

# Council Agenda Report

From: John Falkenstien, City Engineer

Subject:	Establish an updated speed zone along Union Road from North River Road to Golden Hill
	Road.

Date: October 4, 2016

# Facts

- 1. Union Road currently has various speed zones between North River Road and Golden Hill Road, varying by segment and direction of travel.
- 2. For safety and for uniform enforcement it is desirable that Union Road have one consistent speed zone from North River Road to Golden Hill Road, consistent with both directions of travel.
- 3. The City is required to complete a speed zone survey in order to establish speed limits in compliance with the State Vehicle Code for enforcement by radar. The recent construction of improvements between Kleck Road and Prospect Avenue makes the timing of a new speed zone survey appropriate.
- 4. Specific criteria must be met in establishing speed limits. Without conformance to the criteria, radar cannot be used enforce speed limits. Generally, speed limit postings are set at the nearest 5 mph increment of the 85th percentile speed of free flowing traffic (as measured in the field). The posted speed may be reduced by 5 mph from the nearest 5 mph increment of the 85th percentile speed for a speed reduction due to existing conditions affecting the safety of the community. In this case conditions include changes to the roadway, accident data, and the design speed of the roadway.

# Options

- 1. Do nothing.
- 2. Approve Draft Resolution A approving the speed limit of 40 mph for Union Road from North River Road to Golden Hill Road.
- 3. Modify and approved Draft Resolution A approving the speed limit of 45 mph for Union Road from North River Road to Golden Hill Road.
- 4. Direct staff to conduct a new speed survey of Union Road for the purposes of establishing more individual speed zone segments between North River Road and Golden Hill Road.

# **Analysis and Conclusion**

The Špeed Survey Report for Union Road prepared by C2 Consult Corp. outlines the background and justification for establishing a 40 mph zone over Union Road from North River Road to Golden Hill Road. One speed zone, applicable to the entire reach, is far more effective than the current arrangement of various zones. The consistency rewards drivers by helping them focus their attention. The enforcement becomes straightforward, easier for our officers.

Given the measured critical speed of 47 mph (85th percentile), a posted speed limit of 45 mph would be strictly consistent with California Vehicle Code guideline of setting the speed limit at the nearest 5 mph increment. Justification for the 40 mph zone is provided by criteria specific to this case including recent changes to the roadway, accident history, and the design speed of the roadway (35 mph through the curved sections).

# **Fiscal Impact**

None

# Recommendation

Approve Draft Resolution A approving the speed limit of 40 mph for Union Road from North River Road to Golden Hill Road.

# Attachments (2)

- 1. Draft Resolution A
- 2. 9/12/16 C2 Consult Speed Survey Report

# Attachment 1 Draft Resolution A

#### **RESOLUTION NO. 16-XXX**

# A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PASO ROBLES ACCEPTING THE COMPLETED SPEED ZONE SURVEY FOR UNION ROAD AND AUTHORIZING THE UPDATE AND ENFORCEMENT OF ITS POSTED SPEED

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

WHEREAS, the City is required to complete a speed zone survey in order to establish speed limits in compliance with the State Vehicle Code for enforcement by radar; and

WHEREAS, the City retained C2 Consult Corp. to complete a speed survey of Union Road from North River Road to Golden Hill Road (Exhibit A); and

WHEREAS, the Police Department, Public Works Department, and City Engineer have reviewed the speed study and concur with the recommendations in the report prepared by C2 Consult Corp, dated September 12, 2016, attached here as Exhibit A and summarized below:

Union Road, N. River Road to Golden Hill Road 40 MPH

NOW, THEREFORE, BE IT RESOLVED that the City Council does hereby adopt this resolution amending speed limits within the City limits of Paso Robles as listed on the attached Exhibit A and listed above, and superseding the limits as set forth in Chapter 12.54 of the Municipal Code and all previous resolutions adopting speed limits.

APPROVED this 4<sup>th</sup> day of October, 2016, by the following vote:

AYES: NOES: ABSENT: ABSTAIN:

Steven W. Martin, Mayor

ATTEST:

Kristen L. Buxkemper, Deputy City Clerk

Exhibit

A. 9/12/16 C2 Consult Speed Survey





September 12, 2016

Ms. Ditas Esperanza, P.E. Capital Projects Engineer City of Paso de Robles 1000 Spring Street Paso Robles, CA 93446

Dear Ms. Esperanza,

SEP 1 5 2016

City of Paso Robles Public Works Dept.

Pursuant to the City's request we have completed the review of Union Road between South River Road and Golden Hill Road. The purpose of this review was to assess the changes in traffic speeds as a result of the recently completed road improvement project between Kleck and Golden Hill. The second purpose is to assess the potential for combining the two previous speed zones (North River to Kleck and Kleck to Golden Hill) into one unified speed zone.

Pursuant to that request additional traffic speed surveys were completed on Union Road between Kleck and Golden Hill on April 13, 2016. A total of 392 vehicles were surveyed. That sampling found that the critical speed (85<sup>th</sup> percentile) went up since the last survey (from 42mph to 47mph). The average speed is also up from 38mph to 42mph and the 10mph pace is up as well (from 33-42 to 38-47). Given the traffic accident data provided, the number of accidents has increased from 4 to 5 over the past 3 years vs. the previous period. Of note, the survey was completed in the same location as the survey completed in 2013 and increased the sample from 233 vehicles in 2013 to 392 vehicles in this survey. The time of day was 2pm in 2013 and 1pm in 2016.

The California Manual on Uniform Traffic Control Devices (CalMUCTD) provides direction and guidance for the establishment of speed zones within communities. The following are extracts from that document to assist in the development of the new speed zone for Union Road.

Section 2B.13 Speed Limit Sign (R2-1) Support:

The setting of speed limits can be controversial and requires a rational and defensible determination to maintain public confidence. Speed limits are normally set near the 85th-percentile speed that statistically represents one standard deviation above the average speed and establishes the upper limit of what is considered reasonable and prudent. As with most laws, speed limits need to depend on the voluntary compliance of the greater majority of motorists. Speed limits cannot be set arbitrarily low, as this would create violators of the majority of drivers and would not command the respect of the public.

# Standard:

Speed zones (other than statutory speed limits) shall only be established on the basis of an engineering and traffic survey (E&TS) study that has been performed in accordance with traffic engineering practices. The engineering

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study shall include an analysis of the current speed distribution of free-flowing vehicles. The Speed Limit (R2-1) sign shall display the limit established by law, ordinance, regulation, or as adopted by the authorized agency based on the engineering study. The speed limits displayed shall be in multiples of 5 mph. Speed Limit signs, indicating speed limits for which posting is required by law, shall be located at the points of change from one speed limit to another. At the downstream end of the section to which a speed limit applies, a Speed Limit sign showing the next speed limit shall be installed. Additional Speed Limit signs shall be installed beyond major intersections and at other locations where it is necessary to remind road users of the speed limit that is applicable. Speed Limit signs indicating the statutory speed limits shall be installed at entrances to the State and, where appropriate, at jurisdictional boundaries in urban areas.

# Support:

In general, the maximum speed limits applicable to rural and urban roads are established:

A. Statutorily – a maximum speed limit applicable to a particular class of road, such as freeways or city streets, that is established by State law; or B. As altered speed zones – based on engineering studies.

State statutory limits might restrict the maximum speed limit that can be established on a particular road, notwithstanding what an engineering study might indicate.

# Option:

If a jurisdiction has a policy of installing Speed Limit signs in accordance with statutory requirements only on the streets that enter a city, neighborhood, or residential area to indicate the speed limit that is applicable to the entire city, neighborhood, or residential area unless otherwise posted, a CITYWIDE (R2-5aP), NEIGHBORHOOD (R2-5bP), or RESIDENTIAL (R2-5cP) plaque may be mounted above the Speed Limit sign and an UNLESS OTHERWISE POSTED (R2-5P) plaque may be mounted below the Speed Limit sign (see Figure 2B-3).

# Guidance:

A Reduced Speed Limit Ahead (W3-5 or W3-5a) sign (see Section 2C.38) should be used to inform road users of a reduced speed zone where the speed limit is being reduced by more than 10 mph, or where engineering judgment indicates the need for advance notice to comply with the posted speed limit ahead. States and local agencies should conduct engineering studies at least once every 5, 7 or 10 years, in compliance with CVC Section 40802 to reevaluate non-statutory speed limits on segments of their roadways that have undergone significant changes since the last review, such as the addition or elimination of parking or driveways, changes in the number of travel lanes, changes in the configuration of bicycle lanes, changes in traffic control signal coordination, or significant changes in traffic volumes. No more than three speed limits should be displayed on any one Speed Limit sign or assembly. When a speed limit within a speed zone is posted, it should be within 5 mph of the 85th-percentile speed of freeflowing traffic.

# Standard:

When a speed limit is to be posted, it shall be established at the nearest 5 mph increment of the 85th-percentile speed of free-flowing traffic, except as shown in the two Options below.

#### Option:

The posted speed may be reduced by 5 mph from the nearest 5 mph increment of the 85th-percentile speed, in compliance with CVC Sections 627 and 22358.5. See Standard below for documentation requirements.
 For cases in which the nearest 5 mph increment of the 85th-percentile speed would require a rounding up, then the speed limit may be rounded down to the nearest 5 mph increment below the 85th percentile speed, if no further reduction is used. Refer to CVC Section 21400(b).

#### Standard:

If the speed limit to be posted has had the 5 mph reduction applied, then an E&TS shall document in writing the conditions and justification for the lower speed limit and be approved by a registered Civil or Traffic Engineer. The reasons for the lower speed limit shall be in compliance with CVC Sections 627 and 22358.5.

#### Support:

The following examples are provided to explain the application of these speed limit criteria:

Example 1. Using Option 1 above and first step is to round down: If the 85th percentile speed in a speed survey for a location was 37 mph, then the speed limit would be established at 35 mph since it is the closest 5 mph increment to the 37 mph speed. As indicated by the option, this 35 mph established speed limit could be reduced by 5 mph to 30 mph if the conditions and justification for using this lower speed limit are documented in the E&TS and approved by a registered Civil or Traffic Engineer.

Example 2. Using Option 1 above and first step is to round up: If the 85th percentile speed in a speed survey for a location was 33 mph, then the speed limit would be established at 35 mph since it is the closest 5 mph increment to the 33 mph speed. As indicated by the option, this 35 mph speed limit could be reduced by 5 mph to 30 mph if the conditions and justification for using this lower speed limit are documented in the E&TS and approved by a registered Civil or Traffic Engineer.

Example 3. Using Option 2 above and first step is to round up: If the 85th percentile speed in a speed survey for a location was 33 mph, instead of rounding up to 35mph, the speed limit can be established at 30mph, but no further reductions can be applied (which is allowed in the two examples above).

# Standard:

Examples 1 and 2 for establishing posted speed limits shall apply to engineering and traffic surveys (E&TS) performed on or after July 1, 2009 in accordance with Caltrans' Traffic Operations Policy Directive Number 09-04 dated June 29, 2009.

#### Option:

After January 1, 2012, Example 3 may be used to establish speed limits. Refer to CVC 21400(b).

#### Support:

Any existing E&TS that was performed before July 1, 2009 in accordance with previous traffic control device standards is not required to comply with the new criteria until it is due for reevaluation per the 5, 7 or 10 year criteria. Speed studies for signalized intersection approaches should be taken outside the influence area of the traffic control signal, which is generally considered to be approximately 1/2 mile, to avoid obtaining skewed results for the 85th-percentile speed.

# Support:

Advance warning signs and other traffic control devices to attract the motorist's attention to a signalized intersection are usually more effective than a reduced speed limit zone.

# Guidance:

An advisory speed plaque (see Section 2C.08) mounted below a warning sign should be used to warn road users of an advisory speed for a roadway condition. A Speed Limit sign should not be used for this situation.

# Option:

Other factors that may be considered when establishing or reevaluating speed limits are the following:

A. Road characteristics, shoulder condition, grade, alignment, and sight distance;

B. The pace;

C. Roadside development and environment;

D. Parking practices and pedestrian activity; and

E. Reported crash experience for at least a 12-month period.

Two types of Speed Limit signs may be used: one to designate passenger car speeds, including any nighttime information or minimum speed limit that might apply; and the other to show any special speed limits for trucks and other vehicles.

A changeable message sign that changes the speed limit for traffic and ambient conditions may be installed provided that the appropriate speed limit is displayed at the proper times. A changeable message sign that displays to approaching drivers the speed at which they are traveling may be installed in conjunction with a Speed Limit sign.

# Guidance:

If a changeable message sign displaying approach speeds is installed, the legend YOUR SPEED XX MPH or such similar legend should be displayed. The color of the changeable message legend should be a yellow legend on a black background or the reverse of these colors.

#### Support:

Advisory Speed signs and plaques are discussed in Sections 2C.08 and 2C.14. Temporary Traffic Control Zone Speed signs are discussed in Part 6. The WORK ZONE (G20-5aP) plaque intended for installation above a Speed Limit sign is discussed in Section 6F.12. School Speed Limit signs are discussed in Section 7B.15.

Speed limits in California are governed by the California Vehicle Code (CVC), Sections 22348 through 22413; also, pertinent sections are found in Sections 627 and 40802 and others referenced in this section. See Section 1A.11 for information regarding this publication.

Refer to Part 6, Section 6C.01 for speed limit signs in temporary traffic control zones. Refer to Part 7 for speed limit signs in school areas.

#### Engineering and Traffic Survey (E&TS)

#### Support:

CVC Section 627 defines the term "Engineering and traffic survey" and lists its requirements.

#### Standard:

An engineering and traffic survey (E&TS) shall include, among other requirements deemed necessary by Caltrans, consideration of all of the following:

A. Prevailing speeds as determined by traffic engineering measurements.

B. Collision records.

C. Highway, traffic, and roadside conditions not readily apparent to the driver.

#### Guidance:

The E&TS should contain sufficient information to document that the required three items of CVC Section 627 are provided and that other conditions not readily apparent to a driver are properly identified.

Prevailing speeds are determined by a speed zone survey. A speed zone survey should include:

- A. The intent of the speed measurements is to determine the actual speed of unimpeded traffic. The speed of traffic should not be altered by concentrated law enforcement, or other means, just prior to, or while taking the speed measurements.
- B. Only one person is required for the field work. Speeds should be read directly from a radar or other electronic speed measuring devices; or,
- C. Devices, other than radar, capable of accurately distinguishing and measuring the unimpeded speed of free flowing vehicles may be used.
- D. A location should be selected where prevailing speeds are representative of the entire speed zone section. If speeds vary on a given route, more than one speed zone section may be required, with separate measurements for each section. Locations for measurements should be chosen so as to minimize the effects of traffic signals or stop signs.

- E. Speed measurements should be taken during off-peak hours between peak traffic periods on weekdays. If there is difficulty in obtaining the desired quantity, speed measurements may be taken during any period with free flowing traffic.
- F. The weather should be fair (dry pavement) with no unusual conditions prevailing.
- G. The surveyor and equipment should not affect the traffic speeds. For this reason, an unmarked car is recommended, and the radar speed meter located as inconspicuously as possible.
- H. In order for the sample to be representative of the actual traffic flow, the minimum sample should be 100 vehicles in each survey. In no case should the sample contain less than 50 vehicles.
- *I. Short speed zones of less than 0.5 miles should be avoided, except in transition areas.*
- J. Speed zone changes should be coordinated with changes in roadway conditions or roadside development.
- K. Speed zoning should be in 10 mph increments except in urban areas where 5 mph increments are preferable.
- L. Speed zoning should be coordinated with adjacent jurisdictions.

# Support:

Physical conditions such as width, curvature, grade and surface conditions, or any other condition readily apparent to the driver, in the absence of other factors, would not require special downward speed zoning. Refer to CVC 22358.5.

# Option:

When qualifying an appropriate speed limit, local authorities may also consider all of the following findings:

- A. Residential density, if any of the following conditions exist on the particular portion of highway and the property contiguous thereto, other than a business district:
  - 1. Upon one side of the highway, within 0.25 miles, the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses or business structures.
  - 2. Upon both sides of the highway, collectively, within a distance of 0.25 miles the contiguous property fronting thereon is occupied by 16 or more separate dwelling houses or business structures.

3. The portion of highway is larger than 0.25 miles but has the ratio of separate dwelling houses or business structures to the length of the highway described in either subparagraph 1 or 2 above.

B. Pedestrian and bicyclist safety.

The following two methods of conducting E&TS may be used to establish speed limits:

- 1. State Highways The E&TS for State highways is made under the direction of the Caltrans District Traffic Engineer. The data includes:
  - a. One copy of the Example of Speed Zone Survey Sheet (See Figure 2B-101(CA)) showing:

- 1. A north arrow
- 2. Engineer's station or post mileage
- 3. Limits of the proposed zones
- 4. Appropriate notations showing type of roadside development, such as "scattered business," "solid residential," etc. Schools adjacent to the highway are shown, but other buildings need not be plotted unless they are a factor in the speed recommendation or the point of termination of a speed zone.
- 5. Collision rates for the zones involved
- 6. Average daily traffic volume
- 7. Location of traffic signals, signs and markings
- 8. If the highway is divided, the limits of zones for each direction of travel
- 9. Plotted 85th percentile and pace speeds at location taken showing speed profile

b. A report to the District Director that includes:

- 1. The reason for the initiation of speed zone survey.
- 2. Recommendations and supporting reasons.
- 3. The enforcement jurisdictions involved and the recommendations and opinions of those officials.
- 4. The stationing or reference post in mileage at the beginning and ending of each proposed zone and any intermediate equations. Location ties must be given to readily identifiable physical features.
- 2. City and County Through Highways, Arterials, Collector Roads and Local Streets.
  - a. The short method of speed zoning is based on the premise that a reasonable speed limit is one that conforms to the actual behavior of the majority of motorists, and that by measuring motorists' speeds, one will be able to select a speed limit that is both reasonable and effective. Other factors that need to be considered include but are not limited to: the most recent two-year collision record, roadway design speed, safe stopping sight distance, superelevation, shoulder conditions, profile conditions, intersection spacing and offsets, commercial driveway characteristics, and pedestrian traffic in the roadway without sidewalks.
  - b. Determination of Existing Speed Limits Figures 2B-103(CA)
     & 2B-104(CA) show examples of data sheets which may be used to record speed observations. Specific types of vehicles may be tallied by use of letter symbols in appropriate squares.

In most situations, the short form for local streets and roads will be adequate; however, the procedure used on State highways may be used at the option of the local agency.

#### Guidance:

The factors justifying a reduction below the 85th percentile speed for the posted speed limit are the same factors mentioned above. Whenever such factors are considered to establish the speed limit, they should be documented on the speed zone survey or the accompanying engineering report.

The establishment of a speed limit of more than 5 mph below the 85th percentile speed should be done with great care as studies have shown that establishing a speed limit at less than the 85th percentile generally results in an increase in collision rates; in addition, this may make violators of a disproportionate number of the reasonable majority of drivers.

#### Support:

Generally, the most decisive evidence of conditions not readily apparent to the driver surfaces in collision histories. Speed limits are established at or near the 85th percentile speed, which is defined as that speed at or below which 85<sup>th</sup> percent of the traffic is moving. The 85th percentile speed is often referred to as the critical speed. Pace speed is defined as the 10 mph increment of speed containing the largest number of vehicles (See Figure 2B-102(CA)). The lower limit of the pace is plotted on the Speed Zone Survey Sheets as an aid in determining the proper zone limits. Speed limits higher than the 85<sup>th</sup> percentile are not generally considered reasonable and prudent. Speed limits below the 85th percentile do not ordinarily facilitate the orderly movement of traffic and require constant enforcement to maintain compliance. Speed limits established on the basis of the 85th percentile conform to the consensus of those who drive highways as to what speed is reasonable and prudent, and are not dependent on the judgment of one or a few individuals. The majority of drivers comply with the basic speed law. Speed limits set at or near the 85th percentile speed provide law enforcement officers with a limit to cite drivers who will not conform to what the majority considers reasonable and prudent. Further studies show that establishing a speed limit at less than the 85th percentile (Critical Speed) generally results in an increase in collision rates.

#### Option:

When roadside development results in traffic conflicts and unusual conditions which are not readily apparent to drivers, as indicated in collision records, speed limits somewhat below the 85th percentile may be justified. Concurrence and support of enforcement officials are necessary for the successful operation of a restricted speed zone.

#### Guidance:

Speed zones of less than 0.5 miles and short transition zones should be avoided.

#### Recommendation

This recommendation is based on the City's desire to combine the two Union Road segments into one speed zone from South River Road to Golden Hill Road. Given the large sample size of the combined data (both 2013 and 2106), the recommendation is to establish the speed zone at 40mph. Further it is recommended, that the City of Paso de Robles install curve warning signs to advise drivers of all curves with design speeds less than the posted speed limit. The following includes Section 2C.06, 2C.08, 2C.11, 2C.12, and 2C.46 of the Manual which provides a discussion on the application of the Advisory Speed Plaque, the Combination of Horizontal-Alignment/ Intersection Signs, the One-Directional Arrow Signs, and Intersection Warning signs. It will also state criteria to be used when evaluating these strategies.

- 1. Advisory Speed Plaque (W13-1P) (Section 2C.08)
- 2. Horizontal Alignment Warning Signs (Section 2C.06)
- 3. Combination Horizontal Alignment/Intersection Signs (W1-10 Series) (Section 2C.11)
- 4. Intersection Warning Signs (W2-1 through W2-8) (Section 2C.46)
- 5. Cross Traffic Does Not Stop Plaque (W4-4P) (Section 2C.59)
- 6. Or other signs as deemed appropriate by the City







This recommendation is the result of discussions with the City Staff and is based on the following findings:

- The combined critical speed (85<sup>th</sup> percentile) is 45mph (rounded from 47mph to 45mph)
- 2) The number of accidents over the past 3 years is 5
- 3) The design speed for new improved roadway section between Kleck and Golden Hill is 35mph
- 4) Pursuant to California Vehicle Code Sections 627 and 22358.5. the posted speed limit for the combined segment could be reduced from the 85<sup>th</sup> percentile speed of 45mph to 40mph to reflect:
  - a. the changes to the roadway with completion of the new road improvement project
  - b. the accident data
  - c. the design speed

Thank you for the opportunity to assist with this study. If you have any questions or need any additional information, please feel free to contact me.

Sincerely,

Charles Clouse, AICP, PTP Principal

Attachments (2) – 2016 Union Road Speed Survey 2013/2016 Combined Union Road Speed Survey

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This recommendation is the result of discussions with the City Staff and is based on the following findings:

- 1) The combined critical speed (85<sup>th</sup> percentile) is 45mph (rounded from 47mph to 45mph)
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  - a. the changes to the roadway with completion of the new road improvement project
  - b. the accident data
  - c. the design speed

Thank you for the opportunity to assist with this study. If you have any questions or need any additional information, please feel free to contact me.

Sincerely

Charles Clouse, AICP, PTP Principal

Attachments (2) – 2016 Union Road Speed Survey 2013/2016 Combined Union Road Speed Survey



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# C2 Consult Corp

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Fresno, CA 93721

LOCATION: #46 UNION ROAD DIRECTION: EAST-WEST ROAD X-SECTION: 2 LANES WITH INTERMITTANT PAINTED MEDIAN PAVED WIDTH: 36 Feet BUSINESS OR RESIDENCE DISTRICT: NO

#### KLECK TO GOLDEN HILL

DATE: 4/13/2016 DAY: WEDNESDAY TIME: 1:00 PM **OBSERVER: MB** 

RECOMMENDED SPEED LIMIT	POS' SPEED	TED LIMIT	10 MPH PACE SPEED			AVERAGE SPEED	CRITICAL SPEED	
40	40 40		38	-	47	42	4	7
	<=	>	< 170/	IN 600/	>		<=	>

COMMENTS/UNUSUAL CONDITIONS LOW DENSITY RESIDENTIAL IN WESTERN HALF WITH SEVERAL DRIVEWAYS AND TWO LANE ROAD. CENTER MEDIAN IN EASTERN HALF WITH RECENTLY ADDED LEFT TURN AND BIKE LANES. CURB AND GUTTER ALSO ADDED WITH CITY PROJECT,



SPEED	FREQU	ENCY	CUMUL	ATIVE
MPH	#	%	#	%
28	1	0%	1	0.3%
29	0	0%	1	0.3%
30	1	0%	2	0.5%
31	4	1%	6	1.5%
32	5	1%	11	2.8%
33	6	2%	17	4.3%
34	7	2%	24	6.1%
35	15	4%	39	9.9%
36	14	4%	53	13.5%
37	14	4%	67	17.1%
38	21	5%	88	22 4%
39	31	8%	119	30.4%
40	34	9%	153	39 0%
41	35	9%	188	48.0%
42	26	7%	214	54.6%
43	28	7%	242	61 7%
44	25	6%	267	68.1%
45	24	6%	291	74.2%
46	19	5%	310	79.1%
47	24	6%	334	85.2%
48	13	3%	347	88.5%
49	12	3%	359	91.6%
50	8	2%	367	93.6%
51	7	2%	374	95.4%
52	7	2%	381	97.2%
53	3	1%	384	98.0%
54	0	0%	384	98.0%
55	3	1%	387	98.7%
56	1	0%	388	99.0%
57	2	1%	390	99.5%
58	1	0%	391	99.7%
59	0	0%	391	99.7%
60	1	0%	392	100.0%



# C2 Consult Corp

2125 Kern St., Suite 301

Fresno, CA 93721

LOCATION:#46 UNION ROADN. RIVER TO GOLDEN HILLDIRECTION:EAST-WESTDATE:20ROAD X-SECTION:2 LANES WITH INTERMITTANT PAINTED MEDIANDAY:PAVED WIDTH:36 FeetTIME:BUSINESS OR RESIDENCE DISTRICT:NOOBSERVER: MB

RECOMMENDED SPEED LIMIT	RECOMMENDED POSTED SPEED LIMIT SPEED LIMIT		PA	10 MPH	ED	AVERAGE SPEED	CRITICAL	
40	40 40		38	() <b>=</b> ()	47	42	4	7
UNA I	<=	>	<	IN	>		<==	>
	35%	65%	15%	71%	14%		85%	15%

 COMMENTS/UNUSUAL CONDITIONS
 LOW DENSITY RESIDENTIAL IN WESTERN HALF WITH SEVERAL

 DRIVEWAYS AND TWO LANE ROAD. CENTER MEDIAN IN EASTERN HALF WITH RECENTLY ADDED LEFT TURN

 AND BIKE LANES. CURB AND GUTTER ALSO ADDED WITH CITY PROJECT.



SPEED	FREQU	ENCY	CUMULATIVE		
MPH	#	%	#	%	
25	ľ	0%	1	01%	
26		0%	1	0.1%	
27		0%	4	0.1%	
28	1	0%	2	0.3%	
29	1	0%	3	0.4%	
30	2	0%	5	0.7%	
31	5	1%	10	1.4%	
32	5	1%	15	2 2%	
33	10	1%	25	3.6%	
34	10	1%	35	5 1%	
35	17	2%	52	7.5%	
36	20	30%	72	10 4%	
37	29	4%	101	14 6%	
38	35	5%	136	19 7%	
30	51	7%	187	27 1%	
40	57	8%	244	35 4%	
41	61	9%	305	44 2%	
42	50	7%	355	51 4%	
43	51	7%	406	58 8%	
44	49	7%	455	65 9%	
45	52	8%	507	73 5%	
46	40	60%	547	70 30%	
47	43	6%	500	85 50%	
48	30	4%	620	80 0%	
40	21	30%	641	02.0%	
50	13	20%	654	94 8%	
51	12	20%	666	96 5%	
52	0	1%	675	97 8%	
53	5	194	680	08 6%	
54	, i	004	681	08 704	
55	1	104	695	00 304	
55	1	004	686	00 /0/	
57	2	0.00	688	00 7%	
50	2	0%	680	99,170	
50	1	0%	680	1000/	
59		070	600	100%	



2013 and 2016

PM