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*Final Report*

# Traffic Signal Warrant Study

**Addison, Texas  
Dallas County**

**Prepared for:**

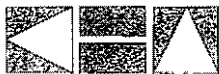
**Town of Addison**

**Prepared by:**

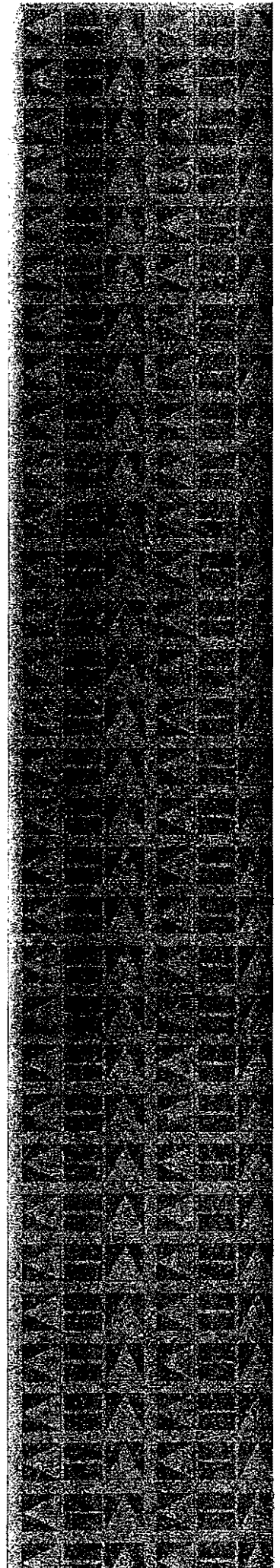
**Kimley-Horn and Associates, Inc.  
Dallas, Texas**

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# Traffic Signal Warrant Study

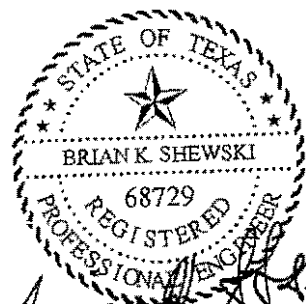
Various Locations

Addison, Texas  
Dallas County

*Prepared by:*

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January 9, 2003



*Brian K. Shewski*  
1/9/03

## Executive Summary

Kimley-Horn and Associates, Inc. (KHA) was retained by the Town of Addison to determine if the Town maintained signalized intersections met State guidelines for traffic signal warrants. The 30 intersections evaluated in this traffic signal warrant study are summarized below:

- |                            |                                |
|----------------------------|--------------------------------|
| 1. Marsh at Arapaho        | 16. Midway at Spring Valley    |
| 2. Belt Line at Marsh      | 17. Spring Valley at Greenhill |
| 3. Belt Line at Business   | 18. Addison at Arapaho         |
| 4. Belt Line at Commercial | 19. Addison at Lindbergh       |
| 5. Belt Line at Surveyor   | 20. Addison at Airport         |
| 6. Belt Line at Runyon     | 21. Addison at Keller Springs  |
| 7. Belt Line at Midway     | 22. Addison at Westgrove       |
| 8. Belt Line at Beltway    | 23. Addison at Sojourn         |
| 9. Belt Line at Addison    | 24. Quorum at Westgrove        |
| 10. Belt Line at Quorum    | 25. Quorum at Keller Springs   |
| 11. Midway at Dooley       | 26. Quorum at Airport          |
| 12. Midway at Lindbergh    | 27. Quorum at Arapaho          |
| 13. Midway at Beltway      | 28. Quorum at Edwin Lewis      |
| 14. Midway at Proton       | 29. Arapaho at Edwin Lewis     |
| 15. Midway at Hornet       | 30. Westgrove at Sojourn       |

The *Texas Manual on Uniform Traffic Control Devices* (TMUTCD) sets forth twelve (12) warrants, or justifying sets of conditions, at least one of which should be fully satisfied before a traffic signal is warranted for construction. This study determined in a *quantitative* manner if a signalized intersection met any of the TMUTCD signal warrants. Twenty-six (26) of the thirty (30) intersections met Warrant 11 (Peak Hour Warrant). The four intersections that did not meet any of the warrants include:

- Addison at Sojourn — ?
- Airport at Quorum
- Arapaho at Edwin Lewis — ?
- Quorum at Edwin Lewis

The remainder of this report highlights the traffic data collection and detailed signal warrant analyses for each of the signalized intersections.

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# Traffic Signal Warrant Study

## Introduction

The use of Federal funds for traffic signal upgrades or new installations requires that each intersection meet at least one of the twelve (12) warrants as defined in the *Texas Manual on Uniform Traffic Control Devices* (TMUTCD). Kimley-Horn and Associates, Inc. (KHA) was retained by the Town of Addison to determine which of the Town maintained signalized intersections met any of these warrants. The 30 intersections evaluated in this traffic signal warrant study are summarized below:

- |                            |                                |
|----------------------------|--------------------------------|
| 1. Marsh at Arapaho        | 16. Midway at Spring Valley    |
| 2. Belt Line at Marsh      | 17. Spring Valley at Greenhill |
| 3. Belt Line at Business   | 18. Addison at Arapaho         |
| 4. Belt Line at Commercial | 19. Addison at Lindbergh       |
| 5. Belt Line at Surveyor   | 20. Addison at Airport         |
| 6. Belt Line at Runyon     | 21. Addison at Keller Springs  |
| 7. Belt Line at Midway     | 22. Addison at Westgrove       |
| 8. Belt Line at Beltway    | 23. Addison at Sojourn         |
| 9. Belt Line at Addison    | 24. Quorum at Westgrove        |
| 10. Belt Line at Quorum    | 25. Quorum at Keller Springs   |
| 11. Midway at Dooley       | 26. Quorum at Airport          |
| 12. Midway at Lindbergh    | 27. Quorum at Arapaho          |
| 13. Midway at Beltway      | 28. Quorum at Edwin Lewis      |
| 14. Midway at Proton       | 29. Arapaho at Edwin Lewis     |
| 15. Midway at Hornet       | 30. Westgrove at Sojourn       |

These 30 intersection locations are also illustrated in **Figure A** on the next page. Two additional intersections shown in this figure, Arapaho at Surveyor and Landmark at Landmark Plaza, were known not to meet any warrants and were not included in the study.

Belt Line, Midway, Marsh, Arapaho, and Spring Valley are six-lane divided arterials. Belt Line and Midway are also both regional principal arterials. The remaining roadways and cross-streets are four-lanes or less.

# Figure A. Town of Addison Traffic Signal Locations



- Intersection Study Locations (30)
- Other Signalized Intersections (2)

## Study Procedures

**Overview of Signal Warrants.** As previously noted, one (1) of the TMUTCD traffic signal warrants must be fully satisfied before Federal funding can be considered as an option for traffic signal upgrades or new installations. Factors included in the evaluation of these warrants can include vehicle and pedestrian volumes, the number of traffic lanes, the prevailing traffic speeds, traffic accident experience, and school zones.

***Traffic Volume Data.*** Relative to traffic volumes, the warrants consider the total hourly approach volumes in *both* directions on the major street along with the corresponding hourly volumes for *higher volume approach* on the minor street. These volume thresholds are detailed within each warrant discussion.

Hourly traffic volumes were utilized from several sources. The majority of the approach counts were pulled from the data collected for the traffic signal retiming projects for Belt Line Road, Midway Road, Marsh Lane, and Addison Road. If an intersection did not meet the peak hour warrant, additional hourly counts were used from 24-hour traffic counts collected by GRAM Traffic. This count information is highlighted in the intersection warrant spreadsheets found in the **Appendix**.

***Number of Approach Lanes.*** The number of approach lanes will affect the volume thresholds for certain warrants. If an approach only has one lane the volume threshold for warranting is reduced. For this study, only one intersection cross-street had a one-lane approach – Sojourn at Addison Road.

***Speeds.*** Relative to the TMUTCD signal warrants, the traffic volume thresholds depend on whether or not the 85th percentile speed on the major street is greater than 40 MPH. Based on travel time runs conducted as part of the traffic signal timing projects and the fact that the posted speed limit is 30 to 40 MPH throughout the study area, there was no reduction allowed in the volume thresholds.

***Traffic Accident Data.*** Relative to the application of the signal warrants, traffic accident experience is used only to reduce certain traffic volume thresholds. Traffic accident frequencies at the four unwarranted signalized intersections were determined by Town staff not to be significant.

## Signal Warrants

The spreadsheets found in the **Appendix** highlight the traffic volume warrant(s) conducted for each intersection. As discussed previously, twenty-six (26) of the intersections met the peak hour warrant which eliminated the need to conduct additional warrant analyses. However, four (4) of the intersections required additional warrant analysis. The following discussion summarizes this analysis.

- Warrant 1 - Minimum Vehicular Volume. This warrant would be satisfied only if the following volume levels exist for at least eight (8) hours of an average day:
  - At least 600 vehicles per hour (VPH) on the major street (sum of both approaches) concurrently with,
  - At least 200 VPH on the higher volume approach of the minor street.
  - None of the four intersections satisfied this warrant.
  
- Warrant 2 - Interruption of Continuous Traffic. This warrant would be satisfied only if the following volume levels exist for at least eight (8) hours of an average day:
  - At least 900 vehicles per hour (VPH) on the major street (sum of both approaches) concurrently with,
  - At least 100 VPH on the higher volume approach of the minor street.
  - None of the four intersections satisfied this warrant.
  
- Warrant 3 - Minimum Pedestrian Volume. The satisfaction of this warrant would require that the following pedestrian volume levels for the crossing of the major street: 100 or more pedestrians per hour for at least four (4) hours of an average day or at least 190 pedestrians per hour during any one hour. Although pedestrian volumes were not recorded, field observations during peak hours indicated that this warrant would almost certainly not be satisfied for any of the intersection locations.



- Warrant 4 - School Crossing. Even though Addison Road has a school speed zone at Sojourn, there is not an established school crossing at this intersection. Therefore, this warrant is not applicable.
  
- Warrant 5 - Progressive Movement. This warrant would be applicable only at a location between existing *coordinated* traffic signals. Even then, Warrant 5 would be satisfied only if the spacing between the existing coordinated signals had been determined to be too great to maintain the necessary degree of vehicle platooning for signal coordination purposes. Accordingly, this warrant is not applicable.
  
- Warrant 6 - Accident Experience  
 This warrant would be satisfied if five (5) or more accidents of types susceptible to correction by signal control had occurred during a 12-month period *and* if traffic volumes were at least 80 percent of those required to satisfy Warrant 1 or Warrant 2. As previously noted, accident frequencies for the four (4) unwarranted intersections were not deemed significant enough to satisfy this warrant.
  
- Warrant 7 - Systems Warrant. This warrant would be applicable only at the common intersection of two or more designated major routes. Other requirements of this warrant are that there the total entering volume (TEV) be at least 1,000 during the peak hour and that the five-year projected volumes satisfy one or more of Warrants 1, 2, 8, 9, and 11. The four unwarranted intersections do not fall into this category.
  
- Warrant 8 - Combinations of Warrants. This warrant would be satisfied if two or more of Warrants 1, 2, or 3 were satisfied to the extent of 80 percent or more of the stated values. The four unwarranted intersections did not meet the stated values for this warrant.
  
- Warrant 9 - Four Hour Volumes. This warrant is evaluated by plotting the actual data points for the counted hours on a graph. If four (4) hours fall above the applicable line, the warrant is satisfied. The four unwarranted intersections did not meet the stated values for this warrant.

- Warrant 10 - Peak Hour Delay. This warrant is intended for existing STOP sign controlled intersections and is therefore not applicable for this study.
- Warrant 11 - Peak Hour Volume. This warrant is evaluated in the same manner as Warrant 9, i.e., by plotting the actual data points for the counted hours on a graph. As previously stated, twenty-six (26) of the 30 intersections evaluated met the requirements of this warrant.
- Warrant 12 - Warrant Volumes for Traffic Actuated Signals. This warrant is evaluated in the same manner as Warrants 9 and 11, i.e., by plotting the actual data points for the counted hours on a graph. If eight (8) or more of the points lie above the applicable line, the warrant is satisfied. Alternately, if two (2) or more of the points lie above a second line, the warrant is satisfied. In the case of the four (4) remaining unwarranted intersections, this warrant is not satisfied.

## Conclusions

This study determined in a *quantitative* manner which Town of Addison signalized intersections met at least one of the TMUTCD signal warrants. The results show that twenty-six (26) of the thirty (30) intersections met Warrant 11 (Peak Hour Warrant). The four intersections that did not meet any of the warrants include:

- Addison at Sojour
- Airport at Quorum
- Arapaho at Edwin Lewis
- Quorum at Edwin Lewis

The traffic volume warrants are detailed in the **Appendix**. The other warrants are highlighted within the body of the report.

## **APPENDIX**

**Table A1  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: MARSH # OF APPROACH LANES: 3  
 MINOR STREET: ARAPAHO # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM								
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM	3,921	321	Y	Y	Y	Y	Y	Y
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	3,921	321	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A2**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 5  
 MINOR STREET: MARSH # OF APPROACH LANES: 5  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM	2,913	3,356	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	2,913	3,356	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	
							1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A3**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 5  
 MINOR STREET: BUSINESS # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE		
06:00 AM TO 07:00 AM			600	200				
07:00 AM TO 08:00 AM	3,122	240	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	3,122	240	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A4  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 5  
 MINOR STREET: COMMERCIAL # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM	3,150	222	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM					Y	Y		
05:00 PM TO 06:00 PM	4,125	111	Y		Y	Y		
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	7,275	333	2	1	1	2	2	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A5  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 5  
 MINOR STREET: SUVEYOR # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM								
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM	3,816	505	Y	Y	Y	Y	Y	Y
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	3,816	505	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5



**Table A6**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 4  
 MINOR STREET: RUNYON # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM								
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM	3,743	209	Y	Y	Y	Y	Y	Y
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM	3,641	118	Y		Y	Y	Y	
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	7,384	327	2	1	2	2	2	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A7  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 6  
 MINOR STREET: MIDWAY # OF APPROACH LANES: 6  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC		MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11	
	600	200		MAIN SIDE STREET MET	BOTH SIDE STREET MET	MAIN LINE STREET	BOTH SIDE STREET MET			
06:00 AM TO 07:00 AM						900	100			
07:00 AM TO 08:00 AM	3,290		1882	Y	Y	Y	Y	Y	Y	
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM										
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	3,290		1,882	1	1	1	1	1	1	
				8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED		1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A8  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 4  
 MINOR STREET: BELTWAY # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM								
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM	4,269	381	Y	Y	Y	Y	Y	Y
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	4,269	381	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	
							1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-8  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-6

**Table A9  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 5  
 MINOR STREET: ADDISON # OF APPROACH LANES: 5  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1			WARRANT 2			WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
06:00 AM TO 07:00 AM			800	200		900	100			
07:00 AM TO 08:00 AM	3,696	1,499	Y	Y	Y	Y	Y	Y	Y	
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM										
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	3,696	1,499	1	1	1	1	1	1	1	
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A10  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: BELT LINE # OF APPROACH LANES: 5  
 MINOR STREET: QUORUM # OF APPROACH LANES: 5  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	BOTH SIDE STREET MET	MAIN LINE	BOTH SIDE STREET MET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM	3,462	506	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	3,462	506	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A11  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: MIDWAY # OF APPROACH LANES: 4  
 MINOR STREET: DOOLEY # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	BOTH SIDE STREET	MAIN LINE	BOTH SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM	3,873	101	Y		Y	Y		
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM	3,733	267	Y	Y	Y	Y	Y	Y
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	7,606	368	2	1	2	2	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	
								1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A12  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: MIDWAY # OF APPROACH LANES: 4  
 MINOR STREET: LINDBERGH # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1			WARRANT 2			WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
06:00 AM TO 07:00 AM			600	200		900	100			
07:00 AM TO 08:00 AM	3,938	468	Y	Y	Y	Y	Y	Y	Y	
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM										
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	3,938	468	1	1	1	1	1	1	1	
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A13**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: MIDWAY # OF APPROACH LANES: 5  
 MINOR STREET: BELTWAY # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM	3,511	321	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	3,511	321	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5



**Table A14  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: MIDWAY # OF APPROACH LANES: 4  
 MINOR STREET: PROTON # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM	3,512	387	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	3,512	387	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A15**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: MIDWAY # OF APPROACH LANES: 5  
 MINOR STREET: HORNET # OF APPROACH LANES: 4  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM	3,611	172	Y		Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM	3,801	221	Y	Y	Y	Y	Y	Y
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM	7,412	393	2	1	2	2	2	2
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	
							1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A16**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: MIDWAY # OF APPROACH LANES: 5  
 MINOR STREET: SPRINGS VALLEY # OF APPROACH LANES: 4  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE		
06:00 AM TO 07:00 AM			600	200				
07:00 AM TO 08:00 AM	3,505	1,332	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	3,505	1,332	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A17**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: SPRING VALLEY # OF APPROACH LANES: 4  
 MINOR STREET: GREENHILL SCHOOL # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM	2,022	279	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	2,022	279	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A18**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: ADDISON # OF APPROACH LANES: 3  
 MINOR STREET: APAPAHO # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM			500	200	900	100		
07:00 AM TO 08:00 AM	1,514	356	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	1,514	356	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A19  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: ADDISON # OF APPROACH LANES: 3  
 MINOR STREET: LINDBERGH # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE		
06:00 AM TO 07:00 AM			500	200				
07:00 AM TO 08:00 AM	1,880	319	Y	Y	Y	Y	Y	Y
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM								
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	1,880	319	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

Table A20  
 Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes

MAJOR STREET: ADDISON # OF APPROACH LANES: 3  
 MINOR STREET: AIRPORT # OF APPROACH LANES: 2  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM								
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM	1,903	212	Y	Y	Y	Y	Y	Y
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	1,903	212	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	
							1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

Table A21  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes

MAJOR STREET: ADDISON # OF APPROACH LANES: 3  
 MINOR STREET: KELLER SPRINGS # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC		MINOR ST TRAFFIC HEAVY LEG		WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET		
06:00 AM TO 07:00 AM	600	200		900	100					
07:00 AM TO 08:00 AM	Y	Y	Y	Y	Y				Y	Y
08:00 AM TO 09:00 AM										
09:00 AM TO 10:00 AM										
10:00 AM TO 11:00 AM										
11:00 AM TO 12:00 PM										
12:00 PM TO 01:00 PM										
01:00 PM TO 02:00 PM										
02:00 PM TO 03:00 PM										
03:00 PM TO 04:00 PM										
04:00 PM TO 05:00 PM										
05:00 PM TO 06:00 PM										
06:00 PM TO 07:00 PM										
07:00 PM TO 08:00 PM										
08:00 PM TO 09:00 PM										
09:00 PM TO 10:00 PM										
	1,458	462		1	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED		

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5



**Table A22  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: WESTGROVE # OF APPROACH LANES: 3

MINOR STREET: ADDISON # OF APPROACH LANES: 3

TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC		MINOR ST TRAFFIC HEAVY LEG		WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11	
	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET			BOTH MET
06:00 AM TO 07:00 AM					600	200		900	100		
07:00 AM TO 08:00 AM	1,482		458		Y	Y	Y	Y	Y	Y	
08:00 AM TO 09:00 AM											
09:00 AM TO 10:00 AM											
10:00 AM TO 11:00 AM											
11:00 AM TO 12:00 PM											
12:00 PM TO 01:00 PM											
01:00 PM TO 02:00 PM											
02:00 PM TO 03:00 PM											
03:00 PM TO 04:00 PM											
04:00 PM TO 05:00 PM											
05:00 PM TO 06:00 PM											
06:00 PM TO 07:00 PM											
07:00 PM TO 08:00 PM											
08:00 PM TO 09:00 PM											
09:00 PM TO 10:00 PM											
	1,482		458		1	1	1	1	1	1	
					8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	8 HOURS NEEDED NOT SATISFIED	4 HRS NEEDED NOT SATISFIED	4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A25  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: KELLER SPRINGS # OF APPROACH LANES: 3  
 MINOR STREET: QUORUM # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11	
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET			BOTH MET
06:00 AM TO 07:00 AM			600	200	900	100			
07:00 AM TO 08:00 AM									
08:00 AM TO 09:00 AM									
09:00 AM TO 10:00 AM									
10:00 AM TO 11:00 AM									
11:00 AM TO 12:00 PM									
12:00 PM TO 01:00 PM									
01:00 PM TO 02:00 PM									
02:00 PM TO 03:00 PM									
03:00 PM TO 04:00 PM									
04:00 PM TO 05:00 PM									
05:00 PM TO 06:00 PM	1,489	1,010	Y	Y	Y	Y	Y	Y	
06:00 PM TO 07:00 PM									
07:00 PM TO 08:00 PM									
08:00 PM TO 09:00 PM									
09:00 PM TO 10:00 PM									
	1,489	1,010	1	1	1	1	1	1	
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED		1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A26**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: QUORUM # OF APPROACH LANES: 3  
 MINOR STREET: AIRPORT # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1			WARRANT 2			WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
06:00 AM TO 07:00 AM	439	46	600	200		900	100			
07:00 AM TO 08:00 AM	646	137	Y				Y			
08:00 AM TO 09:00 AM	839	225	Y	Y	Y		Y			
09:00 AM TO 10:00 AM	352	88								
10:00 AM TO 11:00 AM	296	86					Y			
11:00 AM TO 12:00 PM	505	151					Y			
12:00 PM TO 01:00 PM	609	226	Y	Y	Y		Y			
01:00 PM TO 02:00 PM	605	192	Y				Y			
02:00 PM TO 03:00 PM	416	114					Y			
03:00 PM TO 04:00 PM	383	155					Y			
04:00 PM TO 05:00 PM	533	189					Y			
05:00 PM TO 06:00 PM	944	222	Y	Y	Y	Y	Y	Y		
06:00 PM TO 07:00 PM	517	115					Y			
07:00 PM TO 08:00 PM	312	85								
08:00 PM TO 09:00 PM	174	48								
09:00 PM TO 10:00 PM	165	38								
	7,735	2,117	5	3	3	1	10	1	0	
			8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

Table A27  
Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes

MAJOR STREET: ARAPAHO # OF APPROACH LANES: 3  
 MINOR STREET: QUORUM # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2			WARRANT 9	WARRANT 11
			MAIN LINE	SIDE STREET	MAIN LINE	SIDE STREET	BOTH MET		
06:00 AM TO 07:00 AM	0	0	600	200	900	100			
07:00 AM TO 08:00 AM	0	0							
08:00 AM TO 09:00 AM	0	0							
09:00 AM TO 10:00 AM	0	0							
10:00 AM TO 11:00 AM	0	0							
11:00 AM TO 12:00 PM	0	0							
12:00 PM TO 01:00 PM	0	0							
01:00 PM TO 02:00 PM	0	0							
02:00 PM TO 03:00 PM	0	0							
03:00 PM TO 04:00 PM	0	0							
04:00 PM TO 05:00 PM	0	0							
05:00 PM TO 06:00 PM	1,203	484	Y	Y	Y	Y	Y	Y	
06:00 PM TO 07:00 PM	0	0							
07:00 PM TO 08:00 PM	0	0							
08:00 PM TO 09:00 PM	0	0							
09:00 PM TO 10:00 PM	0	0							
	1,203	484	1	1	1	1	1	1	
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED		1 HR NEEDED SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

Table A28  
 Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes

MAJOR STREET: QUORUM # OF APPROACH LANES: 3  
 MINOR STREET: EDWIN LEWIS # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11	
			MAIN LINE	SIDE STREET	MAIN LINE	BOTH SIDE STREET			BOTH SIDE STREET MET
06:00 AM TO 07:00 AM	248	47	600	200	900	100			
07:00 AM TO 08:00 AM	842	191	Y			Y			
08:00 AM TO 09:00 AM	1,098	232	Y	Y	Y	Y	Y		
09:00 AM TO 10:00 AM	609	83	Y						
10:00 AM TO 11:00 AM	415	62							
11:00 AM TO 12:00 PM	630	163	Y			Y			
12:00 PM TO 01:00 PM	876	179	Y			Y			
01:00 PM TO 02:00 PM	854	101	Y			Y			
02:00 PM TO 03:00 PM	575	89							
03:00 PM TO 04:00 PM	536	131				Y			
04:00 PM TO 05:00 PM	661	215	Y	Y	Y	Y			
05:00 PM TO 06:00 PM	1,055	304	Y	Y	Y	Y	Y		
06:00 PM TO 07:00 PM	801	131	Y			Y			
07:00 PM TO 08:00 PM	469	71							
08:00 PM TO 09:00 PM	357	59							
09:00 PM TO 10:00 PM	344	37							
	10,370	2,095	9	3	2	9	2	0	
			8 HOURS NEEDED NOT SATISFIED		6 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED		1 HR NEEDED NOT SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

**Table A29**  
**Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes**

MAJOR STREET: ARAPAHO # OF APPROACH LANES: 3  
 MINOR STREET: EDWIN LEWIS # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11	
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE			SIDE STREET
06:00 AM TO 07:00 AM	178	16	600	200	900	100			
07:00 AM TO 08:00 AM	556	53							
08:00 AM TO 09:00 AM	732	53	Y						
09:00 AM TO 10:00 AM	376	27							
10:00 AM TO 11:00 AM	276	44							
11:00 AM TO 12:00 PM	426	80							
12:00 PM TO 01:00 PM	573	88							
01:00 PM TO 02:00 PM	571	81							
02:00 PM TO 03:00 PM	505	64							
03:00 PM TO 04:00 PM	543	95							
04:00 PM TO 05:00 PM	795	126	Y		Y				
05:00 PM TO 06:00 PM	1,163	147	Y		Y	Y			
06:00 PM TO 07:00 PM	665	75	Y						
07:00 PM TO 08:00 PM	363	36							
08:00 PM TO 09:00 PM	229	25							
09:00 PM TO 10:00 PM	162	36							
	8,113	1,046	4	0	0	1	2	1	
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED		1 HR NEEDED NOT SATISFIED

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5

Table A30  
 Traffic Signal Warrant Assessment Using Actual 2001 Traffic Volumes

MAJOR STREET: WESTGROVE # OF APPROACH LANES: 3  
 MINOR STREET: SOJOURN # OF APPROACH LANES: 3  
 TOWN, STATE: Addison, TX

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

THRESHOLD VALUES	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1		WARRANT 2		WARRANT 9	WARRANT 11
			MAIN LINE STREET	BOTH SIDE STREET	MAIN LINE STREET	BOTH SIDE STREET		
06:00 AM TO 07:00 AM			600	200	900	100		
07:00 AM TO 08:00 AM								
08:00 AM TO 09:00 AM								
09:00 AM TO 10:00 AM								
10:00 AM TO 11:00 AM								
11:00 AM TO 12:00 PM								
12:00 PM TO 01:00 PM								
01:00 PM TO 02:00 PM								
02:00 PM TO 03:00 PM								
03:00 PM TO 04:00 PM								
04:00 PM TO 05:00 PM								
05:00 PM TO 06:00 PM	1,601	396	Y	Y	Y	Y	Y	Y
06:00 PM TO 07:00 PM								
07:00 PM TO 08:00 PM								
08:00 PM TO 09:00 PM								
09:00 PM TO 10:00 PM								
	1,601	396	1	1	1	1	1	1
			8 HOURS NEEDED NOT SATISFIED		8 HOURS NEEDED NOT SATISFIED		4 HRS NEEDED NOT SATISFIED	
							1 HR NEEDED SATISFIED	

WARRANT 1 -- Minimum Vehicular Volume Warrant (8 hours)  
 WARRANT 2 -- Interruption to Continuous Traffic (8 hours)  
 WARRANT 9 -- Four Hour Volume Warrant - Figure 4-7  
 WARRANT 11 -- Peak Hour Volume Warrant - Figure 4-5