TRAFFIC FORECASTING MEMORANDUM

SR-12 REALIGNMENT / RIO VISTA BRIDGE PRELIMINARY STUDY

04-Sol-12-PM 19.3/03-SAC-12-PM 5.8
EA 04-4A490K

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May 2008

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

This Traffic Analysis summary memorandum presents the results of traffic analysis performed by the City of Fairfield using the Solano Napa Traffic Demand Model to assess the number of traffic lanes required for an SR 12 facility located along the existing route and for a bypass for the year 2030. This analysis is based on the forecasted traffic volumes for year 2030 between SR 113 and SR 160 in the City of Rio Vista, Solano County. Figure 1 illustrates the project location. This analysis examines traffic volumes and levels of service at intersections and roadway segment along SR 12 and a bypass under the following conditions:

- 2030 Future Forecast (No Project) Conditions;
- 2030 Future Forecast (Existing Route w/Mid-Level Bridge) Conditions;
- 2030 Future Forecast (Bypass w/High-Level Bridge) Conditions.

A. 2030 Future (No Project) Conditions

This alternative assumes that no major improvements will take place on SR 12 between SR 113 and SR 160 in the study area. The existing SR 12 is a 2 and 4 lane facility within the project limits.

B. 2030 Future (Existing Route w/Mid-Level Bridge) Conditions

Under this alternative, SR 12 will remain essentially in the existing alignment and will be improved to a four lane facility, two lanes in each direction with standard shoulders, in the east-west directions.

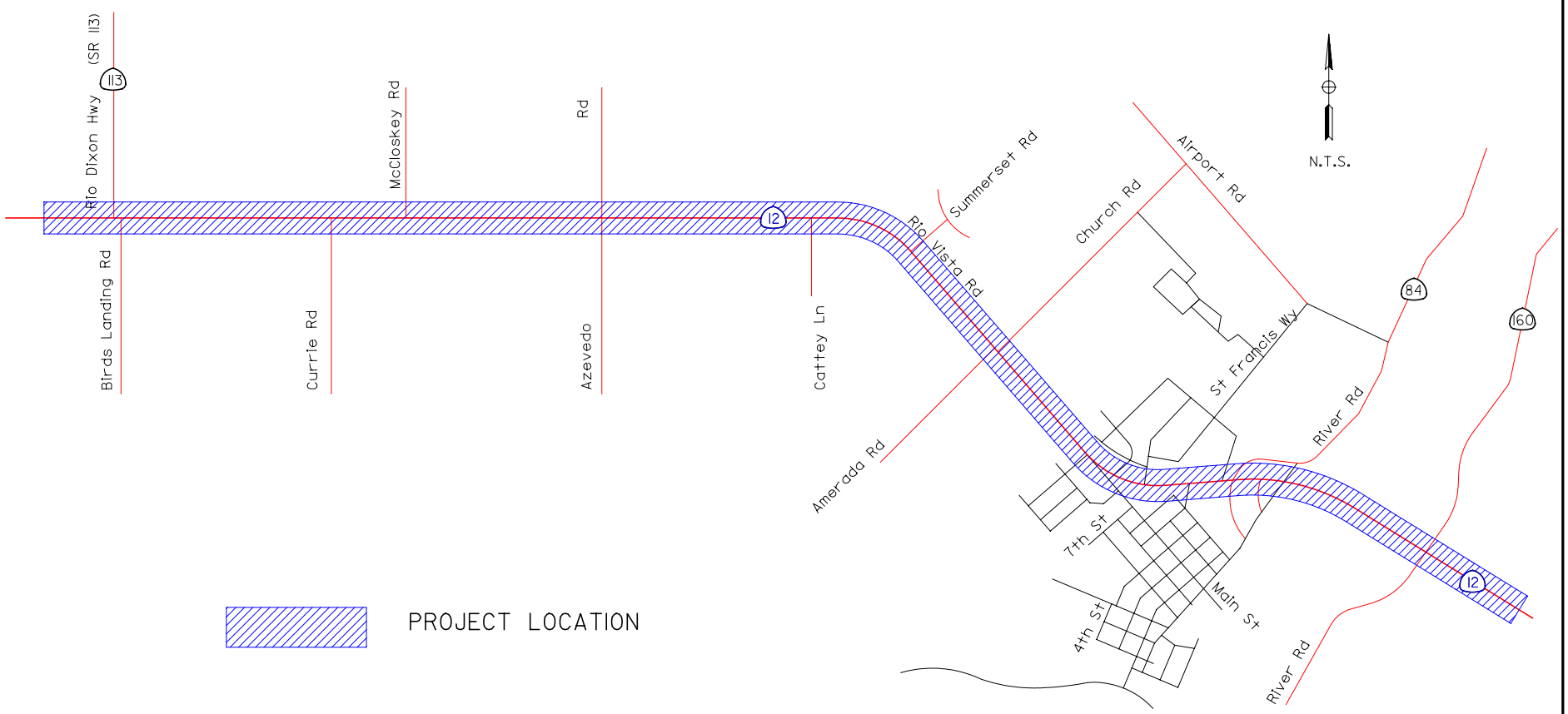
C. 2030 Future (Bypass w/High-Level Bridge) Conditions

Under this alternative, SR 12 facility will be shifted to a bypass alignment either to the north or south of the existing SR-12 from west of to the Rio Vista City limits to east of SR160 and will be a standard four-lane freeway (I-505) facility.

II. ANALYSIS METHODOLOGY

A. Significance Criteria

Traffic operations on study intersections and roadway segments were analyzed based on the *Highway Capacity Manual (2000)*. Table 1 displays the LOS criteria for signalized intersection and Table 2 daily volume thresholds for varies highway facility types.



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STATE ROUTE 12 - TRAFFIC ANALYSIS

Project Location (Existing SR 12 Alignment)

FIGURE
1

Table 1 - Level of Service Criteria – Signalized Intersections

LOS	Control Delay per Vehicle (s/veh)
A	=<10
B	>10 - 20
C	>20 - 35
D	>35 - 55
E	>55 - 80
F	>80

Source: Highway Capacity Manual, 2000.

Table 2 - Level of Service Criteria – Roadway Segments

Facility Type	Number of lanes	Daily Volume Threshold LOS A	B	C	D	E
Arterial (1) (Low Access Control)	2 4	9,000 18,000	10,500 21,000	12,000 24,000	13,500 27,000	15,000 30,000
Arterial (2) (Moderate Access Control)	2 4	10,800 21,600	12,600 25,200	14,400 28,800	16,200 32,400	18,000 36,000

(1) Low access control roads generally have frequent driveways and speeds of 25 to 35 mph.
(2) Medium access control roads generally have limited driveways and speeds of 35 to 45 mph.

Source: Del Rio Hills Planned Development, Traffic Impact Analysis, Fehr & Peers, June 11, 2007.

III. TRAFFIC ANALYSIS

A. Existing Traffic Volumes / Operation

Existing traffic volumes along SR 12 used for analysis documented in this memorandum were obtained from the City of Fairfield, and are based on the Del Rio Hills Planned Development Traffic Impact Analysis report dated June 11, 2007.

Traffic operations were conducted at the study roadway segments along SR 12 and intersections between SR 113 and SR 160. Table 3 and 4 summarize the results of this analysis.

Table 3 - Roadway Level of Service – Existing Conditions

Roadway Segment	Existing Conditions				
	Lanes	Type	Volume	V/C	LOS
SR 12 – SR 113 to Summerfield	2	Arterial (1)	16,900	0.85	D
SR 12 – Summerfield to Church	2	Arterial (1)	18,900	**0.95**	**E**
SR 12 – Church to Main St	2	Arterial (2)	18,600	**1.03**	**F**
SR 12 – Main St to River Rd	2	Arterial (2)	18,800	**1.04**	**F**
SR 12 – River Rd to SR 160	2	Arterial (2)l	21,000	**1.05**	**F**

Table 4 - Intersection Level of Service – Existing Conditions

Intersection	Existing Conditions				
	Control	AM		PM	
		Delay	LOS	Delay	LOS
SR 12 / SR 113	TWSC	34	D	**>50**	**F**
SR 12 / Summerfield	SIGNAL	7	A	8	A
SR 12 / Church Rd	TWSC	18	C	**>50**	**F**
SR 12 / Main St	SIGNAL	21	C	27	C
SR 12 EB / River Rd	TWSC	13	B	30	D
SR 12 WB / River Rd	TWSC	17	C	20	C
SR 12 / SR 160	TWSC	28	C	45	D

IV TRAFFIC VOLUME FORCASTS

This section summarizes the methodology used to develop traffic Volume forecasts and presents daily roadway segment and AM & PM peak hour forecasts for the following scenarios:

- 2030 with No Project Conditions
- 2030 with Mid-Level Bridge along existing route Conditions
- 2030 with High-Level Bridge and bypass Conditions

A. Travel Demand Forecasting Methodology

Traffic volume forecasts for the scenarios listed above were developed by the City of Fairfield and are based on volumes from the City's forecasting. In general, the forecasting methodology included the development of "through traffic" growth using the Solano Napa Traffic Demand model.

Table 5 presents the forecasted traffic volumes for the daily, am & pm for 2030 Scenarios and Table 6:

Table 5 – 2030 Forecasted Traffic Volumes

Location		2030 Forecasted Volumes (3) (No Project)		2030 Forecasted Volumes (3) (High-Level Bridge)		2030 Forecasted Volumes (3) (Mid-Level Bridge)	
		vph		vph		vph	
		AM	PM	AM	PM	AM	PM
SR 12, SR 113 to Summerfield	EB	977	1662	2005	2668	2725	2760
	WB	1651	1112	2297	1954	2901	2477
SR 12, Summerfield to Church Rd	EB	1495	1777	1981	2068	2414	2167
	WB	1557	1550	1946	1961	2193	2187
SR 12, Church Rd to Main St	EB	1544	1697	1894	1879	3033	2438
	WB	1500	1568	1817	1885	2498	2761
SR 12, Main to River Rd	EB	1132	1261	1702	1660	3033	2438
	WB	1062	1231	1704	1842	2498	2761
SR 12, River Rd to SR 160	EB	1284	1411	2388	2341	2685	1649
	WB	1222	1430	2034	2264	1687	2364
(3) Source: City of Fairfield, Traffic Forecast Model, March, 2008.							

Table 6 – Peak Hour Volume Threshold - Roadway Segments

Location		Peak Hour Volume Threshold (3) (2030 No Project)		Peak Hour Volume Threshold (3) (2030 High-Level Bridge)		Peak Hour Volume Threshold (3) (2030Mid-Level Bridge)	
		Lanes	Capacity	Lanes	Capacity	Lanes	Capacity
SR 12, SR 113 to Summerfield	EB	1	1600	2	2800	2	4000
	WB	1	1600	2	2800	2	4000
SR 12, Summerfield to Church Rd	EB	2	1800	2	1800	2	4000
	WB	2	1800	2	1800	2	4000
SR 12, Church Rd to Main St	EB	2	1800	2	1800	2	4000
	WB	2	1800	2	1800	2	4000
SR 12, Main to River Rd	EB	2	1800	2	1800	2	4000
	WB	2	1800	2	1800	2	4000
SR 12, River Rd to SR 160	EB	1	900	2	1800	2	4000
	WB	1	900	2	1800	2	4000
(3) Source: City of Fairfield, Traffic Forecast Model, March, 2008.							

B. Planned Transportation Improvements

Improvements to SR12 identified by the Solano Transportation Authority (Future Roadway projects) were added to the year 2030 No Project and Mid-Level Condition scenarios. Table 7 lists these improvements. A four-lane freeway was assumed as the other long-term improvement to the SR12 corridor between SR 113 and SR160. These improvements were added to the 2030 High-Level Bridge Conditions scenario, where SR 12 is considered as an alignment to the south of the existing SR-12, but results are also applicable to a northern bypass.

Table 7 – Planned Transportation Improvements

Project Name	Project Description	Original Lane Configuration	New Lane Configuration	Source
SR 12 Operations and Safety Improvements	From Rio Vista CL to Suisun City Limit (Phase 1)	1 EB,1 WB	1 EB, 1 WB	Bay Area RTP
SR 12 Widening	Widen SR 12 from 2 lanes to 4 lanes from Summerset Rd to Rio Vista Bridge	1 EB,1 WB	2 EB, 2 WB	Countywide Travel Model Runs
Source: Future Roadway Projects (Review Draft), Solano County, January 10, 2007.				

This analysis assumes that the planned improvements will be in place along the roadway segments and intersections of SR12 between SR 113 and SR 160.

C. Traffic Analysis

Traffic Operation analyses were performed along the roadway segments of SR 12 between SR 113 and SR 160 for the future conditions using the forecasted volumes. The analysis were performed based the HCM 2000 Methodology and based on the daily volume thresholds for varies highway facility types presented in the City's forecasting. Table 8 summarizes the results of the analysis for the roadway segments of SR 12 for the No Project Scenario.

Table 8 - Roadway Level of Service – 2030 No Project Conditions

Roadway Segment	2030 No Project Conditions					
	Lanes	Direction	AM		PM	
			V/C	LOS	V/C	LOS
SR12 – SR113 to Summerfield	1	EB	0.61	B	**1.04**	**F**
	1	WB	**1.03**	**F**	0.69	B
SR12 – Summerfield to Church Rd	2	EB	0.83	D	**0.99**	**E**
	2	WB	0.86	D	0.86	D
SR12 – Church Rd to Main St	2	EB	0.86	D	**0.94**	**E**
	2	WB	0.83	D	0.87	D
SR12 – Main St to River Rd	2	EB	0.63	B	0.70	C
	2	WB	0.59	A	0.68	B
SR12 – River Rd to SR 160	1	EB	**1.43**	**F**	**1.57**	**F**
	1	WB	**1.36**	**F**	**1.59**	**F**

Table 9 summarizes the results of the analysis for the roadway segments of SR 12 for the Mid-Level Bridge Scenario.

Table 9 - Roadway Level of Service – 2030 Mid-Level Bridge Conditions

Roadway Segment	2030 Mid-Level Bridge Conditions					
	Lanes	Direction	AM		PM	
			V/C	LOS	V/C	LOS
SR12 – SR113 to Summerfield	2	EB	0.72	C	**0.95**	**E**
	2	WB	0.82	D	0.70	C
SR12 – Summerfield to Church Rd	2	EB	**1.10**	**F**	**1.15**	**F**
	2	WB	**1.08**	**F**	**1.09**	**F**
SR12 – Church Rd to Main St	2	EB	**1.05**	**F**	**1.04**	**F**
	2	WB	**1.00**	**F**	**1.05**	**F**
SR12 – Main St to River Rd	2	EB	**0.95**	**E**	**0.92**	**E**
	2	WB	**0.95**	**E**	**1.02**	**F**
SR12 – River Rd to SR 160	2	EB	**1.33**	**F**	**1.30**	**F**
	2	WB	**1.13**	**F**	**1.26**	**F**

Table 10 summarizes the results of the analysis for the roadway segment of SR 12 for the High-Level Bridge Scenario.

Table 10 - Roadway Level of Service – 2030 High-Level Bridge Conditions

Roadway Segment	2030 High-Level Bridge Conditions					
	Lanes	Direction	AM		PM	
			V/C	LOS	V/C	LOS
I-515 (SR12) – SR113 to Summerfield	2	EB	0.68	B	0.82	D
	2	WB	0.73	C	0.70	C
I-515 (SR12) – Summerfield to Church Rd	2	EB	0.60	B	0.66	B
	2	WB	0.55	A	0.62	B
I-515 (SR12) – Church Rd to SR 160	2	EB	0.76	C	0.74	C
	2	WB	0.62	B	0.78	C
I-515 (SR12) – SR 160 to SR 12	2	EB	0.67	B	0.51	A
	2	WB	0.42	A	0.67	B

Table 11 summarizes the results of the analysis for the intersections along SR 12 for the 2030 No Project Scenario.

Table 11 - Intersection LOS – 2030 No Project Conditions

Intersection	2030 No Project Conditions				
	Control	AM		PM	
		Delay	LOS	Delay	LOS
SR 12 / SR 113	SIGNAL	**141.0**	**F**	**138.8**	**F**
SR 12 / Summerfield	SIGNAL	14.6	B	23.1	C
SR 12 / Church Rd	SIGNAL	**128.7**	**F**	**173.9**	**F**
SR 12 / Main St	SIGNAL	**83.2**	**F**	**158.5**	**F**
SR 12 / SR 160	SIGNAL	**134.8**	**F**	**120.7**	**F**

Table 12 summarizes the results of the analysis for the intersections along SR 12 for the 2030 Mid-Level Bridge Scenario.

Table 12 - Intersection LOS – 2030 Mid-Level Bridge Conditions

Intersection	2030 Mid-Level Bridge Conditions				
	Control	AM		PM	
		Delay	LOS	Delay	LOS
SR 12 / SR 113	SIGNAL	19.1	B	41.5	D
SR 12 / Summerfield	SIGNAL	29.3	C	31.6	C
SR 12 / Church Rd	SIGNAL	35.7	D	37.8	D
SR 12 / Main St	SIGNAL	37.6	D	33.0	C
SR 12 EB Ramps/River Rd	SIGNAL	12.4	B	14.6	B
SR 12 WB / SR 160	SIGNAL	25.3	C	38.1	D
SR 12 EB Ramps / SR 160	SIGNAL	41.7	D	30.4	C

Table 13 summarizes the results of the analysis for the intersections along SR 12 for the 2030 High-Level Bridge Scenario.

Table 13 - Intersection LOS – 2030 High-Level Bridge Conditions

Intersection	2030 Mid-Level Bridge Conditions				
	Control	AM		PM	
		Delay	LOS	Delay	LOS
SR 12 EB Ramps / SR 113	SIGNAL	8.5	A	7.8	A
SR 12 WB Ramps / SR 113	SIGNAL	4.5	A	19.3	B
SR 12 EB Ramps / Church Rd	SIGNAL	5.1	A	5.7	A
SR 12 WB Ramps / Church Rd	SIGNAL	5.8	A	3.3	A
SR 12 Ramps / SR 160	SIGNAL	28.8	C	4.9	D

V. CONCLUSION

It is concluded that the planned transportation improvements at the roadway segments and study intersections along SR 12 will improve the traffic operations at these locations. The intersections will operate at LOS D or better for the 2030 Mid-Level Bridge Conditions comparing with 2030 No Project Conditions, however SR 12 will experience unacceptable level of service for the 2030 Mid-Level Bridge Conditions for all the SR 12 roadway segments from SR 113 to SR 160. Widening SR 12 at the Sacramento Bridge will improve the operational characteristics at this location by providing the planned four (4) lanes divided roadway segment. This roadway segment will continue to operate at unacceptable Level of Service for both 2030 Scenarios (No Project and Mid-Level Bridge); however the Volume to Capacity (v/c) ratio will drop by 21% (1.59 to 1.26) due to the added capacity to this roadway segment within the project limits. It is anticipated that the SR12 roadway segments will continue to operate unsatisfactory at LOS E and F with the planned improvements for the 2030 Mid-Level Conditions.

The analysis for the 2030 Bypass with High Level Bridge shows that all intersections at freeway ramp intersections and the freeway segments will operate at LOS D or better for this scenario.

For both alternatives analyzed, a Mid-level Bridge along the existing route and a Bypass with a High Level Bridge, the forecasting indicates that a facility of at least four lanes is required.