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TRAFFIC SIGNAL WARRANT ANALYSIS
SAGE ROAD AND ERWIN ROAD INTERSECTION

TRAFFIC VOLUME AND LEVEL OF SERVICE

Peak hour traffic volumes were counted in October 2003 and are presented in the following pages. Traffic volumes indicate that a significant number (145 in the AM peak hour and 257 in the PM peak hour) of vehicles are making left turns from Sage Road onto Erwin Road. Capacity analysis determined that the Level of Service for the left turn movement from Sage Road to Erwin Road is "F" (heavily congested). The delay for left-turning vehicles was 163 seconds during the AM peak hour and 417 seconds during the PM peak hour.

ACCIDENT HISTORY

The accident history for this intersection shows that a total of seven accidents occurred in 2003. The type and number of accidents are provided below:

<u>Type of Accident</u>	<u>Number of Accidents</u>
Angle (Left-turn)	4
Rear-end	2
Other	1

The majority of the accidents in 2003 were angle-type. These accidents can typically be mitigated by the installation of a traffic signal. Detailed accident reports are available in the Engineering Department.

TRAFFIC SIGNAL WARRANT ANALYSIS

The Manual on Uniform Traffic Control Devices (MUTCD) developed by the Federal Highway Administration (FHWA) includes nationally standardized criteria that could justify the installation of a traffic signal at a given location. These criteria are called "warrants". These traffic signal warrants consider data such as accident history, pedestrian activity, traffic volumes and delay times.

The results of the warrant analysis for this intersection, conducted by the Town's traffic consultant, are provided in the following pages. The results indicate that the "Peak Hour Warrant" (MUTCD Warrant 3B) is met at this intersection under current traffic conditions. Warrant 1A (8-Hour Minimum Volume Warrant) is also met. Warrant 7 (Crash Experience) is not fully met at this location, but we believe that the four angle-type accidents that occurred at this intersection in 2003 indicate the need for a traffic signal.

Peak Hour Turning Movement Count

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File Name : ErwinSage
 Site Code : 00000111
 Start Date : 10/07/2003
 Page No : 1

Groups Printed- All-Vehicles

Start Time	Erwin Road From East				Sage Road From South				Erwin Road From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Trks	Left	Thru	Right	Trks	Left	Thru	Right	Trks			
07:00 AM	9	33	0	0	10	0	6	1	0	29	27	2	3	114	117
07:15 AM	34	82	0	0	20	0	7	0	0	50	40	0	0	233	233
07:30 AM	26	101	0	0	27	0	12	0	0	103	44	1	1	313	314
07:45 AM	32	99	0	0	35	0	23	1	0	106	62	1	2	357	359
Total	101	315	0	0	92	0	48	2	0	288	173	4	6	1017	1023
08:00 AM	32	123	0	0	39	0	20	0	0	96	69	0	0	379	379
08:15 AM	23	113	0	0	34	0	30	1	0	72	61	3	4	333	337
08:30 AM	32	109	0	2	45	0	20	1	0	73	76	2	5	355	360
08:45 AM	19	94	0	0	27	0	14	3	0	59	62	4	7	275	282
Total	106	439	0	2	145	0	84	5	0	300	268	9	16	1342	1358
BREAK															
11:30 AM	9	60	0	1	32	0	18	0	0	39	31	3	4	189	193
11:45 AM	18	54	0	1	50	0	22	2	0	51	35	2	5	230	235
Total	27	114	0	2	82	0	40	2	0	90	66	5	9	419	428
12:00 PM	18	53	0	0	49	0	12	1	0	35	48	0	1	215	216
12:15 PM	8	59	0	0	42	0	25	0	0	48	43	2	2	225	227
12:30 PM	13	58	0	0	26	0	15	0	0	63	47	2	2	222	224
12:45 PM	20	60	0	0	38	0	16	0	0	38	36	0	0	208	208
Total	59	230	0	0	155	0	68	1	0	184	174	4	5	870	875
01:00 PM	12	53	0	0	61	0	17	1	0	51	34	2	3	228	231
01:15 PM	19	59	0	1	66	0	22	3	0	43	39	0	4	248	252
Total	31	112	0	1	127	0	39	4	0	94	73	2	7	476	483
BREAK															
04:00 PM	13	93	0	0	58	0	35	1	0	67	50	3	4	316	320
04:15 PM	14	82	0	0	57	0	31	1	0	77	37	2	3	298	301
04:30 PM	14	64	0	1	54	0	17	2	0	54	25	3	6	228	234
04:45 PM	22	96	0	0	47	0	39	1	8	74	24	0	1	310	311
Total	63	335	0	1	216	0	122	5	8	272	136	8	14	1152	1166
05:00 PM	20	117	0	0	61	0	60	4	0	91	38	1	5	387	392
05:15 PM	19	133	0	0	67	0	50	1	0	87	42	0	1	398	399
05:30 PM	22	129	0	0	66	0	47	1	0	81	52	1	2	397	399
05:45 PM	29	150	0	0	63	0	66	1	0	80	49	1	2	437	439
Total	90	529	0	0	257	0	223	7	0	339	181	3	10	1619	1629
Grand Total	477	2074	0	6	1074	0	624	26	8	1567	1071	35	67	6895	6962
Approch %	18.7	81.3	0.0		63.3	0.0	36.7		0.3	59.2	40.5				
Total %	6.9	30.1	0.0		15.6	0.0	9.1		0.1	22.7	15.5		1.0	99.0	

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Traffic Signal Warrant Analysis
Sage Road at Erwin Road

02/13/04
16:44:47

WARRANTS/TEAPAC[Ver 2.01.16] - MUTCD Warrant Analysis

Conditions Used for Warrant Analysis 2000 MUTCD

Intersection # 4 Sage Road at Erwin Road

Major Street Direction	EastWest
Number of Lanes in North-South direction	2
Number of Lanes in East-West direction	1
Approach speed on major street is greater than 40 mph	No
Isolated community has population less than 10,000	No
Signal will not seriously disrupt progressive traffic flow	Yes
Trials of other remedies have failed to improve conditions	Yes
Number of accidents correctable by a signal	5
Peak hour stop sign delay for worst minor approach (veh-hours)	0
Number of accidents correctable by a multi-way stop	0
Peak hour average delay for all minor approaches (sec/veh)	0

WARRANTS/TEAPAC[Ver 2.01.16] - Warrant Analysis for Traffic Signal

Warrant 1A Analysis - 8-Hour Minimum Vehicular Volume

Start Time	1700	1600	1230	1130	745	645	845	0	Req.
Minor Volume	257	216	191	173	153	57	27	0	200
Major Volume	1133	806	645	609	1178	578	234	0	500
Warrant Met?	Yes	Yes	No	No	No	No	No	No	8

Number of 1-hour periods meeting the warrant 2
Signal will not seriously disrupt progressive traffic flow Yes

>> WARRANT 1A IS NOT MET <<

Warrant 1B Analysis - 8-Hour Interruption of Continuous Traffic

Start Time	1700	1600	715	815	1230	1130	615	0	Req.
Minor Volume	257	216	121	106	191	173	10	0	100
Major Volume	1133	806	1099	793	645	609	98	0	750
Warrant Met?	Yes	Yes	Yes	Yes	No	No	No	No	8

Number of 1-hour periods meeting the warrant 4
Signal will not seriously disrupt progressive traffic flow Yes

>> WARRANT 1B IS NOT MET <<

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WARRANTS/TEAPAC[Ver 2.01.16] - Warrant Analysis for Traffic Signal

Warrant 1A Analysis (80%) - 8-Hour Minimum Vehicular Volume

Start Time	1645	1230	1130	1545	745	1745	645	845	Req.
Minor Volume	241	191	173	169	153	63	57	27	160
Major Volume	1041	645	609	590	1178	308	578	234	400
Warrant Met?	Yes	Yes	Yes	Yes	No	No	No	No	8
Number of 1-hour periods meeting the warrant (56% not allowed)									4

Warrant 1B Analysis (80%) - 8-Hour Interruption of Continuous Traf

Start Time	1700	1600	1230	1130	800	700	0	0	Req.
Minor Volume	257	216	191	173	145	92	0	0	80
Major Volume	1133	806	645	609	1113	877	0	0	600
Warrant Met?	Yes	Yes	Yes	Yes	Yes	Yes	No	No	8
Number of 1-hour periods meeting the warrant (56% not allowed)									6

Warrant 1C Analysis - 8-Hour Combination of Warrants

80% of Warrants 1A and 1B are met (56% not allowed)	No
Signal will not seriously disrupt progressive traffic flow	Yes
Trials of other remedies have failed to reduce delays	Yes

>> WARRANT 1C IS NOT MET <<

Warrant 2 Analysis - 4-Hour Vehicular Volume

Start Time	1700	1600	715	1230	1130	815	615	0	Req.
Minor Volume	257	216	121	191	173	106	10	0	-
Minor Reqrmt	115	203	120	270	286	208	541	590	<--
Warrant Met?	Yes	Yes	Yes	No	No	No	No	No	4
Number of 1-hour periods meeting the warrant									3
Signal will not seriously disrupt progressive traffic flow									Yes

>> WARRANT 2 IS NOT MET <<

WARRANTS/TEAPAC[Ver 2.01.16] - Warrant Analysis for Traffic Signal

Warrant 3A Analysis - Peak Hour Delay

Start Time	1645	1230	1130	1545	745	1745	645	845	Req.
Minor Volume	241	191	173	169	153	63	57	27	150
Major Volume	1282	836	782	759	1331	371	635	261	650
Warrant Met?	Yes	Yes	Yes	Yes	Yes	No	No	No	1

Number of 1-hour periods meeting the warrant 5
Signal will not seriously disrupt progressive traffic flow Yes
Delay for worst minor approach (must be at least 5 veh-hours) 0

>> WARRANT 3A IS NOT MET <<

Warrant 3B Analysis - Peak Hour Volume

Start Time	1700	1600	1230	1130	745	645	845	0	Req.
Minor Volume	257	216	191	173	153	57	27	0	-
Minor Reqrmt	238	367	443	461	223	476	648	765	<--
Warrant Met?	Yes	No	No	No	No	No	No	No	1

Number of 1-hour periods meeting the warrant 1
Signal will not seriously disrupt progressive traffic flow Yes

>> WARRANT 3B IS MET <<

Warrant 7 Analysis - Crash Experience

80% of Warrant 1A or 1B is met NO
Signal will not seriously disrupt progressive traffic flow Yes
Trials of other remedies have failed to reduce accidents Yes
Number of correctable accidents (must be 5 or more per year) 4

>> WARRANT 7 IS NOT MET <<

Summary of MUTCD Traffic Signal Warrant Analysis

Warrant 1A 8-Hour Minimum Vehicular Volume	NOT MET
Warrant 1B 8-Hour Interruption of Continuous Traffic	NOT MET
Warrant 1C 8-Hour Combination of Warrants	NOT MET
Warrant 2 4-Hour Vehicular Volume	NOT MET
Warrant 3A Peak Hour Delay	NOT MET
Warrant 3B Peak Hour Volume	MET
Warrant 7 Crash Experience	NOT MET

>> Traffic Signal Warrant is MET <<