



**CENTRAL TEXAS  
Regional Mobility Authority**

## AGENDA ITEM #4 SUMMARY

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Authorize installation of traffic signals at the intersection of Hero Way with the northbound and southbound 183A frontage roads.

Strategic Plan Relevance: Regional Mobility

Department: Engineering

Associated Costs: approximately \$100,000 (most materials already owned by Mobility Authority)

Funding Source: General Funds

Board Action Required: Yes

Description of Matter:

The intersection of 183A and Hero Way is currently stop-controlled. A Traffic Signal Warrant Analysis was performed on January 16, 2014 and indicates 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) were met. It is recommended that a traffic signal be installed.

Reference documentation: Draft Resolution  
Traffic Study Warrants  
Support Letter from Leander City Mayor Fielder and  
Williamson County Commissioner Long

Contact for further information: Wesley M. Burford, P.E., Director of Engineering

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

**RESOLUTION NO. 14-\_\_\_**

**AUTHORIZING INSTALLATION OF TRAFFIC SIGNALS AT  
THE INTERSECTION OF HERO WAY WITH THE NORTHBOUND  
AND SOUTHBOUND 183A FRONTAGE ROADS**

WHEREAS, the Director of Engineering has recently completed an engineering and traffic study for the intersection of the 183A frontage roads and Hero Way to determine if traffic signals at the intersections are now warranted; 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 Hero Way.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves the installation of traffic signals at the intersection of the 183A frontage roads and Hero Way as recommended by the Executive Director, 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 26<sup>th</sup> day of February, 2014.

Submitted and reviewed by:

Approved:

\_\_\_\_\_  
Andrew Martin  
General Counsel for the Central  
Texas Regional Mobility Authority

\_\_\_\_\_  
Ray A. Wilkerson  
Chairman, Board of Directors  
Resolution Number: 14-\_\_\_  
Date Passed: 02/26/14

**Traffic Signal Warrant**  
**183A Frontage Road**  
**And Hero Way**



**CENTRAL TEXAS**  
**Regional Mobility Authority**



*by 2-10-14*

February 2014

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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 Hero Way in Leander, Williamson County, Texas. A Site Location Map has been included in the Appendix of this report as *Exhibit 1*.

In order to conduct the signal warrant analysis 24-hour traffic counts were collected for the intersection of 183A and Hero Way on January 16, 2014. Based on previous data obtained in September 2013 for the Annual Traffic Report, the intersection of 183A Southbound Frontage Road and Hero Way had the highest volumes and number of accidents. This 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 intersection of 183A and Hero Way is currently a diamond interchange with the frontage road divided with 183A main lanes. The northbound and southbound frontage roads speed limit is 60 mph and Hero Way Approach is 45 mph. Hero Way Approach is currently stop-controlled 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 at 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

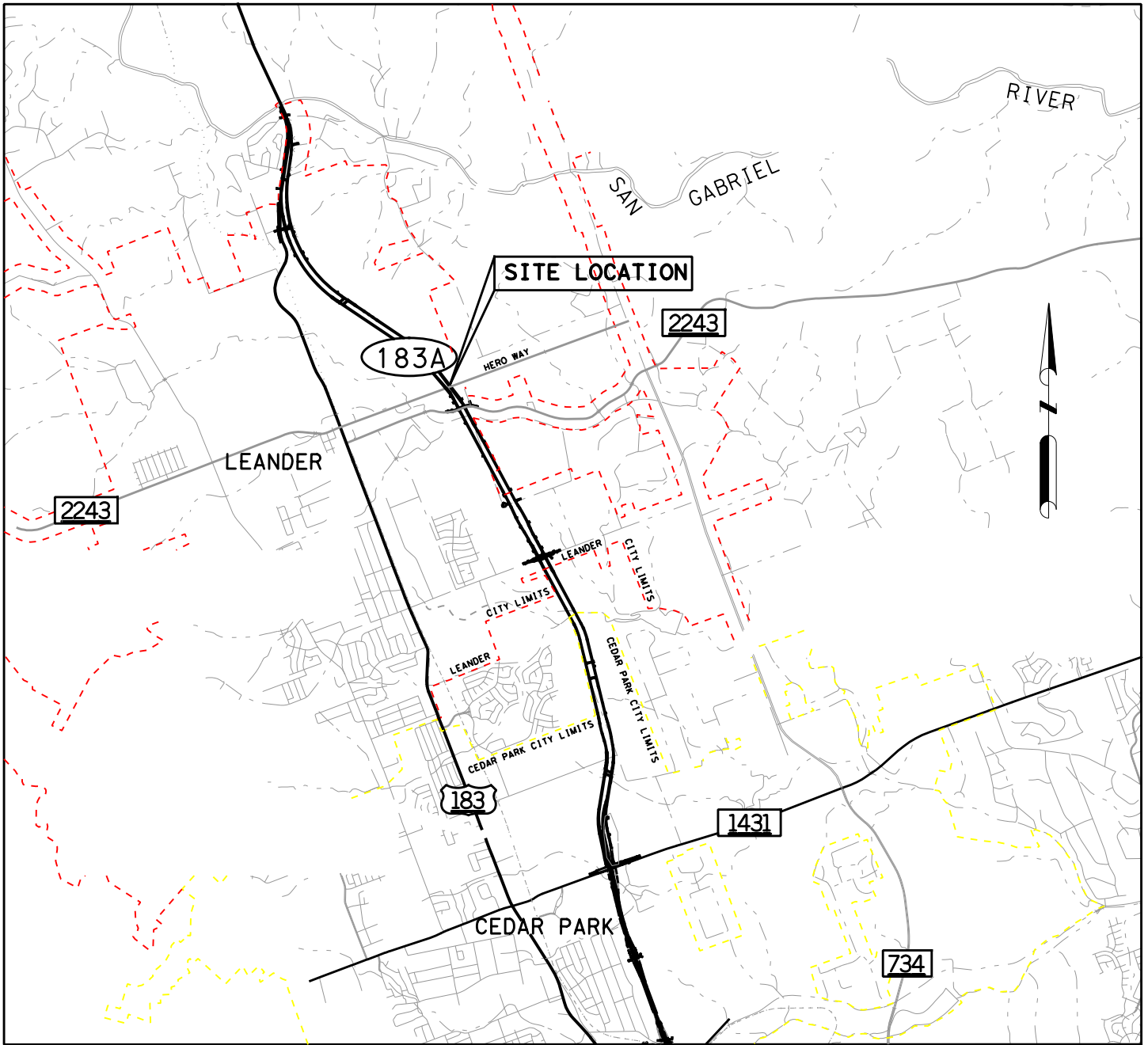
The following results and recommendations are based on data that has been collected, standards set by the TMUTCD. The signal warrant was performed for the 183A Southbound Frontage Road and Hero Way existing conditions. Due to the high volume of accidents, Warrant 7 was analyzed but did not meet the minimum volumes criteria. Warrant 3 satisfied the peak hour criteria therefore a traffic signal installation is recommended to be installed. Please refer to *Exhibit 3* within the Appendix of this report for the detailed Signal Warrant Worksheets.



# APPENDIX

**EXHIBIT 1**

**SITE LOCATION MAP**



**EXHIBIT 1**  
*SITE LOCATION*

**EXHIBIT 2**

**24-HOUR TRAFFIC COUNTS**

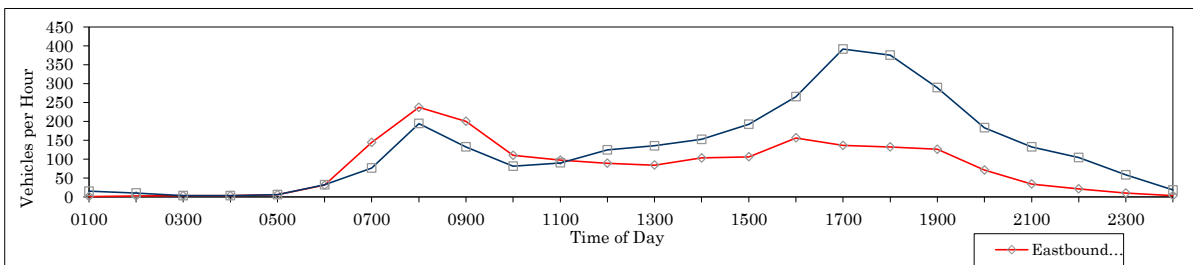
Traffic Data Report	
24 Hour Vehicle Count	
Location	Hero Way at 183A SBFR
City	Leander, Texas
Date	January 16, 2014
Speed Limit	
Notes	



Hero Way				
End Time per Interval	Eastbound Approach		Westbound Approach	
0015	0		5	
0030	1		6	
0045	0		1	
0100	0	1	3	15
0115	0		2	
0130	0		4	
0145	0		1	
0200	2	2	3	10
0215	1		1	
0230	2		1	
0245	0		0	
0300	0	3	1	3
0315	1		0	
0330	1		1	
0345	1		2	
0400	0	3	0	3
0415	1		2	
0430	2		1	
0445	1		3	
0500	2	6	0	6
0515	3		7	
0530	9		3	
0545	13		5	
0600	6	31	17	32
0615	24		16	
0630	32		20	
0645	45		13	
0700	43	144	27	76
0715	57		39	
0730	59		46	
0745	56		54	
0800	65	237	55	194
0815	69		35	
0830	48		32	
0845	51		38	
0900	32	200	27	132
0915	32		11	
0930	27		25	
0945	28		20	
1000	23	110	25	81
1015	22		21	
1030	22		14	
1045	28		24	
1100	25	97	31	90
1115	22		29	
1130	19		27	
1145	24		33	
1200	24	89	35	124

Hero Way				
End Time per Interval	Eastbound Approach		Westbound Approach	
1215	21		35	
1230	20		27	
1245	24		38	
1300	19	84	35	135
1315	20		49	
1330	35		39	
1345	24		23	
1400	24	103	41	152
1415	21		33	
1430	19		54	
1445	35		54	
1500	31	106	51	192
1515	40		43	
1530	33		85	
1545	50		54	
1600	33	156	83	265
1615	39		83	
1630	29		123	
1645	36		88	
1700	32	136	97	391
1715	37		102	
1730	27		101	
1745	39		80	
1800	29	132	92	375
1815	36		87	
1830	30		87	
1845	43		67	
1900	17	126	48	289
1915	17		57	
1930	26		43	
1945	14		55	
2000	14	71	28	183
2015	9		42	
2030	8		29	
2045	7		32	
2100	10	34	29	132
2115	6		27	
2130	7		29	
2145	7		27	
2200	1	21	21	104
2215	3		18	
2230	1		17	
2245	4		13	
2300	2	10	10	58
2315	2		5	
2330	1		5	
2345	0		4	
2400	0	3	4	18

24-Hour Approach Volume: 1,905      3,060  
 Total 24-Hour Approach Volume: 4,965



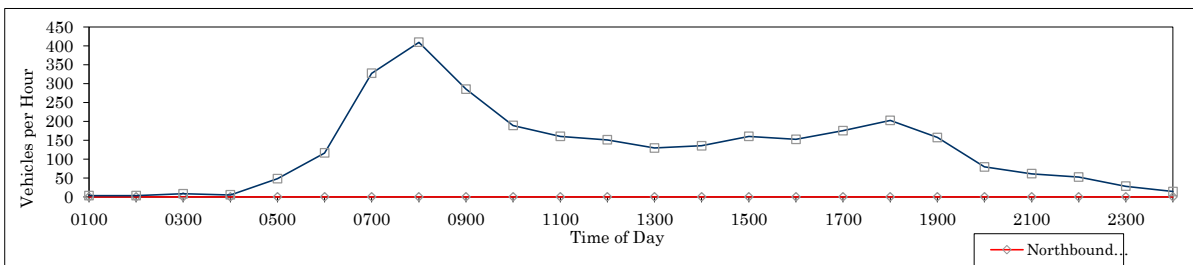
Traffic Data Report	
24 Hour Vehicle Count	
Location	183A SBFR at Hero Way
City	Leander, Texas
Date	January 16, 2014
Speed Limit	
Notes	



183A SBFR		
End Time per Interval	Northbound Approach	Southbound Approach
0015		0
0030		2
0045		0
0100	0	1 3
0115		0
0130		2
0145		0
0200	0	1 3
0215		2
0230		0
0245		5
0300	0	1 8
0315		3
0330		1
0345		0
0400	0	1 5
0415		3
0430		8
0445		14
0500	0	23 48
0515		17
0530		27
0545		36
0600	0	36 116
0615		72
0630		73
0645		88
0700	0	94 327
0715		96
0730		102
0745		99
0800	0	112 409
0815		85
0830		75
0845		69
0900	0	56 285
0915		56
0930		57
0945		35
1000	0	41 189
1015		46
1030		40
1045		35
1100	0	39 160
1115		37
1130		50
1145		36
1200	0	28 151

183A SBFR		
End Time per Interval	Northbound Approach	Southbound Approach
1215		31
1230		33
1245		33
1300	0	32 129
1315		48
1330		29
1345		30
1400	0	28 135
1415		34
1430		37
1445		48
1500	0	41 160
1515		26
1530		30
1545		55
1600	0	41 152
1615		44
1630		48
1645		44
1700	0	39 175
1715		41
1730		54
1745		48
1800	0	59 202
1815		37
1830		48
1845		35
1900	0	37 157
1915		19
1930		20
1945		18
2000	0	22 79
2015		13
2030		23
2045		13
2100	0	12 61
2115		12
2130		9
2145		17
2200	0	14 52
2215		12
2230		5
2245		10
2300	0	1 28
2315		5
2330		5
2345		3
2400	0	1 14

24-Hour Approach Volume: 0 3,048  
 Total 24-Hour Approach Volume: 3,048



**EXHIBIT 3**

**SIGNAL WARRANT WORKSHEETS**



Form Revised 2/27/2012

# Traffic Survey — Count Analysis

## 2011 TMUTCD Warrants

County: Williamson District: Austin  
 City: Leander Population: \_\_\_\_\_ Survey Date: 1-16-14

	Name	Control	Section	85% Speed
Major	Hero Way	Stop		45 MPH
Minor	183A SBFR	Free		

**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	431		409		
6:00 PM	507		202		
5:00 PM	527		175		
9:00 AM	332		285		
4:00 PM	421		152		
7:00 PM	415		157		
7:00 AM	220		327		
3:00 PM	298		160		

### Warrant 1. Eight Hour Vehicular Volume

Yes  No Meets 70%<sup>c</sup> (and major-street speed exceeds 40 mph or population less than 10,000) *or* 100%<sup>a</sup> (regardless of speed) of Condition A.  
 – *or* –  
 Yes  No Meets 70%<sup>c</sup> (and major-street speed exceeds 40 mph or population less than 10,000) *or* 100%<sup>a</sup> (regardless of speed) of Condition B.  
 – *or* –  
 Yes  No Meets 80%<sup>d</sup> of Conditions A and B.  
 – *or* –  
 Yes  No Meets 56%<sup>d</sup> 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% <sup>a</sup>	80% <sup>b</sup>	70% <sup>c</sup>	56% <sup>d</sup>		100% <sup>a</sup>	80% <sup>b</sup>	70% <sup>c</sup>	56% <sup>d</sup>	
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	298	200	160	140	112	160
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% <sup>a</sup>	80% <sup>b</sup>	70% <sup>c</sup>	56% <sup>d</sup>		100% <sup>a</sup>	80% <sup>b</sup>	70% <sup>c</sup>	56% <sup>d</sup>	
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	298	100	80	70	56	160
1	2 or more	750	600	525	420		100	80	70	56	

<sup>a</sup>Basic minimum hourly volume.

<sup>b</sup>Used for combination of Conditions A and B after adequate trial of other remedial measures.

<sup>c</sup>May be used when the major-street speed exceeds 40 mph or in a community with a population of less than 10,000.

<sup>d</sup>May 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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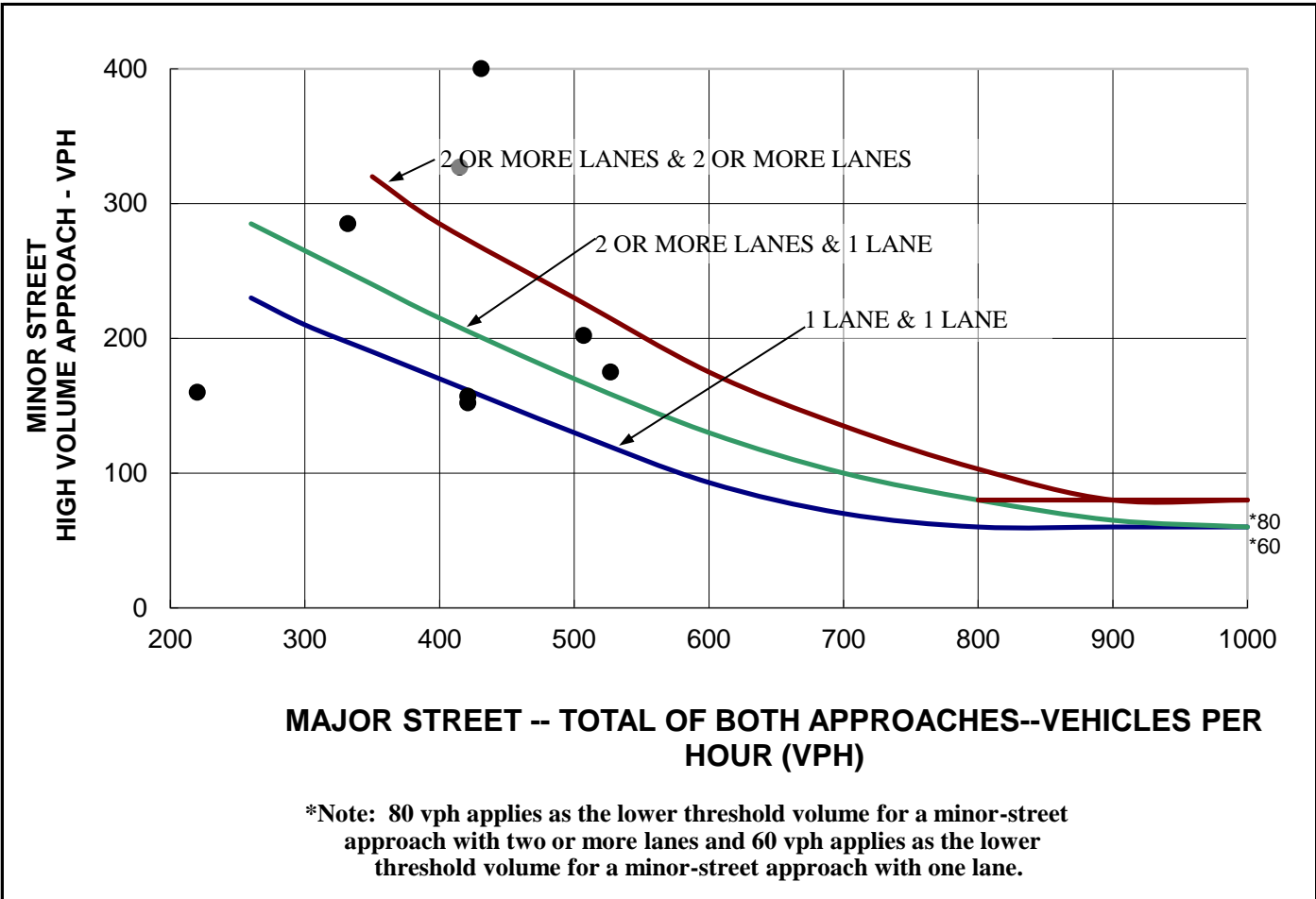


Figure 1. Four-hour volume warrant (community less than 10,000 population or above 40 MPH on major street). (Warrant 2.)

**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.
- or -	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Meets one High Hour (Warrant 3 — see Figure 2).

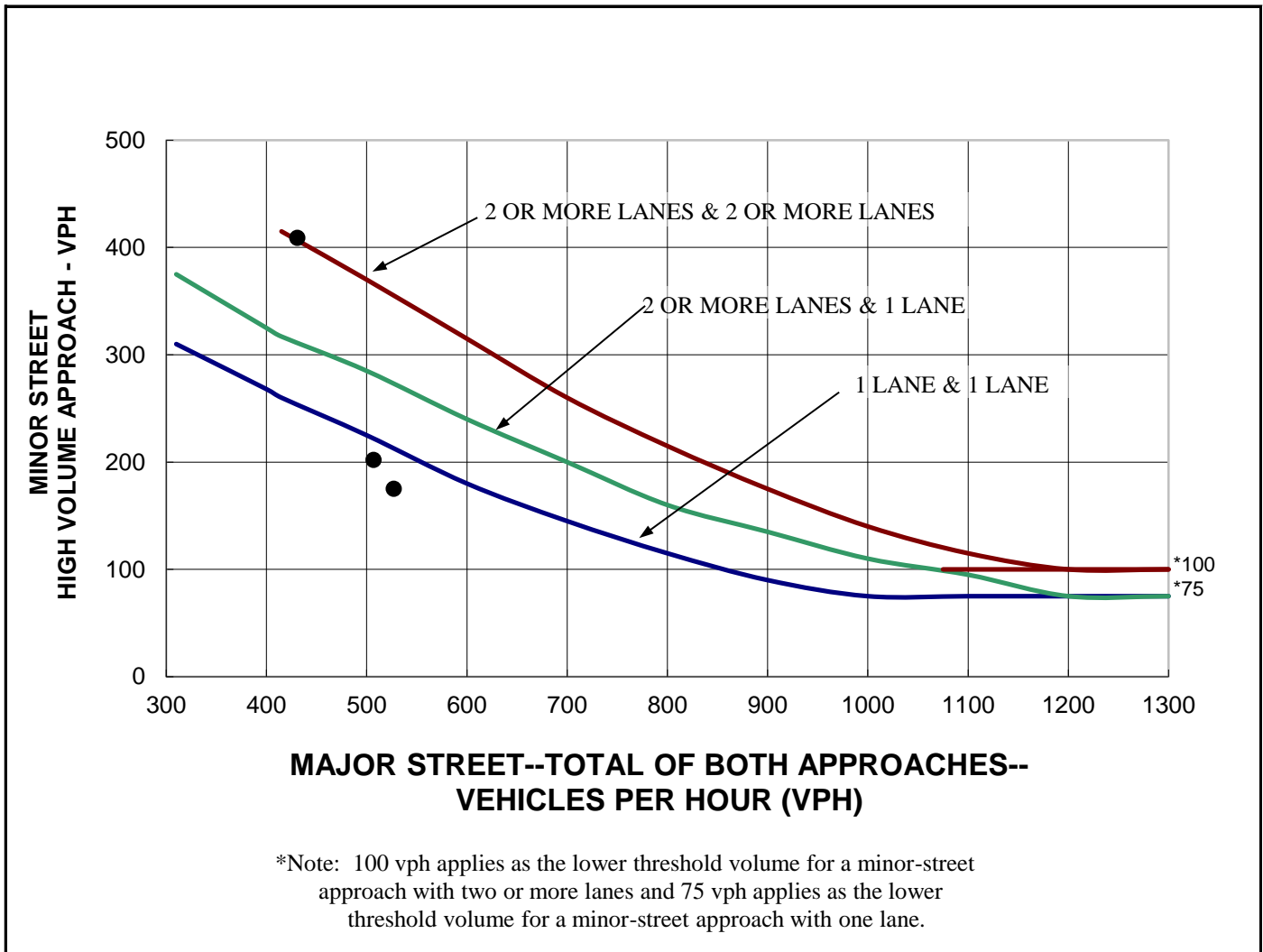


Figure 2. Peak hour volume warrant (community less than 10,000 population or above 40 MPH on major street). (Warrant 3.)

**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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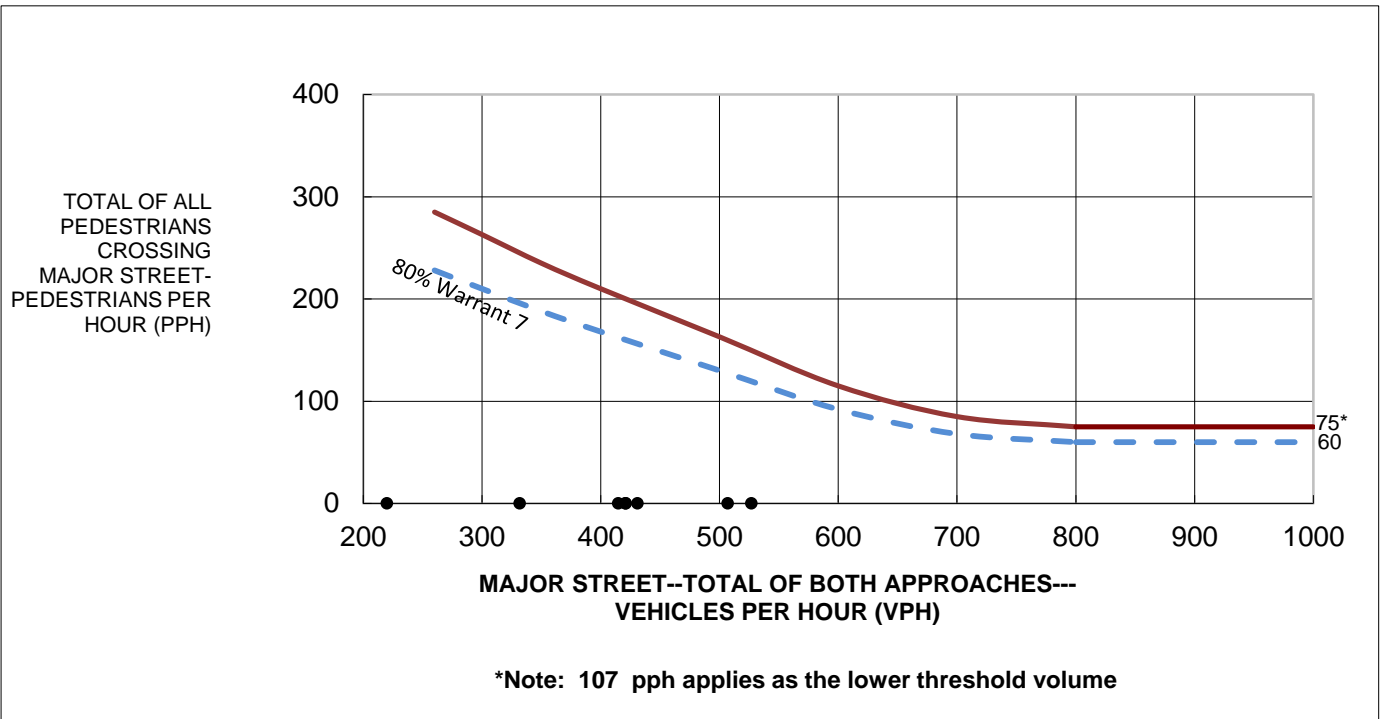


Figure 3. Four-hour pedestrian warrant (community less than 10,000 population or above 35 MPH on major street). (Warrant 4.)

**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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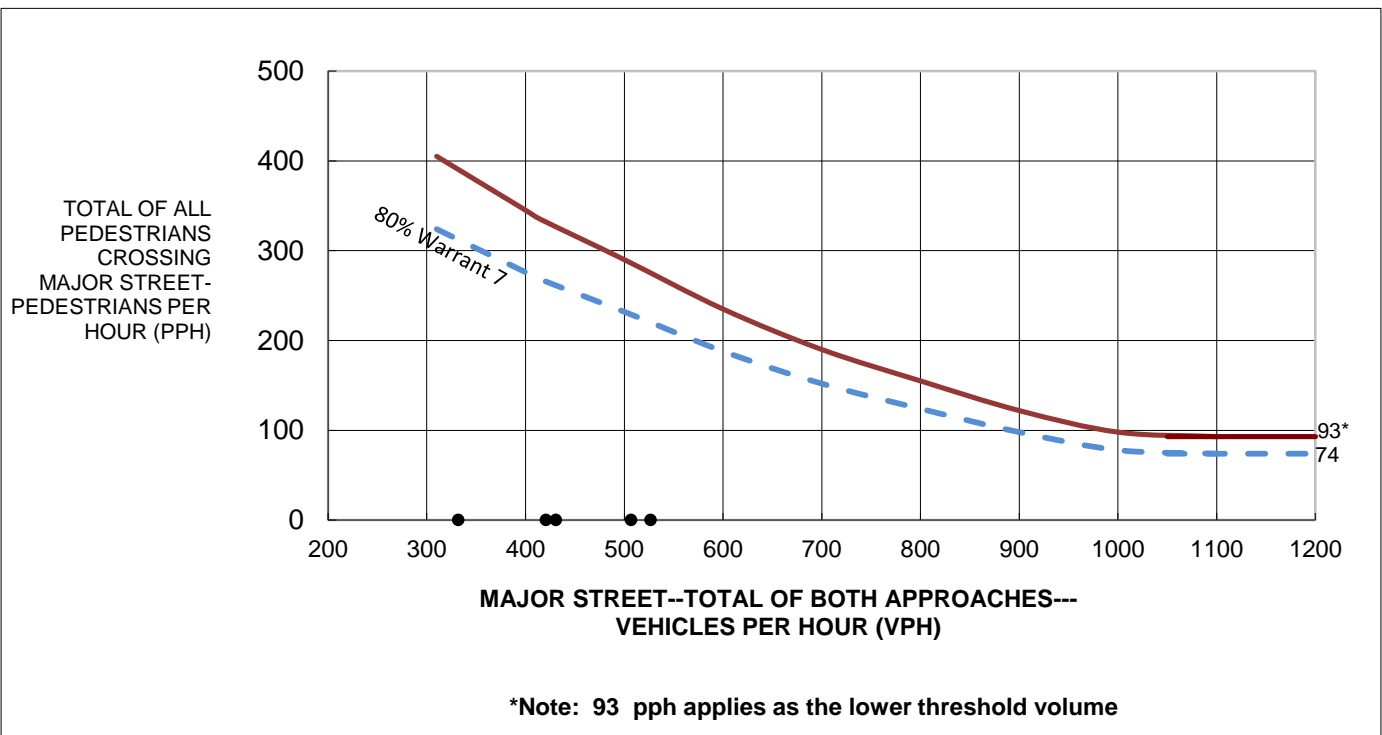


Figure 4. Peak hour pedestrian warrant (community less than 10,000 population or above 35 MPH on major street). (Warrant 4.)

**Warrant 5. School Crossing**

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<b>N/A</b>	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 type="checkbox"/> Yes	<input checked="" 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	<b>N/A</b>	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"> <li>◆ 80% of Condition A or Condition B in Warrant 1</li> <li>◆ 56% of Condition A or B in Warrant 1 (major-street speed exceeding 40 mph or population less than 10,000)</li> <li>◆ 80 % or more of Warrant 4 met?</li> </ul> – <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 checked="" 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 checked="" 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 (Two or More Approach Lanes 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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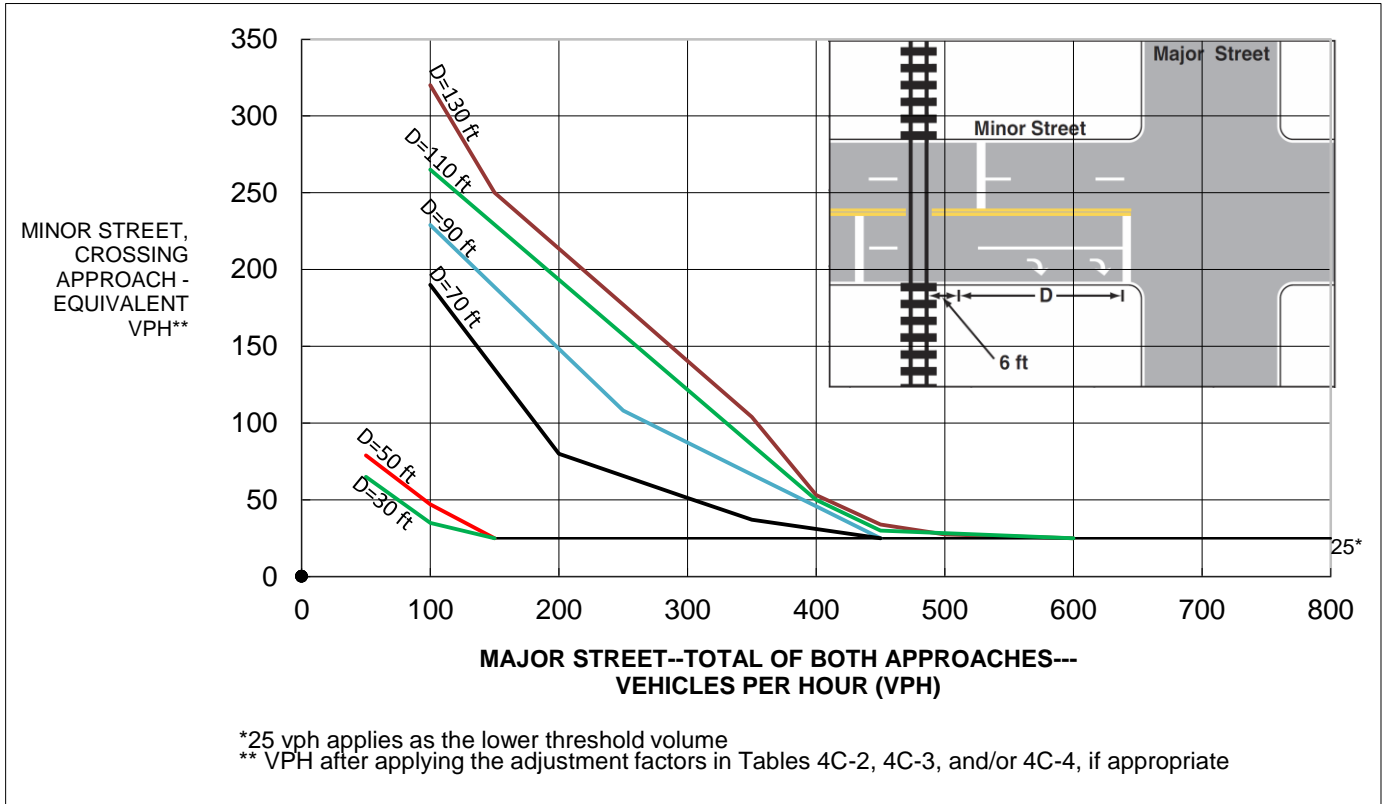


Figure 5. Railroad Grade Crossing (Two or More Approach Lanes at the Track Crossing).  
 (Warrant 9.)



January 14, 2014

Mike Heligenstein  
Executive Director  
Central Texas Regional Mobility Authority  
3300 N IH-35, Suite 300  
Austin, TX 78705


Dear Mr. Heligenstein,

While the opening of Hero Way has brought increased mobility to the Leander area, it has also created an overwhelming traffic safety problem occurring at the intersection of Hero Way and the 183A frontage roads. Within the first ten months of operation, over 30 traffic accidents were reported at this intersection. This past Friday, January 10, 2014 there was an accident involving a fatality of a beloved Liberty Hill resident.

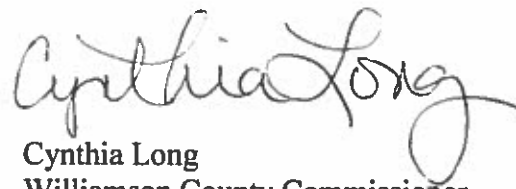
We strongly urge the Mobility Authority to address this problem immediately. Given the Friday fatality, a fully signalized intersection should now be warranted. I am sure you can appreciate the seriousness of the situation and share our concern.

Your time and attention to this matter is greatly appreciated. Nothing is more important than the safety of our citizens and we would like to see the appropriate measures taken to prevent another accident or fatality from taking place.

Sincerely,



Christopher Fielder  
Mayor, City of Leander



Cynthia Long  
Williamson County Commissioner

Cc: Ray Wilkerson, CTRMA Board Chair  
Bob Daigh, Williamson County Senior Director of Infrastructure