TO: James L. App, City Manager

FROM: Dennis J. Cassidy, Chief of Police

SUBJ: Speed Zone Survey Update for Union Road

DATE: March 21, 2006

NEEDS: For the City Council to review and consider acceptance of a recent Speed Zone

Survey completed by Omni-Means for Union Road.

FACTS: 1. The City completed a speed zone study in 2003, which was approved by the City Council in August of that year.

2. In the 2003 speed zone study, staff identified multiple roadways for survey consideration, and Union Road was one of those surveyed.

- 3. Union Road has since undergone construction resulting in roadway changes. The particular segment between Kleck Road and Golden Hill Road is just outside the newly constructed area, and it remains narrow, with visual restrictions that present roadway safety challenges. The issues identified in this stretch of roadway support a new survey.
- 4. The specific area was previously designated as 45 MPH. The new survey results support a posted speed of 35 MPH.
- 5. This item was reviewed by the Streets & Utilities Committee on February 24, 2006, and they recommended the survey be referred to the City Council for acceptance.

ANALYSIS & CONCLUSION:

Omni-Means was recently asked to resurvey the area of roadway on Union Road from Kleck Road to Golden Hill Road. The request was made due to continued visual restrictions and roadway engineering challenges in that area. Since the recent construction and engineering changes made to Union Rd. just West of the segment in question, the roadway changes significantly at Kleck Road. The area of roadway that was resurveyed remains narrow, with visual restrictions that present roadway safety challenges. As such, the posted speed for this area needs adjustment. This survey data supports a reduction in the posted speed from 45 to 35 MPH. The Police Department has reviewed the data and concurs with the results of the Omni-Means report. Ratification of this speed zone survey and adjustment of speed limit signs would enhance traffic safety.

POLICY

REFERENCE: Title 12, Chapter 12.54, Section 12.54.010 of the Municipal Code, Section 22354 of

the California Vehicle Code, and the Caltrans Traffic Manual.

FISCAL IMPACT: None

OPTIONS: a. Adopt Resolution No. 06-xx updating speed limits within the City of Paso Robles.

MEMORANDUM

TO:

DENNIS CASSIDY

FROM:

DITAS ESPERANZA

SUBJECT:

UNION ROAD SPEED SURVEY

DATE:

FEBRUARY 16, 2006

Here is the completed speed survey from Omni-Means. It looks like they can justify setting the speed limit of 35MPH between Kleck and Golden Hill Road.

I will leave it up to you and Lisa (she did last time) to bring to the City Council for formal adoption.

Let me know if you need anything else.

thanks



TECHNICAL MEMORANDUM

To:

City of Paso Robles

Date:

01/19/06

Attn:

Ditas Esperanza

Project:

Speed Survey Study

From:

Paul Matos, Mike Winton, P.E.

Re:

Speed Survey Study

Job No.:

55-5307-06

File No.:

C601mem003.doc

CC:

Dennis Cassidy

The following letter report outlines the Engineering and Traffic Speed Survey conducted by OMNI-MEANS for the City of Paso Robles. The survey was conducted to assist the City in setting appropriate and safe speed limit for Union Road from Kleck Road to Golden Hill Road. For each street segment surveyed, radar speed measurements were conducted. This data was considered along with other factors, including roadway characteristics, adjacent land uses, side street traffic, traffic accidents, and sight distances. Typically, roadway speed limits are established based upon a combination of these factors along with the measured "critical vehicle speed." This is usually referred to as the 85th percentile speed and is defined as the speed at which 85 percent of the motorists are traveling at or below. The following sections describe the data collection efforts and analyses for the traffic speed study.

DATA COLLECTION

Study Initiation: Based on discussions with City staff, speed surveys were conducted on Union Road in the City of Paso Robles at three separate locations. For each survey, a "Radar Speed Survey" worksheet was prepared summarizing the measured vehicle speed characteristics, such as the average speed, the critical speed (85th percentile speed), the pace speed and the posted speed limit. These worksheets are attached to this technical memorandum.

Survey Locations: Radar speed surveys were collected at following locations.

- Union Road between Kleck Road and Walnut Drive
- Union Road Between Walnut Drive and Prospect Avenue
- Union Road between Prospect Avenue and Golden Hill Road

Roadway Description: Union Road is a 2-lane roadway that generally runs in an east-west direction, beginning at North River Road and extending east to State Route 46 beyond the City Limits. Within the vicinity of the study area, Union Road serves residential developments through several local roads and private driveways. From Kleck Road to Golden Hill Road, Union Road contain several changes in grade, limited or no shoulders, and several sharp curves with limited sight distance.

Data Collection Procedures: Field data was collected on January 18, 2006, along the indicated roadway segments and survey locations. Each of the radar speed surveys was made from an inconspicuously parked vehicle. An effort was made to ensure that the presence of the vehicle in no way affected the speed of the traffic being surveyed. Field information was recorded on forms and later electronically coded for computer analysis. Only the lead vehicle of platoons of vehicles was recorded. The calculations derived from this technique accurately demonstrate a balance among the speed, capacity, and

Department. The total number of collisions along the study segment is reported for the three year period extending from 01/01/02 through 12/31/05. No fatalities were reported on the study roadway during this period.

Actual, average, and critical accident rate calculations are reported in terms of total accident rate (all accidents), fatality plus injury accident rate (fatality and injury accidents only), and fatality accident rate (fatality accidents only). First the actual accident rate is calculated at each location in terms of the total number of accidents, fatality plus injury only accidents, and fatality accidents. Next, state wide average accident rates for similar facilities are obtained from the Caltrans publication, 1998 Accident Data on California State Highways (Road Miles, Travel, Accidents, and Accident Rates). Then, a critical accident rate is calculated based upon the system-wide average accident rates, and a Poisson distribution. Since the occurrence of accidents is a stochastic process, assumed a Poisson distribution, one is interested in the identification of spots, intersections, or segments that have relatively high accident rates. Therefore, the actual accident rates are first compared to the critical accident rates to determine if a potential safety problem is present and secondarily to the average accident rates to determine other locations where accidents may be higher than would be normally expected.

The following computational equation is used to calculate the actual accident rates along roadway segments,

 $AR_i = A_i/(ADT * 365 * 3 * Distance/1,000,000)$ where,

 $AR_i = Total$, Fatality plus Injury, or Fatality Accident Rate in Acc/million vehicle miles $A_i = Number$ of Total, Fatality plus Injury, or Fatality Accidents ADT = Average Daily Traffic on the roadway segment Distance = Distance in miles of roadway segment

As previously indicated, system-wide mean accident rates for similar facilities were then obtained from the Caltrans publication, 1998 Accident Data on California State Highways (Road Miles, Travel, Accidents, and Accident Rates). Based upon the system-wide mean accident rate for similar facilities, a critical accident rate can then be calculated utilizing the following equation,

 $CAR_i = MAR_i + (Z) [(MAR_i / M)^{1/2}] + (0.5 / M)$ where,

 CAR_i = Total, Fatality plus Injury, or Fatality Critical Accident Rate MAR_i = Total, Fatality plus Injury, or Fatality System-Wide Mean Accident Rate Z = Level of Significance Indicator, 1.50 for typical cases $M = (ADT^*365^*3*Distance / 1,000,000)$ for roadway segments.

Table 1 provides traffic accident data for Union Road within the project study area. As indicated in Table 1, the study segment has a higher total accident rate when compared to the statewide average; however, it is less than the critical rate, indicating there is not a serious problem regarding traffic collisions on this roadway segment. No fatalities were reported at these locations during the most current 36-month period.

TABLE 1
RAMP SEGMENT TRAFFIC COLLISIONS: 01/01/03 – 12/31/05

				Lab A	ctual R	atë 🔭	A A	erage F	ates	L C	ritical R	ale##
SEGMENT												
		PINJS	PDO	FAT	N#E	TOTAL	PAT	File	TOTAL	FAT	Ti I	TOTAL
Union Road from Kleck Road to Golden	0	1	8	0.000	0.281	2.531	0.026	0.934	2.000	0.295	1 843	3 266
Hill Road	<u> </u>								2.000	0,2,0	2.0,0	3.200

PDO - Property Damage Only; INJ - Injury Accident; FAT - Fatal Accident Source: Paso Robles Police Department

2

FIELD SURVEY RESULTS

Field Data Reduction: Copies of the computer analysis of the field data collected at each survey location are attached to this report. The data at the top of each analysis indicates the observed conditions while the data at the bottom represents the calculated conditions. Observed conditions include the location of the spot speed survey, the direction of travel, the date and day of the week, and time of the survey. The existing speed limit, if posted, is noted along with the type of roadway and the general type of adjacent development (business, residential, industrial, etc.) Calculated values include the average speed, the 85th percentile (critical) speed, the 10 mph pace speed and the percent of vehicles observed within the 10 mph pace speed, the range of speeds observed, and the total number of vehicles observed. A brief explanation of some of these terms follows.

The average speed is the arithmetical mean of the speeds observed and is derived by dividing the sum of all the speeds observed by the total number of observations.

The 85th percentile speed is that speed at or below which 85 percent of the observed vehicles are traveling. The 85th percentile speed (also called the critical speed) of a spot speed survey is the primary indicator of a speed limit that might be imposed. For City roadways the speed limit normally should be established at the nearest five mile per hour increment to the 85th percentile speed. However, in matching existing conditions with the traffic safety needs of the community, engineering judgment may indicate the need for a further reduction of five miles per hour. Factors affecting the decision to further decrease the speed limit include accident experience, traffic volumes, road features, or other special situations.

The pace is the 10 miles per hour increment of observed speeds that contains the greatest number of vehicles. In some cases, the 85th percentile speed and the recommended speed limit lie somewhere within the pace. This is another indicator used to determine appropriate speed limits.

The percent of vehicles in the pace speed is an indication of the bunching of vehicular speeds. The higher the percent of vehicles within the pace speed the better the speed distribution. The percent in the pace is often between 60 and 80. The attached worksheets present a summarized list of the raw radar data that was utilized to develop this report.

Survey Results: Based on recorded radar observations of current vehicle speeds, all three locations had a measured 85^{th} percentile (critical) speed below the posted speed limit. The segment from Prospect Avenue to Golden Hill Road had a measured 85^{th} percentile speed 0-5 mph below the posted speed limit and the segments from Kleck Road to Walnut Drive and Walnut Drive to Prospect Avenue had measured 85^{th} percentile speeds 6-10 mph below the posted speed limit.

Besides measuring the 85th percentile speed, other physical or demographic factors regarding a roadway segment can be involved in determining the proper vehicle speeds, including type of adjacent land uses, presence of on-street parking, and roadway grade changes or curvature.

Recommendations: Based upon the results of the attached surveys, it is recommended the speed limit be lowered 10 mph below the posted speed limit of 45 mph on Union Road from Kleck Road to Golden Hill Road. It should be noted that although the segments on Union Road between Walnut Drive and Golden Hill Road had a critical speeds of 39 and 41 mph, it is the opinion of the engineer that the speed be posted at 35 mph. This is a result of numerous residential driveways and local roads that have full access along Union Road, changes in grade, and limited or no shoulders along Union Road at the study limits. Based upon a qualitative analysis performed during a field review of the study roadway, it has also been determined the available sight distance does not permit safe driving speeds above 35 mph. Therefore, another 5 mph reduction below the measured critical speed for these segments is needed. The following speed limits are recommended as shown in Table 2:

TABLE 2
CRITICAL SPEEDS AND RECOMMENDED SPEED LIMITS

SEGMENT	Eritical Speed (85th percentile)	Recommended Speed
Union Road between Kleck Road and Walnut Drive	37 mph	35 mph
Union Road Between Walnut Drive and Prospect Avenue Drive	39 mph	35 mph
Union Road between Prospect Avenue and Golden Hill Road Drive	41 mph	35 mph



VEHICLE SPEED DATA SHEET

DIRECTION: Both

RADAR: 250' e/o Kleck Road

Union Road from Kleck Road to Walnut Drive

TIME: 1:30 to 2:30 pm

DATE:

January 18, 2006

MPH			_		. 5	I	_			_	10	I	_		_	1	<u> </u>				2	o				- 2	25					30	TOTAL VEH.	TOTAL SPEED
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39	X	Х	X	L			Ι							Г	Γ	Г	Т	Т	T	Т	T	T	T	T	1	1	1		\neg				3	117
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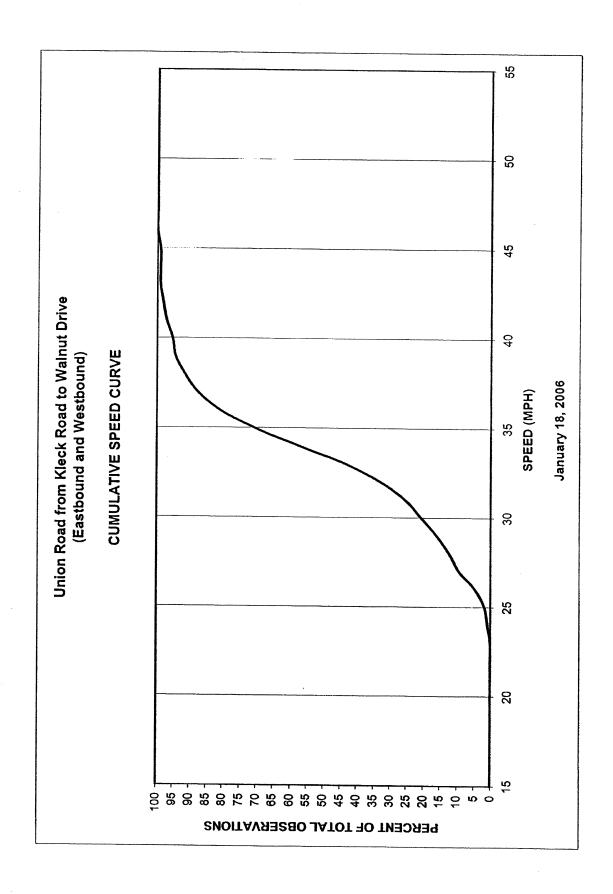
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AVG. SPEED	% OVER PACE	TOTAL NUMBER OF VEHICLES
37	79%	4,330
CRITICAL SPEED (85th PERCENTILE)	% IN PACE	ADT
29 to 38	12%	Collector
PACE SPEED	% UNDER PACE	ROAD CLASSIFICATION
45	Paul Matos	Partly Cloudy
POSTED SPEED	OBSERVER	WEATHER

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Union Road 250' west of Kleck Road (Eastbound and Westbound)

	NC	RTHBOLIND and	SOUTHBOUNE	<u> </u>
SPEED	# OF	CUMULATIVE	% OF	CUMULATIVE
(MPH)	VEHICLES	VEHICLES	TOTAL	%
55	0	0	0.0	100.0
54	0	0	0.0	100.0
53	0	o o	0.0	100.0
52	0	Ö	0.0	100.0
51	0	0	0.0	100.0
50	0	o o	0.0	100.0
49	0	0	0.0	100.0
48	0	0	0.0	100.0
47	0	0	0.0	100.0
46	1	1	0.9	99.1
45	Ö	1	0.0	99.1
44	0	1	0.0	99.1
43	1	2	0.9	98.1
42	i	3	0.9	97.2
41	2	5	1.9	95.3
40	1	6	0.9	
39	3	9	2.8	94.3 91.5
38	4	13	3.8	
		300000000000000000000000000000000000000	3.0	87.7
36	11	31		
35	14	45	10.4	70.8
34	15	60	13.2 14.2	57.5
33	11	71	10.4	43.4
32	8	79	7.5	33.0
31	5	84		25.5
30	5	89	4.7	20.8
29	4	93	4.7	16.0
28	. 3	96	3.8	12.3
27	. 5	101	2.8	9.4
26	3	104	4.7	4.7
25	1	104	2.8	1.9
24	1	105	0.9	0.9
23	0	106	0.9	0.0
22	0	106	0.0	0.0
21	0	106	0.0	0.0
20	0	106	0.0	0.0
19	0	106		0.0
18	0	106	0.0	0.0
17	0	106	0.0	0.0
16	0	106	0.0	0.0
15	0	106	0.0	0.0
TOTAL	106	100	0.0	0.0
IVIAL	Count 16 cou			

Critical Speed: Count 16 cars down from the highest speed observed Note: The approximate critical speed is the speed which corresponds to the highlighted cell



LOCATION: Union Road from Walnut Drive to Prospect Avenue **VEHICLE SPEED** DIRECTION: Both **DATA SHEET** RADAR: 350' e/o Walnut Drive TIME: 10:50 to 11:40 am DATE: January 18, 2006 MPH TOTAL VEH. | TOTAL SPEED 54 ō O ō TOTAL: 35.5 4% AVG. SPEED % OVER PACE TOTAL NUMBER OF VEHICLES 88% 4,330 CRITICAL SPEED (85th PERCENTILE) % IN PACE ADT 31 to 40 8% Collector PACE SPEED % UNDER PACE ROAD CLASSIFICATION

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Partly Cloudy

WEATHER

Paul Matos

OBSERVER

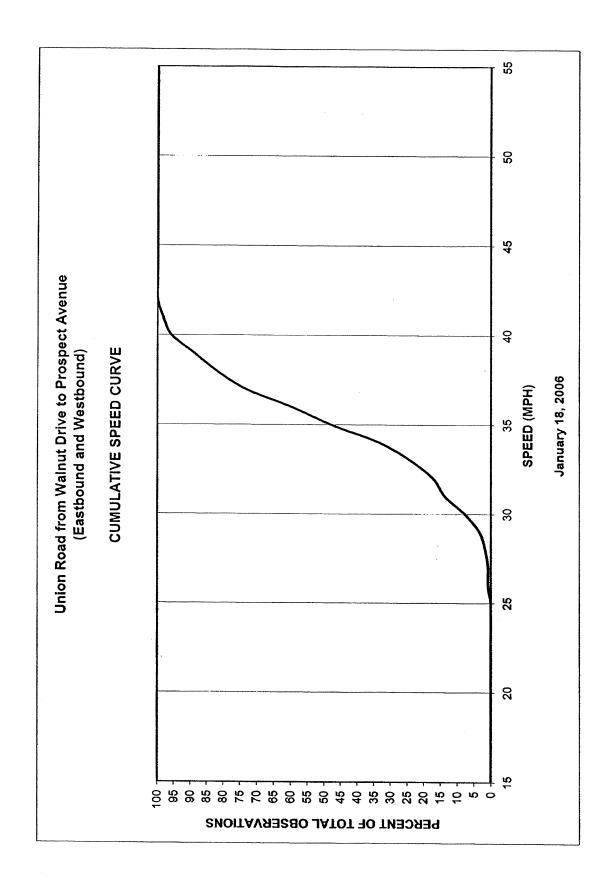
POSTED SPEED

Union Road 350' west of Walnut Drive (Eastbound and Westbound)

	NC.	RTHBOUND and	SOUTHBOUND)		
SPEED	# OF	CUMULATIVE	% OF	CUMULATIVE		
(MPH)	VEHICLES	VEHICLES	TOTAL	%		
55	0	0	0.0	100.0		
54	0	Ō	0.0	100.0		
53	0	0	0.0	100.0		
52	0	0	0.0	100.0		
51	0	0	0.0	100.0		
50	0	0	0.0	100.0		
49	0	0	0.0	100.0		
48	0	0	0.0	100.0		
47	0	0	0.0	100.0		
46	0	0	0.0	100.0		
45	0	0	0.0	100.0		
44	0	0	0.0	100.0		
43	0	0	0.0	100.0		
42	2	2	1.7	98.3		
41	3	5	2.6	95.7		
40	8	13	6.8	88.9		
39	### 19 10 10 15 12	21,53	6.8	82.1		
38	10	31	8.5	73.5		
37	16	47	13.7	59.8		
36	14	61	12.0	47.9		
35	17	78	14.5	33.3		
34	11	89	9.4	23.9		
33	8	97	6.8	17.1		
32	4	101	3.4	13.7		
31	7	108	6.0	7.7		
30	5	113	4.3	3.4		
29	2	115	1.7	1.7		
28	1	116	0.9	0.9		
27	0	116	0.0	0.9		
26	1	117	0.9	0.0		
25	0	117	0.0	0.0		
24	0	117	0.0	0.0		
23	0	117	0.0	0.0		
22	0	117	0.0	0.0		
21	0	117	0.0	0.0		
20	0	117	0.0	0.0		
19	0	117	0.0	0.0		
18	0	117	0.0	0.0		
17	0	117	0.0	0.0		
16	0	117	0.0	0.0		
15	0	117	0.0	0.0		
TOTAL	117					

Critical Speed: Count 18 cars down from the highest speed observed Note: The approximate critical speed is the speed which corresponds to the highlighted cell

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VEHICLE SPEED DATA SHEET

DIRECTION: Union Road from Prospect Avenue to Golden Hill Road

DIRECTION: Both

RADAR: 200' e/o Prospect Avenue

TIME:

10:00 to 10:45 am

DATE:

January 18, 2006

X X X	X X X	X Z	X()	(X																						TOTAL VEH. 0 0 0 0 0 0 0 0 0 0 0 0	TOTAL SPEED 0 0 0 0 0 0 0 0 0 0 0 0 0
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X X X X	X X X	X Z	XD	(X																			 			0 0 0 0	0 0 0 0
X X X X	X X X	X Z	XD	(X																						0 0 0	0 0 0
X X X X	X X X	X Z	XD	(X																						0 0 0	0 0 0
X X X X	X X X	X Z	XD	(X														-				$\frac{1}{4}$	E	E		0	0
X X X X	X X X	X Z	XD	(X														1	Ē	F		1	1		F	0	0
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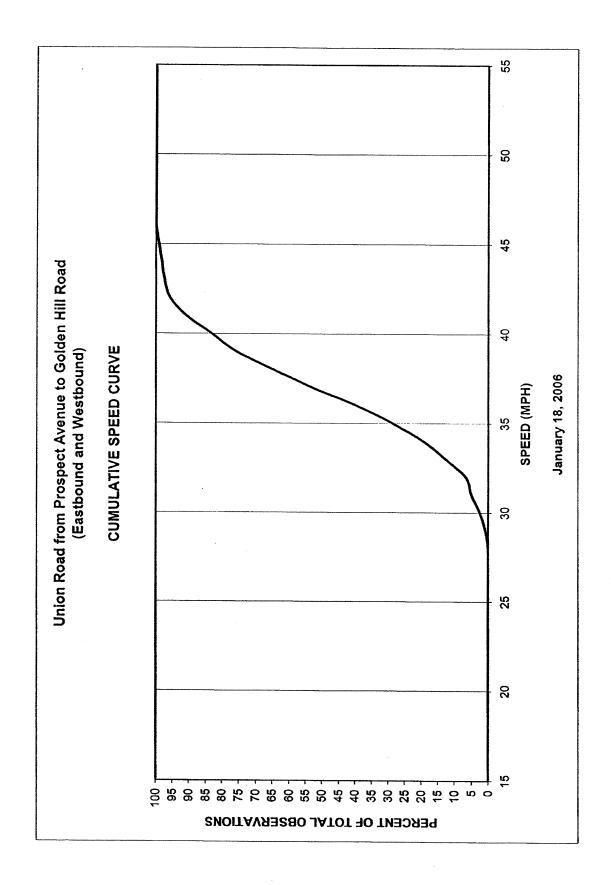
31.3	4%	119
AVG. SPEED	% OVER PACE	TOTAL NUMBER OF VEHICLES
41	89%	4,330
CRITICAL SPEED (85th PERCENTILE)	% IN PACE	ADT
33 to 42	7%	Collector
PACE SPEED	% UNDER PACE	ROAD CLASSIFICATION
45	Paul Matos	Partly Cloudy
POSTED SPEED	OBSERVER	WEATHER

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Union Road 200' west of Prospect Avenue (Eastbound and Westbound)

	NC	ORTHBOUND and	SOUTHBOUND)
SPEED	# OF	CUMULATIVE	% OF	CUMULATIVE
(MPH)	VEHICLES	VEHICLES	TOTAL	%
55	0	0	0.0	100.0
54	0	0	0.0	100.0
53	0	0	0.0	100.0
52	0	0	0.0	100.0
51	0	0	0.0	100.0
50	0	0	0.0	100.0
49	0	0	0.0	100.0
48	0	0	0.0	100.0
47	0	0	0.0	100.0
46	1	1	0.8	99.2
45	1	2	0.8	98.3
44	1	3	0.8	97.5
43	2	5	1.7	95.8
42	6	11	5.0	90.8
A 419-15	tara i 9 as 14	120411	7624	8324
40	9	29	7.6	75.6
39	13	42	10.9	64.7
38	14	56	11.8	52.9
37	16	72	13.4	39.5
36	13	85	10.9	28.6
35	11	96	9.2	19.3
34	8	104	6.7	12.6
33	7	111	5.9	6.7
32	2	113	1.7	5.0
31	3	116	2.5	2.5
30	2	118	1.7	0.8
29	1	119	0.8	0.0
28	0	119	0.0	0.0
27	0	119	0.0	0.0
26	0	119	0.0	0.0
25	0	119	0.0	0.0
24	0	119	0.0	0.0
23	0	119	0.0	0.0
22	0	119	0.0	0.0
21	0	119	0.0	0.0
20	0	119	0.0	0.0
19	0	119	0.0	0.0
18	0	119	0.0	0.0
17	0	119	0.0	0.0
16	0	119	0.0	0.0
15	0	119	0.0	0.0
TOTAL	119			
Critical Speed	Count 19 co	re down from th	a biobact ana	

Critical Speed: Count 18 cars down from the highest speed observed Note: The approximate critical speed is the speed which corresponds to the highlighted cell



RESOLUTION NO. 06-

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PASO ROBLES ACCEPTING THE COMPLETED SPEED ZONE SURVEY FOR UNION ROAD FROM KLECK ROAD TO GOLDEN HILLS ROAD AND AUTHORIZING THE UPDATE AND ENFORCEMENT OF POSTED SPEEDS ACCORDINGLY

WHEREAS, the City chooses in the interest of public safety to update speed zone studies in areas where significant roadway changes have been made and a need for speed survey data is deemed appropriate; and

WHEREAS, the City Council contracted with Omni-Means traffic engineers to complete a speed zone survey of Union Road from Kleck Road to Golden Hill Road consisting of radar and traffic engineering studies; and

WHEREAS; the Streets & Utilities Committee, Police Department and Public Works Department have reviewed the speed study and concur with the speed limit as listed in the attached Exhibit "A" as corrected; and

WHEREAS, Municipal Code Section 12.54.010 and 12.54.020 allow for speed limits to be set by resolution of the City Council.

NOW, THEREFORE, BE IT HEREBY RESOLVED that the City Council of the City of El Paso de Robles does hereby adopt this resolution amending the speed limit within the City limits as listed on the attached Exhibit "A," including the correction of the recommended speed for Union Road, 250 west of Kleck Road to Golden Hill Road 45 mph to 35 mph, superseding the limits as set forth in Chapter 12.54 of the Municipal Code and all previous resolutions adopting speed limits.

PASSED AND ADOPTED by the City Council of the City of Paso Robles this 21st day of March, 2006 by the following vote:

AYES: NOES: ABSTAIN: ABSENT:	
ATTEST:	Frank R. Mecham, Mayor
Cathy M. David, Deputy City Clerk	

RESOLUTION 06-XXX EXHIBIT 1 SPEED ZONES 2006

LOWERED LIMITS SEGMENT	EXISTING (MPH)	PROPOSED (MPH)
Union Road between Kleck Road and Walnut Drive	45	35
Union Road between Walnut Drive and Prospect Avenue Drive	45	35
Union Road between Prospect Avenue and Golden Hill Road Drive	45	35