3.2 Vehicular Traffic

This section presents results of an assessment of potential impacts of the East Bay BRT Project on vehicular traffic in the study area. The section is divided into seven major subsections.

- **Existing Conditions.** This section describes the existing roadway network, roadway traffic volumes, and intersection level of service.

- **2015 No-Build Alternative.** This section reports anticipated traffic conditions in Year 2015 under the No-Build Alternative, which assumes enhancement of Route 1R Rapid Bus service with improvements to bus stops, transit vehicles, and transit signal priority.

- **2015 Near-Term Traffic Impacts: Build Alternatives.** This section analyzes the near-term traffic impacts of the two Build Alternatives under consideration. These are the Locally Preferred Alternative (LPA) and the downtown Oakland to San Leandro BART (DOSL) Alternative. Included are anticipated changes to traffic volumes, delays, and roadway and intersection levels of service. Traffic impacts in the study area from downtown Oakland to San Leandro are for the most part the same for each of the two Build Alternatives. The DOSL Alternative would not incur the impacts north of downtown Oakland associated with the LPA.

- **2035 Horizon Year No-Build Alternative.** This section reports anticipated traffic conditions in 2035 under the No-Build Alternative, which assumes enhancement of Route 1R Rapid Bus service with improvements to bus stops, transit vehicles, and transit signal priority.

- **2035 Horizon Year Traffic Impacts.** Build Alternatives. This section analyzes the long-term, cumulative traffic impacts of the two Build Alternatives under consideration. Included are anticipated changes to traffic volumes, delays, and roadway and intersection levels of service. Traffic impacts for the LPA cover the entire study corridor from downtown Berkeley to San Leandro BART. From downtown Oakland to San Leandro, impacts are for the most part the same for both the LPA and DOSL Alternative. However, the DOSL Alternative would not incur the impacts north of downtown Oakland associated with the LPA.

- **Neighborhood Traffic Effects.** This section analyzes the effects of the Build Alternatives on local streets in the vicinity of the BRT alignment. The reduction in roadway capacity and restriction on left-turn movements at certain minor intersections may result in the diversion of traffic onto neighborhood streets and a change in local circulation patterns. The location, likelihood and magnitude of these diversions are identified in this section.

- **Avoidance, Minimization, and/or Mitigation Measures.** This section describes mitigation measures for addressing roadway and intersection impacts as a result of the East Bay BRT Project.
Methodology

Intersection operations analyses were performed for existing conditions (year 2009), 2015 Near-Term No-Build and Build conditions, and 2035 Horizon Year No-Build and Build conditions. Where proposed improvements to transit under the Build Alternatives are anticipated to negatively affect traffic operations (i.e., worsen 2015 or 2035 conditions relative to the No-Build Alternative) to below thresholds for service levels established by local agencies, mitigation measures are proposed, where feasible, to reduce impacts to a level of no significance. In some locations, mitigation measures will not reduce impacts to a less than significant level. The mitigations are still proposed by the project and the fact the impacts are not fully mitigated is noted.

The improvements proposed by the East Bay BRT Project will reduce roadway capacity and restrict select turning movements along the streets that constitute the portion of the Build alignments through the cities of Oakland and San Leandro. These effects on circulation will likely result in a shift in traffic volumes to parallel corridors and key cross-streets. (In the city of Berkeley, no roadway capacity or turn restrictions are proposed under either the LPA or DOSL Alternatives. However, under the LPA there will be a moderate shift in traffic in the southernmost part of the city due to the secondary effects of capacity reductions and restrictions on turning movements in the North Oakland portion of the corridor.) A screenline analysis demonstrates the shift in travel patterns from the BRT alignment to parallel streets that may occur due to the roadway modifications proposed by the East Bay BRT project. Roadway volumes along several segments of the corridor are provided for informational purposes and use in the screenline analysis.

To determine the impacts associated with the capacity reductions on the alignment roadways, turning movement restrictions and the shift in traffic volumes, intersections both on- and off-alignment were analyzed for current and future traffic operations and levels of service. Additionally, the reduction in capacity and the restriction of certain left-turn movements onto and off of the Build alignments may result in a redistribution of traffic within the network of collector and local streets adjacent to the corridor. This diversion of traffic through neighborhoods is further analyzed in this section.

Roadway volume and intersection level of service (LOS) analyses are provided for both the morning and afternoon peak hours. Intersection analysis locations were identified based on criteria developed in conjunction with Caltrans and the cities of Oakland, San Leandro and Berkeley. Specific additional intersection locations were added based on input from each of the jurisdictional agencies. In total, 125 distinct intersection locations have been analyzed during both peak hours for all above-specified analysis scenarios. Additionally, four intersection locations were immediately adjacent to another unsignalized or signalized study intersection such that the operations of both intersections were closely tied together. The intersection LOS for both adjacent intersections was evaluated and reported, bringing the total number of locations analyzed to 129. The locations of the study intersections are shown in Figures 3.2-1 and Figures 3.2-2. The results of the intersection analysis are described in Section 3.2.3.3, Intersection Impacts: 2015 LPA and Section 3.2.6.3, Intersection Impacts: 2035 LPA.
Figure 3.2-1: Study Intersection Locations for Traffic Analysis (1 of 2)

AC Transit East Bay BRT Project
Intersection conditions are characterized in terms of specific performance statistics that are combined into an overall measure designated “level of service” (LOS).

To determine intersection LOS, operational characteristics of various intersections in the project alignment were assessed for service parameters such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and average control delay. Control delay refers to the time lost to vehicles decelerating, stopping, and accelerating at traffic signals.

Roadway geometrics, traffic counts, and signal timing data were collected and used as inputs to conduct the operational analysis. The effects of transit signal priority on intersection operations, both with and without the build alternatives, were incorporated into the analysis. The inputs were applied to the Synchro Version 7.0 software package used to implement the methodology of the 2000 Highway Capacity Manual.

Based on the operational characteristics of various intersections, each was assigned an LOS designation from “A” to “F,” using the following criteria:

- **LOS A**—Negligible delays. No approach phase is fully utilized and no vehicle waits longer than one red indication. Average control delay is less than 10 seconds per vehicle for both signalized and unsignalized intersections.

- **LOS B**—Minimal delays. An occasional approach phase is fully used. Drivers begin to feel restricted. Average control delay is 10 to 20 seconds per vehicle for signalized intersections and 10 to 15 seconds per vehicle for unsignalized intersections.

- **LOS C**—Acceptable delays. Major approach phase may become fully used. Most drivers feel somewhat restricted. Average control delay is 20 to 35 seconds per vehicle for signalized intersections and 15 to 25 seconds per vehicle for unsignalized intersections.

- **LOS D**—Tolerable Delays. Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays. Average control delay is 35 to 55 seconds per vehicle for signalized intersections and 25 to 35 seconds per vehicle for unsignalized intersections.

- **LOS E**—Major Delays. Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues form in advance of the signal. Average control delay is 55 to 80 seconds per vehicle for signalized intersections and 35 to 50 seconds per vehicle for unsignalized intersections.

- **LOS F**—Excessive delays. Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections. Average control delay is greater than 80 seconds per vehicle for signalized intersections and greater than 50 seconds per vehicle for unsignalized intersections.
Due to the large number of intersections analyzed, the discussion of existing and future intersection levels of service focuses only on intersections operating at poor levels of service. Intersections operating at LOS D or better in urban areas are generally considered to be operating at an acceptable level of service. Therefore, for the discussion of existing conditions LOS, intersections currently operating at LOS E or LOS F are identified. In the discussion of future No-Build and Build conditions, the same convention is followed. It is important to note, however, that this does not mean that conditions would not change for intersections operating at LOS D or better. The East Bay BRT Project could, for example, result in a change in operations from LOS C to LOS D at a particular location. This would be a project-related impact, however it is not considered significant since the intersection would still be considered to operate at an acceptable level of service. The impacts discussion is limited to effects that result in conditions worse than locally accepted standards of intersection performance.

Significance Criteria

An impacted intersection is one that does not meet locally established level of service standards with the Build Alternative and operations that fall below (i.e. degrade) the adopted significant threshold relative to the No-Build condition. The city of Oakland has developed specific guidance and criteria for establishing intersection impacts. In consultation with the other cities with intersections within the study area, it was agreed that the Oakland criteria are reasonable and would provide for a common standard to apply to intersection performance throughout the corridor.

The Oakland criteria define impacts as:

- At a study signalized intersection which is located outside the Central Business District (CBD) area, the project would cause the LOS to degrade from LOS D or better to worse than LOS D (i.e., E or F);

- At a study signalized intersection which is located within the CBD area, the project would cause the LOS to degrade from LOS E or better to LOS F;

- At a study signalized intersection outside the CBD area where the level of service is LOS E, the project would cause the total intersection average vehicle delay to increase by four (4) or more seconds, or degrade to LOS F;

- At a study signalized intersection in all areas where the level of service is LOS F, the project would cause the total intersection average vehicle delay to increase by two (2) or more seconds;

- At a study unsignalized intersection in all areas, the project would cause the LOS to degrade from LOS D or better to worse than LOS D (i.e., E or F);

---

1 Criteria are derived from *City of Oakland CEQA Thresholds/Criteria of Significance Guidelines*, July 2008.
At a study unsignalized intersection in all areas where the level of service is LOS E or LOS F, the project would add ten (10) or more vehicles to a critical movement.

The primary source of impacts to on-alignment intersections is the loss of roadway capacity for general traffic by the conversion of traffic lanes to exclusive transit use. Secondary sources of impacts include the addition of protected left-turn signal phasing, additional U-turn volumes, potential delays to traffic on cross streets and minor delays from traffic signal priority along the project alignment. The primary source of impacts to off-alignment intersections is diversion of traffic from the on-alignment arterials.

Revisions to Analysis Subsequent to Issuance of Draft EIS/EIR

A number of changes have been made to the vehicular traffic analysis since the issuance of the Draft EIS/EIR. These changes in methodology and analysis include the elements listed below:

- The horizon forecast year for cumulative analysis has changed from 2025 to 2035. The 2035 analysis contained in this document is based on the Alameda County Travel Demand Model, which incorporates Association of Bay Area Governments (ABAG) land use forecasts from Projections 2009 for population and employment and land use allocations by traffic analysis zone from ABAG Projections 2007, the latest allocations that were available at the time travel forecasts were begun in late 2009. Revised land use projections result in modified traffic volumes and trip patterns within the study area.

- Refinements were made to the Alameda County Travel Demand Model to obtain more detailed projections specific to the project corridor.

- An updated slate of planned and programmed projects was incorporated into the model. These projects are identified in Section 3.1.2 Future Transit Service - No-Build Conditions.

- An opening day scenario was analyzed and is included in this document. This scenario reflects background 2015 conditions, the anticipated timeframe for the start of operations of the project. Land use projections for 2015 conditions are based on the ABAG forecast. Roadway volumes and intersection analysis are provided for this forecast year for the No-Build scenario and the project Build alternatives.

- The existing conditions analysis was updated to reflect 2009 conditions. This included new traffic counts performed in fall 2009.

- The number of study intersections was increased from 36 in the morning peak hour and 88 in the afternoon peak hour to 129 in both peak hours.

- The project definition has undergone some changes based on comments received on the Draft EIS/EIR and the locally preferred alternatives adopted by each of the cities along the project corridor. These changes are detailed in Section 2.0 Project Alternatives.
They include reductions in the length of transit-only lanes and modifications to the locations of specific turn restrictions and intersection signalization.

3.2.1 Existing Conditions

Major roadways in the vicinity of the East Bay BRT Project include state highways and urban streets.

Five major freeways serve the study area. Interstate 80 (I-80), which connects San Francisco to the East Bay and points east, passes near the western end of the study area. State Route 24 (SR 24), an east-west regional traffic route, connects Berkeley and Oakland to Contra Costa County via the Caldecott Tunnel. Interstate 580 (I-580) and Interstate 880 (I-880) run parallel to International Boulevard/East 14th Street in the southern half of the study area. Interstate 980 (I-980) runs parallel to Telegraph Avenue between SR 24 and I-880 in the Oakland portion of the study area.

Within Berkeley, major streets on or parallel to the project alignment include Shattuck Avenue, College Avenue, and Telegraph Avenue. Major cross streets include University Avenue, Bancroft Way, Durant Avenue, Dwight Way, and Ashby Avenue.

Within Oakland, major streets on or parallel to the project alignment include Martin Luther King Jr. Way, Telegraph Avenue, Broadway, International Boulevard, and San Leandro Street. Major cross streets include 51st Street, MacArthur Boulevard, 40th Street, Grand Avenue, 23rd Avenue, Fruitvale Avenue, 35th Avenue, High Street, Seminary Avenue, Hegenberger Expressway/73rd Avenue, and 98th Avenue.

Within San Leandro, the major street used by the project alignment is East 14th Street, a continuation of International Boulevard. East 14th Street extends from the Oakland-San Leandro border past the southern project limit. The project alignment also uses Davis Street and San Leandro Boulevard for short segments to access the San Leandro BART Station. There are no other major streets that cross the project alignment within San Leandro.

3.2.1.1 Roadway Traffic Volumes: Existing Conditions

Traffic volumes along the streets within the proposed BRT corridor were obtained from traffic counts conducted for the project in fall 2009. Morning and afternoon peak hour traffic volumes are described below. Figures 3.2-3 and 3.2-4 display morning and afternoon peak-hour volumes in each direction along the key roadways constituting the East Bay BRT Project alignment.

Existing Traffic Volumes: Morning Peak Hour

- **Shattuck Avenue, City of Berkeley.** Both northbound and southbound traffic volumes on Shattuck Avenue between University Avenue and Durant Avenue average around 900 vehicles per hour (vph).
- **Telegraph Avenue, City of Berkeley.** Volumes on upper Telegraph Avenue in Berkeley range between 500 and 900 vph in each direction. Northbound volumes are generally in the upper part of the range, while southbound volumes are in the lower part of the range.

- **Telegraph Avenue, City of Oakland.** Along the Oakland portion of Telegraph Avenue, volumes are highest near Alcatraz Avenue, near the city border. Northbound volumes are around 900 vph near Alcatraz Avenue but drop to 400 vph where Telegraph approaches downtown Oakland. Southbound volumes are near 1,000 vph near Alcatraz Avenue but drop to 400 vph as Telegraph Avenue approaches downtown Oakland.

- **Broadway, City of Oakland.** Volumes average approximately 300-500 vph in either direction through downtown Oakland.

- **International Boulevard, City of Oakland.** Volumes are the highest on International Boulevard near Fruitvale Avenue, with 1,000 vph in the northbound direction. Volumes are consistently higher in the northbound direction than the southbound direction, as vehicles head towards the Oakland central business district in the morning peak hour. Southbound volumes are relatively steady in the 400 to 600 vph range.

- **East 14th Street, City of San Leandro.** Volumes are approximately 400 vph in the northbound direction and 500 vph in the southbound direction as vehicles head into San Leandro employment areas.
Existing Traffic Volumes: Afternoon Peak Hour

- **Shattuck Avenue, City of Berkeley.** Traffic volumes between University Avenue and Durant Avenue are slightly higher during the afternoon peak than the morning peak. The southbound direction is around 1,100 vph and the northbound direction is around 900 vph.

- **Telegraph Avenue, City of Berkeley.** Southbound volumes were notably higher in the afternoon peak hour than the morning peak hour, approximately 900 vph between Dwight Way and Ashby Avenue, while northbound volumes were the same or slightly lower than the morning peak hour.

- **Telegraph Avenue, City of Oakland.** All sections of the Oakland segment of Telegraph Avenue have the same or higher traffic volumes in both directions during the afternoon peak hour than during the morning peak hour. Southbound afternoon peak volumes range from about 600 vph approaching downtown Oakland to about 1,000 vph near Alcatraz Avenue. Northbound volumes range from 700 vph leaving downtown Oakland to 900 vph approaching Alcatraz Avenue.

- **Broadway, downtown Oakland.** In the afternoon, Broadway volumes showed some directionality, with 500 to 800 vph headed south, towards I-880, and 400 vph headed north.

- **International Boulevard, City of Oakland.** Southbound traffic generally exceeds northbound traffic on International Boulevard during the afternoon peak hour as vehicles leave the Oakland central business district. Volumes peak near 66th Avenue with 1,000 vph in the southbound direction and 900 vph in the northbound direction.

- **East 14th Street, City of San Leandro.** Volumes range between 700 vph and 800 vph in each direction on East 14th Street. This reflects higher activity in the afternoon peak hour than the morning peak hour, where volumes ranged up to 500 vph in each direction.

### 3.2.1.2 INTERSECTION LEVELS OF SERVICE: EXISTING CONDITIONS

The number of intersections not meeting an acceptable standard of performance in each peak hour is identified below. The location of intersections currently operating at LOS E and F is shown in Figure 3.2-5.

### Morning Peak Intersection LOS: Existing Conditions

For the morning peak hour, of the 129 unique intersections that were evaluated, all but four operate at an acceptable level of service (LOS D or better). Of those four, only one is on the project alignment. The deficient intersection on the project alignment (and the city it is located in) is listed below:
• Intersection #101: 81st Avenue & International Boulevard (unsignalized, Oakland) – LOS F

The deficient off-alignment intersections (and the city they are located in) are listed below:

• Intersection #18: Derby Street & Warring Street (unsignalized, Berkeley) – LOS F
• Intersection #20: Ashby Avenue & Adeline Street (signalized, Berkeley) – LOS E
• Intersection #116: San Leandro Boulevard & Best Avenue (unsignalized, San Leandro) – LOS F

Detailed results of the intersection LOS analysis are also presented in Appendix D.

Afternoon Peak Intersection LOS: Existing Conditions

For the afternoon peak hour, of the 129 unique intersections that were evaluated, all but ten operate at an acceptable level of service (LOS D or better). Of those ten, six are located along the project alignment. The deficient intersections on the project alignment (and the City they are located in) are listed below:

• Intersection #4: Bancroft Way & Ellsworth Street (unsignalized, Berkeley) – LOS F
• Intersection #29: Alcatraz Avenue & Telegraph Avenue (signalized, Oakland) – LOS E
• Intersection #73: 8th Avenue & East 12th Street (unsignalized, Oakland) – LOS F
• Intersection #89: 36th Avenue & International Boulevard (unsignalized, Oakland) – LOS E
• Intersection #101: 81st Avenue & International Boulevard (unsignalized, Oakland) – LOS F
• Intersection #114: Haas Avenue & East 14th Street (unsignalized, San Leandro) – LOS E

The deficient off-alignment intersections (and the city they are located in) are listed below:

• Intersection #18: Derby Street & Warring Street (unsignalized, Berkeley) – LOS F
• Intersection #28: Alcatraz Avenue & Adeline Street (signalized, Berkeley) – LOS E
• Intersection #989: 73rd Avenue & San Leandro Street (unsignalized, Oakland) – LOS E
• Intersection #116: San Leandro Boulevard & Best Avenue (unsignalized, San Leandro) – LOS F
Figure 3.2-5: LOS E and F Intersections - Existing Conditions

AC Transit East Bay BRT Project
Detailed results of the intersection LOS analysis are also presented in Appendix D.

3.2.2 Year 2015 No-Build Alternative

This section reports anticipated traffic conditions in 2015 for the No-Build Alternative. It identifies planned and programmed projects affecting the capacity of the roadway network in the project corridor, describes forecast future roadway volumes, and summarizes estimated intersection LOS performance for the same intersections analyzed under Section 3.2.1.2, Intersections Level of Service: Existing Conditions.

The No-Build Alternative includes transportation improvements that are planned and programmed for the project alignment except for the East Bay BRT Project itself. The No-Build Alternative assumes enhancement of current corridor bus service, including transit traffic signal priority through most signalized intersections along Route 1R. A list of planned or programmed projects in the study area that could affect roadway geometrics and traffic operations under 2015 No-Build conditions is provided in Table 3.2-1.
### Table 3.2-1: Planned and Programmed Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Roadway Changes Affecting BRT Travel Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caltrans</strong></td>
<td></td>
</tr>
<tr>
<td>Caldecott Tunnel Improvement Project</td>
<td>Construction of a fourth bore of the Caldecott Tunnel to improve mobility, reduce travel times, and improve safety along State Route 24 between Alameda and Contra Costa counties</td>
</tr>
<tr>
<td>I-880/High Seismic Retrofit</td>
<td>Replace existing I-880 overhead structure, replace interchange at State Route 77/42 Avenue/High Street with diamond interchange with at-grade intersections</td>
</tr>
<tr>
<td>I-880 SB HOV Lane Extension</td>
<td>Extend southbound I-880 HOV lane from Hegenberger Expwy in Oakland to Marina Boulevard in San Leandro. Includes interchange modifications and overcrossing widening at Davis Street and Marina Boulevard.</td>
</tr>
<tr>
<td><strong>City of Oakland</strong></td>
<td></td>
</tr>
<tr>
<td>27th Street Bikeway</td>
<td>Replace one travel lane in each direction with a bike lane and a widened median on 27th Street between San Pablo Avenue and Harrison Street</td>
</tr>
<tr>
<td>12th Street Reconstruction</td>
<td>Existing network of roadways crossing Lake Merritt estuary replaced by six-lane boulevard (three lanes in each direction), Lakeshore Avenue terminated before reaching 12th Street, 1st Avenue expanded to two lanes in each direction</td>
</tr>
<tr>
<td>Signalization of 36th Street and International Boulevard</td>
<td>A traffic signal has been added at the intersection of 36th Street and International Boulevard (previously side-street stop-controlled) subsequent to completion of the existing conditions analysis.</td>
</tr>
<tr>
<td>Foothill Boulevard Bike Lanes</td>
<td>Foothill Boulevard between 36th Avenue and 55th Avenue converted to one lane in each direction with center turn lane to add bike lanes, including a new signal at Foothill Boulevard and 40th Street</td>
</tr>
<tr>
<td>MacArthur BART Transit Village</td>
<td>Construction of a 400-space parking structure for BART, 624 residential units and 42,500 square feet of retail at the MacArthur BART station</td>
</tr>
<tr>
<td>MacArthur BART Bicycle Access Project</td>
<td>Construct bikeways on 40th Street, 41st Street, and W. MacArthur Boulevard. This includes median modification and re-striping.</td>
</tr>
<tr>
<td>Oakland Airport Connector</td>
<td>The Oakland Airport Connector will link the Coliseum/Oakland Airport BART Station with Oakland International Airport with a transit system planned along Hegenberger Expwy.</td>
</tr>
<tr>
<td><strong>City of San Leandro</strong></td>
<td></td>
</tr>
<tr>
<td>E 14th Street North Area Study</td>
<td>Provision of an additional northbound through lane between Hays Street and Georgia Way in San Leandro</td>
</tr>
<tr>
<td>E 14th Street South Area Median Project</td>
<td>Addition of a median on East 14th Street between 136th Street and 144th Street, including provision of left-turn bays.</td>
</tr>
<tr>
<td>San Leandro Boulevard Streetscape Improvements</td>
<td>Reduce San Leandro Boulevard from 7 to 5 lanes and add parallel parking, Class II bike lanes and intersection bulbouts</td>
</tr>
<tr>
<td>San Leandro Triangle</td>
<td>Second left-turn lane added to Hesperian Boulevard northbound approach to East 14th Street, new transition lane from northbound East 14th Street onto Bancroft Avenue</td>
</tr>
<tr>
<td><strong>BART</strong></td>
<td></td>
</tr>
<tr>
<td>Extension of BART from Fremont to Warm Springs</td>
<td>The Warm Springs Extension will add 5.4-miles of new tracks from the existing Fremont Station south to a new station in the Warm Springs district of the City of Fremont.</td>
</tr>
</tbody>
</table>

3.2.2.1 **ROADWAY TRAFFIC VOLUMES: 2015 NO-BUILD CONDITIONS**

Traffic volumes along the streets in the vicinity of the proposed BRT alignment were obtained by applying growth factors from the travel demand forecast model for 2015 No-Build Conditions to 2009 observed counts. Figures 3.2-6 and 3.2-7 display morning and afternoon peak-hour traffic volumes in each direction along the roadways constituting the East Bay BRT Project alignment for the 2015 No-Build Conditions scenario.
Figure 3.2-7: Roadway Segment Volumes - 2015 No Build PM

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3.2.2.2 SCREENLINE ANALYSIS: 2015 NO-BUILD CONDITIONS

Each project alternative results in a different vehicular roadway and transit network within the study area, affecting roadway volumes and transit ridership. In order to compare the effect on travel patterns between different corridors and between different modes for each alternative, a screenline analysis was performed. The screenline analysis indicates total person trips crossing an imaginary line, perpendicular to the BRT alignment, in the afternoon peak hour. The screenline is drawn across all major parallel roadways and transit corridors in the vicinity of the BRT alignment. This identifies the net impact to overall trip-making and mode share in the corridor. Additionally, the BRT corridor has been isolated from parallel corridors to identify the effect of the Build Alternatives on auto and transit trips along the alignment streets. Seven screenlines were evaluated, spaced throughout the BRT corridor. The location of the seven screenlines, as well as their extents, is shown in Figure 3.2-8. Table 3.2-2 below indicates the peak hour auto person trips and transit person trips crossing each of the screenlines in both directions in the 2015 No-Build scenario.

<table>
<thead>
<tr>
<th>Screenline</th>
<th>Auto Person Trips</th>
<th>Transit Person Trips</th>
<th>Total No-Project Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BRT Corridor</td>
<td>Parallel Routes</td>
<td>Bus Trips on BRT Corridor</td>
</tr>
<tr>
<td>1 Near Dwight Way</td>
<td>2,100</td>
<td>15,300</td>
<td>900</td>
</tr>
<tr>
<td>2 Near 51st Street</td>
<td>1,500</td>
<td>10,600</td>
<td>700</td>
</tr>
<tr>
<td>3 Near 27th Street</td>
<td>1,500</td>
<td>21,200</td>
<td>800</td>
</tr>
<tr>
<td>4 Near 13th Avenue</td>
<td>1,100</td>
<td>41,400</td>
<td>1,100</td>
</tr>
<tr>
<td>5 Near High Street</td>
<td>2,800</td>
<td>37,000</td>
<td>1,300</td>
</tr>
<tr>
<td>6 Near 98th Avenue</td>
<td>2,500</td>
<td>40,500</td>
<td>500</td>
</tr>
<tr>
<td>7 Near Davis Street</td>
<td>2,000</td>
<td>41,700</td>
<td>400</td>
</tr>
</tbody>
</table>

Notes: Trips shown are in person trips, not vehicle trips. The number of vehicle trips is assumed to equal the number of person trips divided by 1.2 (assuming an average rate of 1.2 persons per vehicle). Trips shown are afternoon peak hour only.
Source: Cambridge Systematics, 2010
As shown in the table, total trips across the screenline are highest in the southern part of the study area, between downtown Oakland and San Leandro. Total transit trips are highest near downtown Oakland. Auto trips are highest at the far southern part of the study area, in San Leandro and southern Oakland.

3.2.2.3 **INTERSECTION LEVELS OF SERVICE: 2015 NO-BUILD CONDITIONS**

The No-Build Alternative includes changes to local roadways (identified in Appendix A), some of which would improve traffic flow and others which would attempt to improve conditions for transportation modes other than the private car. Levels of service are expected to deteriorate under 2015 No-Build conditions, primarily due to projected increases in land use density and trip generation. Worsening LOS results from continuing growth in auto travel, which occurs as the population and employment increases, and there is little or no shift from using autos as the primary travel mode to other modes, such as transit.

The locations of intersections projected to operate at LOS E and F are shown in Figure 3.2-9.

**Morning Peak Intersection LOS: 2015 No-Build Conditions**

For the morning peak hour, of the 129 unique intersections that were evaluated, all but nine are expected to operate at an acceptable level of service (LOS D or better). Of those nine, five are located along the project alignment. The deficient intersections on the project alignment (and the city they are located in) are listed below:

- Intersection #65: 1st Avenue & International Boulevard (signalized, Oakland) – LOS E
- Intersection #68: 4th Avenue & East 12th Street (unsignalized, Oakland) – LOS F
- Intersection #73: 8th Avenue & East 12th Street (unsignalized, Oakland) – LOS F
- Intersection #101: 81st Avenue & International Boulevard (unsignalized, Oakland) – LOS F
- Intersection #114: Haas Avenue & East 14th Street (unsignalized, San Leandro) – LOS E

The deficient off-alignment intersections (and the city they are located in) are listed below:

- Intersection #18: Derby Street & Warring Street (unsignalized, Berkeley) – LOS F
- Intersection #20: Ashby Avenue & Adeline Street (signalized, Berkeley) – LOS F
- Intersection #28: Alcatraz Avenue & Adeline Street (signalized, Berkeley) – LOS E
- Intersection #116: San Leandro Boulevard & Best Avenue (unsignalized, San Leandro) – LOS F

Detailed results of the intersection LOS analysis are also presented in Appendix D.
Figure 3.2-9: LOS E and F Intersections - 2015 No-Build  
AC Transit East Bay BRT Project
Afternoon Peak Intersection LOS: 2015 No-Build Conditions

For the afternoon peak hour, of the 129 unique intersections that were evaluated, all but 16 operate at an acceptable level of service (LOS D or better). Of those sixteen, half are located along the project alignment. The deficient intersections on the project alignment (and the city they are located in) are listed below:

- Intersection #4: Bancroft Way & Ellsworth Street (unsignalized, Berkeley) – LOS F
- Intersection #29: Alcatraz Avenue & Telegraph Avenue (signalized, Oakland) – LOS E
- Intersection #68: 4th Avenue & East 12th Street (unsignalized, Oakland) – LOS E
- Intersection #73: 8th Avenue & East 12th Street (unsignalized, Oakland) – LOS F
- Intersection #76: 13th Avenue & International Boulevard (unsignalized, Oakland) – LOS F
- Intersection #101: 81st Avenue & International Boulevard (unsignalized, Oakland) – LOS F
- Intersection #106: 98th Avenue & International Boulevard (signalized, Oakland) – LOS E
- Intersection #114: Haas Avenue & East 14th Street (unsignalized, San Leandro) – LOS F

The deficient off-alignment intersections (and the city they are located in) are listed below:

- Intersection #18: Derby Street & Warring Street (unsignalized, Berkeley) – LOS F
- Intersection #20: Ashby Avenue & Adeline Street (signalized, Berkeley) – LOS E
- Intersection #27: Alcatraz Avenue & College Avenue (signalized, Berkeley) – LOS F
- Intersection #28: Alcatraz Avenue & Adeline Street (signalized, Berkeley) – LOS F
- Intersection #34: 55th Street & Martin Luther King Jr. Way (signalized, Oakland) – LOS E
- Intersection #37: 52nd Street & Shattuck Avenue (signalized, Oakland) – LOS E
- Intersection #989: 73rd Avenue & San Leandro Street (unsignalized, Oakland) – LOS F
- Intersection #116: San Leandro Boulevard & Best Avenue (unsignalized, San Leandro) – LOS F

Detailed results of the intersection LOS analysis are also presented in Appendix D.

3.2.3 Traffic Impacts: 2015 LPA

The LPA will include a full complement of BRT improvements in the project alignment, including transit priority at signalized intersections; new, light rail-like passenger stations; and dedicated bus lanes along most of the project alignment. The LPA will affect traffic circulation within the project corridor by eliminating some through travel lanes and left turns along various roadway segments on the Build alignments. Intersection geometrics at various intersections throughout the corridor are also modified to provide a dedicated bus guideway. See Appendix A for drawings depicting the proposed roadway and intersection modifications. All of these changes would result in the following traffic circulation impacts:
- **Reduction in Roadway Capacity.** The East Bay BRT Project includes the conversion of traffic lanes into dedicated bus lanes along several major streets. The addition of BRT-only lanes within the existing right-of-way will allow for faster bus travel; however, it also would reduce roadway traffic capacity on streets on the project alignment.\(^2\) Figure 2.3-2 in Chapter 2, Section 2.3.2 indicates where along the proposed alignments for the Build Alternatives dedicated transit lanes are proposed. The decrease in roadway capacity along the project alignment will result in increased congestion and delay in certain locations and have a ripple effect on traffic patterns along nearby roadways. A number of motorists will take alternate streets to avoid traveling on roadways with BRT facilities. The traffic analysis has quantified the operational impacts of diversions by evaluating LOS at key intersections along alternate roadways most likely to experience an increase in traffic.

- **Left-Turn Prohibitions and Cross Street Through-Movement Restrictions.** The presence of a dedicated bus lane will also prohibit left-turn movements between on-alignment streets and many minor, unsignalized cross streets. Through movements crossing the BRT alignment along these minor streets will also be restricted. As a result, drivers wishing to execute the prohibited left-turn and through movements at the affected intersections will need to make a right turn and then proceed to the next signalized intersection and make a U-turn. The additional U-turn movements increase traffic volumes at signalized intersections and degrade operations.

As part of the project, whether to facilitate pedestrian access to stations, facilitate bus movements, or allow for cross-corridor traffic, a number of currently unsignalized intersections will be signalized. This signalization is assumed as a project feature and is not associated with any identified project impacts. Traffic signals will be added as part of the project at the following locations:

- 61st Street & Telegraph Avenue (Oakland)
- 47th Street & Telegraph Avenue (Oakland)
- Hawthorne Avenue & Telegraph Avenue (Oakland)
- Sycamore Street & Telegraph Avenue (Oakland)
- Alice Street & 11th Street (Oakland)
- 3rd Avenue & East 12th Street (Oakland)
- 4th Avenue & East 12th Street (Oakland)
- 6th Avenue & East 12th Street (Oakland)
- 7th Avenue & East 12th Street (Oakland)
- 8th Avenue & East 12th Street (Oakland)
- 9th Avenue & East 12th Street (Oakland)
- 12th Avenue & East 12th Street (Oakland)
- 13th Avenue & East 12th Street (Oakland)
- 3rd Avenue & International Boulevard (Oakland)

---

\(^2\) Implementation of BRT-only lanes would not always result in reduction of roadway capacity. In some locations, typically short congested roadway segments, lane capacity is also retained. See Chapter 2.
• 6th Avenue & International Boulevard (Oakland)
• 9th Avenue & International Boulevard (Oakland)
• 11th Avenue & International Boulevard (Oakland)
• 12th Avenue & International Boulevard (Oakland)
• 13th Avenue & International Boulevard (Oakland)
• 15th Avenue & International Boulevard (Oakland)
• 18th Avenue & International Boulevard (Oakland)
• 20th Avenue & International Boulevard (Oakland)
• 50th Avenue & International Boulevard (Oakland)
• 52nd Avenue & International Boulevard (Oakland)
• 54th Avenue & International Boulevard (Oakland)
• 55th Avenue & International Boulevard (Oakland)
• 57th Avenue & International Boulevard (Oakland)
• 78th Avenue & International Boulevard (Oakland)
• 81st Avenue & International Boulevard (Oakland)
• 92nd Avenue (westside) & International Boulevard (Oakland)
• 100th Avenue (westside) & International Boulevard (Oakland)
• Bristol Boulevard & East 14th Street (San Leandro)
• Bellevue Drive & East 14th Street (San Leandro)
• Sunnyside Drive & East 14th Street (San Leandro)

In addition to the signals listed above, new pedestrian signals will be added at the following locations:

• 65th Street & Telegraph Avenue (Oakland)
• 43rd Street & Telegraph Avenue (Oakland)
• 39th Street & Telegraph Avenue (Oakland)
• 28th Street (Westside) & Telegraph Avenue (Oakland)
• 24th Street (eastside) & Telegraph Avenue (Oakland)
• Miller Avenue & International Boulevard (Oakland)
• 28th Avenue & International Boulevard (Oakland)
• 31st Avenue & International Boulevard (Oakland)
• 39th Avenue & International Boulevard (Oakland)
• 48th Avenue & International Boulevard (Oakland)
• 58th Avenue & International Boulevard (Oakland)
• 67th Avenue & International Boulevard (Oakland)
• 72nd Avenue & International Boulevard (Oakland)
• 77th Avenue & International Boulevard (Oakland)
• 85th Avenue & International Boulevard (Oakland)
• Auseon Avenue & International Boulevard (Oakland)
• 87th Avenue & International Boulevard (Oakland)
The new pedestrian signal at the intersection of Miller Avenue and International Boulevard improves access to the Cesar Chavez Education Center. The new pedestrian signal at the intersection of 67th Avenue and International Boulevard improves access to the Havenscourt Middle School.

At three locations, existing signals will be removed by the project. These are at the following intersections:

- 66th Street & Telegraph Avenue (Oakland)
- 26th Street & Telegraph Avenue (Oakland)
- 82nd Avenue (westside) & International Boulevard (Oakland)

The existing signal on the eastside leg of 82nd Avenue and International would remain.

Finally, two existing signals are proposed to be converted to pedestrian only signals by the project:

- 24th Street (westside) & Telegraph Avenue (Oakland)
- 36th Avenue & International Boulevard (Oakland)

The traffic analysis has quantified the potential impacts of changes in circulation by (1) incorporating the proposed travel lane reductions and turn restrictions in the 2015 roadway network for the LPA, (2) forecasting future traffic volumes with the transit improvement, and (3) analyzing the performance of intersections to determine how operations would likely be affected.

The following sections analyze the direct traffic impacts of the LPA, describing anticipated changes to traffic volumes, delays, and intersection levels of service.

### 3.2.3.1 ROADWAY VOLUMES: 2015 LPA

Traffic volumes along the streets within the proposed BRT corridor were obtained from the travel demand forecast model for year 2015 with LPA conditions. Figures 3.2-10 and 3.2-11 display morning and afternoon peak-hour traffic volumes for the LPA. Traffic is shown for year 2015 for each direction along the roadways constituting the East Bay BRT Project alignment.

In general, volumes decrease along the roadways utilized by the project alignment and increase on parallel streets, as described previously, due to 1) a reduction in roadway capacity along the alignment for the East Bay BRT Project, 2) prohibition of several left-turn and through movements at unsignalized intersections, and 3) a shift in modes from auto to bus.

### 3.2.3.2 SCREENLINE ANALYSIS: 2015 LPA

The shifts in traffic resulting from the East Bay BRT LPA are apparent when comparing changes in peak hour person trips along the project corridor before and after BRT improvements are to be implemented. Representative afternoon 2015 peak hour volumes are shown in Table 3.2-3.
Traffic volumes are displayed for screenlines, which aggregate survey points for comparing trips across (imaginary) lines drawn essentially perpendicular to the BRT LPA alignment and other parallel roadways. Please refer back to Figure 3.2-8 for a graphical depiction of the location and extents of the screenlines. The screenline volumes capture the major north-south movements through the corridor at these locations.
Figure 3.2-10: Roadway Segment Volumes - 2015 LPA Build AM

AC Transit East Bay Project
Figure 3.2-11: Roadway Segment Volumes - 2015 LPA Build PM
AC Transit East Bay Project
### Table 3.2-3: Year 2015 Change in Person Trips with LPA at Select Screenlines

<table>
<thead>
<tr>
<th>Screenline</th>
<th>Change in Auto Person Trips</th>
<th>Change in Transit Person Trips</th>
<th>Overall Change in Person Trips</th>
<th>Total No-Project Person Trips</th>
<th>% Change in Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BRT Corridor</td>
<td>Parallel Routes</td>
<td>Net Change</td>
<td>Bus Trips on BRT Corridor</td>
<td>Bus Trips on Parallel Routes</td>
</tr>
<tr>
<td>#</td>
<td>Location</td>
<td>-300</td>
<td>200</td>
<td>-100</td>
<td>900</td>
</tr>
<tr>
<td>1</td>
<td>Near Dwight Way</td>
<td>-400</td>
<td>200</td>
<td>-200</td>
<td>1,000</td>
</tr>
<tr>
<td>2</td>
<td>Near 51st Street</td>
<td>-300</td>
<td>200</td>
<td>-100</td>
<td>1,200</td>
</tr>
<tr>
<td>3</td>
<td>Near 27th Street</td>
<td>-300</td>
<td>100</td>
<td>-200</td>
<td>1,600</td>
</tr>
<tr>
<td>4</td>
<td>Near 13th Avenue</td>
<td>-900</td>
<td>600</td>
<td>-300</td>
<td>700</td>
</tr>
<tr>
<td>5</td>
<td>Near High Street</td>
<td>-700</td>
<td>500</td>
<td>-200</td>
<td>400</td>
</tr>
<tr>
<td>6</td>
<td>Near Davis Street</td>
<td>-100</td>
<td>0</td>
<td>-100</td>
<td>400</td>
</tr>
</tbody>
</table>

Notes: Trips shown are in person trips, not vehicle trips. The number of vehicle trips is assumed to equal the number of person trips divided by 1.2 (assuming an average rate of 1.2 persons per vehicle). Trips shown are afternoon peak hour only.

Net auto usage decreases by 100 to 300 person trips at all seven screenline locations with the LPA. This reflects a drop in auto trips on the BRT corridor, with a relatively smaller increase in auto trips along parallel routes. The southern portion of the corridor sees a larger shift in auto trips from the BRT corridor to adjacent routes. Transit trips increase or stay the same at all seven screenlines. The largest increase in transit trips is near the southern end of the corridor, with up to 400 additional peak hour person trips on transit in the afternoon peak hour. New trips on BRT result from diverted trips of former motorists (i.e., autos), and a shift of trips from BART and bus routes parallel to the BRT service. The drop in projected BART ridership is higher in the northern portion of the corridor than the southern portion. This is likely because the BRT service terminates at San Leandro BART, so southbound BRT passengers are transferring to BART at one of the potential transfer locations along the corridor to reach destinations further south. Overall trips, summing all modes, are relatively constant and the potential for trip-making on transit in the corridor is enhanced by the project.

3.2.3.3 **INTERSECTION IMPACTS: 2015 LPA**

This section presents the projected impacts to intersections on the project alignment (on-alignment intersections) and to intersections on other streets (off-alignment intersections) with the LPA. Impacts discussed are those that worsen operations relative to the No-Build condition and do not meet locally established standards (or exceed thresholds) for LOS.

Eighteen intersections are projected to experience worsening traffic conditions to a level considered a significant adverse impact in 2015 with implementation of the LPA, as shown in Figure 3.2-12, and Table 3.2-4. Of those 18 intersections, seven are impacted in both the morning and afternoon peak hours, two are just impacted in the morning peak hour, and nine are just impacted in the afternoon peak hour. Intersection LOS under Year 2015 with LPA Conditions is included in Appendix D.

It should be noted that the intersection impacts presented in this section, Figure 3.2-12 and Table 3.2-4 are for the LPA before the implementation of proposed mitigation measures. The number and level of intersection impacts is reduced with the implementation of mitigation measures (see Section 3.2.9.3 and Table 3.2-12).
## Table 3.2-4: Summary of Intersections with Significant Impacts: Year 2015 No-Build and Year 2015 with LPA

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 2015 No-Build</td>
<td>Year 2015 With LPA</td>
<td>Year 2015 With LPA</td>
</tr>
<tr>
<td>No.</td>
<td>Main Street</td>
<td>Cross Street</td>
<td>City</td>
</tr>
<tr>
<td><strong>Morning Peak Hour</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>On-Alignment Intersections</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Telegraph Ave</td>
<td>Alcatraz Ave</td>
<td>Oakland</td>
</tr>
<tr>
<td>33</td>
<td>Telegraph Ave</td>
<td>55th St</td>
<td>Oakland</td>
</tr>
<tr>
<td>39</td>
<td>Telegraph Ave</td>
<td>51st St</td>
<td>Oakland</td>
</tr>
<tr>
<td>83</td>
<td>International Blvd</td>
<td>29th Ave</td>
<td>Oakland</td>
</tr>
<tr>
<td>91</td>
<td>International Blvd</td>
<td>42nd Ave</td>
<td>Oakland</td>
</tr>
<tr>
<td>106</td>
<td>International Blvd</td>
<td>98th Ave</td>
<td>Oakland</td>
</tr>
<tr>
<td><strong>Off-Alignment Intersections</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Alcatraz Ave</td>
<td>Adeline St</td>
<td>Berkeley</td>
</tr>
<tr>
<td>37</td>
<td>Shattuck Ave</td>
<td>52nd St</td>
<td>Oakland</td>
</tr>
<tr>
<td>84</td>
<td>Fruitvale Ave</td>
<td>E 12th St</td>
<td>Oakland</td>
</tr>
<tr>
<td><strong>Afternoon Peak Hour</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>On-Alignment Intersections</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Telegraph Ave</td>
<td>Alcatraz Ave</td>
<td>Oakland</td>
</tr>
<tr>
<td>32</td>
<td>Telegraph Ave</td>
<td>56th St</td>
<td>Oakland</td>
</tr>
<tr>
<td>33</td>
<td>Telegraph Ave</td>
<td>55th St</td>
<td>Oakland</td>
</tr>
<tr>
<td>39</td>
<td>Telegraph Ave</td>
<td>51st St</td>
<td>Oakland</td>
</tr>
<tr>
<td>50</td>
<td>Telegraph Ave</td>
<td>W MacArthur Blvd</td>
<td>Oakland</td>
</tr>
<tr>
<td>78</td>
<td>14th Ave</td>
<td>E 12th St (SB)</td>
<td>Oakland</td>
</tr>
<tr>
<td>90</td>
<td>International Blvd</td>
<td>38th Ave</td>
<td>Oakland</td>
</tr>
<tr>
<td>91</td>
<td>International Blvd</td>
<td>42nd Ave</td>
<td>Oakland</td>
</tr>
<tr>
<td>979</td>
<td>International Blvd</td>
<td>Havenscourt Blvd</td>
<td>Oakland</td>
</tr>
</tbody>
</table>
Table 3.2-4: Summary of Intersections with Significant Impacts: Year 2015 No-Build and Year 2015 with LPA

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main Street</td>
<td>Cross Street</td>
<td>City</td>
</tr>
<tr>
<td>99</td>
<td>International Blvd</td>
<td>Hegenberger Expy</td>
<td>Oakland</td>
</tr>
<tr>
<td>106</td>
<td>International Blvd</td>
<td>98th Ave</td>
<td>Oakland</td>
</tr>
<tr>
<td>Off-Alignment Intersections</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Alcatraz Ave</td>
<td>College Ave</td>
<td>Berkeley</td>
</tr>
<tr>
<td>28</td>
<td>Alcatraz Ave</td>
<td>Adeline St</td>
<td>Berkeley</td>
</tr>
<tr>
<td>34</td>
<td>Martin Luther King Jr. Wy</td>
<td>55th St</td>
<td>Oakland</td>
</tr>
<tr>
<td>36</td>
<td>Martin Luther King Jr. Wy</td>
<td>52nd St</td>
<td>Oakland</td>
</tr>
<tr>
<td>84</td>
<td>Fruitvale Ave</td>
<td>E 12th St</td>
<td>Oakland</td>
</tr>
</tbody>
</table>


Note: Indicated delay for signalized and all-way stop-controlled intersections is average for all movements. Indicated delay for side-street stop-controlled intersections is for worst movement.
3.2.4 Traffic Impacts: 2015 DOSL Alternative

The DOSL Alternative is projected to have almost identical traffic impacts to the LPA over the portion of the LPA corridor where the shorter DOSL Alternative would operate: downtown Oakland to San Leandro BART. The DOSL Alternative is projected to not have any traffic impacts north of downtown Oakland since no new BRT service would operate in that corridor and no modifications to the existing roadway network would be proposed. For roadway volumes north of downtown Oakland, refer to the Year 2015 No-Build Conditions analysis. For roadway volumes from downtown Oakland to San Leandro, please reference the Year 2015 with LPA Conditions analysis. To support this assumption, screenline analyses were performed at the same locations as were analyzed with the LPA and are presented in Table 3.2-5.

3.2.4.1 Screenline Analysis: 2015 DOSL Alternative

For comparison purposes, screenlines are provided with DOSL Alternative conditions at the same points analyzed with the LPA even though the DOSL Alternative will only modify roadway configurations and provide BRT service between downtown Oakland and San Leandro (at the screenlines listed from 13th Avenue to the south). Please refer back to Figure 3.2-8 for a graphical depiction of the location and extents of the screenlines.

North of downtown Oakland, the project DOSL Alternative results in minor changes to transit usage and roadway patterns. Auto trips in the DOSL Alternative BRT corridor are unchanged when compared to No-Build conditions. Bus ridership shifts slightly from the corridor to parallel routes due to minor project-related modifications in bus routing and a required transfer at 20th Street for trips between Telegraph Avenue and International Avenue with adoption of the DOSL Alternative. BART volumes increase slightly north of downtown Oakland with the DOSL Alternative given enhanced access to BART associated with the BRT between downtown Oakland and San Leandro. South of downtown Oakland, the DOSL Alternative has similar effects on auto and transit trip patterns as the LPA. Between 100 and 300 peak hour trips are shifted from auto to transit at each screenline. Auto trips are also shifted from the BRT alignment to parallel routes, and bus trips are shifted from parallel routes to the BRT alignment.

In comparing the effects of the DOSL Alternative and the LPA, the increase in bus trips along the BRT alignment is slightly less under the DOSL Alternative than under the LPA, particularly at the north end of the corridor (e.g., from Fruitvale to downtown Oakland). This is expected, given the reduced length and service area of the DOSL Alternative. The number of peak hour bus trips on the BRT corridor is between 0 and 300 fewer at each screenline under the DOSL Alternative as compared to the LPA. There is no difference in auto trips along the BRT alignment at the four screenlines between downtown Oakland and San Leandro between the LPA and the DOSL Alternative.
<table>
<thead>
<tr>
<th>Screenline</th>
<th>Change in Auto Person Trips</th>
<th>Change in Transit Person Trips</th>
<th>Overall Change in Person Trips</th>
<th>Total No-Project Person Trips</th>
<th>% Change in Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BRT Corridor</td>
<td>Parallel Routes</td>
<td>Net Change</td>
<td>Bus Trips on BRT Corridor</td>
<td>Bus Trips on Parallel Routes</td>
</tr>
<tr>
<td>Near Dwight Way</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-100</td>
<td>100</td>
</tr>
<tr>
<td>Near 51st Street</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-100</td>
<td>100</td>
</tr>
<tr>
<td>Near 27th Street</td>
<td>0</td>
<td>-100</td>
<td>-100</td>
<td>-300</td>
<td>200</td>
</tr>
<tr>
<td>Near 13th Avenue</td>
<td>-300</td>
<td>100</td>
<td>-200</td>
<td>1,300</td>
<td>-1,000</td>
</tr>
<tr>
<td>Near High Street</td>
<td>-900</td>
<td>600</td>
<td>-300</td>
<td>0</td>
<td>-200</td>
</tr>
<tr>
<td>Near 98th Avenue</td>
<td>-700</td>
<td>500</td>
<td>-200</td>
<td>400</td>
<td>-100</td>
</tr>
<tr>
<td>Near Davis Street</td>
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<td>0</td>
<td>-100</td>
<td>400</td>
<td>-100</td>
</tr>
</tbody>
</table>

Notes: Trips shown are in person trips, not vehicle trips. The number of vehicle trips is assumed to equal the number of person trips divided by 1.2 (assuming an average rate of 1.2 persons per vehicle). Trips shown are afternoon peak hour only.
3.2.4.2 **INTERSECTION IMPACTS: 2015 DOSL ALTERNATIVE**

As indicated by the screenline analysis, north of downtown Oakland, the DOSL Alternative results in very similar conditions as the No-Build Alternative. Between downtown Oakland and San Leandro, the DOSL Alternative results in very similar conditions as the LPA. Therefore, for operations of intersections north of downtown Oakland, refer to the Year 2015 No-Build Conditions analysis. For operations of intersections from downtown Oakland to San Leandro, refer to the Year 2035 with LPA analysis. The DOSL Alternative will result in intersection impacts at the following 8 locations:

On-Alignment Intersections:

- Intersection #78: 14th Avenue & East 12th Street (Southbound) (Oakland) – afternoon peak only
- Intersection #83: International Boulevard & 29th Avenue (Oakland) – morning peak only
- Intersection #90: International Boulevard & 38th Avenue (Oakland) – afternoon peak only
- Intersection #91: International Boulevard & 42nd Avenue (Oakland) – both peak hours
- Intersection #979: International Boulevard & Havenscourt Boulevard (Oakland) – afternoon peak only
- Intersection #99: International Boulevard & Hegenberger Expressway (Oakland) – afternoon peak only
- Intersection #106: International Boulevard & 98th Avenue (Oakland) – both peak hours

Off-Alignment Intersections:

- Intersection #84: Fruitvale Avenue & East 12th Street (Oakland) – both peak hours

Refer to Table 3.2-4 for the resulting delay and LOS associated with each intersection listed above. Note that the delay and LOS for intersections north of downtown Oakland, which will not be impacted by the DOSL Alternative, are assumed to be identical to the No-Build Alternative.

3.2.5 **Year 2035 No-Build Alternative**

This section reports anticipated traffic conditions in Year 2035 for the No-Build Alternative. It describes forecast future roadway volumes and summarizes estimated intersection LOS performance for the same intersections analyzed under Section 3.2.1.2, Intersection Levels of Service: Existing Conditions.

The Year 2035 No-Build Alternative does not include any additional roadway or transit improvements beyond those identified in the Year 2015 No-Build Alternative discussion.

3.2.5.1 **ROADWAY TRAFFIC VOLUMES: 2035 NO-BUILD CONDITIONS**

Traffic volumes along the streets within the proposed BRT corridor were obtained from the travel demand forecast model for 2035 No-Build Conditions. Figures 3.2-13 and 3.2-14 display...
morning and afternoon peak-hour volumes in each direction along the roadways constituting the East Bay BRT Project alignment for the 2035 No-Build Conditions scenario.

3.2.5.2 **SCREENLINE ANALYSIS: 2035 NO-BUILD CONDITIONS**

Table 3.2-6 below indicates the peak hour auto person trips and transit person trips crossing each of the screenlines in both directions in the 2035 No-Build scenario. Please refer back to Figure 3.2-8 for a graphical depiction of the location and extents of the screenlines.

<table>
<thead>
<tr>
<th>Screenline</th>
<th>Auto Person Trips</th>
<th>Transit Person Trips</th>
<th>Total No-Project Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BRT Corridor</td>
<td>Parallel Routes</td>
<td>Bus Trips on BRT Corridor</td>
</tr>
<tr>
<td>1 Near Dwight Way</td>
<td>2,500</td>
<td>16,900</td>
<td>1,200</td>
</tr>
<tr>
<td>2 Near 51st Street</td>
<td>1,500</td>
<td>13,000</td>
<td>1,000</td>
</tr>
<tr>
<td>3 Near 27th Street</td>
<td>2,200</td>
<td>26,200</td>
<td>1,300</td>
</tr>
<tr>
<td>4 Near 13th Avenue</td>
<td>1,500</td>
<td>47,100</td>
<td>1,600</td>
</tr>
<tr>
<td>5 Near High Street</td>
<td>3,600</td>
<td>42,500</td>
<td>1,700</td>
</tr>
<tr>
<td>6 Near 98th Avenue</td>
<td>3,300</td>
<td>46,100</td>
<td>600</td>
</tr>
<tr>
<td>7 Near Davis Street</td>
<td>2,800</td>
<td>47,900</td>
<td>600</td>
</tr>
</tbody>
</table>

Notes: Trips shown are in person trips, not vehicle trips. The number of vehicle trips is assumed to equal the number of person trips divided by 1.2 (assuming an average rate of 1.2 persons per vehicle). Trips shown are afternoon peak hour only.

Source: Cambridge Systematics, 2010

As shown in the table, total corridor trips are highest in the southern part of the study area, between downtown Oakland and San Leandro, under 2035 No-Build conditions. Total transit trips are highest near downtown Oakland. Auto trips are highest at the southern part of the study area, in San Leandro and southern Oakland.
Figure 3.2-13: Roadway Segment Volumes - 2035 No-Build AM

AC Transit East Bay Project
3.2.5.3 **INTERSECTION LEVELS OF SERVICE: 2035 NO-BUILD CONDITIONS**

The No-Build Alternative includes changes to local roadways (identified in Table 3.2-1), some of which will improve traffic flow and others which attempt to improve conditions for transportation modes other than the private car. However, even with the proposed improvements, intersection LOS in the project alignment is expected to deteriorate under 2035 No-Build conditions at a number of locations. Worsening LOS results from continuing growth in auto travel, which occurs as the population and employment increases, and there is little or no shift from using autos as the primary travel mode to other modes, such as transit. While the No-Build scenario assumes improvements for Route 1R, the rapid bus route currently operating in the East Bay BRT corridor, the travel time of the bus, and hence its ability to attract ridership, is also impacted by the worsening intersection congestion along the corridor.

The location of intersections projected to operate at LOS E and F is shown in Figure 3.2-15.

**Morning Peak Intersection LOS: 2035 No-Build Conditions**

For the morning peak hour, of the 129 unique intersections that were evaluated, all but 32 operate at an acceptable level of service (LOS D or better). Of those 32, 16 are located along the project alignment. The deficient intersections on the project alignment (and the city they are located in) are listed below:

- Intersection #4: Bancroft Way & Ellsworth Street (unsignalized, Berkeley) – LOS F
- Intersection #8: Durant Avenue & Shattuck Avenue (signalized, Berkeley) – LOS E
- Intersection #39: 51st Street & Telegraph Avenue (signalized, Oakland) – LOS E
- Intersection #52: Hawthorne Avenue & Telegraph Avenue (unsignalized, Oakland) – LOS E
- Intersection #65: 1st Avenue & International Boulevard (signalized, Oakland) – LOS F
- Intersection #68: 4th Avenue & East 12th Street (unsignalized, Oakland) – LOS F
- Intersection #73: 8th Avenue & East 12th Street (unsignalized, Oakland) – LOS F
- Intersection #76: 13th Avenue & International Boulevard (unsignalized, Oakland) – LOS F
- Intersection #79: 14th Avenue & International Boulevard (signalized, Oakland) – LOS E
- Intersection #80: 19th Avenue & International Boulevard (unsignalized, Oakland) – LOS F
- Intersection #91: 42nd Avenue & International Boulevard (signalized, Oakland) – LOS E
- Intersection #101: 81st Avenue & International Boulevard (unsignalized, Oakland) – LOS F
- Intersection #106: 98th Avenue & International Boulevard (signalized, Oakland) – LOS F
- Intersection #112: Dutton Avenue & East 14th Street (signalized, San Leandro) – LOS F
- Intersection #114: Haas Avenue & East 14th Street (unsignalized, San Leandro) – LOS F
- Intersection #117: Davis Street & San Leandro Boulevard (signalized, San Leandro) – LOS E
Legend:
- Route of Proposed BRT System

Intersections at LOS E or F:
- Blue circle: AM Peak Hour - Signalized
- Green circle: PM Peak Hour - Signalized
- Pink circle: AM & PM Peak Hour - Signalized
- Blue triangle: AM Peak Hour - Unsignalized
- Green triangle: PM Peak Hour - Unsignalized
- Pink triangle: AM & PM Peak Hour - Unsignalized

*Study intersection number is shown adjacent to symbol for intersections operating at LOS E/F.

Figure 3.2-15: LOS E and F Intersections 2035 No-Build

AC Transit East Bay BRT Project
The deficient off-alignment intersections (and the city they are located in) are listed below:

- Intersection #18: Derby Street & Warring Street (unsignalized, Berkeley) – LOS F
- Intersection #20: Ashby Avenue & Adeline Street (signalized, Berkeley) – LOS F
- Intersection #28: Alcatraz Avenue & Adeline Street (signalized, Berkeley) – LOS F
- Intersection #30: 62nd Street & Claremont Avenue (signalized, Oakland) – LOS E
- Intersection #34: 55th Street & Martin Luther King Jr. Way (signalized, Oakland) – LOS E
- Intersection #37: 52nd Street & Shattuck Avenue (signalized, Oakland) – LOS E
- Intersection #51: West MacArthur Boulevard & Broadway (signalized, Oakland) – LOS F
- Intersection #84: Fruitvale Avenue & East 12th Street (signalized, Oakland) – LOS F
- Intersection #86: Fruitvale Avenue & Foothill Boulevard (signalized, Oakland) – LOS F
- Intersection #92: High Street & San Leandro Street (signalized, Oakland) – LOS F
- Intersection #989: 73rd Avenue & San Leandro Street (unsignalized, Oakland) – LOS F
- Intersection #105: 98th Avenue & San Leandro Street (signalized, Oakland) – LOS F
- Intersection #107: 98th Avenue & Bancroft Avenue (unsignalized, Oakland) – LOS F
- Intersection #110: San Leandro Boulevard & West Broadmoor Boulevard (unsignalized, San Leandro) – LOS E
- Intersection #116: San Leandro Boulevard & Best Avenue (unsignalized, San Leandro) – LOS F
- Intersection #1125: Fruitvale Avenue & San Leandro Street (signalized, Oakland) – LOS F

Detailed results of the intersection LOS analysis are also presented in Appendix D.

**Afternoon Peak Intersection LOS: 2035 No-Build Conditions**

For the afternoon peak hour, of the 129 unique intersections that were evaluated, 42 operate at a deficient level of service (LOS E or F). Of those 42, 20 are located along the project alignment. The deficient intersections on the project alignment (and the city they are located in) are listed below:

- Intersection #4: Bancroft Way & Ellsworth Street (unsignalized, Berkeley) – LOS F
- Intersection #29: Alcatraz Avenue & Telegraph Avenue (signalized, Oakland) – LOS E
- Intersection #32: 56th Street & Telegraph Avenue (signalized, Oakland) – LOS E
- Intersection #39: 51st Street & Telegraph Avenue (signalized, Oakland) – LOS F
- Intersection #50: West MacArthur Boulevard & Telegraph Avenue (signalized, Oakland) – LOS E
- Intersection #52: Hawthorne Avenue & Telegraph Avenue (unsignalized, Oakland) – LOS F
- Intersection #65: 1st Avenue & International Boulevard (signalized, Oakland) – LOS E
- Intersection #68: 4th Avenue & East 12th Street (unsignalized, Oakland) – LOS F
- Intersection #73: 8th Avenue & East 12th Street (unsignalized, Oakland) – LOS F
The deficient off-alignment intersections (and the city they are located in) are listed below:

- Intersection #18: Derby Street & Warring Street (unsignalized, Berkeley) – LOS F
- Intersection #20: Ashby Avenue & Adeline Street (signalized, Berkeley) – LOS E
- Intersection #23: Ashby Avenue & College Avenue (signalized, Berkeley) – LOS E
- Intersection #24: Ashby Avenue & Claremont Avenue (signalized, City of Berkeley) – LOS E
- Intersection #27: Alcatraz Avenue & College Avenue (signalized, Berkeley) – LOS F
- Intersection #28: Alcatraz Avenue & Adeline Street (signalized, Berkeley) – LOS F
- Intersection #30: 62nd Street & Claremont Avenue (signalized, Oakland) – LOS E
- Intersection #34: 55th Street & Martin Luther King Jr. Way (signalized, Oakland) – LOS F
- Intersection #36: 52nd Street & Martin Luther King Jr. Way (signalized, Oakland) – LOS E
- Intersection #37: 52nd Street & Shattuck Avenue (signalized, Oakland) – LOS F
- Intersection #51: West MacArthur Boulevard & Broadway (signalized, Oakland) – LOS E
- Intersection #84: Fruitvale Avenue & East 12th Street (signalized, Oakland) – LOS E
- Intersection #92: High Street & San Leandro Street (signalized, Oakland) – LOS F
- Intersection #989: 73rd Avenue & San Leandro Street (unsignalized, Oakland) – LOS F
- Intersection #100: Hegenberger Expressway & Bancroft Avenue (signalized, Oakland) – LOS F
- Intersection #105: 98th Avenue & San Leandro Street (signalized, Oakland) – LOS E
- Intersection #107: 98th Avenue & Bancroft Avenue (signalized, Oakland) – LOS E
- Intersection #113: Dutton Avenue & Bancroft Avenue (signalized, San Leandro) – LOS F
- Intersection #114: Haas Avenue & Bancroft Avenue (unsignalized, San Leandro) – LOS F
- Intersection #116: San Leandro Boulevard & Best Avenue (unsignalized, San Leandro) – LOS F
- Intersection #117: Davis Street & Bancroft Avenue (signalized, San Leandro) – LOS E
- Intersection #1125: Fruitvale Avenue & San Leandro Street (signalized, Oakland) – LOS F

Detailed results of the intersection LOS analysis are also presented in Appendix D.

### 3.2.6 Traffic Impacts: 2035 LPA

The following sections analyze the direct traffic impacts of the LPA, describing anticipated changes to traffic volumes, delays, and intersection levels of service.

#### 3.2.6.1 Roadway Volumes: 2035 LPA

Traffic volumes along the streets within the proposed BRT corridor were obtained from the travel demand forecast model for Year 2035 with LPA Conditions. Figures 3.2-16 and 3.2-17 display morning and afternoon peak-hour traffic volumes for the LPA. Traffic is shown for year 2035 for each direction along the roadways constituting the East Bay BRT Project alignment.

In general, volumes decrease along the roadways utilized by the project alignment and increase on parallel streets, as described previously, due to 1) a reduction in roadway capacity along the alignment for the East Bay BRT LPA, and 2) prohibition of several left-turn and through movements at unsignalized roadways.
3.2.6.2 **SCREENLINE ANALYSIS: YEAR 2035 WITH LPA CONDITIONS**

The shifts in traffic resulting from the East Bay BRT LPA are apparent when comparing changes in peak hour person trips along the project corridor before and after BRT improvements would be implemented. Representative afternoon 2035 peak hour volumes are shown in Table 3.2-7. Traffic volumes are displayed for screenlines, which designate survey points for comparing trips across (imaginary) lines drawn essentially perpendicular to the BRT LPA alignment and other parallel roadways. Please refer back to Figure 3.2-8 for a graphical depiction of the location and extents of the screenlines. The screenline volumes capture the major north-south movements through the corridor at these locations.

Net auto trips decrease by 100 to 800 peak hour person trips at all seven screenline locations with the LPA. This reflects a more substantial drop in auto trips on the BRT corridor, with a smaller increase in auto trips along parallel routes. The southern portion of the corridor sees a larger shift in auto trips from the BRT corridor to adjacent routes. Transit trips increase at all seven screenline locations. The largest increase in transit trips is near the southern end of the corridor, with an increase of up to 1,200 peak hour person trips on transit. The overall composition of the transit trips shift from BART and bus trips on parallel routes to the BRT service. The drop in projected BART ridership is noticeably higher in the northern portion of the corridor than the southern portion. In fact, the project results in a projected increase in BART trips south of the Fruitvale BART Station. This is likely because the BRT service terminates at San Leandro BART, so BRT passengers are transferring to BART at one of the potential transfer locations along the corridor to reach destinations further south. Total person trips across all modes are relatively constant, as expected, and the potential for trip-making on transit in the corridor is enhanced by the project.
### Table 3.2-7: Year 2035 Change in Person Trips with LPA at Select Screenlines

<table>
<thead>
<tr>
<th>Location</th>
<th>Change in Auto Person Trips</th>
<th>Change in Transit Person Trips</th>
<th>Overall Change in Person Trips</th>
<th>Total No-Project Person Trips</th>
<th>% Change in Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BRT Corridor</td>
<td>Parallel Routes</td>
<td>Net Change</td>
<td>Bus Trips on BRT Corridor</td>
<td>Bus Trips on Parallel Routes</td>
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<td>1 Near Dwight Way</td>
<td>-300</td>
<td>200</td>
<td>-100</td>
<td>1,100</td>
<td>-400</td>
</tr>
<tr>
<td>2 Near 51st Street</td>
<td>-600</td>
<td>300</td>
<td>-300</td>
<td>1,400</td>
<td>-400</td>
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<tr>
<td>3 Near 27th Street</td>
<td>-600</td>
<td>300</td>
<td>-300</td>
<td>1,700</td>
<td>-300</td>
</tr>
<tr>
<td>4 Near 13th Avenue</td>
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<td>-100</td>
<td>-500</td>
<td>2,300</td>
<td>-1,300</td>
</tr>
<tr>
<td>5 Near High Street</td>
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<td>600</td>
<td>-800</td>
<td>1,200</td>
<td>-300</td>
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<tr>
<td>6 Near 98th Avenue</td>
<td>-1,100</td>
<td>500</td>
<td>-600</td>
<td>600</td>
<td>-100</td>
</tr>
<tr>
<td>7 Near Davis Street</td>
<td>-100</td>
<td>-200</td>
<td>-300</td>
<td>500</td>
<td>-100</td>
</tr>
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</table>

Notes: Trips shown are in person trips, not vehicle trips. The number of vehicle trips is assumed to equal the number of person trips divided by 1.2 (assuming an average rate of 1.2 persons per vehicle). Trips shown are afternoon peak hour only.

3.2.6.3 **INTERSECTION IMPACTS: 2035 LPA**

This section presents the projected impacts to intersections on the project alignment (on-alignment intersections) and to intersections on other streets (off-alignment intersections) with the LPA. Impacts discussed are those that worsen operations relative to the No-Build condition and do not meet locally established standards (or exceed thresholds) for LOS.

Thirty-three intersections are projected to experience worsening traffic conditions to a level considered a significant adverse impact in 2035 with implementation of the LPA, as shown in Figure 3.2-18, and Table 3.2-8. Of those 33 intersections, nine are impacted in only the morning peak hour, 14 are impacted only in the afternoon peak hour, and 10 are impacted in both the morning and afternoon peak hours. Intersection LOS and impacts under the 2035 LPA scenario are included in Appendix D.

It should be noted that the intersection impacts presented in this section, Figure 3.2-18 and Table 3.2-8 are for the LPA before the implementation of proposed mitigation measures. The number and level of intersection impacts is reduced with the implementation of mitigation measures (see Section 3.2.9.5 and Table 3.2-13).
Figure 3.2-18: Significant Impacts 2035 with LPA
AC Transit East Bay BRT Project
Table 3.2-8: Summary of Intersections Adversely Affected:
Year 2035 No-Build and Year 2035 with LPA

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Year 2035 No-Build and Year 2035 with LPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Main Street</td>
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<tr>
<td><strong>Morning Peak Hour</strong></td>
<td></td>
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<tr>
<td>On-Alignment Intersections</td>
<td></td>
</tr>
<tr>
<td>29 Telegraph Ave</td>
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<tr>
<td>33 Telegraph Ave</td>
<td>55th St</td>
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<td>39 Telegraph Ave</td>
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<td>27th St</td>
</tr>
<tr>
<td>70 E 12th St</td>
<td>5th Ave</td>
</tr>
<tr>
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<td>29th Ave</td>
</tr>
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<td>91 International Blvd</td>
<td>42nd Ave</td>
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<tr>
<td>99 International Blvd</td>
<td>Hegenberger Expy</td>
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<tr>
<td>117 San Leandro Blvd</td>
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<td>Off-Alignment Intersections</td>
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</tr>
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<td>Shattuck Ave</td>
</tr>
<tr>
<td>27 Alcatraz Ave</td>
<td>College Ave</td>
</tr>
<tr>
<td>28 Alcatraz Ave</td>
<td>Adeline St</td>
</tr>
<tr>
<td>34 Martin Luther King Jr. Wy</td>
<td>55th St</td>
</tr>
<tr>
<td>84 Fruitvale Ave</td>
<td>E 12th St</td>
</tr>
<tr>
<td>86 Fruitvale Ave</td>
<td>Foothill Blvd</td>
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<tr>
<td>105 San Leandro St</td>
<td>98th Ave</td>
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### Table 3.2-8: Summary of Intersections Adversely Affected:

Year 2035 No-Build and Year 2035 with LPA

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<tr>
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</thead>
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<td>No.</td>
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<td>San Leandro</td>
</tr>
<tr>
<td>113</td>
<td>Bancroft Ave</td>
<td>Dutton Ave</td>
<td>San Leandro</td>
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</table>

#### Afternoon Peak Hour

**On-Alignment Intersections**

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<th>Delay (seconds)</th>
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<th>Delay (seconds)</th>
<th>LOS</th>
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<td>E</td>
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<td>18.8</td>
<td>B</td>
<td>22.5</td>
<td>C</td>
<td>78.4</td>
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<td>C</td>
<td>45.3</td>
<td>D</td>
<td>88.1</td>
<td>F</td>
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<td>50</td>
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<td>W MacArthur Blvd</td>
<td>Oakland</td>
<td>16.3</td>
<td>B</td>
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<td>E</td>
<td>238.7</td>
<td>F</td>
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<td>Telegraph Ave</td>
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<td>19.2</td>
<td>B</td>
<td>26.9</td>
<td>C</td>
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<td>B</td>
<td>17.3</td>
<td>B</td>
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<td>B</td>
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**Off-Alignment Intersections**

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<tr>
<th>No.</th>
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<th>City</th>
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<th>Delay (seconds)</th>
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<th>Delay (seconds)</th>
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<tbody>
<tr>
<td>18</td>
<td>Derby St</td>
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<td>E</td>
<td>76.4</td>
<td>E</td>
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</table>
Table 3.2-8: Summary of Intersections Adversely Affected:
Year 2035 No-Build and Year 2035 with LPA

<table>
<thead>
<tr>
<th>No.</th>
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<th>Cross Street</th>
<th>City</th>
<th>Existing Conditions (2009)</th>
<th>No-Build Alternative (2035)</th>
<th>With LPA (2035) Unmitigated</th>
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<td></td>
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<td></td>
<td></td>
<td>Delay (seconds)</td>
<td>LOS</td>
<td>Delay (seconds)</td>
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<td>King Jr. Wy</td>
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<td></td>
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<tr>
<td></td>
<td>King Jr. Wy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>Fruitvale Ave</td>
<td>E 12th St</td>
<td>Oakland</td>
<td>23.4</td>
<td>C</td>
<td>75.8</td>
</tr>
</tbody>
</table>


Note: Indicated delay for signalized and all-way stop-controlled intersections is average for all movements. Indicated delay for side-street stop-controlled intersections is for worst movement.
3.2.6.4 **Comparison of Intersection Impacts to Draft EIS/EIR**

As indicated in the introduction to this chapter, a number of changes have been made, both to the build alternatives and the analysis methodology, since the distribution of the project’s Draft EIS/EIR. These changes include the addition of a number of study intersections, an updated existing conditions analysis, modification to the locations of dedicated transit lanes, and revised analysis years. To inform the reader, Table 3.2-9 has been prepared to document the number of impacts by location between the Draft and Final EIS/EIR. Given that the LPA was modified since the Draft EIS/EIR was circulated and the horizon year is different between the two analyses, it is important to emphasize that this table is not a valid comparison of the impact of the build alternative between the Draft and Final EIS/EIR.

### Table 3.2-9: Comparison of Number of Impacts: Year 2035 with LPA vs. Year 2025 DEIS Analysis

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Final EIS</th>
<th>Draft EIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkeley Subtotal</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Oakland Subtotal</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>San Leandro Subtotal</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Corridor Total</td>
<td>33</td>
<td>19</td>
</tr>
</tbody>
</table>


3.2.7 **Traffic Impacts: 2035 DOSL Alternative**

The DOSL is projected to have almost identical traffic impacts to LPA over the portion of the LPA corridor where the DOSL Alternative would operate. The DOSL Alternative is projected to not have any traffic impacts north of downtown Oakland since no BRT service would operate in that corridor and no modifications to the existing roadway network are be proposed. For roadway volumes north of downtown Oakland, refer to the 2035 No-Build Conditions analysis. For roadway volumes from downtown Oakland to San Leandro, refer to 2035 LPA analysis. To support this assumption, screenline analyses were performed at the same locations as were analyzed with the LPA, and are presented in Table 3.2-10.
Table 3.2-10: Year 2035 Change in Person Trips with DOSL Alternative at Select Screenlines

<table>
<thead>
<tr>
<th>#</th>
<th>Location</th>
<th>Change in Auto Person Trips</th>
<th>Change in Transit Person Trips</th>
<th>Overall Change in Person Trips</th>
<th>Total No-Project Person Trips</th>
<th>% Change in Person Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BRT Corridor</td>
<td>Parallel Routes</td>
<td>Net Change</td>
<td>Bus Trips on BRT Corridor</td>
<td>Bus Trips on Parallel Routes</td>
</tr>
<tr>
<td>1</td>
<td>Near Dwight Way</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-100</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Near 51st Street</td>
<td>0</td>
<td>-100</td>
<td>-100</td>
<td>-200</td>
<td>200</td>
</tr>
<tr>
<td>3</td>
<td>Near 27th Street</td>
<td>0</td>
<td>-100</td>
<td>-100</td>
<td>-400</td>
<td>400</td>
</tr>
<tr>
<td>4</td>
<td>Near 13th Avenue</td>
<td>-400</td>
<td>-100</td>
<td>-500</td>
<td>2,000</td>
<td>-1,200</td>
</tr>
<tr>
<td>5</td>
<td>Near High Street</td>
<td>-1,400</td>
<td>700</td>
<td>-700</td>
<td>1,000</td>
<td>-300</td>
</tr>
<tr>
<td>6</td>
<td>Near 98th Avenue</td>
<td>-1,100</td>
<td>600</td>
<td>-500</td>
<td>600</td>
<td>-100</td>
</tr>
<tr>
<td>7</td>
<td>Near Davis Street</td>
<td>-100</td>
<td>-100</td>
<td>-200</td>
<td>500</td>
<td>-100</td>
</tr>
</tbody>
</table>

Notes: Trips shown are in person trips, not vehicle trips. The number of vehicle trips is assumed to equal the number of person trips divided by 1.2 (assuming an average rate of 1.2 persons per vehicle). Trips shown are afternoon peak hour only.
3.2.7.1 **SCREENLINE ANALYSIS: 2035 DOSL ALTERNATIVE**

For comparison purposes, screenlines are provided with DOSL Alternative conditions at the same points analyzed with the LPA. Please refer back to Figure 3.2-8 for a graphical depiction of the location and extents of the screenlines. As assumed in the 2015 analysis, the DOSL Alternative will only modify roadway configurations and provide BRT service between downtown Oakland and San Leandro (at the screenlines listed from 13th Avenue to the south).

North of downtown Oakland, the project results in minor changes to transit usage and roadway patterns. Auto trips on the BRT corridor are unchanged when compared to No-Build conditions. South of downtown Oakland, the DOSL has similar effects on auto and transit trip patterns as the LPA. Between 200 and 700 person trips are shifted from auto to transit at each screenline between downtown Oakland and San Leandro. Auto trips are also shifted from the BRT alignment to parallel routes, and bus trips are shifted from parallel routes to the BRT alignment.

In comparing the effects of the DOSL Alternative and the LPA, the increase in bus trips in the BRT corridor is somewhat less under the DOSL Alternative than under the LPA, particularly at the north end of the DOSL Alternative corridor. The number of peak hour bus trips along the BRT alignment is between 0 and 300 fewer at each screenline with the DOSL Alternative as opposed to the LPA. This is associated with a corresponding smaller reduction in auto trips with the DOSL Alternative at the same screenlines. There is no difference in auto trips on the BRT corridor at the four screenlines between downtown Oakland and San Leandro between the LPA and the DOSL Alternative.

3.2.7.2 **INTERSECTION IMPACTS: 2035 DOSL ALTERNATIVE**

As indicated above by the screenline analysis, north of downtown Oakland, the DOSL Alternative results in very similar traffic volumes as the No-Build Alternative. Since the DOSL Alternative will not result in any roadway modifications north of downtown Oakland, conditions are virtually identical to the No-Build Alternative. Therefore, for operations of intersections north of downtown Oakland, refer to the 2035 No-Build Conditions analysis. Between downtown Oakland and San Leandro, the DOSL Alternative results in very similar traffic volumes as the LPA. For operations of intersections from downtown Oakland to San Leandro, reference to the 2035 LPA analysis. In summary, the DOSL Alternative will result in intersection impacts at the following 17 locations:

**On-Alignment Intersections:**
- Intersection #70: East 12th Street & 5th Avenue (Oakland) – morning peak only
- Intersection #78: East 12th Street (southbound) & 14th Avenue (Oakland) – afternoon peak only
- Intersection #79: International Boulevard & 14th Avenue (Oakland) – afternoon peak only
- Intersection #83: International Boulevard & 29th Avenue (Oakland) – morning peak only
- Intersection #88: International Boulevard & 35th Avenue (Oakland) – afternoon peak only
- Intersection #90: International Boulevard & 38th Avenue (Oakland) – afternoon peak only
- Intersection #91: International Boulevard & 42nd Avenue (Oakland) – morning peak only
- Intersection #93: International Boulevard & High Street (Oakland) – afternoon peak only
- Intersection #979: International Boulevard & Havenscourt Boulevard (Oakland) – afternoon peak only
- Intersection #99: International Boulevard & Hegenberger Expressway (Oakland) – both peak hours
- Intersection #106: International Boulevard & 98th Avenue (Oakland) – afternoon peak only
- Intersection #117: San Leandro Boulevard & Davis Street (San Leandro) – morning peak only

Off-Alignment Intersections:

- Intersection #84: Fruitvale Avenue & East 12th Street (Oakland) – both peak hours
- Intersection #86: Fruitvale Avenue & Foothill Boulevard (Oakland) – morning peak only
- Intersection #105: San Leandro Street & 98th Avenue (Oakland) – morning peak only
- Intersection #110: San Leandro Boulevard & West Broadmoor Boulevard (San Leandro) – morning peak only
- Intersection #113: Bancroft Avenue & Dutton Avenue (San Leandro) – morning peak only

Please reference Table 3.2-8 for the resulting delay and LOS associated with each intersection listed above. Note that the delay and LOS for intersections north of downtown Oakland, which will not be impacted by the DOSL Alternative, are assumed to be identical to the No-Build Alternative.

### 3.2.8 Neighborhood Traffic Effects

The Build Alternatives result in the conversion of existing mixed flow travel lanes to dedicated transit-only lanes. The reduction in roadway capacity leads to additional congestion at certain intersections on the alignment corridors, documented in the intersection impacts section of this chapter. This may motivate motorists making right-turn movements at congested intersections to instead make those right turns at upstream intersections to avoid delays at the congested intersection. The result could be a diversion of traffic off the major alignment roadway and onto local streets. This possibility was analyzed along with estimates of the likelihood and potential frequency of that diversion. Since the dedicated transitway is only proposed along the portion of the alignment within the cities of Oakland and San Leandro, diverted right turns prior to congested intersections are only be anticipated to occur in these cities.

The Build Alternatives also affect local circulation by limiting the number of locations where vehicles can make left-turns or through movements. At a number of locations along the corridor, these restrictions affect either the BRT alignment or streets crossing the BRT alignment. This may result in motorists seeking alternate routes or increased u-turns to avoid the turn restrictions.

For example, motorists may make a left-turn at the street prior to or after their desired side street, and then travel on local streets to return to their desired path of travel. Other motorists may drive
past their desired side street and make a u-turn at the next available location to return to their desired street. This increase in u-turn movements has been incorporated into the intersection delay and LOS calculations documented earlier in this section. Other changes in local automobile circulation patterns are documented below. Likely alternative routes of travel and the potential frequency of vehicles making that movement are both analyzed.

There are no thresholds of significance for neighborhood diversion. Due to the low-volume nature of affected neighborhood streets and the low volume of diverted traffic at any particular location, it is not anticipated that these diversions will result in intersection deficiencies that have not been otherwise identified in this document. Locations that warrant inclusion in a traffic monitoring program will be identified. A neighborhood traffic protection policy is discussed below, following identification of the diversion effects.

3.2.8.1 **Diverted Right Turns Prior to Congested Intersections**

The implementation of BRT on Telegraph Avenue, International Boulevard, and East 14th Street removes one lane of mixed-flow traffic in each direction of the roadway. This change combined with the anticipated growth in population and employment in the next 25 years would increase traffic congestion at some intersections. The added delay for motorists may motivate some to seek alternate streets to avoid such intersections. The most likely diversion movement to avoid the delay at intersections would be a right turn onto a local street prior to reaching the congested area.

The preceding LOS and delay analysis identified intersections on the BRT route that are projected to be congested at LOS F during the afternoon peak hour conditions in Year 2035 with LPA Conditions. These intersections indicate locations where motorists might seek alternate routes. Potential diversions by motorists to avoid intersections operating at LOS E or better are not anticipated because the delay associated with the congested intersection would not be detrimental to travel time and thereby motivate motorists to seek alternate routes.

Feasible right-turn diversion routes were identified for each intersection approach operating at LOS F along the build alignment where roadway capacity has been reduced. These routes were identified by tracing the most direct routes around an intersection. Diversion routes could not begin more than one-half mile from a congested intersection and cannot require left-turns to enter or exit the BRT route. Some intersection approaches may actually not have an available diversion route because the right turn may be for access to a freeway ramp, have an existing right-turn restriction or not exist. In some cases the potential right turn diversions are already reflected in the base traffic analysis conducted using the travel demand model.

Travel times were calculated for diverted and non-diverted right turn traffic. Estimates were based on travel time data collected in fall 2009. If observed data was not available for a route, average travel speeds from other nearby routes were applied. The estimate of travel times in Year 2035 for the non-diverted right turn routes was calculated by adding the incremental increase in intersection approach delay at the congested intersection between Year 2009 and Year 2035 with LPA with implementation of mitigation measures to the fall 2009 travel time. Year 2035 travel times for neighborhood diversion routes are assumed to be the same as in 2009.
The likelihood of diversion is categorized as “★★” if the average diversion route at least 30 seconds faster than the non-diverted route, meaning that a driver is likely to consider making a right-turn through the neighborhood to bypass a congested intersection. The likelihood of diversion is categorized as “★” if the diversion route’s travel time is similar to the main roadway (i.e. is between 30 seconds faster and 30 seconds slower). This condition may tempt a driver to consider diverting, depending on the driver’s familiarity with the neighborhood routes.

Based on this analysis, Table 3.2-11 shows the intersections and turn movements that are projected to possibly (“★”) or likely (“★★”) result in a right-turn diversion to neighborhood streets. In addition, it indicates the maximum potential number of diverted vehicles per minute for each diversion. This is based on the afternoon peak hour during Year 2035 with LPA conditions. Morning peak hour diversions would be substantially less for most intersections. It should be noted that most diversions can be made using several different routes; therefore, it is not anticipated that in most cases any single diversion route would realize the maximum number of diverted vehicles.

<table>
<thead>
<tr>
<th>#</th>
<th>Intersection</th>
<th>Movement</th>
<th>Travel Time Difference for Diversion Route vs. Main Route</th>
<th>Likelihood of Diversion</th>
<th>Maximum Number of Diversions (vehicles/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>Telegraph Ave &amp; Alcatraz Ave</td>
<td>NB Right</td>
<td>-75 to -50 sec</td>
<td>★★</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SB Right</td>
<td>-45 to -25 sec</td>
<td>★★</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EB Right</td>
<td>-5 to +15 sec</td>
<td>★</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>Telegraph Ave &amp; 51st St</td>
<td>NB Right</td>
<td>+15 to +35 sec</td>
<td>★</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EB Right</td>
<td>0 to +20 sec</td>
<td>★</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WB Right</td>
<td>-10 to 0 sec</td>
<td>★</td>
<td>2</td>
</tr>
<tr>
<td>47</td>
<td>Telegraph Ave &amp; 40th St</td>
<td>NB Right</td>
<td>-120 to -100 sec</td>
<td>★★</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SB Right</td>
<td>-60 to -40 sec</td>
<td>★★</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WB Right</td>
<td>-5 to +15 sec</td>
<td>★</td>
<td>1</td>
</tr>
<tr>
<td>50</td>
<td>Telegraph Ave &amp; W MacArthur Blvd</td>
<td>NB Right</td>
<td>-80 to -60 sec</td>
<td>★★</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EB Right</td>
<td>-60 to -45 sec</td>
<td>★★</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WB Right</td>
<td>-20 to 0 sec</td>
<td>★</td>
<td>3</td>
</tr>
<tr>
<td>55</td>
<td>Telegraph Ave &amp; 27th St</td>
<td>NB Right</td>
<td>-35 to -15 sec</td>
<td>★</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SB Right</td>
<td>-5 to +15 sec</td>
<td>★</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EB Right</td>
<td>-15 to +5 sec</td>
<td>★</td>
<td>2</td>
</tr>
<tr>
<td>76</td>
<td>International Boulevard &amp; 13th</td>
<td>SB Right</td>
<td>-120 to -100 sec</td>
<td>★★</td>
<td>1</td>
</tr>
</tbody>
</table>
### Diversions per Minute

<table>
<thead>
<tr>
<th>Ave</th>
<th>WB Right</th>
<th>NB Right</th>
<th>SB Right</th>
<th>EB Right</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>79 International Blvd &amp; 14th Ave</td>
<td>-10 to +10 sec</td>
<td>-25 to -5 sec</td>
<td>-10 to +10 sec</td>
<td>0 to +20 sec</td>
<td>★ 1</td>
</tr>
<tr>
<td>90 International Blvd &amp; 38th Ave</td>
<td>-10 to +10 sec</td>
<td>-30 to -10 sec</td>
<td>-10 to +10 sec</td>
<td>-30 to -10 sec</td>
<td>★ &lt;1</td>
</tr>
<tr>
<td>93 International Blvd &amp; High St</td>
<td>-110 to -90 sec</td>
<td>-60 to -40 sec</td>
<td>+15 to +35 sec</td>
<td>0 to +20 sec</td>
<td>★ 1</td>
</tr>
<tr>
<td>99 International Blvd &amp; Hegenberger Expwy</td>
<td>+20 to +30 sec</td>
<td>★ 1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Notes:**
- NB = northbound, SB = southbound, EB = eastbound, WB = westbound.
- ★★ means that the driver is likely to consider a diversion route because the mainline route with BRT guideway is projected to be 30 or more seconds slower than the alternate route.
- ★ means that the driver will possibly consider a diversion route because the mainline route with BRT guideway is projected to be between 30 seconds slower and 30 seconds faster than the alternate route.
- Diversions per minute are for all possible diversion routes and reflect Year 2035 with LPA volumes.

The number of potential diversions shown in the table equals the total number of right-turning vehicles making the identified movement at the congested intersection, not the number of actual diversions. At most locations, particularly where the diversion is only ranked as “possible” (“★”), it is anticipated that only a portion of these vehicles will divert to the neighborhood streets.

At all seven locations where diversions are indicated to be likely (“★★”), two or fewer vehicles would potentially make the diversion per minute. These locations should be monitored upon project implementation to determine if traffic calming measures are warranted to lessen the effects associated with this diversion. At all other locations, while there may be an increase in traffic on several neighborhood streets, the increase would be marginal and would not substantially increase traffic on those streets.

With the DOSL Alternative, right-turn diversions resulting from the proposed project would only be anticipated to occur at intersections between downtown Oakland and San Leandro. This includes right-turn diversions that would occur to avoid delays at intersections #76, 79, 90, 93, 99, and 106, as specified in Table 3.2-11, above. At other intersections, the project is not anticipated to measurably increase neighborhood traffic due to right-turn diversions.
3.2.8.2 Changes to Local Circulation Patterns

For much of the proposed East Bay BRT alignment, buses operate in dedicated transit lanes in the median of Telegraph Avenue, International Boulevard, and East 14th Street. At all major intersections and some minor intersections, movements across the median bus lanes have openings through the intersections to allow left-turn movements from the alignment roadway to side-streets and left-turn and through movements from side-streets. To facilitate smooth traffic operations, these intersections will generally either have existing signals in place, or will have new signals installed.

At the remaining minor intersections, the median bus lanes will be continuous through the intersections. In these locations, left-turning and side-street traffic will not be able to go across the bus lanes, converting these intersections to right-in, right-out only operations – vehicles are permitted to make only right-turns.

These turning restrictions cause two types of traffic changes to the local circulation patterns:

- **U-Turn Movements.** This scenario assumes that blocked traffic from side streets will continue to use the same side street, but will instead turn right onto the main roadway and make a u-turn at the next open intersection. This scenario also assumes traffic from the main roadway desiring to turn left onto a restricted side street will proceed to the next open intersection and make a u-turn to return to the desired side street. This worst-case scenario was assumed for the traffic operations analysis presented earlier in this section.

- **Changes in Neighborhood Circulation to Access Main Roadway.** This scenario assumes that restricted traffic (left-turn and through movements) from side streets will drive via alternative neighborhood streets to the nearest street without access restrictions. This scenario also assumes traffic from the main roadway desiring to turn left onto a blocked side street will drive to the nearest intersection without the turning restriction.

These two scenarios illustrate two of the possible changes in local circulation caused by restricting minor intersections to right-in/ right-out only. Depending on prevailing traffic conditions or individual preference, motorists may use either method to access blocked side streets.

The intersection impact analysis presented earlier in this section includes U-turn movements. The added U-turns results in the higher vehicle trip volumes and higher turning movement volumes on the alignment roadway, representing worst-case scenario conditions for traffic operations on the BRT corridor. Increased congestion on the alignment, however, may result in
a potential increase in cut-through traffic on neighborhood streets. This section analyzes the potential for these changes in neighborhood circulation and access to the main roadway. ³

To quantify the changes to local circulation patterns associated with converting minor intersections to right-in, right-out only, an analysis was prepared for the BRT corridor from the Oakland/Berkeley border in the north to the intersection of East 14th Avenue and Stoakes Avenue in San Leandro in the south. It is within these boundaries of the corridor where bus-only lanes are proposed.

Each right-in/right-out restriction would affect between zero and 66 vehicles during the afternoon peak hour (2009 volumes). The biggest change would be caused by the prohibition of left-turn movements at the intersection of Telegraph Avenue & 49th Street, where 66 afternoon peak hour vehicles that currently turn from southbound Telegraph Avenue to eastbound 49th Street would be diverted. The alternate route would be to turn left from southbound Telegraph Avenue to eastbound 51st Street, where that left-turn movement is maintained, and then a right-turn to southbound Clarke Street to reach 49th Street. Alternatively, the shifted traffic could use southbound Webster Street or Shafter Avenue to reach 49th Street. For virtually all diversions, multiple routes could be utilized to reach the desired destination, somewhat diluting the effects of the neighborhood traffic circulation changes.

Most alternate streets will be utilized by less than one vehicle per minute in the afternoon peak hour (2009 volumes). A few routes will be particularly heavily utilized due to multiple turn restrictions at adjacent intersections. These routes are noted below:

- **Canning Street (accessed from southbound Telegraph Avenue via 59th Street)** –
  This corridor runs parallel to Telegraph Avenue and would be utilized to access the neighborhoods to the east of Telegraph Avenue between 60th Street and 57th Street. This would potentially include 80 afternoon peak hour vehicles (2009 volumes).

- **East 12th Street (accessed from northbound International Boulevard via 14th Avenue)** –
  This corridor runs parallel to International Boulevard and would be utilized to access the neighborhoods to the west of International Boulevard between 14th Avenue and 6th Avenue. This would potentially include 112 afternoon peak hour vehicles (2009 volumes).

- **East 15th Street (accessed from southbound International Boulevard via 5th Avenue)** –
  This corridor runs parallel to International Boulevard and would be utilized to access the neighborhoods to the east of International Boulevard between 5th Avenue and 14th Avenue.

³ See AC Transit East Bay BRT Final EIS/EIR Neighborhood Traffic Diversion and Change in Local Circulation Patterns Analyses, Memorandum, prepared by Cambridge Systematics, December 2011. The document is available from AC Transit. The analysis shows anticipated diversion routes for each affected intersection. It also indicates the number of vehicles that currently make the affected movement and would be required to make either the u-turn or access point diversion. The number of vehicles shown is for the 2009 afternoon peak hour. Because the affected intersections are generally local streets, they are not included in the regional travel demand forecast model and future year projections cannot be obtained.
Avenue. This would potentially include 144 afternoon peak hour vehicles (2009 volumes).

- **East 15th Street (accessed from southbound International Boulevard via 22nd Avenue)** – This corridor runs parallel to International Boulevard and would be utilized to access the neighborhoods to the east of International Boulevard between 22nd Avenue and 25th Avenue. This would potentially include 82 afternoon peak hour vehicles (2009 volumes).

- **East 16th Street (access to southbound International Boulevard via 27th Avenue)** – This corridor runs parallel to International Boulevard and would be utilized to access International Boulevard from the neighborhoods to the east between 23rd Avenue and 27th Avenue. This would potentially include 82 afternoon peak hour vehicles (2009 volumes).

- **Marin Way (accessed from southbound International Boulevard via 16th Avenue)** – This corridor runs parallel to International Boulevard and would be utilized to access the neighborhoods to the east of International Boulevard between 16th Avenue and 21st Avenue. This would potentially include 88 afternoon peak hour vehicles (2009 volumes).

- **Walnut Street (accessed from southbound International Boulevard via 100th Avenue)** – This corridor runs parallel to International Boulevard and would be utilized to access the neighborhoods to the east of International Boulevard between 100th Avenue and 103rd Avenue. This would potentially include 79 afternoon peak hour vehicles (2009 volumes).

All other alternate streets are anticipated to be utilized by approximately one vehicle per minute or fewer (2009 volumes). The detour routes indicated above with more than one vehicle per minute anticipated (2009 volumes) should be monitored upon project implementation to determine if traffic calming measures are warranted to lessen the effects associated with this local circulation change. At all other locations, while there would be an increase in traffic on several neighborhood streets, the increase would be marginal and would not substantially increase traffic on those streets.

With the DOSL Alternative, side-street access changes in local circulation patterns would only occur between downtown Oakland and San Leandro. The intersection geometrics along Telegraph Avenue would not be modified, therefore circulation patterns would not change as a result of implementation of the DOSL Alternative. The same neighborhood traffic diversions would occur as identified above for the LPA along International Boulevard and East 14th Street with the DOSL Alternative.

### 3.2.8.3 Proposed Policy for Neighborhood Traffic Management

To address potential traffic increases on local streets resulting from the implementation of the East Bay BRT project, AC Transit commits to fund the implementation of a neighborhood traffic management program. The program will evaluate neighborhood streets potentially used as alternate routes by motorists. The affected cities along the proposed corridor will then determine suitable solutions. This program may include monitoring and the development of criteria for evaluating neighborhood management actions such as installation of traffic calming devices.
The traffic monitoring program will be developed together with the affected cities. It will likely include collecting traffic counts and traffic speed data on selected local streets before and after the implementation of BRT. AC Transit will provide necessary data to the cities to determine the appropriate locations and times for data collection. The places could include those identified in the FEIS/R as well as other locations.

AC Transit commits to pay for planning (including addressing secondary impacts), design, and installation of devices to either reduce traffic volumes or reduce traffic speeds on local streets should they be adversely affected by the BRT project. The cities will establish criteria for when a local street is considered to be affected and when action is warranted. Possible criteria include traffic volume and speeds; number of collisions; and proximity to schools, senior centers, libraries, hospitals, priority bicycle corridors, etc. The cities may establish a ranking procedure and implementation schedule using the aforementioned criteria.

The neighborhood traffic management program will include data collection prior to construction, followed by post construction data collection and planning and be completed within one year after opening the BRT system. Design and implementation will then occur over the next six months. In addition, AC Transit will contribute to a second fund to address miscellaneous neighborhood traffic management issues that may arise over the next 10 years. This second fund will be used for design and installation only and is intended for use only if the cities, through their neighborhood programs, identify additional traffic management needs that can be attributed to the BRT system. The level of funding specified will be discussed and negotiated prior to project approval.

**3.2.9 Avoidance, Minimization, and/or Mitigation Measures**

This section discusses mitigation measures to avoid or reduce permanent traffic impacts that will occur as a result of the project. Mitigation is undertaken when impacts cannot be avoided through project redesign.

**3.2.9.1 Mitigation of Intersection Impacts Under the Build Alternatives**

This section proposes measures to mitigate impacts to on- and off-alignment intersections as a result of the Build Alternatives. Only impacts not within accepted local standards, as described in Section 3.2, Significant Criteria, are subject to mitigation.

**Transit First Policy and Guidelines Directing the Development of Traffic Mitigation Measure**

The City of Oakland has implemented a Transit-First Policy, which is demonstrated in several policies incorporated into the City’s Land Use and Transportation Element (LUTE) of its 1998 General Plan. Policy T3.6 of the LUTE states that on designated “transit streets”, which include both Telegraph Avenue and International Boulevard, “The City should encourage and promote use of public transit in Oakland by expediting the movement of and access to transit vehicles”. Policy T3.7 further discusses the balance between various modes utilizing the same right-of-way corridor: “the mode that has the potential to provide the greatest mobility and access for people,
rather than vehicles, giving due consideration to the environmental, public safety, economic development, health, and social equity impacts” should be favored.

In this light, the vehicular impacts resulting from the improvement of transit service within the Telegraph Avenue and International Boulevard corridors are sought to be mitigated through the proposal of improvement measures, but only where those mitigations would not reduce accessibility and circulation for other modes of travel and where they would not impact existing businesses and residences.

Recommended mitigations have been limited to measures that are feasible and do not generate substantial adverse impacts as a consequence of their implementation. For a developed urban area, guidelines for practicable mitigations were set as follows:

- Implement operational improvements, such as improved signal timing and phasing, in preference to physical improvements.
- Minimize right-of-way requirements and avoid displacement of residences and businesses. Re-striping traffic lanes and other geometric improvements within existing curb-to-curb street cross sections would be considered before roadway widening.
- Avoid measures that would adversely affect the movement and safety of pedestrians and other non-motorized travel, and possibly diminish the pedestrian-, bicycle-, and transit-friendly features of the corridor or that would limit the ability to enhance those features.

In accordance with these guidelines, mitigation measures that would (1) require the acquisition of considerable right-of-way and/or the displacement of existing active businesses or residences, or (2) result in unsafe or undesirable conditions for other modes of travel were not considered feasible.

### 3.2.9.2 METHODOLOGY FOR IDENTIFICATION OF FEASIBLE MITIGATION

Mitigations have been developed in consultation with the staff at each of the jurisdictional cities and Caltrans. Initially, mitigations that reduce impacts to below the level of significance were developed. These were reviewed with city staff (only in Oakland were mitigations determined substantial enough to warrant discussion with city staff) and were adjusted to meet the reasonableness guidelines for practicable mitigations. The refined mitigations were analyzed for 2015 and 2035 LPA conditions to understand their effect on intersection LOS, including their ability to fully or partially address significant impacts. The analysis results were also reviewed with city staff. Based on discussions with these agencies, feasible improvements are proposed below that limit the impact to other modes and local businesses and residences, while reducing or eliminating the vehicular traffic impact resulting from the Build Alternatives. At some intersections, noted below, the proposed mitigation is not sufficient to fully mitigate the project’s impact. Further improvements at these locations are not considered feasible without significant secondary impacts to other modes or adjacent land uses. This approach is consistent with Oakland’s Transit-First Policy.

Mitigation measures assume implementation of the roadway modifications incorporated into the Build Alternatives as shown in Appendix A and would modify the intersection layout assumed
under the Build Alternatives as described. Some of the proposed mitigations include adding travel lanes to the effected intersection. This is typically accomplished by removing parking, but could include 1) narrowing travel lanes (but never to below standard), 2) adjusting bicycle facilities, 3) adjusting pedestrian facilities, or 4) narrowing medians. The secondary impacts of these changes are described for each mitigation measure in Section 3.2.9.3 and 3.2.9.5.

Mitigations were developed based on forecast 2035 LPA conditions. In some instances, the accepted mitigations for both 2035 and 2015 will not fully mitigate impacts to below the level of significance. At other locations, the proposed mitigations will reduce impacts in 2015 to below the level of significance but not in 2035. These situations are also noted in Sections 3.2.9.3 and 3.2.9.5.

At locations that are impacted under 2035 LPA conditions but not in 2015, the mitigations proposed would not need to be implemented prior to 2015. However, AC commits to their implementation prior to 2035, assuming traffic conditions worsen as projected. Monitoring of future conditions is proposed to provide relevant information on the need for and likely benefits of proposed mitigations to be implemented post-2015.

3.2.9.3 Mitigation for Year 2015 Intersection Impacts with LPA

Mitigation of Intersection Impacts: City of Berkeley

The following mitigation measures partially or fully mitigate the significant vehicular traffic impacts at the identified intersections in one or more peak hour:

- Alcatraz Avenue & College Avenue (Intersection #27: off-alignment, afternoon peak hour impact only)
  - Proposed Mitigation: Restripe eastbound approach to add an exclusive right-turn lane. Add a new northbound left-turn lane. Coordinate signal with Claremont Avenue & College Avenue and optimize cycle length, timing splits and timing offset.
  - Resulting LOS: Implementation of the proposed mitigation improves operations from LOS F to LOS C and the project impact is reduced to less than significant.
  - Secondary Impacts: Loss of three parking spaces along College Avenue and loss of two parking spaces along Alcatraz Avenue.

- Alcatraz Avenue & Adeline Street (Intersection #28: off-alignment, both peak hours impacted)
  - Proposed Mitigation: Coordinate signal with Ashby Avenue & Adeline Street and Ashby Avenue & Shattuck Avenue and optimize signal cycle length, timing splits and timing offset. Requires modifying phasing at Ashby Avenue & Adeline Street and upgrading signal controller at Ashby Avenue & Shattuck Avenue. Optimize signal timing splits and offset. Restripe westbound approach to add an exclusive left-turn lane. Prohibit eastbound left-turns. Prohibit pedestrian
crossing of Adeline Street on the south side of the intersection. Extend the northbound and southbound left-turn pockets.

- **Resulting LOS:** Implementation of the proposed mitigation improves operations from LOS E to LOS D in morning peak hour and from LOS F to LOS E in the afternoon peak hour. This reflects a lower level of delay in both peak hours than with the No-Build Alternative and the project impact is reduced to less than significant.

- **Secondary Impacts:** Loss of three parking spaces along Alcatraz Avenue. Loss of 440 linear feet of landscape median. Existing eastbound left-turns will be forced to shift to other intersections. No secondary intersection impact is forecast to result. Potential for increase in pedestrian walk distances due to elimination of pedestrian crossing, affecting 20 pedestrians in morning peak-hour and 24 pedestrians in afternoon peak-hour.

**Mitigation of Intersection Impacts: City of Oakland**

The following mitigations will partially or fully mitigate the significant vehicular traffic impact at the identified intersections in one or more peak hour:

- **Telegraph Avenue & Alcatraz Avenue (Intersection #29: on-alignment, both peak hours impacted)**
  
  - **Proposed Mitigation:** Restripe northbound approach to convert existing exclusive left-turn lane to a shared left-turn/through through lane. Provide a second northbound receiving lane that extends approximately 150 feet north of the intersection. Optimize signal cycle length, timing splits and timing offset and modify intersection phasing. Remove southbound u-turn. Restripe eastbound and westbound approaches to add exclusive right-turn lanes.

  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS D in morning peak hour and from LOS F to LOS E in the afternoon peak hour. While the proposed improvement would reduce the project impact to less than significant for the morning peak hour, in the afternoon peak hour the increase in delay from the No-Build Alternative exceeds significance thresholds. In order to fully mitigate the project impact, several additional improvements would be required. These improves include a new exclusive southbound right-turn lane, a second exclusive southbound left-turn lane, a new exclusive northbound right-turn lane, and an eastbound right-turn overlap phase. These improvements require the acquisition of right-of-way and the elimination of some bike facilities. Therefore, these mitigations are considered infeasible. A significant impact remains at the intersection; no feasible mitigation strategies are available to reduce the impact to less than significant for the afternoon peak hour.

  - **Secondary Impacts:** Loss of two parking spaces along Telegraph Avenue and loss of five parking spaces on Alcatraz Avenue. Existing southbound u-turns will be forced to shift to other intersections. No secondary intersection impact is forecast
to result. Northbound bike lane converted to sharrow on Telegraph Avenue between Alcatraz Avenue and 66th Street. Southbound bike lane converted to sharrow on Telegraph Avenue between 65th Street and 66th Street near the BRT station.

- Telegraph Avenue & 56th Street (Intersection #32: on-alignment, afternoon peak hour impact only)
  - Proposed Mitigation: Add an exclusive northbound right-turn lane. Optimize signal cycle length, timing splits and timing offset.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS F to LOS C and the project impact is reduced to less than significant.
  - Secondary Impacts: Loss of five parking spaces along Telegraph Avenue.

- Telegraph Avenue & 55th Street (Intersection #33: on-alignment, both peak hours impacted)
  - Proposed Mitigation: Re-stripe eastbound approach to add an exclusive left-turn lane. Optimize signal cycle length, timing splits and timing offset.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS F to LOS D in the morning peak hour and from LOS E to LOS D in the afternoon peak hour. Thus, with mitigation, the project impact is reduced to less than significant.
  - Secondary Impacts: Loss of four parking spaces along 55th Street.

- Martin Luther King Jr. Way & 55th Street (Intersection #34: off-alignment, afternoon peak hour impact only)
  - Proposed Mitigation: Add new exclusive right-turn lanes on both eastbound and westbound approaches.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS E to LOS C and the project impact is reduced to less than significant.
  - Secondary Impacts: None.

- Martin Luther King Jr. Way & 52nd Street (Intersection #36: off-alignment, afternoon peak hour impact only)
  - Proposed Mitigation: Optimize signal timing splits.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS E to LOS D and the project impact is reduced to less than significant.
  - Secondary Impacts: None.
• Shattuck Avenue & 52nd Street (Intersection #37: off-alignment, morning peak hour impact only)
  o **Proposed Mitigation:** Optimize signal cycle length, timing splits and timing offset.
  o **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS D and the *project impact is reduced to less than significant.*
  o **Secondary Impacts:** None.

• Telegraph Avenue & 51st Street (Intersection #39: on-alignment, both peak hours impacted)
  o **Proposed Mitigation:** Add Telegraph Avenue & 55th Street and Shattuck Avenue & 52nd Street to the coordination zone. Optimize signal cycle length, timing splits and timing offset. Construct an additional southbound left-turn lane. Eliminate the left-turn lane on the northbound approach and re-direct this movement via Shattuck Avenue & 52nd Street. Restripe northbound approach to replace the left-turn lane with a through lane and provide a second northbound receiving lane that extends approximately 80 feet north of Telegraph Avenue & Claremont Avenue.
  o **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS D in the morning peak hour and from LOS F to LOS D in the afternoon peak hour. Thus, with mitigation, the *project impact is reduced to less than significant.*
  o **Secondary Impacts:** Loss of 11 parking spaces on Telegraph Avenue. Sidewalk on west side of Telegraph Avenue between 51st Street and 52nd Street reduced from 11 feet to 10 feet. Traffic island at southeast corner of Telegraph Avenue & Claremont Avenue reduced in width by six feet. Bike lanes on Telegraph Avenue converted to sharrows. Northbound left-turn movements will be diverted to Shattuck Avenue & 52nd Street, but will not cause a secondary intersection impact.

• Telegraph Avenue & West MacArthur Boulevard (Intersection #50: on-alignment, afternoon peak hour impact only)
  o **Proposed Mitigation:** Restripe westbound approach to convert existing shared through/right-turn lane to an exclusive right-turn lane. Optimize signal cycle length, timing splits and timing offset.
  o **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS D and the *project impact is reduced to less than significant.*
  o **Secondary Impacts:** None.
• East 12th Street (southbound) & 14th Avenue (Intersection #78: on-alignment, afternoon peak hour impact only)
  o Proposed Mitigation: Coordinate signals at East 12th Street (SB) & 14th Avenue, East 12th Street (NB) & 14th Avenue, and International Boulevard & 14th Avenue with East 12th Street and International Boulevard through Eastlake. Optimize signal cycle length, timing splits, and timing offsets.
  o Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS E to LOS C and the project impact is reduced to less than significant.
  o Secondary Impacts: None.

• International Boulevard & 29th Avenue (Intersection #83: on-alignment, morning peak hour impact only)
  o Proposed Mitigation: Coordinate signals on International Boulevard between 15th Street and 29th Street and optimize signal cycle length, timing splits, and timing offsets.
  o Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS F to LOS D and the project impact is reduced to less than significant.
  o Secondary Impacts: None.

• Impacts to intersections in the Fruitvale area and along International Boulevard between Fruitvale and 38th Avenue will be mitigated in part with the provision of additional capacity on parallel arterials. These improvements serve to enhance San Leandro Street as an alternative to International Boulevard and to improve traffic flow in the Fruitvale area.
  o Proposed Mitigation: Additional turn pockets will be provided at a number of intersections along the portion of San Leandro Street between Fruitvale Avenue and 50th Avenue. In addition, turn pockets will be added at the intersection of East 12th Street and 29th Avenue. The intersections of East 10th Street/San Leandro Street with Fruitvale Avenue and Derby Avenue with East 12th Street will be re-constructed to provide additional capacity. East 10th Street and San Leandro Street will be realigned at Fruitvale Avenue to provide a through connection at the intersection. Signals will be installed at the closely spaced intersections of Derby Avenue and northbound and southbound East 12th Street. East 10th Street and Derby Avenue (west of East 12th Street) will be re-striped to improve vehicular flow. Signals on San Leandro Street from 37th Street to 50th Street will be coordinated.
  o Resulting LOS: See the subsequent intersection-by-intersection discussion.
Secondary Impacts: This set of improvements modifies roadway geometrics at a number locations and results in changes to local travel patterns. Accordingly, it results in a number of secondary impacts, listed below:

- Right-of-way acquisition, totaling 6,090 square feet, along Derby Avenue, west of East 12th Street; 10th Street, north of Fruitvale Avenue; and San Leandro Street, between Fruitvale Avenue and 33rd Avenue.
- Modification of the pedestrian facility along the east side of San Leandro Street approaching High Street from a ten foot wide unpaved pathway to a five foot wide paved sidewalk with curb.
- Reduction in the sidewalk on the west side of San Leandro Street between Fruitvale Avenue and 33rd Avenue from twelve feet to eight feet.
- Planned East 12th Street Bikeway converted from a bike lane to sharrow for approximately 245 feet on southbound East 12th Street approaching Derby Avenue.
- The loss of a number of parking spaces throughout the improvement area, listed below:
  - East 12th Street & 29th Avenue: Loss of two spaces along East 12th Street and six spaces along 29th Avenue;
  - 13th Street & Derby Avenue: Loss of one space along Derby Avenue;
  - Northbound East 12th Street & Derby Avenue: Loss of 14 spaces along East 12th Street and three spaces along Derby Avenue;
  - Southbound East 12th Street & Derby Avenue: Loss of seven spaces along East 12th Street and two spaces along Derby Avenue;
  - East 10th Street & Derby Avenue: Loss of seven spaces along East 10th Street
  - East 10th Street & Fruitvale Avenue: Loss of 12 spaces along East 10th Street
  - Northbound East 12th Street & Fruitvale Avenue: Loss of two spaces along East 12th Street;
  - International Boulevard & Fruitvale Avenue: Loss of two spaces along Fruitvale Avenue;
  - San Leandro Street & Fruitvale Avenue: Loss of 13 spaces on San Leandro Street;
  - San Leandro Street & 35th Avenue: Loss of four spaces along San Leandro Street;
- San Leandro Street & 37th Avenue: Loss of three spaces along San Leandro Street;
- San Leandro Street & 39th Avenue: Loss of three spaces along San Leandro Street;
- San Leandro Street & High Street: Loss of five spaces along San Leandro Street;
- San Leandro Street & 45th Avenue: Loss of four spaces along San Leandro Street;
- San Leandro Street & 47th Avenue: Loss of six spaces along San Leandro Street; and
- San Leandro Street & 50th Avenue: Loss of four spaces along San Leandro Street and loss of three spaces along 50th Avenue.

- East 12th Street & Fruitvale Avenue (Intersection #84: off-alignment, both peak hours impacted)
  - Proposed Mitigation: In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, restripe the eastbound approach to convert an existing through/left-turn lane to a second left-turn only lane. Restripe the northbound approach to convert an existing exclusive right-turn lane to a shared through/right-turn lane. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS E to LOS C in the morning peak hour and from LOS E to LOS D in the afternoon peak hour. Thus, with mitigation, the project impact is reduced to less than significant.
  - Secondary Impacts: None.

- International Boulevard & 38th Street (Intersection #90: on-alignment, afternoon peak hour impact only)
  - Proposed Mitigation: In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, coordinate signals on International Boulevard between 31st and 46th Street and optimize signal cycle length, timing splits and offsets for all signals in the signal coordination zone.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS E to LOS C and the project impact is reduced to less than significant.
  - Secondary Impacts: None.

- International Boulevard & 42nd Street (Intersection #91: on-alignment, both peak hours impacted)
o **Proposed Mitigation:** Maintain two northbound and two southbound through lanes on International Boulevard between 41\textsuperscript{st} Avenue and 44\textsuperscript{th} Avenue. Over this segment, the southbound BRT would operate in mixed flow. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.

  
  o **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS D in the morning peak hour and from LOS E to LOS C in the afternoon peak hour. Thus, with mitigation, the *project impact is reduced to less than significant.*

  
  o **Secondary Impacts:** Loss of six parking spaces along International Boulevard between 41\textsuperscript{st} Avenue and High Street and removal of the unsignalized crosswalk at 41\textsuperscript{st} Avenue.

  
  • International Boulevard & Havenscourt Boulevard (Intersection #979: on-alignment, afternoon peak hour impact only)

  
  o **Proposed Mitigation:** Maintain two northbound and two southbound through lanes on International Boulevard between 65\textsuperscript{th} Avenue and 67\textsuperscript{th} Avenue. Between 65\textsuperscript{th} Avenue and 67\textsuperscript{th} Avenue, the southbound BRT would operate in mixed flow. Between 66\textsuperscript{th} Avenue and 67\textsuperscript{th} Avenue, the northbound BRT would operate in mixed flow. Provide enhanced pedestrian crossings and intersection controls at International Boulevard and 65\textsuperscript{th} Avenue and International Boulevard and 67\textsuperscript{th} Avenue where buses transition to and from dedicated lanes. At the intersection of International Boulevard & Havenscourt Boulevard, provide protected left-turn phasing on all approaches. Remove northbound and southbound u-turns and prohibit right turns on red. Coordinate and optimize International Boulevard cycle lengths between 66\textsuperscript{th} Street and 78\textsuperscript{th} Street.

  
  o **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS C and the *project impact is reduced to less than significant.*

  
  o **Secondary Impacts:** Loss of five parking spaces along International Boulevard. BRT median platform relocated from 66\textsuperscript{th} Avenue to 65\textsuperscript{th} Avenue.

  
  • International Boulevard & Hegenberger Expressway (Intersection #99: on-alignment, afternoon peak hour impact only)

  
  o **Proposed Mitigation:** Maintain two northbound and southbound through lanes on International Boulevard between 72\textsuperscript{nd} Avenue and 74\textsuperscript{th} Avenue. Restripe the westbound approach to add an exclusive right-turn lane. Optimize signal timing splits and timing offsets for all signals on International Boulevard between 66\textsuperscript{th} Avenue and 78\textsuperscript{th} Avenue.

  
  o **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS D and the *project impact is reduced to less than significant.*
Secondary Impacts: Loss of 12 parking spaces along International Boulevard. Slight reduction in the width of the sidewalk on the far side corner of northbound International Boulevard at 72nd Avenue. BRT median platform shifted north from 72nd Avenue to between 71st Avenue and 72nd Avenue. Removal of the unsignalized crosswalk across International Boulevard at 75th Avenue.

- International Boulevard & 98th Avenue (Intersection #106: on-alignment, both peak hours impacted)
  - Proposed Mitigation: Maintain two northbound through lanes on International Boulevard from 99th Avenue to 97th Avenue and construct an additional southbound left-turn lane on International Boulevard at 98th Avenue. Optimize signal cycle length, timing splits and timing offset.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS E to LOS D in the morning peak hour and from LOS F to LOS D in the afternoon peak hour. Thus, with mitigation, the project impact is reduced to less than significant.
  - Secondary Impacts: Loss of 12 parking spaces along International Boulevard. BRT median platform relocated from 98th Avenue to 99th Avenue. Crosswalk at 97th Avenue removed and 200 linear feet of landscaped median loss on International Boulevard.

Intersection delay and level of service prior to and with the mitigation for Year 2015 with LPA impacts is presented in Table 3.2-12 below:
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Table 3.2-12: Intersection Levels of Service Before and After Mitigation, Year 2015 LPA
### Table 3.2-12: Intersection Levels of Service Before and After Mitigation, Year 2015 LPA

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Note: Indicated delay for signalized and all-way stop-controlled intersections is average for all movements. Indicated delay for side-street stop-controlled intersections is for worst movement.
3.2.9.4 Mitigation for Year 2015 Intersection Impacts with DOSL Alternative

The DOSL Alternative does not result in significant vehicular impacts at intersections north of downtown Oakland. Therefore, the mitigation measures identified at those intersections as associated with the LPA would not be required. The required mitigation measures from downtown Oakland to San Leandro are identical as those identified under the LPA. To further clarify, the following mitigation measures are proposed with the DOSL Alternative to partially or fully mitigate significant vehicular impacts at 8 locations:

- **East 12th Street (southbound) & 14th Avenue (Intersection #78):** Coordinate signals at East 12th Street (SB) & 14th Avenue, East 12th Street (NB) & 14th Avenue, and International Boulevard & 14th Avenue, and International Boulevard & 14th Avenue with East 12th Street and International Boulevard through Eastlake. Optimize signal cycle length, timing splits, and timing offsets.

- **International Boulevard & 29th Avenue (Intersection #83):** Coordinate signals on International Boulevard between 15th Street and 29th Street and optimize signal cycle length, timing splits, and timing offsets.

- **Impacts to intersections in the Fruitvale area and along International Boulevard between Fruitvale and 38th Avenue will be mitigated in part with the provision of additional capacity on parallel arterials.** These improvements serve to enhance San Leandro Street as an alternative to International Boulevard and to improve traffic flow in the Fruitvale area. Additional turn pockets will be provided at a number of intersections along the portion of San Leandro Street between Fruitvale Avenue and 50th Avenue. In addition, turn pockets will be added at the intersection of East 12th Street and 29th Avenue. The intersections of East 10th Street/San Leandro Street with Fruitvale Avenue and Derby Avenue with East 12th Street will be re-constructed to provide additional capacity. East 10th Street and San Leandro Street will be realigned at Fruitvale Avenue to provide a through connection at the intersection. Signals will be installed at the closely spaced intersections of Derby Avenue and northbound and southbound East 12th Street. East 10th Street and Derby Avenue (west of East 12th Street) will be re-striped to improve vehicular flow. Signals on San Leandro Street from 37th Street to 50th Street will be coordinated.

- **East 12th Street & Fruitvale Avenue (Intersection #84):** In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, restripe the eastbound approach to convert an existing through/left-turn lane to a second left-turn only lane. Restripe the northbound approach to convert an existing exclusive left-turn lane to a through lane. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.

- **International Boulevard & 38th Street (Intersection #90):** In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, coordinate signals on International Boulevard between 31st and 46th Street and optimize signal cycle length, timing splits and offsets for all signals in the signal coordination zone.

- **International Boulevard & 42nd Street (Intersection #91):** Maintain two northbound and two southbound through lanes on International Boulevard between 41th Avenue and 44th Avenue. Over this segment, the southbound BRT would operate in mixed flow. Optimize
signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.

- **International Boulevard & Havenscourt Boulevard (Intersection #979):** Maintain two northbound and two southbound through lanes on International Boulevard between 65\(^{th}\) Avenue and 67\(^{th}\) Avenue. Between 65\(^{th}\) Avenue and 67\(^{th}\) Avenue, the southbound BRT would operate in mixed flow. Between 66\(^{th}\) Avenue and 67\(^{th}\) Avenue, the northbound BRT would operate in mixed flow. Provide enhanced pedestrian crossings and intersection controls at International Boulevard and 65\(^{th}\) Avenue and International Boulevard and 67\(^{th}\) Avenue where buses transition to and from dedicated lanes. At the intersection of International Boulevard & Havenscourt Boulevard, provide protected left-turn phasing on all approaches to the intersection. Remove northbound and southbound u-turns and prohibit right turns on red. Coordinate and optimize International Boulevard cycle lengths between 66\(^{th}\) Street and 78\(^{th}\) Street.

- **International Boulevard & Hegenberger Expressway (Intersection #99):** Maintain two northbound and southbound through lanes on International Boulevard between 72\(^{nd}\) Avenue and 74\(^{th}\) Avenue. Restripe the westbound approach to add an exclusive right-turn lane. Optimize signal timing splits and timing offsets for all signals on International Boulevard between 66\(^{th}\) Avenue and 78\(^{th}\) Avenue.

- **International Boulevard & 98\(^{th}\) Avenue (Intersection #106):** Maintain two northbound through lanes on International Boulevard from 99\(^{th}\) Avenue to 97\(^{th}\) Avenue and construct an additional southbound left-turn lane on International Boulevard at 98\(^{th}\) Avenue. Optimize signal cycle length, timing splits and timing offset.

### 3.2.9.5 Mitigation for Year 2035 Intersection Impacts with LPA

**Mitigation of Intersection Impacts: City of Berkeley**

The following mitigations will partially or fully mitigate the significant vehicular traffic impacts at the identified intersections in one or more peak hour:

- **Derby Street & Warring Street (Intersection #18: off-alignment, both peak hours impacted)**
  - *Proposed Mitigation:* Construct new exclusive right-turn lane with yield control on westbound approach
  - *Resulting LOS:* Implementation of the proposed mitigation measure improves operations from LOS F to LOS B in the morning peak hour and from LOS F to LOS D in the afternoon peak hour. Thus, with mitigation, the project impact is reduced to less than significant.
  - *Secondary Impacts:* Loss of five parking spaces along Derby Street.

- **Ashby Avenue & Shattuck Avenue (Intersection #21: off-alignment, morning peak hour impact only)**
- **Proposed Mitigation:** Coordinate signal with Ashby Avenue & Adeline Street and Alcatraz Avenue & Adeline Street and optimize signal cycle length, timing and splits. Requires upgrading the signal to actuated-coordinated.

- **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS D and the **project impact is reduced to less than significant.**

- **Secondary Impacts:** None.

- **Ashby Avenue & College Avenue (Intersection #23: off-alignment, afternoon peak hour impact only)**
  - **Proposed Mitigation:** Optimize signal timing splits.
  - **Resulting LOS:** With implementation of the proposed mitigation measure, the intersection continues to operate at LOS E, but the increase in delay compared to the No-Build Alternative does not meet significance thresholds, and the **project impact is reduced to less than significant.**
  - **Secondary Impacts:** None.

- **Ashby Avenue & Claremont Avenue (Intersection #24: off-alignment, afternoon peak hour impact only)**
  - **Proposed Mitigation:** Optimize signal cycle length, timing splits and timing offset.
  - **Resulting LOS:** Implementation of the proposed mitigation measure reduces delay but does not improve level of service. In order to fully mitigate the project impact, a number of additional improvements would be required. New eastbound and westbound exclusive left-turn and right-turn lanes and modified signal phasing to accommodate protected left-turns and right-turn overlaps would be required. A **significant impact remains at the intersection;** no feasible mitigation strategies are available to reduce the impact to less than significant for the afternoon peak hour.
  - **Secondary Impacts:** None.

- **Alcatraz Avenue & College Avenue (Intersection #27: off-alignment, both peak hours impacted)**
  - **Proposed Mitigation:** Restripe eastbound approach to add an exclusive right-turn lane. Add a new northbound left-turn lane. Coordinate signal with Claremont Avenue & College Avenue and optimize cycle length, timing splits and timing offset. This mitigation is also proposed to address 2015 intersection impacts.
  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS D in both peak hours and the **project impact is reduced to less than significant.**
• **Secondary Impacts:** Loss of three parking spaces along College Avenue and loss of two parking spaces along Alcatraz Avenue.

- Alcatraz Avenue & Adeline Street (Intersection #28: off-alignment, both peak hours impacted)
  
  • **Proposed Mitigation:** Coordinate signal with Ashby Avenue & Adeline Street and Ashby Avenue & Shattuck Avenue and optimize signal cycle length, timing splits and timing offset. Requires modifying phasing at Ashby Avenue & Adeline Street and upgrading signal at Ashby Avenue & Shattuck Avenue. Optimize signal timing splits and offsets. Restripe westbound approach to add an exclusive left-turn lane. Prohibit eastbound left-turns. Prohibit pedestrian crossing of Adeline Street on the south side of the intersection. Extend the northbound and southbound left-turn pockets. This mitigation is also proposed to address 2015 intersection impacts.

  • **Resulting LOS:** With implementation of the proposed mitigation measure, the intersection continues to operate at LOS F in both peak hours, but with less delay as in the No-Build Alternative, and the **project impact is reduced to less than significant.**

  • **Secondary Impacts:** Loss of three parking spaces along Alcatraz Avenue. Loss of 440 linear feet of landscape median. Existing eastbound left-turns will be forced to shift to other intersections. No secondary intersection impact is forecast to result from this shift. Potential for increase in pedestrian walk distances due to elimination of pedestrian crossing, affecting 20 pedestrians in morning peak-hour and 24 pedestrians in afternoon peak-hour.

**Mitigation of Intersection Impacts: City of Oakland**

The following mitigations will partially or fully mitigate the significant vehicular traffic impact at the identified intersections in one or more peak hour:

- Telegraph Avenue & Alcatraz Avenue (Intersection #29: on-alignment, both peak hours impacted)

  • **Proposed Mitigation:** Restripe northbound approach to convert existing exclusive left-turn lane to a shared left-turn/through lane. Provide a second northbound receiving lane that extends approximately 150 feet north of the intersection. Optimize signal cycle length, timing splits and timing offset and modify intersection phasing. Remove southbound u-turn. Restripe eastbound and westbound approaches to add exclusive right-turn lanes. This mitigation is also proposed to address 2015 intersection impacts.

  • **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS E in the morning peak hour and, while reducing delay, does not improve level of service in the afternoon peak hour. In order to fully mitigate the project impact, several additional improvements would be required. These improves include a new exclusive southbound right-turn lane, a
second exclusive southbound left-turn lane, a new exclusive northbound right-turn lane, and an eastbound right-turn overlap phase. These improvements require the acquisition of right-of-way and the elimination of some bike facilities. Therefore, these mitigations are considered infeasible. A significant impact remains at the intersection; no feasible mitigation strategies are available to reduce the impact to less than significant for either peak hour.

- **Secondary Impacts:** Loss of two parking spaces along Telegraph Avenue and loss of five parking spaces along Alcatraz Avenue. Existing southbound u-turns will be forced to shift to other intersections. No secondary intersection impact is forecast to result. Northbound bike lane converted to sharrow on Telegraph Avenue between Alcatraz Avenue and 66th Street. Southbound bike lane converted to sharrow on Telegraph Avenue between 65th Street and 66th Street near the BRT station.

- **Claremont Avenue & 62nd Street (Intersection #30: on-alignment, afternoon peak hour impact only)**
  - **Proposed Mitigation:** Construct exclusive eastbound and westbound left-turn lanes on Claremont Avenue. Re-stripe southbound approach on College Avenue to add an exclusive right-turn lane. Coordinate signal with Alcatraz Avenue & College Avenue and optimize signal cycle length, timing splits and timing offset.
  - **Resulting LOS:** The proposed mitigation measure improves operations from LOS F to LOS D and the project impact is reduced to less than significant.
  - **Secondary Impacts:** Loss of 15 spaces along 62nd Street.

- **Telegraph Avenue & 56th Street (Intersection #32: on-alignment, afternoon peak hour impact only)**
  - **Proposed Mitigation:** Add an exclusive northbound right-turn lane. Optimize signal cycle length, timing splits and timing offset. This mitigation is also proposed to address 2015 intersection impacts.
  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS C and the project impact is reduced to less than significant.
  - **Secondary Impacts:** Loss of five parking spaces on Telegraph Avenue.

- **Telegraph Avenue & 55th Street (Intersection #33: on-alignment, both peak hours impacted)**
  - **Proposed Mitigation:** Re-stripe eastbound approach to add an exclusive left-turn lane. Optimize signal cycle length, timing splits and timing offset. This mitigation is also proposed to address 2015 intersection impacts.
  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS E in the morning peak hour and, while reducing
delay, does not improve level of service in the afternoon peak hour. In order to fully mitigate the project impact in both peak hours, an exclusive southbound right-turn lane would need to be constructed. This improvement requires the acquisition of right-of-way, and is therefore considered infeasible. A significant impact remains at the intersection; no feasible mitigation strategies are available to reduce the impact to less than significant for either peak hour.

- Secondary Impacts: Loss of four parking spaces along 55th Street.

- Martin Luther King Jr. Way & 55th Street (Intersection #34: off-alignment, both peak hours impacted)
  - Proposed Mitigation: Add new exclusive right-turn lanes on both eastbound and westbound approaches. This mitigation is also proposed to address 2015 intersection impacts.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS E to LOS D in the morning peak hour and from LOS F to LOS D in the afternoon peak hour. Thus, with mitigation, the project impact is reduced to less than significant.
  - Secondary Impacts: None.

- Martin Luther King Jr. Way & 52nd Street (Intersection #36: off-alignment, afternoon peak hour impact only)
  - Proposed Mitigation: Optimize signal timing splits. This mitigation is also proposed to address 2015 intersection impacts.
  - Resulting LOS: With implementation of the proposed mitigation measure, the intersection continues to operate at LOS E, but with less delay as in the No-Build Alternative, and the project impact is reduced to less than significant.
  - Secondary Impacts: None.

- Telegraph Avenue & 51st Street (Intersection #39: on-alignment, both peak hours impacted)
  - Proposed Mitigation: Add Telegraph Avenue & 55th Street and Shattuck Avenue & 52nd Street to the coordination zone. Optimize signal cycle length, timing splits and timing offset. Construct an additional southbound left-turn lane. Eliminate the left-turn lane on the northbound approach and re-direct this movement via Shattuck Avenue & 52nd Street. Restripe northbound approach to replace the left-turn lane with a through lane and provide a second northbound receiving lane that extends approximately 80 feet north of Telegraph Avenue & Claremont Avenue. This mitigation is also proposed to address 2015 intersection impacts.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS F to LOS E in the morning peak hour and with less delay than in the No-Build Alternative. In the afternoon peak hour, the proposed
mitigation measure improves operations from LOS F to LOS D. Thus, with mitigation, the project impact is reduced to less than significant.

- **Secondary Impacts:** Loss of 11 parking spaces on Telegraph Avenue. Sidewalk on west side of Telegraph Avenue between 51st Street and 52nd Street reduced from 11 feet to 10 feet. Traffic island at southeast corner of Telegraph Avenue & Claremont Avenue reduced in width by six feet. Bike lanes on Telegraph Avenue converted to sharrows. Northbound left-turn movements will be diverted to Shattuck Avenue & 52nd Street, but will not cause a secondary intersection impact.

- **Telegraph Avenue & 40th Street (Intersection #47: on-alignment, afternoon peak hour impact only)**
  - **Proposed Mitigation:** Re-stripe eastbound approach to add an exclusive right-turn lane. Optimize signal timing splits and timing offset.
  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS E in the afternoon peak hour, but does not mitigate the impact to a less than significant level. In order to fully mitigate the intersection impact, exclusive northbound and southbound right-turn lanes would need to be constructed and northbound and southbound u-turns would need to be prohibited. This requires the acquisition of right-of-way, and is therefore considered infeasible. Therefore, a significant impact remains at the intersection; no feasible mitigation strategies are available to reduce the impact to less than significant for the afternoon peak hour.

- **Secondary Impacts:** Loss of five parking spaces along 40th Street. Curb bulbout on eastbound 40th Street would not be constructed. Convert eastbound bike lane on 40th Street approaching Telegraph Avenue to a sharrow.

- **Telegraph Avenue & West MacArthur Boulevard (Intersection #50: on-alignment, afternoon peak hour impact only)**
  - **Proposed Mitigation:** Restripe westbound approach to convert existing shared through/right-turn lane to an exclusive right-turn lane. Optimize signal cycle length, timing splits and timing offset. This mitigation is also proposed to address 2015 intersection impacts.
  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS E in the afternoon peak hour, but does not mitigate the impact to a less than significant level. In order to fully mitigate the intersection impact, a number of improvements would be required. These would include construction of exclusive right-turn lanes on the northbound, southbound and eastbound approaches, construction of exclusive left-turn lanes on the eastbound and westbound approaches, and construction of a second left-turn lane on the southbound approach. These improvements all require the acquisition of right-of-way, and are therefore considered infeasible. A significant impact
remains at the intersection; no feasible mitigation strategies are available to reduce the impact to less than significant for the afternoon peak hour.

Secondary Impacts: None.

- Telegraph Avenue & 27th Street (Intersection #55: on-alignment, both peak hours impacted)
  - Proposed Mitigation: Add exclusive right-turn lanes on the eastbound, westbound, and southbound approaches. Optimize signal timing splits and timing offset.
  - Resulting LOS: Implementation of the proposed mitigation measure improves operations from LOS E to LOS D in the morning peak hour and from LOS F to LOS C in the afternoon peak hour. Thus, with mitigation, the project impact is reduced to less than significant.
  - Secondary Impacts: Loss of six parking spaces along 27th Street. The bike lane would be converted to a bike sharrow on the eastbound, westbound and southbound approaches.

- East 12th Street & 5th Avenue (Intersection #70: on-alignment, morning peak hour impact only)
  - Proposed Mitigation: Optimize signal cycle length, timing splits, and timing offsets and coordinate signals along East 12th Street.
  - Resulting LOS: Implementation of the proposed mitigation measure reduces delay but does not improve level of service. In order to fully mitigate the project impact at this intersection a number of additional improvements would be required. These would include the prohibition of all u-turns at the intersection, the restriction of southbound left-turns at 5th Avenue, and the addition of a second northbound through lane on East 12th Street from 14th Avenue to 2nd Avenue. A significant impact remains at the intersection; no feasible mitigation strategies are available to reduce the impact to less than significant for the morning peak hour.
  - Secondary Impacts: None.

- East 12th Street (SB) & 14th Avenue (Intersection #78: on-alignment, afternoon peak hour impact only)
  - Proposed Mitigation: Coordinate signals at East 12th Street (SB) & 14th Avenue, East 12th Street (NB) & 14th Avenue, and International Boulevard & 14th Avenue and International Boulevard & 14th Avenue with East 12th Street and International Boulevard through Eastlake. Optimize signal cycle length, timing splits, and timing offsets. This mitigation is also proposed to address 2015 intersection impacts.
- **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS C and the *project impact is reduced to less than significant.*

- **Secondary Impacts:** None.

- **International Boulevard & 14\(^{th}\) Avenue (Intersection #79: on-alignment, afternoon peak hour impact only)**

  - **Proposed Mitigation:** Coordinate signals at East 12\(^{th}\) Street (SB) & 14\(^{th}\) Avenue, East 12\(^{th}\) Street (NB) & 14\(^{th}\) Avenue, and International Boulevard & 14\(^{th}\) Avenue and International Boulevard & 14\(^{th}\) Avenue with East 12\(^{th}\) Street and International Boulevard through Eastlake. Optimize signal cycle length, timing splits, and timing offsets.

  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS C and the *project impact is reduced to less than significant.*

  - **Secondary Impacts:** None.

- **International Boulevard & 29\(^{th}\) Avenue (Intersection #83: on-alignment, morning peak hour impact only)**

  - **Proposed Mitigation:** Coordinate signals on International Boulevard between 15\(^{th}\) Street and 29\(^{th}\) Street and optimize signal cycle length, timing splits, and timing offsets. This mitigation is also proposed to address 2015 intersection impacts.

  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS D and the project impact is reduced to less than significant.

  - **Secondary Impacts:** None.

- **Impacts to intersections in the Fruitvale area and along International Boulevard between Fruitvale and 38th Avenue will be mitigated in part with the provision of additional capacity on parallel arterials. These improvements serve to enhance San Leandro Street as an alternative to International Boulevard and to improve traffic flow in the Fruitvale area.**

  - **Proposed Mitigation:** Additional turn pockets will be provided at a number of intersections along the portion of San Leandro Street between Fruitvale Avenue and 50\(^{th}\) Avenue. In addition, turn pockets will be added at the intersection of East 12\(^{th}\) Street and 29\(^{th}\) Avenue. The intersections of East 10\(^{th}\) Street/San Leandro Street with Fruitvale Avenue and Derby Avenue with East 12\(^{th}\) Street will be re-constructed to provide additional capacity. East 10\(^{th}\) Street and San Leandro Street will be realigned at Fruitvale Avenue to provide a through connection at the intersection. Signals will be installed at the closely spaced intersections of Derby Avenue and northbound and southbound East 12\(^{th}\) Street. East 10\(^{th}\) Street and Derby Avenue (west of East 12\(^{th}\) Street) will be re-striped to
improve vehicular flow. Signals on San Leandro Street from 37th Street to 50th Street will be coordinated. This mitigation is also proposed to address 2015 intersection impacts.

- **Resulting LOS:** See the subsequent intersection-by-intersection discussion.

- **Secondary Impacts:** This set of improvements is associated with a number of different intersections and results in a shift in traffic from International Boulevard to parallel routes. Therefore, there are a number of secondary impacts, listed below:
  - A significant impact to level of service at the International Boulevard and Fruitvale Avenue intersection (Intersection #85: off-alignment, morning peak hour impact only). This *secondary impact is reduced to less than significant* with the construction of an exclusive eastbound right turn pocket on Fruitvale Boulevard, coordination of signals on International Boulevard between 31st Street and 46th Street and optimization of signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.
  - Right-of-way acquisition, totaling 6,090 square feet, along Derby Avenue, west of East 12th Street; 10th Street, north of Fruitvale Avenue; and San Leandro Street, between Fruitvale Avenue and 33rd Avenue.
  - Modification of the pedestrian facility along the east side of San Leandro Street approaching High Street from a ten foot wide unpaved pathway to a five foot wide paved sidewalk with curb.
  - Reduction in the sidewalk on the west side of San Leandro Street between Fruitvale Avenue and 33rd Avenue from twelve feet to eight feet.
  - Planned East 12th Street Bikeway converted from a bike lane to sharrow for approximately 245 feet on southbound East 12th Street approaching Derby Avenue.
  - The loss of a number of parking spaces throughout the improvement area, listed below:
    - East 12th Street & 29th Avenue: Loss of two spaces along East 12th Street and six spaces along 29th Avenue;
    - 13th Street & Derby Avenue: Loss of one space along Derby Avenue;
    - Northbound East 12th Street & Derby Avenue: Loss of 14 spaces along East 12th Street and three spaces along Derby Avenue;
    - Southbound East 12th Street & Derby Avenue: Loss of seven spaces along East 12th Street and two spaces along Derby Avenue;
• East 10th Street & Derby Avenue: Loss of seven spaces along East 10th Street

• East 10th Street & Fruitvale Avenue: Loss of 12 spaces along East 10th Street

• Northbound East 12th Street & Fruitvale Avenue: Loss of two spaces along East 12th Street;

• International Boulevard & Fruitvale Avenue: Loss of two spaces along Fruitvale Avenue;

• San Leandro Street & Fruitvale Avenue: Loss of 13 spaces on San Leandro Street;

• San Leandro Street & 35th Avenue: Loss of four spaces along San Leandro Street;

• San Leandro Street & 37th Avenue: Loss of three spaces along San Leandro Street;

• San Leandro Street & 39th Avenue: Loss of three spaces along San Leandro Street;

• San Leandro Street & High Street: Loss of five spaces along San Leandro Street;

• San Leandro Street & 45th Avenue: Loss of four spaces along San Leandro Street;

• San Leandro Street & 47th Avenue: Loss of six spaces along San Leandro Street; and

• San Leandro Street & 50th Avenue: Loss of four spaces along San Leandro Street and loss of three spaces along 50th Avenue.

• East 12th Street & Fruitvale Avenue (Intersection #84: off-alignment, both peak hours impacted)

  • Proposed Mitigation: In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, restripe the eastbound approach to convert an existing through/left-turn lane to a second left-turn only lane. Restripe the northbound approach to convert an existing exclusive right-turn lane to a shared through/right-turn lane. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone. This mitigation is also proposed to address 2015 intersection impacts.

  • Resulting LOS: With implementation of the proposed mitigation measure operations improve from LOS F to LOS C in the morning peak hour. Operations improve from LOS F to LOS E in the afternoon peak hour and the increase in
delay from the No-Build Alternative is less than significant. Thus, with mitigation, the project impact is reduced to less than significant.

- **Secondary Impacts**: None.

- **Foothill Boulevard & Fruitvale Avenue (Intersection #86: off-alignment, morning peak hour impact only)**
  - **Proposed Mitigation**: Optimize signal timing splits and timing offsets for coordination with the intersection of International Boulevard and Fruitvale Avenue.
  - **Resulting LOS**: Implementation of the proposed mitigation measure improves operations from LOS F to LOS E and with less delay than in the No-Build Alternative. Thus, with mitigation, the project impact is reduced to less than significant.
  - **Secondary Impacts**: None.

- **International Boulevard & 35th Street (Intersection #88: on-alignment, afternoon peak hour impact only)**
  - **Proposed Mitigation**: In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, coordinate signals on International Boulevard between 31st Street and 46th Street and optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.
  - **Resulting LOS**: Implementation of the proposed mitigation measure improves operations from LOS E to LOS D and the project impact is reduced to less than significant.
  - **Secondary Impacts**: None.

- **International Boulevard & 38th Street (Intersection #90: on-alignment, afternoon peak hour impact only)**
  - **Proposed Mitigation**: In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, coordinate signals on International Boulevard between 31st Street and 46th Street and optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone. This mitigation is also proposed to address 2015 intersection impacts.
  - **Resulting LOS**: Implementation of the proposed mitigation measure improves operations from LOS F to LOS C and the project impact is reduced to less than significant.
  - **Secondary Impacts**: None.
• International Boulevard & 42nd Avenue (Intersection #91: on-alignment, morning peak hour impact only)
  o **Proposed Mitigation:** Maintain two northbound and two southbound through lanes on International Boulevard between 41st Avenue and 44th Avenue. Over this segment, the southbound BRT would operate in mixed flow. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone. This mitigation is also proposed to address 2015 intersection impacts.
  o **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS D and the project impact is reduced to less than significant.
  o **Secondary Impacts:** Loss of six parking spaces along International Boulevard between 41st Avenue and High Street and removal of the unsignalized crosswalk at 41st Avenue.

• International Boulevard & High Street (Intersection #93: on-alignment, afternoon peak hour impact only)
  o **Proposed Mitigation:** Maintain two northbound and two southbound through lanes on International Boulevard between 41st Avenue and 44th Avenue. Over this segment, the southbound BRT would operate in mixed flow. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.
  o **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS C and the project impact is reduced to less than significant.
  o **Secondary Impacts:** Loss of eight parking spaces on International Boulevard between High Street and 45th Avenue. Reduction in landscaped median of 360 linear feet. Crosswalk at 44th Avenue relocated 85 feet to the south. BRT median platform relocated from High Street to between 44th and 45th Avenues.

• International Boulevard & Havenscourt Boulevard (Intersection #979: on-alignment, afternoon peak hour impact only)
  o **Proposed Mitigation:** Maintain two northbound and two southbound through lanes on International Boulevard between 65th Avenue and 67th Avenue. Between 65th Avenue and 67th Avenue, the southbound BRT would operate in mixed flow. Between 66th Avenue and 67th Avenue, the northbound BRT would operate in mixed flow. Provide enhanced pedestrian crossings and intersection controls at International Boulevard and 65th Avenue and International Boulevard and 67th Avenue where buses transition to and from dedicated lanes. At the intersection of International Boulevard & Havenscourt Boulevard, provide protected left-turn phasing on all approaches. Remove northbound and southbound u-turns and prohibit right turns on red. Coordinate and optimize International Boulevard cycle
lengths between 66th Street and 78th Street. This mitigation is also proposed to address 2015 intersection impacts.

- **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS C and the *project impact is reduced to less than significant.*

- **Secondary Impacts:** Loss of five parking spaces along International Boulevard. BRT median platform relocated from 66th Avenue to 65th Avenue. Northwest and northeast curb bulbs at 65th Avenue would not be constructed.

- **International Boulevard & Hegenberger Expressway (Intersection #99: on-alignment, both peak hours impacted)**

  - **Proposed Mitigation:** Maintain two northbound and southbound through lanes on International Boulevard between 72nd Avenue and 74th Avenue. Restripe the westbound approach to add an exclusive right-turn lane. Optimize signal timing splits and timing offsets for all signals on International Boulevard between 66th Avenue and 78th Avenue. This mitigation is also proposed to address 2015 intersection impacts.

  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS D in the morning peak hour and from LOS F to LOS D in the afternoon peak hour. Thus, with mitigation, the *project impact is reduced to less than significant.*

  - **Secondary Impacts:** Loss of 12 parking spaces along International Boulevard. Slight reduction in the width of the sidewalk on the far side corner of northbound International Boulevard at 72nd Avenue. BRT median platform shifted north from 72nd Avenue to between 71st Avenue and 72nd Avenue. Removal of the unsignalized crosswalk across International Boulevard at 75th Avenue.

- **San Leandro Boulevard & 98th Avenue (Intersection #105: off-alignment, morning peak hour impact only)**

  - **Proposed Mitigation:** Optimize signal timing splits and timing offset.

  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS E and with less delay than in the No-Build Alternative. Thus, with mitigation, the *project impact is reduced to less than significant.*

  - **Secondary Impacts:** None.

- **International Boulevard & 98th Avenue (Intersection #106: on-alignment, afternoon peak hour impact only)**

  - **Proposed Mitigation:** Maintain two northbound through lanes on International Boulevard from 99th Avenue to 97th Avenue and construct an additional southbound left-turn lane on International Boulevard at 98th Avenue. Optimize
signal cycle length, timing splits and timing offset. This mitigation is also proposed to address 2015 intersection impacts.

- **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS E and with less delay than in the No-Build Alternative. Thus, with mitigation, the *project impact is reduced to less than significant.*

- **Secondary Impacts:** Loss of 12 parking spaces along International Boulevard. BRT median platform relocated from 98th Avenue to 99th Avenue. Crosswalk at 97th Avenue removed and 200 linear feet of landscaped median loss on International Boulevard.

### Mitigation of Intersection Impacts: City of San Leandro

The following mitigations would partially or fully mitigate the significant vehicular traffic impact at the identified intersections in one or more peak hour:

- **San Leandro Boulevard & West Broadmoor Boulevard (Intersection #110: off-alignment, morning peak hour impact only)**
  - **Proposed Mitigation:** Re-construct the westbound right-turn from West Broadmoor Boulevard as a channelized right-turn with an acceleration lane on San Leandro Boulevard.
  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS D and the *project impact is reduced to less than significant.*
  - **Secondary Impacts:** Loss of 15 parking spaces on San Leandro Boulevard.

- **Bancroft Avenue & Dutton Avenue (Intersection #113: off-alignment, morning peak hour impact only)**
  - **Proposed Mitigation:** Optimize signal timing splits and timing offset.
  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS E to LOS C and the *project impact is reduced to less than significant.*
  - **Secondary Impacts:** None.

- **Davis Street & San Leandro Boulevard (Intersection #117: on-alignment, morning peak hour impact only)**
  - **Proposed Mitigation:** Restripe the northbound approach to add an exclusive right-turn lane. Optimize signal cycle length, timing splits and timing offset.
  - **Resulting LOS:** Implementation of the proposed mitigation measure improves operations from LOS F to LOS D and the *project impact is reduced to less than significant.*
o Secondary Impacts: Loss of raised median along San Leandro Boulevard south of Davis Street for the length of the right-turn pocket.

Intersection delay and level of service prior to and with the mitigation for Year 2015 with LPA impacts is presented in Table 3.2-13 below:
### Table 3.2-13: Intersection Levels of Service Before and After Mitigation, Year 2035 LPA

<table>
<thead>
<tr>
<th>Intersection</th>
<th>No-Build Alternative (2035)</th>
<th>With LPA (2035)</th>
<th>Significant Impact with Mitigation?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Delay (sec)</td>
<td>LOS</td>
<td>Delay (sec)</td>
</tr>
<tr>
<td>Morning Peak Hour</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>On-Alignment Intersections</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 Telegraph Ave &amp; Alcatraz Ave</td>
<td>Oakland</td>
<td>51.3 D</td>
<td>108.4 F</td>
</tr>
<tr>
<td>33 Telegraph Ave &amp; 55th St</td>
<td>Oakland</td>
<td>10.5 B</td>
<td>96.3 F</td>
</tr>
<tr>
<td>39 Telegraph Ave &amp; 51st St</td>
<td>Oakland</td>
<td>68.8 E</td>
<td>97.0 F</td>
</tr>
<tr>
<td>55 Telegraph Ave &amp; 27th St</td>
<td>Oakland</td>
<td>30.5 C</td>
<td>62.0 E</td>
</tr>
<tr>
<td>70 E 12th St &amp; 5th Ave</td>
<td>Oakland</td>
<td>20.5 C</td>
<td>143.4 F</td>
</tr>
<tr>
<td>83 International Blvd &amp; 29th Ave</td>
<td>Oakland</td>
<td>21.1 C</td>
<td>138.1 F</td>
</tr>
<tr>
<td>91 International Blvd &amp; 42nd Ave</td>
<td>Oakland</td>
<td>56.6 E</td>
<td>77.2 E</td>
</tr>
<tr>
<td>99 International Blvd &amp; Hegenberger Expwy</td>
<td>Oakland</td>
<td>45.1 D</td>
<td>76.3 E</td>
</tr>
<tr>
<td>117 San Leandro Blvd &amp; Davis St</td>
<td>San Leandro</td>
<td>59.2 E</td>
<td>100.0 F</td>
</tr>
<tr>
<td><strong>Off-Alignment Intersections</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Derby St &amp; Warring St</td>
<td>Berkeley</td>
<td>88.5 F</td>
<td>95.8 F</td>
</tr>
<tr>
<td>21 Ashby Ave &amp; Shattuck Ave</td>
<td>Berkeley</td>
<td>32.1 C</td>
<td>197.6 F</td>
</tr>
<tr>
<td>27 Alcatraz Ave &amp; College Ave</td>
<td>Berkeley</td>
<td>45.6 D</td>
<td>208.6 F</td>
</tr>
<tr>
<td>28 Alcatraz Ave &amp; Adeline St</td>
<td>Berkeley</td>
<td>156.0 F</td>
<td>169.5 F</td>
</tr>
<tr>
<td>34 Martin Luther King Jr. Wy</td>
<td>Oakland</td>
<td>56.6 E</td>
<td>62.6 E</td>
</tr>
<tr>
<td>84 Fruitvale Ave &amp; E 12th St</td>
<td>Oakland</td>
<td>136.0 F</td>
<td>171.6 F</td>
</tr>
<tr>
<td>86 Foothill Boulevard &amp; Fruitvale Avenue</td>
<td>Oakland</td>
<td>81.5 F</td>
<td>84.9 F</td>
</tr>
<tr>
<td>105 San Leandro St &amp; 98th Ave</td>
<td>Oakland</td>
<td>95.3 F</td>
<td>141.3 F</td>
</tr>
<tr>
<td>110 San Leandro Blvd &amp; W Broadmoor</td>
<td>San Leandro</td>
<td>77.4 F</td>
<td>211.4 F</td>
</tr>
<tr>
<td>113 Bancroft Ave &amp; Dutton Ave</td>
<td>San Leandro</td>
<td>52.3 D</td>
<td>61.2 E</td>
</tr>
<tr>
<td><strong>Afternoon Peak Hour</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Significant Impact with Mitigation? Yes/No
### Table 3.2-13: Intersection Levels of Service Before and After Mitigation, Year 2035 LPA

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Main Street</th>
<th>Cross Street</th>
<th>City</th>
<th>No-Build Alternative (2035)</th>
<th>With LPA (2035)</th>
<th>Significant Impact with Mitigation?</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Delay (sec)</td>
<td>LOS</td>
<td>Delay (sec)</td>
</tr>
<tr>
<td><strong>On-Alignment Intersections</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Telegraph Ave</td>
<td>Alcatraz Ave</td>
<td>Oakland</td>
<td>71.3</td>
<td>E</td>
<td>168.3</td>
</tr>
<tr>
<td>32</td>
<td>Telegraph Ave</td>
<td>56th St</td>
<td>Oakland</td>
<td>60.7</td>
<td>E</td>
<td>126.1</td>
</tr>
<tr>
<td>33</td>
<td>Telegraph Ave</td>
<td>55th St</td>
<td>Oakland</td>
<td>22.5</td>
<td>C</td>
<td>78.4</td>
</tr>
<tr>
<td>39</td>
<td>Telegraph Ave</td>
<td>51st St</td>
<td>Oakland</td>
<td>84.9</td>
<td>F</td>
<td>118.0</td>
</tr>
<tr>
<td>47</td>
<td>Telegraph Ave</td>
<td>40th St</td>
<td>Oakland</td>
<td>45.3</td>
<td>D</td>
<td>88.1</td>
</tr>
<tr>
<td>50</td>
<td>Telegraph Ave</td>
<td>W MacArthur Blvd</td>
<td>Oakland</td>
<td>57.4</td>
<td>E</td>
<td>238.7</td>
</tr>
<tr>
<td>55</td>
<td>Telegraph Ave</td>
<td>27th St</td>
<td>Oakland</td>
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<tr>
<td>78</td>
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<td>14th Ave</td>
<td>Oakland</td>
<td>17.3</td>
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<tr>
<td>79</td>
<td>International Blvd</td>
<td>14th Ave</td>
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<td>D</td>
<td>82.2</td>
</tr>
<tr>
<td>88</td>
<td>International Blvd</td>
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<td>90</td>
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<td>Oakland</td>
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<td>93</td>
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<td>979</td>
<td>International Blvd</td>
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<td>99</td>
<td>International Blvd</td>
<td>Hegenberger Expy</td>
<td>Oakland</td>
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<td>E</td>
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<tr>
<td>106</td>
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<td>98th Ave</td>
<td>Oakland</td>
<td>124.5</td>
<td>F</td>
<td>131.9</td>
</tr>
<tr>
<td><strong>Off-Alignment Intersections</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Derby St</td>
<td>Warring St</td>
<td>Berkeley</td>
<td>114.1</td>
<td>F</td>
<td>124.1</td>
</tr>
<tr>
<td>23</td>
<td>Ashby Ave</td>
<td>College Ave</td>
<td>Berkeley</td>
<td>67.5</td>
<td>E</td>
<td>76.4</td>
</tr>
<tr>
<td>24</td>
<td>Ashby Ave</td>
<td>Claremont Ave</td>
<td>Berkeley</td>
<td>77.9</td>
<td>E</td>
<td>103.0</td>
</tr>
<tr>
<td>27</td>
<td>Alcatraz Ave</td>
<td>College Ave</td>
<td>Berkeley</td>
<td>106.9</td>
<td>F</td>
<td>263.1</td>
</tr>
<tr>
<td>28</td>
<td>Alcatraz Ave</td>
<td>Adeline St</td>
<td>Berkeley</td>
<td>156.7</td>
<td>F</td>
<td>192.9</td>
</tr>
<tr>
<td>30</td>
<td>Claremont Ave</td>
<td>62nd St</td>
<td>Oakland</td>
<td>72.9</td>
<td>E</td>
<td>113.6</td>
</tr>
</tbody>
</table>
### Table 3.2-13: Intersection Levels of Service Before and After Mitigation, Year 2035 LPA

<table>
<thead>
<tr>
<th>No.</th>
<th>Main Street</th>
<th>Cross Street</th>
<th>City</th>
<th>Delay (sec)</th>
<th>LOS</th>
<th>Delay (sec)</th>
<th>LOS</th>
<th>Delay (sec)</th>
<th>LOS</th>
<th>Significant Impact with Mitigation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>Martin Luther King Jr. Wy</td>
<td>55th St</td>
<td>Oakland</td>
<td>117.1</td>
<td>F</td>
<td>132.5</td>
<td>F</td>
<td>45.9</td>
<td>D</td>
<td>No</td>
</tr>
<tr>
<td>36</td>
<td>Martin Luther King Jr. Wy</td>
<td>52nd St</td>
<td>Oakland</td>
<td>66.0</td>
<td>E</td>
<td>75.1</td>
<td>E</td>
<td>55.5</td>
<td>E</td>
<td>No</td>
</tr>
<tr>
<td>84</td>
<td>Fruitvale Ave</td>
<td>E 12th St</td>
<td>Oakland</td>
<td>75.8</td>
<td>E</td>
<td>103.8</td>
<td>F</td>
<td>79.0</td>
<td>E</td>
<td>No</td>
</tr>
</tbody>
</table>


Note: Indicated delay for signalized and all-way stop-controlled intersections is average for all movements. Indicated delay for side-street stop-controlled intersections is for worst movement.

* Delay is not an appropriate measure in this situation because of the nature of the proposed mitigation. A more appropriate measure is the one applied to merging traffic streams. This measure was estimated using Highway Capacity Manual 2000 methodology (Chapter 25).
3.2.9.6 Mitigation for Year 2035 Intersection Impacts with DOSL Alternative

The DOSL Alternative does not result in significant vehicular impacts at intersections north of downtown Oakland. Therefore, the mitigation measures identified at those intersections as associated with the LPA would not be required. The required mitigation measures from downtown Oakland to San Leandro are identical as those identified under the LPA. To further clarify, the following mitigation measures are proposed with the DOSL Alternative to partially or fully mitigate significant vehicular impacts at 18 locations:

- East 12th Street & 5th Avenue (Intersection #70): Optimize signal cycle length, timing splits, and timing offsets and coordinate signals along East 12th Street.
- East 12th Street (SB) & 14th Avenue (Intersection #78): Coordinate signals at East 12th Street (SB) & 14th Avenue, East 12th Street (NB) & 14th Avenue, and International Boulevard & 14th Avenue and International Boulevard & 14th Avenue with East 12th Street and International Boulevard through Eastlake. Optimize signal cycle length, timing splits, and timing offsets.
- International Boulevard & 14th Avenue (Intersection #79): Coordinate signals at East 12th Street (SB) & 14th Avenue, East 12th Street (NB) & 14th Avenue, and International Boulevard & 14th Avenue and International Boulevard & 14th Avenue with East 12th Street and International Boulevard through Eastlake. Optimize signal cycle length, timing splits, and timing offsets.
- International Boulevard & 29th Avenue (Intersection #83): Coordinate signals on International Boulevard between 15th Street and 29th Street and optimize signal cycle length, timing splits, and timing offsets.
- Impacts to intersections in the Fruitvale area and along International Boulevard between Fruitvale and 38th Avenue will be mitigated in part with the provision of additional capacity on parallel arterials. These improvements serve to enhance San Leandro Street as an alternative to International Boulevard and to improve traffic flow in the Fruitvale area. Additional turn pockets will be provided at a number of intersections along the portion of San Leandro Street between Fruitvale Avenue and 50th Avenue. In addition, turn pockets will be added at the intersection of East 12th Street and 29th Avenue. The intersections of East 10th Street/San Leandro Street with Fruitvale Avenue and Derby Avenue with East 12th Street will be re-constructed to provide additional capacity. East 10th Street and San Leandro Street will be realigned at Fruitvale Avenue to provide a through connection at the intersection. Signals will be installed at the closely spaced intersections of Derby Avenue and northbound and southbound East 12th Street. East 10th Street and Derby Avenue (west of East 12th Street) will be re-striped to improve vehicular flow. Signals on San Leandro Street from 37th Street to 50th Street will be coordinated.
- East 12th Street & Fruitvale Avenue (Intersection #84): In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, restripe the eastbound approach to convert an existing through/left-turn lane to a second left-turn only lane. Restripe the northbound approach to convert an existing exclusive left-turn lane to a
through lane. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.

- Foothill Boulevard & Fruitvale Avenue (Intersection #86): Optimize signal timing splits and timing offsets for coordination with the intersection of International Boulevard and Fruitvale Avenue.

- International Boulevard & 35th Street (Intersection #88): In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, coordinate signals on International Boulevard between 31st Street and 46th Street and optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.

- International Boulevard & 38th Street (Intersection #90): In addition to the improvements identified above for San Leandro Street, East 12th Street, and East 10th Street, coordinate signals on International Boulevard between 31st Street and 46th Street and optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.

- International Boulevard & 42nd Avenue (Intersection #91): Maintain two northbound and two southbound through lanes on International Boulevard between 41st Avenue and 44th Avenue. Over this segment, the southbound BRT would operate in mixed flow. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.

- International Boulevard & High Street (Intersection #93): Maintain two northbound and two southbound through lanes on International Boulevard between 41st Avenue and 44th Avenue. Over this segment, the southbound BRT would operate in mixed flow. Optimize signal cycle length, timing splits and timing offsets for all signals in the signal coordination zone.

- International Boulevard & Havenscourt Boulevard (Intersection #979): Maintain two northbound and two southbound through lanes on International Boulevard between 65th Avenue and 67th Avenue. Between 65th Avenue and 67th Avenue, the southbound BRT would operate in mixed flow. Between 66th Avenue and 67th Avenue, the northbound BRT would operate in mixed flow. Provide enhanced pedestrian crossings and intersection controls at International Boulevard and 65th Avenue and International Boulevard and 67th Avenue where buses transition to and from dedicated lanes. At the intersection of International Boulevard & Havenscourt Boulevard, provide protected left-turn phasing on all approaches. Remove northbound and southbound u-turns and prohibit right turns on red. Coordinate and optimize International Boulevard cycle lengths between 66th Street and 78th Street.

- International Boulevard & Hegenberger Expressway (Intersection #99): Maintain two northbound and southbound through lanes on International Boulevard between 72nd Avenue and 74th Avenue. Restripe the westbound approach to add an exclusive right-turn lane. Optimize signal timing splits and timing offsets for all signals on International Boulevard between 66th Avenue and 78th Avenue.
- International Boulevard & 98th Avenue (Intersection #106): Maintain two northbound through lanes on International Boulevard from 99th Avenue to 97th Avenue and construct an additional southbound left-turn lane on International Boulevard at 98th Avenue. Optimize signal cycle length, timing splits and timing offset.

- San Leandro Boulevard & West Broadmoor Boulevard (Intersection #110): Re-construct the westbound right-turn from West Broadmoor Boulevard as a channelized right turn with an acceleration lane.

- San Leandro Street & 98th Avenue (Intersection #105): Optimize signal timing splits and timing offset.

- Bancroft Avenue & Dutton Avenue (Intersection #113): Optimize signal timing splits and timing offset.

- Davis Street & San Leandro Boulevard (Intersection #117): Restripe the northbound approach to add an exclusive right-turn lane. Optimize signal cycle length, timing splits and timing offset.
3.2.9.7 SUMMARY OF MITIGATION WITH LPA

Traffic operations impacts resulting in operations below established local standards would occur at 34 of the 129 study intersections in either Year 2015 or Year 2035 with implementation of the East Bay BRT Project LPA. Of those impacts, 17 impacts are projected to occur in both Year 2015 and Year 2035, one impact would occur only in the Year 2015 scenario, and 16 impacts would occur only in the Year 2035 scenario. For those impacts not projected to occur in Year 2015, but occur in Year 2035, it is likely that the impact would first arise in a year between 2015 and 2035, pending future land use and circulation patterns.

Impacts can be mitigated to result in intersection operations equal to or better than with the No-Build Alternative at most of these locations. Mitigation measures are proposed at all 34 impacted locations, although at a handful of locations they are not sufficient to result in a less than significant increase in delay associated with the project. Mitigation of impacts to reduce the project impact to a less than significant level for Year 2015 impacts would not be possible at the following signalized intersection in the City of Oakland:

- Intersection #29: Telegraph Avenue & Alcatraz Avenue (afternoon peak hour)

Mitigation of impacts to reduce the project impact to a less than significant level for Year 2035 impacts would not be possible at the following signalized intersection in the City of Berkeley:

- Intersect #24: Claremont Avenue & Ashby Avenue (afternoon peak hour)

Mitigation of impacts to reduce the project impact to a less than significant level for Year 2035 impacts would not be possible at the following five signalized intersections in the City of Oakland:

- Intersection #29: Telegraph Avenue & Alcatraz Avenue (both peak hours)
- Intersection #33: Telegraph Avenue & 55th Street (both peak hours)
- Intersection #47: Telegraph Avenue & 40th Street (afternoon peak hour)
- Intersection #50: Telegraph Avenue & West MacArthur Boulevard (afternoon peak hour)
- Intersection #70: East 12th Street & 5th Avenue (morning peak hour)

3.2.9.8 SUMMARY OF MITIGATION WITH DOSL ALTERNATIVE

Traffic operations impacts resulting in operations below established local standards would occur at 17 of the 129 study intersections in either Year 2015 or Year 2035 with implementation of the East Bay BRT Project DOSL Alternative. Of those impacts, eight impacts are projected to occur in both Year 2015 and Year 2035, and nine impacts would occur only in the Year 2035 scenario. For those impacts not projected to occur in Year 2015, but occur in Year 2035, it is likely that the impact would first arise in a year between 2015 and 2035, pending future land use and circulation patterns.

Impacts can be mitigated to result in intersection operations equal to or better than with the No-Build Alternative at most of these locations. Mitigation measures are proposed at all 17 impacted locations, although at one location they are not sufficient to result in a less than significant
increase in delay associated with the project. Mitigation of impacts to reduce the project impact to a less than significant level for Year 2015 impacts would be possible at all study intersections. Mitigation of impacts to reduce the project impact to a less than significant level for Year 2035 impacts would not be possible at the following signalized intersection in the City of Oakland:

- Intersection #70: East 12th Street & 5th Avenue (morning peak hour).