

# ***SR-60/World Logistics Center Parkway Interchange Project***



## **Ramp Closure Study**

Riverside County, California

08-RIV-60-PM 20.0/22.0

EA 0M590

*December 2018*

**SR-60/WORLD LOGISTICS CENTER PARKWAY  
INTERCHANGE  
RAMP CLOSURE STUDY**

Caltrans No.:0813000109

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# 1. INTRODUCTION

This report presents the ramp closure study for the Project Approval and Environmental Document (PA/ED) for improvements to the SR-60/World Logistics Center Parkway (WLC Pkwy) Interchange (IC) in the City of Moreno Valley, California and is applicable to all build alternatives studied in the PA/ED phase. The two build alternatives include Alternative 2 (modified Partial Cloverleaf) and Alternative 6 (Modified Partial Cloverleaf with Roundabout Intersections). Additionally, there are two Design Variations for each Build Alternative and both will similarly realign Eucalyptus Avenue to join WLC Pkwy approximately 900' south of the existing Eucalyptus Avenue/WLC Pkwy intersection. During construction of the project, the SR-60/WLC Pkwy Interchange ramps, WLC Pkwy overcrossing and the entire interchange would be closed at various stages of the construction. Caltrans' policy is that a study is required whenever a freeway ramp is to be closed for more than ten days. The following ramps at the SR-60/ WLC Pkwy Interchange will be closed for more than ten days during construction of the project:

- Eastbound SR-60 WLC Pkwy off-ramp – a four month closure
- Eastbound SR-60 WLC Pkwy on-ramp – a four month closure
- Westbound SR-60 WLC Pkwy off-ramp – a six month closure
- Westbound SR-60 WLC Pkwy on-ramp – a four month closure

## ***Background of the SR-60/WLC Pkwy Interchange Improvement Project***

The SR-60/WLC Pkwy Interchange is currently a two-quadrant cloverleaf with side-street stop-controlled ramp intersections. This configuration is sufficient to handle the current traffic demand because the interchange's catchment area is sparsely developed, with the exception of the 1.8 million square-foot Skechers high-cube warehouse. However, the Community Development Element of the City's General Plan currently designates the project area for development as a mix of residential, commercial, business park, and open space land uses, the Moreno Highlands Specific Plan (MHSP). There is also a plan currently under development which replaces the MHSP with the World Logistics Center (WLC) Specific Plan. The WLC would consist primarily of approximately 40.6 million square feet of high-cube logistics warehouse buildings. The only scenario considered for this report is the WLC development. Also, under the current General Plan, the area north of SR-60 would be developed as a mix of office buildings and single-family dwellings.

With the development of the WLC, the traffic demand at the SR-60/World Logistics Center Pkwy interchange will be much greater than at present. The proposed project is to improve the capacity of the interchange to accommodate the anticipated increase in demand.

## 2. EXISTING CONDITIONS

### ***Land Use***

Land uses in the area were reviewed in September 2018 to identify the type of land use, location, and access to the roadway network. Specific attention was given to those land uses that rely on WLC Pkwy to access the local and regional roadway network. The land uses in the area of WLC Pkwy consist primarily of dry-land agriculture, with a few residences, a landfill, and one large distribution center (see Exhibit 1). The large distribution center is the 1.8 million square-foot Skechers facility, which includes a factory outlet store and is the largest trip generator along WLC Pkwy. Vehicle trips from Skechers account for approximately half of existing peak hour traffic at the SR-60 Eastbound ramp intersection with WLC Pkwy.

In addition to the Skechers distribution facility, the other large traffic generating land use in the vicinity of the WLC Pkwy interchange is the Badlands Landfill located northeast of the Theodore Street/Ironwood Avenue intersection. The Landfill site is permitted to receive up to 612 vehicles per day. Based on data from 2014, on a typical day when the Landfill site is open, 10 to 15 Department employees travel to and from the site and on average 217 customers access the Landfill per day. Vehicle trips accessing both land uses primarily travel to/from SR-60, although several trips for the Badlands Landfill were observed using local streets parallel to SR-60. Detour routing for the interchange closure has specifically considered the travel patterns of the two large land uses.

In addition to the Skechers distribution facility and the Badlands Landfill the following are potentially affected land uses located on WLC Pkwy that use the interchange to access SR-60:

- One residence on the west side of WLC Pkwy near the Dracaea Avenue intersection.
- Four residences on the east side of WLC Pkwy between Eucalyptus Ave and Dracaea Ave.
- Seven residences on the east side of Theodore Street and north of SR-60.

It was noted during field visits that the only other active non-residential land use along WLC Pkwy was the sale of hay at one WLC Pkwy residence. However, it is assumed that the sales are private and that the trip generating characteristics of the site would not differ substantially from a standard residential parcel.

Land uses along Redlands Boulevard were reviewed to determine if the WLC Pkwy Interchange closure and detour routes would significantly affect the land uses. Land uses along, and in the vicinity of, Redlands Boulevard include residential, a nursery, a church, and a mini-market. In summer 2015, the ALDI warehouse was constructed and opened at the northwest quadrant of the intersection of Redlands Boulevard and Eucalyptus Avenue.

### ***Roadway Network***

#### *WLC Pkwy Interchange*

The existing ramp system provides direct access to WLC Pkwy and Theodore Street from SR-60. The existing interchange is a two-quadrant cloverleaf in which westbound SR-60 on and off ramp traffic connects to Theodore Street at a side-street stop-controlled intersection on the northern side of the interchange. Eastbound SR-60 on and off ramp traffic connects at a side-street stop-controlled intersection on the southern side of the interchange. Through traffic on WLC Pkwy passes over SR-60 on a two lane overpass.

The WLC Pkwy IC does not have bicycle lanes but has paved shoulders and a sidewalk on the east side of the bridge.

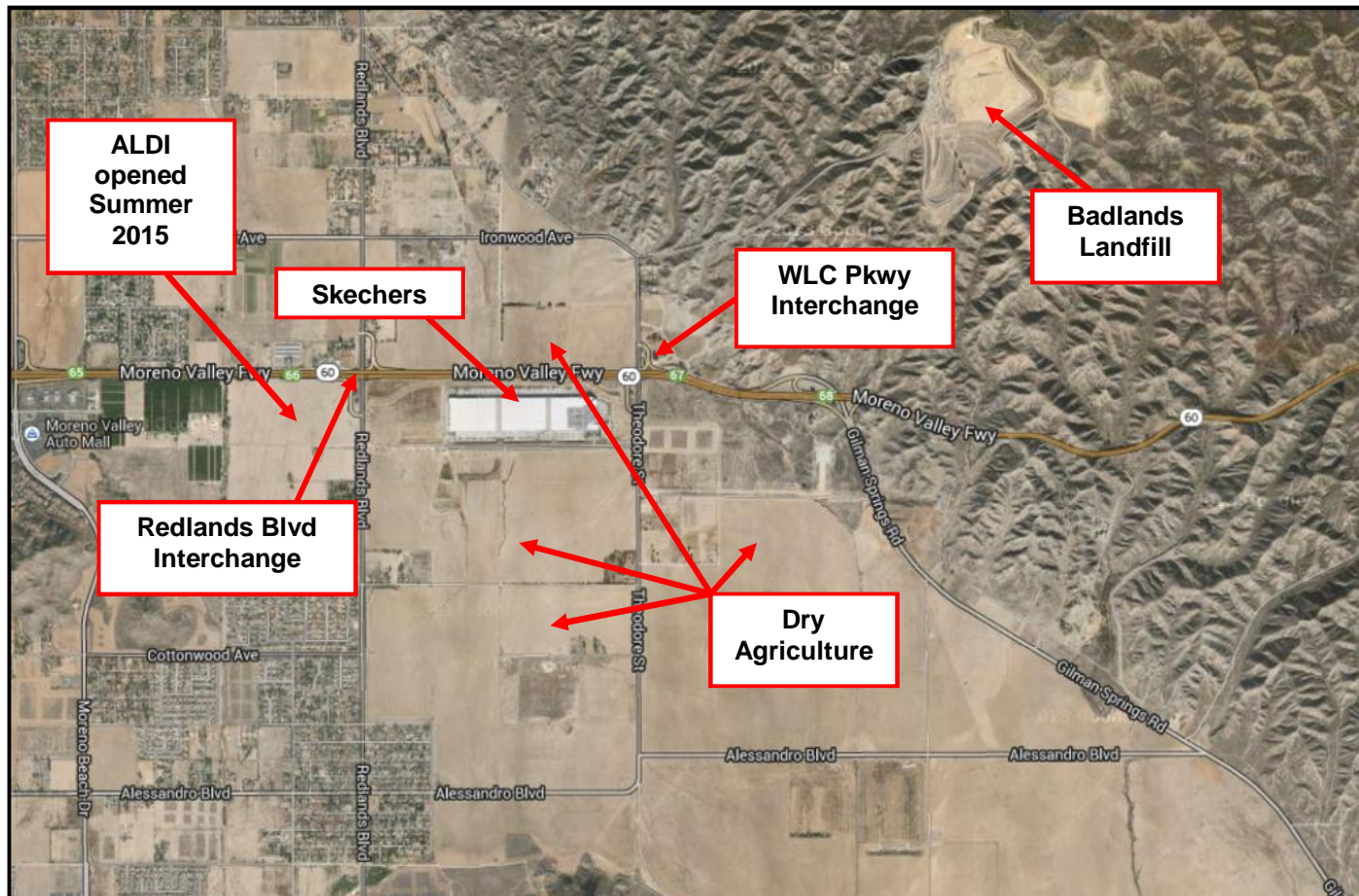


Exhibit 1: Existing Conditions in Study Area

*Eucalyptus Avenue*

Eucalyptus Avenue currently extends approximately 3,800 feet, from WLC Pkwy to the western edge of the Skechers distribution facility. The existing configuration of the roadway is two lanes westbound and one lane eastbound with a raised median. Access to the Skechers distribution facility is provided via five driveways on Eucalyptus Avenue, two of which are right-in and right-out only. On-street bike lanes exist along Eucalyptus Avenue in both directions of travel. A sidewalk is provided only on the portion of roadway adjacent to the Skechers site. Currently the segment between the Skechers frontage and Redlands Blvd. is paved for emergency access. The emergency access allowed traffic during closure of the WLC Pkwy overcrossing in 2015, and remains to be open for one-way westbound traffic.

The General Plan calls for Eucalyptus Avenue to be extended west through an intersection with Redlands Boulevard as a four-lane divided roadway. In summer 2015, the ALDI warehouse project constructed a segment of Eucalyptus Avenue to the west to connect to the ALDI project site. The intersection of Eucalyptus Avenue/Redlands Boulevard has been constructed and a traffic signal was installed as part of the project as well.

*Redlands Boulevard Interchange*

Redlands Boulevard/SR-60 IC is the adjacent interchange west of WLC Pkwy IC. Redlands Boulevard is a two-lane north-south arterial road that accesses the land both north and south of SR-60 which WLC Pkwy IC serves.

*Ironwood Avenue*

Ironwood Avenue is a two-lane east-west arterial road parallel to the SR-60. It turns into Theodore Street at the Badlands landfill access.

### 3. CONDITIONS WITH RAMP CLOSURE

#### ***Limits of Construction and Construction Staging***

Construction of the Project will require at times the closure of WLC Pkwy, including the bridge over SR-60, from north of the existing SR-60 westbound ramps to the intersection of Eucalyptus Avenue/ WLC Pkwy. The exact point of closure will be determined during the development of construction plans; however, it is likely that due to the grade change the northern closure point would be beyond the driveway to the residence at 12400 WLC Pkwy. Staging would then be required to maintain access to and from the residence.

On the south side of SR-60, differences in profile grade between proposed WLC Pkwy and existing Eucalyptus Avenue would require construction to elevate the WLC Pkwy/Eucalyptus intersection by as much as 30 feet. Due to the substantial difference between the existing and proposed grade at the intersection, the proposed plan is to close the intersection for construction and maintain an alternate route to access Eucalyptus Avenue, through Redlands Boulevard..

Complete closure of the interchange during construction is proposed for 4 months. The eastbound SR-60 WLC Pkwy on-ramp, eastbound SR-60 Theodore off-ramp, and westbound SR-60 WLC Pkwy off-ramp would be closed for approximately four months, while the westbound SR-60 WLC Pkwy off-ramp would be closed for six months. Complete closure is expected to reduce the overall cost and timeframe for construction as well as ensuring a safer environment for construction workers and motorists due to the construction challenges with the substantial difference (up to 30 feet) between the existing and the proposed roadway profile. Construction staging concept was developed with the assumption that the interchange would be completely closed during part of the construction. The conceptual stage construction and the estimated construction durations are described below.

#### **Construction Phase 1**

Sub-Phase 1a – Construct portion of the proposed eastbound and westbound ramps of the interchange that are not within the footprint of the existing ramps. No roadway closure is anticipated and the interchange will remain open. (Estimated Duration: 7 months)

Sub-Phase 1b – Construct the extension of Eucalyptus Avenue between WLC Pkwy and Redlands Boulevard. Partial closure at the Eucalyptus Avenue and Redlands Boulevard intersection is anticipated but traffic flow will be maintained on Redlands Boulevard. The interchange will remain open. (Estimated duration: 2 months)

Sub-Phase 1c – Construct the Eucalyptus Avenue and WLC Pkwy intersection and permanent grading for the SCE poles relocation. The WLC Pkwy and Eucalyptus Avenue intersection would be closed to all traffic movements during this phase. A temporary roadway would be constructed at the south west quadrant of the closed intersection to connect Eucalyptus Avenue and WLC Pkwy to the south. Traffic accessing in and out of the Skechers distribution facility would be detoured to the newly constructed Eucalyptus Boulevard and Redlands Boulevard intersection. The interchange would remain open during this sub-phase providing access to and from the north on WLC Pkwy only. (Estimated duration: 4 months)

Sub-Phase 1d – Construct the temporary detour connecting the WLC Pkwy and Eucalyptus Avenue intersection to the existing WLC Pkwy and the freeway ramp to the north. The intersection would remain closed during this sub-phase. (Estimated duration: 1 month)

The estimated construction duration for Phase 1 is 7 months assuming that sub-phases 1b, 1c, and 1d would occur concurrently with Phase 1a.

#### **Construction Phase 2**

Sub-Phase 2a – Construct WLC Pkwy north and south of the existing bridge over SR 60 to join with the newly constructed ramps from sub-phase 1a. The interchange will be completely closed to all traffic movements during this sub-phase for approximately 4 months. (Estimated duration: 4 months)

Sub-Phase 2b – Demolish the existing ramps and construct the remaining portion of the proposed ramps and approaches of the interchange. Portions of the work in this sub-phase can be done concurrently with sub-phase 2a to minimize the need for other roadway closures. (Estimated duration: 4 months)

The estimated construction duration for Phase 2 is 6 months with some overlaps of the two sub-phases.

**Construction Phase 3**

Sub-phase 3a – Construct the new WLC Pkwy bridge over SR-60. The WLC Pkwy bridge will be closed but the newly constructed freeway ramps will be open during this sub-phase. Some of the bridge work could overlap with work in Phase 2 to reduce construction duration. (Estimated duration: 10 months)

Sub-phase 3b - Widening of Theodore Street near Ironwood Avenue. Partial closure of Theodore Street at Ironwood Avenue is anticipated. (Estimated duration: 2 months)

The estimated construction duration for Phase 3 is 10 months with sub-phase 3b occurring concurrently with sub-phase 3a.

It is estimated that the construction staging strategy with the interchange completely closed for 4 months as described above would reduce the overall project construction duration from 30 months to 9 months. Construction with partial closure of the interchange and allowing traffic flow at the ramps and on WLC Pkwy throughout the course of construction would require the widening of WLC Pkwy to be done for half of the roadway at a time, which would substantially increase the duration for sub-phases 1c and 2a, which would then push back the start of the bridge construction in sub-phase 3a. In addition, widening WLC Pkwy in two phases would be challenging due to the substantial difference (up to 30 feet) between the existing and the proposed roadway profile. Temporary shoring would be required along WLC Pkwy. The estimated construction duration comparison between the construction staging with and without the complete interchange closure is presented in Exhibit 2.

It is estimated that the construction cost of the roadway widening portion would be reduced by 25% to 35% with the complete interchange closure during construction and the effort and costs required for traffic control would be reduced as well. Due to the substantial difference in the proposed roadway profile on WLC Pkwy, temporary shoring along the roadway would be required to allow traffic on WLC Pkwy during construction. This would not be needed if the roadway and interchange are completely closed to traffic.

**Ramp Closure Impacts - Eastbound SR-60 WLC Pkwy Off-ramp**

The eastbound SR-60 WLC Pkwy off-ramp would remain open during Construction Phase 1. The off-ramp would be closed for approximately four months during Construction Phase 2a for the construction of WLC Pkwy south of SR-60. The new eastbound SR-60 WLC Pkwy off-ramp would be in use during Construction Phase 2b while the existing off-ramp is demolished. The new eastbound SR-60 WLC Pkwy off-ramp would remain in use for the remainder of construction.

Detour routes, delays, impacts to businesses and impacts to emergency services during the eastbound SR-60 WLC Pkwy off-ramp closure are identical for all ramp closures and explained in subsequent sections.

**Ramp Closure Impacts - Eastbound SR-60 WLC Pkwy On-ramp**

The eastbound SR-60 WLC Pkwy on-ramp would remain open during Construction Phase 1. The on-ramp would be closed for approximately four months during Construction Phase 2a for the construction of WLC Pkwy south of SR-60. The new eastbound SR-60 WLC Pkwy on-ramp would be in use during Construction Phase 2b while existing on-ramp is demolished. The new eastbound SR-60 WLC Pkwy on-ramp would remain in use for the remainder of construction.

Detour routes, delays, impacts to businesses and impacts to emergency services during the eastbound SR-60 WLC Pkwy on-ramp closure are identical for all ramp closures and explained in subsequent sections.

**Ramp Closure Impacts - Westbound SR-60 WLC Pkwy Off-ramp**

The westbound SR-60 WLC Pkwy off-ramp would remain open during Construction Phase 1. The off-ramp would be closed for approximately four months during Construction Phase 2a for the construction of WLC Pkwy north of SR-60. The westbound SR-60 WLC Pkwy off-ramp would remain closed for an additional 2 months during Construction Phase 2b while the existing off-ramp is demolished and a portion of the new



westbound SR-60 WLC Pkwy off-ramp is being constructed. Once completed, the new westbound SR-60 WLC Pkwy off-ramp would be in use for the remainder of construction.

Detour routes, delays, impacts to businesses and impacts to emergency services during the westbound SR-60 WLC Pkwy off-ramp closure are identical for all ramp closures and explained in subsequent sections.

***Ramp Closure Impacts - Westbound SR-60 WLC Pkwy On-ramp***

The westbound SR-60 WLC Pkwy on-ramp would remain open during Construction Phase 1. The on-ramp would be closed for approximately four months during Construction Phase 2a for the construction of WLC Pkwy north of SR-60. The new westbound SR-60 WLC Pkwy on-ramp would be in use during Construction Phase 2b while existing on-ramp is demolished. The new westbound SR-60 WLC Pkwy on-ramp would remain in use for the remainder of construction.

Detour routes, delays, impacts to businesses and impacts to emergency services during the westbound SR-60 WLC Pkwy on-ramp closure are identical for all ramp closures and explained in subsequent sections.

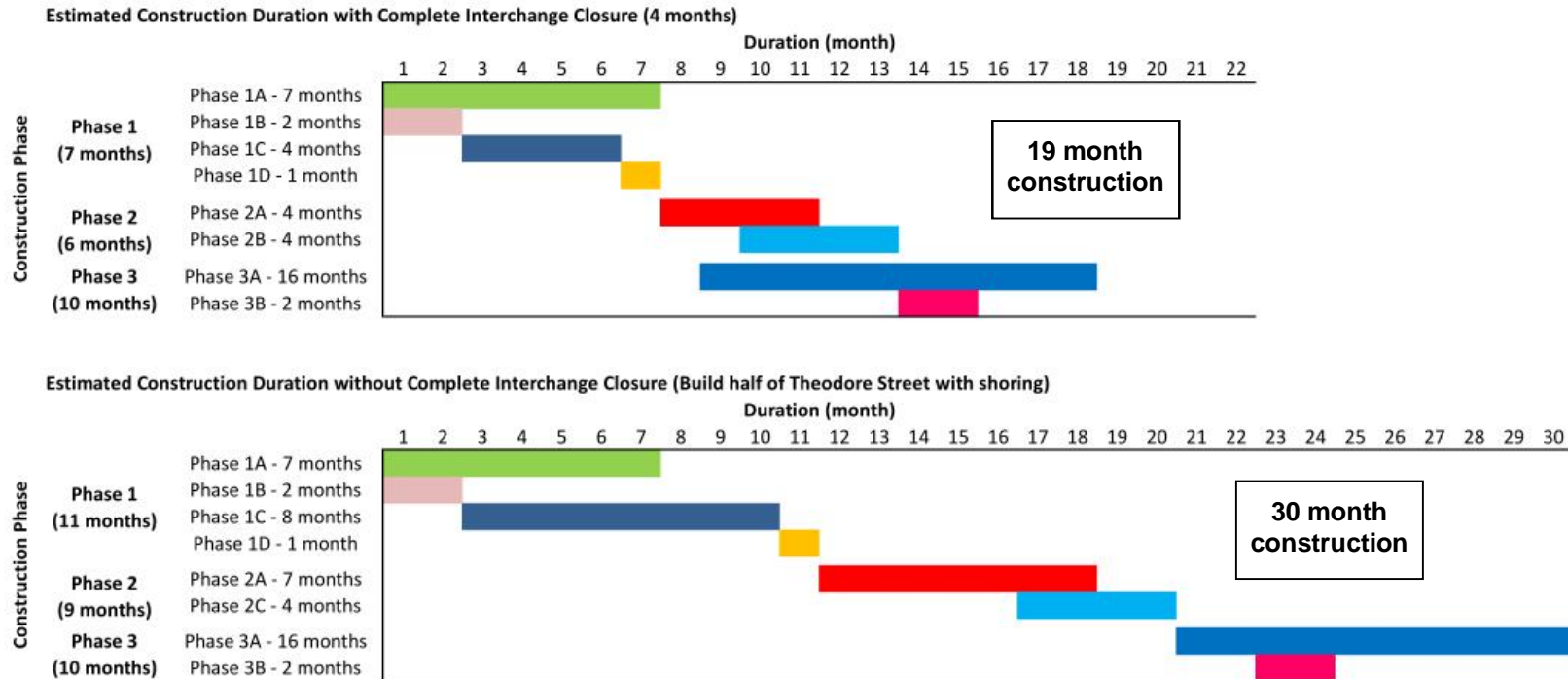


Exhibit 2: Estimated Construction Duration Comparison

### **Ramp Closure Impacts – Identical for all Ramp Closures**

The following impacts have been identified for the ramp closures on the SR-60/WLC Pkwy project, and are applicable to all ramps.

#### *Detour Routes*

Detour routes have been developed to provide access between SR-60 and the largest land uses north and south of the freeway (shown in Exhibit 3). The detour routes utilize the most direct roadways consistent with existing travel patterns. The detour routes will use the Redlands Boulevard interchange which is located approximately one mile to the west of the WLC Pkwy interchange.

#### *Detour Route North of SR-60 (shown in green in Exhibit 3)*

Traffic from the Badlands Landfill and residential land uses to the north of SR-60 will use Ironwood Avenue and Redlands Boulevard to access the Redlands Boulevard interchange with SR-60. This path would require that Ironwood Avenue between Redlands Boulevard and Theodore Street be designated a temporary truck route to accommodate waste disposal trucks going to and from the landfill (it is not currently a designated truck route).

#### *Detour Route to Skechers of SR-60 (shown in blue in Exhibit 3)*

Trips to and from the Skechers distribution center will use the Redlands Blvd. Interchange, a short section of Redlands Blvd., and the Eucalyptus Avenue Extension. This path would require that the short section of Redlands Boulevard, south of the eastbound off-ramp, and the Eucalyptus Avenue Extension be used for truck access and will require it to be open for 2-way access for all vehicles. Emergency services will continue to access the Skechers distribution center on the west side from Redlands Blvd.

#### *Detour Route to Houses along South WLC Pkwy (shown in brown in Exhibit 3)*

Trips to and from the five residences along WLC Pkwy will use Alessandro Boulevard to access Gilman Springs Road, and from there use the Gilman Springs Road Interchange to access SR-60 eastbound. Emergency services will access the residences from Redlands Boulevard via Alessandro Boulevard to WLC Pkwy.

It is noted that in January 2015, the existing WLC Pkwy bridge was struck by a truck traveling on SR-60 mainline. This incident resulted in a complete closure of the WLC Pkwy bridge for emergency repairs. During the bridge closure, the same detour routes as proposed in this study were put in place to detour traffic.

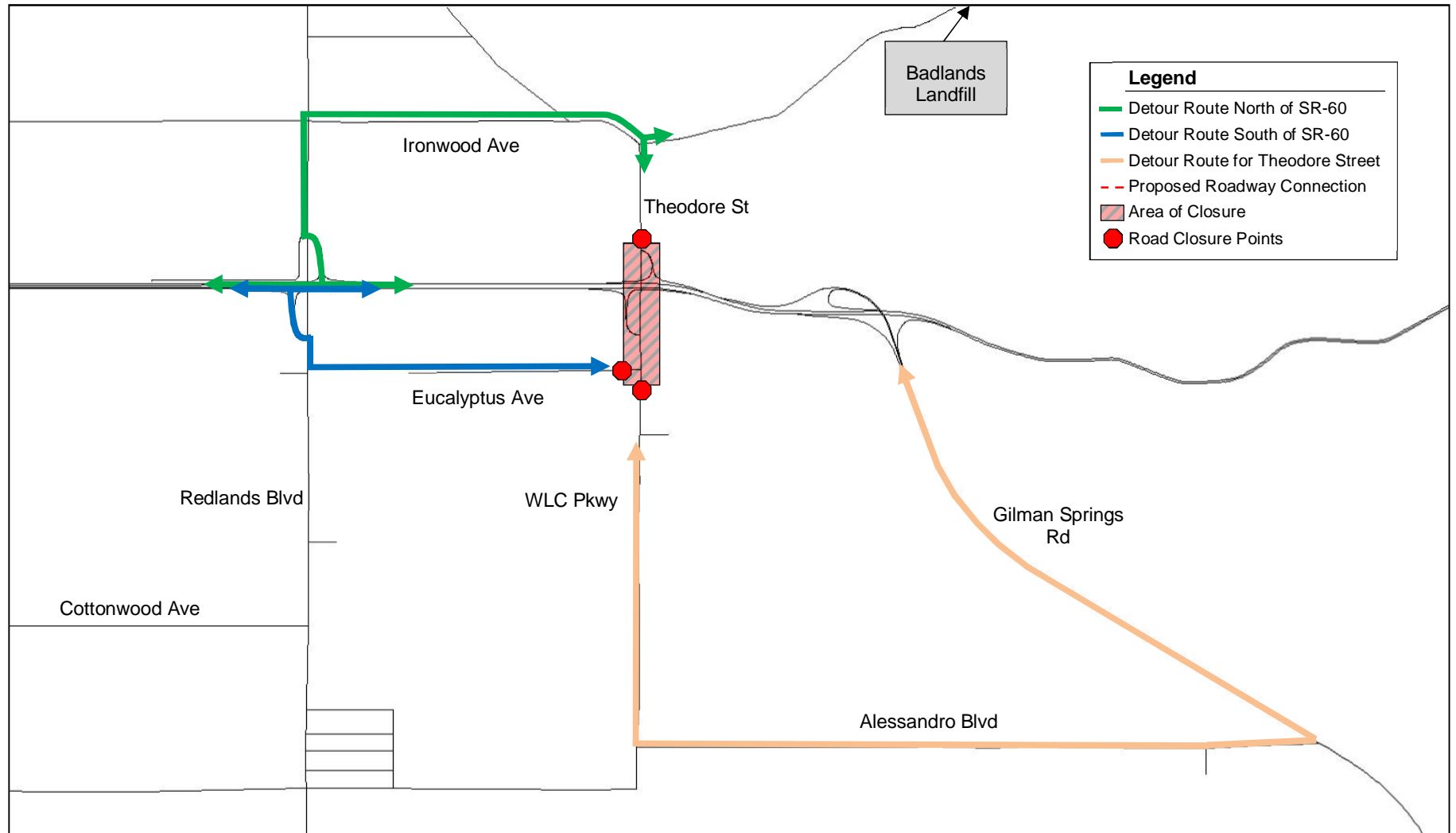


Exhibit 3: Proposed Detour Routes During Ramp Closure

### *Traffic Re-Distribution During Construction*

The base condition traffic volumes at the WLC Pkwy interchange were distributed through the study intersections based on the primary detour routes, consistent with baseline traffic patterns in the area.

A conservative approach assuming all the respective existing traffic volumes at the closed ramp will be diverted to the primary detour routes was applied to identify the traffic impacts under the worst-case scenario for the interchange closure. It is possible that a certain amount of traffic will be diverted to routes other than the identified primary detour routes and some travelers will adjust their travel plans in order to avoid the area with closures. Therefore, the actual traffic volumes diverted to the primary detour routes could be less than those identified in the report.

### *Intersection Operations During Construction*

Traffic operations at the study intersections were evaluated for the Project Construction Conditions to determine if distributed traffic would cause negative impacts on intersection operations. Intersection operations were evaluated using the Synchro software, consistent with the WLC Pkwy PA/ED study. The existing conditions traffic operations in this study are consistent with the findings from the PA/ED study. In addition, no improvement projects were assumed to be completed to the study intersections prior to the beginning of Project construction; therefore, the intersection geometries and signal phasing have been assumed to remain consistent with existing conditions.

All study intersections would operate at acceptable level of service during the AM and PM peak hours for the Project Construction Conditions. Therefore, no capacity increasing improvements are needed to accommodate the additional traffic demand at the study intersections.

### *Travel Time*

Travel time was determined for scenarios before and after the WLC Pkwy interchange closure to assess the additional time required to travel on the detour routes and to determine whether unreasonable inconvenience would occur as a result of the proposed detours. The travel time estimates were conducted using roadway travel distances and posted speed limits to calculate a route travel time.

Given the relatively low congestion and delay along the roadways and intersections in the study area, the time-speed approach was deemed sufficient for travel time estimations. However, all detour routes were driven to ensure that they were free of constraints that may hinder free flow travel during non-peak times.

Exhibit 4 provides the estimated travel times between SR-60 and key origins within the study area for Existing Conditions and Project Construction Conditions. The intent of estimating travel time between SR-60 and key points within the area is to better understand how a typical motorist would be affected by the WLC Pkwy interchange closure. Traffic counts and field observations found that most traffic along WLC Pkwy uses SR-60; therefore, selecting destination points on SR-60 was intended to mimic existing travel patterns.

For example, the exhibit provides an estimate of the distance and travel time from the Theodore Street/Ironwood Avenue intersection to a point on SR-60 west of the Redlands Boulevard ramps. The route is a common drive for vehicles traveling between Moreno Valley and the Badlands Landfill. The exhibit provides distance and estimated travel time increases to be expected during the Project Construction Conditions.

The travel time along the routes refers to the time spent traveling along each respective detour. Time is rounded to the nearest minute.

**Exhibit 4: Travel Time and Distance Estimates**

Travel Time	Existing Conditions	Project Construction Conditions*	Difference
<i>To/From SR-60 West of Redlands Boulevard</i>			
Theodore Street/Ironwood Avenue	1.4 miles 2 minutes	1.5 miles 2 minutes	0.1 miles < 1 minute
WLC Pkwy/Eucalyptus Avenue	1.4 miles 2 minutes	1.4 miles 2 minutes	0 miles < 1 minute
Skechers Distribution Site – Vehicle Access	1.7 miles 2 minutes	1.1 miles 2 minutes	-0.6 miles < 1 minute
Skechers Distribution Site – Truck Access	2.0 miles 3 minutes	0.7 miles 1 minutes	-1.3 miles -1 minute
WLC Pkwy/Dracea Avenue	2.1 miles 3 minutes	3.8 miles 6 minutes	1.7 miles 3 minutes
<i>To/From SR-60 East of Gilman Springs Road</i>			
Theodore Street/Ironwood Avenue	1.6 miles 2 minutes	3.7 miles 5 minutes	2.1 miles 3 minutes
WLC Pkwy/Eucalyptus Avenue	1.0 miles 1 minute	3.2 miles 3 minutes	2.1 miles 2 minutes
Skechers Distribution Site – Vehicle Access	1.3 miles 1 minute	2.9 miles 3 minutes	1.5 miles 2 minutes
Skechers Distribution Site – Truck Access	1.8 miles 2 minutes	2.3 miles 3 minutes	0.7 miles 1 minute
WLC Pkwy/Dracea Avenue	1.6 miles 2 minutes	4.7 miles 7 minutes	3.1 miles 5 minutes
*Notes:			
<ul style="list-style-type: none"> <li>- Travel times represent approximations based on distance and posted speed limit calculation and do not include stopped time at intersections. Minimum travel time shown as “&lt; 1 minute”.</li> <li>- “Vehicle Access” was assumed to be the driveway approximately 1,600 feet from Theodore St.</li> <li>- “Truck Access” was assumed to be the driveway approximately 3,600 feet from Theodore St.</li> </ul>			

As can be seen in Exhibit 4, most travelers coming from or going to places west of Redlands Blvd. on SR-60 (76% of current WLC Pkwy Interchange users) would experience little if any delay as a result of the closure of the WLC Pkwy Interchange. In fact, the extension of Eucalyptus Avenue will decrease the distance and travel time for the largest group of users of the WLC Pkwy interchange, namely the Skechers distribution site. As shown in Exhibit 3, the truck access between the site and the west will decrease by over one mile; while passenger car access to the site will decrease by over half a mile (passenger cars typically enter the site at a different driveway than trucks). The only notable inconvenience to/from areas west of the site would be travelers to and from the five residences along WLC Pkwy south of Eucalyptus Ave. who would travel an additional 1.7 miles (approximately 3 minutes) to reach SR-60 at Redlands Blvd.

The 23% of current WLC Pkwy Interchange users traveling to or from SR-60 east of Gilman Springs Road IC would experience increases in travel time of 1 to 3 minutes, with the exception of travelers to and from the five residences along WLC Pkwy south of Eucalyptus Ave. who would travel an additional 3.1 miles (approximately 5 minutes) to reach SR-60 at Gilman Springs Road.

*Emergency Response Travel Time*

Emergency response travel time was considered when evaluating the detour routes associated with the closure of the WLC Pkwy interchange. Access to the Skechers site by the Moreno Valley Fire Department was analyzed to determine the amount of delay that would be added to response times with the closure of the interchange. The calculated travel time delay was compared to the Moreno Valley Fire Department goal

of responding within a four minute drive time to 90% of the calls (Moreno Valley Fire Department Strategic Plan, December 2011).

The closest fire station to the Skechers distribution site is the Moreno Beach Fire Station #58, located at 28040 Eucalyptus Avenue. Eucalyptus Avenue has recently been constructed and opened to connect to Redlands Boulevard. This allows for access directly to the Skechers site.

Field observations noted that fire response vehicles, while responding to a call, used the open "truck" entrance along the western edge of the Skechers site. The other access gates along Eucalyptus are closed and not staffed, whereas the gates at the western edge of the site are staffed so that they can be opened for the fire department. For purposes of this evaluation, emergency response vehicles were assumed to access the site via the driveway on the western end of the Skechers distribution site.

Estimated travel times for emergency response were calculated similar to passenger car and truck travel times, by using a speed-distance calculation. The estimated travel times do not account for stoppage time.

With Eucalyptus Avenue extended to connect to Redlands Boulevard, the distance required to access the site decreases by 1.4 miles, resulting in an approximately 90 seconds of response time savings. The emergency travel time to the Skechers site is less than one minute.

Emergency access from the Moreno Beach Fire Station #58 site to the five residences south of the WLC Pkwy Interchange would remain the same. The access route will be on Alessandro Boulevard to WLC Pkwy.

#### *Heavy Vehicle Traffic*

Intersections along the detour routes were evaluated to determine if the addition of heavy vehicle turning movements could be accommodated. Field observations and a review of the City of Moreno Valley Truck Routes found that heavy vehicles already successfully make turns at intersections under Existing Conditions. The following three intersections require special attention for Project Construction Conditions.

##### *Redlands Boulevard/Ironwood Avenue*

The detour route between the SR-60 Redlands Boulevard interchange and the Badlands Landfill would require heavy vehicles to make a northbound right-turn and westbound left-turn at the Redlands Boulevard/Ironwood Avenue intersection. This turning movement is not frequently made by heavy vehicles at the present time. A truck turning analysis at the intersection was performed to determine if heavy vehicles could make the turning movements. The analysis shows that the truck template goes beyond the existing footprint of the intersection. Therefore the southeast quadrant of this intersection will need to be improved to accommodate the detoured trucks.

##### *Alessandro Boulevard/WLC Pkwy*

A truck turning analysis at the intersection was performed to determine if heavy vehicles could make the turning movements. The analysis shows that the truck template goes beyond the existing footprint of the intersection. Therefore the intersection will need to be improved to accommodate the detoured trucks.

##### *Alessandro Boulevard/Gilman Springs Road*

A truck turning analysis at the intersection was performed to determine if heavy vehicles could make the turning movements. The analysis shows that the truck template goes beyond the existing footprint of the intersection. Therefore the southwest and northwest quadrants of this intersection will need to be improved to accommodate the detoured vehicles. Roadway improvements will be incorporated at this location to facilitate vehicle movement through the detour route. In addition, due to the high volume of through traffic on Gilman Springs Road conflicting with left turns to and from Alessandro Boulevard, a temporary traffic signal can be considered. The traffic volumes in the PM peak hour would meet the peak hour signal warrant per CAMUTCD.

*Bicycle and Pedestrian Traffic*

Bicycle and pedestrian crossings of the WLC Pkwy interchange will be prohibited during construction. Bicyclists and pedestrians should be detoured to the Redlands Boulevard freeway crossing. The Redlands Boulevard interchange, similar to the WLC Pkwy interchange, lacks dedicated bicycle and pedestrian accommodations. Therefore, no significant impact due to degradation of facilities is expected for bicyclists and pedestrians.



## 4. CONCLUSIONS

The closure of the WLC Pkwy interchange would require existing traffic to be diverted to adjacent roadways and the Redlands Boulevard interchange. The evaluations completed as part of this study found that the detour routes and study intersections could accommodate the detoured vehicles while maintaining an acceptable level of service. Closure of the WLC Pkwy interchange ramps with proper notice and planning need not adversely affect the existing traffic operations in the study area and inconveniences to motorists would be minimized given the close proximity and relative ease of access to the Redlands Boulevard interchange.

Time-delay analysis and intersection operational analysis were performed for the proposed primary detour routes associated with the WLC Pkwy interchange closure to identify the potential traffic impacts due to the closure. The analysis found that all study intersections would continue to operate at acceptable levels of service during construction of the Project.

In addition, travel times of the existing routes and the proposed primary detour routes for the interchange closure scenario were determined for free-flow conditions. The travel time delay analysis concluded that all the proposed detour routes for the closure would impose a less than one minute delay to motorists traveling to/from the west on SR-60. Motorists travelling to/from the east, which represent a smaller amount of traffic, would incur an approximate 2:20 minute delay.

Completion of the Eucalyptus Avenue Extension prior to initiation of the Project would reduce travel delay for motorists on Eucalyptus Avenue, when compared to existing conditions. The completion of the Eucalyptus Avenue Extension would allow for the WLC Pkwy/Eucalyptus Avenue intersection to be closed for the entire construction period with increased delay to only a small percentage of motorists in the area.

The goals and objectives of the interchange closure are to provide a safe environment for both the work force and motoring public as well as minimizing delays for motorists. The analysis in this study revealed that the intersections along the detour routes would operate at an acceptable level of service and thus the impacts on motorists would not be significant. In addition, having complete closure of the interchange for 4 months during construction would provide a safer environment for the workers and motorists as well as reduce the construction duration when compared to having partial closure of the WLC Pkwy bridge. Complete interchange closure would reduce the overall construction duration by approximately 12 months with a cost saving of 25% to 35% on the roadway construction cost.

### ***Recommended Measures***

The WLC Pkwy Interchange Project is not expected to adversely impact businesses and residences in the area; however, the following measures are recommended:

- Partially close Theodore Street north of the SR-60 westbound on/off ramp intersection and provide continued access to local land owners during the closure. (Phase 2)
- Partially close WLC Pkwy south of the WLC Pkwy/Eucalyptus Avenue intersection. (Phase 1)
- Post notifications at the Badlands Landfill, along landfill access road, and at the Ironwood Avenue/Theodore Street intersection to notify trucks of the closure of Theodore Street and limited turn-around space available on Theodore Street.
- Install temporary Truck Route Detour signage (SC3 CA DETOUR with arrow supplement to R14-1 TRUCK ROUTE) to direct trucks along Ironwood Avenue and Redlands Boulevard between the Badlands Landfill and SR-60 (to provide special notice to Badlands Landfill-related truck trips, in addition to standard detour signage, as needed).
- Install temporary Truck Route Detour signage (SC3 CA DETOUR with arrow supplement to R14-1 TRUCK ROUTE) to direct trucks along the short section of Redlands Boulevard, south of the eastbound off-ramp, and the Eucalyptus Avenue Extension, to access Sketchers distribution site.

- Improve the southeast quadrant of this intersection of Redlands Boulevard and Ironwood Avenue to accommodate the detoured trucks.
- Post notifications at intersections along Alessandro Boulevard and Redlands Boulevard to alert northbound motorists of the Theodore Street/WLC Pkwy closure.
- Create one point of contact within the City of Moreno Valley and/or Caltrans to provide closure information to requesting parties.
- Provide proper notification and continued communication for all affected groups, including:
  - Local businesses
  - Local agencies (City of Moreno Valley and County of Riverside public services)
  - Emergency response services (Moreno Valley Fire Department, Riverside County Fire Department, and local ambulance services, etc.)
  - Law enforcement agencies (City of Moreno Valley Police Department, County of Riverside Sheriff, California Highway Patrol, etc.)
  - Local school districts
  - Trucking industry
  - Chamber of Commerce and local politicians
- Conduct an open house to discuss the interchange closure plan with the public.
- Notify the public of the pending interchange closure by, for example, sending informational notices, issuing press releases, and making public service radio announcements.
  - Form an email interest/distribution list for updates
  - Have a project website for updates
- Involve the City of Moreno Valley and County of Riverside Traffic Engineer in interchange closure actions, as needed.
- Provide improvements at the following intersections:
  - Redlands Boulevard /Ironwood Avenue- Improve the southeast quadrant of this intersection to accommodate the detoured trucks.
  - Alessandro Boulevard/WLC Pkwy – Improve intersection to accommodate the detoured trucks.
  - Alessandro Boulevard/Gilman Springs Road – Improve intersection to accommodate the detoured vehicles. Consider installing a temporary traffic signal at this location.