



**CENTRAL TEXAS
Regional Mobility Authority**

Meeting Date: October 28, 2015
AGENDA ITEM # 5

Authorize installation of traffic signals at the intersection of San Gabriel Parkway with northbound and southbound 183A frontage roads.

Strategic Plan Relevance: Regional Mobility
Department: Engineering
Contact: Wesley M. Burford, P.E., Director of Engineering
Associated Costs: approximately \$150,000
Funding Source: Operating Fund
Action Requested: Consider and act on draft resolution

Summary:

The intersection of 183A and San Gabriel Parkway is currently stop-controlled. A Traffic Signal Warrant Analysis was performed on June 16, 2015. Traffic counts were performed on September 16, 2015, and the results indicate that a signal is warranted.

The results of the warrant are based on the data collected in accordance with the TxDOT standard process for signals. The peak hour criteria (Warrant 3 - Peak Hour) was met. The Executive Director recommends installation of a traffic signal at this intersection.

Backup provided: Traffic Signal Warrant
Support Letters
Draft Resolution for Board Consideration

Traffic Signal Warrant
183A Frontage Road
And San Gabriel Parkway



CENTRAL TEXAS
Regional Mobility Authority



Alex 10-15-15

October 2015

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I. PROJECT DESCRIPTION

This report presents a summary of findings for a Traffic Signal Warrant Analysis performed by HNTB Corporation, Inc. for the intersection of 183A Frontage Road and San Gabriel Parkway in Leander, Williamson County, Texas. A Site Location Map has been included in the Appendix of this report as *Exhibit 1*.

To conduct the signal warrant analysis, 24-hour traffic counts were collected for each of the approaches to intersection of 183A and San Gabriel Parkway on September 15, 2015. Analysis was conducted for both the 183A Northbound Frontage Road intersection and the 183A Southbound Frontage Road intersection. The intersection of 183A Southbound Frontage Road and San Gabriel Parkway was found to have both the highest traffic volumes and number of crashes. Traffic volume data and most recent available crash data can be found in the Appendix of this report as *Exhibit 2*. A site visit was also conducted to observe the geometric configuration of the intersection as well as any unique characteristics about the approaches.

The speed limit on the northbound and southbound frontage roads is 60 mph and San Gabriel Parkway Approach is 45 mph. San Gabriel Parkway Approach is currently stop-controlled, both eastbound and westbound, at both intersections.

II. ANALYSIS

The 2011 Texas Manual on Uniform Traffic Control Devices (TMUTCD) requires that certain warrants be met prior to the installation of a traffic signal. These warrants are summarized as follows:

- | | |
|--------------------------------|---------------------------------------|
| 1. Eight-Hour Vehicular Volume | 5. School Crossing |
| 2. Four-Hour Vehicular Volume | 6. Coordinated Signal System |
| 3. Peak Hour | 7. Crash Experience |
| 4. Pedestrian Volume | 8. Roadway Network |
| | 9. Intersection Near a Grade Crossing |

Below are the TMUTCD descriptions of the Traffic Signal Warrants. In addition to the descriptions, TMUTCD also considers sound engineering judgment and recommendations as enough evidence to warrant the necessity of a traffic signal.

A. Warrant 1 – Eight-Hour Vehicular Volume

This warrant involves three (3) conditions (A, B, or a combination of A and B) which can individually satisfy the conditions of Warrant 1. Condition A is the Minimum Vehicular Volume which is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. Condition B is the Interruption of Continuous Traffic which

is intended for application where the traffic volume on a major street is so heavy that traffic on a minor street suffers excessively.

B. Warrant 2 – Four-Hour Vehicular Volume

This warrant is intended to be applied where the volumes of intersecting traffic is the principal reason to consider installing a traffic control signal.

C. Warrant 3 – Peak Hour

This warrant is intended for use at a location where traffic conditions are such that for a minimum of one (1) hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

D. Warrant 4 – Pedestrian Volume

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

E. Warrant 5 – School Crossing

This warrant is intended for application where the fact that school children cross the major street is the principal reason to consider installing a traffic control signal.

F. Warrant 6 – Coordinated Signal System

This warrant is when progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.

G. Warrant 7 – Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. Requests for crash data have been submitted to TxDOT and we have yet to receive them.

H. Warrant 8 – Roadway Network

This warrant is analyzed when installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway.

I. Warrant 9 – Intersection Near a Grade Crossing

This warrant is analyzed when installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway.

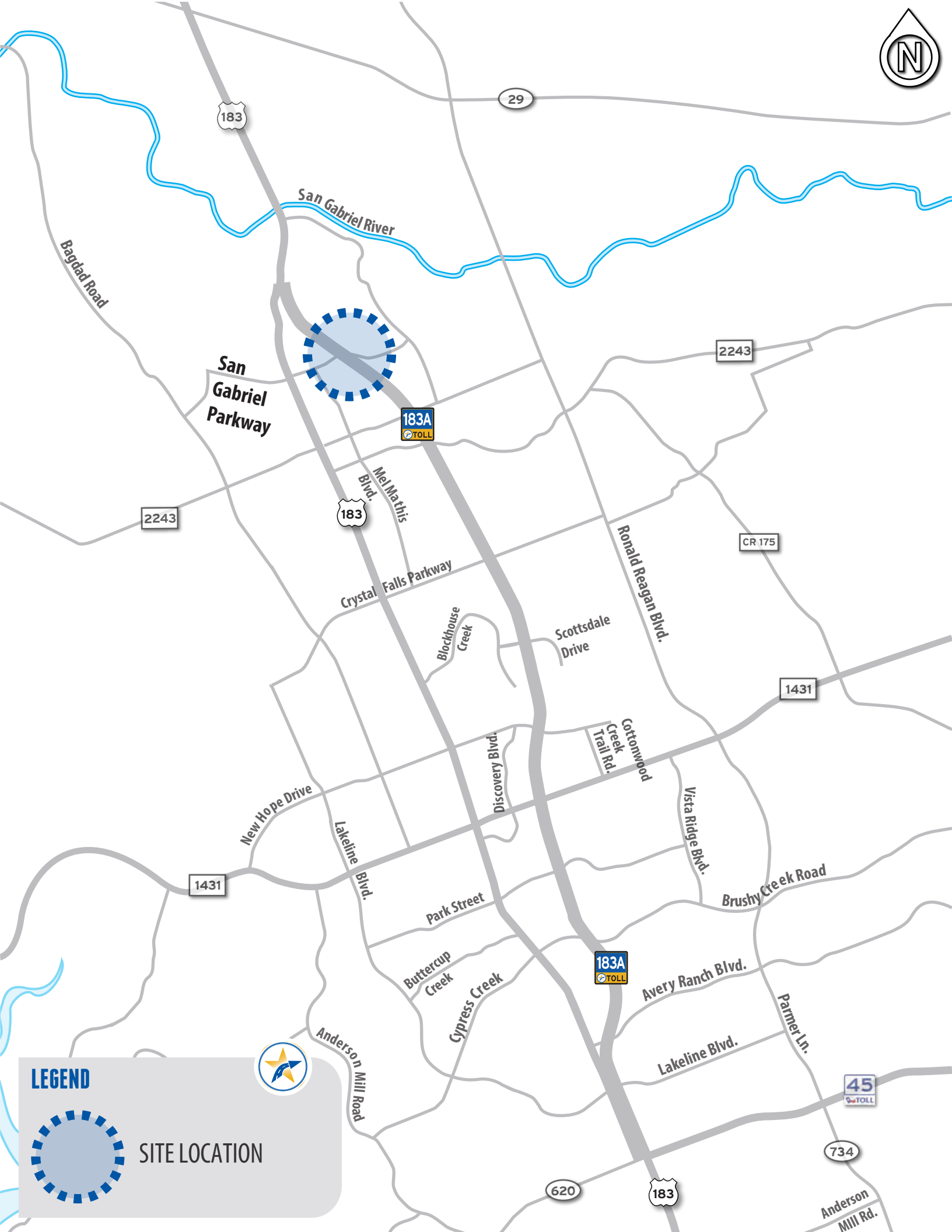
III. RESULTS AND RECOMMENDATIONS

The following results and recommendations are based on data that has been collected and standards set by the TMUTCD. Traffic Signal Warrant Analysis was completed for both the 183A Northbound Frontage Road and 183A Southbound Frontage Road, but only the 183A Southbound Frontage Road intersection was found to satisfy any of the TMUTCD Warrants. The peak hour volume criteria for Warrant 3 were satisfied. Due to the crash history at the site, the Crash Experience Warrant, Warrant 7, was also analyzed. It was determined that the intersection with the southbound frontage road also met the volume criteria outlined by Condition B of Warrant 7 and therefore Warrant 7 was also satisfied. Since Warrants 3 and 7 are each met, installation of a traffic signal is recommended. Please refer to *Exhibit 3* within the Appendix of this report for the detailed Signal Warrant Worksheets.

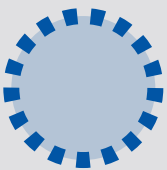
APPENDIX

EXHIBIT 1

SITE LOCATION MAP



LEGEND



SITE LOCATION

EXHIBIT 2

24-HOUR TRAFFIC COUNTS/ACCIDENT DATA

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Gram Traffic, Inc.													Page 2		
2	3751 FM 1105 Bldg A															
3	Georgetown, TX. 78626															
4	512-832-8650															
5														Site Code: Loc 36		
6														Station ID:		
7														San Gabriel Pkwy		
8														Just East of US 183A		
9														Latitude: 0' 0.0000 Unc		
10		16-Sep	Westbound	Hour Totals		Eastbound		Hour Totals		Combined Totals						
11		Wed	Morning	Afterno	Morning	Afterno	Morning	Afterno	Morning	Afterno	Morning	Afternoon				
12	12:00		1	4			0	4								
13	12:15		0	1			3	6								
14	12:30		1	12			0	8								
15	12:45		1	5	3	22	1	5	4	23	7	45				
16	01:00		1	5			1	10								
17	01:15		0	4			1	7								
18	01:30		1	8			1	9								
19	01:45		0	6	2	23	0	7	3	33	5	56				
20	02:00		0	7			0	12								
21	02:15		0	5			0	8								
22	02:30		0	5			0	7								
23	02:45		0	12	0	29	0	9	0	36	0	65				
24	03:00		0	7			0	4								
25	03:15		0	6			0	6								
26	03:30		0	5			0	5								
27	03:45		0	4	0	22	0	7	0	22	0	44				
28	04:00		0	3			0	4								
29	04:15		0	1			0	8								
30	04:30		2	5			0	1								
31	04:45		1	11	3	20	0	8	0	21	3	41				
32	05:00		0	13			0	7								
33	05:15		2	3			0	8								
34	05:30		1	4			1	9								
35	05:45		9	8	12	28	1	7	2	31	14	59				
36	06:00		5	3			3	6								
37	06:15		5	7			1	10								
38	06:30		8	7			4	10								
39	06:45		5	6	23	23	4	10	12	36	35	59				
40	07:00		4	5			3	7								
41	07:15		11	5			3	6								
42	07:30		12	3			8	2								
43	07:45		8	5	35	18	7	9	21	24	56	42				
44	08:00		5	7			5	8								
45	08:15		11	4			3	5								
46	08:30		4	3			5	6								
47	08:45		9	3	29	17	1	2	14	21	43	38				
48	09:00		3	1			9	0								
49	09:15		6	0			2	4								
50	09:30		2	0			4	3								
51	09:45		2	2	13	3	2	6	17	13	30	16				
52	10:00		1	6			5	5								
53	10:15		3	5			2	1								
54	10:30		6	0			5	2								
55	10:45		4	1	14	12	5	1	17	9	31	21				
56	11:00		6	0			6	2								
57	11:15		6	1			2	1								
58	11:30		13	2			2	0								
59	11:45		3	0	28	3	5	2	15	5	43	8				
60	Total		162	220			105	274			267	494				
61	Percent		42.4%	57.6%			27.7%	72.3%			35.1%	64.9%				
62		0	162	220	162	220	105	274	105	274	267	494				
63	Grand Total		328	430			213	546			541	976				
64	Percent		43.3%	56.7%			28.1%	71.9%			35.7%	64.3%				

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1				Gram Traffic, Inc.										Page 1		
2				3751 FM 1105 Bldg A												
3				Georgetown, TX. 786												
4														Site Code: Loc 68		
5														Station ID:		
6														San Gabriel Pkwy		
7														Just West of US183A		
8														Latitude: 0' 0.0000 Undefined		
9																
10		15-Sep	Eastbound	Hour Totals		Westbound		Hour Totals		Combined Totals						
11		Tue	Morning	Afterno	Morning	Afterno	Morning	Afterno	Morning	Afterno	Morning	Afternoon				
12	12:00		1	17			0	14								
13	12:15		2	11			1	9								
14	12:30		1	11			1	17								
15	12:45		0	22	4	61	1	20	3	60	7	121				
16	01:00		0	13			2	14								
17	01:15		0	24			2	19								
18	01:30		1	16			0	15								
19	01:45		1	23	2	76	1	12	5	60	7	136				
20	02:00		0	17			0	16								
21	02:15		0	21			1	21								
22	02:30		3	24			0	29								
23	02:45		0	23	3	85	0	17	1	83	4	168				
24	03:00		0	13			0	16								
25	03:15		0	25			0	19								
26	03:30		0	19			0	30								
27	03:45		1	22	1	79	0	32	0	97	1	176				
28	04:00		2	19			0	32								
29	04:15		2	17			1	31								
30	04:30		3	23			1	53								
31	04:45		7	24	14	83	0	41	2	157	16	240				
32	05:00		2	30			5	30								
33	05:15		11	20			3	40								
34	05:30		14	29			2	47								
35	05:45		19	43	46	122	4	46	14	163	60	285				
36	06:00		34	26			2	40								
37	06:15		33	27			13	28								
38	06:30		47	29			21	21								
39	06:45		43	15	157	97	23	32	59	121	216	218				
40	07:00		42	21			22	22								
41	07:15		56	20			10	28								
42	07:30		53	16			21	26								
43	07:45		62	17	213	74	21	14	74	90	287	164				
44	08:00		52	8			8	23								
45	08:15		40	12			19	22								
46	08:30		33	10			32	12								
47	08:45		24	6	149	36	20	20	79	77	228	113				
48	09:00		19	7			16	16								
49	09:15		26	4			14	9								
50	09:30		29	2			15	7								
51	09:45		14	4	88	17	12	10	57	42	145	59				
52	10:00		24	3			14	6								
53	10:15		19	3			13	12								
54	10:30		15	3			15	7								
55	10:45		28	2	86	11	15	5	57	30	143	41				
56	11:00		20	1			18	4								
57	11:15		12	3			18	3								
58	11:30		22	4			18	3								
59	11:45		26	2	80	10	22	4	76	14	156	24				
60	Total		843	751			427	994			1270	1745				
61	Percent		52.9%	47.1%			30.0%	70.0%			42.1%	57.9%				
62		0	843	751	843	751	427	994	427	994	1270	1745				

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1				Gram Traffic, Inc.										Page 1		
2				3751 FM 1105 Bldg A												
3				Georgetown, TX. 786												
4														Site Code: Loc 69		
5														Station ID:		
6														San Gabriel Pkwy		
7														Between Frontage Roads		
8														Latitude: 0' 0.0000 Undefined		
9																
10		15-Sep	Westbound	Hour Totals		Eastbound		Hour Totals		Combined Totals						
11		Tue	Morning	Afterno	Morning	Afterno	Morning	Afterno	Morning	Afterno	Morning	Afternoon				
12	12:00		0	15			0	6								
13	12:15		1	12			4	4								
14	12:30		1	21			0	9								
15	12:45		1	21	3	69	0	14	4	33	7	102				
16	01:00		2	14			0	6								
17	01:15		2	21			0	4								
18	01:30		0	13			1	4								
19	01:45		1	16	5	64	1	11	2	25	7	89				
20	02:00		0	15			0	6								
21	02:15		0	23			0	5								
22	02:30		0	30			0	9								
23	02:45		0	18	0	86	0	8	0	28	0	114				
24	03:00		0	18			0	5								
25	03:15		0	20			0	9								
26	03:30		0	28			0	6								
27	03:45		0	31	0	97	1	5	1	25	1	122				
28	04:00		0	35			0	7								
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30	04:30		2	56			0	11								
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33	05:15		3	42			1	5								
34	05:30		3	47			2	10								
35	05:45		9	48	20	171	3	9	6	30	26	201				
36	06:00		8	39			6	10								
37	06:15		15	35			2	10								
38	06:30		28	22			5	11								
39	06:45		22	30	73	126	10	6	23	37	96	163				
40	07:00		21	21			7	11								
41	07:15		15	26			8	7								
42	07:30		27	25			11	10								
43	07:45		29	15	92	87	11	13	37	41	129	128				
44	08:00		9	24			7	4								
45	08:15		22	25			6	6								
46	08:30		29	16			1	5								
47	08:45		22	18	82	83	4	4	18	19	100	102				
48	09:00		20	18			0	4								
49	09:15		18	9			3	3								
50	09:30		19	8			3	2								
51	09:45		12	12	69	47	5	1	11	10	80	57				
52	10:00		13	5			8	1								
53	10:15		13	14			4	2								
54	10:30		12	6			6	3								
55	10:45		16	5	54	30	13	1	31	7	85	37				
56	11:00		18	3			7	2								
57	11:15		17	4			7	2								
58	11:30		22	2			11	2								
59	11:45		22	2	79	11	11	1	36	7	115	18				
60	Total		481	1034			169	292			650	1326				
61	Percent		31.7%	68.3%			36.7%	63.3%			32.9%	67.1%				
62	0	481	1034	481	1034	169	292	169	292	650	1326					

Gram Traffic, Inc.
 3751 FM 1105 Bldg A
 Georgetown, TX. 78626
 512-832-8650

Page 2
 Site Code: Loc 69
 Station ID:
 San Gabriel Pkwy
 Between Frontage Roads
 Latitude: 0' 0.0000 Undefined

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1				Gram Traffic, Inc.											Page 2	
2				3751 FM 1105 Bldg A												
3				Georgetown, TX. 78626												
4				512-832-8650												
5																
6																
7																
8																
9																
10		16-Sep	Westbound	Hour Totals		Eastbound		Hour Totals		Combined Totals						
11		Wed	Morning	Afterno	Morning	Afterno	Morning	Afterno	Morning	Afterno	Morning	Afternoon				
12	12:00		1	17			0	9								
13	12:15		3	13			5	4								
14	12:30		1	23			0	6								
15	12:45		1	17	6	70	1	7	6	26	12	96				
16	01:00		3	21			1	12								
17	01:15		1	18			1	7								
18	01:30		3	20			2	10								
19	01:45		6	26	13	85	0	9	4	38	17	123				
20	02:00		0	21			0	10								
21	02:15		0	17			0	14								
22	02:30		1	17			0	7								
23	02:45		0	24	1	79	0	7	0	38	1	117				
24	03:00		0	24			0	6								
25	03:15		0	28			0	9								
26	03:30		0	26			1	11								
27	03:45		0	36	0	114	1	4	2	30	2	144				
28	04:00		1	32			0	3								
29	04:15		0	24			0	7								
30	04:30		1	40			0	6								
31	04:45		1	39	3	135	0	7	0	23	3	158				
32	05:00		1	53			0	6								
33	05:15		4	50			0	18								
34	05:30		1	38			1	10								
35	05:45		8	47	14	188	4	9	5	43	19	231				
36	06:00		13	33			3	12								
37	06:15		16	32			6	11								
38	06:30		15	21			2	4								
39	06:45		34	23	78	109	8	11	19	38	97	147				
40	07:00		24	25			6	7								
41	07:15		18	23			5	5								
42	07:30		21	18			15	3								
43	07:45		19	28	82	94	10	6	36	21	118	115				
44	08:00		13	25			5	5								
45	08:15		29	26			4	2								
46	08:30		14	25			5	5								
47	08:45		20	17	76	93	2	3	16	15	92	108				
48	09:00		11	12			4	1								
49	09:15		16	6			1	4								
50	09:30		12	4			3	1								
51	09:45		12	7	51	29	3	5	11	11	62	40				
52	10:00		12	10			7	5								
53	10:15		12	12			6	0								
54	10:30		13	6			5	2								
55	10:45		14	3	51	31	3	2	21	9	72	40				
56	11:00		9	4			7	2								
57	11:15		21	3			11	0								
58	11:30		26	5			9	2								
59	11:45		19	4	75	16	2	0	29	4	104	20				
60	Total		450	1043			149	296			599	1339				
61	Percent		30.1%	69.9%			33.5%	66.5%			30.9%	69.1%				
62	0		450	1043	450	1043	149	296	149	296	599	1339				
63	Grand Total		931	2077			318	588			1249	2665				
64	Percent		31.0%	69.0%			35.1%	64.9%			31.9%	68.1%				

EXHIBIT 3

SIGNAL WARRANT WORKSHEETS



Form Revised 2/27/2012

Traffic Survey — Count Analysis

2011 TMUTCD Warrants

County: Williamson District: Waco
 City: Leander Population: N/A Survey Date: 9/15/15

	Name	Control	Section	85% Speed
Major	183A SBFR			60 MPH
Minor	San Gabriel			

Eight Highest Hours: Include the same 8 hours for the Major and Minor St. volumes.

Time Ends	Major St. - Both App.		Minor St. - Hi. Vol. App.		Comments:
	Veh. Total	Ped. Total	Veh. Total	Ped. Total	
8:00 AM	1,071		213		
6:00 PM	558		171		
5:00 PM	545		163		
7:00 AM	875		157		
9:00 AM	771		149		
7:00 PM	492		126		
4:00 PM	527		97		
10:00 AM	588		88		

Warrant 1. Eight Hour Vehicular Volume

Yes No Meets 70%^c (and major-street speed exceeds 40 mph or population less than 10,000) *or* 100%^a (regardless of speed) of Condition A.
 – *or* –
 Yes No Meets 70%^c (and major-street speed exceeds 40 mph or population less than 10,000) *or* 100%^a (regardless of speed) of Condition B.
 – *or* –
 Yes No Meets 80%^b of Conditions A and B.
 – *or* –
 Yes No Meets 56%^d of Conditions A and B (and major-street speed exceeds 40 mph or population less than 10,000).

Condition A - Minimum Vehicle Volume

Number of Lanes		Vehicles per hour on Major St (Total of Both Approaches)				Vehicles per hour on higher-volume Minor St approach (One Direction Only)					
Major Street	Minor Street	Required				Existing	Required				Existing
		100% ^a	80% ^b	70% ^c	56% ^d		100% ^a	80% ^b	70% ^c	56% ^d	
1	1	500	400	350	280		150	120	105	84	
2 or more	1	600	480	420	336		150	120	105	84	
2 or more	2 or more	600	480	420	336	588	200	160	140	112	88
1	2 or more	500	400	350	280		200	160	140	112	

Condition B - Interruption of Continuous Traffic

Number of Lanes		Vehicles per hour on Major St (Total of Both Approaches)				Vehicles per hour on higher-volume Minor St approach (One Direction Only)					
Major Street	Minor Street	Required				Existing	Required				Existing
		100% ^a	80% ^b	70% ^c	56% ^d		100% ^a	80% ^b	70% ^c	56% ^d	
1	1	750	600	525	420		75	60	53	42	
2 or more	1	900	720	630	504		75	60	53	42	
2 or more	2 or more	900	720	630	504	588	100	80	70	56	88
1	2 or more	750	600	525	420		100	80	70	56	

^aBasic minimum hourly volume.

^bUsed for combination of Conditions A and B after adequate trial of other remedial measures.

^cMay be used when the major-street speed exceeds 40 mph or in a community with a population of less than 10,000.

^dMay be used for combination of Conditions A and B after adequate trial of other remedial measures when major street exceeds 40 mph or in an isolated community with a population of less than 10,000.

Warrant 5. School Crossing

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	N/A	Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period? – <i>and</i> –
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No		Is there a minimum of 20 students during the highest crossing hour? – <i>and</i> –
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		Is the nearest signal located more than 300 feet away? (This warrant may be applied, if the proposed signal is less than 300 feet and does not restrict the progressive movement of traffic.)

Warrant 6. Coordinated Signal System

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	N/A	On a one-way street or a street with traffic predominantly in one direction, are the adjacent signals far enough apart that the necessary degree of vehicle platooning does not occur? – <i>or</i> –
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No		On a two-way street, are the adjacent signals far enough apart that the necessary degree of vehicle platooning does not occur and would the proposed and adjacent traffic control signal provide a progressive operation?

Warrant 7. Crash Experience

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is one of the following conditions met?: <ul style="list-style-type: none"> ◆ 80% of Condition A or Condition B in Warrant 1 ◆ 56% of Condition A or B in Warrant 1 (major-street speed exceeding 40 mph or population less than 10,000) ◆ 80 % or more of Warrant 4 met? – <i>and</i> –
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Have there been 5 or more reportable crashes susceptible to correction by a traffic signal within a 12 month period?

Warrant 8. Roadway Network

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Is the total existing, or immediately projected, entering volume on all approaches greater than 1000 vehicles for each of any 5 hours of a Saturday and/or Sunday. – <i>or</i> –
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Is the total existing, or immediately projected, entering volume greater than 1000 vehicles for the peak hour of a typical weekday, and do the 5 year projected traffic volumes meet one or more of Warrants 1, 2, and 3 during an average weekday?

Check applicable characteristics of each route:

Major Street	Minor Street	
<input type="checkbox"/>	<input type="checkbox"/>	It is part of street or highway system that serves as the principal roadway network for through traffic flow.
<input type="checkbox"/>	<input type="checkbox"/>	It includes rural or suburban highways outside, entering, or traversing a city.
<input type="checkbox"/>	<input type="checkbox"/>	It appears as a major route on an official plan such as a major street plan in an urban area traffic and transportation study.

Remarks:

Warrant 2. Four Hour Volumes (70% Factor)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Meets each of 4 Highest Hours (Warrant 2 — see Figure 1).
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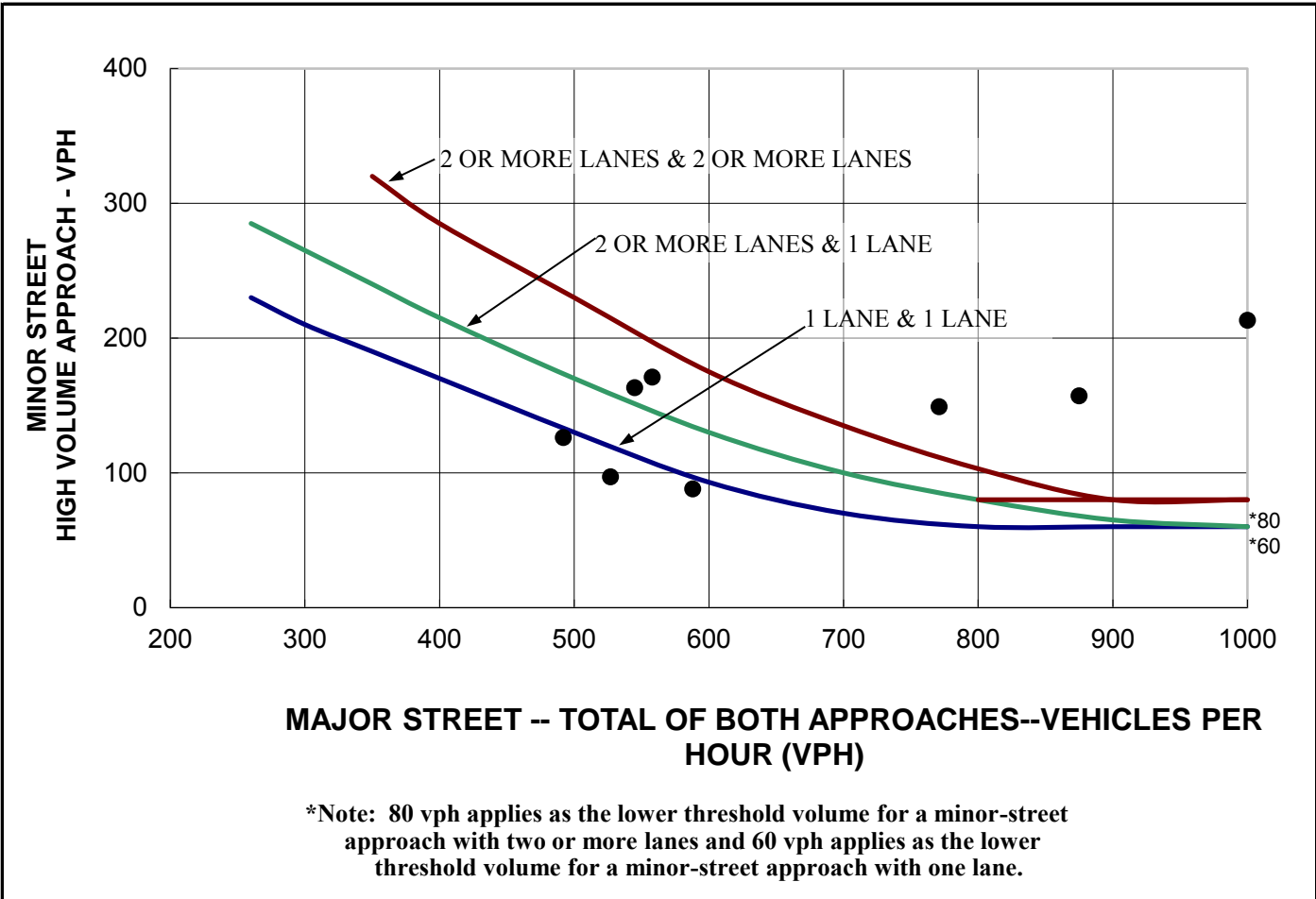


Figure 1. Four-hour volume warrant (community less than 10,000 population or above 40 MPH on major street). (Warrant 2.)

Warrant 3. Peak Hour (70% Factor)

<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all of the following conditions true for any four consecutive 15 minute periods? 1. The total stopped time delay experienced by the traffic on one minor street approach (one direction only) controlled by a stop sign equals or exceeds 4 vehicle-hours for a one-lane approach and 5 vehicle-hours for a two-lane approach, <i>and</i> 2. The volume of the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, <i>and</i> 3. The total entering volume serviced during the hour equals or exceeds 650 vph for intersections with three approaches or 800 vph for intersections with four (or more) approaches.
- <i>or</i> -	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Meets one High Hour (Warrant 3 — see Figure 2).

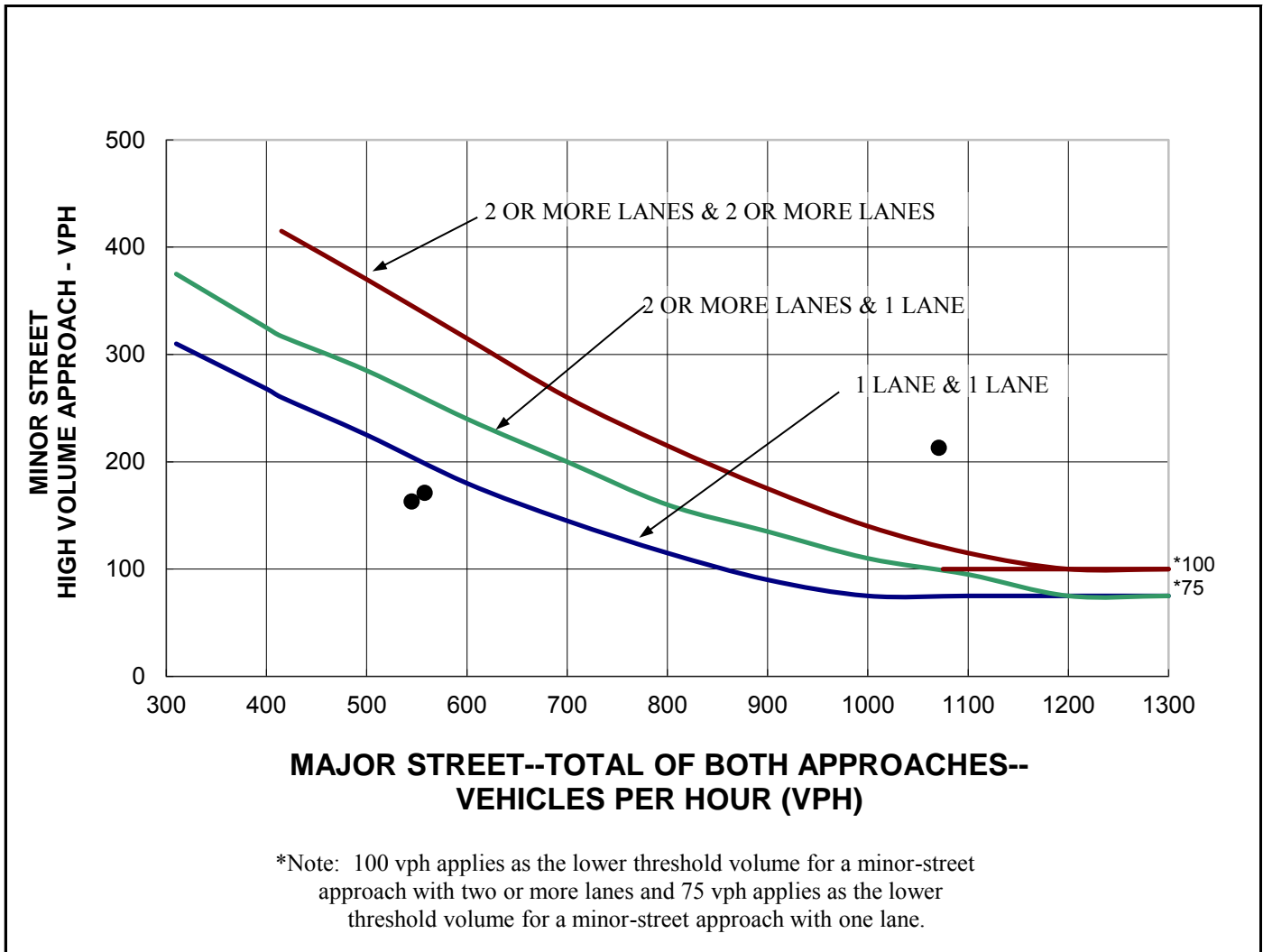


Figure 2. Peak hour volume warrant (community less than 10,000 population or above 40 MPH on major street). (Warrant 3.)

Warrant 4. Four Hour Pedestrian Volumes (70% Factor)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Meets each of 4 Highest Hours (Warrant4 — see Figure 3).
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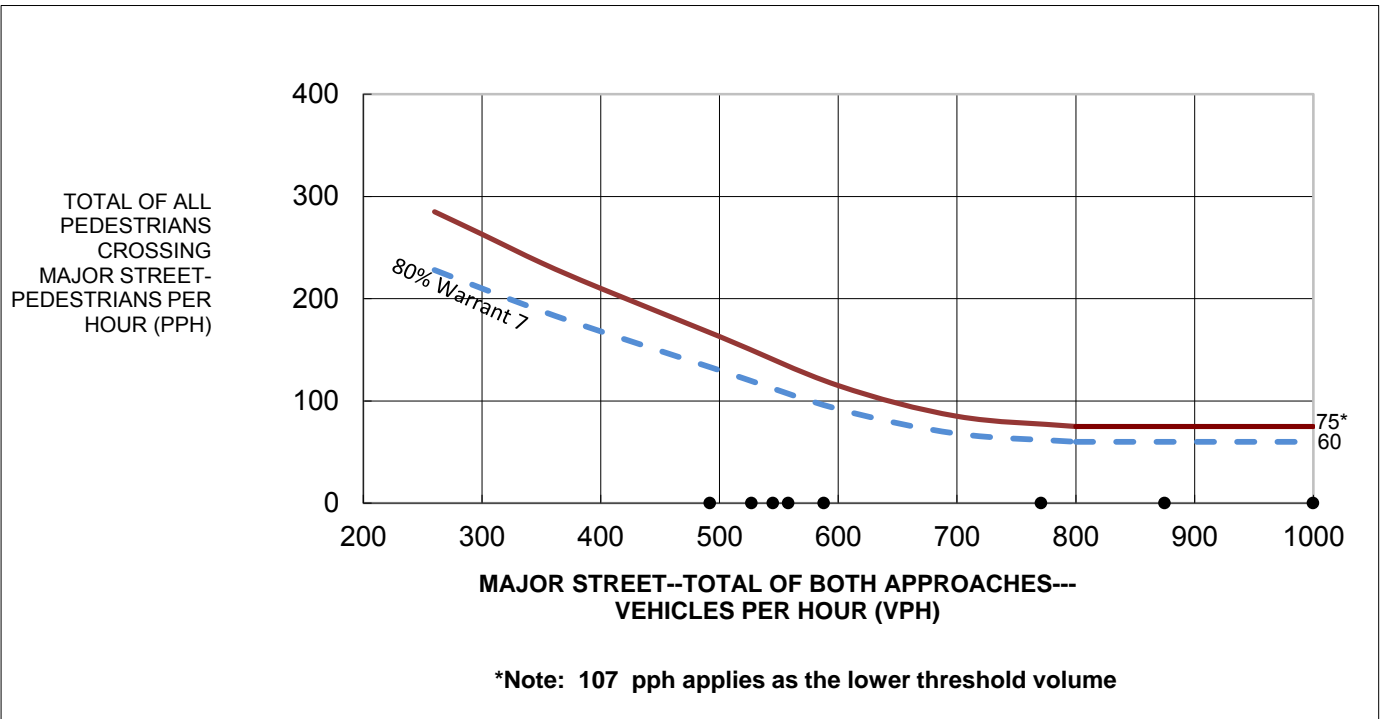


Figure 3. Four-hour pedestrian warrant (community less than 10,000 population or above 35 MPH on major street). (Warrant 4.)

Warrant 4. Peak Hour Pedestrian Volumes (70% Factor)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Meets Peak Hour Pedestrian (Warrant4 — see Figure 4).
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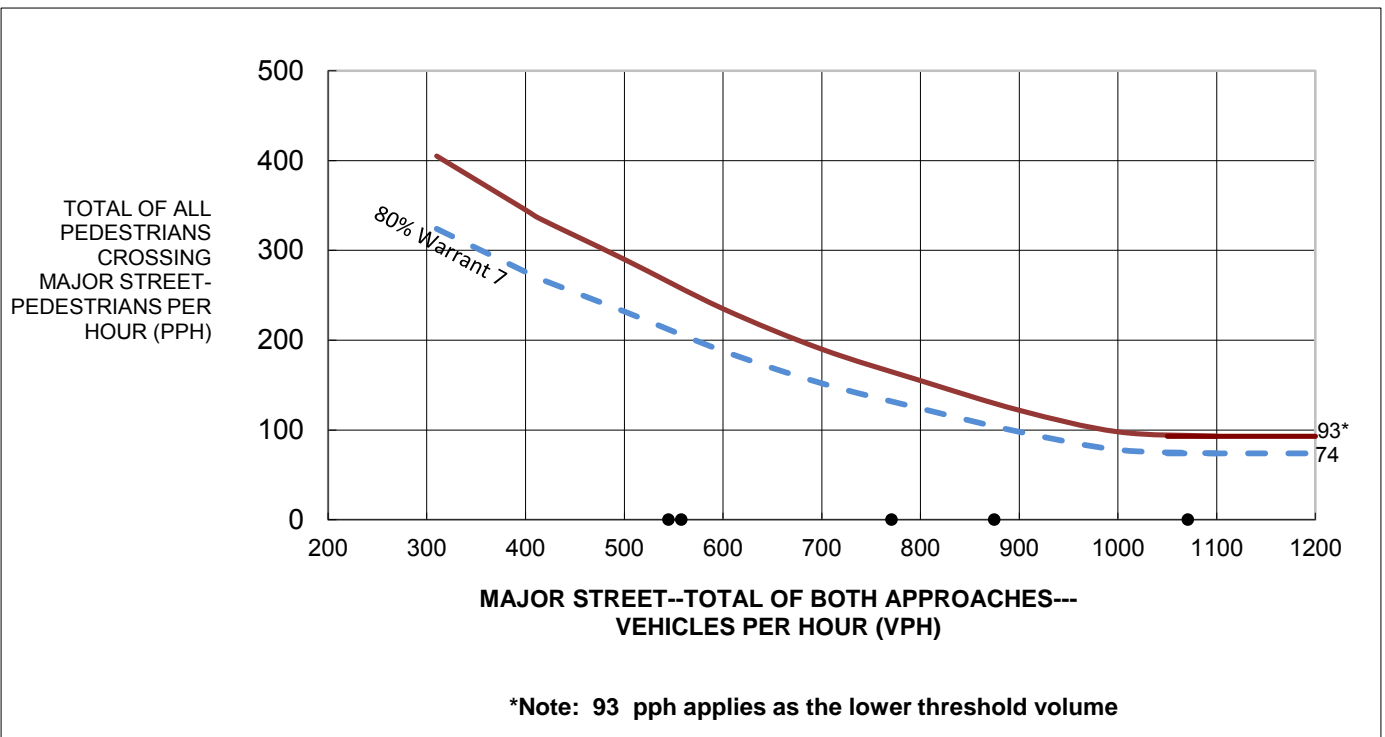


Figure 4. Peak hour pedestrian warrant (community less than 10,000 population or above 35 MPH on major street). (Warrant 4.)

Warrant 9. Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Meets one High Hour (Warrant 9 — see Figure 5).
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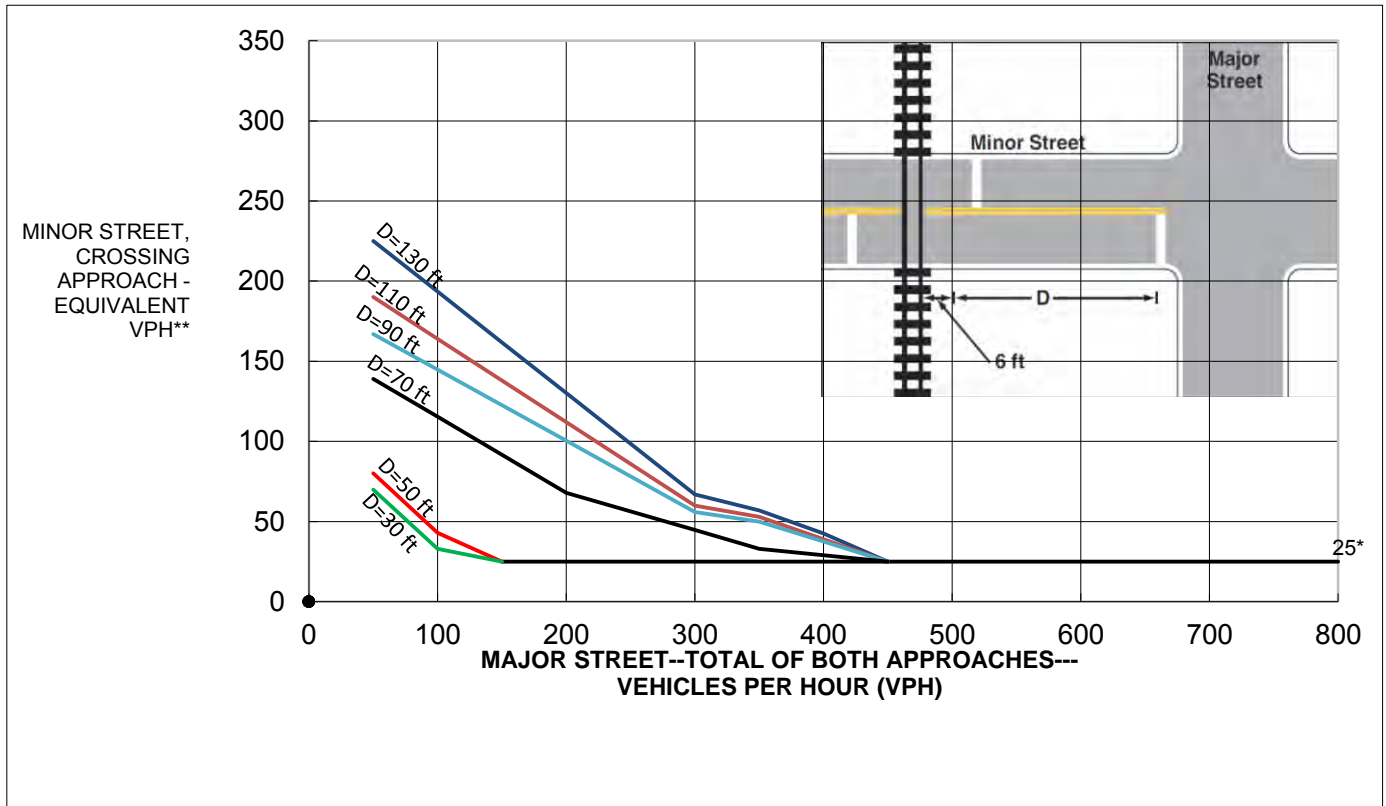


Figure 5. Railroad Grade Crossing (One Approach Lane at the Track Crossing).
 (Warrant 9.)

*25 vph applies as the lower threshold volume

** VPH after applying the adjustment factors in Tables 4C-2, 4C-3, and/or 4C-4, if appropriate



Form Revised 2/27/2012

Traffic Survey — Count Analysis

2011 TMUTCD Warrants

County: Williamson District: Austin
 City: Leander Population: N/A Survey Date: 9/15/15

	Name	Control	Section	85% Speed
Major	183A NBF			60 MPH
Minor	San Gabriel			

Eight Highest Hours: Include the same 8 hours for the Major and Minor St. volumes.

Time Ends	Major St. - Both App.		Minor St. - Hi. Vol. App.		Comments:
	Veh. Total	Ped. Total	Veh. Total	Ped. Total	
8:00 PM	398		41		The signal warrant is for the intersection of 183A Northbound Frontage Road and San Gabriel Parkway.
8:00 AM	230		41		
7:00 PM	576		37		
12 NOON	284		36		
1:00 PM	292		33		
11:00 AM	254		31		
6:00 PM	736		30		
5:00 PM	630		30		

Warrant 1. Eight Hour Vehicular Volume

Yes No Meets 70%^c (and major-street speed exceeds 40 mph or population less than 10,000) *or* 100%^a (regardless of speed) of Condition A.
 – *or* –
 Yes No Meets 70%^c (and major-street speed exceeds 40 mph or population less than 10,000) *or* 100%^a (regardless of speed) of Condition B.
 – *or* –
 Yes No Meets 80%^b of Conditions A and B.
 – *or* –
 Yes No Meets 56%^d of Conditions A and B (and major-street speed exceeds 40 mph or population less than 10,000).

Condition A - Minimum Vehicle Volume

Number of Lanes		Vehicles per hour on Major St (Total of Both Approaches)				Vehicles per hour on higher-volume Minor St approach (One Direction Only)					
Major Street	Minor Street	Required				Existing	Required				Existing
		100% ^a	80% ^b	70% ^c	56% ^d		100% ^a	80% ^b	70% ^c	56% ^d	
1	1	500	400	350	280		150	120	105	84	
2 or more	1	600	480	420	336		150	120	105	84	
2 or more	2 or more	600	480	420	336	230	200	160	140	112	30
1	2 or more	500	400	350	280		200	160	140	112	

Condition B - Interruption of Continuous Traffic

Number of Lanes		Vehicles per hour on Major St (Total of Both Approaches)				Vehicles per hour on higher-volume Minor St approach (One Direction Only)					
Major Street	Minor Street	Required				Existing	Required				Existing
		100% ^a	80% ^b	70% ^c	56% ^d		100% ^a	80% ^b	70% ^c	56% ^d	
1	1	750	600	525	420		75	60	53	42	
2 or more	1	900	720	630	504		75	60	53	42	
2 or more	2 or more	900	720	630	504	230	100	80	70	56	30
1	2 or more	750	600	525	420		100	80	70	56	

^aBasic minimum hourly volume.

^bUsed for combination of Conditions A and B after adequate trial of other remedial measures.

^cMay be used when the major-street speed exceeds 40 mph or in a community with a population of less than 10,000.

^dMay be used for combination of Conditions A and B after adequate trial of other remedial measures when major street exceeds 40 mph or in an isolated community with a population of less than 10,000.

Warrant 2. Four Hour Volumes (70% Factor)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Meets each of 4 Highest Hours (Warrant 2 — see Figure 1).
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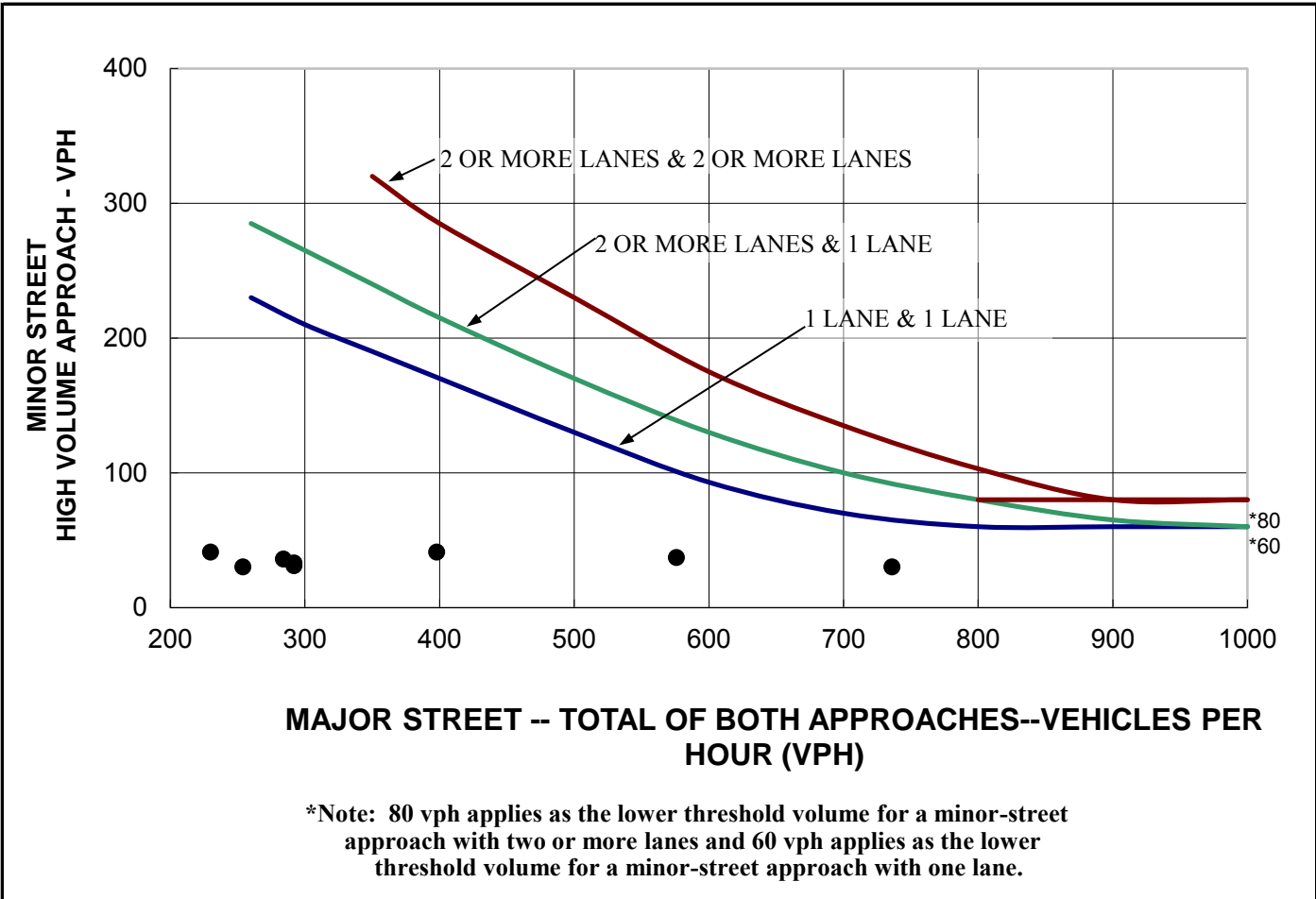


Figure 1. Four-hour volume warrant (community less than 10,000 population or above 40 MPH on major street). (Warrant 2.)

Warrant 3. Peak Hour (70% Factor)

<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are all of the following conditions true for any four consecutive 15 minute periods? 1. The total stopped time delay experienced by the traffic on one minor street approach (one direction only) controlled by a stop sign equals or exceeds 4 vehicle-hours for a one-lane approach and 5 vehicle-hours for a two-lane approach, <i>and</i> 2. The volume of the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, <i>and</i> 3. The total entering volume serviced during the hour equals or exceeds 650 vph for intersections with three approaches or 800 vph for intersections with four (or more) approaches.
- <i>or</i> -	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Meets one High Hour (Warrant 3 — see Figure 2).

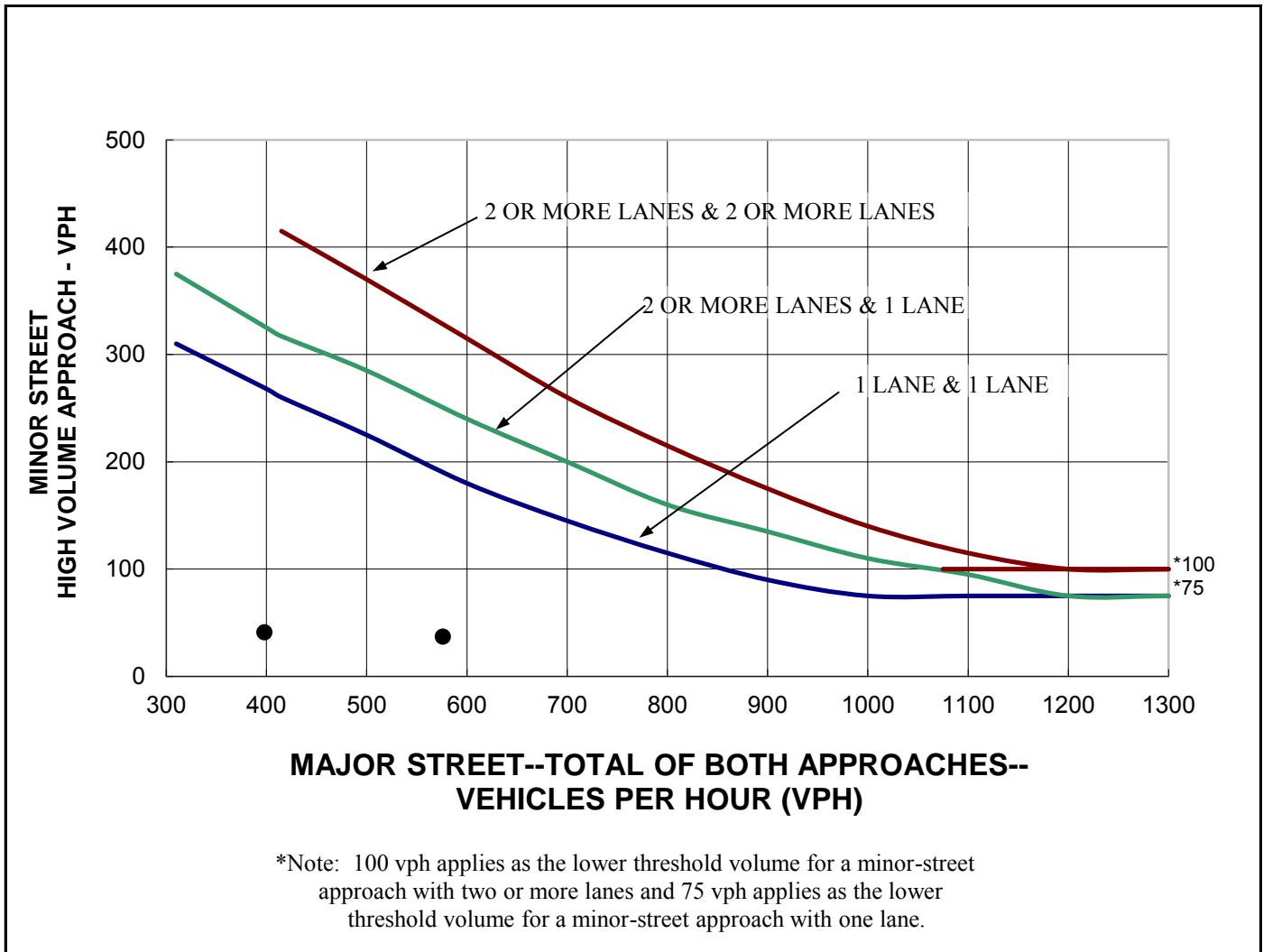


Figure 2. Peak hour volume warrant (community less than 10,000 population or above 40 MPH on major street). (Warrant 3.)

Warrant 4. Four Hour Pedestrian Volumes (70% Factor)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Meets each of 4 Highest Hours (Warrant4 — see Figure 3).
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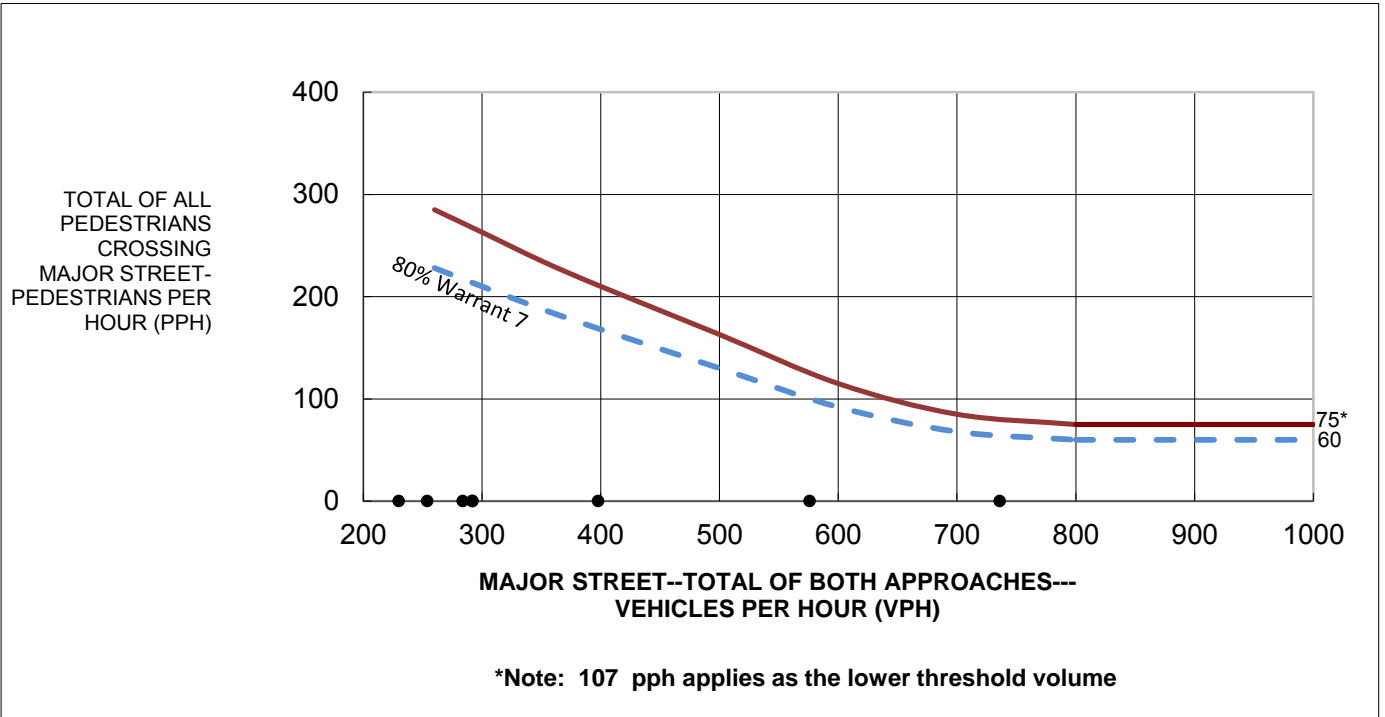


Figure 3. Four-hour pedestrian warrant (community less than 10,000 population or above 35 MPH on major street). (Warrant 4.)

Warrant 4. Peak Hour Pedestrian Volumes (70% Factor)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Meets Peak Hour Pedestrian (Warrant4 — see Figure 4).
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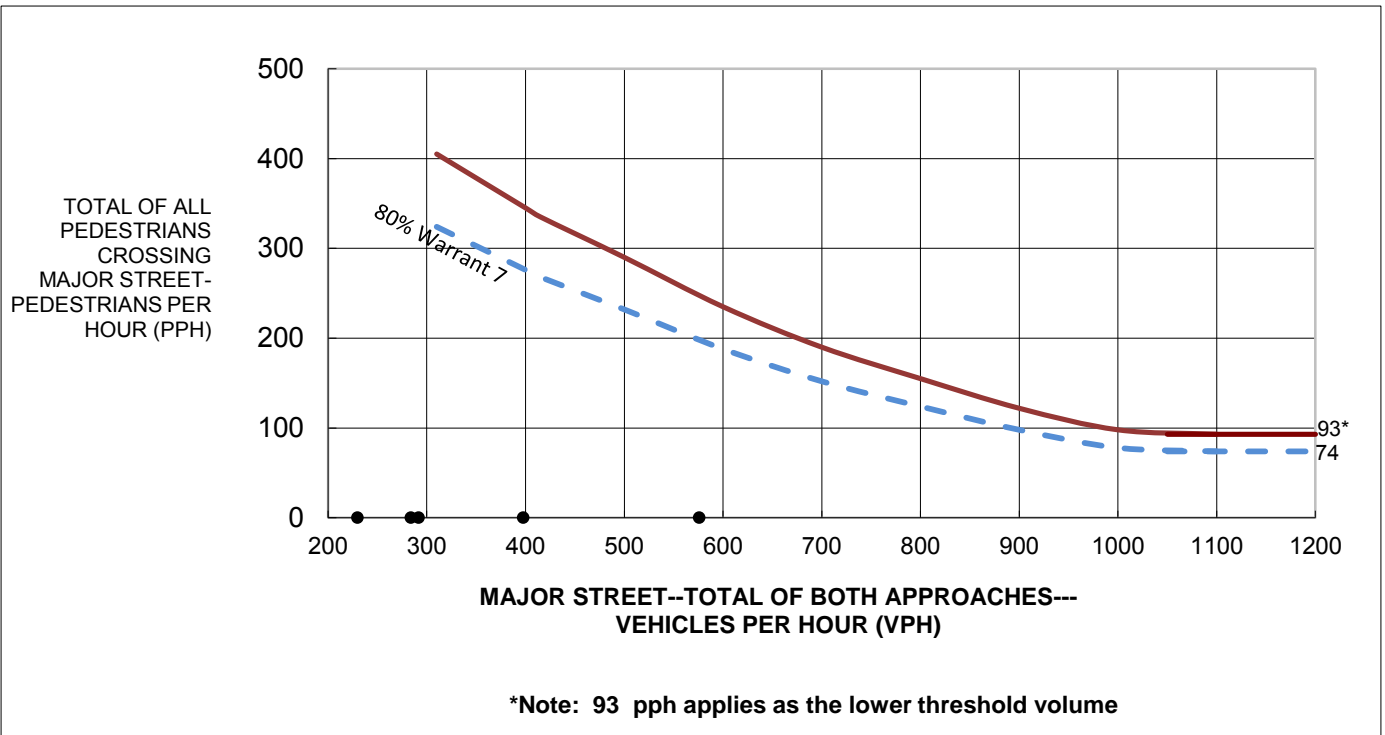


Figure 4. Peak hour pedestrian warrant (community less than 10,000 population or above 35 MPH on major street). (Warrant 4.)

Warrant 5. School Crossing

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	N/A	Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period? – <i>and</i> –
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No		Is there a minimum of 20 students during the highest crossing hour? – <i>and</i> –
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		Is the nearest signal located more than 300 feet away? (This warrant may be applied, if the proposed signal is less than 300 feet and does not restrict the progressive movement of traffic.)

Warrant 6. Coordinated Signal System

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	N/A	On a one-way street or a street with traffic predominantly in one direction, are the adjacent signals far enough apart that the necessary degree of vehicle platooning does not occur? – <i>or</i> –
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No		On a two-way street, are the adjacent signals far enough apart that the necessary degree of vehicle platooning does not occur and would the proposed and adjacent traffic control signal provide a progressive operation?

Warrant 7. Crash Experience

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Is one of the following conditions met?: <ul style="list-style-type: none"> ◆ 80% of Condition A or Condition B in Warrant 1 ◆ 56% of Condition A or B in Warrant 1 (major-street speed exceeding 40 mph or population less than 10,000) ◆ 80 % or more of Warrant 4 met? – <i>and</i> –
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Have there been 5 or more reportable crashes susceptible to correction by a traffic signal within a 12 month period?

Warrant 8. Roadway Network

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Is the total existing, or immediately projected, entering volume on all approaches greater than 1000 vehicles for each of any 5 hours of a Saturday and/or Sunday. – <i>or</i> –
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Is the total existing, or immediately projected, entering volume greater than 1000 vehicles for the peak hour of a typical weekday, and do the 5 year projected traffic volumes meet one or more of Warrants 1, 2, and 3 during an average weekday?

Check applicable characteristics of each route:

Major Street	Minor Street	
<input type="checkbox"/>	<input type="checkbox"/>	It is part of street or highway system that serves as the principal roadway network for through traffic flow.
<input type="checkbox"/>	<input type="checkbox"/>	It includes rural or suburban highways outside, entering, or traversing a city.
<input type="checkbox"/>	<input type="checkbox"/>	It appears as a major route on an official plan such as a major street plan in an urban area traffic and transportation study.

Remarks:

Warrant 9. Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Meets one High Hour (Warrant 9 — see Figure 5).
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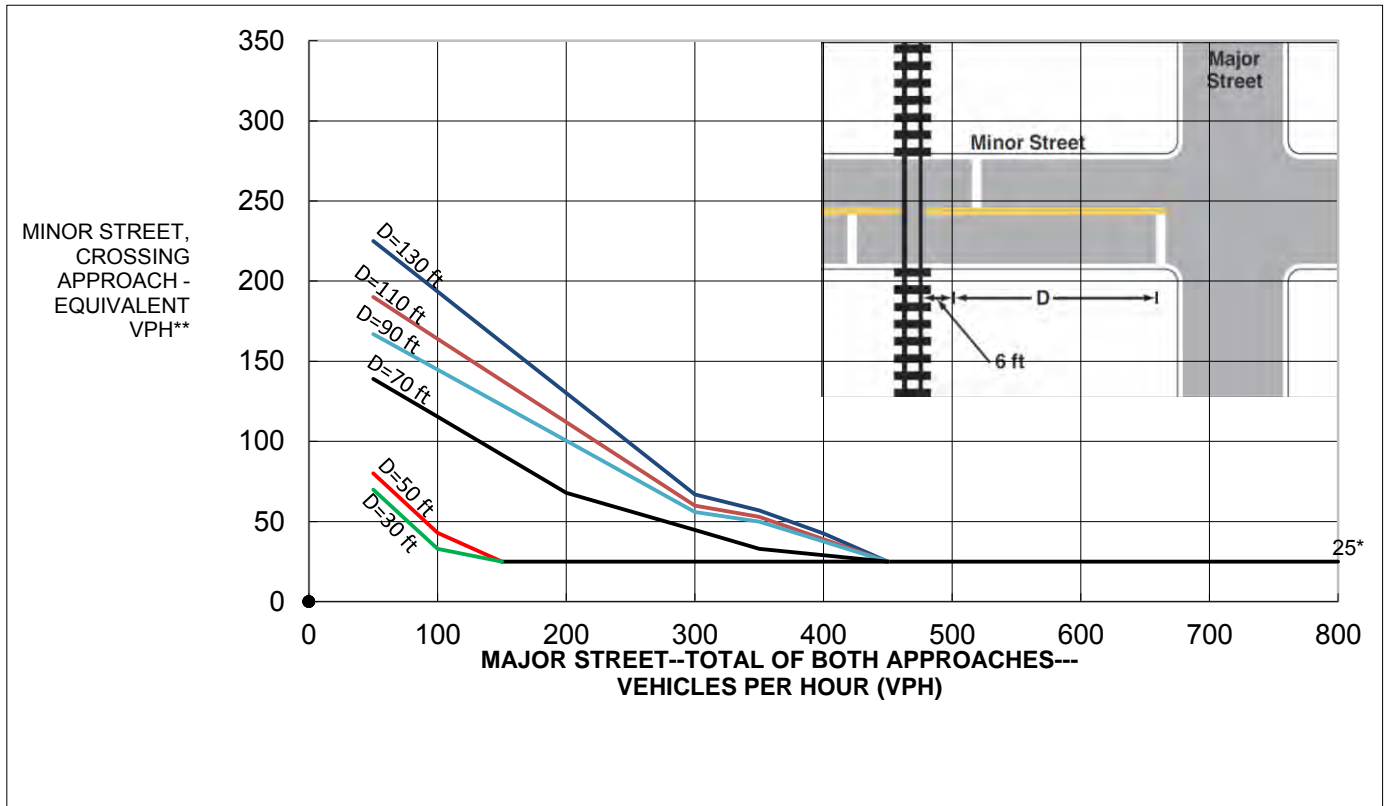
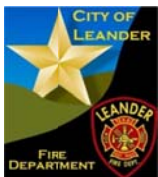


Figure 5. Railroad Grade Crossing (One Approach Lane at the Track Crossing).
 (Warrant 9.)

*25 vph applies as the lower threshold volume
 ** VPH after applying the adjustment factors in Tables 4C-2, 4C-3, and/or 4C-4, if appropriate



Leander Fire Department

October 13, 2015

Mr. Wesley Burford
Director of Engineering
Central Texas Regional Mobility Authority
3300 N. I-35, Suite 300
Austin, Texas 78705

Dear Mr. Burford,

On behalf of the Leander Fire Department, we would like to express our support for the installation of a traffic signal at the intersection of 183A and San Gabriel Parkway.

The installation of a signal will help provide additional safety measures at this increasingly utilized intersection.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in black ink that reads "Bill Gardner".

Bill Gardner
Fire Chief/Emergency Mgmt Coord.
Leander Fire Department



City of Leander, Texas

Police Department

705 Leander Drive - Leander, TX 78641 (512) 528-2800



October 12, 2015

Mr. Wesley Burford
Director of Engineering
Central Texas Regional Mobility Authority
3300 N. I-35, Suite 300
Austin, Texas 78705

Dear Mr. Burford,

On behalf of the Leander Police Department, we would like to express our support for the installation of a traffic signal at the intersection of 183A and San Gabriel Parkway.

The installation of a signal will help provide additional safety measures at this increasingly utilized intersection.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "G Minton".

Greg Minton
Chief of Police



October 7, 2015



Mr. Wesley Burford
Director of Engineering
Central Texas Regional Mobility Authority
3300 N. I-35, Suite 300
Austin, Texas 78705

Cynthia Long
COMMISSIONER, PRECINCT 2

Dear Mr. Burford,

On behalf of Williamson County, Precinct 2, I would like to express my support for the installation of a traffic signal at the intersection of 183A and San Gabriel Parkway. As I am sure you are aware, there have been several accidents at this intersection, including the most recent fatality. Constituents that I represent are concerned about the safety of their families when traveling and commuting to work, school and other activities.

It is my understanding that a traffic signal warrant was performed at this intersection and that a signal is now warranted. Traffic signals do not always prevent accidents, but they often lessen their severity. I believe that installation of a signal at this increasingly busy intersection will provide additional safety measures and will hopefully reduce future loss of life.

Thank you for your time and consideration in this important matter.

Sincerely,

A handwritten signature in cursive script that reads 'Cynthia P. Long'.

Cynthia P. Long
County Commissioner – Precinct 2

WILLIAMSON COUNTY

512.260-4280 Fax 512.260-4284
clong@wilco.org www.wilco.org
350 Discovery Blvd., Suite 201
Cedar Park, TX 78613

**GENERAL MEETING OF THE BOARD OF DIRECTORS
OF THE
CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY**

RESOLUTION NO. 15-___

**AUTHORIZE INSTALLATION OF TRAFFIC SIGNALS AT THE INTERSECTION
OF SAN GABRIEL PARKWAY WITH THE NORTHBOUND AND SOUTHBOUND
183A FRONTAGE ROADS.**

WHEREAS, the Mobility Authority has recently completed an engineering and traffic study to determine if traffic signals at the intersections are now warranted at the intersection of the 183A frontage roads with San Gabriel Parkway in accordance with applicable standards adopted by the Texas Department of Transportation; and

WHEREAS, based on the results of the engineering and traffic study and the resources now available to the Mobility Authority, the Executive Director recommends the installation of traffic signals at the intersections of the 183A frontage roads and San Gabriel Parkway.

NOW THEREFORE BE IT RESOLVED that the Board hereby approves the installation of traffic signals at the intersection of 183A frontage roads and San Gabriel Parkway, and authorizes and directs the Executive Director to complete the installation of those traffic signals within a reasonable time.

Adopted by the Board of Directors of the Central Texas Regional Mobility Authority on the 28th day of October, 2015.

Submitted and reviewed by:

Approved:

Andrew Martin, General Counsel

Ray A. Wilkerson
Chairman, Board of Directors