

TO: James L. App, City Manager
FROM: Meg Williamson, Interim Public Works Director
SUBJECT: All-way stop South River Road and Charolais Road Intersection
DATE: May 18, 2004

NEEDS: For the City Council to consider the status of traffic controls (all-way stop) at the intersection of South River Road and Charolais Road.

- FACTS:**
1. The intersection of South River Road and Charolais Road is a “T” intersection located at the southern City limits. The predominant traffic flows are southbound South River Road turning left to eastbound Charolais Road, and westbound Charolais Road turning right to northbound South River Road.
 2. Both South River Road and Charolais Road are classified as “arterial streets” in the current Circulation Element.
 3. On June 27, 2003, the Streets and Utilities Committee received a request for traffic controls on South River Road from Riverbank Tract residents.
 4. An all-way stop at the intersection of Charolais & River Roads was discussed at the July 25, 2003, Streets and Utilities Committee meeting. The Committee voted 2-0 to recommend installation for a test period of six months.
 5. At the meeting of August 19, 2003, the City Council approved the installation of the all-way stop, with the provision that a follow-up report be presented analyzing its effectiveness
 6. Omni-Means, a traffic-engineering firm, has completed a study that reports a decrease in speed on South River Road in the vicinity of the all-way stop installation. The study also reports an increased risk of traffic accidents due to motorists not coming to complete stops at the intersection.

**ANALYSIS
&**

CONCLUSION: An all-way stop was considered at this intersection based upon two criteria. First, this is an intersection of two arterial streets. Second, the Caltrans Traffic Manual states that an all-way stop may be installed on the major street at a “T” intersection where safety considerations justify stopping the greater flow of traffic to permit a left turning movement.

Several month’s after the installation of the all-way stop Omni-means was hired to study the all-way stop intersection and traffic approaching and leaving the intersection. The study (attached) found that traffic has been slowed in the vicinity of the all-way stop and has aided motorist’s ability to make left turn movements. However, the study also finds serious safety concerns related to motorists “rolling through the intersection”.

“Based upon the results of the traffic speed surveys conducted South River Road at Charolais Road, the overall 85th percentile speed taken at both survey locations and both time periods are lower than the posted speed limit in the vicinity of the stop sign installation. From these results, the stop signs installed on South River Road are achieving the desired

result of reducing motorist speed below the posted limit. However, from the results of the obedience survey, the majority of motorists at the intersection fail to come to a complete stop. From a safety perspective and due to the high level of rolling stops at the intersection, the likelihood of a right angle collision increases because of the poor compliance rate. It is recommended that the City increase law enforcement at this intersection in order to deter motorists from breaking the law and to further reduce travel speeds on South River Road.”

Police department Citation records appear to support the observation made by Omni-means. Police issued five stop sign violations, one speeding violation, one seatbelt violation and one equipment violation in the five-month period from November 1, 2003 through March 31, 2004.

It appears that the installation of the all-way stop has resulted in slower traffic in the vicinity of the stop/intersection. However it has also created a potentially dangerous situation due to lack of compliance (motorists not making complete stops).

There may be more effective traffic calming and control improvements that could be considered for this intersection. These alternatives will be the subject of a draft traffic calming policy currently under development

Therefore, it may be prudent to defer consideration of permanent all-way stop at Charolais and South River Road until the traffic calming policies have been adopted.

POLICY

REFERENCE: Caltrans Traffic Manual

FISCAL

IMPACT: none

OPTIONS:

- a. Continue temporary status of traffic controls at the intersection of Charolais Road & South River Road while further study and consideration are given to other control methods.
- b. Amend, modify, or reject the above option.

Attachments (1):

- 1) Omni-means technical memorandum

TECHNICAL MEMORANDUM

To: City of Paso Robles
Attn: Ditas Esperanza
From: Gary Mills
Re: South River Road Traffic Calming Speed
Survey

Date: May 3, 2004
Project: South River Road Traffic Calming
Speed Survey
Job No.: 25-5307-07
File No.: C601MEM002.DOC

CC:

EXECUTIVE SUMMARY

The purpose of this Technical Memorandum is to respond to traffic speeding and safety concerns related to the installation of stop signs on South River Road/Charolais Road. The previous traffic control device consisted of a single stop sign controlling traffic flow from westbound Charolais Road onto South River Road. The City of Paso Robles authorized a travel speed and safety study to assess the specific problem and determine appropriate mitigation measures. This Technical Memorandum highlights the findings of this study.

Speeding, specifically on South River Road, has been a concern of the neighborhood and the City, which has prompted the City to install stop signs at the northbound and southbound approaches of the South River Road/Charolais Road intersection. In recent months, many motorists traveling through the study intersection have failed to stop or yield right-of-way, potentially providing a setting for vehicular accidents. The City of Paso Robles, in attempting to address and alleviate neighboring concerns, has retained OMNI-MEANS to determine the nature and extent of the prevailing traffic speeding problems and develop recommendations for reasonable incremental traffic calming measures that will more effectively alleviate traffic speeding problems.

Sample speed surveys in both directions were taken with radar at two (2) locations along South River Road during two time periods, 9:00 a.m. to 11:00 a.m. and 3:00 p.m. to 5:00 p.m. As a result, a total of 613 observations were taken along South River Road at the two study locations. In addition, a traffic obedience survey was collected at the intersection of South River Road/Charolais Road in order to determine the level of compliance at each approach. This included determination of the number of vehicles that failed to come to a complete stop at each approach of the intersection.

STUDY LOCATION AND SETTING

The location of this speed study is in southeast Paso Robles, along two roadway segments that primarily serve residences in the area. The majority of the traffic that travels through the intersection of South River Road/Charolais Road is directed from westbound Charolais Road to northbound South River Road and from southbound South River Road to eastbound Charolais Road. Radar speed surveys were collected at the following locations:

South River Road

1. 300' South of Charolais Road
2. 300' North of Charolais Drive

Data Collection: Field data was collected on Tuesday, April 6, 2004, along the above indicated roadway segments and survey locations. Each radar speed survey was made from an inconspicuously parked vehicle. An effort was made to ensure that the presence of the observer vehicle in no way affected the speed of the vehicles being surveyed. Field information was recorded on forms and later electronically coded for computer analysis.

STUDY METHODOLOGY

The study methodology basically involves collection of traffic speed data along two critical study roadway segments. The speed data measurement involves the use of a speed "radar gun" that utilizes the "Doppler Effect" theory to scientifically determine the moving speed of an approaching or leaving (relative to the observer) vehicle.

The time period for collecting the speed data depends on the purpose of the study. Off-peak hours are preferable if the collection of "free flow" vehicle speeds is desired. However, since the study area is primarily residential, speed data was collected during morning off-peak, and afternoon peak hour periods in order to obtain a comprehensive sample that adequately covers typical weekday conditions. Speed surveys were conducted at locations in the southeastern City of Paso Robles along South River Road at two (2) 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.

At all survey locations, the speeds of all available vehicles were recorded during peak hours of travel in 30-minute increments. Along sections of roadways where free flow traffic conditions exist, only the lead or pace vehicles were recorded. The calculations derived from this technique accurately demonstrate a balance among speed, capacity, and the general use of a roadway segment.

STUDY RESULTS

Data Analysis: Copies of the computer analysis of field data collected at each survey location are attached to this memorandum. Data at the top of each analysis indicates observed conditions while data at the bottom represents calculated conditions. Observed conditions include location of the spot speed survey, direction of travel, 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 general type of adjacent development (business, residential, industrial, etc.). Calculated values include the 50th percentile 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 is provided as follows.

The "50th percentile speed" is that speed above and below which 50 percent of the sample speeds fall. This is also known as the median or middle speed.

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/county roadways, the speed limit normally should be established at the first five mile

per hour increment below the 85th percentile speed. However, in matching existing conditions with traffic safety needs of the community, engineering judgment may indicate the need for a further reduction. 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 nearly all cases, the 85th percentile speed and the recommended speed limit lie somewhere within the pace, frequently in the middle to upper ranges. This is another indicator used to determine appropriate speed limits. The percentage of vehicles in 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.

Tables 1 through 3 present a collation of the raw radar speed data under a.m. off-peak, p.m. peak hour, and combined conditions respectively. These tables include all survey locations and related calculations. The existing posted speed limits are also shown in these tables.

As indicated in Table 1, all locations had a critical speed less than the posted speed limit for the 9 a.m. - 11 a.m. survey period. Based on recorded radar observations of current vehicle speeds, vehicles traveling southbound on South River Road showed an increase in the 85th percentile (critical) speed, changing from 35 mph to 38 mph. Northbound traffic showed a reduction in the 85th percentile speed, which decreased from 39 mph to 31 mph.

**TABLE 1 - COLLATION OF RAW RADAR SURVEY DATA
9:00 A.M. TO 11:00 A.M. (A.M. OFF PEAK)**

Location	# Samples	Direction	Observed Speed (MPH)			% In Pace	Speed Limit
			50 th	85 th	Pace		
South River Road							
1. South of Charolais Road	50	Northbound	36	39	32-41	68	40
2. North of Charolais Road	136	Northbound	29	31	25-34	93	40
3. North of Charolais Road	103	Southbound	33	35	27-36	85	40
4. South of Charolais Road	52	Southbound	32	38	30-39	71	40

Table 2 summarizes the survey data taken during the 3 p.m. – 4:30 p.m. peak survey period. As with the survey results from the am off-peak, southbound traffic on South River Road experienced an increase in the 85th percentile (critical) speed, starting with 33 mph and increasing to 35 mph. Northbound traffic experienced a decrease in the 85th percentile speed, changing from 41 mph to 37 mph.

**TABLE 2 - COLLATION OF RAW RADAR SURVEY DATA
3:00 P.M. TO 4:30 P.M. (P.M. PEAK)**

Location	# Samples	Direction	Observed Speed (MPH)			% In Pace	Speed Limit
			50 th	85 th	Pace		
South River Road							
1. South of Charolais Road	49	Northbound	36	41	30-39	73	40
2. North of Charolais Road	87	Northbound	32	37	29-38	85	40
3. North of Charolais Road	71	Southbound	30	33	26-35	93	40
4. South of Charolais Road	63	Southbound	33	35	29-38	75	40

Tables 3 summarizes survey data taken during the 9 a.m. - 11 a.m. survey period at the study locations for both directions. As indicated in Table 3, both locations had a critical speed less than the posted speed limit. Based on recorded radar observations of current vehicle speeds, South River Road north of Charolais Road had a measured 85th percentile speed 6 mph below the posted speed limit and South River Road south of Charolais Road had a measured 85th percentile speed 1 mph below the posted speed limit.

TABLE 3 - COLLATION OF RAW RADAR SURVEY DATA (SUMMARY)
9:00 A.M. TO 11:00 A.M. (A.M. OFF PEAK)

Location	# Samples	Direction	Observed Speed (MPH)			% In Pace	Speed Limit
			50 th	85 th	Pace		
South River Road							
1. North of Charolais Road	239	Both	30	34	27-36	86	40
2. South of Charolais Road	104	Both	34	39	30-39	68	40

Table 4 provides a compilation of the survey data taken during the 3 p.m. – 4:30 p.m. survey period at the study locations for both directions. As indicated in Table 4, both locations on South River Road had a critical speed less than the posted speed limit, with a measured 85th percentile speed of 5 mph and 2 mph below the posted 40 mph speed limit respectively.

TABLE 4 - COLLATION OF RAW RADAR SURVEY DATA (SUMMARY)
3:00 P.M. TO 4:30 P.M. (P.M. PEAK)

Location	# Samples	Direction	Observed Speed (MPH)			% In Pace	Speed Limit
			50 th	85 th	Pace		
South River Road							
1. North of Charolais Road	158	Both	31	35	28-37	84	40
2. South of Charolais Road	112	Both	34	38	29-38	73	40

Table 5 contains data collected from the traffic obedience survey for the a.m. off-peak period. For all approaches of the intersection during the off-peak survey, the majority of the vehicles that enter the intersection fail to make a complete stop, ranging from 57.1%- 72.0% of the total vehicles surveyed.

TABLE 5 - COLLATION OF RAW SURVEY DATA
9:00 A.M. TO 11:00 A.M. (A.M. OFF PEAK)

Location	# Samples	# Roll	# Stop	% Roll	% Stop
South River Road					
1. S/O Charolais Road (Northbound)	42	24	18	57.1	42.9
2. N/O Charolais Road (Southbound)	88	60	28	68.2	31.8
Charolais Road					
3. E/O South River Road (Westbound)	93	67	26	72.0	28.0

Table 6 contains data collected from the traffic obedience survey for the p.m. peak period. With the exception of northbound traffic on South River Road, the majority of the vehicles that enter the intersection fail to make a complete stop, ranging from 83.6%-89.2%. When comparing the data in Tables 5 and 6, an increase in the level of disobedience can be seen on the southbound and westbound approaches of the study intersection. Southbound “rolling” traffic increased from 68.2% to 89.2%, and westbound traffic increased from 72.0% to 83.6%. However, northbound “rolling” traffic decreased, changing from 57.1% to 37.3%.

**TABLE 6 - COLLATION OF RAW SURVEY DATA
3:00 P.M. TO 4:30 P.M. (P.M. PEAK)**

Location	# Samples	# Roll	# Stop	% Roll	% Stop
South River Road					
1. S/O Charolais Road (Northbound)	51	19	32	37.3	62.7
2. N/O Charolais Road (Southbound)	120	107	13	89.2	10.8
Charolais Road					
3. E/O South River Road (Westbound)	73	61	12	83.6	16.4

STUDY RESULTS

Based upon the results of the traffic speed surveys conducted on South River Road at Charolais Road, the overall 85th percentile speed taken at both survey locations and both time periods are lower than the posted speed limit in the vicinity of the stop sign installation. From these results, the stop signs installed on South River Road are achieving the desired result of reducing motorist speed below the posted limit. However, from the results of the obedience survey, the majority of motorists at the intersection fail to come to a complete stop. From a safety perspective and due to the high level of rolling stops at the intersection, the likelihood of a right-angle collision increases because of the poor compliance rate. It is recommended that the City increase law enforcement at this intersection in order to deter motorists from breaking the law and to further reduce travel speeds on South River Road.