

## **1.0 Purpose and Need for the Project**

### **1.1 Introduction**

Caltrans proposes to improve traffic conditions in Sonoma County on the section of Route 101 from the Wilfred Avenue/Golf Course Drive interchange in Rohnert Park to Route 12 in Santa Rosa, a distance of 8 km. Improvements under discussion include the addition of a new lane in each direction within the existing median, auxiliary lanes, soundwalls, ramp widenings and the modification of intersections at ramp termini.

### **1.2 Background**

In 1990, Caltrans began working on Project Study Reports (PSRs) to widen the existing Route 101 freeway to 6 lanes and reconstruct interchanges from Petaluma to Windsor. Those PSRs were in preparation for a proposed sales tax measure that would raise funds to improve roadways in Sonoma County. The measure was defeated in the November 1991 election. Subsequently, a separate PSR was approved for the section of Route 101 between Route 116 West and the Santa Rosa Avenue Overcrossing. PSRs for the remaining segments were not completed or approved. Funding for the segment studied in the approved PSR was included in the Metropolitan Transportation Commission (MTC), 1990/91 Regional Transportation Improvement Program (RTIP), and adopted in the 1990 State Transportation Improvement Program (STIP).

### **1.3 Purpose and Need for the Project**

Route 101, completed in the early 1960's, is a major link in the region's interregional road system and the most important north-south route within Sonoma County. With the exception of the reconstruction of the ramps and auxiliary lanes at the Wilfred Avenue/Golf Course Drive Interchange and at the northbound ramps and auxiliary lanes at Hearn Avenue, no freeway widenings or ramp improvements have been made since then. Dating back from the time when the original freeway was completed, to the present, Sonoma County has experienced the largest proportional growth in both population (184% increase) and jobs (395% increase) of any county within the San Francisco Bay Area. This section of Highway 101 is the primary connector between the cities of Rohnert Park to the south and Santa Rosa to the north, as it is the most direct route that exists between these growing communities. Numerous studies indicate Highway 101 operates as 'Main Street' for the region.

The major objective for this proposed project is to:

Improve travel times and reduce congestion on a major regional connector by allowing all motorists to move at speeds that approach the legal maximums.

### **Traffic Congestion**

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At the present time, travelers on Route 101 experience substantial congestion on the freeway, on the cross streets and on the ramps. This congestion is characterized by the 1995 Sonoma County Congestion Management Program as Level of Service (LOS) E and F.

#### Freeway LOS

LOS is a qualitative measure of describing the convenience, comfort, safety, and utility of a system's operational conditions. Specifically, it generally describes traffic flow in terms of speed and travel time, freedom to maneuver and traffic interruptions. The standardized LOS grading system for a multilane freeway may evaluate any given segment of highway or roadway for its present and/or future traffic handling capacity. These LOS measures are designated A through F, from best to worst, and they cover the entire range of traffic operations that may occur. The following descriptions illustrate what is meant by freeway (multilane) LOS at each level:

- A-** The highest quality of service. Free traffic flow, low volume and densities. There is little or no restriction on maneuverability or speed. Average speed is 55+ mph with no delays.
- B-** This level features stable traffic flow, with speeds becoming slightly restricted. There are low restrictions on maneuverability. Average speed is 50 mph with no delays.

- C-** There is stable traffic flow, but less freedom to select speed, change lanes or pass. Density of traffic increases. Average speed is 45 mph with minimal delays.
  
- D-** Speeds are tolerable but subject to sudden and considerable variation. Average speed is 40 mph with minimal delays.
  
- E-** Generally unstable traffic flow with rapidly fluctuating speeds and flow rates. There are short headways, low maneuverability, and low driver comfort. Average speed is 35 mph with considerable delays.
  
- F-** Constrained traffic flow indicative of traffic at roadway capacity. Speed and flow may drop to zero with high densities. Average speed is less than 25 mph with considerable delays.

See **Exhibit 1-3** for a map depicting the level of service in the Sonoma 101 North Bay Corridor from Petaluma to Windsor. These conditions have resulted in:

- Frequent backups and other delays even during off-peak hours.
- Increasing travel times for users, based on the declining traffic flow.
- Declining vehicular efficiency based on excessive fuel consumption when vehicles are stuck in the frequent stop and go traffic.

Intersection LOS

Level of service analyses have been conducted for selected intersections within the project area as well, based on 1998 A.M. and P.M. peak hour volumes. The LOS for unsignalized intersections is defined as a function of average total delay. The descriptions below illustrate what different levels of LOS at unsignalized intersections mean:

<b>Level of Service</b>	<b>Average Total Delay (expressed in seconds of delay per vehicle)</b>
A	≤ 5
B	>5 and ≤ 10
C	>10 and ≤ 20
D	>20 and ≤ 30
E	>30 and ≤ 45
F	>45

The LOS for signalized intersections is defined in terms of stopped delay. The following descriptions describe what different levels of LOS at signalized intersections mean:

<b>Level of Service</b>	<b>Stopped Delay (expressed in seconds of delay per vehicle)</b>
A	≤ 5
B	>5 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 40
E	>40 and ≤ 60
F	>60

These analyses can be applied to **Table 1-3.1** on the next page.

**Table 1-3.1  
Existing Intersection Level of Services (1998)**

Location	LOS		TYPE
	AM	PM	
Rohnert Park Expressway/Southbound Route 101 Ramps	B	C	Signalized
Rohnert Park Expressway/Northbound Route 101 Ramps	B	E	Signalized
Wilfred Avenue/Redwood Drive	C	C	Signalized
Santa Rosa Avenue/Northbound Route 101 Ramps	A	B	Non-Signalized
East Todd Road O. C./East Todd Road	A	A	Non-Signalized
Yolanda Avenue/ Northbound Route 101 Ramps/Santa Rosa Avenue	D	C	Signalized
Hearn Avenue/Santa Rosa Avenue	B	C	Signalized
Hearn Avenue/Corby Avenue	D	C	Signalized
Corby Avenue/Southbound Route 101 Ramps	F	F	Non-Signalized
Baker Avenue/Northbound Route 101 Ramps	B	C	Signalized
Baker Avenue/Southbound Route 101 Ramps	A	C	Non-Signalized
Baker Avenue/Corby Avenue	B	B	Non-Signalized

This table identifies intersections within the project area and their level-of-service.

**Table 1-3.2** details the current and forecasted Annual Average Daily Traffic Volumes captured on Route 101 within the proposed project area. This data corroborates current and predicted increases in congestion.

**Table 1-3.2  
Current and Forecasted Annual Average Daily Traffic Volumes**

KP	Interchange Location	1996 AADT	2020 AADT
24.17 to 24.99	Wilfred Ave./Santa Rosa Ave.	100,000	128,000
24.99 to 26.62	Santa Rosa Ave/Todd Road	91,000	106,000
26.62 to 29.79	Todd Rd./Hearn Ave.	94,000	116,000
29.76 to 30.58	Hearn Ave /Baker Ave.	103,000	112,000
30.58 to 31.62	Baker Ave /Route 12	111,000	129,000

**Table 1-3.3** shows the estimated travel times (in both directions) for motorists travelling between the Route 116 interchange in the south and the River Road interchange in the north. The increases in travel times are presented here for three time periods in the future: 2000, 2015, and 2020.

**Table 1-3.3  
Projected Travel Times on 101  
Between Route 116 I/C and River Road I/C**

Direction	Year	A.M. Peak Hour	P.M. Peak Hour
		Travel Time (min)	Travel Time (min)
Northbound	2000	15.8	21.6
Southbound	2000	19.9	18.4
Northbound	2015	23.0	27.8
Southbound	2015	27.2	40.9
Northbound	2020	24.1	28.4
Southbound	2020	30.6	47.6

The traffic data and projections above clearly show a transportation issue of critical concern within the proposed project area. The construction of additional freeway lanes would be a key component in addressing current and projected traffic conditions. Widening attendant off and on-ramps within the project area would also provide adequate storage. Intersections, which, at most ramps are now controlled by stop signs, would require traffic signals, and additional lanes for left and right-turn movements. Moreover, to comply with Caltrans District 4 policy,

most on-ramps would need ramp metering signals and an additional lane for high occupancy vehicles (HOV) vehicles. Local streets would need to be modified to provide additional capacity and storage for on-ramp traffic as well.

**Accident Rates**

Accident rates for this section of Route 101 are higher than the statewide average for this type of facility. Rates are indicated in accidents per million vehicle kilometers (MVK) traveled. See **Table 1-3.4** for accident data for the three-year period from January 1, 1995 to December 31, 1997:

**Table 1-3.4  
Accident Rate 1/1/1995 - 12/31/1997**

KP	Number of Accidents			Accident Rate					
				Actual (MVK)			Average (MVK)		
	Tot	Fat	Inj	Fat	F+I	Tot	Fat	F+I	Tot
23.98 to 31.70	739	0	307	.000	<b>0.60</b>	<b>1.45</b>	0.011	<b>.42</b>	<b>1.07</b>

A total of 739 accidents occurred over this three-year period, although 307 people were injured. 68.4% of the accidents consisted of rear-end collisions, 17.1% due to hit objects, 8.3% were caused by sideswipes, and the remaining 6.2% were due to other violations. The probable cause for the majority of accidents is freeway congestion.

Roadside environment hazards

Another significant contributor to accidents within the project area is when errant vehicles leave the traveled way and strike fixed objects or overturn. Automobile accidents have been attributable to trees within the shoulder area and, during storms, matured trees growing along the corridor have caused property damage to adjacent residences. The CURE (Clean Up the Roadside Environment) Program, originally developed in 1967, is a product of the Caltrans Highway Safety Improvement Program. CURE, which is implemented through the Caltrans Maintenance program, was established to reduce accidents and minimize accident severity involving fixed objects. A clear recovery zone is desired at all locations along the traveled way as specified in the Highway Design Manual Section 309.1. The clear recovery zone is measured from the edge of traveled way or face of curb to the obstruction, although site-specific conditions such as volume, speed, alignment, weather, adjacent development and environmental conditions are evaluated when identifying the clear recovery zone. Studies have indicated that a clear recovery zone of 9 m (30 feet) from the edge of the traveled way permits about 80 percent of drivers leaving the roadway out of control to recover. The edge of traveled way is usually indicated on the pavement surface with a solid white line along the right side of the right (outermost) lane and does not include the shoulder.

Because many existing trees along Highway 101 in the project area occur within the identified 9 m (30-foot) clear recovery zone, such a standard would be difficult to achieve in light of the attendant environmental concerns. Thus on rural conventional highways such as 101 in Sonoma County, alternate minimum clear recovery zone standards of 6 m (20 feet) with no curbs and 0.5 m (1.5 feet) with curbs have been established. But, because enforcement of even these minimum standards will impact view sheds, guardrails will be installed to protect both travelers and trees. At this time, no tree takes by Caltrans Maintenance are anticipated as a result of the CURE program. Caltrans is sensitive to tree removal and will not remove trees without conscious consideration of all impacts. For additional information on visual impacts, see **Section 5.I**.