

## **Appendix B    Traffic Study**



# CALEXICO WEST LAND PORT OF ENTRY BORDER STATION EXPANSION

## TRAFFIC IMPACT STUDY

November 2009



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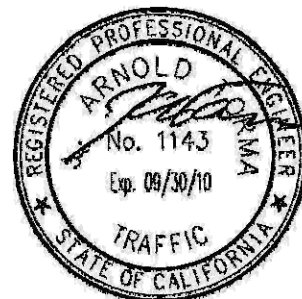
# CALEXICO WEST LAND PORT OF ENTRY BORDER STATION EXPANSION

## TRAFFIC IMPACT STUDY

November 2009

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## EXECUTIVE SUMMARY

The United States General Services Administration (GSA) proposes to expand the number of inspection stations for the Calexico West Land Port of Entry (LPOE) from 10 stations to 16 stations in an effort to relieve traffic congestion, reduce vehicle queues due to inspection, improve security at the port and facilitate Customs and Border Protection Mission. The Calexico West LPOE is currently aligned with State Route 111 (SR-111), and, with the expansion, the LPOE will be realigned with Cesar Chavez Boulevard in order to avoid train blockages of the southbound lanes into Mexico. Furthermore, five southbound ad-hoc inspection lanes will also be provided.

KOA Corporation has prepared the following traffic study for the proposed Calexico West LPOE Border Station Expansion for the GSA. The purpose of the Calexico West LPOE Border Station Expansion Traffic Study is to identify local circulation system deficiencies created by the implementation of the proposed project. This study evaluates two phases of the Border Station Expansion. The first phase is analyzed under the near-term scenario, and second phase is analyzed under the both the near-term and horizon year scenarios. Also, the southbound segment leaving the United States was analyzed under phase two as 3 lane and 8 lane segment alternatives.

Phases I through III of the Calexico West LPOE Master Plan are the only phases that affect traffic operations of the LPOE. The remaining phases (Phases IV and V) are identified in Chapter 1 of this report. However, for the purposes of the analysis in this report, Phase 1 will include Phases I and II, and Phase 2 will represent Phase III.

The first phase of the border station expansion will maintain existing California Border Patrol (CBP) operations at the LPOE aligned with SR-111 (10 inspection lanes including SENTRI). The first phase will also construct 10 inspection lanes (including SENTRI) at the proposed LPOE aligned with Cesar Chavez Boulevard, providing a total of 20 inspection lanes entering the United States for the Calexico West LPOE. This phase will be maintained until funding is acquired for the second phase. The current location of the southbound LPOE lanes will be maintained in this phase. As a separate project, Mexico will begin inspecting southbound LPOE traffic before this phase is implemented.

The second phase of the border station expansion will eliminate CBP operations at the LPOE aligned with SR-111. For the LPOE aligned with Cesar Chavez Boulevard, 6 inspection lanes will be constructed in addition to the ones built during the interim phase. The second phase will maintain 16 inspection lanes (including SENTRI) entering the United State for the Calexico West LPOE and will allow partial direct access to Imperial Avenue. The existing location of the southbound LPOE lanes will be realigned with Cesar Chavez Boulevard in this scenario. As a separate project, Mexico will also inspect the southbound LPOE traffic.

KOA Corporation coordinated with Caltrans, Imperial Valley Association of Governments (IVAG), the County of Imperial, and the City of Calexico to determine the project study area. The border station expansion generates trips by increasing the capacity of the northbound inspection. Furthermore, trips will divert from SR-111 (existing LPOE alignment) to Cesar Chavez Boulevard (future LPOE alignment); this will create a negative net effect at some locations along SR-111 and especially streets in close proximity to the existing LPOE.

Sixteen (16) intersections, eleven (11) roadway segments, and two (2) arterials are analyzed in this study using the methods approved by Caltrans and the City of Calexico. No Capital Improvement Projects (CIP) related to the analyzed intersections or roadway segments were found; therefore, the existing roadway network condition was designated as the base condition for both the 2015 and 2035

analysis years. However, the “With Project” scenarios include project features at the intersections of SR-111 & 2<sup>nd</sup> Street and Cesar Chavez Boulevard & 2<sup>nd</sup> Street.

This report analyzes the following scenarios:

- Existing Conditions
- Near-Term (2015) Without Project
- Near-Term (2015) With Project Phase 1
- Near-Term (2015) With Project Phase 2
- Horizon Year (2035) Without Project
- Horizon Year (2035) With Project Phase 2

The traffic forecasting is derived from the *Imperial County Transportation Model (Callexico GP +)*. Since the model forecasts to the year 2025, model growth was interpolated to produce year 2035 volumes. Study intersections and roadway segments were grown by the ambient growth factors derived from this exercise. In addition, Caltrans provided the forecast for the border crossing in the year 2030 as published in the *California-Baja California Border Master Plan, September 2008* report, and this growth was also interpolated to produce the year 2035 border crossing volumes. This border crossing growth was also applied throughout the study area intersections and roadway segments accounting for intersection growth due to the border crossings. The year 2015 volumes were handled in the same manner by interpolating between existing volumes and forecasted year 2035 volumes.

The project’s expansion of the border facilities decreases the wait times which makes crossing the border more desirable to those who wanted to cross, but did not, due to the long waits for inspection. The increased capacity of the border crossing translates into more vehicular demand, and this effect is also known as “latent demand”. The *Imperial Valley – Mexicali Economic Delay Study, November 2007* report identifies the percent increase to account for latent demand (10%) which may occur if capacity were unconstrained. This percentage was applied to the “Without Project” border-crossing volumes to obtain the “With Project” border-crossing volumes.

## CHAPTER 1 INTRODUCTION

The United States General Services Administration (GSA) proposes to expand the number of inspection stations for the Calexico West Land Port of Entry (LPOE) from 10 stations to 16 stations in an effort to relieve traffic congestion, reduce vehicle queues due to inspection, improve security at the port and facilitate Customs and Border Protection Mission. The Calexico West LPOE is currently aligned with State Route 111 (SR-111), and, with the expansion, the LPOE will be realigned with Cesar Chavez Boulevard in order to avoid train blockages of the southbound lanes into Mexico.

KOA Corporation has prepared traffic impact analysis to analyze the potential vehicular traffic impacts resulting for the proposed Calexico Land Port of Entry (LPOE) Border Crossing Expansion. The expansion will increase the capacity of the port and thus increase vehicular traffic. This study evaluates two phases of the Border Station Expansion. The first phase is analyzed under the near-term scenario, and the second phase is analyzed under the near-term and horizon year scenario.

### PROJECT DESCRIPTION

In order to meet the proposed schedule of the Border Station Master Plan, various site and operational constraints, the construction of the new facility will be phased. Actions described in Phases I and II represent permanent construction at the new LPOE while Phases III through V relocate the remaining border operations from the existing LPOE to the new LPOE with some additional construction.

The phases described below come from the *Calexico West LPOE Master Plan, January 2009*. However, for the purposes of the analysis in this report, Phase 1 will include Phases I and II, and Phase 2 will represent Phase III.

#### Phase I

The project work will start with the clearing and leveling of the Old Commercial Port area and construction of a new Auto Inspection/ Head House Building. Due to limitations in funding, only partial construction of the auto facility can be realized in this phase. The following elements will begin construction at this point: head house, vehicle inspection facilities, vehicular traffic lanes, canopies, and surface and lower-level parking.

Preliminary estimates indicate funding to include 10 lanes of primary auto inspection, 12 secondary inspection booths and full build-out of the head house facility. Temporary surface parking for employees and a secure prisoner transport sally-port would be located at the lower level along with employee circulation. To facilitate future construction, shell space is also included in this phase as it is located under the northbound roadway.

#### Phase II

During this phase the remainder of the auto inspection facilities and site development to the western edge of the site are to be constructed. This will provide both northbound and southbound inspection facilities as indicated in the master plan along with surface employee parking, secure circulation and prisoner transport area.

For the phasing process to continue forward Mexico will have to construct their reciprocal facilities in a similar manner and time frame.

### **Phase III**

Before transitioning to the next phase the vehicular processing functions of the existing LPOE will need to be transferred to the new Vehicle Inspection Facility. Pedestrian inspection will remain in the existing LPOE until the new Pedestrian/Administration Building is constructed.

Once the existing southbound lanes of traffic have been vacated construction of the central building can begin. As per the master plan all of the administration, employee support and port response programs are located here as well as prosecutions and central detention at the lower level. The connecting tunnel below the rail corridor is also partially completed in this phase providing secure access between the two facilities and also aiding in future phasing while the existing building is demolished. For a period of time the port will be operating as a split facility.

### **Phase IV**

The existing LPOE, now vacant of vehicular traffic, can begin a partial demolition. The remaining portion of the Pedestrian/Administration building west of the rail corridor can be finished along with the construction of the new Pedestrian processing facility east of the tracks. Once these components are complete the new LPOE will be able to function as a stand-alone building – processing both vehicles and pedestrians. All remaining departments from the existing building will be transferred to the new facility.

### **Phase V**

Once the old LPOE is vacated, it will be demolished and the remainder of the facility and site will be completed. During this construction pedestrians will be routed along the border to the new building via a temporary secure corridor.

## **PROJECT TRIP GENERATION**

Trip generation is a measure or forecast of the number of trips that begin or end at the project site. The traffic generated is a function of the extent and type of development proposed for the site. These trips will result in some traffic increases on the streets where they occur. In general, vehicular traffic generation characteristics for projects are estimated based on established rates. These rates identify the probable traffic generation of various land uses based on studies of developments in comparable settings. However, since there are no published rates for a border crossing, the trip generation must be estimated utilizing available data such as model forecasts, economic delay studies, and other published forecasts in order to determine the effect due to the additional lanes of the border station expansion.

Currently, there are 30,000 average daily vehicle crossings at the Calexico West LPOE. There are 13,000 in the northbound direction and 17,000 in the southbound direction. The existing imbalance of these crossing patterns at the Calexico West LPOE (southbound is greater than northbound) is due to the long wait times for northbound vehicles causing vehicles to divert 6 miles east to the Calexico East LPOE. On the return trip to Mexico (southbound) the wait times at the Calexico West LPOE are not as considerable as the northbound and drivers make their return trip through the Calexico West LPOE, thus causing the northbound and southbound volumes to be imbalanced at the Calexico West LPOE.

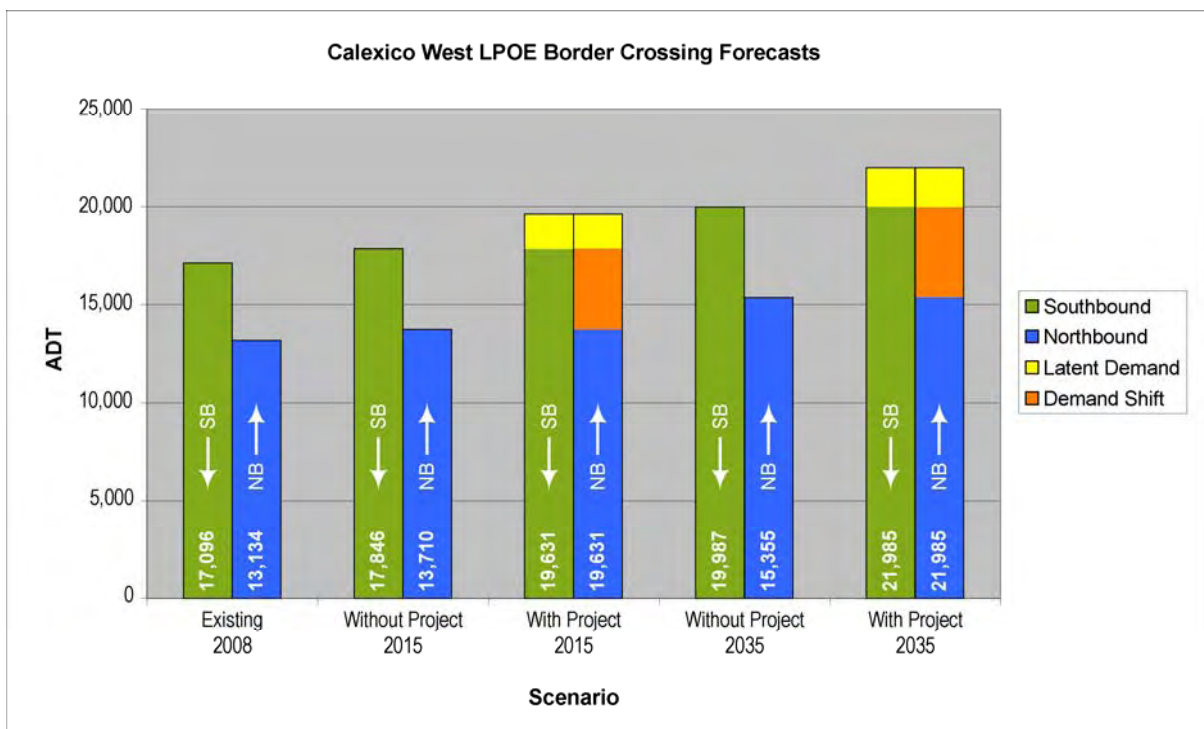
The directional split of northbound vehicles versus southbound vehicles at the Calexico West LPOE is assumed to become balanced with the implementation of the project. All LPOE crossing locations within Imperial County show that the total vehicles entering and leaving the United States to and

from Mexico is approximately equal. The proposed project will alleviate the northbound vehicle wait times at the Calexico West LPOE and drivers will no longer divert to the Calexico East LPOE. This demand shift occurs in the “With Project” scenarios and is shown in orange in Figure 1-1.

The forecast daily traffic demand for the Calexico West LPOE border crossing is obtained from the *California-Baja California Border Master Plan, September 2008* report. The Caltrans forecast of 41,425 ADT for the year 2030 is used under the guidance of Caltrans staff and FHWA as the unconstrained (no border inspection wait time) forecast for the Calexico West LPOE border crossing. The “Without Project” daily volumes are lower than the “With Project” because the border inspection wait times cause longer delays with the existing facility. A reduction to the unconstrained forecasted daily volume was made to represent the constrained existing LPOE configuration of the facility (without Project). The *Imperial Valley – Mexicali Economic Delay Study, November 2007* report approximately shows an additional 10 percent of the current border-crossers would like to cross the border, but choose not to, due to the long wait times at the border (also known as latent demand). Therefore, the border station expansion project is estimated to incur a 10 percent increase in vehicles crossing the border throughout a typical day than if the border station were to remain unchanged from its existing configuration. The latent demand is shown in yellow in Figure 1-1.

Figure 1-1 below illustrates the results of this forecasting exercise.

**Figure 1-1**



**Northbound**

The trip generation for the increased capacity of the expansion is derived from the existing operations. Inspection times are considered classified information; therefore the analysis is based on observed inspection times. The existing border vehicle inspection stations that are currently processing privately owned vehicles consist of 10 lanes with single inspection booth. The existing facilities can currently process approximately 775 vehicles per hour based on the observed inspection time per vehicle per lane. Assuming the same rate with all inspection lanes open for 24 hours, the existing facilities have a daily capacity of 18,600 daily trips (24 hours per day x 775 vehicles per hour = 18,600 vehicles per day). The proposed Phase 1 facilities will be able to process 1,550 vehicles per hour with a daily capacity of 37,200 vehicles per day (24 hours per day x 1,550 vehicles per hour = 37,200 vehicles per day). The proposed Phase 2 facilities will be able to process 1,240 vehicles per hour with a daily capacity of 29,760 vehicles per day (24 hours per day x 1,240 vehicles per hour = 29,760 vehicles per day).

Table 1-1 summarizes the capacities of the port configurations for privately owned vehicles.

**Table 1-1  
Capacity of the LPOE Configurations – Northbound POV Lanes**

| LPOE Configuration | Number of Lanes | Capacity (vehicles) | Project Increase |
|--------------------|-----------------|---------------------|------------------|
| <i>Daily</i>       |                 |                     |                  |
| Existing           | 10              | 18,600              | ----             |
| Phase 1            | 20              | 37,200              | 18,600           |
| Phase 2            | 16              | 29,760              | 11,160           |
| <i>Hourly</i>      |                 |                     |                  |
| Existing           | 10              | 775                 | ----             |
| Phase 1            | 20              | 1,550               | 775              |
| Phase 2            | 16              | 1,240               | 465              |

By comparing the daily capacities of the port configurations in Table 1-1 to the daily volumes presented in Table 1-2, it can be noted that demand is always lower than capacity for the day. However, a more rigorous analysis of daily capacity versus daily demand (hour by hour) may yield a lower daily throughput with an unmet demand; but, to be conservative and simplify the analytical approach, the daily demand was utilized for the analysis of the project in this report.

Peak hour volumes were handled in a similar manner as the daily demand volumes of the border crossing. The hourly capacity of the port for each respective scenario was used as the throughput volume.

Table 1-2 summarizes the forecast volumes with and without the port expansion.

**Table 1-2  
Calexico West Border Crossing – Northbound POV Traffic**

| Northbound          | LPOE Configuration |         |         | Project Increase |         |
|---------------------|--------------------|---------|---------|------------------|---------|
|                     | Existing           | Phase 1 | Phase 2 | Phase 1          | Phase 2 |
| <i>Daily</i>        |                    |         |         |                  |         |
| Existing            | 13,134             | ----    | ----    | ----             | ----    |
| Near-Term (2015)    | 13,710             | 19,631  | 19,631  | 5,921            | 5,921   |
| Horizon Year (2035) | 15,355             | ----    | 21,985  | ----             | 6,630   |
| <i>AM Peak Hour</i> |                    |         |         |                  |         |
| Existing            | 754                | ----    | ----    | ----             | ----    |
| Near-Term (2015)    | 775                | 1,550   | 1,240   | 775              | 465     |
| Horizon Year (2035) | 775                | ----    | 1,240   | ----             | 465     |
| <i>PM Peak Hour</i> |                    |         |         |                  |         |
| Existing            | 665                | ----    | ----    | ----             | ----    |
| Near-Term (2015)    | 775                | 1,550   | 1,240   | 775              | 465     |
| Horizon Year (2035) | 775                | ----    | 1,240   | ----             | 465     |

**Southbound**

At the publishing of this report Mexico’s plan for the expansion of Mexico’s LPOE is not operational. Because of this, the trip generation for Mexico’s expansion plans cannot be estimated. However, the reciprocal effect of the northbound inspection was assumed to occur for southbound vehicles as well (i.e. vehicles entering the United States return to Mexico and vice versa). This concept is further discussed in the *Calexico West Border Station Expansion – Forecast Methodology* technical memorandum which can be found in Appendix D.

The existing inspection facilities in Mexico can currently process vehicles at a rate of 5,400 vehicles per hour based on the observed inspection time per vehicle per lane. Assuming the same rate with all inspection lanes open for 24 hours, the existing facilities have a daily capacity of 129,600 daily trips (24 hours per day x 5,400 vehicles per hour = 129,600 vehicles per day). Additionally, in the immediate future Mexico will begin using a computerized inspection system called SIAVE. This system will be installed on all 10 existing southbound inspection lanes and, based on an inspection rate of 12 seconds per vehicle, will be able to process vehicles at a rate of 3,000 vehicles per hour. Assuming the same rate with all inspection lanes open for 24 hours, the 10-lane SIAVE facility has a daily capacity of 72,000 daily trips (24 hours per day x 3,000 vehicles per hour = 72,000 vehicles per day).



Table 1-3 summarizes the capacity of the southbound port configuration for Mexico.

**Table 1-3  
Capacity of the LPOE Configurations – Southbound POV Lanes**

| Mexico              | Number of Lanes | Capacity (vehicles) | Difference (from Existing) |
|---------------------|-----------------|---------------------|----------------------------|
| <i>Daily</i>        |                 |                     |                            |
| Existing Inspection | 6               | 129,600             | ----                       |
| SIAVE Inspection    | 10              | 72,000              | -57,600                    |
| <i>Hourly</i>       |                 |                     |                            |
| Existing Inspection | 6               | 5,400               | ----                       |
| SIAVE Inspection    | 10              | 3,000               | -2,400                     |

By comparing the daily capacities of the port configurations in Table 1-3 to the daily volumes presented in Table 1-4, it can be noted that demand is always lower than capacity for the day. Since the southbound trips may be constrained by roadway and intersection capacities (the subject of this report’s analysis), it is assumed that the southbound demand will always be equal to the throughput.

Table 1-4 summarizes the forecast volumes of the southbound port configuration for Mexico.

**Table 1-4  
Calexico West Border Crossing – Southbound POV Traffic**

| Southbound          | LPOE Configuration |         |         | Project Increase |         |
|---------------------|--------------------|---------|---------|------------------|---------|
|                     | Existing           | Phase 1 | Phase 2 | Phase 1          | Phase 2 |
| <i>Daily</i>        |                    |         |         |                  |         |
| Existing            | 17,096             | ----    | ----    | ----             | ----    |
| Near-Term (2015)    | 17,846             | 19,631  | 19,631  | 1,785            | 1,785   |
| Horizon Year (2035) | 19,987             | ----    | 21,985  | ----             | 1,998   |
| <i>AM Peak Hour</i> |                    |         |         |                  |         |
| Existing            | 654                | ----    | ----    | ----             | ----    |
| Near-Term (2015)    | 683                | 751     | 751     | 68               | 68      |
| Horizon Year (2035) | 765                | ----    | 842     | ----             | 77      |
| <i>PM Peak Hour</i> |                    |         |         |                  |         |
| Existing            | 1,871              | ----    | ----    | ----             | ----    |
| Near-Term (2015)    | 1,954              | 2,149   | 2,149   | 195              | 195     |
| Horizon Year (2035) | 2,188              | ----    | 2,407   | ----             | 219     |

**Employees**

The proposed expansion of the border crossing will also result in an increase of staff members to address the daily operations of the expanded LPOE. According to the GSA, the current site consists of 232 employees. This number will be increased to 432 employees due to the expansion which is a

net increase of 200 additional port employees. Since there are no known trip generation studies for a facility of this type, the rate for a military base was applied to the employees. A trip generation rate of 2.5 trips per employee was applied to address the anticipated additional daily trips generated by the added employees. The increase in the number of employees will result in approximately 500 new daily trips, 45 AM peak hour trips and 50 PM peak hour trips.

**Table 1-5  
Employee Trip Generation for the Calexico West LPOE**

| Land Use           | Intensity | Units     | Rate/Trips | Daily | AM Peak Hour |     |     | PM Peak Hour |     |     |
|--------------------|-----------|-----------|------------|-------|--------------|-----|-----|--------------|-----|-----|
|                    |           |           |            |       | Total        | In  | Out | Total        | In  | Out |
| Current Employees  | 232       | Employees | Rate       | 2.5   | 9%           | 90% | 10% | 10%          | 60% | 40% |
|                    |           |           | Trips      | 580   | 52           | 47  | 5   | 58           | 35  | 23  |
| Proposed Employees | 432       | Employees | Rate       | 2.5   | 9%           | 90% | 10% | 10%          | 60% | 40% |
|                    |           |           | Trips      | 1,080 | 97           | 87  | 10  | 108          | 65  | 43  |
| Net Change         |           |           |            | 500   | 45           | 40  | 5   | 50           | 30  | 20  |

### Trip Generation Summary

Table 1-5 summarizes the total two-way increase in vehicle traffic at the border due to the expansion, including latent demand and employee trip generation.

**Table 1-6  
Trip Generation of the Calexico West Border Crossing**

| LPOE Configuration         | Daily |         |          | AM Peak Hour |         |          | PM Peak Hour |         |          |
|----------------------------|-------|---------|----------|--------------|---------|----------|--------------|---------|----------|
|                            | Total | SB / In | NB / Out | Total        | SB / In | NB / Out | Total        | SB / In | NB / Out |
| <i>Near-Term (2015)</i>    |       |         |          |              |         |          |              |         |          |
| Phase 1                    | 8,206 | 2,035   | 6,171    | 888          | 108     | 780      | 1,020        | 225     | 795      |
| Phase 2                    | 8,206 | 2,035   | 6,171    | 578          | 108     | 470      | 710          | 225     | 485      |
| <i>Horizon Year (2035)</i> |       |         |          |              |         |          |              |         |          |
| Phase 2                    | 9,128 | 2,248   | 6,880    | 587          | 117     | 470      | 734          | 249     | 485      |

### TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment is the process of identifying the probable destinations, directions, and traffic routes that project related traffic will likely affect. Trip distribution and assignment information can be estimated from observed traffic patterns, experience, or through use of a computerized travel forecast model. Once the proposed expansion trips have been estimated, they are assigned to the study area network.

The distribution and assignment for the border crossing, is based on a select link provided by Caltrans and refined using observed traffic patterns and engineering judgment. It is assumed that the destination of existing vehicles crossing the border at Imperial Avenue (SR-111) would be similar to when the border crossing is realigned with Cesar Chavez Boulevard. The additional project trips due

to the less constrained condition of the project (latent demand) are assumed to have similar destinations as existing trips; as a result, the same trip distribution is used for these trips as well. Figures 1-4 and 1-5 illustrate the proposed LPOE distributions by phase.

## PROJECT TRAFFIC

The proposed project will affect the existing circulation network in several ways: reduce vehicular queues, increase capacity at the border, increase border-related peak hour and daily traffic volumes, and alleviate border-related congestion on Imperial Avenue (SR-111).

Figures 1-6 through 1-11 illustrate the daily and peak hour project traffic for near-term and horizon year conditions according to their respective phases. Negative project traffic may occur in some locations due to the LPOE realignment with Cesar Chavez Boulevard, particularly in the immediate vicinity of the port and along portions of Imperial Avenue (SR-111).

## STUDY AREA

The study area for this project includes those locations that are expected to be affected by this project. The scope of the study area is based on a working knowledge of the local transportation system. Figure 1-1 shows the project vicinity and study area. The specific study area includes the following roadway segments and street intersections:

### Roadway Segments

- Imperial Avenue (SR-111) north of Birch Street (SR-98)
- Imperial Avenue (SR-111) between Birch Street (SR-98) and Temple Court
- Imperial Avenue (SR-111) between Temple Court and Grant St
- Imperial Avenue (SR-111) between Grant Street and 6<sup>th</sup> Street
- Imperial Avenue (SR-111) between 6<sup>th</sup> Street and 5<sup>th</sup> Street
- Imperial Avenue (SR-111) between 5<sup>th</sup> Street and 4<sup>th</sup> Street
- Imperial Avenue (SR-111) between 4<sup>th</sup> Street and 3<sup>rd</sup> Street
- Imperial Avenue (SR-111) between 3<sup>rd</sup> Street and 2<sup>nd</sup> Street
- Imperial Avenue between 2<sup>nd</sup> Street and the United States Border
- Birch Street (SR-98) west of VV Williams Avenue
- Birch Street (SR-98) between VV Williams Avenue and Cesar Chavez Boulevard
- Birch Street (SR-98) between Cesar Chavez Boulevard and Ollie Avenue
- Birch Street (SR-98) between Ollie Avenue and Imperial Avenue (SR-111)
- Birch Street (SR-98) east of Imperial Avenue (SR-111)
- Cesar Chavez Boulevard between Birch Street (SR-98) and Grant Street
- Cesar Chavez Boulevard between Grant Street and 2<sup>nd</sup> Street
- Paulin Avenue between 3<sup>rd</sup> Street and 2<sup>nd</sup> Street

- Grant Street between Cesar Chavez Boulevard and Harold Avenue
- Grant Street between Harold Avenue and Imperial Avenue (SR-111)
- 3<sup>rd</sup> Street between Imperial Avenue (SR-111) and Paulin Avenue
- 3<sup>rd</sup> Street between Paulin Avenue and Rockwood Avenue
- 2<sup>nd</sup> Street west of Cesar Chavez Boulevard
- 2<sup>nd</sup> Street between Cesar Chavez Boulevard and Imperial Avenue (SR-111)
- 2<sup>nd</sup> Street between Imperial Avenue (SR-111) and Paulin Avenue
- 2<sup>nd</sup> Street between Paulin Avenue and Rockwood Avenue

### **Intersections**

- Birch Street (SR-98) / VV Williams Avenue
- Birch Street (SR-98) / Cesar Chavez Boulevard
- Birch Street (SR-98) / Ollie Avenue
- Birch Street (SR-98) / Imperial Avenue (SR-111)
- Imperial Avenue (SR-111) / 10<sup>th</sup> St
- Cesar Chavez Boulevard / Grant Street
- Imperial Avenue (SR-111) / Grant Street
- Imperial Avenue (SR-111) / 7<sup>th</sup> Street
- Imperial Avenue (SR-111) / 5<sup>th</sup> Street
- Imperial Avenue (SR-111) / 4<sup>th</sup> Street
- Imperial Avenue (SR-111) / 3<sup>rd</sup> Street
- Paulin Avenue / 3<sup>rd</sup> Street
- Cesar Chavez Boulevard / 2<sup>nd</sup> St
- Imperial Avenue (SR-111) / 2<sup>nd</sup> St
- Paulin Avenue / 2<sup>nd</sup> St

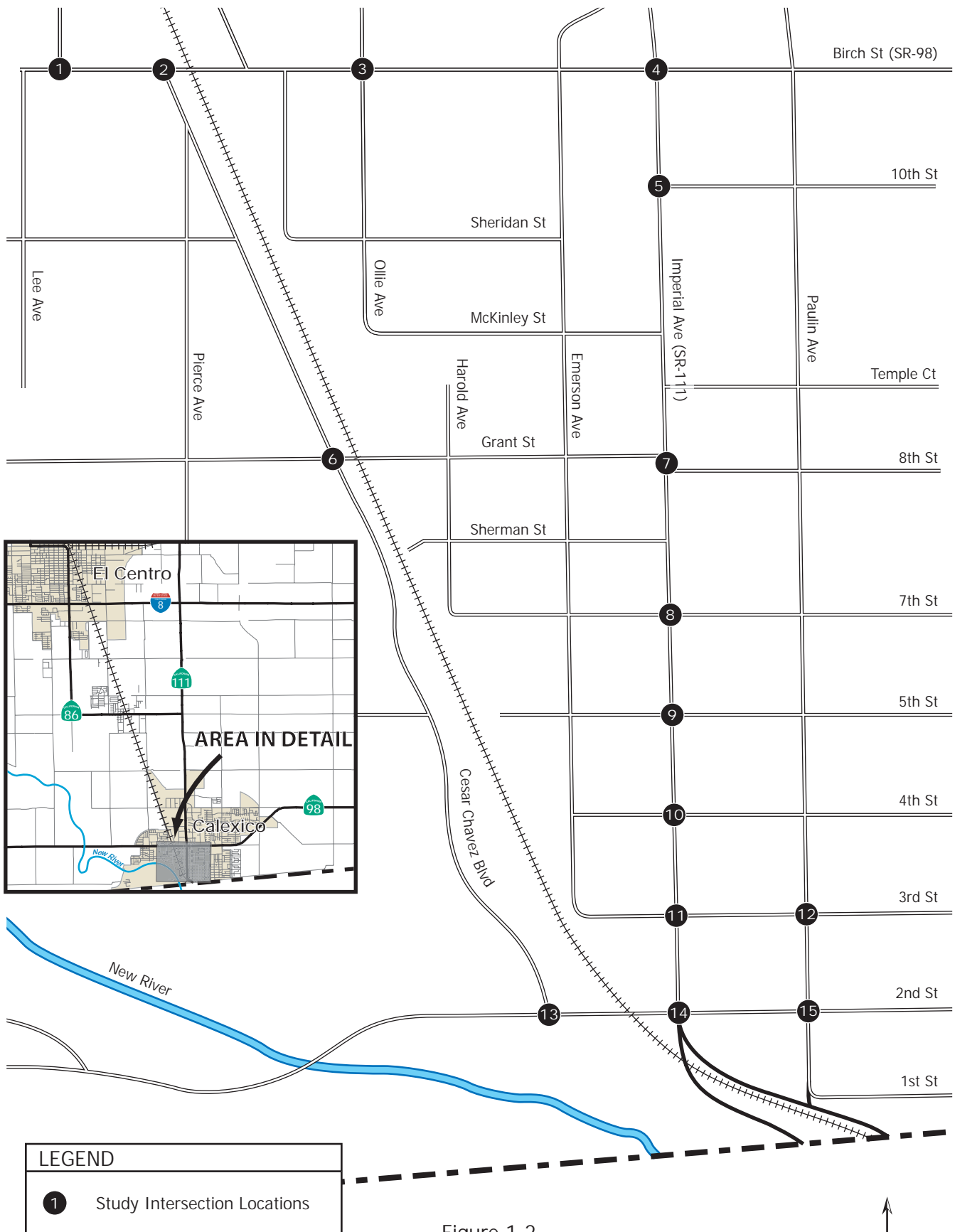
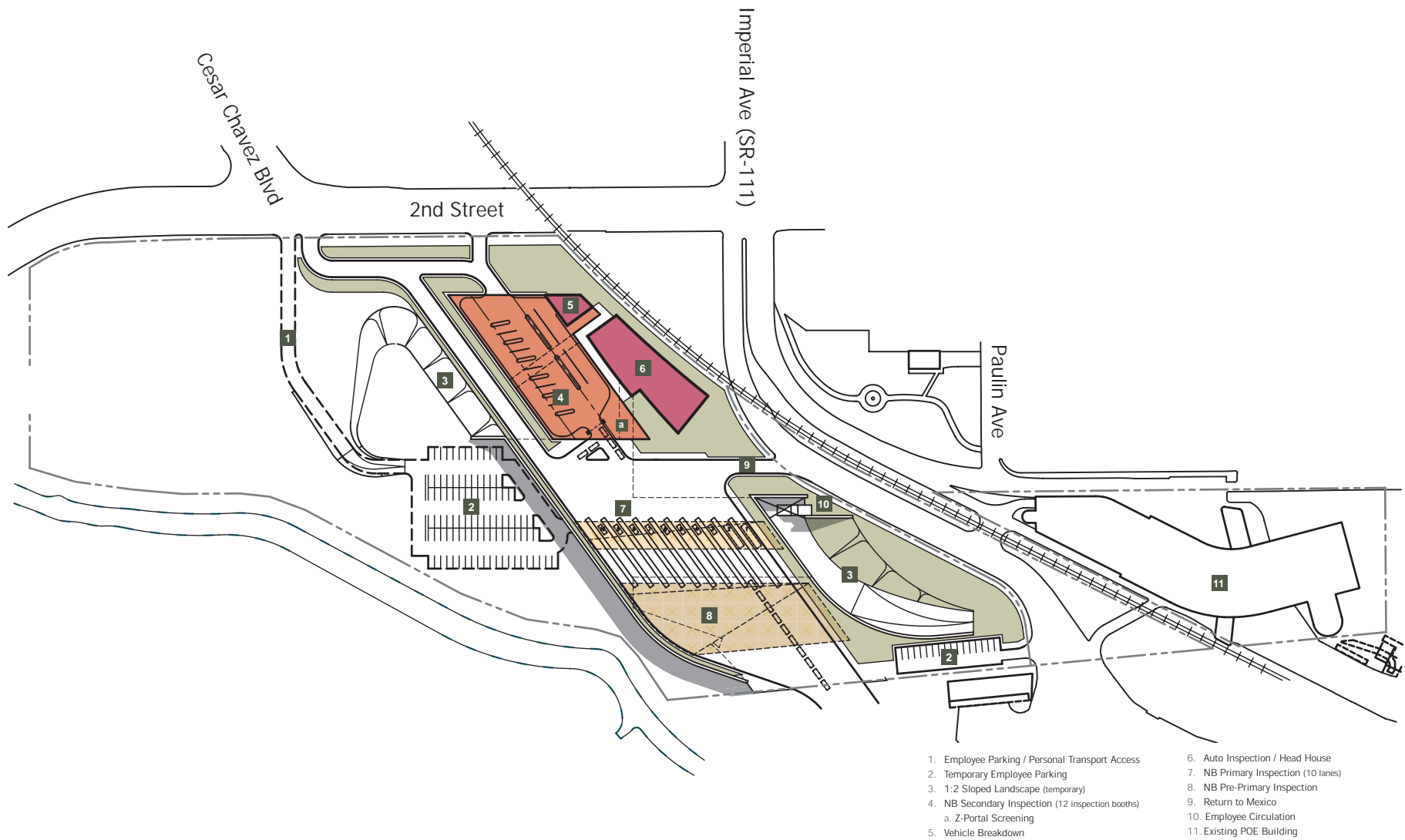
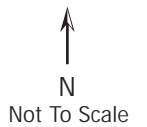


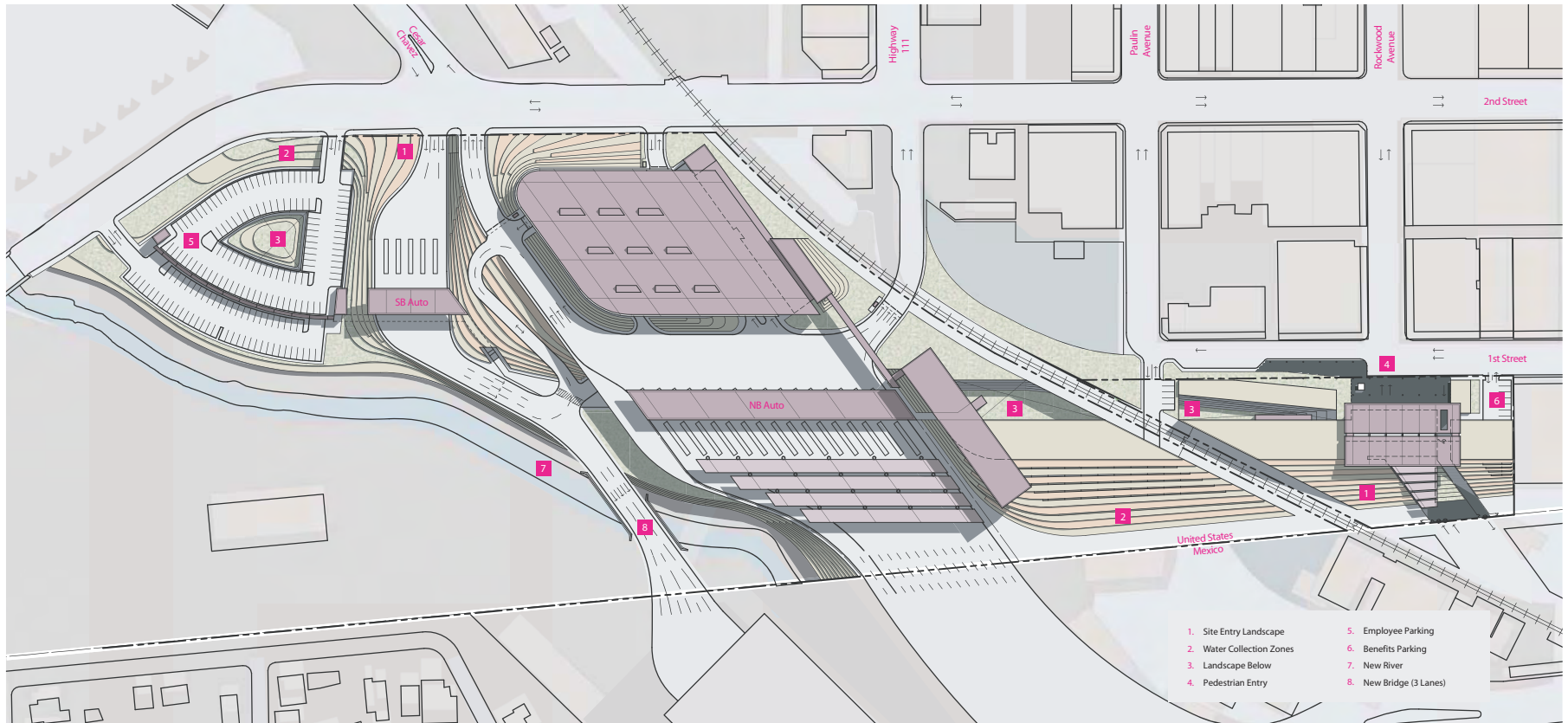
Figure 1-2  
Project Study Area



- 1. Employee Parking / Personal Transport Access
- 2. Temporary Employee Parking
- 3. 1:2 Sloped Landscape (temporary)
- 4. NB Secondary Inspection (12 inspection booths)
  - a. Z-Portal Screening
- 5. Vehicle Breakdown
- 6. Auto Inspection / Head House
- 7. NB Primary Inspection (10 lanes)
- 8. NB Pre-Primary Inspection
- 9. Return to Mexico
- 10. Employee Circulation
- 11. Existing POE Building

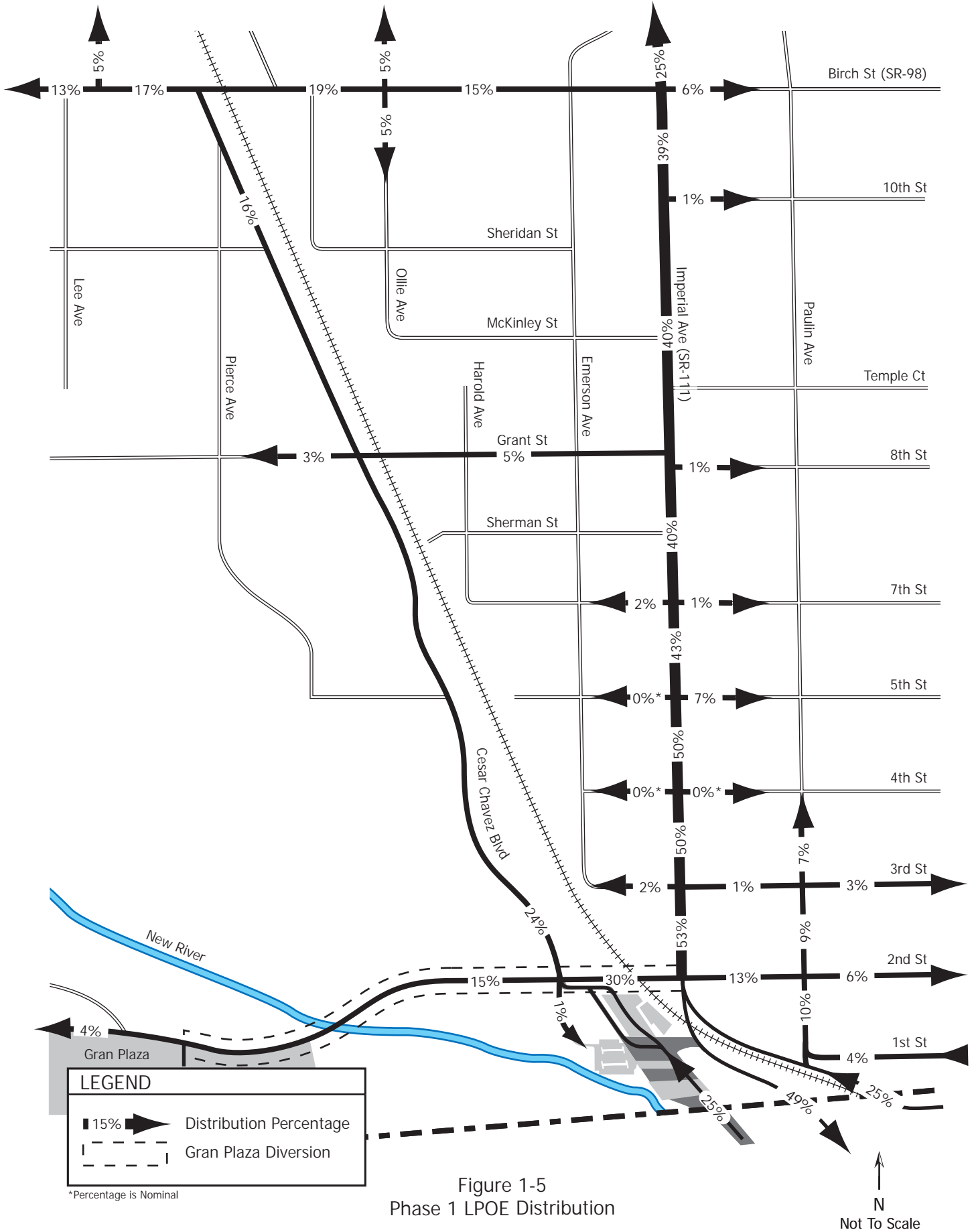
Figure 1-3  
Phase 1 Project Site Plan



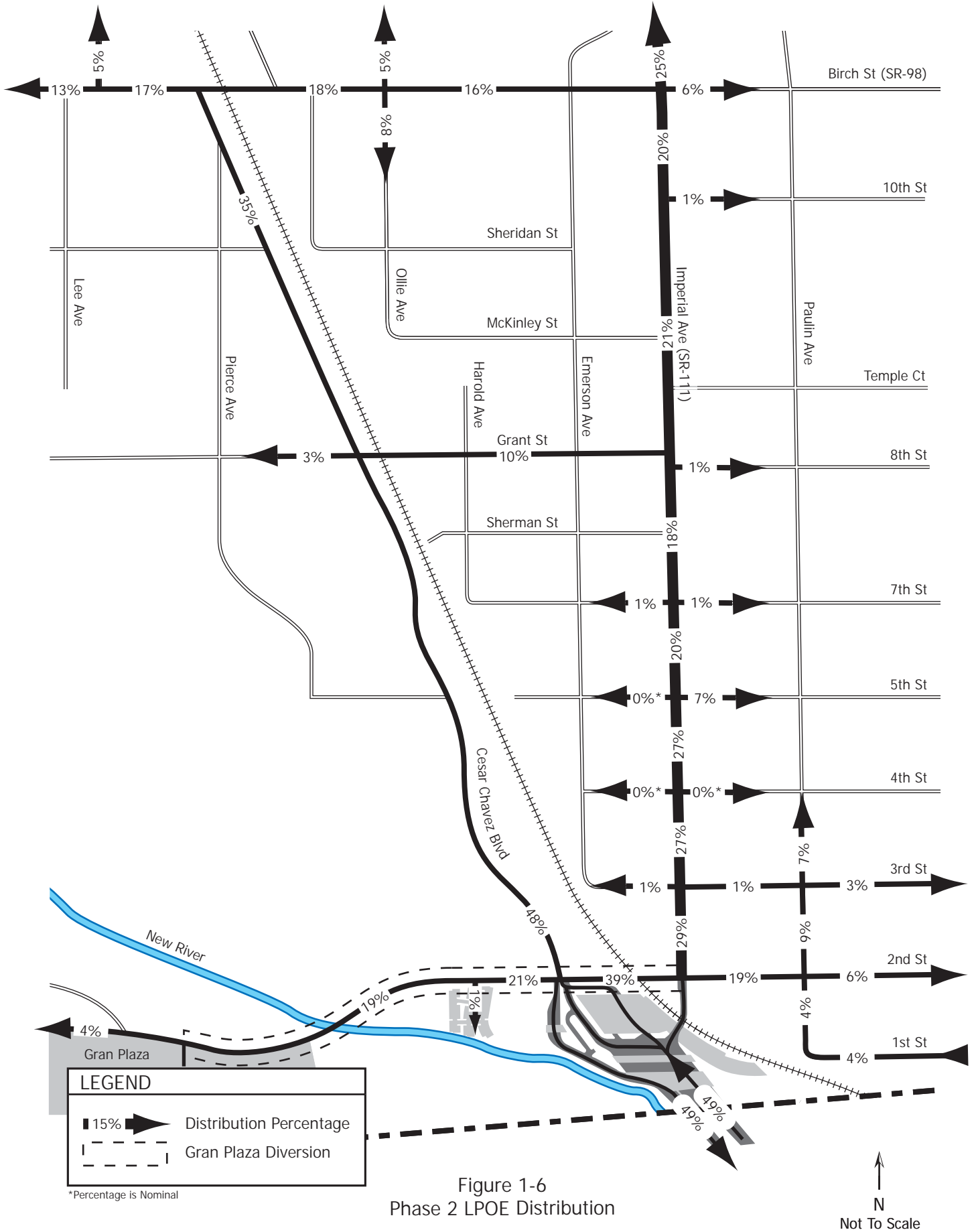


PERKINS + WILL | GSA | RossDrulisCusenbery ARCHITECTURE  
**Calexico west border station**  
 December 11, 2009 **SITE PLAN**  
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Figure 1-4  
Phase 2 Project Site Plan







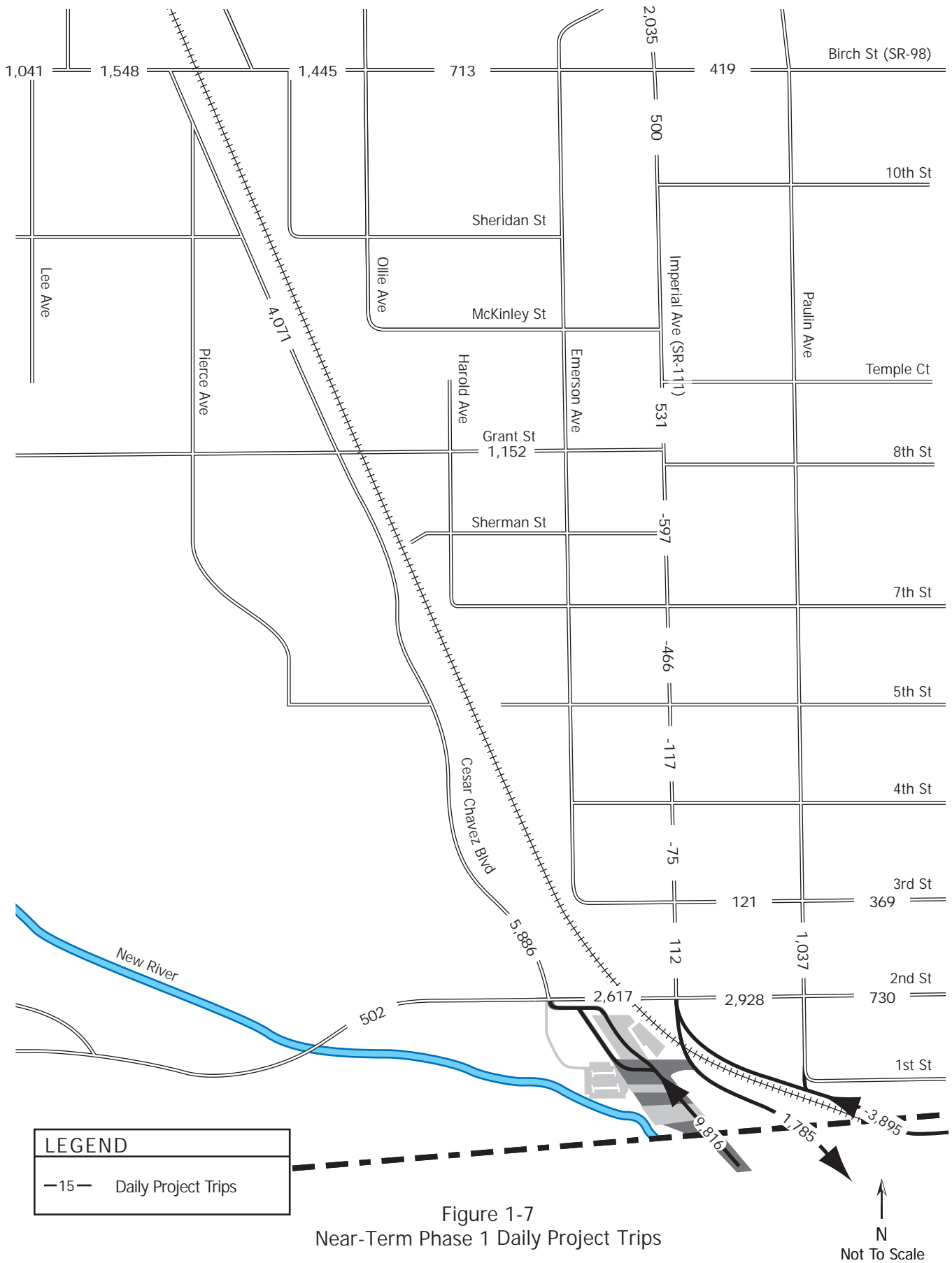


Figure 1-7  
Near-Term Phase 1 Daily Project Trips

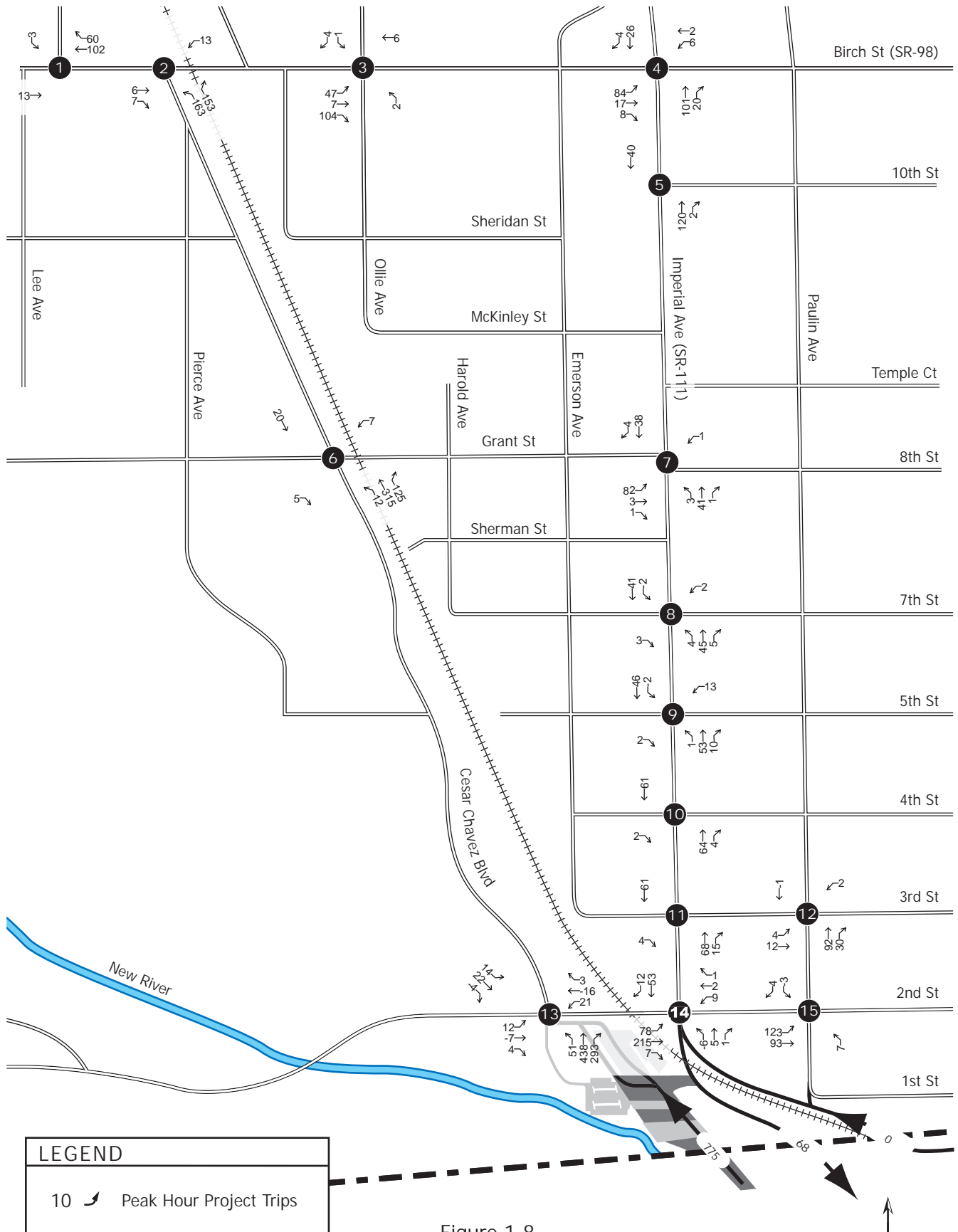


Figure 1-8  
Near-Term Phase 1 AM Peak Hour Project Trips

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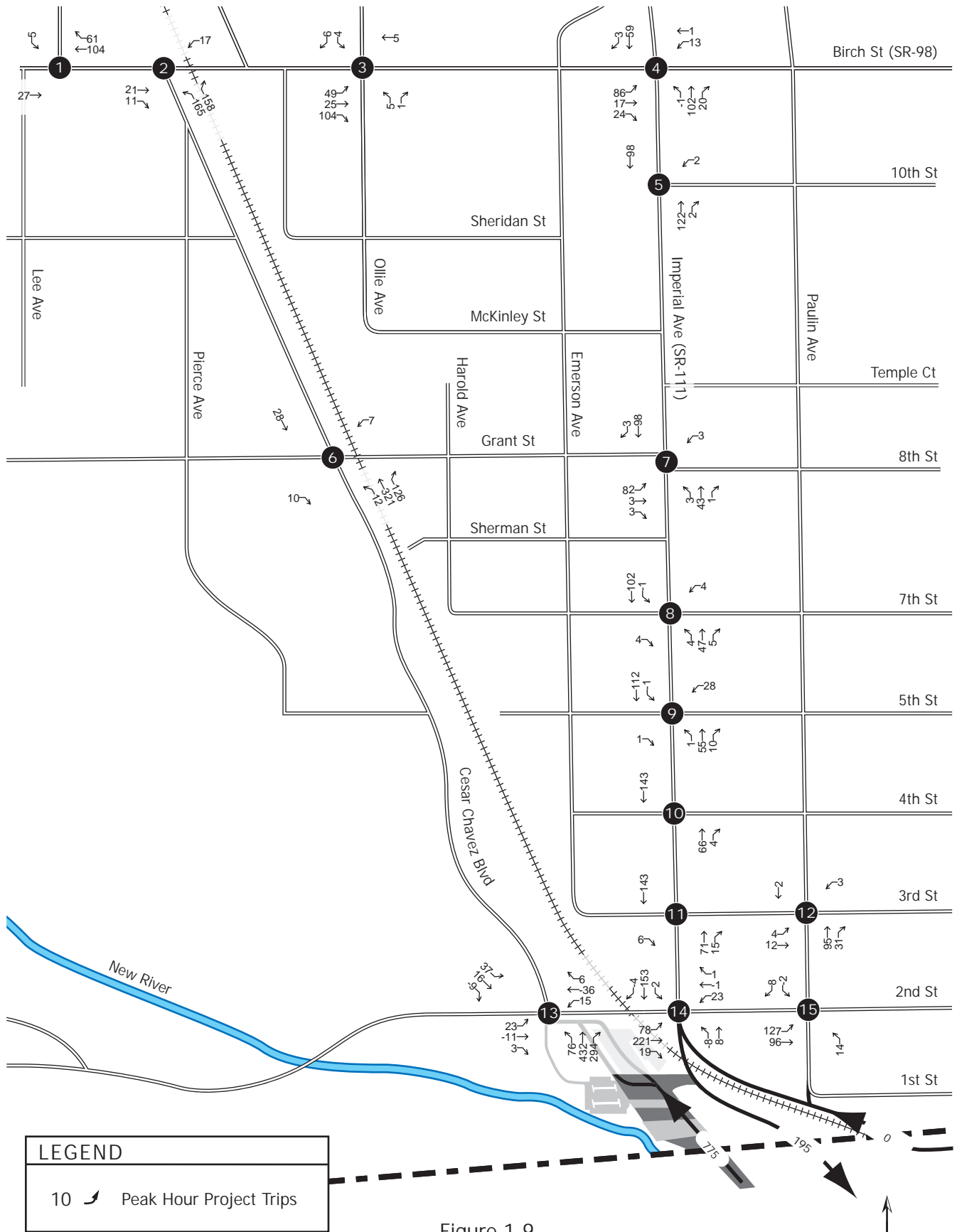


Figure 1-9  
Near-Term Phase 1 PM Peak Hour Project Trips

Note: Numbers are rounded

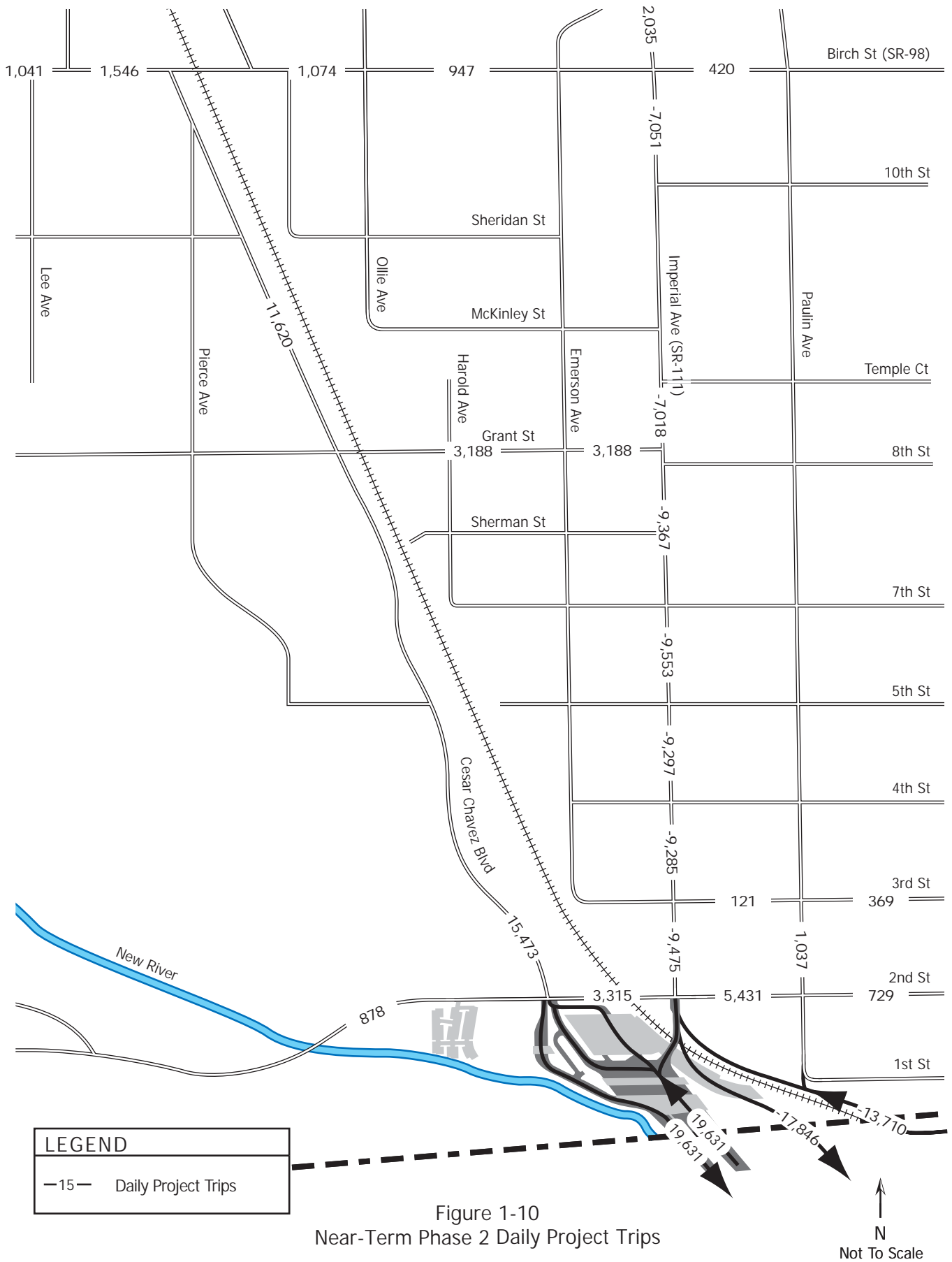
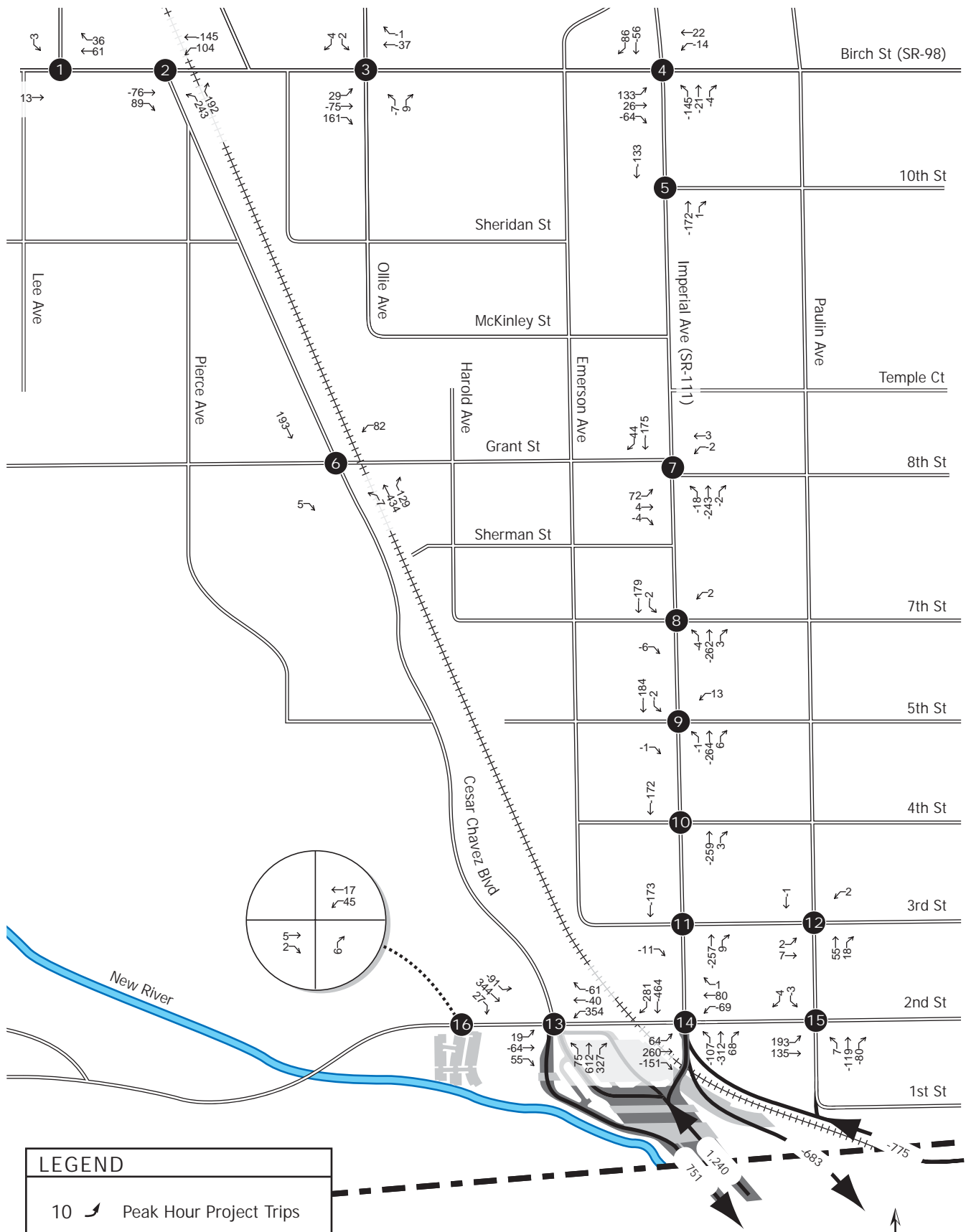


Figure 1-10  
Near-Term Phase 2 Daily Project Trips

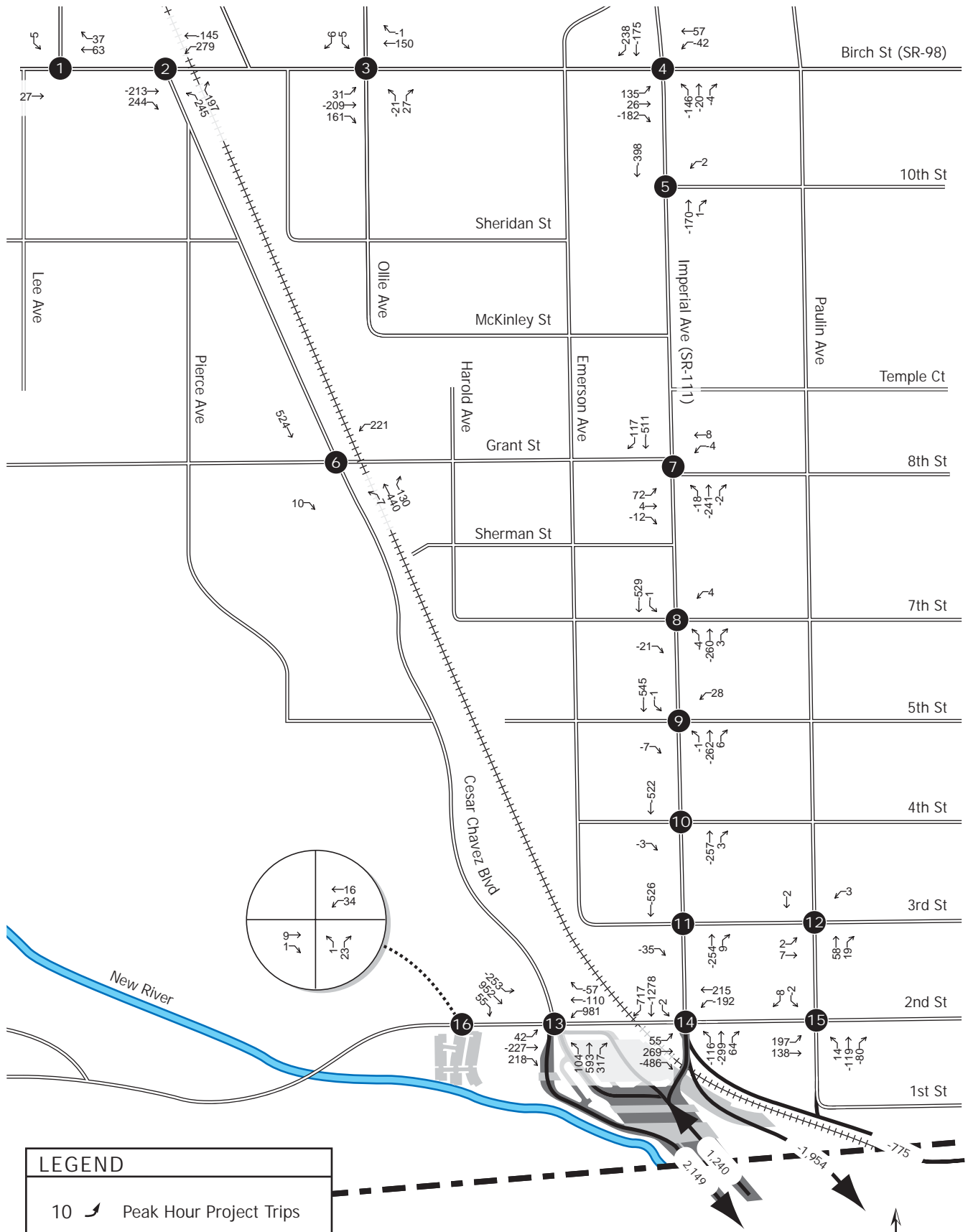


**LEGEND**  
 10 ↗ Peak Hour Project Trips

Note: Numbers are rounded

Figure 1-11  
 Near-Term Phase 2 AM Peak Hour Project Trips

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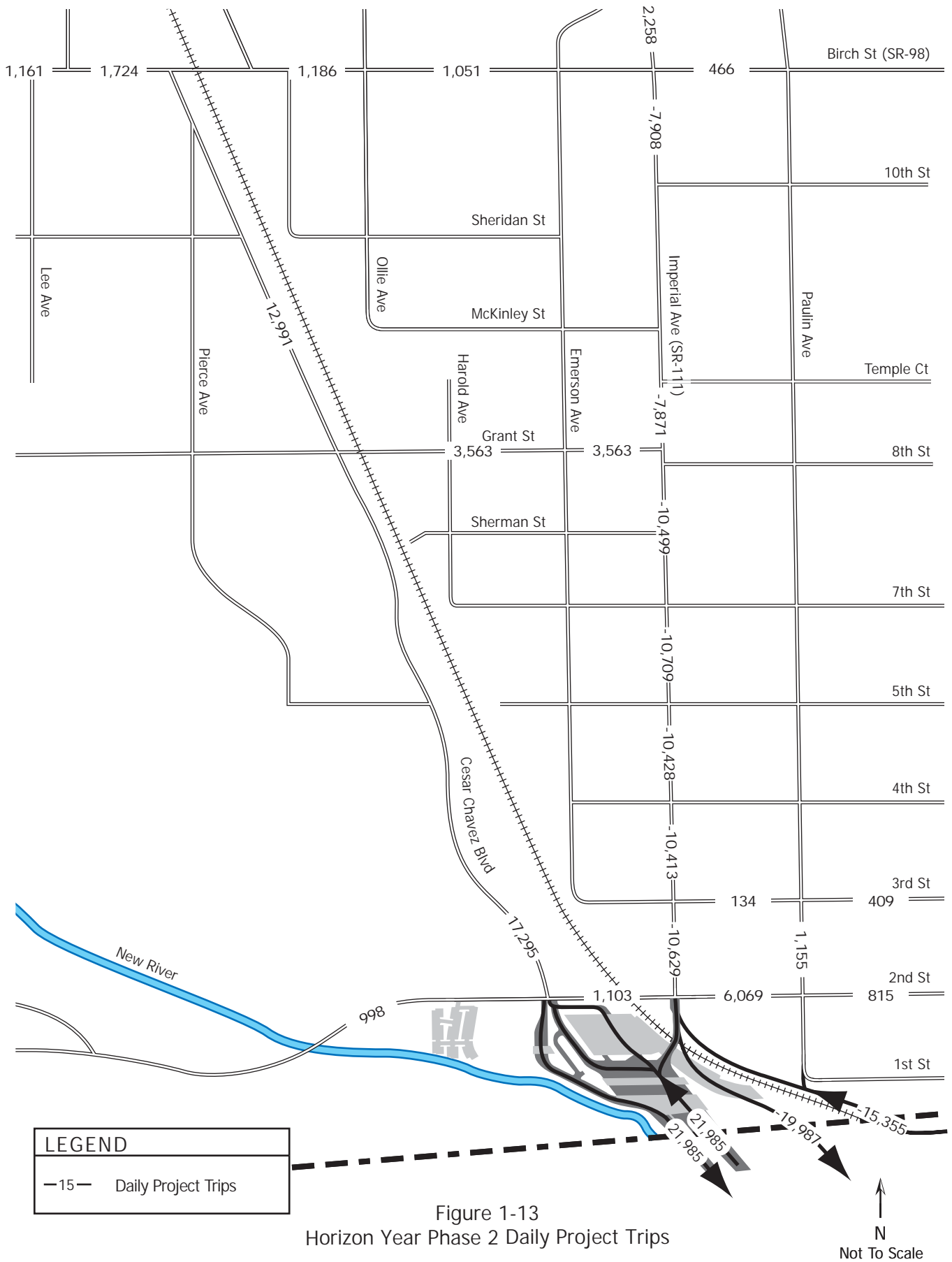


**LEGEND**  
 10 ↘ Peak Hour Project Trips

Note: Numbers are rounded

Figure 1-12  
 Near-Term Phase 2 PM Peak Hour Project Trips

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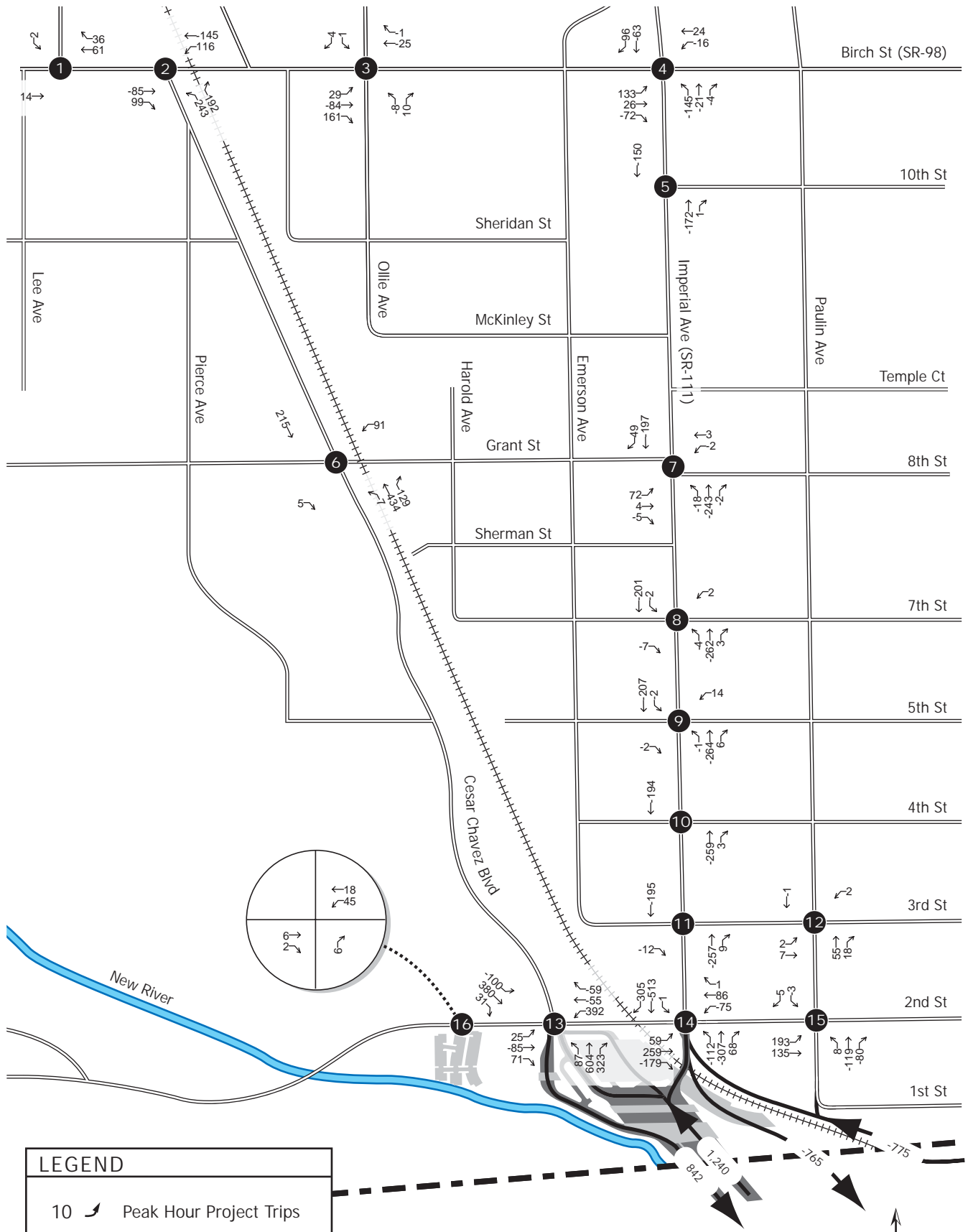
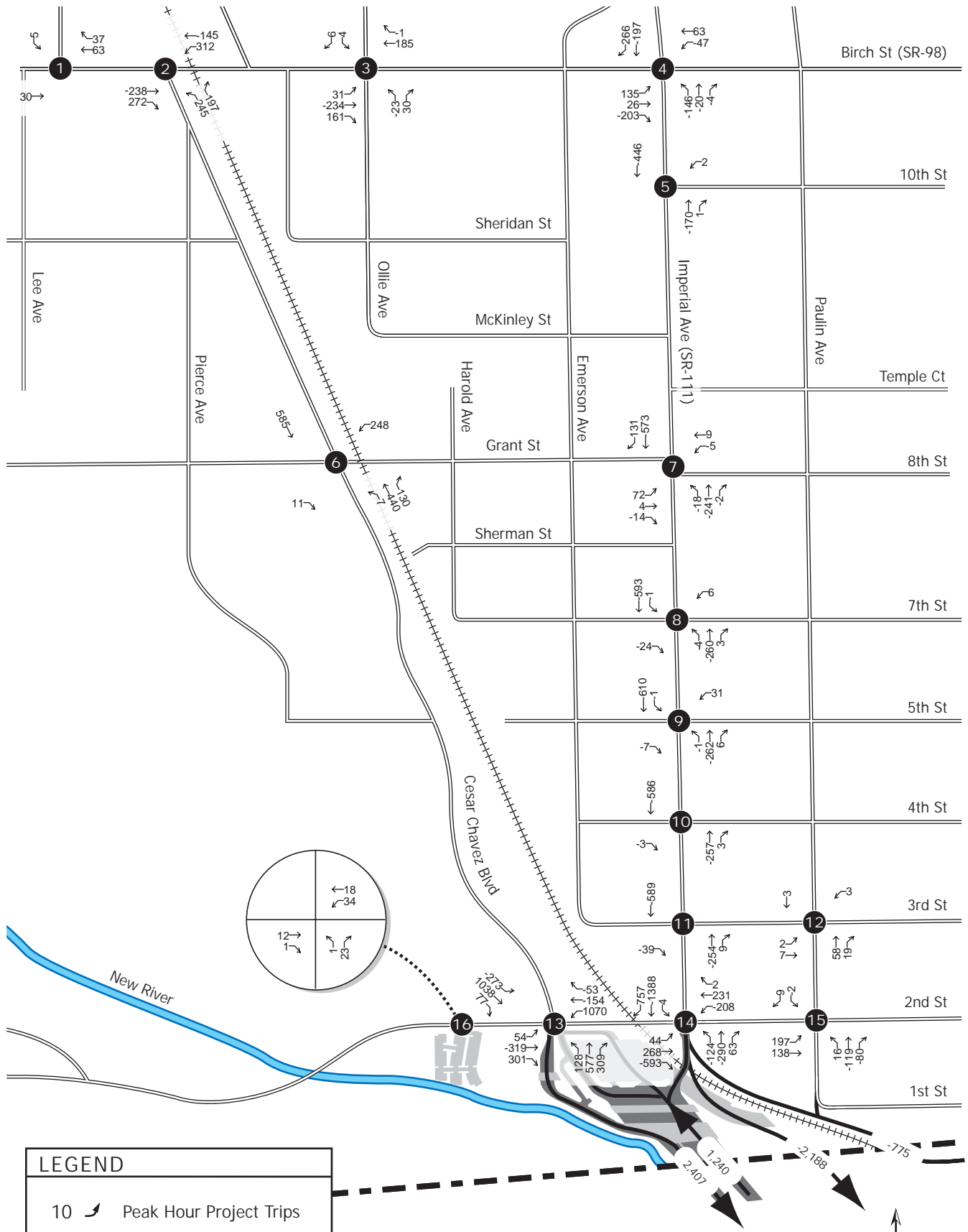


Figure 1-14  
Horizon Year Phase 2 AM Peak Hour Project Trips



**LEGEND**

10 Peak Hour Project Trips

Note: Numbers are rounded

Figure 1-15  
Horizon Year Phase 2 PM Peak Hour Project Trips

N  
Not To Scale

## CHAPTER 2 METHODOLOGIES

This chapter documents the methodologies and assumptions used to conduct the traffic impact analysis for the project. This section contains the following background information:

- Study scenarios
- Study time periods
- Capacity analysis methodologies

### STUDY SCENARIOS

This report presents the following analysis scenarios:

- Existing Conditions (Year 2008)
- Near-term Conditions (Existing Conditions with growth- Year 2015 without project)
- Near-term Conditions (Opening Day) with the Phase 1 Project (Year 2015)
- Near-term Conditions (Opening Day) with the Phase 2 Project (Year 2015)
- Horizon Year Conditions (Year 2035 without project)
- Horizon Year Conditions with Project (Year 2035)

### ANALYSIS METHODOLOGIES

Street system operating conditions are typically described in terms of “level of service.” Level of service is a report-card scale used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service (LOS) ranges from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). A more detailed description of the concepts described in this section is provided in Appendix A of this document. The following methods are outlined in this publication and used in this study.

#### Roadway Segment Capacity Analysis

The City of Calexico has published daily traffic volume standards for roadways within its jurisdiction. To determine service levels on study area roadway segments, we compared the appropriate average daily traffic thresholds for level of service to the daily capacity of the study area roadway segments, and the existing and future volumes in the study area. The thresholds for determining level of service used in this analysis are summarized in Appendix A.

#### Intersection Capacity Analysis

The analysis of peak hour intersection performance was conducted using the Synchro analysis software program, which uses methodologies defined in the 2000 Highway Capacity Manual (HCM) to calculate results. LOS for intersections is determined by control delay. Control delay is defined as the total elapsed time from when a vehicle stops at the end of a queue to the time the vehicle departs from the stop line. The total elapsed time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow

speed to the speed of vehicles in the queue. Appendix A lists the HCM delay/LOS criteria for both signalized and unsignalized intersections.

### ***Signalized Intersections***

The HCM analysis methodology for evaluating signalized intersections is based on the “operational analysis” procedure. This technique uses 1,900 passenger cars per hour of green per lane (pcphgpl) as the maximum saturation flow of a single lane at an intersection. This saturation flow rate is adjusted to account for lane width, on-street parking, conflicting pedestrian flow, traffic composition, (e.g., the percentage of vehicles that are trucks) and shared lane movements (e.g., through and right-turn movements from the same lane). Average control delay is calculated by taking a volume-weighted average of all the delays for all vehicles entering the intersection.

### ***All-Way Stop-Controlled Intersections***

The HCM analysis methodology for evaluating All-Way Stop-Controlled (AWSC) intersections is based on the degree of conflict for each independent approach created by the opposing approach and each conflicting approach. LOS for AWSC intersections is also based on the average control delay. However, AWSC intersections have different threshold values than those applied to signalized intersections. This is based on the rationale that drivers expect AWSC intersections to carry lower traffic volumes than at signalized intersections. Therefore, a higher level of delay is acceptable at a signalized intersection for the same LOS.

### ***Two-Way Stop-Controlled Intersections***

The HCM analysis methodology for evaluating Two-Way Stop-Controlled (TWSC) intersections is based on gap acceptance and conflicting traffic for vehicles stopped on the minor-street approaches. The critical gap (or minimum gap that would be acceptable) is defined as the minimum time interval in the major-street traffic stream that allows intersection entry for one minor-street vehicle. Average control delay and LOS for the “worst approach” are reported. LOS is not defined for the intersection as a whole.

### ***Intersecting Lane Vehicle***

To comply with Caltrans guidelines, the signalized intersections along state routes were also analyzed using the Intersecting Lane Vehicle (ILV) methodology. The ILV method determines the operating conditions of an intersection based upon the number of intersecting vehicles that enter the intersection per lane during the hour (ILV/hr). Where less than 1200 ILV/hr represents stable flow, 1200 to 1500 ILV/hr represents unstable flow with considerable delays possible, and 1500 ILV/hr or more represents over capacity or stop and go operation with severe delay and heavy congestion. ILV analysis can be found in Appendix O for each scenario.

## Queuing and Wait Times

The hourly queuing was analyzed by comparing the demand during any given hour throughout the day to the hourly capacity at the border. When the hourly demand was less than the hourly capacity, the hourly vehicle queue was equal to the demand. When the hourly demand was more than the hourly capacity, the hourly vehicle queue was equal to the demand plus any demand from the proceeding hour that was unable to cross within that hour. Average wait time was determined by dividing the amount of vehicles in the queue by 60 min/hour to determine how many minutes wait (on average) the drivers were experiencing.

## DIVERTED PROJECT TRIPS AND ROUTES

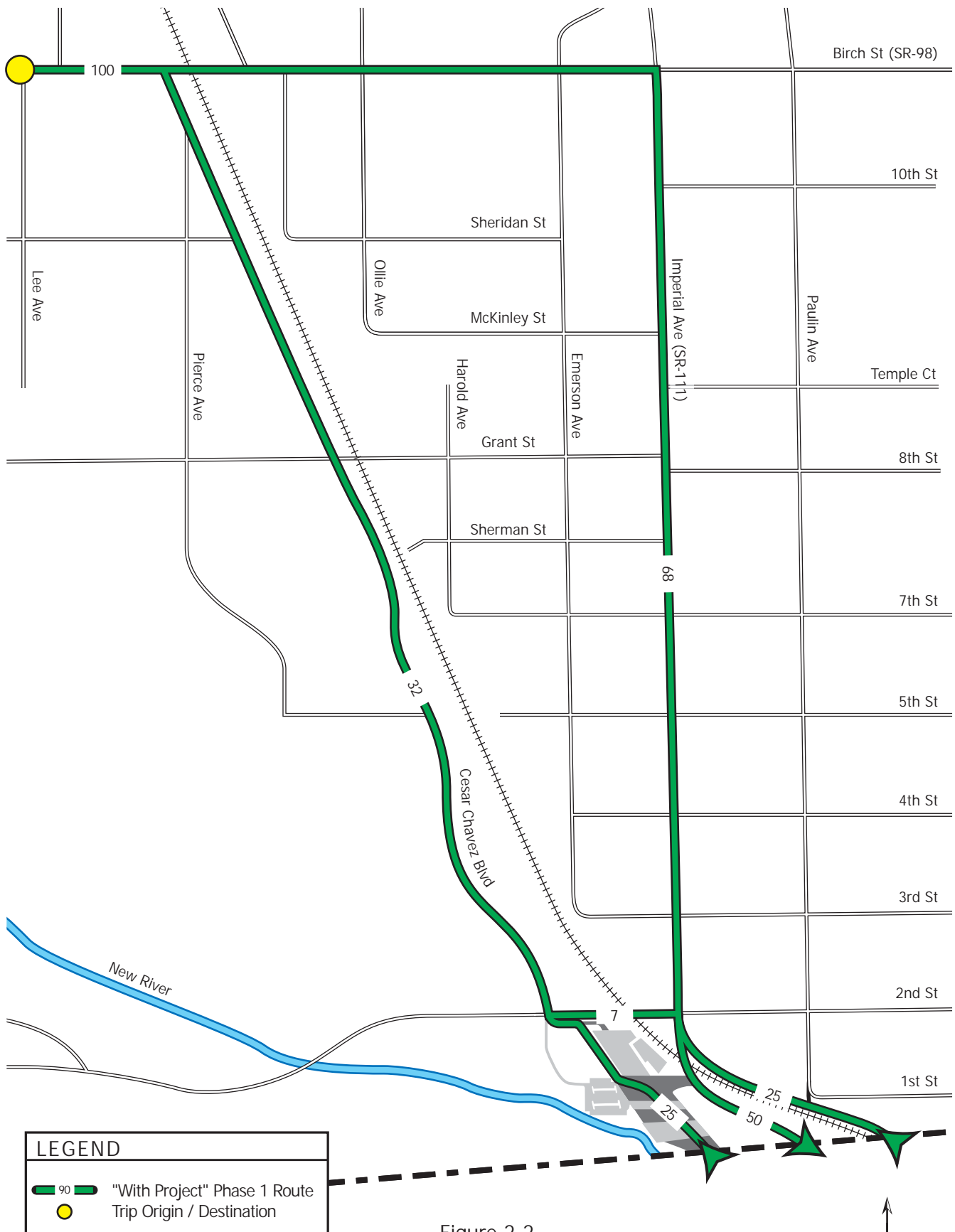
The proposed project daily and peak hour trips discussed in this analysis include existing border-crossing trips that are being diverted/reassigned from Imperial Avenue (SR-111) to the proposed project alignment at Cesar Chavez Boulevard. Phase 1 of the proposed project diverts only a portion of the northbound trips entering the United States. Phase 2 of the proposed project diverts all northbound trips entering the United States and all southbound trips departing the United States. The existing LPOE will discontinue POV inspections when the proposed LPOE becomes fully functional in Phase 2.

Diverted routes are roadways where LPOE trips within the study area will be diverted due to the realignment of the LPOE. The “Without Project” trips, utilizing the existing LPOE, will be diverted from their normal route with construction of either Phase 1 or 2 of the proposed project. The resulting diverted trips will create an increase, decrease, or no change in the traffic volumes along roadway segments and intersections located within the LPOE’s area of influence.

With LPOE traffic diversion an increase in traffic is typically experienced along the newly diverted routes that lead to or from the LPOE. A decrease in traffic volume is experienced along the portion of the original preferred route that is beyond the new point of diversion. The new point of diversion is the location where vehicles begin to re-route in order to access the new LPOE or to reach the original destination. No change in traffic volumes is experienced along the portion of the original route that is before the point of diversion. The figures that follow illustrate these concepts by use of a singular origin/destination as an example (the volumes used in the example are hypothetical). Figure 2-1 shows the trips from the origin/destination during the “Without Project” scenario. These trips are representative of the “Without Project” border-crossing trips that would use the proposed LPOE, but are currently utilizing the existing LPOE. Figures 2-2 and 2-3 show the trips from the origin/destination during the “With Project” scenario for their respective phase of the project. These trips are representative of the trips that are rerouted toward the proposed LPOE according to the phasing of the respective scenario. Figures 2-4 and 2-5 show the net effect for each phase of the proposed LPOE on “Without Project” scenario volumes. These figures are produced by subtracting the Existing LPOE Trips from the respective Project LPOE Trips. As can be seen on this figure, there is generally a net negative along the existing LPOE alignment, a net positive along the proposed LPOE alignment, and a net effect of zero before the diversion points.

Although the example above does not account for latent demand, latent demand may lessen or overcome negative effects that may otherwise have been experienced with the LPOE realignment alone. As described in Chapter 1, proposed LPOE trips for the analysis do account for latent demand. The Existing and Proposed LPOE Trips for all study scenarios can be found in Appendix E, and the “Combined” or Project LPOE Trips used for analysis can be found in Chapter 1 of this report. Figure 2-6 shows the general diversion routes for the project study area.





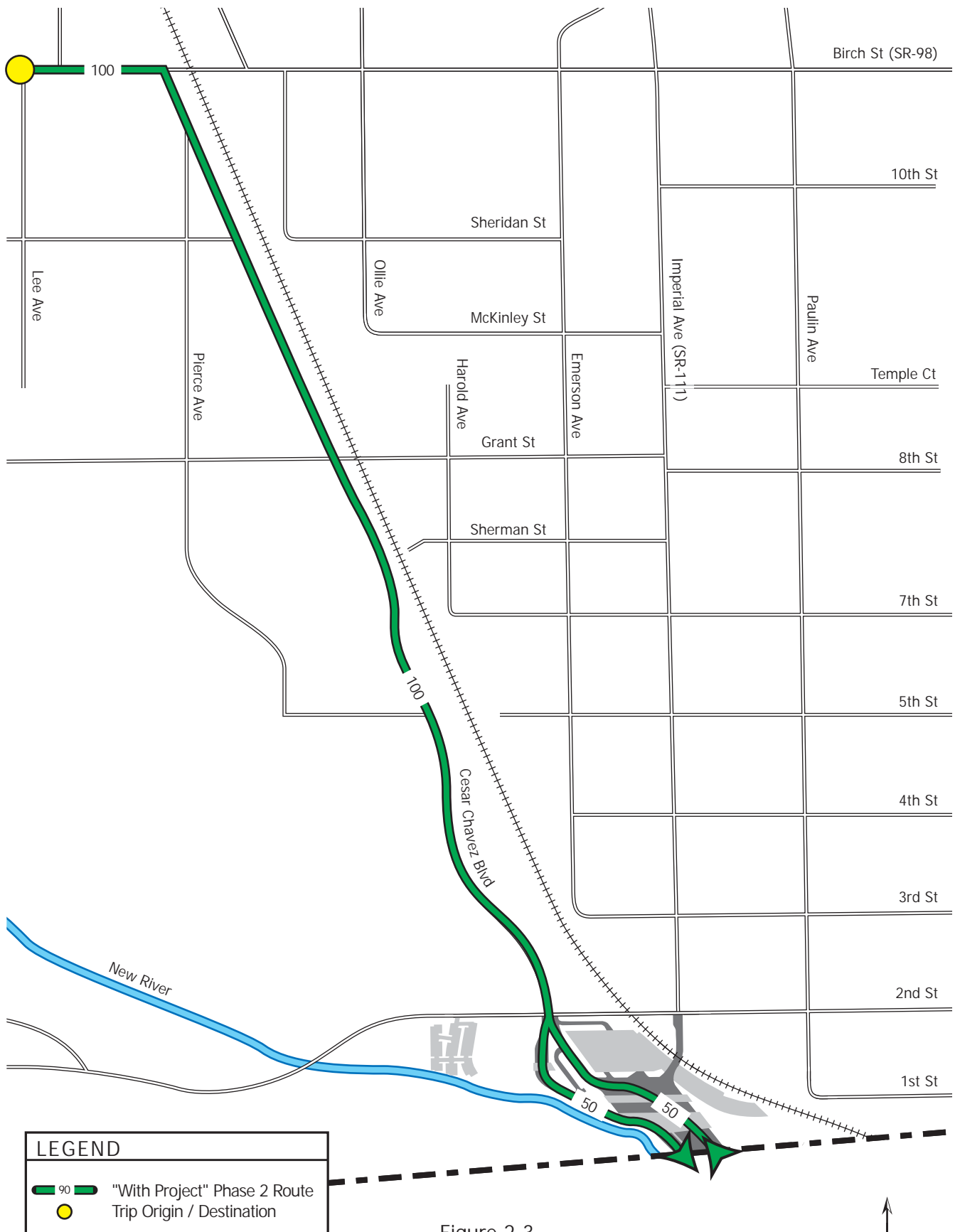


Figure 2-3  
Diversion Example - Phase 2 LPOE Trips

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↑  
Not To Scale





Figure 2-4  
Diversion Example - Combined Phase 1 LPOE Trips

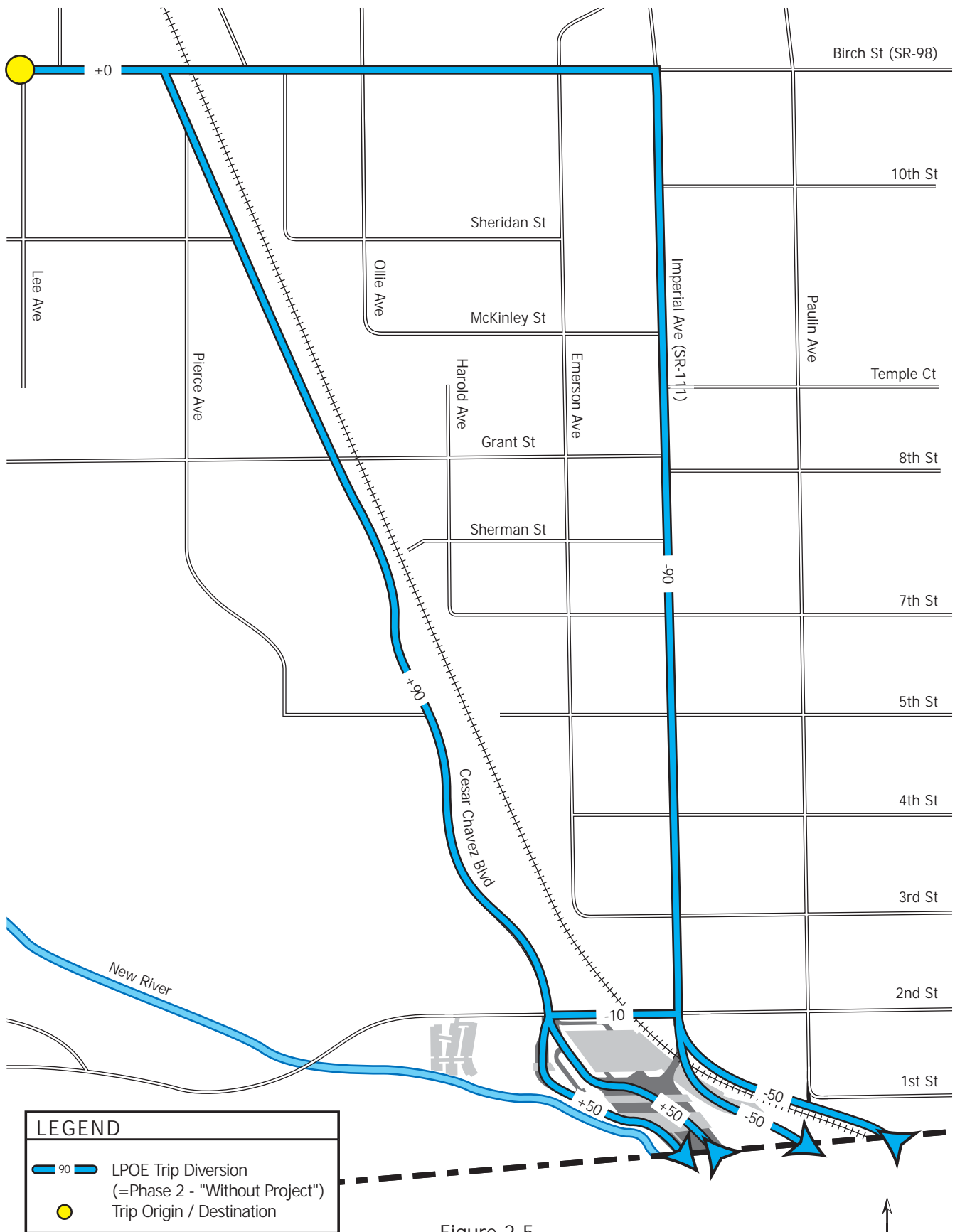


Figure 2-5  
Diversion Example - Combined Phase 2 LPOE Trips

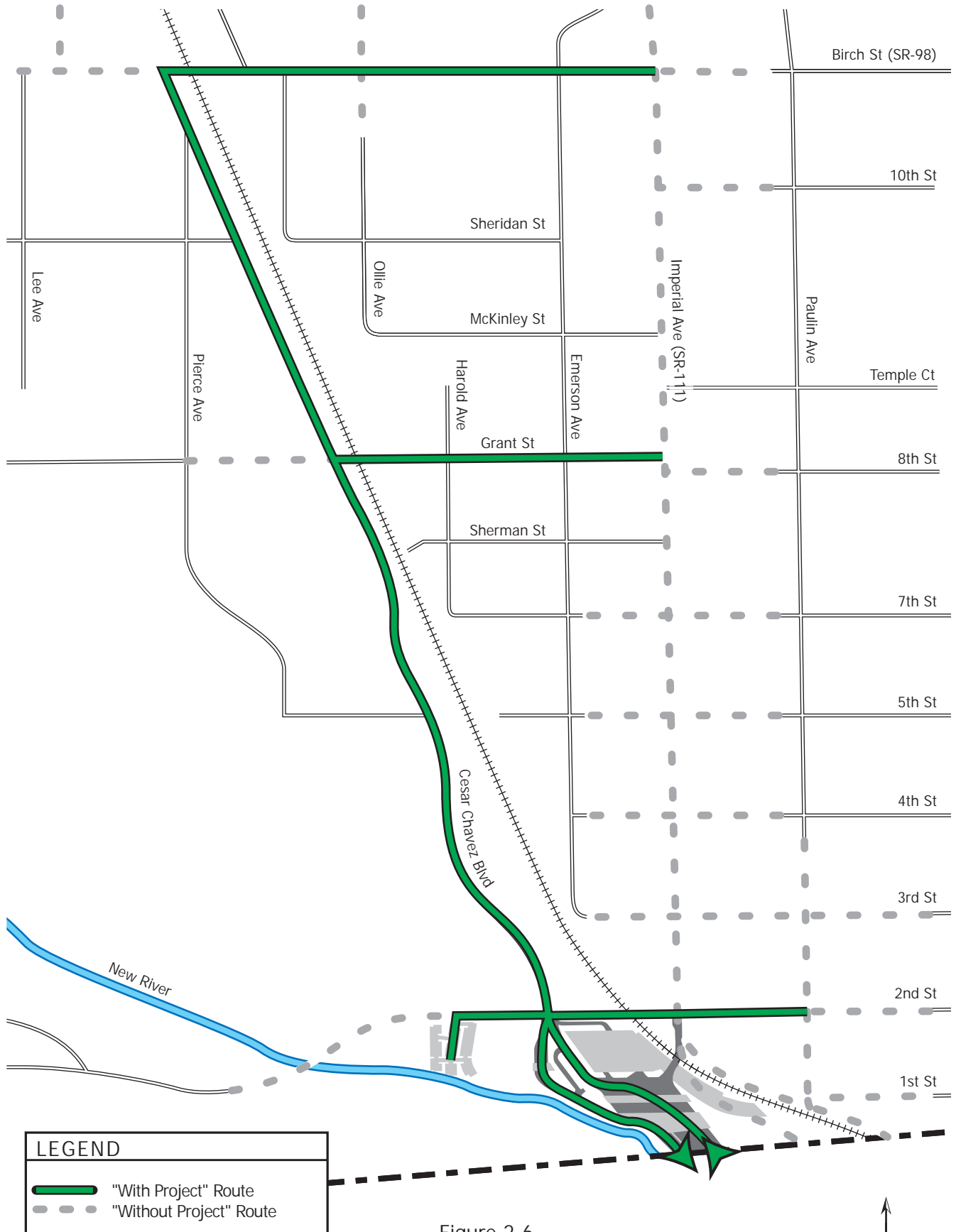


Figure 2-6  
LPOE Diverted Routes

N  
↑  
Not To Scale

## CHAPTER 3 EXISTING CONDITIONS

### CIRCULATION NETWORK

The principal roadways in the project study area are described briefly below. The description includes the physical characteristics, adjacent land uses, and traffic control devices along these roadways. The existing roadway geometry and control conditions are shown in Figure 3-1. Additional details regarding specific intersection operating conditions can be found on the capacity analysis worksheets in Appendix F.

#### ***Cesar Chavez Boulevard***

Cesar Chavez Boulevard runs north/south connecting Birch Street (SR-98) and 2<sup>nd</sup> Street. It parallels the railroad on the western side. Cesar Chavez has four lanes (two in each direction) and is classified as a four lane Major.

#### ***Imperial Avenue (SR-111)***

SR-111 runs north/south connecting Mexico to Interstate 8 and locations farther north. Between the border and Birch Street (SR-98), SR-111 has four lanes (two in each direction) with medians or two-way left turn lanes. North of SR-98, SR-111 is classified as a four lane Expressway. Between SR-98 and 5<sup>th</sup> Street, SR-111 is classified as a four lane Major. Between 5<sup>th</sup> Street and the border, SR-111 is classified as a four lane Prime.

#### ***Paulin Avenue***

Paulin Avenue runs north/south. South of 2<sup>nd</sup> Street, Paulin Avenue is a one way northbound street consisting of two lanes. North of 2<sup>nd</sup> Street, Paulin Avenue is a two way street with one lane in each direction and is classified as a two lane Collector.

#### ***Birch Street (SR98)***

SR-98 runs east/west. West of Ollie Avenue, SR-98 has two lanes (one in each direction) and is classified as a two lane Highway. East of Ollie Avenue, SR-98 has four lanes (two in each direction) and has the classification of a four lane Highway.

#### ***3<sup>rd</sup> Street***

3<sup>rd</sup> Street runs east/west with one lane in each direction and is classified as a two lane Collector.

#### ***2<sup>nd</sup> Street***

2<sup>nd</sup> Street runs east/west. West of Cesar Chavez Boulevard, 2<sup>nd</sup> St has two lanes (one in each direction) and is classified as a two lane Secondary. Between Cesar Chavez Boulevard and SR-111, 2<sup>nd</sup> Street has four lanes (two in each direction) and is classified as a four lane Major. East of SR-111, 2<sup>nd</sup> St has two lanes (one in each direction) and is classified as a two lane Secondary.

### TRAFFIC VOLUMES

The intersection turning movement counts were conducted during the weekday morning peak period from 6:00 AM to 9:00 AM and during the weekday evening peak period from 4:00 PM to 6:00 PM in

November and December 2008. Average daily traffic volumes were obtained through machine data collection in November 2008. The daily traffic volumes are shown in Figure 3-2. The resultant existing weekday morning and evening peak hour intersection volumes are shown in Figures 3-3 and 3-4. Count Data can be found in Appendix B.

## ANALYSIS

The existing segment analysis is summarized in Table 3-1. As seen in Table 3-1, the following roadway segments in the study area are calculated to operate at LOS D or worse. All other segments in the study area are calculated to operate at an acceptable LOS C or better.

- Imperial Avenue (SR-111) from Birch Street (SR-98) to 4<sup>th</sup> Street
- Imperial Avenue (SR-111) from 2<sup>nd</sup> Street to United States Border
- Birch Street (SR-98) from VV Williams Avenue to Imperial Avenue (SR-111)

The existing intersection analysis is summarized in Table 3-2. As seen in Table 3-2, the following intersections in the study area are calculated to operate at LOS D or worse. All other intersections in the study area are calculated to operate at an acceptable LOS C or better. Analysis worksheets can be found in Appendix F.

1. Birch Street (SR-98) / VV Williams Avenue
2. Birch Street (SR-98) / Cesar Chavez Boulevard
3. Birch Street (SR-98) / Ollie Avenue

## CALCULATED NORTHBOUND QUEUE AND WAIT TIMES

Currently there are 10 northbound single vehicle inspection lanes operated by the CBP. Mexico does not have northbound inspection. According to CBP, the existing facilities for the northbound traffic are currently experiencing a maximum daily wait time that reaches approximately 1-hour 30-minutes during the day. KOA staff performed a field observation of the wait time on May 21, 2009 and recorded a 1-hour 15-minute maximum wait time at 4:15 AM, which is consistent with the daily wait times indicated by CBP. These wait times translate into long queues of vehicles waiting to cross the border. These long wait times cause a diversion of northbound traffic from this port to the Calexico East LPOE as indicated by daily traffic counts KOA commission at both LPOE's as documented in the *Calexico West Border Station Expansion – Forecast Methodology* technical memorandum which can be found in Appendix D.

**Table 3-1  
Existing Daily Roadway Segment Conditions**

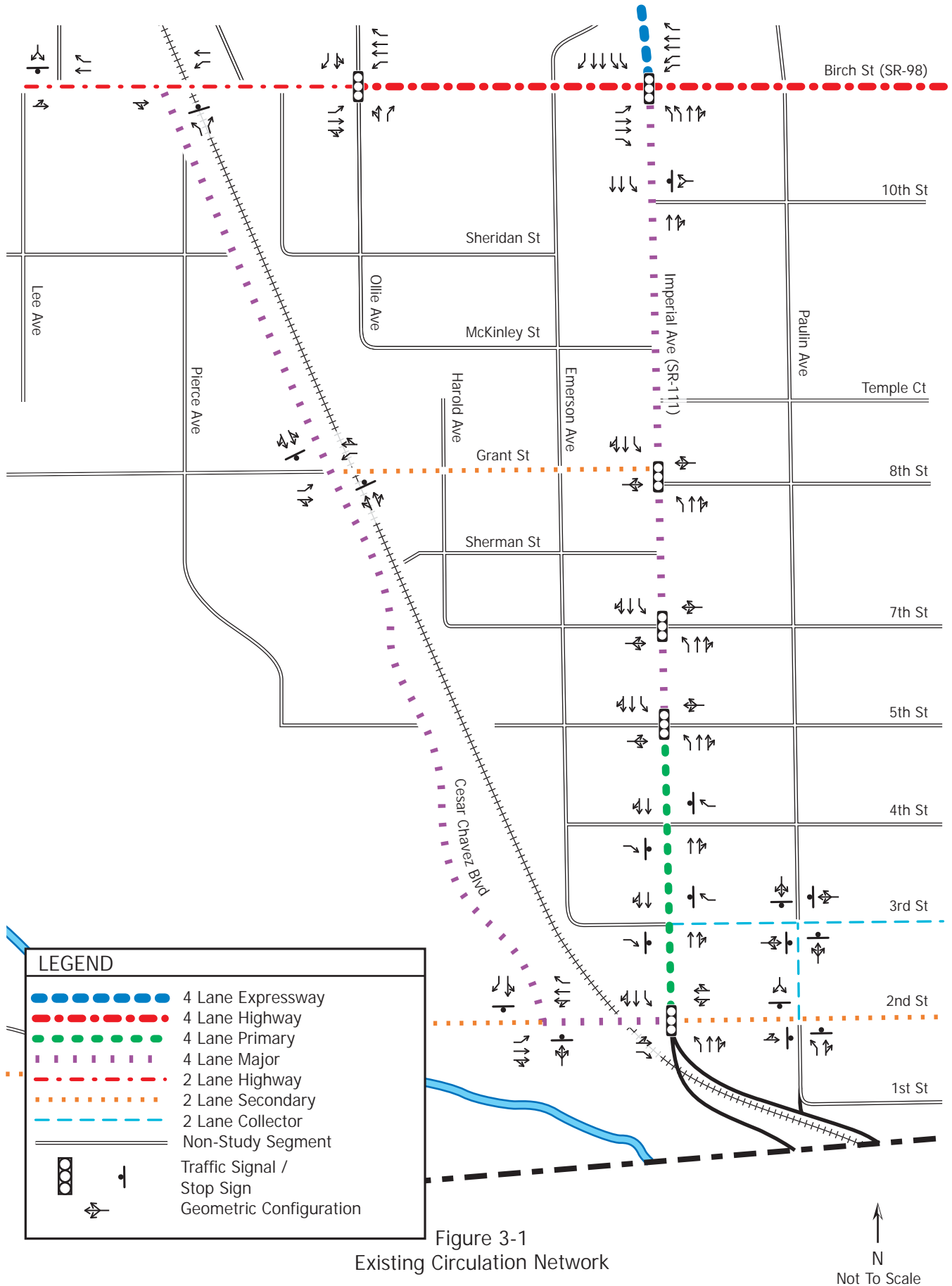
| Roadway Segment                            | Lanes/<br>Class | LOS E<br>Capacity | ADT    | V/C   | LOS |
|--|-----------------|-------------------|--------|-------|-----|
| <i>Imperial Ave (SR-111)</i>               |                 |                   |        |       |     |
| north of Birch St (SR-98)                  | 4E              | 60,000            | 29,945 | 0.499 | A   |
| Birch St (SR-98) to Temple Ct              | 4M              | 25,000            | 33,558 | 1.342 | F   |
| Temple Ct to Grant St                      | 4M              | 25,000            | 30,894 | 1.236 | F   |
| Grant St to 6 <sup>th</sup> St             | 4M              | 25,000            | 30,839 | 1.234 | F   |
| 6 <sup>th</sup> St to 5 <sup>th</sup> St   | 4M              | 25,000            | 30,209 | 1.208 | F   |
| 5 <sup>th</sup> St to 4 <sup>th</sup> St   | 4P              | 37,500            | 30,246 | 0.807 | D   |
| 4 <sup>th</sup> St to 3 <sup>rd</sup> St   | 4P              | 37,500            | 26,089 | 0.696 | B   |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 4P              | 37,500            | 27,873 | 0.743 | C   |
| <i>Birch St (SR-98)</i>                    |                 |                   |        |       |     |
| west of VV Williams Ave                    | 2H              | 18,700            | 15,219 | 0.814 | D   |
| VV Williams Ave to Cesar Chavez Blvd       | 2H              | 18,700            | 19,821 | 1.060 | F   |
| Cesar Chavez Blvd to Ollie Ave             | 2H              | 18,700            | 21,115 | 1.129 | F   |
| Ollie Ave to Imperial Ave (SR-111)         | 4H              | 37,500            | 32,522 | 0.867 | D   |
| east of Imperial Ave (SR-111)              | 4H              | 37,500            | 25,208 | 0.672 | B   |
| <i>Cesar Chavez Blvd</i>                   |                 |                   |        |       |     |
| Birch St (SR-98) to Grant St               | 4M              | 25,000            | 5,546  | 0.222 | A   |
| Grant St to 2 <sup>nd</sup> St             | 4M              | 25,000            | 6,498  | 0.260 | A   |
| <i>Paulin Ave</i>                          |                 |                   |        |       |     |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 2C              | 16,200            | 5,689  | 0.351 | A   |
| <i>Grant St</i>                            |                 |                   |        |       |     |
| Cesar Chavez Blvd to Harold Ave            | 2S              | 17,500            | 5,100  | 0.291 | A   |
| Harold Ave to Imperial Ave (SR-111)        | 2S              | 17,500            | 2,932  | 0.168 | A   |
| <i>3rd St</i>                              |                 |                   |        |       |     |
| Imperial Ave (SR-111) to Paulin Ave        | 2C              | 16,200            | 4,407  | 0.272 | A   |
| Paulin Ave to Rockwood Ave                 | 2C              | 16,200            | 6,163  | 0.380 | A   |
| <i>2nd St</i>                              |                 |                   |        |       |     |
| west of Cesar Chavez Blvd                  | 2S              | 17,500            | 3,714  | 0.212 | A   |
| Cesar Chavez Blvd to Imperial Ave (SR-111) | 4M              | 25,000            | 7,694  | 0.308 | A   |
| Imperial Ave (SR-111) to Paulin Ave        | 2S              | 17,500            | 8,732  | 0.499 | A   |
| Paulin Ave to Rockwood Ave                 | 2S              | 17,500            | 6,103  | 0.349 | A   |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 3-2  
Existing Intersection Conditions**

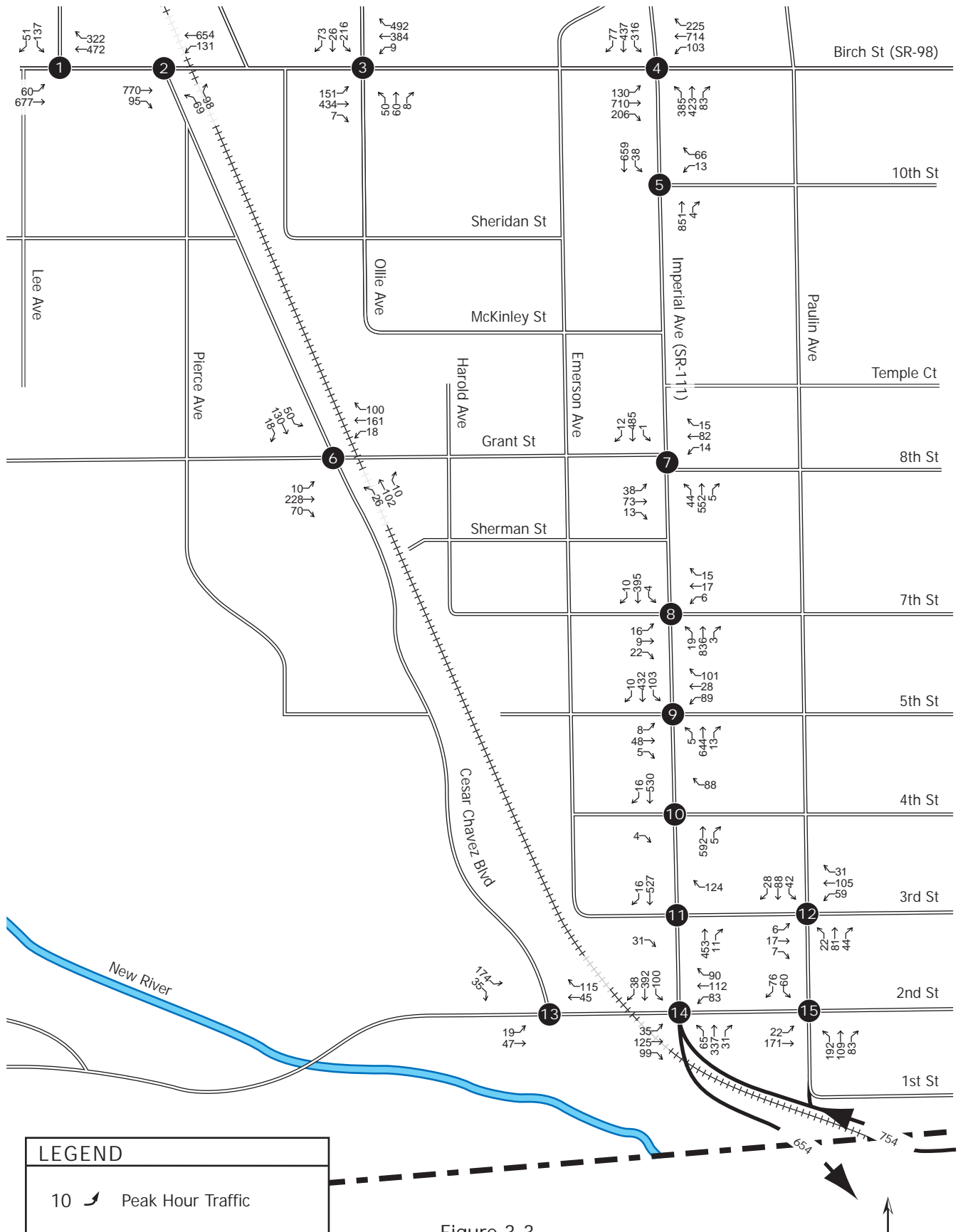
| Intersection                                | AM Peak Hour |     | PM Peak Hour |     |
|---|--------------|-----|--------------|-----|
|   | Delay        | LOS | Delay        | LOS |
| 1. Birch St (SR-98) / VV Williams Ave*      | 120.1        | F   | 46.7         | E   |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 194.5        | F   | 88.9         | F   |
| 3. Birch St (SR-98) / Ollie Ave             | 38.2         | D   | 50.7         | D   |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 34.9         | C   | 34.5         | C   |
| 5. Imperial Ave (SR-111) / 10th St*         | 13.2         | B   | 12.9         | B   |
| 6. Cesar Chavez Blvd / Grant St*            | 17.7         | C   | 17.9         | C   |
| 7. Imperial Ave (SR-111) / Grant St         | 13.2         | B   | 6.1          | A   |
| 8. Imperial Ave (SR-111) / 7th St           | 4.6          | A   | 6.4          | A   |
| 9. Imperial Ave (SR-111) / 5th St           | 14.0         | B   | 16.6         | B   |
| 10. Imperial Ave (SR-111) / 4th St*         | 11.1         | B   | 13.4         | B   |
| 11. Imperial Ave (SR-111) / 3rd St*         | 10.3         | B   | 14.8         | B   |
| 12. Paulin Ave / 3rd St*                    | 9.0          | A   | 11.9         | B   |
| 13. Cesar Chavez Blvd / 2nd St*             | 10.1         | B   | 14.0         | B   |
| 14. Imperial Ave (SR-111) / 2nd St          | 24.5         | C   | 18.0         | B   |
| 15. Paulin Ave / 2nd St*                    | 9.6          | A   | 11.1         | B   |

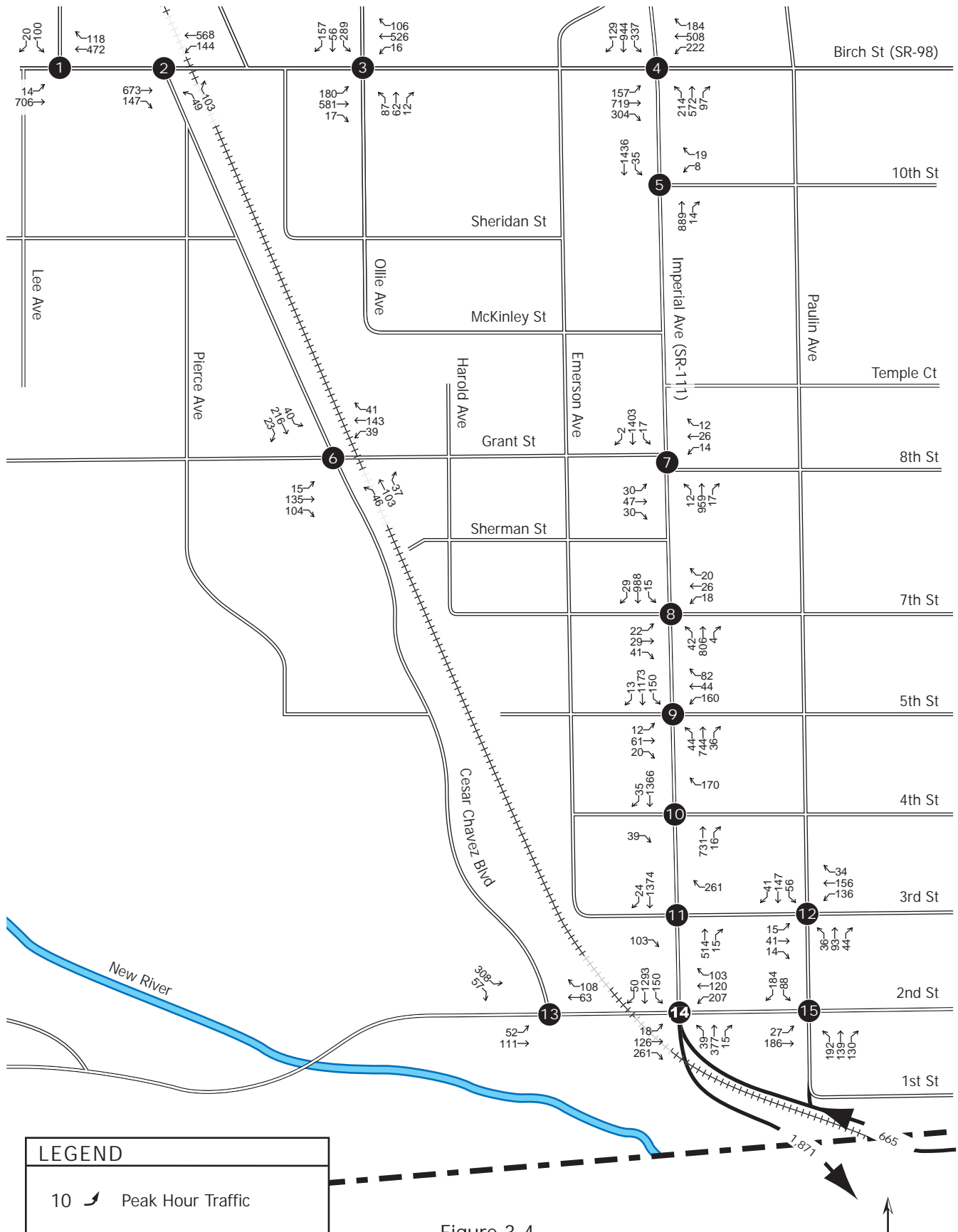
\* Unsignalized intersection











## CHAPTER 4 NEAR-TERM CONDITIONS

Near-term conditions for this traffic study are representative of the year 2015. The proposed project is expected to be completed by the year 2015, and the analysis presented in this chapter will provide the baseline, or “Without Project” conditions, for comparison of subsequent project scenario near-term analysis.

### CIRCULATION NETWORK

There are no current Capital Improvement Projects (CIP) related to the analyzed roadway segments and intersections set to occur by the year 2015; therefore, no circulation improvements to the existing circulation network was assumed for the near-term “Without Project” scenario.

### TRAFFIC VOLUMES

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

For this analysis, the Caltrans *Imperial County Transportation Model (Calexico GP +)* model is used to determine the local growth in Calexico. The *California-Baja California Border Master Plan, September 2008* report was used to forecast border-crossing traffic for the Calexico West LPOE. Detailed information about volume development can be found in Appendix D of this report. The resulting growth rates of this exercise were applied to develop the near-term “Without Project” forecast volumes. The list of included cumulative projects can be found in Appendix C. Figures 4-1 through 4-3 display the near-term roadway segment and intersection volumes without the proposed project.

### ANALYSIS

The effect of the proposed project on the study area circulation network was evaluated. The following tables summarize the results of this analysis.

The near-term baseline segment analysis is summarized in Table 4-1. As seen in Table 4-1, the following roadway segments in the study area are calculated to operate at LOS D or worse. All other segments in the study area are calculated to operate at an acceptable LOS C or better.

- Imperial Avenue (SR-111) north of Birch Street (SR-98) to the United States Border
- Birch Street (SR-98) west of Williams Avenue to Imperial Avenue (SR-111)
- Cesar Chavez Boulevard from Birch Street (SR-98) to 2<sup>nd</sup> Street
- 2<sup>nd</sup> Street west of Cesar Chavez Boulevard to Imperial Avenue (SR-111)

The near-term baseline intersection analysis is summarized in Table 4-2. As seen in Table 4-2, the following intersections in the study area are calculated to operate at LOS D or worse. All other intersections in the study area are calculated to operate at an acceptable LOS C or better. Analysis worksheets can be found in Appendix G.

- 1. Birch Street (SR-98) / VV Williams Avenue
- 2. Birch Street (SR-98) / Cesar Chavez Boulevard
- 3. Birch Street (SR-98) / Ollie Avenue
- 4. Birch Street (SR-98) / Imperial Avenue (SR-111)
- 6. Cesar Chavez Boulevard / Grant Street
- 13. Cesar Chavez Boulevard / 2nd Street
- 14. Imperial Avenue (SR-111) / 2nd Street

**Table 4-1  
Near-Term Without Project  
Daily Roadway Segment Conditions**

| Roadway Segment                            | Lanes/<br>Class | LOS E<br>Capacity | Near-Term<br>Without Project |       |     |
|--|-----------------|-------------------|------------------------------|-------|-----|
|  |                 |                   | ADT                          | V/C   | LOS |
| <i>Imperial Ave (SR-111)</i>               |                 |                   |                              |       |     |
| north of Birch St (SR-98)                  | 4E              | 60,000            | 45,034                       | 0.751 | C   |
| Birch St (SR-98) to Temple Ct              | 4M              | 25,000            | 43,585                       | 1.743 | F   |
| Temple Ct to Grant St                      | 4M              | 25,000            | 39,527                       | 1.581 | F   |
| Grant St to 6 <sup>th</sup> St             | 4M              | 25,000            | 38,978                       | 1.559 | F   |
| 6 <sup>th</sup> St to 5 <sup>th</sup> St   | 4M              | 25,000            | 37,572                       | 1.503 | F   |
| 5 <sup>th</sup> St to 4 <sup>th</sup> St   | 4P              | 37,500            | 36,589                       | 0.976 | E   |
| 4 <sup>th</sup> St to 3 <sup>rd</sup> St   | 4P              | 37,500            | 32,437                       | 0.865 | D   |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 4P              | 37,500            | 34,257                       | 0.914 | E   |
| <i>Birch St (SR-98)</i>                    |                 |                   |                              |       |     |
| west of VV Williams Ave                    | 2H              | 18,700            | 20,498                       | 1.096 | F   |
| VV Williams Ave to Cesar Chavez Blvd       | 2H              | 18,700            | 26,610                       | 1.423 | F   |
| Cesar Chavez Blvd to Ollie Ave             | 2H              | 18,700            | 28,260                       | 1.511 | F   |
| Ollie Ave to Imperial Ave (SR-111)         | 4H              | 37,500            | 34,981                       | 0.933 | E   |
| east of Imperial Ave (SR-111)              | 4H              | 37,500            | 31,096                       | 0.829 | D   |
| <i>Cesar Chavez Blvd</i>                   |                 |                   |                              |       |     |
| Birch St (SR-98) to Grant St               | 4M              | 25,000            | 21,155                       | 0.846 | D   |
| Grant St to 2 <sup>nd</sup> St             | 4M              | 25,000            | 20,604                       | 0.824 | D   |
| <i>Paulin Ave</i>                          |                 |                   |                              |       |     |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 2C              | 16,200            | 6,889                        | 0.425 | A   |
| <i>Grant St</i>                            |                 |                   |                              |       |     |
| Cesar Chavez Blvd to Harold Ave            | 2S              | 17,500            | 7,749                        | 0.443 | A   |
| Harold Ave to Imperial Ave (SR-111)        | 2S              | 17,500            | 4,279                        | 0.245 | A   |
| <i>3rd St</i>                              |                 |                   |                              |       |     |
| Imperial Ave (SR-111) to Paulin Ave        | 2C              | 16,200            | 5,967                        | 0.368 | A   |
| Paulin Ave to Rockwood Ave                 | 2C              | 16,200            | 8,160                        | 0.504 | A   |
| <i>2nd St</i>                              |                 |                   |                              |       |     |
| west of Cesar Chavez Blvd                  | 2S              | 17,500            | 22,496                       | 1.285 | F   |
| Cesar Chavez Blvd to Imperial Ave (SR-111) | 4M              | 25,000            | 22,400                       | 0.896 | D   |
| Imperial Ave (SR-111) to Paulin Ave        | 2S              | 17,500            | 11,591                       | 0.662 | B   |
| Paulin Ave to Rockwood Ave                 | 2S              | 17,500            | 8,062                        | 0.461 | A   |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 4-2  
Near-Term Without Project  
Intersection Conditions**

| Intersection                                | AM Peak Hour |     | PM Peak Hour |     |
|---|--------------|-----|--------------|-----|
|   | Delay        | LOS | Delay        | LOS |
| 1. Birch St (SR-98) / VV Williams Ave*      | 818.3        | F   | 447.2        | F   |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 4281.8       | F   | 3873.9       | F   |
| 3. Birch St (SR-98) / Ollie Ave             | 45.9         | D   | 60.7         | E   |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 48.2         | D   | 61.8         | E   |
| 5. Imperial Ave (SR-111) / 10th St*         | 15.7         | C   | 18.0         | C   |
| 6. Cesar Chavez Blvd / Grant St*            | 9999.9       | F   | 9999.9       | F   |
| 7. Imperial Ave (SR-111) / Grant St         | 19.6         | B   | 15.2         | B   |
| 8. Imperial Ave (SR-111) / 7th St           | 4.6          | A   | 6.6          | A   |
| 9. Imperial Ave (SR-111) / 5th St           | 16.6         | B   | 27.2         | C   |
| 10. Imperial Ave (SR-111) / 4th St*         | 12.4         | B   | 16.4         | C   |
| 11. Imperial Ave (SR-111) / 3rd St*         | 11.8         | B   | 19.8         | C   |
| 12. Paulin Ave / 3rd St*                    | 10.5         | B   | 21.3         | C   |
| 13. Cesar Chavez Blvd / 2nd St*             | 126.8        | F   | 7314.5       | F   |
| 14. Imperial Ave (SR-111) / 2nd St          | 38.3         | D   | 118.9        | F   |
| 15. Paulin Ave / 2nd St*                    | 11.6         | B   | 18.4         | C   |

\* Unsignalized intersection

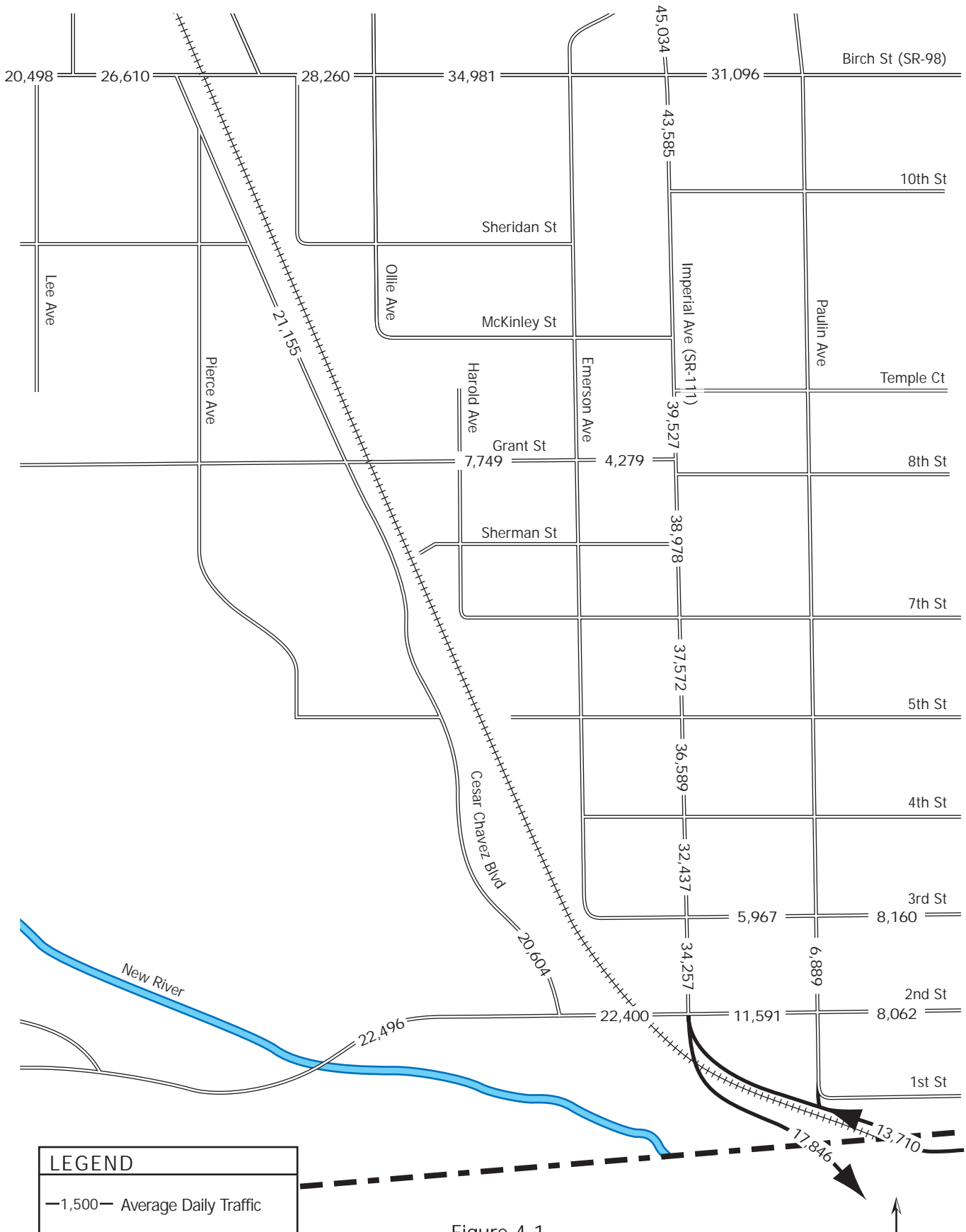
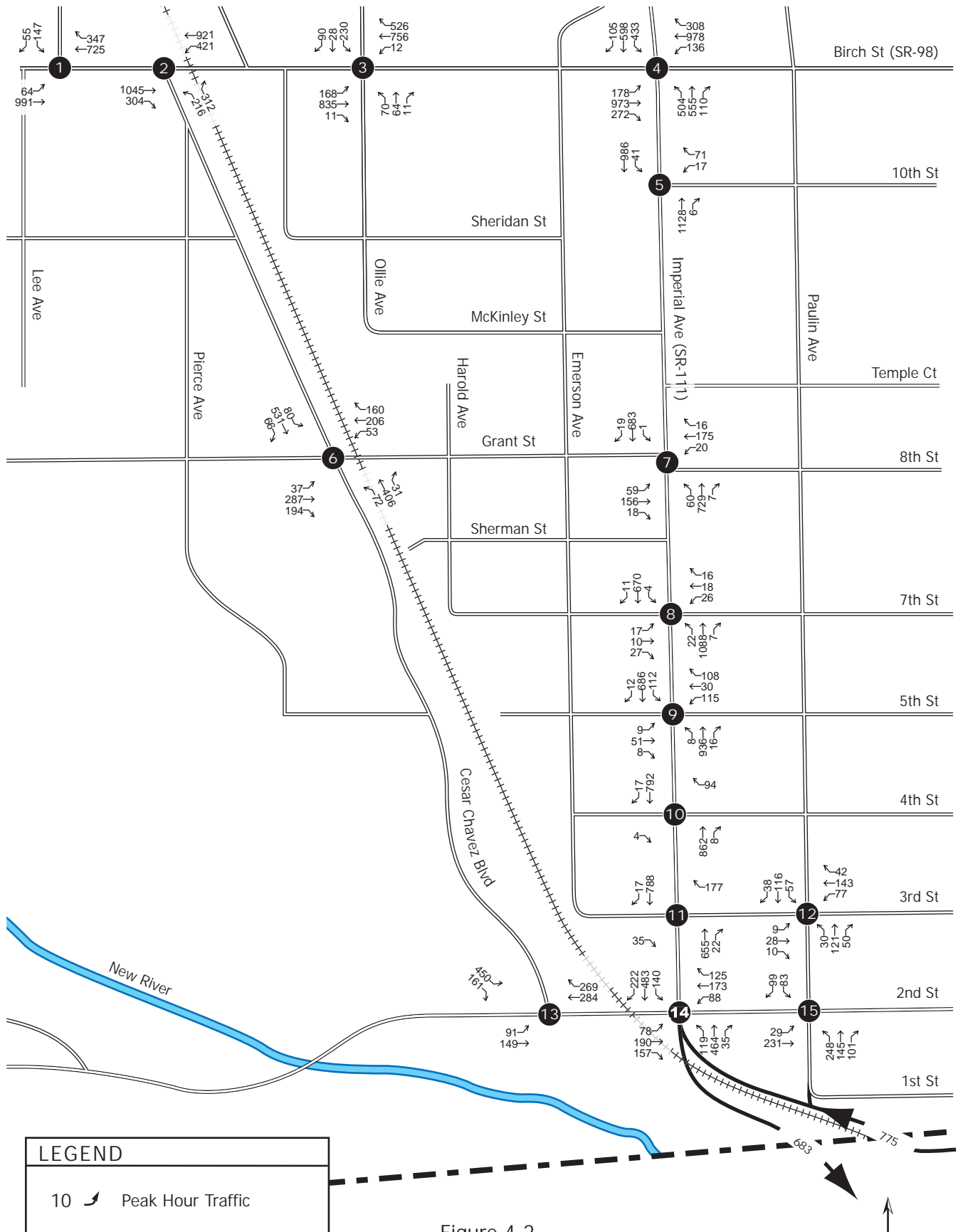
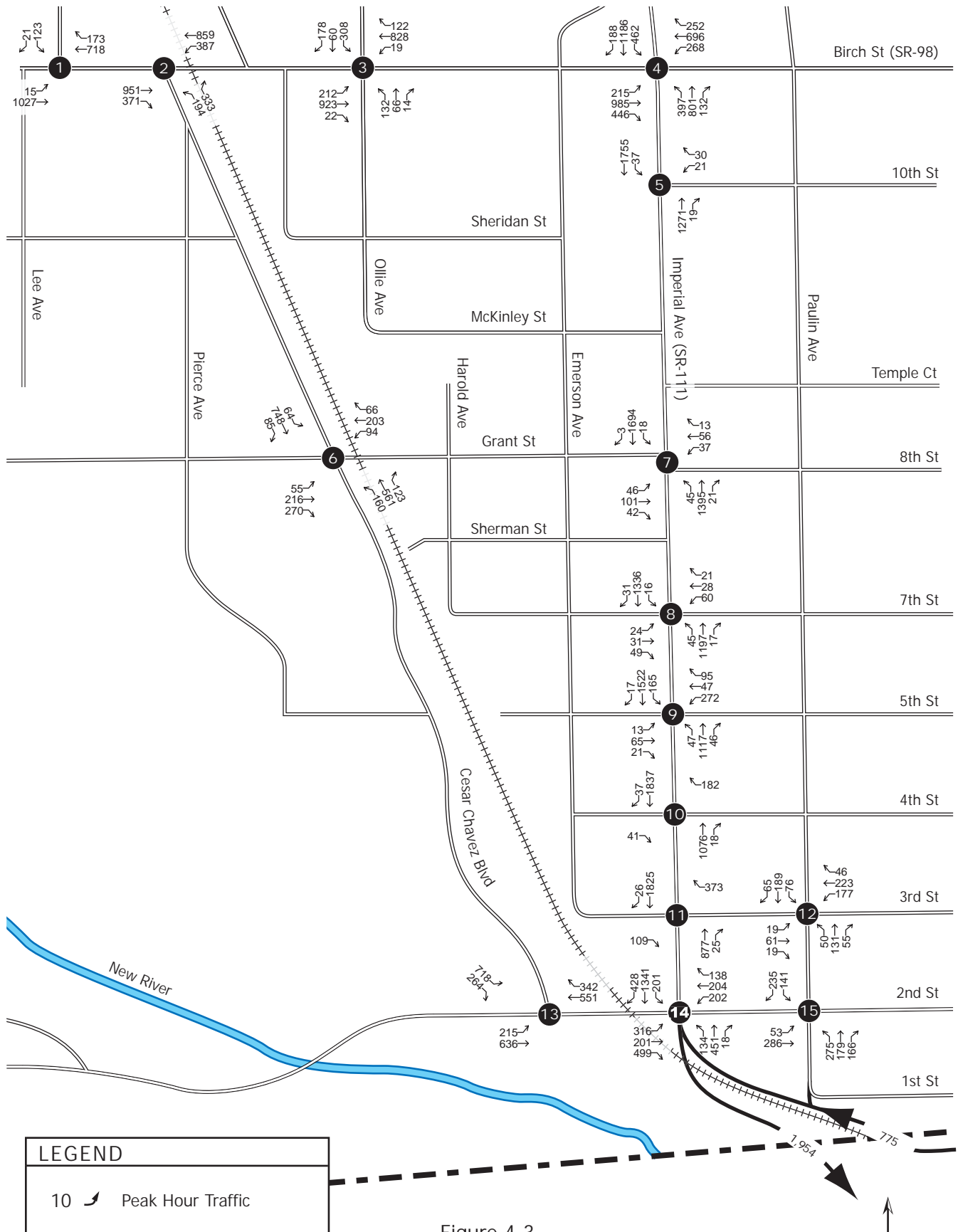


Figure 4-1  
 Near-Term Without Project Daily Roadway Segment Volumes

N  
 Not To Scale







## CHAPTER 5

### NEAR-TERM PHASE 1 CONDITIONS

Near-term conditions for this traffic study are representative of the year 2015. The proposed project is expected to be completed by the year 2015, and the analysis presented in this chapter will provide the Phase 1 project conditions for comparison to the “Without Project” conditions. In Phase 1, the GSA is proposing to expand the Calexico West LPOE northbound POV inspection facility by 10 additional lanes aligned with Cesar Chavez Boulevard at 2<sup>nd</sup> Street, creating a total of 20 northbound POV inspection lanes. The existing LPOE facility operations will be maintained during this phase. The southbound POV border crossing will remain at its existing location for this phase.

#### CIRCULATION NETWORK

No changes to the existing circulation network are assumed for the near-term Phase 1 project scenario except for the recommended improvements for the connection between the Port inspection area and Cesar Chavez Boulevard which includes:

2<sup>nd</sup> Street and Cesar Chavez Boulevard:

- Signalize the intersection
- Eastbound: restripe to provide one left-turn, one thru and one shared thru-right lane
- Westbound: restripe to provide one left-turn, one thru and one right-turn lane
- Northbound: provide one left-turn, two thru and one right-turn lane
- Southbound approach: restripe to provide one shared thru-left and one right-turn lane

Figure 5-1 graphically displays the assumed geometrics for the near-term Phase 2 project analysis.

#### TRAFFIC VOLUMES

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

For this analysis, the Caltrans *Imperial County Transportation Model (Calexico GP +)* model was used to determine the local growth in Calexico. The *California-Baja California Border Master Plan, September 2008* report was used to forecast border-crossing traffic for the Calexico West LPOE. Detailed information about volume development can be found in Appendix D of this report. The resulting growth rates of this exercise were applied to develop the near-term Phase 1 project forecast volumes. The list of included cumulative projects can be found in Appendix C. Figures 5-2 through 5-4 display the near-term roadway segment and intersection volumes with Phase 1 of the project.

#### ANALYSIS

The effect of the proposed project on the study area circulation network was evaluated. The following tables summarize the results of this analysis.

The near-term Phase 1 roadway segment analysis is summarized in Table 5-1. As seen in Table 5-1, the following roadway segments in the study area will degrade with the addition of Phase 1 project traffic beyond the allowable thresholds.

- Imperial Avenue (SR-111) from Birch Street (SR-98) to Grant Street
- Birch Street (SR-98) west of VV Williams Avenue to Ollie Avenue
- Cesar Chavez Boulevard from Birch St (SR-98) to 2<sup>nd</sup> Street
- 2<sup>nd</sup> Street west of Cesar Chavez Boulevard to Paulin Avenue

The near-term Phase 1 intersection analysis is summarized in Table 5-2. As seen in Table 5-2, the following intersections in the study area will degrade with the addition of Phase 1 project traffic beyond the allowable thresholds. Analysis worksheets can be found in Appendix H.

- 1. Birch Street (SR-98) / VV Williams Avenue
- 2. Birch Street (SR-98) / Cesar Chavez Boulevard
- 3. Birch Street (SR-98) / Ollie Avenue
- 4. Birch Street (SR-98) / Imperial Avenue (SR-111)
- 6. Cesar Chavez Boulevard / Grant Street
- 14. Imperial Avenue (SR-111) / 2nd Street
- 15. Paulin Avenue / 2<sup>nd</sup> Street

**Table 5-1  
Near-Term With Project Phase 1  
Daily Roadway Segment Conditions**

| Roadway Segment                          | Lanes/<br>Class | LOS E<br>Capacity | Near-Term<br>Without Project |       |     | Project<br>Traffic | Near-Term<br>Phase 1 LPOE |       |     | Δ V/C  |
|--|-----------------|-------------------|------------------------------|-------|-----|--------------------|---------------------------|-------|-----|--------|
|  |                 |                   | ADT                          | V/C   | LOS |                    | ADT                       | V/C   | LOS |        |
| <i>Imperial Ave (SR-111)</i>             |                 |                   |                              |       |     |                    |                           |       |     |        |
| north of Birch St (SR-98)                | 4E              | 60,000            | 45,034                       | 0.751 | C   | 2,035              | 47,069                    | 0.784 | C   | 0.034  |
| Birch St (SR-98) to Temple Ct            | 4M              | 25,000            | 43,585                       | 1.743 | F   | 500                | 44,085                    | 1.763 | F   | 0.020  |
| Temple Ct to Grant St                    | 4M              | 25,000            | 39,527                       | 1.581 | F   | 531                | 40,058                    | 1.602 | F   | 0.021  |
| Grant St to 6 <sup>th</sup> St           | 4M              | 25,000            | 38,978                       | 1.559 | F   | -597               | 38,381                    | 1.535 | F   | -0.024 |
| 6 <sup>th</sup> St to 5 <sup>th</sup> St | 4M              | 25,000            | 37,572                       | 1.503 | F   | -466               | 37,106                    | 1.484 | F   | -0.019 |
| 5 <sup>th</sup> St to 4 <sup>th</sup> St | 4P              | 37,500            | 36,589                       | 0.976 | E   | -117               | 36,472                    | 0.973 | E   | -0.003 |
| 4 <sup>th</sup> St to 3 <sup>rd</sup> St | 4P              | 37,500            | 32,437                       | 0.865 | D   | -75                | 32,362                    | 0.863 | D   | -0.002 |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St | 4P              | 37,500            | 34,257                       | 0.914 | E   | 112                | 34,369                    | 0.917 | E   | 0.003  |
| <i>Birch St (SR-98)</i>                  |                 |                   |                              |       |     |                    |                           |       |     |        |
| west of VV Williams Ave                  | 2H              | 18,700            | 20,498                       | 1.096 | F   | 1,041              | 21,539                    | 1.152 | F   | 0.056  |
| VV Williams Ave to Cesar Chavez Blvd     | 2H              | 18,700            | 26,610                       | 1.423 | F   | 1,548              | 28,158                    | 1.506 | F   | 0.083  |
| Cesar Chavez Blvd to Ollie Ave           | 2H              | 18,700            | 28,260                       | 1.511 | F   | 1,445              | 29,705                    | 1.589 | F   | 0.077  |
| Ollie Ave to Imperial Ave (SR-111)       | 4H              | 37,500            | 34,981                       | 0.933 | E   | 713                | 35,694                    | 0.952 | E   | 0.019  |
| east of Imperial Ave (SR-111)            | 4H              | 37,500            | 31,096                       | 0.829 | D   | 419                | 31,515                    | 0.840 | D   | 0.011  |
| <i>Cesar Chavez Blvd</i>                 |                 |                   |                              |       |     |                    |                           |       |     |        |
| Birch St (SR-98) to Grant St             | 4M              | 25,000            | 21,155                       | 0.846 | D   | 4,071              | 25,226                    | 1.009 | F   | 0.163  |
| Grant St to 2 <sup>nd</sup> St           | 4M              | 25,000            | 20,604                       | 0.824 | D   | 5,886              | 26,490                    | 1.060 | F   | 0.235  |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 5-1  
Near-Term With Project Phase 1  
Daily Roadway Segment Conditions (continued)**

| Roadway Segment                            | Lanes/<br>Class | LOS E<br>Capacity | Near-Term<br>Without Project |       |     | Project<br>Traffic | Near-Term<br>Phase 1 LPOE |       |     | Δ V/C |
|--|-----------------|-------------------|------------------------------|-------|-----|--------------------|---------------------------|-------|-----|-------|
|  |                 |                   | ADT                          | V/C   | LOS |                    | ADT                       | V/C   | LOS |       |
| <i>Paulin Ave</i>                          |                 |                   |                              |       |     |                    |                           |       |     |       |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 2C              | 16,200            | 6,889                        | 0.425 | A   | 1,037              | 7,926                     | 0.489 | A   | 0.064 |
| <i>Grant St</i>                            |                 |                   |                              |       |     |                    |                           |       |     |       |
| Cesar Chavez Blvd to Harold Ave            | 2S              | 17,500            | 7,749                        | 0.443 | A   | 1,152              | 8,901                     | 0.509 | A   | 0.066 |
| Harold Ave to Imperial Ave (SR-111)        | 2S              | 17,500            | 4,279                        | 0.245 | A   | 1,152              | 5,431                     | 0.310 | A   | 0.066 |
| <i>3rd St</i>                              |                 |                   |                              |       |     |                    |                           |       |     |       |
| Imperial Ave (SR-111) to Paulin Ave        | 2C              | 16,200            | 5,967                        | 0.368 | A   | 121                | 6,088                     | 0.376 | A   | 0.007 |
| Paulin Ave to Rockwood Ave                 | 2C              | 16,200            | 8,160                        | 0.504 | A   | 369                | 8,529                     | 0.526 | A   | 0.023 |
| <i>2nd St</i>                              |                 |                   |                              |       |     |                    |                           |       |     |       |
| west of Cesar Chavez Blvd                  | 2S              | 17,500            | 22,496                       | 1.285 | F   | 502                | 22,998                    | 1.314 | F   | 0.029 |
| Cesar Chavez Blvd to Imperial Ave (SR-111) | 4M              | 25,000            | 22,400                       | 0.896 | D   | 2,617              | 25,017                    | 1.001 | F   | 0.105 |
| Imperial Ave (SR-111) to Paulin Ave        | 2S              | 17,500            | 11,591                       | 0.662 | B   | 2,928              | 14,519                    | 0.830 | D   | 0.167 |
| Paulin Ave to Rockwood Ave                 | 2S              | 17,500            | 8,062                        | 0.461 | A   | 730                | 8,792                     | 0.502 | A   | 0.042 |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 5-2  
Near-Term With Project Phase 1  
Intersection Conditions**

| Intersection                                | Near-Term       |     |              |     | Δ Delay |
|---|-----------------|-----|--------------|-----|---------|
|   | Without Project |     | Phase 1 LPOE |     |         |
|   | Delay           | LOS | Delay        | LOS |         |
| <i>AM Peak Hour</i>                         |                 |     |              |     |         |
| 1. Birch St (SR-98) / VV Williams Ave*      | 818.3           | F   | 9999.9       | F   | Err     |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 4281.8          | F   | 4861.9       | F   | 580.1   |
| 3. Birch St (SR-98) / Ollie Ave             | 45.9            | D   | 51.2         | D   | 5.3     |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 48.2            | D   | 56.7         | E   | 8.5     |
| 5. Imperial Ave (SR-111) / 10th St*         | 15.7            | C   | 17.3         | C   | 1.6     |
| 6. Cesar Chavez Blvd / Grant St*            | 9999.9          | F   | 9999.9       | F   | Err     |
| 7. Imperial Ave (SR-111) / Grant St         | 19.6            | B   | 22.2         | C   | 2.6     |
| 8. Imperial Ave (SR-111) / 7th St           | 4.6             | A   | 5.1          | A   | 0.5     |
| 9. Imperial Ave (SR-111) / 5th St           | 16.6            | B   | 18.5         | B   | 1.9     |
| 10. Imperial Ave (SR-111) / 4th St*         | 12.4            | B   | 12.3         | B   | -0.1    |
| 11. Imperial Ave (SR-111) / 3rd St*         | 11.8            | B   | 11.9         | B   | 0.1     |
| 12. Paulin Ave / 3rd St*                    | 10.5            | B   | 12.1         | B   | 1.6     |
| 13. Cesar Chavez Blvd / 2nd St**            | 126.8           | F   | 23.7         | C   | -103.1  |
| 14. Imperial Ave (SR-111) / 2nd St          | 38.3            | D   | 37.1         | D   | -1.2    |
| 15. Paulin Ave / 2nd St*                    | 11.6            | B   | 20.4         | C   | 8.8     |
| <i>PM Peak Hour</i>                         |                 |     |              |     |         |
| 1. Birch St (SR-98) / VV Williams Ave*      | 447.2           | F   | 667.1        | F   | 219.9   |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 3873.9          | F   | 4606.8       | F   | 732.9   |
| 3. Birch St (SR-98) / Ollie Ave             | 60.7            | E   | 61.3         | E   | 0.6     |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 61.8            | E   | 73.7         | E   | 11.9    |
| 5. Imperial Ave (SR-111) / 10th St*         | 18.0            | C   | 21.9         | C   | 3.9     |
| 6. Cesar Chavez Blvd / Grant St*            | 9999.9          | F   | 9999.9       | F   | Err     |
| 7. Imperial Ave (SR-111) / Grant St         | 15.2            | B   | 17.2         | B   | 2.0     |
| 8. Imperial Ave (SR-111) / 7th St           | 6.6             | A   | 7.8          | A   | 1.2     |
| 9. Imperial Ave (SR-111) / 5th St           | 27.2            | C   | 32.9         | C   | 5.7     |
| 10. Imperial Ave (SR-111) / 4th St*         | 16.4            | C   | 17.2         | C   | 0.8     |
| 11. Imperial Ave (SR-111) / 3rd St*         | 19.8            | C   | 22.3         | C   | 2.5     |
| 12. Paulin Ave / 3rd St*                    | 21.3            | C   | 32.1         | D   | 10.8    |
| 13. Cesar Chavez Blvd / 2nd St**            | 7314.5          | F   | 36.6         | D   | -7277.9 |
| 14. Imperial Ave (SR-111) / 2nd St          | 118.9           | F   | 203.9        | F   | 85.0    |
| 15. Paulin Ave / 2nd St*                    | 18.4            | C   | 49.8         | E   | 31.4    |

\* Unsignalized Intersection

\*\* Unsignalized without expansion, signalized with expansion

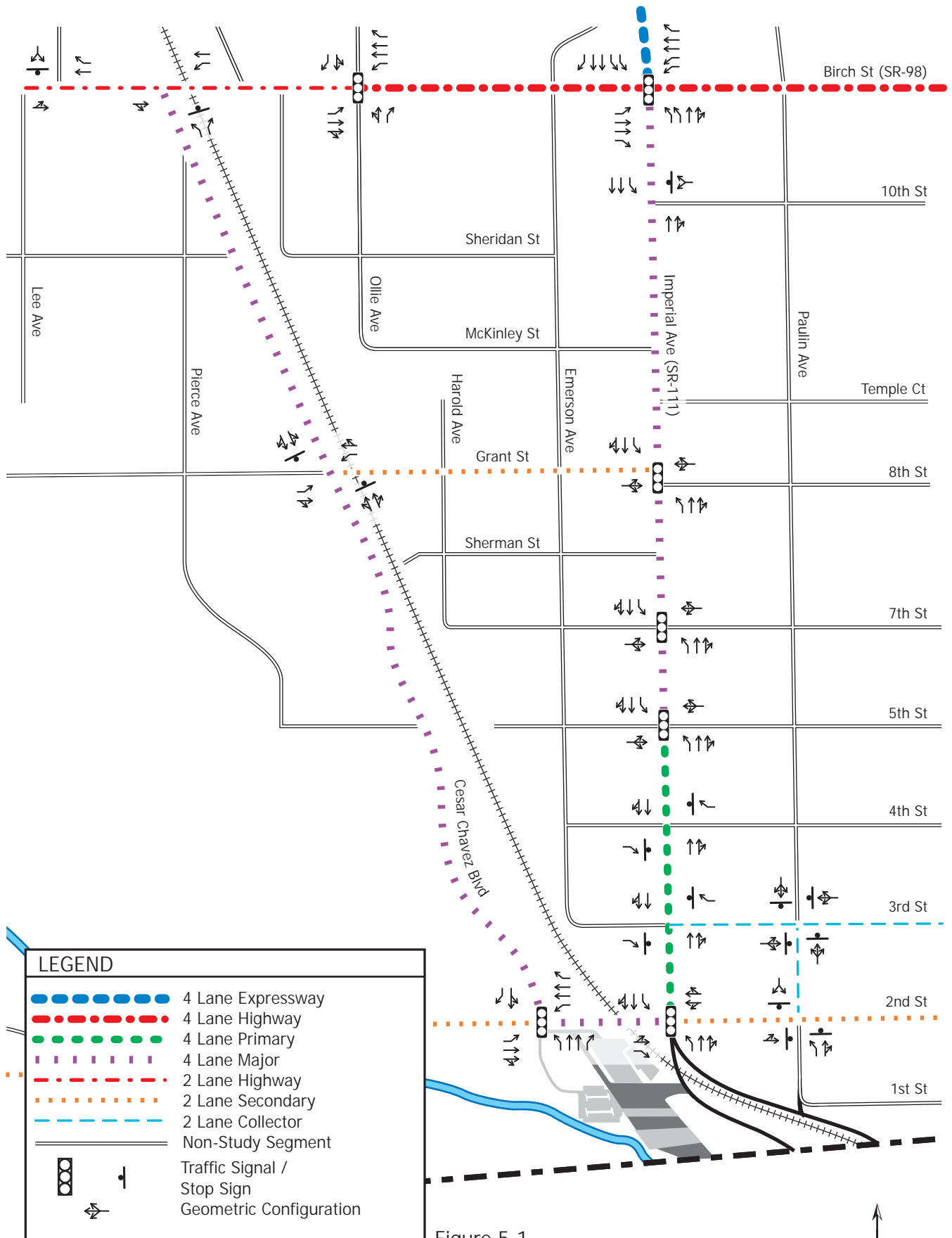


Figure 5-1  
Near-Term With Project Phase 1 Circulation Network



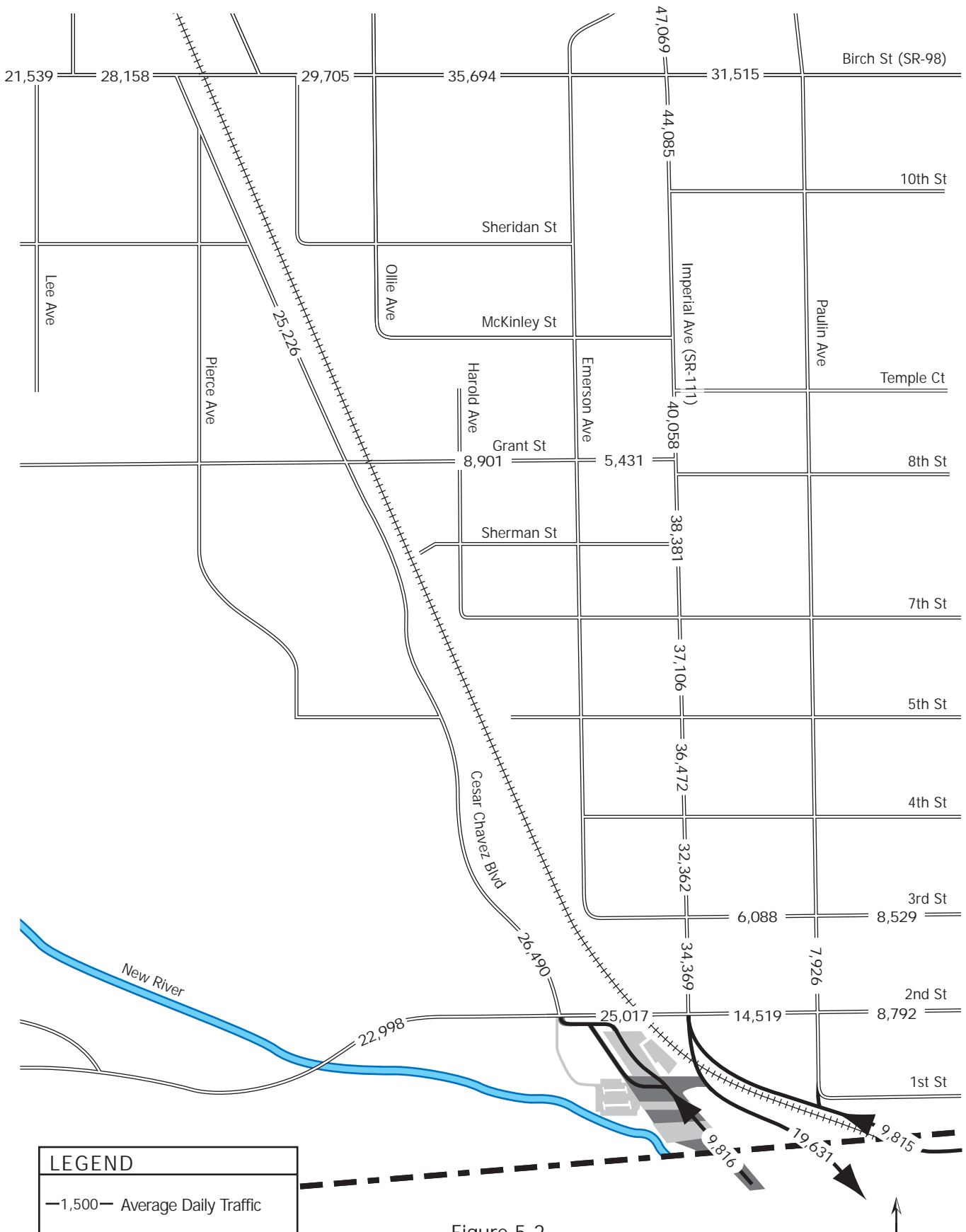
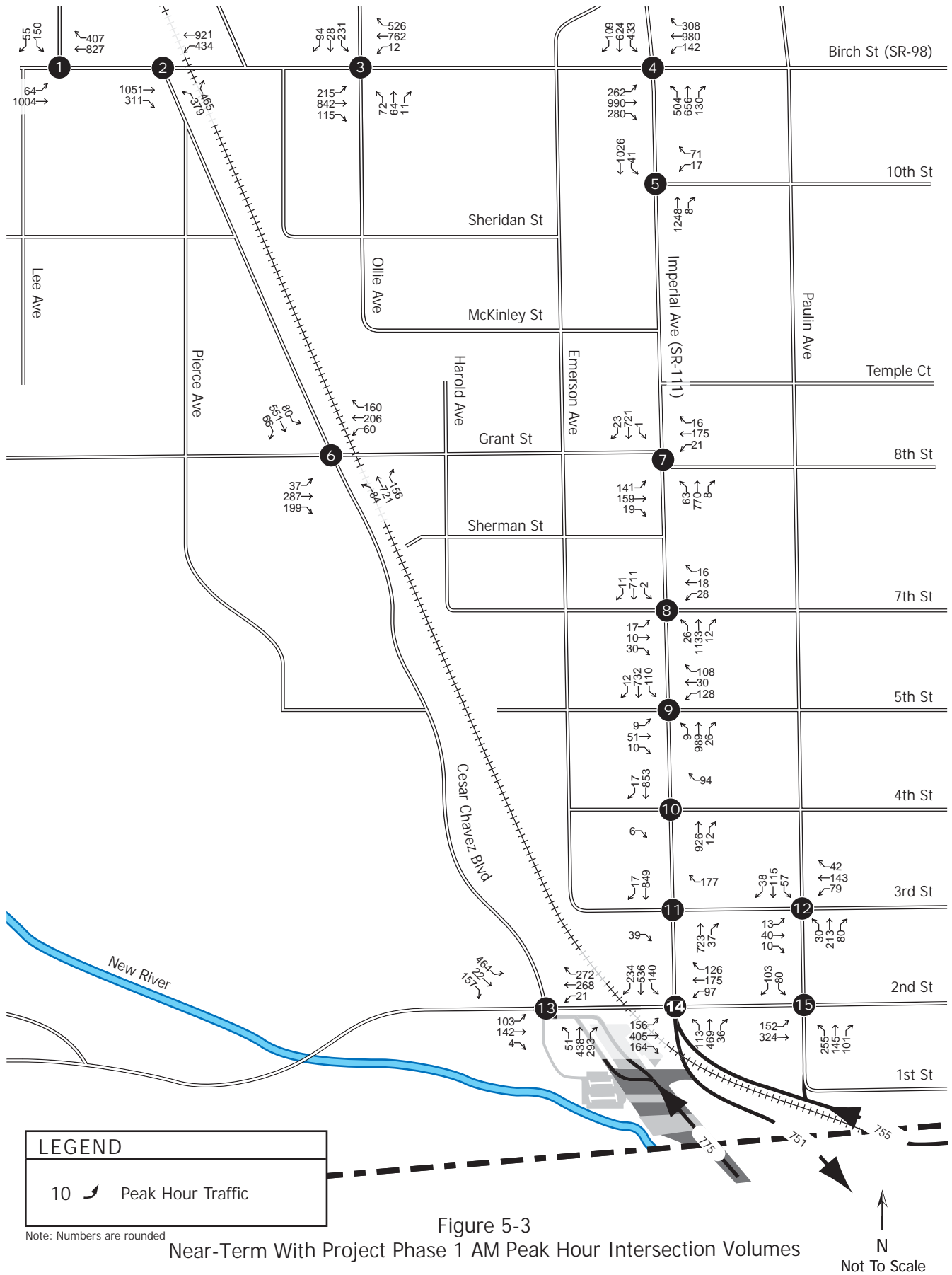
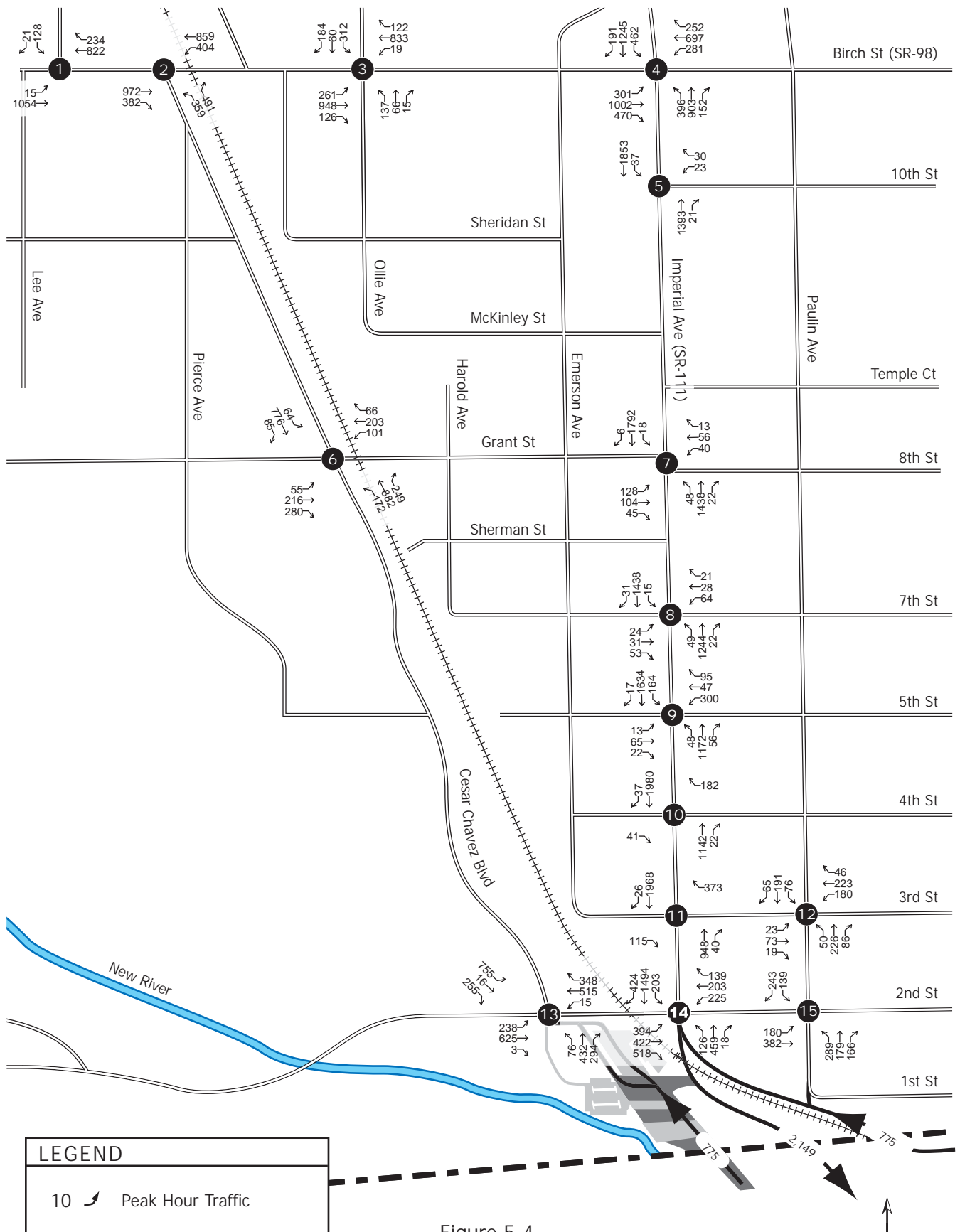


Figure 5-2  
 Near-Term With Project Phase 1 Daily Roadway Segment Volumes

N  
 Not To Scale





## CHAPTER 6

### NEAR-TERM PHASE 2 CONDITIONS

Near-term conditions for this traffic study are representative of the year 2015. The proposed project is expected to be completed by the year 2015, and the analysis presented in this chapter will provide the Phase 2 project conditions for comparison to the “Without Project” conditions. In Phase 2, the GSA is proposing to expand the Calexico West LPOE northbound POV inspection facility by 6 additional lanes and align the LPOE with Cesar Chavez Boulevard at 2<sup>nd</sup> Street, creating a total of 16 northbound POV inspection lanes. The existing LPOE facility POV operations will be discontinued during this phase. The southbound POV border crossing will also be realigned with Cesar Chavez Boulevard at 2<sup>nd</sup> Street for this phase.

#### CIRCULATION NETWORK

No changes to the existing circulation network are assumed for the near-term Phase 2 project scenario except for the recommended improvements for the connection between the Port inspection area and Cesar Chavez Boulevard and Imperial Avenue (SR-111) which includes:

2<sup>nd</sup> Street and Cesar Chavez Boulevard:

- Signalize the intersection
- Eastbound: restripe to provide one left-turn, one thru and one shared thru-right lane
- Westbound: restripe to provide one left-turn, one thru and one right-turn lane
- Northbound: provide one left-turn, two thru and one right-turn lane
- Southbound approach: restripe to provide one shared thru-left and one right-turn lane
- Southbound departure: provide three lanes (Phase 2 only)

2<sup>nd</sup> Street and Imperial Avenue (SR-111):

- Modify the signal
- Northbound: restripe to provide one left-turn, two thru and one right-turn lane
- Southbound: restripe to provide one left-turn and two right-turn lanes

Figure 6-1 graphically displays the assumed geometrics for the near-term Phase 2 project analysis.

#### TRAFFIC VOLUMES

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

For this analysis, the Caltrans *Imperial County Transportation Model (Calexico GP +)* model was used to determine the local growth in Calexico. The *California-Baja California Border Master Plan, September 2008* report was used to forecast border-crossing traffic for the Calexico West LPOE. Detailed information about volume development can be found in Appendix D of this report. The resulting growth rates of this exercise were applied to develop the near-term Phase 2 project forecast

volumes. The list of included cumulative projects can be found in Appendix C. Figures 6-2 through 6-4 display the near-term roadway segment and intersection volumes with Phase 2 of the project.

## ANALYSIS

The effect of the proposed project on the study area circulation network was evaluated. The following tables summarize the results of this analysis.

The near-term Phase 2 roadway segment analysis is summarized in Table 6-1. As seen in Table 6-1, the following roadway segments in the study area will degrade with the addition of Phase 2 project traffic beyond the allowable thresholds.

- Birch Street (SR-98) west of VV Williams Avenue to Imperial Avenue (SR-111)
- Cesar Chavez Boulevard from Birch Street (SR-98) to 2<sup>nd</sup> Street
- 2<sup>nd</sup> Street west of Cesar Chavez Boulevard to Paulin Avenue

The near-term Phase 2 intersection analysis is summarized in Table 6-2. As seen in Table 6-2, the following intersections in the study area will degrade with the addition of Phase 2 project traffic beyond the allowable thresholds. Analysis worksheets can be found in Appendix I.

1. Birch Street (SR-98) / VV Williams Avenue
2. Birch Street (SR-98) / Cesar Chavez Boulevard
3. Birch Street (SR-98) / Ollie Avenue
6. Cesar Chavez Boulevard / Grant Street
15. Paulin Avenue / 2nd Street

**Table 6-1  
Near-Term With Project Phase 2  
Daily Roadway Segment Conditions**

| Roadway Segment                          | Lanes/<br>Class | LOS E<br>Capacity | Near-Term<br>Without Project |       |     | Project<br>Traffic | Near-Term<br>Phase 2 LPOE |       |     | Δ V/C  |
|--|-----------------|-------------------|------------------------------|-------|-----|--------------------|---------------------------|-------|-----|--------|
|  |                 |                   | ADT                          | V/C   | LOS |                    | ADT                       | V/C   | LOS |        |
| <i>Imperial Ave (SR-111)</i>             |                 |                   |                              |       |     |                    |                           |       |     |        |
| north of Birch St (SR-98)                | 4E              | 60,000            | 45,034                       | 0.751 | C   | 2,035              | 47,069                    | 0.784 | C   | 0.034  |
| Birch St (SR-98) to Temple Ct            | 4M              | 25,000            | 43,585                       | 1.743 | F   | -7,051             | 36,534                    | 1.461 | F   | -0.282 |
| Temple Ct to Grant St                    | 4M              | 25,000            | 39,527                       | 1.581 | F   | -7,018             | 32,509                    | 1.300 | F   | -0.281 |
| Grant St to 6 <sup>th</sup> St           | 4M              | 25,000            | 38,978                       | 1.559 | F   | -9,367             | 29,611                    | 1.184 | F   | -0.375 |
| 6 <sup>th</sup> St to 5 <sup>th</sup> St | 4M              | 25,000            | 37,572                       | 1.503 | F   | -9,553             | 28,019                    | 1.121 | F   | -0.382 |
| 5 <sup>th</sup> St to 4 <sup>th</sup> St | 4P              | 37,500            | 36,589                       | 0.976 | E   | -9,297             | 27,292                    | 0.728 | C   | -0.248 |
| 4 <sup>th</sup> St to 3 <sup>rd</sup> St | 4P              | 37,500            | 32,437                       | 0.865 | D   | -9,285             | 23,152                    | 0.617 | B   | -0.248 |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St | 4P              | 37,500            | 34,257                       | 0.914 | E   | -9,475             | 24,782                    | 0.661 | B   | -0.253 |
| <i>Birch St (SR-98)</i>                  |                 |                   |                              |       |     |                    |                           |       |     |        |
| west of VV Williams Ave                  | 2H              | 18,700            | 20,498                       | 1.096 | F   | 1,041              | 21,539                    | 1.152 | F   | 0.056  |
| VV Williams Ave to Cesar Chavez Blvd     | 2H              | 18,700            | 26,610                       | 1.423 | F   | 1,546              | 28,156                    | 1.506 | F   | 0.083  |
| Cesar Chavez Blvd to Ollie Ave           | 2H              | 18,700            | 28,260                       | 1.511 | F   | 1,074              | 29,334                    | 1.569 | F   | 0.057  |
| Ollie Ave to Imperial Ave (SR-111)       | 4H              | 37,500            | 34,981                       | 0.933 | E   | 947                | 35,928                    | 0.958 | E   | 0.025  |
| east of Imperial Ave (SR-111)            | 4H              | 37,500            | 31,096                       | 0.829 | D   | 420                | 31,516                    | 0.840 | D   | 0.011  |
| <i>Cesar Chavez Blvd</i>                 |                 |                   |                              |       |     |                    |                           |       |     |        |
| Birch St (SR-98) to Grant St             | 4M              | 25,000            | 21,155                       | 0.846 | D   | 11,620             | 32,775                    | 1.311 | F   | 0.465  |
| Grant St to 2 <sup>nd</sup> St           | 4M              | 25,000            | 20,604                       | 0.824 | D   | 15,473             | 36,077                    | 1.443 | F   | 0.619  |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 6-1  
Near-Term With Project Phase 2  
Daily Roadway Segment Conditions (continued)**

| Roadway Segment                            | Lanes/<br>Class | LOS E<br>Capacity | Near-Term<br>Without Project |       |     | Project<br>Traffic | Near-Term<br>Phase 2 LPOE |       |     | Δ V/C |
|--|-----------------|-------------------|------------------------------|-------|-----|--------------------|---------------------------|-------|-----|-------|
|  |                 |                   | ADT                          | V/C   | LOS |                    | ADT                       | V/C   | LOS |       |
| <i>Paulin Ave</i>                          |                 |                   |                              |       |     |                    |                           |       |     |       |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 2C              | 16,200            | 6,889                        | 0.425 | A   | 1,037              | 7,926                     | 0.489 | A   | 0.064 |
| <i>Grant St</i>                            |                 |                   |                              |       |     |                    |                           |       |     |       |
| Cesar Chavez Blvd to Harold Ave            | 2S              | 17,500            | 7,749                        | 0.443 | A   | 3,188              | 10,937                    | 0.625 | B   | 0.182 |
| Harold Ave to Imperial Ave (SR-111)        | 2S              | 17,500            | 4,279                        | 0.245 | A   | 3,188              | 7,467                     | 0.427 | A   | 0.182 |
| <i>3rd St</i>                              |                 |                   |                              |       |     |                    |                           |       |     |       |
| Imperial Ave (SR-111) to Paulin Ave        | 2C              | 16,200            | 5,967                        | 0.368 | A   | 121                | 6,088                     | 0.376 | A   | 0.007 |
| Paulin Ave to Rockwood Ave                 | 2C              | 16,200            | 8,160                        | 0.504 | A   | 369                | 8,529                     | 0.526 | A   | 0.023 |
| <i>2nd St</i>                              |                 |                   |                              |       |     |                    |                           |       |     |       |
| west of Cesar Chavez Blvd                  | 2S              | 17,500            | 22,496                       | 1.285 | F   | 878                | 23,374                    | 1.336 | F   | 0.050 |
| Cesar Chavez Blvd to Imperial Ave (SR-111) | 4M              | 25,000            | 22,400                       | 0.896 | D   | 3,315              | 25,715                    | 1.029 | F   | 0.133 |
| Imperial Ave (SR-111) to Paulin Ave        | 2S              | 17,500            | 11,591                       | 0.662 | B   | 5,431              | 17,022                    | 0.973 | E   | 0.310 |
| Paulin Ave to Rockwood Ave                 | 2S              | 17,500            | 8,062                        | 0.461 | A   | 729                | 8,791                     | 0.502 | A   | 0.042 |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 6-2  
Near-Term With Project Phase 2  
Intersection Conditions**

| Intersection                                | Near-Term       |      |              |     | Δ Delay |
|---|-----------------|------|--------------|-----|---------|
|   | Without Project |      | Phase 2 LPOE |     |         |
|   | Delay           | LOS  | Delay        | LOS |         |
| <i>AM Peak Hour</i>                         |                 |      |              |     |         |
| 1. Birch St (SR-98) / VV Williams Ave*      | 818.3           | F    | 1002.8       | F   | 184.5   |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 4281.8          | F    | 9999.9       | F   | Err     |
| 3. Birch St (SR-98) / Ollie Ave             | 45.9            | D    | 52.0         | D   | 6.1     |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 48.2            | D    | 55.1         | E   | 6.9     |
| 5. Imperial Ave (SR-111) / 10th St*         | 15.7            | C    | 14.4         | B   | -1.3    |
| 6. Cesar Chavez Blvd / Grant St*            | 9999.9          | F    | 9999.9       | F   | Err     |
| 7. Imperial Ave (SR-111) / Grant St         | 19.6            | B    | 26.6         | C   | 7.0     |
| 8. Imperial Ave (SR-111) / 7th St           | 4.6             | A    | 6.1          | A   | 1.5     |
| 9. Imperial Ave (SR-111) / 5th St           | 16.6            | B    | 20.5         | C   | 3.9     |
| 10. Imperial Ave (SR-111) / 4th St*         | 12.4            | B    | 11.3         | B   | -1.1    |
| 11. Imperial Ave (SR-111) / 3rd St*         | 11.8            | B    | 11.1         | B   | -0.7    |
| 12. Paulin Ave / 3rd St*                    | 10.5            | B    | 11.4         | B   | 0.9     |
| 13. Cesar Chavez Blvd / 2nd St**            | 126.8           | F    | 35.0         | C   | -91.8   |
| 14. Imperial Ave (SR-111) / 2nd St          | 38.3            | D    | 23.3         | C   | -15.0   |
| 15. Paulin Ave / 2nd St*                    | 11.6            | B    | 34.9         | D   | 23.3    |
| 16. 2nd Street / Employee Parking Lot*      | ----            | ---- | 8.9          | A   | NA      |
| <i>PM Peak Hour</i>                         |                 |      |              |     |         |
| 1. Birch St (SR-98) / VV Williams Ave*      | 447.2           | F    | 601.9        | F   | 154.7   |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 3873.9          | F    | 9999.9       | F   | Err     |
| 3. Birch St (SR-98) / Ollie Ave             | 60.7            | E    | 65.5         | E   | 4.8     |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 61.8            | E    | 56.8         | E   | -5.0    |
| 5. Imperial Ave (SR-111) / 10th St*         | 18.0            | C    | 15.8         | C   | -2.2    |
| 6. Cesar Chavez Blvd / Grant St*            | 9999.9          | F    | 9999.9       | F   | Err     |
| 7. Imperial Ave (SR-111) / Grant St         | 15.2            | B    | 12.0         | B   | -3.2    |
| 8. Imperial Ave (SR-111) / 7th St           | 6.6             | A    | 7.6          | A   | 1.0     |
| 9. Imperial Ave (SR-111) / 5th St           | 27.2            | C    | 26.1         | C   | -1.1    |
| 10. Imperial Ave (SR-111) / 4th St*         | 16.4            | C    | 14.7         | B   | -1.7    |
| 11. Imperial Ave (SR-111) / 3rd St*         | 19.8            | C    | 17.9         | C   | -1.9    |
| 12. Paulin Ave / 3rd St*                    | 21.3            | C    | 26.8         | D   | 5.5     |
| 13. Cesar Chavez Blvd / 2nd St**            | 7314.5          | F    | 43.5         | D   | -7271.0 |
| 14. Imperial Ave (SR-111) / 2nd St          | 118.9           | F    | 18.0         | B   | -100.9  |
| 15. Paulin Ave / 2nd St*                    | 18.4            | C    | 84.2         | F   | 65.8    |
| 16. 2nd Street / Employee Parking Lot*      | ----            | ---- | 11.8         | B   | NA      |

\* Unsignalized Intersection

\*\* Unsignalized without expansion, signalized with expansion



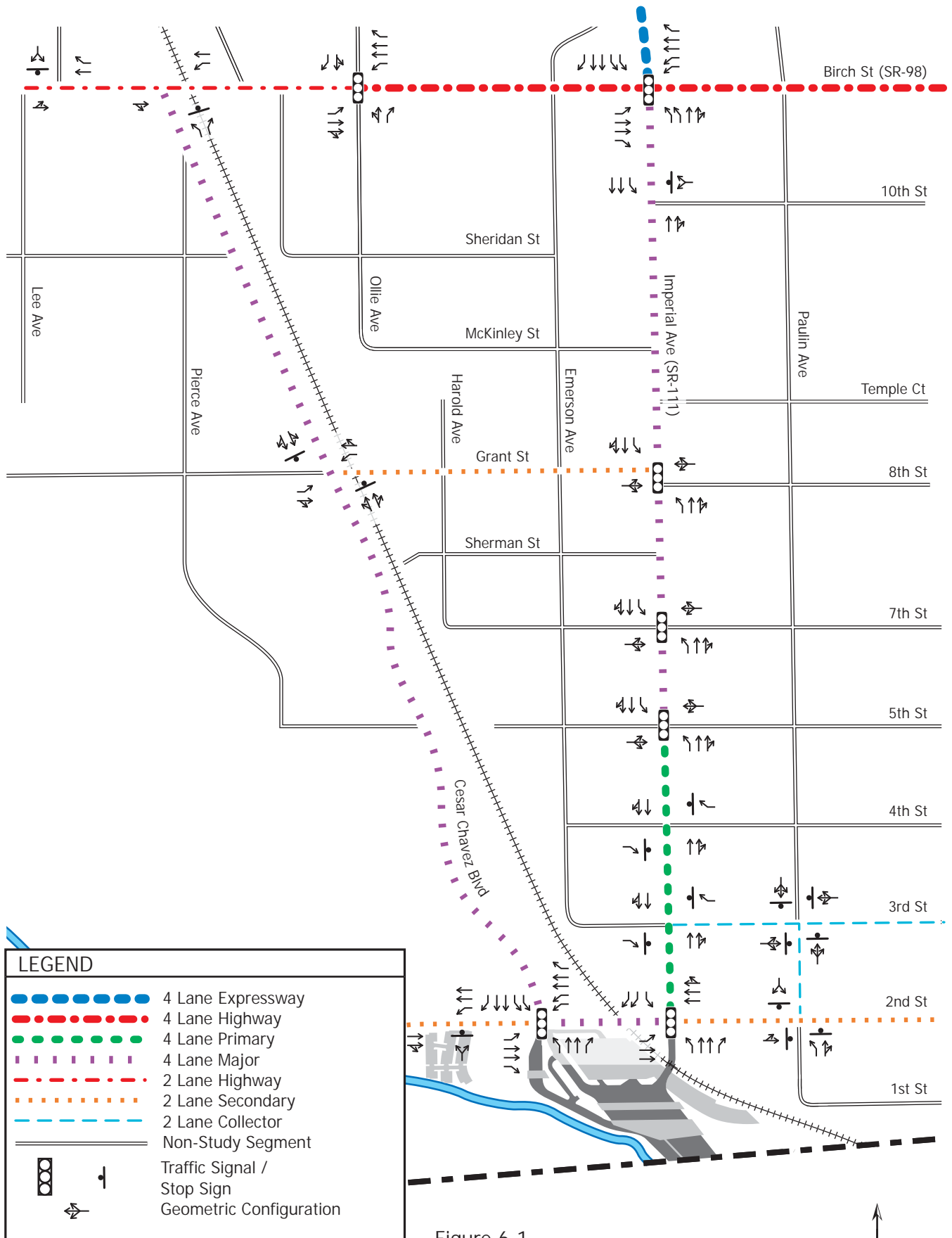


Figure 6-1  
Near-Term With Project Phase 2 Circulation Network

N  
Not To Scale

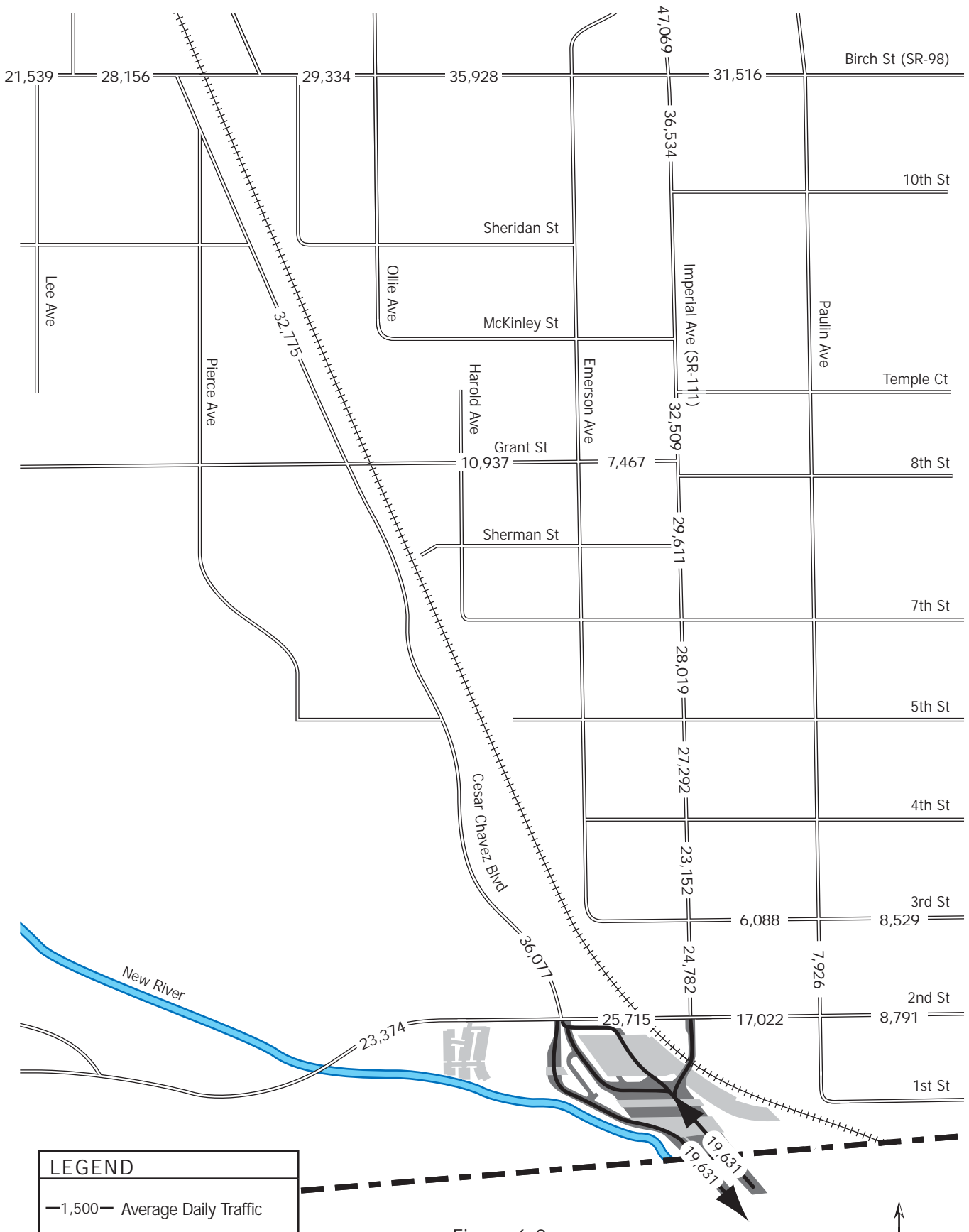
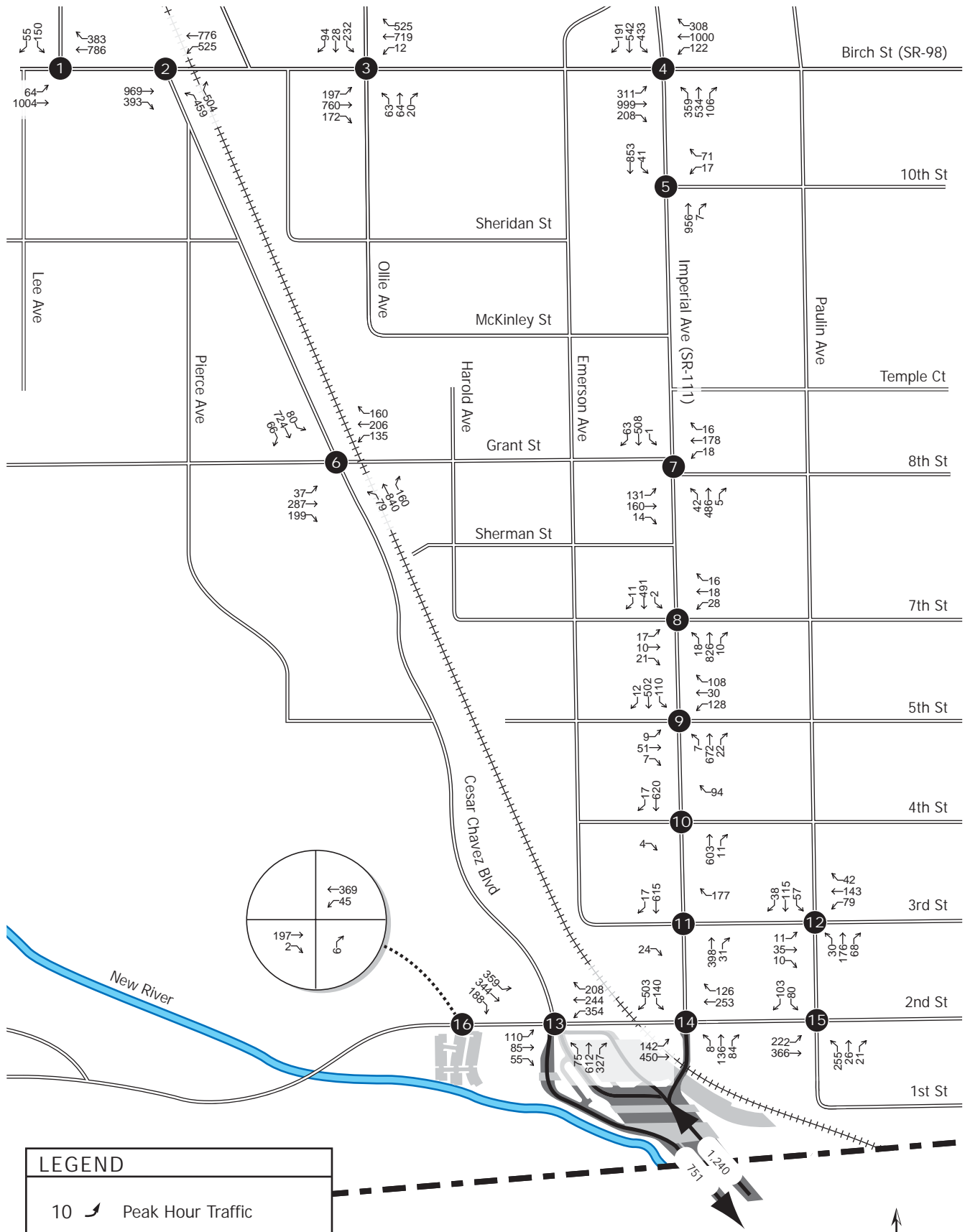


Figure 6-2  
 Near-Term With Project Phase 2 Daily Roadway Segment Volumes

N  
 Not To Scale



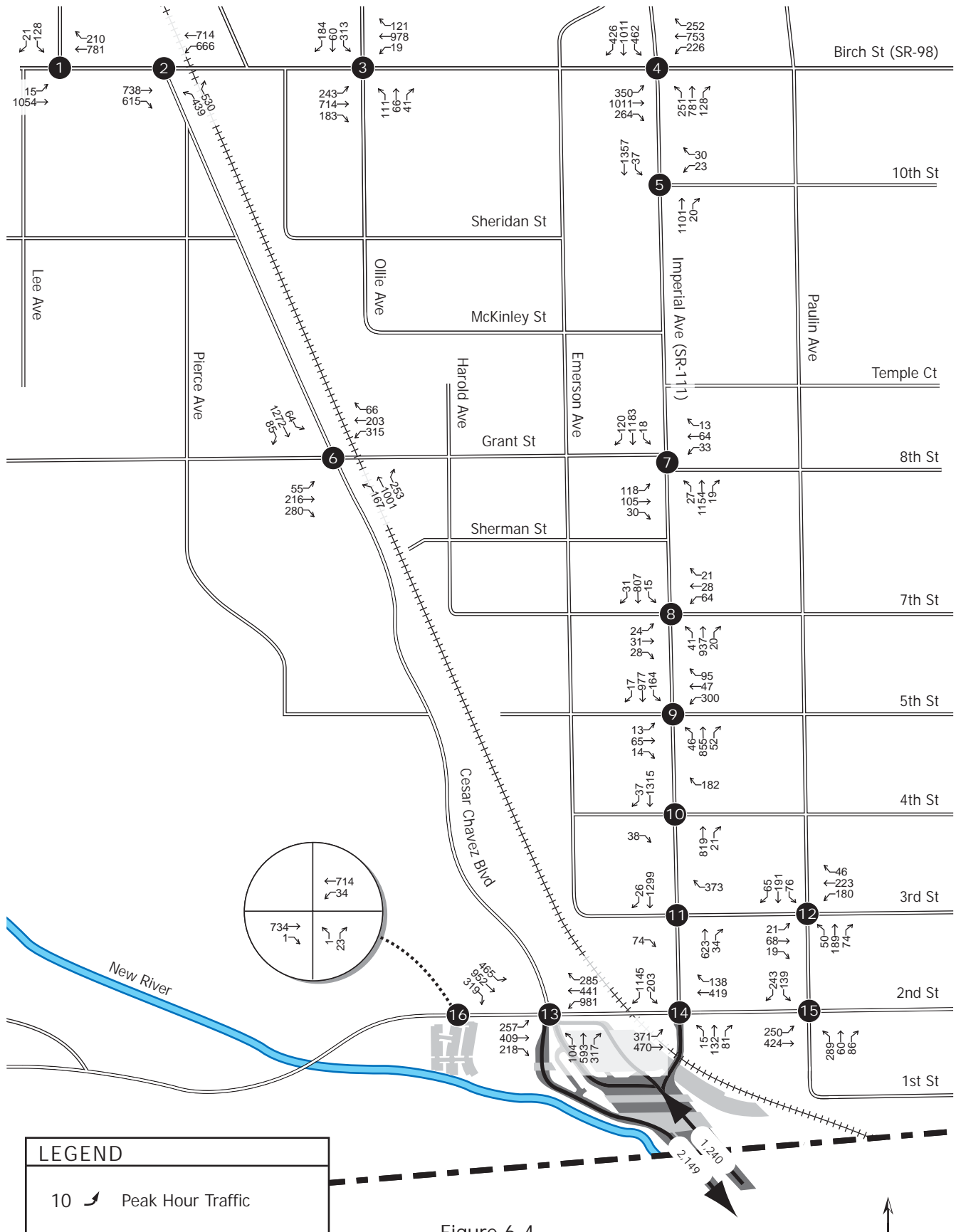


Figure 6-4  
Near-Term With Project Phase 2 PM Peak Hour Intersection Volumes

**LEGEND**  
10 ↗ Peak Hour Traffic

Note: Numbers are rounded

N  
Not To Scale

## CHAPTER 7 HORIZON YEAR CONDITIONS

Horizon year conditions for this traffic study are representative of the year 2035. The analysis presented in this chapter will provide the baseline, or “Without Project” conditions, for comparison of subsequent project scenario horizon year analysis.

### CIRCULATION NETWORK

There are no current Capital Improvement Projects (CIP) related to the analyzed roadway segments and intersections that are fully funded by the year 2035; therefore, no circulation improvements to the existing circulation network were assumed for the horizon year “Without Project” scenarios.

### TRAFFIC VOLUMES

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

For this analysis, the Caltrans *Imperial County Transportation Model (Calexico GP +)* model was used to determine the local growth in Calexico. The *California-Baja California Border Master Plan, September 2008* report was used to forecast border-crossing traffic for the Calexico West LPOE. Detailed information about volume development can be found in Appendix D of this report. The resulting growth rates of this exercise were applied to develop the horizon year “Without Project” forecast volumes. Figures 7-1 through 7-3 display the horizon year roadway segment and intersection volumes without the proposed project.

### ANALYSIS

The effect of the proposed project on the study area circulation network was evaluated. The following tables summarize the results of this analysis.

The horizon year baseline segment analysis is summarized in Table 7-1. As seen in Table 7-1, the following roadway segments in the study area are calculated to operate at LOS D or worse. All other segments in the study area are calculated to operate at an acceptable LOS C or better.

- Imperial Avenue (SR-111) north of Birch Street (SR-98) to the United States Border
- Birch Street (SR-98) west of VV Williams Avenue to east of Imperial Avenue (SR-111)
- Cesar Chavez Blvd from Birch Street (SR-98) to 2<sup>nd</sup> Street
- Grant Street from Cesar Chavez Boulevard to Harold Avenue
- 3<sup>rd</sup> Street from Paulin Avenue to Rockwood Avenue
- 2<sup>nd</sup> Street west of Cesar Chavez Boulevard to Imperial Avenue (SR-111)

The horizon year baseline intersection analysis is summarized in Table 7-2. As seen in Table 7-2, the following intersections in the study area are calculated to operate at LOS D or worse. All other

intersections in the study area are calculated to operate at an acceptable LOS C or better. Analysis worksheets can be found in Appendix J.

- 1. Birch Street (SR-98) / VV Williams Avenue
- 2. Birch Street (SR-98) / Cesar Chavez Boulevard
- 3. Birch Street (SR-98) / Ollie Avenue
- 4. Birch Street (SR-98) / Imperial Avenue (SR-111)
- 5. Imperial Avenue (SR-111) / 10<sup>th</sup> Street
- 6. Cesar Chavez Boulevard / Grant Street
- 7. Imperial Avenue (SR-111) / Grant Street
- 9. Imperial Avenue (SR-111) / 5<sup>th</sup> Street
- 10. Imperial Avenue (SR-111) / 4<sup>th</sup> Street
- 11. Imperial Avenue (SR-111) / 3<sup>rd</sup> Street
- 12. Paulin Avenue / 3<sup>rd</sup> Street
- 13. Cesar Chavez Boulevard / 2nd Street
- 14. Imperial Avenue (SR-111) / 2nd Street
- 15. Paulin Avenue / 2<sup>nd</sup> Street

**Table 7-1  
Horizon Year Without Project  
Daily Roadway Segment Conditions**

| Roadway Segment                            | Lanes/<br>Class | LOS E<br>Capacity | Horizon Year<br>Without Project |       |     |
|--|-----------------|-------------------|---------------------------------|-------|-----|
|  |                 |                   | ADT                             | V/C   | LOS |
| <i>Imperial Ave (SR-111)</i>               |                 |                   |                                 |       |     |
| north of Birch St (SR-98)                  | 4E              | 60,000            | 81,174                          | 1.353 | F   |
| Birch St (SR-98) to Temple Ct              | 4M              | 25,000            | 72,233                          | 2.889 | F   |
| Temple Ct to Grant St                      | 4M              | 25,000            | 64,188                          | 2.568 | F   |
| Grant St to 6 <sup>th</sup> St             | 4M              | 25,000            | 62,231                          | 2.489 | F   |
| 6 <sup>th</sup> St to 5 <sup>th</sup> St   | 4M              | 25,000            | 58,610                          | 2.344 | F   |
| 5 <sup>th</sup> St to 4 <sup>th</sup> St   | 4P              | 37,500            | 54,600                          | 1.456 | F   |
| 4 <sup>th</sup> St to 3 <sup>rd</sup> St   | 4P              | 37,500            | 42,331                          | 1.129 | F   |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 4P              | 37,500            | 46,023                          | 1.227 | F   |
| <i>Birch St (SR-98)</i>                    |                 |                   |                                 |       |     |
| west of VV Williams Ave                    | 2H              | 18,700            | 35,577                          | 1.903 | F   |
| VV Williams Ave to Cesar Chavez Blvd       | 2H              | 18,700            | 46,007                          | 2.460 | F   |
| Cesar Chavez Blvd to Ollie Ave             | 2H              | 18,700            | 48,676                          | 2.603 | F   |
| Ollie Ave to Imperial Ave (SR-111)         | 4H              | 37,500            | 45,746                          | 1.220 | F   |
| east of Imperial Ave (SR-111)              | 4H              | 37,500            | 47,918                          | 1.278 | F   |
| <i>Cesar Chavez Blvd</i>                   |                 |                   |                                 |       |     |
| Birch St (SR-98) to Grant St               | 4M              | 25,000            | 33,653                          | 1.346 | F   |
| Grant St to 2 <sup>nd</sup> St             | 4M              | 25,000            | 32,035                          | 1.281 | F   |
| <i>Paulin Ave</i>                          |                 |                   |                                 |       |     |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 2C              | 16,200            | 10,315                          | 0.637 | B   |
| <i>Grant St</i>                            |                 |                   |                                 |       |     |
| Cesar Chavez Blvd to Harold Ave            | 2S              | 17,500            | 15,321                          | 0.875 | D   |
| Harold Ave to Imperial Ave (SR-111)        | 2S              | 17,500            | 8,130                           | 0.465 | A   |
| <i>3rd St</i>                              |                 |                   |                                 |       |     |
| Imperial Ave (SR-111) to Paulin Ave        | 2C              | 16,200            | 10,425                          | 0.644 | B   |
| Paulin Ave to Rockwood Ave                 | 2C              | 16,200            | 13,868                          | 0.856 | D   |
| <i>2nd St</i>                              |                 |                   |                                 |       |     |
| west of Cesar Chavez Blvd                  | 2S              | 17,500            | 36,397                          | 2.080 | F   |
| Cesar Chavez Blvd to Imperial Ave (SR-111) | 4M              | 25,000            | 32,678                          | 1.307 | F   |
| Imperial Ave (SR-111) to Paulin Ave        | 2S              | 17,500            | 19,763                          | 1.129 | F   |
| Paulin Ave to Rockwood Ave                 | 2S              | 17,500            | 13,659                          | 0.781 | C   |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 7-2  
Horizon Year Without Project  
Intersection Conditions**

| Intersection                                | AM Peak Hour |     | PM Peak Hour |     |
|---|--------------|-----|--------------|-----|
|   | Delay        | LOS | Delay        | LOS |
| 1. Birch St (SR-98) / VV Williams Ave*      | 9999.9       | F   | 9999.9       | F   |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 9999.9       | F   | 9999.9       | F   |
| 3. Birch St (SR-98) / Ollie Ave             | 80.5         | F   | 86.0         | F   |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 121.4        | F   | 179.1        | F   |
| 5. Imperial Ave (SR-111) / 10th St*         | 39.5         | E   | 504.8        | F   |
| 6. Cesar Chavez Blvd / Grant St*            | 9999.9       | F   | 9999.9       | F   |
| 7. Imperial Ave (SR-111) / Grant St         | 24.0         | C   | 61.8         | E   |
| 8. Imperial Ave (SR-111) / 7th St           | 4.6          | A   | 9.2          | A   |
| 9. Imperial Ave (SR-111) / 5th St           | 20.8         | C   | 42.5         | D   |
| 10. Imperial Ave (SR-111) / 4th St*         | 14.8         | B   | 27.8         | D   |
| 11. Imperial Ave (SR-111) / 3rd St*         | 16.0         | C   | 190.1        | F   |
| 12. Paulin Ave / 3rd St*                    | 23.5         | C   | 202.7        | F   |
| 13. Cesar Chavez Blvd / 2nd St*             | 7164.8       | F   | 6935.6       | F   |
| 14. Imperial Ave (SR-111) / 2nd St          | 39.8         | D   | 362.8        | F   |
| 15. Paulin Ave / 2nd St*                    | 31.9         | D   | 110.3        | F   |

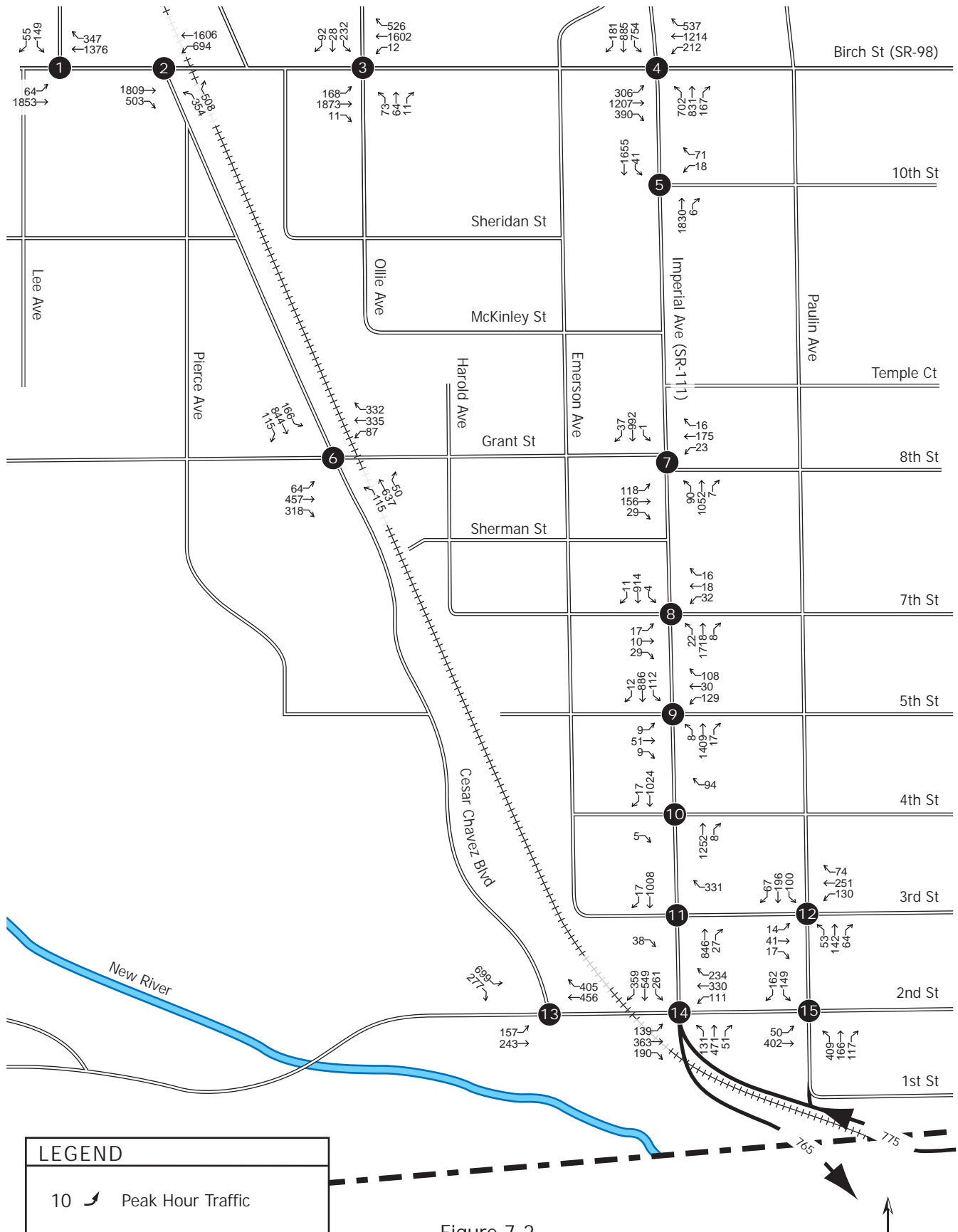
\* Unsignalized intersection





Figure 7-1  
Horizon Year Without Project Daily Roadway Segment Volumes

N  
Not To Scale



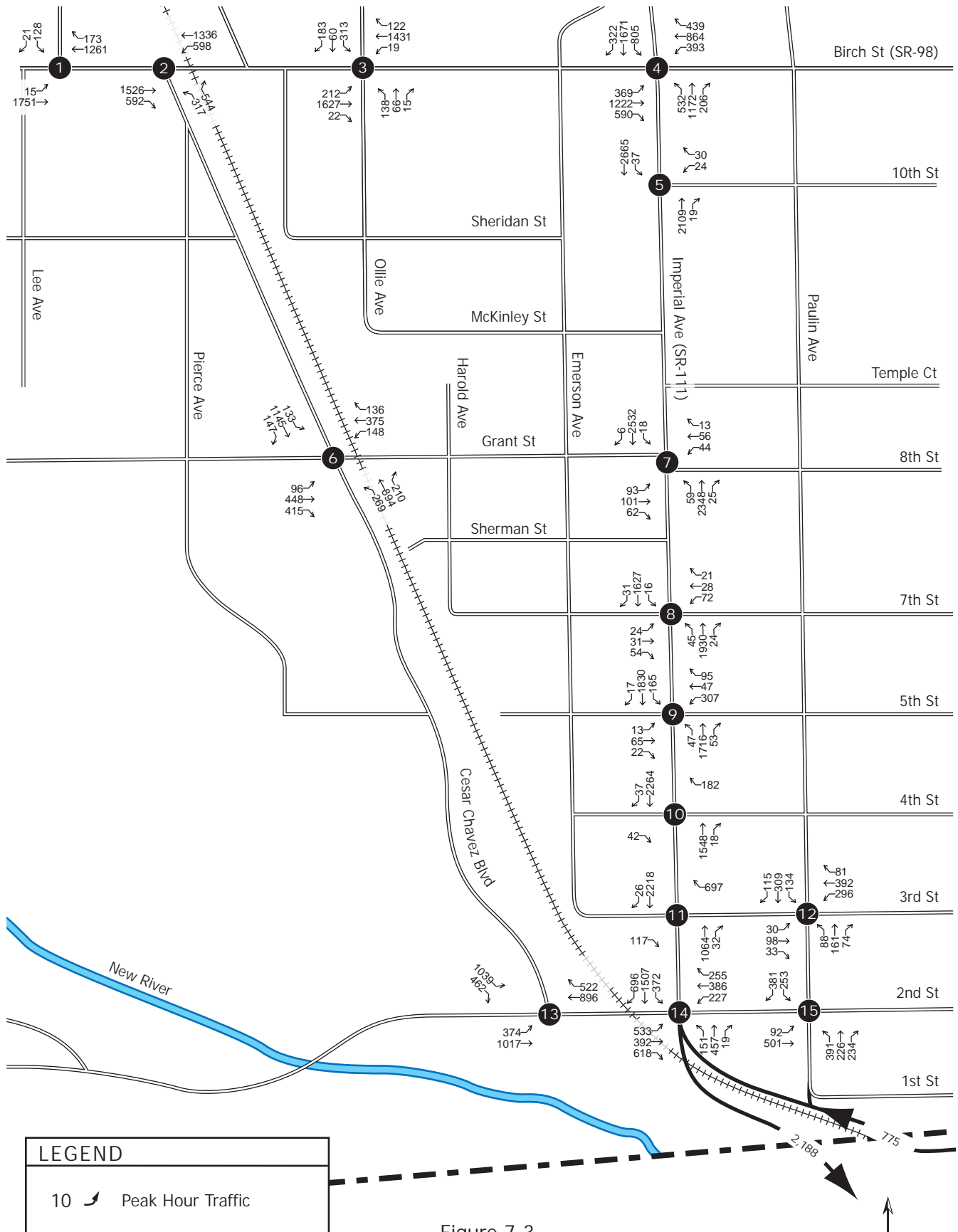


Figure 7-3  
 Horizon Year Without Project PM Peak Hour Intersection Volumes

N  
 Not To Scale

## CHAPTER 8

### HORIZON YEAR PHASE 2 CONDITIONS

Horizon year conditions for this traffic study are representative of the year 2035. The analysis presented in this chapter will provide the Phase 2 project conditions for comparison to the “Without Project” conditions. In Phase 2, the GSA is proposing to expand the Calexico West LPOE northbound POV inspection facility by 6 additional lanes and align the LPOE with Cesar Chavez Boulevard at 2<sup>nd</sup> Street, creating a total of 16 northbound POV inspection lanes. The existing LPOE facility POV operations will be discontinued during this phase. The southbound POV border crossing will also be realigned with Cesar Chavez Boulevard at 2<sup>nd</sup> Street for this phase.

#### CIRCULATION NETWORK

No changes to the existing circulation network are assumed for the horizon year Phase 2 project scenario except for the recommended improvements for the connection between the Port inspection area and Cesar Chavez Boulevard and Imperial Avenue (SR-111) which includes:

2<sup>nd</sup> Street and Cesar Chavez Boulevard:

- Signalize the intersection
- Eastbound: restripe to provide one left-turn, one thru and one shared thru-right lane
- Westbound: restripe to provide one left-turn, one thru and one right-turn lane
- Northbound: provide one left-turn, two thru and one right-turn lane
- Southbound approach: restripe to provide one shared thru-left and one right-turn lane
- Southbound departure: provide three lanes (Phase 2 only)

2<sup>nd</sup> Street and Imperial Avenue (SR-111):

- Modify the signal
- Northbound: restripe to provide one left-turn, two thru and one right-turn lane
- Southbound: restripe to provide one left-turn and two right-turn lanes

Figure 8-1 graphically displays the assumed geometrics for the horizon year Phase 2 project analysis.

#### TRAFFIC VOLUMES

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

For this analysis, the Caltrans *Imperial County Transportation Model (Calexico GP +)* model is used to determine the local growth in Calexico. The *California-Baja California Border Master Plan, September 2008* report was used to forecast border-crossing traffic for the Calexico West LPOE. Detailed information about volume development can be found in Appendix D of this report. The resulting growth rates of this exercise were applied to develop the horizon year Phase 2 project

forecast volumes. Figures 8-2 through 8-4 display the horizon year roadway segment and intersection volumes with Phase 2 of the project.

## ANALYSIS

The effect of the proposed project on the study area circulation network was evaluated. The following tables summarize the results of this analysis.

The horizon year Phase 2 roadway segment analysis is summarized in Table 8-1. As seen in Table 8-1, the following roadway segments in the study area will degrade with the addition of Phase 2 project traffic beyond the allowable thresholds.

- Imperial Avenue (SR-111) north of Birch Street (SR-98)
- Birch Street (SR-98) west of Williams Avenue to east of Imperial Avenue (SR-111)
- Cesar Chavez Boulevard from Birch Street (SR-98) to 2<sup>nd</sup> Street
- Grant Street from Cesar Chavez Boulevard to Harold Avenue
- 2<sup>nd</sup> Street west of Cesar Chavez Boulevard to Paulin Avenue

The horizon year Phase 2 intersection analysis is summarized in Table 8-2. As seen in Table 8-2, the following intersections in the study area will degrade with the addition of Phase 2 project traffic beyond the allowable thresholds. Analysis worksheets can be found in Appendix K.

- 1. Birch Street (SR-98) / VV Williams Avenue
- 2. Birch Street (SR-98) / Cesar Chavez Boulevard
- 3. Birch Street (SR-98) / Ollie Avenue
- 4. Birch Street (SR-98) / Imperial Avenue (SR-111)
- 6. Cesar Chavez Boulevard / Grant Street
- 15. Paulin Avenue / 2nd Street

**Table 8-1  
Horizon Year With Project Phase 2  
Daily Roadway Segment Conditions**

| Roadway Segment                          | Lanes/<br>Class | LOS E<br>Capacity | Horizon Year<br>Without Project |       |     | Project<br>Traffic | Horizon Year<br>Phase 2 LPOE |       |     | Δ V/C  |
|--|-----------------|-------------------|---------------------------------|-------|-----|--------------------|------------------------------|-------|-----|--------|
|  |                 |                   | ADT                             | V/C   | LOS |                    | ADT                          | V/C   | LOS |        |
| <i>Imperial Ave (SR-111)</i>             |                 |                   |                                 |       |     |                    |                              |       |     |        |
| north of Birch St (SR-98)                | 4E              | 60,000            | 81,174                          | 1.353 | F   | 2,258              | 83,432                       | 1.391 | F   | 0.038  |
| Birch St (SR-98) to Temple Ct            | 4M              | 25,000            | 72,233                          | 2.889 | F   | -7,908             | 64,325                       | 2.573 | F   | -0.316 |
| Temple Ct to Grant St                    | 4M              | 25,000            | 64,188                          | 2.568 | F   | -7,871             | 56,317                       | 2.253 | F   | -0.315 |
| Grant St to 6 <sup>th</sup> St           | 4M              | 25,000            | 62,231                          | 2.489 | F   | -10,499            | 51,732                       | 2.069 | F   | -0.420 |
| 6 <sup>th</sup> St to 5 <sup>th</sup> St | 4M              | 25,000            | 58,610                          | 2.344 | F   | -10,709            | 47,901                       | 1.916 | F   | -0.428 |
| 5 <sup>th</sup> St to 4 <sup>th</sup> St | 4P              | 37,500            | 54,600                          | 1.456 | F   | -10,428            | 44,172                       | 1.178 | F   | -0.278 |
| 4 <sup>th</sup> St to 3 <sup>rd</sup> St | 4P              | 37,500            | 42,331                          | 1.129 | F   | -10,413            | 31,918                       | 0.851 | D   | -0.278 |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St | 4P              | 37,500            | 46,023                          | 1.227 | F   | -10,629            | 35,394                       | 0.944 | E   | -0.283 |
| <i>Birch St (SR-98)</i>                  |                 |                   |                                 |       |     |                    |                              |       |     |        |
| west of VV Williams Ave                  | 2H              | 18,700            | 35,577                          | 1.903 | F   | 1,161              | 36,738                       | 1.965 | F   | 0.062  |
| VV Williams Ave to Cesar Chavez Blvd     | 2H              | 18,700            | 46,007                          | 2.460 | F   | 1,724              | 47,731                       | 2.552 | F   | 0.092  |
| Cesar Chavez Blvd to Ollie Ave           | 2H              | 18,700            | 48,676                          | 2.603 | F   | 1,186              | 49,862                       | 2.666 | F   | 0.063  |
| Ollie Ave to Imperial Ave (SR-111)       | 4H              | 37,500            | 45,746                          | 1.220 | F   | 1,051              | 46,797                       | 1.248 | F   | 0.028  |
| east of Imperial Ave (SR-111)            | 4H              | 37,500            | 47,918                          | 1.278 | F   | 466                | 48,384                       | 1.290 | F   | 0.012  |
| <i>Cesar Chavez Blvd</i>                 |                 |                   |                                 |       |     |                    |                              |       |     |        |
| Birch St (SR-98) to Grant St             | 4M              | 25,000            | 33,653                          | 1.346 | F   | 12,991             | 46,644                       | 1.866 | F   | 0.520  |
| Grant St to 2 <sup>nd</sup> St           | 4M              | 25,000            | 32,035                          | 1.281 | F   | 17,295             | 49,330                       | 1.973 | F   | 0.692  |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 8-1  
Horizon Year With Project Phase 2  
Daily Roadway Segment Conditions (continued)**

| Roadway Segment                            | Lanes/<br>Class | LOS E<br>Capacity | Horizon Year<br>Without Project |       |     | Project<br>Traffic | Horizon Year<br>Phase 2 LPOE |       |     | Δ V/C |
|--|-----------------|-------------------|---------------------------------|-------|-----|--------------------|------------------------------|-------|-----|-------|
|  |                 |                   | ADT                             | V/C   | LOS |                    | ADT                          | V/C   | LOS |       |
| <i>Paulin Ave</i>                          |                 |                   |                                 |       |     |                    |                              |       |     |       |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 2C              | 16,200            | 10,315                          | 0.637 | B   | 1,155              | 11,470                       | 0.708 | C   | 0.071 |
| <i>Grant St</i>                            |                 |                   |                                 |       |     |                    |                              |       |     |       |
| Cesar Chavez Blvd to Harold Ave            | 2S              | 17,500            | 15,321                          | 0.875 | D   | 3,563              | 18,884                       | 1.079 | F   | 0.204 |
| Harold Ave to Imperial Ave (SR-111)        | 2S              | 17,500            | 8,130                           | 0.465 | A   | 3,563              | 11,693                       | 0.668 | B   | 0.204 |
| <i>3rd St</i>                              |                 |                   |                                 |       |     |                    |                              |       |     |       |
| Imperial Ave (SR-111) to Paulin Ave        | 2C              | 16,200            | 10,425                          | 0.644 | B   | 134                | 10,559                       | 0.652 | B   | 0.008 |
| Paulin Ave to Rockwood Ave                 | 2C              | 16,200            | 13,868                          | 0.856 | D   | 409                | 14,277                       | 0.881 | D   | 0.025 |
| <i>2nd St</i>                              |                 |                   |                                 |       |     |                    |                              |       |     |       |
| west of Cesar Chavez Blvd                  | 2S              | 17,500            | 36,397                          | 2.080 | F   | 998                | 37,395                       | 2.137 | F   | 0.057 |
| Cesar Chavez Blvd to Imperial Ave (SR-111) | 4M              | 25,000            | 32,678                          | 1.307 | F   | 1,103              | 33,781                       | 1.351 | F   | 0.044 |
| Imperial Ave (SR-111) to Paulin Ave        | 2S              | 17,500            | 19,763                          | 1.129 | F   | 6,069              | 25,832                       | 1.476 | F   | 0.347 |
| Paulin Ave to Rockwood Ave                 | 2S              | 17,500            | 13,659                          | 0.781 | C   | 815                | 14,474                       | 0.827 | D   | 0.047 |

Abbreviations: 4P is a 4 lane Primary. 4M is a 4 lane Major. 2S is a 2 lane Secondary. 2C is a 2 lane Collector. 4E is a 4 lane Expressway. 2H is a 2 lane Highway. 4H is a 4 lane Highway.

**Table 8-2  
Horizon Year With Project Phase 2  
Intersection Conditions**

| Intersection                                | Horizon Year    |      |              |     | Δ Delay |
|---|-----------------|------|--------------|-----|---------|
|   | Without Project |      | Phase 2 LPOE |     |         |
|   | Delay           | LOS  | Delay        | LOS |         |
| <i>AM Peak Hour</i>                         |                 |      |              |     |         |
| 1. Birch St (SR-98) / VV Williams Ave*      | 9999.9          | F    | 9999.9       | F   | Err     |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 9999.9          | F    | 9999.9       | F   | Err     |
| 3. Birch St (SR-98) / Ollie Ave             | 80.5            | F    | 90.7         | F   | 10.2    |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 121.4           | F    | 127.9        | F   | 6.5     |
| 5. Imperial Ave (SR-111) / 10th St*         | 39.5            | E    | 29.5         | D   | -10.0   |
| 6. Cesar Chavez Blvd / Grant St*            | 9999.9          | F    | 9999.9       | F   | Err     |
| 7. Imperial Ave (SR-111) / Grant St         | 24.0            | C    | 27.3         | C   | 3.3     |
| 8. Imperial Ave (SR-111) / 7th St           | 4.6             | A    | 5.1          | A   | 0.5     |
| 9. Imperial Ave (SR-111) / 5th St           | 20.8            | C    | 20.4         | C   | -0.4    |
| 10. Imperial Ave (SR-111) / 4th St*         | 14.8            | B    | 14.1         | B   | -0.7    |
| 11. Imperial Ave (SR-111) / 3rd St*         | 16.0            | C    | 15.7         | C   | -0.3    |
| 12. Paulin Ave / 3rd St*                    | 23.5            | C    | 29.2         | D   | 5.7     |
| 13. Cesar Chavez Blvd / 2nd St**            | 7164.8          | F    | 41.5         | D   | -7123.3 |
| 14. Imperial Ave (SR-111) / 2nd St          | 39.8            | D    | 26.9         | C   | -12.9   |
| 15. Paulin Ave / 2nd St*                    | 31.9            | D    | 143.9        | F   | 112.0   |
| 16. 2nd Street / Employee Parking Lot*      | ----            | ---- | 9.3          | A   | NA      |
| <i>PM Peak Hour</i>                         |                 |      |              |     |         |
| 1. Birch St (SR-98) / VV Williams Ave*      | 9999.9          | F    | 9999.9       | F   | Err     |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 9999.9          | F    | 9999.9       | F   | Err     |
| 3. Birch St (SR-98) / Ollie Ave             | 86.0            | F    | 107.1        | F   | 21.1    |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 179.1           | F    | 170.7        | F   | -8.4    |
| 5. Imperial Ave (SR-111) / 10th St*         | 504.8           | F    | 171.2        | F   | -333.6  |
| 6. Cesar Chavez Blvd / Grant St*            | 9999.9          | F    | 9999.9       | F   | Err     |
| 7. Imperial Ave (SR-111) / Grant St         | 61.8            | E    | 23.0         | C   | -38.8   |
| 8. Imperial Ave (SR-111) / 7th St           | 9.2             | A    | 9.1          | A   | -0.1    |
| 9. Imperial Ave (SR-111) / 5th St           | 42.5            | D    | 41.8         | D   | -0.7    |
| 10. Imperial Ave (SR-111) / 4th St*         | 27.8            | D    | 23.1         | C   | -4.7    |
| 11. Imperial Ave (SR-111) / 3rd St*         | 190.1           | F    | 161.2        | F   | -28.9   |
| 12. Paulin Ave / 3rd St*                    | 202.7           | F    | 233.2        | F   | 30.5    |
| 13. Cesar Chavez Blvd / 2nd St**            | 6935.6          | F    | 79.2         | E   | -6856.4 |
| 14. Imperial Ave (SR-111) / 2nd St          | 362.8           | F    | 33.8         | C   | -329.0  |
| 15. Paulin Ave / 2nd St*                    | 110.3           | F    | 238.9        | F   | 128.6   |
| 16. 2nd Street / Employee Parking Lot*      | ----            | ---- | 16.8         | C   | NA      |

\* Unsignalized Intersection

\*\* Unsignalized without expansion, signalized with expansion



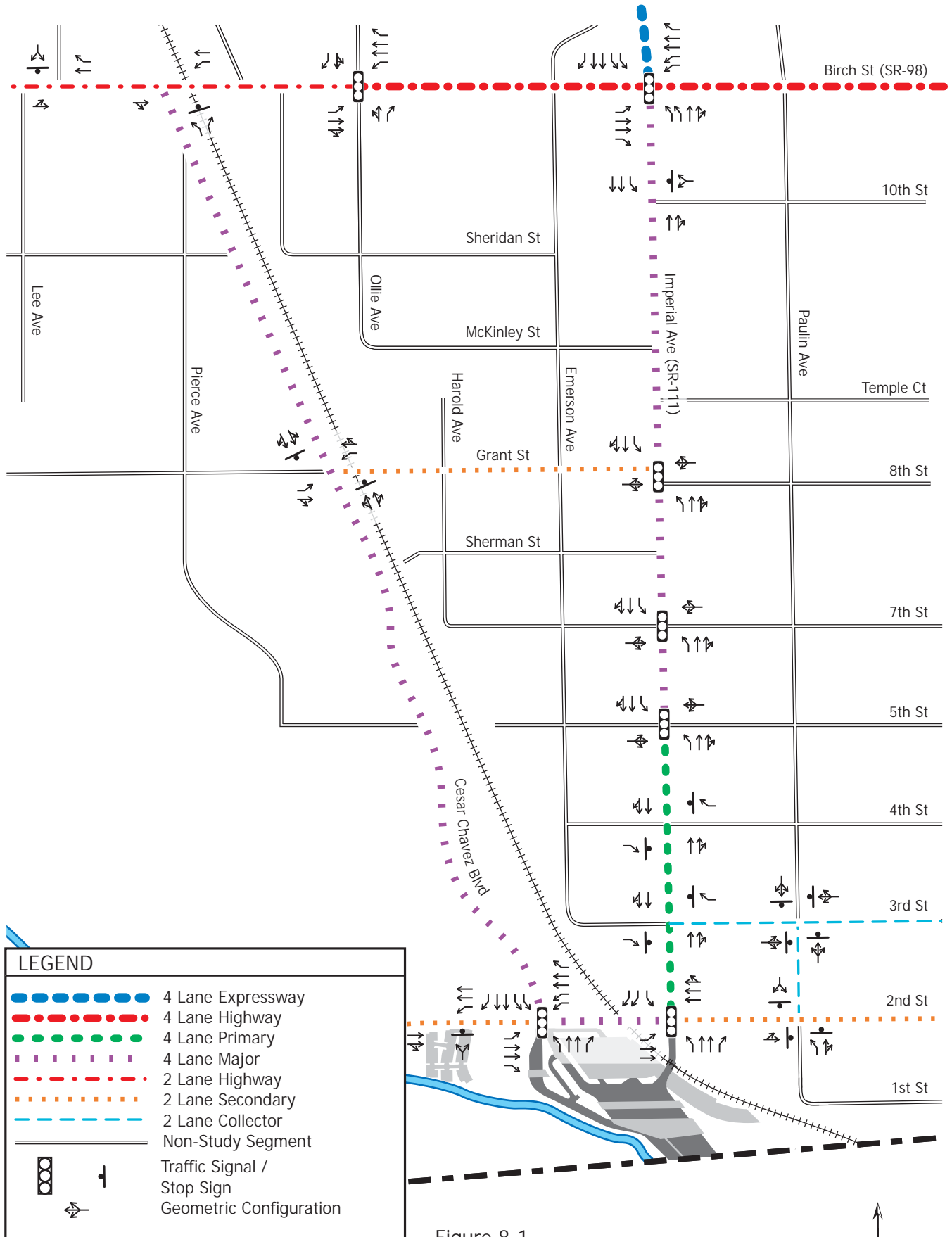


Figure 8-1  
Horizon Year With Project Phase 2 Circulation Network

N  
Not To Scale

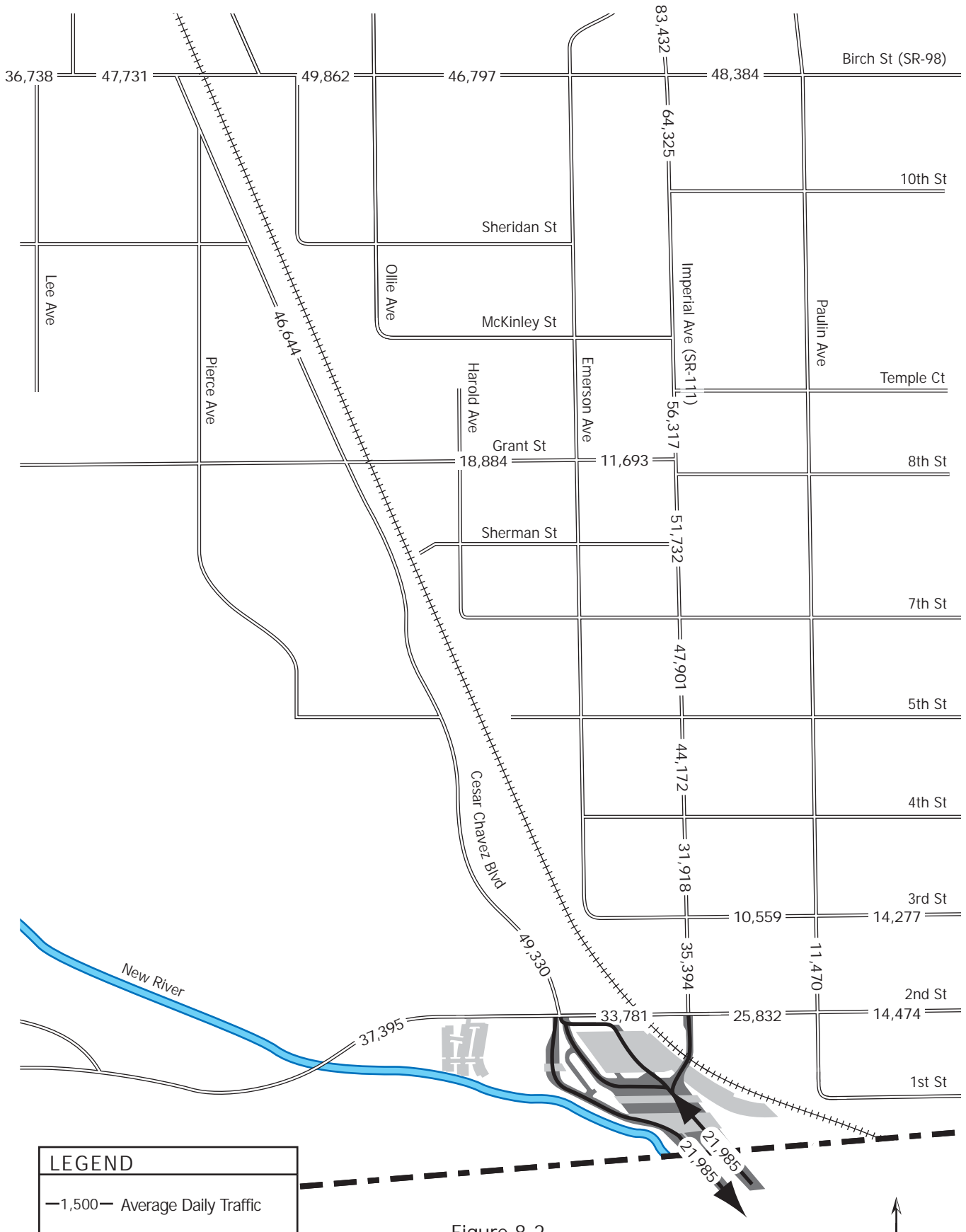
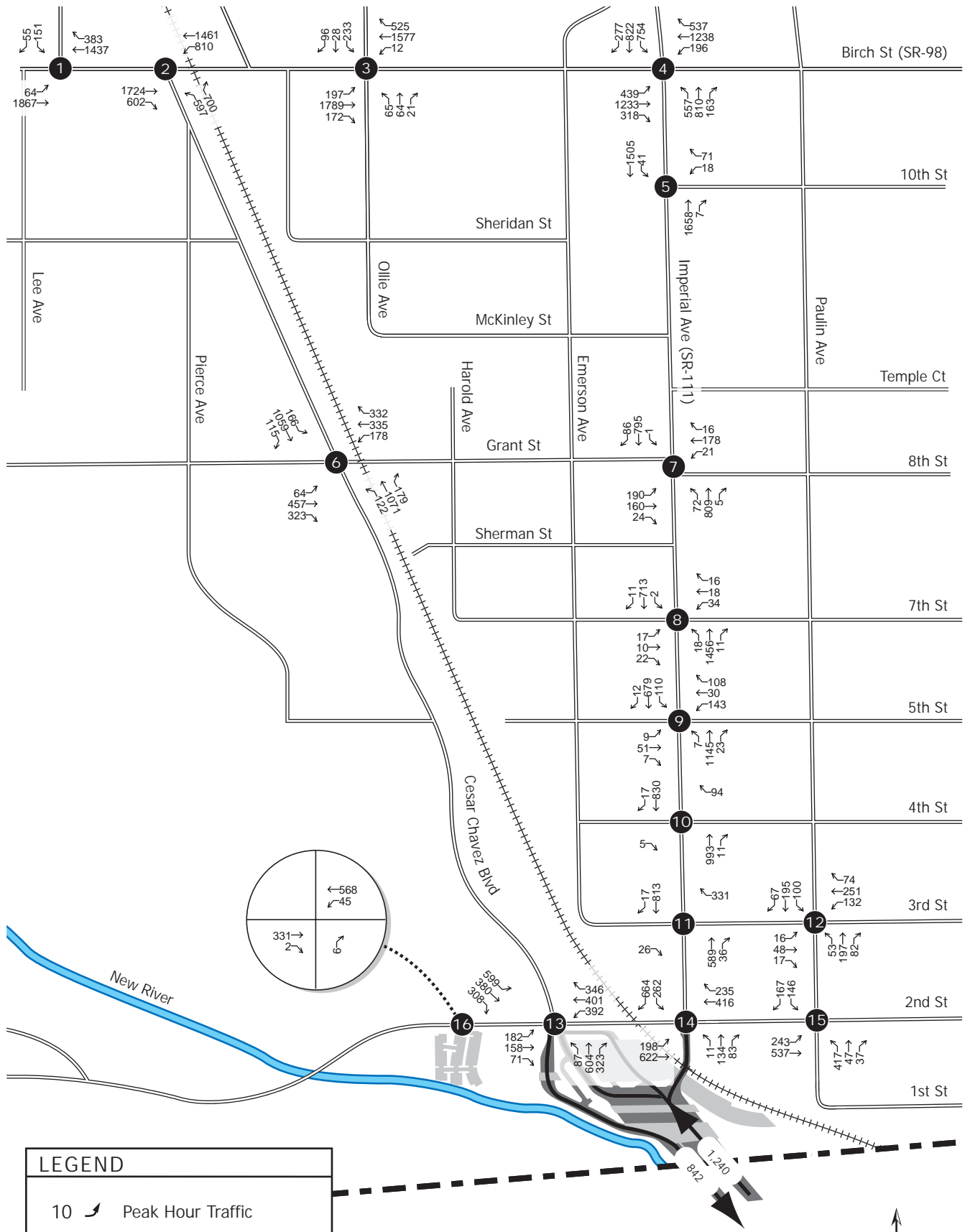


Figure 8-2  
 Horizon Year With Project Phase 2 Daily Roadway Segment Volumes

N  
 Not To Scale



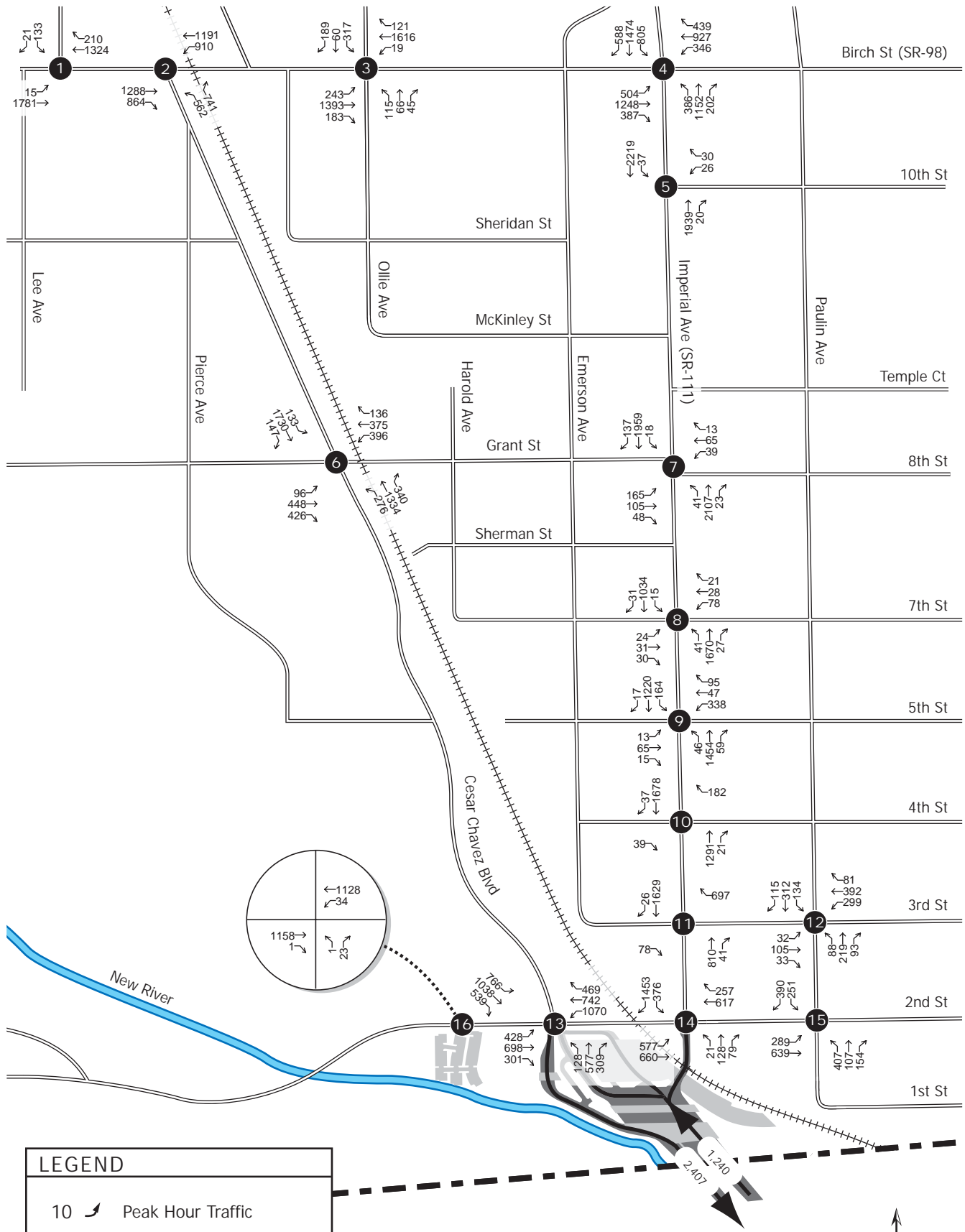


Figure 8-4  
 Horizon Year With Project Phase 2 PM Peak Hour Intersection Volumes

N  
 Not To Scale

## CHAPTER 9 MOBILITY

### PEDESTRIAN

On an average day 20,000 pedestrians enter the United States through the Calexico POE. Currently pedestrians enter the United States through a tunnel system with two entry points as shown on Figure 9-1. The tunnel provides grade separated connectivity across the main southbound and northbound border crossing roadways Adolfo Lopez Mateos and Cristobal Colon. The tunnel ends just south of the border facility, where northbound and southbound pedestrians are separated: southbound pedestrians originate from the east end of the POE building and northbound pedestrians enter the POE building to the west. Currently, there are four northbound pedestrian primary inspection booths and no southbound inspection. The ingress/egress on the United States opens to a pedestrian plaza at 1<sup>st</sup> Street and Rockwood Avenue. Downtown Calexico is adjacent to this crossing.

**Figure 9-1 – Existing Pedestrian Facilities**



In the future, the POE will be demolished and new facilities will be constructed. The future pedestrian inspection building will be in the same location as under the existing conditions. The northbound vehicular lanes will be moved further west, providing more separation between pedestrian and vehicular traffic. Figure 9-2 illustrates the planned pedestrian facilities.

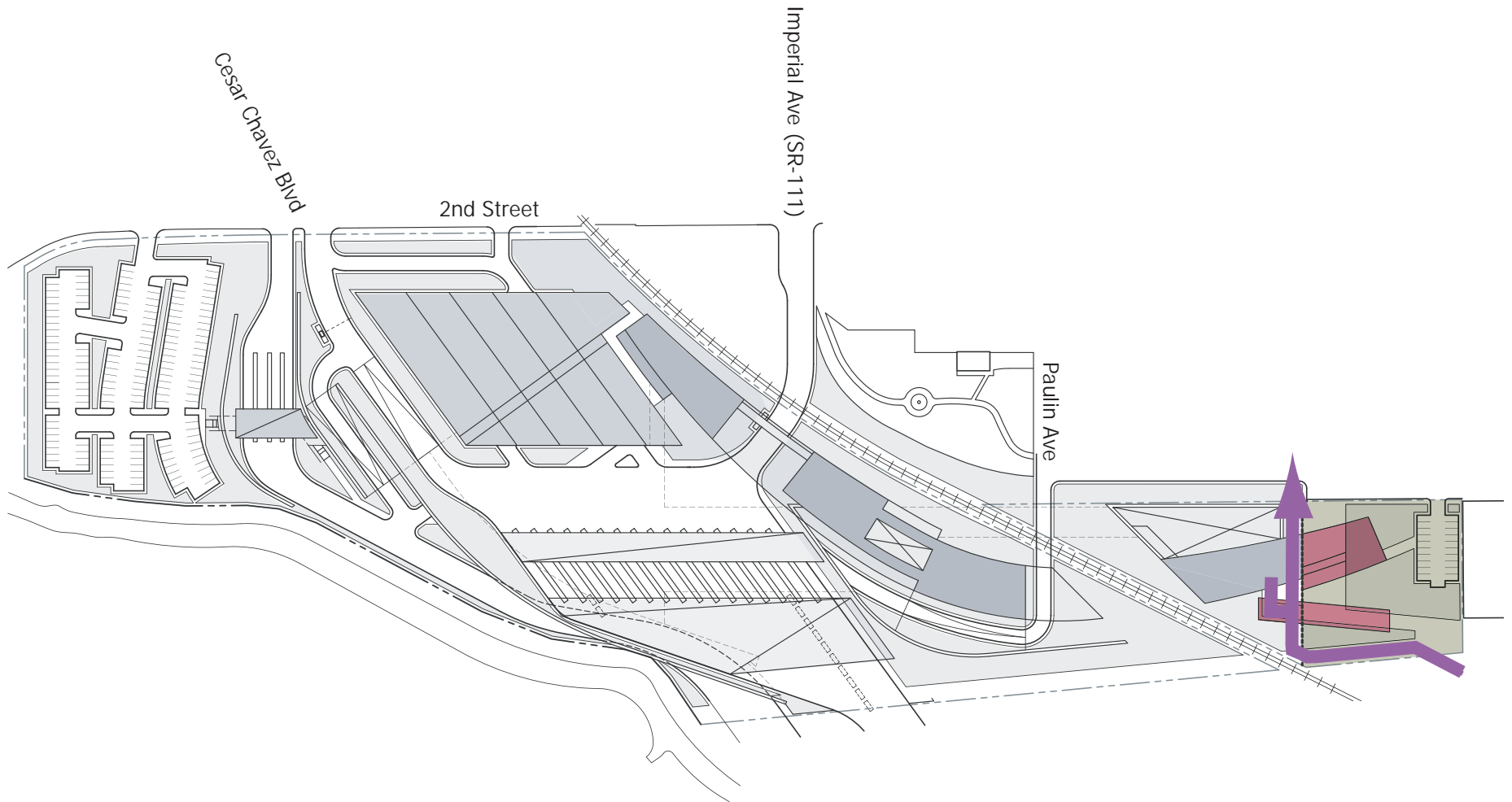


Figure 9-2  
Planned Pedestrian Facilities

↑  
N  
Not To Scale

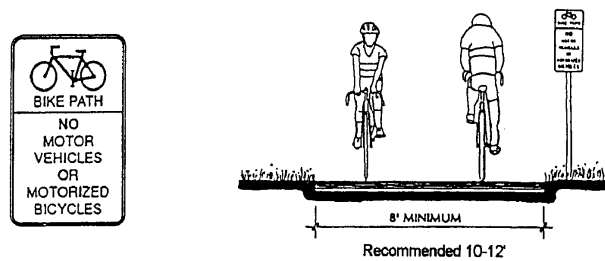
## BICYCLE

Bicycling is a fundamental form of transportation that is sometimes overlooked in this age of high-tech motorized travel. Yet this human-powered transportation mode is important to the success of the transportation system as a whole. All travelers are pedestrians at some point during their trip, even if it is between their parking space and their office building. Bicycling is considered a form of transportation that adds a viable alternative to freedom of mobility. Transportation planners and engineers have the same level of responsibility to provide for the safety of bicyclists and pedestrians as they do for motorists.

Bicycles can provide convenient transportation for destinations ranging between one and five miles. More experienced riders may be comfortable commuting up to 20 miles provided there are adequate bicycle facilities. According to the current City of Calexico Bicycle Master Plan, bikeways can be classified into three types:

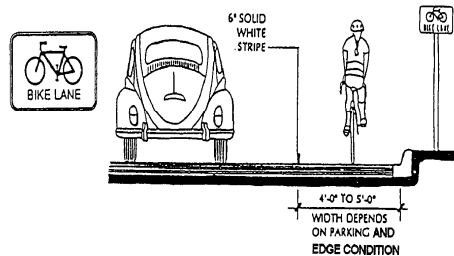
- Class I Bike Path - A bike path provides for bicycle travel on a paved right-of-way completely separated from any street or highway.

Class I Bike Path



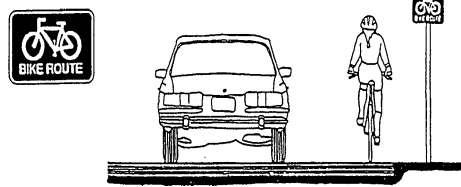
- Class II Bike Lane - These facilities are often referred to as bike lanes. Bike lanes provide a striped and stenciled lane for one-way travel on a street or highway. When properly designed, bike lanes help improve the visibility of bicyclists.

Class II Bike Lane



- Class III Bike Route – Generally referred to as a bike route. It provides for shared use with pedestrian or motor vehicle traffic and is identified only by signage. This is recommended when there is enough right-of-way for bicyclists and motorists to safely pass.

### Class III Bike Route



Any of these facilities can be implemented in the Calexico POE study area, depending on the predicted users, coordination with automobile traffic and several other factors. These factors include roadway classifications characteristics, Community Plan requirements, and availability of adequate right-of-way that can accommodate these facilities. On-road bicycle lanes (Class II) allow higher bicycle speeds compared to bicycle routes (Class III). Shared-use paths (Class I) are useful for children and relaxed recreational riders who are uncomfortable sharing the road with automobiles. Just as for sidewalks, connectivity in the bicycle network is very important. Riders of all abilities should be able to use the network.

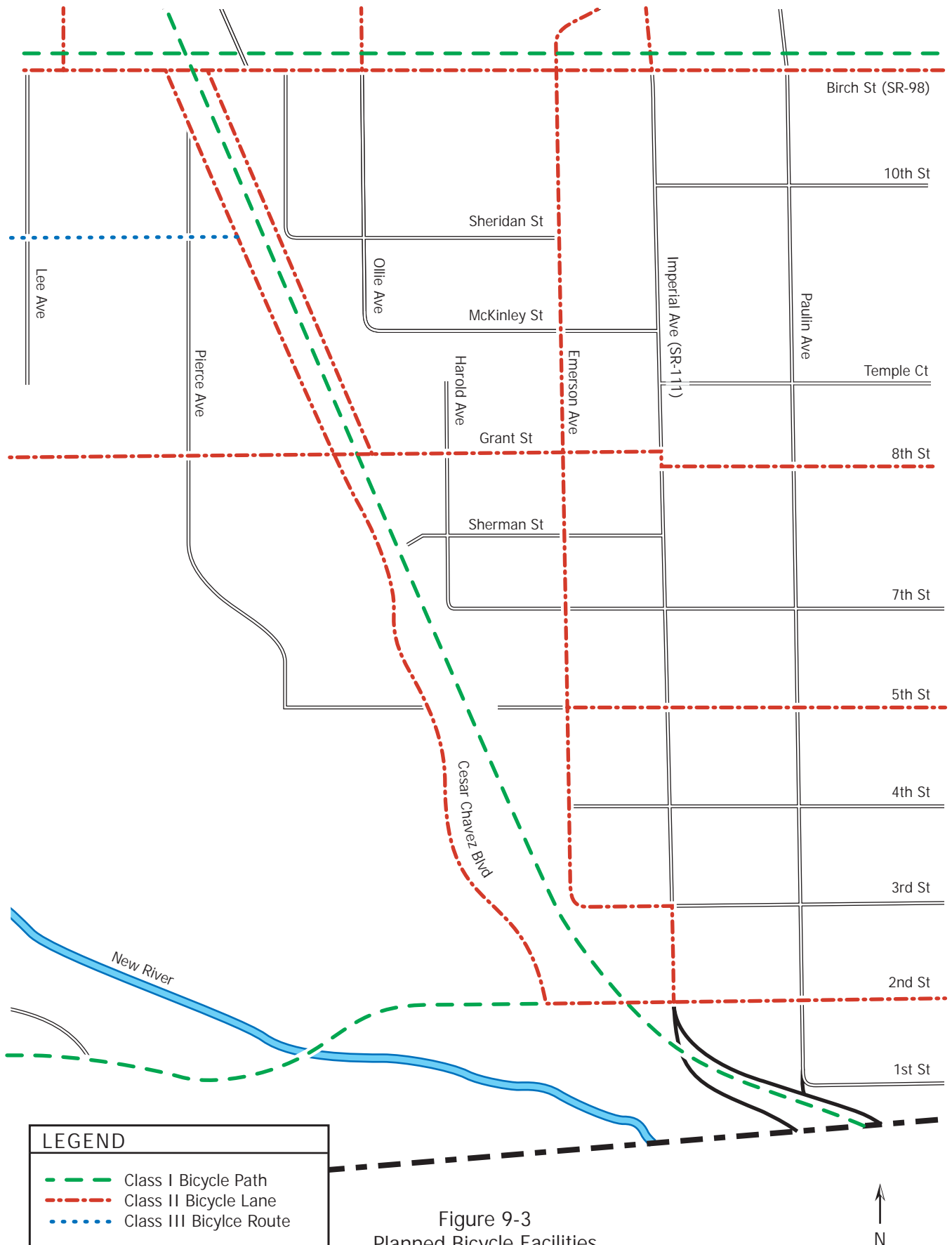
There are a number of bicycle land use attractors that are within a five mile study area. These land uses include commercial, mixed land uses, and the border crossing. The commercial land uses in the immediate vicinity Calexico POE border crossing consist primarily of restaurants and retail spaces. The surrounding communities are Heber and Calexico in the United States, and Santa Isabel and Mexicali in Mexico. The figure to the right shows these communities and their proximity to the Calexico POE border crossing. Bicycle facilities are necessary to provide bicycle connections between these communities.



### Existing Bicycle Facilities

The existing bike circulation network provided at and around the Calexico POE is not heavily utilized either as a result of the few accommodations being provided to bicyclist crossing the border or relatively few cyclists in the area. The number of cyclists crossing the border may be the result of the distance from the border crossing to final destination point and reliance on the modes of transportation. Bicyclists primarily bike on existing streets and sidewalks. Figure 9-3 shows the proposed bicycle facilities.





## **TRANSIT**

The purpose of the transportation system is to move people and goods from place to place. If people and goods are spread out among many vehicles, congestion results when there are more vehicles vying for space than there is roadway capacity. In order to increase the efficiency of the transportation system, public transit vehicles can be utilized to simultaneously accommodate the many people who are taking similar routes to common destinations. Public transit can also be used to provide assistance to those who are unable to drive, walk, or bicycle to the destinations they wish to reach.

The City of Calexico has limited choices in alternate modes of transportation within walking distance from the U.S./Mexico border crossing. The transit options include public bus service, private bus service and taxis illustrated on Figure 9-4.

### **Public Transit**

Public transportation services include ARC Paratransit Dial-a-Ride, a city maintained demand response transportation system provided for senior citizen and for the physically and mentally challenged. The Imperial Valley Transit, an inter-city fixed route bus system is located at the corner of Paulin Ave and 3rd St. There are approximately 28 routes with multiple daily trips Monday through Friday with reduced schedule on Saturday and no service offered on Sunday.

### **Private Transit Service**

Private transit service is another important transportation option currently provided at the LPOE border crossing. It is a flexible alternative to fixed route/schedule traditional transit, and utilizes vehicles such as charter buses and taxis. These services range from those allowing pick-up/drop-off along a defined route by passenger request to those which offer on-demand door-to-door service within a given geographic area. When traditional transit services are not financially feasible in a place or do not serve desired destinations, private transit service fills an important niche in helping customers maintain their health, independence, and self-sufficiency.

Private bus service is offered through Greyhound, Cruceros, Numero Uno Shuttle, and Pelucas Auto Transport. Cruceros bus line is a wholly owned subsidiary of Greyhound that provides cross-border bus service from various locations in Mexico to California and Texas. The Greyhound/Cruceros bus facility located at the corner of Paulin Ave and 1st St has three bays that provide a loading/unloading area for Greyhound passengers and private bus operators.

Taxi Services are offered by Border Cab Company, Calexico Taxi & Yellow Taxi Cab with Pickup/Drop-off located south of 1<sup>st</sup> St on Heffernan Ave.

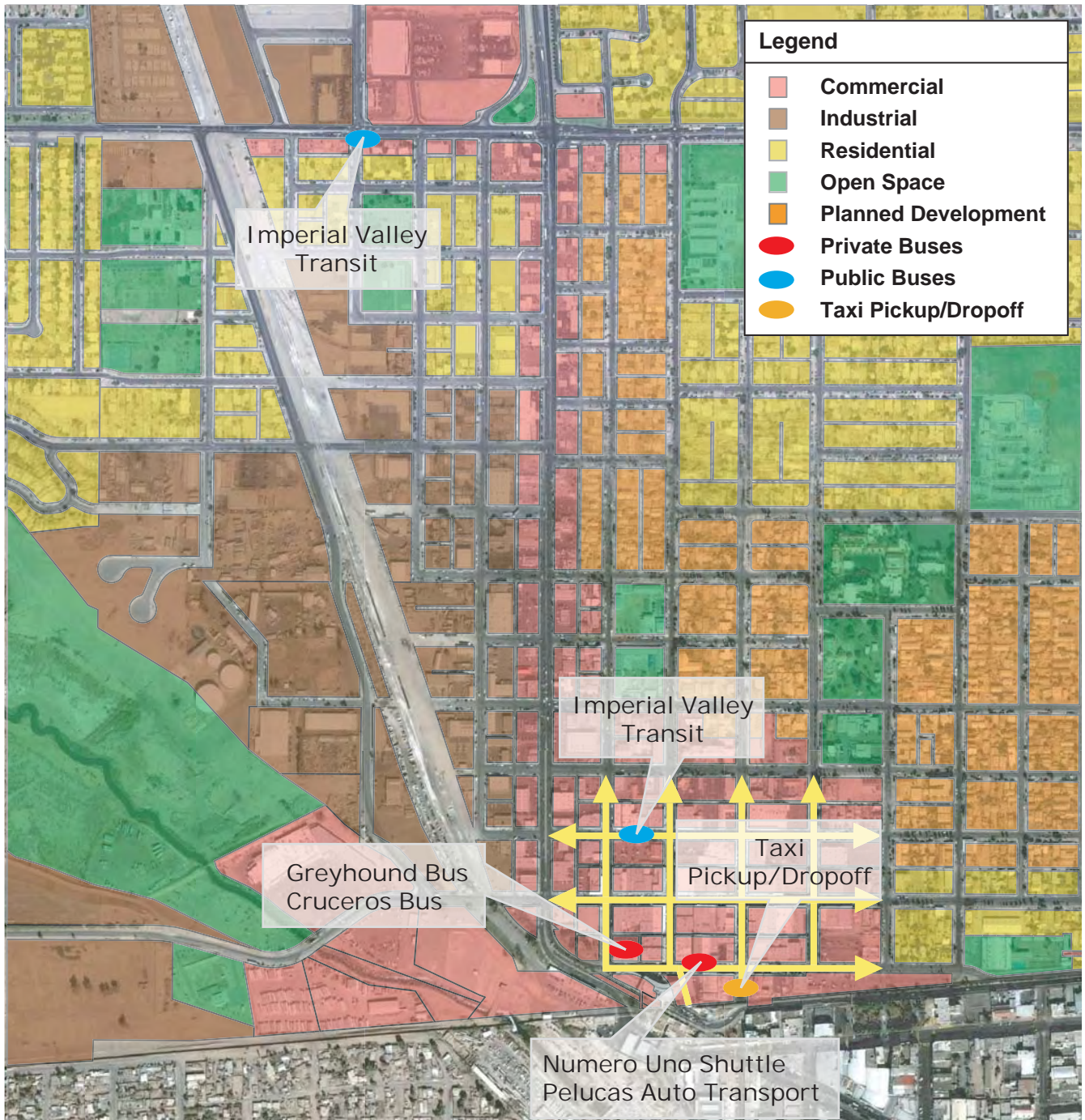
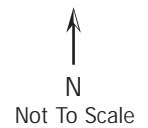


Figure 9-4  
Transit Facilities



## CHAPTER 10 RAILROAD CROSSINGS

The Union Pacific Railroad has a railway line that traverses Calexico. Within the project study area, the railroad tracks intersect with southbound SR-111 south of 2<sup>nd</sup> Street, 2<sup>nd</sup> Street between Cesar Chavez Boulevard and SR-111, Grant Street just east of Cesar Chavez Boulevard, and SR-98 just east of Cesar Chavez Boulevard.

Currently, a train travels through town at 3 AM and 7 AM. It takes approximately 20 minutes for a train to traverse the City. In the future, it is possible that Union Pacific will run more trains through town, therefore analysis was run during both peak hours assuming the worst case of a train arriving during the peak hour.

### ANALYSIS

The study network was analyzed under three scenarios to determine the impact on the network when a train travels through Calexico. In part 1 of the train scenario analysis, it was assumed that the train traveled through town for the complete analysis period (20 minutes). In part 2 of the train scenario analysis, it was assumed that there was no train for the complete analysis period (40 minutes). Combining parts 1 and 2 of the train scenario completes the analysis (20 minutes with train + 40 minutes no train = 1 peak hour).

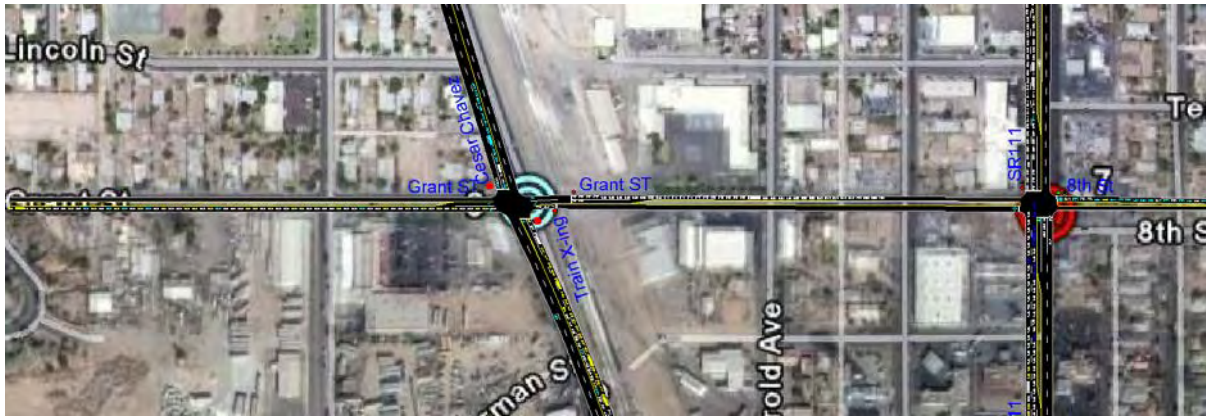
During the time that a train is present, Calexico is cut in half; the three major roads that allow east-west travel are blocked. When a train blocks SR-98 just east of Cesar Chavez Boulevard, traffic starts to back up in all directions. Vehicles traveling eastbound on SR-98 are blocked at Cesar Chavez Boulevard and back up past VV Williams Avenue. Vehicles traveling eastbound on SR-98 wishing to turn right onto Cesar Chavez Boulevard are prevented from turning due to the back up at the intersection. Vehicles traveling westbound on SR-98 are backed up starting at the tracks and continuing past the SR-98 / SR-111 intersection. Vehicles attempting to enter onto SR-98 from the side roads along SR-98 are prevented from turning due to the back up. Figure 10-1 illustrates the traffic queues during a train at the SR-98 railroad crossing.

Figure 10-1 – Train Crossing on SR-98



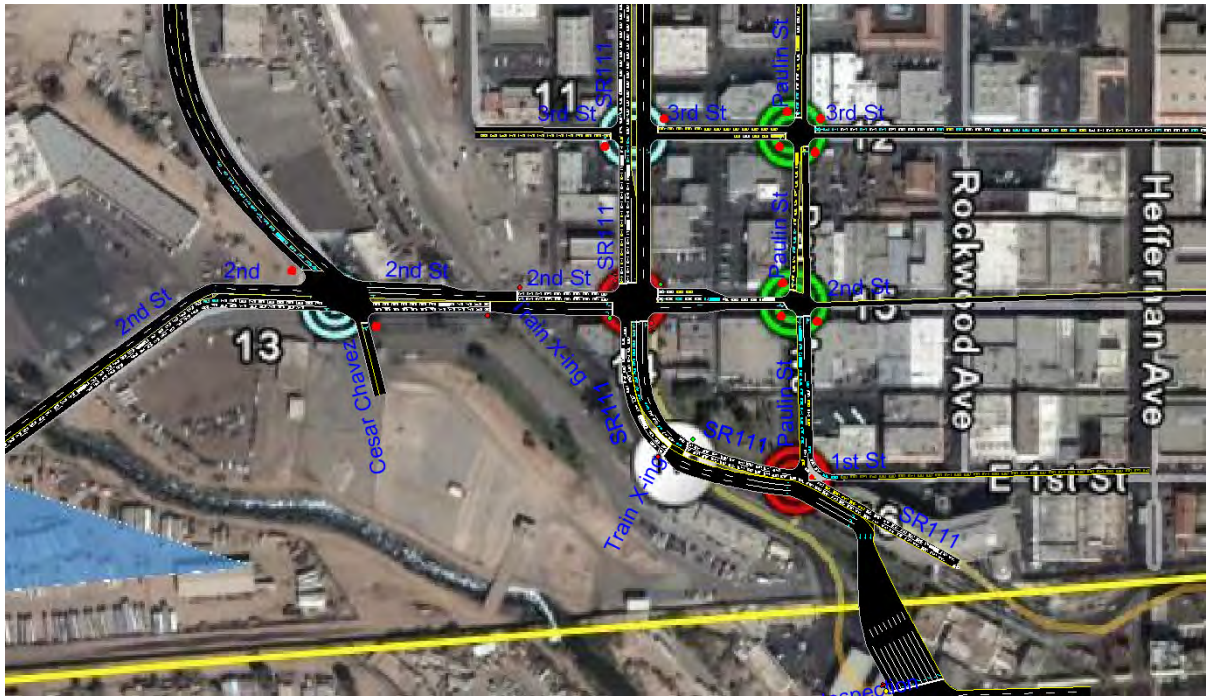
When a train blocks Grant Avenue just east of Cesar Chavez Boulevard, traffic starts to back up in all directions. Vehicles traveling eastbound on Grant Avenue are blocked at Cesar Chavez Boulevard. Vehicles traveling eastbound on Grant Avenue wishing to turn right onto Cesar Chavez Boulevard are prevented from turning due to the back up at the intersection of vehicles wishing to continue east. The eastbound left turn pocket is blocked preventing vehicles from turning north onto Cesar Chavez. Vehicles traveling westbound on Grant Avenue are backed up starting at the tracks and continuing to the SR-98 / SR-111 intersection. Vehicles attempting to enter onto Cesar Chavez Boulevard from the side roads along Grant Avenue are prevented from turning due to the back up. Figure 10-2 illustrates the traffic queues during a train at the Grant Avenue railroad crossing.

**Figure 10-2 – Train Crossing on Grant Avenue**



When a train blocks 2<sup>nd</sup> Street just east of Cesar Chavez Boulevard and SR-111 southbound just south of 2<sup>nd</sup> Street, traffic starts to back up in all directions. Vehicles traveling eastbound on 2<sup>nd</sup> Street are blocked past Cesar Chavez Boulevard. Vehicles traveling westbound on 2<sup>nd</sup> Street are backed up starting at the tracks and continuing past the 2<sup>nd</sup> Street / SR-111 intersection and continuing to back up on Paulin Street. Vehicles traveling northbound on SR-111 wishing to turn left onto 2<sup>nd</sup> Street are prevented from this movement resulting in queuing on SR-111 in the northbound direction. Vehicles traveling southbound on SR-111 wishing to turn right onto 2<sup>nd</sup> Street or continue south toward Mexico are prevented from these movements resulting in queuing on SR-111 in the southbound direction. Figure 10-3 illustrates the traffic queues during a train at the 2<sup>nd</sup> Street railroad crossing.

Figure 10-3 – Train Crossings on 2<sup>nd</sup> Street and SR-111 Southbound



The analysis is summarized in Tables 10-1 and 10-2. The delay is reported in the total delay experienced by all the vehicles attempting to enter the intersection in hours. Simulation results can be found in Appendix L.

**Table 10-1  
Train Scenario Intersection Delay Conditions – AM Peak Hour**

| Intersection                                | Existing |       |       | Near-Term LPOE Configuration |       |        |          |       |        |          |       |        | Horizon Year LPOE Configuration |        |        |          |        |        |
|---|----------|-------|-------|------------------------------|-------|--------|----------|-------|--------|----------|-------|--------|---------------------------------|--------|--------|----------|--------|--------|
|   |          |       |       | Existing                     |       |        | Phase 1  |       |        | Phase 2  |       |        | Existing                        |        |        | Phase 2  |        |        |
|   | No Train | Train | Total | No Train                     | Train | Total  | No Train | Train | Total  | No Train | Train | Total  | No Train                        | Train  | Total  | No Train | Train  | Total  |
| <i>AM Peak Hour</i>                         |          |       |       |                              |       |        |          |       |        |          |       |        |                                 |        |        |          |        |        |
| 1. Birch St (SR-98) / V.V. Williams Ave*    | 4.0      | 86.8  | 90.8  | 6.3                          | 133.9 | 140.2  | 4.7      | 129.6 | 134.3  | 21.7     | 136.8 | 158.5  | 182.6                           | 233.5  | 416.1  | 300.0    | 225.0  | 525.0  |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 7.1      | 16.2  | 23.3  | 150.0                        | 45.6  | 195.6  | 191.5    | 37.8  | 229.3  | 191.0    | 40.9  | 231.9  | 322.3                           | 61.9   | 384.2  | 273.1    | 59.4   | 332.5  |
| 3. Birch St (SR-98) / Ollie Ave             | 12.6     | 54.0  | 66.6  | 75.3                         | 66.9  | 142.2  | 120.9    | 73.5  | 194.4  | 109.2    | 71.5  | 180.7  | 172.4                           | 81.9   | 254.3  | 157.8    | 84.7   | 242.5  |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 24.4     | 87.1  | 111.5 | 229.1                        | 108.8 | 337.9  | 359.7    | 114.2 | 473.9  | 344.4    | 119.3 | 463.7  | 806.7                           | 252.2  | 1058.9 | 716.1    | 237.2  | 953.3  |
| 5. Imperial Ave (SR-111) / 10th St*         | 0.8      | 5.4   | 6.2   | 86.6                         | 16.0  | 102.6  | 74.7     | 18.1  | 92.8   | 79.6     | 2.4   | 82.0   | 225.4                           | 32.6   | 258.0  | 174.7    | 32.8   | 207.5  |
| 6. Cesar Chavez Blvd / Grant St*            | 1.1      | 34.2  | 35.3  | 108.4                        | 49.2  | 157.6  | 203.7    | 64.8  | 268.5  | 251.2    | 88.6  | 339.8  | 273.9                           | 97.2   | 371.1  | 360.2    | 126.2  | 486.4  |
| 7. Imperial Ave (SR-111) / Grant St         | 3.6      | 4.5   | 8.1   | 50.5                         | 13.4  | 63.9   | 43.3     | 17.5  | 60.8   | 44.8     | 11.0  | 55.8   | 90.7                            | 20.6   | 111.3  | 72.1     | 21.9   | 94.0   |
| 8. Imperial Ave (SR-111) / 7th St           | 1.4      | 0.4   | 1.8   | 22.5                         | 7.6   | 30.1   | 23.1     | 13.4  | 36.5   | 16.4     | 3.8   | 20.2   | 63.2                            | 13.3   | 76.5   | 47.9     | 9.4    | 57.3   |
| 9. Imperial Ave (SR-111) / 5th St           | 3.8      | 10.6  | 14.4  | 17.8                         | 30.5  | 48.3   | 18.9     | 37.5  | 56.4   | 10.2     | 28.6  | 38.8   | 59.1                            | 40.3   | 99.4   | 37.4     | 29.6   | 67.0   |
| 10. Imperial Ave (SR-111) / 4th St*         | 0.2      | 7.4   | 7.6   | 6.1                          | 10.7  | 16.8   | 7.8      | 10.0  | 17.8   | 4.7      | 8.4   | 13.1   | 33.5                            | 10.9   | 44.4   | 15.2     | 8.6    | 23.8   |
| 11. Imperial Ave (SR-111) / 3rd St*         | 0.3      | 13.4  | 13.7  | 3.2                          | 13.8  | 17.0   | 4.4      | 13.6  | 18.0   | 8.3      | 18.0  | 26.3   | 21.3                            | 13.7   | 35.0   | 13.2     | 13.6   | 26.8   |
| 12. Paulin Ave / 3rd St*                    | 0.6      | 12.2  | 12.8  | 1.0                          | 26.4  | 27.4   | 1.7      | 36.6  | 38.3   | 8.6      | 21.1  | 29.7   | 81.0                            | 71.3   | 152.3  | 116.1    | 68.7   | 184.8  |
| 13. Cesar Chavez Blvd / 2nd St**            | 0.4      | 2.1   | 2.5   | 6.8                          | 7.9   | 14.7   | 58.4     | 82.7  | 141.1  | 33.1     | 7.6   | 40.7   | 58.1                            | 9.9    | 68.0   | 42.8     | 14.9   | 57.7   |
| 14. Imperial Ave (SR-111) / 2nd St          | 6.1      | 21.5  | 27.6  | 10.8                         | 23.7  | 34.5   | 16.1     | 25.5  | 41.6   | 25.8     | 20.1  | 45.9   | 47.8                            | 38.5   | 86.3   | 42.4     | 32.8   | 75.2   |
| 15. Paulin Ave / 2nd St*                    | 0.9      | 11.9  | 12.8  | 1.3                          | 15.6  | 16.9   | 5.4      | 16.5  | 21.9   | 9.0      | 10.7  | 19.7   | 30.4                            | 34.9   | 65.3   | 21.0     | 10.7   | 31.7   |
| 16. 2nd Street / Employee Parking Lot*      | ----     | ----  | ----  | ----                         | ----  | ----   | ----     | ----  | ----   | 10.4     | 4.1   | 14.5   | ----                            | ----   | ----   | 28.3     | 23.1   | 51.4   |
| Simulation Network Delay                    | 71.1     | 510.7 | 581.8 | 788.2                        | 771.3 | 1559.5 | 1157.1   | 893.8 | 2050.9 | 1286.2   | 833.0 | 2119.2 | 2557.4                          | 1285.3 | 3842.7 | 2656.1   | 1317.8 | 3973.9 |

Note: Delay is reported in vehicle hours. Simulation Network Delay is the reported delay on all modeled simulation network features.

**Table 10-2  
Train Scenario Intersection Delay Conditions – PM Peak Hour**

| Intersection                                | Existing |       |       | Near-Term LPOE Configuration |        |        |          |        |        |          |        |        | Horizon Year LPOE Configuration |        |        |          |        |        |
|---|----------|-------|-------|------------------------------|--------|--------|----------|--------|--------|----------|--------|--------|---------------------------------|--------|--------|----------|--------|--------|
|   |          |       |       | Existing                     |        |        | Phase 1  |        |        | Phase 2  |        |        | Existing                        |        |        | Phase 2  |        |        |
|   | No Train | Train | Total | No Train                     | Train  | Total  | No Train | Train  | Total  | No Train | Train  | Total  | No Train                        | Train  | Total  | No Train | Train  | Total  |
| <i>PM Peak Hour</i>                         |          |       |       |                              |        |        |          |        |        |          |        |        |                                 |        |        |          |        |        |
| 1. Birch St (SR-98) / V.V. Williams Ave*    | 32.8     | 81.8  | 114.6 | 28.1                         | 117.5  | 145.6  | 3.7      | 130.2  | 133.9  | 112.6    | 120.3  | 232.9  | 334.6                           | 206.3  | 540.9  | 480.3    | 200.8  | 681.1  |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 29.2     | 10.5  | 39.7  | 85.8                         | 32.2   | 118.0  | 111.9    | 43.2   | 155.1  | 59.3     | 42.8   | 102.1  | 126.9                           | 50.9   | 177.8  | 140.9    | 41.2   | 182.1  |
| 3. Birch St (SR-98) / Ollie Ave             | 42.9     | 90.5  | 133.4 | 119.1                        | 110.4  | 229.5  | 167.6    | 102.5  | 270.1  | 199.1    | 109.0  | 308.1  | 202.1                           | 113.3  | 315.4  | 270.5    | 111.3  | 381.8  |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 34.0     | 73.3  | 107.3 | 412.6                        | 142.9  | 555.5  | 345.5    | 183.9  | 529.4  | 567.8    | 242.2  | 810.0  | 836.6                           | 279.3  | 1115.9 | 1078.9   | 351.9  | 1430.8 |
| 5. Imperial Ave (SR-111) / 10th St*         | 1.6      | 10.7  | 12.3  | 54.1                         | 12.1   | 66.2   | 46.0     | 2.4    | 48.4   | 34.4     | 0.1    | 34.5   | 50.6                            | 16.1   | 66.7   | 56.4     | 9.1    | 65.5   |
| 6. Cesar Chavez Blvd / Grant St*            | 1.1      | 30.4  | 31.5  | 243.3                        | 71.8   | 315.1  | 219.4    | 75.3   | 294.7  | 339.8    | 73.4   | 413.2  | 510.4                           | 142.2  | 652.6  | 493.0    | 168.7  | 661.7  |
| 7. Imperial Ave (SR-111) / Grant St         | 4.9      | 29.2  | 34.1  | 56.2                         | 35.4   | 91.6   | 74.1     | 31.6   | 105.7  | 18.5     | 3.1    | 21.6   | 65.1                            | 30.6   | 95.7   | 85.5     | 15.9   | 101.4  |
| 8. Imperial Ave (SR-111) / 7th St           | 4.4      | 33.3  | 37.7  | 38.4                         | 33.2   | 71.6   | 50.3     | 37.5   | 87.8   | 9.4      | 9.2    | 18.6   | 39.4                            | 33.9   | 73.3   | 58.6     | 25.1   | 83.7   |
| 9. Imperial Ave (SR-111) / 5th St           | 8.3      | 70.4  | 78.7  | 60.9                         | 80.1   | 141.0  | 182.8    | 84.1   | 266.9  | 10.6     | 72.2   | 82.8   | 100.3                           | 83.8   | 184.1  | 165.1    | 87.8   | 252.9  |
| 10. Imperial Ave (SR-111) / 4th St*         | 0.9      | 22.1  | 23.0  | 24.6                         | 27.3   | 51.9   | 33.8     | 25.6   | 59.4   | 0.7      | 29.6   | 30.3   | 18.6                            | 35.5   | 54.1   | 47.0     | 37.1   | 84.1   |
| 11. Imperial Ave (SR-111) / 3rd St*         | 1.1      | 25.9  | 27.0  | 29.8                         | 22.0   | 51.8   | 70.2     | 26.7   | 96.9   | 1.5      | 13.9   | 15.4   | 78.1                            | 36.1   | 114.2  | 39.8     | 25.2   | 65.0   |
| 12. Paulin Ave / 3rd St*                    | 1.2      | 33.5  | 34.7  | 37.9                         | 75.1   | 113.0  | 44.9     | 64.7   | 109.6  | 1.9      | 73.5   | 75.4   | 157.8                           | 123.2  | 281.0  | 380.5    | 127.3  | 507.8  |
| 13. Cesar Chavez Blvd / 2nd St**            | 0.9      | 6.2   | 7.1   | 130.2                        | 19.3   | 149.5  | 196.5    | 85.3   | 281.8  | 52.5     | 25.4   | 77.9   | 145.0                           | 19.7   | 164.7  | 117.6    | 33.4   | 151.0  |
| 14. Imperial Ave (SR-111) / 2nd St          | 9.8      | 20.4  | 30.2  | 43.6                         | 28.8   | 72.4   | 54.1     | 27.2   | 81.3   | 9.2      | 13.9   | 23.1   | 125.4                           | 46.0   | 171.4  | 77.0     | 36.8   | 113.8  |
| 15. Paulin Ave / 2nd St*                    | 1.4      | 12.0  | 13.4  | 8.1                          | 17.7   | 25.8   | 8.6      | 15.9   | 24.5   | 2.7      | 10.7   | 13.4   | 21.8                            | 38.4   | 60.2   | 22.9     | 11.0   | 33.9   |
| 16. 2nd Street / Employee Parking Lot*      | ----     | ----  | ----  | ----                         | ----   | ----   | ----     | ----   | ----   | 76.1     | 65.0   | 141.1  | ----                            | ----   | ----   | 299.4    | 116.3  | 415.7  |
| Simulation Network Delay                    | 189.6    | 677.9 | 867.5 | 1421.2                       | 1073.5 | 2494.7 | 1772.7   | 1201.8 | 2974.5 | 1620.9   | 1180.8 | 2801.7 | 2899.8                          | 1640.0 | 4539.8 | 4162.7   | 1731.9 | 5894.6 |

Note: Delay is reported in vehicle hours. Simulation Network Delay is the reported delay on all modeled simulation network features.



## CHAPTER 11 BORDER QUEUING

Construction of the Calexico West Border Station crossing will require coordination of the proposed facilities of Mexico and the United States. Flow of border crossing vehicles may be affected by constraints of various features related to the LPOE such as:

- Inspection Facilities
- Number of lanes on the segment approaching the border
- Intersection operations

Analysis provided in this chapter identifies the features of the LPOE and surrounding circulation network that is constraining the flow of border crossing vehicles traveling between the United States and Mexico. This will ensure that the facilities are adequately evaluated as a system rather than on a stand-alone basis for a more comprehensive analysis of LPOE queuing.

### SOUTHBOUND QUEUING

At the Calexico West LPOE, Mexico will utilize a computerized inspection system called SIAVE. Based on a SIAVE inspection rate of 12 seconds per vehicle, Mexico will be able to process vehicles at a rate of 300 vehicles per hour for each lane using the SIAVE computerized inspection system (1 vehicle / 12 seconds X 3,600 seconds / 1 hour = 300 vehicles per hour). During Phase 1 of the project the southbound crossing location will remain unchanged and it is assumed Mexico will be operating 10 SIAVE inspection lanes. During Phase 2 of the project the southbound crossing location will be moved to the west adjacent to the new northbound crossing, and it is assumed Mexico will be operating 11 SIAVE lanes at this new LPOE location.

#### Mexican Inspection

The capacity of the southbound Mexican SIAVE vehicle inspection is 3,000 vehicles per hour (300 vehicles per hour X 10 inspection lanes = 3,000 vehicles per hour) during Phase 1 of the project. The maximum peak hour demand forecasted for the southbound Calexico West LPOE Phase 1 conditions is 2,149 vehicles per hour. This occurs for the year 2015 during the PM peak period. By comparing the peak demand to the capacity of the Mexican vehicle inspections (demand of 2,149 vehicles per hour < capacity of 3,000 vehicles per hour), this shows that southbound SIAVE vehicle inspections performed by Mexico under Phase 1 conditions will not generate a substantial queue because the peak vehicular demand is less than capacity of the SIAVE inspection.

The capacity of the southbound Mexican SIAVE vehicle inspection is 3,300 vehicles per hour (300 vehicles per hour X 11 inspection lanes = 3,300 vehicles per hour) during Phase 2 of the project. The maximum peak hour demand forecasted for the southbound Calexico West LPOE Phase 2 conditions is 2,407 vehicles per hour. This occurs for the year 2035 during the PM peak period. By comparing the peak demand to the capacity of the Mexican vehicle inspections (demand of 2,407 vehicles per hour < capacity of 3,300 vehicles per hour), this shows that southbound SIAVE vehicle inspections performed by Mexico under Phase 2 conditions will not generate a substantial queue because the peak vehicular demand is less than capacity of the SIAVE inspection.

## Southbound Segment

Phase 2 of the proposed project includes the option of constructing an eight lane segment versus three lane segment connecting the intersection of 2<sup>nd</sup> Street at Cesar Chavez to the Mexican Inspection facility in the southbound direction. The *Highway Capacity Manual 2000* recommends an uninterrupted flow rate (capacity) of 1,800 vehicles per hour per lane (HCM 2000, 10-24). Therefore, three-lane configuration would yield a southbound lane capacity of 5,400 vehicles per hour (3 lanes x 1,800 vehicles per hour per lane = 5,400 vehicle per hour capacity). The eight lane configuration would yield a southbound lane capacity of 14,400 vehicles per hour (8 lanes x 1,800 vehicles per hour per lane = 14,400 vehicle per hour capacity). By comparing the peak demand to the capacity of the southbound lanes (demand of 2,407 vehicles per hour < capacity of 5,400 vehicles per hour; and demand of 2,407 vehicles per hour < capacity of 14,400 vehicles per hour), this shows that either of the southbound lane configurations will not generate a substantial queue because the peak demand is less than both of the proposed capacities. Furthermore, any number of lanes greater than three would provide ample segment capacity for southbound vehicles and will not generate a substantial queue due to the southbound segment facility.

## Intersection Queuing

The intersection just north of the Calexico West LPOE, Cesar Chavez Boulevard / 2<sup>nd</sup> Street, would provide a direct constraint to the LPOE. Other local circulation features may also provide constraints to the southbound flow of vehicles crossing the LPOE.

Thus far capacity has been shown by simple calculations using the number of lanes and the associated flow rates. However, the departing capacity/flow of a signalized intersection is more complex and requires the use of simulation software. As can be seen in Figures 11-1 and 11-2, queues develop at the Cesar Chavez Boulevard / 2<sup>nd</sup> Street intersection just before heading south toward Mexico. These queues extend northward along Imperial Avenue and Cesar Chavez Boulevard, and also along 2<sup>nd</sup> Street toward the east and west.

## Simulation Results

The simulations for local circulation queuing evaluated the three facility types: the Mexican Inspection facility, the three and eight lane segment, and the intersection of Cesar Chavez Boulevard / 2<sup>nd</sup> Street. By analyzing these facilities as a system, rather than stand alone components, a comprehensive evaluation of southbound queuing can be determined. As can be seen in Figures 11-1 and 11-2 and Tables 11-1 and 11-2, the effect of the proposed three southbound lanes as compared to the eight southbound lanes is substantially the same. Also, the intersection of Cesar Chavez Boulevard / 2<sup>nd</sup> Street appears to be the constraint for LPOE vehicle flow across the border due to the queuing at that intersection and very little queue at Mexico's inspection facility. Simulation results can be found in Appendix M.

## United States Ad-Hoc Inspection

Ad-hoc inspections are inspections conducted by the United States that are performed on an as-needed basis. During ad-hoc inspections the southbound lanes are periodically blocked and a group of vehicles are directed to an ancillary inspection facility located adjacent to the southbound lanes. Once the group of vehicles exit into the ancillary facility, the southbound lanes are reopened allowing vehicles to continue to head southbound in to Mexico; however, the existing three southbound lanes are merged into two lanes during ad-hoc inspections. The group of vehicles are then inspected in the ancillary facility. Once the ad-hoc inspection of these vehicles is complete, the vehicles continue south and merge with southbound traffic.

The capacity of the current southbound ad-hoc vehicle inspection process is 1,260 vehicles per hour (based on field observations performed by KOA Corporation). The maximum peak hour demand for the southbound Calexico West LPOE is 1,871 vehicles per hour occurring during the PM peak hour.. By comparing the peak demand to the capacity of the United States ad-hoc vehicle inspections (demand of 1,871 vehicles per hour > maximum capacity of 1,260 vehicles per hour), this shows that southbound ad-hoc vehicle inspections performed by the United States under the existing conditions would generate a substantial queue because the peak vehicular demand is more than capacity of the ad-hoc inspection.

During Phase 1 of the project the United States will continue to perform southbound ad-hoc inspections. The maximum peak hour demand forecasted for the southbound Calexico West LPOE Phase 1 conditions is 2,149 vehicles per hour occurring in the year 2015 PM peak hour. In Phase 1, the capacity of the southbound ad-hoc inspection process will need to be increased by a factor of 1.7 in order to accommodate the forecasted peak demand.

During Phase 2 of the project southbound ad-hoc inspections will also be performed by the United States at the new LPOE location. The maximum peak hour demand forecasted for the southbound Calexico West LPOE Phase 2 conditions is 2,407 vehicles per hour occurring in the year 2035 PM peak hour. In Phase 2, the capacity of the southbound ad-hoc inspection process will need to be increased by a factor of 1.9 in order to accommodate the forecasted peak demand.

Figure 11-1 – Year 2035 PM Peak Hour  
3 Southbound Lanes

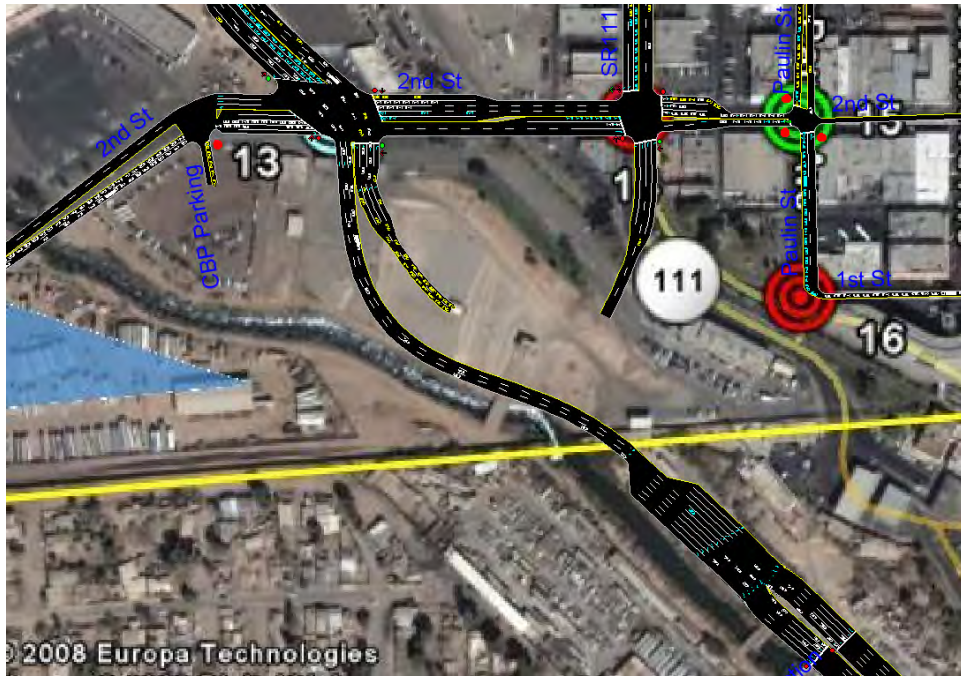


Figure 11-2 – Year 2035 PM Peak Hour  
8 Southbound Lanes



**Table 11-1  
Mexico Southbound Inspection Intersection Delay Conditions – AM Peak Hour**

| Intersection                                | Existing  | Near-Term LPOE Configuration |           |           |           | Horizon Year LPOE Configuration |           |           |                  |                  |
|---|-----------|------------------------------|-----------|-----------|-----------|---------------------------------|-----------|-----------|------------------|------------------|
|   |           | Existing                     | Phase 1   | Phase 2   | Phase 2   | Existing                        | Phase 2   | Phase 2   | Phase 2 Improved | Phase 2 Improved |
|   | SB 3 Lane | SB 3 Lane                    | SB 3 Lane | SB 3 Lane | SB 8 Lane | SB 3 Lane                       | SB 3 Lane | SB 8 Lane | SB 3 Lane        | SB 8 Lane        |
| <i>AM Peak Hour</i>                         |           |                              |           |           |           |                                 |           |           |                  |                  |
| 1. Birch St (SR-98) / VV Williams Ave*      | 6.4       | 43.6                         | 39.6      | 41.2      | 19.7      | 670.3                           | 437.4     | 434.9     | 20.8             | 54.3             |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 8.1       | 325.1                        | 307.8     | 333.0     | 348.9     | 677.7                           | 587.8     | 599.7     | 257.6            | 183.0            |
| 3. Birch St (SR-98) / Ollie Ave             | 18.5      | 144.3                        | 137.6     | 143.2     | 157.5     | 341.9                           | 255.1     | 308.2     | 76.8             | 60.4             |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 39.5      | 661.1                        | 753.6     | 912.5     | 932.1     | 1644.4                          | 1696.9    | 1703.6    | 607.6            | 492.2            |
| 5. Imperial Ave (SR-111) / 10th St*         | 1.3       | 108.5                        | 191.2     | 201.8     | 203.2     | 429.2                           | 453.6     | 451.6     | 25.2             | 18.1             |
| 6. Cesar Chavez Blvd / Grant St*            | 1.6       | 353.2                        | 481.4     | 478.4     | 505.0     | 827.7                           | 852.6     | 823.1     | 193.1            | 201.0            |
| 7. Imperial Ave (SR-111) / Grant St         | 5.8       | 72.8                         | 99.8      | 94.3      | 90.2      | 170.9                           | 130.4     | 171.5     | 13.4             | 16.5             |
| 8. Imperial Ave (SR-111) / 7th St           | 2.0       | 35.3                         | 73.3      | 40.6      | 22.6      | 181.8                           | 129.2     | 129.1     | 8.3              | 3.9              |
| 9. Imperial Ave (SR-111) / 5th St           | 6.5       | 36.1                         | 103.3     | 87.9      | 60.6      | 175.6                           | 128.9     | 157.5     | 60.5             | 78.2             |
| 10. Imperial Ave (SR-111) / 4th St*         | 0.4       | 16.2                         | 43.5      | 16.2      | 13.5      | 89.0                            | 62.2      | 70.2      | 11.7             | 16.4             |
| 11. Imperial Ave (SR-111) / 3rd St*         | 0.5       | 11.0                         | 42.3      | 29.3      | 27.8      | 48.8                            | 43.2      | 48.1      | 22.6             | 32.2             |
| 12. Paulin Ave / 3rd St*                    | 0.9       | 16.0                         | 62.7      | 79.4      | 52.3      | 285.4                           | 314.7     | 338.6     | 29.2             | 45.5             |
| 13. Cesar Chavez Blvd / 2nd St**            | 0.6       | 12.4                         | 220.9     | 59.5      | 51.9      | 51.3                            | 104.1     | 97.4      | 135.4            | 138.6            |
| 14. Imperial Ave (SR-111) / 2nd St          | 8.6       | 25.5                         | 51.3      | 45.6      | 74.7      | 123.0                           | 97.5      | 104.0     | 58.1             | 45.9             |
| 15. Paulin Ave / 2nd St*                    | 1.4       | 3.9                          | 29.1      | 20.5      | 18.1      | 86.8                            | 30.7      | 31.4      | 31.8             | 27.7             |
| 16. 2nd Street / Employee Parking Lot*      | ----      | ----                         | ----      | 41.8      | 38.2      | ----                            | 115.6     | 82.8      | 0.4              | 0.3              |
| Simulation Network Delay                    | 107.6     | 1894.2                       | 2806.8    | 2986.6    | 2941.2    | 6143.6                          | 6073.0    | 6191.2    | 1645.4           | 1492.3           |

Note: Delay is reported in vehicle hours. Simulation Network Delay is the reported delay on all modeled simulation network features.

**Table 11-2  
Mexico Southbound Inspection Intersection Delay Conditions – PM Peak Hour**

| Intersection                                | Existing  | Near-Term LPOE Configuration |           |           |           | Horizon Year LPOE Configuration |           |           |                  |                  |
|---|-----------|------------------------------|-----------|-----------|-----------|---------------------------------|-----------|-----------|------------------|------------------|
|   |           | Existing                     | Phase 1   | Phase 2   | Phase 2   | Existing                        | Phase 2   | Phase 2   | Phase 2 Improved | Phase 2 Improved |
|   | SB 3 Lane | SB 3 Lane                    | SB 3 Lane | SB 3 Lane | SB 8 Lane | SB 3 Lane                       | SB 3 Lane | SB 8 Lane | SB 3 Lane        | SB 8 Lane        |
| <i>PM Peak Hour</i>                         |           |                              |           |           |           |                                 |           |           |                  |                  |
| 1. Birch St (SR-98) / VV Williams Ave*      | 121.9     | 258.8                        | 7.3       | 326.9     | 258.8     | 732.4                           | 1016.1    | 960.8     | 146.7            | 107.7            |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 53.9      | 148.7                        | 187.1     | 134.3     | 124.8     | 277.9                           | 284.0     | 300.2     | 160.8            | 186.2            |
| 3. Birch St (SR-98) / Ollie Ave             | 60.1      | 317.5                        | 313.0     | 342.7     | 441.3     | 488.3                           | 502.8     | 529.1     | 93.4             | 61.0             |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 44.6      | 670.0                        | 885.8     | 1188.0    | 1378.5    | 2098.4                          | 2416.0    | 2312.8    | 1190.9           | 1277.6           |
| 5. Imperial Ave (SR-111) / 10th St*         | 2.2       | 97.5                         | 99.7      | 93.6      | 85.3      | 92.7                            | 72.0      | 120.4     | 20.3             | 5.7              |
| 6. Cesar Chavez Blvd / Grant St*            | 1.8       | 387.5                        | 606.9     | 627.3     | 616.8     | 1050.3                          | 985.3     | 984.8     | 770.7            | 597.3            |
| 7. Imperial Ave (SR-111) / Grant St         | 5.3       | 162.9                        | 232.1     | 144.7     | 128.0     | 269.4                           | 217.7     | 274.6     | 30.8             | 27.0             |
| 8. Imperial Ave (SR-111) / 7th St           | 6.8       | 87.0                         | 153.8     | 63.1      | 70.9      | 183.7                           | 151.4     | 196.3     | 37.7             | 73.9             |
| 9. Imperial Ave (SR-111) / 5th St           | 12.7      | 190.8                        | 420.1     | 124.4     | 111.2     | 259.0                           | 414.4     | 437.7     | 218.3            | 315.1            |
| 10. Imperial Ave (SR-111) / 4th St*         | 1.4       | 74.7                         | 112.2     | 48.5      | 38.1      | 107.8                           | 159.4     | 137.8     | 36.8             | 44.6             |
| 11. Imperial Ave (SR-111) / 3rd St*         | 1.5       | 113.9                        | 139.0     | 30.1      | 19.4      | 170.9                           | 80.6      | 96.3      | 68.4             | 59.5             |
| 12. Paulin Ave / 3rd St*                    | 1.8       | 171.8                        | 179.9     | 175.1     | 132.8     | 482.9                           | 846.1     | 742.3     | 504.6            | 548.3            |
| 13. Cesar Chavez Blvd / 2nd St**            | 1.3       | 222.1                        | 443.0     | 89.7      | 129.4     | 282.7                           | 281.9     | 263.0     | 174.8            | 153.5            |
| 14. Imperial Ave (SR-111) / 2nd St          | 15.2      | 78.9                         | 116.4     | 35.6      | 36.1      | 261.9                           | 153.7     | 151.8     | 50.0             | 56.5             |
| 15. Paulin Ave / 2nd St*                    | 2.5       | 23.9                         | 27.6      | 27.2      | 22.2      | 69.3                            | 33.4      | 34.0      | 34.9             | 35.1             |
| 16. 2nd Street / Employee Parking Lot*      | ----      | ----                         | ----      | 175.8     | 235.9     | ----                            | 668.0     | 634.4     | 315.3            | 223.2            |
| Simulation Network Delay                    | 355.1     | 3249.1                       | 4450.3    | 4030.2    | 4240.2    | 7409.7                          | 9148.6    | 8926.5    | 4127.6           | 4035.2           |

Note: Delay is reported in vehicle hours. Simulation Network Delay is the reported delay on all modeled simulation network features.

## **NORTHBOUND QUEUING**

At the Calexico West LPOE, the United States will construct the new LPOE in two phases. The first phase will allow operations at the existing LPOE to remain unchanged while only ten lanes will be constructed at the new LPOE to the west; twenty northbound vehicle inspection lanes will be operational during the first phase. The second phase will discontinue northbound vehicle inspections at the existing LPOE while six additional lanes will be constructed at the new LPOE to the west; sixteen northbound vehicle inspection lanes will be operational during the second phase. Also, during both phases at the new LPOE, the secondary inspection will utilize a computerized inspection system called Z-Portal.

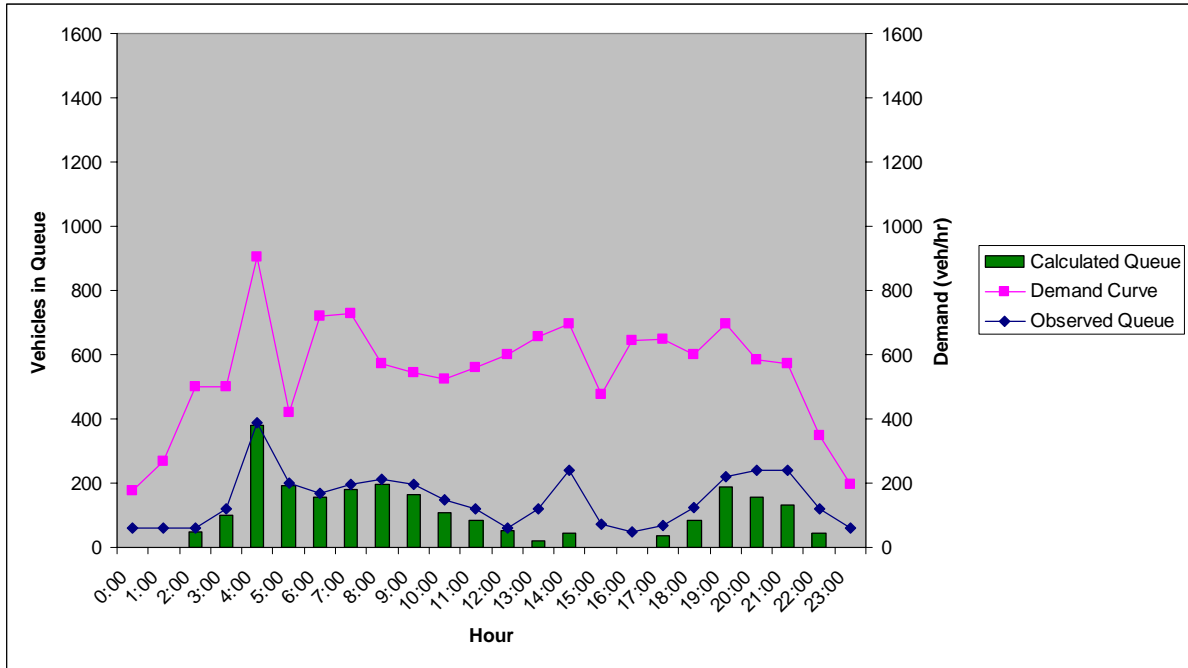
### **United States Primary Inspection**

The capacity of the northbound Calexico West LPOE Phase 1 primary vehicle inspection is 1,550 vehicles per hour (775 vehicles per hour / 10 inspection lanes X 20 inspection lanes = 1,550 vehicles per hour). The maximum peak hour demand forecasted for the northbound Calexico West LPOE Phase 1 conditions is 1,355 vehicles per hour. This occurs for the year 2015 during the AM peak period. Figure 11-6 graphically displays the maximum demand curve for Phase 1 of the project. By comparing the peak demand to the capacity of the United States primary vehicle inspections (demand of 1,355 vehicles per hour < capacity of 1,550 vehicles per hour), this shows that northbound primary vehicle inspections performed by the United States under Phase 1 conditions will not generate a substantial queue because the peak vehicular demand is less than capacity of the primary inspection.

The capacity of the northbound Calexico West LPOE Phase 2 primary vehicle inspection is 1,240 vehicles per hour (775 vehicles per hour / 10 inspection lanes X 16 inspection lanes = 1,240 vehicles per hour). The maximum peak hour demand forecasted for the northbound Calexico West LPOE Phase 2 conditions is 1,520 vehicles per hour. This occurs for the year 2035 during the AM peak period. Figure 11-9 graphically displays the maximum demand curve for Phase 2 of the project. By comparing the peak demand to the capacity of the United States primary vehicle inspections (demand of 1,520 vehicles per hour > capacity of 1,240 vehicles per hour), this shows that northbound primary vehicle inspections performed by the United States under Phase 2 conditions has the potential to generate a substantial queue because the peak vehicular demand is greater than capacity of the primary inspection. However, as can be seen in Figure 11-9 this only occurs during one hour at 4 AM. It would also be expected that vehicles arriving at 4 AM under the capacity constrained existing conditions would depart for the United States from Mexico at a more convenient time due to the excess capacity with the project throughout the morning, thus dissipating the queue by a shift in the demand curve (demand curve shifts are not included as part of this analysis).

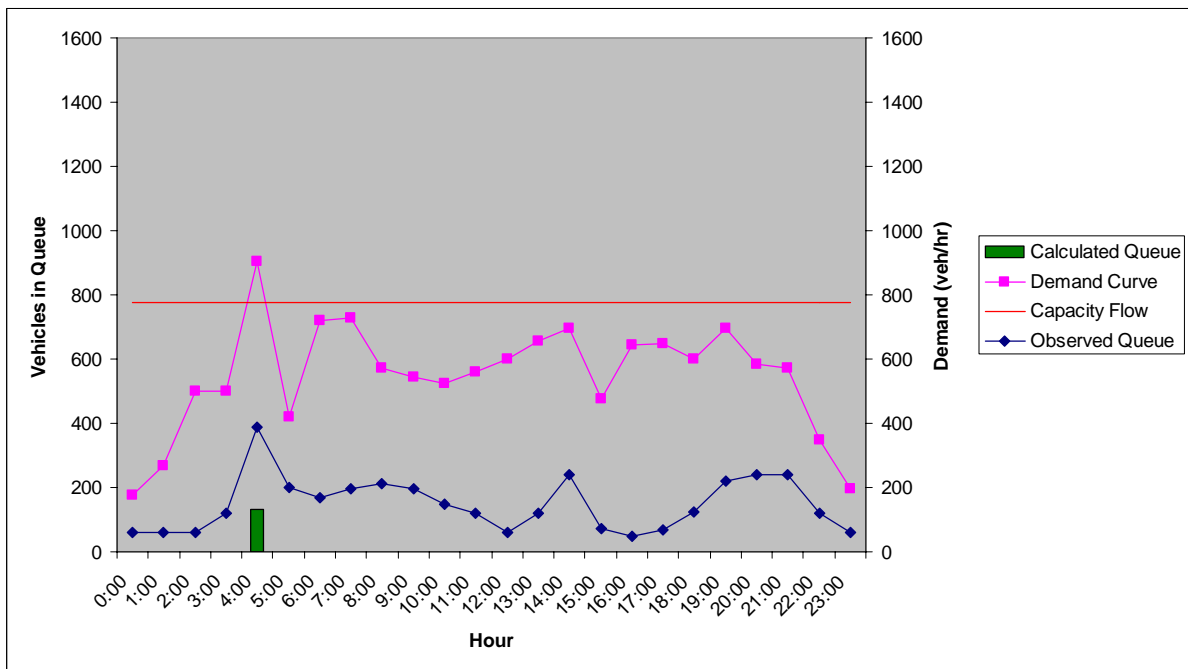
Figures 11-3 through 11-9 show the calculated primary vehicle inspection queues. Calculated queues may not represent actual future queues because vehicle arrivals are challenging to forecast due to numerous factors involved as can be seen by comparing the observed queue to the calculated queue in Figure 11-3 and then to the calculated queue for analysis in Figure 11-4. For this analysis, existing vehicle arrival patterns were used for all demand forecasts and calculated queues. The calculated vehicle queues presented are primarily for a relative comparison between scenarios. Additionally, where “zero” queue is reported, in reality, a nominal queue would be expected if existing vehicle arrival patterns are maintained.

**Figure 11-3**  
**Existing Northbound Queue – Observed**



Note: capacity flow is dependent on number of inspection lanes open

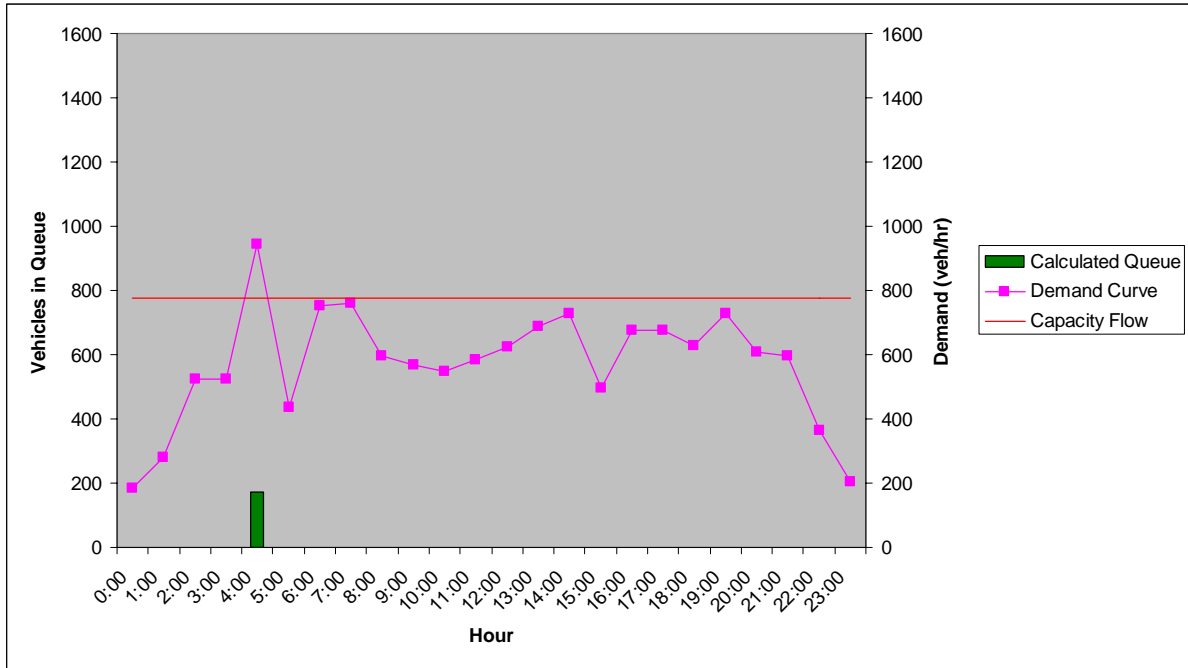
**Figure 11-4**  
**Existing Northbound Queue – Calculated**



Note: 10 inspection lanes = 775 veh/hr capacity flow

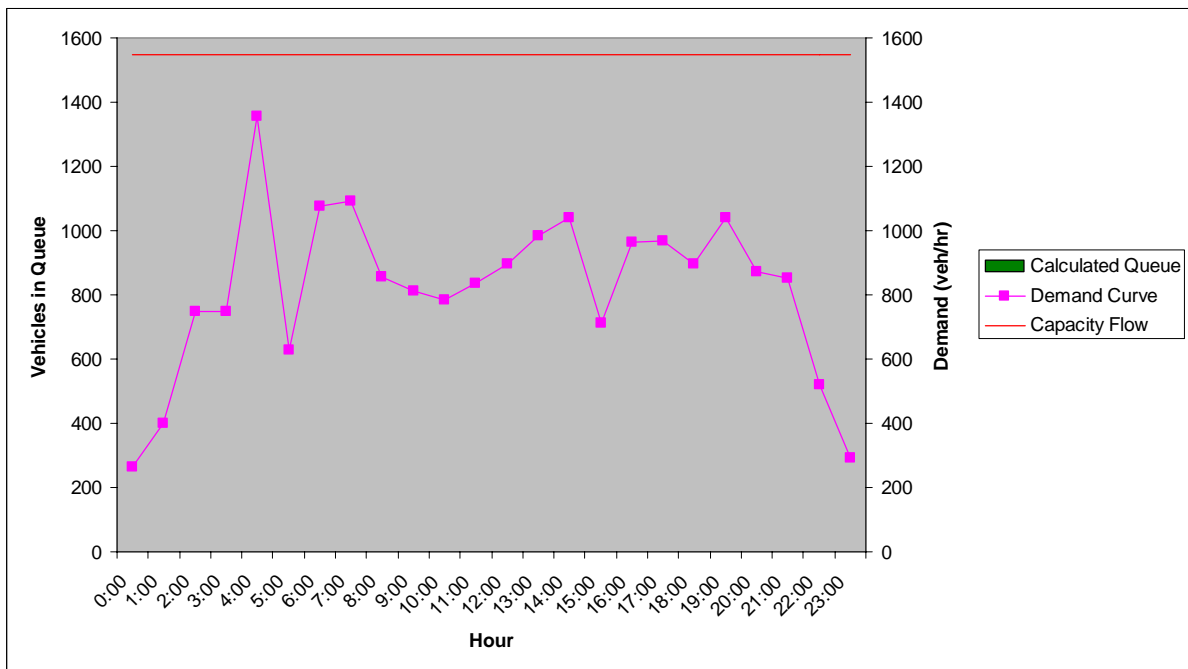


**Figure 11-5**  
Near-Term Northbound Calculated Queue – Existing Configuration



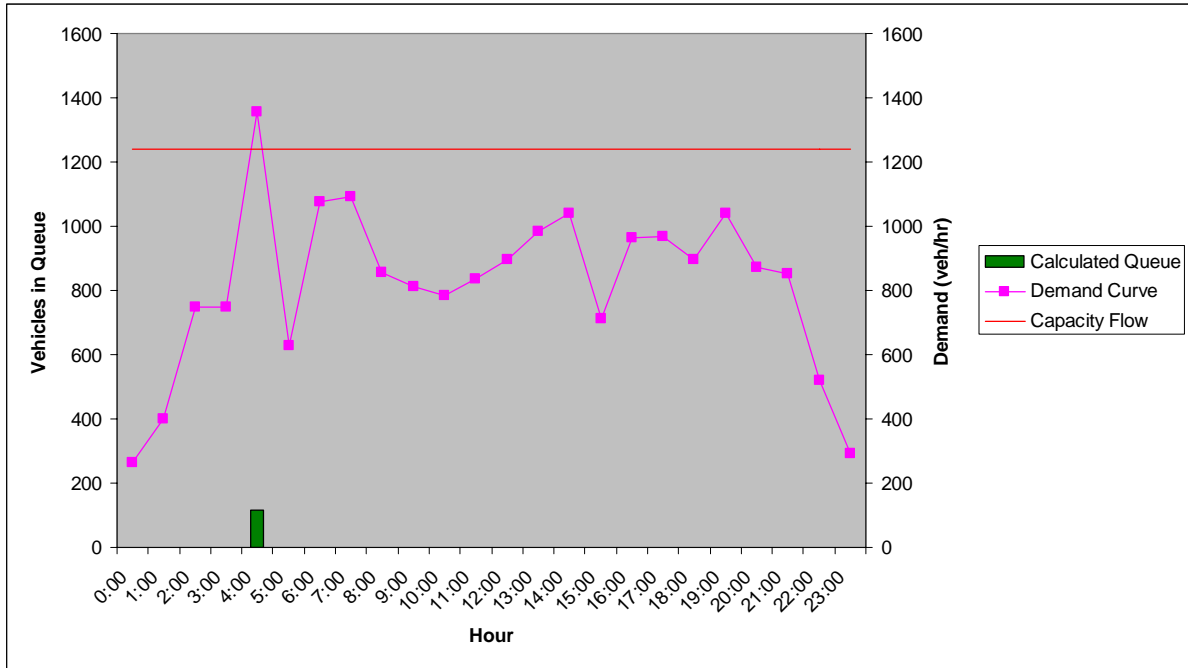
Note: 10 inspection lanes = 775 veh/hr capacity flow

**Figure 11-6**  
Near-Term Northbound Calculated Queue – Phase 1 Configuration



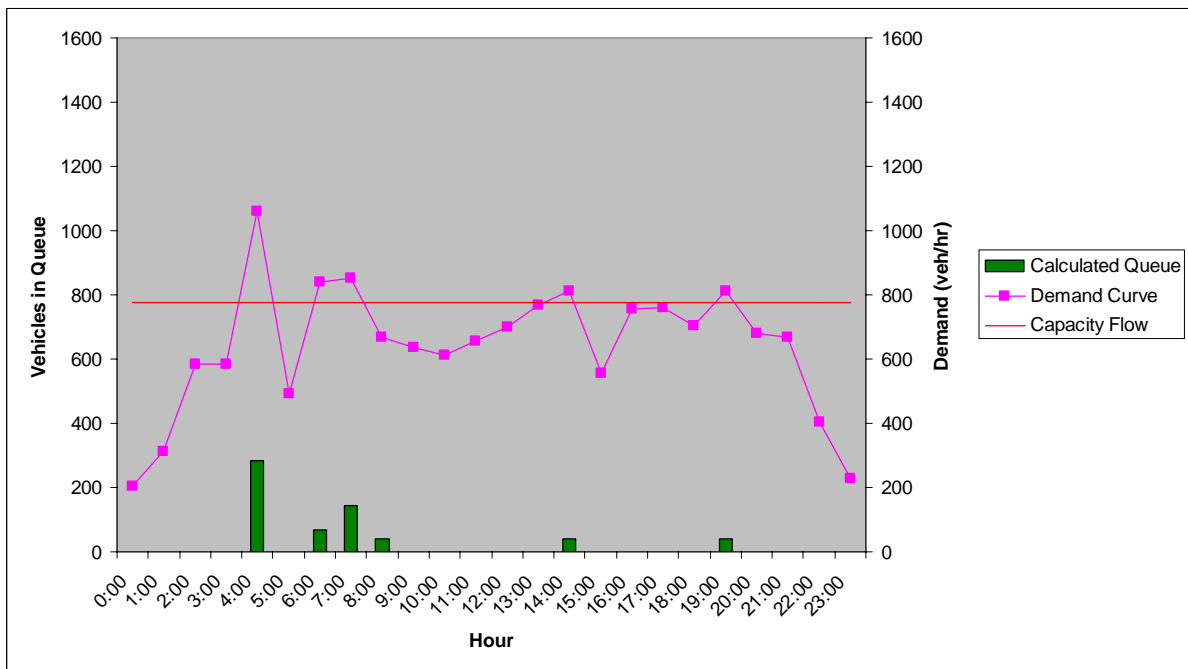
Note: 20 inspection lanes = 1,550 veh/hr capacity flow

**Figure 11-7**  
**Near-Term Northbound Calculated Queue – Phase 2 Configuration**



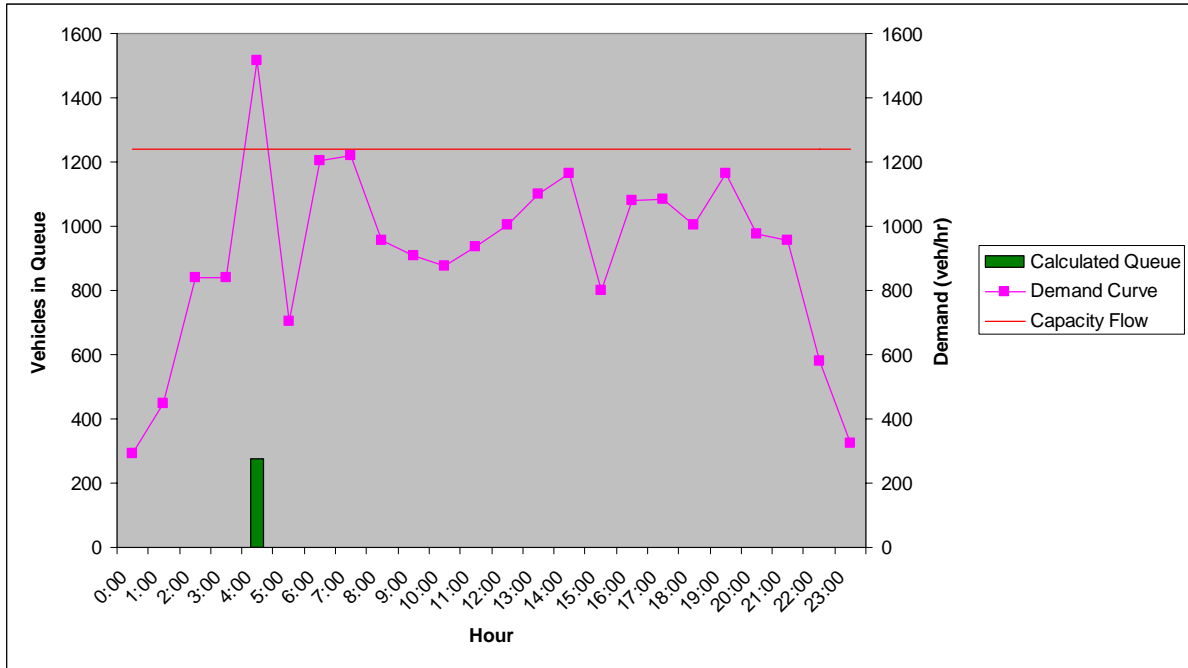
Note: 16 inspection lanes = 1,240 veh/hr capacity flow

**Figure 11-8**  
**Horizon Year Northbound Calculated Queue – Existing Configuration**



Note: 10 inspection lanes = 775 veh/hr capacity flow

**Figure 11-9**  
**Horizon Year Northbound Calculated Queue – Phase 2 Configuration**



Note: 16 inspection lanes = 1,240 veh/hr capacity flow

**United States Secondary Inspection**

The secondary inspection facility is made up of two separate components: Z-Portal computerized scan, and inspection stalls. The capacity of the Z-Portal scanning process is 60 vehicles per hour (1 vehicle / 60 seconds X 3600 seconds / 1 hour = 60 vehicles per hour). Phase 1 constructs 12 inspection stalls with a capacity of 103 vehicles per hour (12 inspection stalls X 1 vehicle / 7 minutes X 60 minutes / 1 hour = 103 vehicles per hour). Phase 2 constructs an additional 20 inspection stalls making a total of 32 inspection stalls with a capacity of 274 vehicles per hour (32 inspection stalls X 1 vehicle / 7 minutes X 60 minutes / 1 hour = 274 vehicles per hour).

Tables 11-3 and 11-4 show the operations of the secondary inspection facility under the different phases (analysis by year or by peak hour is not needed because the phased flow rates are the same). This analysis shows that northbound secondary vehicle inspections performed by the United States under Phase 1 and Phase 2 conditions will not generate a substantial queue because the peak vehicular demand is less than capacity of the secondary inspection.

**Table 11-3  
Phase 1 United States Secondary Inspection Analysis**

| Facility      | Primary Inspection Flow (vph) | Inspection Flow    |            | Inspection Capacity    |                | Capacity Exceeded? |
|---------------|-------------------------------|--------------------|------------|------------------------|----------------|--------------------|
|               |                               | Percent of Primary | Flow (vph) | Inspection Stall (vph) | Z-Portal (vph) |                    |
| Existing LPOE | 775                           | 3.7%               | 29         | 129                    | 60             | No                 |
| Proposed LPOE | 775                           | 3.7%               | 29         | 103                    | 60             | No                 |

**Table 11-4  
Phase 2 United States Secondary Inspection Analysis**

| Facility      | Primary Inspection Flow (vph) | Inspection Flow    |            | Inspection Capacity    |                | Capacity Exceeded? |
|---------------|-------------------------------|--------------------|------------|------------------------|----------------|--------------------|
|               |                               | Percent of Primary | Flow (vph) | Inspection Stall (vph) | Z-Portal (vph) |                    |
| Existing LPOE | 0                             | 3.7%               | 0          | 0                      | 0              | N/A                |
| Proposed LPOE | 1240                          | 3.7%               | 46         | 274                    | 60             | No                 |

### Northbound Segment

Mexico currently provides three northbound segment lanes to the Calexico West LPOE. The *Highway Capacity Manual 2000* recommends an uninterrupted flow rate (capacity) of 1,800 vehicles per hour per lane (HCM 2000, 10-24). Therefore, three-lane configuration would yield a northbound lane capacity of 5,400 vehicles per hour (3 lanes x 1,800 vehicles per hour per lane = 5,400 vehicle per hour capacity). It is currently unknown how many northbound segment lanes Mexico will provide at the new LPOE location. However, a single lane capacity of 1,800 vehicles per hour could satisfy the northbound primary inspection capacity of the United States for all phases (775 to 1,240 vehicles per hour), allowing for continuous flow to the United States primary inspection when Mexico constructs one or more northbound segment lanes.

### Intersection Queuing

Just south of the new LPOE location there are no existing roadways or intersections. Details of Mexico's proposed intersection and roadway design are currently not available for comment. It is expected that, through coordination with the United States, Mexico will construct their reciprocal facilities in a similar manner and time frame.

## CHAPTER 12 IMPROVEMENTS

This chapter identifies project improvements and other potential improvements that can be implemented by others to improve the traffic circulation network within the study area. As part of the project the following transportation improvements will be made:

### Project Improvements

- 13. Cesar Chavez Boulevard / 2nd Street:
  - Signalize the intersection
  - Eastbound: restripe to provide one left-turn, one thru and one shared thru-right lane
  - Westbound: restripe to provide one left-turn, one thru and one right-turn lane
  - Northbound: provide one left-turn, two thru and one right-turn lane
  - Southbound approach: restripe to provide one shared thru-left and one right-turn lane
  - Southbound departure: provide three lanes (Phase 2 only)
- 14. Imperial Avenue (SR-111) / 2nd Street:
  - Modify the signal
  - Northbound: restripe to provide one left-turn, two thru and one right-turn lane
  - Southbound: restripe to provide one left-turn and two right-turn lanes

### Other Recommended Improvements

Potential improvements that can be implemented by others to improve the traffic circulation can be implemented at the following roadway segments and intersections:

#### *Roadway Segments*

- A. Birch Street (SR-98):
  - West of Williams Avenue to George Avenue: widen to a four-lanes with a median
  - George Avenue to Ollie Avenue: widen to three-lanes eastbound and two-lanes westbound with a median
  - Ollie Avenue to Rockwood Avenue: widen to six-lanes with a median
- B. Cesar Chavez Boulevard:
  - Birch Street (State Route 98) to 2nd Street: widen to a four-lane Primary with a median

- C. Grant Street:
  - Imperial Avenue (State Route 111) to Cesar Chavez Boulevard: widen to four-lanes with left-turn pockets
- D. 2<sup>nd</sup> Street:
  - Imperial Avenue (State Route 111) to west of Cesar Chavez Boulevard: widen to four-lanes with left-turn pockets

### ***Intersections***

- 1. Birch Street (SR-98) / VV Williams Avenue:
  - Signalize the intersection
  - Eastbound: widen to provide one left-turn, one through and one shared through-right lane
  - Westbound: widen to provide one left-turn, two-thru and one right-turn lane
  - Southbound: widen to provide one left-turn and one right-turn lane
  - The eastbound and westbound improvements are in accordance with the State Route 98 Project Study Report (PSR)
- 2. Birch Street (SR-98) / Cesar Chavez Boulevard:
  - Signalize the intersection
  - Eastbound: widen to provide two through and one right-turn lane
  - Westbound: widen to provide two left-turn and two-thru lanes
  - Northbound: widen to provide two left-turn and one right-turn lane
  - These improvements are in accordance with the State Route 98 Project Study Report (PSR)
- 3. Birch Street (SR-98) / Ollie Avenue:
  - Eastbound: widen to provide one left-turn, two through and one shared through-right lane
  - Westbound: widen to provide one left-turn, two-thru and one right-turn lane
  - Northbound: Reconfigure to provide one left-turn and one shared through-right lane
  - Southbound: Reconfigure to provide one left-turn and one shared left-through-right lane
  - These improvements are in accordance with the State Route 98 Project Study Report (PSR)
- 4. Birch Street (SR-98) / Imperial Avenue (SR-111):
  - Eastbound: widen to provide two left-turn, three through and one right-turn lane
  - Westbound: widen to provide two left-turn, three through and one right-turn lane

- These improvements are in accordance with the State Route 98 Project Study Report (PSR)
- 6. Cesar Chavez Boulevard / Grant Street:
  - Signalize the intersection
  - Eastbound: widen to provide one left-turn, one thru and one shared thru-right lane
  - Westbound: widen to provide one left-turn, one thru and one shared thru-right lane
  - Northbound: widen to provide one left-turn, one thru and one shared thru-right lane
  - Southbound: widen to provide one left-turn, one thru and one shared thru-right lane
- 13. Cesar Chavez Boulevard / 2nd Street:
  - Signalize the intersection
  - Eastbound: widen to provide two left-turn, two thru and one right-turn lane
  - Westbound: widen to provide two left-turn, two thru and one right-turn lane
  - Northbound: provide one left-turn, two thru and one right-turn lane
  - Southbound: widen to provide two left-turn, two thru and one right-turn lane
- 14. Imperial Avenue (SR-111) / 2nd Street:
  - Modify the signal
  - Northbound: restripe to provide one left-turn, two thru and one right-turn lane
  - Southbound: restripe to provide one left-turn and two right-turn lanes

These improvements are shown in Figures 12-1 and 12-2. Conceptual improvement plans are included in Appendix N.



Figure 12-1  
Recommended Improvements

I  
N  
Not To Scale



## **CHAPTER 13**

### **SUMMARY OF ANALYSIS**

This chapter summarizes the operations at the study intersections and segments. Table 13-1 shows the summary of roadway segment conditions for each scenario. Table 13-2 shows the summary of intersection conditions for each scenario. The proposed expansion will increase the capacity of the northbound traffic lanes crossing the border, which will reduce wait times and increase traffic on local roadways and intersections.

**Table 13-1  
Daily Roadway Segment Summary**

| Roadway Segment                          | Existing |     | Near-Term LPOE Configuration |     |         |     |                  |      |         |     |                  |      | Horizon Year LPOE Configuration |     |         |     |                  |      |
|--|----------|-----|------------------------------|-----|---------|-----|------------------|------|---------|-----|------------------|------|---------------------------------|-----|---------|-----|------------------|------|
|  |          |     | Existing                     |     | Phase 1 |     | Phase 1 Improved |      | Phase 2 |     | Phase 2 Improved |      | Existing                        |     | Phase 2 |     | Phase 2 Improved |      |
|  | V/C      | LOS | V/C                          | LOS | V/C     | LOS | V/C              | LOS  | V/C     | LOS | V/C              | LOS  | V/C                             | LOS | V/C     | LOS | V/C              | LOS  |
| <i>Imperial Ave (SR-111)</i>             |          |     |                              |     |         |     |                  |      |         |     |                  |      |                                 |     |         |     |                  |      |
| north of Birch St (SR-98)                | 0.499    | A   | 0.751                        | C   | 0.784   | C   | ----             | ---- | 0.784   | C   | ----             | ---- | 1.353                           | F   | 1.391   | F   | ----             | ---- |
| Birch St (SR-98) to Temple Ct            | 1.342    | F   | 1.743                        | F   | 1.763   | F   | ----             | ---- | 1.461   | F   | ----             | ---- | 2.889                           | F   | 2.573   | F   | ----             | ---- |
| Temple Ct to Grant St                    | 1.236    | F   | 1.581                        | F   | 1.602   | F   | ----             | ---- | 1.300   | F   | ----             | ---- | 2.568                           | F   | 2.253   | F   | ----             | ---- |
| Grant St to 6 <sup>th</sup> St           | 1.234    | F   | 1.559                        | F   | 1.535   | F   | ----             | ---- | 1.184   | F   | ----             | ---- | 2.489                           | F   | 2.069   | F   | ----             | ---- |
| 6 <sup>th</sup> St to 5 <sup>th</sup> St | 1.208    | F   | 1.503                        | F   | 1.484   | F   | ----             | ---- | 1.121   | F   | ----             | ---- | 2.344                           | F   | 1.916   | F   | ----             | ---- |
| 5 <sup>th</sup> St to 4 <sup>th</sup> St | 0.807    | D   | 0.976                        | E   | 0.973   | E   | ----             | ---- | 0.728   | C   | ----             | ---- | 1.456                           | F   | 1.178   | F   | ----             | ---- |
| 4 <sup>th</sup> St to 3 <sup>rd</sup> St | 0.696    | B   | 0.865                        | D   | 0.863   | D   | ----             | ---- | 0.617   | B   | ----             | ---- | 1.129                           | F   | 0.851   | D   | ----             | ---- |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St | 0.743    | C   | 0.914                        | E   | 0.917   | E   | ----             | ---- | 0.661   | B   | ----             | ---- | 1.227                           | F   | 0.944   | E   | ----             | ---- |
| <i>Birch St (SR-98)</i>                  |          |     |                              |     |         |     |                  |      |         |     |                  |      |                                 |     |         |     |                  |      |
| west of VV Williams Ave                  | 0.814    | D   | 1.096                        | F   | 1.152   | F   | 0.574            | A    | 1.152   | F   | 0.574            | A    | 1.903                           | F   | 1.965   | F   | 0.980            | E    |
| VV Williams Ave to Cesar Chavez Blvd     | 1.060    | F   | 1.423                        | F   | 1.506   | F   | 0.751            | C    | 1.506   | F   | 0.751            | C    | 2.460                           | F   | 2.552   | F   | 1.273            | F    |
| Cesar Chavez Blvd to Ollie Ave           | 1.129    | F   | 1.511                        | F   | 1.589   | F   | 0.792            | C    | 1.569   | F   | 0.782            | C    | 2.603                           | F   | 2.666   | F   | 1.330            | F    |
| Ollie Ave to Imperial Ave (SR-111)       | 0.867    | D   | 0.933                        | E   | 0.952   | E   | 0.634            | B    | 0.958   | E   | 0.638            | B    | 1.220                           | F   | 1.248   | F   | 0.831            | D    |
| east of Imperial Ave (SR-111)            | 0.672    | B   | 0.829                        | D   | 0.840   | D   | 0.560            | A    | 0.840   | D   | 0.560            | A    | 1.278                           | F   | 1.290   | F   | 0.859            | D    |
| <i>Cesar Chavez Blvd</i>                 |          |     |                              |     |         |     |                  |      |         |     |                  |      |                                 |     |         |     |                  |      |
| Birch St (SR-98) to Grant St             | 0.222    | A   | 0.846                        | D   | 1.009   | F   | 0.673            | B    | 1.311   | F   | 0.874            | D    | 1.346                           | F   | 1.866   | F   | 1.244            | F    |
| Grant St to 2 <sup>nd</sup> St           | 0.260    | A   | 0.824                        | D   | 1.060   | F   | 0.706            | C    | 1.443   | F   | 0.962            | E    | 1.281                           | F   | 1.973   | F   | 1.315            | F    |

**Table 13-1  
Daily Roadway Segment Summary (continued)**

| Roadway Segment                            | Existing |     | Near-Term LPOE Configuration |     |         |     |                  |      |         |     |                  |      | Horizon Year LPOE Configuration |     |         |     |                  |      |  |
|--|----------|-----|------------------------------|-----|---------|-----|------------------|------|---------|-----|------------------|------|---------------------------------|-----|---------|-----|------------------|------|--|
|  |          |     | Existing                     |     | Phase 1 |     | Phase 1 Improved |      | Phase 2 |     | Phase 2 Improved |      | Existing                        |     | Phase 2 |     | Phase 2 Improved |      |  |
|  | V/C      | LOS | V/C                          | LOS | V/C     | LOS | V/C              | LOS  | V/C     | LOS | V/C              | LOS  | V/C                             | LOS | V/C     | LOS | V/C              | LOS  |  |
| <i>Paulin Ave</i>                          |          |     |                              |     |         |     |                  |      |         |     |                  |      |                                 |     |         |     |                  |      |  |
| 3 <sup>rd</sup> St to 2 <sup>nd</sup> St   | 0.351    | A   | 0.425                        | A   | 0.489   | A   | ----             | ---- | 0.489   | A   | ----             | ---- | 0.637                           | B   | 0.708   | C   | ----             | ---- |  |
| <i>Grant St</i>                            |          |     |                              |     |         |     |                  |      |         |     |                  |      |                                 |     |         |     |                  |      |  |
| Cesar Chavez Blvd to Harold Ave            | 0.291    | A   | 0.443                        | A   | 0.509   | A   | 0.356            | A    | 0.625   | B   | 0.437            | A    | 0.875                           | D   | 1.079   | F   | 0.755            | C    |  |
| Harold Ave to Imperial Ave (SR-111)        | 0.168    | A   | 0.245                        | A   | 0.310   | A   | 0.217            | A    | 0.427   | A   | 0.299            | A    | 0.465                           | A   | 0.668   | B   | 0.468            | A    |  |
| <i>3rd St</i>                              |          |     |                              |     |         |     |                  |      |         |     |                  |      |                                 |     |         |     |                  |      |  |
| Imperial Ave (SR-111) to Paulin Ave        | 0.272    | A   | 0.368                        | A   | 0.376   | A   | ----             | ---- | 0.376   | A   | ----             | ---- | 0.644                           | B   | 0.652   | B   | ----             | ---- |  |
| Paulin Ave to Rockwood Ave                 | 0.380    | A   | 0.504                        | A   | 0.526   | A   | ----             | ---- | 0.526   | A   | ----             | ---- | 0.856                           | D   | 0.881   | D   | ----             | ---- |  |
| <i>2nd St</i>                              |          |     |                              |     |         |     |                  |      |         |     |                  |      |                                 |     |         |     |                  |      |  |
| west of Cesar Chavez Blvd                  | 0.212    | A   | 1.285                        | F   | 1.314   | F   | 0.920            | E    | 1.336   | F   | 0.935            | E    | 2.080                           | F   | 2.137   | F   | 1.496            | F    |  |
| Cesar Chavez Blvd to Imperial Ave (SR-111) | 0.308    | A   | 0.896                        | D   | 1.001   | F   | 1.001            | F    | 1.029   | F   | 1.029            | F    | 1.307                           | F   | 1.351   | F   | 1.351            | F    |  |
| Imperial Ave (SR-111) to Paulin Ave        | 0.499    | A   | 0.662                        | B   | 0.830   | D   | ----             | ---- | 0.973   | E   | ----             | ---- | 1.129                           | F   | 1.476   | F   | ----             | ---- |  |
| Paulin Ave to Rockwood Ave                 | 0.349    | A   | 0.461                        | A   | 0.502   | A   | ----             | ---- | 0.502   | A   | ----             | ---- | 0.781                           | C   | 0.827   | D   | ----             | ---- |  |

**Table 13-2  
Intersection Summary**

| Intersection                                | Existing |      | Near-Term LPOE Configuration |      |         |      |                  |      |         |     |                  |      | Horizon Year LPOE Configuration |      |         |     |                  |      |
|---|----------|------|------------------------------|------|---------|------|------------------|------|---------|-----|------------------|------|---------------------------------|------|---------|-----|------------------|------|
|   |          |      | Existing                     |      | Phase 1 |      | Phase 1 Improved |      | Phase 2 |     | Phase 2 Improved |      | Existing                        |      | Phase 2 |     | Phase 2 Improved |      |
|   | Delay    | LOS  | Delay                        | LOS  | Delay   | LOS  | Delay            | LOS  | Delay   | LOS | Delay            | LOS  | Delay                           | LOS  | Delay   | LOS | Delay            | LOS  |
| <i>AM Peak Hour</i>                         |          |      |                              |      |         |      |                  |      |         |     |                  |      |                                 |      |         |     |                  |      |
| 1. Birch St (SR-98) / VV Williams Ave*      | 120.1    | F    | 818.3                        | F    | 9999.9  | F    | 8.7              | A    | 1002.8  | F   | 7.8              | A    | 9999.9                          | F    | 9999.9  | F   | 8.8              | A    |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 194.5    | F    | 4281.8                       | F    | 4861.9  | F    | 17.5             | B    | 9999.9  | F   | 17.3             | B    | 9999.9                          | F    | 9999.9  | F   | 50.6             | D    |
| 3. Birch St (SR-98) / Ollie Ave             | 38.2     | D    | 45.9                         | D    | 51.2    | D    | 49.5             | D    | 52.0    | D   | 44.6             | D    | 80.5                            | F    | 90.7    | F   | 60.0             | E    |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 34.9     | C    | 48.2                         | D    | 56.7    | E    | 41.9             | D    | 55.1    | E   | 39.9             | D    | 121.4                           | F    | 127.9   | F   | 68.1             | E    |
| 5. Imperial Ave (SR-111) / 10th St*         | 13.2     | B    | 15.7                         | C    | 17.3    | C    | ----             | ---- | 14.4    | B   | ----             | ---- | 39.5                            | E    | 29.5    | D   | ----             | ---- |
| 6. Cesar Chavez Blvd / Grant St*            | 17.7     | C    | 9999.9                       | F    | 9999.9  | F    | 19.7             | B    | 9999.9  | F   | 20.2             | C    | 9999.9                          | F    | 9999.9  | F   | 37.4             | D    |
| 7. Imperial Ave (SR-111) / Grant St         | 13.2     | B    | 19.6                         | B    | 22.2    | C    | ----             | ---- | 26.6    | C   | ----             | ---- | 24.0                            | C    | 27.3    | C   | ----             | ---- |
| 8. Imperial Ave (SR-111) / 7th St           | 4.6      | A    | 4.6                          | A    | 5.1     | A    | ----             | ---- | 6.1     | A   | ----             | ---- | 4.6                             | A    | 5.1     | A   | ----             | ---- |
| 9. Imperial Ave (SR-111) / 5th St           | 14.0     | B    | 16.6                         | B    | 18.5    | B    | ----             | ---- | 20.5    | C   | ----             | ---- | 20.8                            | C    | 20.4    | C   | ----             | ---- |
| 10. Imperial Ave (SR-111) / 4th St*         | 11.1     | B    | 12.4                         | B    | 12.3    | B    | ----             | ---- | 11.3    | B   | ----             | ---- | 14.8                            | B    | 14.1    | B   | ----             | ---- |
| 11. Imperial Ave (SR-111) / 3rd St*         | 10.3     | B    | 11.8                         | B    | 11.9    | B    | ----             | ---- | 11.1    | B   | ----             | ---- | 16.0                            | C    | 15.7    | C   | ----             | ---- |
| 12. Paulin Ave / 3rd St*                    | 9.0      | A    | 10.5                         | B    | 12.1    | B    | ----             | ---- | 11.4    | B   | ----             | ---- | 23.5                            | C    | 29.2    | D   | ----             | ---- |
| 13. Cesar Chavez Blvd / 2nd St**            | 10.1     | B    | 126.8                        | F    | 23.7    | C    | 29.5             | C    | 35.0    | C   | 26.2             | C    | 7164.8                          | F    | 41.5    | D   | 30.0             | C    |
| 14. Imperial Ave (SR-111) / 2nd St          | 24.5     | C    | 38.3                         | D    | 37.1    | D    | 32.9             | C    | 23.3    | C   | 18.2             | B    | 39.8                            | D    | 26.9    | C   | 23.1             | C    |
| 15. Paulin Ave / 2nd St*                    | 9.6      | A    | 11.6                         | B    | 20.4    | C    | ----             | ---- | 34.9    | D   | ----             | ---- | 31.9                            | D    | 143.9   | F   | ----             | ---- |
| 16. 2nd Street / Employee Parking Lot*      | ----     | ---- | ----                         | ---- | ----    | ---- | ----             | ---- | 8.9     | A   | ----             | ---- | ----                            | ---- | 9.3     | A   | ----             | ---- |

\* Unsignalized Intersection

\*\* Unsignalized without expansion, signalized with expansion

**Table 13-2  
Intersection Summary (continued)**

| Intersection                                | Existing |      | Near-Term LPOE Configuration |      |         |      |                  |      |         |     |                  |      | Horizon Year LPOE Configuration |      |         |     |                  |      |       |     |
|---|----------|------|------------------------------|------|---------|------|------------------|------|---------|-----|------------------|------|---------------------------------|------|---------|-----|------------------|------|-------|-----|
|   |          |      | Existing                     |      | Phase 1 |      | Phase 1 Improved |      | Phase 2 |     | Phase 2 Improved |      | Existing                        |      | Phase 2 |     | Phase 2 Improved |      |       |     |
|   | Delay    | LOS  | Delay                        | LOS  | Delay   | LOS  | Delay            | LOS  | Delay   | LOS | Delay            | LOS  | Delay                           | LOS  | Delay   | LOS | Delay            | LOS  | Delay | LOS |
| <i>PM Peak Hour</i>                         |          |      |                              |      |         |      |                  |      |         |     |                  |      |                                 |      |         |     |                  |      |       |     |
| 1. Birch St (SR-98) / VV Williams Ave*      | 46.7     | E    | 447.2                        | F    | 667.1   | F    | 8.0              | A    | 601.9   | F   | 6.6              | A    | 9999.9                          | F    | 9999.9  | F   | 9.2              | A    |       |     |
| 2. Birch St (SR-98) / Cesar Chavez Blvd*    | 88.9     | F    | 3873.9                       | F    | 4606.8  | F    | 20.3             | C    | 9999.9  | F   | 18.4             | B    | 9999.9                          | F    | 9999.9  | F   | 41.3             | D    |       |     |
| 3. Birch St (SR-98) / Ollie Ave             | 50.7     | D    | 60.7                         | E    | 61.3    | E    | 50.3             | D    | 65.5    | E   | 39.8             | D    | 86.0                            | F    | 107.1   | F   | 105.2            | F    |       |     |
| 4. Birch St (SR-98) / Imperial Ave (SR-111) | 34.5     | C    | 61.8                         | E    | 73.7    | E    | 48.5             | D    | 56.8    | E   | 38.0             | D    | 179.1                           | F    | 170.7   | F   | 98.6             | F    |       |     |
| 5. Imperial Ave (SR-111) / 10th St*         | 12.9     | B    | 18.0                         | C    | 21.9    | C    | ----             | ---- | 15.8    | C   | ----             | ---- | 504.8                           | F    | 171.2   | F   | ----             | ---- |       |     |
| 6. Cesar Chavez Blvd / Grant St*            | 17.9     | C    | 9999.9                       | F    | 9999.9  | F    | 29.0             | C    | 9999.9  | F   | 37.5             | D    | 9999.9                          | F    | 9999.9  | F   | 128.8            | F    |       |     |
| 7. Imperial Ave (SR-111) / Grant St         | 6.1      | A    | 15.2                         | B    | 17.2    | B    | ----             | ---- | 12.0    | B   | ----             | ---- | 61.8                            | E    | 23.0    | C   | ----             | ---- |       |     |
| 8. Imperial Ave (SR-111) / 7th St           | 6.4      | A    | 6.6                          | A    | 7.8     | A    | ----             | ---- | 7.6     | A   | ----             | ---- | 9.2                             | A    | 9.1     | A   | ----             | ---- |       |     |
| 9. Imperial Ave (SR-111) / 5th St           | 16.6     | B    | 27.2                         | C    | 32.9    | C    | ----             | ---- | 26.1    | C   | ----             | ---- | 42.5                            | D    | 41.8    | D   | ----             | ---- |       |     |
| 10. Imperial Ave (SR-111) / 4th St*         | 13.4     | B    | 16.4                         | C    | 17.2    | C    | ----             | ---- | 14.7    | B   | ----             | ---- | 27.8                            | D    | 23.1    | C   | ----             | ---- |       |     |
| 11. Imperial Ave (SR-111) / 3rd St*         | 14.8     | B    | 19.8                         | C    | 22.3    | C    | ----             | ---- | 17.9    | C   | ----             | ---- | 190.1                           | F    | 161.2   | F   | ----             | ---- |       |     |
| 12. Paulin Ave / 3rd St*                    | 11.9     | B    | 21.3                         | C    | 32.1    | D    | ----             | ---- | 26.8    | D   | ----             | ---- | 202.7                           | F    | 233.2   | F   | ----             | ---- |       |     |
| 13. Cesar Chavez Blvd / 2nd St**            | 14.0     | B    | 7314.5                       | F    | 36.6    | D    | 49.3             | D    | 43.5    | D   | 34.3             | C    | 6935.6                          | F    | 79.2    | E   | 66.8             | E    |       |     |
| 14. Imperial Ave (SR-111) / 2nd St          | 18.0     | B    | 118.9                        | F    | 203.9   | F    | 114.5            | F    | 18.0    | B   | 20.7             | C    | 362.8                           | F    | 33.8    | C   | 34.7             | C    |       |     |
| 15. Paulin Ave / 2nd St*                    | 11.1     | B    | 18.4                         | C    | 49.8    | E    | ----             | ---- | 84.2    | F   | ----             | ---- | 110.3                           | F    | 238.9   | F   | ----             | ---- |       |     |
| 16. 2nd Street / Employee Parking Lot*      | ----     | ---- | ----                         | ---- | ----    | ---- | ----             | ---- | 11.8    | B   | ----             | ---- | ----                            | ---- | 16.8    | C   | ----             | ---- |       |     |

\* Unsignalized Intersection

\*\* Unsignalized without expansion, signalized with expansion

## CHAPTER 14 CONCLUSIONS

The United States General Services Administration (GSA) proposes to expand the number of inspection stations for the Calexico West Land Port of Entry (LPOE) from 10 stations to 16 stations in an effort to relieve traffic congestion, reduce vehicle queues due to inspection, improve security at the port and facilitate Customs and Border Protection Mission. The Calexico West LPOE is currently aligned with State Route 111 (SR-111), and, with the expansion, the LPOE will be realigned with Cesar Chavez Boulevard in order to avoid train blockages of the southbound lanes into Mexico. The proposed expansion will increase the capacity of the northbound traffic lanes crossing the border, which will reduce wait times and increase traffic volumes on local roadways and intersections.

GSA will coordinate with all other local, state and federal jurisdictions and project related stake holders throughout the approval process. Furthermore, the EIS considers traffic impacts and identifies measures that would help avoid, minimize or mitigate impacts of the proposed action. NEPA requires the decision-maker to consider the impacts of the proposed action, but does not require the agency to adopt such measures. GSA will consider adopting and implementing measures that are determined to be feasible, although authorized funding may not be available to finance or implement such measures. Any mitigation measures adopted by the agency will be identified in the project Record of Decision.

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