Transportation Concept Report

State Route (SR) 152

District 10

October 2015

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California Department of Transportation

Provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability.

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ABOUT THE TRANSPORTATION CONCEPT REPORT

System Planning is the long-range transportation planning process for the California Department of Transportation (Caltrans). The system planning process fulfills Caltrans' statutory responsibility as owner/operator of the State Highway System (SHS) (California Government Code (CGC) section 65086) by evaluating conditions and proposing enhancements to the SHS. Through System Planning, Caltrans focuses on developing an integrated multimodal transportation system that meets Caltrans' goals of safety and health; stewardship and efficiency; sustainability, livability and economy, system performance, and organization excellence.

The System Planning process comprises four parts: the District System Management Plan (DSMP) and project list, the TCR, and the Corridor System Management Plan (CSMP). The DSMP is a strategic policy and planning document that focuses on maintaining, operating, managing, and developing the transportation system. The TCR is a planning document that identifies the existing and future route conditions as well as future needs for each route on the SHS. The DSMP Project List is a list of planned and partially programmed transportation projects used to recommend projects for funding. The CSMP is a complex, multi-jurisdictional planning document that identifies future needs within corridors experiencing or expected to experience high levels of congestion. The CSMP serves as a TCR for segments covered by the CSMP. These System Planning products are also intended as resources for stakeholders, the public, and partner, regional, and local agencies.

TCR Purpose

California's SHS needs long range planning documents to guide the logical development of transportation systems as required by CGC section 65086 and as necessitated by the public, stakeholders, and system users. The purpose of the TCR is to evaluate current and projected conditions along the route and communicate the vision for the development of each route in each Caltrans District during a 20 to 25 year planning horizon. The TCR is developed with the goals of safety and health, improving stewardship, efficient, sustainable and livable communities, while promoting economic growth and high system performance through organizational excellence in planning the corridor. This is accomplished through integrated management of all aspects of the transportation network, including the highway, transit, pedestrian, bicycle, freight, operational improvements and travel demand management components of the corridor.

STAKEHOLDER PARTICIPATION

The State Route (SR) 152 TCR employed an outreach strategy consistent with local Metropolitan Planning Organization (MPO) and Regional Transportation Planning Agency (RTPA) outreach conducted with the development of the Overall Work Program (OWP). This strategy avoids duplicative effort, and reduces public confusion as to the aims of local and regional transportation planning. As the OWP intends to meet federal requirements outlined in 23 Code of Federal Register 450.314, and in the Moving Ahead for Progress in the 21st Century Act (MAP-21), external stakeholder needs can be addressed by local partner outreach efforts related to the OWP. Development of the TCR includes initial outreach to internal partners—these would be traffic operations, traffic safety, project management, maintenance, environmental support, as well as others.

EXECUTIVE SUMMARY

This TCR reports the evaluation and analysis of State Route (SR) 152 for the period of 2013 to 2040. The effort is to assess the progress made in meeting the needs of regional and interregional users of the SHS, both in providing the necessary capacity to move people and goods quickly, and in upgrading the facilities' operation in order to provide the safest and most efficient means of travel, all within Caltrans' commitment to sustain and maintain the existing system.

The SR 152 corridor provides three important transportation services in the State of California. It serves as a goods movement route connecting the San Joaquin Valley to the Salinas Valley (Central Coast) and the Southern San Francisco Bay (South Bay); it provides a commuter route from affordable housing locations in Merced County to higher rent employment locations in Santa Clara and Monterey Counties; and it provides recreation and tourist access between the South Bay, Monterey, San Joaquin Valley, and the Sierra Nevada Mountains.

SR 152 connects the major north to south corridors of United States Highway (US) 101 to Interstate (I) 5 and SR 99 together. West to east, the route originates at SR 1 in Watsonville and ends at SR 99 in Madera County south of Chowchilla. Within District 10, SR 152 runs through Merced County between Santa Clara and Madera Counties. SR 152 is part of the National Highway System (NHS). As a truck freight route, SR 152 connects three National Truck Network (NTN) routes—US 101, I-5 and SR 99, and, within District 10 is designed to meet the requirements of the Surface Transportation Assistance Act (STAA), and is designated a Terminal Access (TA) route.

Efforts in District 4 to upgrade the route throughout Santa Clara County may provide impetus to increase the capacity of SR 152 in Merced County. Current efforts propose to provide a four lane freeway bypass of the existing route in Gilroy, and to provide a truck climbing lane over Pacheco Pass. These two efforts once completed will enhance SR 152's role as a goods movement route serving the South Bay via US 101.

SR 152 is part of the Interregional Road System (IRRS), and is built to expressway standards, except for conventional highway configuration within the City of Los Banos. Highways on the IRRS have a concept level of service (LOS) of D in the urban areas along the route, and of C in rural areas. For purposes of analysis, SR 152 was divided into 10 homogenous segments. Of those 10 segments, four will have a deficient concept LOS by 2040 (segments 1, 2, 4, and 5).

There is a need to expand the facility from four lanes to six on Segments 1 and 2 (between Santa Clara County and I-5). The effort is not included as a Tier I or Tier II project in the RTP. Currently, there are no proposed operational improvements for Segments 1 and 2. Given the proposal to provide a truck climbing lane on the Santa Clara side, there may be a future need to provide additional auxiliary lanes within the mountainous grades of Segment 1. For Segments 4 and 5 (between the Merced Community College (MCC) entrance and Ward Road in the City of Los Banos), the proposed Los Banos Bypass (LBB) is an effort to upgrade the facility to expressway, and to bypass and relinquish the conventional highway facility.[1]

Two projects to install median barriers on Segment 1 are programmed, as are two projects to update and improve pedestrian facilities on Segments 4 and 5.

The SR 152 corridor currently lacks opportunities to provide alternative transportation. The highway is designated as a Class III bicycle facility, but lacks connection to a wider bicycle network. Pedestrian access is limited to the portion of SR 152 within the City of Los Banos, but lacks Americans with Disabilities Act (ADA) compliant ramps. Transit service in and east of Los Banos is adequate with service provided by three distinct routes.

[1]Merced County Regional Transportation Plan, 2014

Concept Summary

The concept rational is based on two factors: (1) the minimum LOS tolerable for peak hour conditions, and (2) the type of facility necessary to provide the concept LOS. The IRRS is a system of interregional state highway routes outside urbanized areas that provide access to, and links between the State's economic centers, major recreational areas, and urban and rural regions. The concept LOS for an IRRS route is C in rural areas, and D in urban areas.

The reduced speed limit and the traffic signals on Segment 4 (MCC to Mercey Springs Road (SR 165) and Segment 5 (Mercey Springs Road (SR 165) to Ward Road) will generate a reduced LOS compared to the rural expressway segments if there were no difference in the traffic volume. However, the urban segments generate a higher traffic volume, and have a deficient LOS in the Base Year (BY) of 2014.

By the horizon year (HY) (2040), Segments 1 and 2, between I-5 and the Santa Clara County line will be deficient. The proposed action is expansion from four lanes to six lanes. However, Segment 1 has a steep grade in mountainous terrain, and might attain concept LOS with the benefit of an operational improvement.

Proposed Projects and Strategies:

The only proposed capacity increasing project on SR 152 is the LBB. Conceptually, the project extends the expressway alignment of SR 152 northwards around Los Banos, with relinquishment of the conventional highway (Segments 4, 5 and 6). The project is identified in the RTP as partially constrained, and to be built in two stages. The first stage is to construct an expressway connection between Santa Fe Avenue and Mercey Springs Road (SR 165). The second stage is to extend the expressway from the terminus of Stage I at SR 165 westwards onto the existing expressway somewhere near the intersection of SR 152 and Volta Road. The tentative start date is 2023 for Stage I and 2033 for Stage II. Once completed, the expected outcome is a reduction in the interregional traffic, specifically trucks, on the local main street, Pacheco Boulevard, and an overall improvement in corridor performance.[2]

There are no programmed or planned projects to address the deficiency for Segments 1 and 2. The current facility is a four lane expressway. Modeling suggests expansion to a six lane facility might be needed, but the need may also be addressed by the installation of auxiliary lane on the steeper grades. An effort by the Santa Clara Valley Transportation Authority (VTA) to improve the SR 152 corridor on the Santa Clara side of Pachecho Pass includes a proposed truck climbing lane, which may further aggravate conditions on the highway.[3]

Currently there are four active projects for SR 152. Two are safety projects for Segment 1—the first, which should go into construction in 2015, is to install a median barrier between PM R0.0 to R 2.4; and the second is a to install a median barrier from PM R2.4 to PM R 6.0. The other two concern Americans with Disabilities Act (ADA) ramp upgrades and sidewalk extensions on Segments 4 and 5.[4]

Since 2004, an effort to manage access within the City of Los Banos has been in place. The *Los Banos Access Management Plan* established a list of operational improvements for Pacheco Boulevard that have yet to be implemented—these include median barriers to reduce left turns across traffic, signals, and intersections wide enough to accommodate 'U' turns.

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[2] Merced County RTP 2014. Earlier projects included an ultimate freeway design that is not in the current RTP.

[3] VTA, Trade Corridor Summary Report September 30, 2010

[4] Caltrans, District 10 SHOPP and Minors 310 Operational Improvement Program list, October 1, 2013 p. 3

CONCEPT SUMMARY					
Segme	Segment Description	Existing Facility	20-25 Year Capital Facility Concept	20-25 Year System Operations and Management Concept	Post 25 Year Concept
1	Santa Clara County line to SR 33 North (N) (Gonzaga Road)	Four Lane Expressway	Six Lane Expressway	Truck climbing or truck deceleration lanes	Six Lane Expressway
2	JCT SR 33 N (Gonzaga Road) to I-5	Four Lane Expressway	Six Lane Expressway	Not Applicable	Six Lane Expressway
3	I-5 to College Entrance	Four Lane Expressway	Four Lane Expressway	Not Applicable	Four Lane Expressway
4	College Entrance to SR 165	Four Lane Conventional Highway	Four Lane Expressway	7th Street Pedestrian Overcrossing – conforming to current ADA requirements	Four Lane Expressway
5	SR 165 to Wards Ferry Road	Four Lane Conventional Highway	Four Lane Expressway	Not Applicable	Four Lane Expressway
6	Wards Ferry Road to Santa Fe Grade Road	Four Lane Expressway	Four Lane Expressway	Not Applicable	Four Lane Expressway
7	Santa Fe Grade Road to JCT SR 33 South (S)	Four Lane Expressway	Four Lane Expressway	Not Applicable	Four Lane Expressway
8	JCT SR 33 S. to SR 59	Four Lane Expressway	Four Lane Expressway	Not Applicable	Four Lane Expressway
9	SR 59 to Madera County line	Four Lane Expressway	Four Lane Expressway	Not Applicable	Four Lane Expressway

Efforts to increase and enhance active transportation in the corridor are as follows. Proposed improvements for bicycle travel are conversion from Class III to Class II bicycle lanes along Pacheco Boulevard in Los Banos between SR 165 and West I Street (it would be desirable to see this facility as well as sidewalks extended further to MCC, but this is not in the current plan).[5] ADA ramp improvements are proposed for specified locations along Pacheco within Los Banos. There has been a recent change in transit service provided to Los Banos, effectively merging three service lines into two.

[5] *Merced County Regional Bicycle Transportation Plan*, 2008, pp. 26-27

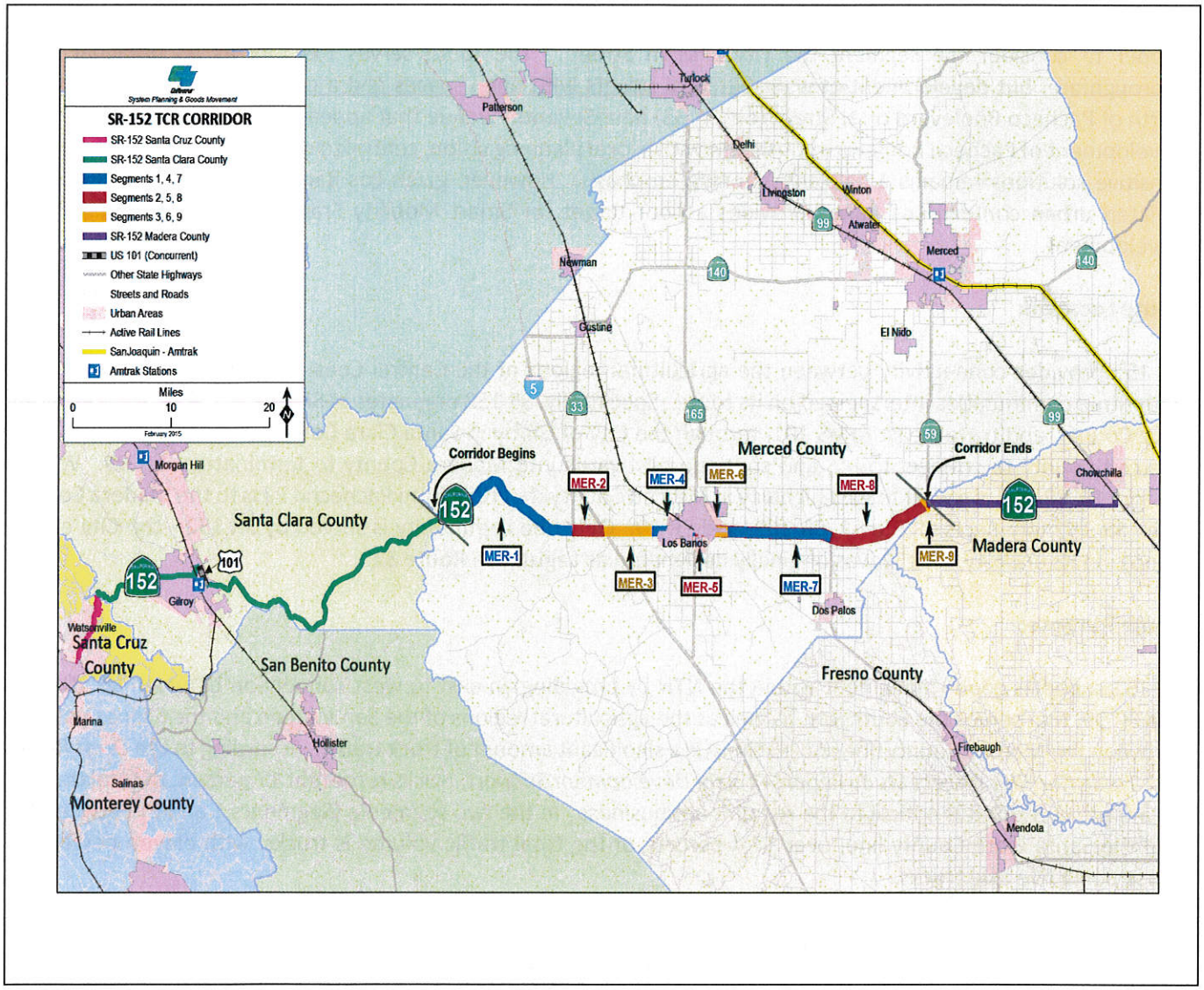
CORRIDOR OVERVIEW

ROUTE SEGMENTATION

Segment	Location Description	County_Route_Beg. PM	County_Route_End PM
1	Santa Clara County line to JCT SR 33 N	MER_152_R0.000	MER_152_R13.237 Equates to 11.270E
2	JCT SR 33 N. to I-5	MER_152_R13.237 Equates to 11.270E	MER_152_13.848
3	I-5 to College Entrance	MER_152_13.848	MER_152_17.79
4	College Entrance to SR 165	MER_152_17.79	MER_152_21.272
5	SR 165 to Wards Ferry Road	MER_152_21.272	MER_152_22.252
6	Wards Ferry Road to Santa Fe Road	MER_152_22.252	MER_152_23.915
7	Santa Fe Road to JCT SR 33 South (S.)	MER_152_23.915	MER_152_R32.351
8	JCT SR 33 S. EB Off-ramp to NB SR 59	MER_152_R32.351	MER_152_R40.672
9	EB Off-ramp to NB SR 59 to Madera County line	MER_152_R40.672	MER_152_R40.949

Division of SR 152 followed District 10 practice. SR 152 was divided into nine segments to allow evaluation of their performance. Segments conformed to land use planning agency boundaries—either Merced County or the City of Los Banos, intersections with other SHS routes, truck route designation, gradient or terrain, highway facility and analysis type, or increases in ten percent or more in daily, or peak hour traffic volumes.

Segment 1 begins at the Santa Clara County line and ends at SR 33 North (N), this segment is heterogeneous, as some portions of the segment may have grades more suitably classified as mountainous, but cannot be adequately analyzed employing the current planning softwares. Segment 2 begins at SR 33 N, and ends at I-5. Segment 3 extends from I-5 through rural farmland and ends at the signalized entrance for MCC. Segment 4, from the MCC entrance to Mercey Springs Road (SR 165), the segment is signalized throughout, and within the city limits of Los Banos. Segment 5 begins at Mercey Springs Road (SR 165), and ends at Ward Road, the segment is signalized throughout, and within the city limits of Los Banos. Segment 6, from Ward Road to Santa Fe Grade is within the city limits of Los Banos but is unsignalized at Santa Fe Grade. Segment 7, from Santa Fe Grade, to SR 33 S, travels through rural farmland. Segment 8 between SR 33 S and SR 59 interchange remains in rural farmland. Segment 9 from SR 59 to the Madera County line, remains in rural farmland.



ROUTE DESCRIPTION

As an IRRS route, SR 152 is conceived of as an expressway, and was constructed as such with the exception of the portion in the City of Los Banos. Efforts to upgrade Segments 4 through 6 to expressway have been ongoing. Segments 1 and 2 are expressway with a posted speed limit of 65 miles per hour (MPH), while the rest of the rural expressways have a posted speed limit of 55 MPH. Within the City of Los Banos, the conventional highway has a maximum posted speed of 40 MPH, along with thirteen signalized intersections.

With the development of the new Interregional Transportation Strategic Plan (ITSP), there has been a shift in planning emphasis for SR 152. In the earlier ITSP (1997) SR 152 in its entirety was addressed as a High Emphasis Focus Route. The revised draft ITSP addresses SR 152 as a goods movement corridor but only between US 101 and I-5. At this time, it is unclear how the change in transportation planning emphasis might affect SR 152 between I-5 and SR 99 as to concept LOS or concept facility.

Throughout its extent, SR 152 is designated a TA truck route consistent with the provision of STAA. A portion of the route, between SR 33 S and SR 165 is part of the extra legal load network (ELLN), which is a permit designated route for the transport of loads up to 20 feet in height, but not exceeding legal weight restrictions.

Although Segments 4 through 6 are within the City of Los Banos, and form the commercial strip, it may not be proper to consider the segment the city's 'Main Street'. The route serves the City as its principal local thoroughfare, but development of walkable local streets with open spaces and a community center are found north of Pacheco Boulevard on H Street (old SR 33) near Seventh Avenue that appear to serve as this locus. Still, development of Pacheco Boulevard consistent with a local planning vision, central to complete streets and context sensitive solutions remains a Caltrans planning emphasis. However, given Los Banos' rural surroundings, and isolated urban context, Los Banos provides a poor target for Smart Mobility Framework improvements and development.

Route Location:

SR 152 provides connectivity between the agricultural regions of the Central Coast and the San Joaquin Valley with three communities interspersed on its route. Specifically, SR 152 originates at SR 1 near Watsonville in Santa Cruz County, and travels east to US 101, through the City of Gilroy in Santa Clara County, over Pacheco Pass into Merced County to connect to I-5, and continue eastwards into Madera County to terminate at SR 99. Within District 10, SR-152 is a west to east highway in Merced County that runs from Pachecho Pass to the Madera County line. SR 152 intersects SR 33, I-5, SR 165, and SR 59. Only one community is served by SR 152—the City of Los Banos. In its entirety, SR 152 was originally designated as Legislative Route 32.

Route Purpose:

SR 152 supports goods movement within the NTN by providing an east to west connection between US 101, I-5 and SR 99, that serves the South Bay, as well as the agricultural regions of the San Joaquin and the Salinas Valleys. Between the Merced County line and I-5 there is a significant amount of truck traffic. According to the *Draft Route 152 Trade Corridor Project Study Report-Project Development Support,* trucks represent 17 percent of total traffic.[6] As a trade corridor it is critical to the region's agribusiness. In the two segments (Segments 1 and 2) between I-5 and the Santa Clara County line, over 17.4 percent of the total traffic volume is trucks, with eleven percent of those being five axle trucks.

A large proportion of workers in Los Banos work outside of the city. Of the 10,638 work commute trips originating from the City of Los Banos—46 percent (4,820) were to jobs located in Los Banos; 40 percent (4,253) commuted to the west on SR 152, and 8 percent (855) traveled east on SR 152, with the remaining 6 percent (710) commuted on SR 165.[7]

Furthermore the SR 152 corridor has an important role in diverting recreation and tourist traffic away from the congested freeway corridors in the Bay Area, by providing access to the South Bay from the south or the Monterey Peninsula from the east, as well as providing a reverse commute from those destinations to the San Luis Reservoir, local wildlife refuges, or the Sierra Nevada mountains. Annual daily records of daily peak hour traffic data for SR 152 have reported weekly peak hours on weekends that do coincide with the work commute. Occasionally a peak hour recorded on a weekend will be the highest peak hour volume reported for a year.

Major Route Features:

With SR 152 crossing the Coast Range at Pachecho Pass (1,368 foot elevation), there is a need to segregate slower trucks from the rest of the traffic. The average grade on segment 1 is 1.7 percent and can, in locations, exceed 3 percent for an extended distance. Currently, there is a westbound uphill truck climbing lane, but there is no auxiliary lane present on the downhill side.

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[6] *Route 152 Trade Corridor Project PSR-PDS,* pp. 8

[7] Census Transportation Planning Products Program, 2006-2010.

As a four lane expressway, the SR 152 corridor in Merced is uniform except for the four lane conventional highway segment in Los Banos. The conventional highway facility produces a bottleneck reducing trip reliability and extending travel time. With thirteen signalized intersections, traffic movement is further impaired by slow truck acceleration. The LBB is expected to correct this by extending a four lane expressway to the north around the city.

Route Designations and Characteristics

ROUTE DESIGNATIONS & CHARACTERISTICS									
Segment #	1	2	3	4	5	6	7	8	9
FES	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
STRAHNET	No	No	No	No	No	No	No	No	No
State Scenic Highway	Yes	Yes	No	No	No	No	No	No	No
IRRS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
High Emphasis	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Focus Route	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Federal Functional Classification	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial	Other Principal Arterial
Goods Movement Route	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Truck Designation	TA	TA	TA	TA	TA	TA	TA	TA	TA
Rural, Urban, Urbanized	Rural	Rural	Rural	Urban	Urban	Urban	Rural	Rural	Rural
Metropolitan Planning Organization	MCAG	MCAG	MCAG	MCAG	MCAG	MCAG	MCAG	MCAG	MCAG
Regional Transportation Planning Agency	MCAG	MCAG	MCAG	MCAG	MCAG	MCAG	MCAG	MCAG	MCAG
Local Agency	Merced County	Merced County	Merced County	City of Los Banos	City of Los Banos	City of Los Banos	Merced County	Merced County	Merced County
Air District	SJVAPCD	SJVAPCD	SJVAPCD	SJVAPCD	SJVAPCD	SJVAPCD	SJVAPCD	SJVAPCD	SJVAPCD
Terrain	Rolling-Mountainous	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat
Key:	FES = Freeway and Expressway System; NHS = National Highway System; IRRS = Interregional Road System; SJVAPCD = San Joaquin Valley Air Pollution Control District; TA = Terminal Access Truck Route								

COMMUNITY CHARACTERISTICS

The City of Los Banos and its immediate surroundings are considered an urban area designated by the Federal Highways Administration. Los Banos is a city of 35,972 in Merced County, with a population of 255,793. For Los Banos the current racial profile of Los Banos is 84.1 percent white, 3.8 percent African American, 3.2 percent Asian American, 1.4 percent American Indian or Alaskan Native, and 0.4 percent Native Hawaiian; with current ethnic profile of 64.9 percent Hispanic or Latino. The demographic profile of Los Banos nearly reflects the racial and ethnic profile of Merced County, with the exception that the percentage of Hispanics or Latinos is almost 10 percent higher in the City. Although both Los Banos and Merced County have some of the highest percentages of

total population below the federal poverty line in the State, the median household income in Los Banos ($49,131) is almost $6,000 greater than Merced's ($43,314), although both are below the median household income for California ($58,328). This divergence in median household income between the city and the county likely reflects a larger percentage of residents in Los Banos that work in the Central Coast or Bay Area.[8]

Although there is a clear connection between population growth in Los Banos and increases in the interregional commute over Pacheco Pass, the contribution the San Joaquin Valley region makes to recreational traffic is more difficult to assess. With the elevated poverty found in the San Joaquin Valley, and particularly in Merced County, the contribution to recreational travel on SR 152 would be expected to be slight in comparison to the flow originating from the Bay Area.

LAND USE

SR 152 is subject to two General Plans (GP), the Merced County GP and the City of Los Banos GP, as well as two specialized GPs for the San Luis Reservoir State Recreation Area and the California State Water Project. The Merced County GP applies to all rural segments of SR 152, with land uses consistent with rural low density housing, agriculture, and open lands. These designations provide little impediment to future expansion of highway capacity should it be needed. The proposed alignment for the LBB runs through both GPs. Although delineated in the Los Banos GP land use map[9], the route and any set asides are not depicted in the Merced County GP land use map.[10]

Some consideration needs to be taken of development encroaching onto SR 152. Although recovery from the economic downturn in 2007 is progressing, there has not been evidence of a take-off in new construction or planning approvals of new subdivisions in Merced County. Much of the SR 152 corridor outside of Los Banos is designated agriculture or pasture land and remains undeveloped. Within Los Banos, the corridor is built up to where additional development is unlikely to encroach on the existing corridor. Along the proposed LBB set aside, there may be a need to provide for parallel frontage roads that feed into the expressway at designated intersections, or other provision made for roads to cross the expressway, in anticipation of continued growth.

SYSTEM CHARACTERISTICS

As a route on the FES and IRRS, SR 152 currently is a four lane expressway facility within a rural context. For the HY of 2040, Segments 4 through 6 serve the City of Los Banos, and will retain conventional highway features, with relinquishment to local control and ownership. By the HY the facility will become expressway, reflecting the installation of the LBB. Increasing traffic volumes on Segments 1 and 2 (Santa Clara County line to I-5) may entail an increase in capacity to six multiple use lanes from four. Other than programmed safety improvements on Segment 1, the overall facility will require little in the way of new operational improvements. Upgrade and expansion of the ITS infrastructure is anticipated during this period, and is the likely source of operational improvements.

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[8] American Community Survey, 2006-2010.

[9] City of Los Banos General Plan Land Use Map, 2007

[10] General Plan Draft land use Maps: 2030 Merced County General Plan Land use Policy Diagram,

SYSTEM CHARACTERISTICS									
Segment #	1	2	3	4	5	6	7	8	9
Existing Facility									
Facility Type	E	E	E	C	C	E	E	E	E
General Purpose Lanes	Four	Four	Four	Four	Four	Four	Four	Four	Four
Lane Miles	52.948	10.312	15.786	13.928	3.92	6.652	31.696	33.284	1.108
Centerline Miles	13.237	2.578	3.942	3.482	0.98	1.663	7.924	8.321	0.277
Median Width (feet)	46	0 to 52	0 to 12	0 to 12	12 to 99	70 to 99	70 to 99	22 to 52	22 to 52
Median Characteristics	Grassy Median	Grassy Median	Grassy Median	Varies CTL or LT	Varies CTL or LT	Grassy Median	Grassy Median	Grassy Median	Grassy Median
Auxiliary Lanes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Passing Lanes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Truck Climbing Lanes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Distressed Pavement	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current RW (min. to max.)	180 to 250	20 to 320	250 to 320	68 to 150	80 to 170	200 to 320	200 to 320	200 to 320	200 to 320
Concept Facility									
Facility Type	E	E	E	E	E	E	E	E	E
General Purpose Lanes	Six	Six	Four	Four	Four	Four	Four	Four	Four
Lane Miles	79.422	15.468	15.786	13.928	3.92	6.652	31.696	33.284	1.108
Centerline Miles	13.237	2.578	3.942	3.482	0.98	1.663	7.924	8.321	0.277
Aux Lanes	Yes	No	No	No	No	No	No	No	No
Passing Lanes	Yes	No	No	No	No	No	No	No	No
Truck Climbing Lanes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TMS Elements									
TMS Elements (BY)	None	None	None	TMS, CMS, CCTV, RWIS, EMS, Traffic Signals	TMS, CCTV, RWIS, EMS, Traffic Signal, HAR	None	None	None	None
TMS Elements (HY)	TMS, CMS, CCTV, RWIS	TMS, CMS	TMS, CMS, CCTV, RWIS, EMS	TMS, CMS, CCTV, RWIS, EMS Traffic Signal, HAR	TMS, CMS, CCTV, RWIS, Traffic Signal	TMS	CMS, CCTV, WIM	TMS	TMS

C = Conventional Highway; E- = Expressway; RW = right-of-way; CTL = Center Turn Lane; LT = Left Turn; TMS = Transportation Monitoring Station; CMS = Congestion Monitoring Station; CCTV = Closed Circuit Television; RWIS = Roadway Weather Information System; EMS = Extinguishable Message Sign; HAR = Highway Advisory Radio; WIM = Weigh in Motion

BICYCLE FACILITY

Segment	BICYCLE FACILITY							
	Post Mile	Location Description	Bicycle Access Prohibited	Facility Type	Outside Paved Shoulder Width	Facility Description	Posted Speed Limit (MPH)	Parallel Facility Present
1	R0.000 to R13.237/11.270	Santa Clara County line to JCT SR 33 and N. Gonzaga Rd.	No	Class III	8	E	65	No
2	R13.237/ 11.270-13.848	JCT SR 33 N. and Gonzaga Rd. to I-5	No	Class III	4 to 8	E	65	No
3	13.848 and 17.79	I-5 to College Entrance	No	Class III	0 to 8	E	35-65	No
4	17.79 and 21.272	College Entrance to SR 165	No	Class III	4 to 8	C	35-50	No
5	21.272 and 22.252	SR 165 to Wards Ferry Rd.	No	Class III	8	C	40-50	No
6	22.252 and 23.915	Wards Ferry Road to Santa Fe Rd.	No	Class III	0 to 8	E	65	No
7	22.252 and 23.915	Wards Ferry Road to Santa Fe Rd.	No	Class III	0 to 8	E	65	No
8	R32.351 and R40.672	JCT SR 33 and EB Off-ramp to NB SR 59	No	Class III	8 to 10	E	65	No
9	R40.672 and R40.949	EB Off-ramp to NB SR 59 to Madera County line	No	Class III	8 to 10	E	65	No
E = Expressway; C = Conventional Highway								

The SR 152 corridor is bicycle accessible, and is designated as a Class III bicycle facility. Within the City of Los Banos (Segments 4 through 6) there are proposed three projects that may improve bicycle mobility within the corridor: a Class II bicycle lane from the Los Banos College to the San Luis Canal; extension of the Rail Trail Class I bicycle path from Ward Road to San Luis Canal; and, a class II bicycle lane from the Rail Trail to Ward Road.[11] The current bicycle LOS for all segments of SR 152 was F. Caltrans has adopted the criteria that bicycle LOS be equal to or better than the facility's LOS for automobiles.

PEDESTRIAN FACILITY

The only pedestrian facility in the SR 152 corridor is on Segments 4 and 5 in Los Banos. Sidewalks occur on both sides of the street except for the portion between Badger Flat Road and West I Street where the sidewalk is on the south side; and, between Place Road and the signalized entrance to Home Depot with sidewalks only on the south side. The pedestrian LOS was E for both segments. Caltrans has adopted the criteria that pedestrian LOS be equal to or better than the facility's LOS for automobiles.

[11] *2006 City of Los Banos Bicycle Commuter Plan,* pp. 27 and 28

PEDESTRIAN FACILITY								
Segment	Post Mile	Location Description	Pedestrian Access Prohibited	Sidewalk Present	Sidewalk Width (ft.)	Crossing Distance (ft.)	Facility Description	Role
1-3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	17.79 to 21.272	College Entrance to SR 165	No	Yes	6 - 12	68 - 150	North, Intermittent	Local
	19.618 to 21.272	West I St. to SR 165	No	Yes	6 - 12	68	South, Complete	Local
5	21.272 to 21.610	SR 165 to Miller Lane LT	No	Yes	6 - 9	68 - 80	Intermittent	Local
	21.610 to 21.946	Miller Lane to Home Depot	No	Only on south side	6 - 9	80 - 100.	Intermittent	Local
	21.946 to 22.252	Home Depot to Ward Rd.	No	Only on north side	6 - 9	100	Intermittent	Local
6-9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Currently, there are no local plans to fill in the sidewalk gaps. There are two programmed ADA curb ramp improvement projects listed in the District 10 Status of Projects, as well as a project to reconstruct the pedestrian overcrossing at Seventh Street to current ADA design standards.

TRANSIT FACILITY

Deviated fixed route transit and paratransit services are available—the two fixed route buses serve Los Banos throughout the work day, and the paratransit service provides a once weekly connection to Turlock on SR 165. Park and Ride facilities are available at the Walmart parking lot and the Los Banos Airport. For 2014, LOS for transit was found to be at E. Although Caltrans has not adopted a performance standard for transit LOS, unlike bicycle and pedestrian LOS, it would be desirable to have an LOS of C or better.

The California High Speed Rail Authority has selected a route for the State High Speed Rail. The route will connect the Bay Area with Southern California, crossing the Coast Mountain Range at Pacheco Pass and the Tehachapi Mountains at Tehachapi Pass. This route will follow the SR 152 corridor, but will do little to address local commute patterns as no stop is planned in the corridor.[12]

[12] http://www.hsr.ca.gov

TRANSIT FACILITY													
Segment	Mode & Collateral Facility	Name	Route End Points	Ridership (mo.)	Headway (Mins)	Operating Period	ITS & Technology	Stations		Amenities	Bikes Allowed on Transit	Location Description	# Parking Spaces
								Cities	Post miles				
1-3	No public transit service or stops.												
4	Intercity Bus	LB	Com-munity Center	2810	120	0538 2120	GPS real time	Los Banos, Dos Palos, Merced	21.272	No	Yes	Los Banos Community Center	~50
	Local Bus	LB1	PM 17.79 to PM 21.272	1483	50	0727 to 2112	GPS real time	Los Banos	21.272	No	Yes	College; Walmart	~50
	Local Bus	LB2	PM 17.79 to PM 21.272	771	110	0617 to 2151	GPS real time	Los Banos	21.272	No	Yes	College; Walmart	~50
	Park and Ride	Leased lots	Los Banos Airport	N/A	N/A	N/A	N/A	Los Banos	~19.618	Parki ng	N/A	Los Banos Airport	N/A
	Park and Ride	Leased lots	Walmart	N/A	N/A	N/A	N/A	Los Banos	~18.882	Parki ng	N/A	Walmart	N/A
5	Local Bus	LB1	PM 21.272 to 23.915	1483	50	0727 to 2112	GPS real time	Los Banos	PM 21.272	No	Yes	Kmart, Food 4 Less, Ward Road	N/A
	Local Bus	LB2	PM 21.272	771	110	0617 to 2151	GPS real time	Los Banos	PM 21.272	No	Yes	Kmart	N/A
6-9	No public transit stops.												

FREIGHT

FREIGHT					
Segment	Facility Type/Freight Generator	Location	Mode	Name	Major Commodity Industry
1-2	N/A				
3	Tomato Processing Plant	13448 Volta Road	Rail	Morning Star	Tomato Products
	Tomato Processing Plant	9950 S. Ingomar Grade Rd.	Rail	Ingomar Packing	Tomato Products
4	Dairy Processing Plant	1155 E. Pacheco Blvd., Los Banos	Truck	California Dairies Inc.	Milk Products
	Cheese Processing Plant	429 H St., Los Banos	Truck	Peluso	Cheese Products
	Meat Processing	1312 West Pacheco Blvd	Truck	Abattoir	Meat Products
	Truck Freight	1175 Pacheco Blvd. #175	Truck	California Milk Transport Inc.	Milk Products
5	Truck Freight	1955 E Pacheco Blvd.	Truck	A and A Transport Company Inc.	General Freight
	Truck Freight	2523 E. Pacheco Blvd.	Truck	Coast Xpress	General Freight
6	Truck	2657 Pacheco Blvd.	Truck	Meza Brothers	Truck Repair
	Truck Freight	24320 E Pacheco Blvd.	Truck	Botelho Bros. Trucking	General Freight
7-9	N/A				

Currently, SR 152 is an important component for the interstate transport of agricultural goods from the Central Coast to the rest of the country. Upgrades to the corridor between US 101 and SR 156 in Gilroy will likely increase the volume of goods movement to and from the South Bay. Approximately 26 percent of the truck freight traveling to or from the South Bay travels by SR 152, compared to ten percent for SR 46, and 64 percent for

I-580.[13] SR-152's future share of freight is expected to grow. SR 152 serves as an interregional connection between the Central Coast and the San Joaquin Valley to more raw agricultural products to processing facilities. Prominent destinations include Volta, Los Banos, Turlock, and Fresno. As a freight corridor, SR 152 does not provide any direct links to air or rail, except for destination shared with SR 99 or I-5.

There are no planned projects to address the expected growth in truck volume on SR 152. It is unclear at this time whether the truck climbing lane proposed by VTA on the opposite side of Pacheco Pass will require installation of truck deceleration lanes or not, given the anticipated increase in truck volume. There may also be a need to improve the operations at the ramp from the southbound I-5 onto the westbound SR 152, as the off-ramp may not meet the federal truck turning template (at present truck volume is low, and the ramp can be avoided by exiting onto SR 33 to the north, and turning from there onto SR 152). The LBB may improve travel time efficiency, but at this time it is unclear what share of the freight volume this would apply to.

ENVIRONMENTAL CONSIDERATIONS

In Merced County, SR 152, aside from Segments 1 and 2, for much of its extent, occupies a reclaimed lake bed or the floodplain of the San Joaquin River in which both have been employed for agriculture since the 1870's. Within that context the likely environmental resources to be encountered would be wetlands, prehistoric and historic cultural resources, endangered, threatened, and sensitive biological species, and prime farmlands. With Segments 1 and 2 occupying the coast ranges, a different set of concerns arises—these would relate to endemic animals and plants, serpentine and ultramafic rocks with high heavy metal concentrations as well as naturally occurring asbestos, historic cultural resources, and wetlands.

Environmental Scan										
Segment	Cultural Resources	Floodplain	Hazardous Materials	Naturally Occurring Asbestos	Air Quality				Waters and Wetlands	Special Status Species
					Ozone	Particulate Matter (micron)		CO		
						2.5	10			
1	High	No	Moderate	Yes	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	Moderate	High
2	High	Yes	Moderate	Yes	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	Moderate	High
3	High	Yes	Moderate	No	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	High	High
4	Moderate	Yes	Moderate	No	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	High	High
5	Moderate	Yes	Moderate	No	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	High	High
6	Moderate	Yes	Moderate	No	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	High	High
7	High	Yes	Moderate to High	No	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	Moderate	High
8	Moderate	100 yr.	Moderate	No	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	Low	High
9	Moderate	100 yr.	Moderate	No	Non-Attainment	Non-Attainment	Non-Attainment	Unclassified	Low	High

[13] *Route 152 Trade Corridor Project PSR-PDS, East – West Truck Crossings*, pp. 6

CORRIDOR PERFORMANCE

The precision and accuracy of three variables determine the accuracy of measurements taken of corridor performance. These are the proportion of peak hour traffic occurring in the highest volume fifteen minute interval to the total peak hour volume (the peak hour factor or PHF); the proportion of Peak Hour to AADT (K); and, the proportion of peak hour commuters traveling in one direction to those traveling in the opposite direction (Directional Split or D). Over time, as a corridor serves regions with greater urban characteristics, the expectation is to have a PHF increase from a value of 0.88 to around 0.92; to have an increasing AADT; and to have a decreasing K. For instance, the rate of growth for AADT will exceed that for peak hour traffic volumes, because eventually the peak period of travel will exceed one hour. A decreasing D permits efficient use of all the facility's lanes, and indicates a balanced work commute in both directions.

There has been concern with the accuracy of Department traffic counts with their ability to measure traffic conditions. Throughout District 10, the values reported appear inconsistent with growth since the time of measurement. Original counts in some locations may have been estimated or verified twenty years ago or later. High peak hour volumes at anomalous hours have been reported suggesting errors in the recording equipment, and have been translated into elevated K values, similarly anomalously high D values have been obtained. For these reasons, the three variables, PHF, K, and D are estimated to be consistent with model default values, particularly for the HY, rather than those empirically derived.

LOS employs a qualitative measure of traffic congestion that relies in part upon both subjective, though repeatable observations of congestion as well as the ratio of the volume of traffic to the full capacity of a highway lane at a particular speed (V/C). Congestion is better measured by the underlying quantitative ratio of volume to capacity (V/C). LOS best serves as a comparison to a performance standard such as concept LOS, rather than as a performance measure, as the V/C might be quite variable between two segments though both may share the same LOS value.

VMT has replaced LOS as the statewide highway performance measure. An effort to measure segment VMT as a performance measure using past traffic data was undertaken. For the period 2003 to 2013, six of the nine segments reported a negative growth rate. Of the three that reported a positive growth rate, two (segments 4 and 5) occur within the City of Los Banos, and both show traffic growth rates above the population growth rate. Of those two, segment 5 reports a growth rate six times the population growth rate—this could be associated with the development of commercial shopping facilities along the portion of Pacheco Boulevard west of SR 165. Earlier decades reported a positive correlation between population growth and traffic growth for all segments, sometimes at levels six times the population growth (see table below).

Growth Rates in the SR 152 Corridor										
\Segment Period	1	2	3	4	5	6	7	8	9	Los Banos
1982-1992	6.35	7.72	6.58	5.51	5.58	5.38	6.12	4.46	4.46	1.05
1992-2003	5.97	4.93	4.22	1.48	1.23	1.99	1.68	2.30	2.08	1.05
2003-2013	-2.94	-0.95	-0.02	1.10	6.23	-0.26	0.11	-0.37	-0.50	1.02
2013-2040	2.32	2.03	1.46	1.10	2.87	1.89	2.46	3.33	2.21	1.01

At this time it is unclear what produced the negative correlation between traffic growth and population growth seen between 2003 and 2013. Although the period includes the recent recession, the downturn in traffic volume

occurs prior to 2007, and continues on into 2011. Positive growth (with exception of Segment 1) resumes for the period 2011-2013. By 2011, traffic volumes are equivalent to those seen in the late 1990's, which seems unlikely since the population of Los Banos at that time was smaller by approximately 14,000. The foreclosure crisis that hit the San Joaquin Valley did not seem to hit Los Banos as hard as other areas, but was estimated at approximately 35 percent.[14] The unemployment rate in Los Banos as of April 2014 has been 11.8 percent, which is almost in line with Merced County's unemployment rate of 11.6%. However this is below the reported rate of 21% for February 2012 and is also below the 12.3% reported in February 2006 before the start of the recession.[15] Without a large portion of the population moving away due to a foreclosure and relocating closer to work, and with a history of high unemployment, it would appear that the recession would have had little to do with the downturn in traffic volumes on SR 152. However, it is possible the economic downturn reduced the number of recreation trips per household as families were watching their pocketbooks, or that the recently employed have selected work closer to home.

What is notable about the corridor is the future annual growth rate for each segment: These range from 1.10 percent to 3.33 percent. Within Segments 1 and 2 between I-5 and the Santa Clara line, growth is estimate at above 2%; while segments 3 and 4, west of Los Banos to I-5 it is less than 1.5%; however, Segments 5, 6, 7, 8 and 9 (east of Los Banos to the Madera County line) show a growth rate of greater than 2% (with the exception of Segment 6).

This future projection seems to break with current trends, or suggests that intercity travel to Los Banos will exceed Los Banos' influence on interregional travel to the Central Coast and South Bay. This should be seen as a considerable development. The driver for AADT growth is the workday commute, these should be greatest within Los Banos (Segments 4 and 5) and the corridor to the west (Segments 1-3). Los Banos is too small an attractor to provide an interregional or intercity attraction to urban areas and counties to the east and south, especially when considering the availability of employment in the larger Cities of Merced, Turlock, and Fresno. At present, 40% of the current working population in Los Banos commutes west on SR 152, while 45% works within Los Banos. A large number of these commuters would need to shift to an eastward commute to achieve the level of traffic growth predicted in these projections. This would appear unlikely given wage disparities between the Bay area and Central Coast; and with the increased household expense incurred shifting from working near to home to farther away.

Taking into account the uncertainty regarding previous forecasts and traffic counts, the current forecast for Segments 1 and 2 becoming deficient by the HY is unreliable. However, this uncertainty suggests that the future forecast more likely underestimates future conditions. LOS for Segment 1 is projected to be E, and for Segment 2, is projected to be D, for the year 2040. This implies that the need for capacity expanding improvements to both facilities exists.

However, consideration needs to be given to not expand SR 152 to three general use lanes for Segments 1 and 2. For Segment 1 (between Pacheco Pass and SR 33) the HY LOS of E reflects the effect the steep grade has on traffic flow and may not be accurate since an auxiliary lane is present. A shortcoming of the software employed to calculate LOS is that it cannot assess LOS if there are passing lanes. If Segment 1 meets concept LOS in the HY, this would limit the advisability of expansion for Segment 2 (between SR 33 and I-5). Segment 2 is a short 2.5 mile segment with a 65 MPH speed limit, making expansion to three lanes problematic given the extent of transitioning from and back to two lanes at each end.

Given the inexactness of this analysis, further study is recommended for Segments 1 and 2.

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[14] "Nearly Thirty Homes off the Market, Have New Owners", Los Banos Enterprise, July 15, 2011

[15] "Los Banos Unemployment Ticks Up but Economy May Be Improving", Los Banos Enterprise, March 15, 2012

Corridor Performance										
Segment #		1	2	3	4	5	6	7	8	9
Basic System Operations										
AADT (2013)		28,000	24,700	25,000	30,000	33,500	19,000	18,700	16,100	15,200
AADT (2040)		52,000	43,000	36,500	41,000	72,000	31,500	36,000	39,000	28,000
AADT Growth Rate/Year		2.32	2.03	1.46	1.10	2.87	1.89	2.46	3.33	2.21
LOS Method		HighPlan	HighPlan	HighPlan	ArtPlan	ArtPlan	HighPlan	HighPlan	HighPlan	HighPlan
LOS (2013)		C	C	B	F	F	B	B	B	B
LOS (2040)		E	D	C	F (without project)	F (without project)	C	C	C	C
LOS Concept		C	C	C; D from PM 18.203	D	D	C	C	C	C
VMT (BY)		370,720	64,500	94,608	106,201	32,830	31,597	157,753	133,968	4,294
VMT (HY)		688,420	110,940	143,883	142,762	70,560	52,385	304,632	324,519	7,756
Truck Traffic										
Total Average Annual Daily Truck Traffic (AADTT) (BY)		4350	4350	4350	2800	2800	2800	2600	2450	3250
Total Average Annual Daily Truck Traffic (AADTT) (HY)		8100	7500	6500	4750	6000	4600	5000	5900	5900
Total Trucks (% of AADT) (BY)		15.5	17.4	18.1	9.2	8.4	14.7	13.9	15.2	21
Total Trucks (% of AADT) (HY)		15.5	17.4	18.1	9.2	8.4	14.7	13.9	15.2	21
5+ Axle Average Annual Daily Truck Traffic (AADTT) (BY)		2800	2800	2800	1550	1550	1550	1650	1700	2150
5+ Axle Average Annual Daily Truck Traffic (BY) (AADTT) (HY)		5200	4850	4150	2100	3350	2600	3200	4100	3800
5+ Axle Average Annual Daily Truck Traffic (as % of AADT) (BY)		0.10	0.11	0.11	0.05	0.05	0.082	0.09	0.11	0.14
5+ Axle Average Annual Daily Truck Traffic (as % of AADT) (HY)		0.10	0.11	0.11	0.05	0.05	0.082	0.09	0.11	0.14
Peak Hour Traffic Data										
Peak Period Length (Minutes):		15 to 30	15 to 30	15 to 30	15 to 30	15 to 30	15 to 30	15 to 30	15 to 30	15 to 30
Peak Hour Direction:		EB	EB	EB	EB	EB	EB	EB	EB	EB
Peak Hour Time of Day:		PM	PM	PM	PM	PM	PM	PM	PM	PM
Peak Hour VMT (BY):		37,064	6,450	9,737	10,620	3,283	3,160	15,824	13,397	429
Peak Hour VMT (HY):		68,832	11,094	14,388	14,276	7,056	5,238	30,463	32,452	776

The ambiguity in estimating current traffic volumes and future growth rates have likely hindered the transition of the LBB from a partially constrained project to a constrained project with a firm schedule. The value of the LBB is the project would address interregional truck traffic from SR 99 enroute to or from I-5 or US 101, reducing travel delay by eliminating the bottleneck created by the signalized conventional highway facility in Los Banos. With the issue of uncertain traffic numbers along with a freight perspective that truck trips on the SR 152 corridor predominantly originate from I-5 rather than SR 99, as expressed in the update of the Interregional Transportation Strategic Plan, justifying the benefit over the cost of the improvement may not be clearly provided. Unfortunately,

at this time, this matter can only be resolved by the collection of more accurate data or undertaking a new corridor study.

Truck volumes and their growth rates reflect changes in the overall AADT, rather than an independent projection. One of the issues with comparing truck volumes with traffic volumes is that fewer traffic count stations count trucks, than do those that count cars. The future truck volume is obtained by its proportion to the future volume. In the case of SR 152, this appears to yield reasonable estimates except in the case of Segment 4 which appears to be an underestimate. The same concerns and considerations apply to the five axle truck counts.

No bottlenecks are reported for the corridor. Although SR 152 is reported as the ninth most congested freeway in District 10 for 2011 based upon vehicle hours of delay at sixty MPH, it lacks a PeMS network upload from its traffic monitoring stations.[16]

Performance measurements for peak hour depend upon similar measurement practices as daily traffic and growth rates discussed above. Without the PeMS upload, information about peak hour average speed, and peak hour delay are unavailable.

[16] Mobility Performance Report 2011, Caltrans 2014

KEY CORRIDOR ISSUES

- Currently, SR 152 affords transport of local agricultural products to markets or processors, but is seen as an important goods movement connection to the Silicon Valley and other South Bay locations.

- Further housing growth in Los Banos will contribute to an increase in the interregional trips over the Pacheco Pass, into either the South Bay or the Central Coast.

- Recreational travel over SR 152 will likely continue to grow, the degree of this growth will depend upon both the population growth of the San Joaquin Valley and the growth in available disposable income.

- By 2030, segments 1 and 2 will be deficient. There are no projects listed in the MCAG 2014 RTP to address the future deficiencies on either segment. A six lane expressway or freeway should be considered.

- There is a need for a traffic study to assess the future impact of the proposed corridor improvements on SR 152 in Santa Clara County, and how these affect the overall corridor. These improvements may result in a the re-routing of a substantial number of truck trips away from the I-580 corridor onto SR 152, and necessitate additional upgrades to the segments to address freight needs.

- The planned construction of LBB will be in two stages the first occurring in 2023 and the second in 2033. The project bypasses the conventional highway bottleneck within the existing alignment within the city limits of Los Banos.

- There may be future changes in the planning emphasis placed on the SR 152 corridor. The current ITSP emphasized a corridor between I-5 to US 101, with a de-emphasis on the portion of the route between SR 99 and I-5

- Pertaining to Segments 4 through 6, lack of available right of way for expansion has contributed to congestion, and inability to install class II bicycle lanes. This along with a lack of coordination sustaining the existing access management plan, has made creating a streetscape consistent with complete streets and context sensitive solutions difficult.

CORRIDOR CONCEPT

CONCEPT RATIONALE

SR-152 is on the IRRS. Concept LOS for routes on the IRRS is D for segments in urban areas, this applies to Segments 4 through 6; and C for segments in rural areas this would apply to Segments 1 through 3 and 7 through 9. The intended facility for SR 152 is expressway. All segments except for Segments 4 through 6 are currently expressway.

All segments on SR 152 are four lanes. There is a need to expand to six lanes on Segments 1 and 2 between the Santa Clara county line and I-5. There is a proposed system upgrade to replace Segments 4 through 6 with a four lane expressway—the LBB. There are no plans for further upgrades to the system beyond 2040. The existing and proposed facility is consistent with planning objectives in both Districts 4 and 6.

Although the current Caltrans emphasis is upon system preservation and maintenance, a critical issue concerns the role that local interregional travel from Los Banos will have upon the local SHS in Southwest Merced County. With 40 percent of the local workforce reporting commutes to areas requiring travel via SR 152 west, this should be indicative of higher volumes on Segments 1, 2, 3 and 4. However, in recent years the traffic volumes on these segments have declined at a greater rate than others, and the decline cannot be explained by referring to the recent recession.

With this concern, there appears to be a need to expand the facility of Segments 1 and 2 to six lanes. Current analysis employing the forecast traffic conditions from the base year of 2013 to 2040 report that by the HY, Segment 1's LOS will be E and Segment 2's LOS will be D. There is reason to assume that the traffic volume reported for 2013 may be an undercount, and that both segments will have greater traffic congestion than modeled.

Under this same concern with traffic volumes, there remains a need for the LBB, but it is unclear if the benefit outweighs the cost, as it appears that the traffic volumes to the east may be overestimated.

Although the concept facility is consistent across District boundaries, there is concern that operational improvements for trucks may need to be undertaken with the installation of a truck climbing lane by District 4 at Pacheco Pass. This may necessitate extension or expansion of truck lanes. A study is recommended.

PLANNED AND PROGRAMMED PROJECTS AND STRATEGIES

PLANNED AND PROGRAMMED PROJECTS AND STRATEGIES						
Segment	**Description**	**Planned or Programmed**	**Location (PM)**	**Source**	**Purpose**	**Implementation Phase**
1	Install median barrier	Planned	R2.4 to R6.0	Status of Projects	Safety	PID
2	None					
3	LBB Phase II	Planned	16.0 to 17.79	STIP, RIP, IIP, Local, Other	Mobility; Safety	PID
4	LBB Phase II	Planned	17.79 to 21.272	STIP, RIP, IIP, Local, Other	Mobility; Safety	PID
	ADA Curb Ramps	Programmed	20.6 to 21.10	SHOPP	Mobility	PID
5	LBB Phase I	Programmed	PM 22.3 to 23.915	STIP, RIP, IIP, Local, Other	Mobility; Safety	PS&E/RW
6	LBB Phase I	Programmed	PM 23.915 to 25.8	STIP, RIP, IIP, Local, Other	Mobility; Safety	PS&E/RW
7-9	None					

PROJECTS AND STRATEGIES TO ACHIEVE CONCEPT

PROJECTS AND STRATEGIES TO ACHIEVE CONCEPT						
Segment	**Description**	**Planned or Programmed**	**Location**	**Source**	**Purpose**	**Implementation Phase**
1	Six Lane Expressway	NA	PM 0.0 – PM R13.237/11.270	N/A	Mobility; Safety	N/A
2	Six-Lane Expressway	NA	PM R13.237/11.270 to PM 13.848	N/A	Mobility; Safety	N/A
3	LBB Phase II with pedestrian and bicycle trail	Planned	16.0 to 17.79	STIP, RIP, IIP, Local, Other	Mobility; Safety	PID
4	LBB Phase II	Planned	17.79 to 21.272	STIP, RIP, IIP, Local, Other	Mobility; Safety	PID
	ADA Curb Ramps	Proposed	17.79 to 21.272	SHOPP	Mobility	N/A
5	LBB Phase I	Programmed	PM 21.272 to 22.252 (R22.3)	STIP, RIP, IIP, Local, Other	Safety; Mobility	PS&E/RW
	ADA Curb Ramps	Planned	PM 21.272 to 23.915	SHOPP	Mobility	N/A
6	LBB Phase I	Programmed	PM 22.252 (R22.3) to 23.915	STIP, RIP, IIP, Local, Other	Safety, Mobility	PS&E/RW
7	LBB Phase I	Programmed	PM 23.915 to R25.8	STIP, RIP, IIP, Local, Other	Safety, Mobility	PS&E/RW
8-9	None					

APPENDIX: GLOSSARY OF TERMS AND ACRONYMS

GLOSSARY OF TERMS

Access Management Plan – A plan developed to minimize access points along a state highway to improve performance.

Annual Average Daily Traffic (AADT) -- the total traffic volume on a given highway or segment in a year divided by 365.

Base year – the initial year of analysis, usually, the year that recent data is available, or the date of publication of a RTP.

Bikeways:

Class I (Bicycle Path) – a separate travel right of way for the exclusive use of bicycles, pedestrians, and possibly equestrians.

Class II (Bicycle Lane) – special use highway lane exclusive to bicycles. Usually separated from motorized vehicle traffic by striping, and may permit merging at approached to intersections for right turns.

Class III (Bicycle Route) – shared right of way between motorized vehicles and bicycles, may have wide shoulders to accommodate separation of the two modes, or may be signed to alert motorists to shared use.

Class IV – A Class II bikeway accompanied by a cement wall to physically separate of bicyclists from motorists.

Bottlenecks – a location where the carrying capacity is substantially less than elsewhere on a route. Often this occurs with a lane reduction, or excessive merging and weaving, or driver distraction, or a surge in demand, or a combination of these and other factors.

Capacity – the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

Centers – An urban area for small cities that are just becoming urbanized.

Centerline Miles – totaling all of the mileage for each lane in each direction for a specified length.

Concept LOS – the minimum acceptable LOS over the next 20-25 years.

Conceptual Project – an action or a project that needed to maintain mobility or serve multimodal users, but is not included in a fiscally constrained plan and is not programmed. It could be included in a General Plan or in the unconstrained section of a long-term plan.

Conventional Highway – a highway classification with at grade intersections.

Corridor – a broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, bicycle, pedestrian, and transit route alignments. Off system facilities are included as informational purposes and not analyzed in the TCR.

Expressway – a highway classification with some level of restriction on having at grade intersections.

Development Fees – fees that are provided by a developer impacting the number of trips generated by a development project such as a housing subdivision that they are constructing.

Facility Concept – describes the future highway facility and the strategies that may be needed to be deployed within the next 20-25 years. This can include capacity increasing, State highway, bicycle facility, pedestrian facility, transit facility, non-capacity increasing operational improvements, new managed lanes, conversion of existing managed lanes to another managed lane type or characteristic, TMS field elements, TDM and incident management.

Facility Type – refers to a highway as being either a freeway, expressway, conventional, or a one-way city street.

Freight Generator – any facility, business, manufacturing plant, distribution center, industrial development, or other location (convergence of commodity and transportation system) that produces significant commodity flow, measured in tonnage, weight, carload, or truck volume.

Freeway – a fully access restricted facility that allows high traffic speeds of 55 mph or higher.

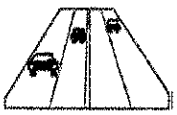
Headway – the time between two successive vehicles as they pass a point on the roadway, measured from the same common feature of both vehicles.

Horizon Year – The year that the future (20-25 years) data is based on.

Intermodal Freight Facility – a location where different transportation modes and networks (air, marine, rail, truck) interconnect and allow freight to be transferred (trans-loaded) from one mode to another.

Intelligent Transportation System (ITS)—an integrated network of communications-based information and electronics technologies to collect real time traffic information, process it, and take appropriate actions. The intended outcomes are to improve transportation safety, mobility and to enhance worker productivity by reducing travel delay.

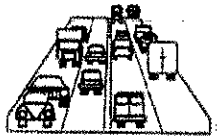
Level of Service (LOS) -- a qualitative measure describing operational conditions within a traffic stream and their perception by motorists. A LOS definition generally describes these conditions in terms of speed, travel time, freedom to maneuver, traffic interruption, comfort, and convenience. Six levels of LOS can generally be categorized as follows:



LOS A describes free flowing conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometric features of the highway.

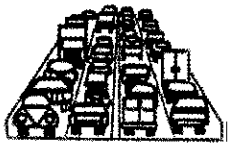
LOS B is also indicative of free-flow conditions. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.

LOS C represents a range in which the influence of traffic density on operations becomes marked. The ability to maneuver with the traffic stream is now clearly affected by the presence of other vehicles.



LOS D demonstrates a range in which the ability to maneuver is severely restricted because of the traffic congestion. Travel speed begins to be reduced as traffic volume increases.

LOS E reflects operations at or near capacity and is quite unstable. Because the limits of the level of service are approached, service disruptions cannot be damped or readily dissipated.



LOS F a stop and go, low speed conditions with little or poor maneuverability. Speed and traffic flow may drop to zero and considerable delays occur. For intersections, LOS F describes operations with delay in excess of 60 seconds per vehicle. This level, considered by most drivers unacceptable often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection.

Multi-modal –the different modes of commuting within a travel corridor (automobile, subway, bus, rail, bicycle, pedestrian, or air).

Managed Lanes – are from highway facilities managed with operational strategies such as high occupancy vehicle (HOV) lanes, ramp – metering and high occupancy toll (HOT) lanes.

Park-and-Ride – location where commuters park their personal vehicles and continue their trip by carpool, vanpool, or transit.
Peak Hour – the hour of the day in which the maximum volume occurs across a point on the highway.

Peak Hour Volume – the hourly volume during the highest hour traffic volume of the day traversing a point on a highway segment. It is generally between 6 percent and 10 percent of the AADT. The lower values are generally found on roadways with low volumes.

Peak Period – the part of day during which traffic congestion is at its greatest. Typically, this happens twice a day, in the morning and in the evening during the time most people commute to work or return (rush hour). Peak Period is defined for individual routes, not a District or statewide standard.

Performance Measures – are measures of the speed, safety, accessibility, efficiency in the operation and management of a state highway system.

Planned Project – a planned improvement or action is a project in a fiscally constrained section of a long-term plan, such as an approved Regional or Metropolitan Transportation Plan (RTP or MTP), Capital Improvement Plan, or measure.

Post mile – a measured location on a route within the State Highway System. Typically measured on routes from county lines, the values of a post mile will increase from south to north, or west to east. When a section of road is relocated, new post miles (usually noted by an alphabetical prefix such as "R" or "M") are established for it. If relocation results in a change in length, "milepost equations" are introduced at the end of each relocated portion so that mileposts on the reminder of the route within the county will remain unchanged.

Programmed Project – an improvement or action identifying funding amounts by year, and included in short term project funding documents such as the State Transportation Improvement Program (STIP) or the State Highway Operation and Protection Program (SHOPP). Programming refers to projects permitted for expenditure of monies allocated for project development and implementation (are subject to oversight by project managers).

Protected lands could be Section 4(f) land or other lands recognized for their natural, ecological and or cultural values that are managed by an array of different federal, state, tribal and local level authorities.

Railroads:

Class I – a carrier having annual operating revenues of $250 million or more. This class includes the nation's major railroads. In California, Class I railroads include Union Pacific Railroad (UP) and Burlington Northern Santa Fe Railway.

Class II – a carrier having annual operating revenues between $250 million and $20 million. Class II railroads are considered mid-sized freight-hauling railroad in terms of operating revenues. They are considered "regional railroads" by the Association of American Railroads.

Class III – a carrier having annual operating revenues of $20 million or less. The typical Class III is a short line railroad, which feeds traffic to or delivers traffic from a Class I or Class II railroad.

Route Designation – refers to design standards applicable to a route based upon legislative intent. Typical legislative designations include but National Highway System (NHS), Interregional Route System (IRRS), Freeway and Expressway System, and Scenic Highway System.

Rural – Fewer than 5,000 in population designates a rural area. Limits are based upon population density as determined by the U.S. Census Bureau.
Section 4f Land – Land that is protected by federal lands under certain conditions for development.

Segment – A portion of a facility between two points.

Segment I – LBB portion between Santa Fe Grade Road and SR 165

Segment II – LBB portion between SR 165 and Volta Road

System Operations and Management Concept – Describe the system operations and management elements that may be needed within 20-25 years. This can include Non-capacity increasing operational improvements (aux. lanes, channelization's, turnouts, etc.), conversion of existing managed lanes to another managed lane type or characteristic (e.g. HOV land to HOT lane), TMS Field Elements, transportation demand management, and incident management.

System Preservation - the unmet needs estimate for preserving the state's transportation system incorporates three elements: preventive maintenance, rehabilitation and reconstruction, and regulatory mandates.

- Preventive maintenance applies cost-effective treatments to existing transportation infrastructure in order to preserve it, slowing down future deterioration of a transportation facility (without significantly increasing the structural capacity). Preventive maintenance strategies are typically applied to assets that are in good condition and have significant remaining service life. This ensures the structural integrity of transportation systems that serve people and freight.

- Rehabilitation and reconstruction strategies are applied to transportation infrastructure that is in fair to poor condition. The goal here is to restore assets to an acceptable operating condition.

- Preservation efforts also include the cost of regulatory mandates. Examples of regulatory mandates include storm water retrofitting required by the Clean Water Act (CWA) and state water quality control boards, and improvements required by the Americans with Disabilities (ADA).

TDM - transportation Demand Management programs designed to reduce or shift demand for transportation through various means, such as the use of public transportation, carpooling, telework, and alternative work hours. TDM strategies can be used to manage congestion during peak periods and mitigate environmental impacts.

Tier I - partially programmed projects

Tier II - fiscally constrained projects that are not programmed. Projects in this category must be from a fiscally constrained document/list (such as the fiscally constrained project list in an RTP) and not from an unconstrained document (such as a TCR).

Tier III - projects that the District will advocate to be included in fiscally constrained projects lists (RTP, SHOPP) during the 20-25 year planning horizon. These are projects that are not currently in a fiscally constrained project list.

Tier IV - projects that have a demonstrated need within the 20-25 year time horizon and have been identified as high priority by the District but are unlikely to receive funding within the 20-25 year time horizon. These are likely projects that will be programmed if an unexpected funding source becomes available, like an initiative or local measure.

Tier V - other projects identified as needed by the District: these may be within the 20-25 year time horizon, beyond the 20-25 year time horizon, or only conceptual in nature.

Traffic Study – an in depth analysis of the traffic conditions under existing and future scenarios for a development project.

Transportation Management System (TMS) -- the business processes and associated tools, field elements and communications systems that help maximize the productivity of the transportation system. TMS includes, but is not limited to, advanced operational hardware, software, communications systems and infrastructure, for integrated advanced TMS and information systems, and for electronic toll collection systems.

Urban – 5,000 to 49,999 in population designates an urban area. Limits are based upon population density as determined by the U.S. Census Bureau.

Urbanized – over 50,000 in population designates an urbanized area. Limits are based upon population density as determined by the U.S. Census Bureau.

Vehicle Miles Traveled (VMT) – the total number of miles traveled by motor vehicles on a road or highway segments.

ACRONYMS

AADT - Annual Average Daily Traffic
AADTT- Annual Average Daily Truck Traffic
ADA - Americans with Disabilities Act of 1990
BY – Base Year
C – Conventional Highway
CALTRANS - California Department of Transportation
CTTP – Census Transportation Planning Products
CCTVs - Closed Circuit Television Cameras
CMS - Changeable Message signs
CSMP - Corridor System Management Plan
CTL – Center Turn Lane
DSMP - District System Management Plan
E - Expressway
EB - Eastbound
EIR - Environmental Impact Report
ELLN – Extra Legal Load Network
F -Freeway
F&E - Freeway and Expressway
HAR - Highway Advisory Radio (HAR)
HY – Horizon Year
IIP - Interregional Improvement Program
IRRS - Interregional Road System
ITS - Intelligent Transportation System
ITSP - Interregional Transportation Strategic Plan
LBB—Los Banos Bypass
LT – Left Turn
LOS - Level of Service
MAP-21 - Moving Ahead for Progress in the 21st Century
MAX - Modesto Area Express
MCAG - Merced County Association of Government
MCC—Merced Community College
MER - Merced
N/A - Not available
NB - Northbound

NHS - National Highway System
OWP – Overall Work Program
PID - Project Initiation Document
PM - Post Mile
PS&E - Plans, Specifications, and Estimates
PSR - Project Study Report
RIP - Regional Improvement Program
ROW - Right of Way
RTIP - Regional Transportation Improvement Program
RTP - Regional Transportation Plan
RTPA - Regional Transportation Planning Agencies
RWIS - Roadway Weather Information System
SHOPP - State Highways Operations and Protection Program
SHS - State Highway System
SR - State Route
SRA – State Recreation Area
STA - Stanislaus
STANCOG - Stanislaus Council of Governments
STRAHNET - Strategic Highway Network
STAA - Surface Transportation Assistance Act
STIP - State Transportation Improvement Program
TA – Terminal Access Truck Route
TCR - Transportation Concept Report
TDM - Transportation Demand Management
TMC - Transportation Management Centers
TMD – Transportation Demand Modal
TMS - Transportation Management System
TSDP - Transportation System Development Program
US - United States
VTP – Valley Transportation Plan