Transportation Concept Report

State Route 140

District 10

June 2016

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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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EXECUTIVE SUMMARY

State Route 140 is a State highway located in District 10: the route runs west to east from Interstate 5 (I-5) to SR 99 to Yosemite National Park (Yosemite) through Merced (MER) and Mariposa (MPA) Counties. The portion of SR 140 in Yosemite is administered by the National Park Service. The route can be characterized by three interrelated functions. The portion between I-5 and SR 99 serves as a secondary goods movement corridor serving farms and agricultural processing facilities in northern Merced County. The portion traveling east of SR 99 from the City of Merced provides both recreational access to Yosemite, as well as a regional work commute between residences in Mariposa County and both employers in the San Joaquin Valley, and Yosemite. The commute volumes tend to diminish and the traffic becomes predominantly recreational past the town of Midpines.

Segments of SR 140 east of the City of Merced are included in the Interregional Road System (IRRS) System, with the entire route included in the Freeway and Expressway System (FES) and the National Highway System (NHS). The concept Level of Service (LOS) for the corridor west of SR 99 would be D, while east of SR 99 would be C for rural segments and D for urban. The concept facility throughout its extent would be freeway or expressway. East of the town of Mariposa, SR 140 is a designated a State Scenic Highway. Throughout its extent, SR 140 is bicycle and pedestrian accessible.

In 2006, the Ferguson Landslide closed a section of SR 140 for a period of a year. An emergency repair reopened the highway by constructing two temporary one lane bridges and a one lane bypass on the opposite side of the river. A two phase permanent solution has been programmed with the first project to remove the material from the slide slated to begin construction in 2015, followed by construction of a structure designed to shield the road way from falling rock to be constructed two to three years later. Currently the permanent repair has been delayed and may be reevaluated due to reactivation of the slide during winter rains in 2015. Presently, SR 140 east of the Ferguson Slide is closed to trucks and buses longer than 45 feet.

The route provides limited utility as an interregional truck route. Unlike the other west to east connectors between I-5 and SR 99 in District 10, SR 140 is not a uniform Terminal Access (TA) truck route throughout its extent. Between I-5 and Gustine, and east of Midpines to Yosemite, SR 140 is designated as a California Legal Truck Route or a California Advisory Legal Truck Route. A temporary restriction of no buses or trucks greater than 45 feet in length are permitted east of the Ferguson Slide. Commercial vehicles are prohibited in national parks except when Yosemite would be a final delivery destination or related services or purposes.

For the Base Year (BY) of 2015 three segments of SR 140 have an LOS that exceeds the concept LOS. Both segments within the City of Merced (MER 8 and MER 9) and in the town of Mariposa (MPA 3). All three have short intersection spacing with speed limits under 45 Miles per Hour (MPH). By the Horizon Year (HY) one additional segment becomes deficient, between Applegate and Franklin Roads (MER 6). Given the short length of the segment, the proposed improvement to address the need would be increasing the number of lanes from two to four.

Neither the current Merced County Association of Governments (MCAG) Regional Transportation Plan (RTP) nor the Mariposa County Local Transportation Commission (MCLTC) RTP address any capacity increasing projects for SR 140 by 2040. Within Merced County, a locally funded roundabout as part of a complete streets solution is being undertaken on MER 3 at Post Mile (PM) 5.6, and has the opportunity to be the first roundabout constructed on the SHS in District 10. The MCLTC RTP does address long range operational projects (Tier II), realigning a portion of the segment of SR 140 between Midpines and Briceberg (MPA 5); and installing additional passing lanes between Catheys Valley and the town of Mariposa (MPA 2) and between the towns of Mariposa and Midpines (MPA 4), along with constructing left turn pockets at various intersections.

efficiency highways consistent with planning forecasts from half a century ago. Where a State highway is on the FES but not the IRRS, the concept LOS is D, but the minimal facility remains expressway.

For highway design and planning purposes, LOS characterizes conditions of high traffic speeds (45 to 70 MPH), along with a low number of stop controlled intersections. The condition is referred to as uninterrupted flow. Increasing the number of access points (intersections, driveways) can reduce LOS, as their presence can alter the rate and volume of traffic flow. Signalized intersections at intervals of two miles or greater may not substantially impede traffic flow, but will likely do so if at shorter intervals. Generally, highway segments with numerous signalized intersections at short distances between one another experience interrupted flow. For ideal interregional travel, the desired condition is uninterrupted traffic flow at posted speeds in excess of 40 MPH, controlled access, and intersections spaced at distances of two miles or greater.

From I-5 though the City of Merced, SR 140 is on the FES. The concept LOS for all segments in this portion of the highway is D. SR 140 east of the City of Merced is on the IRRS. Since none of the communities east of the City of Merced have populations greater than 5,000[5] this allows the route to have a concept LOS of C due to its rural character.

Initial conditions, at the time of the 2015 BY, result in MER 8, MER 9, and MPA 3 having an LOS that exceeds the concept LOS. By the 2040 HY, MER 6 is also forecast to be deficient. For MER 8, MER 9, and MPA 3 the deficiency arises due to interrupted flow conditions (closely spaced intersections, posted speed limits below 40 MPH). The conceptual solution for these segments is realignment rather than increasing lane capacity, and would require a concept facility of a two lane expressway for the HY. For MER 6, the proposed conceptual action would be either an expansion from two lanes to four lanes, or the inclusion of passing lanes. Given the short length of the segment, there appears to be no difference between the two strategies, as the length of any passing lane would approach the entire distance of the segment. No upgrades to these facilities are currently included in the respective RTPs.

The one difficulty in supporting upgrading capacity or function of the highway segments on SR 140 rests on their utility for interregional travel. The balance of cost to benefit for improving interregional travel for commutes to work and back tends to be straightforward, however for a route that has a large component of its annual daily traffic reflecting recreational travel[6], may not be so straightforward. Bypassing urban areas where developed services for tourism exist may be a cost to the local economy rather than an enhancement. Furthermore, widening segments such as MER 6 without a clear source for the forecast increase in future traffic (the area surrounding MER 6 is unincorporated, developed as low density residential or agriculture, and remains in the Merced County Sphere of Influence) does not appear justified, as the traffic increase does not transmit to adjoining segments to a degree that it affects their future LOS (e.g. such an improvement does not appear to have logical termini). Further analysis would be necessary.

Due to topography, the highway segments in Mariposa County possess lower LOS than their counterparts in Merced County. Many of these segments have passing lanes, and perform better than segment modeling indicates. Because the rolling or mountainous terrain degrades traffic flow, passing lanes will often improve vehicle flow, and where not currently present, are reflected in several long range projects proposed in the Mariposa County RTP. For this reason, no further improvements on deficient rural segments of SR 140 are proposed in this report.

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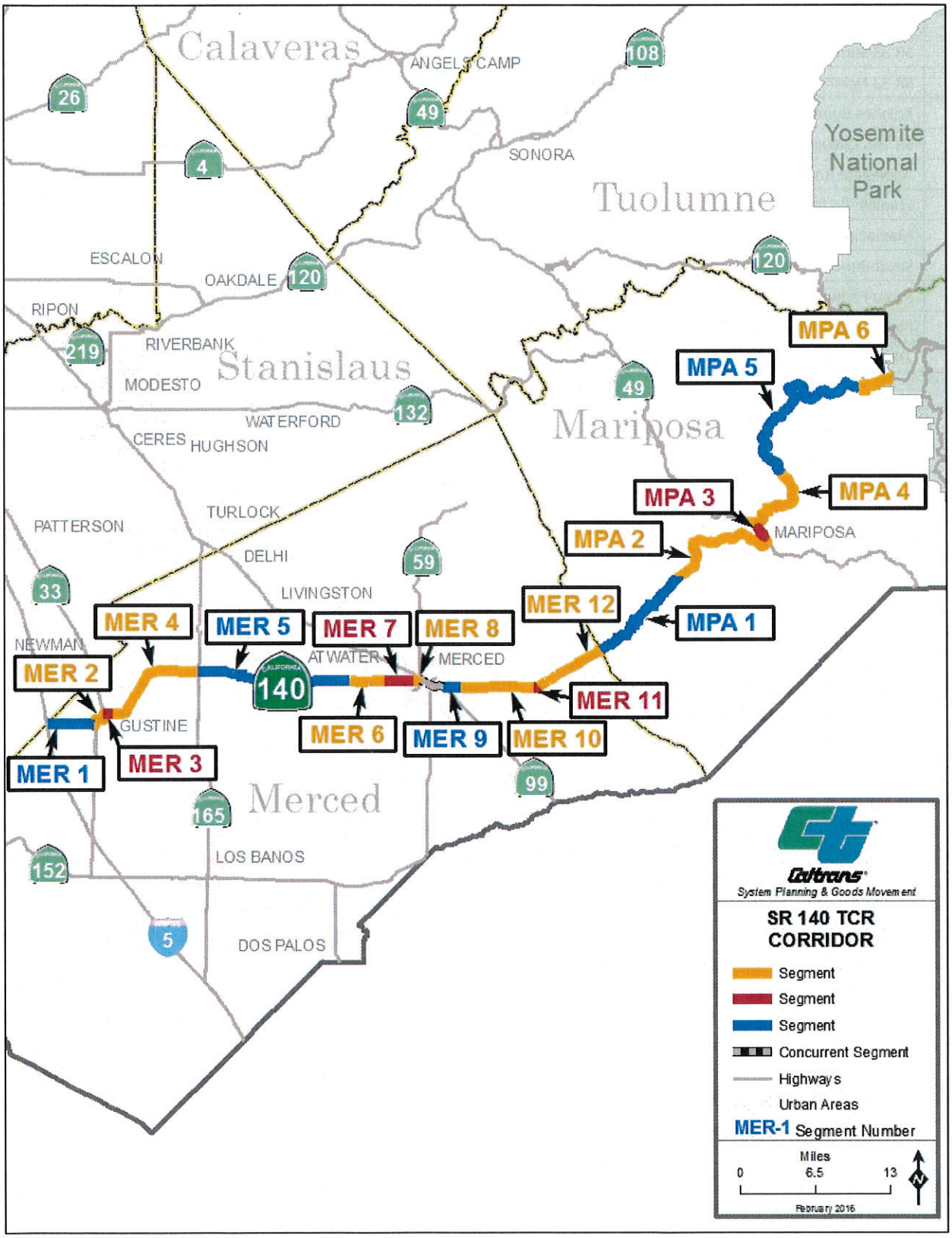
[5]The population of the community of Planada may surpass this by 2020.

[6] Evidence indicating a recreational component to SR 140's traffic is discussed below.

CORRIDOR OVERVIEW

ROUTE SEGMENTATION



gain and loss, and unique operational issues due to steep grades. MPA 3 accesses the County Seat of Mariposa, with a reduced speed limit between SR 49 South and SR 49 North. Past SR 49 North, MPA 4 continues eastward to the town of Midpines at Triangle Road. MPA 5 extends from Triangle Road to Foresta Road near the town of El Portal. MPA 6 runs from Foresta Road to the entrance to Yosemite.

ROUTE DESCRIPTION

SR 140 is an east to west corridor that begins at I-5, west of the City of Gustine in Merced County, and terminates in Yosemite in Mariposa County. SR 140 traverses the flat agricultural land of the San Joaquin Valley and continues through the Sierra Nevada Foothills along the Merced River Canyon. SR 140 is a year-round highway serving the Cities of Gustine and Merced, and the communities of Planada, Catheys Valley, Mariposa Midpines, Briceburg, and El Portal. Along this corridor are recreational areas such as San Luis National Wildlife Refuge, Kesterson National Wildlife Refuge, the Sierra National Forest, and Yosemite National Park.

Throughout much of its extent, the facility of SR 140 is a two lane conventional highway. Two four lane segments occur within the City of Merced on segments MER 8 and MER 9. A route break of 1.9 miles occurs in the City of Merced where it is concurrent with SR 99. SR 140 runs concurrent with SR 33 in the City of Gustine, and with SR 49 in the town of Mariposa.

Route Location:

SR 140 is one of seven east to west highways connecting I-5 to SR 99 in District 10, and one of two in Merced County. SR 140 lacks the interconnection between urban centers that the other routes have, resulting in lower traffic volumes between SR 99 and I-5. Lacking the functionality of a work commute route, SR 140 provides a secondary goods movement route for agricultural goods and products within Merced County, and as a recreational route between SR 99 at the City of Merced and Yosemite. As one of the four highway entrances to the Park, SR 140 offers the shortest access to Yosemite Valley from nearby local lodging, compared to SR 120 (north and east entrances) and SR 41 (south entrance).

SR 140 was two legislative routes: LR 122 between SR 33 and SR 99, and LR 18 between SR 99 and Yosemite.

Route Purpose:

SR 140 lacks one clearly defined purpose. Although the route's central purpose in the SHS is to act as a Gateway to Yosemite and the surrounding towns, as reflected by the inclusion in IRRS for the portion of the route east of SR 99. Between I-5 to the City of Merced, SR 140 supports local travel, along with local and regional freight transport from farms to processing facilities, or shippers. Between the cities of Gustine and Merced, SR 140 serves as a local commuter route.

Although during summer months four state highways access Yosemite, the only dependable winter access is SR 140. The section of SR 140 between the Merced County line near Planada and Yosemite is known as the "All Year Highway."

YARTS started operating transit buses in May of 2000, superseding the earlier AMTRAK bus service to Yosemite. Currently service has expanded to where YARTS serves Yosemite from Fresno, Mariposa, Merced, Mono and Tuolumne Counties, and offers travelers a dependable alternative to driving. For Yosemite, YARTS has reduced transportation and parking demand.

ROUTE DESIGNATIONS & CHARACTERISTICS (continued)						
MARIPOSA COUNTY						
Segment #	MPA 1	MPA 2	MPA 3	MPA 4	MPA 5	MPA 6
FES	Yes					
NHS	Yes					
Strategic Highway Network	No					
Scenic Highway	No			Yes		
IRRS	Yes					
Federal Functional Classification	Principal Arterial					
Goods Movement Route	No					
Truck Designation	Terminal Access Route (STAA)				Temporary Special Length Restriction - No vehicles over 45 feet due to landslide	
Rural/Urban/Urbanized	Rural					
Metropolitan Planning Organization	None					
Regional Transportation Planning Agency	Mariposa County Local Transportation Commission					
Congestion Management Agency	None					
County Transportation Commission	Mariposa County Local Transportation Commission					
Local Agency	Mariposa County					
Tribes	There are no Federally Recognized Tribes					
Air District	Mariposa County Air Pollution Control District					
Terrain	Rolling	Mountainous	Rolling		Mountainous	

SR 140 is included in the FES and is on the NHS for its entire extent, and is included in the IRRS from The Merced City limits, near Santa Fe Avenue, east to Yosemite. The concept LOS consistent for the portion of SR 140 on the FAE, but not the IRRS, is D for both rural and urban segments, while for the portion on the IRRS, is C for rural and D for urban. The proposed facility is at a minimum expressway. None of the current route is constructed to expressway or freeway standards, though the portion of the highway between the Cities of Gustine and Merced may function as an expressway (without the dividing median).

As a goods movement route, SR 140 is designated between I-5 and SR 33 as a California legal truck route. Between SR 33 South and SR 33 North it is designated a California Legal Advisory Truck Route with a Maximum King Pin to Rear Axle (KPR) distance of thirty feet. From SR 33 North to Triangle Road in Mariposa County, SR 140 is a TA truck route consistent with the Surface Transportation Assistance Act (STAA). From Triangle Road to the Yosemite Park Boundary, the route is again a California Legal Advisory Truck Route, with a maximum KPR distance of thirty two feet.

Between its junction with SR 49 in the town of Mariposa to the Yosemite boundary (PM 22.8 to PM 51.8) it is officially designated part of the State Scenic Highways and Historic Parkways State Scenic Highway System. It is eligible to be part of the State Scenic Highways from PM 21.2 to 22.8.

A portion of MER 5 and all of MER 6 border the Merced River which is designated a Wild and Scenic River. Areas extending up to a quarter of a mile from the ordinary high water mark of the river are subject to the provisions of the Wild and Scenic Rivers Act.[7]

[7] Public Law 90-542; 16 U.S.C. 1271 et seq.

town of Mariposa, SR 140 was realigned by the State during the depression era, relinquishing Eighth Street where most of the administrative services for the county are located for the current alignment along Charles Street while still accessing the historic portion of the town.

LAND USE

SR 140 extends through six land use planning agencies—the Counties of Merced and Mariposa, the Cities of Gustine and Merced, the US Forest Service, and the US Fish and Wildlife Service. Within the Counties of Merced and Mariposa, the land uses tend towards agriculture and rural residential in both counties, though this changes in the towns of Planada and Mariposa to higher density residential housing and commercial. Within the City of Gustine, SR 140 accesses residential, recreational, commercial, and industrial land uses. For the City of Merced, SR 140 accesses light, medium, and heavy density residential areas and commercial land uses. In both the San Luis National Wildlife Refuge and the Stanislaus National Forest, SR 140 travels through public lands subject to conservation management plans.

The potential in Merced and Mariposa counties for the development of "Smart Mobility" land uses and improvements appears slight. This is due in part to the low population density, low household incomes, and substantial participation of the local workforce in industrial sectors that do not line up with transit use or active transportation. Segments of SR 140 within the City of Merced may be poised for intensification of use and improvements for active transportation, but as a transportation corridor SR 140's greatest utility is for interregional travel, while SR 59/ Dr. Martin Luther King Jr. Boulevard and 16th Street more directly serve and provide connection to the suburban center and historic downtown.

LAND USE	
MERCED COUNTY	
Segment	**Place Type[15]**
MER 1	5b—Rural Settlements and Agricultural Lands
MER 2	5a—Rural Towns
MER 3	5a—Rural Towns
MER 4	5b— Rural Settlements and Agricultural Lands, 6—Protected Lands
MER 5	5b--Rural Settlements and Agricultural Lands
MER 6	5b--Rural Settlements and Agricultural Lands
MER 7	5b--Rural Settlements and Agricultural Lands
MER 8	4b—Suburban Corridors
MER 9	4b—Suburban Corridors
MER 10	5b--Rural Settlements and Agricultural Lands
MER 11	5a—Rural Towns
MER-12	5b--Rural Settlements and Agricultural Lands
MARIPOSA COUNTY	
MPA 1	5b--Rural Settlements and Agricultural Lands
MPA 2	5b--Rural Settlements and Agricultural Lands
MPA 3	5a—Rural Towns
MPA 4	5b--Rural Settlements and Agricultural Lands
MPA 5	6—Protected Lands
MPA 6	6—Protected Lands

[15] Places types follow designations in the Smart Mobility Framework, 2011

SYSTEM CHARACTERISTICS						
MERCED COUNTY						
Segment #	MER 1	MER 2	MER 3	MER 4	MER 5	MER 6
Existing Facility						
Facility Type	Conventional					
General Purpose Lanes	Two					
Lane Miles	9.38	3.74	1.54	18.78	26.50	8.16
Centerline Miles	4.19	1.87	0.77	9.39	13.25	4.08
Passing Lanes	None					
Truck Climbing Lanes	None					
20-25 Year Concept Facility						
Facility Type	Conventional					
General Purpose Lanes	Two					
Lane Miles	9.38	3.74	1.54	18.78	26.50	8.16
Centerline Miles	4.19	1.87	0.77	9.39	13.25	4.08
Passing Lanes	None					
Truck Climbing Lanes	None					
Post 25 Year Facility						
Facility Type	Expressway					
General Purpose Lanes	Two					Four
Lane Miles	9.38	3.74	1.54	18.78	26.50	8.16
Centerline Miles	4.19	1.87	0.77	9.39	13.25	4.08
Aux Lanes	None					
Passing Lanes	None					
Truck Climbing Lanes	None					
ROW Needs	None					
Transportation Monitoring System Elements[16]						
Elements (2015)	None	None	None	None	TMS	TMS
Elements (2040)	TMS	TMS	TMS	TMS	TMS	TMS

[16] Abbreviations: TMS: Traffic Monitoring Station; CMS: Changeable Message Sign; CCTV: Closer Circuit Television; HAR: Highway Advisory Radio; FB: Flashing Beacon

SYSTEM CHARACTERISTICS (Continued)						
MARIPOSA COUNTY						
Segment #	MPA 1	MPA 2	MPA 3	MPA 4	MPA 5	MPA 6
Existing Facility						
Facility Type	Conventional					
General Purpose Lanes	Two					
Lane Miles	19.00	23.44	1.76	12.60	39.98	7.26
Centerline Miles	9.50	11.72	0.86	6.30	19.79	3.63
Passing Lanes	Yes		None	Yes		None
Truck Climbing Lanes	None	Yes	None			
20-25 Year Concept Facility						
Facility Type	Conventional					
General Purpose Lanes	Two					
Lane Miles	19.00	23.44	1.76	12.60	39.98	7.26
Centerline Miles	9.50	11.72	0.86	6.30	19.79	3.63
Passing Lanes	Yes		None	Yes		None
Truck Climbing Lanes	None	Yes	None			
Post 25 Year Facility						
Facility Type	Expressway					
General Purpose Lanes	Two					
Lane Miles	19.00	23.44	1.76	12.60	39.98	7.26
Centerline Miles	9.50	11.72	0.86	6.30	19.79	3.63
Aux Lanes	None					
Passing Lanes	Yes		None	Yes		None
Truck Climbing Lanes	None	Yes	None			
ROW Needs[17]	None	8-30 feet	None	Unclear		None
Transportation Monitoring System Elements[14]						
Elements (2015)	None	TMS	TMS, CMS, CCTV, HAR	CMS, CCTV	Signal, CMS, TMS, CCTV,	None
Elements (2040)	None			TMS		TMS

BICYCLE FACILITY

The existing bicycle facility on the SR 140 corridor is a Class III bicycle route, with the exception of a bicycle lane on a portion of MER 2 in the City of Gustine. Local agencies have not made upgrading the facility from shared lanes to exclusive bicycle lanes or paths upon the corridor a priority[18]. Aside from a parallel alternative bicycle route on Childs Avenue, terrain and geography limit the opportunity to provide less congested local alternatives to bicycle travel on the highway. As bicycle LOS is below automobile LOS for all highway segments in the corridor, given sufficient demand, there may exist a future need to upgrade the bicycle facility to where bicycle travel is segregated from automobiles. Outside of river crossings, where bridge widening would be required, installation of a Class II or IV facility may best address this concern, particularly when adjoining federal land use agencies are present, and Class I bicycle paths conflict with existing management plans.

The current bicycle plan in Mariposa County[19] proposes retention of the Class III facility with signage and widened shoulders. Future growth in bicycle use along the SR 140 corridor, given the current LOS of F, would portend a need to shift away from a Class III facility to a concept Class II or Class IV facility as the least intensive of expansion

[17] Unclear refers to Tier II projects in the MLTC RTP 2012 that may already be installed

[18] *Merced County Regional Bicycle Transportation Plan*, October 2008, various pages: *Mariposa County Bicycle Plan,* 2013

[19] Mariposa Bicycle and Pedestrian Plan, 2011

automobiles. Bridges lack the shoulder or sidewalks to allow separation of bicycle traffic from automobiles. In many locations highway shoulders lack the paved widths or obstruct safe refuge with rumble strips on the fog line. Although no capacity increasing projects are anticipated for the corridor, it has become necessary for any highway or bridge projects that involve shoulder or travel lane upkeep consider the needs of bicycle refuge and allow a bicycle corridor that permits continuous travel without interruption due to lack of passage or safe conduct.

PEDESTRIAN FACILITY

In assessing the prospect of SR 140 as a complete street facility, four pedestrian facilities were identified in urban and urbanizing areas (MER 2, MER 8, MER 9, and MPA 3). Future need for pedestrian facilities may likely exist in the unincorporated community of Planada on MER 11, particularly if commercial and residential development should continue to expand northwards across SR 140. Pedestrian facilities on MER 2 are present from Linden Avenue east to the 4th Avenue right turn where they are only present on the north (westbound) side of the highway to 3rd Avenue. Crosswalks and curb ramps are for the most part present, but are not to current ADA design standards. For MER 8, sidewalks are intermittent to nonexistent between Sydney Street and Massacio, but are present with curb ramps eastwards from Sydney Street to the SR 99 freeway. Segment MER 9 possesses sidewalks with ADA ramps along with crosswalks in both directions at both signalized and unsignalized intersections. MPA 3 has intermittent sidewalks that cover a small portion of the segment—sidewalks are present on both sides of the highway from the block between 5th and 6th Streets, and appear in two locations on the north (west) side of the highway on from 6th to 10th Streets. Crosswalks are present, but may occur at intersections lacking sidewalks or ramps accessing sidewalks on side streets. Many of the curb ramps are not compliant with current ADA standards. District 10 will continue in its efforts to improve walkability in the SR 140 corridor by upgrading ADA ramps, and help facilitate local public work agencies in the installation of sidewalks.

Several rural school districts straddle SR 140. Pedestrian and bicycling needs of students may be addressed by safe routes to schools application in order to fund improvements that integrate active transportation to and from school. Providing and upgrading Safe and sheltered walking and bicycling facilities has become a consideration in proximity to schools in the development of highway projects in effort to fulfill Caltrans commitment to complete streets. One rural school crossing zone was observed at Scott Road (Mer 6) for McSwain Elementary School.

PEDESTRIAN FACILITY			
Segment	**Pedestrian Access Prohibited**	**Sidewalk Present**	**Alt. Facility**
MERCED COUNTY			
MER 1	No	No	
MER 2	No	Yes--intermittent	
MER 3 – MER 7	No	No	
MER 8	No	Yes--Intermittent	
MER 9	No	Yes	
MER 10 —MER 12	No	No	
MARIPOSA COUNTY			
MPA 1—MPA 2	No	No	
MPA 3	No	Yes--intermittent	
MPA 4 –MPA 6	No	No	

SR 140 supports local, intercity, and interregional transit. Local bus route M-1 (Merced Transit, The Bus) runs a short distance between 11th Street and Sydney on SR 140 (MER 8) with daily service of 17 round trips between 6:38 AM and 10:47 PM with weekend service consisting of six trips scheduled between 7:30 A.M. and 5:32 P.M. Local bus route M-5 runs along SR 140 between Parsons Avenue and Motel Dr. (MER 9) with daily service between the hours of 6:30 A.M. to 11:05 P.M. on weekdays, and 8:00 A.M. to 6:16 P.M. on weekend. No scheduled stops are on SR 140.

Three intercity transit services run on SR 140. Two are Merced Transit and one is Stanislaus Transit. The first runs from the Merced Transit Center (Transpo) to Gustine, and south on SR 33 to Santa Nella and onto Los Banos with three round trips on weekdays between 6:45 AM and 4:12 PM, with a single interrupted trip on weekends.[21] No stops are on SR 140. The second runs between the Transpo and Planada on SR 140, and south on Santa Fe Drive to Le Grand with seven round trips between the hours of 6:05 A.M. and 8:13 P.M. weekdays, and with five round trips between 7:00 A.M. and 5:15 P.M. weekends. The third runs from Patterson to Gustine with seven weekday round trips, and operates between 5:40 A.M. and 9:21 P.M. on weekdays, and with five trips operating between 6:00 AM and 8:06 PM on Saturdays.

There is no fixed route deviated transit service in Mariposa County, which currently offers a dial a ride service with once weekly routes serving alternate portions of the County.

Interregional transit between Merced and Mariposa County is provided by YARTS which runs from the Merced Regional Airport to Yosemite Valley along SR 140 seven days a week with service between the hours of 5:22 A.M. and 8:17 P.M. with several stops on the route.

FREIGHT

The SR 140 corridor lacks a strong freight presence in District 10. Compared to other east to west truck routes between I-5 and SR 99 in District 10, SR 140 is substandard. The corridor lacks the design standards consistent with the STAA, between I-5 and SR 33, and is a TA truck route from the City of Gustine to the City of Merced. East of the City of Merced and into Mariposa County, the terminal destination for SR 140 is Yosemite which has truck entry restrictions, with the TA truck route ending at Triangle Road west of the town of Midpines, some twenty miles shy of the Yosemite entrance. Other than the Class I railroad (Atchison, Topeka, and Santa Fe) that follows the highway alignment of MER 10, there is no support for rail. Gustine provides transfer of goods from trucks to rail, the facility is served by a California Northern Railroad, a Class III rail line with daily service. Although SR 140 approaches (via Thornton Road) the Merced Regional Airport (Macready Field) off of MER 8, local and regional access is provided from the east by Childs Avenue from SR 99. Macready Field provides commuter flights to Oakland and Los Angeles, as well as medical evacuation flights, but provides few freight services.

ENVIRONMENTAL CONSIDERATIONS

The SR-140 corridor travels through three distinct environmental contexts—the reclaimed Tulare Lake bed and the San Joaquin River Valley, the Sierra Nevada foothills, and the Merced River Canyon. West of the City of Merced, SR 140 encounters various environmental resources—wetlands; prehistoric and historic cultural resources; endangered, threatened, and sensitive biological species; and prime farmlands. Because the route borders a national wildlife refuge, Section 4 (f) considerations may come into play. East of the City of Merced to the town of Midpines, SR 140 encounters similar environmental resources-- prehistoric and historic cultural resources; endangered, threatened or sensitive biological species; along with hazardous materials such as

[21] In 2016, the Hilmar route was modified to employ SR 140 to connect to the Transpo.

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 during the peak hour(s).

The key consideration in the application of these variables is that they measure conditions for Class I highways, but less so for Class II and Class III highways. Most of the segments on SR 140 were modeled as Class I, but two segments were considered Class II—MPA 5 and MPA 6. Given these segments have a posted speed limit below 55 MPH; Depression Era shoulders and lane designs; numerous vertical and horizontal curves—all located within a scenic river canyon. These physical conditions, combined with frequent and unexpected pull offs from and merges into the lane of traffic by other drivers, result in driver expectations different from those that characterize a commute to work. The planning outcome is that assumptions regarding improving LOS on these segments is relaxed as a criteria for improvement, while variables that address the values for recreational uses and access are emphasized.

A serious constraint upon improving the recreational experience upon SR 140 between Midpines and Yosemite are safety considerations associated with erosion. Several slides and debris flows have closed the highway for several days in recent months. The Ferguson Slide has temporarily closed the two lane highway until a new design can remedy the debris movement without endangering highway users, resulting in an emergency signal controlled one lane route on the opposite side of the river. Although the two lane highway is scheduled to reopen, there remains the possibility for slides and debris flows to close other segments of the highway while slope treatments would be at odds with the aesthetic attraction of the highway.

There has been concern with the accuracy of Caltrans 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 longer. High peak hour volumes at anomalous hours have been reported suggesting errors in the recording equipment[22], 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.

The 2010 traffic census provides the most recent year of measurement of peak hours on SR 140. For the most part both the AM and PM peak hour volumes have values of K that approach 10% of AADT (8.24% to 10.95%)[23]. These peak hour volumes are comprised of ten measurements at five count stations, two in Merced County and three in Mariposa County. Five of these peak hour measurements occur on a Saturday or a Sunday, four of which are reported in Mariposa County.

The measurement of high K values, along with weekend peak hours suggest a corridor that is not performing in a manner consistent with an interregional work commute, but for recreational purposes. That the peak hour

[22] For example, the 2010 peak hour report gives a September peak hour at 11 PM for SR 140 at SR 165.
[23] Sampling is intermittent rather than continuous at the count stations.

Corridor Performance[24]						
MERCED COUNTY						
Segment #	MER 1	MER 2	MER 3	MER 4	MER 5	MER 6
Basic System Operations						
AADT (BY)	1170	5990	3420	3340	3475	5640
AADT (HY)	1865	10060	5670	6410	6810	10531
VMT (BY)	4902.3	11201.3	2633.4	31362.6	46043.75	23011.2
VMT (HY)	7814.35	18812.2	4365.9	60189.9	90232.5	42966.48
Truck Traffic						
Total AADTT (BY)	146	839	407	351	403	654
Total Trucks (% of AADT) (BY)	12.50%	14.00%	11.90%	10.50%	11.60%	11.60%
5+ Axle AADTT (BY)	80	587	226	184	258	419
5+Axle Trucks (% of AADT) (BY)	55.00%	70.00%	55.60%	52.50%	64.00%	64.00%
Bottlenecks Data						
Bottleneck Existing:	Not Reported					
Bottleneck Location						
Bottleneck Queue (length):						
Bottleneck Causality:						
Peak Hour Traffic Data						
Peak Period Length	0.25 Hr	0.25 Hr	0.25 Hr	0.25 Hr	0.25 Hr	0.25 Hr
Peak Hour Direction:	East	East	East	East	5	6
Peak Hour Time of Day	1500	1500	1500	1500	1500	1500
Peak Hour VMT (BY):	401.99	918.51	215.94	2571.73	2550.82	1274.82
Peak Hour VMT (HY):	640.78	1542.60	358.00	4935.57	4998.88	2380.34

[24] Acronyms: AADT: Average Annual Daily Traffic; VMT:Vehicle Miles Traveled; AADTT: Average Annual Daily Truck Traffic

Corridor Performance (continued)						
MARIPOSA COUNTY						
Segment #	MPA 1	MPA 2	MPA 3	MPA 4	MPA 5	MPA 6
Basic System Operations						
AADT (BY)	5300	4480	9290	3840	1750	1310
AADT (HY)	8780	7240	13450	5450	2215	1580
VMT (BY)	50350	52505.6	7989.4	75993.6	6352.5	4755.3
VMT (HY)	83410	84852.8	11567	107855.5	8040.45	5735.4
Truck Traffic						
Total AADTT (BY)	444	125	287	202	193	67
Total Trucks (% of AADT) (BY)	8.37%	2.78%	3.09%	5.25%	11.00%	5.10%
5+ Axle AADTT (BY)	224	32	65	47	112	20
5+Axle Trucks (% of AADT) (BY)	50.40%	26.00%	22.60%	23.50%	58.40%	29.20%
Bottlenecks Data						
Bottleneck Existing:	Not Reported					
Bottleneck Location					Ferguson Slide	
Bottleneck Queue (length):					Varies	
Bottleneck Causality:					Temporary One Way	
Peak Hour Traffic Data						
Peak Period Length	0.25 Hr	0.25 Hr	0.25 Hr	0.25 Hr	0.25 Hr	0.25 Hr
Peak Hour Direction:	East	East	West	East	East	East
Peak Hour Time of Day	1500	1600	1700	1300	1300	1300
Peak Hour VMT (BY):	2789.39	4883.02	874.84	2649.02	3792.26	520.71
Peak Hour VMT (HY):	4620.91	7891.31	1266.59	3759.68	4799.92	628.03

CORRIDOR CONCEPT

CONCEPT RATIONALE

The central purpose of a TCR is to provide future direction on planning strategies to optimize interregional travel within a highway corridor for District 10. Caltrans currently emphasizes an approach that focuses upon sustaining and maintaining corridors, and less upon capacity expansion. Discussion of maintenance and design upgrades unrelated to system expansion are generally excluded from the TCR for this reason. Included in this approach are the strategies of Smart Growth, Context Sensitive Solutions, and Complete Streets, that attend to local interests and vision. At present, there are no planned projects to increase capacity; and there is no clear analytical indication for the need to increase capacity within the corridor. The planned and programmed projects for the corridor largely address operational deficiencies—improvements for STAA trucks, and intersection improvements.

In the case of SR 140 it is unclear how the route serves interregional travel in the sense of a work commute between two regions. The corridor does provide a work commute between Mariposa County and Merced County, but the population served by this is slight, and cost to improve the commute likely exceeds its benefits. Although the City of Merced may function as an interregional work trip generator, major centers of employment like the Bay Area or Sacramento are too distant to be served by the corridor while the nearest commute attractors (Fresno and Modesto) are accessible by other State highways with greater capacity.

SR 140 provides interregional travel for recreational purposes. However, as a recreational route, proposals for increasing highway capacity or operational betterment may degrade the values inherent in the tourist attraction. Yosemite has planned to reduce automobile congestion through transit solutions. YARTS was specifically conceived to address this need. Widening and straightening the portion of SR 140 that enters Yosemite may provide a quicker and possibly safer driving experience, but at the loss of travelers experiencing the natural beauty and the feeling for how people traveled the area in the past, with the likely outcome of increasing Yosemite congestion.

Given the rolling to mountainous terrain throughout Mariposa County, there exists some need for passing lanes. Several of these are proposed in the current RTP, and are reflected in the tables.

There is also a need for better bicycle connectivity in the corridor, particularly in Mariposa County. The State's advocacy of active transportation as a partial strategy to reduce the overall greenhouse gas footprint of transportation, and reduce carbon emissions to levels found in 1990 may lead to an increase in bicycle touring by residents of major urban areas. This has led to designation of SR 33 as a statewide interregional bicycle route, and may require similar upgrades for bicycle access to recreation destinations such as Yosemite. Such is suggested for SR 140 as either a Class II or Class IV since current bicycle LOS is F for the Class III facility now in place.

PROJECTS AND STRATEGIES TO ACHIEVE CONCEPT

PROJECTS AND STRATEGIES TO ACHIEVE CONCEPT					
Segment(s)	**Description**	**Location**	**Source**	**Purpose**	**Implementation Phase**
MERCED COUNTY					
MER 1	None are under consideration at this time.				
MER 2	STAA Improvements	SR 33/140 in Gustine	SHOPP and Minors 310 Operational Improvement Program	Enhanced goods movement	Mid Term
MER 3	None are under consideration at this time.				
MER 4-5	Intersection improvement and install traffic signal	Intersection of SR 140/SR 165	SHOPP and Minors 310 Operational Improvement Program	Reduction in daily vehicle hours of delay	Long Term
MER 5-6	Intersection improvement for STAA	Intersection of SR 140 and Applegate Road	SHOPP and Minors 310 Operational Improvement Program	Enhanced goods movement	Long Term
MER 7-8	None are under consideration at this time.				
MER 3-12	Bicycle Facility (Class I, II, IV)	Parallel Facility	N/A	Safety	Long Term
MARIPOSA COUNTY					
MPA 1-6	Bicycle Facility (Class I, II, IV)	Parallel Facility	N/A	Safety	Long Term
MPA 1	None are under consideration at this time.				
MPA 2	Passing Lane	Cathay's Valley	RTP	Improve Operations	Long Term
MPA 3	None are under consideration at this time.				
MPA 4	Passing Lane	N/A	RTP	Improve Operations	Long Term
MPA 5	Realignment	N/A	RTP	Improve Operations	Long Term
MPA 6	None are under consideration at this time.				

Terms (Continued)

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.

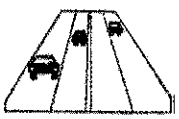
Headway – the time between two successive vehicles as they pass a point on the roadway, measured from the same common feature of both vehicles.

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

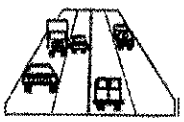
Intermodal Freight Facility – a location where different transportation modes and networks (air, marine, rail, truck) interconnect and allow freight to be transferred (transloaded) from one mode to another.

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.

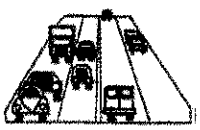
Level of Service (LOS) -- a qualitative measure describing operational conditions within a traffic stream and their perception by motorists. A LOS definition generally describes these conditions in terms of speed, travel time, freedom to maneuver, traffic interruption, comfort, and convenience. Six levels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



Terms (Continued)

Postmile – 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 a 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).

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 (BNSF).

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.

Segment – A portion of a facility between two points.

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.

Terms (Continued)

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

Acronyms (Continued)

ITIP – Interregional Transportation Improvement Program
ITSP - Interregional Transportation Strategic Plan
ITTS - Interregional Road System
K – Variable that expresses the ratio of peak hour volume to total traffic volume
KM - Kilometer
KPRA - Kingpin to Rear Axle
LOS - Level of Service
MAP-21 - Moving Ahead for Progress in the 21st Century
MAX - Modesto Area Express
MCAG - Merced County Association of Governments
MCLTC - Mariposa County Local Transportation Commission
MER – Merced County
MPA – Mariposa County
MPO - Metropolitan Planning Organizations
MVP – Maintenance Vehicle Pullouts
N/A - Not available
NHS - National Highway System
OWP – Overall Work Program
PA&ED - Project Approval/Environmental Document
PHF – Peak Hour Factor
PID - Project Initiation Document
PM - Post Mile
PPNO - Planning/Programming Number
PS&E - Plans, Specifications, and Estimates
PSR - Project Study Report
RHNA - Regional Housing Needs Allocation
RIP - Regional Improvement Program
ROW - Right of Way
RP – California Rail Plan
RSTP - Regional Surface Transportation Program
RTIP - Regional Transportation Improvement Program
RTIF-Regional Transportation Impact Fee
RTP - Regional Transportation Plan
RTPAs - Regional Transportation Planning Agencies
RTPA - Regional Transportation Planning Agencies
RWIS - Roadway Weather Information System
SAFETEA - Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2005
SB - Senate Bill
SCS - Sustainable Community Strategies
SHA - State Highway Account
SHOPP - State Highways Operations and Protection Program
SHS - System Highway System
SHSP - Strategic Highway Safety Plan
SJVGMAP - San Joaquin Valley Goods Movement Action Plan
SMF - Smart Mobility Framework
SR - State Route