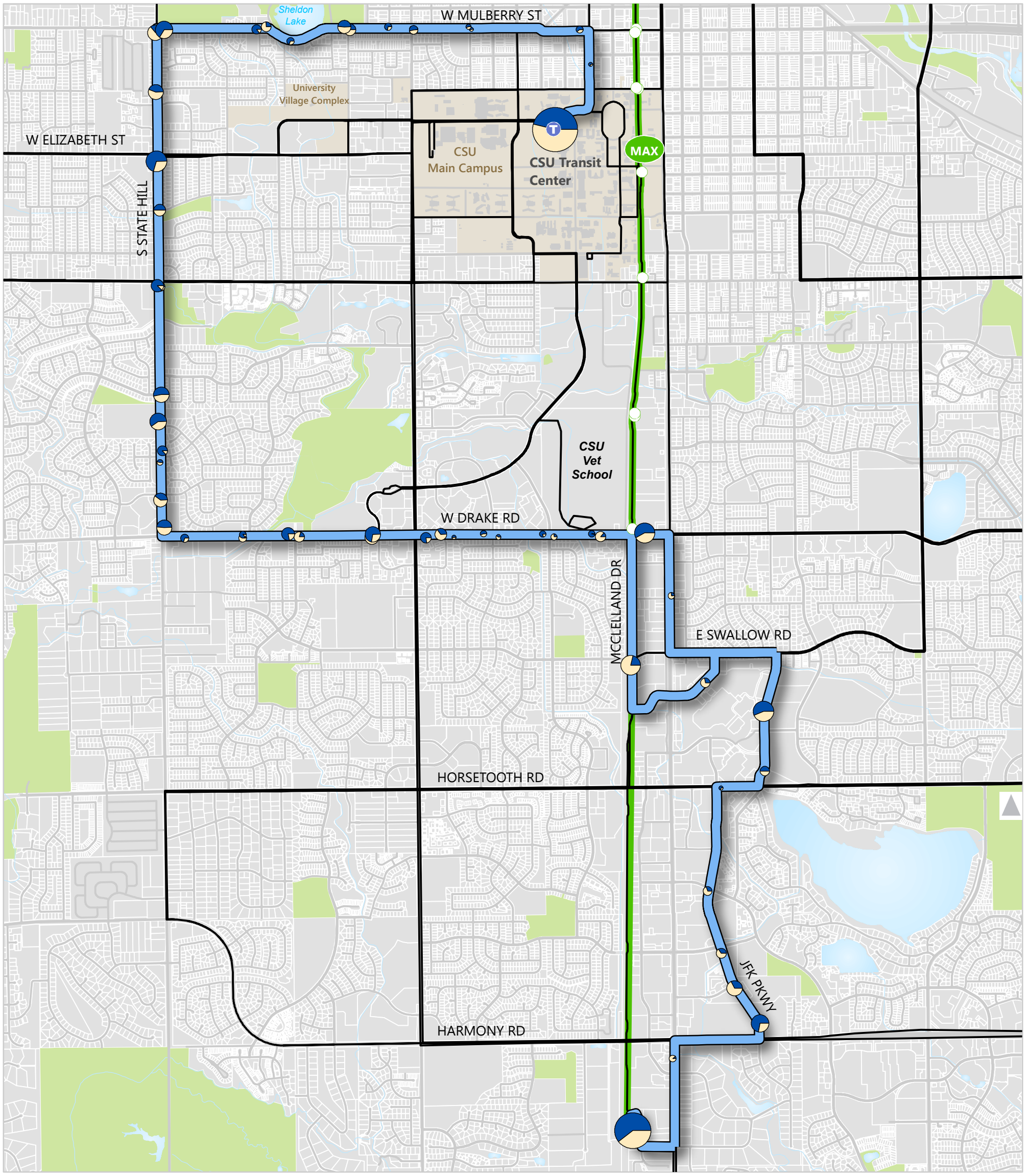
Passengers per Revenue Hour					
Route	AM Peak	Midday	PM Peak	PM	Late Night
2	64.1	61.9	58.5	37.1	N/A

Passengers per Revenue Mile					
Route	AM Peak	Midday	PM Peak	PM	Late Night
2	5.1	4.9	4.7	2.8	N/A

ROUTE 6

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan



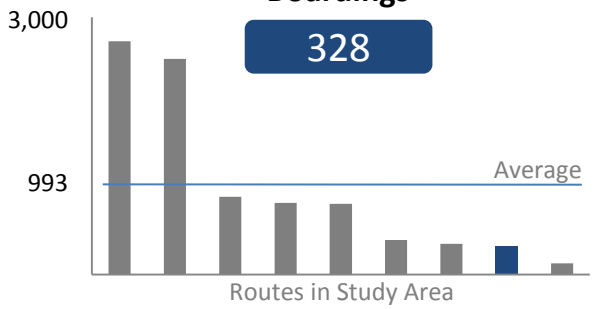
Route 6 Daily Ridership

TMD

Route 6

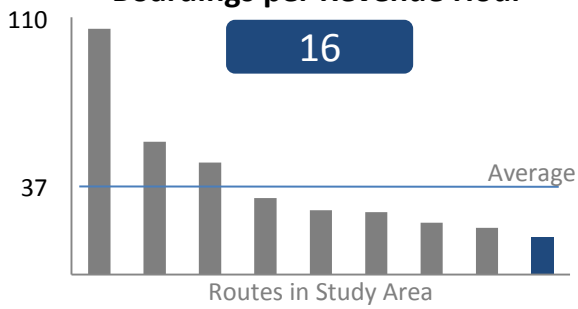
Service every **60 minutes peak, 60 minutes off-peak**
Hours of operation: **6:06 AM - 10:18 PM, Monday - Saturday**

Average Weekday Boardings



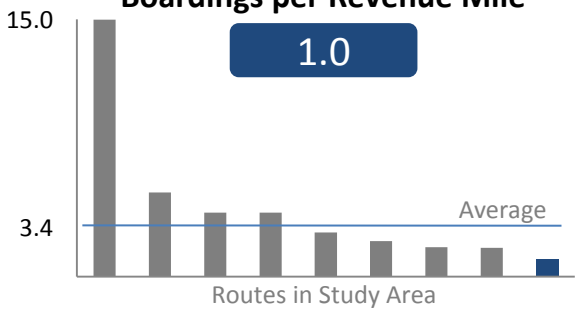
Saturday
229

Average Weekday Boardings per Revenue Hour



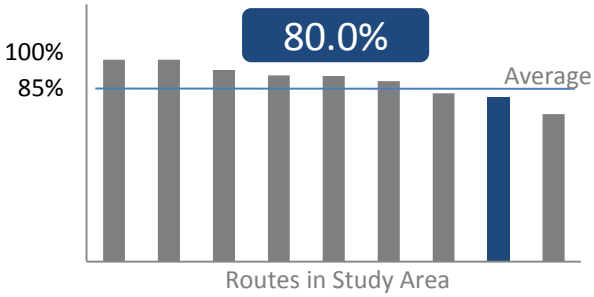
Saturday
11

Average Weekday Boardings per Revenue Mile



Saturday
0.7

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
6	8	10	8	6	N/A

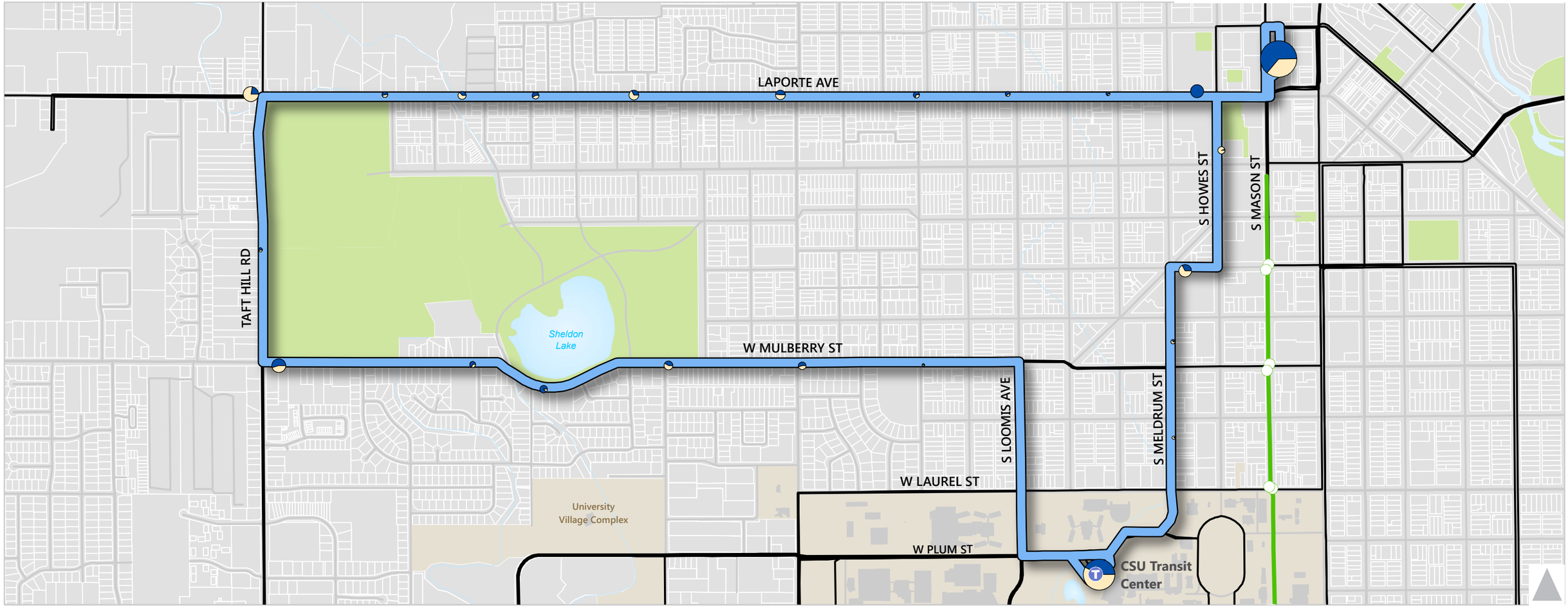
Passengers per Revenue Hour					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
6	24.0	20.8	18.8	8.1	N/A

Passengers per Revenue Mile					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
6	1.6	1.4	1.2	0.5	N/A

ROUTE 10

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan



MAX Stations

Bus Network

Featured Route

MAX Bus Rapid Transit (BRT)

100

50

10

Boardings

Alightings

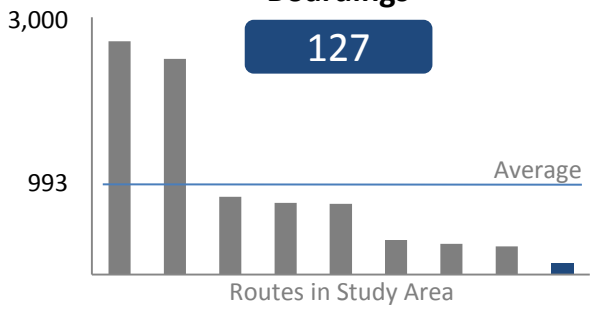
Route 10 Daily Ridership

TMD

Route 10

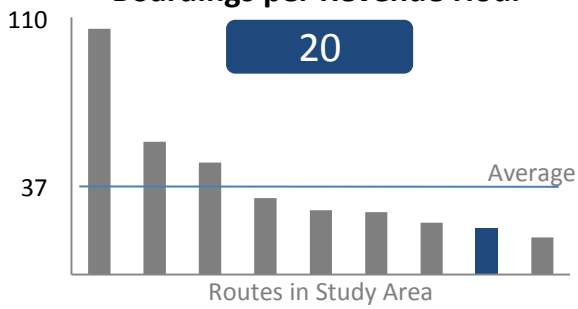
Service every **60 minutes peak, 60 minutes off-peak**
Hours of operation: **6:45 AM - 7:08 PM, Monday - Saturday**

Average Weekday Boardings



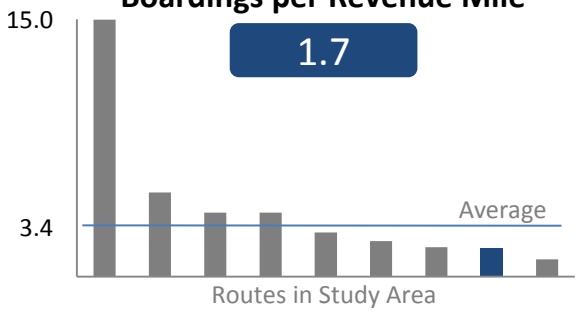
Saturday
6,65

Average Weekday Boardings per Revenue Hour



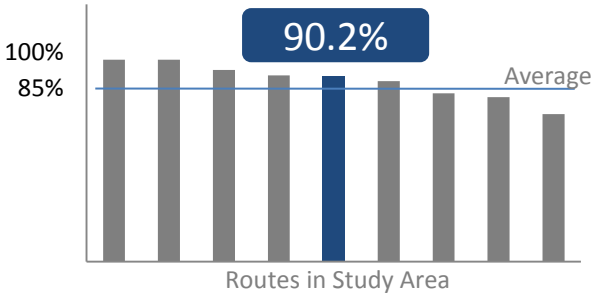
Saturday
10

Average Weekday Boardings per Revenue Mile



Saturday
0.9

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
10	4	5	4	N/A	N/A

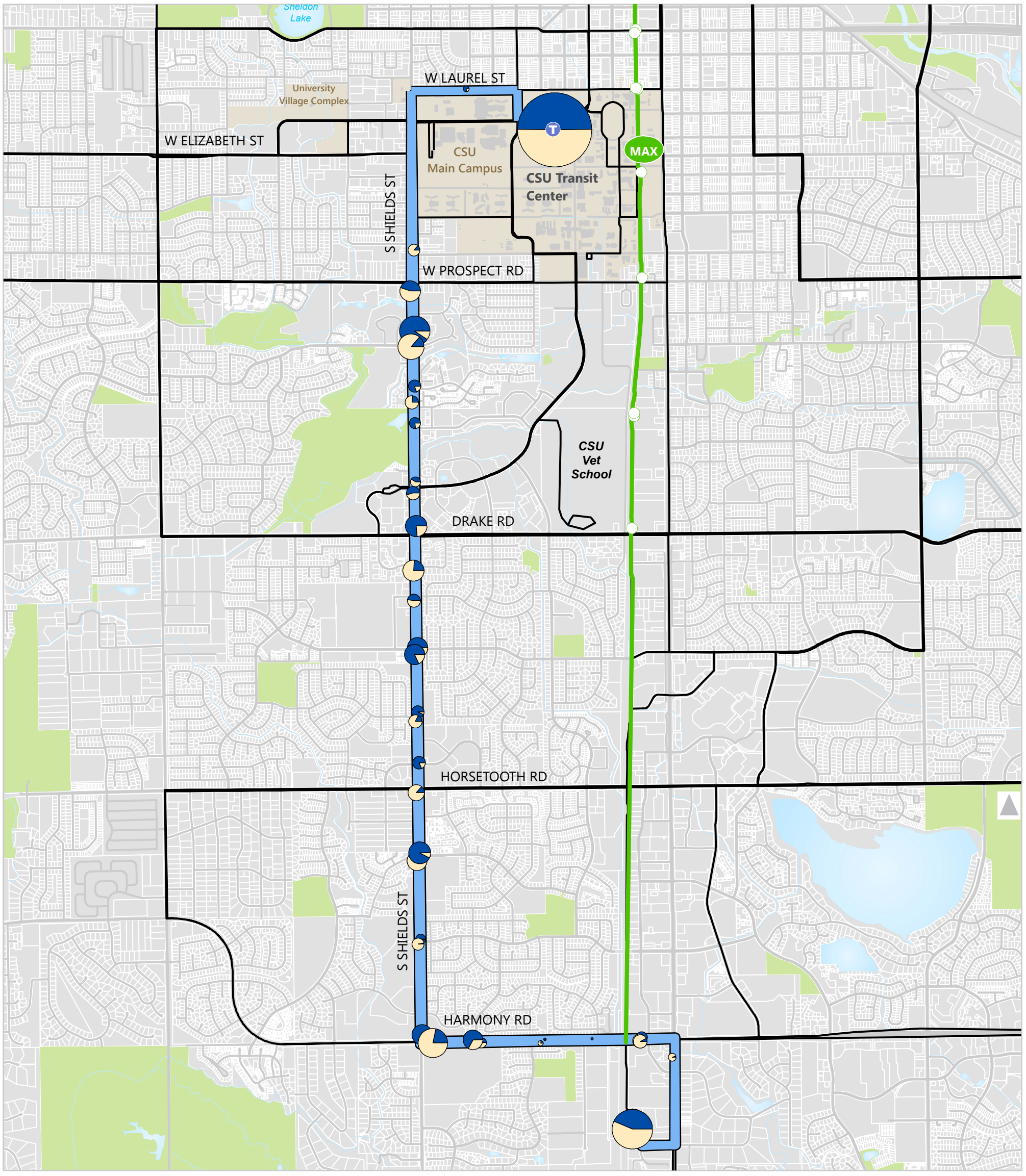
Passengers per Revenue Hour					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
10	20.2	20.1	16.1	N/A	N/A

Passengers per Revenue Mile					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
10	1.7	1.7	1.4	N/A	N/A

ROUTE 19

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan



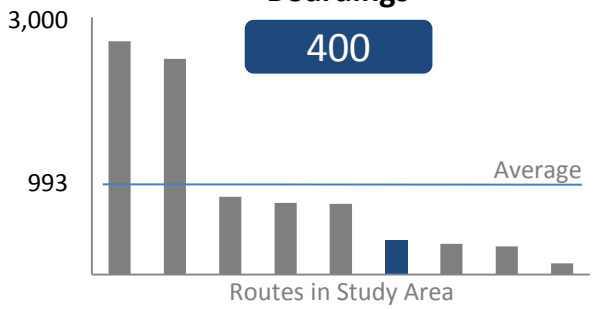
Route 19 Daily Ridership

TMD

Route 19

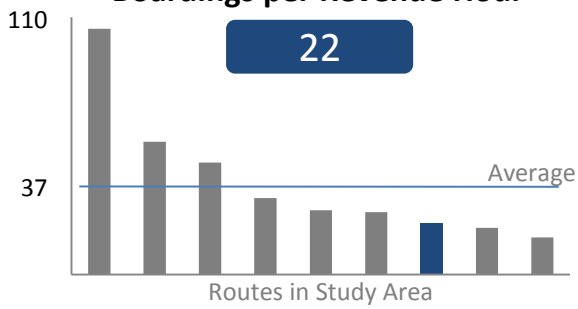
Service every **30 minutes peak, 60 minutes off-peak**
Hours of operation: **6:52 AM - 7:43 PM, Monday - Friday**

Average Weekday Boardings



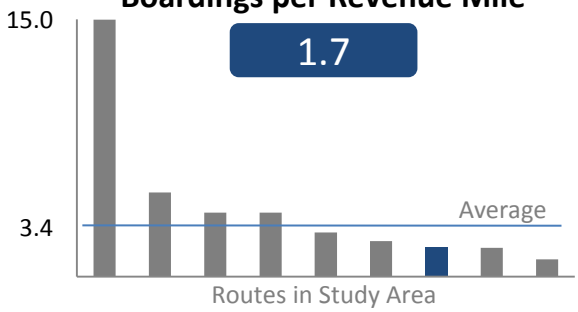
Saturday
N/A

Average Weekday Boardings per Revenue Hour



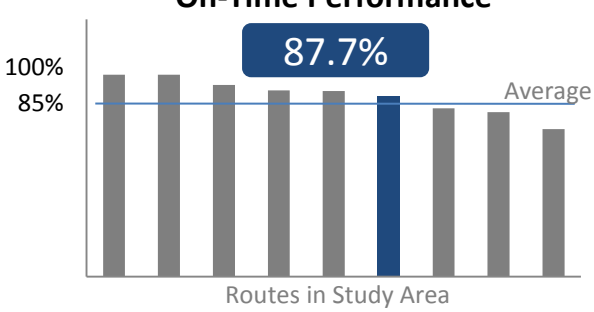
Saturday
N/A

Average Weekday Boardings per Revenue Mile



Saturday
N/A

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
19	14	11	12	1	N/A

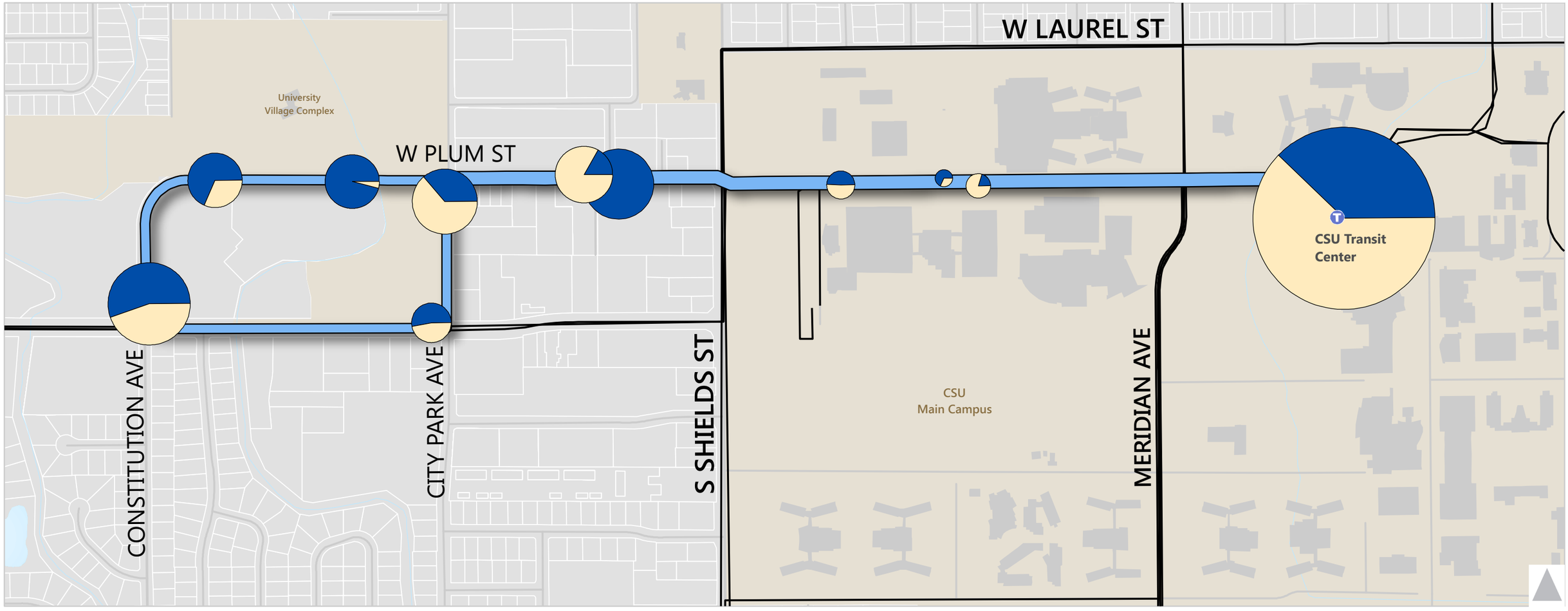
Passengers per Revenue Hour					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
19	24.3	28.8	21.6	15.2	N/A

Passengers per Revenue Mile					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
19	1.9	2.3	1.7	1.2	N/A

ROUTE 31

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan

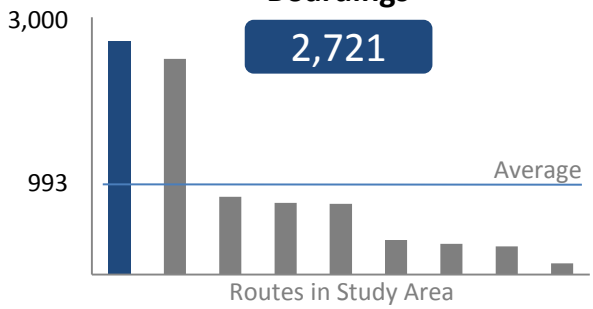


Route 31 Daily Ridership

Route 31

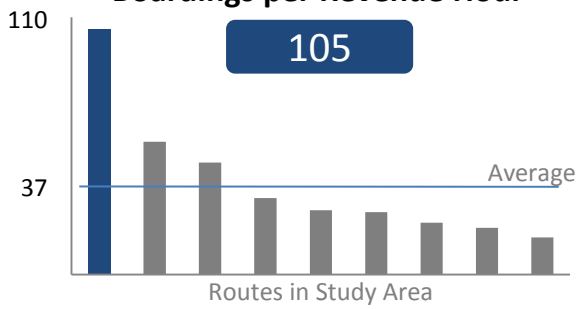
Service every **10 minutes peak, 10 minutes off-peak**
Hours of operation: **6:58 AM - 6:20 PM, Monday - Friday**

Average Weekday Boardings



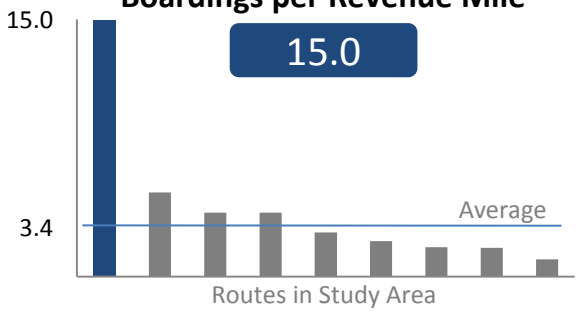
Saturday
N/A

Average Weekday Boardings per Revenue Hour



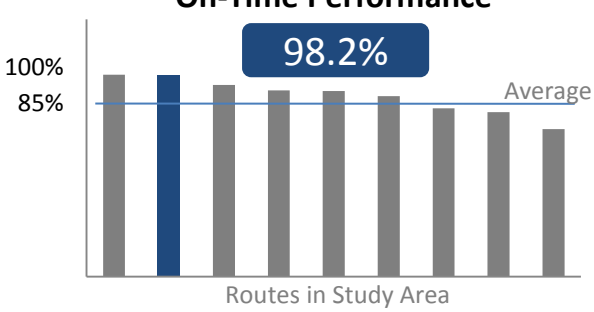
Saturday
N/A

Average Weekday Boardings per Revenue Mile



Saturday
N/A

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
31	24	32	20	N/A	N/A

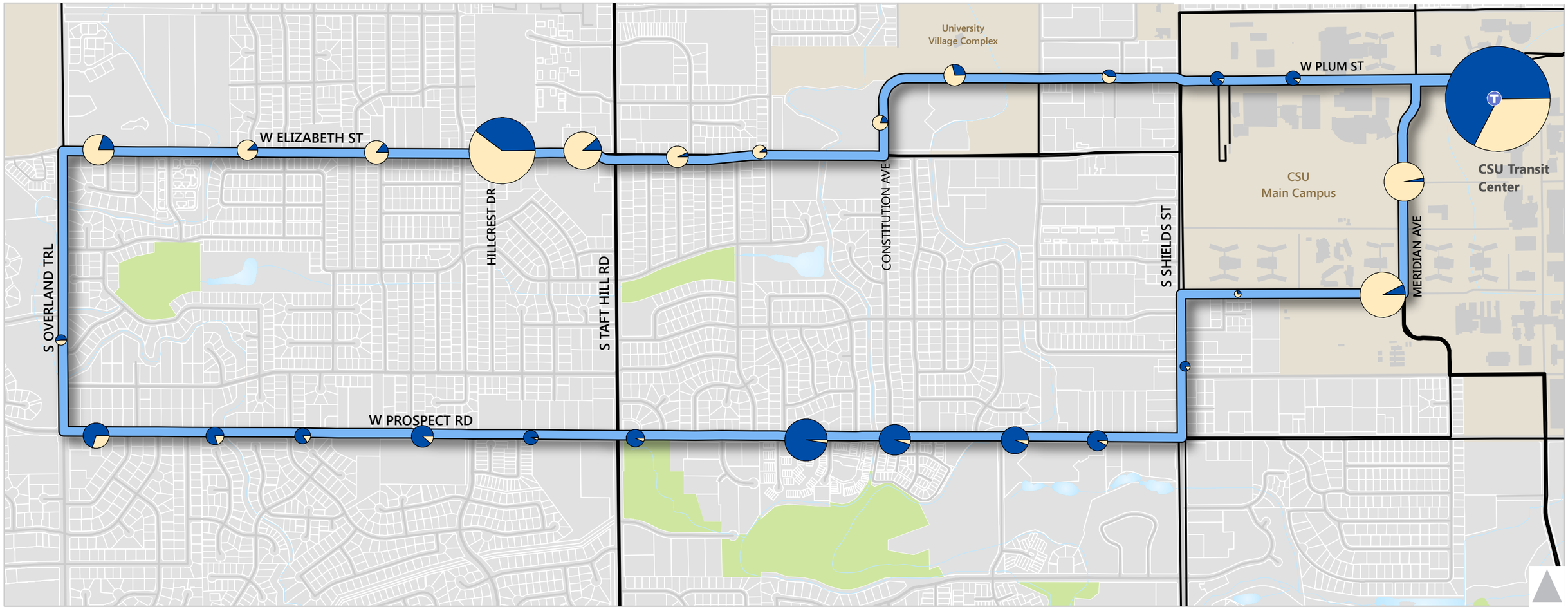
Passengers per Revenue Hour					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
31	98.8	118.5	100.0	N/A	N/A

Passengers per Revenue Mile					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
31	14.3	17.0	14.3	N/A	N/A

ROUTE 32

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan

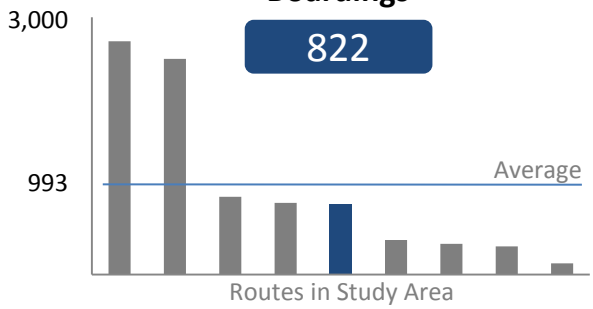


Route 32 Daily Ridership

Route 32

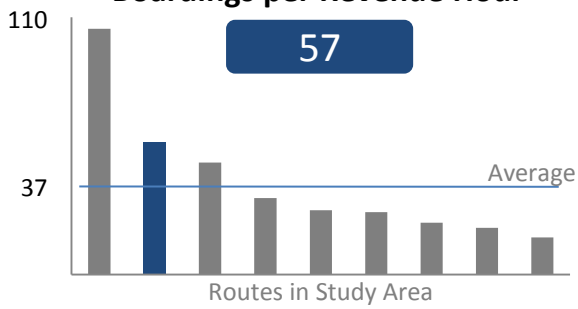
Service every **17/30 minutes peak, 30 minutes off-peak**
Hours of operation: **6:50 AM - 6:40 PM, Monday - Friday**

Average Weekday Boardings



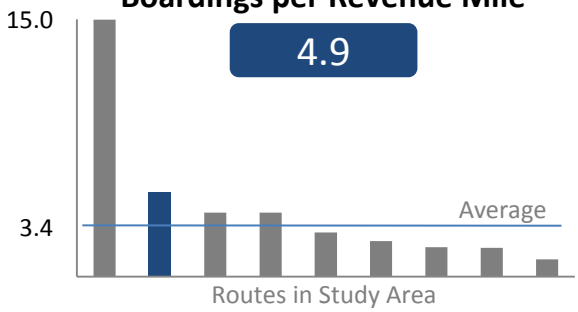
Saturday
N/A

Average Weekday Boardings per Revenue Hour



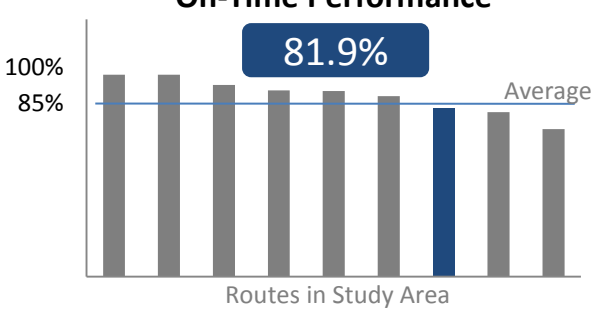
Saturday
N/A

Average Weekday Boardings per Revenue Mile



Saturday
N/A

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
32	11	11	7	N/A	N/A

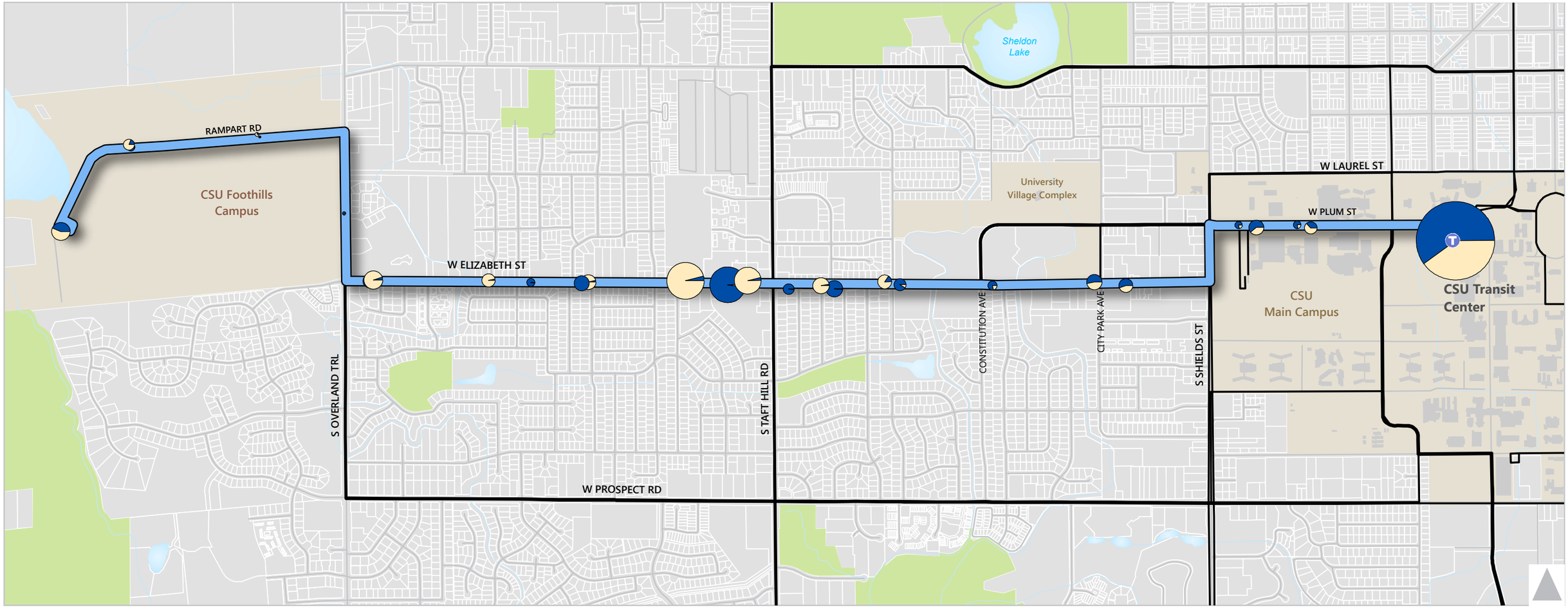
Passengers per Revenue Hour					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
32	56.6	66.2	61.0	N/A	N/A

Passengers per Revenue Mile					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
32	5.0	5.8	5.3	N/A	N/A

ROUTE 33

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan



MAX Stations

Bus Network

Featured Route

MAX Bus Rapid Transit (BRT)

200

100

50

Boardings

Alightings

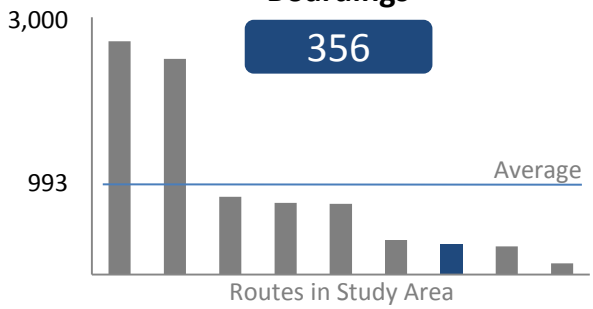
Route 33 Daily Ridership

TMD

Route 33

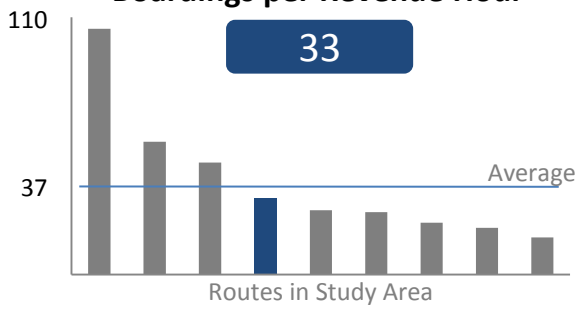
Service every **30 minutes peak, 30 minutes off-peak**
Hours of operation: **6:52 AM - 5:49 PM, Monday - Friday**

Average Weekday Boardings



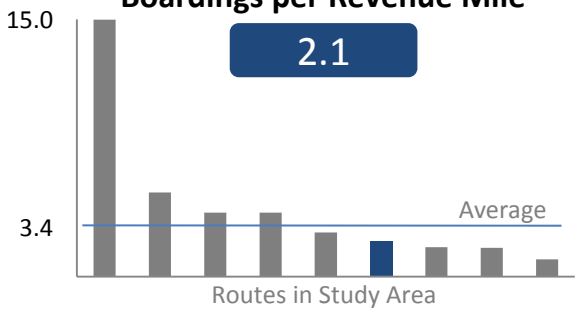
Saturday
N/A

Average Weekday Boardings per Revenue Hour



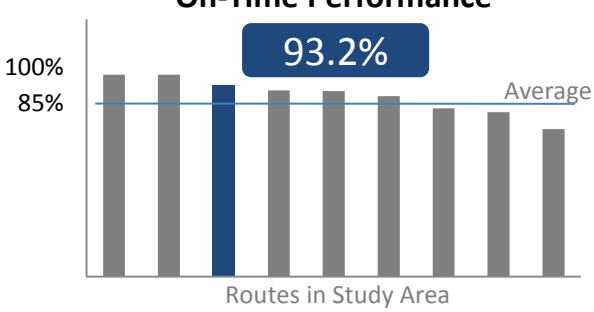
Saturday
N/A

Average Weekday Boardings per Revenue Mile



Saturday
N/A

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
33	13	20	11	N/A	N/A

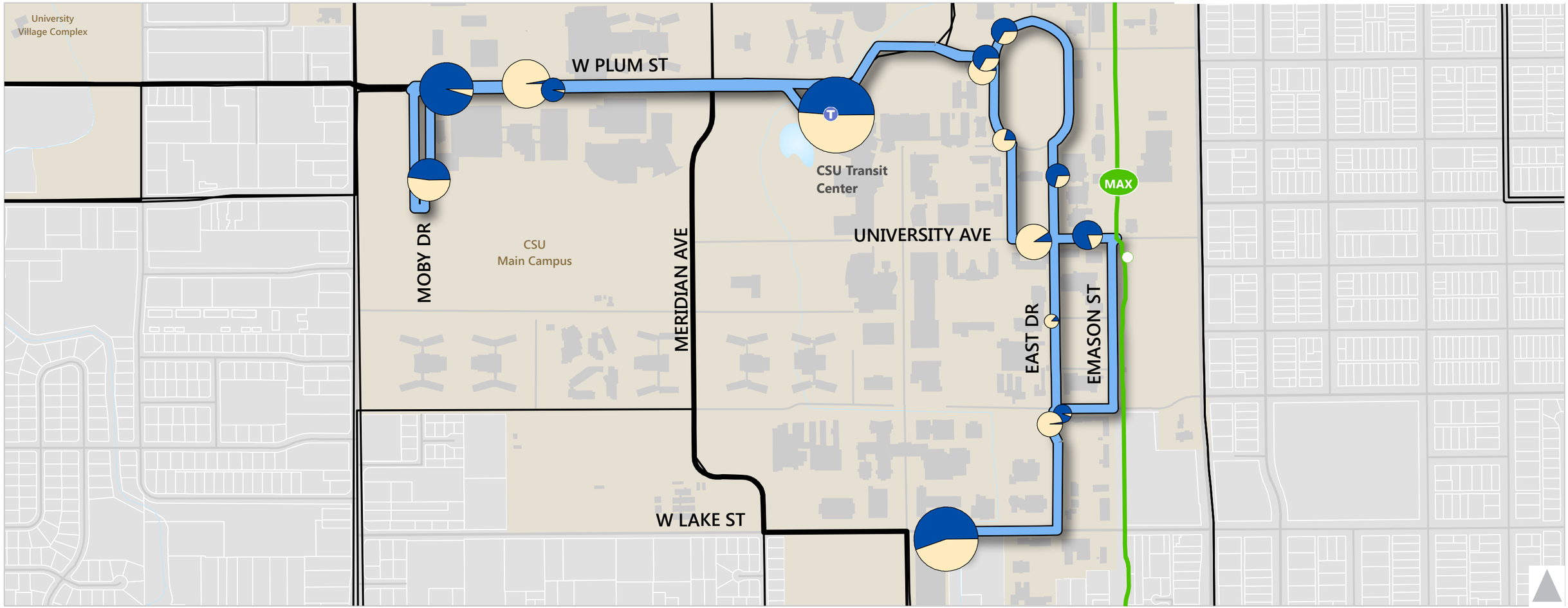
Passengers per Revenue Hour					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
33	35.9	35.7	38.9	N/A	N/A

Passengers per Revenue Mile					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
33	2.3	2.3	2.5	N/A	N/A

HORN

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan



MAX Stations

Bus Network

Featured Route

MAX Bus Rapid Transit (BRT)

200

100

50

Boardings

Alightings

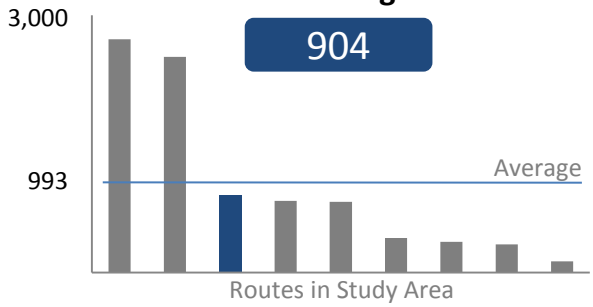
HORN Daily Ridership

TMD

Around the Horn

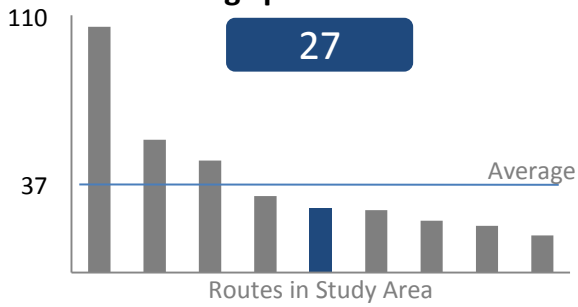
Service every **10 minutes peak, 10 minutes off-peak**
Hours of operation: **6:42 AM - 6:38 PM, Monday - Saturday**

Average Weekday Boardings



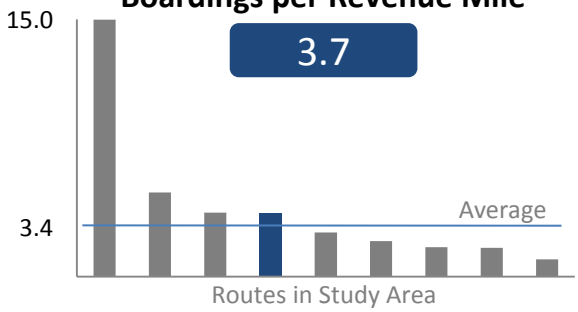
Saturday
114

Average Weekday Boardings per Revenue Hour



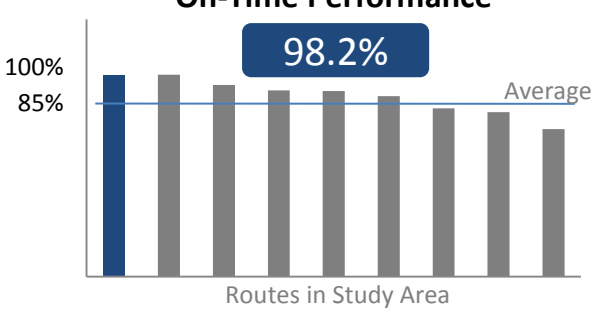
Saturday
10

Average Weekday Boardings per Revenue Mile



Saturday
1.3

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
Horn	38	60	42	N/A	N/A

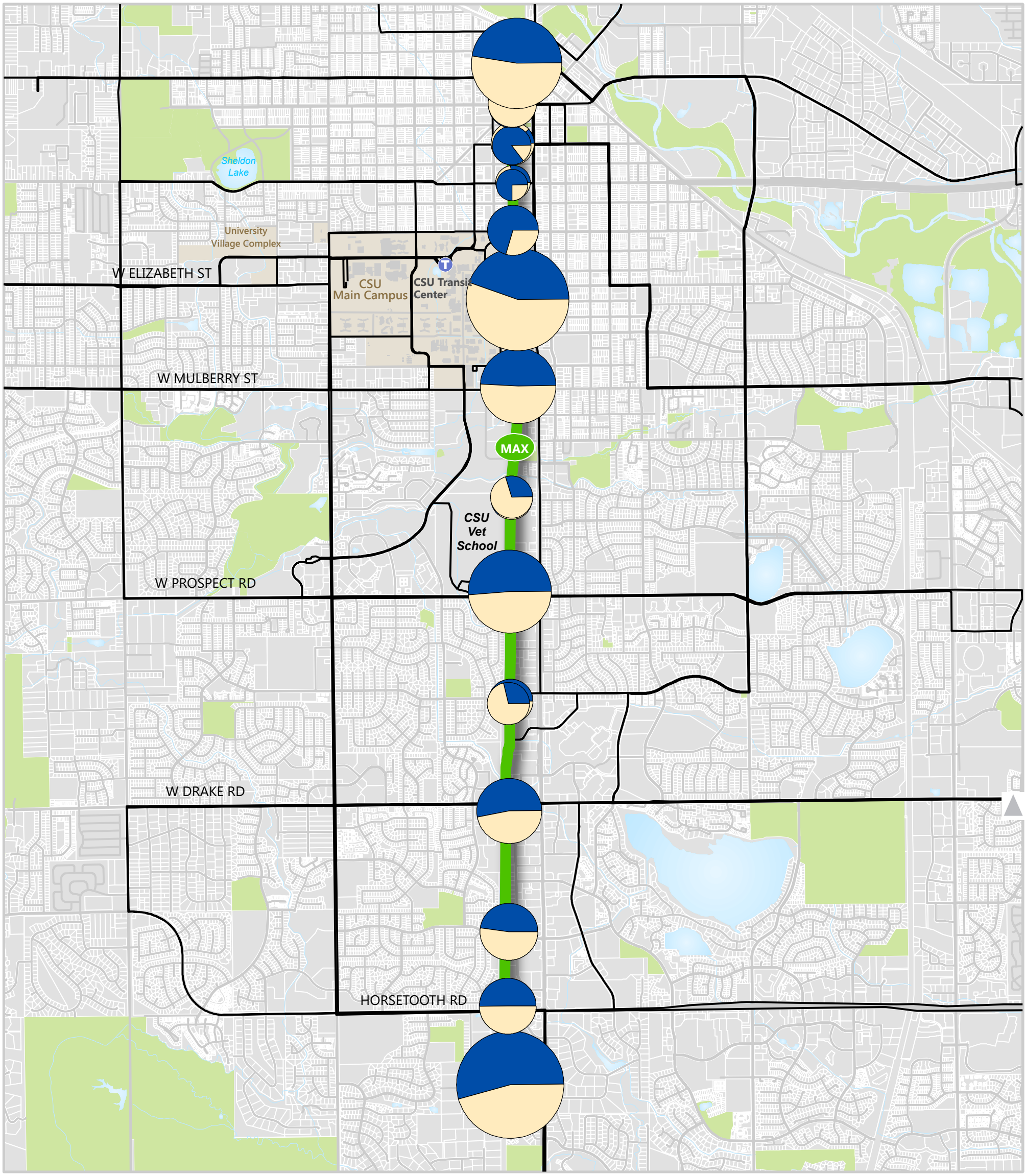
Passengers per Revenue Hour					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
Horn	23.2	28.1	18.0	N/A	N/A

Passengers per Revenue Mile					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
Horn	3.2	3.9	2.4	N/A	N/A

MAX

Daily Ridership by Route

West Elizabeth Enhanced Travel Corridor Plan



MAX Stations

Bus Network

Featured Route

MAX Bus Rapid Transit (BRT)

200

100

50

Boardings

Alightings

HORN Daily Ridership

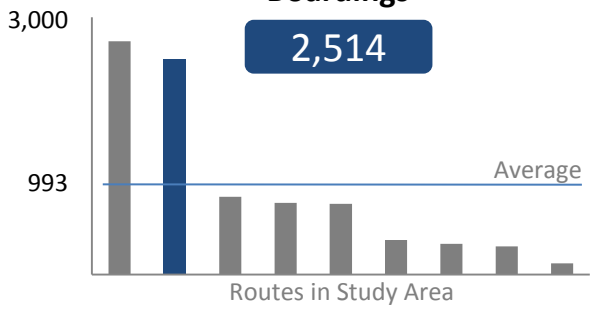
TMD

MAX Bus Rapid Transit

Service every **10 minutes peak, 10 minutes off-peak**

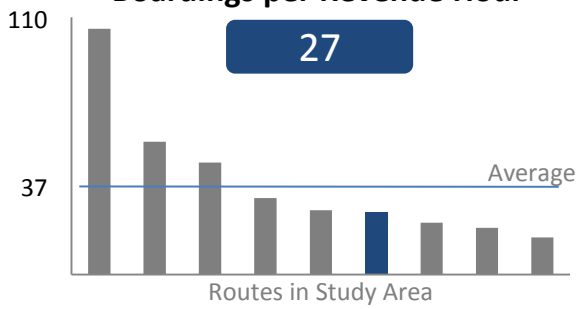
Hours of operation: **5:10 AM - 12:16 AM, Monday - Saturday**

Average Weekday Boardings



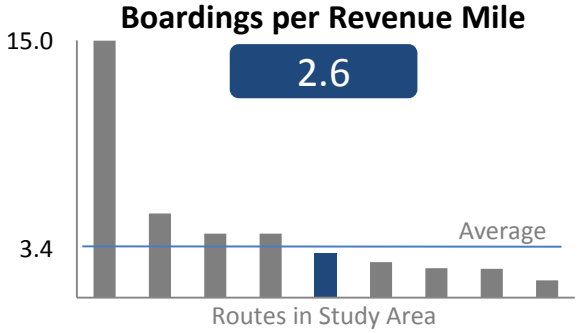
Saturday
2,357

Average Weekday Boardings per Revenue Hour



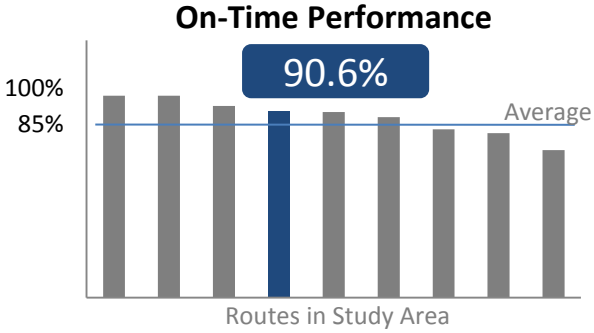
Saturday
26

Average Weekday Boardings per Revenue Mile



Saturday
2.5

Total On-Time Performance



Analysis by Time Period

One-Way Trips					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
MAX	45	60	48	27	10

Passengers per Revenue Hour					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
MAX	21.5	26.7	27.1	13.0	5.7

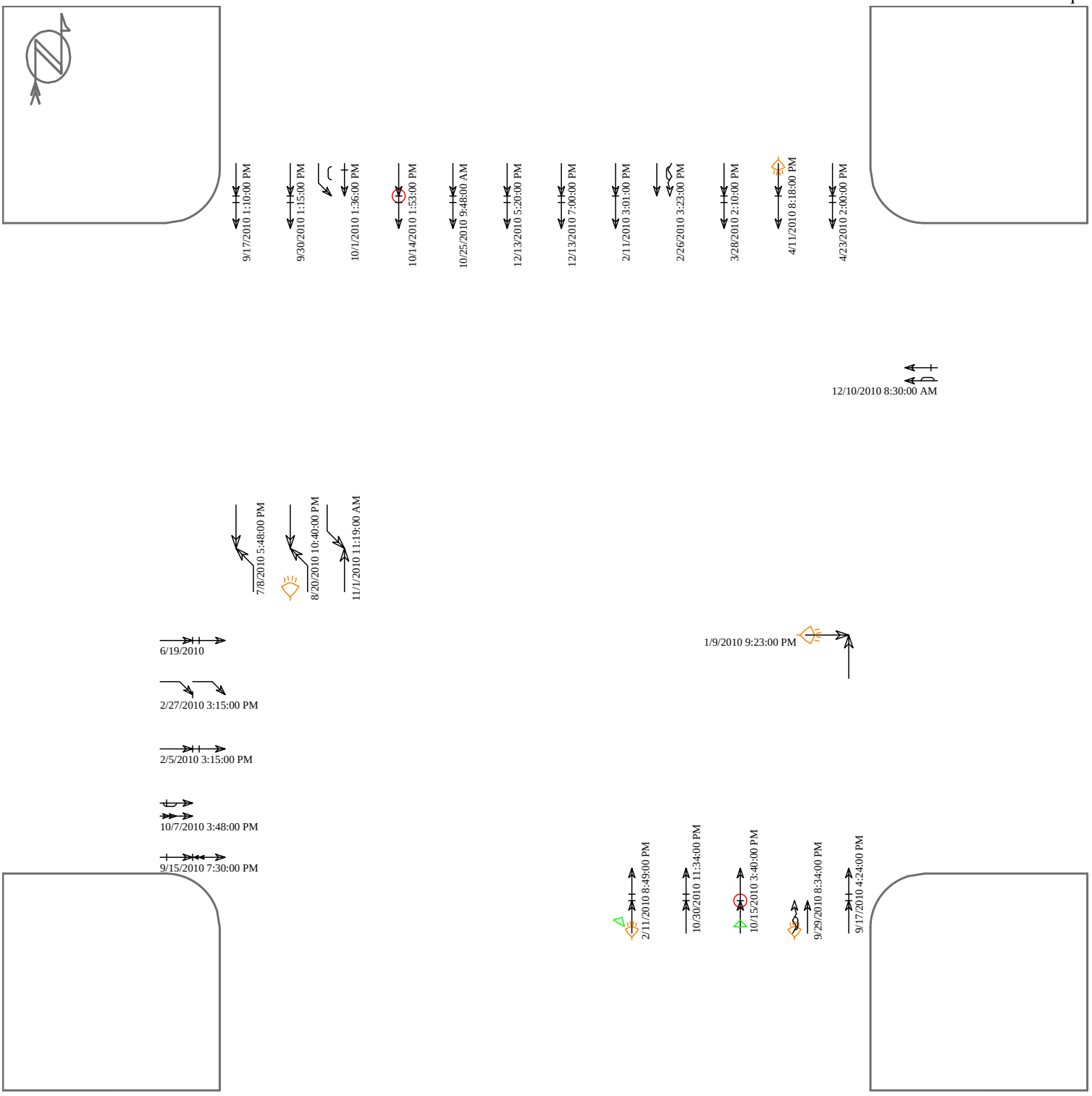
Passengers per Revenue Mile					
Route	**AM Peak**	**Midday**	**PM Peak**	**PM**	**Late Night**
MAX	2.1	2.6	2.7	1.3	0.6

APPENDIX D: CRASH DIAGRAMS

109 SHIELDS AND ELIZABETH
2010

28 Crashes

intersectionquery



(0) crashes could not be placed in this schematic

- Straight
- Stopped
- Unknown
- Backing
- Overtaking
- Sideswipe
- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn
- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

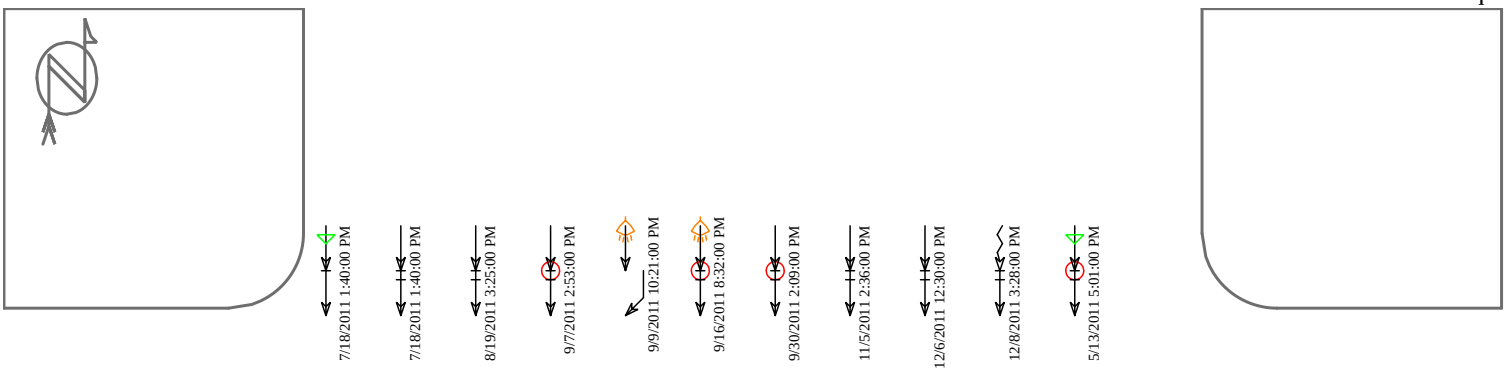
- General
- Signal
- Tree
- Pole
- Curb
- Animal

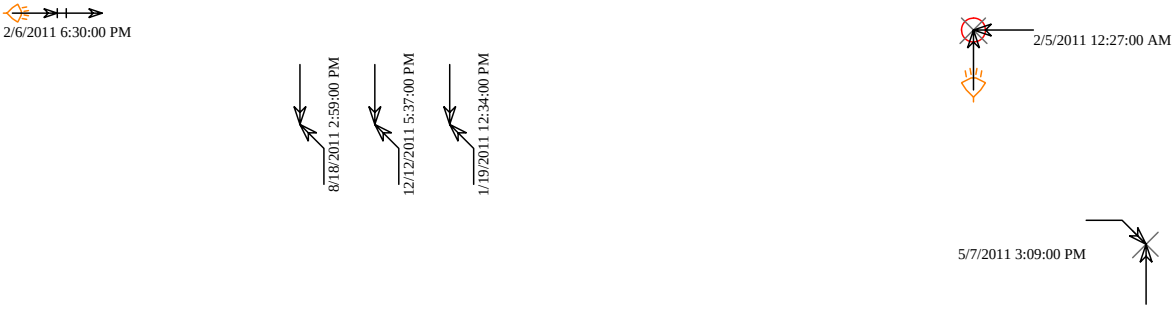
- 3rd vehicle
- Extra data

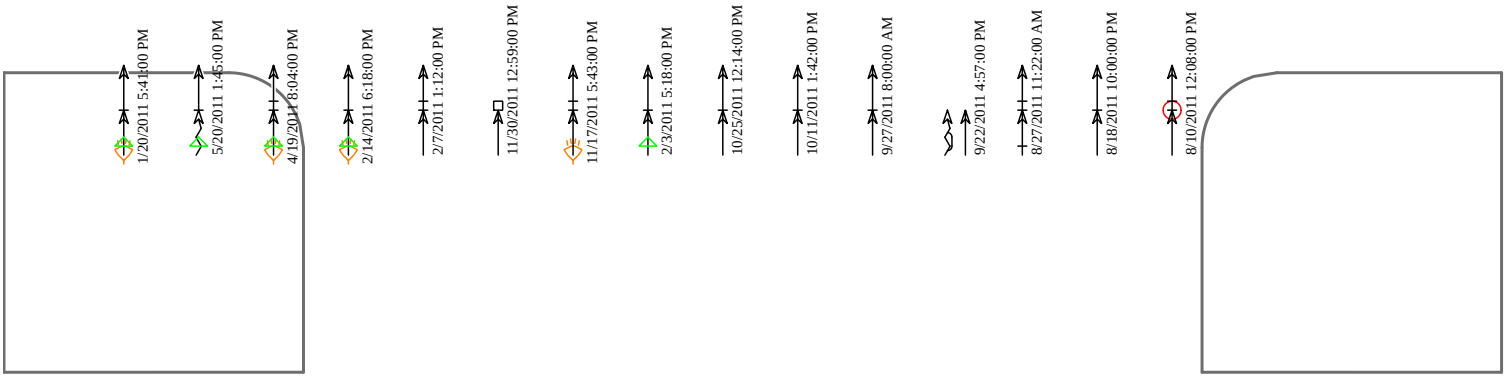
109 SHIELDS AND ELIZABETH
2011

34 Crashes

intersectionquery







(1) crashes could not be placed in this schematic

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- Parked
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- Right turn
- Left turn
- U-turn
- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

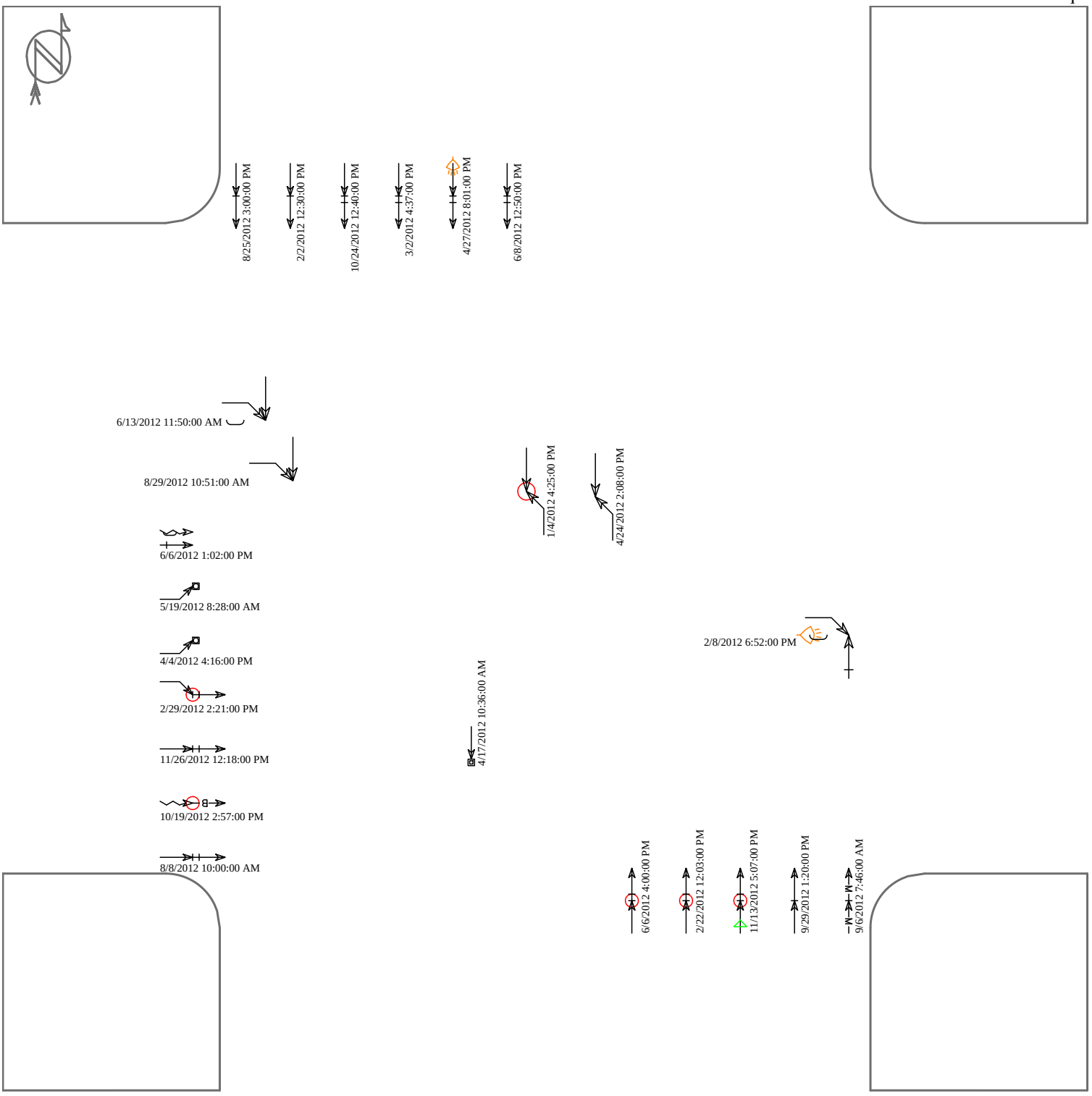
Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

24 Crashes

intersectionquery



(0) crashes could not be placed in this schematic

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- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

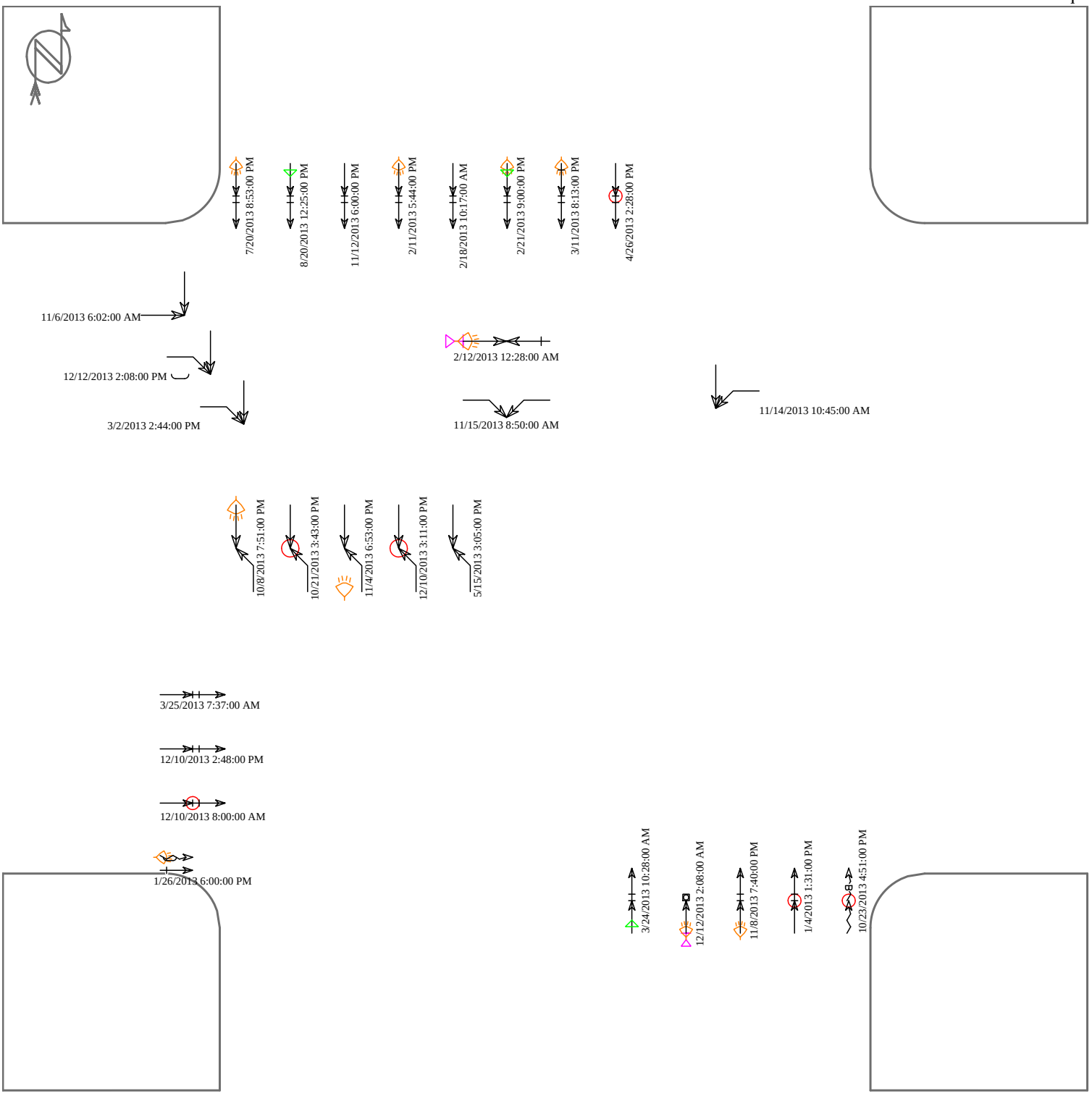
Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

29 Crashes

intersectionquery



(1) crashes could not be placed in this schematic

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- Parked
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- Out of control
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- U-turn
- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

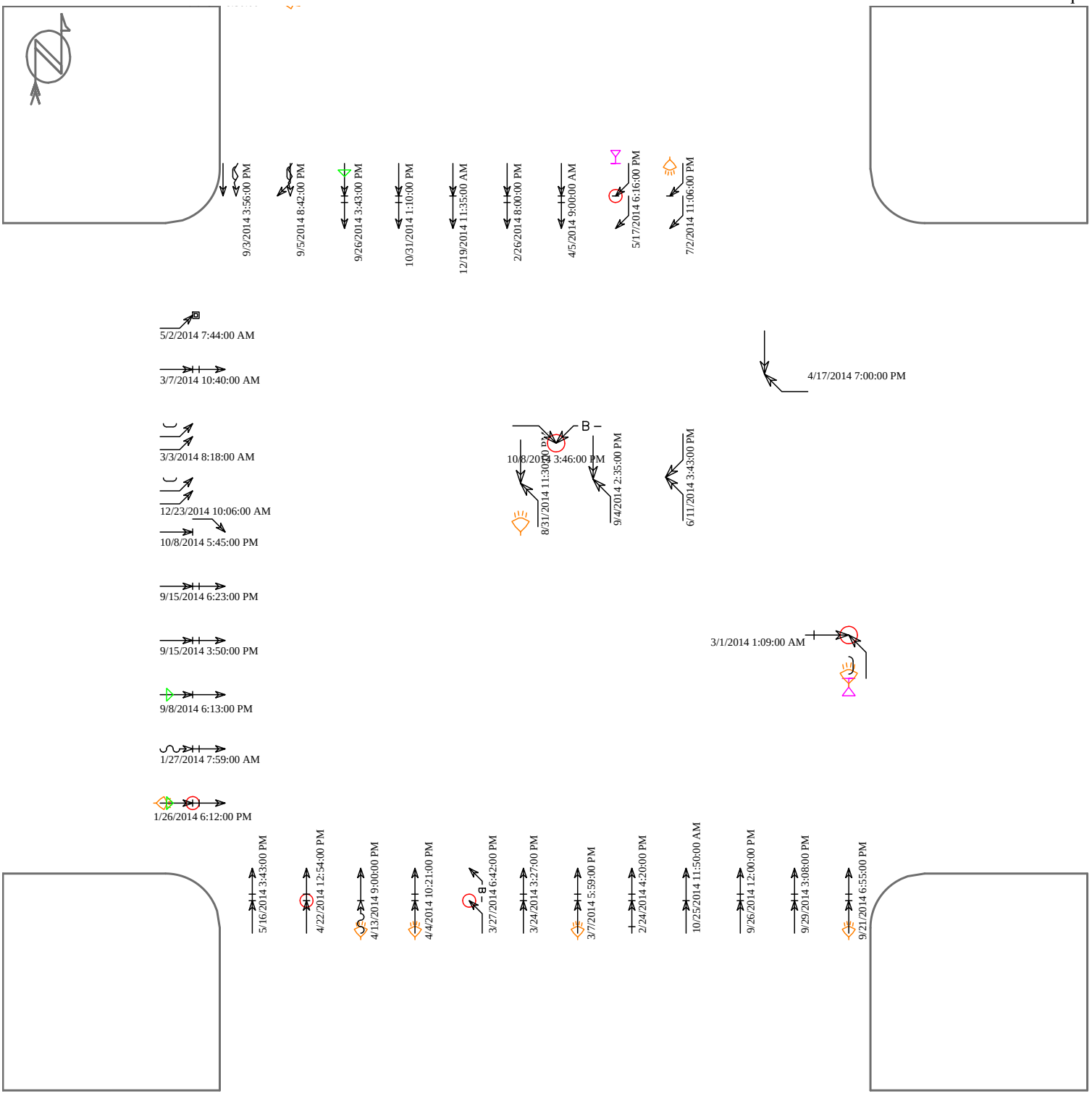
Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

39 Crashes

intersectionquery



(0) crashes could not be placed in this schematic

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- Backing
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- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

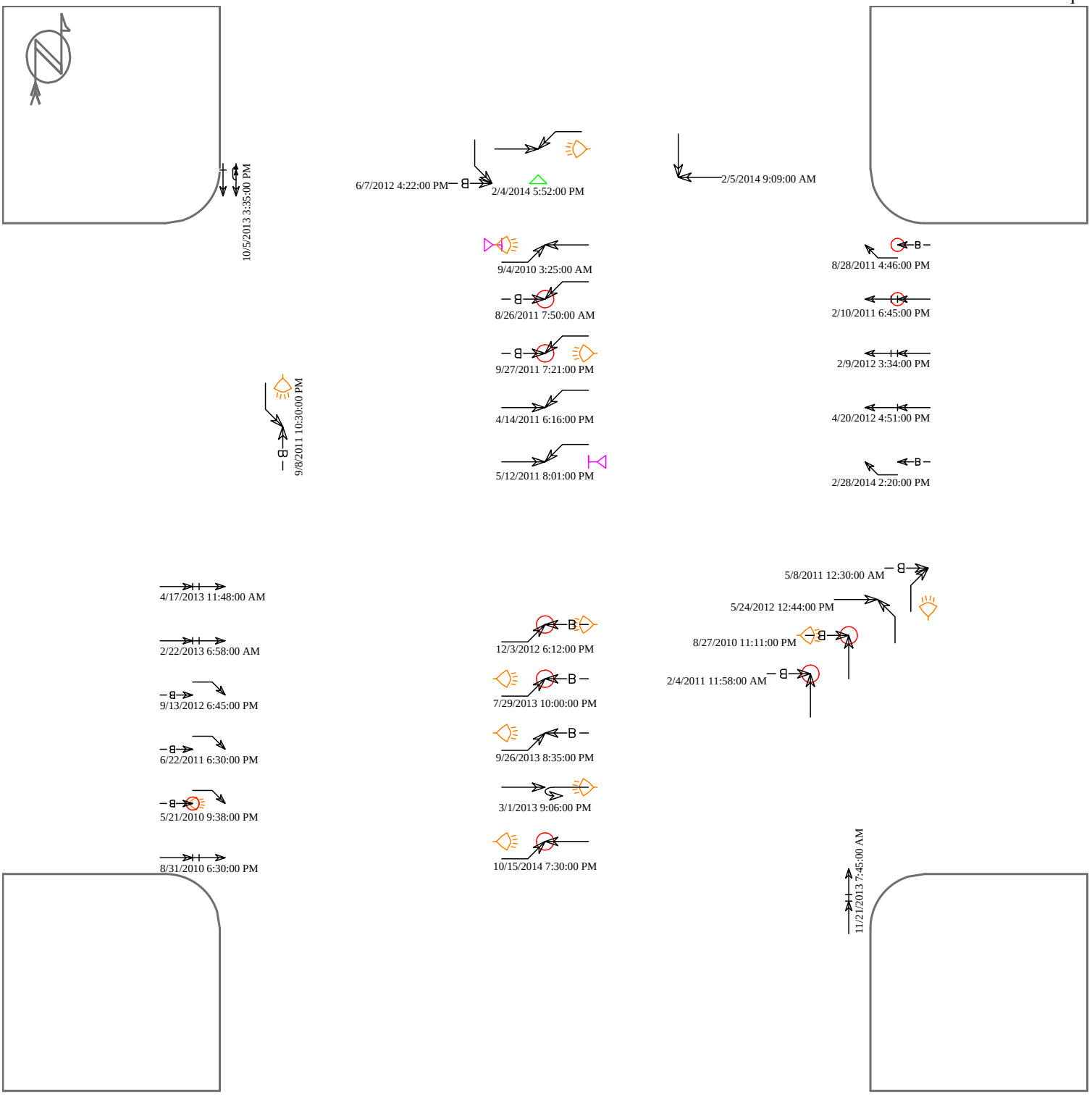
- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

3 CITY PARK AND ELIZABETH
2010 - 2014

32 Crashes

intersectionquery



(1) crashes could not be placed in this schematic

- Straight
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- Unknown
- Backing
- Overtaking
- Sideswipe
- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn
- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

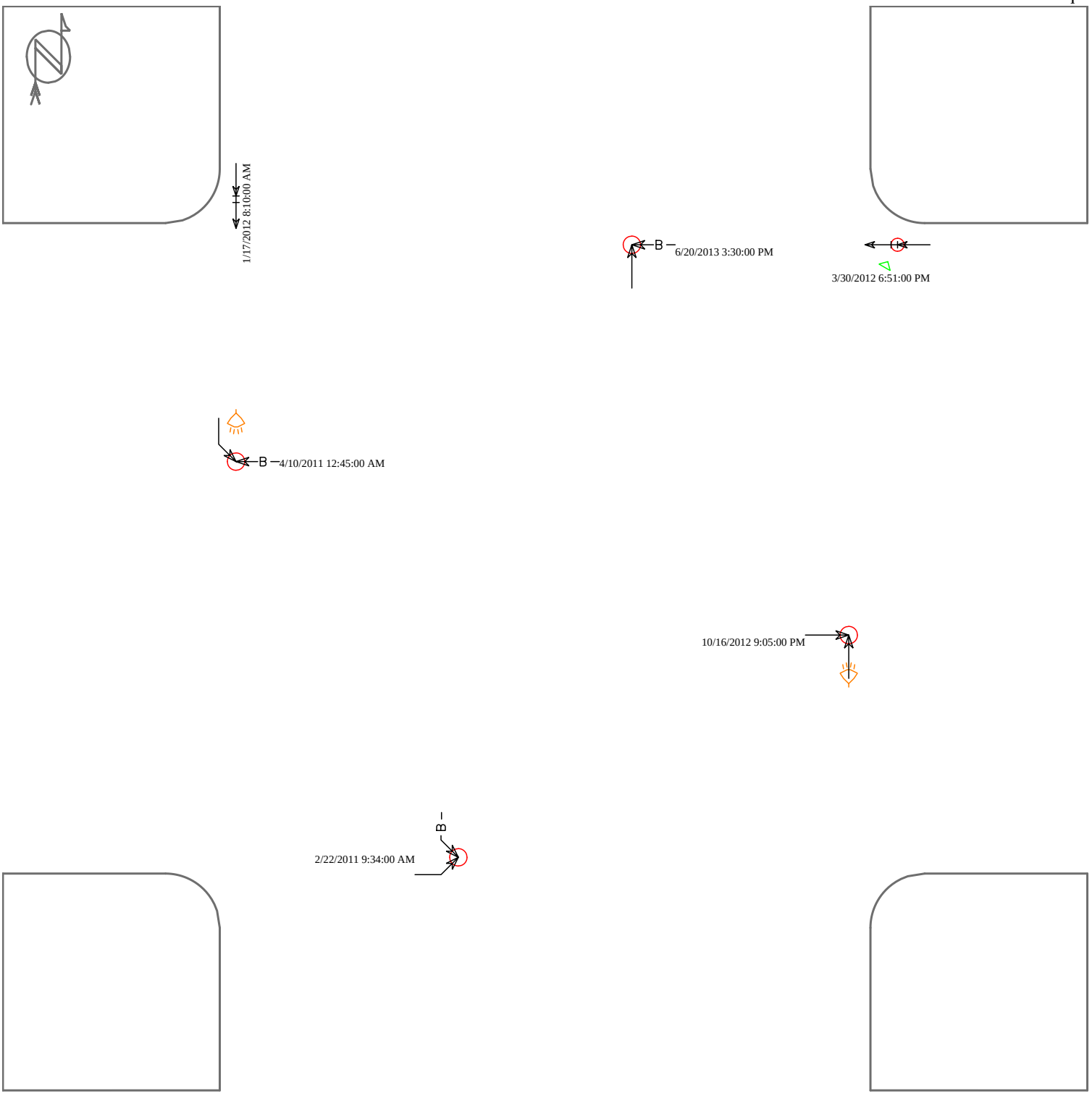
- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

6394 SKYLINE DR AND W ELIZABETH ST
2010 - 2014

6 Crashes

intersectionquery



(0) crashes could not be placed in this schematic

- Straight
- Stopped
- Unknown
- Backing
- Overtaking
- Sideswipe
- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn
- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

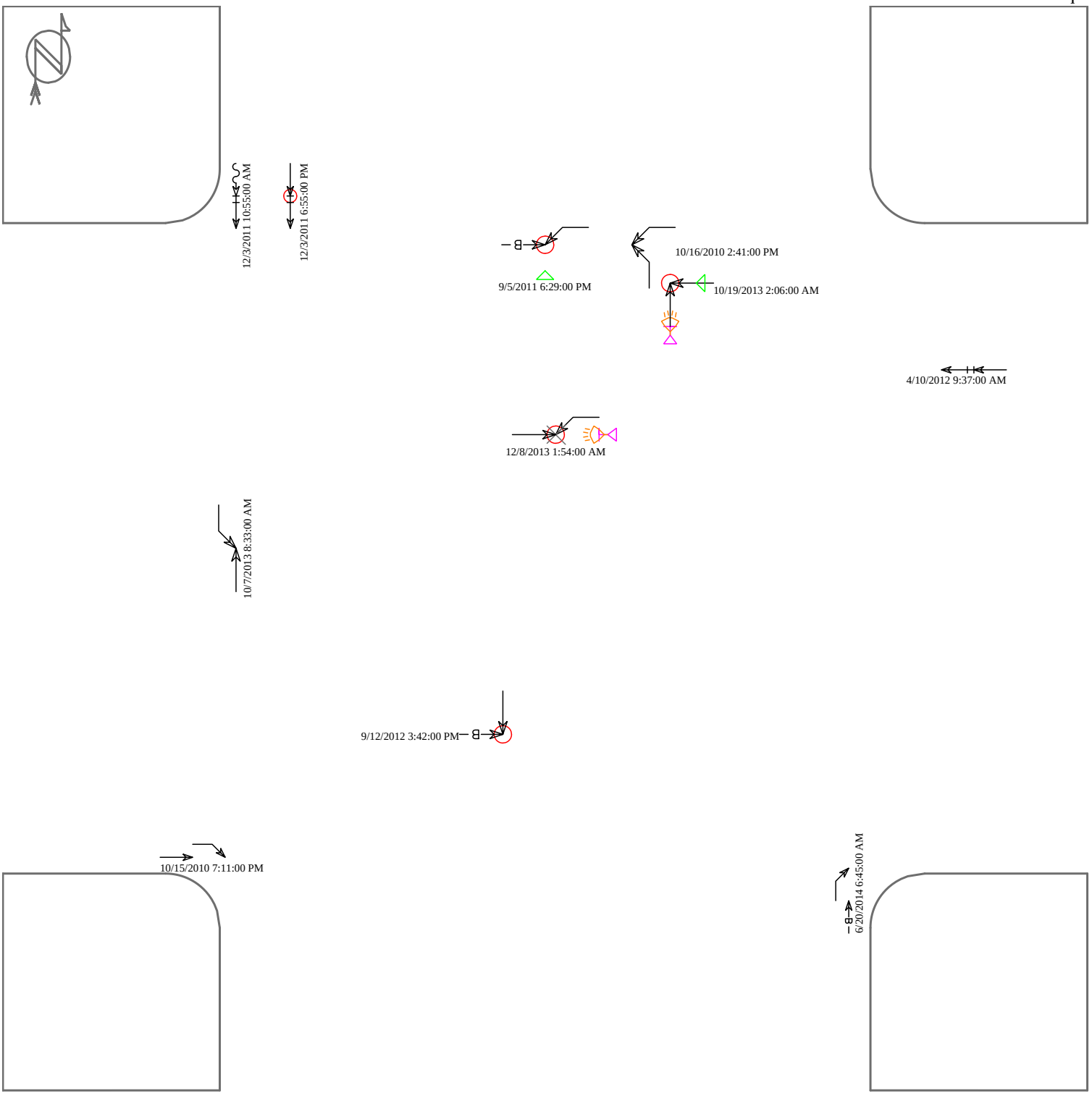
- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

7625 PONDEROSA DR AND W ELIZABETH ST
2010 - 2014

12 Crashes

intersectionquery



(1) crashes could not be placed in this schematic

- Straight
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- Unknown
- Backing
- Overtaking
- Sideswipe
- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn
- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

6385 S OVERLAND TRL AND W ELIZABETH ST
2010 - 2014

17 Crashes

intersectionquery

(1) crashes could not be placed in this schematic

- Straight
- Stopped
- Unknown
- Backing
- Overtaking
- Sideswipe
- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn
- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

APPENDIX E: COMMUNITY ENGAGEMENT DETAILS

City of Fort Collins

Corridor Understanding: Community Engagement Appendix

West Elizabeth Enhanced Travel Corridor Plan

Table of Contents

Introduction

This appendix documents the key outreach activities during Phase 1 (Corridor Understanding) of the West Elizabeth Enhanced Travel Corridor Plan.

Key outreach activities included:

Activity	Date
Surveys (Intercept, Paper, Online)	March-May, 2015
Listening Sessions	April 29 & May 4, 2015
WikiMap	April-May, 2015
Neighborhood Walking, Biking, and Transit Tours	May 11-14, 2015
Open Streets	June 7, 2015

Summaries of these outreach activities, including the key themes heard, are presented in the sections below.

Survey Summaries

BACKGROUND

As part of the community engagement and corridor understanding process three surveys were administered during the spring of 2015 which asked residents to provide responses to a variety of questions related to how they used the West Elizabeth Corridor, what the key issues were, and how the study area might be improved.

Survey Instrument	Date	Responses
Paper Survey #1—CSU Classes	March, 2015	32
Intercept Survey/Paper Survey #2	March 31 & April 10, 2015/ April, 2015	101/45
Online Survey	Mid-April through Mid-May, 2015	274
	Total	**452**

While the content of all three surveys were similar in concept, some of the questions varied and evolved between survey instruments. All questions, including demographic information, were optional. However, most respondents did complete the entire survey, which is helpful for understanding the experience of respondents from different viewpoints.

Paper Survey #1

The first of the surveys to be administered was created and distributed by City staff to students at Colorado State University (CSU). The survey consisted of 7 questions: 4 multiple choice questions, 1 ranking question, and 2 open-ended questions.

Intercept Survey/Paper Survey #2

The second survey was refined by students as part of a class project for the Center for Conservation Leadership through Learning (CLTL). The survey was administered at various locations across the West Elizabeth Corridor, such as the King Soopers shopping center and bus stops. The intercept survey consisted of 11 multiple choice questions. Several of the questions

allowed multiple responses as well as an "Other" option through which participants could provide a write-in response. Students also had the opportunity to take a paper copy of the survey to complete at home and submit later at the CSU Transit Center.

Online Survey

Survey questions from the paper survey were further refined and incorporated into an online survey which was open from mid-April through mid-May and accessed via the West Elizabeth ETC website. The online survey consisted of 11 multiple choice questions and 1 ranking question. Several of the questions allowed for multiple responses as well as an "Other" option with a write-in response. In addition, three questions asked why the user didn't use specific modes (bike, bus, walking) in the corridor more often. These had logic built in that prompted an additional question if a safety-related response was chosen and provide a deeper understanding of safety concerns related to specific modes.

A comparison of the survey questions is shown in the table below. Key topic areas include:

- Background
- Travel Behavior
- Barriers to Active Transportation
- Potential Improvements
- Demographics
- Other Comments

Responses to these questions are summarized in the sections that follow (text and charts). Questions with charts depicting responses are bold and include "**Q#.**," which indicates the chart number.

Question	Paper Survey #1	Intercept Survey / Paper Survey #2	Online Survey
BACKGROUND			
Q1. Using the map above, which of the following apply to you? (Please select all that apply)	✓	✓	✓
If answered "None of the above" in previous question: Why do you not use West Elizabeth Street?			✓
TRAVEL BEHAVIOR			
Frequency in Corridor			
On average, how often do you use the West Elizabeth corridor (between Overland Trail and Shields)?	✓		
Modes Used/Primary Mode			
Q2. Which travel mode(s) do you use in this corridor? (Please select all that apply)		✓	✓
Which travel mode(s) do you typically use in this corridor? Rank the modes as 1 for the most frequent, 2 for next, and so on; only rank the modes you use.	✓		
Q3. Which travel mode do you use most often in this corridor? (Please select one)	*	✓	✓
Corridor Likes			
What do you like about traveling in the West Elizabeth corridor?	✓		
Frequency of Active Transportation			
Q4. On average, how often do you use active transportation (biking, walking, buses) in this Corridor? (Please select one)		✓	✓
BARRIERS TO ACTIVE TRANSPORTATION			
Transit			
Q5. What keeps you from using buses more in this corridor?		✓	✓
If chose "safety concerns" in previous question: What are your specific safety concerns about taking the bus in West Elizabeth corridor? Please provide specific locations/origins/destinations.			✓
Biking			
Q6. What keeps you from biking more in the corridor? (Please select all that		✓	✓

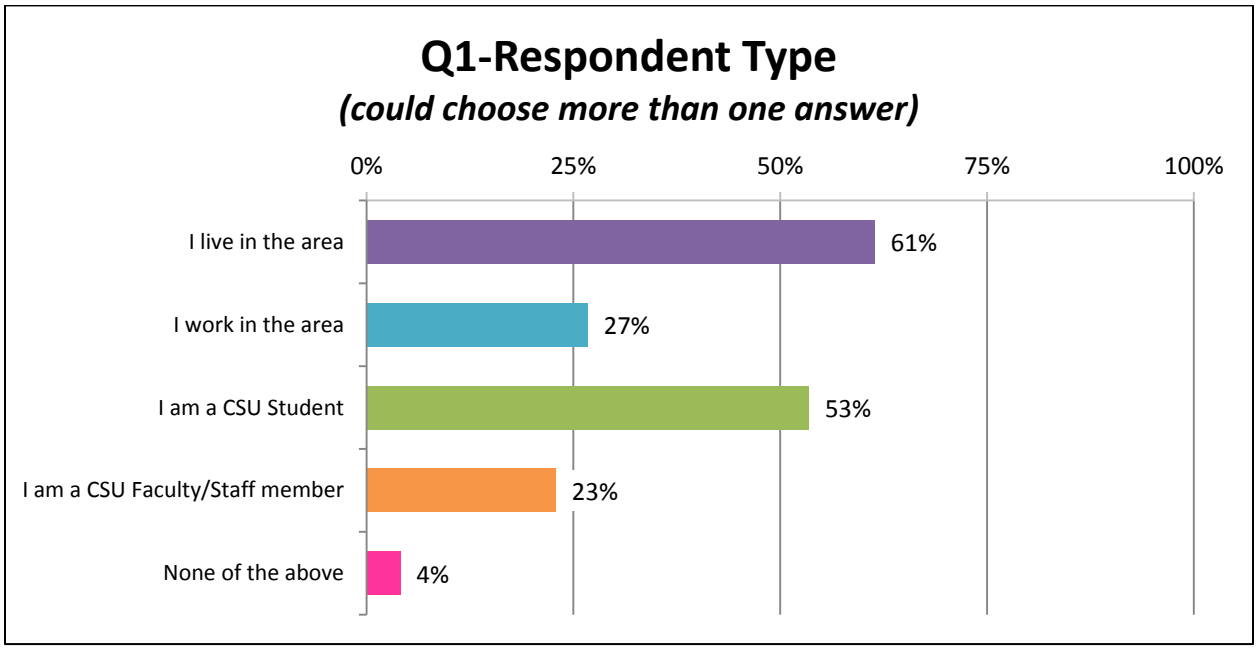
Question	Paper Survey #1	Intercept Survey / Paper Survey #2	Online Survey
apply)			
If chose "safety concerns" in previous question: What are your specific safety concerns about biking in West Elizabeth corridor? Please provide specific locations/origins/destinations.			✓
Walking			
Q7. What keeps you from walking more in this corridor? (Please select all that apply)		✓	✓
If chose "safety concerns" in previous question: What are your specific safety concerns about walking in West Elizabeth corridor? Please provide specific locations/origins/destinations.			✓
POTENTIAL IMPROVEMENTS			
What could be improved?	✓		
Q8. What improvements, if any, would you like to see in this corridor? (Please select all that apply)		✓	
Please rank the potential improvements in this corridor described below. Top priority is ranked "1".			✓
DEMOGRAPHICS			
Gender			
Q9. What is your gender?/With what gender do you identify?	✓	✓	✓
Age			
Q10. What is your age?	✓	✓	✓
Ethnicity			
Q11. With what ethnicity do you identify?		✓	✓
Rent v. Own			
Do you own or rent your residence?			✓
OTHER COMMENTS			
Please share any comments or suggestions related to the West Elizabeth Corridor or the West Elizabeth ETC Plan.			✓

* *Used responses for Rank = 1 from previous question in chart*

WHAT WE HEARD – KEY THEMES

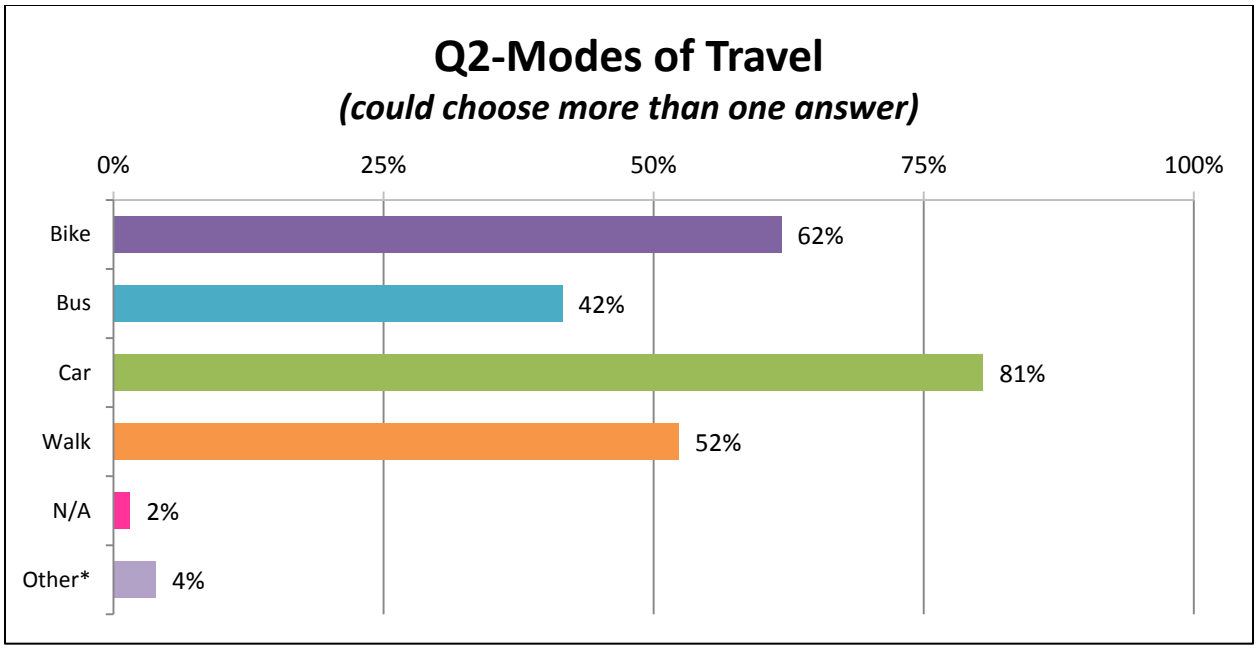
Background

- A total of 452 people participated in various West Elizabeth corridor understanding surveys.
- The majority of respondents lived in the study area (61%), and a high percentage of participants were CSU students (53%).

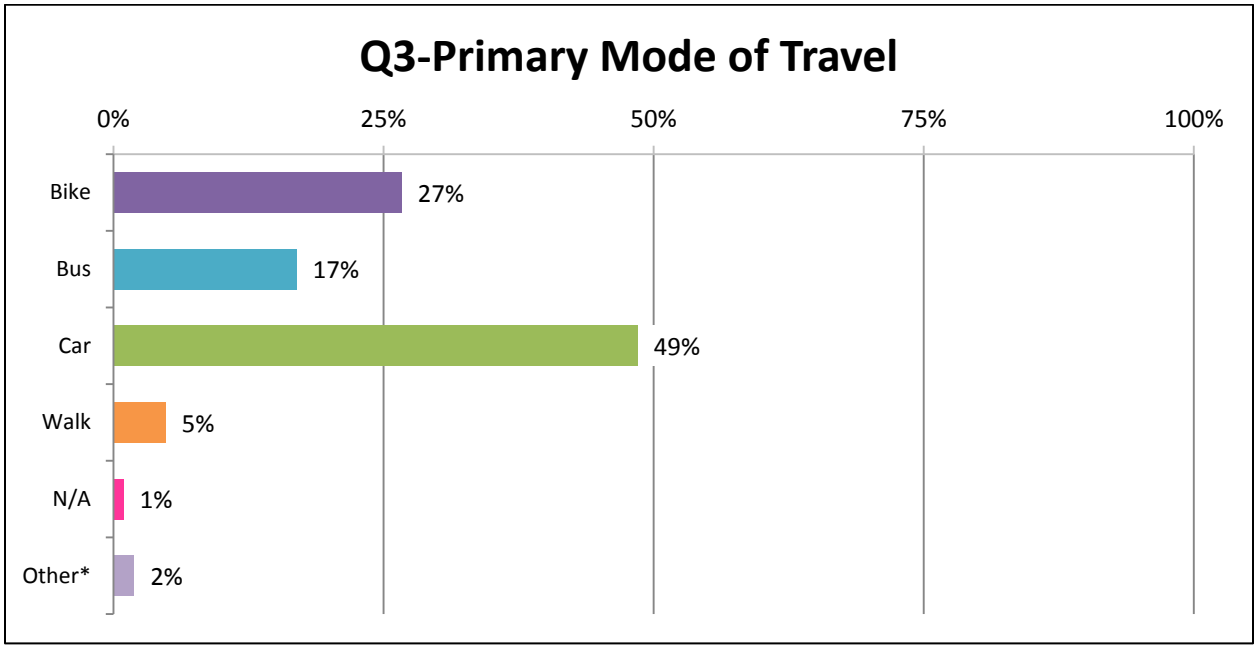


Travel Behavior

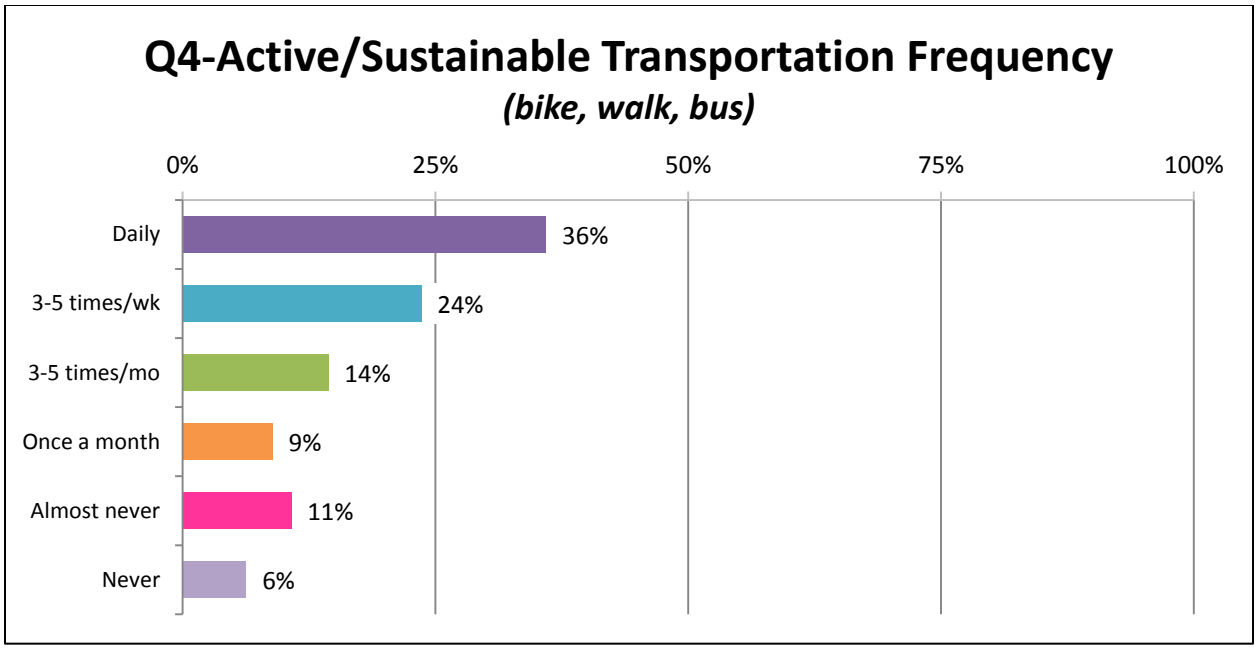
- Over half of the respondents already use multiple modes in the corridor (respondents were able to select all options that applied to them):
  - 81% - Drive
  - 62% - Bike
  - 52% - Walk
- The primary mode currently used is car (49%), followed by bike (27%).
- Over one-third of respondents (36%) use active transportation (biking, walking, buses) on a daily basis, while 17% of respondents never or almost never use active modes.



*Includes longboard/skateboard



*Includes longboard/skateboard

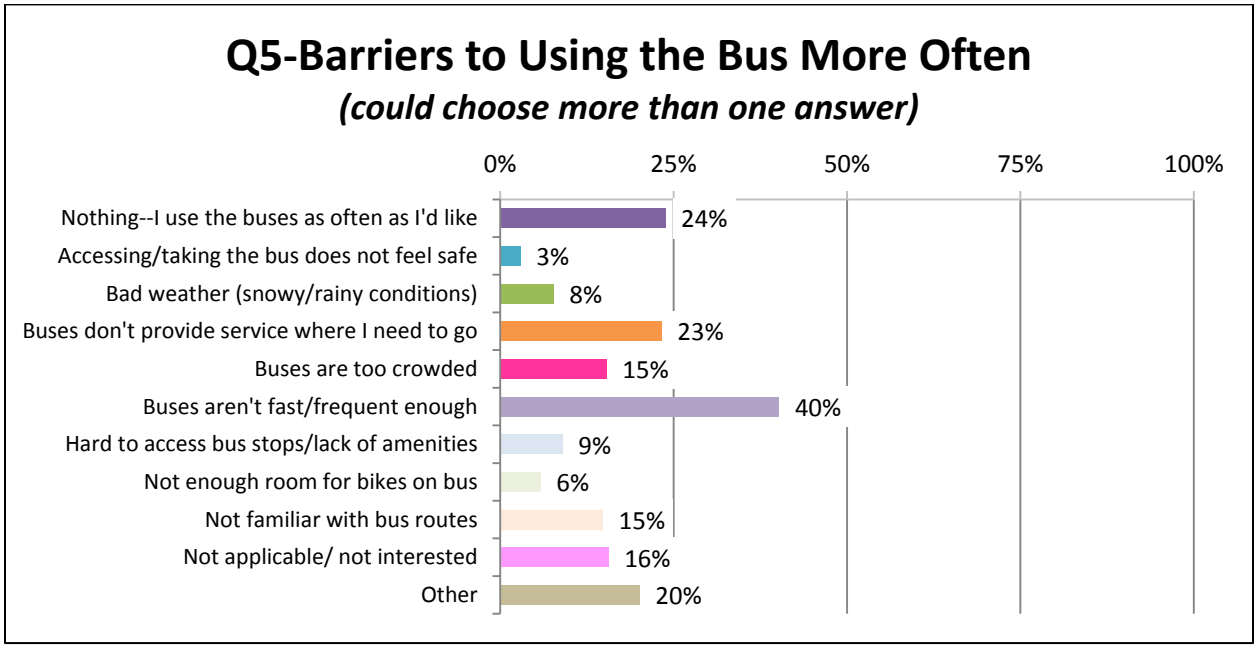


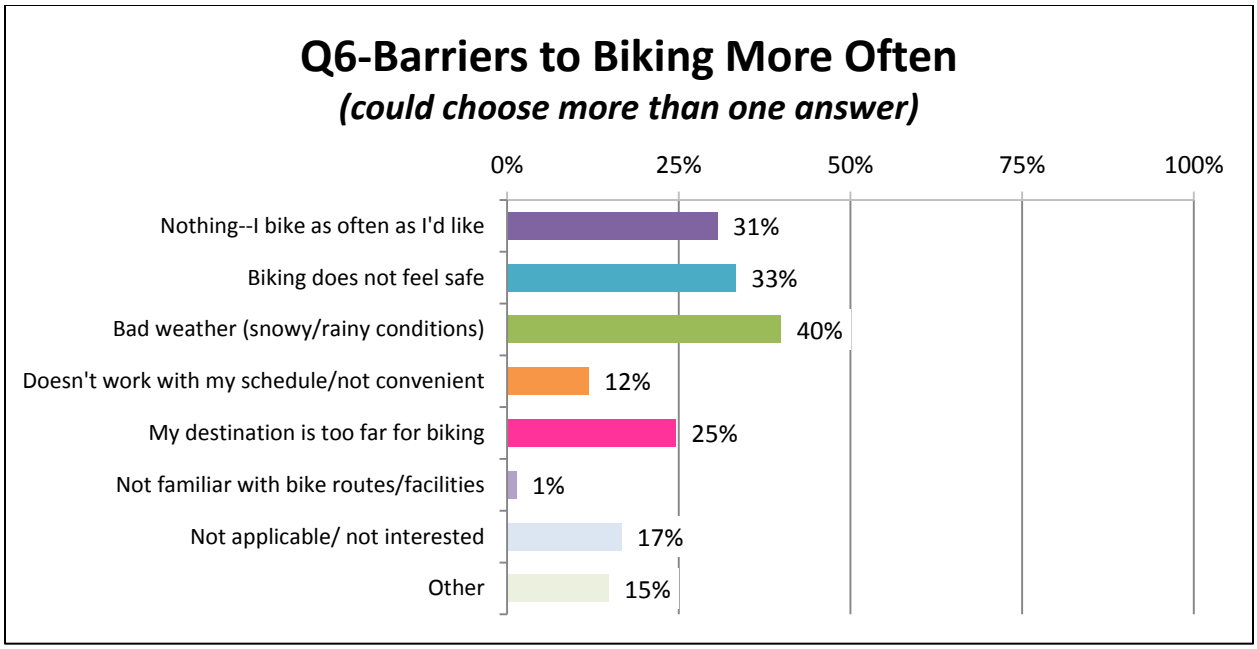
Barriers to Active Transportation

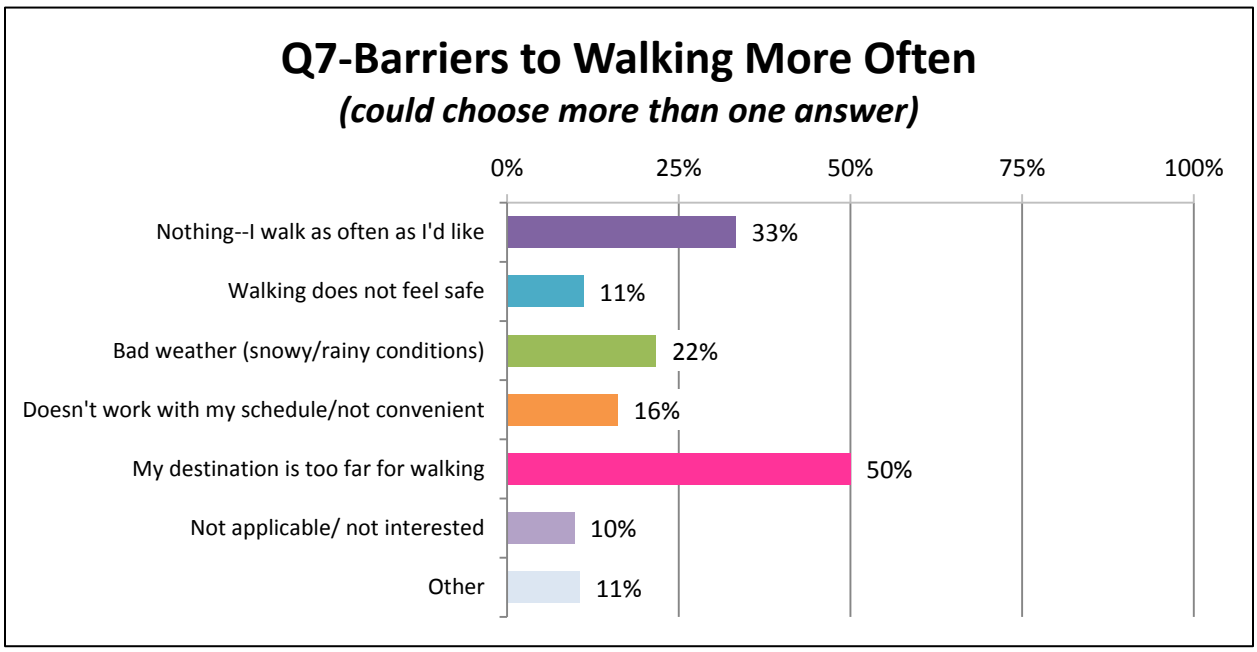
- The top barrier to using the bus more often was that the buses aren't fast or frequent enough (40%).
- Key safety concerns related to taking the bus:
    - Accessing bus service (e.g., not feeling safe walking to/from and waiting at the bus stops in early morning or evening hours when it was dark out)
    - Navigating the corridor to access the bus amidst busy traffic
- Nearly one-third (31%) of respondents don't perceive any barriers to biking in the corridor. Conversely, 40% said bad weather keeps them from biking more, and 33% said biking does not feel safe enough.
- Key safety concerns related to biking:
    - Biking alongside high levels of vehicular traffic
    - Distracted drivers not paying attention to bicyclists on the roadway; several respondents commenting on witnessing or nearly being involved in bicycle/auto accidents

- Quality of bicycle infrastructure in the area (e.g., narrow bicycle lanes, discontinuous and disconnected bicycle lanes, debris in the roadway, and challenging intersections)

- Similarly, one-third (33%) of respondents don't perceive any barriers to walking in the corridor, and 50% said the distance to their destination is too far to walk.
- Key safety concerns related to walking:
  - Nighttime safety (e.g., poor lighting in the area)
  - Perception of lack of protection from traffic along segments of the roadway with discontinuous or missing sidewalks and at intersections





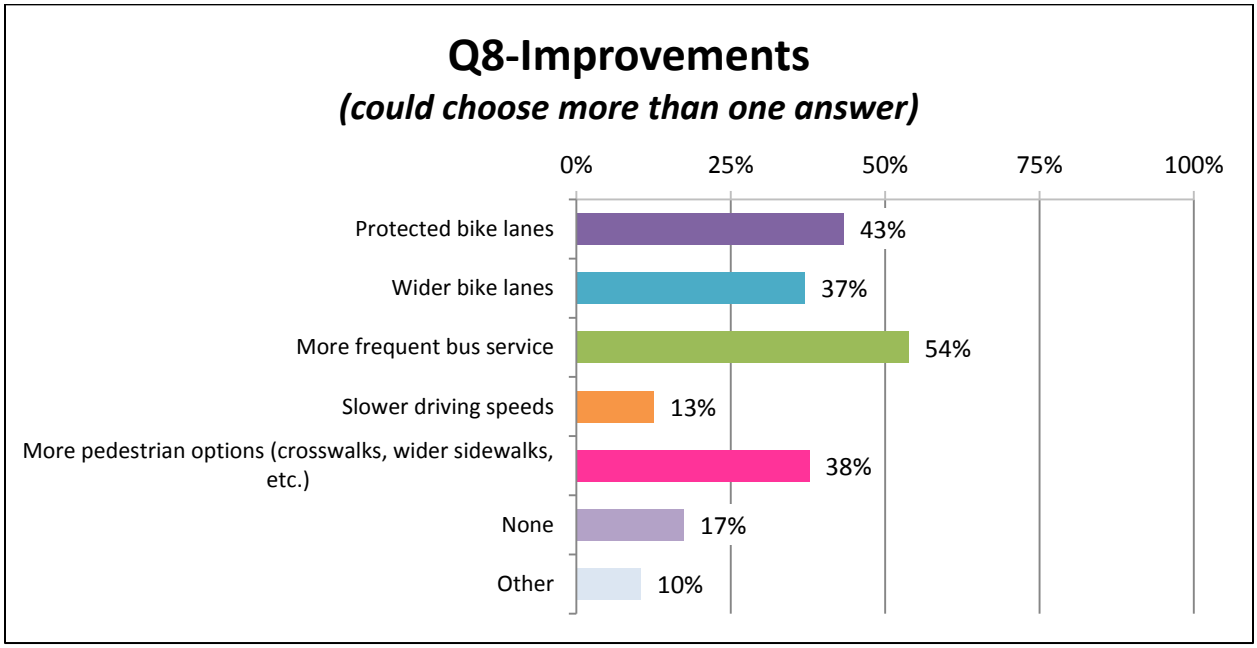


Potential Improvements

- Paper Survey #1 – Key themes:
    - Improved bicycle infrastructure (e.g., protected bike lanes, improved lane design at intersections, and better plowing of bike lanes)
    - Improved pedestrian facilities (e.g., an underpass crossing Shields and improved intersection design and timing)

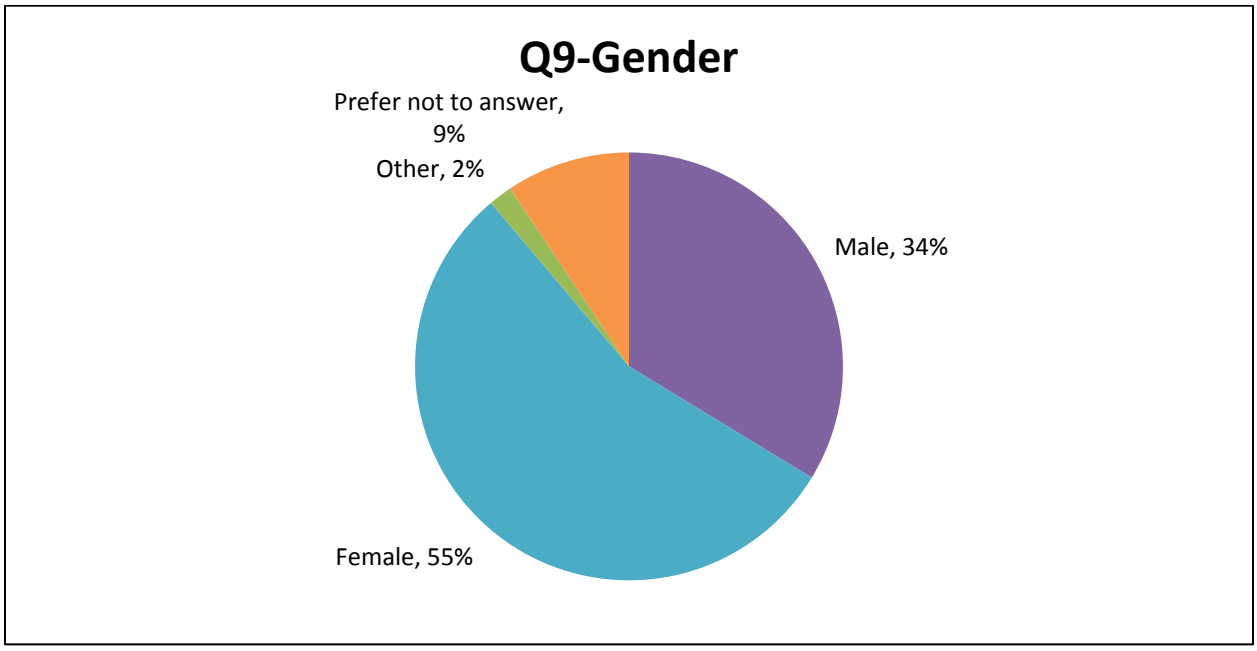
- Additional bus routes, additional space on buses
- Traffic/congestion management

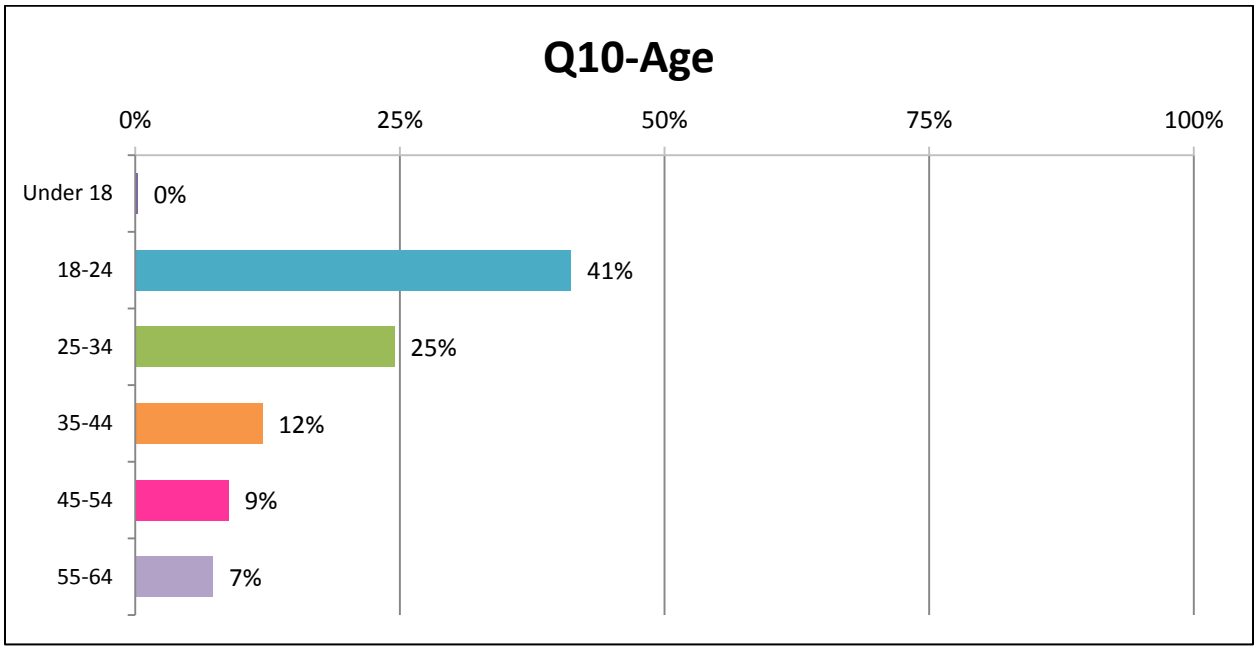
- Intercept Survey/Paper Survey #2 – The most frequently chosen types of improvements supported included:
  - 54% - More frequent bus service
  - 43% - Protected bike lanes
  - 38% - More pedestrian options
  - 37% - Wider bike lanes
- Online survey – Ranking of improvements:
  - #1 – Bike-related improvements (weighted score: 763)
  - #2 – Transit-related improvements (668)
  - #3 – Pedestrian-related improvements (619)
  - #4 – Motor vehicle-related improvements (605)
  - #5 – Urban design-related improvements (489)

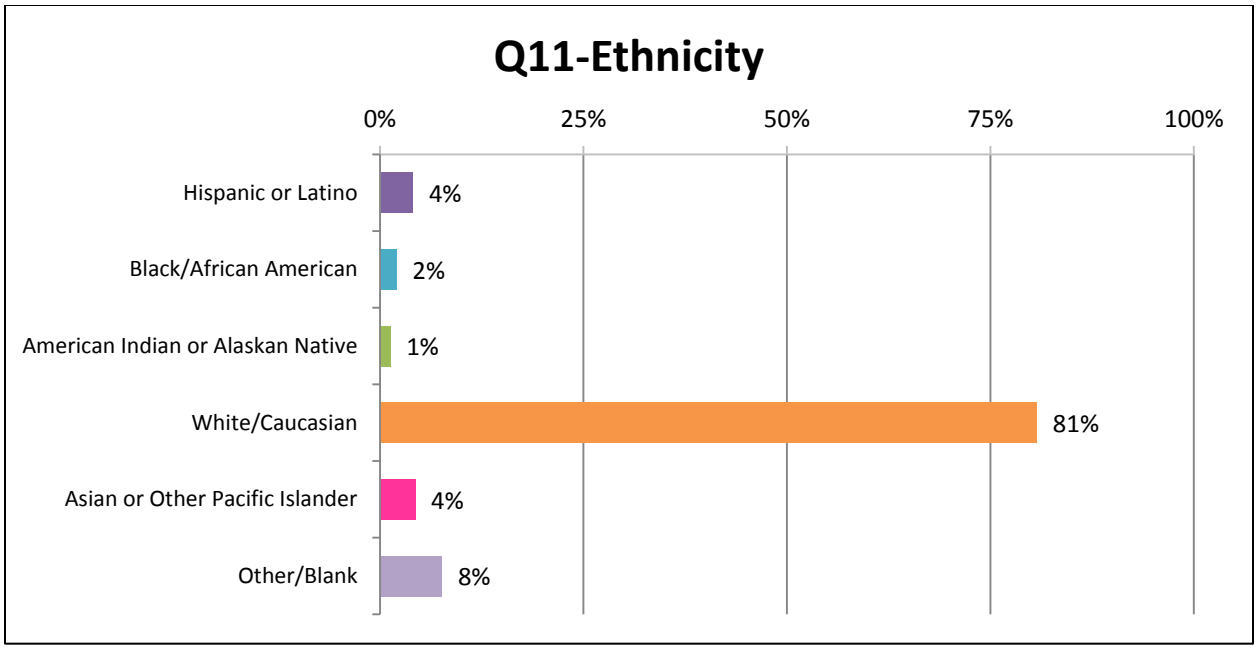


Demographics

- Overall, a majority of survey respondents were female (55%) and between the ages of 18 and 34 (66%) which is generally representative of the study area.







Other Comments

Comments were wide ranging due to the nature of the question; however responses tended to focus on a few key issues similar to comments on other survey questions.

- Suggestions for improved bicycle infrastructure, including protected bike lanes and improved lane design at intersections.
- Improved bus service (e.g., MAX-type bus system on Elizabeth, extended service hours, more bus stops, and better connections to the rest of the city).
- Additional speed enforcement, improved intersection design and signal timing, and suggestions for a traffic light at the King Soopers entrance on West Elizabeth Street.
- Concerns about the increased development and density in the corridor and the impacts that changes to the corridor may have on the surrounding neighborhoods.

West Elizabeth Enhanced Travel Corridor Plan

City of Fort Collins

Listening Session Summary

BACKGROUND

Two listening sessions were held on April 29 and May 4, 2015 to gain insights from the community about the existing conditions and issues surrounding the West Elizabeth Corridor and to help identify potential areas of improvements.

Date	Session	Location	Participants
April 29	6:00 – 8:00 pm	Westminster Presbyterian Church	30
May 4	6:00 – 8:00 pm	Polaris/Lab School	21
		Total	**51**

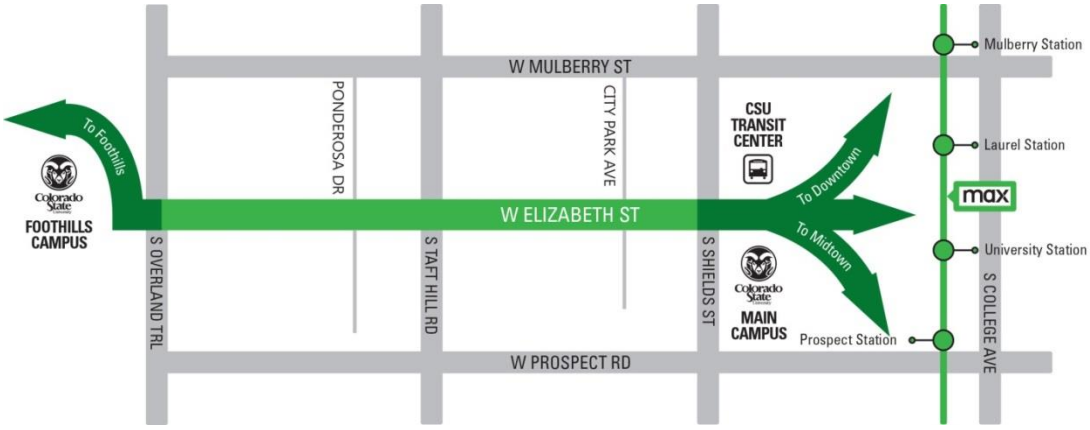
The listening sessions began with an introduction to the West Elizabeth Enhanced Corridor Plan, a description of the community engagement activities conducted thus far, and an overview of the community engagement process moving forward.

Participants were asked to break into groups to discuss different transportation modes in the corridor, including: vehicular, transit, pedestrian, and bicycle. Each group had maps associated with the topic areas and was encouraged to share thoughts, concerns, or questions they had related to the topic. Participants were encouraged to discuss their thoughts with the group and write notes on the maps. Each group had approximately 30 minutes to discuss the topic before moving to one of the other topic areas.

WHAT WE HEARD – KEY THEMES

The project team heard a number of concerns, opportunities, and comments during the discussions and on the comment forms. The following list of key themes summarizes the ideas and comments shared by participants at both listening sessions. Comments are organized by corridor segments according to the map below:

- CSU Foothills Campus/Overland Trail to Ponderosa Drive
- Ponderosa Drive to Taft Hill Road
- Taft Hill Road to City Park Avenue
- City Park Avenue to Shields/CSU Main Campus



Overland Trail to Ponderosa Drive

- Bicycle infrastructure is discontinuous and less prevalent in this western portion of the corridor.
- Pedestrian crossing (across Elizabeth) is difficult and dangerous; we need dedicated crossings.
- I would ride the bus more if there were service on Mulberry Street west of Taft Hill Road.
- Elizabeth Street is bottlenecked beyond Ponderosa Drive; remove the on-street parking.
- Property owners are concerned how they might be affected by changes to the corridor.

Ponderosa Drive to Taft Hill Road

- The intersection at Taft Hill Road and Elizabeth is busy, dangerous, and confusing; there are conflicts between all modes there.
- It is difficult and to cross Elizabeth west of Taft Hill Road. We need a pedestrian crossing near King Soopers (*heard many times*).
- Access conflicts at King Soopers entrance west of Taft Hill Road (also south of Elizabeth Street) – *(this was mentioned several times and is probably the biggest theme of the night)*

Taft Hill Road to City Park Avenue

- City Park Avenue north of Elizabeth is dangerous for bicyclists despite being a major connection to Old Town. Need a low-stress bike network on City Park Avenue.
- The bike lane (westbound) on Elizabeth Street past City Park Avenue is too narrow.
- There is a lot of congestion on City Park Avenue and Plum Street. Too much activity; on-street parking, buses, bicyclists, and pedestrians (*heard several times*).
- There is a lot of cut through traffic on Springfield Drive and City Park Avenue.

City Park Avenue to Shields

- Intersection improvements are needed at Plum Street and Shields for all modes.
- Bike facilities need improvements on Plum Street; this is a high conflict area between buses and bicyclists (*heard several times*).
- Improved bicycle crossings needed at the Shields and Elizabeth Street intersection, currently feels unsafe.
- Although people appreciate the activated crosswalk on Elizabeth Street drivers don't necessarily yield to pedestrians.
- Would like to see detached bicycle and pedestrian facilities; possibly a shared use path.
- There is a lot of congestion in Campus West.
- Students use the neighborhood between City Park Avenue and Constitution Avenue south of Elizabeth Street as a park-n-ride.

Other/General Comments

VEHICULAR

- Lots of access points (driveways) that result in high number of bicycle/vehicular conflicts.
- "Right-sizing" Elizabeth Street and using a vehicular lane for dedicated transit or improved bicycle and pedestrian facilities might be a good option (*heard several times*).
- Better traffic enforcement is needed (*heard several times*).
- Would like to see traffic diverted to adjacent arterials (Mulberry & Prospect) to relieve congestion.
- Speeding is big issue, traffic calming is needed.
- Improved street lighting is needed.

TRANSIT

- Bus stop amenities need improvements (*mentioned several times*).
- Need higher frequency bus service; full buses discourage transit use.
- Students use the study area neighborhoods as a park-n-ride.
- Buses speed in the corridor (*mentioned several times*)
- Need Sunday, weekend, and late evening service.
- Would like the buses to connect to the MAX.
- Buses only cater to students.

PEDESTRIAN

- Sidewalk infrastructure is inconsistent; need continuous walkability along all of West Elizabeth Street and better cohesiveness in the level of infrastructure.
- Sidewalks are narrow, uncomfortable, and challenging for mobility-challenged individuals.
- Infrastructure needs to be better maintained including snow removal.
- Detached sidewalks are preferred.
- Need more pedestrian refuge islands to protect pedestrians when crossing Elizabeth Street.
- Residents are concerned about light pollution from adding additional pedestrian crossings.

BIKING

- Biking behavior in the corridor is impulsive and unpredictable, such as riding the wrong direction in bike lanes and on the sidewalks. There needs to be more education to improve travel behavior.
- Bike lanes are not obvious /intuitive on Elizabeth Street. In some sections it unsure if there is a dedicated bike lane or if it is just the road shoulder (*heard several times*).
- Bike lanes need better snow removal.
- Bikes and buses go the same speed, leapfrog down corridor, this creates multiple conflict points between the two.
- North-south connectivity across the corridor needs improvement.

WikiMap Summary

BACKGROUND

As part of the first phase for the West Elizabeth Enhanced Travel Corridor Plan an online interactive map "WikiMap" was created and available for input. A link to the WikiMap was distributed through the project email distribution list and newsletter as well as available on fcgov.com\westelizabeth from mid-April to mid-May 2015.

The wikimap contained a basemap of the study area on which participants were instructed to provide feedback regarding:

- Problem Locations
- Places I Liked
- Routes I travel

WikiMap Instructions:

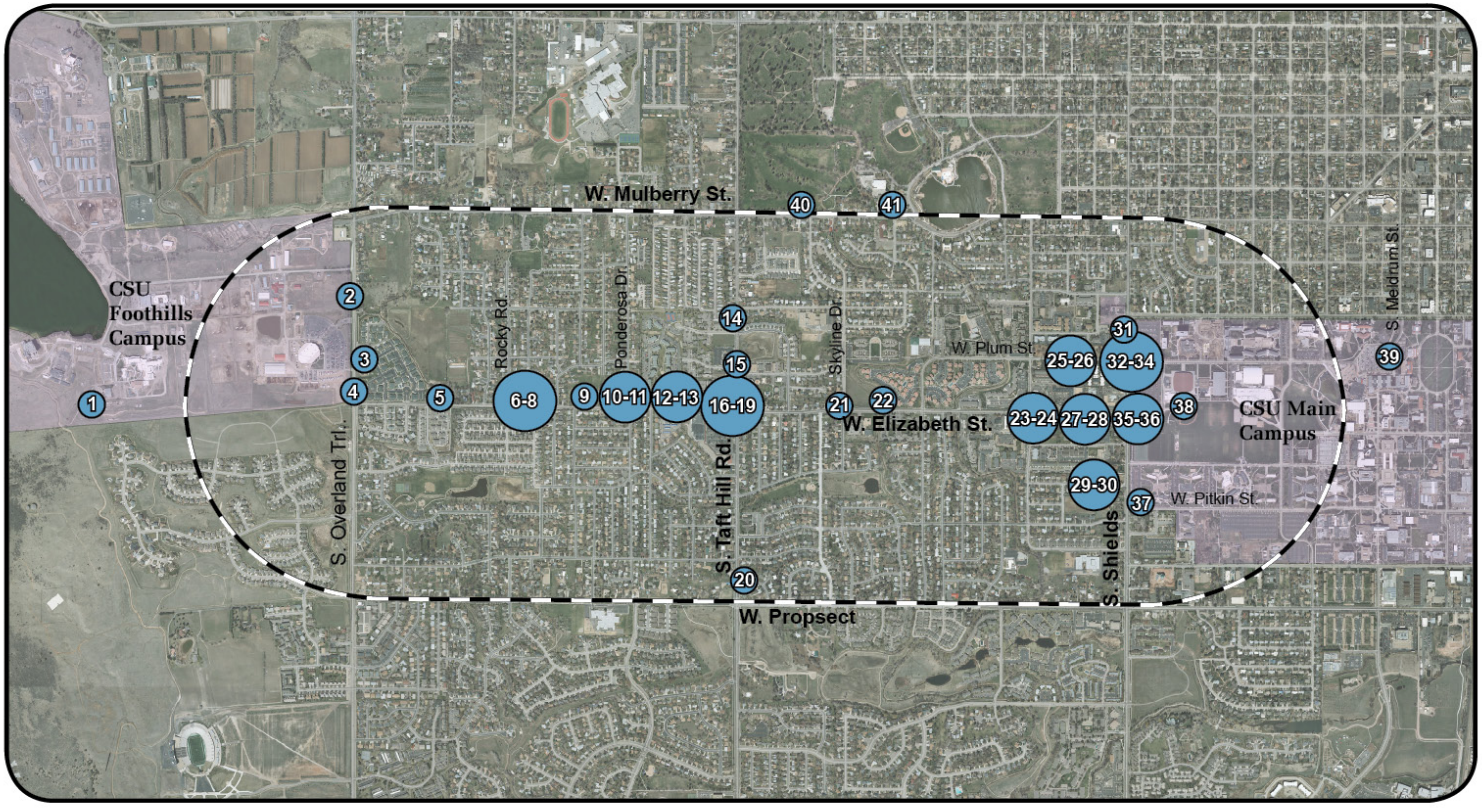
Participants logged 41 "Problem Locations" and comments. Comments generally related to bicycling infrastructure and safety, pedestrian infrastructure and safety, intersection design and signal, and traffic volumes. The comments highlighted some of the challenging interactions between multiple modes. For example, a majority of the comments related to bicycling, such as concern about discontinuous bicycle lanes, were also accompanied by concerns for high levels of vehicular traffic.

There were fewer "Locations I Like" provided by participants; 7 total. The two main themes expressed in the comments where an appreciation for open space, community gardens, and parks and an appreciation for newly resurfaced and striped bicycle lanes.

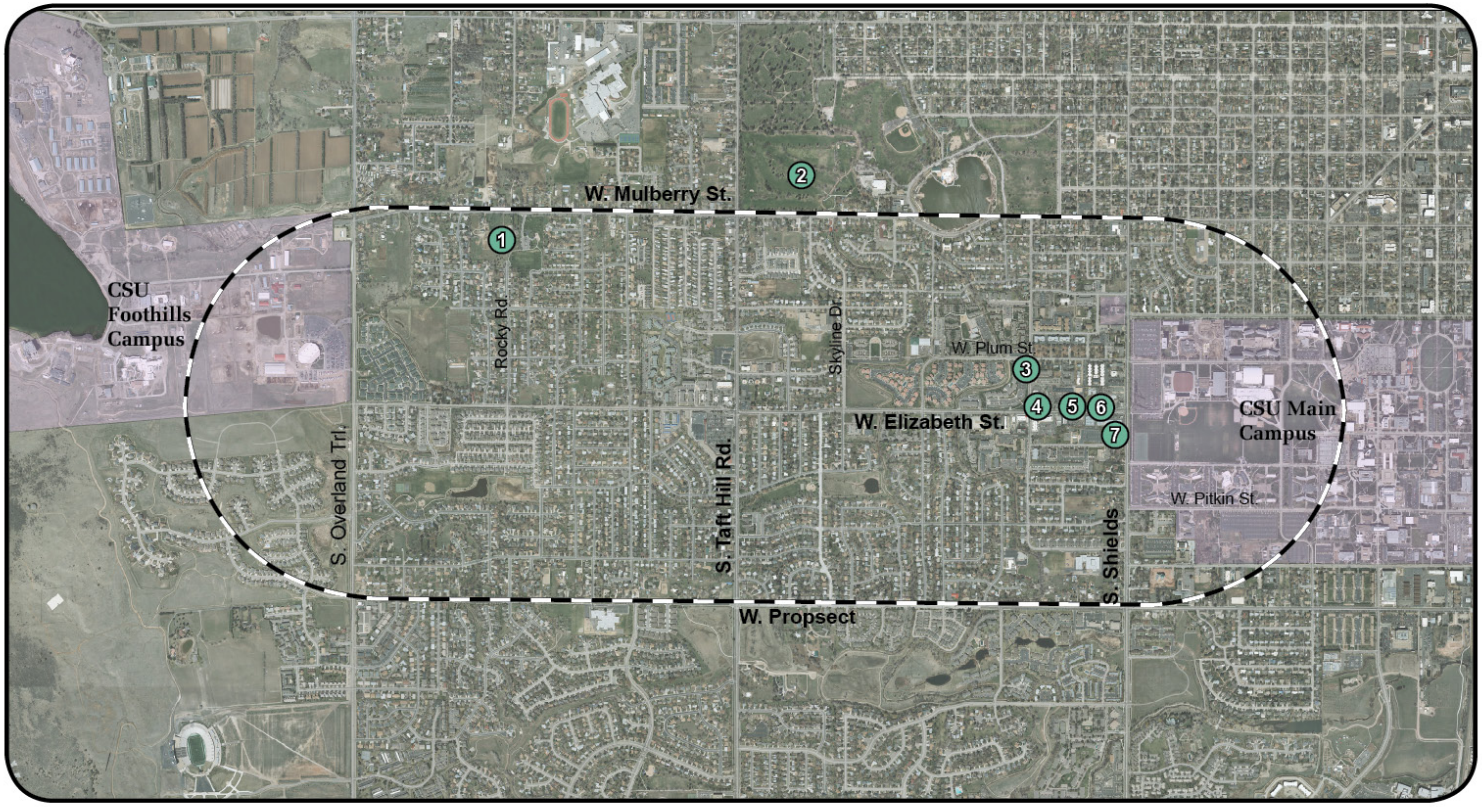
Participants were also able to provide detailed information on how they traveled in the corridor by marking routes they took and indicating the mode(s) used. Of the 27 routes logged, over half of the trips were made by bike. Popular destinations were the CSU Main Campus and the CSU Foothills Campus.

DETAILED RESULTS

WikiMap—Problem Locations



WikiMap—Locations I Like



Legend

- Locations I like
- CSU Campus
- Study Area Boundary

0 0.25 0.5 1 Miles

N

Problem Location Comments:

1. Public transportation doesn't have service when classes are out of session; this is a problem.
2. No sidewalk
3. Crossing to the Equine Center is challenging.
4. a. Multiple issues at this intersection; fast-moving cars, can't see cars until they are on top of hill, lots of cars turning, no crosswalks across Overland Trail.
   b. Agree, needs a traffic light and turn lanes.
5. Need a bus stop here that should include a clearly marked bench/shelter configuration.
6. a. Bike lane nonexistent - must merge with traffic when biking west. Poorly lit.
   b. Agree, north side of street starting from Ponderosa Drive to Overland Trail needs sidewalks/bike paths and lighting to make it safe for everyone.
7. No bike lane. It just disappears.
8. No comment
9. No bike lane eastbound.

No bike lane eastbound along Elizabeth near Cypress Drive.

10. Cars parked along Elizabeth Street force drivers heading south from Ponderosa Drive to pull very far into Elizabeth Street.
11. Westbound cars on Elizabeth Street turning right onto Ponderosa Drive cross over the bike lane.
12. Congested area with lots of pedestrians trying to cross Elizabeth Street and lots of cars going to/from the grocery store.
13. King Soopers driveway turn lane is so short and so close to Taft Hill Road that drivers routinely swerve around cars turning left at high speeds. I have been nearly hit multiple times there.
14. Unsafe crossing. You must cross to the left side of the road to push the crosswalk button. The button is also not near the sidewalk, so you must dismount and leave your bike and trailer (with kids) to push the button, then get back on your bike and move to the right hand side of the road to cross.
15. Green bike zone on the southwest corner of Plum Street is a problem. The right turn lane (to head south on Shields) crosses the bike lane, which gets heavy traffic. This type of design will result in a careful driver accidentally hitting a distracted biker.
16. a. Congestion/unsafe due to high volume of cars, needs improvement traffic timing, turn lanes, bike and walking space.
    b. This intersection is backed up all directions from 9 am to 5 pm, 6 days a week. The summer is not bad but when the students are here I avoid it as much possible.

Problem Location Comments:

17 This is a problematic intersection, as both Elizabeth Street and Taft Hill Road become very narrow here. I imagine this occurred because of lack of space. Regardless, narrow sidewalks, loss of bike lanes, narrow car lanes, and multiple entrances (King Soopers, Loaf-n-Jug, Domino's, Everyday Gas Station, etc) make this an unsafe and unpleasant area for all modes of transportation.

18 Poor bike lane indication for cyclists traveling west.

19 No comment

20 a. This area on Taft Hill Road, roughly between Lake Street and Stuart Street often contains a high amount of road debris in the bike lanes. I'm not sure exactly what causes so much stuff to pile up in the bike lanes in this area.
b. Crossing Taft Hill Road at Lake Street is difficult and dangerous on a bike and as a pedestrian. The speed limit on Taft Hill Road is high, the two sides of Lake Street don't meet, and it is difficult to view traffic coming from the south because of a short, steep hill. Bikers looking for alternatives to heavy-traveled, high speed-limit, bus route streets like Prospect Road would gravitate to streets like Lake Street, but crossing Taft Hill Road and Shields (on Springfield Drive) is almost as dangerous as taking Prospect.

21 Poorly lit, can't see people approaching on a bike while waiting to make a turn.

22 Poorly lit

23 The pavement in the bike lane is uneven and makes me nervous about catching a wheel. Drivers like to speed off from the stop light at City Park Avenue. Sometimes there is a bus in the bike lane and I have to jump onto the sidewalk.

24 a. Busy intersection that does not feel safe for cyclists, especially younger cyclists accessing Bennett Elementary School.
b. It doesn't seem like cyclists on City Park Avenue are able to set off the automatic sensors to change the light.

25 Could this area be closed for transit and bike only during the day?

26 The construction, closing the sidewalks and bike lanes makes this a nasty mix.

27 High volume of cyclists and mixing zones with auto traffic. This area should have a protected bike lane.

28 Island in the middle of the road.

29 University students crossing Shields from Laurel Street to Prospect creates unsafe conditions for all. A grade-separated crossing for access to CSU Main Campus is critical.

30 High traffic area. Nearly impossible to make a turn north onto Shields Street.

31 No comment

Problem Location Comments:

32 When going westbound on Plum Street across this intersection, cars turning left often can't see you until you are in the intersection because same direction cars (turning left) block the view.

33 Heavy congestion for all modes of transportation. It is going to get worse with the new apartments opening in Fall. Need timed, left turn signal both eastbound and eastbound (turning from Plum Street onto Shields).

34 Walk signal infrequent, and some cars don't pay attention to people in the crosswalk.

35 The light is inconsistent here. It doesn't always sense bikes headed east.

36 Would love to see an over or underpass here or a block north or south. Lots of pedestrians here!

37 Very difficult to cross here.

38 Trail is too narrow.

39 Lack of grid connection between CSU west routes and MAX route. East-west bus routes should be extended.

40 Trying to make a left or right turn off of Crestmore is EXTREMELY dangerous, huge trees block visibility of oncoming cars as well as bikes.

41 No comment

Location I Like Comments:

1 Open park space and community garden.

2 This is a nice park.

3 New bike lanes make this section of City Park Avenue feel safer.

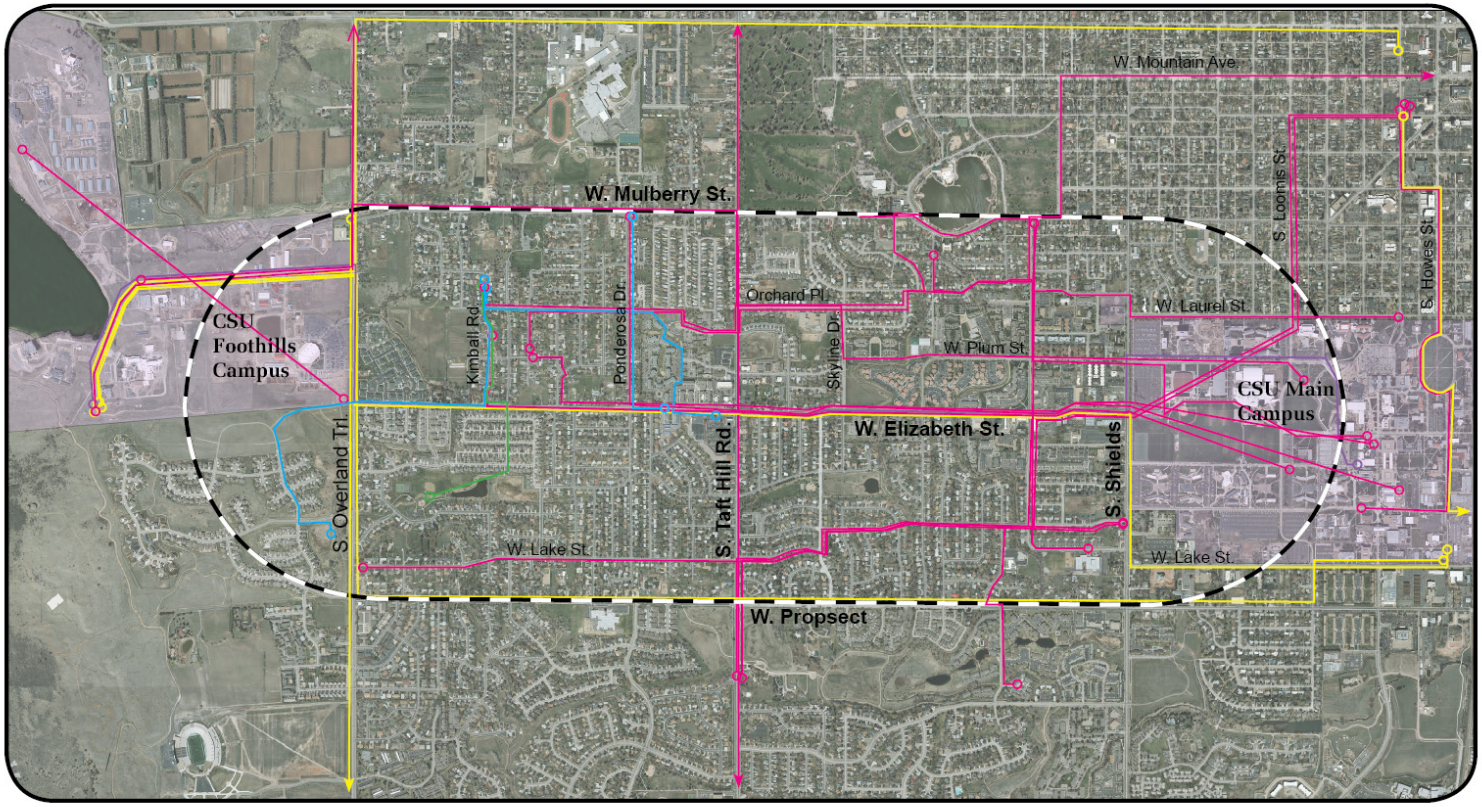
4 I like when I get here on my ride and the bike lane is smooth and wide. Motorists seem to be more aware of cyclists in this area too.

5 Sonic Drive-in

6 No comment

7 Comcast Xfinity office.

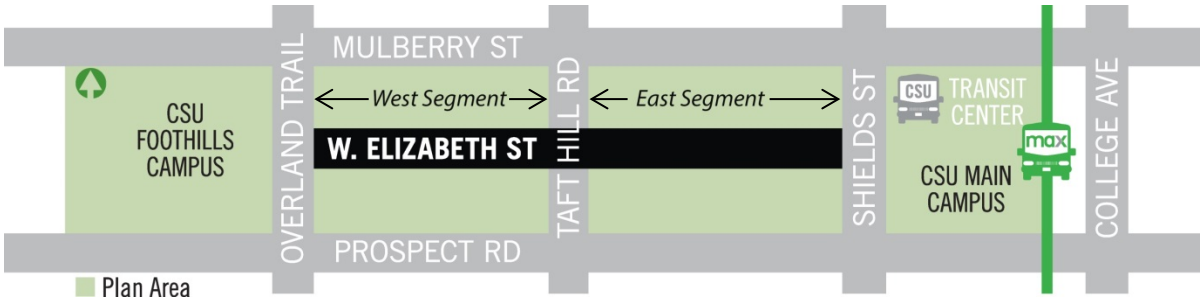
WikiMap—Routes I Travel



Neighborhood Walking, Biking, and Transit Tours Summary

BACKGROUND

Six tours were scheduled during the week of May 11, 2015. The intent of the tours was for City Staff to experience the corridor with locals who live, work and play in the area. Community members were asked to voluntarily lead or participate in the tours and to identify issues and opportunities from their perspectives. The following table provides the dates, focus and attendees of each tour. The tour comments are summarized primarily by the following group of images as well as geographically by the map that follows.



Date	Time	Tour Detail	Participants
5/11/2015	12:30 – 2 p	Tour 1: Bike Tour of West Segment (between Overland Trail and Skyline Drive)	Josh Weinberg, Leader Andrea Weinberg Susannah Wright Emma Belmont, City Staff Amy Lewin, City Staff
5/12/2015	11 a – 12:30 p	Tour 2: Walking Tour of Campus West Shopping Center (between City Park Avenue and Shields Street)	Justie Nicol, Leader Doug Ernest Kathy Nicol Mike Werner Craig Russell, Consultant Emma Belmont, City Staff Rebecca Everette, City Staff Amy Lewin, City Staff
5/14/2015	10 – 11:30 a	Tour 4: Walking and Transit Tour of East Segment (between City Park Avenue and Taft Hill Road)	Terry Schictling, Leader Aaron Fodge, CSU Emma Belmont, City Staff Rebecca Everette, City Staff Amy Lewin, City Staff Kurt Ravenschlag, City Staff
5/14/2015	5:15 – 6:56 p	Tour 5: Walking Tour of West Segment (Between Hillcrest Road and Andrews Peak Drive)	Carron Silva, Leader Bonnie Michael Mike Werner Emma Belmont, City Staff Amy Lewin, City Staff

*Tours 3 and 6 were canceled due to low participation

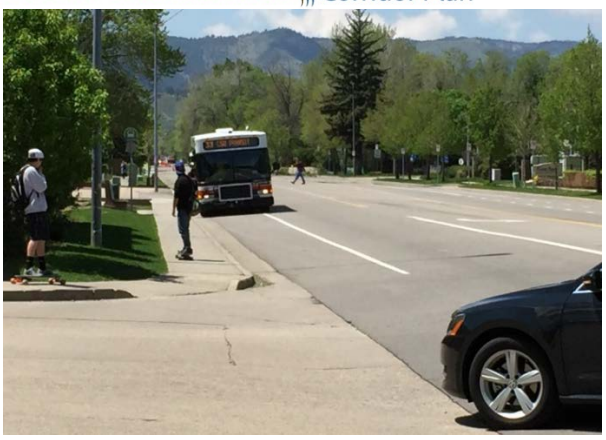
West Elizabeth Enhanced Travel Corridor Plan

WHAT WE HEARD – KEY THEMES

Tour 1: West Segment Biking Tour

Overland and West Elizabeth – residents have difficulty making turning left turn movements from West Elizabeth onto Overland Trail; they would like to see a light added here.

Ponderosa and West Elizabeth Street – residents experience sight distances issues at this intersection because the stop sign is back so far they have to proceed onto West Elizabeth to see oncoming vehicles.



King Soopers Shopping Center at West Elizabeth and Taft Hill - many vehicle, bus pedestrian and bicycle conflicts due to the frequent left-turns into King Soopers.

Common bike path through private development to avoid crossing at Taft Hill and West Elizabeth – signage indicates “Resident Access Only”.

Plum and Taft Hill crossing – frequently used crossing to get to Lab/ Polaris School to the east.

Vehicles crowding the bike lane at Elizabeth and Shields (eastbound travel).

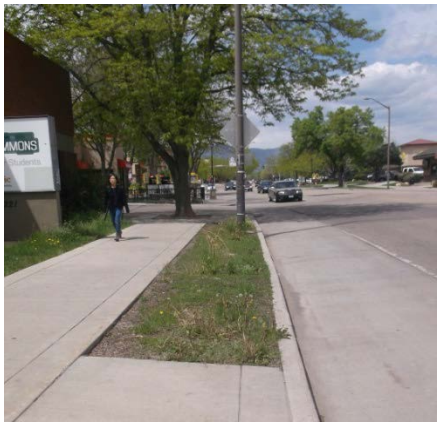
Bike and vehicle interaction as bike transitions through the turn lane into the bike lane at the intersection.

Cyclists using the sidewalk instead of bike lanes. Many bicyclists also ride the wrong way on sidewalks, creating safety concerns.

High volumes of pedestrians crossing Shields at West Elizabeth.

Driveway conflicts with bicyclists, pedestrians, and vehicles and challenges to accessing businesses.

Concern over vehicles sometimes not yielding at designated mid-block crossing.



Landscape areas not being maintained.

Need for delivery drop-off for many businesses.

Parking challenges exist in the corridor.

Tour 4: East Segment Walking and Transit Tour (between City Park and Taft Hill)




Accessibility issues exist throughout this corridor – some sidewalks are too narrow and are not compliant with ADA regulations.


Taft Hill and West Elizabeth Intersection – the crosswalk pushbuttons aren't accessible for someone in a mobility device to use. Also, bikes and vehicles extend into the crosswalk and make it challenging to cross.




Many bus stops are inaccessible, have limited or no passenger amentities, or amenities are located in a dirt patch.

There is a lot of transit service in this corridor (Route 2 plus Route 2 trailer bus).

Bike and bus conflict as buses stop in the bike lane to drop off passengers.

Bike traveling on the sidewalk, against traffic.

Tour 5: West Segment Walking Tour (between City Park and Taft Hill)




Ram's Crossing at Ram's Point - this location has a heavily used bus stop, but the sidewalk ends less than 100' west of the stop, making it challenging for residents from the western neighborhoods to access the stop.

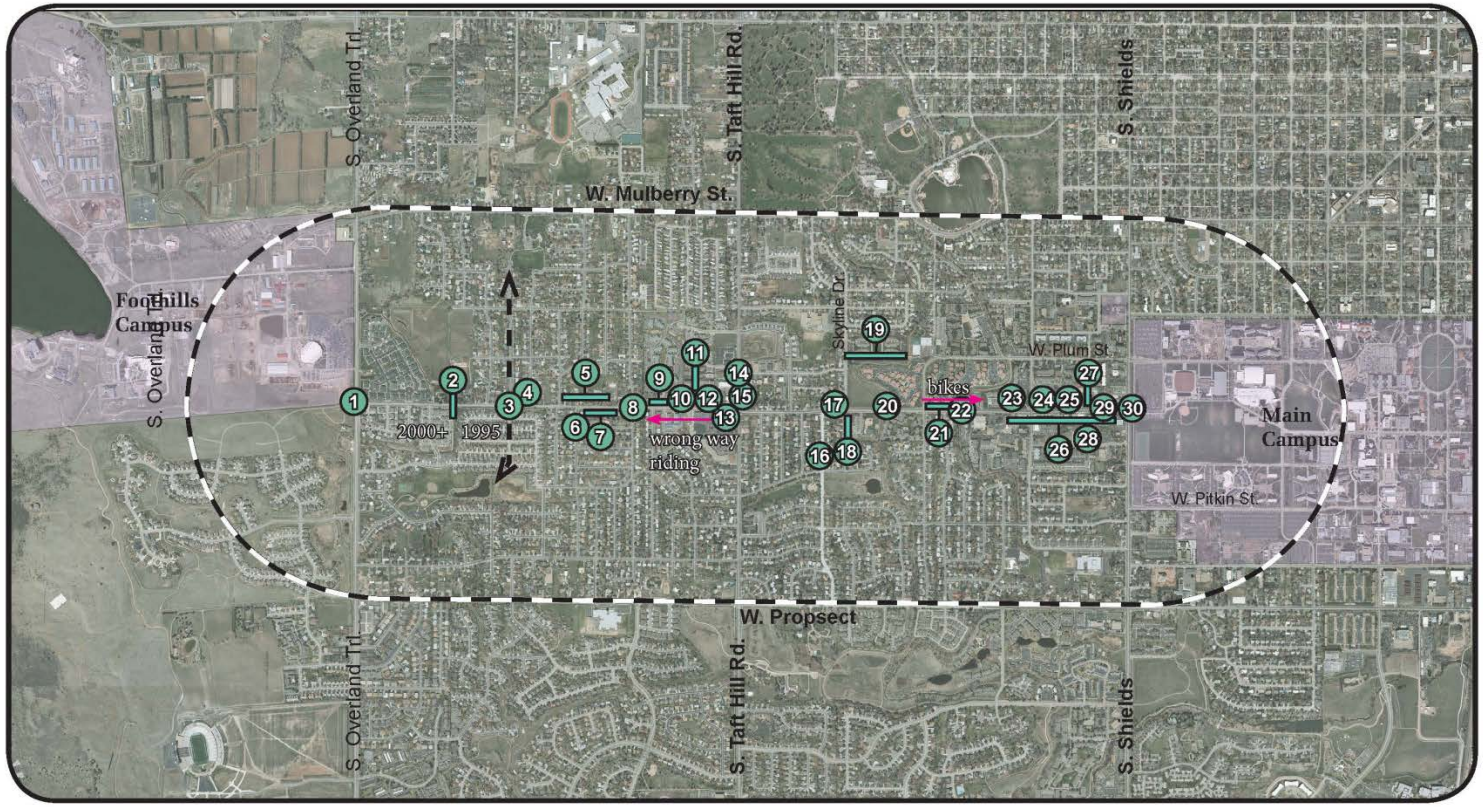

West of Ram's Crossing at Ram's Point the north side of West Elizabeth Street has inconsistent sidewalk facilities.

Properties on the north side of West Elizabeth have drainage issues; many have a ditch and wells very close to the southern edge of their properties. Muddy conditions often occur.

Bus stop on the north side of West Elizabeth Street – a drainage ditch runs directly behind the stop, residents observe littering and noise especially from late-night bus riders getting dropped off.

South side of West Elizabeth Street – sidewalk facilities are better than the north side of the street, but are still inconsistent.

DETAILED RESULTS



Legend

- Notes
- CSU Campus
- Study Area Boundary

0 0.25 0.5 1 Miles

N

Marked Notes:

1. Difficulty getting onto Overland from Elizabeth becasue of traffic
2. Ditch maitenance
3. Potential walk
4. New owners
5. Ditch
6. Plowing challenge
7. Used to be parking prohibited
8. Sight distance issues
9. Parking on turn lane
10. Irrigation ditch
11. Path through private development used to avoid crossing at Taft and Elizabeth
12. No bike rack at bus stop
13. Congestion – lots of conflict due to heavy left turns into King Soopers
14. Crossing to get to Lab and Polaris schools
15. 8:30 - 11:00 and at night – lots of crossings
16. Bike lanes? Or shared bike parking
17. Ramp not accessible
18. Missing sidewalk
19. Ditch corner?
20. Bridge bump and slope
21. Rough sidewalk
22. Bump on bridge
23. Zipcar
24. Didn't shovel
25. Poor shoveling
26. Parking challenges, driveway access challenges. Delivery trucks use center turn lane.
27. Potential for alley improvements
28. Landscape maitenance issues
29. Cars don't always yeild at crosswalks
30. Congested with pedestrians in small space

Other Unmarked Notes:

- Ok with prohibiting parking
- Water rights off Pleasant Valley
- Trash is an issue
- Support of rd. abt.
- Leave shopping carts in front of house/bus stops
- Muddy next to shoulder
- Trash collects in ditches
- D-way sloped high
- Need space between shelter and bus for ramp
- Narrow attached sidewalk not good for wheelchairs, 28"
- 4-way stops, traffic doesn't repair

Open Streets Summary

BACKGROUND

The project team hosted a booth at June's Open Streets event, where they engaged residents in conversation about West Elizabeth Enhanced Travel Corridor Plan.

City staff introduced the project to several citizens and asked if they would like to provide feedback as to the main issues in the corridor and improvements desired for the future. Three posters were presented for input, a "What We've Heard" poster, a "What's Your Big Idea?" poster, and a transit route map of the corridor. Citizens were encouraged to provide their "big vision" for the corridor and write ideas directly on the "What's Your Big Idea?" poster. They were also asked to provide information on origin-destination routes taken in the corridor in order to glean travel behavior and routes.

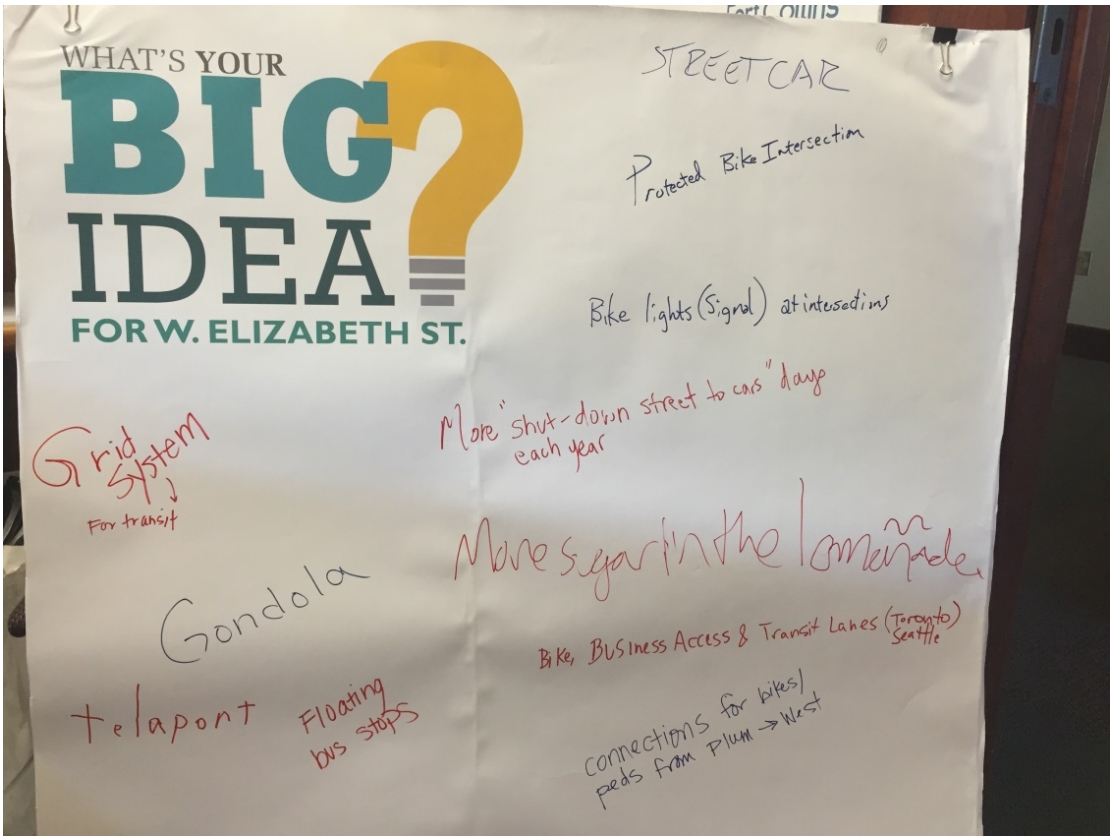
During these conversations many residents provided additional comments and concerns which were documented on sticky notes and added to the transit map in order to provide spatial reference. Three main themes emerged from these conversations:

1. Desire for a MAX-type bus service (referring to MAX's frequency and modern feel) on West Elizabeth Street.
2. Desire for Sunday bus service.
3. Desire for buffered or protected bike lanes in the corridor.

WHAT WE HEARD – KEY THEMES

What's Your Big Idea?

- Grid system for transit
- Protected bike intersection
- Streetcar
- Teleport
- Floating bus stops
- Connections for bikes/pedestrians from Plum heading west
- Bike light (signal) at intersection
- Bike business access & transit lanes (like Toronto & Seattle)
- Gondola
- More sugar in the lemonade



Transit Route Map Comments:

TRANSIT

- I ride to MAX through campus
- Route 31- more frequent and on the weekend
- Straight Prospect route (bus)
- Need at least 15 min service on West Elizabeth Street
- Need 10-ride pack of transit passes back again!
- Express route for further West
- Jitney Coop Model: smaller vehicle, more drivers, more frequency, and independent contractor
    - City sponsored indirect costs: training, insurance, and healthcare
- Route west on Mulberry to Overland Trail. Maybe loop around Elizabeth Street eastbound
- Need later MAX route
    - Through bars closing
- Sunday service
- Need Sunday service MAX- January especially
- MAX would be nice to go to Loveland
- MAX to 81 is tight sometimes
- Hard to get from the Old Town area to the Senior Center

PEDESTRIAN

- Pedestrian signal at Shields and Atkins - Concerns for cars not stopping here; seems ambiguous. Install pedestrian signals like what's at Laurel Streets or on West Elizabeth Street.
- Current sidewalks: narrow, missing, broken, misaligned, frost heave
- Safe Routes to School needs to focus on Laporte Avenue

BIKING

- Afraid to bike on West Mulberry Street
- Separated bike lanes (heard comment from several people)
- Increased number of bike lanes
- Laporte Avenue & Overland Trail- bike issues at intersection

West Elizabeth Enhanced Travel Corridor Plan
City of Fort Collins

Open Streets: Origin-Destination Commnets