Freeway Ramp Queuing

Within the Project area, the northbound I-880 off-ramp at 29th Avenue one freeway off-ramp is controlled by an intersection, which results in queuing.

The northbound I-880 off-ramp at 29th Avenue is approximately 338 feet long and does not meet the minimum deceleration length for a freeway off-ramp. The ramp is controlled by an all-way stop controlled intersection, which coincides with the 29th Avenue / East 9th Street intersection that is included in the local roadway intersection operations analysis. The length of the 95th percentile queue during the weekday AM and PM peak hours is included in Table 2.2-16, Freeway Ramp Queuing – Existing Conditions.

As shown in Table 2.2-16, Freeway Ramp Queuing – Existing Conditions, the longest vehicle queues form on the northbound I-880 off-ramp at 29th Avenue during the weekday PM peak hour. During the weekday PM peak hour, the ramp deceleration length is limited to 213 feet. The off-ramp length is 312 feet less than the minimum mandatory deceleration length. Typically, vehicles begin to decelerate on the mainline freeway in advance of the off-ramp length.

### Table 2.2-16: Freeway Ramp Queuing – Existing Conditions

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Weekday AM Peak Hour</th>
<th>Weekday PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Queue</td>
<td>Deceleration</td>
</tr>
<tr>
<td>NB I-880 Off-Ramp at 29th Av.</td>
<td>75</td>
<td>263</td>
</tr>
</tbody>
</table>

Source: AECOM – July 2009

Queue length is in terms of feet for the 95th percentile queue; Deceleration length is in terms of feet from the back of the queue to the mainline freeway divergence point; The minimum mandatory off-ramp deceleration length is 525 feet; The Northbound I-880 Off-Ramp at 29th Avenue is 338 feet long.

### Regional Freeway Analysis – Forecast Year 2035

Build Alternative

Freeway Network Operations

The Build Conditions freeway mainline and ramp traffic volumes on I-880 between the 23rd Avenue and 29th Avenue interchanges are shown in Exhibit 2.2-15, Build Conditions Freeway Mainline and Ramp Traffic Volumes.

The vehicle density and speed at these freeway ramp junctions for the weekday AM and PM peak hours were extracted from the CORSIM model and is included in Table 2.2-17, Freeway Measures of Effectiveness – Build Conditions.

The simulated traffic volumes on the I-880 mainline freeway were compared to the vehicle demand volumes. The traffic volumes at each of the freeway ramp junctions for the weekday AM and PM peak hours were extracted from the CORSIM model and are included in Table 2.2-18, Freeway Traffic Volumes – Build Conditions.
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

The Build Conditions freeway mainline and ramp traffic volumes on I-880 between the 23rd Avenue and 29th Avenue interchanges are shown in Exhibit 2.2-15, *Build Conditions Freeway Mainline and Ramp Traffic Volumes*.

### Table 2.2-17: Freeway Measures of Effectiveness - Build Conditions

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Peak Hour</th>
<th>No Build Conditions</th>
<th>Build Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Density</td>
<td>Speed</td>
</tr>
<tr>
<td><strong>Southbound I-880 Freeway</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverge Section at 23rd Avenue</td>
<td>AM</td>
<td>105</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>23</td>
<td>62</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue</td>
<td>AM</td>
<td>100</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>27</td>
<td>57</td>
</tr>
<tr>
<td>Weaving Section between 29th Avenue and Fruitvale Avenue</td>
<td>AM</td>
<td>97</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>27</td>
<td>53</td>
</tr>
<tr>
<td><strong>Northbound I-880 Freeway</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverge Section at 29th Avenue</td>
<td>AM</td>
<td>34</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>74</td>
<td>26</td>
</tr>
<tr>
<td>Weaving Section between Lisbon Avenue and 23rd Avenue</td>
<td>AM</td>
<td>49</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>62</td>
<td>22</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue (EB)</td>
<td>AM</td>
<td>64</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>19</td>
<td>58</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue (WB)</td>
<td>AM</td>
<td>50</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>21</td>
<td>58</td>
</tr>
</tbody>
</table>

Source: AECOM – July 2009

Density in terms of passenger cars / lane / mile; Speed in terms of miles per hour; “-“ denotes freeway section does not exist in the Build Conditions.
I-880 Southbound
AM 8327
PM 8061

I-880 Northbound
AM 10,851
PM 9202

NB 23rd Av On Ramp
AM 2016 (1490)
PM 1176 (753)

I-880 Northbound
AM 8835 (-176)
PM 8026 (-35)

NB 20th Av On Ramp
AM 732 (-176)
PM 645 (-35)

I-880 Northbound
AM 9761 (-510)
PM 8677 (-505)

NB 20th Av Off Ramp
AM 926 (-334)
PM 651 (-470)

I-880 Northbound
AM 9029 (-334)
PM 8032 (-470)

NB 29th Av On Ramp
AM 732 (-176)
PM 645 (-35)

I-880 Northbound
AM 9761 (-510)
PM 8677 (-505)

NB 20th Av Off Ramp
AM 926 (-334)
PM 651 (-470)

I-880 Northbound
AM 9029 (-334)
PM 8032 (-470)

NB 29th Av Off Ramp
AM 655 (334)
PM 1134 (470)

I-880 Northbound
AM 9685
PM 9166

Build Alternative (2035) Conditions Freeway Traffic Volumes

Source: Transportation Analysis, July 2009

Exhibit 2.2-15
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Blank page placeholder
Table 2.2-18: Freeway Traffic Volumes - Build Conditions

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>No Build Conditions</th>
<th>Build Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peak Hour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demand</td>
<td>Served</td>
</tr>
<tr>
<td>Southbound I-880 Freeway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverge Section at 23rd Avenue</td>
<td>AM</td>
<td>8,326</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>8,061</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue</td>
<td>AM</td>
<td>8,217</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>7,965</td>
</tr>
<tr>
<td>Weaving Section between 29th Avenue and Fruitvale Avenue</td>
<td>AM</td>
<td>8,590</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>8,503</td>
</tr>
<tr>
<td>Northbound I-880 Freeway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverge Section at 29th Avenue</td>
<td>AM</td>
<td>9,685</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>9,168</td>
</tr>
<tr>
<td>Weaving Section between Lisbon Avenue and 23rd Avenue</td>
<td>AM</td>
<td>10,271</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>9,184</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue (EB)</td>
<td>AM</td>
<td>10,325</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>8,780</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue (WB)</td>
<td>AM</td>
<td>10,850</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>9,204</td>
</tr>
</tbody>
</table>

Source: AECOM – July 2009

Density in terms of passenger cars / lane / mile; Speed in terms of miles per hour; “-” denotes freeway section does not exist in the Build Conditions

**Freeway Ramp Queuing**

The northbound I-880 off-ramp at 29th Avenue would be controlled by an intersection in the Build Conditions, which results in queuing. The northbound I-880 off-ramp at 29th Avenue would be approximately 645 feet long. The ramp would be controlled by signalized intersection, which would coincide with the 29th Avenue / northbound I-880 off-ramp at 29th Avenue intersection that is included in the local roadway intersection operations analysis. The length of the 95th percentile queue during the weekday AM and PM peak hours is included in Table 2.2-19, Freeway Ramp Queuing – Build Conditions. In the Build Conditions, the 95th percentile queue length is expected to be 120 feet during the weekday PM peak hour. This queue length would reduce the ramp deceleration length to 525 feet, which would meet the minimum mandatory off-ramp deceleration length.
### Table 2.2-19: Freeway Ramp Queuing - Build Conditions

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Peak Hour</th>
<th>No Build Conditions</th>
<th>Build Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Queue</td>
<td>Deceleration</td>
</tr>
<tr>
<td>NB I-880 Off-Ramp at 29th Avenue</td>
<td>AM</td>
<td>75</td>
<td>263</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>150</td>
<td>188</td>
</tr>
</tbody>
</table>

Source: AECOM - July 2009

Queue length is in terms of feet for the 95th percentile queue; Deceleration length is in terms of feet from the back of the queue to the mainline freeway divergence point; The minimum mandatory off-ramp deceleration length is 525 feet; The Northbound I-880 Off-Ramp at 29th Avenue is 338 feet long in the No Build Conditions; The Northbound I-880 Off-Ramp at 29th Avenue is 645 feet long in the Build Conditions.

**No Build Alternative**

The No Build Conditions regional freeway analysis includes an evaluation of the network operations and ramp queuing.

**Freeway Network Operations**

The No Build Conditions freeway mainline and ramp traffic volumes on I-880 between the 23rd Avenue and 29th Avenue interchanges are shown in Exhibit 2.2-17, No Build Conditions Freeway Mainline and Ramp Traffic Volumes.

The freeway network was simulated using the CORSIM model for the weekday AM and PM peak periods. The vehicle density and speed at these freeway ramp junctions for the weekday AM and PM peak hours were extracted from the CORSIM model and is included in Table 2.2-20, Freeway Measures of Effectiveness – No Build Conditions.

The simulated traffic volumes on the I-880 mainline freeway were compared to the vehicle demand volumes. The traffic volumes at each of the freeway ramp junctions for the weekday AM and PM peak hours were extracted from the CORSIM model and are included in Table 2.2-21, Freeway Traffic Volumes – No Build Conditions.

### Table 2.2-20: Freeway Measures of Effectiveness - No Build Conditions

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Peak Hour</th>
<th>Existing Conditions</th>
<th>No Build Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Density</td>
<td>Speed</td>
</tr>
<tr>
<td>Southbound I-880 Freeway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverge Section at 23rd Avenue</td>
<td>AM</td>
<td>23</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>23</td>
<td>63</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue</td>
<td>AM</td>
<td>27</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>27</td>
<td>59</td>
</tr>
<tr>
<td>Weaving Section between 29th Avenue and Fruitvale Avenue</td>
<td>AM</td>
<td>26</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>26</td>
<td>55</td>
</tr>
<tr>
<td>Northbound I-880 Freeway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverge Section at 29th Avenue</td>
<td>AM</td>
<td>26</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>27</td>
<td>64</td>
</tr>
</tbody>
</table>
### Table 2.2-20: Freeway Measures of Effectiveness - No Build Conditions, continued

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Peak Hour</th>
<th>Existing Conditions</th>
<th>No Build Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Density</td>
<td>Speed</td>
</tr>
<tr>
<td>Weaving Section between Lisbon Avenue and 23rd Avenue</td>
<td>AM</td>
<td>25</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>26</td>
<td>58</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue (EB)</td>
<td>AM</td>
<td>35</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>35</td>
<td>53</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue (WB)</td>
<td>AM</td>
<td>32</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>32</td>
<td>59</td>
</tr>
</tbody>
</table>

Source: AECOM - July 2009

Density in terms of passenger cars / lane / mile; Speed in terms of miles per hour.

### Table 2.2-21: Freeway Traffic Volumes - No Build Conditions

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Peak Hour</th>
<th>Existing Conditions</th>
<th>No Build Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Demand</td>
<td>Simulated</td>
</tr>
<tr>
<td>Southbound I-880 Freeway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverge Section at 23rd Avenue</td>
<td>AM</td>
<td>6,627</td>
<td>6,765</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>6,794</td>
<td>6,868</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue</td>
<td>AM</td>
<td>6,642</td>
<td>6,781</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>6,664</td>
<td>6,718</td>
</tr>
<tr>
<td>Weaving Section between 29th Avenue and Fruitvale Avenue</td>
<td>AM</td>
<td>7,007</td>
<td>7,162</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>7,184</td>
<td>7,247</td>
</tr>
<tr>
<td>Northbound I-880 Freeway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diverge Section at 29th Avenue</td>
<td>AM</td>
<td>7,166</td>
<td>6,829</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>7,604</td>
<td>7,657</td>
</tr>
<tr>
<td>Weaving Section between Lisbon Avenue and 23rd Avenue</td>
<td>AM</td>
<td>7,725</td>
<td>7,355</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>7,404</td>
<td>7,632</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue (EB)</td>
<td>AM</td>
<td>8,421</td>
<td>8,077</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>7,338</td>
<td>7,770</td>
</tr>
<tr>
<td>Merge Section at 23rd Avenue (WB)</td>
<td>AM</td>
<td>8,768</td>
<td>8,407</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>7,550</td>
<td>7,965</td>
</tr>
</tbody>
</table>

Source: AECOM - July 2009

Demand represents the peak hour mainline traffic volume demand; Simulated represents the peak hour mainline traffic demand volume that is served in the freeway simulation.
Freeway Queuing

The northbound I-880 freeway off-ramp is controlled by an intersection, which results in queuing, which terminates at 29th Avenue. The northbound I-880 off-ramp at 29th Avenue is approximately 338 feet long and does not meet the minimum deceleration length for a freeway off-ramp. The ramp is controlled by an all-way stop controlled intersection, which coincides with the 29th Avenue / East 9th Street that is included in the local roadway intersection operations analysis. The length of the 95th percentile queue during the weekday AM and PM peak hours is included in Table 2.2-22, Freeway Ramp Queuing – No Build Conditions. In the No Build Conditions, the 95th percentile queue length is expected to be 150 feet during the weekday PM peak hour. This queue length would reduce the ramp deceleration length to 188 feet, which is 337 feet less than the minimum mandatory off-ramp deceleration length.

Table 2.2-22: Freeway Ramp Queuing - No Build Conditions

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Peak Hour</th>
<th>Existing Conditions</th>
<th>No Build Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Queue</td>
<td>Deceleration</td>
</tr>
<tr>
<td>NB I-880 Off-Ramp at 29th Ave</td>
<td>AM</td>
<td>75</td>
<td>263</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>125</td>
<td>213</td>
</tr>
</tbody>
</table>

Source: AECOM - July 2009

Queue length is in terms of feet for the 95th percentile queue; Deceleration length is in terms of feet from the back of the queue to the mainline freeway divergence point; The minimum mandatory off-ramp deceleration length is 525 feet; The Northbound I-880 Off-Ramp at 29th Avenue is 338 feet long.

Accident Data

Regional Freeway

Traffic accident records available through the Traffic Accident Surveillance and Analysis System (TASAS) for the Proposed Project were reviewed. TASAS accident data was reviewed for a three year period, January 1, 2005 to December 31, 2007. Collisions in the Project area are relatively common due to the current design of the freeway facilities and the local roadway network. The collision rates at the five southbound I-880 segments, and corresponding post miles, and the six northbound I-880 segments, and corresponding post miles, that were evaluated include are included in Table 2.2-23, Freeway Collision Rate Summary.
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Placeholder
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

The 2006 Annual Report of Fatal and Injury Motor Vehicle Traffic Collisions based on the Statewide Integrated Traffic Records System (SWITRS), provided by the California Highway Patrol, indicates that the statewide average number of collisions per million vehicle miles traveled is approximately 1.57. The following freeway segments experience collision rates that are at least 25 percent greater than the statewide average:

- Southbound I-880 from Embarcadero Off-Ramp to 23rd Avenue Off-Ramp;
- Southbound I-880 from 23rd Avenue Off-Ramp to 23rd Avenue On-Ramp;
- Southbound I-880 from 29th Avenue On-Ramp to Fruitvale Avenue Off-Ramp; and,
- Northbound I-880 from High Street On-Ramp to 29th Avenue Off-Ramp.

The Build Alternative forecast year 2035 is not expected to increase the potential of accidents in this area, but includes improvements to upgrade the existing roadway resulting in safer vehicular circulation through the Project area. Under the no build forecast year, the proposed improvements would not be completed and the existing conditions would most likely be worsened.

The 23rd Avenue and 29th Avenue Overcrossings have a nonstandard vertical clearance over the I-880 mainline and have been struck by oversized vehicles. These are the only remaining nonstandard overcrossings within the I-880 corridor. Under the Build Alternative, the nonstandard 23rd Avenue and 29th Avenue overcrossings would be removed and reconstructed with standard clearance overcrossings. Under the Build Alternative, the Proposed Project would redesign and replace existing interchange facilities that have been in place for decades and do not adhere to current design standards or driver expectations. Under the Build Alternative, the existing northbound I-880 on-ramps and off-ramp at 23rd Avenue would be reconstructed to improve operations and safety as vehicle demand exceeds freeway design capacity; the existing northbound I-880 on-ramps and off-ramp at 23rd Avenue would be reconstructed to improve operations and safety; and, the existing northbound I-880 off-ramp at 29th Avenue and northbound I-880 on-ramp at Lisbon Avenue would be reconstructed to improve operations and safety.

Local Roadway

The collision rates were calculated at the 28 intersection locations over a five-year period between January 1, 2003 and December 31, 2007. These collision rates are included in Table 2.2-24, Intersection Collision Rate Summary.

---


10 The Davis Street and Marina Boulevard overcrossings currently have non-standard vertical clearances but will be modified as part of the ongoing I-880 HOV lane project.
<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Type of Collision</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Side Swipe</td>
<td>Rear End</td>
</tr>
<tr>
<td>Southbound I-880 Freeway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Embarcadero to 23rd Av.</td>
<td>0.35</td>
<td>1.29</td>
</tr>
<tr>
<td>2 23rd Av. to 23rd Av.</td>
<td>0.48</td>
<td>0.92</td>
</tr>
<tr>
<td>3 23rd Av. to 29th Av.</td>
<td>0.29</td>
<td>0.69</td>
</tr>
<tr>
<td>4 29th Ave. to Fruitvale Av.</td>
<td>0.78</td>
<td>1.00</td>
</tr>
<tr>
<td>5 Fruitvale Av. to High St.</td>
<td>0.21</td>
<td>0.71</td>
</tr>
<tr>
<td>Southbound Average</td>
<td>0.32</td>
<td>0.93</td>
</tr>
<tr>
<td>Northbound I-880 Freeway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 High St. to 29th Av.</td>
<td>0.51</td>
<td>1.28</td>
</tr>
<tr>
<td>7 29th Av. to Lisbon Av.</td>
<td>0.39</td>
<td>1.07</td>
</tr>
<tr>
<td>8 Lisbon Av. to 23rd Av.</td>
<td>0.42</td>
<td>1.10</td>
</tr>
<tr>
<td>9 23rd Av. to 23rd Av. (E)</td>
<td>0.44</td>
<td>0.89</td>
</tr>
<tr>
<td>10 23rd Av. (E) to 23rd Av. (W)</td>
<td>0.35</td>
<td>0.52</td>
</tr>
<tr>
<td>11 23rd Av. (W) to Embarcadero</td>
<td>0.37</td>
<td>0.53</td>
</tr>
<tr>
<td>Northbound Average</td>
<td>0.42</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Source: Traffic Accident Surveillance and Analysis System (TASAS); AECOM – July 2009

Rates in terms of collisions per million vehicle miles traveled; Data collected between January 1, 2005 and December 31, 2007; (a) Two (2) of the reported collisions on Southbound I-880 between the 23rd Avenue Off-Ramp and the 23rd Avenue On-Ramp consisted of the vehicle striking the bottom of the 23rd Avenue structure.
## Table 2.2-24: Intersection Collision Rate Summary

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Involved with</th>
<th>Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vehicle</td>
<td>Bicycle</td>
</tr>
<tr>
<td>1 Park Street / Lincoln Avenue</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2 Park Street / Buena Vista Avenue</td>
<td>0.32</td>
<td>0.00</td>
</tr>
<tr>
<td>3 Park Street / Clement Avenue</td>
<td>0.19</td>
<td>0.00</td>
</tr>
<tr>
<td>4 Park Street / Blanding Avenue</td>
<td>0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>5 29th Avenue / 23rd Avenue</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>6 29th Avenue / Glascoock Street</td>
<td>0.17</td>
<td>0.00</td>
</tr>
<tr>
<td>7 29th Avenue / Ford Street</td>
<td>0.13</td>
<td>0.00</td>
</tr>
<tr>
<td>8 29th Avenue / Chapman Street</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>9 29th Avenue / East 7th Street</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>10 29th Avenue / East 9th Street</td>
<td>0.04</td>
<td>0.00</td>
</tr>
<tr>
<td>11 29th Avenue / East 10th Street</td>
<td>0.77</td>
<td>0.00</td>
</tr>
<tr>
<td>12 29th Avenue / East 12th Street</td>
<td>0.57</td>
<td>0.00</td>
</tr>
<tr>
<td>13 29th Avenue / International Bl.</td>
<td>0.78</td>
<td>0.00</td>
</tr>
<tr>
<td>14 Lisbon Avenue / East 8th Street</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>15 Lisbon Avenue / East 10th Street</td>
<td>0.96</td>
<td>0.00</td>
</tr>
<tr>
<td>16 23rd Avenue / Ford Street</td>
<td>0.07</td>
<td>0.00</td>
</tr>
<tr>
<td>17 23rd Avenue / Chapman Street</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>18 23rd Avenue / East 7th Street</td>
<td>0.58</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Table 2.2-24: Intersection Collision Rate Summary, continued

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Involved with</th>
<th>Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vehicle</td>
<td>Bicycle</td>
</tr>
<tr>
<td>19 23rd Av. / E. 11th St.</td>
<td>0.55</td>
<td>0.00</td>
</tr>
<tr>
<td>20 22nd Av. / E. 12th St.</td>
<td>1.23</td>
<td>0.02</td>
</tr>
<tr>
<td>21 22nd Av. / International Bl.</td>
<td>1.17</td>
<td>0.00</td>
</tr>
<tr>
<td>22 Kennedy St. / E. 7th St.</td>
<td>1.28</td>
<td>0.00</td>
</tr>
<tr>
<td>23 Kennedy St. / Dennison St.</td>
<td>0.45</td>
<td>0.00</td>
</tr>
<tr>
<td>24 16th Av. / Embarcadero</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>25 Fruitvale Av. / E. 8th St.</td>
<td>0.31</td>
<td>0.00</td>
</tr>
<tr>
<td>26 Fruitvale Av. / E. 9th St.</td>
<td>0.55</td>
<td>0.02</td>
</tr>
<tr>
<td>27 Fruitvale Av. / E. 12th St.</td>
<td>0.37</td>
<td>0.02</td>
</tr>
<tr>
<td>28 Fruitvale Av. / International Bl.</td>
<td>0.99</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Source: City of Oakland; City of Alameda; AECOM –July 2009

Rates in terms of collisions per million vehicles entering the intersection. N/A = Data Not Available; (a) Average based on collision rate for intersections with similar traffic volumes.

2.2.4.3 Environmental Consequences

Intersection Operations

The Proposed Project would significantly improve intersection operations at several intersections due to the geometric reconfiguration of the network, the resulting modifications in the circulation patterns, and the implementation of the recommended improvements. A detailed assessment of the 11 intersections operating at LOS E or worse in the Build Conditions was conducted. A comparison of the intersections to the applicable significance criteria is included in Table 2.2-25, Intersection Operations Detailed Summary – Build Conditions. Based on the intersection operations detailed summary, six of the 11 intersections operating at LOS E or worse and would result in an adverse impact and mitigation measures to reduce impacts would be required.
### Table 2.2-25: Intersection Operations Detailed Summary
- Build Conditions

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Weekday AM Peak</th>
<th>Weekday PM Peak</th>
<th>Meets Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avg V/C Cont</td>
<td>Avg V/C Cont</td>
<td></td>
</tr>
<tr>
<td><strong>Signalized intersection degrades from LOS D or better to LOS E or worse with Proposed Project</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Park St. / Clement Av.</td>
<td>n/a n/a n/a</td>
<td>n/a n/a n/a</td>
</tr>
<tr>
<td>13</td>
<td>29th Av. / International</td>
<td>n/a n/a n/a</td>
<td>n/a n/a n/a</td>
</tr>
<tr>
<td><strong>Signalized intersection operates at LOS E with and without Proposed Project</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Park St. / Lincoln Av.</td>
<td>-- -- --</td>
<td>0.0 n/a 0.0%</td>
</tr>
<tr>
<td>3</td>
<td>Park St. / Clement Av.</td>
<td>4.5 n/a 3.7%</td>
<td>-- -- --</td>
</tr>
<tr>
<td><strong>Signalized intersection degrades from LOS E to LOS F with Proposed Project(a)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>29th Av. / E. 12th St.</td>
<td>-- -- --</td>
<td>&gt;6.0 n/a n/a</td>
</tr>
<tr>
<td><strong>Signalized intersection operates at LOS F with and without Proposed Project</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Park St. / Blanding Av.</td>
<td>2.3 n/a 2.9%</td>
<td>8.2 n/a 4.4%</td>
</tr>
<tr>
<td>12</td>
<td>29th Av. / E. 12th St.</td>
<td>n/a 0.00 n/a</td>
<td>n/a -- --</td>
</tr>
<tr>
<td>13</td>
<td>29th Av. / International</td>
<td>-- -- --</td>
<td>n/a 0.39 n/a</td>
</tr>
<tr>
<td>20</td>
<td>22nd Av. / E. 12th St.</td>
<td>n/a 0.15 n/a</td>
<td>n/a 0.00 n/a</td>
</tr>
<tr>
<td>26</td>
<td>Fruitvale Av. / E. 9th St.</td>
<td>n/a 0.00 n/a</td>
<td>n/a 0.00 n/a</td>
</tr>
<tr>
<td>27</td>
<td>Fruitvale Av. / E. 12th St.</td>
<td>n/a 0.03 n/a</td>
<td>n/a 0.06 n/a</td>
</tr>
<tr>
<td>28</td>
<td>Fruitvale Av. / International</td>
<td>n/a 0.00 n/a</td>
<td>n/a -- --</td>
</tr>
<tr>
<td><strong>Unsignalized intersection meets signal warrants and 10+ trips are added with Proposed Project</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>23rd Av. / Chapman St.(b)</td>
<td>n/a n/a n/a</td>
<td>-- -- --</td>
</tr>
<tr>
<td>24</td>
<td>16th Av. / Embarcadero(c)</td>
<td>n/a n/a n/a</td>
<td>n/a n/a n/a</td>
</tr>
</tbody>
</table>

Source: AECOM - July 2009

Avg = Average total intersection delay increase; V/C = Total intersection volume-to-capacity ratio increase; Cont = Contribution to total intersection volume growth; "--" = Intersection does not operate at specified condition; n/a = Criteria is not applicable; Bold denotes intersection meets the significance criteria; (a) Average delay represents worse critical movement average delay; (b) In the weekday AM peak hour, the net number of Project-related trips at the 23rd Avenue / Chapman Street intersection would decrease by 292 trips. Therefore, a warrant analysis is not required; (c) In the weekday AM and PM peak hours, there would be no Project-related trips at the 16th Avenue / Embarcadero intersection. Therefore, a warrant analysis was not conducted.

**Intersection #3 - Park Street / Clement Avenue**

During the weekday AM peak hour, the Park Street / Clement Avenue intersection would operate at LOS E with and without the implementation of the Proposed Project. The increase in average delay and traffic volume growth contribution would exceed the City of Alameda’s significance criteria of a maximum allowable average delay increase of four...
operating at LOS E or worse. During the weekday PM peak hour, the Park Street / Clement Avenue intersection would degrade from LOS D to LOS E with the implementation of the Proposed Project. This would meet the City of Alameda’s significance criteria of degrading the intersection operations from LOS D or better to LOS E or worse. As such, implementation of the Proposed Project would result in adverse impacts and would require mitigation measures to reduce impacts.

**Intersection #4 - Park Street / Blanding Avenue**

During the weekday PM peak hour, the Park Street / Blanding Avenue intersection would operate at LOS F with and without the implementation of the Proposed Project. The average intersection delay would increase by 8.2 seconds and 4.4 percent of the overall traffic volume growth at the intersection would be contributed by the Proposed Project. The increase in average delay and traffic volume growth contribution would exceed the City of Alameda’s significance criteria of a maximum allowable average delay increase of four seconds and contribution of traffic volume growth of three percent for intersections operating at LOS E or worse.

**Intersection #12 - 29th Avenue / East 12th Street**

During the weekday PM peak hour, the 29th Avenue / East 12th Street intersection would degrade from LOS E to LOS F and the worst critical movement delay would increase by more than six seconds with the implementation of the Proposed Project. This would meet the City of Oakland’s significance criteria of degrading the intersection operations from LOS E to LOS F and increasing the worst critical movement by more than six seconds.

**Intersection #13 - 29th Avenue / International Boulevard**

During the weekday AM peak hour, the 29th Avenue / International Boulevard intersection would degrade from LOS D to LOS E with the implementation of the Proposed Project. This would meet the City of Oakland’s significance criteria of degrading the intersection operations from LOS D or better to LOS E or worse.

During the weekday PM peak hour, the 29th Avenue / International Boulevard intersection would operate at LOS F with and without the implementation of the Proposed Project. The average intersection v/c ratio would increase by 0.39, which would exceed the City of Oakland’s significance criteria of a maximum allowable increase of 0.03 for intersections operating at LOS F or worse.

**Intersection #20 - 22nd Avenue / East 12th Street**

During the weekday AM peak hour, the 22nd Avenue / East 12th Street intersection would operate at LOS F with and without the implementation of the Proposed Project. The average intersection v/c ratio would increase by 0.15, which would exceed the City of Oakland’s significance criteria of a maximum allowable increase of 0.03 for intersections operating at LOS F or worse.

**Intersection #27 - Fruitvale Avenue / East 12th Street**

During the weekday PM peak hour, the Fruitvale Avenue / East 12th Street intersection would operate at LOS F with and without the implementation of the Proposed Project. The average intersection v/c ratio would increase by 0.06, which would exceed the City of
Oakland’s significance criteria of a maximum allowable increase of 0.03 for intersections operating at LOS F or worse.

**Intersection Queuing**

Based on the intersection queuing detailed summary, the queue length would increase beyond the storage capacity at six intersections with the implementation of the Proposed Project, resulting in adverse impacts.

**Intersection #3 - Park Street/ Clement Avenue**

The weekday PM peak hour, the westbound left-turn movement queue length at the Park Street / Clement Avenue intersection would increase from 125 feet (v/c ratio of 1.32) to 150 feet (v/c ratio of 1.58). Since the v/c ratio would exceed 1.00, the queue would exceed the storage length of the left-turn pocket and could potentially affect network operations. These changes in queue length resulting from implementation of the Proposed Project would result in adverse impacts and would require mitigation measures to reduce impacts.

**Intersection #4 - Park Street / Blanding Avenue**

During the weekday AM peak hour, the westbound through-right-turn movement queue length at the Park Street / Blanding Avenue intersection would increase from 475 feet (v/c ratio of 1.07) to 500 feet (v/c ratio of 1.10). Since the v/c ratio would exceed 1.00, the queue would exceed the storage length of the roadway segment and could potentially affect network operations.

During the weekday PM peak hour, the westbound through-right-turn movement queue length at the Park Street / Blanding Avenue intersection would increase from 650 feet (v/c ratio of 1.34) to 675 feet (v/c ratio of 1.38). Since the v/c ratio would exceed 1.00, the queue would exceed the storage length of the roadway segment and could potentially affect network operations. These changes in queue length resulting from implementation of the Proposed Project would result in adverse impacts and would require mitigation measures to reduce impacts.

**Intersection #7 - 29th Avenue / Ford Street**

During the weekday AM peak hour, queue length at the 29th Avenue / Ford Street intersection eastbound left-turn movement would be 550 feet (v/c ratio of 0.98) and the eastbound through-right-turn movement would be 675 feet (v/c ratio of 0.79). Both approaches would extend beyond the Glascock Street railroad tracks and the through-right-turn movement would extend onto the Park Street Bridge.

During the weekday PM peak hour, queue length at the 29th Avenue / Ford Street intersection eastbound left-turn movement would be 400 feet (v/c ratio of 1.09) and the eastbound through-right-turn movement would be 825 feet (v/c ratio of 0.85). Since the v/c ratio would exceed 1.00, the queue would exceed the storage length of the roadway segment and could potentially affect network operations. Both approaches would extend beyond the Glascock Street railroad tracks and onto the Park Street Bridge. The through-right-turn movement could potentially extend beyond the Park Street Bridge as the volume is greater than the capacity. These changes in queue length resulting from implementation of the Proposed Project would result in adverse impacts and would require mitigation measures to reduce impacts.


**Intersection #12 - 29th Avenue / East 12th Street**

During the weekday AM peak hour, the northbound though-right-turn movement queue length at the 29th Avenue / East 12th Street intersection would increase from 525 feet (v/c ratio of 1.25) to 600 feet (v/c ratio of 1.37). The eastbound through-right-turn movement queue length would increase from 300 feet (v/c ratio of 0.73) to 400 feet (v/c ratio of 0.88). Since the v/c ratio would exceed 1.00 in the northbound direction, the queue would exceed the storage length of the roadway segment and could potentially affect network operations.

During the weekday PM peak hour, the northbound left-turn movement queue length at the 29th Avenue / East 12th Street intersection would increase from 175 feet (v/c ratio of 1.07) to 200 feet (v/c ratio of 1.10). The eastbound through-right-turn movement queue length would increase from 675 feet (v/c ratio of 1.25) to 900 feet (v/c ratio of 1.57). Since the v/c ratio would exceed 1.00 in the northbound and eastbound directions, the queue would exceed the storage length of the roadway segments and could potentially affect network operations. These changes in queue length resulting from implementation of the Proposed Project would result in adverse impacts and would require mitigation measures to reduce.

**Intersection #13 - 29th Avenue / International Boulevard**

During the weekday PM peak hour, the eastbound left-turn movement queue length at the 29th Avenue / International Boulevard intersection would increase from 350 feet (v/c ratio of 1.22) to 400 feet (v/c ratio of 1.31). Since the v/c ratio would exceed 1.00, the queue would exceed the storage length of the roadway segment and could potentially affect network operations.

**Intersection #20 - 22nd Avenue / East 12th Street**

During the weekday AM peak hour, the northbound left-turn movement queue length at the 22nd Avenue / East 12th Street intersection would increase from 350 feet (v/c ratio of 1.60) to 550 feet (v/c ratio of 2.49). The eastbound approach queue length would increase from 525 feet (v/c ratio of 3.44) to 550 feet (v/c ratio of 3.46). The westbound approach queue length would increase from 400 feet (v/c ratio of 1.18) to 475 feet (v/c ratio of 1.32). Since the v/c ratio would exceed 1.00 in the northbound, eastbound, and westbound directions, the queue would exceed the storage length of the corresponding turn pocket or roadway segment and could potentially affect network operations.

During the weekday PM peak hour, the northbound left-turn movement queue length at the 22nd Avenue / East 12th Street intersection would increase from 250 feet (v/c ratio of 1.05) to 275 feet (v/c ratio of 1.18). Since the v/c ratio would exceed 1.00 in the northbound direction, the queue would exceed the storage length of the turn pocket and could potentially affect network operations. These changes in queue length resulting from implementation of the Proposed Project would result in adverse impacts and would require mitigation measures to reduce.

**Intersection #26 - Fruitvale Avenue / East 9th Street**

During the weekday AM peak hour, the eastbound through-right-turn movement queue length at the Fruitvale Avenue / East 9th Street intersection would increase from 950 feet (v/c ratio of 1.01) to 1,025 feet (v/c ratio of 1.09). Since the v/c ratio would exceed 1.00, the queue would exceed the storage length of the roadway segment and could potentially affect network operations.
network operations. These changes in queue length resulting from implementation of the Proposed Project would result in adverse impacts and would require mitigation measures to reduce impacts.

**Intersection #27 – Fruitvale Avenue / East 12th Street**

During the weekday AM peak hour, the eastbound left-turn movement queue length at the Fruitvale Avenue / East 12th Street intersection would increase from 500 feet (v/c ratio of 3.76) to 550 feet (v/c ratio of 3.80). Since the v/c ratio would exceed 1.00, the queue would exceed the storage length of the roadway segment and could potentially affect network operations.

**Intersection #28 – Fruitvale Avenue/ International Boulevard**

During the weekday AM peak hour, the northbound through-right-turn movement queue length at the Fruitvale Avenue / International Boulevard intersection would increase from 400 feet (v/c ratio of 1.02) to 425 feet (v/c ratio of 1.03). Since the v/c ratio would exceed 1.00, the queue would exceed the storage length of the roadway segment and could potentially affect network operations.

**No Build**

**Intersection #7 – 29th Avenue / Ford Street**

It should be noted that in the No Build Conditions the eastbound approach is a free movement and no queuing would be caused by the intersection; however, a queue would likely propagate onto the eastbound approach from the Ford Street weaving section. The two-lane Ford Street weaving section would accommodate 2,230 vph and 1,792 vph during the weekday AM and PM peak hours, respectively, in the No Build Conditions. During the peak hours, the Ford Street weaving section would likely reach overflow conditions and long queues would form. These queue lengths would likely be comparable to, or possibly exceed, the eastbound queue lengths that are expected in the Build Conditions. Additionally, the Northbound I-880 On-Ramp at 23rd Avenue ramp meter could potentially contribute to queuing that would propagate through the 29th Avenue / Ford Street intersection.

**Local Roadways**

**Build**

**Northbound I-880 Off-Ramp at 23rd Avenue to Alameda**

Vehicles utilizing the northbound I-880 off-ramp at 23rd Avenue to access Alameda in the No Build Conditions would be rerouted to utilize the reconstructed northbound I-880 off-ramp at 29th Avenue. In addition to the improvements to the northbound I-880 off-ramp at 29th Avenue, improvements to the 29th Avenue Overcrossing and the Park Street Triangle would increase the roadway capacity and improve the travel time. This configuration would accommodate all vehicles exiting the northbound I-880 freeway to access Alameda via the Park Street Bridge.

The travel time between the northbound I-880 freeway and Alameda is expected to decrease by 1.7 minutes in the weekday AM peak hour and decrease by 2.8 minutes in the PM peak hour of the Build Conditions as vehicles are rerouted to the northbound I-880 off-ramp at 29th Avenue.
Northbound I-880 Off-Ramp at 23rd Avenue to Oakland

The travel time between the northbound I-880 off-ramp at 23rd Avenue and Oakland is expected to decrease by 1.3 minutes in the weekday AM peak hour and decrease by 2.2 minutes in the PM peak hour of the Build Conditions. This improvement could be expected due to standardization of the northbound I-880 off-ramp at 23rd Avenue, the rerouting of Alameda-bound vehicles to the northbound I-880 off-ramp at 29th Avenue, and the improved intersection capacity.

Alameda to Northbound I-880 On-Ramp at 23rd Avenue (Eastbound)

The two northbound I-880 on-ramps at 23rd Avenue would be consolidated to a single ramp with the implementation under the Build Condition. The consolidated ramp would be metered and the capacity would be lower than the capacity of the current configuration. Without ramp metering, the maximum capacity of the ramp would be approximately 1,650 vehicles per hour (vph). This capacity is dictated by the mainline freeway volumes and geometry. Given the traffic volumes and intersection geometry, the maximum capacity of the eastbound left turning movement (two lanes) and westbound right turning movement (one lane) would be approximately 2,100 vph. The metered northbound I-880 on-ramp at 23rd Avenue would have a lower capacity than the proposed intersection.

The travel time between Alameda and the northbound I-880 on-ramp at 23rd Avenue is expected to increase by 1.98 minutes in the weekday AM peak hour of the Build Conditions. This increase in travel time would be caused by queuing at the northbound I-880 on-ramp at 23rd Avenue.

The travel time between Alameda and the northbound I-880 on-ramp at 23rd Avenue is expected to increase by 1.9 minutes in the weekday PM peak hour of the Build Conditions. This increase in travel time would be caused primarily by the signalization of the 29th Avenue / Ford Street intersection. The majority of the green time at this intersection would be allotted to vehicles utilizing the northbound I-880 off-ramp at 29th Avenue to access Alameda.

Oakland to Northbound I-880 On-Ramp at 23rd Avenue (Westbound)

The two Northbound I-880 On-Ramps at 23rd Avenue would be consolidated to a single ramp with the implementation of the Proposed Project. The westbound approach traffic would no longer be provided an exclusive ramp, which would result in reduced ramp capacity.

The travel time between Oakland and the Northbound I-880 On-Ramp at 23rd Avenue is expected to increase by 1.2 minutes in the weekday AM peak hour of the Build Conditions. This increase in travel time would be caused primarily by the consolidation of the two Northbound I-880 On-Ramps at 23rd Avenue.

Oakland to Southbound I-880 On-Ramp at 23rd Avenue

The travel time between Oakland and the Southbound I-880 On-Ramp at 23rd Avenue is expected to decrease by 1.1 minutes in the weekday PM peak hour of the Build Conditions. This travel time decrease would be caused by the improvements at the 23rd Avenue / East 11th Street intersection. The traffic circulation modifications and the improvements at the 23rd Avenue / East 11th Street intersection would reduce network delay and improve the travel time.
No Build

Northbound I-880 Off-Ramp at 23rd Avenue to Oakland

Vehicles utilizing the northbound I-880 off-ramp at 23rd Avenue to access Oakland in the No Build Conditions would exit the freeway via a substandard ramp and travel through two signalized intersections with low capacity. Vehicle queuing and substantial intersection delays would be expected and related impacts such as increased congestion, vehicle idling emissions, and impacts to pedestrian/motorist safety.

The travel time between the Northbound I-880 Off-Ramp at 23rd Avenue and Oakland is expected to decrease by 1.3 minutes in the weekday AM peak hour and decrease by 2.2 minutes in the PM peak hour of the Build Conditions. This improvement could be expected due to standardization of the Northbound I-880 Off-Ramp at 23rd Avenue, the rerouting of Alameda-bound vehicles to the Northbound I-880 Off-Ramp at 29th Avenue, and the improved intersection capacity.

Freeway Network Operations

Build

The Proposed Project would consolidate the two northbound I-880 on-ramps at 23rd Avenue to a single ramp. In addition to the removal of a ramp junction, the spacing between the northbound I-880 on-ramp at 23rd Avenue and the northbound I-880 on-ramp at 29th Avenue would be approximately 2,500 feet. Currently, the distance from the northbound I-880 on-ramp at Lisbon Avenue and the northbound I-880 on-ramp at 23rd Avenue (eastbound) is approximately 1,700 feet. The distance between the northbound I-880 on-ramp at 23rd Avenue (eastbound) and northbound I-880 on-ramp at 23rd Avenue (westbound) is approximately 600 feet.

The auxiliary lane between the northbound I-880 on-ramp at Lisbon Avenue and the northbound I-880 off-ramp at 23rd Avenue is 373 feet long and would accommodate 2,168 vehicles and 1,801 vehicles during the weekday AM and PM peak hours, respectively. The Proposed Project would increase the length of the auxiliary lane by 400 feet and reduce the number of trips by 510 vehicles and 505 vehicles during the weekday AM and PM peak hours, respectively. This improvement would adversely reduce the severity and number of maneuvers in the weaving section.

During the weekday AM peak hour of the Build Conditions, the increased ramp spacing allows adequate space for vehicle maneuvers at the ramp junctions. This significantly increases the freeway capacity and travel speed for vehicles traveling through the corridor in the northbound direction. With the implementation of the Proposed Project, the travel average speed increases from approximately 40 miles per hour (mph) to 60 mph between the I-880 overcrossing at High Street and the 23rd Avenue interchange. Negligible changes in freeway performance are expected in the southbound direction.

During the weekday PM peak hour of the Build Conditions, the increased auxiliary lane length between the 23rd Avenue and 29th Avenue interchanges and reduced traffic volumes would significantly increase the travel speed on the mainline freeway. The standardization of the geometric configuration of the ramps would improve the ramp junctions as vehicles could exit the freeway at a higher rate of speed. Additionally, the modification of the 23rd Avenue / East 11th Street intersection would reduce delay and queuing that could impact
ramp operations. With the implementation of the Proposed Project, the average travel speed increases from approximately 25 mph to 50 mph between the I-880 overcrossing at High Street and the 29th Avenue interchange. Negligible changes in freeway performance are expected in the southbound direction.

Freeway Queuing

With the implementation of the Proposed Project, the length of the Northbound I-880 Off-Ramp at 29th Avenue would increase by 337 feet – to a total ramp length of 645 feet when compared to the No Build Conditions. The weekday AM and PM peak hour queue lengths at the 29th Avenue / Northbound I-880 Off-Ramp at 29th Avenue intersection would be 75 feet and 100 feet, respectively. Given the length of the queue, the corresponding ramp deceleration length during the weekday AM and PM peak hours would be 570 feet and 545 feet, respectively. The deceleration length would exceed the minimum mandatory deceleration length of 525 feet.

No Build

During the weekday AM peak hour of the No Build Conditions, the simulated freeway travel speeds are less than 30 mph throughout the I-880 corridor in the southbound direction. The reduced speeds in the southbound direction are caused by the roadway grade and vertical curvature at the I-880 overcrossings at Fruitvale Avenue, High Street, and 98th Avenue, which reduce the freeway capacity resulting in increased upstream density and slower speeds. In the northbound direction, travel speeds are typically less than 20 mph upstream of the High Street Overcrossing. The slow speeds in the northbound direction are caused by the roadway grade and vertical curvature at the I-880 overcrossings at Fruitvale Avenue, High Street, and 98th Avenue.

During the weekday PM peak hour of the No Build Conditions, the simulated travel speeds decrease and the density increases in the southbound direction at the Broadway and 98th Avenue ramps. In the northbound direction, travel speeds are typically above 50 mph downstream of High Street and below 30 mph upstream of High Street. The roadway grade and vertical curvature at the I-880 overcrossings at High Street and Fruitvale Avenue reduce the freeway capacity and cause increased upstream density and slower speeds in both directions. The high on-ramp volumes at the I-980, Broadway, and Oak Street interchanges cause poor junction operations and result in increased upstream density and slower speeds in the southbound direction.

In the weekday AM peak hour of the No Build Conditions in the southbound direction of I-880, the maximum peak hour mainline traffic volume demand in the Proposed Project vicinity is expected to be 8,590 vph. The maximum peak hour mainline traffic volume that could be served was determined in the simulation to be 6,850 vph. The maximum traffic volume served was determined in the simulation to be 7,678 vph at 6:45am at the Southbound I-880 weaving section between 29th Avenue and Fruitvale Avenue – where the average vehicle speed would be 41 mph. The maximum average vehicle speed at 6:45am was determined in the simulation to be 64 mph at the Southbound I-880 diverge section at 23rd Avenue – where the simulated traffic volume was 7,325 vph.

In the weekday AM peak hour of the No Build Conditions in the northbound direction of I-880, the maximum peak hour mainline traffic volume demand in the Proposed Project vicinity is expected to be 10,850 vph. The maximum peak hour mainline traffic volume that
could be served was determined in the simulation to be 8,097 vph. The maximum traffic volume served was determined in the simulation to be 8,127 vph at 7:45am at the Northbound I-880 merge section at 23rd Avenue (WB) – where the average vehicle speed would be 41 mph. The maximum average vehicle speed at 7:45am was determined in the simulation to be 63 mph at the Northbound I-880 diverge section at Embarcadero – where the simulated traffic volume was 7,839 vph.

In the weekday PM peak hour of the No Build Conditions in the southbound direction of I-880, the maximum peak hour mainline traffic volume demand in the Proposed Project vicinity is expected to be 8,503 vph. The maximum peak hour mainline traffic volume that could be served was determined in the simulation to be 7,170 vph. The maximum traffic volume served was determined in the simulation to be 7,619 vph at 4:30 PM at the southbound I-880 diverge section at 10th Avenue and Fruitvale Avenue – where the average vehicle speed would be 54 mph. The maximum average vehicle speed at 4:30 PM was determined in the simulation to be 65 mph at the southbound I-880 diverge section at 23rd Avenue – where the simulated traffic volume was 6,049 vph. The vehicle demand exceeds the roadway capacity in the southbound direction of the freeway.

In the weekday PM peak hour of the No Build Conditions in the northbound direction of I-880, the maximum peak hour mainline traffic volume demand in the Proposed Project vicinity is expected to be 9,204 vph. The maximum peak hour mainline traffic volume that could be served was determined in the simulation to be 5,647 vph. The maximum traffic volume served was determined in the simulation to be 7,691 vph at 3:30 PM at the northbound I-880 merge section at 23rd Avenue (westbound) – where the average vehicle speed would be 50 mph. The maximum average vehicle speed at 3:30 PM was determined in the simulation to be 64 mph at the northbound I-880 diverge section at Embarcadero – where the simulated traffic volume was 6,797 vph. The vehicle demand exceeds the roadway capacity in the northbound direction of the freeway.

Freeway Queuing

As stated above, in the No Build Conditions the queue length on the northbound I-880 off-ramp at 29th Avenue would reduce the ramp deceleration length to 188 feet, which is 337 feet less than the minimum mandatory off-ramp deceleration length of 525 feet and would result in adverse impacts.

Parking

Some on-street parking will be removed or restricted as a result of implementation of Mitigation Measures TRA-1, TRA-2, TRA-7, and TRA-8 to reduce adverse traffic impacts. This removal or temporary restriction of parking is minimal and inconsequential.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

Intersection Operations

Based on the detailed assessment of the intersection operations, six intersections would meet the City of Alameda and City of Oakland significance criteria and result in adverse impacts. The following mitigation measures, as related to traffic impacts (TRA) are proposed to reduce impacts.
Intersection #3 - Park Street / Clement Avenue

TRA-1 The Proposed Project impacts will be mitigated by re-striping the eastbound approach to establish a left-turn pocket and optimizing the signal cycle length and phasing.

During the weekday AM peak hour, the Park Street / Clement Avenue intersection would operate at LOS D (average intersection delay of 51.5 seconds per vehicle) with the implementation of the proposed mitigation. The proposed mitigation would offset the impacts of the Proposed Project and would not be expected to cause any adverse impacts.

During the weekday PM peak hour, the Park Street / Clement Avenue intersection would operate at LOS D (average intersection delay of 39.9 seconds per vehicle) with the implementation of the proposed mitigation. The proposed mitigation would offset the impacts of the Proposed Project and would not be expected to cause any adverse impacts.

Due to the closely spaced roadway network configuration and high traffic volumes, the four signalized intersections on Park Street between Lincoln Avenue and Blanding Avenue would need to operate on a common cycle length to achieve optimal performance. The optimal cycle length would be 65 seconds during the weekday AM and weekday PM peak periods. These cycle length modifications would not be expected to cause any adverse impacts to intersection operations or queuing. The City of Alameda is currently using a cycle length of 90 seconds and 110 seconds during the AM and PM periods, respectively. The current cycle lengths will be modified as necessary to optimize the Park Street/23rd Avenue corridor from Buena Vista to the I-880 northbound on-ramp.

Once the Proposed Project is completed and operational, further improvements could be incorporated to improve circulation and reduce delay at the Park Street / Clement Avenue intersection. These improvements could include the addition of one left turn pocket in the southbound direction with the removal of on-street parking; transit queue jump lanes on Park Street between Buena Vista Avenue and Clement Avenue with the removal of on-street parking; full intersection actuation and video detection equipment; striping modifications between Buena Vista Avenue and Clement Avenue to accommodate transit queue jump lanes; and communication equipment to allow transit priority / preemption through the intersection via the queue jump lane.

The City of Alameda will monitor the operations of the Park Street / Clement Avenue intersection once the Proposed Project is complete and these improvements could be constructed when deemed necessary.

Intersection #4 - Park Street / Blanding Avenue

TRA-2 The Proposed Project impacts will be mitigated by optimizing signal cycle length and phasing.

During the weekday PM peak hour, the Park Street / Blanding Avenue intersection would operate at LOS F (average intersection delay of more than
80.0 seconds per vehicle) with the implementation of the proposed mitigation. The proposed mitigation would offset the impacts of the Proposed Project and would not be expected to cause any adverse impacts.

Due to the closely spaced roadway network configuration and high traffic volumes, the four signalized intersections on Park Street between Lincoln Avenue and Blanding Avenue would need to operate on a common cycle length to achieve optimal performance. The optimal cycle length would be 65 seconds during the weekday AM and weekday PM peak periods. These cycle length modifications would not be expected to cause any adverse impacts to intersection operations or queuing.

Once the Proposed Project is completed and operational, further improvements could be incorporated to improve circulation and reduce delay at the Park Street / Blanding Avenue intersection. These improvements could include the addition of one shared through-left turn pocket in the northbound direction with the removal of on-street parking; the addition of one left turn pocket in the southbound direction with the removal of on-street parking; full intersection actuation and video detection equipment and communication equipment to allow transit priority / preemption through the intersection.

The City of Alameda will monitor the operations of the Park Street / Blanding Avenue intersection once the Proposed Project is complete and these improvements could be constructed when deemed necessary.

Intersection #12 - 29th Avenue / East 12th Street

TRA-3 The Proposed Project impacts could be mitigated by re-striping the eastbound approach to increase from two lanes to three lanes; re-striping the westbound approach to include one left-turn pocket and one shared through-right lane (a reduction from two receiving lanes to one receiving lane in the westbound direction); adjusting the signal phasing to protect eastbound and westbound left-turns; and optimizing the signal cycle length and phasing.

These improvements would not require the acquisition right-of-way as the space required to increase the eastbound approach to three lanes (one left-turn pocket, one through-lane, and one right-turn lane) would be offset by reducing the westbound receiving lane requirements to one lane. The left-turn pockets would allow for protected left-turn phasing in the eastbound and westbound directions.

In addition to the geometric improvements, the signal timing and phasing could be optimized to improve intersection operations.

During the weekday PM peak hour, the 29th Avenue / East 12th Street intersection would operate at LOS C (average intersection delay of 33.5 seconds per vehicle) with the implementation of the proposed mitigation. The proposed mitigation would offset the impacts of the Proposed Project and would not be expected to cause any adverse impacts.

It should be noted that the proposed Gateway Community project would contribute 13.0 percent of the overall traffic volume growth at this intersection during the weekday PM peak hour and would independently impact
intersection operations. Prior to the implementation of the Gateway Community project, the intersection may only require the partial implementation of the proposed mitigation measures.

**Intersection #13 – 29th Avenue / International Boulevard**

**TRA-4** The Proposed Project impacts could be mitigated by optimizing the signal cycle length and phasing.

During the weekday AM peak hour, the 29th Avenue / International Boulevard intersection would operate at LOS C (average intersection delay of 31.3 seconds per vehicle) with the implementation of the proposed mitigation. The proposed mitigation would offset the impacts of the Proposed Project and would not be expected to cause any adverse impacts.

During the weekday PM peak hour, the 29th Avenue / International Boulevard intersection would operate at LOS D (average intersection delay of 43.4 seconds per vehicle) with the implementation of the proposed mitigation. The proposed mitigation would offset the impacts of the Proposed Project and would not be expected to cause any adverse impacts.

**Intersection #20 – 22nd Avenue / East 12th Street**

**TRA-5** The Proposed Project impacts could be mitigated by re-striping the northbound approach to include two left-turn lanes, one through-lane, and one (1) shared through-right-turn lane; and optimizing the signal cycle length and phasing.

It should be noted that the current northbound three through-lane approach on East 12th Street tapers to two lanes within 300 feet downstream of the 22nd Avenue / East 12th Street intersection. Given this configuration, reducing the number of through lanes on the northbound approach would not reduce the carrying capacity of East 12th Street in the northbound direction.

During the weekday AM peak hour, the 22nd Avenue / East 12th Street intersection would operate at LOS E (average intersection delay of 59.4 seconds per vehicle) with the implementation of the proposed mitigation. The proposed mitigation would offset the impacts of the Proposed Project and would not be expected to cause any adverse impacts.

**Intersection #27 – Fruitvale Avenue / East 12th Street**

**TRA-6** The Proposed Project impacts could be mitigated by optimizing the signal cycle length and phasing.

During the weekday PM peak hour, the Fruitvale Avenue / East 12th Street intersection would operate at LOS E (average intersection delay of 70.2 seconds per vehicle) with the implementation of the proposed mitigation. The proposed mitigation would offset the impacts of the Proposed Project and would not be expected to cause any adverse impacts.
Intersection Queuing

Intersection #3 – Park Street/ Clement Avenue

TRA-7 The Proposed Project impacts will be mitigated by re-striping the eastbound approach to establish a left-turn pocket and optimizing the signal cycle length and phasing.

During the weekday PM peak hour, the westbound left-turn movement queue length at the Park Street / Clement Avenue intersection would be 100 feet (v/c ratio of 1.24) with the implementation of the proposed improvements. These improvements would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

Due to the closely spaced roadway network configuration and high traffic volumes, the four signalized intersections on Park Street between Lincoln Avenue and Blanding Avenue would need to operate on a common cycle length to achieve optimal performance. The optimal cycle length would be 65 seconds during the weekday AM and weekday PM peak periods. These cycle length modifications would not be expected to cause any adverse impacts to intersection operations or queuing.

Once the Proposed Project is completed and operational, further improvements could be incorporated to improve circulation and reduce delay at the Park Street / Clement Avenue intersection. These improvements could include the addition of one left turn pocket in the southbound direction with the removal of on-street parking; transit queue jump lanes on Park Street between Buena Vista Avenue and Clement Avenue with the removal of on-street parking; full intersection actuation and video detection equipment; striping modifications between Buena Vista Avenue and Clement Avenue to accommodate transit queue jump lanes; and communication equipment to allow transit priority / preemption through the intersection via the queue jump lane.

The City of Alameda will monitor the operations of the Park Street / Clement Avenue intersection once the Proposed Project is complete and these improvements could be constructed when deemed necessary.

Intersection #4 – Park Street / Blanding Avenue

TRA-8 The Proposed Project impacts will be mitigated by optimizing the signal cycle length and phasing.

During the weekday AM peak hour, the westbound though-right-turn movement queue length at the Park Street / Blanding Avenue intersection would be 475 feet (v/c ratio of 1.07) with the implementation of the proposed improvements. These improvements would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

During the weekday PM peak hour, the westbound though-right-turn movement queue length at the Park Street / Blanding Avenue intersection would be 725 feet (v/c ratio of 1.33) with the implementation of the proposed improvements. These improvements would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.
Due to the closely spaced roadway network configuration and high traffic volumes, the four signalized intersections on Park Street between Lincoln Avenue and Blanding Avenue would need to operate on a common cycle length to achieve optimal performance. The optimal cycle length would be 65 seconds during the weekday AM and weekday PM peak periods. These cycle length modifications would not be expected to cause any adverse impacts to intersection operations or queuing.

Once the Proposed Project is completed and operational, further improvements could be incorporated to improve circulation and reduce delay at the Park Street / Blanding Avenue intersection. These improvements could include the addition of one shared through-left turn pocket in the northbound direction with the removal of on-street parking; the addition of one left turn pocket in the southbound direction with the removal of on-street parking; full intersection actuation and video detection equipment and communication equipment to allow transit priority / preemption through the intersection.

The City of Alameda will monitor the operations of the Park Street / Blanding Avenue intersection once the Proposed Project is complete and these improvements could be constructed when deemed necessary.

**Intersection #7 – 29th Avenue / Ford Street**

**TRA-9** Additional improvements are not recommended for this intersection. The proposed intersection configuration would improve circulation in the Park Street Triangle for motorists, bicyclists, and pedestrians. The addition of the proposed pedestrian crosswalk on the eastern approach would result in increased vehicle queues in the eastbound direction.

To reduce the eastbound queue length, the proposed pedestrian crosswalk on the eastbound approach could be removed from the Proposed Project. Without the pedestrian crosswalk on the eastbound approach, the queue length on the eastbound left-turn movement would be 550 feet (v/c ratio of 0.97) and on the through-right-turn movement would be 250 feet (v/c ratio of 0.68) during the weekday AM peak hour. The queue length on the eastbound left-turn movement would be 475 feet (v/c ratio of 0.99) and on the through-right-turn movement would be 425 feet (v/c ratio of 0.73) during the weekday PM peak hour. Without the eastern approach crosswalk the eastbound queue length would not extend to the Park Street Bridge.

**Intersection #12 – 29th Avenue / East 12th Street**

**TRA-10** The Proposed Project impacts could be mitigated by re-striping the eastbound approach to include one left-turn pocket, one through lane, and one right-turn lane (an increase from two lanes to three lanes in the eastbound direction); re-striping the westbound approach to include one left-turn pocket and one shared through-right lane (a reduction from two receiving lanes to one receiving lane in the westbound direction); adjusting the signal phasing to protect eastbound and westbound left-turns; and optimizing the signal cycle length and phasing.
These improvements would not require the acquisition of right-of-way as the space required to increase the eastbound approach to three lanes (one left-turn pocket, one through-lane, and one right-turn lane) would be offset by reducing the westbound receiving lane requirements to one lane. The left-turn pockets would allow for protected left-turn phasing in the eastbound and westbound directions.

In addition to the geometric improvements, the signal timing and phasing could be optimized to improve intersection operations.

During the weekday AM peak hour, the northbound through-right-turn movement queue length at the 29th Avenue / East 12th Street intersection would be 800 feet (v/c ratio of 1.19) with the implementation of the proposed improvements. The eastbound through movement queue length would be 275 feet (v/c ratio of 0.52) with the implementation of the proposed improvements. These improvements would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

During the weekday PM peak hour, the northbound left-turn movement queue length at the 29th Avenue / East 12th Street intersection would be 200 feet (v/c ratio of 0.94) with the implementation of the proposed improvements. The eastbound through movement queue length would be 550 feet (v/c ratio of 0.93) with the implementation of the proposed improvements. These improvements would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

It should be noted that the Gateway Community project would contribute 10.7 percent and 13.0 percent of the overall traffic volume growth at this intersection during the weekday AM and PM peak hours, respectively, and would independently impact intersection operations. Prior to the implementation of the Gateway Community project, the intersection may only require the partial implementation of the proposed mitigation measures.

**Intersection #13 – 29th Avenue/International Boulevard**

TRA-11 The Proposed Project impacts could be mitigated by optimizing the signal cycle length and phasing.

During the weekday PM peak hour, the eastbound left-turn movement queue length at the 29th Avenue / International Boulevard intersection would be 300 feet (v/c ratio of 0.85) with the implementation of the proposed improvements. This improvement would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

**Intersection #20 – 22nd Avenue / East 12th Street**

TRA-12 The Proposed Project impacts could be mitigated by re-striping the eastbound approach to include one left-turn pocket, one through lane, and one right-turn lane (an increase from two lanes to three lanes in the eastbound direction); re-striping the westbound approach to include one left-turn pocket and one shared through-right lane (a reduction from two receiving lanes to one receiving lane in...
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

the westbound direction); adjusting the signal phasing to protect eastbound and westbound left-turns; and optimizing the signal cycle length and phasing.

These improvements would not require the acquisition of right-of-way as the space required to increase the eastbound approach to three lanes (one left-turn pocket, one through-lane, and one right-turn lane) would be offset by reducing the westbound receiving lane requirements to one lane. The left-turn pockets would allow for protected left-turn phasing in the eastbound and westbound directions.

In addition to the geometric improvements, the signal timing and phasing could be optimized to improve intersection operations.

During the weekday AM peak hour, the northbound left-turn movement queue length at the 22nd Avenue / East 12th Street intersection would be 275 feet (v/c ratio of 0.99) with the implementation of the proposed improvements. The eastbound approach queue length would be 600 feet (v/c ratio of 2.45) with the implementation of the proposed improvements. The westbound approach queue length would be 500 feet (v/c ratio of 0.95) with the implementation of the proposed improvements. These improvements would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

During the weekday PM peak hour, the northbound left-turn movement queue length at the 22nd Avenue / East 12th Street intersection would be 125 feet (v/c ratio of 0.75) with the implementation of the proposed improvements. These improvements would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

Intersection #26 – Fruitvale Avenue / East 9th Street

TRA-13 The Proposed Project impacts could be mitigated by optimizing the signal cycle length and phasing.

During the weekday AM peak hour, the eastbound through-right-turn movement queue length at the Fruitvale Avenue / East 9th Street intersection would be 925 feet (v/c ratio of 0.93) with the implementation of the proposed improvements. This improvement would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

Intersection #27 – Fruitvale Avenue / East 12th Street

TRA-14 The Proposed Project impacts could be mitigated by optimizing the signal cycle length and phasing.

During the weekday AM peak hour, the eastbound left-turn movement queue length at the Fruitvale Avenue / East 12th Street intersection would be 600 feet (v/c ratio of 1.88) with the implementation of the proposed improvements. This improvement would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

Intersection #28 – Fruitvale Avenue / International Boulevard

TRA-15 The Proposed Project impacts could be mitigated by optimizing the signal cycle length and phasing.
During the weekday AM peak hour, the northbound through-right-turn movement queue length at the Fruitvale Avenue / International Boulevard intersection would be 450 feet (v/c ratio of 1.02) with the implementation of the proposed improvements. This improvement would mitigate the Proposed Project impacts and would not be expected to cause any adverse impacts.

**Traffic Management Plan**

TRA-16 The Proposed Project impacts could be minimized by the implementation of a Traffic Management Plan.

The TMP for the I-880/29th Avenue and 23rd Avenue Project will identify temporary detours needed to construct the proposed improvements. These temporary detours are anticipated to be in place for a few hours (nighttime ramp and freeway closures) up to several months (closure of the 29th Avenue overcrossing). The detours that will be in place for a few hours will be identified in the TMP and the Project special provisions will identify certain requirements the contractor will need to implement. In addition, the Project Resident Engineer will be coordinating the nighttime detours with adjacent projects and local media. The detours that will remain in place for an extended period of time will be identified in the TMP, the Project special provisions and on the Project stage construction plans.

The Resident Engineer will also coordinate these detours with adjacent projects and the local media.

The anticipated general stage construction for the Proposed Project will consist of four stages. The staging concept and discussion is conceptual and subject to change during the development of final plans. The TMP will include the final construction staging and how the construction staging will minimize impacts as related to the finalized Project design.

The TMP will evaluate the traffic circulation patterns associated with the detours needed to construct the Proposed Project. The TMP will also evaluate the need for pedestrian and bicycle detours during construction. The TMP will also include measures to reduce adverse impacts related to emergency access and parking.

### 2.2.5 Visual/Aesthetics

#### 2.2.5.1 Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the Federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically (emphasis added) and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, the Federal Highway Administration in its implementation of NEPA (23 USC 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state “with...enjoyment
of aesthetic, natural, scenic, and historic environmental qualities.” (CA Public Resources Code Section 21001[b]).

2.2.5.2 Affected Environment

A Visual Impact Assessment (VIA) was prepared for the Proposed Project in December 2008, revised April 2009. The information contained in this section is based on the analysis conducted for the VIA report. The VIA was conducted in accordance with guidance provided by the Federal Highway Administration (FHWA), and satisfies the requirements of NEPA and CEQA.

Visual Setting, Viewshed, and Sensitive Viewers

Project Setting

The regional landscape establishes the general visual environment of the Project; however, the specific visual environment upon which this assessment will focus upon is determined by defining landscape units and the Project viewshed.

The regional landscape of northwest Alameda County is characterized by the San Francisco Bay to the west, rolling hills of the Oakland Hills to the east, and generally flat land between San Francisco Bay and Oakland Hills. The Project area is located in the flat area of the City and consists of a mix of uses including residential, commercial, industrial, and institutional uses. The I-880 freeway corridor is urban in nature, and views from this corridor generally consist of urban development. Partial views to ridgetops associated with the Oakland Hills to the east are afforded within the I-880 corridor.

Landscape Units

A landscape unit is a portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character. A landscape unit will often correspond to a place or district that is commonly known among local viewers.

Landscape Unit 1: I-880 Corridor

Landscape Unit 1 (LU1) is located within a flat stretch of land along I-880 between the I-880/23rd Avenue Interchange and the I-880/Fruitvale Avenue Interchange; refer to Exhibit 2.2-17, Landscape Units. LU1 is relatively flat, with elevations ranging from approximately 15 to 25 feet above mean sea level (msl). LU1 consists of the I-880 corridor located within the northwestern portion of Alameda County. The landscape unit is defined by urban land surrounding the corridor located to the north and south of the Project area, the Oakland Hills to the east, and the San Francisco Bay to the west.

Landscape Unit 2: Residential and Institutional

Landscape Unit 2 (LU2) is located in a generally flat area, with elevations ranging from approximately 18 to 42 feet above msl. LU2 consists of residential and institutional land uses located adjacent, to the east of the Project site between 29th Avenue and 23rd Avenue. LU2 is defined by commercial uses to the north, the Oakland Hills to the east, I-880 and the San Francisco Bay to the west, and I-880 to the south and west.

Landscape Unit 3: Commercial and Industrial

Landscape Unit 3 (LU3) consists of commercial and industrial land uses located immediately south of I-880. LU3 is located in a relatively flat area, with elevations ranging
from approximately 14 to 23 feet above msl. This landscape unit is defined by I-880 to the north, the Oakland Hills and I-880 to the east, and the San Francisco Bay to the south and west.

**Project Viewshed**

A viewshed is a subset of a landscape unit and is comprised of all the surface areas visible from an observer’s viewpoint. The limits of a viewshed are defined as the visual limits of the views located from the Proposed Project. The viewshed also includes the locations of viewers likely to be affected by visual changes brought about by Project features.

Based upon a site visit conducted on October 29, 2008, scattered views are afforded from surrounding urban land uses within a one-mile radius of the Project site. The majority of views to the Project site are from northbound and southbound travel lanes along I-880, and adjoining residential, commercial, and industrial land uses to the north and south. The majority of views to the Project area from more distant locations are screened by existing topography, structures, and vegetation that severely limit the viewshed to the Proposed Project.

**Landscape Unit 1: I-880 Corridor**

The majority of views to the Project site within LU1 are afforded from travelers in the northbound and southbound lanes of I-880. Views are afforded along the stretch of freeway (approximately 1.25 miles) between Fruitvale Avenue and 16th Avenue. Travelers have views of the I-880 corridor and the 29th and 23rd Avenue overcrossings.

**Landscape Unit 2: Residential and Institutional**

The residential and institutional uses located to the north of I-880 within LU2 have views to the Project site. Views from residential uses are to the area of the Project site where the new soundwall would be located, as well as to the 29th Avenue Overcrossing. Views from institutional uses include the 29th Avenue Overcrossing, the new soundwall, and the 23rd Avenue Overcrossing. In addition, views from Lazear School would include proposed soundwalls NB-3 and NB-5.

**Landscape Unit 3: Commercial and Industrial**

The mixed uses, mostly commercial and industrial uses with sparse residential uses interspersed are located to the south of I-880 within LU3. These uses have views to the Project site, which include the 29th and 23rd Avenue overcrossings.

**Existing Visual Character**

Visual character is descriptive and non-evaluative, which means it is based on defined attributes that are neither good nor bad. A change in visual character cannot be described as having good or bad attributes until it is compared with the viewer response to that change. If there is public preference for the established visual character of a regional landscape and resistance to a project that would contrast that character, then changes in the visual character can be evaluated.

Urban development exists within the vicinity of the Project site. The majority of land uses to the north of I-880 in this area consist of residential uses. Institutional and commercial uses also exist to the north of the Project site. Commercial, residential, and light industrial uses adjoin the southern portion of the Project site.
Landscape Unit 1: I-880 Corridor

Existing visual resources within LU1 include partial views to the Oakland Hills, located to the east of the Project site. The San Francisco Bay is located to the west of the Project site; however, this resource is not visible from LU1.

Man-made features within the viewshed from LU1 consist of urban development. Also, a chain-link fence is present along the northern edge of the freeway, separating I-880 and the frontage road (East 8th Street) located near commercial and residential uses. There are also three freeway overcrossings visible within LU1.

Vegetation within LU1 consists of mature ornamental landscaping associated with various urban land uses. Numerous large mature trees and vegetation are located throughout the Project area adjoining I-880 as well as within surrounding uses. Tree species within the Project area that may be affected by the Proposed Project include Redwood, California Sycamore, Acacia, Brazilian Pepper, Black Oak, and Pear.

Landscape Unit 2: Residential and Institutional

Existing visual resources within LU2 include partial views to the Oakland Hills, located to the east, and the Kennedy Tract/Jingletown neighborhood. According to the Historical Resources Evaluation Report (HRER), prepared by Jones & Stokes, in 2008, the Kennedy Tract/Jingletown neighborhood may be eligible as a historic district. Residential structures within this neighborhood consist of late nineteenth and early twentieth century structures. Ornamental landscaping within LU2 consists of typical vegetation associated with residential development as well as Redwood and Sycamore trees within Kennedy Tract Park. No water features are visible within LU2.
Man-made features within the viewshed from LU2 consist of surrounding residential and sparse commercial development. Also, a chain-link fence is present along the northern edge of the freeway, separating I-880 and the frontage road (East 8th Street) located near commercial and residential uses. The 29th Avenue Overcrossing is located to the southeast and the 23rd Avenue Overcrossing is located to the northwest of LU2.

In addition, existing views from the Lazear School are a chain link fence transportation uses (vehicular travel on I-880 and local streets), trees and other vegetation.

Landscape Unit 3: Commercial and Industrial

Existing visual resources within LU3 include partial views to the Oakland Hills, located to the east of the Project site. Vegetation within LU3 consists of mature ornamental landscaping associated with various urban land uses. The San Francisco Bay is located to the west of LU3; however, this resource is not visible. Man-made features within LU3 consist of surrounding commercial, light industrial, and sparse residential development. Visible transportation features include the 29th Avenue and 23rd Avenue Overcrossing structures.

Existing Visual Quality

Visual quality is evaluated by identifying the vividness, intactness, and unity present in the viewshed. FHWA states that this method should correlate with public judgments of visual quality well enough to predict those judgments. This approach is particularly useful in highway planning because it does not presume that a highway project is necessarily an eyesore. This approach to evaluating visual quality can also help identify specific methods for mitigating each adverse impact that may occur as a result of a project. The three criteria for evaluating visual quality can be defined as follows:

- **Vividness** is the visual power or memorability of landscape components as they combine in distinctive visual patterns.

- **Intactness** is the visual integrity of the natural and man-built landscape and its freedom from encroaching elements. It can be present in well-kept urban and rural landscapes, as well as in natural settings.

- **Unity** is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual man-made components in the landscape.

Landscape Unit 1: I-880 Corridor

The average existing visual quality within LU1 Project site is considered to be moderate. Drivers accessing various portions of I-880 generally have views of adjacent urban development that is fairly unified. Existing overcrossings at 29th Avenue and 23rd Avenue appear to detract from the Project area’s intactness. Partial distant background views are afforded to ridgetops associated with the Oakland Hills located approximately 3.25 miles east of the Project site. Views to the San Francisco Bay from the I-880 corridor are not afforded due to obstruction from existing structures and mature trees adjacent to the freeway. Views to residential and commercial uses, as well as mature vegetation that adjoin I-880 are also afforded within these views.
Landscape Unit 2: Residential and Institutional

The average existing visual quality within LU2 is considered to be moderately high. The historic Kennedy Tract/Jingletown neighborhood consists of residential structures that vary in texture and color. These residential structures appear to be in fair condition. Residents located in this area have views to surrounding residential and institutional uses and I-880. Residents in this area are afforded partial background views to ridgetops of the Oakland Hills to the east. Lazear Elementary School is located to the north of the Project site near I-880 and 29th Avenue. The viewers at the school have direct views to I-880, surrounding residential and commercial uses, and partial background views to ridgetops associated with Oakland Hills. I-880 and the 29th and 23rd Avenue Overcrossings appear to encroach on views from residential and institutional uses.

Landscape Unit 3: Commercial and Industrial

The average existing visual quality within LU3 is considered to be moderate. Existing overcrossings at 29th Avenue and 23rd Avenue appear to detract from the area’s intactness. Partial distant background views exist to the ridgetops associated with the Oakland Hills located approximately 3.25 miles east of the Project site. Views to the San Francisco Bay from LU3 are not afforded due to obstruction from existing structures. Views to surrounding commercial, industrial, and limited residential uses are afforded to viewers within LU3.

Viewer Sensitivity

Viewer sensitivity is defined as both the viewers’ concern for scenic quality and the viewers’ response to changes in the visual resources that make up the view. Local values and objectives may confer visual significance on landscape components and areas that would otherwise appear unexceptional in a visual resource analysis. Even when the existing appearance of a project site is uninspiring, a community may still object to projects that fall short of its visual goals. Analysts can learn about these special resources and community aspirations for visual quality through citizen participation procedures, as well as from local publications and planning documents.

Multiple sensitive viewers adjoin the Project site, the majority of which consist of residential and commercial uses located to the north and south of I-880, as well as institutional uses to the north. The City has developed policies and objectives pertaining to scenic resources within the City of Oakland General Plan 1998 (General Plan). Scenic resources, as designated by the City’s General Plan include the hillsides to the east and features viewed across San Francisco Bay (i.e., San Francisco and Mount Tamalpais). Views to these visual resources are protected through a combination of development review, zoning, design review, and proper management of park and open space areas.

Based on the Scenic Highways Element of the General Plan, adopted in June 1996, I-580, also referred to as the MacArthur Freeway (approximately 2.20 miles east of the Project site), is currently designated as a State scenic highway. There are no officially designated or eligible scenic highway corridors within the Project viewshed.

The General Plan also identifies trees in residential neighborhoods and commercial areas as a scenic resource. The City has adopted the City of Oakland Street Tree Plan, which addresses species selection and criteria for tree planting, maintenance, and removal. Street trees (i.e.,
Redwood, California Sycamore, Acacia, Brazilian Pepper, Black Oak, and Pear) currently exist in the Project area, adjoining I-880 and within surrounding uses. The City encourages street tree planting to the greatest extent possible in order to enhance the appearance and quality of the City’s built environment. Street tree planting assists to create a distinct visual image of the City’s major streets and neighborhoods.

According to the HRER, the Kennedy Tract/Jingletown neighborhood may be eligible as an historic district. The Kennedy Tract/Jingletown neighborhood (located within LU2) adjoins the east border of I-880 to the north of 29th Avenue. The neighborhood is loosely bordered by 23rd Avenue to the north, East 11th Street and the portion of East 10th Street located between Lisbon Avenue and 29th Avenue to the east, 29th Avenue to the south, and I-880/East 8th Street to the west. According to the HRER, this neighborhood consists of 159 structures primarily dating to the late nineteenth and early twentieth century. These buildings appear to be eligible for listing on the National Register of Historic Places listing and also meet the criteria for local historic district listing.

**Viewer Exposure**

Viewer exposure is typically assessed by measuring the number of viewers exposed to the resource change, type of viewer activity, duration of their view, speed at which the viewer moves, and position of the viewer. High viewer exposure heightens the importance of early consideration of design, art, and architecture, along with their roles in managing the visual resource effects of a project.

**Freeway Travelers** – Many drivers commute from the Oakland area to San Francisco every day. Existing daily traffic volumes on I-880 within the area (23rd Avenue to 29th Avenue) range from approximately 73,000 to 90,000 vehicles per day, with peak hour volumes ranging from 4,074 to 8,177 vehicles.

I-880 serves as the primary regional transportation corridor for movement of goods. There is a high volume of truck traffic on the I-880 freeway corridor, particularly since trucks are prohibited on I-580 through the City. Due to the proximity of the City to the seaport, airport, and industrial areas, the I-880 freeway contains the highest percentage of trucks on City freeways since there are no alternative routes. Truck traffic through the Project area would experience extended views to the Project site.

Daily commuters along I-880 may have an increased awareness of the Project due to the amount of time spent on the freeway each day. Drivers traveling in congested traffic conditions would likely perceive detailed views of the Project features. Drivers traveling at normal freeway speeds typically focus on long-range non-peripheral views. Passengers have a heightened awareness and a wide range of views.

**Community Residents** – Numerous residents live in the vicinity of the Project, some of which have long-duration views of I-880 and the 23rd and 29th Avenue Overcrossings. Longer distance views to I-880 are not afforded due to existing structures and street trees.

Based on the General Plan, as previously discussed, community residents are concerned with the quality of views from their communities, as well as with the importance of street trees. As a result, residents are likely to have a high concern for the Project and its effect on views from their homes and neighborhoods. Additionally, residents within the historic Kennedy
Tract/Jingletown neighborhood are highly concerned with the appearance of historic structures within the area.

**Commercial Area Employees and Customers** – A variety of commercial uses, ranging from freeway service commercial to light industrial/commercial, are located in the Project vicinity. Commercial employees and clientele would likely have short-to-moderate duration views and a moderate awareness of the Project area.

**Local Street Users** – Hundreds of drivers, bicyclists, and pedestrians using local streets each day have short duration views of the Project site. There is one frontage road located to the north of I-880 (East 8th Street) that currently has direct views to the Project, as the chain-link fence that currently separates the frontage road from I-880 does not provide screening. Streets with short duration views perpendicular to I-880 within the residential, commercial, and industrial areas surrounding the Project site include Portwood Avenue, Lisbon Avenue, 27th Avenue, 26th Avenue, East 7th Street, and Peterson Street. Local street users would have a moderate-to-high awareness of the Project.

**Institutional and Recreation Uses** – The Project area is located adjacent to Lazear Elementary School, Kennedy Tract Park, Olivet Institutional Missionary Baptist Church, and Mary Help of Christians Church. Users of these facilities would have middleground views of the Project site for moderate periods of time.

Institutional and recreation users may be concerned about the appearance of the Project. These institutional and recreational users would have an acute awareness of the Proposed Project features due to their proximity.

**Key Views and Resources**

The visual impacts of Project alternatives are determined by assessing the visual resource change due to the Project and predicting viewer response to that change.

Visual resource change is the sum of the change in visual character and change in visual quality. The first step in determining visual resource change is to assess the compatibility of the Proposed Project with the visual character of the existing landscape. The second step is to compare the visual quality of the existing resources with projected visual quality after the Project is constructed.

The viewer response to Project changes is the sum of viewer exposure and viewer sensitivity to the Project as determined in the preceding section. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to be adversely affected by the change.

For the purpose of this assessment, Project impacts were assessed for each Key View selected. Visual resource change was measured using the Visual Quality Evaluation Form, administered by the FHWA. The Visual Quality Evaluation Form allows the analyst to assign a numerical value to existing visual conditions, as well as assess the resulting visual quality upon Project implementation. A scaled rating system of 1 through 7 was used to designate a numerical value. The numerical value of 1 represents a very low unit of measurement, and 7 represents a very high unit of measurement. A numerical value for vividness, intactness, and unity was given for existing and proposed conditions within each Key View selected.
The potential for an adverse impact depends upon the severity of resource change and the degree to which people are likely to be adversely affected by the change. Therefore, the following criteria is utilized for determining the resulting visual impacts at each Key View point, based upon comparing the difference in visual quality to the predicted viewer response, which is as follows:

- **Low** – Minor adverse change to the existing visual resource, with low viewer response to change in the visual environment. May or may not require mitigation.

- **Moderate** – Moderate adverse change to the visual resource with moderate viewer response. Impact can be mitigated within five years using conventional practices (i.e., landscaping, architectural treatments, use of a variety of building materials, directional lighting techniques, etc.).

- **Moderately High** – Moderate adverse visual resource change with high viewer response or high adverse visual resource change with moderate viewer response. Extraordinary mitigation practices may be required. Landscape treatment required will generally take longer than five years to mitigate.

- **High** – A high level of adverse change to the resource or a high level of viewer response to visual change such that architectural design and landscape treatment cannot mitigate the impacts. Viewer response level is high. An alternative project design may be required to avoid highly adverse impacts.

Because it is not feasible to analyze all the views in which the Proposed Project would be seen, it is necessary to select a number of Key Views that would most clearly display the visual effects of the Project. Key Views also represent the primary viewer groups that would potentially be affected by the Project. Four (4) Key View points were selected for the Proposed Project.

**Key View #1 (Viewers from the Road)**

**Orientation** – Key View 1 was taken on-site from the I-880 northbound auxiliary lane near the Lisbon Avenue on-ramp. This view looks to the northwest, along the northbound travel lanes of I-880; refer to Exhibit 2.2-18, *Key View Point 1 – Existing Condition*.

**Existing Visual Quality/Character** – Based on the Visual Quality Evaluation conducted at this Key View, vividness was rated at 4, intactness was rated at 4, and unity was rated at 5, resulting in an overall quality rating of 4.3. The existing visual quality and character of the site is moderate (generally rated at 4). Although hardscape features dominate this Key View, intactness is moderate and overall unity is moderately high.

Travelers on northbound I-880 view four travel lanes. No soundwall exists within these views. Mature trees and vegetation are visible along both sides of I-880. Development within this Key View consists of commercial uses to the east. Visible commercial structures appear to be one story in height and building materials appear to be wood and stucco materials. No structures are visible to the west due to mature trees and vegetation screening views. Background views to sparse mature vegetation are present. Intactness within this Key View is considered to be moderate. Minimal commercial signage, utilities, and power lines are visible throughout this Key View. Overall unity is moderately high. Views of the mature vegetation along I-880 provide a visually coherent landscape. The commercial uses to the east appear consistent with typical commercial uses viewed along I-880 throughout
LU1. Visible hardscape features are softened by existing mature ornamental landscaping. Overall, mature landscaping along the east and west sides of I-880 unify the features throughout this Key View.

**Proposed Project Features** – Visible Project features include the 23rd Avenue Overcrossing, reconstructed on-ramp, and a 12-foot soundwall. The Project would remove the two existing 23rd Avenue overcrossings and replace them with a single, four-lane overcrossing that meets current design standards for vertical clearance (16 feet, 6 inches). The new overcrossing would provide an 800-foot span over I-880, allowing for a 12-foot auxiliary lane construction, 12-foot travel lanes, and 6-foot to 10-foot outside shoulders on northbound I-880. The overcrossing would have 12-foot travel lanes, 5-foot shoulders, a 5-foot sidewalk for pedestrians on the south side, and would be wide enough to accommodate a future Class II bicycle lane.

The northbound I-880/Lisbon Avenue on-ramp would be relocated to 29th Avenue, adjacent to the existing Shell Gas Station to the south. A 12-foot soundwall would be constructed on the east side of the I-880, extending from 29th Avenue north approximately 1,000 feet. The soundwall would be constructed as a Department Standard masonry block wall.

**Changes to Visual Quality/Character** – The Project changes are consistent with the built nature of the area; refer to Exhibit 2.2-19, *Key View Point 1 – Proposed Condition*. However, visual changes to the quality and character at this Key View would be moderate (resulting in an overall quality rating of 3 after implementation of the Proposed Project) unless avoided, minimized, or mitigated due to the increase in hardscape and the vegetation thinning and/or removal of trees to the east of I-880.

Impacts from the new 23rd Avenue Overcrossing would not significantly alter this Key View compared to existing conditions. The overcrossing would be elevated by approximately two feet, but would not significantly change the structure’s form, when compared to the existing condition. The new soundwall would require vegetation thinning and possible removal of mature trees. The new soundwall may increase the dominance of hardscape features and increase light reflectivity from the additional concrete (with the resultant radiant heat glare). The new soundwall would encroach on the transportation uses from this Key View. Therefore, a landscaped aesthetic treatment (i.e., vine treatment, etc.) should be added to the wall structure to enhance the driver scale environment and reduce reflectivity (Minimization Measure VIS-2).

Vegetation thinning and tree removal would occur to the east of I-880 to accommodate the proposed soundwall and ramp improvements, creating additional hardscape appearances in the Key View. In order to minimize the significance of the disturbed landscaping, new landscaping would be planted, where feasible, in a manner that is consistent with the appearance of the existing ornamental landscaping (Minimization Measure VIS-2). In areas of the Project that are characterized by ornamental landscaping, freeway landscaping (i.e., trees, shrubs, and groundcover) would be installed. Landscape palettes and concept plans would conform to the Department’s design standards with the concurrence of the District Landscape Architect.

**Viewer Response** – Travelers along I-880 would have short-to-long duration views (depending on traffic conditions) to the new overcrossing and soundwall features.
Sensitivity to visual change would be moderate for this viewer group. Due to the high number of viewers affected and the moderate sensitivity to the change, the overall viewer response to Project changes would be moderately high.

**Resulting Visual Impact** – Project improvements would moderately affect existing views of the Project from this Key View (rated difference of -1.0), and sensitive viewers would have a moderately high viewer response to Project changes. These moderate changes would be reduced upon the implementation of avoidance and minimization, measures. Implementation of the Proposed Project would increase hardscape features within the area by adding the additional wall feature and thinning/removing existing mature vegetation. Implementation of recommended avoidance and minimization measures pertaining to landscaped aesthetic treatment (i.e., tree planting, vine treatment, etc.) to the soundwall (Minimization Measure VIS-2) would enhance the drive scale environment and reduce the hardscape appearance of the Project site. Upon implementation of landscaping recommendations (Minimization Measure VIS-2), the visible nature of the Project site would be consistent with the appearance of the surrounding ornamental vegetation. Additionally, Minimization Measure VIS-3 recommends the application of wall color/texture to the soundwall, which would reduce potential light reflectivity as a result of the wall.

**Key View #2. (Viewers to the Road)**

**Orientation** – Key View 2 was taken from the Kennedy Tract/Jingletown neighborhood, specifically on Lisbon Avenue to the east of I-880. The Kennedy Tract/Jingletown neighborhood has been identified within the HRER as a possible eligible historic district. The Kennedy Tract/Jingletown neighborhood is comprised of 159 structures primarily dating to the late nineteenth and early twentieth century. This Key View looks southwest toward the Proposed Project; refer to Exhibit 2.2-20, *Key View Point 2 – Existing Condition*.

**Existing Visual Quality/Character** – Based on the Visual Quality Evaluation conducted at this Key View, vividness was rated at 6, intactness was rated at 4, and unity was rated at 6, resulting in an overall quality rating of 5.3. The existing visual quality and character of the views are moderately high (generally rated at 5).

Overall vividness in this Key View appears to be high. Foreground views of low-to-medium density residential structures are afforded. The residential structures vary in texture, architectural treatments, and color. These structures are consistent with surrounding residential structures. Varying architectural features in the residential structures provide for a high degree of memorability. Streetscape is afforded within foreground and middleground views. Middleground views also include chain-link fencing and I-880. Commercial and residential uses along the west side of I-880 are visible in the background. Intactness within this Key View is considered to be moderate. Overhead power lines that are visible throughout this Key View increase visible encroachment. The residential structures in foreground views are uniform in height. Middleground views to I-880 interrupt the appearance of unity in this view. However, views to background residential and commercial structures allow the appearance of unity to remain moderately high throughout this Key View.

**Proposed Project Features** – Visible Project features within this Key View include the new soundwall and roadway improvements along East 8th Street. The northbound I-880/Lisbon Avenue on-ramp would be relocated to 29th Avenue to the south, and is no longer visible in
this Key View. A 12-foot soundwall would be constructed along East 8th Street within this Key View.

**Changes to Visual Quality/Character** – The Project changes would consist of relocating the northbound I-880/Lisbon Avenue on-ramp and introduction of a soundwall along the east side of I-880; refer to Exhibit 2.2-21, *Key View Point 2 – Proposed Condition*. Visual changes to the quality and character in this Key View would be moderate due to the increased appearance of hardscape features (resulting in an overall quality rating of 5.0 after implementation of the Proposed Project) unless avoided, minimized, or mitigated.

The new soundwall would increase the dominance of hardscape features. However, the soundwall would eliminate views to I-880. A landscaped aesthetic treatment (i.e., tree planting, vine treatment, etc.) would be added, where feasible, to wall structures (Minimization Measure VIS-2). Landscape palettes and concept plans would be implemented with the concurrence of the District Landscape Architect. Architectural treatments should also be considered in the soundwall design to enhance a pedestrian scale environment and reduce the appearance of hardscape (Minimization Measure VIS-3).

Light reflectivity impacts may result from the new soundwall to Key View 2. To reduce negative impacts from hardscape, such as introduced light reflectivity from the additional concrete (with the resultant radiant heat glare), a landscaped aesthetic treatment (i.e., tree planting, vine treatment, etc.) should be added to the soundwall (Minimization Measure VIS-2).

**Viewer Response** – Residential dwelling units within the Kennedy Tract/Jingletown neighborhood would have long duration views of the Project features, including the soundwall. The Kennedy Tract/Jingletown neighborhood has been identified within the HRER as a possible eligible historic district. The Kennedy Tract/Jingletown neighborhood is comprised of 159 structures primarily dating to the late nineteenth and early twentieth century. Due to the number and duration of views affected, the overall viewer response to change would be high.

**Resulting Visual Impact** – Project improvements would moderately alter the existing views of the Project site from this Key View (rated difference of -0.3). Adjoining residential uses would have a high visual sensitivity to the proposed improvements. These moderate changes would be reduced upon implementation of the recommended avoidance and minimization measures. Project changes would include the thinning or removal of portions of ornamental vegetation from views of the Project site. Views of I-880 would be blocked by the new soundwall. Also, residential uses would have views to additional hardscape features, which may additionally increase light reflectivity in the area. However, upon implementation of landscaping and aesthetic treatment recommendations (Minimization Measures VIS-2 and VIS-3), adverse impacts from these features would be reduced.

**Key View #3 (Viewers to the Road)**

**Orientation** – Key View 3 was taken from 23rd Avenue to the north of the 23rd Avenue/East 11th Street intersection. This view looks to the south, toward the 23rd Avenue Overcrossing intersection ramp; refer to Exhibit 2.2-22, *Key View Point 3 – Existing Condition*.

**Existing Visual Quality/Character** – Based on the Visual Quality Evaluation conducted at this Key View, vividness was rated at 5, intactness was rated at 4, and unity was rated at 5,
resulting in an overall quality rating of 4.6. The existing visual quality and character of the views are moderately high (generally rated at 5).

Overall vividness within this Key View appears to be moderately high. Existing mature ornamental landscaping (i.e., Redwood and California Sycamore) represent the dominant feature within this Key View. A landscaped median (up to 65 feet wide) separating eastbound and westbound travel lanes on 23rd Avenue is visible in the foreground and middleground views. Partial views to the existing 23rd Avenue Overcrossing exist. Foreground and middleground views to commercial structures are afforded to the east of 23rd Avenue. These structures appear to be approximately two stories in height. Background views include mature trees along 23rd Avenue. Overall intactness within this Key View is moderate. The existing mature vegetation minimizes the encroachment from roadway uses. Existing overhead power lines and traffic signaling appear to encroach on the mature vegetation in this view. The existing mature vegetation appears to unify this Key View, as the vegetation is viewed throughout this Key View. Overall unity is moderately high.

Proposed Project Features – The Proposed Project would remove the two existing 23rd Avenue overcrossings and replace them with a single, four-lane overcrossing that meets current design standards for vertical clearance (16 feet, 6 inches). The new overcrossing would provide an 800-foot span over I-880 and would have 12-foot travel lanes, 5-foot shoulders, a 5-foot sidewalk for pedestrians on the south side, and would be wide enough to accommodate a future Class II bicycle lane.

The East 11th Street/23rd Avenue intersection would be reconstructed to accommodate the following:

- Remove the existing northbound I-880/eastbound 23rd Avenue on-ramp;
- Construct a new intersection at the Northbound I-880/23rd Avenue on-ramp;
- Provide dual left-turn lanes from eastbound 23rd Avenue to the northbound I-880 on-ramp;
- Reconstruct the existing northbound I-880/23rd Avenue on-ramp to accommodate the two left-turn lanes;
- Accommodate the u-turn movement from eastbound to westbound 23rd Avenue; and,
- Remove the existing free right-turn movement from westbound 23rd Avenue to the northbound I-880 on-ramp.

Pedestrian facility in the reconstructed East 11th Street/23rd Avenue intersection would be similar to existing conditions. Sidewalks would be provided on the south side of the 23rd Avenue overcrossing via a five-foot sidewalk, consistent with the current conditions. The existing 65-foot median and other mature landscaping along 23rd Avenue would be removed to accommodate the improvements.

Changes to Visual Quality/Character – Visual changes to quality and character at this Key View would be considered high due to the removal of a significant amount of mature vegetation and an increase in visible hardscape (resulting in an overall quality rating of 3.0
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

148 I-880 Operational and Safety Improvements at 29th Avenue and 23rd Avenue Overcrossings IS/EA

after implementation of the Proposed Project); refer to Exhibit 2.2-23, Key View Point 3 – Proposed Condition.

The proposed on-ramp and overcrossing would increase the appearance of paved surface area. The hardscape appearance of the 23rd Avenue on-ramp and overcrossing would contribute to the roadway encroachment on the surrounding uses. The scale and massing of this area with the proposed improvements would be significantly increased. The removal of all mature vegetation to accommodate the improvements reduces the appearance of unity. Overall unity would be reduced to a moderate visual rating due to the introduced hardscape features. Therefore, a landscaped aesthetic treatment (i.e., tree planting, landscaped median, etc.) would be required along or within the roadway, as feasible, to enhance a pedestrian and driver scale environment and reduce the hardscape appearance (Minimization Measure VIS-2). Landscape palettes and concept plans would be implemented with the concurrence of the District Landscape Architect.

**Viewer Response** – Commercial employees and clientele (moderate level of awareness) and local street users (moderate level of awareness) would have direct views to the Proposed Project features. Due to the moderate number of viewers affected, the overall viewer response to change would be moderate.

**Resulting Visual Impact** – Project improvements would highly affect existing views of the Project site from this Key View (rated difference of -1.6). Sensitive viewers would have a moderate viewer response to the Project changes. The Project would be required to avoid, minimize, and mitigate visual impacts from this Key View, as the overall unity would be significantly reduced due to the removal of mature vegetation. Minimization Measure VIS-2 would require that all removed landscaping be replaced, where feasible. Although the resultant visible hardscape features would appear different than existing conditions, the character/quality at the Project site would appear similar to other urban areas typically viewed within the City.

**Key View #4 (Viewers to the Road)**

**Orientation** – Key View 4 was taken from commercial and residential uses along 23rd Avenue near East 7th Street. This view looks north toward the Proposed Project; refer to Exhibit 2.2-24, Key View Point 4 – Existing Condition.

**Existing Visual Quality/Character** – Based on the Visual Quality Evaluation conducted at this Key View, vividness was rated at 5, intactness was rated at 5, and unity was rated at 5, resulting in an overall quality rating of 5. The existing visual quality and character of the views is considered moderately high (generally rated at 5).

Residential and commercial structures are visible in the foreground views. The structures consist of brick and stucco materials, and vary in color. The varying color and texture associated with the foreground structures provide for moderately high vividness. Ornamental landscaping is present throughout the view. Streetscape along 23rd Avenue in foreground views is visible. Views of mature vegetation (i.e., Redwood and Sycamore trees) are also afforded in middleground views. Development within this Key View consists of residential and commercial uses of up to two stories along 23rd Avenue. The pedestrian scale of the structures in the area is enhanced by continuous ornamental landscaping and architectural treatments. However, the existing overhead power lines detract from the intactness of this view. Overall intactness within this Key View is considered to be
moderately high. Mature vegetation along the streetscape reduces the appearance of hardscape features of the structures and roadway. Existing structures and landscaping appear to be cohesive. Overall unity is moderately high.

**Proposed Project Features** – The Proposed Project would remove the two existing 23rd Avenue overcrossings and replace them with a single, four-lane overcrossing that meets current design standards for vertical clearance (16 feet, 6 inches). The new overcrossing would provide an 800-foot span over I-880 and would have 12-foot travel lanes, 5-foot shoulders, a 5-foot sidewalk for pedestrians on the south side, and would be wide enough to accommodate a future Class II bicycle lane. Mature landscaping along 23rd Avenue would be removed to accommodate the new overcrossing.

**Changes to Visual Quality/Character** – Visual changes to quality and character at Key View 4 would be considered moderate due to the increased appearance of hardscape features and removal of mature landscaping (resulting in an overall quality rating of 4.0 after implementation of the Proposed Project) unless avoided, minimized, or mitigated; refer to Exhibit 2.2-25, *Key View Point 4 – Proposed Condition*.

Mature landscaping located along 23rd Avenue along the streetscape near commercial and residential uses would remain visible. The new overcrossing would be larger and more visible than the original overcrossing. The removed mature trees and vegetation would create the appearance of the overcrossing encroaching upon the commercial and residential uses. Overall unity would be considered moderate. The hardscape features of the new overcrossing would be highly visible and would increase scale and massing of transportation uses within the area.

Landscaping would be removed along 23rd Avenue, creating additional hardscape in this Key View. In order to avoid, minimize, or mitigate the significance of the disturbed landscaping, new landscaping would be planted in a manner that is consistent with the appearance of the existing ornamental landscaping (Minimization Measure VIS-2). In order to avoid, minimize, or mitigate the significance of the dominating hardscape features, a landscaped aesthetic treatment (i.e., large tree planting, landscaped median, etc.) should be added to reduce the hardscape appearance (Minimization Measure VIS-2). Landscape palettes and concept plans would be implemented with the concurrence of the District Landscape Architect.

**Viewer Response** – Residential dwelling units and commercial uses would have long duration views of the Proposed Project features, including roadway improvements and the new overcrossing. Sensitivity to visual changes would be moderate-to-high for these viewer groups. Additionally, local street users would be moderately aware of the Proposed Project. Due to the moderate number of viewers affected, the overall viewer response to change would be moderately high.

**Resulting Visual Impact** – Project improvements would moderately affect existing views of the Project site from this Key View (rated difference of -1.0). Sensitive viewers would have a moderately high viewer response to Project changes. However, impacts resulting from these moderate changes would be reduced upon implementation of recommended avoidance and minimization measures. Residential uses would have views to additional hardscape features, which may additionally increase light reflectivity in the area.
Upon implementation of landscaping recommendations (Minimization Measure VIS-2), the visible hardscape features would be reduced and the Project area would appear consistent with the surrounding community. Therefore, with implementation of Minimization Measure VIS-2, these impacts would be reduced.

Other Views

Viewer recipients at Lazear School would experience a change in the existing views if proposed soundwalls NB-3 and NB-5 were constructed. Sensitive viewers would have a moderate viewer response to the Project changes. In addition, the school is requesting the soundwalls to lessen existing noise from the freeway. Project changes would include the thinning or removal of portions of ornamental vegetation from views of the Project site. Views of I-880 would be blocked by the new soundwall. Also, residential uses would have views to additional hardscape features, which may additionally increase light reflectivity in the area. Implementation of Minimization Measures VIS-2 and VIS-3 would lessen any adverse visual impacts within the project area.

2.2.5.3 Environmental Consequences

No Build Alternative

The No Build Alternative would maintain the existing roadway and interchange configurations, and therefore, would not alter existing views. Existing visual/aesthetic resources would not be affected by the No Build Alternative.

Build Alternative

Short-Term Construction Impacts

Implementation of the Proposed Project would expose sensitive users to views of the Project site. With implementation of the recommended avoidance and minimization measures, visual impacts would be reduced.

The Proposed Project would result in temporary visual impacts from construction activities. Exposed surfaces, construction debris, equipment, and truck traffic may temporarily impact views adjacent to the site. These impacts are short-term and would cease upon Project completion. Construction-related visual impacts would be minimized by adhering to the Department’s Standard Specifications for Construction.

Light and glare from nighttime construction lighting would potentially cause a nuisance to motorists traveling along I-880. Demolition and construction activities associated with the 29th and 23rd Avenue overcrossing would require temporary nighttime construction. Nighttime construction may be required to take place for several months. One to two travel lanes may need to be closed for nighttime construction to protect the safety of the construction workers and to expedite the Project. Nighttime construction
Blank Page Placeholder
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Blank Page Placeholder
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Blank Page Placeholder
Blank Page Placeholder
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Blank Page Placeholder
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Blank Page Placeholder
along I-880 would be limited by the Department to the hours of 10:00 p.m. to 6:00 a.m. Necessary lighting for safety and construction purposed would be contained and directed toward the specific area of construction.

The proposed soundwall along East 8th Street would be constructed prior to implementation of construction activities for the 29th and 23rd overcrossings in order to reduce potential nighttime lighting impacts associated with construction of the 23rd and 29th Avenue overcrossing on sensitive uses (Minimization Measure VIS-1). Should construction of the soundwall occur during nighttime hours, necessary lighting for safety and construction purposed would be contained and directed toward the specific area of construction. Also, a temporary opaque barrier would be used to limit potential light spillover onto adjacent residential uses. Early construction of the soundwall is necessary to minimize potential nighttime construction impacts from construction activities within the I-880 mainline. Therefore, although motorists traveling along I-880 may experience short-term impacts from light and glare, light and glare impacts to surrounding sensitive uses (particularly to the east) would be minimized with implementation of Minimization Measure VIS-1 and impacts in this regard would be reduced.

**Long-Term Operational Impacts**

The following is a summary of resulting impacts for each Key View:

**Key View 1:** Project features at Key View 1 would result in a moderate change to character/quality and a moderately high viewer response to that change. Changes would include an increase in hardscape features and removal of existing vegetation. These moderate changes in character/quality would be reduced with implementation of Minimization Measure VIS-2.

**Key View 2:** Introduced Project features at Key View 2 would result in a moderate high change to character/quality and a high viewer response to that change. Changes would include an increased appearance in hardscape features as a result of the new soundwall. These moderate changes in character/quality would be reduced with implementation of Minimization Measures VIS-2 and VIS-3.

**Key View 3:** Introduced Project features at Key View 3 would result in a high change to character/quality and a moderate viewer response to that change. Changes would include the removal of existing mature landscaping and an increase in the appearance of hardscape features. Implementation of Minimization Measure VIS-2 would reduce these visual impacts. Also, the resultant character at Key View 3 would appear similar to the generally urban character of the area. Therefore, the resultant visual change at Key View 3 would not appear to adversely degrade the character/quality of the area and impacts in this regard would be minimal after implementation of Minimization Measure VIS-2.

**Key View 4:** Implementation of the Project would result in moderate changes to character/quality and a moderately high viewer response to that change at Key View 4. Changes would include an increase in the appearance of hardscape features and the removal of mature landscaping. These moderate changes in character/quality would be minimal with implementation of Minimization Measure VIS-2. Overall, these visual impacts can be minimized with implementation of recommended Minimization Measure (with the exception of southern views along 23rd Avenue within the northern portion of the Project site). The Proposed Project would replace a chain-link fence with a 12-foot soundwall. The
new soundwall would be composed of textured, tan/beige concrete material. The surrounding community would experience a change in visible hardscape. Although the new soundwall would increase visible hardscape in the immediate vicinity of the neighborhood, the soundwall would also screen middleground views to I-880 (which also contributes to visible hardscape). With implementation of Minimization Measures VIS-2 and VIS-3, landscape and wall aesthetic treatment (i.e., tree planting, vine treatment, etc.) would be added to the new wall to enhance the surrounding residential and pedestrian scale environment and reduce the appearance of hardscape as a result of the wall.

The interchange improvements would remove existing ornamental vegetation. Erosion control plant species utilized would be determined by the District Landscape Architect to ensure that the mix and application strategy is appropriate for the specific soil composition of the area (Minimization Measure VIS-2). In order to preserve the existing character of the ornamental landscaping features (including form, texture, and color of mature landscaping), trees, shrubs, and grasses would be planted, where feasible. All landscape palettes and concept plans would be selected with the guidance of the District Landscape Architect, and would be consistent with the appearance of the surrounding ornamental landscaping.

The Proposed Project would alter the visible landscape along 23rd Avenue within the northern portion of the Project site due to mature landscape removal. The Project would reduce the potential area available for re-planting, and generally limit the size of new vegetation allowed. However, the resultant character at Key View 3 would appear similar to the urban character of the area. Therefore, the resultant visual change at Key View 3 would not appear to adversely degrade the character/quality of the area and impacts in this regard would be reduced after implementation of Minimization Measure VIS-2.

Other Views

Introduced Project features at Lazear School would result in a moderate high change to character/quality and a high viewer response to that change. Changes would include an increased appearance in hardscape features as a result of the new soundwall. These moderate changes in character/quality would be reduced with implementation of Minimization Measures VIS-2 and VIS-3.

Light and Glare

Implementation of the Proposed Project would introduce additional sources of light and glare such as street lighting, vehicle headlights, and traffic signals. Additional traffic signals with street lighting would be installed on 23rd Avenue near the proposed new I-880 north on-ramp. If this lighting is not adequately focused or shielded, it may cause spillover lighting and glare that may present a nuisance to the commercial uses to the east of 23rd Avenue. The existing mature vegetation within the median along 23rd Avenue, as well as along 23rd Avenue west of I-880, would be removed to allow for construction of the proposed overcrossing. Although vegetation would be replanted, commercial uses and interspersed residential uses along 23rd Avenue would be exposed to increased amounts of light and glare. However, since businesses adjacent to 23rd Avenue would operate primarily during daytime hours (approximately 9:00 a.m. to 8:00 p.m.), these uses would not be adversely affected by new sources of light and glare. Additionally, Minimization Measure VIS-4 would allow the District Landscape Architect to review Project lighting types, plans, and placement at his or her discretion. Implementation of Minimization
Measure VIS-4 would ensure that appropriate lighting controls would be applied to reduce light and glare impacts.

Light and glare impacts associated with vehicle headlights along I-880 toward residents to the east would be minimized with implementation of the Proposed Project. The proposed soundwall along the eastern side of I-880 would block light and glare to adjacent residential neighborhoods to the east. Residents and commercial uses along the frontage road (East 8th Street) would be exposed to increased levels of light and glare from vehicle headlights reflecting off the proposed soundwall. However, implementation of recommended landscaping treatments (Minimization Measure VIS-2) and compliance with the Department’s Standard Design Practices, in concurrence with the District Landscape Architect, would eliminate these adverse effects of light and glare impacts. Therefore, impacts in this regard would be reduced with implementation of Minimization Measure VIS-2.

2.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

The Department and FHWA mandate that a qualitative/aesthetic approach be taken to avoid and minimize for visual quality loss in the Project area. This approach fulfills the letter and the spirit of FHWA requirements because it addresses the actual cumulative loss of visual quality that will occur in the Project viewshed when the Project is implemented. It also constitutes avoidance and minimization that can generate public acceptance of the Project.

Visual avoidance and minimization for adverse Project impacts addressed in the Key View assessments and summarized in Section 2.2.6, Visual/Aesthetics, of this document, will consist of adhering to the following design requirements in cooperation with the District Landscape Architect. The requirements are arranged by Project feature and include design options in order of effectiveness. All visual avoidance and minimization will be designed and implemented with the guidance of the District Landscape Architect. The following minimization measures as related to visual impacts (VIS) have been proposed to reduce adverse impacts.

VIS-1 To minimize potential impacts, the proposed soundwall along East 8th Street shall be constructed prior to implementation of construction activities for the 29th and 23rd Avenue Overcrossings in order to reduce potential nighttime lighting impacts associated with construction of the 29th and 23rd Avenue Overcrossings on sensitive uses. Should construction of the soundwall occur during nighttime hours, necessary lighting for safety and construction purposes shall be contained and directed toward the specific area of construction. Also, a temporary opaque barrier shall be used to limit potential light spillover onto adjacent residential uses.

VIS-2 To minimize potential impacts, and to maintain the context of the Project area (color, form, and texture), the Project shall install landscaping that is compatible with the existing landscape on the freeway and adjacent communities. Landscape shall include specimen-sized trees (where feasible), shrub/ground cover mass planting, and vines on walls to soften the hardscape features (including the new soundwall and roundabout feature [if implemented]), and reduce the negative environmental impacts (such as glare and radiant heat) from
hardscape. The new landscape concept and plant palette shall be determined in consultation with the District Landscape Architect. Erosion control plant species utilized shall be determined by the District Landscape Architect to ensure that the mix and application strategy is appropriate for the specific soil composition of the area.

In addition, coordination between the City and the School District shall be conducted to provide a collaborative decision making process to determine specific soundwall design features such as texture, color, and overall appearance. This collaboration shall also provide measures to control graffiti, such as vine planting when possible and graffiti removal scheduling.

VIS-3 To minimize potential impacts, and to maintain consistency with the existing infrastructure (i.e., bridges, walls, sidewalks, etc.) in the Project area, landscape and/or architectural treatments (i.e., color, texture, etc.) for the structure elements (including the soundwall and potential roundabout feature) of the Project shall be determined in consultation with the District Landscape Architect during the Plans, Specifications, and Estimate (PS&E) phase.

VIS-4 Project lighting types, plans, and placement shall be reviewed at the discretion of the District Landscape Architect in order to minimize light and glare impacts on surrounding sensitive uses.

2.2.6 Cultural Resources

2.2.6.1 Regulatory Setting

“Cultural resources” as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places (National Register). Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA’s responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the “use” of land from historic properties. Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and
2.2.6.2 Affected Environment

The Historic Property Survey Report (HPSR), including the Archaeological Survey Report (ASR) and the Historic Resources Evaluation Report (HRER), was prepared for this Proposed Project (Jones & Stokes, 2009). Preparation of the document included conducting site visits, performing a record search at the Northwest Information Center (NWIC), Sonoma State University, and contacting state and local agencies, as well as nearby Native American tribes.

The Area of Potential Effects (APE) for the Project was established based on the maximum Proposed Project footprint and encompasses the existing right-of-way; any new right of way; all proposed easements, temporary or permanent, including staging areas or construction access roads; and material or disposal sites that may be impacted by Project activities. As shown in Exhibit 2.2-26, Area of Potential Effect Map, there are two APE lines: the architectural APE and the archaeological APE.

The architectural APE includes all individual buildings and groupings of historic buildings directly abutting the Project. The APE accounts for all potential proximity-related impacts to potential historic architectural resources abutting the full length of the 29th and 23rd Avenue overcrossings proposed for reconstruction. It extends west of I-880 in the Brooklyn Basin neighborhood, extending as far west as the easterly curb line of Ford Street at the 29th Avenue overcrossing terminus and the westerly curb line of East 7th Street at the southbound 23rd Avenue overcrossing terminus. It also extends east to include the Kennedy Tract neighborhood, extending as far east as East 10th Street and East 11th Street. The archaeological APE was established based on the potential for ground disturbing activities associated with the Proposed Project. It includes all areas where re-grading of roadways, excavation for footings or piling for overcrossing structures and/or soundwalls are proposed, or where construction staging is proposed.

The record searches conducted on July 18, 2006 and September 30, 2008 identified no archaeological sites within the APE. The record searches identified the California Cotton Mills Weaving/Carding/Spinning Building within the APE, as a historical resource under CEQA.

The Native American Heritage Commission (NAHC) was contacted in September 2008 to request that it conduct a search of its sacred lands database and provide a list of Native American representatives that might have any information or concerns regarding the Project and the Project area. The NAHC replied in October 2008, stating that the search of its sacred lands database did not indicate the presence of any Native American cultural resources in the study area. The NAHC also provided a list of local Native American representatives that may have interest in, or knowledge of, the Project area. In November 2008, letters were sent to all contacts identified on the list of Native American representatives provided by the NAHC (refer to Appendix A in the ASR for all Native American correspondence). The letter included a brief Project description, a map of the Project area, and a summary of the record search results. The letter also requested that the recipients respond with any information or
concerns. As of July 2009, none of the Native American representatives had responded with any concerns regarding the Project and the Project area.

In addition to archaeologists and architectural historians conducting pre-field research that included a background records search for previously recorded resources, correspondence with the California Native American Heritage Commission (NAHC) and local Native American representatives, pedestrian surveys of the Project area were also conducted. Because the entire Project area either consists of a built/developed environment, freeway/interchanges, or heavily landscaped cut-and-fill, a formal archaeological survey was not conducted. A very limited pedestrian survey of the archaeological APE was conducted on September 26, 2008.

In addition to the field survey of the APE for archaeological resources, a detailed examination of historical maps, aerial photos, and historical documents was undertaken in an effort to identify buildings and structures historically located within the archaeological APE that may have had associated subsurface ‘historic-era’ archaeological deposits that could be encountered during ground disturbing activities associated with the Project.

The California Cotton Mills Weaving/Carding/Spinning Building is located in the northernmost portion of the APE. The California Cotton Mills Weaving/Carding/Spinning Building is the principal surviving structure within what was once a large compound of numerous mill buildings and structures. The 1917 building appears to be individually eligible for the National Register of Historic Places (National Register) under Criteria A and C at a local level of significance. On July 15, 2009, SHPO concurred that the California Cotton Mills Weaving/Carding/Spinning Building is eligible for listing on the National Register. The mill compound produced one of the largest arrays of cotton products in California and is also significant for ethnic historical reasons, as it was integral to the development of the Kennedy Tract/Brooklyn Basin neighborhood, known as Jingletown, which housed a large Portuguese population. In addition, the mill compound was also the scene of important immigrant and woman labor struggles in 1911 and 1918. The California Cotton Mills Weaving/Carding/Spinning Building is considered a historical resource under CEQA.

The Kennedy Tract/Jingletown (Jingletown) historic district was not identified during the record searches and is not listed on a Federal, State, or local historic register; it was identified during the field survey. Jingletown has a strongly cohesive architectural and design character that embodies Oakland’s late nineteenth century and early twentieth century vernacular architectural tradition. Occupying approximately 40 acres, the Jingletown historic district is located between 29th and 23rd Avenues and between East 9th and 11th Streets, east of I-880. It consists of 161 properties, dominated by single-family and two-family residences constructed between 1880 and 1929. Jingletown appears to be eligible for the National Register under Criteria C and A at a local level of significance. On July 15, 2009, SHPO concurred that the Jingletown historic district is
Area of Potential Effect Map for Archaeology and Architecture
I-880 North Operational and Safety Improvements Project
04-AI-A-880, PM 28.4/29.2
EA 0A710
Alameda County Caltrans District 4

Michelle P. Squyer, Caltrans PQS, Architectural History (date)
Brett Rushing, Caltrans PQS, Archaeology (date)
Name, Manager from Caltrans (date)

08/07 JN 35-100463-13402

LEGEND
ARCHITECTURAL HISTORY APE
ARCHAEOLOGICAL APE
POTENTIAL KENNEDY TRACT/"JINGLETOWN" HISTORIC DISTRICT
PARCEL BOUNDARIES
CALTRANS RIGHT-OF-WAY
CITY OF OAKLAND RIGHT-OF-WAY
NEW SOUNDWALL

KEY INVENTORIED RESOURCES
NR-eligible Properties
KENNEDY TRACT / "JINGLETOWN" (RESOURCE # I-880-ALA-1_DISTRICT)
CALIFORNIA COTTON MILLS (RESOURCE # I-880-ALA-2)
CEQA Historical Resources
646 KENNEDY STREET (RESOURCE # I-880-ALA-3)
948-976 23RD AVENUE (RESOURCE # I-880-ALA-4)

Area of Potential Effects Map
Exhibit 2.2-27

INTERSTATE 880 OPERATIONAL AND SAFETY IMPROVEMENTS
AT 29TH AVENUE AND 23RD AVENUE OVERCROSSING USA

AECOM
THI S PAGE I NTENTIONAL LY LEFT BLANK.
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Two properties, 646 Kennedy Street and 948-976 23rd Avenue, are considered historical resources under CEQA but are not eligible for the National Register. The property at 646 Kennedy Street is identified as Barrow Pringle/Bayley-Underhill Overall Company/Bay Cities Paper Box Company and was historically an industrial – clothing manufacturing building. The property has a local significance and is considered a historical resource under CEQA, but is ineligible for the National Register. The property at 948-976 23rd Avenue is identified as Eandi Metals Works and was historically, and continues to be, an industrial – metal manufacturing building. The property has significance because of its historical association as the most noteworthy of the metal fabrication and foundry businesses clustered in Oakland’s Kennedy Tract/Brooklyn Basin during the mid to late twentieth century. The property is a historical resource under CEQA, but is not eligible for the National Register (Jones & Stokes, 2009). In addition to these two properties, the HPSR identifies two resources, 1080 Calcot Place and 1092 Calcot Place, which SHPO determined not to be historical resources under CEQA, on October 9, 2008 (Jones & Stokes, 2009).

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the District Environmental Branch so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

2.2.6.3 Environmental Consequences

No Build Alternative

Under the No Build Alternative, no changes would be made to the 29th and 23rd Avenue Overcrossings. No impacts would occur to historic or archaeological resources within the Project area.
Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Build Alternative

The archaeological literature and record searches conducted for the Project indicate that the APE does not contain prehistoric archaeological resources. One prehistoric archaeological site and one potential prehistoric archaeological site have been recorded within a one-half-mile radius of the APE. No archaeological sites have been recorded within or adjacent to the archaeological APE. The Project is within close proximity to the prehistoric San Francisco Bay margin and is within relatively young (Holocene) alluvial fan deposits. This suggests moderate archaeological sensitivity. Site visits conducted during the preparation of the HPSR, ASR, and HRER indicated that the areas within and surrounding the APE have been extensively modified and disturbed by multiple phases of urban development and redevelopment. Additional surveys would be required if Project plans are changed to include areas not surveyed previously, or if deeper excavation is required in locations other than those specified during the preparation of the HPSR, ASR, and HRER.

The Project would not be located within the property boundaries of the National Register-eligible California Cotton Mills Weaving/Carding/Spinning Building nor would it call for the demolition of any resources within the property boundaries. All Proposed Project improvements adjoining this historic resource would occur within the public right-of-way. The Project would not adversely affect the activities, features, and attributes that qualify the California Cotton Mills Weaving/Carding/Spinning Building property for protection under Section 106 of the NHPA because the property would not be acquired. Neither the California Cotton Mills Weaving/Carding/Spinning Building nor its character defining architectural elements would be adversely affected through any type of Project-related acquisition process. Any construction easements would occur within the public right-of-way, rather than on the California Cotton Mills Weaving/Carding/Spinning Building property, and would not substantially compromise the adjoining neighborhood’s already degraded physical/visual setting. As assigned by FHWA, Caltrans has determined that a Finding of No Adverse Effect without Standard Conditions is appropriate for the undertaking of the Proposed Project (Jones and Stokes, 2009).

The Project does not call for the removal of the California Cotton Mills Weaving/Carding/Spinning Building from its current location, changes in the character of the property, or for changes to the physical features associated with a property that contribute to its historic significance (Jones & Stokes, 2009). No character defining features of the historic property would be adversely affected. No constructive use of the California Cotton Mills Weaving/Carding/Spinning Building property would occur because the Project would not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f); nor is temporary occupancy of a Section 4(f) property proposed (RBF Consulting and Jones & Stokes, 2009).

The Project would occur within the delineated boundaries of the National Register-eligible Jingletown historic district. The Project would not result in the demolition of any resource within the boundaries of the historic district. In areas of right-of-way acquisition, no historic properties in the delineated historic district would be acquired and no character defining features of contributing resources within the district would be adversely affected. The Proposed Project would not affect any historical architectural resource deemed a contributing historic resource within the delineated boundaries of the district (Jones and Stokes, 2009). Temporary construction easements and construction staging areas are
proposed on vacant land or within the existing right-of-way. The construction easement along the north side of 29th Avenue adjoins, but is outside of, the historic district boundaries and would not substantially compromise the neighborhood’s already degraded physical/visual setting (Jones and Stokes, 2009).

Construction of the soundwall along East 8th Street would occur outside the boundaries of the National Register-eligible historic district. Only one building abutting East 8th Street is a contributing resource to the historic district, all other buildings are non-contributing resources. The historic setting of the neighborhood has been irreversibly compromised due to the placement of I-880 during the late 1940s. At present, a chain link fence separates the buildings along East 8th Street from I-880 (RBF Consulting and Jones and Stokes 2009). Exhibit 2.2-20, Key View Point 2 - Existing Condition, depicts the existing visual environment, while Exhibit 2.2-21, Key View Point 2 - Proposed Condition, provides a visual simulation of the proposed impacts from the construction of the soundwall on the historic district. As discussed in the Visual Impact Assessment (RBF Consulting, 2009), the soundwall would have minimal impacts on the visual setting. As assigned by FHWA, Caltrans has determined that a Finding of No Adverse Effect without Standard Conditions is appropriate for the undertaking of the Proposed Project (Jones and Stokes, 2009). It should be noted that minimization measures to reduce potential adverse vibration impacts resulting from implementation of the Project have been included in Sections 2.3.2 Geology/Soils/Seismic/Topography and 2.3.5 Noise.

The National Register-eligible Jingletown historic district is considered a Section 4(f) historic resource however, no constructive use of properties within the potential historic district would occur because the Project would not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f); nor is temporary occupancy of a Section 4(f) property proposed.

No substantial adverse effects to National Register-eligible properties or to the two referenced historical resources under CEQA are anticipated as a result of the Project. The reason being that the Project would not result in the material impairment of an historical resource or changes to the historic resource’s immediate surroundings such that the resources would be materially impaired.

Coordination between the Department and the SHPO is currently in progress. Although neither the California Cotton Mills Weaving/Carding/Spinning Building nor the Jingletown historic district were previously listed on the National Register, both were determined eligible by SHPO based on review of the HPSR in June 2009. The SHPO concurrence letter dated July 15, 2009 (see Appendix B), documents the coordination and consultation between the Department and the SHPO. In addition, two properties were identified, 646 Kennedy Street and 948-976 23rd Avenue, that are ineligible for the National Register; however, they are historical resources under CEQA. A Finding of Effect Report has been prepared and will be sent to the SHPO for review and concurrence. Overall, the Section 106 finding for the Project’s potential effects on historic properties is No Adverse Effect without Standard Conditions.
## 2.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following avoidance measure, as related to cultural resources (CULT), would reduce or eliminate the adverse property acquisition effects of the Proposed Project:

**CULT-1** If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

Implementation of the following minimization measure would reduce or eliminate the adverse property acquisition effects of the Proposed Project:

**CULT-2** If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the District Environmental Branch so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.