

Concept of Operations

For

Pismo Congestion Relief Project

Left Shoulder Part-Time Travel Lane

Prepared by:



District 5 Traffic Operations Branch

v.3.0 Final

On Route 101 in San Luis Obispo County near Pismo Beach

Postmile: 16.0 – R22.5

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Concept of Operations – Final Draft Version	December 1, 2020	3.0	Final working version with all comments from FHWA incorporated
Concept of Operations – Final Version	January 7, 2021	3.0	Final version. Submitted to FHWA, CHP, HQ, SLOCOG

Forward

Purpose

This Concept of Operations (ConOps) was prepared by Caltrans District 5 Traffic Operations Branch. This document is an attempt to establish standardized policies and operational procedures to operate the first Left Shoulder Part-Time Travel Lane (LSPTTL) in the State of California.

The policies and procedures established herein are for information and guidance of the officers and employees of the Department, Traffic Management Center (TMC) Operators, Freeway Service Patrol (FSP) and California Highway Patrol (CHP).

Many of the instructions and procedures given here are subject to amendment as conditions and experience deem warranted. It is considered a living document where special situations may call for variation or adjustment from the policy and procedures and are subject to the District Traffic Operations and Management managers and CHP approval.

Scope

This ConOps is not a substitute for engineering and operational knowledge, experience, or judgement. It includes techniques as well as Figures and Tables to explain the concept of how one should operate a left side shoulder when it is used for part-time travel during peak traffic demand period. Safety of all road users is always the utmost priority for the Department in which any decisions made during the operation of this facility requires prudent and sound engineering judgement that will provide the most efficient and safe travel to the motoring public.

Table of Contents and Main Body Text

The Table of Contents gives the page number for each Topic, Section and Subsection. As more experience is gained through the years of operations of the facility, it is expected that this ConOps will be revised as deemed appropriate to provide the latest State of the Art practices and operating procedures and contents contains herein. As Intelligent Transportation System (ITS) technologies continues to evolve and becomes more advance and mature, the table of contents and main body text stated herein would be revised to incorporate the latest ITS elements, techniques and technological changes and advancement.

Acknowledgements

District 5 Traffic Operations Branch would like to acknowledge and express our gratitude to the following functional units and agencies for their input and advice on this ConOps.

1. Caltrans District Operations and Maintenance
2. Caltrans Project Management
3. Caltrans Office of System Operations (HQ)
4. Caltrans Managed Lane Program Manager (HQ)
5. Caltrans Design
6. California Highway Patrol (CHP), California Central Coast Division
7. San Luis Obispo Council of Government (SLOCOG)
8. Federal Highway Administration (FHWA), California Division-CalSouth Office

The project development team for this project includes SLOCOG, the City of Pismo Beach, and the CHP.

Other stakeholders listing includes:

1. County of San Luis Obispo
2. Various Cities and community service districts within southern San Luis Obispo County
3. The Northern Chumash Tribal Council (yak tityu tityu yak tiłhini tribe in San Luis Obispo County region)
4. A myriad of local organizations and citizen advocacy groups.

The roles of these PDT members and stakeholders is to help develop and garner feedback and support on the project.

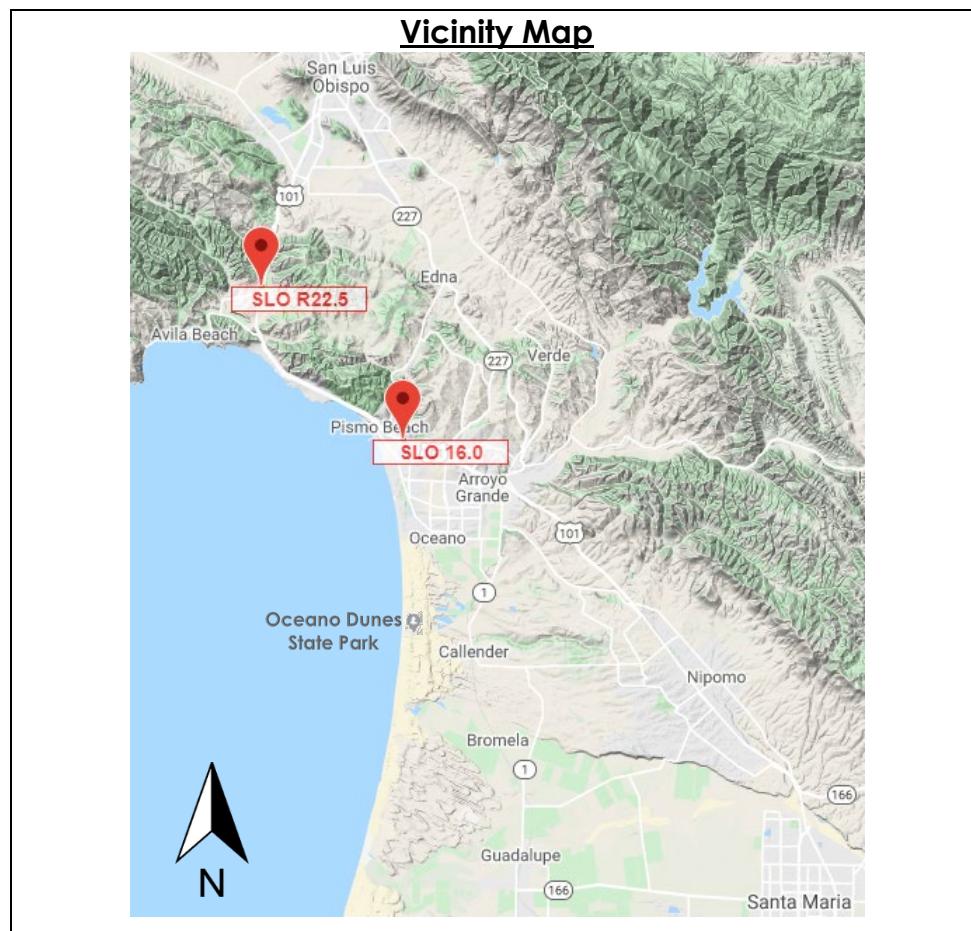
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Introduction

The US 101 is a major north-south connector providing key links between the Central Valley and the Central Coast. It was upgraded from an expressway to a four(4) lanes freeway in the early 1960s. The two(2) lanes southbound freeway within the project vicinity consists of a short and steep upgrade from San Luis Obispo Creek to just south of Avila Beach Drive southbound on-ramp merge. There are five under-crossing bridges encompassing the project with a breath taking scenic panoramic view of the Pacific Ocean from Pismo Beach to the Oceano Dunes. In 2009, a project was completed, which included a truck climbing lane in the southbound direction. The truck lane starts at San Luis Obispo Creek and drops 0.25 miles north of Spyglass Drive. The truck lane drop is approximately 0.6 miles past the crest of the vertical curve located just south of Avila Beach Drive. The existing left shoulder varies from 3 to 10 feet and the right shoulder varies from 8 to 10 feet. A frontage road, Shell Beach Road is in near proximity and parallel the freeway right of ways on the ocean side. Sensitive Native American and coastal resources are found throughout the corridor. Therefore, widening the freeway to full standards will be extremely costly due to the constrained environment. The City of San Luis Obispo serves as a primary employment center with northbound morning commuters entering daily from Santa Maria, Nipomo and the Five Cities Area, and later returning southbound in the late afternoon evening hours.



The Pismo Congestion Relief Project proposes to widen and re-construct the existing left shoulder to be used as a part-time travel lane between Postmile 16.0 - R22.5 on the southbound side of Route 101 near Pismo Beach depending on the preferred alternative selected through the Environmental Impact Report (EIR) process. In the Traffic Operations Assessment Report (TOAR), the benefit/cost was estimated at an attractive ratio of 9:1. This corridor currently experiences recurring congestion during the regular afternoon commute hours and weekends during Summer season. The Time of Operations of this part-time travel lane is expected to be five (5) hours per day and occur during the afternoon peak travel demand and then revert to a 14-foot-wide shoulder next to a median barrier at all other times. Overhead signal structures with Lane-Use Control Signals will be spaced at intervals based on visibility along the corridor to instruct motorists whether the part-time travel lane is open to traffic. The color of lane-use control signal indications shall be clearly visible for 2,300 feet at all times under normal atmospheric conditions, unless otherwise physically obstructed per CA-MUTCD Rev 5, Chapter 4M.

This project is the first in the State of California in which a left shoulder is utilized as a part-time travel lane. It is a seven (7) year pilot project in which its effectiveness will be re-evaluated, and the future of the facility will be determined by all stakeholders at the seventh year of operations. It is recommended that the facility be evaluated 1 year after opening day and re-evaluated 6 years after opening day before the end of the pilot program (7th year). Project will be evaluated based on an average speed improvement of at least 55 mph or faster, a Travel Time Index of 1.37 or less, a Buffer Time of 12.4 minutes or less, Buffer Time Index of 1.0 or less and the removal of bottlenecks and queues.

After a seven-year pilot period, Caltrans plans to pursue legislation making the part-time travel lane permanent.

The information in this Concept of Operations (ConOps) document references the FHWA's "Use of Freeway Shoulders for Travel — Guide for Planning, Evaluating, and Designing Part-Time Shoulder Use as a Traffic Management Strategy" unless otherwise noted.

At the writing of this ConOps, there are currently 2 viable Alternatives, namely EIR Alternatives 1 with no change to truck-climbing lane, Alternative 1 with truck-climbing extended pass Spyglass exit and Alternative 2. This corresponds to the Traffic Operations Analysis Report (TOAR) Alternative 1, 2 & 3 respectively.

Objectives

The primary objective of this facility is to alleviate congestion through the corridor during peak traffic demand. Converting the inside shoulder into a temporary travel lane would improve the operation of the corridor during peak travel demand, thereby reducing congestion and delays experienced by motorists without requiring large capital investments. Implementation would require additional maintenance and

traffic management efforts to ensure that the lane is safe to operate as a travel lane during peak congestion time periods as well as identifying when to open or close the part-time travel lane. An additional element under consideration is increased enforcement in the area to ensure that the regulation of the lane is observed by motorists. A full Traffic Operations Assessment Report (TOAR) was performed for 20 years and determined that a 24/7 full-time lane is not needed and widening the existing shoulder would be less expensive than adding a third full-time lane to full design standard in a very constrained right-of-way. The analysis showed that a part-time travel lane was adequate and meets the need and purpose of the project which is to relieve congestion.

Applicable State Statute and Intended Users

California Vehicle Code(CVC) Sections [21650](#) and [21755](#) prohibit motorists from driving on the shoulder of a highway. The only exception is for transit buses operated by the Monterey-Salinas Transit District and the Santa Cruz Metropolitan Transit District. California Streets and Highways Code(SHC) Section [148.1](#) specifically authorizes these agencies to operate transit buses on the right shoulders of certain state highways within the areas served by the transit services of the districts, with the approval of Caltrans and the CHP. There are two sections of the Streets and Highways Code provide Caltrans with the authority to develop and operate part-time lanes. SHC Section [149](#) allows Caltrans to authorize or permit exclusive or preferential use of designated lanes on existing state highways for buses only or for buses and other high-occupancy vehicles. SHC Section [92](#) provides that Caltrans may do anything necessary and convenient or proper for the construction, improvement, maintenance or use of all State highways. The part-time travel lane is intended to serve as a third general-purpose lane during peak traffic events. The part-time travel lane would be open to all users except commercial trucks with three or more axles and vehicles with trailers in accordance to CVC Sections [22406](#) (Maximum Speed for Designated Vehicles) and [21655](#) (Slow-Moving Vehicles). Regulatory "TRUCKS USE RIGHT LANE" (R4-5) sign may be placed in advance of the begin of LSPTTL to advise trucks that they must use the right lane except to pass slow moving vehicles as provided in CVC Section [21654](#).

Times of Operation

The proposed facility is intended to alleviate congestion in the southbound direction during peak afternoon commute hours between 2pm and 7pm. The peak demands in this area occur primarily during the afternoon commute times, or between 3:30 pm and 6:00 pm on weekdays.

This area also experiences congestion during weekends especially during the summer months. Congestion may occur at other hours due to special events or holidays. To promote a consistent mode of operations and road user expectation perspective,

the part-time travel lane Time of Operation is therefore recommended to be from 2pm – 7pm daily, five (5) hours per day to simplify operations and control.

The District Traffic Management Center (TMC) is currently not a full-time operation. However, provisions can be made for the distant future when the TMC goes into a full-time 24/7 operation mode.

The part-time lanes should not be used during periods of inclement weather. Inclement weather is defined in CVC Section [24400](#) as a weather condition that prevents a driver of a motor vehicle from clearly discerning a person or another motor vehicle on the highway from a distance of 1,000 feet or requires windshield wipers to be in continuous use due to rain, mist, snow, fog, or other precipitation or atmospheric moisture.

Daily Normal Operating Scenario

Operating hours of the part-time travel lane currently being proposed is set at a fixed time from 2pm to 7pm daily. Outside of the peak congestion times, the shoulder would remain closed to traffic, with the overhead signs displaying a Red **X**. When it comes time to open the part-time travel lane, TMC operators would visually inspect the shoulder for debris and obstruction through the Pan-Tilt-Zoom (PTZ) Close Circuit TV CCTV.

Opening

During daily 2pm to 7pm operations, it is anticipated that the District 5 TMC operator would be required to monitor traffic conditions in the corridor via visual inspection through PTZ CCTV with the option of requesting assistance of the FSP.

Before the onset of the opening time, a visual sweeping of the corridor for any debris and obstruction would be required immediately before opening the part-time travel lane to traffic to ensure it is clear of any debris and obstructions. Freeway Service Patrol (FSP) could be dispatched in coordination with TMC operator using PTZ CCTV cameras to remove any obstructions to ensure lane is clear before opening.

Once the part-time travel lane is determined to be clear for traffic all the Lane-Use Control Signal will be turned on all at once from Red **X** to Green Down ↓ arrow.

FSP could be dispatched to perform a physical sweep if the TMC operator deems necessary to have a controlled opening of the lane. The FSP flashing light bar must be on while performing the shoulder sweep. If the FSP is dispatched to do the sweep, it shall be in constant communication with TMC operator to turn on the Green Down ↓ Arrow as it passes under each Lane-Use Control Signal to provide a safe and controlled opening of the lane. The speed of FSP performing the sweep shall be no faster than 65 mph. All Lane-Use Control Signal shall display Green Down ↓ arrows pointing downwards in a rolling sequential order as FSP passes under each Lane-Use Control Signal indicating the part-time travel lane is open to traffic.

Once the part-time lane is fully open, the TMC operator would send a notification to the CHP dispatcher notifying them that the part-time travel lane is open to traffic.

If inclement weather occurs during the operating hours of 2PM – 7 PM, CHP and the TMC operator should make the determination to closed the LSPTTL as prescribed in the Closing section below and per Caltrans Guidance for Implementation of Part-Time Lanes.

Closing

If inclement weather occurs before the 2 PM, the LSPTTL should remain close until the weather clears per determination by CHP and TMC.

Closing would occur at 7 pm daily. The TMC operator would initiate the closing macro and the Lane-Use Control Signals will switch from Green Down ↓ arrow to Red X in a rolling sequential order at a prescribed time interval of 25 seconds indicating the part-time travel lane is closed to traffic based on a 65 mph speed at 2300 feet interval spacing. The time interval shall be adjusted based on the spacing between each consecutive Lane-Use Control Signal. This would provide enough time for vehicles that are already in the part-time travel lane to vacate and exit the part-time travel lane safely without being “trap” by the Red X. Once the LSPTTL is fully closed, the TMC operator would send a notification to the CHP dispatcher notifying them that the part-time travel lane is now closed.

If inclement weather occurs just before 7 PM and is impairing the TMC operator from using the PTZ CCTV, a visual sweeping operation by dispatching FSP described in the paragraph under the Opening section on previous page would be required when closing the part-time travel lane in a rolling sequential fashion. This step can be re-evaluated and revised as needed after the part-time travel lane is opened to traffic for 1-2 years.

Design Features

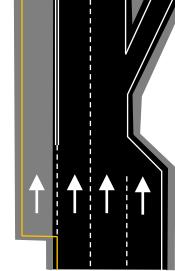
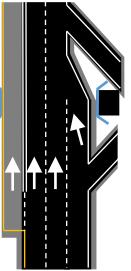
Left Shoulder Part-Time Travel Lane (LSPTTL)

The part-time travel lane would start from post mile R20.3 to post mile 16.2 under Alternative 1 and from post mile R21.5 to post mile 16.2 under Alternative 2, comprising an approximately 4.1 or 5.3 mile long corridor respectively. The part-time travel lane would widen the inside shoulder on the southbound side and would consist of a twelve (12) foot travel lane with appropriate structural section and a two (2) foot left shoulder with a similar structural section. The part-time travel lane would be striped on the right side of the shoulder with an eight (8) inch white dash lane lines at the beginning for 1300 feet, followed by a double eight(8) inch white lines until the remaining 1400 feet with a eight (8) inch white dash lane line to end the shoulder travel. A solid yellow lane line will be on the left side of the shoulder.

Entry to Corridor

The corridor would begin approximately at post mile R21.5 or R20.4 depending on which Alternative is ultimately selected through the environmental review process. The existing outside lane (a Truck Climbing Lane, TCL) is dropped approximately at postmile R20.3 and the highway narrows from three lanes to two. There are two (2) alternatives for the entry to the part-time travel lane. Alternative 1 has 2 variations for where the TCL ends and is shown in Table 1.

Table 1: Left Shoulder Part-Time Travel Lane Entry Options

Options for the Entry to the Left Shoulder Part-Time Travel Lane		
Alternative 1:		Alternative 2:
Variation 1	Variation 2	
 <p>Shell Beach Rd. Off-ramp (Exit 193)</p> <p>LSPTTL starts approx. 1800' upstream of Spyglass Off-ramp</p>	 <p>Extend TCL pass Shell Beach Rd. Off-ramp and ends before the On-ramp</p>	 <p>Shell Beach Rd. Off-ramp (Exit 193)</p> <p>Avila Beach Dr. Overcrossing</p> <p>San Luis Obispo Creek</p>

Alternative 1 would widen the shoulder on the inside and have the part-time travel lane start to the left of the existing general-purpose lanes, approximately at postmile R20.4, 1800 feet before the Shell Beach Road Off-ramp. Variation 1 would retain the existing configuration where the truck climbing lane ends just prior to the Shell Beach Road Off-ramp. Variation 2 would widen the Spyglass Drive Undercrossing to four lanes and extend the truck climbing lane to end after the Shell Beach Road offramp but before the subsequent Shell Beach Road On-ramp.

Alternative 2 proposes starting the project 1 mile upstream of the existing TCL drop, just after the San Luis Obispo Creek Bridge. Instead of the truck climbing lane being to the right, the two general-purpose lanes would be shifted one lane to the right for the part-time travel lane to occupy the left lane. This option would remove the truck climbing lane from the corridor and provide two travel lanes during the off-peak and three travel lanes during the peak in this section. For the first mile of the corridor, where the truck climbing lane is being removed and the part-time travel lane added, no pavement widening work would be necessary and only striping and signing changes would be implemented.

No preferred Alternative has been selected at this time.

Ending of the Corridor

The corridor would end at post mile 16.2 in the vicinity of the South Price Street On-ramp. The part-time travel lane would end before the Union Pacific Rail Road (UPRR) overcrossing as shown in Figure 1.

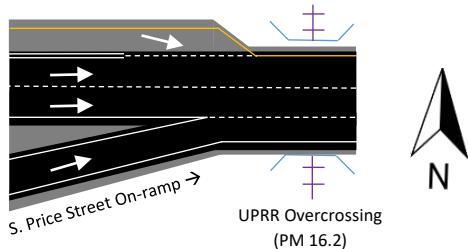


Figure 1: Ending of part-time travel lane corridor

Traffic Control Devices

LSPTTL Static Roadside Signs

A series of road side sign package for experimentation was approved by the California Traffic Control Devices Committee (CTCDC) on July 9, 2020 consistent with [CA MUTCD Section 1A.10](#). By using this recommended sign package, it minimized the need for the large overhead CMS/EMS sign.

Advance signage will be installed at one(1) mile, three quarter ($\frac{3}{4}$) mile, half ($\frac{1}{2}$) mile and quarter ($\frac{1}{4}$) mile before the beginning of the part-time travel lane to inform motorist that shoulder for part time travel is allowed downstream as shown in Figure 2.

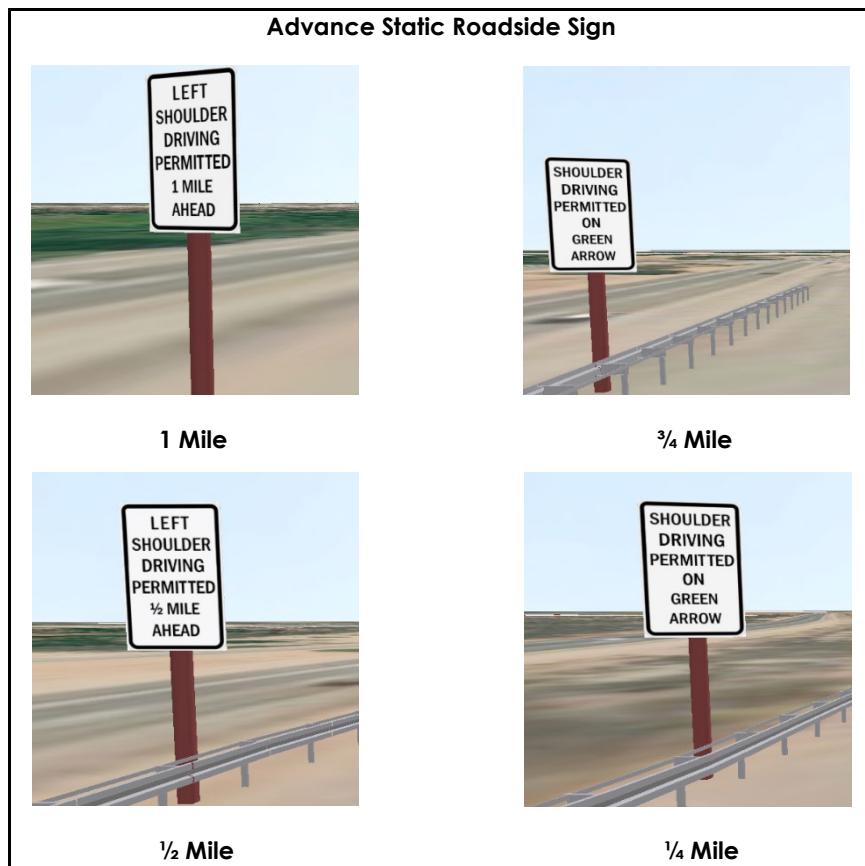
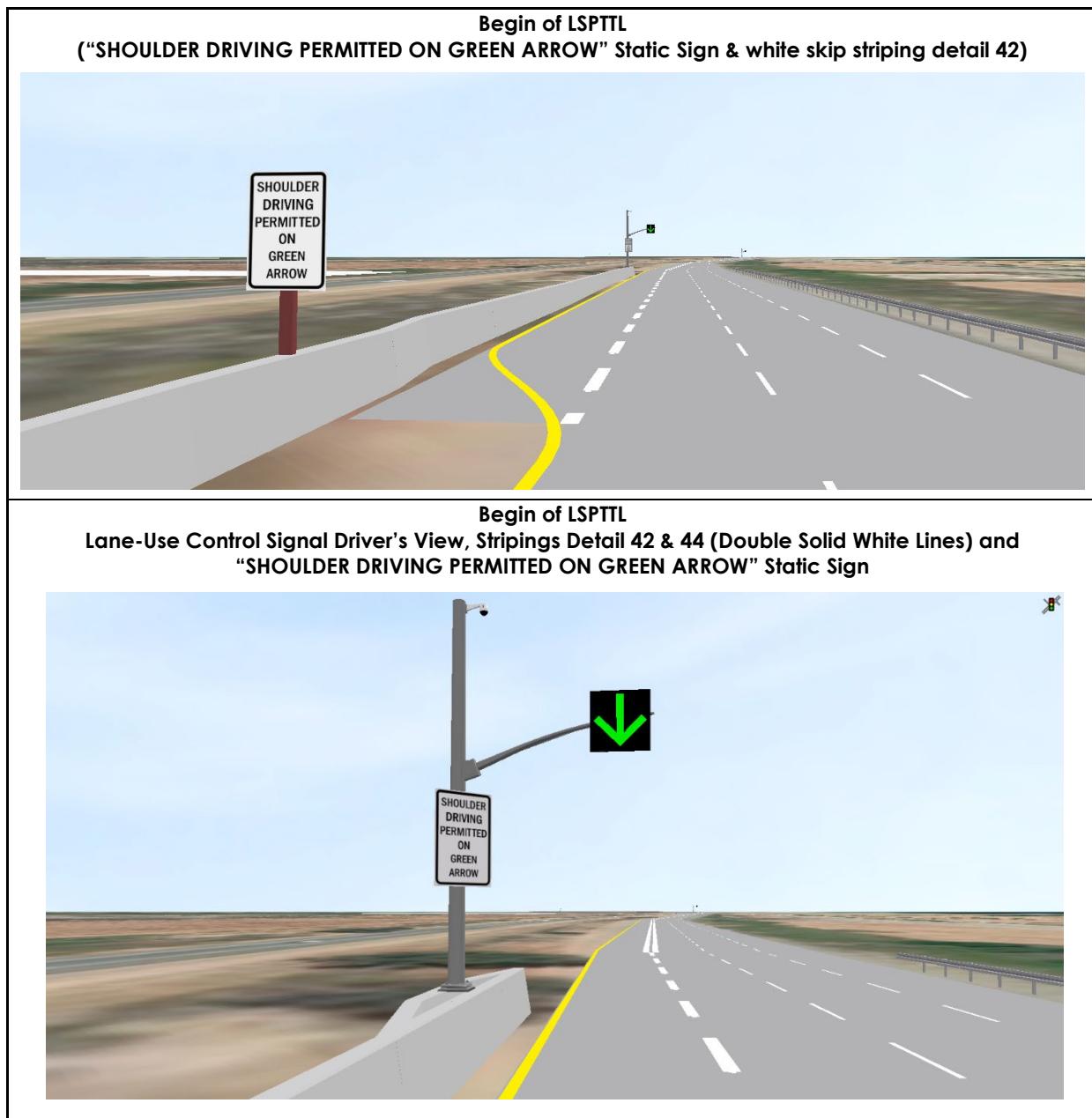


Figure 2: Advance Static Roadside Sign

Beginning and End of Left Shoulder Part-Time Travel Lane, Lane-Use Control Signal, Striping and Static Sign

Figure 3 illustrates the sequence of the static signs, striping and Lane-Use Control Signal. There is only one (1) permitted Entry (Begin) and Exit (End) for 1300 feet and 1400 feet respectively. At the ingress and egress of the part-time travel lane, there would be an eight (8) inch white dash line on the right side of the lane. between the ingress and egress zones, a double white eight (8) inch solid lines to indicate lane change from left to right is prohibited until the last 1400 feet at the egress area as shown in Figure 3. This would require the California Highway Patrol (CHP) to enforce the rules of the road per [California MUTCD and Vehicle Code](#).



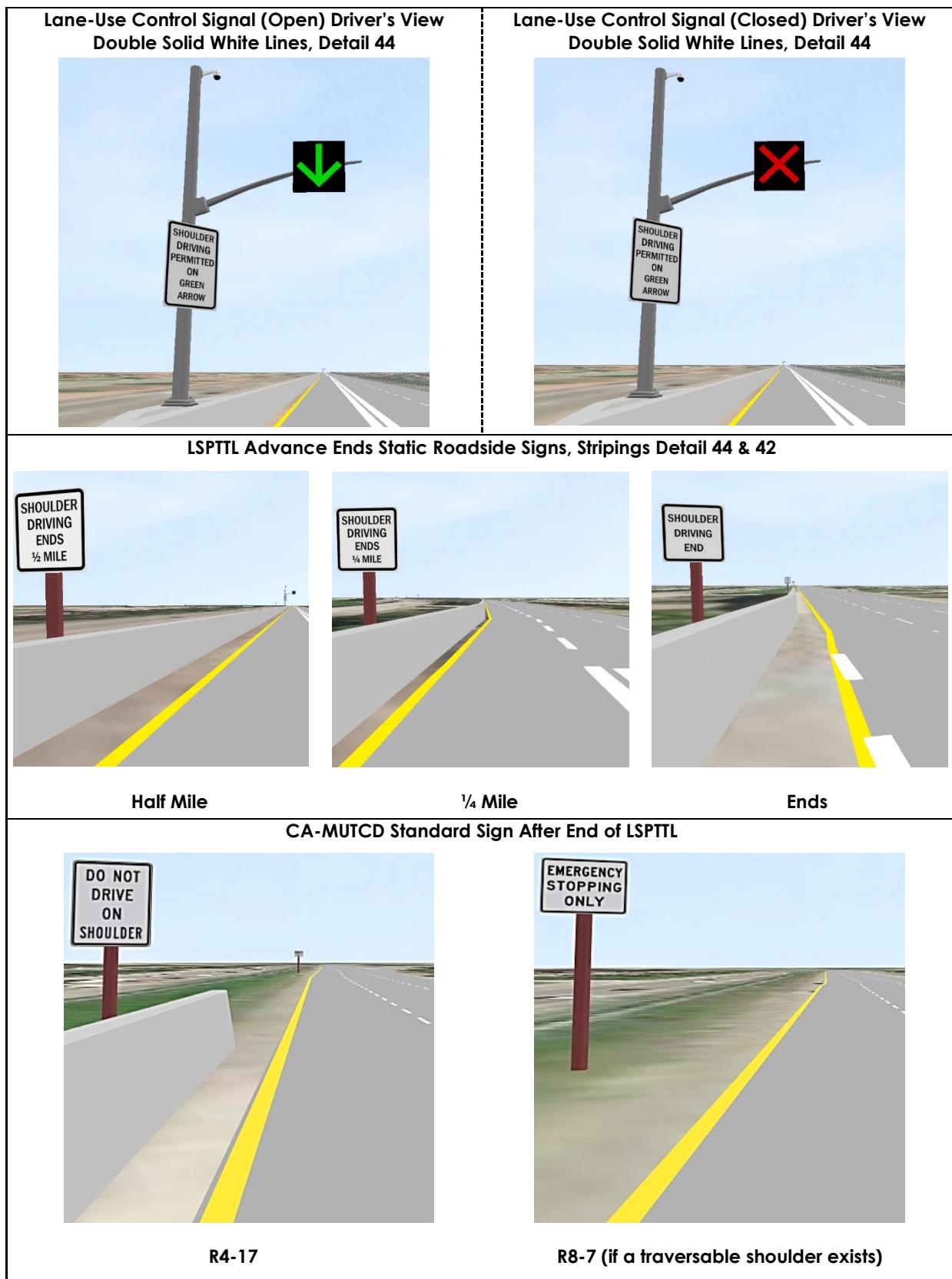


Figure 3: Beginning and end of part-time travel lane, Striping and Static Sign

One(1) MUTCD standard R4-17 sign is install immediately 500 feet after the "END TRAVEL ON SHOULDER" sign and MUTCD standard R8-7 sign may be installed (optional) when there is a traversable standard left shoulder after the end of LSPTTL.

Lane-Use Control Signals

Overhead electronic Lane-Use Control Signals will be installed along the corridor at regular intervals to indicate to motorists if the part-time travel lane is open or not. It would be consistent with [CA MUTCD Chapter 4M](#) and CVC Section [21454](#). The lane-use control signals would be placed at intervals based on the criteria that at least one signal is visible to the motorists at all time through the corridor. Due to the potential for fog to obscure the displays of the lane-use control signals, spacing and size of the signals will have to be positioned so that a motorist can easily comprehend the displays at any time, even in dense fog. Larger signals can be placed at longer intervals while smaller signs would have to be placed closer together. For example, lane control signs that are 30"x30" square in size can be spaced 0.25 to 0.37 miles apart while lane control signs that are 48"x48" square can be spaced 0.5 to 0.62 miles apart. However, no lane control signal are to spaced at more than 2300 feet apart per CA MUTCD. The lane-use control signals will be centered over the shoulder on [Caltrans standard signal pole type 19-3-100](#) as shown in Figure 4 below.

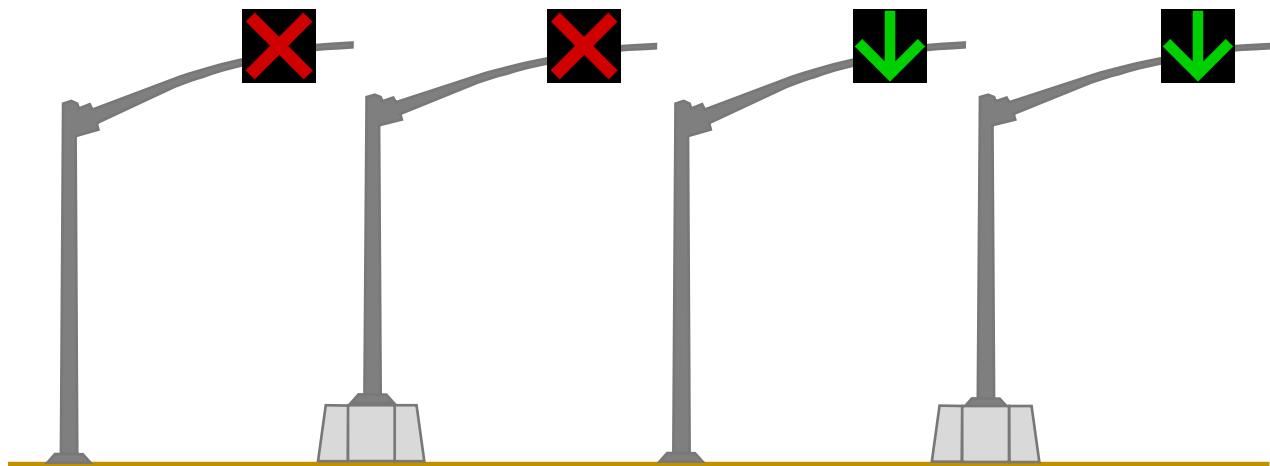


Figure 4: Lane-Use Control Signals Mounting: Traffic Signal Pole with Mast Arm, on ground or on median barrier.

During normal freeway operations, the proposed facility will consist of two general-purpose lanes with a fourteen (14) foot left shoulder. The Lane Control Signal will display a Red X indicating that the part-time travel lane is closed to traffic and for emergency stopping only.

PTZ CCTV cameras shall be installed near the top of each of the Lane-Use Control Signal post. At some locations, multiple cameras per mast arm or an independent camera might be needed to ensure full coverage of the corridor due to the presence of relatively tight curves and numerous sight obstructions along the corridor. U.S. Route 101 in the vicinity of Pismo Beach is primarily a tangent portion with gentle curves,

vertical crest and a few objects that may obstruct the CCTV camera's field of view. Therefore, it is anticipated that only one CCTV camera per signal pole would be necessary. However, field verification during field installation and testing will determine the ultimate number of CCTVs required.

Other Operating Scenarios

The following scenarios are hypothetical in nature and are intended to guide decision making processes in the following potential situations. These scenarios were created based upon the organization and input of the entities involved.

1. Incident — Left Shoulder Blocked Ahead of Peak Hour

Just prior to the start of the afternoon peak period, a vehicle breaks down and becomes immobilized on the inside shoulder. The TMC operator performs a normal visual sweep of the corridor using the PTZ CCTV feed. The TMC operator then notices the disabled vehicle blocking the part-time travel lane, recognizing that it is nearing the opening hour and that the part-time travel lane should be opened soon, the TMC operator would then abort the opening procedure and notify the Freeway Service Patrol and a unit is dispatched to the location and assists the motorist. The process takes a little over an hour for the Freeway Service Patrol to respond and clear the part-time travel lane. By this point it is well into the peak hour and traffic is heavily congested due to traffic having access to only two lanes. At this time, the Freeway Service Patrol notifies the TMC that the lane has been cleared and the TMC operator performs a visual inspection via the PTZ CCTV feed and this time sees that the lane is clear for traffic. The TMC operator then initiates the macro that would change the Lane-Use Control Signals to display a Green Down ↓ arrow while also notifying the CHP dispatcher that the part-time travel lane is open to traffic.

The closing of the lane after peak hour would function similar to any other scenario. The Lane-Use Control Signals would change to display a Red X and a notification would be sent to the CHP dispatcher notifying them that the part-time travel lane is now closed.

2. Incident Management — Crash/#2 Lane Blocked in Off-Peak

During normal freeway operations in the off-peak hours, a collision occurs and the #2 or outside lane becomes blocked. This results in traffic slowing down and merging into the #1 lane. Immediate coordination between TMC operator and the CHP Incident Commander on-scene would be needed because the commander could unilaterally direct traffic into the shoulder. Also, the commander may want to keep the shoulder open upstream for EMT/Fire/Tow vehicles to reach the scene. The TMC operator receives a notification from the commander that the part-time travel lane should be opened to traffic. The TMC operator begins a visual sweep of the corridor via the PTZ CCTV feed and notices that the #2 lane is blocked while the part-time travel lane is clear and ready for traffic. After ensuring that the part-time travel lane is clear, the TMC operator initiates the macro that would change the Lane-Use Control

Signals to display a Green Down ↓ arrow while also notifying the CHP that the part-time travel lane is open to traffic and the part-time travel lane is open to help manage the incident.

The CHP would handle the clearing of the collision similar to any other incident, activating the necessary resources as they see fit. After the collision has been cleared and the #2 lane opened to traffic, the CHP notifies the TMC and the TMC operator to initiates the closing macro where the Lane-Use Control Signals change to display a Red X and a notification would be sent to the CHP dispatcher notifying them that the part-time travel lane is now closed and the incident was cleared.

A similar method could be used to allow two lanes of traffic to flow around a maintenance operation requiring the closure of the #2 lane.

Opening the part-time travel lane to move traffic around a closure in the #1 lane is not being considered at this time.

3. Weekend Traffic/Summer Tourist Season

Weekend and Summer tourist season traffic are currently anticipated to be handled as described in the Normal Daily Operating Scenario on page 3.

4. Incident—Crash/Part-Time Travel Lane Becomes Blocked During Peak Hour

It is currently well into the peak hour and part-time travel lane is open to traffic. A collision occurs in the part-time travel lane and the lane becomes blocked to traffic causing traffic to slow down and begin merging into the #1 lane. Immediate coordination between TMC operator and the CHP Incident Commander on-scene would be needed because the commander could unilaterally direct traffic into the #1 lane. The TMC operator would initiate the closing macro that would change the Lane-Use Control Signals to display a Red X simultaneously and a notification would be sent to the CHP incident commander notifying him/her that the part-time travel lane is now closed due to the incident. The CHP commander would activate the necessary resources to clear the collision, similar to any other collision. After the collision has been cleared, the commander would notify the TMC operator that the collision has been cleared and the TMC operator would visually sweep the corridor, ensuring that the part-time travel lane is clear and ready for traffic. After seeing that the part-time travel lane is clear and ready for traffic, the TMC operator would initiate the macro that would change the Lane-Use Control Signal to display a Green Down ↓ arrow while also notifying the CHP dispatcher that the part-time travel lane is now open to traffic. If the collision occurred later in the day, it is possible that the collision cannot be cleared before the closing hour, in which case the part-time travel lane would remain closed.

Additionally, the CHP could request that the part-time travel lane be closed to allow emergency responders to use the shoulder to quickly reach a crash scene anywhere on the facility.

5. Weather Related Incident — Fog or Rain

In the period preceding the peak period, relatively dense fog rolls in from the coast. The TMC operator, in anticipation of opening the part-time travel lane to traffic notices that the fog has rolled in and is partially obscuring the field of view of the PTZ CCTV cameras.

If visibility is less than $\frac{1}{4}$ of a mile, the TMC operator may consider not opening the part-time travel lane. If the visibility is more than a $\frac{1}{4}$ of a mile and if the TMC operator determines that they cannot see enough of the roadway to ensure that it is clear, the FSP can be dispatched to drive the corridor and physically check the part-time travel lane. The FSP should be in constant communication with the TMC operator as it passes each Lane-Use Control Signal to confirm the part-time travel lane is clear and ready for traffic.

After sweeping the corridor, the FSP contacts the TMC operator that the part-time travel lane is clear to initiates the macro that would change the Lane-Use Control Signal to display a Green Down ↓ arrow.

If the TMC operator deems necessary to have a controlled opening of the lane , the operator could choose to dispatch the FSP a second time. The FSP flashing light bar must be on while performing the shoulder sweep. If the FSP is dispatched to do the sweep, it shall be in constant communication with TMC operator to turn on the Green Down ↓ Arrow as it passes under each Lane-Use Control Signal to provide a safe and controlled opening of the lane. The speed of FSP performing the sweep shall be no faster than 65 mph. All Lane-Use Control Signal shall display Green Down ↓ arrows pointing downwards in a rolling sequential order as FSP passes under each Lane-Use Control Signal indicating the part-time travel lane is open to traffic.

During operation of the lane, the TMC operator would rely on seeing vehicle tail lights and apparent speed when passing the PTZ CCTV cameras to verify if traffic is still flowing through the corridor. As an assist to the TMC operator, vehicle presence and speed detectors would monitor traffic for potential slow down to speed lower than 50 mph indicating that the part-time travel lane may be blocked. If the fog becomes so dense that the TMC operator cannot readily assess the flow of traffic, the TMC operator may consider closing the shoulder lane to traffic.

6. Equipment Failures — Lane Use Control Signal and PTZ CCTV

When any equipment failures occur before or during the normal operating hours, TMC operator has to close the travel lane and immediately dispatch maintenance crew to fix or replace the failed equipment. The Travel lane shall remain close until repairs are complete. Once repairs are completed, all opening procedure shall follow the Daily Normal Operating Scenario outlined on page 4 & 5 of this document.

When any equipment failures occur outside the normal operating hours of 2pm – 7pm, all repairs shall follow the procedure outlined in the Maintenance section on page 14 & 15 of this document.

System Management

Owner

After construction is completed, Caltrans District 5 will be responsible for the maintenance and operation of the part-time travel lane. Caltrans will also be the owner of the fiber optic line.

Operator

The part-time travel lane would be activated and monitored by the District 5 Traffic Management Center (TMC) located in San Luis Obispo. A TMC operator would monitor the corridor through PTZ CCTV cameras positioned along the corridor and would be responsible to ensure the part-time travel lane is clear of debris and obstructions before the opening time. Decision should be made to delay the turning on of the Lane-Use Control Signal if an obstruction is detected and/or reported by the FSP sweep.

The long-term costs of an increased number of operators to continuously monitor part-time shoulder use may be greater than creating software to assist with part-time shoulder use. Opening or closing a shoulder as a fully automated process is not being considered at this point in time; however, a computer-based system could be utilized to monitor traffic volumes and speeds and provide recommendations to TMC operators as to when it may be advisable to open or close the part-time travel lane. Nonetheless, a TMC operator would ultimately decide whether to open or close a shoulder based on the recommendation. Training for the use of the software would be provided by the vendor.

Maintenance

Maintenance of the part-time travel lane would be similar to the maintenance of the adjacent general-purpose lanes. Maintenance operations that would require maintenance vehicles stopping on the shoulder would be restricted to be outside of peak times to not adversely affect the operation of the part-time travel lane. There is no need to clean the part-time travel lane with street sweepers on a regular basis, as the presence of traffic on the shoulder moves debris off of it similar to a general-purpose lane. Maintenance operations for the part-time travel lane would be completed outside of the peak hours, when the lane functions as a wide shoulder. The extra width would provide an area for maintenance workers to position their vehicles as they perform routine maintenance on the infrastructure associated with the part-time travel lane.

The Lane-Use Control Signals consist of a panel with Light Emitting Diodes (LEDs) embedded in it. LEDs have a long service life and it is anticipated that the signals rarely need to be serviced. If the diodes were to stop functioning on one of the signals, maintenance would most likely have to replace the signal panel with a new one so

that repairs can be made to the old malfunctioning unit. Maintenance of the PTZ CCTV cameras and vehicle detection equipment would be similar to the routine maintenance of similar equipment already installed elsewhere in the state, although it would be somewhat easier since the part-time travel lane would provide a good refuge for workers.

Enforcement

The success of part-time shoulder use in large part would depend on the extent to which drivers comply with posted regulatory signs and lane-use control signals and California Traffic laws. CHP regular enforcement beat and protocol is expected. Protected enforcement pad and refuge area would be provided strategically along the project.

There is one (1) permitted 1300-foot Entry (Begin) and one (1) permitted 1400-foot Exit (End) for the part-time travel lane. At the controlled ingress and egress of the lane, an eight (8) inch white skip line is on the outside of the lane for 1300 feet, it will then followed by a double white lines to indicate the lane changes is prohibited until the last 1400 feet (See Figures 4). This will provide California Highway Patrol (CHP) the legal authority to enforce per California MUTCD and CVC Sections [21460](#), [21461](#) and [21655.8](#) during and outside normal operating hours. On-site presence of a patrolling enforcement officer is the most effective means of enforcement, as automated means of enforcement are not available at this time and there are no legal provision in California freeway system. PTZ CCTV surveillance may assist in reviewing the frequency of violations (i.e., monitoring vehicles illegally crossing the separation treatment, illegal use of the lane during off operation hours) and determine specific areas for enforcement. Installation of Vehicle Detector System (VDS) is also being considered, as these elements could provide information as to the performance of the facility. In particular, these elements could be helpful in tracking compliance on a system level and would help target specific areas for additional enforcement, if necessary. The project team will recommend enforcement to CHP where appropriate.

Incident Management

Freeway Service Patrol (FSP)

The first beat of Freeway Service Patrol was implemented by SLOCOG in March 2020. Caltrans will continue to coordinate with and seek authorization from SLOCOG to add on or revise to the existing FSP protocol to support and enhance the safe and efficient operations of this part-time travel lane.

The Freeway Service Patrol will be requested to regularly pass through the area to assist motorists as well as to help clear debris from the managed part-time travel lane.

Caltrans maintenance forces may also be contacted to assist in keeping the shoulder clear of debris.

Prior to opening the part-time travel lane to traffic, the District 5 TMC will visually inspect the corridor using installed PTZ CCTV cameras which cover the length of the corridor. After ensuring that the part-time travel lane is clear and safe for operations, the District 5 TMC opens it for use. If the inspection detects that there is obstruction blocking the part-time travel lane, the District 5 TMC will dispatch the Freeway Service Patrol to clear the debris or assist disabled vehicles as necessary and will not open the part-time travel lane until it is clear.

The District 5 TMC will notify the California Highway Patrol San Luis Obispo Communications Center once the inspection is complete to provide a status update.

Intelligent Transportation System Elements

The corridor will incorporate PTZ CCTV coverage of the part-time travel lane, giving the TMC complete coverage of the operation of the facility. This will allow the TMC to monitor the corridor for slowdowns and potential obstructions to traffic flow and assign the Freeway Service Patrol or Caltrans maintenance forces to assist in clearing the obstruction.

Vehicle Detection System (VDS) would be installed strategically to facilitate data collection for Speed and Flow on the freeway. They would provide valuable information as to the performance and reliability of the system, providing District personnel with detailed information on vehicle volumes and speeds on a regular basis. Data collected will be utilized for traffic analysis and evaluate the project on the 1st and 6th year of operation discussed under the Introduction section on page 2 of this document.

Controller cabinets with backup power supply units will be installed at key locations along the corridor to ensure continuous operation of the Lane-Use Control Signals and other ITS elements. The cabinets will be installed beyond the right shoulder where they can easily and safely be accessed by maintenance personnel, preferably adjacent to existing cabinets, power supply and/or a maintenance pullout. One location under consideration would be adjacent to the existing cabinets that is located along the right shoulder of the southbound US 101 freeway (adding maintenance pullout at these locations is also being considered). In addition to the cabinets, installation of fiber optic cable will be implemented along the corridor to provide fast and reliable communications between the cabinets to ensure the reliable operation of the ITS elements along the corridor. Caltrans will install, own and operate the fiber optic infrastructure. Any wireless communications will be through Verizon Wireless or local wireless provider.

Outreach and Education

As a part of the ongoing efforts to seek project approval, the project will have its own website and marketing effort to educate the public about the project. Marketing efforts would detail what motorists should expect and how the system would operate in terms of understanding the Lane-Use Control Signals and when and how the part-time travel lane is intended to be used. A Vissim microscopic simulation video for each alternative can be found at the project website.

Public outreach efforts would also include enforcement information as well as information as to why the part-time travel lane might be closed during the peak hour (example: the part-time travel lane is blocked by a disabled vehicle, debris or obstruction).

Follow-up Items Tracking Log

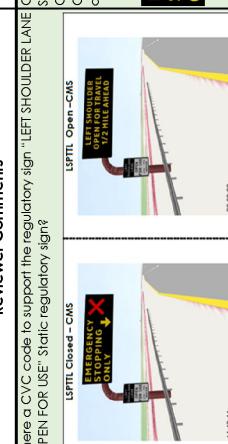
Left Shoulder Paratime Travel Lane (LSPTTL) Concept of Operations Comment - Responses (Open Ended till Completion)

ConOps Version	Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete	Resolution Date
1.0	CHP Lt. Kurker	1	-	The California Highway Patrol (CHP) is always concerned with officer and motorists safety; especially when it comes to the use of a center median (left shoulder) utilized to make traffic stops, assist disabled motorists, and unassisted motorists waiting for assistance. Seeing this is a new driving behavior/technique being asked of California Drivers, the proposal of a Part-Time Travel Lane (PTTL) is of great concern to both the CHP and the local San Luis Obispo (SLO) CHP Area. Because regardless of education, enforcement, or what signage is in place, drivers will be prone to continue to use the closed PTTL either intentionally or by mistake. This creates the opportunity for tragedy; which is our greatest concern.	Citizens shared the concerns that CHP has. Ensuring a safe and efficient roadway is of the highest priority for the Department. Learning from other States and I-580 EB how they realized and operates their PTTL is key to successfully design the safest and most efficient roadway through the Central Coast community. Therefore, Citizens recognized CHP as an important enforcement partner and is a key player in ensuring the motorist public understands, learned and know how to use this new type of travel lane properly, safely and efficiently. Public outreach through Public Service Announcement (PSA) by both Caltrans, CHP and all local partners would be an essential tool in the toolbox to prepare motorists that uses this freeway segment.	Continue a close working relationship with CHP on enforcement needs through Caltrans Traffic Control Devices Committee (CTCDC) representation and hearing sessions.	On going	
1.0	CHP Lt. Kurker	3	-	That being said should this specific project continue to move forward the SLO CHP Area's comment/s/input regarding the PTTL area as follows: • Will regulatory signs be posted advising motorists that use of the PTTL outside of authorized times, and entering/exiting the PTTL across the solid yellow line is a violation?	Yes, regulatory signs will be posted similar to HOV facilities and are subject to CTCDC experimental permission. The entry/exiting across the solid yellow line is prohibited per CVC 21459 & 21460 as there will be a double yellow lines @ 14 feet apart except at the entry and exiting of the PTTL where there is a broken yellow line and a colored-pavement area similar to the Bus on Shoulder (BOS) application on I-15 in San Diego county. An experimentation of these new signs and colored pavement are subjected to CTCDC permission and approval.	Will continue to work with CHP and CTCDC on all experimental Traffic Control Devices.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	7/9/2020
1.0	CHP Lt. Kurker	6	13	• On page 13, Typical Operation, it states FSP will sweep the PTTL 15 minutes prior to opening the PTTL to ensure if it clear of debris or other safety precautions are in place if a disabled vehicle, traffic collision, a CHP officer makes a traffic stop and the violator stops in the PTTL, etc., AFTER the FSP driver sweeps the lane and advises TMC the lane is clear? ■ Understand every scenario can't be anticipated and prevented, but it is very predictable and likely these scenarios will happen • If safety precautions are already in place, what are they?	There is a high potential that a real time sweep in coordination with the TMC operators to turn on each LnCS bus before FSP passes under each Lane-Use Control Signal. Caltrans is currently working with CalPoly/TMC training simulators, center and researchers in charge on a partnership to develop protocols and SOP's for TMC operators, FSP operators and CHP officers. It is imperative that all personnel involved in ensuring the safe opening and closure of the PTTL received the proper training before the facilities open to motorist. All anticipated safety precautions for any foreseeable scenarios will required a thorough and rigorous testing through the TMC simulator with inputs from all entities involved in the training and operation of the PTTL.	On going coordination will be expected.	On going	
1.0	CHP Lt. Kurker	7	1	• If the SLO CHP Area is requested to conduct heightened enforcement for the PTTL, a reimbursable services overtime contract will need to be initiated with the SLO CHP Area	Comment noted. Heightened enforcement will only be requested when there is an increase evidence that trucks and trailers are using the thru part time travel lane during operating hours in violation of CVC 22426 & 21655 or when vehicles are using the closed shoulder during off operating hours, in which this situation is highly unlikely.	Will work with CHP on reimbursement services Overtime contract when needed.	On going	

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 Red Text = on going task

Comments Resolution Tracking

Left Shoulder Parttime Travel Lane (LSPTL) Concept of Operations Comment - Responses (Open Ended till Completion)

ConOps Version	Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete	Resolution Date
1.0	HQ - Vijay T.	8	3	<p>Is there a CVC code to support the regulatory sign "LEFT SHOULDER LANE - OPEN FOR USE" or static regulatory sign?</p>  <p>Figure 1: Changeable Message Sign (CMS) and Static Lane Control Sign (left).</p> <p>Yellow slip line and solid line between the left/shoulder lane and other travel lanes would require a request for experiment (refer Section 1A.10 of the CA MUTCD).</p> <p>Per section 3A.05 of the CA MUTCD</p> <ul style="list-style-type: none"> - 03 When used, yellow markings for longitudinal lines shall delineate: <ul style="list-style-type: none"> A. The separation of traffic traveling in opposite directions, B. The left-hand edge of the roadways or divided highways and one-way streets or ramps, or C. The separation of two-way left-turn lanes and reversible lanes from other lanes. <p>Using a rusty contrast surface treatment at the entry and exit area will require a request for experiment.</p> <p>Per section 3G.01 of the CA MUTCD Standard:</p> <p>03 If colored pavement is used within the travelled way, on flush or raised median islands, or on shoulders to regulate, warn, guide traffic or if retroreflective colored pavement is used, the colored pavement is considered to be a traffic control device and shall be limited to the following colors and applications:</p> <ul style="list-style-type: none"> A. Yellow pavement color shall be used only for flush or raised median islands, separating traffic flows in opposite directions or for left-hand shoulders of roadways of divided highways, or one-way streets or ramps. B. White pavement color shall be used for flush or raised channelizing islands where traffic passes on both sides in the same general direction or for right-hand shoulders. 	<p>Currently there is no CVC code supporting the static regulatory sign "LEFT SHOULDER LANE - OPEN FOR USE". This will require an approval from CTCDC for experimentation. What was proposed and illustrated is an CMS sign. Any symbols and messages use are subject to CTCDC review and experimentation permission and approval.</p>  <p>Will prepare request for CTCDC experimentation package submittal, review and permission to experiment.</p>		✓	submitted on 5/15/2020, approval obtained on 7/9/2020
1.0	HQ - Vijay T.	9		<p>Noted and understood. All new traffic control devices will be subject to CTCDC review and experimentation permission and approval.</p>	<p>Will prepare request for CTCDC experimentation package submittal, review and permission to experiment.</p>		✓	submitted on 5/15/2020, approval obtained on 7/9/2020
1.0	HQ - Vijay T.	10		<p>Noted and understood. All new traffic control devices will be subject to proposal to CTCDC for experimentation permission and approval.</p> <p>This will have a similar experimentation process for the TOL & BOS red-colored pavement experiment in D1.1 that was successful and has received an interim approval la22 from FHWA to use red-colored pavement for TOL.</p> <p>The reason this project is proposing a rusty-colored pavement is to avoid confusion with the TOL red contrast surface.</p>	<p>Will prepare request for CTCDC experimentation package submittal, review and permission to experiment.</p>		✓	submitted on 5/15/2020, approval obtained on 7/9/2020

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 Red Text = on going task

Comments Resolution Tracking

Left Shoulder Partime Travel Lane (LSPTL) Concept of Operations Comment - Responses (Open Ended Till Completion)

ConOps Version	Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete	Resolution Date
1.0	HQ - Don H.	33	7	Is FSP, operative in this corridor during the 2-7PM timeframe (PM Peak)?	District project team is currently working with SLOCOG to provide ESP before the LSPTL is operational. Project team is also planning to work with CalPoly TMC Simulator training Center to provide training to all TMC personnel, FSP and CHP before LSPTL goes operational.	On going effort to ensure FSP is ready.	✓	FSP 1st beat was executed on 1st quarter of 2020 3/13/2020
1.0	SLOCOG - Stephen H.	51	12	From what I understand, FSP is told when to deploy by CHP. Will FSP requests be made to the truck drivers or through CHP?	It would be an added service only during Opening and Closing of the part-time travel lane. During this time, Califtrans would expect some kind of communication protocol to be established between Califtrans TMC operator and FSP driver.	Work with SLOCOG, CHP and TMC to establish a communication protocol and SOP's as the project progress.	On going	
2.1	FHWA S. Fyburn	2	-	The ConOps is not a design document. As such the final design of signs, signs, markings etc. may be reviewed in the future and additional comments provided. Design and operation of all traffic controls must comply with the CA-MUTCD and be represented appropriately on the project's PS&E documents.	Understood. This is a pilot project, and many of the Traffic Control proposed herein are experimental. Therefore, all design elements that will be design is to be consistent with the ConOps and any final design of all experimental traffic control devices are subject to future review and additional comments by the CTCDC and FHWA. All design elements used on the project are also subject to PS&E review and documentation.	Will continue to work with all review entities on this pilot project.	On going	
2.1	FHWA S. Fyburn	16	10	Enforcement section states: "If violation rate is deemed unacceptable and above Statewide averages of similar facilities..." As the ConOps notes, this will be the first facility being used as a part-time shoulder. As such, it is not clear how a violation rate or similar facilities will be established. Therefore, an acceptable violation rate, or other performance measure, should be defined in partnership with the CHP and included in this ConOps.	Understood and this is key to the successful enforcement of this new type of facility in California. District is actively engaging CHP partnership in this area. A TO lane facility was subject to an enforcement study in San Diego District (D1). A similar study methodology can be considered to establish an acceptable violation rate, or other performance measure. This report by D1 on the TO lane enforcement study report can be made available on request. District 5 had discussed with D4 on their I-580 EB right part-time lane pilot project, we were informed that a regular CHP enforcement beat was employed. District 5 has also researched enforcement on the CDOT I-70 left shoulder express toll lane in Idaho spring area and discovered that a regular CSP enforcement beat protocol was employed as well with protected enforcement pad along the freeway corridor at strategic locations.	Will continue to work with CHP to discuss and develop an workable and enforceable strategy. From discussing with D4, the I-580 part lane enforcement was per CHP regular beat. So is CDOT I-70 express lane, the regular CSP protocol was employed and no special enforcement protocol was called upon.	On going	
2.1	FHWA S. Fyburn	22	13	This page notes: "In addition to the cabinets, installation of fiber optic cable is being considered along the corridor to provide fast and reliable communications between the cabinets to ensure the reliable operation of the ITS elements along the corridor". The elements to be included with this project (i.e. fiber optic cable) need to be determined and stated as project elements in this Conops.	The project currently is in BA&ED phase. Fiber optic is being consider by District Electrical Operations Engineer and the details will be determined during PS&E phase and be documented in the PS&E document. Califtrans will install, own and operate the fiber optic infrastructure. Any wireless communication will be through the most current wireless provider.	Final design selection TBD during PS&E.	On going	

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Comments Resolution Tracking

Left Shoulder Partime Travel Lane (LSPTL) Concept of Operations Comment - Responses (Open Ended Till Completion)

ConOps Version	Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete	Resolution Date
2.1	FHWA S. Pyburn	24	13	Typical Operation - This section notes: "Once the part-time travel lane is determined to be cleared for traffic, the overhead CMS would display a message: "LEFT SHOULDER OPEN FOR TRAVEL ½ MILE AHEAD" and all Lane-Use Control Signals following the CMS shall display Green Down arrows pointing downwards in a rolling sequential order at a prescribed time interval of 27.7 seconds indicating the part-time travel lane is open to traffic. This time interval is based on a 65 mph free flow speed and the Lane-Use Control Signal are all spaced at a half (½) mile spacing. If the time interval shall be adjusted accordingly." The purpose of the "rolling sequential order" and the "prescribed time interval" is not clear and may violate requirements of Section 4.M. of the CA-MUTCD. Per the CA-MUTCD, lane-use control signals must be displayed continuously and [The color of lane-use control signal indications shall be clearly visible for 2,300 feet at all times under normal atmospheric conditions, unless otherwise physically obstructed.]"	For a 4-5 mile long corridor, it will take FSP 4-5 mins to sweep the lane at freeflow speed. This approach was to address CHP concerns that there could be a possibility a tall vehicle would block the lane right after the FSP did its sweep. Therefore it is envisioned as FSP do it's sweep, it is in constant communication with TMC operator to turn on the Green Down Arrow as it passes under each Lane-Use Control Signal to provide a safer and more controlled opening of the lane. We recommend the speed of FSP performing the sweep be no greater than 65 mph.	This proposed FSP operation still need review by HQ, CHP, SLOCOC and FHWA and their approval.	On going	
2.1	FHWA S. Pyburn	25	14	Closing - It is not clear why a visual sweep of lane is required to close the lane.	Since this project proposed to use only the Red X and Downward Green Arrow signal face only, to prevent stalled vehicles being "trapped" during the transition from Green Down Arrow to Red X condition, we want to make sure there is no blockage once the permission to travel on shoulder is turned off. There is also a possibility of fog impairing TMC operator CCTV vision, in this situation it would be necessary to call on FSP to sweep the lane as the lane are closing.	This proposed FSP operation still need review by HQ, CHP, SLOCOC and FHWA and their approval.	On going	
2.1	FHWA S. Pyburn	30	--	The ConOps is missing a description/diagram of communication architecture, references to regional architecture or statement of compliance with architecture standards.	Communication architecture has not been determined as of date. It's final design is subject to inputs from Distict & HQ Electrical Ops, all stake holders and the public comments received with all visual and CEOA requirement considered. Details of communication architecture will be presented in the P&E documentation and an updated Con Ops.	Final design TBD during P&E.	On going	
2.1	FHWA M. Brattin	38	10	Enforcement - Can the wording be changed to say "protected refuge" in the first paragraph to clarify that some type of protection (e.g. k-call) will be provided as some CHP officers have requested "protected refuge" for observation of HO-lane enforcement.	Yes, Traffic Ops also prefer a "protected refuge" for the CHP officers. 4 enforcement pod locations was indentified, however, their number locations has not been finalized until P&E and environmental review. All efforts will be applied to ensure CHP officer has the safest place to perform their duty.	Continue to seek CHP input. Final locations TBD during P&E.	On going	

Legends: Black Text = responded/completed as of response to date
 Red Text = on going task

Comments Resolution Tracking

References

1. Use of Freeway Shoulders For Travel

Federal highway Administration (FHWA). February 2016. Guide for Planning, Evaluating and Designing Part-Time Shoulder Use as a Traffic Management Strategy at <https://ops.fhwa.dot.gov/publications/fhwahop15023/index.htm>

2. Decision Support Framework and Parameters for Dynamic Part-Time Shoulder Use

Federal highway Administration (FHWA). November 2019. Considerations for Opening Freeway Shoulder for Travel as a Traffic Management Strategy at <https://ops.fhwa.dot.gov/publications/fhwahop19029/index.htm>

3. California Manual on Uniform Traffic Control Devices (CA MUTCD)

California Department of Transportation (Caltrans), CA MUTCD 2014, Revision 5(Effective 03/27/2020) at <https://dot.ca.gov/programs/traffic-operations/camutcd>

4. CDOT Concept of Operations For EB I-70 Peak Period Shoulder Lane

Interstate 70 – US 40 at Empire Junction to Twin Tunnels, CDOT Project NHPP 0703-401 (19474), February 25, 2014, Version 6.0

5. CDOT Concept of Operations For WB I-70 Peak Period Shoulder Lane

Interstate 70 – US 40 at Twin Tunnels to Empire Junction, CDOT Concept of Operations Report, System Engineering Documentation, Categorical Exclusion, October 19, 2018, Version 1.2

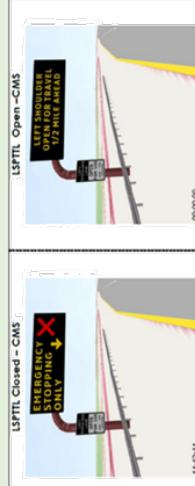
Response to Comments

1. 01/24/2020 (ConOps v.1.0)

Left Shoulder Parttime Travel Lane (LSP TTL) Concept of Operations Comment - Responses (1/24/2020)

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete
CHP Lt. Kurker	1	-	The California Highway Patrol (CHP) is always concerned with officer and motorist safety; especially when it comes to the use of a center median (left shoulder) utilized to make traffic stops, assist disabled motorists and unassisted motorists waiting for assistance. Seeing this is a new driving behavior/technique being asked of California Drivers, the proposal of a Part-time TravelLane (PTTL) is of great concern to both the CHP and the local San Luis Obispo (SLO) CHP Area. Because regardless of education, enforcement, or what signage is in place, drivers will be prone to continue to use the closed PTTL, either intentionally or by mistake. This creates the opportunity for tragedy, which is our greatest concern.	Caltrans shared the concerns that CHP has. Ensuring a safe and efficient operations of California roadway is of the highest priority for the Department. Learning from other States and I-580 EB how they realized and operated their PTTL is key to successfully design the safest and most efficient roadway through the Central Coast community. Therefore, Caltrans recognized CHP as an important enforcement partner and is a key player in ensuring the motoring public understands, learned and know how to use this new type of travel lane properly, safely and efficiently. Public outreach through Public Service Announcement (PSA) by both Caltrans, CHP and all local partners would be an essential tool in the tool box to prepare motorists that uses this freeway segment.	Continue a close working relationship with CHP on enforcement needs through California Traffic Control Devices Committee (CTCDC) representation and hearing sessions.	
CHP Lt. Kurker	2	-	I am sure there are bureaucratic challenges this project faces; however, if monies are already being expended to convert the center median into a travel lane, CHP's concerns would be alleviated if it were to become a 24/7 normal use travel lane, instead of a PTTL. This would in turn save the project money from having to install additional signage, sensors, lights, manpower, etc. for a PTTL.	Any new Traffic control devices for experimentation will require California Traffic Control Devices Committee (CTCDC) approval where CHP is a member representative in the committee. Due to the very constraint of ways through this corridor and the traffic analysis indicated that the 20 years need of a third full time lane is not warranted. The project team has determined that the most efficient way in optimizing the resources and operations to minimize the project capital cost and address the congestion relief need is to construct a PTTL. A holistic Benefit-Cost (B/C) analysis estimated a near 8 to 1 ratio when the PTTL is built.	No Action needed.	
CHP Lt. Kurker	3	-	That being said, should this specific project continue to move forward, the SLO CHP Area's comments/input regarding the PTTL are as follows: • Will regulatory signs be posted advising motorists that use of the PTTL outside of authorized times, and entering/exiting the PTTL across the solid yellow line is a violation?	Yes, regulatory signs will be posted similar to HOV facilities and are subject to CTCDC experimental permission. The entry/exiting across the solid yellow line is prohibited per CVC 21459 & 21450 as there will be a double yellow lines @ 14 feet apart except at the entry and exiting of the PTTL where there is a broken yellow line and a colored-pavement area similar to the Bus on Shoulder (BOS) application on I-15 in San Diego county. An experimentation of these new signs and colored pavement are subjected to CTCDC permission and approval.	Will continue to work with CHP and CTCDC on all experimental Traffic Control Devices.	
CHP Lt. Kurker	4	7	The Concept of Operations document on page 7 states the PTTL will be opened seven days a week, yet the Hours of Operation sign reflects 'MON-SUN'. or recommend removing 'MON-SUN' or merely saying 'DAILY' to alleviate potential confusion on the motorists' part	Recommendation noted and sign will be revised before submittal to CTCDC for review and approval for experimentation.	Revise Hours of Operation sign	
CHP Lt. Kurker	5	8	• Regarding the Entry to Corridor Options on page 8; I recommend Alternative 2 oThis is the only Alternative that does not require traffic to merge lanes oAny time traffic is required to merge from one traffic lane into another lane, it creates a much higher potential for traffic collisions resulting in property damage and injuries	Comment noted.	No Action needed.	

Left Shoulder Partime Travel Lane (LSTTL) Concept of Operations Comment - Responses (1/24/2020)

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete
CHP Lt. Kurker	6	13	<ul style="list-style-type: none"> On page 13, Typical Operation, it states FSP will sweep the PTTL just before LNCs just before FSP pass under each Lane-Use Control Signal. Calttrans is currently working with CalifHOTMC Training simulator center and researchers in charge on a cooperative partnership to develop protocols and SOPs for HMC operators, FSP operators and CHP officers. It is imperative that all personnel involved in ensuring the safe opening and closure of the PTTL received the proper training before the facilities is open to motorists. All anticipated safety precautions for any foreseeable scenarios will be required a thorough and rigorous testing through the HMC simulator with inputs from all entities involved in the training and operation of the PTTL. 	<p>There is a high potential that a real time sweep in coordination with the TMC operators to turn on each LNCs just before FSP pass under each Lane-Use Control Signal. Calttrans is currently working with CalifHOTMC Training simulator center and researchers in charge on a cooperative partnership to develop protocols and SOPs for HMC operators, FSP operators and CHP officers. It is imperative that all personnel involved in ensuring the safe opening and closure of the PTTL received the proper training before the facilities is open to motorists. All anticipated safety precautions for any foreseeable scenarios will be required a thorough and rigorous testing through the HMC simulator with inputs from all entities involved in the training and operation of the PTTL.</p>	On going coordination will be expected.	
CHP Lt. Kurker	7	1	<ul style="list-style-type: none"> If the SLO CHP Area is requested to conduct heightened enforcement for the PTTL, a reimbursable services overtime contract will need to be initiated with the SLO CHP Area 	<p>Comment noted.</p> <p>Heightened enforcement will only be requested when there is an increase evidence that trucks and trailers are using the the part time travel lane during operating hours in violation of CVC 22408 & 2155 or when vehicles are using the closed shoulder during off operating hours, in which this situation is highly unlikely.</p>	Will work with CHP on reimbursement services OT contract when needed.	
HQ - Vijay T.	8	3	<p>Is there a CVC code to support the regulatory sign "LEFT SHOULDER LANE - OPEN FOR USE" Static regulatory sign?</p> 	<p>Currently there is no CVC code supporting the static regulatory sign "LEFT SHOULDER LANE - OPEN FOR USE". This will require an approval from CTCDC for experimentation. What was proposed and illustrated is an CMS sign. Any symbols and messages use are subject to CTCDC review and experimentation permission and approval.</p>	<p>Will prepare request for CTCDC experimentation package submittal, review and permission to experiment.</p> <p>EMERGENCY STOPPING ONLY</p> <p>LEFT SHOULDER OPEN FOR TRAVEL 1/2 MILE AHEAD</p>	
HQ - Vijay T.	9	-		<p>Yellow skip line and solid line between the Left/shoulder lane and other travel lanes would require a request for experiment (refer Section 1A.10 of the CAMUTCD).</p> <p>Per section 3A.05 of the CA MUTCD</p> <p>Q3 When used, yellow markings for longitudinal lines shall delineate:</p> <ol style="list-style-type: none"> The separation of traffic traveling in opposite directions. The left-hand edge of the roadways of divided highways and one-way streets or ramps, or The separation of two-way left-turn lanes and reversible lanes from other lanes. 	<p>Noted and understood. All new traffic control devices will be subject to CTCDC review and experimentation permission and approval.</p>	<p>Will prepare request for CTCDC experimentation package submittal, review and permission to experiment.</p>

Left Shoulder Partime Travel Lane (LSPTTL) Concept of Operations Comment - Responses (1/24/2020)

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete
HQ - Vijay T.	10	-	Using a rusty contrast surface treatment at the entry and exit area will require a request for experiment. Per Section 3G.01 of the CA MUTCD Standard: Q3 If colored pavement is used within the traveled way, on flush or raised islands, or on shoulders to regulate, warn, or guide traffic or if retroreflective colored pavement is used, the colored pavement is considered to be a traffic control device and shall be limited to the following colors and applications: A. Yellow pavement color shall be used only for flush or raised median islands separating traffic flows in opposite directions or for left-hand shoulders of roadways of divided highways or one-way streets or ramps. B. White pavement color shall be used for flush or raised channelizing islands where traffic passes on both sides in the same general direction or for right-hand shoulders.	<p>Noted and understood. All new traffic control devices will be subject to proposal to CTCDC for experimentation permission and approval. This will have a similar experiment process for the TOL & RQS red-colored pavement experiment in D11 that was successful and has received an interim approval id22 from FHWA to use red-colored pavement for TOL.</p> <p>The reason this project is proposing a rusty-colored pavement is to avoid confusion with the TOL red contrast surface.</p>	Will prepare request for CTCDC experimentation package submittal, review and permission to experiment.	
HQ - Don H.	11	1	This corridor currently experiences congestion during the afternoon hours 4-6 - daily on .	Revised sentence to "This corridor currently experiences recurring congestion during the regular afternoon commute hours and weekends during Summer season."	Revision made	✓
HQ - Don H.	12	1	When will initial evaluation take place, so that it will be "RE-evaluated?"	The current recommendation is the facility be evaluated 1 year after opening day and "re-evaluated" 6 years after opening day and before the end of the pilot program (7th year).	Incorporated the current thought in the ConOps	✓
HQ - Don H.	13	1	This corresponds to the Traffic Operations Analysis Report (TOAR)	"s" added to the word "correspond"	Incorporated correction	✓
HQ - Don H.	14	1	Converting the inside shoulder into a temporay ^{part-time} travel lane Alternative 1, 2 & 3 respectively.	Strike "temporay", "s", add "part-time".	Incorporated correction	✓
HQ - Don H.	15	1	consider "increased" over "heightened"	Noted and will incorporate to document.	Revision made	✓

Left Shoulder Partime Travel Lane (LSPTL) Concept of Operations Comment - Responses (1/24/2020)

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete	
HQ - Don H.	16	1	What about improving the subbase, base and pavement thickness (structural section) as a part of the project?	The project will be improving the structural section. The narrow existing median width precludes the construction of a third full-time lane due to the required shoulder widths standards. From an engineering standpoint, we would not propose to construct a 24/7 widening than had less than standard shoulder widths. In order to meet those standards, the freeway would have to be expanded into both the median and outside of the freeway. Widening to the outside has several additional consequences, including loss of mature trees, reconstruction of on-and offramps, and narrowing or realignment of frontage roads. Since congestion in this corridor is limited to only certain hours of the day, a part time travel lane can achieve the same congestion relief goal as a full time lane. However, the part time travel lane does not have the same shoulder width requirements since it does provide a standard left shoulder during the majority of the day when the part time lane is not in use. This means there is sufficient width to construct it in the existing median through most of its length. With this viable and very effective alternative already available, it would not serve anyone to seek out or study a more expensive and destructive option that offers no additional benefit.	No Action required.		
HQ - Don H.	17	2	consider "afternoon commute between 2:00 and 7:00 pm."	When exploring a range of alternatives, it seems reasonable for a project team to set an upper limit for the level of impacts that can be tolerated, when alternatives already exist that can meet the project purpose. That would allow us to intuitively omit the analysis of larger, more expensive, and more destructive alternatives with no greater benefit. If we didn't set a reasonable limit, we would be studying tunnels, mile-long bridges, or an entirely new alignment for 101. Knowing in advance that we can't reasonably propose those extremes, we left them out of our study. To a lesser extent, that is true for the full-width 24/7 widening as well.	Noted and will incorporate into document.	✓	
HQ - Don H.	18	2	General comment: hyphenate full-time throughout document.		Noted and will incorporate into document.	✓	
HQ - Don H.	19	2	Mon thru Sunday is basically EVERY DAY, so no need to specify	Comment noted.	Incorporated correction	✓	
HQ - Don H.	20	2	Replace "fuller" with "better".	Suggestion incorporated	Incorporated correction	✓	
HQ - Don H.	21	2	Replace "periods" with "travel demand".	Suggestion incorporated	Incorporated suggestion	✓	
HQ - Don H.	22	2	add "to"	Suggestion incorporated	Incorporated suggestion	✓	
HQ - Don H.	23	2	general-purpose (consider hyphenating throughout the document)	Suggestion incorporated	Incorporated suggestion	✓	
HQ - Don H.	24	2	commercial trucks	Suggestion incorporated	Incorporated suggestion	✓	

Left Shoulder Partime Travel Lane (LSPTTL) Concept of Operations Comment - Responses (1/24/2020)

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete
HQ - Don H.	25	3	Red X along with an amber downward pointing arrow gives mixed messages, due to the green downward pointing arrow being "OPEN" but what does the amber arrow mean? Esp. in combination with the red X? As proposed, with the static sign on the sign support (w/ 7 lines of copy) and an overhead 3-line CMS, this is way too much information all-at-once.		Yellow Arrow removed from the CMS sign. EMERGENCY STOPPING X Static sign removed from the CMS pole to avoid information overload.	✓
HQ - Don H.	26	4	insert use, for the CA MUTCD term (typical) throughout document and in the titles.	Comment noted, will insert word "...use" to call reference to Lane-use Control Signals	Insertion made	✓
HQ - Don H.	27	5	LnCS is not a standard acronym in the CA MUTCD	Comment noted, will remove all LnCS acronyms from the ConOps.	Comment incorporated	✓
HQ - Don H.	28	5	consider inserting a hyphen for all "Lane-Use Control Signal" references, as identified and defined in Chapter 4M of the CA MUTCD.	Comment noted, will insert.	Insertion made	✓
HQ - Don H.	29	5	Consistently use "Lane Use Control Signal" when referring to "lane control signals" or "Lane Control sign" references throughout the concept of operations. Nowhere are there specs on how large the overhead cantilever overhead, or Mast Arm-mounted versions are.	Comment noted, will insert.	Insertion made	✓
HQ - Don H.	30	6	These are signals, not signs, please refer to Chapter 4M of CA MUTCD	Comment note, will make correction.	Correction made	✓
HQ - Don H.	31	6	Is there a CA MUTCD sign designation, usage policy for this sign, or is it a nonstandard sign??	It is a non standard sign. This will be part of the experimental package subject to fcc/CICDC approval.	No Action required.	✓
HQ - Don H.	32	7	Is FSP operative in this corridor during the 2-7PM timeframe (PM Peak)?	The Hours of Operations Signs is non-standard and will be part of the experimental package submission to CFCDC for their review and permission to experiment. The layout was to mimic R86-3(CA) for HOV. MON-SUN is everyday, so it will be removed in the next version of ConOps.	Correction made LEFT SHOULDER LANE OPEN FOR USE 2PM - 7PM MON SUN	✓
HQ - Don H.	33	7	What is ITS?	On going effort to ensure FSP is ready.		
HQ - Saeed V.	34	Forward	What is ITS?	ITS stands for Intelligent Transportation System	Spell out ITS	✓
HQ - Saeed V.	35	i	If there is an existing shoulder then you are not constituting. Rewrite as: Widening and converting the existing inside shoulder to be used as a part time travel lane	Will add the acronyms (LSPTTL) Suggestion noted.	Insertion incorporated.	✓
HQ - Saeed V.	36	1	Will this be finalized how many miles will be constructed as LSPTTL? What is the Post Mile?	Will state the project limit postmile instead of the length of the LSPTTL	Sentence revised	✓
HQ - Saeed V.	37	1	Will this be finalized how many miles will be constructed as LSPTTL? What is the Post Mile?	Revised and project limit postmile used	✓	

Legends: Black Text = responded, completed & as of response to date
Red Text = on going task

Left Shoulder Partime Travel Lane (LSPTTL) Concept of Operations Comment - Responses (1/24/2020)

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Complete
HQ - Saeed V.	38	1	What is EIR?	EIR stands for Environmental Impact Report.	Spent out EIR	✓
HQ - Saeed V.	39	1	Check grammar throughout the report.	Comment noted.	Checks performed	✓
HQ - Saeed V.	40	1	convert to lower case "a"	Un-capitalization made	Correction made	✓
HQ - Saeed V.	41	1	part time lane	Comment noted.	No changes made	✓
HQ - Saeed V.	42	1	spaced in intervals	Comment noted. Will use "spaced at intervals" instead of "spaced in intervals"	Correction made	✓
HQ - Saeed V.	43	1	qise	Comment noted.	Word removed	✓
HQ - Saeed V.	44	1	The need to add a lane should be evaluated based on future ADT not the current ADT. Part time lane is intended to be used every day throughout the year. And the need to use the lane may increase in the future (more hours per day). I would suggest to take this statement out.	A full Traffic Operations Assessment Report (TOAR) was performed for 20 years. ADT is core typically for planning analysis. TOAR are operational analysis and should be based on peak hours or peak periods. Will rephrase the entire statement.	Revision made	✓
HQ - Saeed V.	45	2	either a solid or dashed line	Suggestion noted.	Phrase removed	✓
HQ - Saeed V.	46	2	Move "The District Traffic Management Control (TMC) is currently not a full time operations." to next paragraph.	Comment noted	Revision made	✓
HQ - Saeed V.	46	2	add "to"	This is a left shoulder, therefore a yellow-colored lane line is appropriate per CA MUTCD and standard plans.	Addition made	✓
HQ - Saeed V.	47	2	Why yellow on the inside? Is it standard?	Comment noted.	No Action required	✓
HQ - Saeed V.	48	11	Remove "the", convert to lower case "a"	Currently, base on the TOAR, the Concept of Operations is a fixed time daily operations between 2pm - 7PM. Since, this is a pilot project, Caltrans think it is prudent to operate as a fixed time. If the project is deemed successful after the 7th year. A "more" dynamic hour of operations can be considered, this would require more resources to operate a more dynamic, part time travel lane.	Revision made	✓
SLOCOG - Stephen H.	49	2	In the near-term, can the LSPTTL be opened when there are incidents impacting north-south travel on I-5? Such as when the grapevine was closed over Christmas break causing serious backup on highways throughout the region.	Currently, base on the TOAR, the Concept of Operations is a fixed time daily operations between 2pm - 7PM. Since, this is a pilot project, Caltrans think it is prudent to operate as a fixed time. If the project is deemed successful after the 7th year. A "more" dynamic hour of operations can be considered, this would require more resources to operate a more dynamic, part time travel lane.	No Action required.	✓
SLOCOG - Stephen H.	50	2	Are buses not allowed on the LSPTTL? If not, can the LSPTTL be open to transit only in the off-peak hours? A left shoulder part-time bus travel lane?	Buses are allowed during the hour of operations. Commercial trucks, truck & trailer with 3-axle or more and all vehicles towing are not allowed per CVC 22406 and 21655.	No Action required.	✓
SLOCOG - Stephen H.	51	12	From what I understand, FSP is told when to deploy by CHP. Will FSP requests be made to the truck drivers or through CHP?	It would be an added service only during Opening and Closing of the part-time travel lane. During this time, Caltrans would expect some kind of communication protocol to be established between Caltrans TMC operator and FSP driver.	Work with SLOCOG, CHP and TMC to establish a communication protocol and SOPs as the project progresses.	

2. 04/30/2020 (ConOps v.2.1)

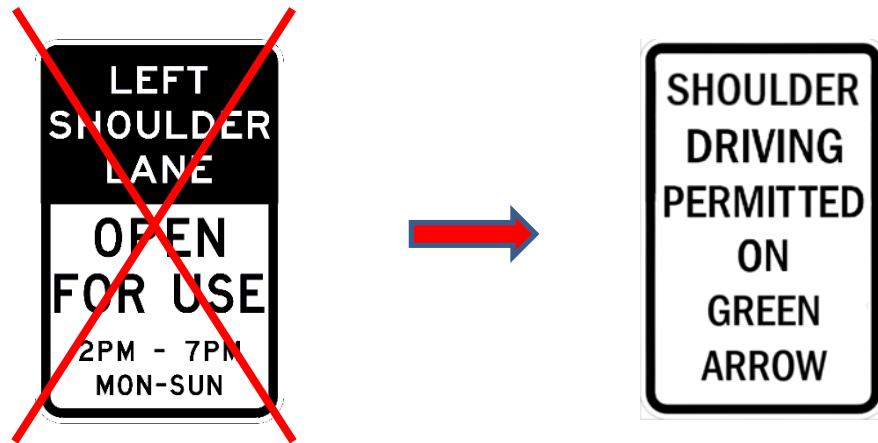
FHWA provided their first set of review comments. No additional comment was received from all other reviewers. Content and main body text were rearranged per FHWA recommendation.

FHWA reached out to District Traffic Operations Branch after reviewing the second draft (v.2.1) of the Concept of Operations document. A WebEx meeting was initiated on May 6th, 2020 and subsequently a follow-up meeting on May 7th centered around the project proposed lane lines, colored-pavement, signs and lane-use control signal. Attendees at the meeting were represented by FHWA Cal-South and Sacramento office staff, District Traffic Operations and Project Management. They discourage the use of colored-pavement and outside yellow lane line on the project. In their assessment, District should follow the concept on the signs and lane lines outlined in the CA-MUTCD Chapter 2G for Preferential and Managed Lanes and Part 3, Markings. They recommend using the white lane lines per MUTCD figure 3A-113 (CA). At the proposed controlled ingress/egress (entry/exit) of the shoulder for travel, use a white dash lane line (detail 42) for 1300 feet and 1400 feet respectively per original concept. For the rest of the shoulder, a double 8" white line with a 4" separation between the lines per detail 44 can be used (See MUTCD Figure 3D- 3.A) to prohibit contiguous access. That will take care of the need to have a colored pavement.

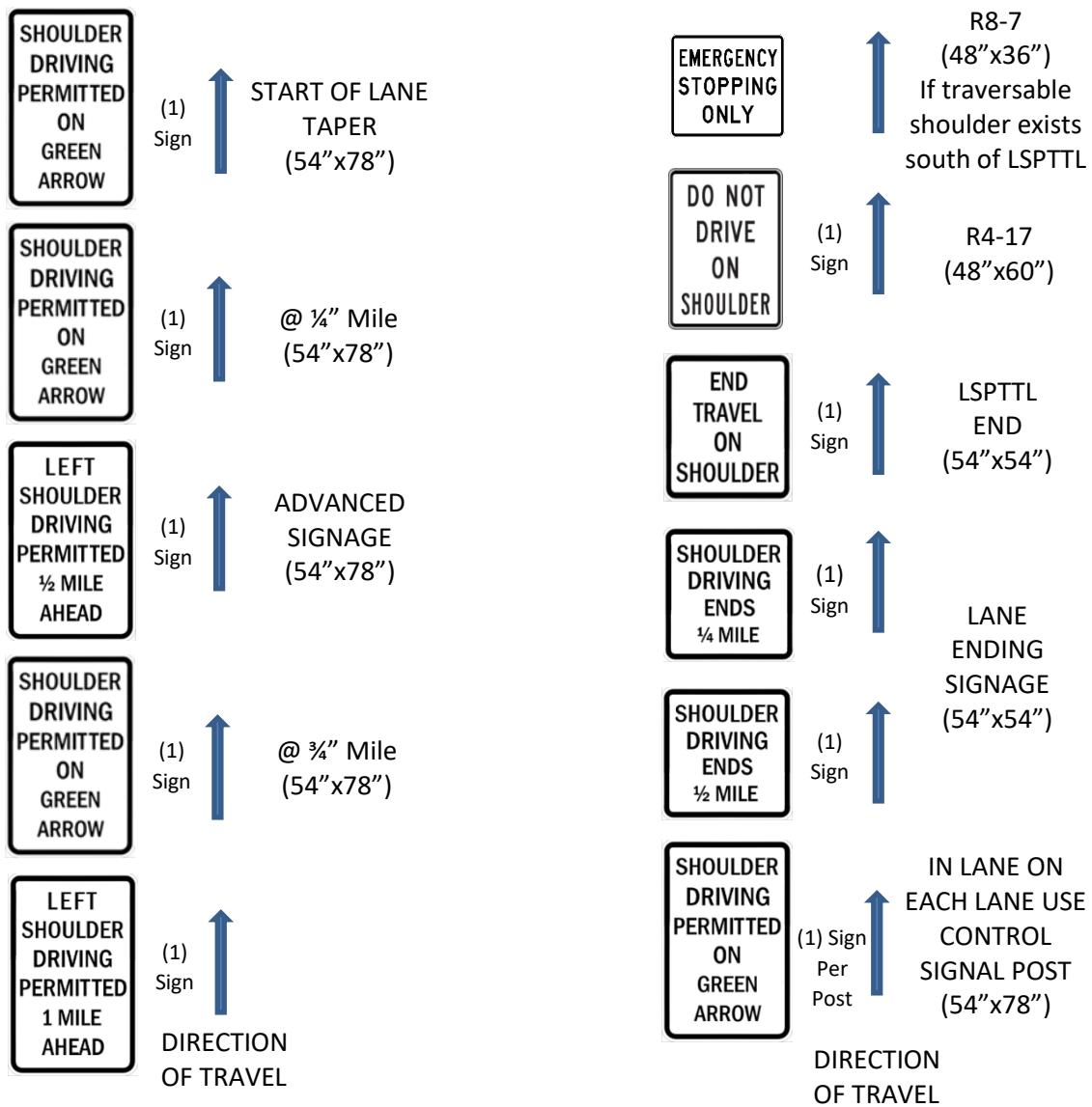
Further consultation with FHWA HQ in Washington D.C. through the Cal-South Office and with the understanding of the sensitive coastal visual impact context high-lighted during the May 6th meeting. FHWA HQ recommends the original large CMS concept be removed and be replaced by smaller road side signs on breakaway wood post to guide the motoring public. They also discourage the use of the phrase "shoulder lane", verbatim "It is confusing as the shoulder is by definition not a lane, i.e. they are either going to add a travel lane or allow travel on the shoulder, it is not both. In this case, where they are only using it for travel a few hours a week during week days, it really operates as a shoulder that travel is allowed on at times. Because of this, they really don't need the type of Guide signs they are proposing where they are treating this as a full-time preferential access restricted lane of some sort. Rather, the signing for this should be rather simple and you don't need much advance signing. The signs for this should be black on white signs with the primary legend being TRAVEL ON SHOULDER ALLOWED."

Hence, Traffic Operations is recommending the following changes that may result in a reduced visual impact to the corridor. Please note that all proposed static signs should be placed on the freeway median area unless right of ways constraint prohibits it. If this situation arises, consultation District Traffic Operations for alternate location for sign placement will be required.

Under ConOps v2.1 proposal for all Alternatives. The sign mounted on the lane-use control signal post is to be replaced by this 54"x78" sign as shown.



Below is the newly recommended sign sequence and the concept was presented to the California Traffic Control Devices Committee on July 9, 2020 for experimentation and was approved by the committee on the same day. Two(2) other MUTCD standard signs (R4-17 & R8-7) were recommended by FHWA. By using this recommended sign package, it minimized the need for the large overhead CMS/EMS sign.



3. 12/01/2020 (ConOps v.3.0)

A Final Draft version 3.0 of the ConOps was submitted to FHWA on 12/1/2020 for their concurrence. A Concurrence was received on 12/23/2020.

RE: Pismo Congestion Relief Concept of Operations - Final draft v3.0



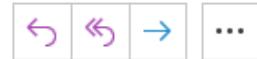
Bhatti, Maria (FHWA) <maria.bhatti@dot.gov>

To Toh, Sam S@DOT

Cc Pyburn, Steve (FHWA); Gavilan, Lismary (FHWA)

Retention Policy Enforced: Inbox 120 day (4 months) Expires 4/22/2021

Follow up. Start by Thursday, December 24, 2020. Due by Thursday, December 24, 2020.
You replied to this message on 12/23/2020 4:43 PM.



12/23/2020

EXTERNAL EMAIL. Links/attachments may not be safe.

Hi Sam,

We have reviewed the documents and have no additional comments.

Just one concern regarding my previous comment on FSP sweep prior to the opening of part-time lane. I am good with the response as long as the CCTV cameras will capture the entire length of the part-time lane to ensure that there is no obstruction prior to the opening the lane.

Thanks and Happy Holidays.

Maria Bhatti

Safety and Traffic Operations Engineer

FHWA California Division

[maria.bhatti@dot.gov](mailto:<u>maria.bhatti@dot.gov</u>)

916-498-5002

Left Shoulder Partime Travel Lane (LSPTL) Concept of Operations Comment (3/25/2020) - Responses (12/01/2020)

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Completed	FHWA Concurrence 12/23/2020 Version 3.0
FHWA S. Pyburn	1	--	There is not a clear and concise description of how the lane will be operated. Please add a section for proposed operation as the operation information seems to be scattered across several sections.	There was a concised description of how the lane will be operated. However it was scattered in the Operation Scenario Section. This section has been re-arranged and re-paragraphed and is presented on page 10 & 11 of ConOps v.3.0	Operation Scenarios Section was re-arranged and re-paragraphed. See Page 10-14.	✓	✓
FHWA S. Pyburn	2	--	The ConOps is not a design document. As such the final design of signals, signs, markings etc. may be reviewed in the future and additional comments provided. Design and operation of all traffic controls must comply with the CA-MUTCD and be represented appropriately on the project's PS&E documents.	Understood. This is a pilot project and many of the Traffic Control proposed herein are experimental. Therefore, all design elements that will be design is to be consistent with the ConOps and any final design of all experimental traffic control devices are subject to future review and additional comments by the CTCDC and FHWA. All design elements used on the project are also subject to PS&E review and documentation.	Will continue to work with all review entities on this pilot project.	On going	
FHWA S. Pyburn	3	--	All requests to experiment with traffic control devise that are not include in the CA-MUTCD must be approved by FHWA regardless of the action of the California Traffic Control Devices Committee and FHWA approval should not be presumed.	Understood. District is currently working with VJigy T., CA MUTCD Editor on the CTCDC request for experimentation package for May 15 th submittal.	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓
FHWA S. Pyburn	4	3	Figure 1 - On the CMS option for the lane being closed, the combination of the text and red X will require FHWA approval of a request to experiment with a non-standard traffic control device. FHWA approval of this experiment should not be presumed, regardless of the action of the California Traffic Control Devices Committee.	The large CMS sign proposed was replaced by smaller static road side signs per FHWA HQ recommendation on 05/07/2020.	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Completed	FHWA Concurrency Version 3.0
FHWA S. Pyburn	5	3	Figure 1 - Place Red X on a stand alone sign structure.	The idea of the proposed Red X inside the CMS was to provide drivers a message that when they see a Red X in the Lane-Use Control Signal downstream, it means the shoulder is for emergency stopping only. We are attempting to emulate current CDOT CMS messaging on their I-70 Part Time Left Shoulder Use Express Toll Lane. (See pix below)		Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020
FHWA S. Pyburn	6	3	Figure 1 - The CMS option indicating the lane is closed is a regulatory sign and must be black and white.	District would still like to submit this proposed experimentation for CTCDC and FHWA review and approval minus the down arrow per Pyburn comment.		The large CMS sign proposed was replaced by smaller static road side signs per FHWA HQ recommendation on 5/15/2020.	✓ ✓
FHWA S. Pyburn	7	3	Figure 1 - The sign for the lane is open is a guide sign and must have white letters on a green background.	Agree. Will change if White on Green		The large CMS sign proposed was replaced by smaller static road side signs per FHWA HQ recommendation on 5/15/2020.	✓ ✓
FHWA S. Pyburn	8	4 & 5	Figure 2 - Use of dashed yellow lines that do not separate opposing lanes of traffic will require FHWA approval of a request to experiment with a non-standard traffic control device. FHWA approval of this experiment should not be presumed, regardless of the action of the California Traffic Control Devices Committee.	White lane lines per CA-MUTCD Chapter 2G for Preferential and Managed Lanes and Part 3, Markings, figure 3A-113 (CA) were recommended by FHWA.	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓
FHWA S. Pyburn	9	4 & 5	Figure 2-b. Use of red lanes is currently approved for transit-only lanes. The proposed use will require FHWA approval of a request to experiment with a non-standard traffic control device. FHWA approval of this experiment should not be presumed, regardless of the action of the California Traffic Control Devices Committee.	Understood. Colored pavement no longer proposed and will be removed from the concept.	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Completed	FHWA Concurrence 12/23/2020 Version 3.0
FHWA S. Pyburn	10	4 & 5	Figure 2 - Use of dashed yellow lines that do not separate opposing lanes of traffic will require FHWA approval of a request to experiment with a non-standard traffic control device. FHWA approval of this experiment should not be presumed, regardless of the action of the California Traffic Control Devices Committee.	White dash lane lines per CA-MUTCD Chapter 2G for Preferential and Managed Lanes and Part 3, Markings, figure 3A-113 (CA) were recommended by FHWA.	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓
FHWA S. Pyburn	11	4 & 5	Figure 2 - The figure has a state that could have a red X but also displays a static sign that displays the hours the lane is open. The sign and red arrow are contradictory.	The static sign is now replaced by a black on white static sign per FHWA recommendation. 	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓
FHWA S. Pyburn	12	4 & 5	Figure 2- The text indicates a 24/7 TMC would allow the lane to operate on-demand. Such operation could contradict the operating hours noted on the static sign.	The mentioned of 24/7 TMC is meant to put forth a future possibility if this pilot is successful and if a dynamic operation of the lane is so desired by Caltrans and local state holders, only a 24/7 TMC can handle a dynamic operation. The current pilot project is not proposing a 24/7 TMC. No decision has been made to make the TMC 24/7.	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓
FHWA S. Pyburn	13	4 & 5	Figure 2 - The figure shows the dynamic lane with striping on both sides of the lane, which means drivers must be on the left side of a yellow line. Pavement markings are defined such that drivers are always on the right side of a yellow line. The proposed configuration will require FHWA approval of a request to experiment with a non-standard traffic control device. FHWA approval of this experiment should not be presumed, regardless of the action of the California Traffic Control Devices Committee.	White lane lines per CA-MUTCD Chapter 2G for Preferential and Managed Lanes and Part 3, Markings, figure 3A-113 (CA) were recommended by FHWA.	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓
FHWA S. Pyburn	14	5	Lane-use Control Signals - Indicate that design and operation of the lane-use signals shall comply with Section 4.M of the CA-MUTCD.	Understood. This project will use the Red X and Green Down Arrow. Yellow X will not be used.	No action.	✓	✓
FHWA S. Pyburn	15	7	The text notes "The Hours of Operations Sign could be a hybrid or fixed wordings and dynamic message black on white sign highlighted by the red box in Figure 6 above. This would provide flexibility if future congestion warrants a change in the hours of operations." It would appear that this decision should be made at this time with appropriate conditions for changing the times, method of changing hours, communication protocols, etc. can be defined in this ConOps.	The current pilot project is not proposing a 24/7 TMC. No decision has been made to make the TMC 24/7. During this 7 years pilot project due to the current part time TMC operations(12 hrs. from 6am-6pm). With this project, TMC will operate from 6am to 7 pm. If the pilot is successful and if a 24/7 TMC is warranted in the very distant future, this ConOps will be revised and updated to incorporate a hybrid dynamic sign. The dynamic hours of operations, method of changing hours, communication protocols, etc. will all be subjected to the same review and approval process like this one and will be updated and revised appropriately.	The verbiage about hybrid sign will be removed from ConOps v.3.0	✓	✓

Agency	Comment #	Page #	Reviewer Comments	D5 Traffic Ops Response	Action Item	Completed	FHWA Concurrence Version 3.0
FHWA S. Pyburn	16	10	Enforcement section states: "Violation rate is deemed unacceptable and above statewide averages of similar facilities." As the ConOps notes, this will be the first facility with a left shoulder being used as a part-time shoulder. As such, it is not clear how a violation rate of similar facilities will be established. Therefore, an acceptable violation rate, or other performance measure, should be defined in partnership with the CHP and included in this ConOps.	Understanding and this is key to the successful enforcement of this new type of facility in California. District 1 is actively engaging CHP partnership in this area. A TOL lane facility was subject to an enforcement study in San Diego District [D11]. A similar study methodology can be considered to establish an acceptable violation rate, or other performance measure. This report by D11 on the TOL enforcement study report can be made available on request. District 5 had discussed with D4 on their I-580 EB right part-time lane pilot project, we were informed that a regular CHP enforcement beat was employed. District has also researched enforcement on the CDOT I-70 left shoulder express toll lane in Idaho Spring area and discovered that a regular CSP enforcement beat protocol was employed as well with protected enforcement pad along the freeway corridor at strategic locations.	Will continue to work with CHP to discuss and develop an workable and enforceable strategy. From discussing with D4, the I-880 part time lane enforcement was per CHP regular beat, SOP and protocol. So is CDOT I-70 express lane, the regular CSP enforcement beat protocol was employed and no special enforcement protocol was called upon.	On going	On going
FHWA S. Pyburn	17	10	If automated enforcement devices are likely to be used in the future, consider including support infrastructure (i.e. pull boxes, conduit, etc.) with this project.	Noted. Automated enforcement is no longer being considered in this project after consulting with Caltrans District 4 on their EB I-580 part-time left shoulder lane pilot, regular CHP enforcement beat was employed. No special enforcement protocol was called upon. District also consulted FHWA Colorado Division and CDOT on the I-70 left shoulder express lane between Empire to Idaho Spring and it appears at this time there is no special enforcement either, besides CSP presence during their regular beat.	All text referring to automated enforcement removed.		
FHWA S. Pyburn				Upon further research, California do not have LESD on State Freeways, hence it would required legislature and change in California Vehicle Code to have LESD on State Freeways. Therefore, based on the above researched discovery, LESDs proposed in v.2.1 is removed and replace with CHP regular enforcement beat verbiage. Caltrans will install own and operates the ITS backbone infrastructure. It will be laid through the median. Any future/potential needs will be considered in the distant future for the corridor but not as part of this pilot project. The infrastructure laid is to support the CMS, CCTV and Lane-Use Control Signals in this pilot project. Detail pull boxes, conduit, etc will be presented in the PS&E design documents and not in this ConOps doc.	✓	✓	

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FHWA S. Pyburn	18	12	Freeway Service Patrol - Information for Freeway Service Patrol appears to be more appropriate for the "Typical Operations" section.	That is correct and the current proposal is a fixed time operations. SLOCOG has just executed a FSP contract starting in March 2020, and is operational as we speak. Contract expiration is stated in 2024. https://www.slocog.org/calenda/freeway-service-patrol-ribbon-cutting-ceremony	No action.	✓	✓
FHWA S. Pyburn	19	12	Freeway Service Patrol - This section lists two choices of operations. The planned method of operations needs to be defined and clearly stated in the ConOps before this ConOps can be approved.	Option 2 was removed.	Option was decided, see updated text in ConOps v.3.0	✓	✓
FHWA S. Pyburn	20	12	Intelligent Transportation Systems - This section notes: "In a distant future if decision is that the part-time travel lane should become a dynamic operation..." The meaning of this sentence is not clear. It could mean the decision for a dynamic operation would be made in the future. However, the description of that condition implies it could be the operating state when the lane first becomes operational.	All reference to dynamic operation will be removed from ConOps v.3.0.	Dynamic operation verbiage removed.	✓	✓
FHWA S. Pyburn	21	12	Intelligent Transportation Systems - This section describes the possibility of an automated system operating the shoulder operations. That operational mode presents a number of challenges and would warrant a separate, more detailed Concept of Operations. While the description of such operation is beneficial, approval of the ConOps should not be construed to be an approval for a fully automated system.	Understood. Will parking lot the idea of automated system scenario and remove from ConOps v.3.0.	Remove automated system scenario.	✓	✓
FHWA S. Pyburn	22	13	This page notes: "In addition to the cabinets, installation of fiber optic cable is being considered along the corridor to provide fast and reliable communications between the cabinets to ensure the reliable operation of the ITS elements along the corridor." The elements to be included with this project (i.e. fiber optic cable) need to be determined and stated as project elements in this ConOps.	The project currently is in PA&ED phase. Fiber optic is being considered by District Electrical Operations Engineer and the details will be determined during PS&E phase and be documented in the PS&E document. Caltrans will install, own and operates the fiber optic infrastructure. Any wireless communication will be through the most current wireless provider.	Final design selection TBD during PS&E.	On going	On going
FHWA S. Pyburn	23	13	Typical Operation - This section is critical to all other sections of the ConOps. Therefore, this section should be moved to immediately after the "Objectives" section.	Noted. Will move this section.	Section moved to page 3 & 4 under section Times of Operations and Daily Normal Operating Scenario	✓	✓

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FHWA S. Pyburn	24	13	Typical Operation - This section notes: "Once the part-time travel lane is determined to be clear for traffic, the overhead CMS would display a message "LEFT SHOULDER OPEN FOR TRAVEL ½ MILE AHEAD" and all Lane-Use Control Signals following the CMS shall display Green Down↓ arrows pointing downwards in a rolling sequence indicating the part-time travel lane is open to traffic. This time interval is based on a 65 mph free flow speed and the Lane-Use Control Signal are all spaced at half (½) mile spacing. If the Lane-Use Control Signal are spaced at a varying distance, the time interval shall be adjusted accordingly." The purpose of the "rolling sequential order" and the "prescribed time interval" is not clear and may violate requirements of Section 4.M. of the CA-MUTCD. Per the CA-MUTCD, lane-use control signals must be displayed continuously and "[t]he color of lane-use control signal indications shall be clearly visible for 2,300 feet at all times under normal atmospheric conditions, unless otherwise physically obstructed."	For a 4.5 mile long corridor, it will take FSP 4.5 mins to sweep the lane at freeflow speed. This approach was to address CHP concerns that there could be a possibility a stall vehicle would block the lane right after the FSP did its sweep. Therefore it is envisioned as FSP do its sweep, if its in constant communication with IMC operator to turn on the Green Down↓ Arrow as it passes under each Lane-Use Control signal to provide a safer and more controlled opening of the lane. We recommend the speed of FSP performing the sweep be no greater than 65 mph.	Submit request to CTCDC for experimentation. Subject to CTCDC and FHWA approval to experiment.	✓ submitted on 5/15/2020, approval obtained on 7/9/2020	✓
FHWA S. Pyburn	25	14	Closing - It is not clear why a visual sweep of lane is required to close the lane.	Since this project proposed to use only the Red X and Downward Green Arrow signal face only. To prevent stalled vehicles being "trapped" during the transition from Green Down Arrow to Red X condition, we want to make sure there is no blockage once the permission to travel on shoulder is turned off. There is also a possibility of fog impairing IMC operator CCTV vision, in this situation it would be necessary to call on FSP to sweep the lane as the lane are closing.	This proposed FSP operation still need review by HQ, CHP, SLOCOG and FHWA and their approval.	On going	On going
FHWA S. Pyburn	26	14	Closing - This section indicates the Lane-use Control signals will "switch from Green Down↓ arrow to Red X" Per the CA-MUTCD, a Yellow X is required to indicate "that a road user is to prepare to vacate the lane over which the signal indication is located because a lane control change is being made to a steady RED X signal indication." Thus, a Yellow X is required in the closing sequence.	This is a pilot project and is requesting a deviation from CA-MUTCD chapter 4M. This pilot project is proposing to not use the Yellow X. Our concern about using a Yellow X in this project is it would encourage driver to try to beat the Yellow X like a typical Yellow signal indicator through an intersection. However, it appears in CA-MUTCD Chapter 4M figure 4M-101 (CA) that a Red X and a Green Arrow combo is allowed.	No action.	✓	✓
							

Figure 4M-101 (CA). Example of Lane Control Signal Face

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FHWA S. Pyburn	27	14	Closing - This section states: "After the CMS changes, the Lane-Use Control Signals will then switch from Green Down arrow to Red X in a rolling sequential order at a prescribed time interval of 27.7 seconds indicating the part-time travel lane is closed to traffic." In addition to the comment above regarding the Yellow X, it is not clear what is meant by the display will be in a rolling sequential order at a specified time interval. Per the CA-MUTCD, lane-use control signals must be displayed continuously. Therefore, the signal will change from Green ↓ arrow to Yellow X to Red X. A duration of the Yellow X must be specified.	This is a pilot project and is requesting a deviation from CA-MUTCD chapter 4M. This pilot project is proposing to not use the Yellow X. The rolling sequential part is referring to the switch from Green Down Arrow to Red X as described in the the above response #27, 28 & 29. All signal indications are required to be on 24/7, 365 days per CA-MUTCD Chapter 4M. Our concern about using a Yellow X in this project is it would encourage driver to beat the Yellow X like a typical Yellow signal indicator through an intersection.	No action.	✓	✓
FHWA S. Pyburn	28	15	Operational Scenarios - Per comments above, changes to sequencing and display of the Lane-use Control signals will be required to comply with the CA-MUTCD. As such, descriptions of the operating scenarios will need to be revised accordingly.	This is a pilot project and is requesting a deviation from CA-MUTCD chapter 4M. This pilot project is proposing to not use the Yellow X. This pilot project is also proposing a unique switching of the signal indication between the two phase (Red X and Green Arrow) in a rolling sequential fashion starting from upstream to downstream of the travel lane. Please reference above response #27, #28 & #30	No action.	✓	✓
FHWA S. Pyburn	29	--	The ConOps is missing a definition of stakeholders and their roles.	The PDI includes SLOCOG, the City of Pismo Beach, and the CHP. Also the stakeholder listing includes the County of SLO, the various Cities and community service districts within southern San Luis Obispo County. The Northern Chumash Tribal Council (yak titu titu yak titu) tribe in San Luis Obispo County region and a myriad of local organizations and citizen advocacy groups. The roles of these PDI members and stakeholders is to help develop and gather feedback on this project.	Definition of stakeholders and their roles added to the Acknowledgements page.	✓	✓
FHWA S. Pyburn	30	--	The ConOps is missing a description/diagram of communication architecture, references to regional architecture or statement of compliance with architecture standards.	Communication architecture has not been determined as of date. It's final design is subject to inputs from District & HQ Electrical Ops, all stakeholders and the public comments received with all visual and CEQA requirement considered. Details of communication architecture will be presented in the PS&E documentation and an updated ConOps.	Final design TBD during PS&E. On going	On going	
FHWA S. Pyburn	31	--	The ConOps does not mention truck prohibition signs, which is fine, but must be included in the project plans.	CA-MUTCD truck prohibition sign will be mentioned in page 3 of ConOps v3.0.	Added text about truck prohibition sign.	✓	✓
FHWA M. Bhatti	32	1	Introduction - Consider including some basis info on current roadway conditions/characteristics such posted speed, number of lanes and shoulder information, etc. No details but just some basic information will be helpful.	Text added per recommendation under ConOps section Introduction.	Basic info added to the beginning paragraph on page 1	✓	✓
FHWA M. Bhatti	33	1	Introduction - It is stated that the facility will be evaluated 1 year after opening day. It's unclear how exactly is the facility going to be evaluated, through certain performance measures, etc.	Project will be evaluated based on an average speed improvement of at least 53 mph or better, a Travel Time Index of 1.37 or less, a Buffer Time of 12.4 minutes or less, Buffer Time Index of 1.0 or less and the removal of bottlenecks and queues.	Add performance measure that will be used to evaluate on page 1 under section Introduction.	✓	✓

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FHWA M. Bhatti	34	2	Design Features - Instead of saying "R20.3 <u>or</u> R21.5" consider saying that under Alternative 1 the post mile is from ____ to ____ and under Alternative 2 the post mile is from ____ to _____. This will clarify hat there are two alternatives being explored and less confusion on what post miles is the part-time lane going to start/end.	Sentence will be revised per recommendation.	Sentence revised, see page 2 in ConOps v.3.0	✓	✓
FHWA M. Bhatti	35	6	Figure 3 - It says that "monolithic cylindrical pole" is one option but what design standard is this under as the second option clearly states that a "standard Caltrans traffic signal pole or luminaire pole with mast arm" is to be used. It might be worth determining which of these two options to use early and to go with the "standard Caltrans traffic signal pole or luminaire pole with mast arm."	Visual resources (i.e., ocean and skyline) along this corridor are highly valued. The design of the signal poles would take into consideration input from various stakeholders. Such stakeholders could be internal aesthetics team members or it may include external stakeholders or permit grantors (i.e., City of Pismo Beach, coastal commission, the public). At the preparation of this response, the design team has narrowed down the signal standard to one option. It will be per Caltrans Standard Plan ES-7E, 19-3-100 with a 25' mast arm. This mast arm will be trimmed to teh needed length. As of right now, Traffic Safety has recommended that signal poles be located behind median concrete barriers. This is primarily due to cost and desire to stay with standard items. Design would like Structures help and provide a design integrating the pole with the barrier. It will look cleaner, not require shielding on the back side to protect the signal pole, and require a shorter mast arm since the pole is closer to the lane. No decision has been made yet whether it will be mounted on the barrier or behind the barrier.	Signal standard selected per Caltrans standard plan ES-7E, Pole Type 19-3-100, mast arm 25', trimmed to length per project needs.	✓	✓
FHWA M. Bhatti	36	6	Figure 4 - It may be worth determining early which "standard Caltrans traffic signal pole or luminaire pole with mast arm" is suitable for this project and whether or not it will require a foundation installation or is the median barrier able to support the signal pole as the type of pole will determine how big of a foundation is needed and if the median barrier is a good enough for support.	Please see response #38.	Signal standard selected per Caltrans standard plan ES-7E, Pole Type 19-3-100, mast arm 25', trimmed to length per project needs.	No action.	✓
FHWA M. Bhatti	37	8	Table 1 - It is suggested that the choice between the two alternatives should be based on where the back of the queue is on daily basis and if there is a way to determine that and an option is picked based on this information.	Agreed and both alternatives presented herein are both capable of congestion relief per Traffic Analysis is documented in the TOAR. TOAR is available upon request.	Continue to seek CHP input. Final locations TBD during PS&E.	On going	On going
FHWA M. Bhatti	38	10	Enforcement - Can the wording be changed to say "protected refuge" in the first paragraph to clarify that some type of protection (e.g., k-tail) will be provided as some CHP officers have requested "protected refuge" for observation of HOT-lane enforcement.	Yes, Traffic Ops also prefer a "protected refuge" for the CHP officers. 4 enforcement pad locations was indemnified, however, the number locations has not been finalized until PS&E and environmental review. All efforts will be applied to ensure CHP officer has the safest place to perform their duty.			

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FHWA M. Bhatti	39	10	Enforcement - It says that the LEDS will be considered and mounted on the Lane-Use Control Signal post or mast arm for enforcement. Can some hidden locations be considered to avoid "slaloming" by local users?	After Consulting with Caltrans District 4 on their EB I-580 part-time right shoulder lane pilot, regular CHP enforcement beat was employed. No special enforcement protocol was called upon. Also, consulted FHWA Colorado Division and CDOT on the I-70 left shoulder express lane between Empire to Idaho Spring and it appears at this time there is no special enforcement either, besides CSP presence during their regular beat. Upon further research, California do not have LEDS on State Highways, hence it would required legislature and change in California Vehicle Code to have LEDS on freeways. Therefore, based on the above researched discovery, LEDS proposed in v2.1 is removed and replace with CHP regular enforcement beat verbiage.	Remove old verbiage and replace with new verbiage, see page 17.	✓ ✓	
FHWA M. Bhatti	40	12	Freeway Service Patrol - Can it be considered and clarified to complete activities under both options of visual inspection using CCTV cameras and drive through of the corridor prior to the opening of the part-time travel lane because a disabled vehicle could move onto the shoulder after FSP has passed.	The FSP Standard Operating Procedure was adopted in October, 2019 by SLOCOG. SLOCOG has also debut the first beat of FSP through this corridor March of 2020 but ribbon cutting was delayed due to COVID-19 national crisis. https://www.slocog.org/calendar/freeway-service-patrol-ribbon-cutting-ceremony	District has decide to go with Option 1, Option 2 has been removed. This will keep current FSP SOP as is. The Daily Normal Operating Scenario is revised as well to reflect this.	✓ ✓	
FHWA M. Bhatti	41	12	Intelligent Transportation Systems - This section notes: "In a distant future if decision is that the part-time travel lane should become a dynamic operation..." It is suggested that the information on possible future dynamic operation be presented in a separate section with details explaining what and how so it will eliminate confusion on what infrastructure elements will be installed now and in future. If the infrastructure for future dynamic operation will be installed now then it needs to be clearly note or a decision needs to be made at this time to avoid possible future cost.	Dynamic operation is not being considered in the currently project work plan. All mention of this operation mode will be removed.	Remove all dynamic operation reference from current ConOps	✓ ✓	
FHWA M. Bhatti	42	12	Intelligent Transportation System Elements - It is unclear whether the speed detectors and vehicle detectors be installed now or in the future. If this infrastructure will be installed in future to measure performance and reliability of the system, how is the performance going to be measured right after or a few years after opening of the system to determine if the system is accomplishing its intended	Speed detectors and vehicle detectors will be installed as part of the project. The main purpose is to allow after condition data collection, monitoring and performance evaluation of the facility utilizing the already calibrated FREQ models create in the TOAR.	No action.	✓ ✓	
FHWA M. Bhatti	43	16	Incident Management - There is a grammatical error in the last line of first paragraph the sentence should read "...CHP that the part-time travel lane is open to traffic due to a crash and that is blocking the #2 lane and the part-time travel lane is open to help manage the incident."	Will correct this typo.	Typo corrected.	✓ ✓	

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FHWA M. Bhatti	44	--	<p>An earlier comment mentions identifying stakeholders and their roles in the ConOps. There is an even greater need to identify all stakeholders early in this project because there could be major input from the locals or environmental perspective on the overhead sign structures due to this project's close proximity to the beach and/or local/state parks and if it is possible to install such structures in this area is a question that should be explored early on in the project.</p>	<p>Understood. Public outreach for the project is planned in the 3rd or early 4th quarter of 2020 subject to the current COVID-19 national crisis.</p> <p>The Visual Impact Assessment (VIA) is required due to CEQA and is nearly finalized by our Landscape Architecture group. This VIA measures the impacts as a result of not only the proposed "overhead sign structures due to this project's close proximity to the beach and/or local/state parks," but also the planned pavement widening and soundwalls.</p> <p>Once internal QA/GC of the VIA is complete and incorporated into the Draft Environmental Document (Draft EIR/EA), it will be circulated for public review followed with a public outreach meeting. The timing of Draft EIR/EA completion with subsequent public outreach is currently stated for late-summer 2020.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	