Draft Environmental Impact Report

For the Washington Boulevard/
Andora Bridge Improvement Project

Appendices

June 2019

City of Roseville
Public Works
311 Vernon Street
Roseville, CA 95678

CITY OF ROSEVILLE
CALIFORNIA
Public Works

Contents

Appendix A

Notice of Preparation and Public Comments

Notice of Preparation

NOTICE OF PREPARATION

Washington Boulevard/Andora Widening Project

Date:	September 12, 2016
To:	State Clearinghouse Responsible Agencies, Trustee Agencies, and Interested Parties
Subject:	Notice of Preparation of an Environmental Impact Report for the Proposed Washington Boulevard/Andora Widening Project and a Notice of Public Scoping Meeting
Project Title/File Number:	Washington Boulevard/Andora Widening Project
NOP Comment Period:	Written comments are due to the City's Public Works, Engineering Division no later than October 15, 2016 by 5:00 p.m. See Lead Agency contact person and mailing address below.
Public Scoping Meeting:	In accordance with Public Resources Code Section 21083.9, notice is hereby given that the City of Roseville will conduct a Public Scoping Meeting and Community Open House on September 21, 2016 from 6:00 to 7:30pm at Vencil Brown Elementary School, Multi-Purpose Room. The school is located at 250 Trestle Road, Roseville.
Project Location:	The City of Roseville is proposing to replace the existing 100-year-old Union Pacific Railroad Andora bridge underpass on Washington Boulevard in order to facilitate the widening of the roadway from 2 to 4 lanes between Pleasant Grove Boulevard and Sawtell Road, a distance of approximately 0.85 mile. The Andora bridge underpass is located north of Downtown Roseville at Union Pacific Railroad Milepost 108.20.
Lead Agency/Contact Person:	City of Roseville Public Works, Engineering Division Nina Buelna, Associate Engineer 311 Vernon Street Roseville, CA 95678 Phone: (916) 746-1300 Fax: (916) 746-1339 TDD: (916) 744-5220 Email: nbuelna@roseville.ca.us Website: www.roseville.ca.us/pw

INTRODUCTION

This Notice of Preparation (NOP) has been issued to notify interested parties that an Environmental Impact Report (EIR) will be prepared, and to solicit feedback on the scope and content of the analysis in the EIR. The City of Roseville (City) will be the lead agency and will prepare an EIR for the Washington Boulevard/Andora Widening Project (referred to herein as the "proposed project"), which includes the project approvals listed in Section 4 of this NOP. The proposed project is also subject to compliance with the National Environmental Policy Act (NEPA). Caltrans, through a delegation agreement with the Federal Highway Administration, will be the NEPA lead agency. The proposed project description and vicinity and location maps are provided in this NOP.

NOP Comment Period: Due to the time limits mandated by state law, your response to this NOP must be sent at the earliest possible date and submitted to the City, but not later than 30 calendar days after receipt. Please submit comments to the City of Roseville no later than 5:00 p.m. **on October 15, 2016**. Please provide written comments to:

Nina Buelna, Associate Engineer
City of Roseville
Public Works, Engineering Division
311 Vernon Street
Roseville, CA 95678
Phone: (916) 746-1300
Fax: (916) 746-1339
TDD: (916) 744-5220
Email: nbuelna@roseville.ca.us
Website: www.roseville.ca.us/pw

Public Scoping Meeting: A public scoping meeting regarding the proposed project will be held on September 21, 2016 to receive comments from interested parties regarding the issues that should be addressed in the EIR. The time and location of the public scoping meeting is provided on the first page of this NOP.

REGULATORY BACKGROUND

This NOP provides notification that an EIR will be prepared for the proposed project. This NOP has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Division 13 Section (§) 21000 et seq., and the State CEQA Guidelines, Title 14 California Code of Regulations §15000 et seq. According to CEQA Guidelines §15064, an EIR must be prepared if there is substantial evidence in light of the whole record that the proposed project may have a significant effect on the environment.

This NOP describes the proposed project and requested project approvals, lists the potential and probable environmental effects of the proposed project, and the proposed scope of analysis for the EIR.

PROJECT DESCRIPTION

The Washington Boulevard/Andora Widening Project (proposed project) is a proposed replacement of the existing 100-year-old Andora bridge underpass on Washington Boulevard and widening of Washington Boulevard from two to four lanes between Pleasant Grove Boulevard and Sawtell Road in the City of Roseville (City) (see Figure 1, Regional Location). Figure 3 shows the major project components.

PROJECT LOCATION AND SETTING

The proposed project is located in the City of Roseville in Placer County on Washington Boulevard along an approximately 0.85 mile segment between Sawtell Road and Pleasant Grove Boulevard. At the southern end of the project area, a Union Pacific Railroad (UPRR) line runs along east side of Washington Boulevard, crosses over the road on the Andora railroad bridge just south of the South Fork of Pleasant Grove Creek, and then continues along the west side of the road towards Pleasant Grove Boulevard (see Figure 2, Project Location).

The southern section of the project area contains commercial uses to the east and residential uses to west and the northern section of the project contains residential uses only. West of the Andora bridge underpass, the project area supports City open space lands. Residential development occurs on both sides of the road between the Andora bridge underpass and Pleasant Grove Boulevard. An existing Class 1 bike trail along the east side of Washington Boulevard connects Diamond Oaks Road to Derek Place.

Project Overview

The proposed project will consist of widening Washington Boulevard to allow two through lanes in each direction with a raised median separating northbound and southbound traffic (see Figure 3). Eight-foot-wide Class 2 bike lanes also will be included along both sides of the roadway. The existing Class 1 bike trail on the east side of Washington Boulevard, from Diamond Oaks Road to Derek Place, will be replaced with a 10-foot-wide path parallel to Washington Boulevard to connect to Sawtell Drive. The existing pedestrian underpass located approximately 100 feet east of Washington Boulevard will be abandoned. A new 10-foot-wide multiuse path on the west side of Washington Boulevard between Emerald Oaks Road and Kaseberg Drive is also proposed; however, the construction of this path may be deferred until additional construction funding is available. No new traffic signals are proposed as part of the project, however the existing traffic signal at Diamond Oaks Road will be modified to conform to the new four-lane roadway.

The proposed Andora bridge underpass will be a two-span bridge with columns located in the roadway median island. The existing roadway crosses beneath the UPRR tracks at a 45-degree angle. Because UPRR limits bridge skews to a maximum of 30 degrees, the proposed bridge median columns will be slightly skewed, by approximately 15 degrees. The existing Andora bridge underpass can accommodate two railroad tracks, although only one track currently exists at this location. Therefore, the project will be designed to accommodate two UPRR tracks; the proposed bridge structure may be constructed in stages to provide the second track at a future date.

The existing railroad underpass has substandard vertical clearance (see Exhibit 1. Existing Underpass). To provide standard vertical clearance, the profile grade of Washington Boulevard will be lowered approximately 3 feet. The lowering of the roadway will necessitate relocation of City-owned sewer and water lines, underground telecommunication lines, and potential adjustments to underground gas lines. The lowering of the roadway will also require removal and replacement of two drainage culvert crossings. Drainage improvements include the addition of a drainage pump station to drain the underpass because the low point of the roadway will be below the 100-year flood elevation. Other drainage improvements will include regrading ditches and possible expansion of upstream flood water retention areas. All drainage improvements would be confined to existing City right of way adjacent to the project site. To comply with current stormwater quality requirements, bio-treatment areas will also be located within the project site.

Exhibit 1. Existing Andora Bridge Underpass at Washington Boulevard

During construction, railroad traffic must be maintained uninterrupted except for very short time periods allowed by UPRR. During removal of the existing underpass, the railroad will be detoured to a temporary track, known as a shoofly. The shoofly will be located within UPRR- and City-owned rights of way. The shoofly length could extend up to 0.75 mile north and 0.5 mile south of the existing underpass location and could shift up to 65 feet westerly. Temporary fill will be placed within the portion of the Sierra View Tributary that runs along the south side of the tracks to accommodate the temporary shoofly alignment.

In addition to the temporary fill within the Sierra View Tributary, the project will also include work within the flood plains of the South Branch of Pleasant Grove Creek, as well as an unnamed tributary to

the South Branch of Pleasant Grove Creek. This work may include grading and other modifications to the channel to offset potential fill within the floodplain associated with the road widening and drainage culvert extensions.

Construction will temporarily affect public traffic. Washington Boulevard vehicular traffic would be allowed to pass through the project site under the control of one-way flagging operations, or Washington Boulevard would be closed entirely to vehicular traffic for up to 6 months. Vehicles would be rerouted on City streets; pedestrians and bicyclists would not be rerouted and would continue to use the existing UPRR pedestrian underpass. To accommodate the increased vehicular traffic on the detour route, the Foothills/Junction Boulevard intersection would be restriped temporarily to add a second left-turn lane from southbound Foothills Boulevard to eastbound Junction Boulevard. Existing traffic signals would be temporarily modified to provide adequate level of service during the duration of construction.

PROJECT DESIGN ELEMENTS

The proposed project includes the following elements:

- Widening approximately 0.85 mile of Washington Boulevard from two to four lanes with a raised median separating northbound and southbound traffic.
- Widening the existing road below the Andora bridge underpass to accommodate the additional two lanes. The proposed Andora bridge underpass would be a two-span bridge with columns located in the roadway median island.
- Adding eight-foot-wide Class 2 bike lanes along both sides of Washington Boulevard.
- Replacing the existing Class 1 bike path on the east side of Washington Boulevard (from Diamond Oaks Road to Derek Place) with a 10- to 12-foot-wide path that would run parallel to Washington Boulevard to connect to Sawtell Road.
- Adding a new 8- to 12-foot-wide multiuse path on the west side of Washington Boulevard between Emerald Oaks Road and Kaseberg Drive. Portions of the proposed multiuse path may be deferred until additional construction funding is available.
- Providing traffic signal modifications. The existing traffic signal at Diamond Oaks Road would be modified to conform to the new 4-lane roadway.
- Conducting floodplain and drainage improvements.
- Relocating existing utilities (including sewer, water, and gas).

PROJECT BACKGROUND

Washington Boulevard, a generally north-south roadway, begins in downtown Roseville at its junction with Oak Street and ends at State Route (SR) 65. It provides an important local connection between Downtown Roseville and North Central Roseville, Northwest Roseville, and North Industrial through its connections with other major local thoroughfares, including Foothills Boulevard, Pleasant Grove Boulevard, East Roseville Parkway, Industrial Boulevard, and Blue Oaks Boulevard. Washington

Boulevard provides a vital economic link from residential areas to shopping and employment centers in Downtown Roseville.

The widening of Washington Boulevard between Sawtell Road and Pleasant Grove Boulevard is identified in the City's Transportation System Capital Improvements Program to improve traffic circulation and pedestrian traffic through the area. Currently approximately 18,000 vehicles per day travel through this location, and the road improvements will enhance accessibility for motorists, pedestrians and cyclists along Washington Boulevard and nearby intersections. To enable widening of the roadway at the narrow underpass location, the UPRR Andora bridge over Washington Boulevard must also be widened and replaced. Currently 36 trains per day travel over this bridge and therefore the bridge must remain open and accessible by rail traffic during construction.

In summer 2016, the City of Roseville and the project team met with both residents and local businesses about the proposed project. More than 45 community members attended the two meetings with the project team to discuss the project, ask questions, and provide feedback on the project and proposed construction approach.

PURPOSE AND NEED

The purpose of the proposed project is to improve existing and future traffic; enhance access and safety for motorists, pedestrians, and cyclists; and meet railroad clearance requirements. The proposed project would also provide better connectivity between the existing two-lane, 0.85-mile segment of Washington Boulevard and the existing four-lane segments of Washington Boulevard.

The project is needed because recurring morning and evening peak-period demand exceeds the current design capacity of Washington Boulevard, creating traffic operations and safety issues for motorists, pedestrians, and cyclists. These issues result in high delays and wasted fuel, all of which will be exacerbated by anticipated increases in traffic from future population and employment growth.

PROJECT SCHEDULE

Begin Project Design & Environmental Clearance	April 2016
Concept Design and Public Outreach	September 2016
Environmental Clearance	Fall 2017
Final Design	Winter 2017
Union Pacific Approval	Spring 2018
Begin Construction	Summer 2018
Construction Completion if Washington Boulevard Closed for 5 Months	Summer 2019
Construction Completion if Washington Boulevard Open to One-Way Traffic	Summer 2020

PROJECT APPROVALS

Several agencies would be involved in the consideration of proposed project elements. Potential State and local approvals and permits would be considered for the proposed project related to wetlands, endangered species, floodplain encroachment, water quality, and streambed alteration.

Responsible agencies would include:

- California Department of Transportation
- U.S. Army Corps of Engineers
- Central Valley Regional Water Quality Control Board
- Central Valley Flood Protection Board
- United States Fish and Wildlife Service
- California Department of Fish and Wildlife

PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

Pursuant to section 15063 (a), of the CEQA Guidelines, an Initial Study has not been prepared for the proposed project. Rather, it is anticipated that the EIR will analyze the project-related impacts to resources in the project area within the following resource areas:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions and Climate Change
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Public Services
- Recreation
- Transportation and Circulation

- Utilities

PROJECT ALTERNATIVES ANALYSIS

As required by CEQA, the EIR will evaluate alternatives to the proposed project. As stated in CEQA Guidelines §15126.6(c), the primary intent of the alternatives evaluation in an EIR is to evaluate a range of alternatives to the project that "could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects." CEQA also requires that the project alternatives analysis include consideration of the "no project" alternative. The "no project" alternative may be defined as "no development" or it may be defined as "some other development."

CUMULATIVE IMPACTS ANALYSIS

As required by CEQA, the EIR will evaluate the cumulative impacts of the proposed project. As stated in CEQA Guidelines §15065(a)(3), projects should be evaluated to determine whether the project's impacts are "cumulatively considerable," which means that the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."

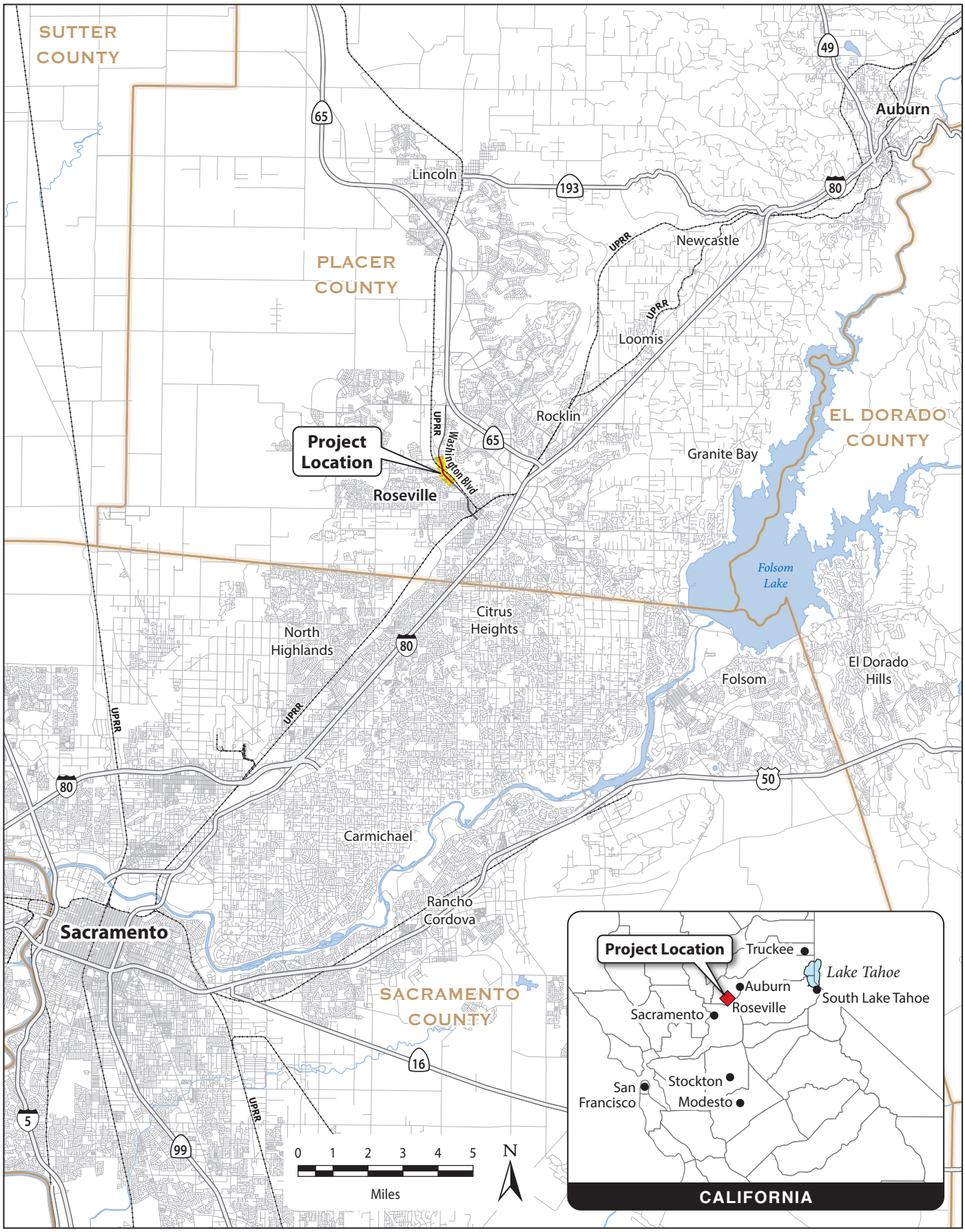

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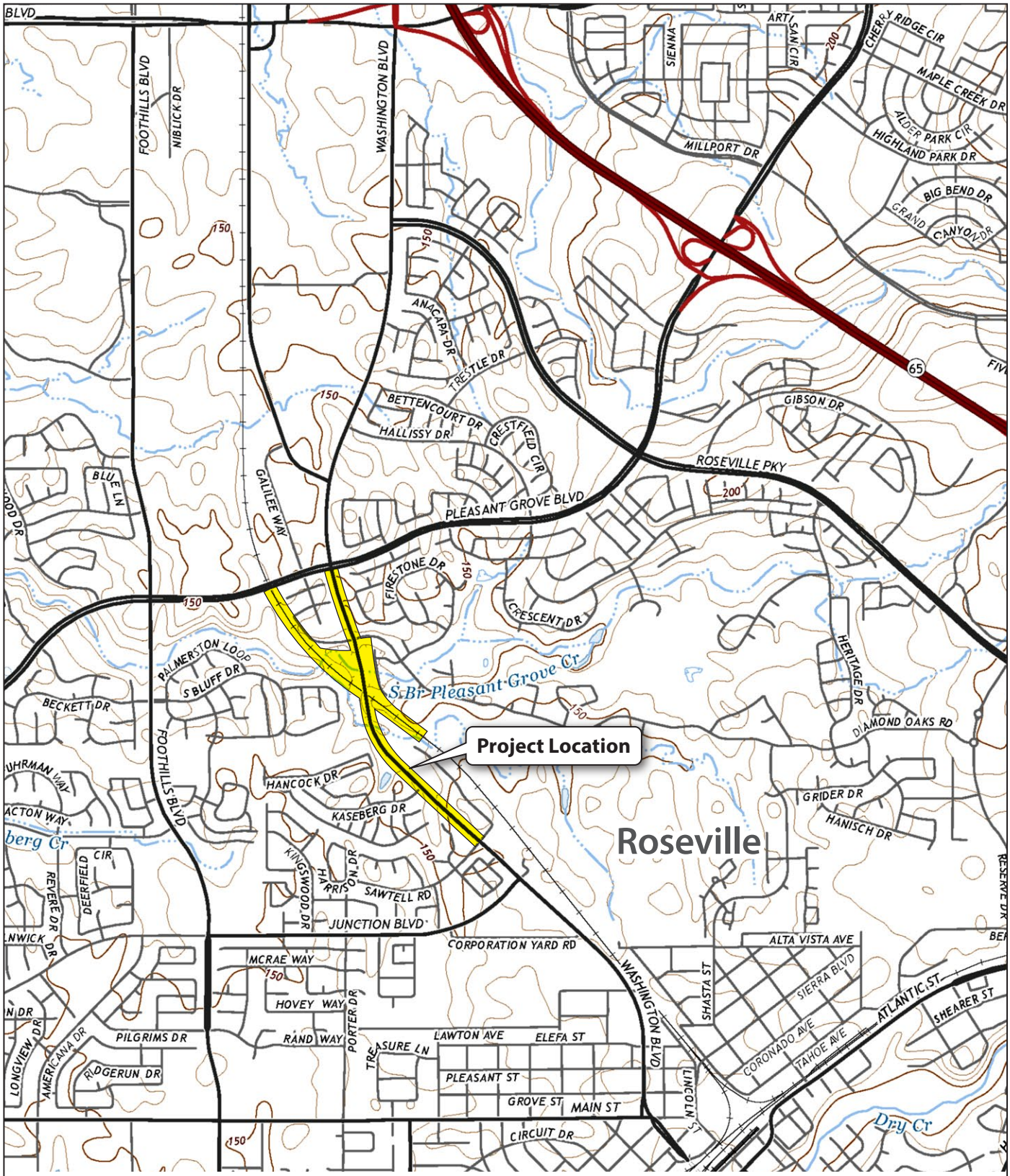
Figure 1
Regional Location



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Base Map: US Topo 7.5' series Roseville, California quadrangle (2015)

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Figure 2
Project Location

LEGEND:

- CITY RIGHT-OF-WAY
- UPRR RIGHT-OF-WAY
- NEIGHBORHOOD BOUNDARY
- EXISTING TRACK
- PROPOSED SHOOFLY TRACK
- EXISTING BIKE TRAILS
- PROPOSED BIKE TRAILS
- EXIST WATERWAYS

KASEBERG-KINGSWOOD

INDUSTRIAL AREA EAST

HIGHLAND RESERVE

DIAMOND OAKS

EXIST UPRR TRACK

PROPOSED SHOOFLY TRACK

PROPOSED UNDERPASS STRUCTURE

REMOVE EXIST TRAIL CROSSING

CITY R/W

PROPOSED CLASS I BIKE TRAIL

EXISTING BIKE TRAIL

PROPOSED DRAINAGE BASIN

PROPOSED CLASS I BIKE TRAIL

POTENTIAL DRAINAGE BASIN

SOUTH BRANCH PLEASANT GROVE CREEK

SIERRA VIEW TRIBUTARY

EMERALD OAKS ROAD

PLEASANT GROVE BLVD

DIAMOND OAKS ROAD

WASHINGTON BLVD

DEREK PLACE

SAWTELL ROAD

UPRR

UPRR

FIGURE 3: PROJECT OVERVIEW

SCALE: 1"=150' MAY 2016

CITY OF ROSEVILLE

WASHINGTON/ ANDORA WIDENING PROJECT

Community Open House and Public Scoping Meeting Summary Report

Washington Blvd./Andora Widening Project
Community Open House & Public Scoping Meeting Summary
Wednesday, September 21, 2016 | 6:00 – 7:30 p.m.
Vencil Brown Elementary School, Roseville

Introduction

On Wednesday, September 21, 2016, the City of Roseville hosted a Community Open House and Public Scoping Meeting for the Washington Blvd. / Andora Widening Project. More than 60 residents attended the Community Open House and Public Scoping Meeting at the Vencil Brown Elementary School Multi-Purpose Room, located at 250 Trestle Road in Roseville from 6:00 – 7:30 p.m.

Project Overview

As part of the City of Roseville's Capital Improvement Program, the City will be widening Washington Boulevard from Sawtell Road to Pleasant Grove Boulevard from two to four lanes. The project also includes the replacement and widening of the Union Pacific railroad Andora Bridge that crosses over Washington Boulevard.

Goals of the project include:

- Reduce existing and future traffic congestion
- Enhancing access for pedestrians and cyclists

Open House & Scoping Meeting Purpose

The Community Open House and Public Scoping Meeting provided an opportunity for the community to learn more about the project and provide feedback. Goals of the meeting included:

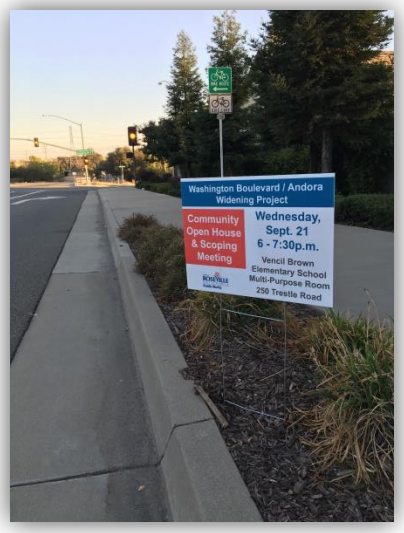
- Provide an overview of the project and its purpose/need
- Share the project schedule and opportunities for community input on community context, project functionality, and aesthetics.
- Provide an overview of preliminary design concepts and cross sections
- Gather feedback on construction approach and proposed detours
- Gather feedback for the environmental review process and potential environmental concerns

Open House & Scoping Meeting Format

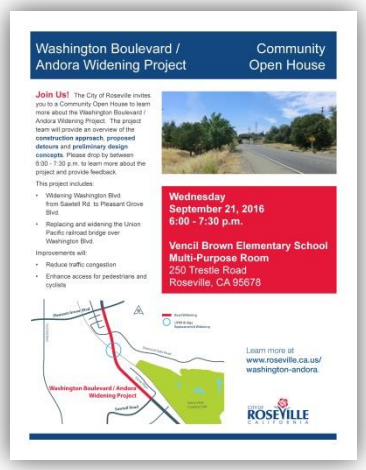
The Community Open House and Public Scoping Meeting included three information stations with displays and maps for community members to visit. Project team members were available to discuss ideas and answer questions. Community members could provide feedback on printed comment cards at each station as well. The information stations included:

- Project Overview, Proposed Cross Sections, and Preliminary Design Concepts – This station provided an overview of the project as a whole including a large aerial map demonstrating the project area and limits. This station also included the proposed road cross section and preliminary design concepts for the railroad bridge overcrossing. These displays were available on both sides of the multi-purpose room.
- Project Schedule, Proposed Construction Approach and Detour Routes – This station provided an overview of the project schedule, the two potential approaches to construction along Washington Boulevard and the proposed detour routes.
- Environmental Review Process – This station provided an overview of the environmental review process and the Notice of Preparation (NOP) for the project. Community members were asked to provide feedback on the scope of the project for the environmental review.

Open House & Scoping Meeting Notification



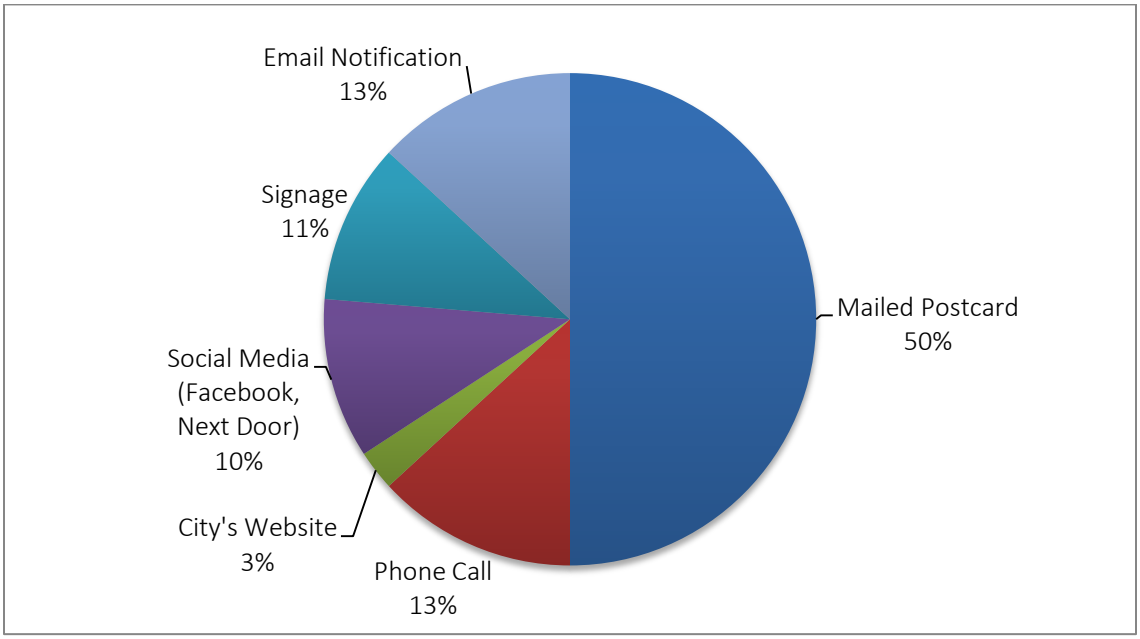
To notify local residents and community members, an email notification was sent to more than 240 community members and stakeholders. Postcard invitations were mailed to more than 1,350 residents within 0.25 miles of the project area. In addition, door hangers were distributed to residents in the Emerald Oaks area to inform about the project and due to potential construction detour impacts. Signage was posted along Washington Boulevard near key intersections and entrances to neighborhoods. Flyers were distributed to local apartment complexes as well.



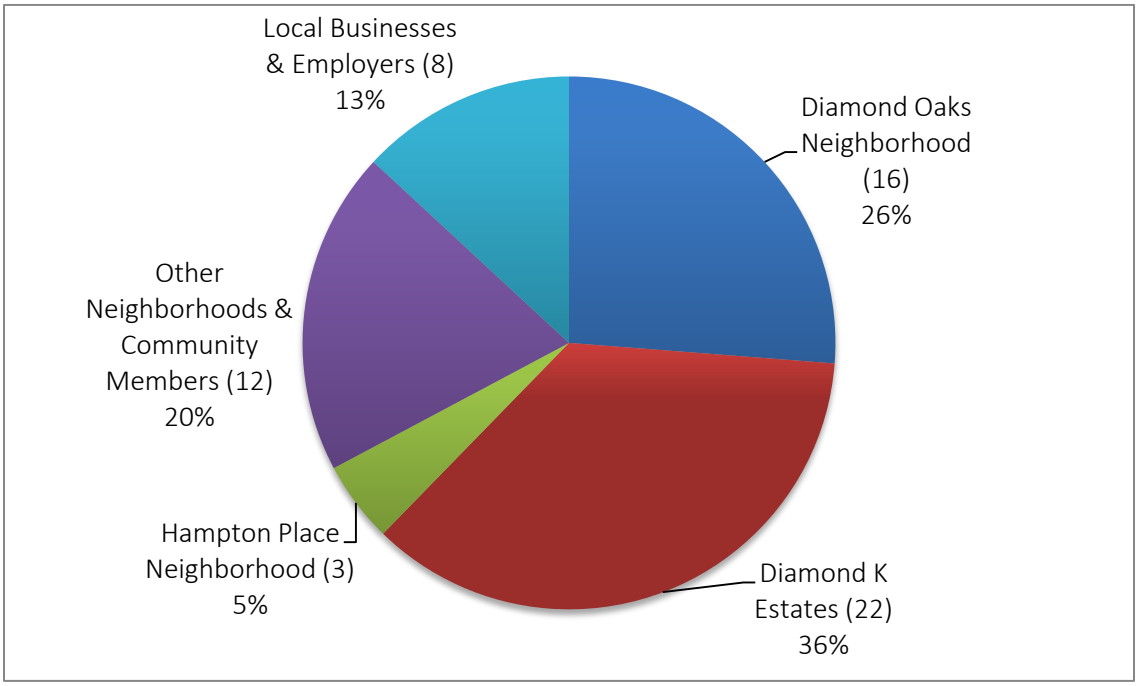
Information regarding the Community Open House and Public Scoping Meeting was also posted on the City of Roseville's website, calendar, and current events section. The open house invitation was shared on NextDoor with all 14,729 Roseville users, as well as posted on Twitter, Facebook and Instagram. The meeting invitation was emailed to the 7,485 subscribers of the City's bi-weekly newsletter and 265 subscribers of the Washington/Andora Widening Project Updates e-mail list. The following groups, community-based organizations, and neighborhoods shared information about the meeting on their social media:

- Roseville Coalition of Neighborhood Associations (RCONA)
- Roseville Area Chamber of Commerce
- Roseville Heights Neighborhood Association
- RCSF Brown
- Vencil Brown Elementary School PTC
- Cherry Glen Theiles Manor Neighborhood Association
- RCSD Spanger
- S2 Group
- Woodcreek Oaks Neighborhood Association

Open House attendees were asked to share how they heard about the meeting.



More than 60 residents attended the Community Open House and Public Scoping Meeting.



Other neighborhoods included residents from Country Club Estates, Diamond Creek, Fiddyment Farm, and Sun City Roseville.

Community Feedback

Open House attendees were asked to provide feedback on comment cards. The following feedback was submitted to the project team on a comment card or emailed:

Project Overview

- Basically this is an improvement for the local area as well. Infrastructure.
- I am excited for the widening of the bridge, a much needed change.
- Project is long overdue.

Cross Section and Aesthetic Elements

- Please have median all the way with trees and roses. Excited!

- Four lanes of traffic on Washington will be like a freeway especially since there is very little if any police traffic enforcement on Washington and Pleasant Grove. On both streets cars drive well over the posted limit as well as tail gate.
- Thank you for the 4 lanes and project! Very excited! Get started!

Bicycle and Pedestrian Connections

- Existing bike stub on west side that ends, please connect to existing bike trails behind Pleasant Grove/ Foothills - behind Emerald Oaks. One long connected bike path instead of going over Pleasant Grove to Foothills. Review Bike Master Plan to include this connection.
- This project has a lot of strong points, adding bike paths as well as multi-use paths to improve bike and pedestrian mobility and creating a safe environment.
- Is the multi-use path on the south west of the UPRR track being abandoned and replaced with the path connecting to Sawtell Road? Or are they both being maintained?
- This seems to be a productive project for the City of Roseville. I am interested to see how this progresses. It should be a good step for bike friendliness.

Construction Approach and Detours

- I vote for the fastest widening solution (closed for 4 months).
- I'd like to request that during this project or when it starts, can the City keep the boulevard closed to shorten the duration of the project? I believe residents in the

Diamond Oaks Community will find easy access to major routes to commute.

- A detour to access or exit Diamond K is not possible as there is only one way in and out --that being off Washington.

Community Outreach

- I'd like to extend my appreciation to Ms. Gladys for her warm reception given to me on the day of the Community Open House at Vencil Brown Elementary School. She provided me with some very useful information about the project.

Additional Project Elements for Consideration

- At the present time, please extend the left turn lane off southbound Washington onto Diamond Oaks Road. This could be done now!
- Diamond K needs a stoplight. You can't really say 'no' just because it's private property since you are accommodating for turn lane, acceleration lane, and merge lane. Just put in the light and solve the real problem.
- It is very clear the city doesn't give a damn about people who live in Diamond K. Diamond Oaks that is a neighborhood you care about. You made sure they had two ways to leave their community, but Diamond K people....you are just on your own. Too bad too sad. "Oh we will make the suicide lane longer" Whop di do do.
- Please put speed tables (not bumps) on Diamond Oaks to help slow traffic since you won't put additional stop signs.
- Traffic moves very fast now and will move faster with "4" lanes of traffic. A merge lane will not be very helpful.

We need a stop sign or light at Kaseberg.

- If the overpass with the train tracks is improved, will more trains run on the tracks and contribute more noise and pollution?
- Will there be more CO2 and air pollution for persons living near intersection of Washington & Pleasant Grove and Washington and Diamond Oaks?
- If there is an oil spill and fire from a train, will residents of Diamond Oaks be able to get out of their neighborhood with increase traffic leaving downtown towards Pleasant Grove?
- We think noise barriers (walls) should be constructed for homes along Washington & Diamond Oaks-other neighborhoods have them even for houses high off the roads.
- The wooden backyard fences, along the East side of Washington Blvd South of Pleasant Grove Blvd, need to be replaced with concrete wall fences as part of the Washington Blvd widening project. There will be a likely increase in noise to Diamond Oaks area residents once Washington Blvd is widened and the concrete walls will help reflect or dampen the noise. Concrete walls appear to be a city requirement at all new housing developments, such as the one under construction at the northeast corner of Foothills and Main, and installing the same southeast of Pleasant Grove and Washington would only be consistent and just.

Funding

- Will there be CFD's for that area? This should not be a total tax for citywide. How will this be paid for? Seems like UP is not paying for anything, or not much.

Appendix

- Comment Card
- Fact Sheet
- Postcard Mailer
- Flyer
- Door Hanger

Washington Boulevard / Andora Widening Project

Community Feedback

Please share your thoughts, comments, or questions about the project.

Name _____

Email _____

Phone _____

Neighborhood _____

You can submit your comments to staff today or directly to Ashley Baumgartner at abaum@aimconsultingco.com or fax (916) 442-1186.

CITY OF ROSEVILLE CALIFORNIA Public Works

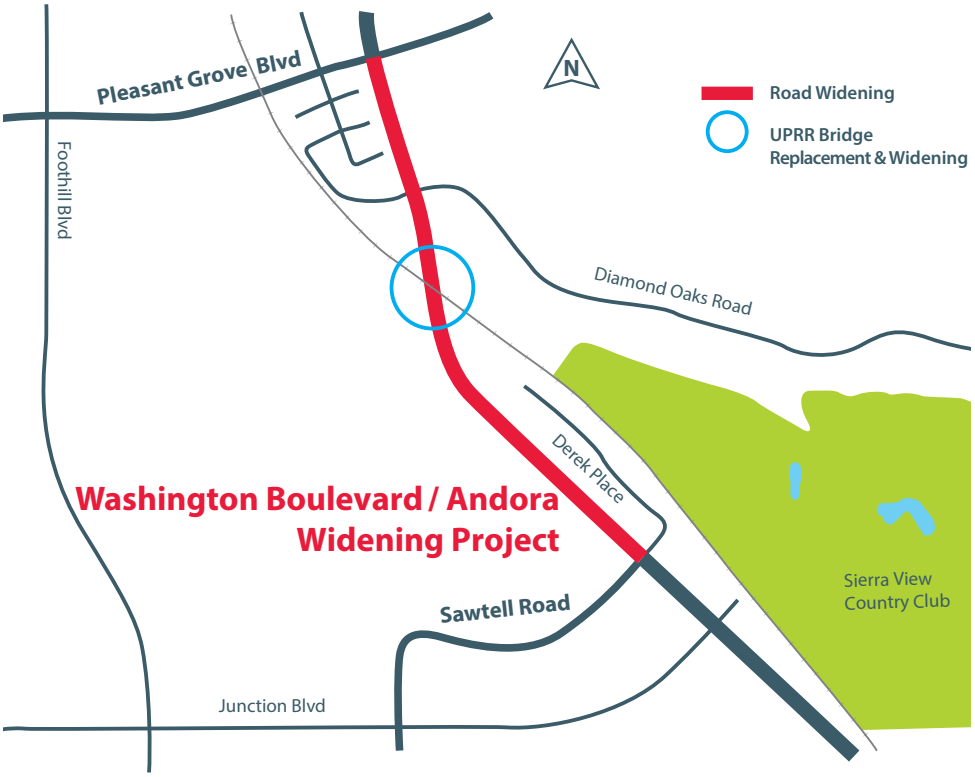
Place
postage
stamp
here

AIM Consulting, Inc.
2523 J Street, Suite 202
Sacramento, CA 95816

Washington / Andora Widening Project
Fact Sheet

About the Project

As part of the City of Roseville's Traffic Masterplan, the City will be widening Washington Boulevard from Sawtell Road to Pleasant Grove Boulevard from two to four lanes. The project also includes the replacement and widening of the Union Pacific railroad bridge that crosses over Washington Boulevard.



Goals of the Project

- Reduce traffic congestion
- Enhance access for pedestrians and cyclists
- Meet railroad clearance requirements

Schedule

Begin Project Design & Environmental Clearance	April 2016
Concept Design and Public Outreach	August 2016
Environmental Clearance	Fall 2017
Final Design	Winter 2017
Union Pacific Approval	Spring 2018
Construction Ready *(Funding for construction has not yet been identified. The soonest construction could begin is 2019, should funding become available.)*	Summer 2019
Construction Completion if Washington Boulevard Closed for 5 Months	Summer 2020
Construction Completion if Washington Boulevard Open to One-Way Traffic	Summer 2021

Funding

The proposed project will be funded with federal, state, and local development traffic impact fees.

Questions?

For more information, please contact Nina Buelna, Project Manager at NBuelna@roseville.ca.us or visit the project webpage at www.roseville.ca.us/washington-andora

CITY OF ROSEVILLE CALIFORNIA

Washington Boulevard / Andora Widening Project

Community Open House

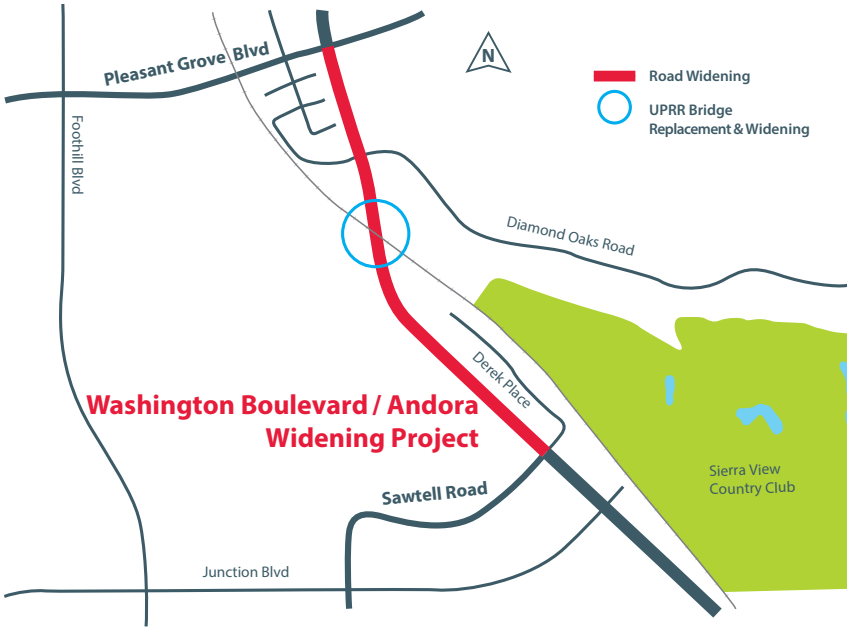
Join Us! The City of Roseville invites you to a Community Open House to learn more about the Washington Boulevard / Andora Widening Project. The project team will provide an overview of the **construction approach**, **proposed detours** and **preliminary design concepts**. Please drop by between 6:00 - 7:30 p.m. to learn more about the project and provide feedback.

This project includes:

- Widening Washington Blvd. from Sawtell Rd. to Pleasant Grove Blvd.
- Replacing and widening the Union Pacific railroad bridge over Washington Blvd.

Improvements will:

- Reduce traffic congestion
- Enhance access for pedestrians and cyclists



Wednesday, September 21, 2016
6:00 - 7:30 p.m.

Vencil Brown Elementary School Multi-Purpose Room
250 Trestle Road
Roseville, CA 95678

CITY OF ROSEVILLE CALIFORNIA

Public Works
Engineering
311 Vernon Street
Roseville, California 95678-2649

Washington Boulevard / Andora Widening Project

Community Open House
Wednesday, Sept. 21
6:00 - 7:30 p.m.

Vencil Brown Elementary
School Multi-Purpose Room
250 Trestle Road
Roseville, CA 95678

For more information, please contact Ashley Baumgartner at abaum@aimconsultingco.com or 916-442-1168.

Learn more at **www.roseville.ca.us/washington-andora**.

Washington Boulevard / Andora Widening Project

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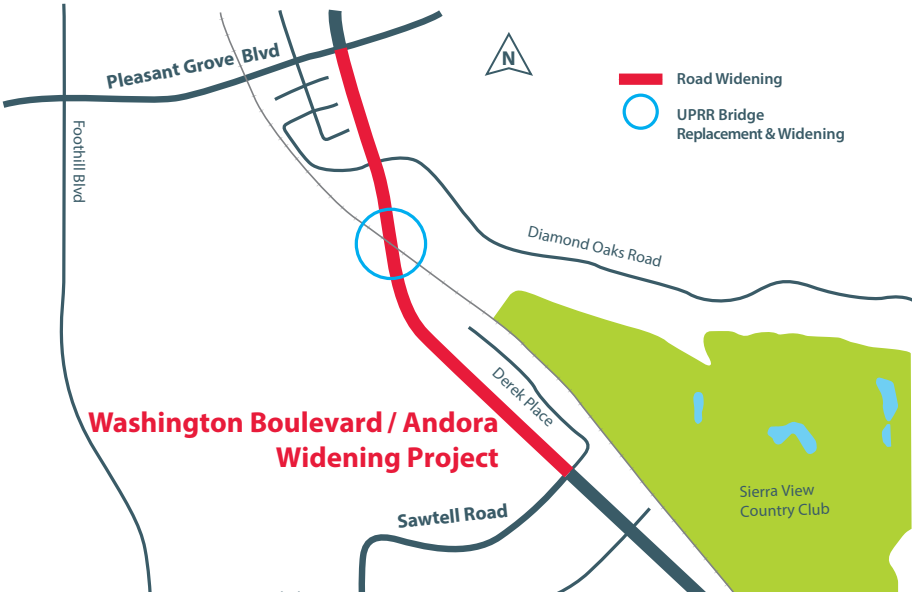
- Replacing and widening the Union Pacific railroad bridge over Washington Blvd.

Improvements will:

- Reduce traffic congestion
- Enhance access for pedestrians and cyclists

Wednesday
September 21, 2016
6:00 - 7:30 p.m.

Vencil Brown Elementary School
Multi-Purpose Room
250 Trestle Road
Roseville, CA 95678



Learn more at
www.roseville.ca.us/washington-andora.

CITY OF ROSEVILLE CALIFORNIA

Washington Boulevard / Andora Widening Project

Community Open House

The City of Roseville invites you to a Community Open House to learn more about the Washington Boulevard / Andora Widening Project and provide comments on the scope of the environmental review.

JOIN US!

Wednesday, September 21, 2016
6:00 - 7:30 p.m.

Vencil Brown Elementary School
Multi-Purpose Room

250 Trestle Road
Roseville, CA 95678

Learn more at:
www.roseville.ca.us/washington-andora

CITY OF ROSEVILLE CALIFORNIA
Public Works

Notice of Preparation Comment Letters

Luzedevina "Nina" Buelna, P.E.
Project Engineer, City of Roseville
Public Works Engineering
311 Vernon Street
Roseville, CA 95678

September 18, 2016

Nina,

I've been following the Washington/Andora project carefully and I appreciate the care that the City is taking in engaging the community to make sure everyone is aware of the need and the process for this important project.

I have a concern that I want to at least address since I'm not sure if it has even been brought to your attention. I know several residents who live in the Diamond K Estates modular/manufactured home division off of Washington. Kaseberg is the only entrance into their community. For YEARS I have been hearing them talk about the left turn problems they have when trying to leave their neighborhood. These seem to be mostly retired residents and making a left turn is very challenging under the current circumstances. 1a

At the moment, there is a center suicide lane, which is very challenging for the residents. Instead, many choose to turn right and then make a U-turn further down.

My concern is that once we widen the road to four lanes, this intersection will become a nightmare for the residents since a lot more vehicles will be on the road and navigating across two lanes will be much more dangerous. Also, if they turn right, they'll have to quickly navigate to the left lane in order to make a U-turn. Again, we're setting them up for a much more dangerous experience. 1b

Can the city add a stoplight at this intersection? It seems like it's the safest way to keep our residents safe. I do not understand what triggers the need for a stoplight but I hope your team uses the down time for the bridge widening project to help keep these neighbors safe. 1c

Thank you for considering this enhancement to the community.

Sincerely,

Scott Alvord
141 Bogart Ct.
Roseville, CA 95747

CALIFORNIA
Water Boards

Central Valley Regional Water Quality Control Board

30 September 2016

Nina Buelna
City of Roseville
311 Vernon Street
Roseville, CA 95678

CERTIFIED MAIL
91 7199 9991 7035 8362 8516

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, WASHINGTON BOULEVARD / ANDORA WIDENING PROJECT, SCH# 2016092028, PLACER COUNTY

Pursuant to the State Clearinghouse's 14 September 2016 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environment Impact Report* for the Washington Boulevard / Andora Widening Project, located in Placer County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases,

the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues.

For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/.

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Policy is available on page IV-15.01 at:
http://www.waterboards.ca.gov/centralvalleywater_issues/basin_plans/sacsjr.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan

(SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

Waste Discharge Requirements – Discharges to Waters of the State

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

Regulatory Compliance for Commercially Irrigated Agriculture

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program. There are two options to comply:

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/app_approval/index.shtml; or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.

2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100**. Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently $1,084 + $6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory Program, call the Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Low or Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of the waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit.

For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit3.shtml

If you have questions regarding these comments, please contact me at (916) 464-4644 or Stephanie.Tadlock@waterboards.ca.gov.

Stephanie Tadlock

Stephanie Tadlock
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

MIWOK MAIDU United Auburn Indian Community of the Auburn Rancheria

Gene Whitehouse, Chairman | John L. Williams, Vice Chairman | Danny Rey, Secretary | Jason Camp, Treasurer | Calvin Moman, Council Member

September 28, 2016

Nina Buelna
City of Roseville
311 Vernon St.
Roseville, CA 95678

Subject: NoP of an EIR for the Proposed Washington Boulevard/Andora Widening Project

Dear Nina Buelna,

Thank you for requesting information regarding the above referenced project. The United Auburn Indian Community (UAIC) of the Auburn Rancheria is comprised of Miwok and Southern Maidu (Nisenan) people whose tribal lands are within Placer County and whose service area includes El Dorado, Nevada, Placer, Sacramento, Sutter, and Yuba counties. The UAIC is concerned about development within its aboriginal territory that has potential to impact the lifeways, cultural sites, and landscapes that may be of sacred or ceremonial significance. We appreciate the opportunity to comment on this and other projects in your jurisdiction. The UAIC would like to consult on this project.

In order to ascertain whether the project could affect cultural resources that may be of importance to the UAIC, we would like to receive copies of any archaeological reports that are completed for the project. We also request copies of future environmental documents for the proposed project so that we have the opportunity to comment on potential impacts and proposed mitigation measures related to cultural resources. The UAIC would also like the opportunity to have our tribal monitors accompany you during the field survey. The information gathered will provide us with a better understanding of the project and cultural resources on site and is invaluable for consultation purposes.

The UAIC's preservation committee has identified cultural resources in and around your project area, and would like to recommend that a tribal monitor be present during any ground disturbing activities. Thank you again for taking these matters into consideration, and for involving the UAIC early in the planning process. We look forward to reviewing the documents requested above and consulting on your project. Please contact Marcos Guerrero, Cultural Resources Manager, at (530) 883-2364 or by email at mguerrero@auburnrancheria.com if you have any questions.

Sincerely,

Gene Whitehouse,
Chairman

CC: Marcos Guerrero, CRM

Placer County
AIR POLLUTION CONTROL DISTRICT

110 Maple Street, Auburn, CA 95603 • (530) 745-2330 • Fax (530) 745-2373 • www.placer.ca.gov/apcd

Erik C. White, Air Pollution Control Officer

October 14, 2016

City of Roseville
Public Works, Engineering Division
ATTN: Nina Buelna, Associate Engineer
311 Vernon Street
Roseville, CA 95678

SENT VIA : nbuelna@roseville.ca.us

SUBJECT: Washington Boulevard / Andora Widening Project Notice of Preparation of an Environmental Impact Report

Dear Ms. Buelna,

Thank you for submitting the **Washington Boulevard / Andora Widening Project** (Project) and associated **Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR)** to the Placer County Air Pollution Control District (District) for review. The applicant is requesting approval to replace the existing Union Pacific Railroad bridge underpass on Washington Boulevard in order to facilitate the widening of the roadway from 2 to 4 lanes. The District provides the following comments for consideration.

Environmental Review

The District developed a California Environmental Quality Act (CEQA) Air Quality Handbook (Handbook) to assist public agencies with the preparation of air quality analyses for land use projects within Placer County. This Handbook provides recommended analytical approaches and feasible mitigation measures when preparing air quality analyses for land use projects. The Handbook is available via the District's website at http://www.placer.ca.gov/departments/air/landusecega. Additional detail relating to the following recommended items can be found within the Handbook.

1. The Project is located within the Sacramento Valley Air Basin (SVAB) and is under the jurisdiction of the District. The SVAB is designated as nonattainment for federal and state ozone (O_3) standards, nonattainment for the state particulate matter standard (PM_{10}). Within the Air Quality section of the Initial Study, the District recommends the discussion include the area designations for the federal and state standards for the SVAB.

2. The District's Board has adopted new thresholds for both criteria pollutants and greenhouse gasses as of October 13th, 2016. The District recommends the adopted thresholds be applied in the EIR when analyzing Air Quality impacts associated with the proposed project. (*Please note that the new thresholds have not yet been updated within the Handbook*). The new thresholds are as follows:

Criteria Pollutants

1) Construction Threshold of 82 pounds per day for Reactive Organic Gases (ROG), Oxides of Nitrogen (NOx), and particulate matter smaller than 10 microns (PM10).
2) Operational Threshold of 55 pounds per day for ROG, NOx and 82 pounds per day for PM10.
3) Cumulative Threshold of 55 pounds per day for ROG, NOx and 82 pounds per day for PM10.

Greenhouse Gasses

1) Bright-line Threshold of 10,000 metric tons of CO2e per year for the construction and operational phase of land use projects and stationary source projects
2) Efficiency Threshold for the operational phase of land use projects exceeding the de minimis level.
3) De Minimis Level of 1,100 metric tons of CO2e per year for the operational phase of land use projects.

For more information please refer to our website:
http://www.placer.ca.gov/departments/air/landusecega/cegathresholds

3. The District recommends the Sacramento Air Quality Management District (SMAQMD) **Roadway Construction Emissions Model** be utilized when analyzing construction emissions associated with road construction projects. The model can be found on the SMAQMD website at: http://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools

4. In the event that the air quality analysis demonstrates the potential for the Project could cause significant adverse air quality impacts, all feasible mitigation measures shall be identified for project construction and operation to minimize or eliminate significant adverse air quality impacts. Additional mitigation measures can be found in the District's CEQA Handbook within the related appendices.

5. Prior to approval of Grading or Improvement Plans, the applicant shall submit a Construction Emission / Dust Control Plan (DCP) to the Placer County Air Pollution Control District. The applicant shall not break ground prior to receiving District approval of the DCP, and delivering that approval to the local jurisdiction issuing the permit. The DCP is available online and can be submitted via the District's website[1].

6. The prime contractor shall submit to the District a comprehensive inventory (Model Equipment List (XLS))[2] of all the heavy-duty off-road equipment (50 horsepower of greater) that will be used in aggregate of 40 or more hours for the construction project. If any new equipment is added after submission of the inventory, the prime contractor shall contact the District prior to the new equipment being utilized. At least three business days prior to the use of subject heavy-duty off-road equipment, the project

1 http://www.placer.ca.gov/departments/air/dustctrlreqs
2 http://airquality.org/ceqa/modelequipmentlist3-3-16.xls

representative shall provide the District with the anticipated construction timeline including start date, name, and phone number of the property owner, project manager, and on-site foreman.

7. Prior to approval of Grading or Improvement Plans, the applicant shall submit to the District a Construction Mitigation Calculation (Construction Mitigation Calculator (XLS 4.4 Mb)[3] demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average of 20% of NOx and 45% of DPM reduction as compared to CARB statewide fleet average emissions. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

Construction Related Conditions of Approval

8. The following standard notes shall be listed on the Improvement/Grading Plan, or as an attached form:

   a. During construction the contractor shall utilize existing power sources (e.g., power poles) or clean fuel (e.g., gasoline, biodiesel, natural gas) generators rather than temporary diesel power generators.
   b. During construction, the contractor shall minimize idling time to a maximum of 5 minutes for all diesel powered equipment.
   c. Idling of construction related equipment and construction related vehicles should not occur within 1,000 feet of any sensitive receptor.

9. The District's Rules and Regulations shall be listed as standard notes, or as an attached form to all subsequent Grading/Improvement Plans. A list of the District's Rules and Regulations can be found in Appendix B of the District's CEQA Handbook[4].

Thank you for allowing the District this opportunity to review the project proposal. Please do not hesitate to contact me at 530.745.2325 or ychang@placer.ca.gov if you have any questions.

Sincerely,

Yushuo Chang
Planning & Monitoring Section Manager

ec: Tom Thompson, Planning Consultant

3 http://airquality.org/ceqa/ConstructionEmissionsMitigationCalculator_v6_2012Jan.xls
4 http://www.placer.ca.gov/departments/air/landuseceqa

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

Memorandum

Date: September 20, 2016

To: All Reviewing Agencies

From: Scott Morgan, Director

Re: SCH # **2016092035**

Washington Boulevard/Andora Widening Project

The State Clearinghouse distributed the above-referenced **Notice of Preparation** on **September 15, 2016** to your agency for review and comment. It has come to our attention that the document was issued a new State Clearinghouse Number in error. For all future correspondence regarding this project, please use the original State Clearinghouse Number **2016092028**. We apologize for any inconvenience this may have caused. All other project information remains the same.

cc: Nina Buelna
City of Roseville
311 Vernon Street
Roseville, CA 95678

NOP Distribution List

VD

County: Placer

SCH# 2016092035

Resources Agency

Resources Agency
Nadell Gayou

- ☐ **Dept. of Boating & Waterways**
  Denise Peterson
- ☐ **California Coastal Commission**
  Elizabeth A. Fuchs
- ☐ **Colorado River Board**
  Lisa Johansen
- ☐ **Dept. of Conservation**
  Elizabeth Carpenter
- ☐ **California Energy Commission**
  Eric Knight
- ☐ **Cal Fire**
  Dan Foster
- ☐ **Central Valley Flood Protection Board**
  James Herota
- ☐ **Office of Historic Preservation**
  Ron Parsons

Dept of Parks & Recreation
Environmental Stewardship Section

- ☐ **California Department of Resources, Recycling & Recovery**
  Sue O'Leary
- ☐ **S.F. Bay Conservation & Dev't. Comm.**
  Steve Goldbeck
- ■ **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou

Fish and Game

- ☐ **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- ☐ **Fish & Wildlife Region 1**
  Curt Babcock
- ☐ **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- ■ **Fish & Wildlife Region 2**
  Jeff Drongesen
- ☐ **Fish & Wildlife Region 3**
  Craig Weightman
- ☐ **Fish & Wildlife Region 4**
  Julie Vance
- ☐ **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- ☐ **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- ☐ **Fish & Wildlife Region 6 I/M**
  Heidi Calvert
  Inyo/Mono, Habitat Conservation Program
- ☐ **Dept. of Fish & Wildlife M**
  William Paznokas
  Marine Region

Other Departments

- ☐ **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- ☐ **Depart. of General Services**
  Public School Construction
- ☐ **Dept. of General Services**
  Cathy Buck/George Carollo
  Environmental Services Section
- ☐ **Delta Stewardship Council**
  Kevan Samsam
- ☐ **Housing & Comm. Dev.**
  CEQA Coordinator
  Housing Policy Division

Independent Commissions,Boards

- ☐ **Delta Protection Commission**
  Erik Vink
- ☐ **OES (Office of Emergency Services)**
  Monique Wilber
- ■ **Native American Heritage Comm.**
  Debbie Treadway
- ■ **Public Utilities Commission**
  Supervisor
- ☐ **Santa Monica Bay Restoration**
  Guangyu Wang
- ☐ **State Lands Commission**
  Jennifer Deleong
- ☐ **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Cal State Transportation Agency CalSTA

- ☐ **Caltrans - Division of Aeronautics**
  Philip Crimmins
- ☐ **Caltrans – Planning HQ LD-IGR**
  Terri Pencovic
- ■ **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- ☐ **Caltrans, District 1**
  Rex Jackman
- ☐ **Caltrans, District 2**
  Marcelino Gonzalez
- ■ **Caltrans, District 3**
  Eric Federicks – South
  Susan Zanchi - North
- ☐ **Caltrans, District 4**
  Patricia Maurice
- ☐ **Caltrans, District 5**
  Larry Newland
- ☐ **Caltrans, District 6**
  Michael Navarro
- ☐ **Caltrans, District 7**
  Dianna Watson
- ☐ **Caltrans, District 8**
  Mark Roberts
- ☐ **Caltrans, District 9**
  Gayle Rosander
- ☐ **Caltrans, District 10**
  Tom Dumas
- ☐ **Caltrans, District 11**
  Jacob Armstrong
- ☐ **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- ☐ Airport & Freight
  Cathi Slaminski
- ■ Transportation Projects
  Nesamani Kalandiyur
- ☐ Industrial/Energy Projects
  Mike Tollstrup
- ☐ **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- ☐ **State Water Resources Control Board**
  Cindy Forbes – Asst Deputy
  Division of Drinking Water
- ☐ **State Water Resources Control Board**
  Div. Drinking Water #_____
- ☐ **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- ☐ **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- ☐ **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- ☐ **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- ☐ **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- ☐ **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- ☐ **RWQCB 3**
  Central Coast Region (3)
- ☐ **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- ■ **RWQCB 5S**
  Central Valley Region (5)
  - ☐ **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - ☐ **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- ☐ **RWQCB 6**
  Lahontan Region (6)
  - ☐ **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- ☐ **RWQCB 7**
  Colorado River Basin Region (7)
- ☐ **RWQCB 8**
  Santa Ana Region (8)
- ☐ **RWQCB 9**
  San Diego Region (9)

- ☐ **Other**_____
  _____
  _____
- ☐ _____
  Conservancy

Last Updated 7/19/2016

Appendix B

Final Transportation Study and Technical Memorandum for the Washington / Andora Widening Project

Fehr & Peers' *Final Transportation Study for the Washington/Andora Widening Project* (September 18, 2018)

Final Transportation Study for the

Washington / Andora Widening Project

Prepared for:

MARK THOMAS & COMPANY

CITY OF ROSEVILLE CALIFORNIA

September 18, 2018

RS16-3431

FEHR & PEERS

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1. INTRODUCTION

This study analyzes the transportation impacts of the proposed Washington / Andora Widening Project ("Proposed Project"), which would widen approximately 0.75-miles of Washington Boulevard from two to four travel lanes from north of Sawtell Road/Derek Place to approximately 500 feet south of Pleasant Grove Boulevard. The study analyzes transportation conditions under Existing Conditions and Cumulative (2035) conditions.

PROJECT DESCRIPTION

The project would widen Washington Boulevard in Roseville, CA from two to four travel lanes between Sawtell Road/Derek Place and Pleasant Grove Boulevard, resulting in a continuous four-lane divided roadway. This would involve restriping and widening the roadway primarily to the east. The widening also includes improvements to the existing Union Pacific Railroad (UPRR) Andora Underpass bridge and stream culverts to accommodate the wider cross-section. If grant funding is obtained, the project could also construct a traffic signal for bicycle and pedestrian connectivity at the Washington Boulevard/Kaseberg Drive intersection.

The widening would also include the following improvements to other travel modes in the corridor:

- The project would result in continuous Class II bike lanes (i.e., on-street with appropriate signing and striping) on both sides of Washington Boulevard between Sawtell Road/Derek Place and Pleasant Grove Boulevard.

- A new sidewalk and a new segment of Class I (i.e., off-street) Multi-Use Path would be constructed on the west side of the roadway between Kaseberg Drive, the Power line corridor and Diamond Oaks Road/Emerald Oak Road, thereby resulting in a continuous pedestrian facility between Sawtell Road/Derek Place and Pleasant Grove Boulevard.

- The project would expand an existing Class I (i.e., off-street) Multi-Use Path located on the east side of the roadway. After construction, it would extend parallel to Washington Boulevard from Derek Place/Sawtell Road to Pleasant Grove Boulevard, providing an alternative to the existing Class I path that connects to Derek Place.

The project would not alter the existing bus turnout located in the southbound direction of Washington Boulevard south of Pleasant Grove Boulevard.

STUDY AREA

The study area extends along the Washington Boulevard corridor from Pleasant Grove Boulevard to Junction Boulevard. The following study intersections located along the corridor were selected for study (refer to **Figure 1**):

1. Washington Boulevard/Pleasant Grove Boulevard
2. Washington Boulevard/Diamond Oaks Road
3. Washington Boulevard/Kaseberg Drive (private)
4. Washington Boulevard/Sawtell Road
5. Washington Boulevard/Junction Boulevard

Although the proposed widening would not extend through study intersections 1, 4, and 5, they were included in the study area because of the potential that the project would result in a shift in traffic away from other roadways, thereby adding traffic to these facilities.

For the analysis of temporary impacts associated with construction-related closures of Washington Boulevard, the study area has been expanded to include key intersections along Foothills Boulevard, Pleasant Grove Boulevard, and Roseville Parkway.

Figure 1 shows six elementary or middle schools located in the vicinity of the proposed widening. This figure also shows the locations of golf courses and fire stations in the vicinity. Although not shown on Figure 1, Roseville High School, which is located beyond the limits of the map at the terminus of Sierra Boulevard at Tiger Way, is frequented accessed via Washington Boulevard.

ANALYSIS SCENARIOS

The following scenarios are analyzed in this report to evaluate the effects of the proposed project:

- Existing Conditions - represents the existing setting upon which project-specific impacts are evaluated.
- Existing Plus Project Conditions - represents existing conditions with the Washington / Andora Widening Project.

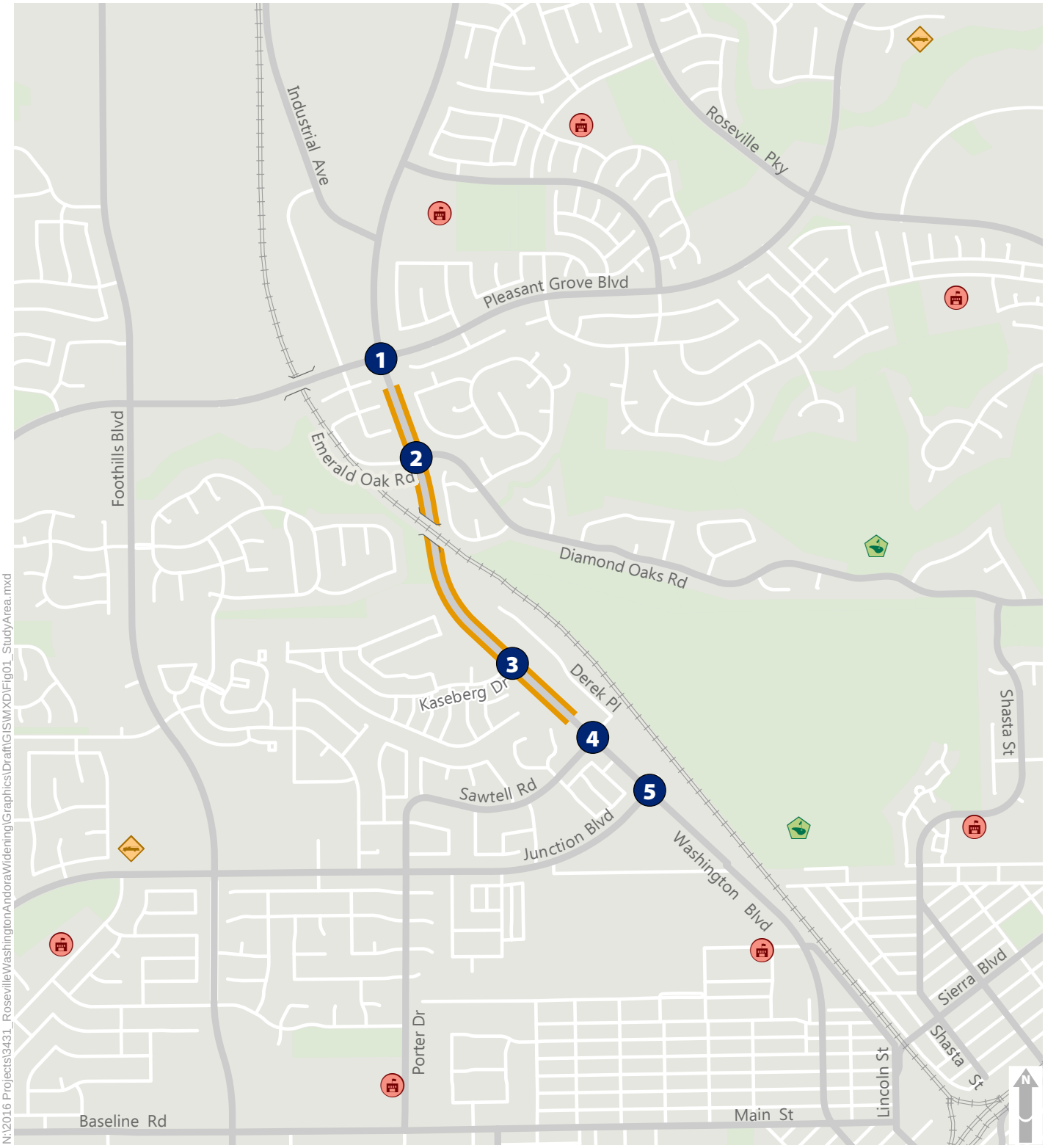


Figure 1

Study Area

- Cumulative (2035) No Project Conditions – assumes development of reasonably foreseeable land uses throughout the region and assumes planned City of Roseville roadway system improvements but without the Washington / Andora Widening Project.
- Cumulative (2035) Plus Project Conditions – assumes Cumulative (2035) No Project conditions but with the Washington / Andora Widening Project.

This report also evaluates temporary construction-related closures of Washington Boulevard, including operational results for the two preferred options.

ANALYSIS METHODS

LEVEL OF SERVICE (LOS)

Level of Service (LOS) is a qualitative measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion and delay under stop-and-go conditions. **Table 1** contains information for intersection LOS criteria.

SimTraffic is micro-simulation software used to analyze the study intersections for all scenarios. Per standard practice, ten SimTraffic runs were conducted and averaged for the reported results consistent with the methodology described in the *2010 Highway Capacity Manual* (HCM). SimTraffic is appropriate for this analysis because it accounts for queue spillbacks, considers the effect of coordinated signal timing along Pleasant Grove Boulevard, and appropriately assigns delay to bottleneck intersections.

For signalized intersections, the average delay and LOS is reported for the weighted average of all movements at the intersection. For side-street stop-controlled intersections, the average delay and LOS is reported both for the entire intersection as well as the minor-street movement with the greatest delay.

TABLE 1: SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description (for Signalized Intersections)	Average Delay (seconds per vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	≤ 10.0	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	>10.0 to 20.0	> 10.0 to 15.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 30.0	> 15.0 to 25.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0	> 25. 0 to 35.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0	>35.0 to 50.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0	> 50.0

Source: 2010 Highway Capacity Manual.

AVERAGE DAILY TRAFFIC (ADT)

Average Daily Traffic (ADT) is a valuable metric used to evaluate the traffic volume on a roadway compared to its capacity. ADT is the sum of all trips in each direction of a roadway segment over a 24-hour period. Comparison of "No Project" and "Plus Project" ADT can provide understanding of the overall impacts of a project on the roadway system. ADT is typically an estimate of mid-week traffic (Tuesday, Wednesday, or Thursday) while schools are in session.

Note that while the City of Roseville reports ADT on its roadways, the City does not use an ADT-based LOS metric. The City evaluates LOS at signalized intersections only because intersections dictate overall operations of the City's roadway system.

SIGNIFICANCE CRITERIA

The City of Roseville's Level of Service policy calls for maintaining a LOS C standard at a minimum of 70 percent of all signalized intersections in the City during the AM and PM peak hours. The City Council, following a public hearing, may determine, on a case-by-case basis that "extraordinary" improvements are not feasible or desirable and may relax the LOS C standard for a particular intersection.

The City's LOS policy is not applicable for unsignalized intersections. Average delay and LOS results are provided at those facilities for information purposes.

The project would have a significant impact if it would:

ROADWAY SYSTEM

1. Cause a signalized intersection in Roseville to be degraded as follows under Existing or Cumulative (2035) conditions during the AM or PM peak hours:
    - For intersections operating at LOS C or better: worsen operations to LOS D or worse.
    - For intersections that operate at less than LOS C: cause operations to further worsen by one or more service levels.
    - For intersections that operate at LOS F: cause intersection delay to worsen by 12.5 seconds or greater.
2. Cause the overall percentage of signalized intersections throughout the City of Roseville operating at LOS C or better during the AM and PM peak hours to fall below 70 percent.

Since the City Council approved the Amoruso Ranch Specific Plan in mid-2016 (along with a 2035 horizon year and changes in intersection analysis methods), the City's General Plan now reflects a revised list of intersections that would operate at LOS D or worse during the AM and PM peak hours. This list of intersections includes the Washington Boulevard/Pleasant Grove Boulevard intersection, which is predicted to operate at LOS D during the PM peak hour under Cumulative (2035) conditions. All other signalized study intersections were predicted to operate at LOS C or better.

BICYCLE SYSTEM

- Not meet the policies and guidelines of Roseville's Bicycle Master Plan.

PEDESTRIAN SYSTEM

- Interfere with the operation of an existing pedestrian facility or preclude the construction of a planned pedestrian facility.

TRANSIT SYSTEM

- Have a negative impact on transit operations, travel times, and/or circulation.

CONSTRUCTION-RELATED TRAFFIC IMPACTS

- Degrade an intersection to an unacceptable level of operations.
- Cause inconveniences to motorists due to prolonged street closures.
- Result in increased frequency of potential conflicts between vehicles, pedestrians, and bicyclists.

EMERGENCY VEHICLE ACCESS IMPACTS

- Result in inadequate emergency vehicle access.

2. EXISTING CONDITIONS

This chapter analyzes existing conditions within the study area including the roadway, bicycle, pedestrian, and transit systems.

ROADWAY SYSTEM

Within the study area, Washington Boulevard is primarily a two-lane arterial roadway with a posted speed limit of 45 mph. As noted previously, it has an 85th percentile vehicle speed of 51 mph based on a survey conducted by the City of Roseville in January 2014.

Washington Boulevard transitions from four to two travel lanes a short distance south of Pleasant Grove Boulevard. Similarly, it transitions from four to two travel lanes a short distance north of Sawtell Road/Derek Place. As the image below depicts, Washington Boulevard is a two-lane undivided roadway with limited shoulders at the UPRR Andora underpass. **Figure 2** shows the existing number of travel lanes along segments of Washington Boulevard and on other nearby roadways.

View of northbound Washington Boulevard at UPRR Andora Underpass

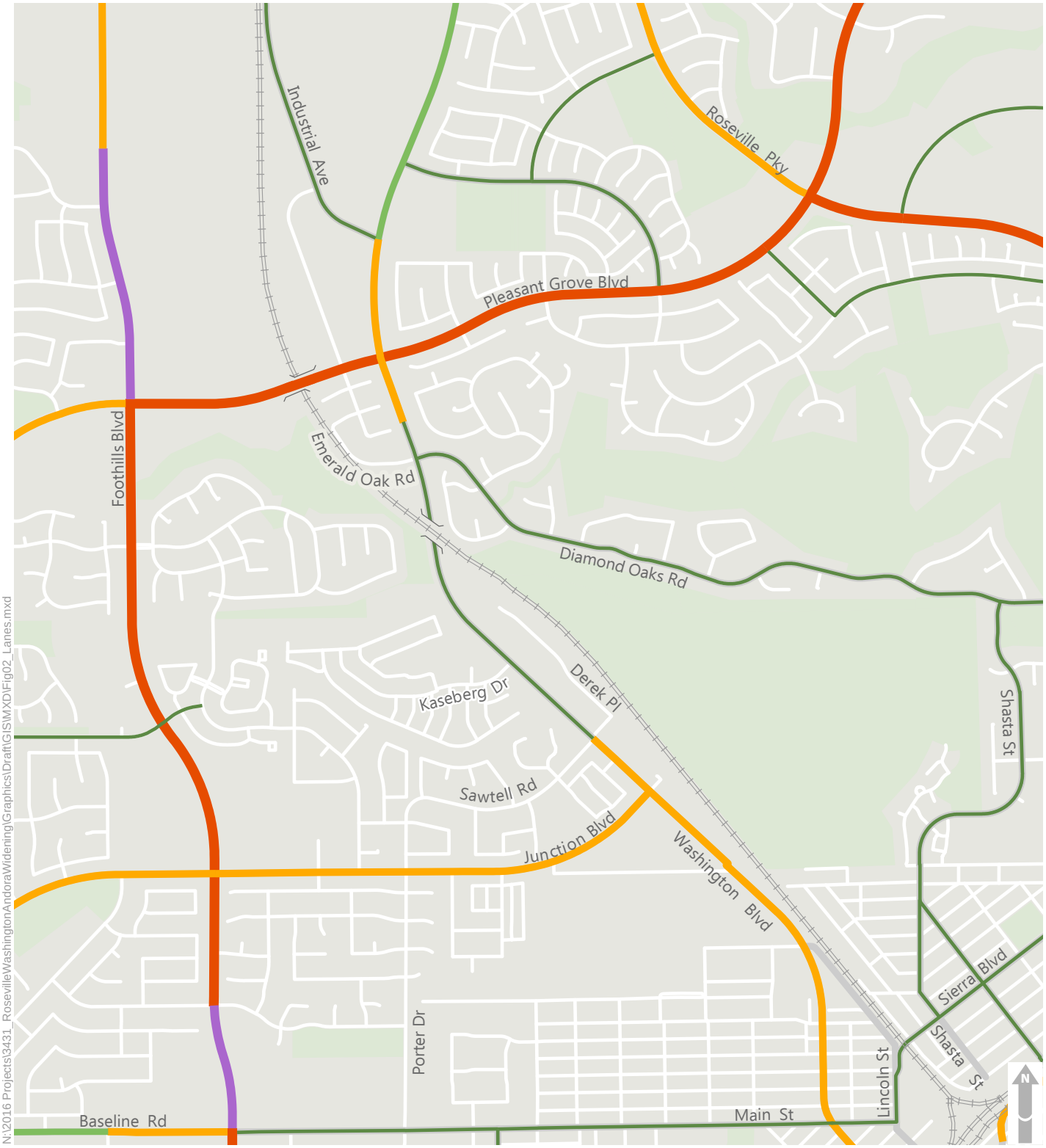


Figure 2

Number of Lanes

Figure 3 displays existing weekday AM and PM peak hour turning volumes and lane configurations at the study intersections. At most study intersections, the AM peak hour occurred from 7:30 – 8:30 AM, and the PM peak hour occurred from 4:45 to 5:45 PM.

The City of Roseville provided traffic count data at the four signalized study intersections for three different weekdays in April 2015 from their ITS traffic count database. Fehr & Peers conducted traffic counts at the unsignalized Washington Boulevard/Kaseberg Drive intersection in May 2016. The segment volumes (i.e., north and south of Kaseberg Drive) collected in May 2016 were compared to the averaged April 2015 counts. The comparison showed somewhat greater volumes during the May 2016 counts versus the April 2015 counts. This growth may be due to a variety of factors ranging from new land uses in the area, increased congestion on parallel facilities, and seasonal variations in traffic demand. The through movements at intersections #1, #2, #4, and #5 were increased from the observed April 2015 values as appropriate to reflect this traffic growth, thereby enabling these volumes to represent May 2016 conditions.

The ADT on Diamond Oaks Road and Washington Boulevard was collected and compared for conditions when nearby schools are both in session and out of session. **Table 2** shows the results for Diamond Oaks Road, while **Table 3** shows the results for Washington Boulevard. As shown, the ADT on Washington Boulevard increases by five percent, and the ADT on Diamond Oaks Road increases by 20 percent when school is in session.

TABLE 2: DIAMOND OAKS ROAD - EXISTING AVERAGE DAILY TRAFFIC

Segment	Count Date	Average Daily Traffic (ADT)
School Out of Session		
Diamond Oaks Road east of Washington Boulevard	Tuesday, August 2, 2016	4,400
	Wednesday, August 3, 2016	4,400
	Thursday, August 4, 2016	4,700
	Average	4,500
School In Session		
Diamond Oaks Road east of Washington Boulevard	Wednesday, August 17, 2016	5,100
	Thursday, August 18, 2016	5,600
	Average	5,400 (20% increase)

Notes:
1. Data collected on Tuesday, August 16th was not used because of malfunction of Washington Boulevard/Pleasant Grove Boulevard traffic signal, which caused atypical traffic patterns.
2. Source: City of Roseville ITS Traffic count database.
3. Values rounded to the nearest 100 vehicles.

Source: Fehr & Peers, 2016.

TABLE 3: WASHINGTON BOULEVARD - EXISTING AVERAGE DAILY TRAFFIC

Segment	Count Date	Average Daily Traffic (ADT)
School Out of Session		
Washington Boulevard south of Diamond Oaks Road	Tuesday, August 2, 2016	19,000
	Wednesday, August 3, 2016	19,200
	Thursday, August 4, 2016	19,800
	Average	19,300
School In Session		
Washington Boulevard south of Diamond Oaks Road	Wednesday, August 17, 2016	19,900
	Thursday, August 18, 2016	20,700
	Average	20,300 (5% increase)

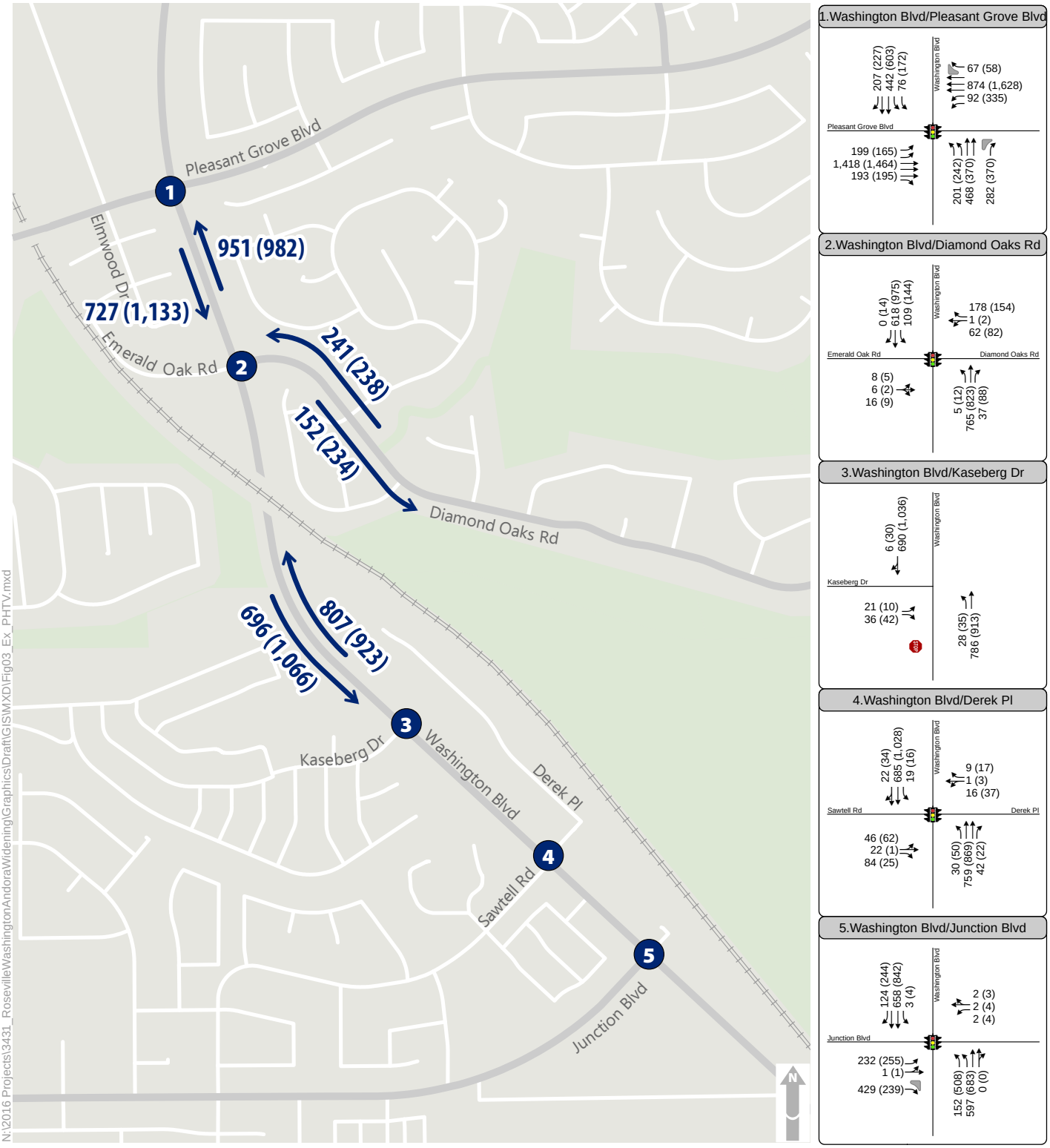
Notes:
1. Data collected on Tuesday, August 16th was not used because of malfunction of Washington Boulevard/Pleasant Grove Boulevard traffic signal, which caused atypical traffic patterns.
2. Source: City of Roseville ITS Traffic count database.
3. Values rounded to the nearest 100 vehicles.

Source: Fehr & Peers, 2016.

Figure 4 shows the existing ADT at multiple locations along Washington Boulevard, Pleasant Grove Boulevard, Diamond Oaks Road, and Junction Boulevard. The ADT estimates were obtained as follows:

- The ADT on Pleasant Grove Boulevard and Junction Boulevard were based on data provided by the City of Roseville in April 2015.
- The ADT estimate shown on Figure 4 on Washington Boulevard south of Diamond Oaks Road is based on the average value shown in Table 3 (while schools are in session). The ADT estimates on the other segments were derived by factoring the daily traffic volume based on how the AM and PM peak hour volume differ for each given segment.

The ADT on Washington Boulevard (20,300 to 22,100 within the widening limits) represents a substantial amount of traffic for a two-lane undivided roadway to accommodate.



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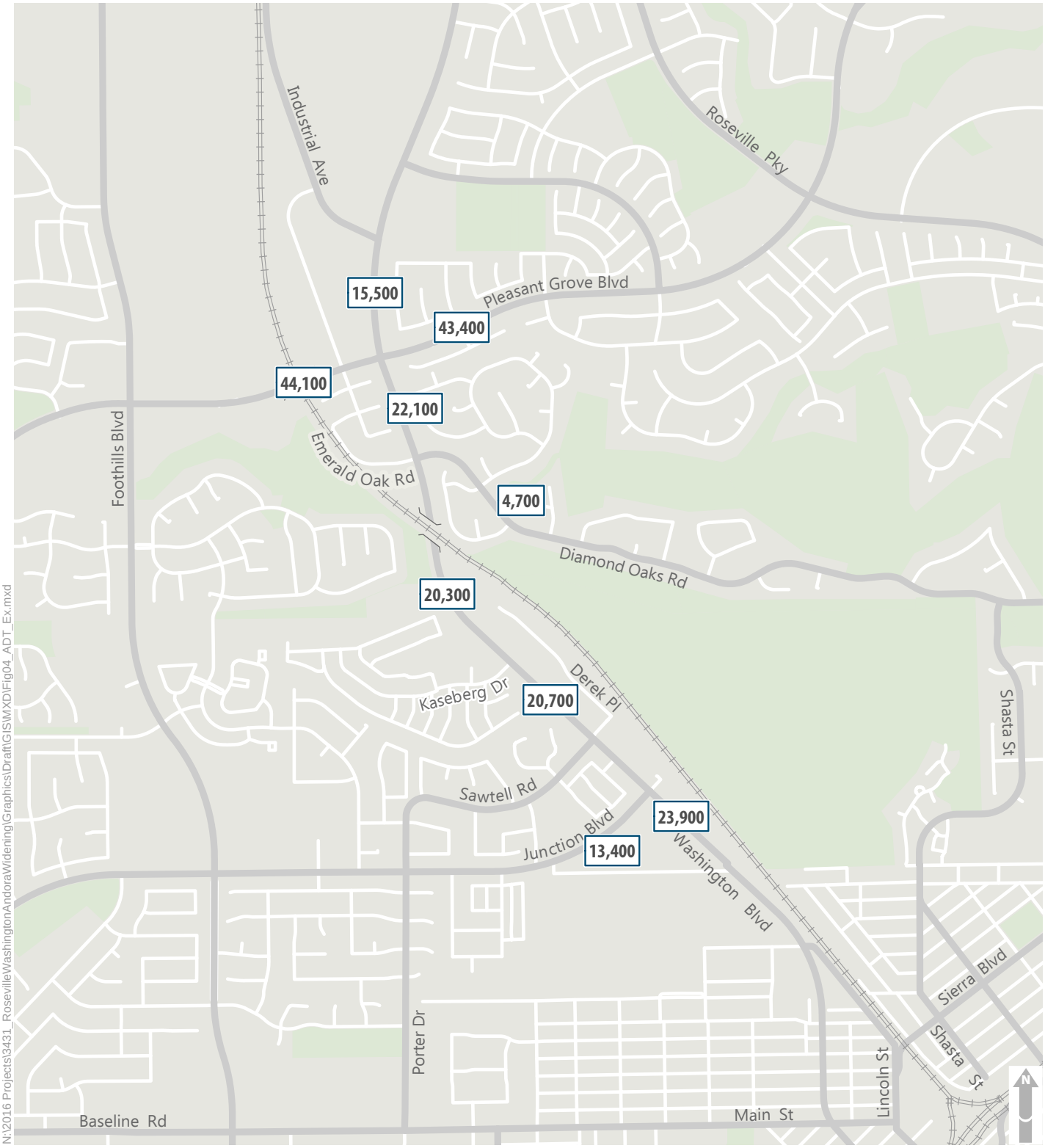
Note: The AM peak hour occurred from 7:30 – 8:30 AM, and the PM peak hour occurred from 4:45 to 5:45 PM.

Figure 3

Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions



13,400 Average Daily Traffic (ADT)

Note:
Based on traffic counts collected in May 2016 while schools were in session.

Figure 4

Average Daily Traffic - Existing Conditions

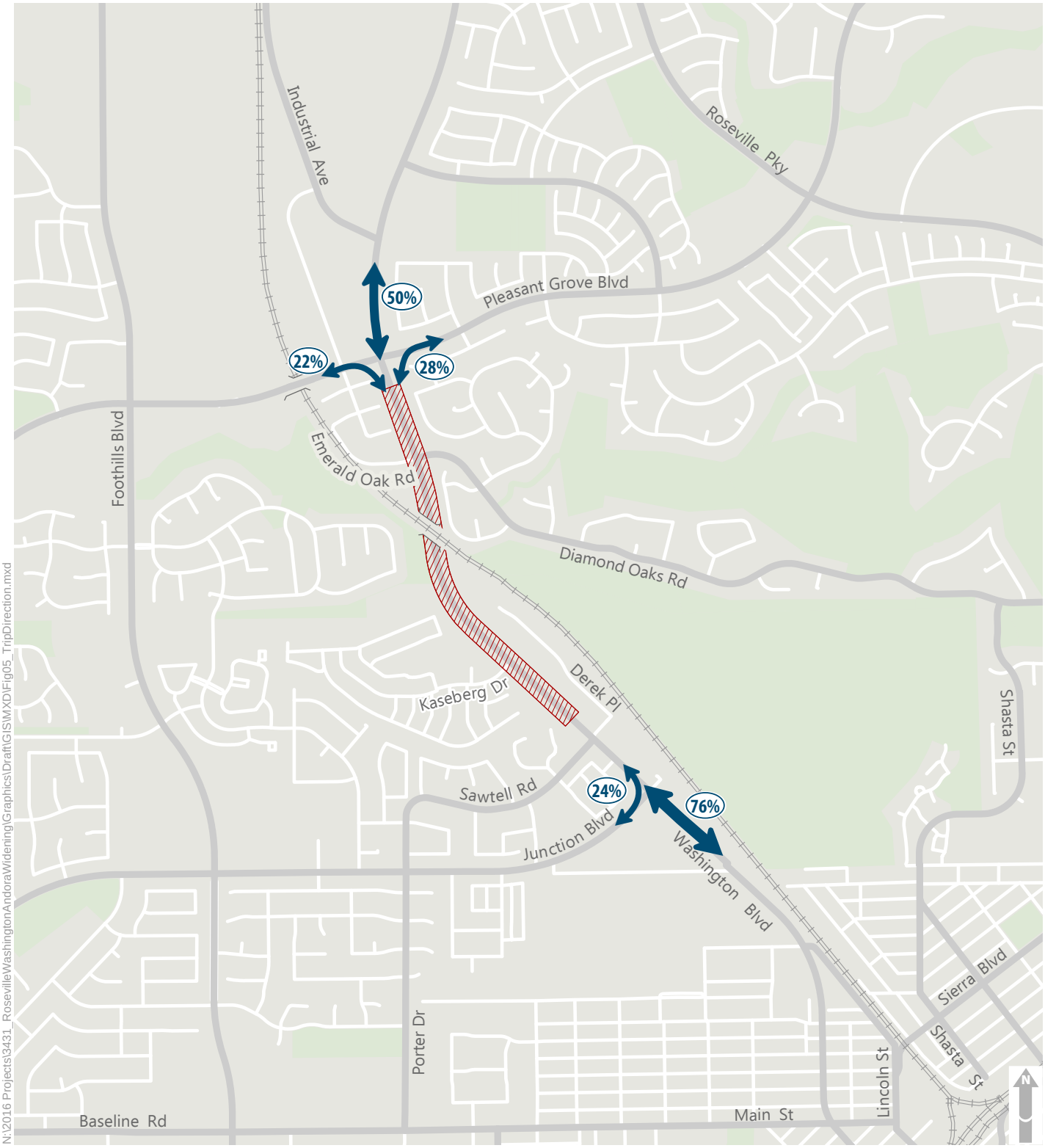
Figure 5 shows the general directionality of trips entering and exiting each end of the Washington Boulevard corridor, which reflect conditions with school in session. These estimates were derived by the AM and PM peak hour turning movements and should be considered to provide a general trend of travel behavior. As shown, about three-quarters of the trips on the south end of the corridor are continued through trips on Washington Boulevard south of Junction Boulevard. In contrast, about half of the trips on the north end of the corridor either turn left or right from Pleasant Grove Boulevard.

Figure 6 displays a comparison of existing travel times on potential parallel/alternative routes to Washington Boulevard. This data was compiled primarily to assist in the evaluation of how various construction closure scenarios may affect a redistribution of existing traffic. Data is shown for the PM peak hour since this period has the greatest overall traffic volumes and amount of potentially diverted traffic. The travel time runs were conducted while schools were not in session because the majority of construction-related closures would occur during the summer when schools are not in session. This data is reported in this chapter because it pertains to existing conditions. However, its meaning and applicability to construction closures are discussed in detail in Chapter 5.

INTERSECTION OPERATIONS

The study corridor was analyzed using the SimTraffic microsimulation model. Refer to Chapter 1 for rationale for selection of this model. Actual signal timings at each signalized study intersection were entered into the model, as were lane configurations and peak hour traffic volumes. Although the private eastbound Kaseberg Drive approach to Washington Boulevard does not have two striped lanes, field observations indicated that the approximate 27-feet of pavement is sufficient to allow simultaneous left- and right-turn movements. Hence, they were modeled as exclusive left- and right-turn lanes.

It is important that the SimTraffic model be calibrated to match existing conditions. Thus, the model included the signal timing/coordination plans that exist along the Pleasant Grove Boulevard corridor (including the addition of nearby signalized intersections to model the effect of vehicle platooning). Additionally, it is important that the model properly replicate the somewhat random arrival of northbound Washington Boulevard traffic approaching Diamond Oaks Road. Field observations reveal that these arrivals can result in lengthy queues that extend back toward (but not typically into) the UPRR Andora Underpass structure. The SimTraffic model estimated the northbound through movement at Washington Boulevard/Diamond Oaks Road would have a PM peak hour 95th percentile vehicle



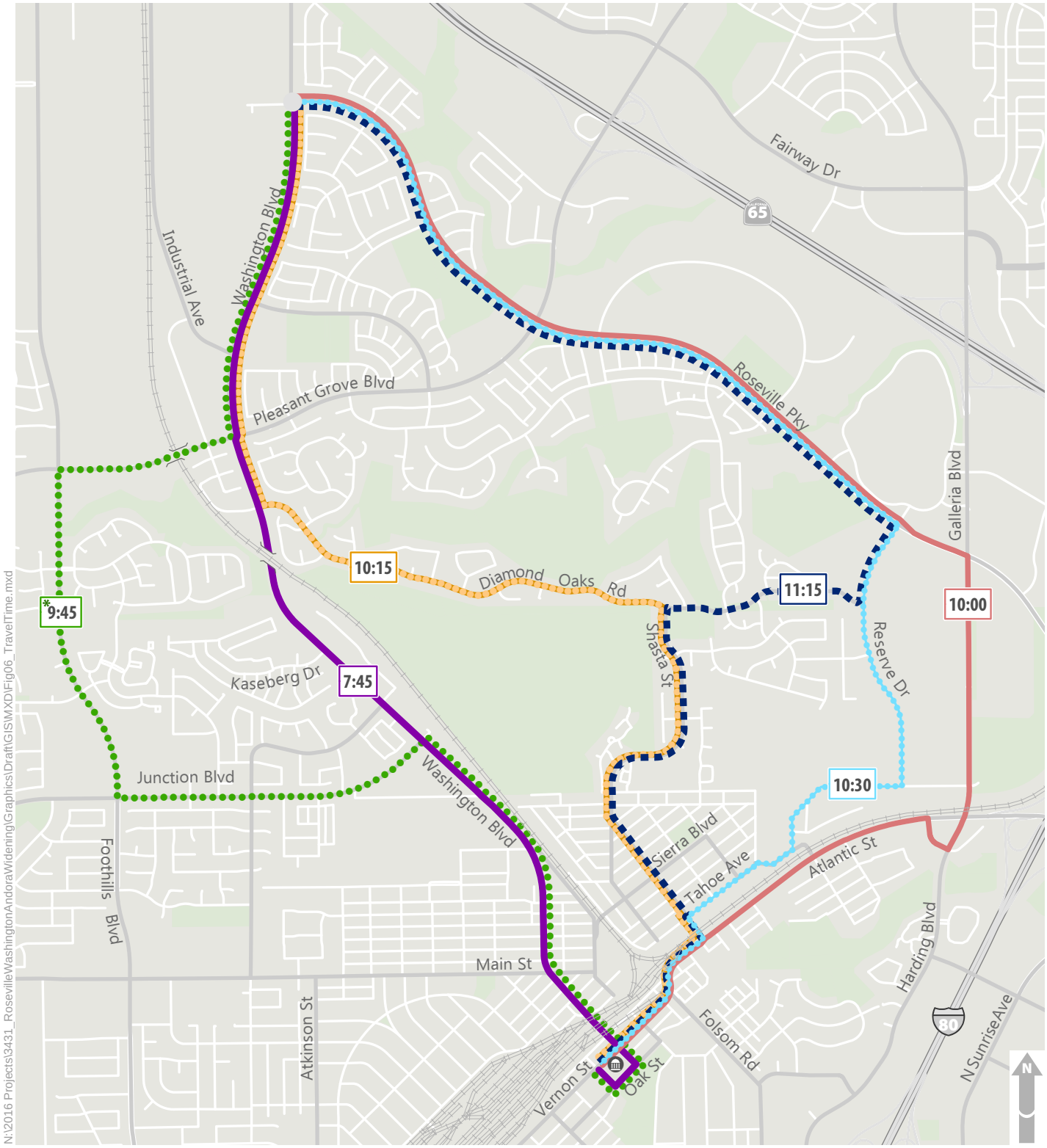
50% Percent of Trips

Study Corridor

Note:
Directionality estimated using AM and PM peak hour turning movements.

Figure 5

Existing Directionality of Trips Entering/Exiting Study Corridor



City Hall

XX:YY minutes:seconds

Notes:

1. Travel time survey conducted during PM peak hour while schools were not in session.
2. City Hall chosen as southerly destination, though travel time results would be comparable for other southerly origins/destinations.

*Travel time savings on this route increases as the southerly destination moves north (e.g., Old Roseville)

Figure 6

Travel Time Comparison - Existing Conditions

BICYCLE / PEDESTRIAN SYSTEM

The following bicycle facilities are present along the Washington Boulevard corridor:

- Northbound: No designated bicycle facilities are present along Washington Boulevard. However, a two-way Class I multi-use path exists on the east side of Washington Boulevard extending from the Derek Place cul-de-sac northerly to Pleasant Grove Boulevard. This Class I facility includes a tunnel under the UPRR tracks.
- Southbound: A Class II on-street bike lane extends for a short segment south of Pleasant Grove Boulevard, terminating prior to Diamond Oaks Road. A sign is present in the southbound direction stating the following: "Bicycles Not Advised in Underpass". Southbound bicyclists can access the Class I path on the east side by either traveling with traffic and turning left at Diamond Oaks Road or remaining on the west side of the street and using the crosswalk to cross to the east side of the street.

No designated pedestrian facilities are present on the east side of Washington Boulevard north of Sawtell Road with the exception of the portion of the two-way Class I multi-use path located north of Diamond Oaks Road. A sidewalk is located on the west side of Washington Boulevard between Pleasant Grove Boulevard and Diamond Oaks Road. A sidewalk also exists from south of Kaseberg Drive to Sawtell Road. Crosswalks are present on all approaches at the Washington Boulevard/Pleasant Grove Boulevard and Washington Boulevard/Sawtell Road signalized intersections. Crosswalks are present on the east, west, and north legs of the Washington Boulevard/Diamond Oaks Road signalized intersection. Crosswalks are not present at the Washington Boulevard/Kaseberg Drive intersection.

In summary, bicycle and pedestrian facilities are present on portions of the study segment of Washington Boulevard. However, they are not continuous and therefore not well-suited for extended bicycle and pedestrian travel.

TRANSIT SYSTEM

No transit routes currently run on Washington Boulevard within the study area. However, Roseville Transit operates local lines along segments of Washington Boulevard adjacent to the study area (e.g. north of Pleasant Grove Boulevard and south of Junction Boulevard). A bus turnout is constructed on the west side of Washington Boulevard south of Pleasant Grove Boulevard.

3. EXISTING PLUS PROJECT CONDITIONS

This chapter analyzes the impacts of the proposed project under existing conditions. Refer to Appendix B for the 30 percent drawings of the proposed widening prepared by Mark Thomas & Company (dated September 9, 2016).

TRAFFIC FORECASTS

The City of Roseville base year travel demand model (TDM) was used to forecast expected changes in daily traffic and peak hour turning movement volumes under an "Existing Plus Washington / Andora Widening" condition (i.e., "Existing Plus Project"). The model underwent a review of roadway lanes, free-flow speeds, traffic analysis zone (TAZ) loadings, and other factors to ensure that it was adequately calibrated within the study area so that its traffic projections matched existing volumes (to within tolerable levels of deviation).

The proposed widening of Washington Boulevard was added to the base year model. The difference in the traffic volume estimates predicted by the model was then added to existing counts. This process is known as the difference method and is displayed below:

> *Existing Plus Project Forecast = Existing Volume + (Base Model Plus Project – Base Model)*

Figure 7 shows the AM and PM peak hour turning volumes at these intersections for the Existing Plus Project scenario. During each peak hour, the volumes traveling in either direction of Washington Boulevard south of Pleasant Grove Boulevard would increase by 220 to 400 vehicles depending on the peak hour and direction.

Figure 8 presents the Existing Plus Project ADT forecasts, and **Table 5** compares them to the Existing Conditions. As shown, the widening of Washington Boulevard would result in an increase of 7,700 vehicles per day on the widened portion of the roadway. A considerable amount of this traffic (6,000 daily vehicles) would be redistributed from Foothills Boulevard, a parallel six-lane roadway.

queue of 450 feet (i.e., 18 vehicles), which represents queuing that extends about two-thirds of the way back to the overcrossing. Reviews of other critical turn movements yielded similar validation findings. Thus, the model is adequately calibrated to existing conditions.

All signalized study intersections currently operate with protected left-turn phasing with the exception of the eastbound-westbound approaches to the Washington Boulevard/Diamond Oaks Road/Emerald Oak Road intersection, which operate with permitted phasing. The intersections along Washington Boulevard at Junction Boulevard and Sawtell Road are coordinated during peak periods. The Washington Boulevard/Diamond Oaks Road intersection is coordinated with the Pleasant Grove Boulevard intersection during the morning and evening commute periods as well.

Table 4 displays the average delay and LOS at the five study intersections (refer to Appendix A for technical calculations). These results represent conditions while schools are in session. As shown, all signalized study intersections operate at LOS C or better with the exception of the Washington Boulevard/Pleasant Grove Boulevard intersection, which operates at LOS D during the PM peak hour.

TABLE 4: PEAK HOUR INTERSECTION OPERATIONS – EXISTING CONDITIONS

	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
1	Washington Boulevard / Pleasant Grove Boulevard	Signal	33	C	46	D
2	Washington Boulevard / Diamond Oaks Road / Emerald Oak Road	Signal	21	C	29	C
3	Washington Boulevard / Kaseberg Drive (private) [1]	Side-Street Stop	14 (11)	A (B)	5 (23)	A (C)
4	Washington Boulevard / Sawtell Road / Derek Place	Signal	10	A	11	B
5	Washington Boulevard / Junction Boulevard	Signal	10	A	16	B

[1] For side-street stop controlled intersections, the overall delay and worst movement delay is reported.
Source: Fehr & Peers, 2016.

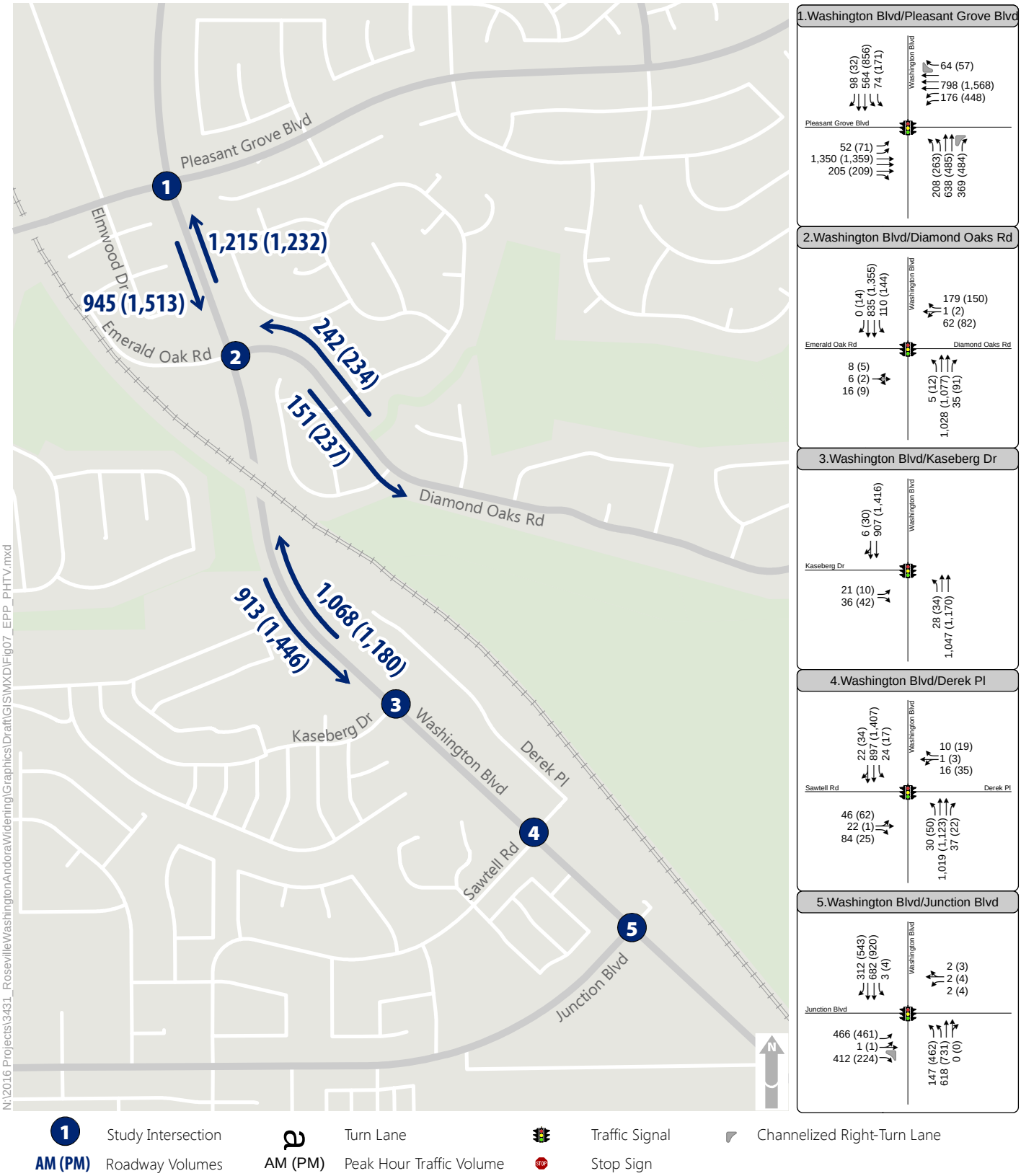


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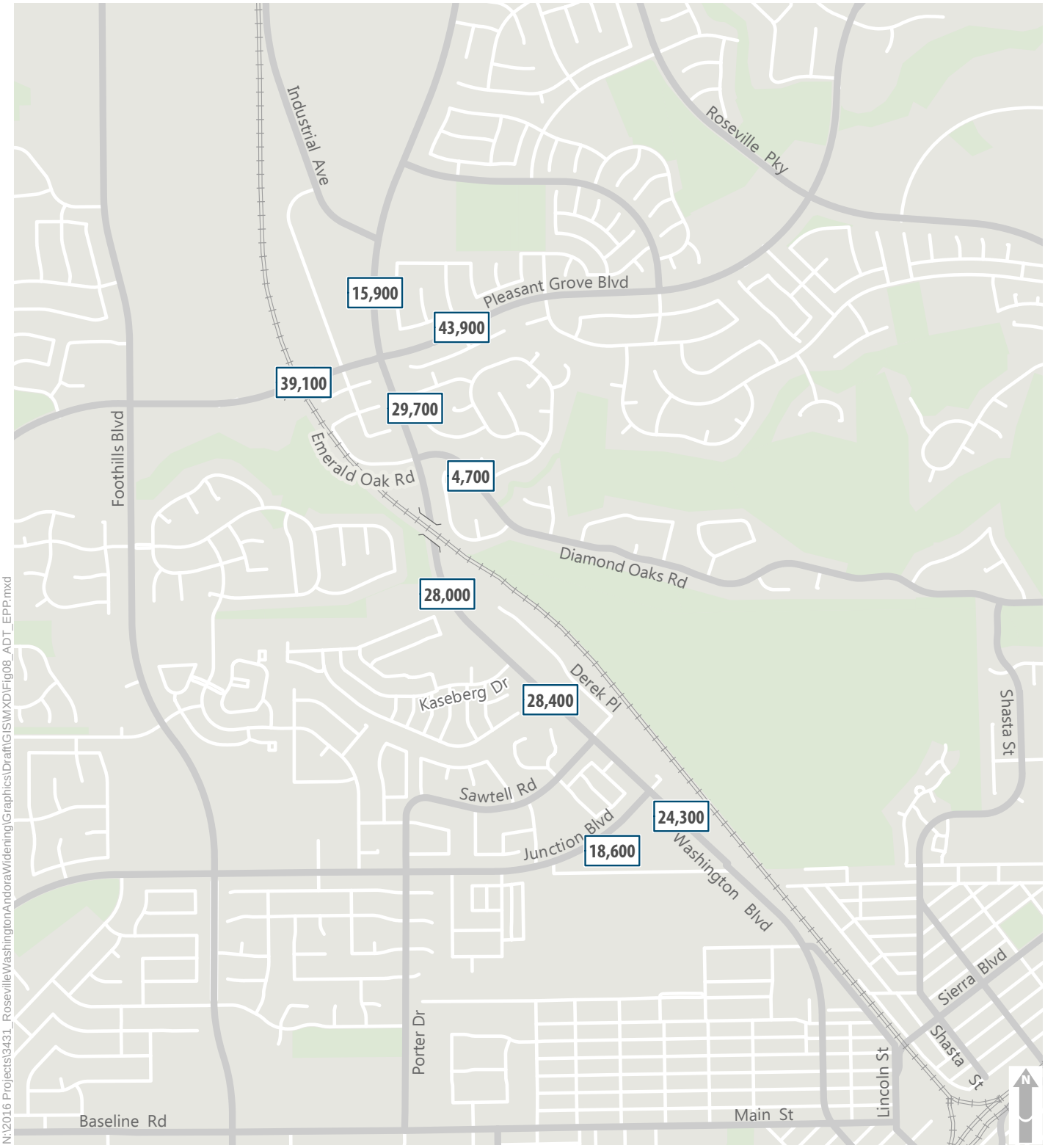
Figure 7

Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Project Conditions



13,400 Average Daily Traffic (ADT)

Figure 8

Average Daily Traffic - Existing Plus Project Conditions

TABLE 5: EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC

Location	Existing ADT	Existing Plus Project ADT	Difference
Washington Boulevard between Pleasant Grove Boulevard and Industrial Avenue	15,500	15,900	+400
Washington Boulevard between Emerald Oak Road / Diamond Oaks Road and Pleasant Grove Boulevard	22,100	29,700	+7,600
Washington Blvd between Kaseberg Drive and Emerald Oak Road / Diamond Oaks Road	20,300	28,000	+7,700
Washington Blvd between Kaseberg Drive and Sawtell Road / Derek Place	20,700	28,400	+7,700
Washington Blvd between Junction Boulevard and Corporation Yard Road	23,900	24,300	+400
Pleasant Grove Boulevard between Winslow Drive and Washington Boulevard	43,400	43,900	+500
Pleasant Grove Boulevard between Washington Boulevard and Galilee Road/ Elmwood Rive	44,100	39,100	-5,000
Diamond Oaks Road between Glenwood Circle / Firestone Drive and Washington Boulevard	4,700	4,700	0
Junction Boulevard between Washington Boulevard and Corporation Yard Road	13,400	18,600	+5,200
Foothills Boulevard between Pleasant Grove Boulevard and S Bluff Drive / Beckett Drive	32,200	26,000	-6,000

Note: Values rounded to the nearest one hundred vehicles.

Source: Fehr & Peers, 2016

INTERSECTION OPERATIONS

The following describes the anticipated lane configurations, traffic control, and signal timing at each study intersection:

- Washington Boulevard/Diamond Oaks Road – Northbound and southbound approaches would each consist of one left-turn, two through lanes, and a dedicated right-turn lane. Eastbound and westbound approaches would remain unchanged and continue to operate with permitted phasing, per direction from City Traffic Operations staff.

- Washington Boulevard/Kaseberg Drive (private driveway) – should appropriate grant funding be obtained, this intersection would be signalized (versus operating with side-street stop) to provide improved bicycle and pedestrian connectivity. It would include two northbound and two southbound through lanes, a northbound left-turn lane, and exclusive eastbound left and right-turn lanes.

- Washington Boulevard/Pleasant Grove Boulevard, Washington Boulevard/Sawtell Road, and Washington Boulevard/Junction Boulevard – no changes in lane configurations, traffic controls or signal timing/phasing from existing conditions.

Table 6 displays the average delay and LOS under Existing Plus Project conditions. Technical calculations for this analysis are in Appendix B. The following summarizes the key findings from the analysis:

- The widening of Washington Boulevard would degrade PM peak hour operations at the Washington Boulevard/Pleasant Grove intersection from LOS D to E. This occurs as a result of the southbound through movement increasing from 603 to 856 vehicles (42 percent), and the westbound-left volume increasing from 335 to 448 vehicles (34 percent), without any assumed changes in signal timings to accommodate these movements.

- Delays would decrease at the Washington Boulevard/Diamond Oaks Road intersection by virtue of additional capacity provided by the widening.

- Delays would increase modestly at the Washington Boulevard/Sawtell Road and Washington Boulevard/Junction Boulevard intersections, though operations would remain at LOS C or better.

- The Washington Boulevard/Kaseberg Drive (private) intersection would operate at LOS A during the AM and PM peak hours if signalized. If the intersection remains in its current side-street stop-control operations would remain at LOS C or better.

TABLE 6: PEAK HOUR INTERSECTION OPERATIONS – EXISTING PLUS PROJECT CONDITIONS

		Existing				Existing Plus Project			
	Intersection	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
1	Washington Boulevard / Pleasant Grove Boulevard	33	C	46	D	34	C	71	E
2	Washington Boulevard / Diamond Oaks Road / Emerald Oak Road	21	C	29	C	14	B	16	B
3	Washington Boulevard / Kaseberg Drive (private)[1]	4 (11)	A (B)	5 (23)	A (C)	Signalized Operations 8 (14)	A (B)	10 (16)	A (B)
						Stop-Control Operations 4 (15)	A (C)	6 (22)	A (C)
4	Washington Boulevard / Sawtell Road / Derek Place	10	A	11	B	9	A	11	B
5	Washington Boulevard / Junction Boulevard	10	A	16	B	13	B	22	C

Notes:

[1] For side-street stop-controlled intersections, the overall delay and worst movement delay is reported. Intersection assumed to be signalized under plus project conditions. Operations under 'plus project' conditions shown for both potential signal (provided grant funding is available) and for continued side-street stop control operations.
Source: Fehr & Peers, 2018

BICYCLE / PEDESTRIAN SYSTEM

The proposed project would substantially improve the environment for bicycle and pedestrian travel, as follows:

- The project would result in continuous Class II bike lanes on both sides of Washington Boulevard between Sawtell Road and Pleasant Grove Boulevard.

- A new sidewalk and a new segment of Class 1 Multi-Use Trail would be constructed on the west side of Washington Boulevard between Kaseberg Drive, the Power line corridor and Diamond Oaks Road, thereby resulting in a continuous pedestrian facility between Sawtell Road and Pleasant Grove Boulevard. Should appropriate funding be provided, the new traffic signal at Kaseberg Drive would provide a crosswalk across Washington Boulevard that would provide access this trail.

- The project would expand an existing Class I (i.e., off-street) Multi-Use Path located on the east side of the roadway. After construction, it would extend parallel to Washington Boulevard from Sawtell Road to Pleasant Grove Boulevard, providing a direct connection to the existing Class I path that connects to Derek Place.

Refer to Chapter 6 for project-specific impacts and mitigation measures.

4. CUMULATIVE (2035) CONDITIONS

This chapter presents the analysis of project impacts under Cumulative (2035) conditions.

LAND USE AND ROADWAY NETWORK ASSUMPTIONS

The City of Roseville utilizes a 2035 Capital Improvements Program (CIP) travel demand model to analyze future roadway conditions in the City. The model assumes buildout of the City of Roseville including various approved specific plans such as the Sierra Vista, Creekview, and Amoruso Specific Plans.[1] Land uses outside of the City represent projected absorption by the Year 2035. The City's traffic model also includes its existing roadway system along with planned CIP roadway and intersection improvements. The City's CIP project list is reasonably foreseeable based on a strong likelihood (and past history) that they will very likely be fully funded by the time they are needed based on the current fees being collected.

The City's CIP includes the widening of Washington Boulevard to four lanes between Pleasant Grove Boulevard and Sawtell Road. Accordingly, recent environmental documents in the City have assumed this improvement in place under cumulative conditions. The City's CIP also assumes the addition of a fourth westbound travel lane at the Washington Boulevard/Pleasant Grove Boulevard intersection, which is assumed in place for this analysis.

[1] The selection of the 2035 CIP versus 2035 Cumulative travel demand models would not appreciably change the study findings, as the cumulative daily forecasts on Washington Boulevard are within 1.5 percent of each other.

TRAFFIC FORECASTS

Traffic forecasts were developed for the following two cumulative scenarios:

- Cumulative No Project – assumes Washington Boulevard remains two lanes between Pleasant Grove Boulevard and Sawtell Road.
- Cumulative Plus Project – assumes Washington Boulevard is widened to four lanes between Pleasant Grove Boulevard and Sawtell Road.

Cumulative traffic forecasts were developed using the 'difference method' procedure as described below:

> *Cumulative Forecast = Existing Volume + (Cumulative Traffic Model – Base Traffic Model)*

Figure 9 shows the Cumulative (2035) No Project AM and PM peak hour turning movement forecasts and lane configurations at the study intersections. **Figure 10** displays the average daily traffic on Washington Boulevard and adjacent roadways for Cumulative No Project conditions.

Figure 11 shows the Cumulative (2035) Plus Project AM and PM peak hour turning movement forecasts and lane configurations at the study intersections. **Figure 12** displays the average daily traffic on Washington Boulevard and adjacent roadways for Cumulative Plus Project conditions.

Table 7 compares the Cumulative (2035) ADT forecasts along Washington Boulevard and adjacent roadways under No Project and Plus Project conditions. Key findings from this table include the following:

- The ADT on Washington Boulevard south of Diamond Oaks Road would increase from 20,300 under existing conditions to 24,900 under Cumulative No Project Conditions, which is a 23 percent increase.
- The proposed widening of Washington Boulevard would result in 32,000 ADT on Washington Boulevard south of Diamond Oaks Road under cumulative conditions. While this is a sizeable volume of traffic for a four-lane arterial, it represents a 21 percent decrease in traffic on a 'per lane' basis when compared to existing conditions (i.e., 20,300 ADT on two lanes).

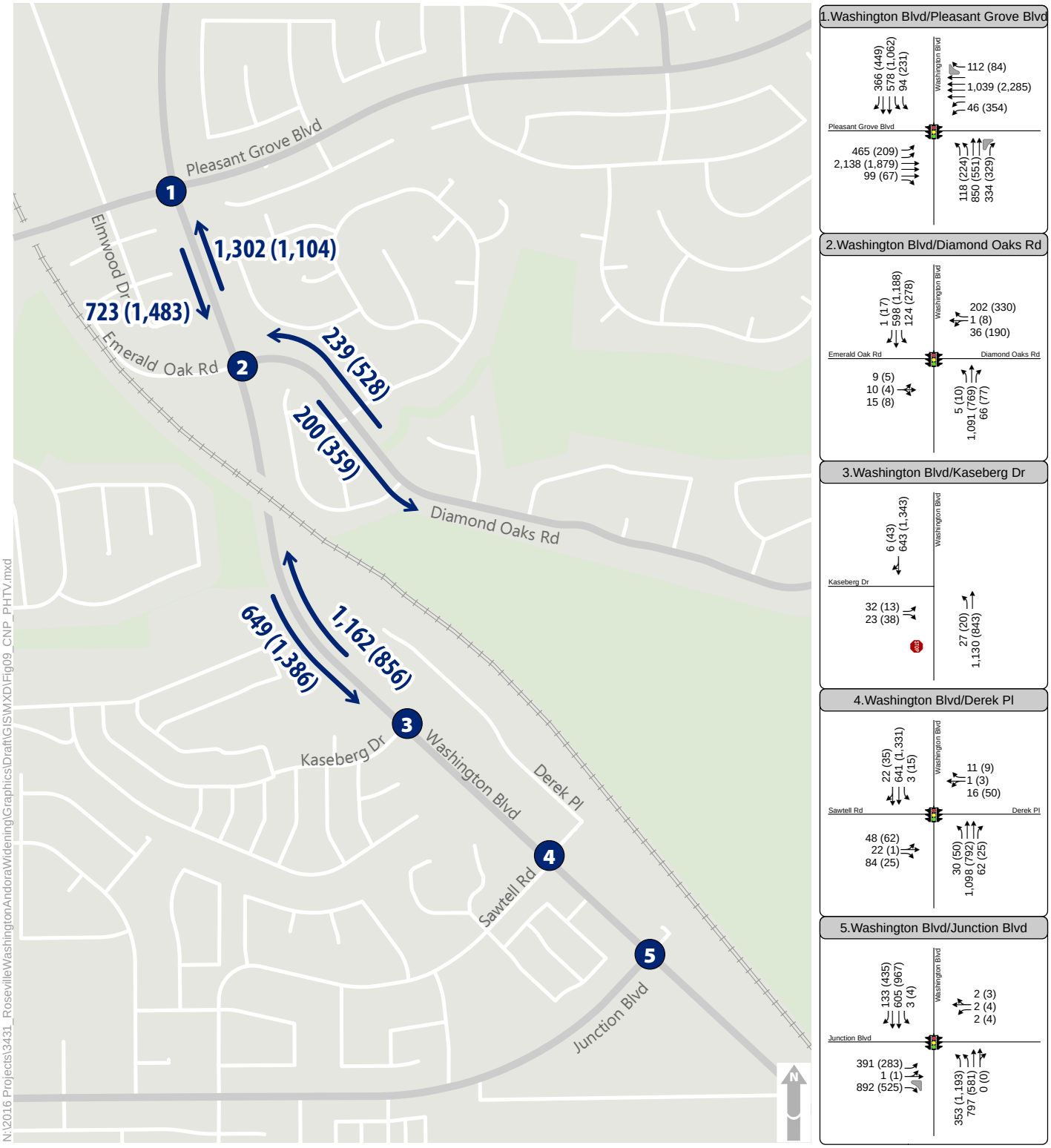
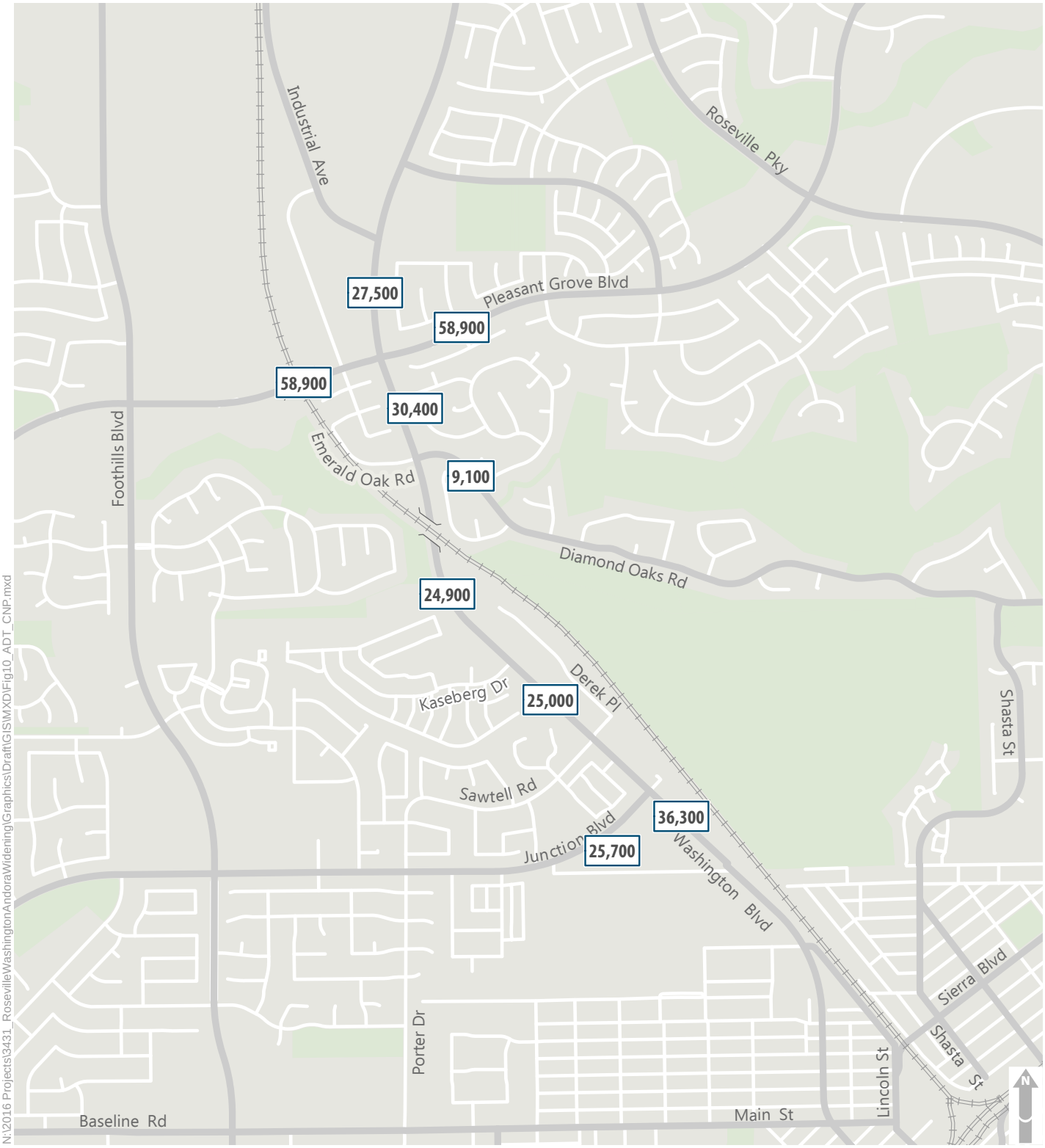


Figure 9

Peak Hour Traffic Volumes and Lane Configurations - Cumulative (2035) No Project Conditions



13,400 Average Daily Traffic (ADT)

Figure 10

Average Daily Traffic - Cumulative (2035) No Project Conditions

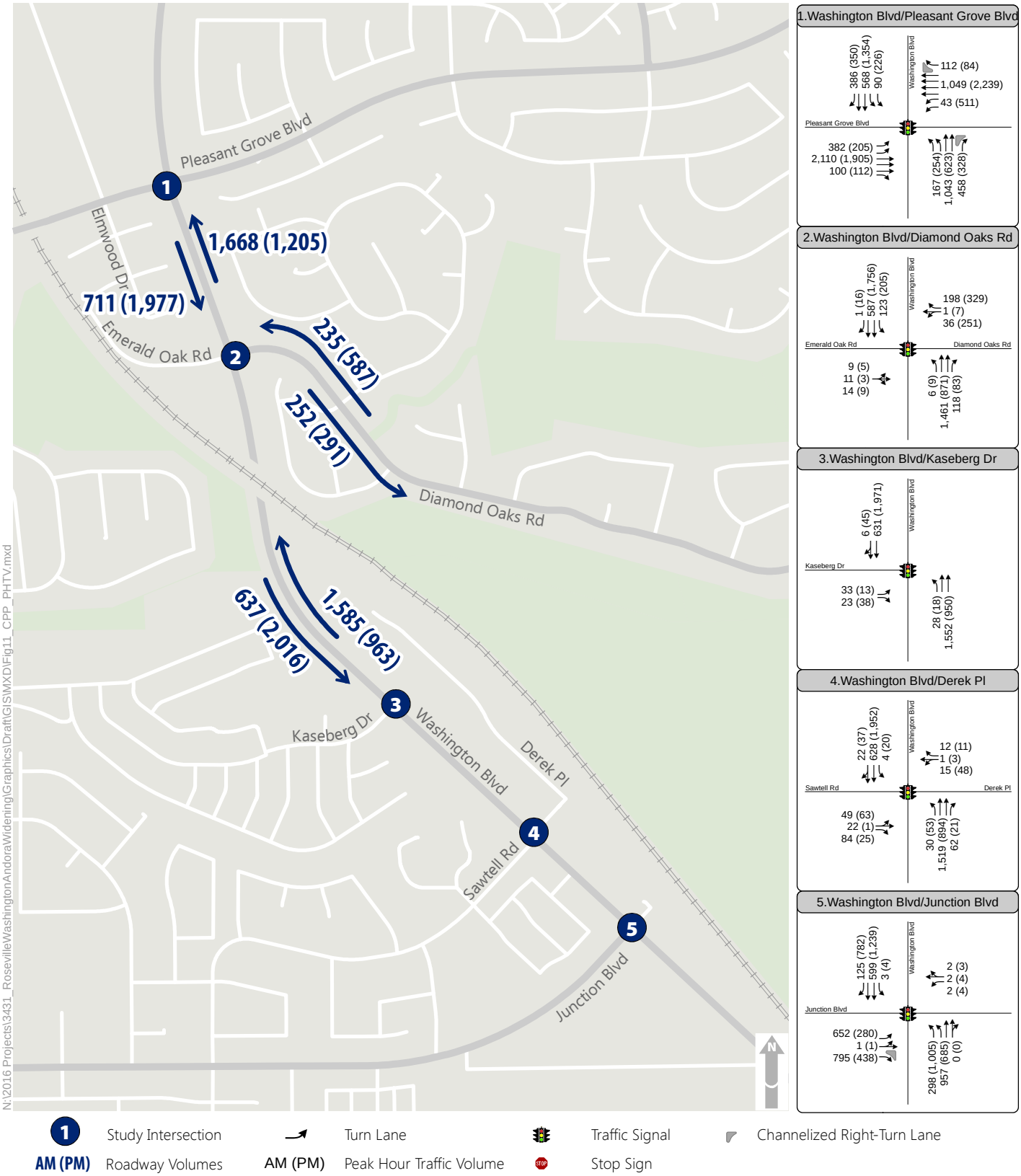


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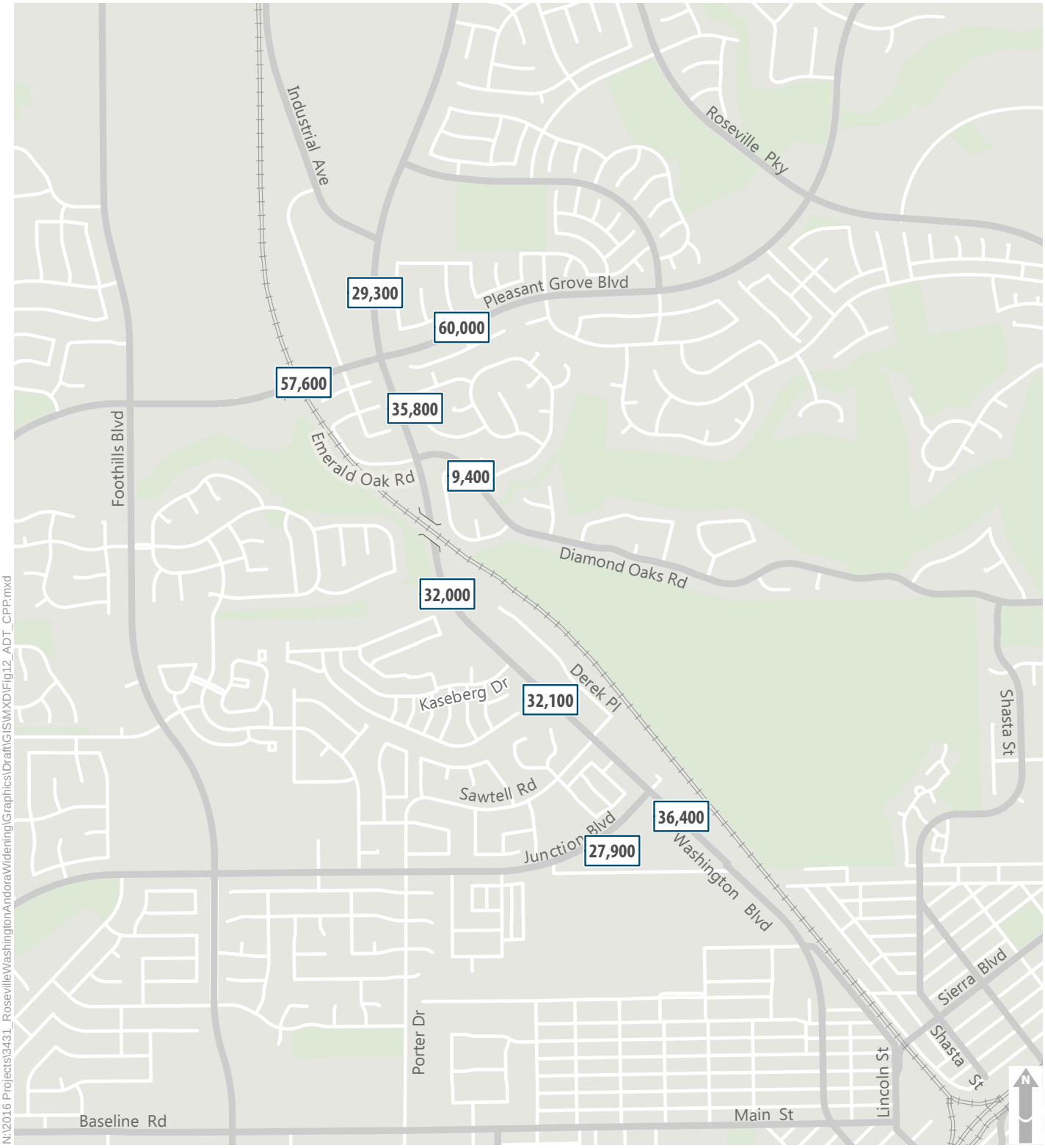
Figure 11

Peak Hour Traffic Volumes and Lane Configurations - Cumulative (2035) Plus Project Conditions



13,400 Average Daily Traffic (ADT)

Figure 12

Average Daily Traffic - Cumulative (2035) Plus Project Conditions

There is less traffic diversion from Foothills Boulevard to Washington Boulevard under Cumulative (2035) Plus Project Conditions versus Existing Plus Project conditions. Review of model output shows diversion on a slightly more regional scale including from more remote parallel roadways, such as Woodcreek Oaks Boulevard and Roseville Parkway.

TABLE 7: CUMULATIVE (2035) AVERAGE DAILY TRAFFIC

Location	Cumulative (2035) No Project ADT	Cumulative (2035) Plus Project ADT	Difference
Washington Boulevard between Pleasant Grove Boulevard and Industrial Avenue	27,500	29,300	+1,800
Washington Blvd between Kaseberg Drive and Emerald Oak Road / Diamond Oaks Road	30,400	35,800	+5,400
Washington Blvd between Kaseberg Drive and Emerald Oak Road / Diamond Oaks Road	24,900	32,000	+7,100
Washington Blvd between Kaseberg Drive and Sawtell Road / Derek Place	25,000	32,100	+7,100
Washington Blvd between Junction Boulevard and Corporation Yard Road	36,300	36,400	+100
Pleasant Grove Boulevard between Winslow Drive and Washington Boulevard	58,900	60,000	+1,100
Pleasant Grove Boulevard between Washington Boulevard and Galilee Road/ Elmwood Rive	58,900	57,600	-1,300
Diamond Oaks Road between Glenwood Circle / Firestone Drive and Washington Boulevard	9,100	9,400	+300
Junction Boulevard between Washington Boulevard and Corporation Yard Road	25,700	27,900	+2,200
Foothills Boulevard between Pleasant Grove Boulevard and S Bluff Drive / Beckett Drive	50,000	49,400	-600

Note: Values rounded to the nearest one hundred vehicles.

Source: Fehr & Peers, 2016.

INTERSECTION OPERATIONS

Traffic operations at the study intersections were analyzed for Cumulative No Project and Cumulative Plus Project AM and PM peak hour conditions using the SimTraffic model. **Table 8** displays these results. Refer to Appendix C for technical calculations.

TABLE 8: INTERSECTION OPERATIONS – CUMULATIVE (2035) CONDITIONS

		Cumulative (2035) No Project				Cumulative (2035) Plus Project			
Intersection		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
1	Washington Boulevard / Pleasant Grove Boulevard	41	D	110	F	52	D	165	F
2	Washington Boulevard / Diamond Oaks Road / Emerald Oak Road	68	E	36	D	22	C	22	C
3	Washington Boulevard / Kaseberg Drive (private)[1]	8 (13)	A (B)	9 (37)	A (E)	Signalized Operations 9 (18)	A (B)	11 (15)	B (B)
						Stop-Control Operations 4 (11)	A (B)	7 (35)	A (E)
4	Washington Boulevard / Sawtell Road / Derek Place	9	A	10	A	12	B	16	B
5	Washington Boulevard / Junction Boulevard	15	B	41	D	20	B	42	D

Notes:

[1] For side-street stop controlled intersections, the overall delay and worst movement delay is reported. Intersection assumed to be signalized under plus project conditions. Operations under 'plus project' conditions shown for both potential signal (provided grant funding is available) and for continued side-street stop control operations.
Source: Fehr & Peers, 2018

The following summarizes the key findings from this table:

- Washington Boulevard/Pleasant Grove Boulevard – The widening of Washington Boulevard would exacerbate (i.e., add delay) LOS D conditions during the AM peak hour and LOS F conditions during the PM peak hour.
- Washington Boulevard/ Diamond Oaks Road – The widening of Washington Boulevard would improve AM peak hour operations from LOS E to C and improve PM peak hour operations from LOS D to C.
- Washington Boulevard/Kaseberg Drive (private driveway) – The installation of a traffic signal would result in acceptable (LOS A or B) operations. However, with continued side-street stop

control, the minor street movement would operate at LOS E. When compared to no project conditions, side-street delays would decrease slightly by virtue of additional gaps in traffic provided by the widening.

- Washington Boulevard/Sawtell Road – Delays would increase modestly, though operations would remain at LOS C or better.

- Washington Boulevard/Junction Boulevard – Delays would increase during the AM peak hour due primarily to the increase in the critical eastbound left-turn movement. However, operations would remain at LOS C. Operations would remain at LOS D during the PM peak hour.

The Washington Boulevard/Pleasant Grove Boulevard intersection was reported to operate at a cumulative LOS C during the AM peak hour and LOS D during the PM peak hour in the *Final Traffic Study for the Amoruso Ranch Specific Plan* (Fehr & Peers, 2016). This result was based on Synchro analysis methods, and the assumption of a third southbound through lane being in place. The Washington Boulevard/Junction Boulevard intersection was reported to operate at a cumulative LOS C during the PM peak hour in the *Final Traffic Study for the Amoruso Ranch Specific Plan* (Fehr & Peers, 2016). The increase in delay is due, in part, to the use of SimTraffic in this study versus Synchro (non-simulation) in the previous study. As noted previously, SimTraffic considers the effects of vehicular queuing spillbacks on adjacent movement operations, while Synchro does not. Additionally, minor changes in turn movement forecasts occurred at each intersection.

Refer to Chapter 6 for cumulatively considerable project impacts and mitigation measures.

BICYCLE SYSTEM

Below is an image of the recommended bikeway network in the study area according to the City of Roseville Bikeway Master Plan (2008). As shown, future Class I bike paths (shown as dashed green lines) are recommended to extend westerly from Washington Boulevard.

Source: City of Roseville Bikeway Master Plan

5. CONSTRUCTION-RELATED TRAFFIC IMPACTS

During construction, the segment of Washington Boulevard near the UPRR Andora underpass would likely need to be closed in some capacity. This chapter presents several potential construction closure scenarios as well as the operational results associated with two of those plans. The closure of Washington Boulevard for construction would likely occur during the months of June through September.

POTENTIAL CONSTRUCTION CLOSURE SCENARIOS

Fehr & Peers, Mark Thomas & Company, and City of Roseville staff brainstormed and evaluated multiple potential closure options of Washington Boulevard to enable reconstruction of the rail bridge.

- Construction Closure Option 1: Washington Boulevard would be closed to all vehicular traffic directly north of Kaseberg Drive to Pleasant Grove Boulevard. This would close Washington Boulevard access to Diamond Oaks Road and Emerald Oak Road for motorists.
- Construction Closure Option 2: Washington Boulevard would be closed to all vehicular traffic directly north of Kaseberg Drive to Diamond Oaks Road, and closed to only southbound vehicular traffic between Diamond Oaks Road and Pleasant Grove Boulevard. This means that vehicles traveling westbound on Diamond Oaks Road and eastbound on Emerald Oak Road may use Washington Boulevard only to travel northbound towards Pleasant Grove Boulevard.
- Construction Closure Option 3: Washington Boulevard would be closed to all vehicular traffic from directly north of Kaseberg Drive to directly south of Diamond Oaks Road. Motorists traveling southbound from Pleasant Grove Boulevard would continue to be able to access Diamond Oaks Road from Washington Boulevard and vice versa.
- Construction Closure Option 4: Washington Boulevard would be reduced to a single-lane from south of Diamond Oaks Road to beyond the railroad bridge for a distance of 1,400 feet, yet still allow northbound and southbound traffic by alternating one-way movements through the constricted section (most likely via a traffic signal).

At the request of the City of Roseville, an operational analysis of Construction Closure Options 3 and 4 was conducted and is presented in the following section.

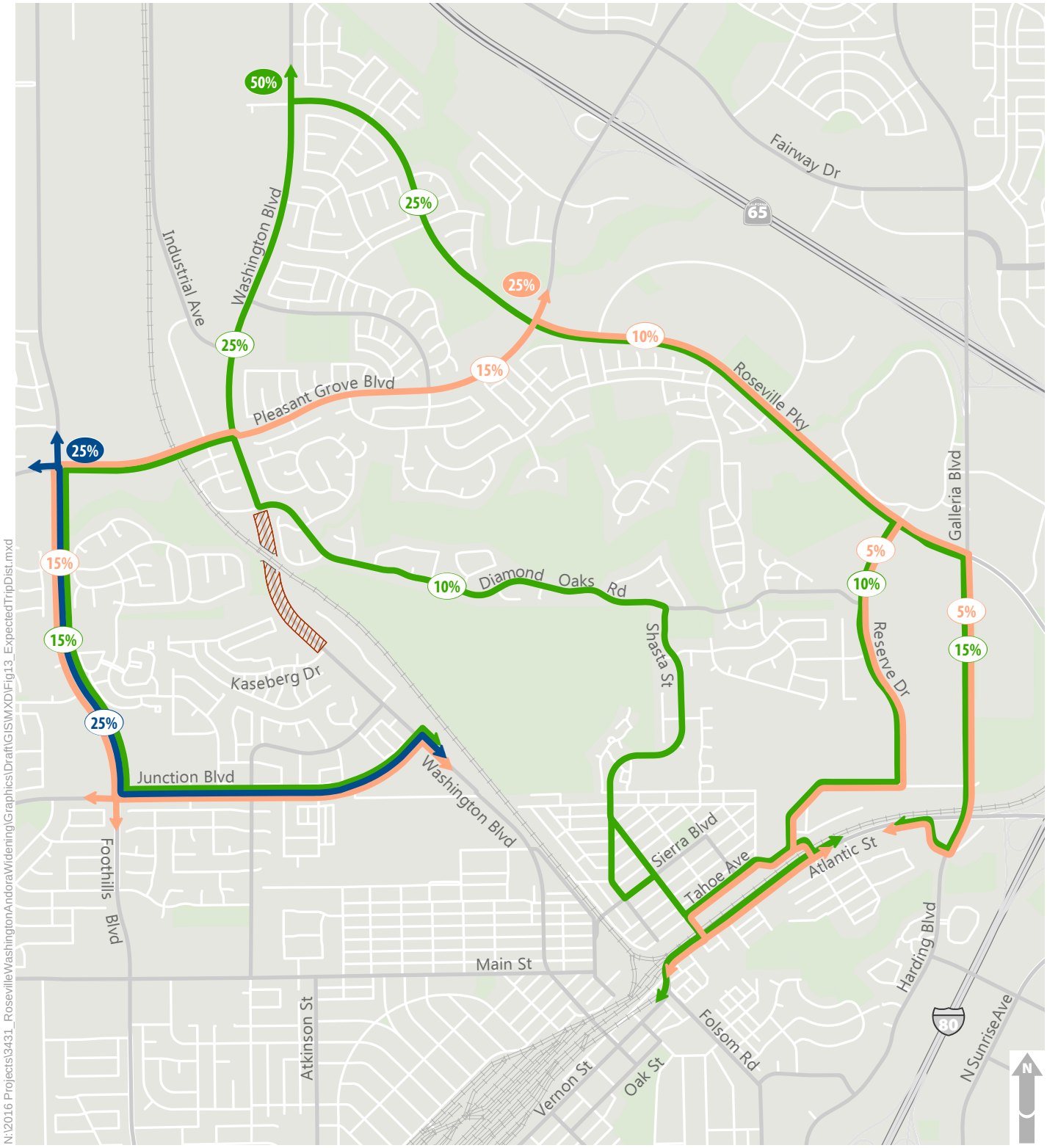
TRAFFIC EFFECTS OF CONSTRUCTION CLOSURE OPTION 3

The following two methods were used to evaluate the potential redistribution of traffic associated with this closure option:

- *Method A – Base Year City of Roseville Travel Demand Model*. The model was rerun with the closure plan in place and changes in average daily traffic were noted. Since the closure would be temporary, only the assignment module of the model was rerun (i.e., trip origins and destinations remained fixed). Refer to the Appendix D for a traffic model plot that shows the projected increase or decrease in ADT due to the street closure.
- *Method B – projected redistribution based on actual amount of traffic to be diverted and travel time survey results*. This method reassigns trips based on the spatial origins and destinations of trips using Washington Boulevard, and comparisons of which alternative routes offer the shortest travel times. **Figure 13** shows the expected redistribution of trips currently using Washington Boulevard.

Appendix D contains a spreadsheet that compares the projected change in ADT between the two methods. Overall, both methods yield comparable sets of projections, though there are some minor differences. Key conclusions from this evaluation include:

- The parallel segment of Foothills Boulevard would experience the greatest increase in traffic, with traffic levels increasing from about 32,000 to 43,000 ADT.
- Diamond Oaks Road east of Washington Boulevard would experience a net increase of about 2,000 ADT under conditions when schools are not in session. This would cause the segment's ADT to increase from 4,500 to 6,500 ADT. Under conditions when schools are in session, the ADT would be expected to increase from 5,400 to 8,000 ADT.



Redistribution of Trips
- to/from the north & south (50%)
- to/from the west & south (25%)
- to/from the east & south (25%)

XX% Percentage at North, West or East gateway

XX% Percentage on a given segment

Closed section of Washington Blvd.

Notes:
1. Routes shown are primarily for through trips and are based on conditions when nearby school are not in session.
2. Routing does not consider the extent to which additional congestion on a given route could cause further redistribution

Figure 13

Expected Redistribution of Existing Traffic Under Closure Option 3

These estimates are considered approximate and could change for a variety of reasons, as described below:

- An effective public information campaign and traffic detour strategy could encourage some streets to be used to a greater degree than others.
- The additional travel time associated with the detours could change trip destinations or suppress trip-making.
- Traffic volume increases on detoured routes could cause additional delays, which could result in redistribution to other routes.

The traffic diversion estimates from Method B are generally considered more accurate than Method A because it considers the actual amount of traffic being rerouted (versus a model's estimation of rerouted traffic). Method B is also somewhat more conservative because it does not consider the same degree of regional redistribution that the traffic model predicts (e.g., the model shows an increase on State Route 65, which is already near capacity).

The following intersections would experience notable increases in traffic under Construction Closure Option 3:

- Foothills Boulevard/Pleasant Grove Boulevard – westbound left-turn would increase by 427 vehicles during the PM peak hour.
- Foothills Boulevard/Junction Boulevard – southbound left-turn would increase by 533 vehicles and westbound right-turn would increase by 470 vehicles during the PM peak hour.
- Roseville Parkway/Reserve Drive – eastbound right-turn would increase by 160 vehicles and northbound left-turn would increase by 140 vehicles during the PM peak hour.
- Roseville Parkway/Galleria Boulevard – northbound left-turn would increase by 185 vehicles during the PM peak hour.

The amount of diverted traffic is greater during the PM peak hour than the AM peak hour. And since weekday PM peak hour conditions are typically worse than AM peak hour conditions, the analysis of construction impacts focuses on PM peak hour conditions.

Table 9 displays the existing PM peak hour LOS at the four intersections listed above. This data was collected in April 2015 as part of the Placer Ranch Specific Plan transportation impact study. This table also shows how each intersection would operate during the construction closure. The technical calculations for this analysis are included in Appendix D.

TABLE 9: PM PEAK HOUR INTERSECTION OPERATIONS - EXISTING CONDITIONS WITH CONSTRUCTION CLOSURE OPTION 3

Intersection	Control	Existing Conditions		Existing with Option 3 Conditions	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Foothills Blvd. / Pleasant Grove Blvd.	Signal	54	D	70	E
Foothills Blvd. / Junction Blvd.	Signal	34	C	137	F
Roseville Parkway / Galleria Blvd.	Signal	52	E	85	F
Roseville Parkway / Reserve Dr.	Signal	33	C	51	D

Notes:
1. All intersections analyzed using SimTraffic except Foothills Boulevard/Junction Boulevard, which was analyzed using Synchro
2. Results shown here represent conditions with schools in session. Impacts would be reduced during periods when schools are not in session due to reduced overall levels of traffic.

Source: Fehr & Peers, 2016

As noted previously, the majority of the construction closure would occur during periods in which schools will not be in session. Thus, the level of additional delays would be somewhat less than is shown in Table 11, which reflects conditions when schools are in session.

TRAFFIC EFFECTS OF CONSTRUCTION CLOSURE OPTION 4

The following analysis methods and assumptions were used to model the potential effects of Construction Closure Option 4.

- Analysis Period: The PM peak hour was chosen because it carries a greater volume of traffic than any other hour of the day.
- Traffic Projections: Due to the likelihood that motorists would know of the construction activity and potential for delays, 50 percent of the existing PM peak hour travel demand was conservatively assumed to divert to parallel roadways.
- Traffic Operation: For analysis purposes, a temporary traffic signal is assumed in place south of the railroad undercrossing to assign right-of-way. The traffic signal at Diamond Oaks Road would serve this function on the north side. Each direction of travel would be given approximately 80 seconds of signal time, which includes the green interval, yellow interval, and then a lengthy all-red interval necessary to fully flush traffic (assumed to travel through the construction zone at no more than 25 mph) out of the lengthy reversible lane prior to allowing the opposing movement.

The SimTraffic model was used to analyze the effects of Construction Closure Option 4 under PM peak hour conditions. The model output (refer to the following page for illustration and Appendix D for technical calculations) reveals the following:

- Northbound traffic would extend beyond Kaseberg Drive and spill back to Sawtell Road. The average delay would be 302 seconds (i.e., five minutes) per vehicle.
- Southbound traffic would queue from Diamond Oaks Road through the Washington Boulevard/Pleasant Grove Boulevard intersection. The average delay on this approach would be 221 seconds per vehicle, though this result is misleading because the model assigns much of this delay to the upstream Pleasant Grove Boulevard intersection.

These delays would correspond to a LOS F condition. Should the level of redistribution to other routes not reach 50 percent (as assumed in this analysis), the extent of delays and queuing would be proportionally greater. Refer to Chapter 6 for project-specific impacts and mitigation measures associated with construction closures.

View of queuing on northbound Washington Boulevard under Construction Closure Option 4

View of queuing on southbound Washington Boulevard under Construction Closure Option 4

6. IMPACTS AND MITIGATION MEASURES

This chapter describes the project-specific and cumulatively considerable impacts of the proposed project.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

ROADWAY SYSTEM

Impact TR-1: Degraded Operations at Washington Boulevard/Pleasant Grove Boulevard Intersection

According to Table 6, the proposed project would cause PM peak hour operations to worsen from LOS D to E under existing plus project conditions. This is considered a **significant** impact.

Mitigation TR-1: Modify traffic signal timing by shifting six seconds of green time from the northbound left-turn movement to the southbound through movement.

This mitigation measure would reallocate green time on the north/south approaches to better match travel demand. It would not alter green time, splits, or offsets on the coordinated east/west Pleasant Grove Boulevard approaches. **Table 10** shows that this mitigation would reduce the PM peak hour delay from 70 to 56 seconds per vehicle (see Appendix E). Although operations would technically remain in the LOS E range, the delay would be within one-second of LOS D, which is considered acceptable. Nonetheless, this impact is considered **significant and unavoidable**.

TABLE 10: INTERSECTION OPERATIONS – EXISTING PLUS PROJECT (MITIGATED) CONDITIONS

	Intersection	Existing Conditions		Existing Plus Project Conditions		Existing Plus Project Conditions With Mitigation	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
1	Washington Boulevard / Pleasant Grove Boulevard	46	D	71	E	56	E

Source: Fehr & Peers, 2016

All other intersections would continue operating acceptably under existing plus project conditions. The project would not cause the overall percentage of signalized intersections throughout the City of Roseville operating at LOS C or better during the AM and PM peak hours to fall below 70 percent.

BICYCLE SYSTEM

The proposed project would substantially improve the bicycling environment along the Washington Boulevard corridor. It would not cause any inconsistencies with policies of Roseville's Bikeway Master Plan. Therefore, impacts to the bicycle system would be **less than significant** and no mitigation is required.

PEDESTRIAN SYSTEM

The proposed project would substantially improve the walking environment along the Washington Boulevard corridor. It would not interfere with the operation of an existing pedestrian facility or preclude the construction of a planned pedestrian facility. Therefore, impacts to the pedestrian system would be **less than significant** and no mitigation is required.

TRANSIT SYSTEM

The proposed project would not modify the existing bus turnout located on the west side of Washington Boulevard south of Pleasant Grove Boulevard. Since the project would improve travel times along the Washington Boulevard corridor and expand its cross-section (particularly at the UPRR Andora underpass), it would provide the potential for bus routing along this street. It would not have a negative impact on transit operations, travel times, and/or circulation. Therefore, impacts to the transit system would be **less than significant** and no mitigation is required.

CONSTRUCTION-RELATED TRAFFIC IMPACTS

Impact TR-2: Adverse Traffic and Circulation Impacts during Construction

All four construction closure options contemplate a prolonged (multi-month) closure of Washington Boulevard at the UPRR Andora underpass. The type and severity of the impact would depend on the specific construction option that is chosen and contractor schedule/operations, which is unknown. All construction-related street closures would degrade one or more intersections to an unacceptable level and likely cause inconveniences to motorists. This is considered a **significant** impact.

Mitigation TR-2a: Prior to any construction closures, a Construction Transportation Management Plan (TMP) shall be developed and implemented. Key components of the Construction TMP would include (but are not limited to):

- Communication: Develop and implement a public information campaign that describes the duration of the street closure and recommends alternative routes. Particular attention should be placed on special events (e.g., school graduations or Placer County Fairgrounds) that may attract unfamiliar users to the City's roadway system.

- Demolition and Construction: Describe and analyze the number of employees and their site parking areas, and the number of trucks, their routing/staging, and operating hours.

- Wayfinding: Position and operate changeable message sign (CMS) trailers at strategic locations to advise motorists of the street closure and suggest alternate routes.

- Traffic Operations: To offset the adverse LOS and delay effects shown in Table 9 (i.e., assuming Construction Closure Option 3 is selected; if a different construction closure plan is selected, a different set of traffic operations improvements may be necessary), modify impacted intersections as follows (refer to discussion on following page for details):

    - Foothills Boulevard/Pleasant Grove Boulevard – Modify signal timing in response to changing travel demand.

    - Foothills Boulevard/Junction Boulevard – Modify intersection to add a second southbound left-turn lane.

- Bicycle/Pedestrian Travel: Close the multi-use path to all travelers during periods in which construction activity could pose safety concerns to those users. Advertise multi-use path closures in advance and suggest alternate routes.

- Emergency Vehicle Response: The City of Roseville Police and Fire Departments shall coordinate with the Engineering and Community Development Departments to ensure that all potential effects of the closure have been addressed including emergency vehicle routing, temporary changes in fire station servicing areas, and emergency vehicle pre-emption at signalized intersections. Fire department staff indicated that vehicles typically need to be within 750 feet of a signal to pre-empt it. Construction Closure Option 3 will be much more capable of achieving this than Construction Closure Option 4.

- Monitoring: The Construction TMP shall include a monitoring program of daily traffic volumes and speeds on Diamond Oaks Road east of Washington Boulevard. The TMP shall describe the frequency of monitoring and establish maximum acceptable thresholds for changes in operations, above which a series of temporary traffic calming measures, such as temporary speed humps, enhanced enforcement, and other measures, may be considered. The following performance standards shall be met at all times during construction:

    - Diamond Oaks Road east of Washington Boulevard experiences no more than a 2,000 ADT increase over existing volumes.
    - The median vehicular travel speed on Diamond Oaks Road east of Washington Boulevard increases by no more than 10 percent over existing conditions.
    - Traffic signal timings at the Washington Boulevard/Pleasant Grove Boulevard and Washington Boulevard/Junction Boulevard intersections are adjusted in response to the change in travel demand.
    - Construction-related trucks access the work site via Washington Boulevard, and not adjacent neighborhood streets.
    - The combination of public outreach and changeable message sign (CMS) trailers enables the general public to be aware of construction-related street closures and select alternate routes.
    - Public transit and emergency provider service times are not adversely affected, based on the performance standards used by those entities.
    - The multi-use path remains open and free of debris during periods in which construction operation does not pose any safety hazards to the facility.

Table 11 displays the effectiveness of the two intersection improvements described above. Refer to Appendix E for technical calculations. A five-second shift in green time from the eastbound through to the westbound left-turn movement at the Foothills Boulevard/Pleasant Grove Boulevard intersection would reduce the average delay from 70 to 61 seconds. The addition of a second southbound left-turn lane at the Foothills Boulevard/Junction Boulevard intersection would better accommodate the projected left-turn movement of 737 vehicles during the PM peak hour, thereby reducing the delay from 137 to 49 seconds per vehicle. Mark Thomas & Company has prepared a conceptual layout that would temporarily accommodate the second lane through lane narrowing.

Improvements (both physical and signal timing-related) were considered at the Roseville Parkway/Reserve Drive and Roseville Parkway/Galleria Boulevard intersections. This would represent an eight percent and five percent increase in PM peak hour traffic, respectively, at each intersection. Any physical improvements would be complicated and temporary, and any signal timing improvements would be difficult to implement without adversely affecting overall Roseville Parkway corridor operations. Therefore, no improvements were identified as being feasible at those intersections for this temporary impact.

TABLE 11: PM PEAK HOUR INTERSECTION OPERATIONS - EXISTING CONDITIONS WITH CONSTRUCTION CLOSURE OPTION 3 AND MITIGATION

Intersection	Control	Existing Conditions		Existing Conditions with Construction Closure Option 3			
				Without Mitigation		With Mitigation	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Foothills Blvd. / Pleasant Grove Blvd.	Signal	54	D	70	E	61	E
Foothills Blvd. / Junction Blvd.	Signal	34	C	137	F	49	D
Roseville Parkway / Galleria Blvd.	Signal	52	E	85	F	-	-
Roseville Parkway / Reserve Dr.	Signal	33	C	51	D	-	-

Notes:
1. All intersections analyzed using SimTraffic except Foothills Boulevard/Junction Boulevard, which was analyzed using Synchro (consistent with prior analysis of intersection).
2. Results shown here represent conditions with schools in session. Impacts would be reduced during periods when schools are not in session due to reduced overall levels of traffic.
3. Refer to above text for description of mitigations.
4. The above dashes imply that no feasible mitigation is available given severity and duration of temporary impact.

Source: Fehr & Peers, 2016

Although Mitigation Measure TR-2 would effectively mitigate the majority of construction-related traffic and circulation impacts, Impact TR-2 would remain **significant and unavoidable** due to the lack of feasible mitigation at the Roseville Parkway/Reserve Drive and Roseville Parkway/Galleria Boulevard intersections. It should be noted that selection of a different construction closure option would have different impacts and mitigation measures.

EMERGENCY VEHICLE ACCESS IMPACTS

Impact TR-3: Inadequate Emergency Vehicle Access

Mitigation: Implement Mitigation Measure TR-2

Mitigation Measure TR-2 includes a Construction TMP that would include a section on Emergency Vehicle Access and Response. It also includes performance standards relating to adequacy of emergency vehicle response that must be maintained at all times during construction. Therefore, Impact TR-3 would be reduced to a **less-than-significant** level with implementation of Mitigation Measure TR-2.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

ROADWAY SYSTEM

Impact TR-4: Cumulatively Degraded Operations at Washington Boulevard/Pleasant Grove Boulevard Intersection

According to Table 8, the proposed project would exacerbate (i.e., add 53 seconds of delay) LOS F conditions at the Washington Boulevard/Pleasant Grove Boulevard intersection during the PM peak hour. This is considered a **significant** impact.

Mitigation: None available

The addition of a third southbound through lane was considered as a potential mitigation measure as it is currently included in the City's CIP. The third southbound approach lane could be provided by redesignating the existing right-turn lane as a through/right lane. However, provision of a third southbound receiving lane would require widening in the southwest quadrant of the intersection, which would require additional right-of-way and cost. It would also eliminate the bus turnout that is currently constructed. Additionally, while it would offer some additional capacity benefit, the City has indicated that comparable installations have resulted in imbalanced lane utilization and marginal intersection capacity benefit.

For these reasons, the City has concluded that the overall benefits of the project outweigh the cumulatively significant impact that would occur at the Washington Boulevard/Pleasant Grove Boulevard intersection and that the adverse effects of adding a third southbound through lane would

exceed the operational benefits it would provide. Accordingly, this impact would be considered **significant and unavoidable**.

The City's General Plan Circulation Element should be modified to indicate that the following intersections will operate worse than LOS C:

- Washington Boulevard/Pleasant Grove Boulevard: LOS D during the AM peak hour and LOS F during the PM peak hour.
- Washington Boulevard/Junction Boulevard: LOS D during the PM peak hour.

It should be noted that these operations would occur whether or not the proposed project is implemented. Accordingly, the project would not cause these conditions itself.

All other study intersections would continue operating acceptably under cumulative plus project conditions. The project would not cause the overall percentage of signalized intersections throughout the City of Roseville operating at LOS C or better during the AM and PM peak hours to fall below 70 percent.

BICYCLE SYSTEM

The proposed project would substantially improve the bicycling environment along the Washington Boulevard corridor. It would not preclude construction of any planned bikeway facilities as identified in the City of Roseville's Bikeway Master Plan. Therefore, impacts to the bicycle system would be **less than significant** and no mitigation is required.

PEDESTRIAN SYSTEM

The proposed project would substantially improve the walking environment along the Washington Boulevard corridor. It would not interfere with the operation of an existing pedestrian facility or preclude the construction of a planned pedestrian facility. Therefore, impacts to the pedestrian system would be **less than significant** and no mitigation is required.

TRANSIT SYSTEM

The proposed project would not modify the existing bus turnout located on the west side of Washington Boulevard south of Pleasant Grove Boulevard. Since the project would improve travel times along the Washington Boulevard corridor and expand its cross-section (particularly at the UPRR

Andora underpass), it would provide the potential for bus routing along this street. It would not have a negative impact on transit operations, travel times, and/or circulation. Therefore, impacts to the transit system would be **less than significant** and no mitigation is required.

CONSTRUCTION-RELATED TRAFFIC IMPACTS

Since project construction would occur well in advance of the cumulative horizon year, cumulative impacts associated with construction are not applicable.

EMERGENCY VEHICLE ACCESS IMPACTS

The project would not adversely affect emergency vehicle access and response times. While impacts are possible during construction, that condition does not pertain to cumulative conditions. Therefore, cumulative impacts associated with emergency vehicle access are not applicable.

TECHNICAL APPENDIX

APPENDIX A
EXISTING CONDITIONS

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	201	206	102.3%	48.5	3.6	D
	Through	468	481	102.7%	35.6	4.0	D
	Right Turn	282	278	98.5%	7.3	0.7	A
	Subtotal	951	964	101.4%	30.2	1.8	C
SB	Left Turn	76	71	94.0%	53.5	6.8	D
	Through	442	449	101.5%	39.2	5.7	D
	Right Turn	207	212	102.3%	14.7	2.0	B
	Subtotal	725	732	100.9%	33.5	4.9	C
EB	Left Turn	199	185	93.0%	61.2	9.6	E
	Through	1,418	1,330	93.8%	34.1	8.5	C
	Right Turn	193	189	97.9%	21.9	4.2	C
	Subtotal	1,810	1,704	94.2%	35.6	7.0	D
WB	Left Turn	92	86	92.9%	55.6	12.3	E
	Through	874	820	93.9%	30.0	4.0	C
	Right Turn	67	65	97.6%	8.8	0.8	A
	Subtotal	1,033	971	94.0%	30.9	4.3	C
Total		4,519	4,372	96.7%	33.0	2.7	C

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	4	83.6%	34.4	27.9	C
	Through	765	756	98.8%	19.0	3.8	B
	Right Turn	37	40	107.8%	9.2	3.2	A
	Subtotal	807	800	99.1%	18.6	3.8	B
SB	Left Turn	109	109	99.7%	48.6	4.6	D
	Through	618	599	97.0%	16.1	1.6	B
	Right Turn						
	Subtotal	727	708	97.4%	21.1	1.8	C
EB	Left Turn	8	10	123.5%	38.8	22.3	D
	Through	6	6	101.3%	38.4	31.2	D
	Right Turn	16	14	85.5%	10.6	13.1	B
	Subtotal	30	30	98.8%	29.0	10.4	C
WB	Left Turn	62	62	100.5%	38.9	7.5	D
	Through	1	1	76.0%	4.3	7.5	A
	Right Turn	178	180	101.2%	19.9	4.7	B
	Subtotal	241	243	100.9%	24.8	4.2	C
Total		1,805	1,781	98.7%	20.6	2.1	C

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	28	25	90.9%	11.8	4.1	B
	Through	786	774	98.5%	6.5	0.9	A
	Right Turn						
	Subtotal	814	800	98.3%	6.7	0.9	A
SB	Left Turn						
	Through	690	652	94.4%	0.6	0.2	A
	Right Turn	6	5	82.3%	0.0	0.1	A
	Subtotal	696	657	94.3%	0.6	0.2	A
EB	Left Turn	21	22	106.8%	10.8	4.4	B
	Through						
	Right Turn	36	39	108.7%	7.3	3.1	A
	Subtotal	57	62	108.0%	8.9	2.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,567	1,518	96.9%	4.2	0.5	A

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	26	87.4%	33.5	10.4	C
	Through	759	747	98.5%	5.6	0.8	A
	Right Turn	42	49	117.6%	2.8	1.0	A
	Subtotal	831	823	99.0%	6.4	0.8	A
SB	Left Turn	19	13	68.0%	33.7	20.0	C
	Through	685	647	94.4%	11.2	4.8	B
	Right Turn	22	33	148.5%	6.9	3.2	A
	Subtotal	726	692	95.4%	11.5	4.4	B
EB	Left Turn	46	45	97.5%	28.1	7.2	C
	Through	22	25	114.0%	28.3	6.5	C
	Right Turn	84	88	105.0%	7.2	1.1	A
	Subtotal	152	158	104.0%	16.8	3.7	B
WB	Left Turn	16	18	111.6%	26.9	10.4	C
	Through	1	1	76.0%	9.1	20.1	A
	Right Turn	9	12	130.9%	6.8	5.2	A
	Subtotal	26	30	116.9%	20.3	9.4	C
Total		1,735	1,704	98.2%	9.7	2.1	A

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	152	144	95.0%	22.6	2.3	C
	Through	597	590	98.8%	5.6	0.8	A
	Right Turn						
	Subtotal	749	734	98.0%	9.0	0.9	A
SB	Left Turn	3	1	25.3%	3.2	7.4	A
	Through	658	621	94.4%	12.7	1.9	B
	Right Turn	124	136	110.0%	5.2	1.1	A
	Subtotal	785	758	96.6%	11.3	1.6	B
EB	Left Turn	232	241	103.8%	20.4	3.5	C
	Through	1	0	0.0%	0.0	0.0	A
	Right Turn	429	454	105.9%	3.1	0.3	A
	Subtotal	662	695	105.0%	9.1	1.4	A
WB	Left Turn	2	1	38.0%	6.5	15.2	A
	Through	2	1	57.0%	4.7	10.9	A
	Right Turn	2	3	133.0%	2.9	5.3	A
	Subtotal	6	5	76.0%	11.5	14.6	B
Total		2,202	2,193	99.6%	9.8	1.0	A

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	242	222	91.5%	51.8	4.1	D
	Through	370	357	96.5%	40.8	3.4	D
	Right Turn	370	367	99.3%	7.6	0.7	A
	Subtotal	982	946	96.4%	30.4	1.9	C
SB	Left Turn	172	182	105.8%	65.0	9.0	E
	Through	603	609	101.0%	54.8	8.3	D
	Right Turn	227	238	104.8%	29.9	4.6	C
	Subtotal	1,002	1,029	102.7%	50.8	7.3	D
EB	Left Turn	165	154	93.0%	67.8	8.1	E
	Through	1,464	1,433	97.9%	51.3	9.3	D
	Right Turn	195	187	96.1%	41.8	8.1	D
	Subtotal	1,824	1,773	97.2%	51.8	8.5	D
WB	Left Turn	335	333	99.4%	60.9	8.3	E
	Through	1,628	1,626	99.9%	43.6	7.7	D
	Right Turn	58	59	100.9%	19.1	4.5	B
	Subtotal	2,021	2,017	99.8%	45.7	7.4	D
Total		5,829	5,766	98.9%	46.0	4.1	D

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	12	17	139.3%	53.6	13.4	D
	Through	823	808	98.1%	22.2	5.6	C
	Right Turn	88	86	97.2%	13.8	4.7	B
	Subtotal	923	910	98.6%	21.9	5.5	C
SB	Left Turn	144	135	93.4%	63.1	7.3	E
	Through	975	947	97.1%	32.4	6.1	C
	Right Turn	14	14	100.4%	24.7	4.0	C
	Subtotal	1,133	1,095	96.7%	36.1	6.1	D
EB	Left Turn	5	2	45.6%	19.2	25.3	B
	Through	2	2	114.0%	26.8	31.1	C
	Right Turn	9	8	84.4%	21.3	16.0	C
	Subtotal	16	12	76.0%	26.7	17.4	C
WB	Left Turn	82	79	96.9%	40.5	6.5	D
	Through	2	2	95.0%	10.2	14.4	B
	Right Turn	154	156	101.2%	19.5	2.5	B
	Subtotal	238	237	99.6%	26.4	2.1	C
Total		2,310	2,254	97.6%	29.3	5.0	C

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	35	34	96.6%	20.3	5.3	C
	Through	913	915	100.3%	8.5	2.4	A
	Right Turn						
	Subtotal	948	949	100.1%	8.9	2.3	A
SB	Left Turn						
	Through	1,036	999	96.4%	1.4	0.3	A
	Right Turn	30	34	114.0%	0.1	0.1	A
	Subtotal	1,066	1,033	96.9%	1.4	0.3	A
EB	Left Turn	10	9	87.4%	23.4	14.3	C
	Through						
	Right Turn	42	41	96.8%	17.8	10.6	C
	Subtotal	52	49	95.0%	19.4	10.6	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,066	2,031	98.3%	5.3	1.1	A

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	50	50	100.3%	39.9	12.6	D
	Through	869	881	101.4%	5.1	1.3	A
	Right Turn	22	22	101.9%	2.4	0.7	A
	Subtotal	941	954	101.4%	6.9	1.7	A
SB	Left Turn	16	17	109.3%	47.7	23.2	D
	Through	1,028	992	96.5%	11.1	1.8	B
	Right Turn	34	29	83.8%	8.8	3.3	A
	Subtotal	1,078	1,038	96.3%	11.7	1.9	B
EB	Left Turn	62	62	99.3%	30.5	6.7	C
	Through	1	0	0.0%	0.0	0.0	A
	Right Turn	25	19	77.5%	10.0	4.9	A
	Subtotal	88	81	92.0%	25.6	4.8	C
WB	Left Turn	37	30	81.1%	37.8	5.3	D
	Through	3	3	101.3%	19.5	28.9	B
	Right Turn	17	20	118.5%	11.1	5.5	B
	Subtotal	57	53	93.3%	26.8	4.8	C
Total		2,164	2,126	98.2%	10.5	1.6	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	508	497	97.9%	23.5	2.6	C
	Through	683	712	104.2%	4.3	1.1	A
	Right Turn						
	Subtotal	1,191	1,209	101.5%	12.2	1.2	B
SB	Left Turn	4	2	47.5%	12.0	19.4	B
	Through	842	828	98.3%	22.0	3.4	C
	Right Turn	244	222	91.1%	10.4	1.2	B
	Subtotal	1,090	1,052	96.5%	19.6	3.1	B
EB	Left Turn	255	236	92.5%	32.3	4.7	C
	Through	1	2	190.0%	9.3	25.0	A
	Right Turn	239	238	99.7%	1.8	0.1	A
	Subtotal	495	476	96.2%	16.9	2.2	B
WB	Left Turn	4	6	152.0%	42.5	17.7	D
	Through	4	2	47.5%	22.9	35.1	C
	Right Turn	3	3	114.0%	5.6	7.2	A
	Subtotal	11	11	103.6%	32.1	11.7	C
Total		2,787	2,749	98.6%	15.9	1.7	B

CITY OF ROSEVILLE CALIFORNIA

PUBLIC WORKS DEPT.

TRAFFIC ENGINEERING AND SPEED MAP

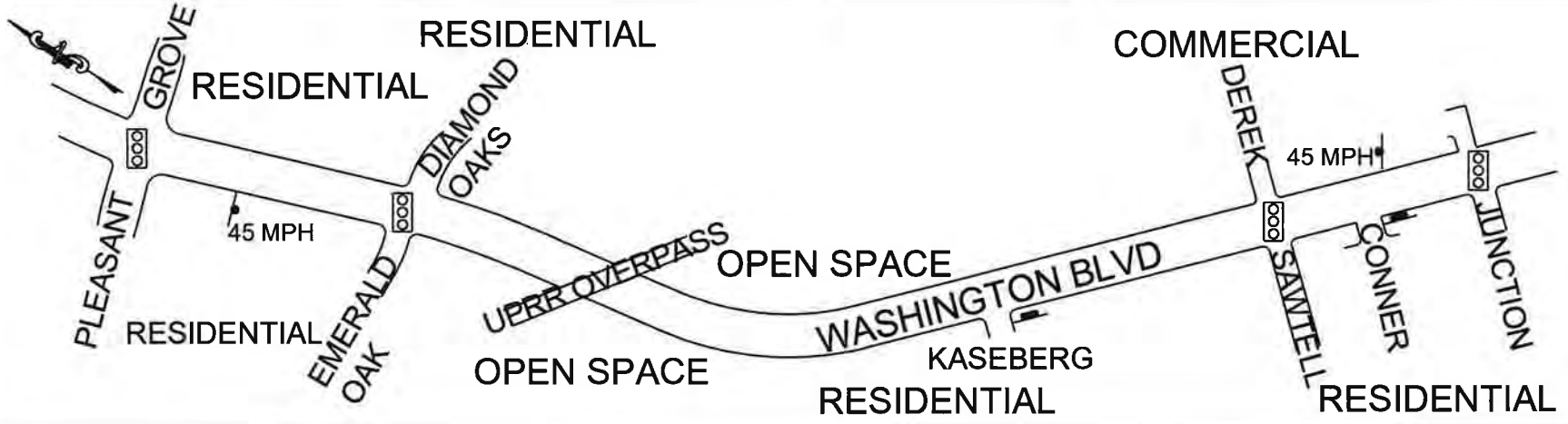
SPEED ZONE SURVEY

ROAD NAME:

WASHINGTON BL

JUNCTION TO PLEASANT GROVE

STRIP MAP



ROADWAY WIDTH	VARIES 40' TO 60'
NO. OF LANES	VARIES 2 TO 4
AADT	18,532
DIVIDER TYPE	PAINTED
CRITICAL SPEED (85th %)	50.1 MPH
PACE SPEED	41–50 MPH
3-YEAR ACCIDENT HISTORY	10
EXISTING SPEED LIMIT	45 MPH
RECOM. SPEED LIMIT	45 MPH
SEGMENT LENGTH	1.04 MI.

LEGEND STOP SIGNS SPEED LIMIT SIGN TRAFFIC SIGNAL

MPH	
61–75	1
51–60	30
41–50	139
31–40	10
1–30	0

ROADSIDE COND.

- SCHOOL ☐
- RESIDENCE ☒
- BUSINESS ☒
- PARKS ☐
- OPEN SPACE ☒
- BIKEWAY ☐

COMMENTS: NO PARKING ON BOTH SIDES OF STREET.

SOME RECOVERY AREA ☒ NO RECOVERY AREA ☐

SCHOOL ROUTE ☐

2014 Traffic Engineering and Speed Map - Speed Zone Survey

City of Roseville
Engineering and Traffic Survey
Summary

Street: WASHINGTON BL
Limits: JUNCTION BL
PLEASANT GROVE BL

Field Observer T TRELEVEN
Checked By:
Date: 1/14/2014

Factors	Direction: North/South		
A. Prevailing Speed Data			
Location of Survey	900' Northwest of Kaseberg Dr		
85th Percentile	50.1		
10 mph Pace	41 - 50		
Percent in Pace	79.5%		
Posted Speed Limit	45		
B. Collision History			
Date Range Covered	12/1/2010	To 11/30/2013	(3 years)
Total Collisions	10		
Collision Rate (Acc/MVM)	0.475		
Expected Collision Rate	1.75		
C. Traffic Factors			
Average Daily Traffic	18532		
Length of Segment	5472		
Lane Configuration	Single Lane Each Direction		
Street Classification	Arterial		
D. Conditions Not Readily Apparent			
Conditions	See: Roadside Conditions on the Speed Zone Survey Map		
Roadway Geometrics	Horizontal Curve		
Comments	Narrow underpath.		
E. Adjacent Land Use	Single Family and Multi-Family Residential; Open Space.		
Posted Speed Limit	45		
Speed Limit Change?	No		
Revised Speed Limit			

Approved and Authorized for release by City of Roseville Traffic Engineering Department:

Juan Cervantes T.E. 3-19-14

Date

Loc. #

City of Roseville

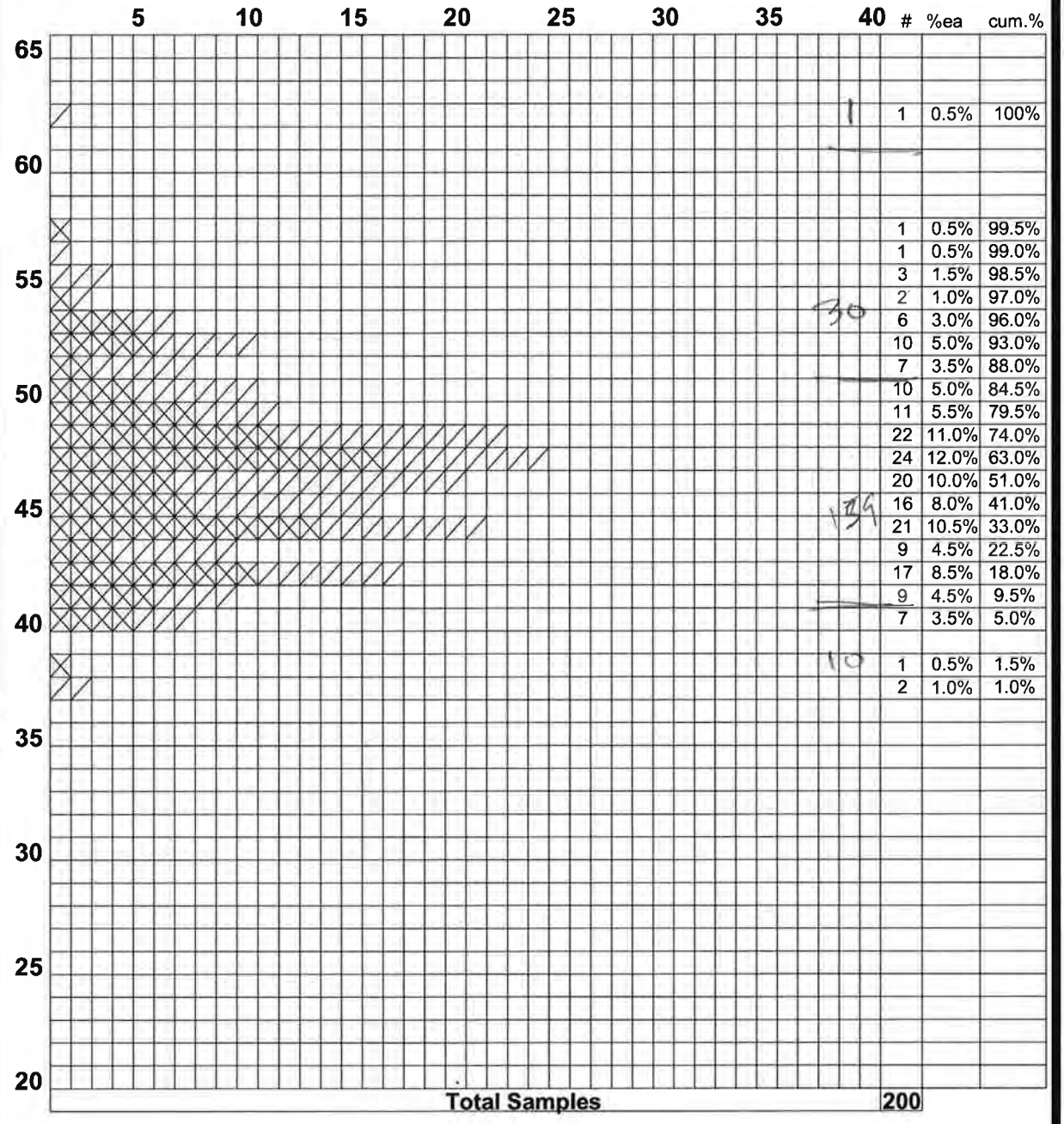
Traffic Engineering Department

Street Name: WASHINGTON BL

Limits: JUNCTION BL to PLEASANT GROVE BL

Radar Survey Sheet

X=North /=South



#	%ea	cum.%
1	0.5%	100%
1	0.5%	99.5%
1	0.5%	99.0%
3	1.5%	98.5%
2	1.0%	97.0%
6	3.0%	96.0%
10	5.0%	93.0%
7	3.5%	88.0%
10	5.0%	84.5%
11	5.5%	79.5%
22	11.0%	74.0%
24	12.0%	63.0%
20	10.0%	51.0%
16	8.0%	41.0%
21	10.5%	33.0%
9	4.5%	22.5%
17	8.5%	18.0%
9	4.5%	9.5%
7	3.5%	5.0%
1	0.5%	1.5%
2	1.0%	1.0%
Total Samples	**200**	

85th Percentile Speed:	50.1
50th Percentile Speed:	45.9
15th Percentile Speed:	41.6
10 MPH Pace:	41- 50
Number in Pace:	159
Percent in Pace:	79.5%

Date of Survey:	1/14/2014	**Start Time:**	14:23
Weather:	Clear	**End Time:**	15:02
Road Condition:	Good	**Posted Speed:**	45
Street Class.:	Arterial	**Observer:**	T TRELEVEN
Conditions not Apparent:	See: Roadside Conditions on the Speed Zone Survey Map		

City of Roseville
Traffic Engineering Department
Radar Speed Data Worksheet

Date: 1/14/14 Location #

Street Name: Washington Bl Observer:

Limits: Junction to Pleasant Grove Location of Survey: 900' NW of Kaseberg

Weather: Roadway Geometrics:

Road Cond: Conditions Not Apparent:

Posted Speed: Start Time: 2:23

Lane Config: End Time: 3:02

Adjacent Land Use:

Street Classification: Arterial - Collector - Local

Average Daily Traffic:

Segment Length:

Speed Limit Changed? Yes - No

Revised Limit:

Checked By:

Collision Start Date:

Collision End Date:

Collision Period:

Total Collisions:

Collision Rate:

Expected Collision Rate:

Direction: ~~SB~~ NB

1. 46	21. 44	41. 48	61. 46	81. 44
2. 48	22. 47	42. 41	62. 45	82. 44
3. 40	23. 44	43. 46	63. 43	83. 46
4. 44	24. 42	44. 42	64. 44	84. 48
5. 50	25. 43	45. 40	65. 52	85. 47
6. 46	26. 53	46. 52	66. 49	86. 41
7. 42	27. 41	47. 46	67. 52	87. 53
8. 50	28. 49	48. 47	68. 42	88. 47
9. 44	29. 41	49. 44	69. 43	89. 48
10. 42	30. 45	50. 50	70. 42	90. 40
11. 53	31. 48	51. 47	71. 44	91. 47
12. 47	32. 40	52. 49	72. 47	92. 44
13. 51	33. 45	53. 38	73. 42	93. 44
14. 47	34. 48	54. 49	74. 42	94. 48
15. 51	35. 45	55. 53	75. 49	95. 44
16. 44	36. 42	56. 54	76. 41	96. 47
17. 47	37. 47	57. 47	77. 51	97. 42
18. 45	38. 48	58. 47	78. 50	98. 52
19. 47	39. 49	59. 48	79. 45	99. 48
20. 49	40. 45	60. 48	80. 47	100. 52

Direction: SB

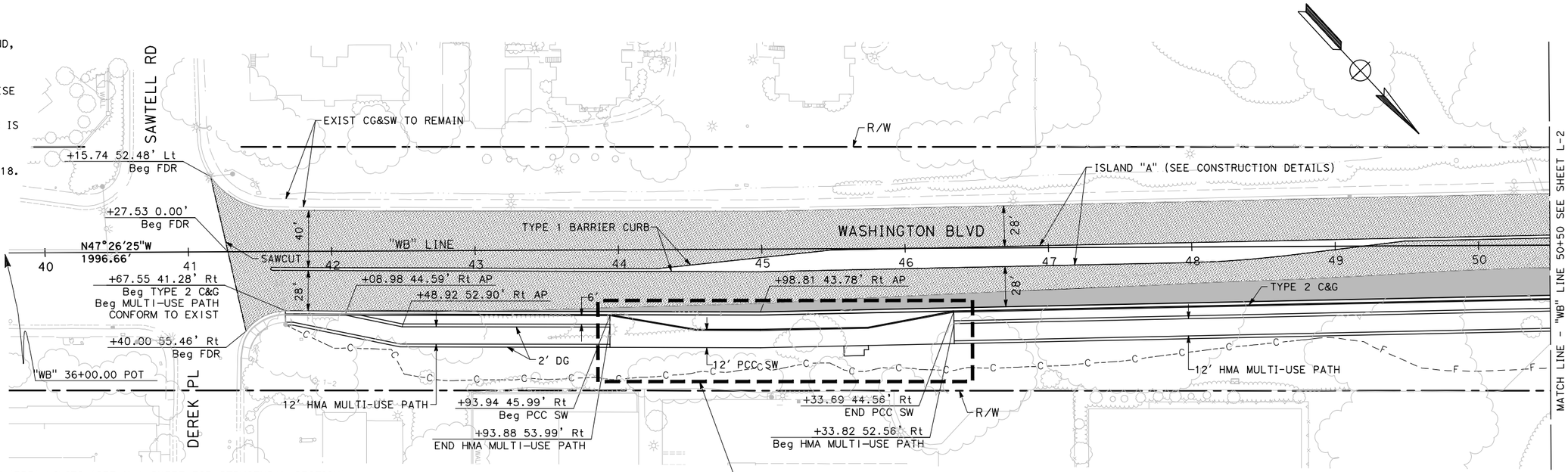
1. 46	21. 46	41. 46	61. 46	81. 37
2. 40	22. 62	42. 46	62. 47	82. 45
3. 55	23. 49	43. 44	63. 52	83. 48
4. 51	24. 47	44. 56	64. 48	84. 50
5. 52	25. 50	45. 41	65. 48	85. 48
6. 45	26. 45	46. 49	66. 42	86. 47
7. 43	27. 44	47. 47	67. 42	87. 46
8. 49	28. 46	48. 42	68. 44	88. 41
9. 55	29. 49	49. 46	69. 43	89. 41
10. 52	30. 46	50. 48	70. 44	90. 50
11. 53	31. 37	51. 48	71. 50	91. 51
12. 48	32. 52	52. 50	72. 44	92. 47
13. 44	33. 47	53. 41	73. 44	93. 46
14. 50	34. 42	54. 48	74. 48	94. 42
15. 52	35. 51	55. 55	75. 45	95. 53
16. 43	36. 45	56. 47	76. 40	96. 45
17. 45	37. 47	57. 48	77. 46	97. 42
18. 44	38. 48	58. 43	78. 45	98. 46
19. 43	39. 41	59. 54	79. 42	99. 48
20. 40	40. 46	60. 51	80. 43	100. 51

Comments:

APPENDIX B
EXISTING PLUS PROJECT CONDITIONS

NOTES:

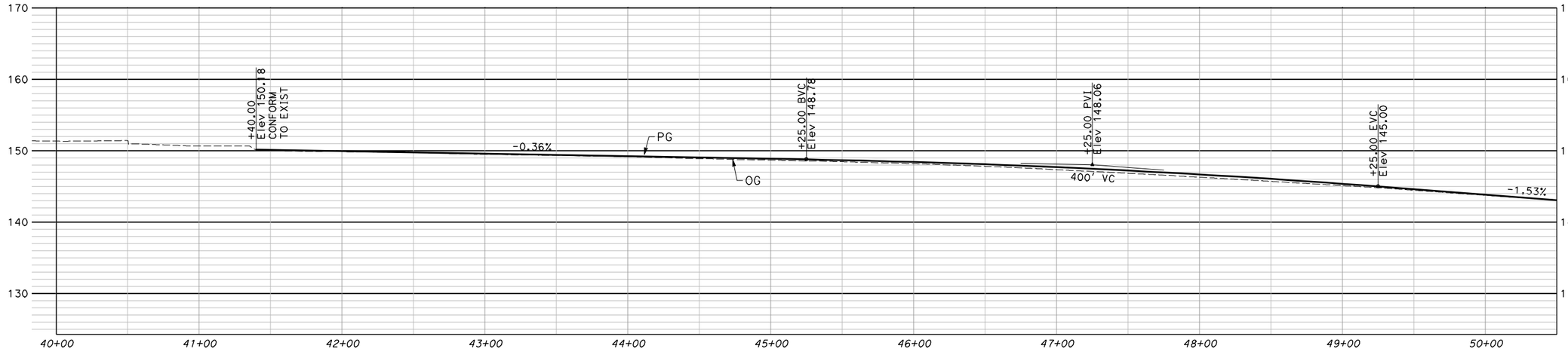
1. FOR GENERAL NOTES AND OTHER LEGEND, SEE SHEET GN-1 AND GN-2.
2. ALL STATION AND OFFSET CALLOUTS REFERENCE "WB" LINE UNLESS OTHERWISE NOTED.
3. STATION/OFFSET CALLOUTS TO GUTTER IS AT LIP.
4. FOR CURB AND GUTTER DETAILS, SEE ROSEVILLE Std PLANS ST-17 AND ST-18.
5. LANE WIDTH IS MEASURED TO LIP OF GUTTER.
6. CHAIN LINK FENCE SHALL CONFORM TO CST ST RSP A85. SEE CONSTRUCTION DETAILS FOR LIMITS AT CULVERTS.
7. SEE CONSTRUCTION DETAILS FOR RETAINING WALL No. 4 TO No. 15 LOCATED NEXT TO UNDERPASS STRUCTURE.



PLAN
SCALE: 1" = 40'

LEGEND:

- FULL DEPTH RECLAMATION (FDR) LIMITS (SEE X-1 SHEET FOR STRUCTURAL SECTION)
- NEW PAVEMENT AREA (SEE X-1 SHEET FOR STRUCTURAL SECTION)
- SAWCUT
- FILL LINE
- CUT LINE
- RETAINING WALL
- SOUNDWALL
- BERM



"WB" LINE PROFILE
SCALE: HORIZ 1" = 40'
VERT 1" = 8'

60% SUBMITTAL

L-1

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION 155.915 **DATUM** CITY
DESCRIPTION CITY OF ROSEVILLE BENCHMARK 8 – A 3 1/4 inch BRASS DISK TOP D.I. NORTH SIDE OF JUNCTION BOULEVARD, APPROXIMATELY 440 FEET EAST OF INTERSECTION WITH SAWTELL ROAD.

DESIGN BY:	JT
DRAWN BY:	JD
CHECKED BY:	ZS
SCALE:	AS SHOWN
DATE:	08/29/2018
PROJECT NO:	SA-16110

BY:

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — ZACHARY JAMES SIVIGLIA — No. 73128 — Exp. 12/31/18 — CIVIL — STATE OF CALIFORNIA

MARK THOMAS
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DEPARTMENT OF PUBLIC WORKS
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ROSEVILLE, CA 95678
(916) 746-1300

CITY OF ROSEVILLE CALIFORNIA

WASHINGTON/ANDORA BRIDGE WIDENING PROJECT
PLAN AND PROFILE

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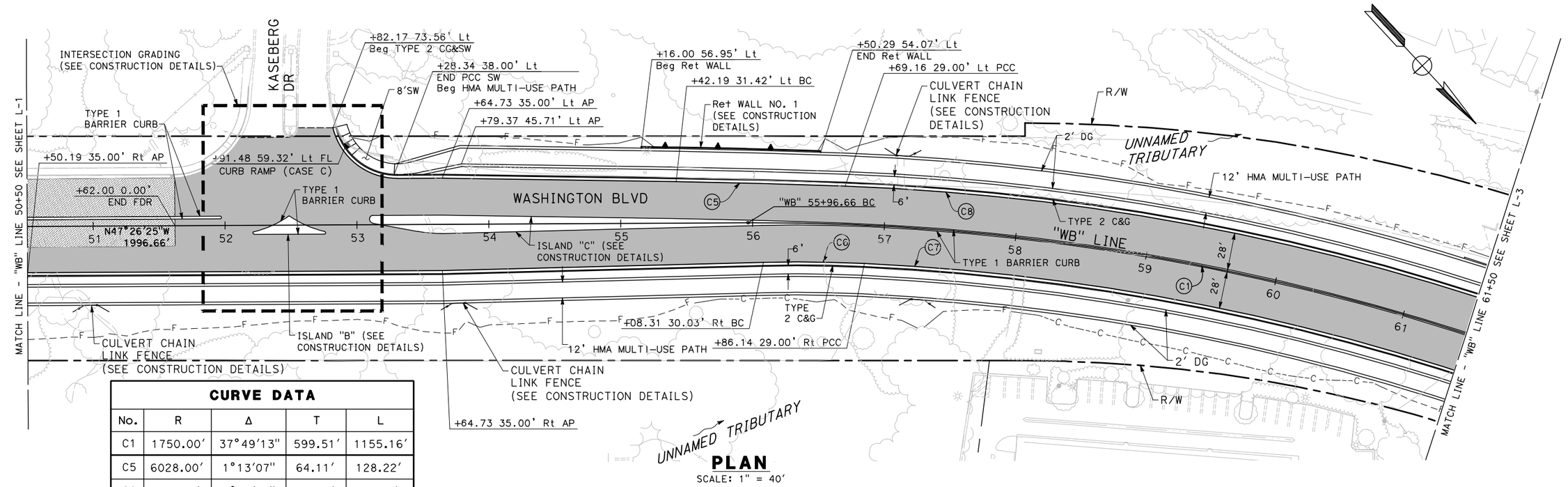
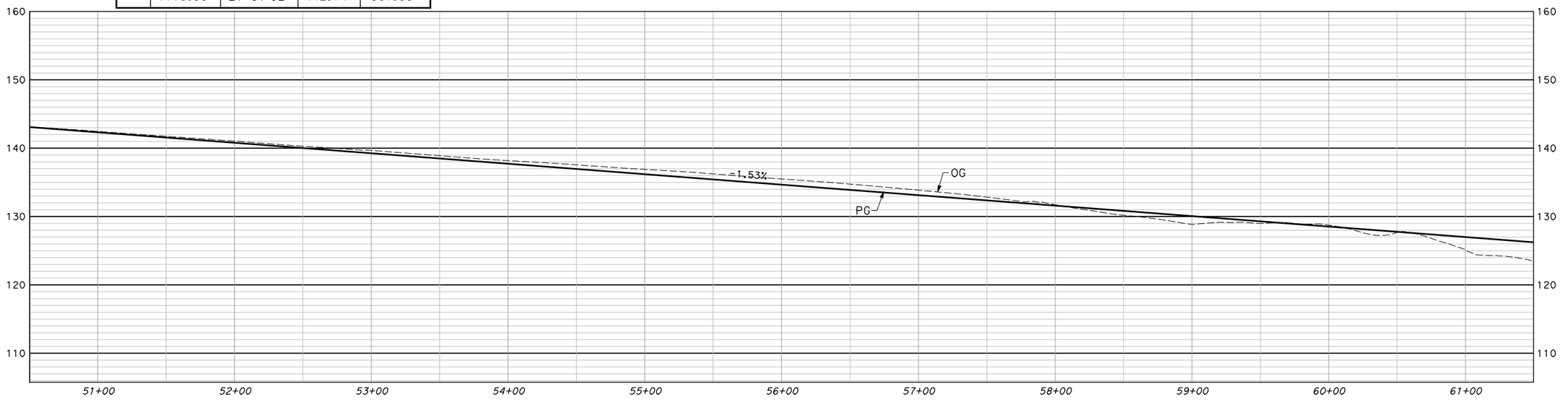


PLAN
SCALE: 1" = 40'

CURVE DATA

No.	R	Δ	T	L
C1	1750.00'	37°49'13"	599.51'	1155.16'
C5	6028.00'	1°13'07"	64.11'	128.22'
C6	852.00'	3°32'06"	26.29'	52.56'
C7	1721.00'	26°37'15"	407.16'	799.61'
C8	1779.00'	27°57'02"	442.74'	867.65'



"WB" LINE PROFILE
SCALE: Horiz 1" = 40'
Vert 1" = 8'

60% SUBMITTAL

L-2

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION 155.915 **DATUM** CITY
DESCRIPTION CITY OF ROSEVILLE BENCHMARK 8 – A 3 1/4 inch BRASS DISK TOP D.I. NORTH SIDE OF JUNCTION BOULEVARD, APPROXIMATELY 440 FEET EAST OF INTERSECTION WITH SAWTELL ROAD.

DESIGN BY:	JT
DRAWN BY:	JD
CHECKED BY:	ZS
SCALE:	AS SHOWN
DATE:	08/29/2018
PROJECT NO:	SA-16110

BY:
PLANS APPROVAL DATE

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WASHINGTON/ANDORA BRIDGE WIDENING PROJECT
PLAN AND PROFILE

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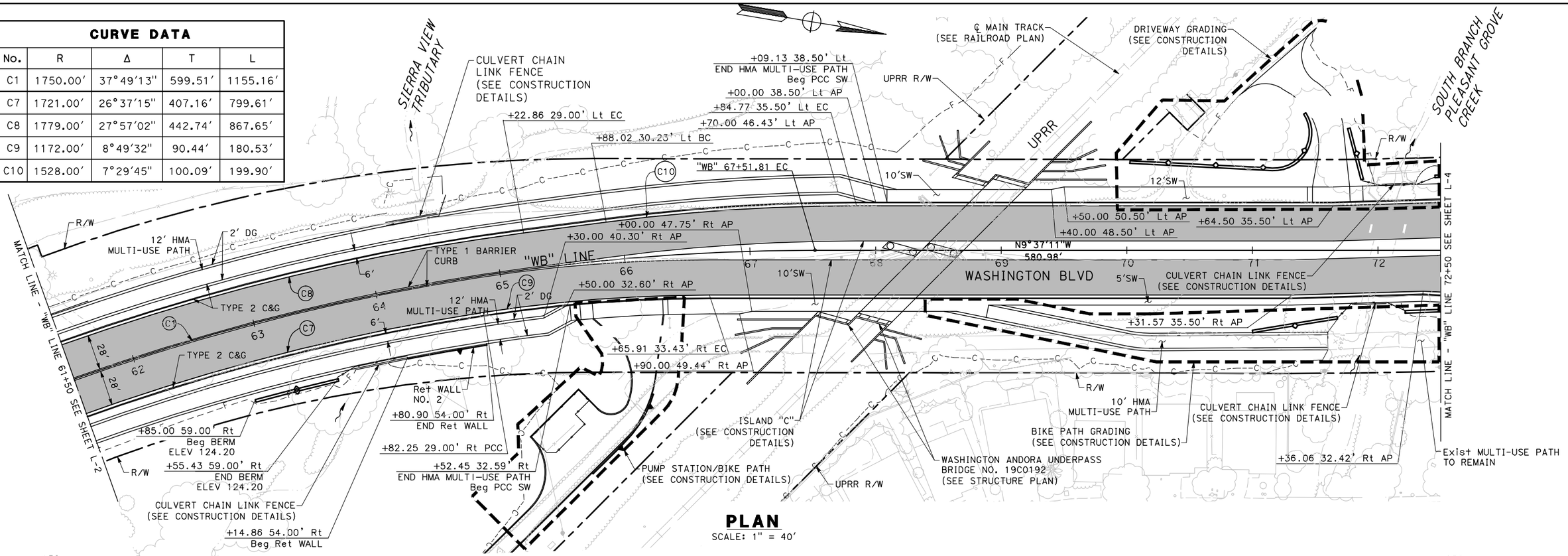
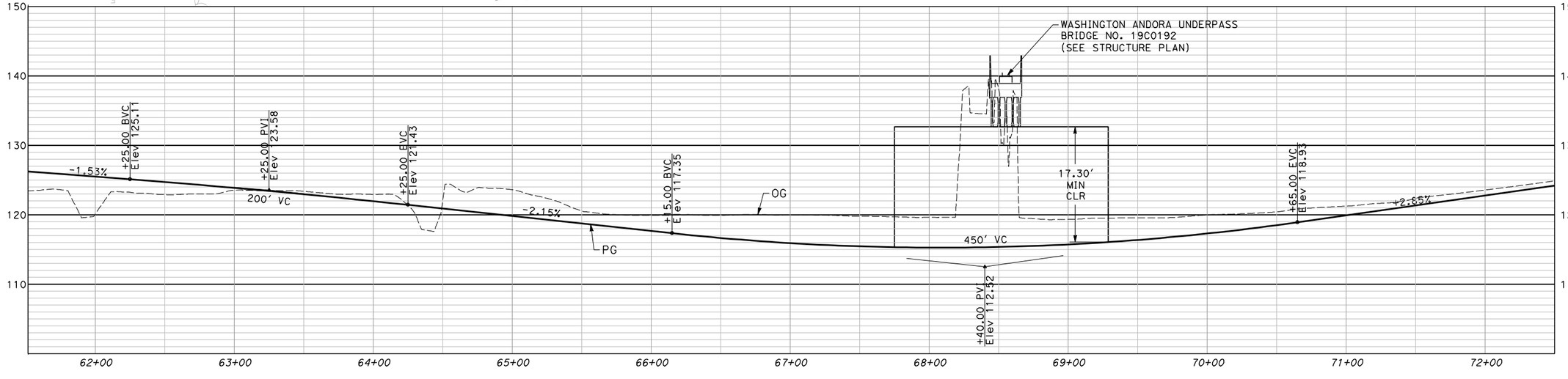
CURVE DATA				
No.	R	Δ	T	L
C1	1750.00′	37°49′13"	599.51′	1155.16′
C7	1721.00′	26°37′15"	407.16′	799.61′
C8	1779.00′	27°57′02"	442.74′	867.65′
C9	1172.00′	8°49′32"	90.44′	180.53′
C10	1528.00′	7°29′45"	100.09′	199.90′



PLAN
SCALE: 1" = 40′



"WB" LINE PROFILE
SCALE: Horiz 1" = 40′
Vert 1" = 8′

60% SUBMITTAL

L-3

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION 155.915 **DATUM** CITY
DESCRIPTION CITY OF ROSEVILLE BENCHMARK 8 – A 3 1/4 inch BRASS DISK TOP D.I. NORTH SIDE OF JUNCTION BOULEVARD, APPROXIMATELY 440 FEET EAST OF INTERSECTION WITH SAWTELL ROAD.

DESIGN BY:	JT
DRAWN BY:	JD
CHECKED BY:	ZS
SCALE:	AS SHOWN
DATE:	08/29/2018
PROJECT NO:	SA-16110

BY: _____
PLANS APPROVAL DATE

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WASHINGTON/ANDORA BRIDGE WIDENING PROJECT
PLAN AND PROFILE

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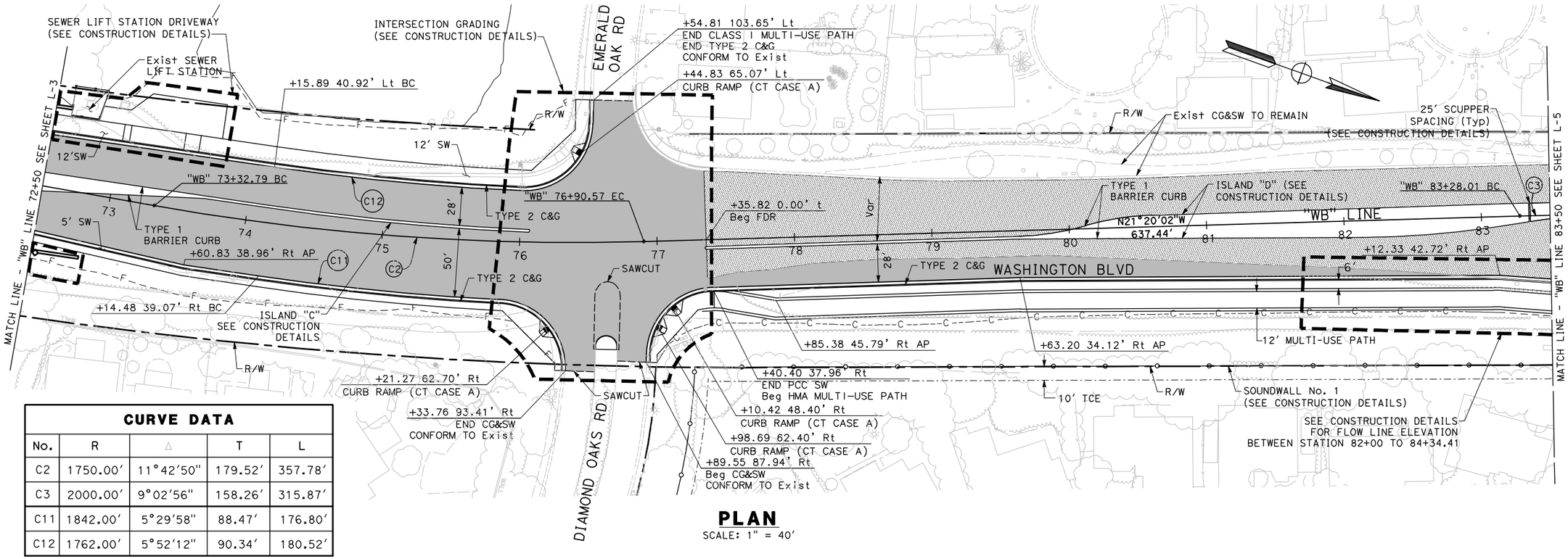
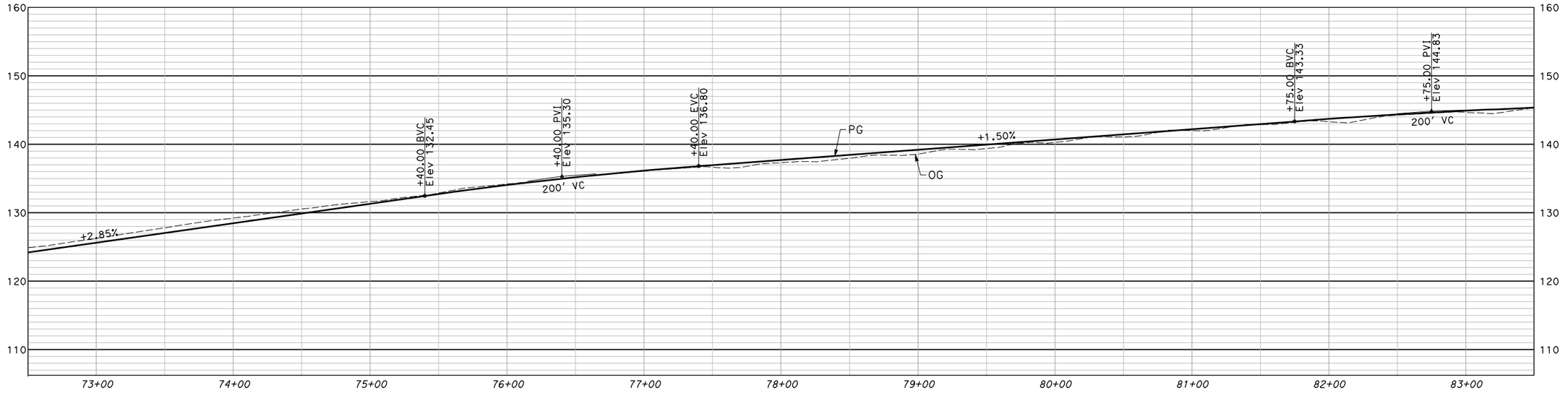


PLAN
SCALE: 1" = 40'

CURVE DATA				
No.	R	Δ	T	L
C2	1750.00'	11°42'50"	179.52'	357.78'
C3	2000.00'	9°02'56"	158.26'	315.87'
C11	1842.00'	5°29'58"	88.47'	176.80'
C12	1762.00'	5°52'12"	90.34'	180.52'



"WB" LINE PROFILE
SCALE: Horiz 1" = 40'
Vert 1" = 8'

60% SUBMITTAL

L-4

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION 155.915 **DATUM** CITY
DESCRIPTION CITY OF ROSEVILLE BENCHMARK 8 – A 3 1/4 inch BRASS DISK TOP D.I. NORTH SIDE OF JUNCTION BOULEVARD, APPROXIMATELY 440 FEET EAST OF INTERSECTION WITH SAWTELL ROAD.

DESIGN BY:	JT
DRAWN BY:	JD
CHECKED BY:	ZS
SCALE:	AS SHOWN
DATE:	08/29/2018
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BY:
PLANS APPROVAL DATE

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WASHINGTON/ANDORA BRIDGE WIDENING PROJECT
PLAN AND PROFILE

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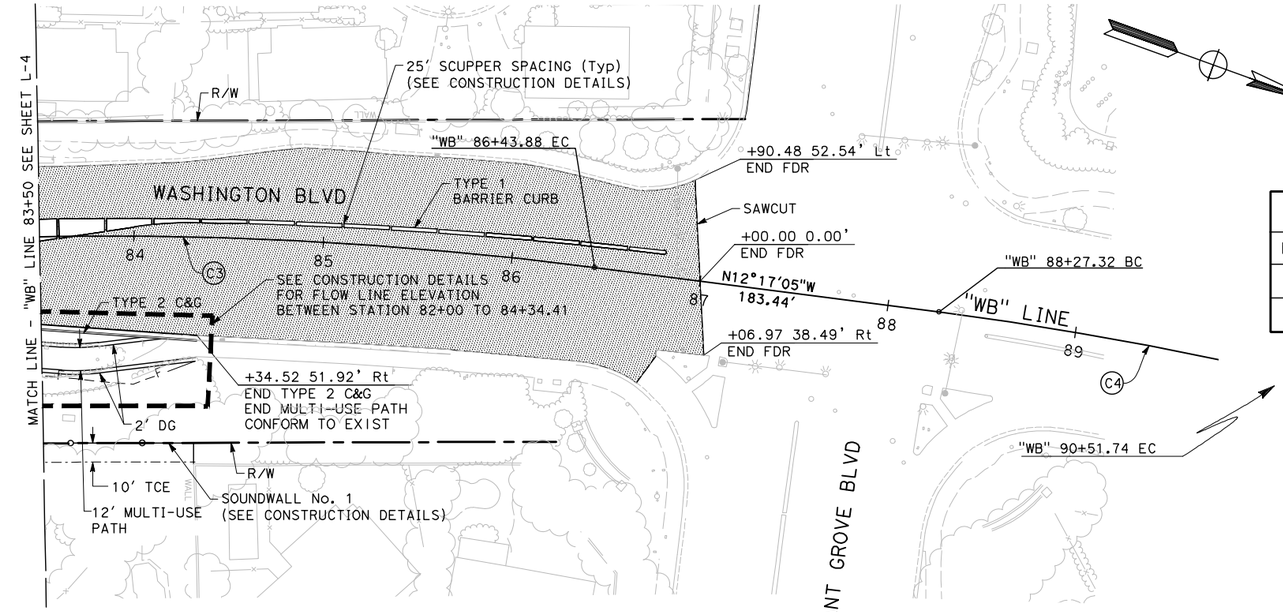
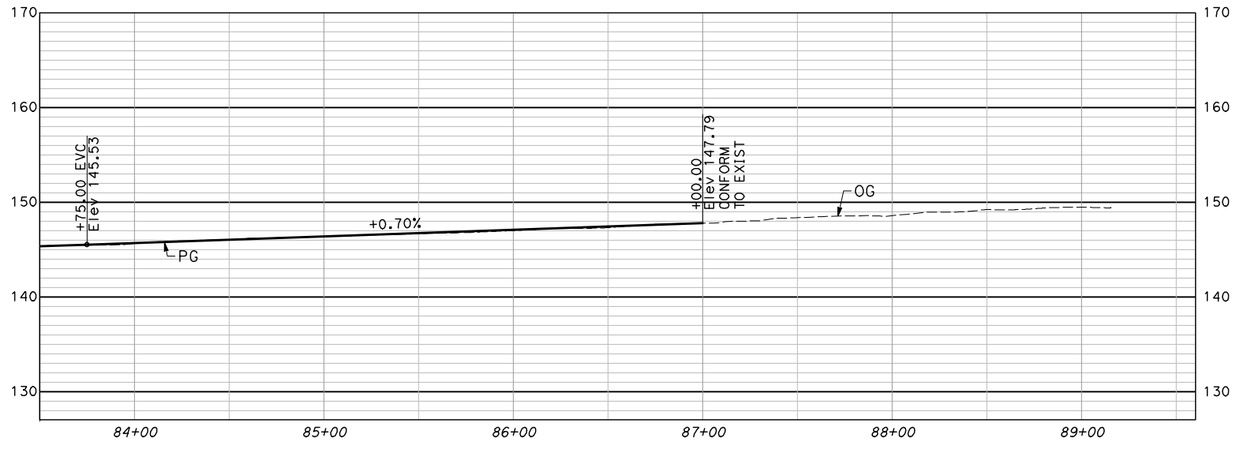


PLAN
SCALE: 1" = 40'

CURVE DATA				
No.	R	Δ	T	L
C3	2000.00'	9°02'56"	158.26'	315.87'
C4	1910.00'	6°43'56"	112.34'	224.42'



"WB" LINE PROFILE
SCALE: Horiz 1" = 40'
Vert 1" = 8'

60% SUBMITTAL L-5

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION 155.915 **DATUM** CITY
DESCRIPTION CITY OF ROSEVILLE BENCHMARK 8 – A 3 1/4 inch BRASS DISK TOP D.I. NORTH SIDE OF JUNCTION BOULEVARD, APPROXIMATELY 440 FEET EAST OF INTERSECTION WITH SAWTELL ROAD.

DESIGN BY:	JT
DRAWN BY:	JD
CHECKED BY:	ZS
SCALE:	AS SHOWN
DATE:	08/29/2018
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PLANS APPROVAL DATE

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WASHINGTON/ANDORA BRIDGE WIDENING PROJECT
PLAN AND PROFILE

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SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	208	216	103.8%	47.0	6.4	D
	Through	638	633	99.2%	36.0	5.1	D
	Right Turn	369	364	98.7%	8.7	0.9	A
	Subtotal	1,215	1,213	99.8%	29.8	4.3	C
SB	Left Turn	74	70	94.0%	59.0	7.4	E
	Through	564	581	103.0%	46.1	5.6	D
	Right Turn	98	103	105.5%	15.3	3.5	B
	Subtotal	736	754	102.4%	43.0	5.0	D
EB	Left Turn	52	48	92.8%	61.3	14.1	E
	Through	1,350	1,262	93.5%	34.9	10.0	C
	Right Turn	205	203	99.0%	24.9	5.5	C
	Subtotal	1,607	1,513	94.1%	34.4	8.7	C
WB	Left Turn	176	175	99.3%	50.4	5.3	D
	Through	798	739	92.7%	28.8	3.9	C
	Right Turn	64	57	89.7%	9.3	1.0	A
	Subtotal	1,038	972	93.6%	31.6	2.9	C
Total		4,596	4,451	96.8%	34.0	2.2	C

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	6	121.6%	31.9	27.1	C
	Through	1,028	977	95.0%	12.6	1.7	B
	Right Turn	35	38	108.6%	5.8	2.0	A
	Subtotal	1,068	1,021	95.6%	12.5	1.7	B
SB	Left Turn	110	107	97.1%	39.1	4.6	D
	Through	835	830	99.4%	10.3	2.0	B
	Right Turn						
	Subtotal	945	937	99.1%	13.6	1.7	B
EB	Left Turn	8	8	95.0%	32.1	29.4	C
	Through	6	5	82.3%	31.9	28.5	C
	Right Turn	16	12	73.6%	8.8	7.0	A
	Subtotal	30	24	81.1%	26.3	8.8	C
WB	Left Turn	62	63	101.1%	37.9	11.6	D
	Through	1	1	114.0%	10.1	27.0	B
	Right Turn	179	188	104.9%	13.2	3.6	B
	Subtotal	242	252	104.0%	19.4	3.8	B
Total		2,285	2,233	97.7%	13.9	1.4	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	28	27	96.4%	8.0	3.3	A
	Through	1,047	1,009	96.4%	2.7	0.7	A
	Right Turn						
	Subtotal	1,075	1,036	96.4%	2.8	0.6	A
SB	Left Turn						
	Through	907	872	96.2%	4.4	0.7	A
	Right Turn	6	7	120.3%	4.0	0.7	A
	Subtotal	913	879	96.3%	4.4	0.7	A
EB	Left Turn	21	20	94.1%	15.3	6.4	C
	Through						
	Right Turn	36	33	92.9%	7.1	4.8	A
	Subtotal	57	53	93.3%	10.5	4.1	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,045	1,968	96.3%	3.7	0.5	A

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	29	97.5%	36.2	8.7	D
	Through	1,019	988	96.9%	6.8	1.8	A
	Right Turn	37	45	121.2%	3.4	1.0	A
	Subtotal	1,086	1,062	97.8%	7.5	1.9	A
SB	Left Turn	24	26	109.3%	42.1	6.5	D
	Through	897	864	96.3%	8.6	4.4	A
	Right Turn	22	21	95.0%	7.5	7.0	A
	Subtotal	943	911	96.6%	9.5	4.2	A
EB	Left Turn	46	40	86.7%	31.4	5.8	C
	Through	22	22	100.2%	33.7	12.1	C
	Right Turn	84	82	98.2%	9.8	4.0	A
	Subtotal	152	144	95.0%	19.1	4.6	B
WB	Left Turn	16	16	99.8%	36.5	12.8	D
	Through	1	0	0.0%	0.0	0.0	A
	Right Turn	10	10	95.0%	5.3	3.4	A
	Subtotal	27	25	94.3%	24.1	7.7	C
Total		2,208	2,143	97.0%	9.4	2.2	A

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	147	143	97.5%	31.0	2.9	C
	Through	618	608	98.4%	9.2	2.0	A
	Right Turn						
	Subtotal	765	751	98.2%	13.4	1.7	B
SB	Left Turn	3	3	101.3%	5.9	11.3	A
	Through	682	665	97.5%	14.1	2.1	B
	Right Turn	312	301	96.5%	8.6	1.2	A
	Subtotal	997	969	97.2%	12.5	1.5	B
EB	Left Turn	466	443	95.0%	22.4	2.8	C
	Through	1	1	114.0%	7.6	17.7	A
	Right Turn	412	423	102.7%	3.2	0.4	A
	Subtotal	879	867	98.6%	13.0	1.7	B
WB	Left Turn	2	0	19.0%	4.0	12.6	A
	Through	2	2	114.0%	18.5	31.4	B
	Right Turn	2	0	19.0%	0.7	2.1	A
	Subtotal	6	3	50.7%	18.0	20.8	B
Total		2,647	2,590	97.8%	12.9	1.0	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	28	24	86.9%	18.5	4.9	B
	Through	1,047	1,003	95.8%	6.1	1.7	A
	Right Turn						
	Subtotal	1,075	1,028	95.6%	6.4	1.8	A
SB	Left Turn						
	Through	907	891	98.2%	8.5	1.2	A
	Right Turn	6	7	120.3%	4.2	4.2	A
	Subtotal	913	898	98.4%	8.5	1.2	A
EB	Left Turn	21	19	90.5%	13.5	3.9	B
	Through						
	Right Turn	36	38	106.6%	7.6	3.0	A
	Subtotal	57	57	100.7%	9.9	2.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,045	1,983	97.0%	7.5	1.3	A

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	263	252	95.7%	58.2	15.8	E
	Through	485	496	102.3%	42.0	3.7	D
	Right Turn	484	483	99.8%	9.9	1.0	A
	Subtotal	1,232	1,231	99.9%	32.9	4.9	C
SB	Left Turn	171	136	79.3%	227.6	38.1	F
	Through	856	701	81.9%	219.9	34.6	F
	Right Turn	32	32	98.6%	164.0	31.4	F
	Subtotal	1,059	868	82.0%	219.1	35.2	F
EB	Left Turn	71	68	95.3%	66.3	10.9	E
	Through	1,359	1,301	95.7%	49.7	7.8	D
	Right Turn	209	206	98.5%	39.9	7.6	D
	Subtotal	1,639	1,574	96.1%	49.1	6.9	D
WB	Left Turn	448	444	99.1%	79.4	17.7	E
	Through	1,568	1,535	97.9%	39.6	4.9	D
	Right Turn	57	59	103.3%	17.6	2.4	B
	Subtotal	2,073	2,038	98.3%	47.8	7.5	D
Total		6,003	5,711	95.1%	71.0	7.6	E

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	12	11	95.0%	46.1	15.7	D
	Through	1,077	1,074	99.7%	15.5	2.2	B
	Right Turn	91	107	117.3%	9.1	1.7	A
	Subtotal	1,180	1,192	101.0%	15.2	2.0	B
SB	Left Turn	144	124	86.0%	43.5	6.5	D
	Through	1,355	1,186	87.5%	12.7	1.7	B
	Right Turn	14	12	86.9%	10.8	7.0	B
	Subtotal	1,513	1,322	87.4%	15.6	1.5	B
EB	Left Turn	5	5	98.8%	34.4	26.3	C
	Through	2	2	76.0%	16.1	26.2	B
	Right Turn	9	6	67.6%	12.8	13.8	B
	Subtotal	16	13	78.4%	33.4	19.9	C
WB	Left Turn	82	87	106.1%	37.6	10.1	D
	Through	2	1	38.0%	3.0	9.4	A
	Right Turn	150	158	105.4%	15.2	4.7	B
	Subtotal	234	246	105.1%	23.2	4.5	C
Total		2,943	2,772	94.2%	16.2	1.3	B

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	34	30	88.3%	23.7	10.9	C
	Through	1,170	1,165	99.6%	3.1	0.5	A
	Right Turn						
	Subtotal	1,204	1,195	99.3%	3.6	0.5	A
SB	Left Turn						
	Through	1,416	1,248	88.1%	7.4	0.9	A
	Right Turn	30	27	89.9%	6.8	0.9	A
	Subtotal	1,446	1,275	88.1%	7.4	0.9	A
EB	Left Turn	10	13	129.2%	22.2	22.1	C
	Through						
	Right Turn	42	45	107.7%	12.8	3.9	B
	Subtotal	52	58	111.8%	14.8	3.9	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,702	2,528	93.6%	5.8	0.4	A

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	50	49	98.8%	43.2	6.7	D
	Through	1,123	1,112	99.0%	6.1	1.6	A
	Right Turn	22	24	107.1%	2.8	1.2	A
	Subtotal	1,195	1,185	99.2%	7.5	1.6	A
SB	Left Turn	17	14	80.5%	49.1	11.6	D
	Through	1,407	1,265	89.9%	12.2	2.0	B
	Right Turn	34	29	83.8%	9.5	5.2	A
	Subtotal	1,458	1,308	89.7%	12.5	2.0	B
EB	Left Turn	62	59	95.0%	33.8	6.3	C
	Through	1	2	152.0%	17.2	24.5	B
	Right Turn	25	18	71.4%	13.3	4.9	B
	Subtotal	88	78	89.0%	29.4	5.1	C
WB	Left Turn	35	25	72.7%	28.3	10.8	C
	Through	3	4	126.7%	30.2	20.0	C
	Right Turn	19	18	94.0%	9.3	5.9	A
	Subtotal	57	47	82.7%	23.8	7.9	C
Total		2,798	2,618	93.6%	10.9	1.6	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	462	481	104.0%	34.4	2.5	C
	Through	731	725	99.1%	11.2	1.7	B
	Right Turn						
	Subtotal	1,193	1,205	101.0%	20.4	1.8	C
SB	Left Turn	4	3	66.5%	19.9	22.5	B
	Through	920	843	91.6%	25.2	4.7	C
	Right Turn	543	472	86.9%	19.0	3.4	B
	Subtotal	1,467	1,317	89.8%	23.0	3.5	C
EB	Left Turn	461	455	98.8%	30.7	3.9	C
	Through	1	2	190.0%	9.0	17.1	A
	Right Turn	224	219	97.9%	2.1	0.2	A
	Subtotal	686	676	98.6%	21.4	2.6	C
WB	Left Turn	4	5	123.5%	28.1	25.4	C
	Through	4	3	85.5%	33.9	29.5	C
	Right Turn	3	2	76.0%	3.2	4.2	A
	Subtotal	11	11	96.7%	27.0	16.2	C
Total		3,357	3,210	95.6%	21.7	1.6	C

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	34	38	112.9%	18.8	4.9	B
	Through	1,170	1,170	100.0%	5.9	1.6	A
	Right Turn						
	Subtotal	1,204	1,209	100.4%	6.3	1.6	A
SB	Left Turn						
	Through	1,416	1,176	83.1%	12.8	3.6	B
	Right Turn	30	26	87.4%	12.5	6.2	B
	Subtotal	1,446	1,203	83.2%	12.8	3.5	B
EB	Left Turn	10	9	91.2%	15.7	15.4	B
	Through						
	Right Turn	42	50	118.5%	8.2	3.5	A
	Subtotal	52	59	113.3%	9.4	4.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,702	2,470	91.4%	9.5	2.4	A

APPENDIX C
CUMULATIVE CONDITIONS

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative No Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	118	116	97.9%	55.7	8.0	E
	Through	850	783	92.1%	43.5	5.9	D
	Right Turn	334	299	89.5%	6.0	1.5	A
	Subtotal	1,302	1,198	92.0%	35.3	4.8	D
SB	Left Turn	94	94	100.3%	79.7	8.7	E
	Through	578	554	95.8%	48.3	3.7	D
	Right Turn	366	377	103.0%	20.9	2.6	C
	Subtotal	1,038	1,025	98.7%	41.1	3.1	D
EB	Left Turn	465	369	79.4%	71.8	7.2	E
	Through	2,138	1,717	80.3%	40.0	3.4	D
	Right Turn	99	77	77.9%	30.1	3.5	C
	Subtotal	2,702	2,163	80.1%	45.1	3.0	D
WB	Left Turn	46	42	90.9%	73.7	12.2	E
	Through	1,039	1,021	98.2%	40.5	3.9	D
	Right Turn	112	116	103.8%	9.2	0.8	A
	Subtotal	1,197	1,179	98.5%	38.6	3.9	D
Total		6,239	5,565	89.2%	40.9	1.9	D

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	4	83.6%	74.4	62.6	E
	Through	1,091	974	89.3%	108.4	23.7	F
	Right Turn	66	68	102.5%	101.9	24.0	F
	Subtotal	1,162	1,046	90.0%	108.1	23.5	F
SB	Left Turn	124	101	81.5%	47.7	6.8	D
	Through	598	568	94.9%	13.1	1.4	B
	Right Turn	1	2	228.0%	7.4	9.8	A
	Subtotal	723	671	92.8%	18.6	1.7	B
EB	Left Turn	9	6	67.6%	61.4	41.1	E
	Through	10	7	72.2%	59.9	45.9	E
	Right Turn	15	19	124.1%	25.9	29.4	C
	Subtotal	34	32	93.9%	40.6	35.0	D
WB	Left Turn	36	37	103.4%	43.2	11.2	D
	Through	1	1	76.0%	6.9	15.4	A
	Right Turn	202	206	101.8%	34.1	6.0	C
	Subtotal	239	244	101.9%	35.4	6.1	D
Total		2,158	1,993	92.3%	67.8	12.1	E

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	27	29	105.6%	13.0	5.0	B
	Through	1,130	1,120	99.1%	8.9	6.1	A
	Right Turn						
	Subtotal	1,157	1,149	99.3%	9.0	6.0	A
SB	Left Turn						
	Through	643	622	96.8%	6.0	0.9	A
	Right Turn	6	4	69.7%	5.5	0.8	A
	Subtotal	649	627	96.6%	6.0	0.9	A
EB	Left Turn	32	38	117.6%	12.6	2.6	B
	Through						
	Right Turn	23	21	92.5%	5.9	2.4	A
	Subtotal	55	59	107.1%	10.6	2.3	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,861	1,834	98.6%	8.1	3.8	A

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	33	110.2%	35.1	7.7	D
	Through	1,098	1,099	100.1%	7.4	1.6	A
	Right Turn	62	71	115.2%	3.3	0.7	A
	Subtotal	1,190	1,204	101.2%	7.9	1.5	A
SB	Left Turn	3	2	63.3%	14.6	24.0	B
	Through	641	615	96.0%	7.9	3.3	A
	Right Turn	22	22	101.9%	3.3	3.1	A
	Subtotal	666	640	96.0%	7.9	3.2	A
EB	Left Turn	48	50	103.7%	31.0	6.3	C
	Through	22	22	98.5%	26.2	5.7	C
	Right Turn	84	86	102.2%	9.7	2.3	A
	Subtotal	154	157	102.2%	18.7	2.6	B
WB	Left Turn	16	12	73.6%	28.5	10.7	C
	Through	1	1	76.0%	7.3	16.6	A
	Right Turn	11	11	96.7%	10.6	8.4	B
	Subtotal	28	23	82.8%	22.1	10.2	C
Total		2,038	2,024	99.3%	8.9	1.3	A

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative No Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	353	347	98.2%	28.0	2.6	C
	Through	797	783	98.3%	10.1	1.6	B
	Right Turn						
	Subtotal	1,150	1,130	98.2%	15.6	1.6	B
SB	Left Turn	3	2	63.3%	17.3	25.2	B
	Through	605	571	94.4%	19.1	3.3	B
	Right Turn	133	142	106.6%	7.6	1.0	A
	Subtotal	741	715	96.5%	17.0	2.9	B
EB	Left Turn	391	407	104.2%	24.8	2.8	C
	Through	1	1	114.0%	2.9	6.2	A
	Right Turn	892	888	99.6%	8.6	1.4	A
	Subtotal	1,284	1,297	101.0%	13.7	1.0	B
WB	Left Turn	2	2	76.0%	17.1	30.0	B
	Through	2	1	38.0%	7.4	18.8	A
	Right Turn	2	2	76.0%	3.7	5.9	A
	Subtotal	6	4	63.3%	23.9	30.0	C
Total		3,181	3,145	98.9%	15.1	1.4	B

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	224	224	100.1%	58.8	6.3	E
	Through	551	512	92.9%	36.6	3.0	D
	Right Turn	329	326	99.1%	3.5	0.2	A
	Subtotal	1,104	1,062	96.2%	31.4	2.8	C
SB	Left Turn	231	181	78.5%	276.3	42.2	F
	Through	1,062	847	79.8%	227.0	40.1	F
	Right Turn	449	352	78.4%	199.4	37.2	F
	Subtotal	1,742	1,381	79.3%	226.6	39.9	F
EB	Left Turn	209	173	82.5%	101.5	14.2	F
	Through	1,879	1,567	83.4%	71.5	18.4	E
	Right Turn	67	48	70.9%	62.3	22.9	E
	Subtotal	2,155	1,787	82.9%	74.2	17.8	E
WB	Left Turn	354	293	82.8%	179.6	49.0	F
	Through	2,285	2,088	91.4%	94.2	22.3	F
	Right Turn	84	73	86.9%	53.2	21.7	D
	Subtotal	2,723	2,454	90.1%	103.3	24.5	F
Total		7,724	6,684	86.5%	109.5	14.3	F

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	102.6%	58.9	23.3	E
	Through	769	734	95.5%	47.3	21.4	D
	Right Turn	77	73	95.2%	34.2	23.7	C
	Subtotal	856	818	95.5%	46.4	21.4	D
SB	Left Turn	278	212	76.3%	57.1	6.7	E
	Through	1,188	951	80.1%	24.6	2.6	C
	Right Turn	17	15	89.4%	16.8	6.4	B
	Subtotal	1,483	1,178	79.5%	30.4	3.4	C
EB	Left Turn	5	4	76.0%	68.9	113.2	E
	Through	4	4	104.5%	24.0	30.5	C
	Right Turn	8	8	95.0%	18.1	25.7	B
	Subtotal	17	16	91.6%	32.2	22.6	C
WB	Left Turn	190	184	96.6%	37.0	7.1	D
	Through	8	6	80.8%	41.4	21.2	D
	Right Turn	330	319	96.6%	26.4	4.3	C
	Subtotal	528	509	96.4%	30.4	4.4	C
Total		2,884	2,521	87.4%	35.7	6.7	D

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	24	121.6%	21.8	9.2	C
	Through	843	828	98.2%	4.2	0.8	A
	Right Turn						
	Subtotal	863	852	98.7%	4.7	1.0	A
SB	Left Turn						
	Through	1,343	1,111	82.7%	11.0	1.0	B
	Right Turn	43	40	92.8%	9.5	0.8	A
	Subtotal	1,386	1,151	83.0%	11.0	1.0	B
EB	Left Turn	13	15	114.0%	36.7	22.9	E
	Through						
	Right Turn	38	35	91.0%	27.1	13.1	D
	Subtotal	51	49	96.9%	29.4	11.9	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,300	2,052	89.2%	8.9	0.8	A

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	50	54	107.2%	40.6	14.9	D
	Through	792	788	99.5%	5.5	1.1	A
	Right Turn	25	25	101.8%	2.9	0.7	A
	Subtotal	867	867	100.0%	7.7	1.4	A
SB	Left Turn	15	11	76.0%	44.4	24.0	D
	Through	1,331	1,099	82.5%	7.9	1.3	A
	Right Turn	35	26	74.9%	4.3	3.1	A
	Subtotal	1,381	1,136	82.3%	8.3	1.3	A
EB	Left Turn	62	59	95.6%	38.4	7.3	D
	Through	1	0	38.0%	3.8	12.0	A
	Right Turn	25	20	80.6%	14.6	7.6	B
	Subtotal	88	80	90.7%	32.1	7.0	C
WB	Left Turn	50	46	91.2%	37.2	10.4	D
	Through	3	3	114.0%	36.7	32.4	D
	Right Turn	9	11	118.2%	13.3	7.6	B
	Subtotal	62	60	96.2%	34.6	9.8	C
Total		2,398	2,142	89.3%	9.7	1.4	A

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative No Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,193	1,118	93.7%	58.8	24.4	E
	Through	581	565	97.2%	27.5	18.5	C
	Right Turn						
	Subtotal	1,774	1,682	94.8%	48.4	22.7	D
SB	Left Turn	4	2	38.0%	19.2	24.9	B
	Through	967	796	82.4%	52.9	13.9	D
	Right Turn	435	366	84.0%	35.5	10.7	D
	Subtotal	1,406	1,164	82.8%	47.5	12.5	D
EB	Left Turn	283	297	104.9%	34.6	3.0	C
	Through	1	1	114.0%	2.8	5.9	A
	Right Turn	525	526	100.2%	4.0	0.7	A
	Subtotal	809	824	101.9%	15.0	1.3	B
WB	Left Turn	4	2	57.0%	26.0	32.4	C
	Through	4	4	104.5%	46.1	36.2	D
	Right Turn	3	3	114.0%	1.9	2.4	A
	Subtotal	11	10	89.8%	32.9	23.9	C
Total		4,000	3,680	92.0%	40.6	10.1	D

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	167	171	102.4%	70.2	17.7	E
	Through	1,043	1,006	96.5%	62.3	18.9	E
	Right Turn	458	501	109.4%	30.3	12.8	C
	Subtotal	1,668	1,678	100.6%	53.6	17.3	D
SB	Left Turn	90	72	80.2%	79.0	19.8	E
	Through	568	570	100.4%	46.0	4.0	D
	Right Turn	386	367	95.2%	20.9	2.6	C
	Subtotal	1,044	1,010	96.7%	39.3	4.4	D
EB	Left Turn	382	302	79.2%	88.8	11.3	F
	Through	2,110	1,734	82.2%	58.9	10.5	E
	Right Turn	100	85	84.7%	43.8	9.4	D
	Subtotal	2,592	2,122	81.8%	62.6	10.4	E
WB	Left Turn	43	41	94.6%	76.5	13.8	E
	Through	1,049	1,072	102.2%	45.4	2.7	D
	Right Turn	112	114	102.1%	9.6	1.4	A
	Subtotal	1,204	1,227	101.9%	43.0	2.4	D
Total		6,508	6,036	92.8%	52.0	5.3	D

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	6	5	76.0%	29.8	16.8	C
	Through	1,461	1,459	99.9%	23.4	7.1	C
	Right Turn	118	131	110.8%	15.5	4.1	B
	Subtotal	1,585	1,594	100.6%	22.8	6.8	C
SB	Left Turn	123	128	103.8%	64.2	16.5	E
	Through	587	543	92.4%	10.8	2.3	B
	Right Turn	1	2	152.0%	4.8	7.3	A
	Subtotal	711	672	94.5%	21.1	3.6	C
EB	Left Turn	9	12	130.9%	24.5	9.9	C
	Through	11	9	79.5%	29.6	15.0	C
	Right Turn	14	17	124.9%	14.7	12.5	B
	Subtotal	34	38	111.8%	19.9	5.1	B
WB	Left Turn	36	39	108.7%	26.8	15.7	C
	Through	1	1	114.0%	9.3	19.9	A
	Right Turn	198	185	93.7%	19.0	2.8	B
	Subtotal	235	226	96.1%	20.6	2.4	C
Total		2,565	2,530	98.6%	22.1	5.1	C

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	28	28	99.1%	4.6	2.2	A
	Through	1,552	1,551	99.9%	4.1	1.1	A
	Right Turn						
	Subtotal	1,580	1,579	99.9%	4.1	1.1	A
SB	Left Turn						
	Through	631	591	93.6%	3.8	0.7	A
	Right Turn	6	3	44.3%	3.5	0.7	A
	Subtotal	637	593	93.1%	3.8	0.7	A
EB	Left Turn	33	22	67.9%	10.5	9.5	B
	Through						
	Right Turn	23	24	104.1%	4.1	2.4	A
	Subtotal	56	46	82.8%	7.4	3.9	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,273	2,218	97.6%	4.1	0.9	A

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	27	88.7%	42.8	14.7	D
	Through	1,519	1,524	100.3%	9.4	1.9	A
	Right Turn	62	63	101.1%	5.9	1.4	A
	Subtotal	1,611	1,613	100.1%	9.9	1.8	A
SB	Left Turn	4	3	66.5%	32.0	31.9	C
	Through	628	587	93.4%	15.1	9.2	B
	Right Turn	22	21	93.3%	9.9	7.9	A
	Subtotal	654	610	93.3%	15.1	8.9	B
EB	Left Turn	49	54	110.9%	37.8	7.9	D
	Through	22	29	131.3%	34.6	9.2	C
	Right Turn	84	104	123.5%	8.5	2.2	A
	Subtotal	155	187	120.6%	21.1	4.7	C
WB	Left Turn	15	13	88.7%	34.4	11.1	C
	Through	1	0	0.0%	0.1	0.3	A
	Right Turn	12	17	145.7%	14.3	7.4	B
	Subtotal	28	31	109.9%	21.8	5.1	C
Total		2,448	2,441	99.7%	12.1	2.9	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	298	297	99.6%	39.7	7.1	D
	Through	957	976	102.0%	17.6	2.8	B
	Right Turn						
	Subtotal	1,255	1,273	101.4%	22.7	3.3	C
SB	Left Turn	3	3	88.7%	34.1	29.3	C
	Through	599	565	94.3%	24.1	3.0	C
	Right Turn	125	121	96.7%	9.3	1.8	A
	Subtotal	727	689	94.7%	21.6	2.7	C
EB	Left Turn	652	660	101.3%	27.6	4.7	C
	Through	1	0	38.0%	6.4	20.3	A
	Right Turn	795	830	104.4%	7.6	1.1	A
	Subtotal	1,448	1,491	103.0%	16.5	2.4	B
WB	Left Turn	2	4	209.0%	11.4	13.4	B
	Through	2	2	76.0%	10.2	20.3	B
	Right Turn	2	4	190.0%	5.5	4.3	A
	Subtotal	6	10	158.3%	15.2	13.2	B
Total		3,436	3,461	100.7%	19.8	1.3	B

Intersection 3 **Washington Blvd/Kaseberg Dr** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	28	29	101.8%	27.2	4.5	C
	Through	1,552	1,518	97.8%	8.5	1.9	A
	Right Turn						
	Subtotal	1,580	1,547	97.9%	8.8	1.9	A
SB	Left Turn						
	Through	631	633	100.3%	9.0	1.3	A
	Right Turn	6	6	95.0%	8.9	7.3	A
	Subtotal	637	639	100.3%	9.0	1.3	A
EB	Left Turn	33	32	95.6%	18.0	4.8	B
	Through						
	Right Turn	23	20	87.6%	7.5	3.6	A
	Subtotal	56	52	92.3%	14.0	4.3	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,273	2,237	98.4%	9.0	1.3	A

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	254	261	102.9%	75.8	15.4	E
	Through	623	613	98.3%	37.7	3.8	D
	Right Turn	328	320	97.5%	9.1	0.7	A
	Subtotal	1,205	1,194	99.1%	38.6	4.3	D
SB	Left Turn	226	152	67.1%	361.6	31.4	F
	Through	1,354	954	70.4%	307.8	33.8	F
	Right Turn	350	253	72.2%	278.2	32.7	F
	Subtotal	1,930	1,358	70.4%	308.3	33.1	F
EB	Left Turn	205	159	77.7%	173.1	34.6	F
	Through	1,905	1,450	76.1%	153.4	34.0	F
	Right Turn	112	84	75.0%	153.2	39.3	F
	Subtotal	2,222	1,693	76.2%	155.2	34.1	F
WB	Left Turn	511	363	70.9%	248.9	22.1	F
	Through	2,239	2,010	89.8%	135.6	18.4	F
	Right Turn	84	69	82.3%	96.1	17.1	F
	Subtotal	2,834	2,442	86.2%	151.3	18.3	F
Total		8,191	6,686	81.6%	164.1	14.6	F

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	11	118.2%	37.4	9.7	D
	Through	871	861	98.9%	19.4	3.2	B
	Right Turn	83	87	105.3%	9.4	2.4	A
	Subtotal	963	959	99.6%	18.7	3.0	B
SB	Left Turn	205	143	69.7%	41.0	4.5	D
	Through	1,756	1,244	70.8%	22.9	4.2	C
	Right Turn	16	14	85.5%	18.6	4.3	B
	Subtotal	1,977	1,400	70.8%	24.7	4.0	C
EB	Left Turn	5	4	76.0%	22.2	23.4	C
	Through	3	2	76.0%	8.3	14.2	A
	Right Turn	9	10	109.8%	13.8	6.0	B
	Subtotal	17	16	93.9%	19.3	8.5	B
WB	Left Turn	251	240	95.7%	23.8	2.1	C
	Through	7	6	86.9%	20.2	16.7	C
	Right Turn	329	348	105.7%	14.6	1.8	B
	Subtotal	587	594	101.2%	18.5	0.9	B
Total		3,544	2,969	83.8%	21.5	2.3	C

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	18	18	99.2%	19.1	14.1	C
	Through	950	934	98.3%	1.8	0.2	A
	Right Turn						
	Subtotal	968	952	98.3%	2.2	0.4	A
SB	Left Turn						
	Through	1,971	1,471	74.7%	9.0	1.1	A
	Right Turn	45	33	72.6%	8.4	1.1	A
	Subtotal	2,016	1,504	74.6%	9.0	1.1	A
EB	Left Turn	13	13	96.5%	33.0	19.8	D
	Through						
	Right Turn	38	28	74.0%	12.7	5.2	B
	Subtotal	51	41	79.7%	20.0	8.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		3,035	2,496	82.2%	6.6	0.8	A

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	53	46	86.0%	57.9	14.3	E
	Through	894	869	97.2%	5.3	0.7	A
	Right Turn	21	24	112.2%	2.2	0.8	A
	Subtotal	968	938	96.9%	7.8	1.7	A
SB	Left Turn	20	14	68.4%	63.8	22.4	E
	Through	1,952	1,406	72.0%	18.1	5.2	B
	Right Turn	37	29	79.1%	18.3	9.3	B
	Subtotal	2,009	1,449	72.1%	18.6	5.1	B
EB	Left Turn	63	66	105.0%	45.2	7.2	D
	Through	1	1	76.0%	8.5	26.7	A
	Right Turn	25	24	97.3%	26.5	7.9	C
	Subtotal	89	91	102.5%	40.1	6.2	D
WB	Left Turn	48	41	84.7%	53.0	13.1	D
	Through	3	2	63.3%	19.6	29.8	B
	Right Turn	11	14	124.4%	5.9	3.4	A
	Subtotal	62	56	90.7%	41.9	13.8	D
Total		3,128	2,534	81.0%	15.9	3.3	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

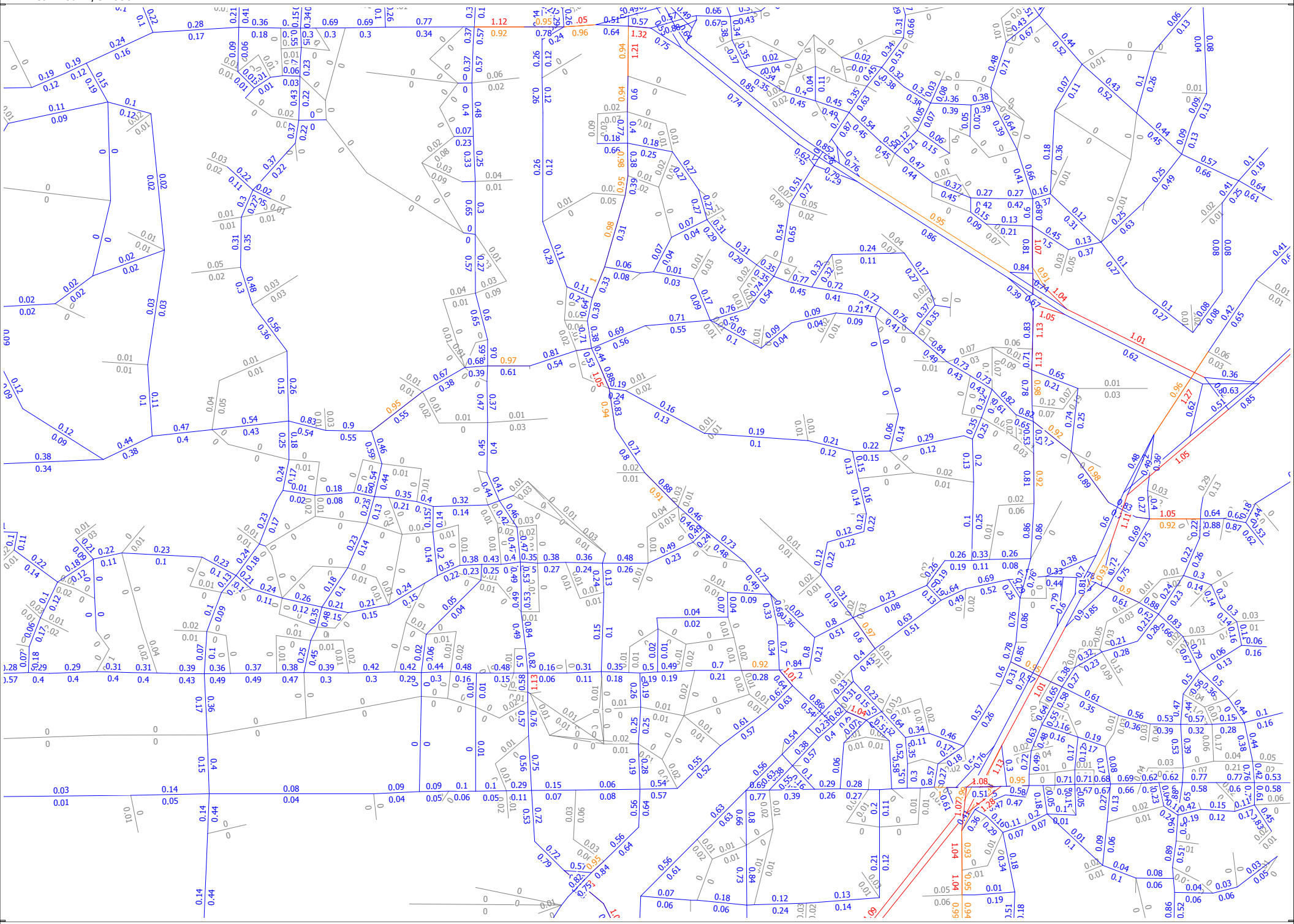
Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,005	941	93.6%	62.2	18.8	E
	Through	685	676	98.6%	23.1	11.1	C
	Right Turn						
	Subtotal	1,690	1,616	95.6%	45.9	16.0	D
SB	Left Turn	4	4	95.0%	44.7	37.2	D
	Through	1,239	977	78.8%	42.8	5.9	D
	Right Turn	782	583	74.5%	61.1	16.1	E
	Subtotal	2,025	1,563	77.2%	49.8	8.3	D
EB	Left Turn	280	275	98.1%	46.0	4.3	D
	Through	1	0	38.0%	2.0	6.3	A
	Right Turn	438	446	101.8%	3.2	0.5	A
	Subtotal	719	721	100.3%	19.5	1.7	B
WB	Left Turn	4	2	47.5%	12.5	18.6	B
	Through	4	5	123.5%	45.2	36.5	D
	Right Turn	3	5	152.0%	10.1	9.4	B
	Subtotal	11	11	103.6%	33.5	18.3	C
Total		4,445	3,911	88.0%	42.6	7.7	D

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Cumulative Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour**

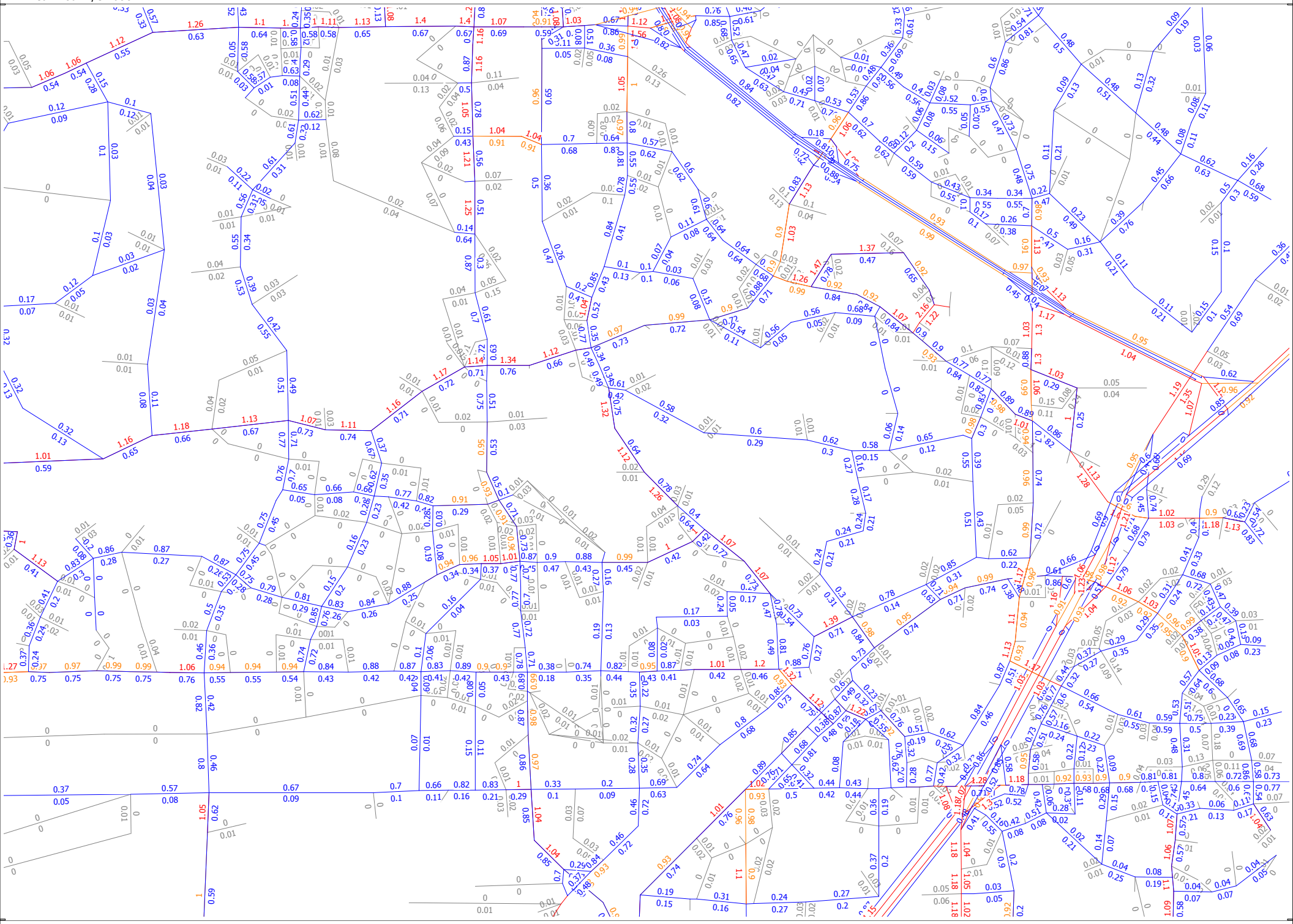
Intersection 3 **Washington Blvd/Kaseberg Dr** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	18	22	120.3%	19.4	6.4	B
	Through	950	938	98.7%	4.6	1.0	A
	Right Turn						
	Subtotal	968	960	99.1%	4.9	1.0	A
SB	Left Turn						
	Through	1,971	1,469	74.5%	14.7	2.7	B
	Right Turn	45	38	85.3%	15.5	4.7	B
	Subtotal	2,016	1,507	74.8%	14.7	2.6	B
EB	Left Turn	13	11	87.7%	14.9	10.6	B
	Through						
	Right Turn	38	41	109.0%	13.1	5.5	B
	Subtotal	51	53	103.6%	13.6	5.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		3,035	2,519	83.0%	11.0	1.7	B

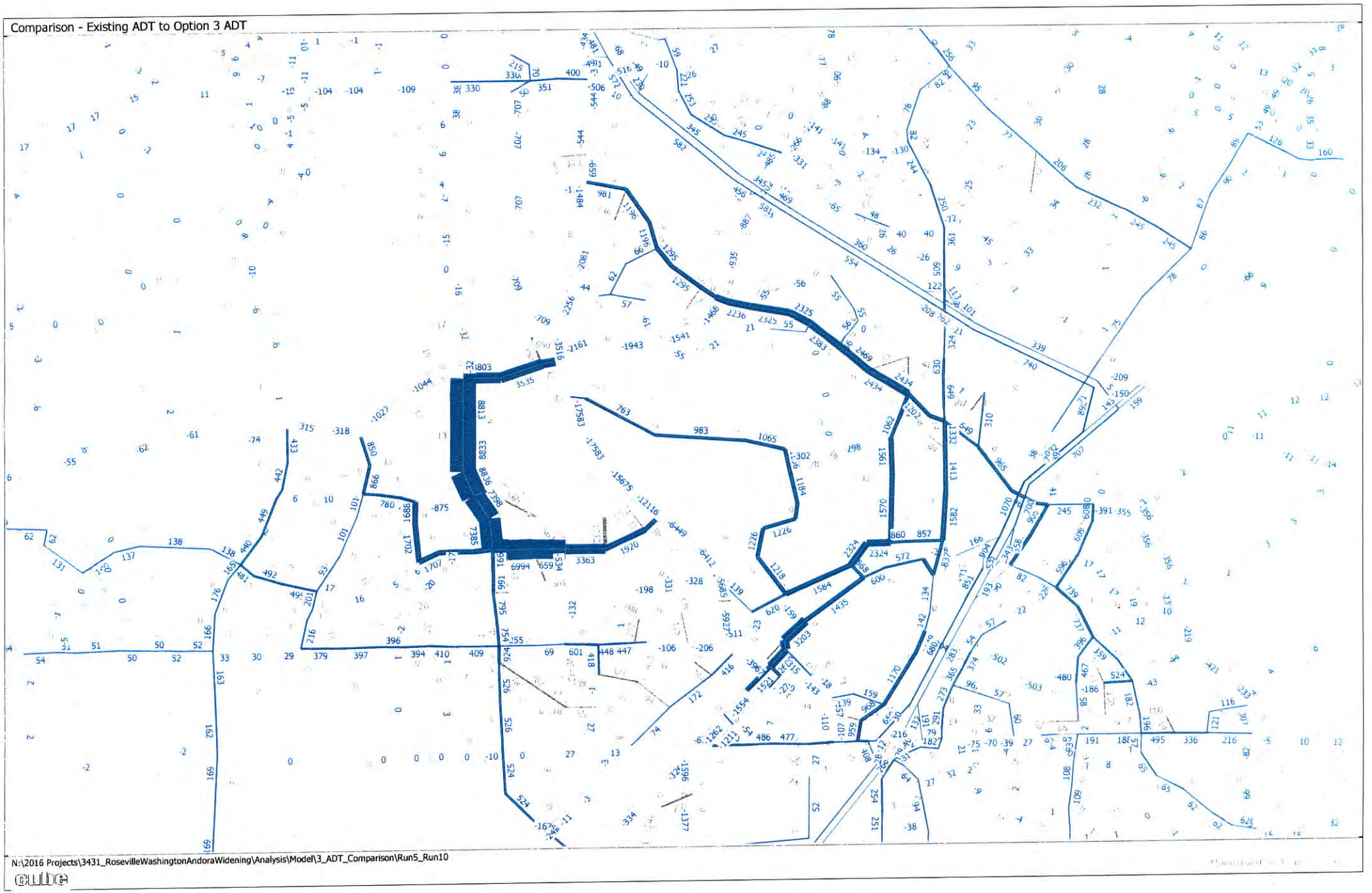
Roseville Washington Andora Widening
Base Year
PM Peak Hour V/C Ratio



Roseville Washington Andora Widening
Cumulative Year No Project
PM Peak Hour V/C Ratio



APPENDIX D
CONSTRUCTION CLOSURE CONDITIONS


Comparison - Existing ADT to Option 3 ADT
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Option 3 Traffic Diversion - Roadways Experiencing Increases

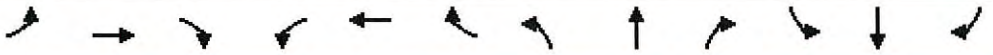
Segment	Functional Class	Existing ADT	Existing Plus Option 3 - Method A	Existing Plus Option 3 - Method B	Method B Divided by Method A
Washington Blvd south of Pleasant Grove	Two to Four Lanes	22,100	5,900	6,200	5.1%
Washington Blvd. south of Diamond Oaks Rd.	Two Lanes	20,300	0	0	-
Foothills south of Pleasant Grove	Six-Lane Arterial	32,200	42,600	43,400	1.9%
Pleasant Grove west of Washington	Six-Lane Arterial	44,100	48,300	47,100	-2.5%
Junction east of Foothills	Four-Lane Arterial	14,400	22,600	22,500	-0.4%
Diamond Oaks east of Washington	Two-Lane Collector	4,700	5,900	6,200	5.1%
Roseville Parkway east of Pleasant Grove	Six-Lane Arterial	44,800	47,500	51,900	9.3%
Galleria south of Roseville Parkway	Six-Lane Arterial	27,900	29,800	32,000	7.4%
Reserve Drive south of Roseville Parkway	Two-Lane Collector	8,000	9,800	11,000	12.2%
SUM or Average		*218,500*	*212,400*	*220300*	*4.8%*
Source / Note		*1, 2*	*3*	*4*	

1 = ADT based on March 2015 traffic data compiled from City's ITS count database as part of Placer Ranch SP EIR.

2 = ADT on Washington Blvd. based on May 2016 counts. Counts not available on Reserve Drive, so very rough estimate of 8,000 ADT assumed.

3 = Method A is the base year model's predicted redistribution of traffic (based on percent increase)

4 = Method B is the projected redistribution based on travel time survey results.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	207	91	198	384	189	148	1148	158	204	1204	180
Future Volume (veh/h)	163	207	91	198	384	189	148	1148	158	204	1204	180
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	181	230	8	220	427	19	164	1276	0	227	1338	0
Adj No. of Lanes	1	2	1	1	2	1	1	3	1	1	3	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	511	224	262	588	258	206	2334	700	269	2514	756
Arrive On Green	0.13	0.14	0.14	0.15	0.17	0.17	0.12	0.46	0.00	0.15	0.49	0.00
Sat Flow, veh/h	1774	3539	1550	1774	3539	1555	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	181	230	8	220	427	19	164	1276	0	227	1338	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1550	1774	1770	1555	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	11.9	7.1	0.5	14.5	13.7	1.2	10.8	21.7	0.0	14.9	21.7	0.0
Cycle Q Clear(g_c), s	11.9	7.1	0.5	14.5	13.7	1.2	10.8	21.7	0.0	14.9	21.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	223	511	224	262	588	258	206	2334	700	269	2514	756
V/C Ratio(X)	0.81	0.45	0.04	0.84	0.73	0.07	0.80	0.55	0.00	0.84	0.53	0.00
Avail Cap(c_a), veh/h	340	599	262	355	628	276	355	2334	700	384	2514	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	51.1	47.0	44.1	49.8	47.4	42.2	51.6	23.4	0.0	49.5	20.8	0.0
Incr Delay (d2), s/veh	4.6	0.8	0.1	9.7	4.2	0.1	2.6	0.9	0.0	8.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	3.5	0.2	7.8	7.0	0.5	5.4	10.4	0.0	7.9	10.3	0.0
LnGrp Delay(d),s/veh	55.7	47.7	44.2	59.4	51.6	42.4	54.3	24.4	0.0	57.5	21.6	0.0
LnGrp LOS	E	D	D	E	D	D	D	C		E	C	
Approach Vol, veh/h		419			666			1440			1565	
Approach Delay, s/veh		51.1			53.9			27.8			26.8	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.9	62.3	18.1	22.6	21.2	58.1	20.7	20.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.7	4.0	* 6	4.0	5.7
Max Green Setting (Gmax), s	23.0	37.0	22.0	18.3	25.0	* 35	23.0	17.3
Max Q Clear Time (g_c+I1), s	12.8	23.7	13.9	15.7	16.9	23.7	16.5	9.1
Green Ext Time (p_c), s	0.2	11.9	0.2	1.0	0.3	10.4	0.2	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C

Notes

SimTraffic Post-Processor **Washington Blvd Widening**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 58 **Foothills Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	328	340	103.7%	53.3	4.2	D
	Through	411	420	102.1%	39.7	4.3	D
	Right Turn	572	554	96.9%	3.9	0.2	A
	Subtotal	1,311	1,314	100.2%	28.2	2.2	C
SB	Left Turn	265	242	91.4%	47.7	7.5	D
	Through	707	720	101.8%	49.7	6.1	D
	Right Turn	173	181	104.9%	3.0	0.4	A
	Subtotal	1,145	1,143	99.9%	41.8	4.6	D
EB	Left Turn	134	120	89.7%	49.2	8.3	D
	Through	1,058	987	93.3%	37.4	3.0	D
	Right Turn	161	154	95.9%	4.3	0.6	A
	Subtotal	1,353	1,261	93.2%	34.6	2.6	C
WB	Left Turn	788	777	98.6%	70.7	8.0	E
	Through	1,380	1,182	85.7%	102.2	35.7	F
	Right Turn	107	86	80.1%	55.7	27.6	E
	Subtotal	2,275	2,045	89.9%	88.1	22.8	F
Total		6,084	5,764	94.7%	53.6	7.4	D

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

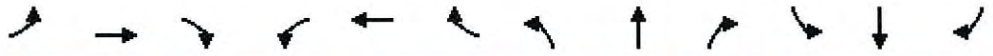
Washington Blvd Widening
Existing Conditions
PM Peak Hour

Intersection 63 **Galleria Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	514	452	87.9%	97.3	32.7	F
	Through	756	723	95.7%	51.1	7.5	D
	Right Turn	65	62	94.9%	8.3	4.6	A
	Subtotal	1,335	1,237	92.6%	66.0	15.7	E
SB	Left Turn	585	583	99.6%	75.1	7.8	E
	Through	582	556	95.5%	46.1	9.4	D
	Right Turn	309	308	99.7%	3.5	0.3	A
	Subtotal	1,476	1,446	98.0%	48.7	5.2	D
EB	Left Turn	446	412	92.3%	101.8	43.8	F
	Through	1,101	1,126	102.3%	40.5	6.7	D
	Right Turn	448	460	102.6%	7.3	1.1	A
	Subtotal	1,995	1,998	100.1%	45.8	9.3	D
WB	Left Turn	247	220	89.2%	93.1	21.5	F
	Through	1,405	1,328	94.5%	96.6	25.3	F
	Right Turn	745	721	96.8%	15.6	9.8	B
	Subtotal	2,397	2,270	94.7%	70.7	20.3	E
Total		7,203	6,950	96.5%	58.0	8.1	E

Intersection 107 **Reserve Dr/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	306	300	98.2%	42.1	7.0	D
	Through	28	29	104.7%	41.9	13.8	D
	Right Turn	274	259	94.7%	9.2	2.5	A
	Subtotal	608	589	96.9%	27.7	4.1	C
SB	Left Turn	165	161	97.5%	39.5	3.1	D
	Through	23	20	88.3%	41.8	13.1	D
	Right Turn	74	73	98.6%	1.1	0.1	A
	Subtotal	262	254	97.0%	28.6	3.0	C
EB	Left Turn	38	42	109.8%	46.3	12.1	D
	Through	1,512	1,544	102.1%	36.6	3.8	D
	Right Turn	271	265	97.8%	8.3	3.4	A
	Subtotal	1,821	1,851	101.7%	32.8	3.8	C
WB	Left Turn	201	174	86.4%	55.3	10.0	E
	Through	1,840	1,714	93.1%	35.5	7.7	D
	Right Turn	187	162	86.9%	8.3	0.5	A
	Subtotal	2,228	2,050	92.0%	35.1	7.4	D
Total		4,919	4,744	96.4%	33.0	3.6	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	167	91	98	354	659	148	1238	68	737	1279	210
Future Volume (vph)	203	167	91	98	354	659	148	1238	68	737	1279	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.7	2.7	3.0	2.7	2.7	3.0	2.7	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1532	1770	3539	1534	1770	5085	1560	1770	5085	1560
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1532	1770	3539	1534	1770	5085	1560	1770	5085	1560
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	226	186	101	109	393	732	164	1376	76	819	1421	233
RTOR Reduction (vph)	0	0	75	0	0	301	0	0	0	0	0	0
Lane Group Flow (vph)	226	186	26	109	393	431	164	1376	76	819	1421	233
Confl. Peds. (#/hr)			10			10			10			10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			Free			Free
Actuated Green, G (s)	18.6	28.1	28.1	12.2	21.7	21.7	15.4	35.3	120.0	25.0	44.6	120.0
Effective Green, g (s)	19.6	31.1	31.1	13.2	24.7	24.7	16.4	38.3	120.0	26.0	47.6	120.0
Actuated g/C Ratio	0.16	0.26	0.26	0.11	0.21	0.21	0.14	0.32	1.00	0.22	0.40	1.00
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7	5.7	4.0	5.7		4.0	6.0	
Vehicle Extension (s)	2.0	3.6	3.6	2.0	3.6	3.6	2.0	4.5		2.0	4.1	
Lane Grp Cap (vph)	289	917	397	194	728	315	241	1622	1560	383	2017	1560
v/s Ratio Prot	c0.13	0.05		0.06	0.11		0.09	c0.27		c0.46	0.28	
v/s Ratio Perm			0.02			c0.28			0.05			0.15
v/c Ratio	0.78	0.20	0.07	0.56	0.54	1.37	0.68	0.85	0.05	2.14	0.70	0.15
Uniform Delay, d1	48.2	34.8	33.5	50.7	42.6	47.6	49.3	38.1	0.0	47.0	30.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.0	0.1	0.1	2.2	0.9	184.8	6.2	5.7	0.1	521.0	2.1	0.2
Delay (s)	60.1	34.9	33.6	52.9	43.5	232.4	55.5	43.9	0.1	568.0	32.4	0.2
Level of Service	E	C	C	D	D	F	E	D	A	F	C	A
Approach Delay (s)		45.7			156.4			43.0			206.7	
Approach LOS		D			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	136.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.7
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

SimTraffic Post-Processor **Washington Blvd Widening**
Average Results from 10 Runs **Option 3**
Volume and Delay by Movement **PM Peak Hour**

Intersection 58 **Foothills Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	493	490	99.4%	101.5	24.4	F
	Through	476	513	107.8%	44.3	5.8	D
	Right Turn	942	906	96.2%	7.4	0.8	A
	Subtotal	1,911	1,909	99.9%	41.5	7.8	D
SB	Left Turn	165	167	101.0%	52.8	7.4	D
	Through	807	823	102.0%	75.3	17.6	E
	Right Turn	173	166	96.1%	3.2	0.4	A
	Subtotal	1,145	1,156	101.0%	61.6	12.4	E
EB	Left Turn	134	140	104.2%	50.2	6.3	D
	Through	891	838	94.1%	35.0	2.7	D
	Right Turn	328	320	97.6%	4.2	0.5	A
	Subtotal	1,353	1,298	95.9%	29.2	2.5	C
WB	Left Turn	1,215	890	73.3%	208.2	31.0	F
	Through	1,215	1,069	88.0%	62.9	7.9	E
	Right Turn	42	31	73.7%	19.6	4.3	B
	Subtotal	2,472	1,990	80.5%	127.4	16.8	F
Total		6,881	6,354	92.3%	69.6	5.6	E

SimTraffic Post-Processor **Washington Blvd Widening**
Average Results from 10 Runs **Option 3**
Volume and Delay by Movement **PM Peak Hour**

Intersection 63 **Galleria Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	699	458	65.5%	301.0	39.6	F
	Through	756	706	93.4%	142.7	36.5	F
	Right Turn	65	65	100.1%	95.5	36.3	F
	Subtotal	1,520	1,228	80.8%	199.3	37.2	F
SB	Left Turn	585	581	99.3%	87.0	26.9	F
	Through	582	567	97.4%	47.3	6.7	D
	Right Turn	309	315	102.1%	3.8	0.6	A
	Subtotal	1,476	1,463	99.1%	53.9	12.4	D
EB	Left Turn	446	415	93.1%	83.8	22.1	F
	Through	1,101	1,085	98.6%	38.6	9.4	D
	Right Turn	662	603	91.2%	8.1	0.7	A
	Subtotal	2,209	2,104	95.2%	38.9	7.1	D
WB	Left Turn	247	237	96.1%	105.4	18.8	F
	Through	1,405	1,371	97.6%	115.3	27.4	F
	Right Turn	745	688	92.4%	25.6	15.4	C
	Subtotal	2,397	2,297	95.8%	87.6	23.5	F
Total		7,602	7,092	93.3%	85.4	7.1	F

Intersection 107 **Reserve Dr/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	446	438	98.1%	61.1	19.6	E
	Through	28	23	83.3%	72.8	26.4	E
	Right Turn	274	257	93.7%	12.4	3.0	B
	Subtotal	748	718	96.0%	43.9	11.6	D
SB	Left Turn	165	170	103.2%	44.7	7.2	D
	Through	23	28	122.6%	37.1	10.8	D
	Right Turn	74	79	106.7%	1.2	0.2	A
	Subtotal	262	277	105.9%	31.6	5.3	C
EB	Left Turn	38	39	101.9%	70.6	16.3	E
	Through	1,726	1,692	98.1%	65.9	10.0	E
	Right Turn	431	408	94.6%	57.5	23.7	E
	Subtotal	2,195	2,139	97.4%	64.4	12.1	E
WB	Left Turn	201	166	82.5%	67.4	14.5	E
	Through	2,025	1,763	87.0%	41.9	16.6	D
	Right Turn	187	155	83.0%	9.8	3.8	A
	Subtotal	2,413	2,084	86.4%	41.5	14.7	D
Total		5,618	5,218	92.9%	50.8	9.0	D

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Option 4 Closure Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	139	91	65.6%	47.5	5.5	D
	Through	207	149	71.8%	32.9	7.5	C
	Right Turn	212	144	68.1%	2.2	0.1	A
	Subtotal	558	384	68.8%	24.6	3.9	C
SB	Left Turn	172	90	52.6%	257.8	90.4	F
	Through	340	119	35.1%	490.9	162.1	F
	Right Turn	227	130	57.3%	218.0	85.8	F
	Subtotal	739	340	46.0%	323.5	111.9	F
EB	Left Turn	165	153	92.6%	65.3	8.9	E
	Through	1,464	1,375	93.9%	47.1	10.4	D
	Right Turn	110	89	81.2%	142.8	88.9	F
	Subtotal	1,739	1,617	93.0%	54.1	13.0	D
WB	Left Turn	189	106	56.3%	236.6	113.8	F
	Through	1,628	1,518	93.3%	39.6	7.2	D
	Right Turn	58	59	101.6%	17.7	4.8	B
	Subtotal	1,875	1,684	89.8%	49.1	9.3	D
Total		4,911	4,025	82.0%	70.0	13.0	E

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	2	27.1%	2.5	3.1	A
	Through	405	247	61.0%	4.8	0.5	A
	Right Turn	50	32	63.1%	3.9	1.0	A
	Subtotal	462	280	60.7%	4.7	0.5	A
SB	Left Turn	144	52	35.9%	203.1	40.8	F
	Through	481	239	49.8%	224.3	18.1	F
	Right Turn	14	6	43.4%	108.8	88.0	F
	Subtotal	639	297	46.5%	221.3	14.0	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	154	152	98.5%	6.3	1.0	A
	Subtotal	154	152	98.5%	6.3	1.0	A
Total		1,255	729	58.1%	93.0	5.3	F

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Option 4 Closure Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	35	22	64.1%	135.8	36.5	F
	Through	452	263	58.2%	220.0	41.1	F
	Right Turn						
	Subtotal	487	285	58.6%	214.0	39.5	F
SB	Left Turn						
	Through	451	222	49.3%	3.9	0.6	A
	Right Turn	30	13	44.3%	2.2	0.8	A
	Subtotal	481	236	49.0%	3.8	0.6	A
EB	Left Turn	10	7	72.2%	249.6	168.6	F
	Through						
	Right Turn	42	35	83.2%	76.6	105.8	F
	Subtotal	52	42	81.1%	99.3	110.3	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,020	563	55.2%	115.7	21.3	F

Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	50	50	100.3%	20.4	8.2	C
	Through	444	383	86.4%	27.2	25.1	C
	Right Turn	22	23	105.4%	6.0	12.0	A
	Subtotal	516	457	88.5%	25.5	23.2	C
SB	Left Turn	9	5	50.7%	17.5	16.1	B
	Through	466	244	52.3%	6.3	4.1	A
	Right Turn	18	12	65.4%	4.2	5.9	A
	Subtotal	493	260	52.7%	6.5	4.0	A
EB	Left Turn	34	31	90.5%	26.2	14.4	C
	Through	1	0	0.0%	1.0	3.3	A
	Right Turn	25	18	71.4%	4.0	1.3	A
	Subtotal	60	49	81.1%	18.2	9.8	B
WB	Left Turn	37	24	63.7%	13.3	6.1	B
	Through	3	3	101.3%	7.2	7.4	A
	Right Turn	9	8	88.7%	22.1	23.1	C
	Subtotal	49	35	70.6%	14.9	7.2	B
Total		1,118	800	71.5%	18.4	14.9	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Option 4 Closure Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	508	498	98.1%	15.9	2.4	B
	Through	374	368	98.5%	6.2	1.3	A
	Right Turn						
	Subtotal	882	866	98.2%	11.8	1.6	B
SB	Left Turn	2	0	0.0%	0.8	2.4	A
	Through	396	229	57.8%	16.4	4.5	B
	Right Turn	130	72	55.2%	6.6	1.6	A
	Subtotal	528	301	56.9%	14.1	3.7	B
EB	Left Turn	140	143	101.8%	17.9	3.3	B
	Through	1	2	152.0%	3.9	8.2	A
	Right Turn	239	240	100.3%	1.8	0.2	A
	Subtotal	380	384	101.0%	7.8	1.3	A
WB	Left Turn	4	2	57.0%	14.2	17.3	B
	Through	4	3	76.0%	11.9	14.0	B
	Right Turn	2	3	133.0%	1.6	1.8	A
	Subtotal	10	8	79.8%	15.2	13.6	B
Total		1,800	1,559	86.6%	11.2	1.4	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Option 4 Closure Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 311 **Washington Blvd - Stop for NB Traffic** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	462	241	52.1%	592.7	72.6	F
	Subtotal	462	241	52.1%	592.7	72.6	F
SB	Left Turn Through Right Turn	481	236	49.0%	5.2	0.4	A
	Subtotal	481	236	49.0%	5.2	0.4	A
EB	Left Turn Through Right Turn						
	Subtotal						
WB	Left Turn Through Right Turn						
	Subtotal						
Total		943	477	50.5%	302.4	38.5	F

APPENDIX E
MITIGATION RESULTS

Intersection 1 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	263	228	86.7%	124.5	39.9	F
	Through	485	466	96.1%	45.1	3.0	D
	Right Turn	484	482	99.6%	10.3	0.9	B
	Subtotal	1,232	1,176	95.5%	46.3	8.8	D
SB	Left Turn	171	175	102.4%	124.5	25.4	F
	Through	856	809	94.5%	98.7	27.1	F
	Right Turn	32	36	111.6%	57.2	22.4	E
	Subtotal	1,059	1,020	96.3%	101.7	26.7	F
EB	Left Turn	71	70	98.5%	67.3	8.9	E
	Through	1,359	1,307	96.2%	46.0	12.5	D
	Right Turn	209	215	102.9%	41.5	10.2	D
	Subtotal	1,639	1,592	97.1%	46.2	11.5	D
WB	Left Turn	448	431	96.3%	75.1	17.0	E
	Through	1,568	1,511	96.4%	38.4	3.5	D
	Right Turn	57	57	100.0%	17.2	3.1	B
	Subtotal	2,073	2,000	96.5%	45.7	5.7	D
Total		6,003	5,788	96.4%	56.0	7.9	E

Intersection 2 **Washington Blvd/Emerald Oak Rd-Diamond Oaks Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	12	10	85.5%	32.6	15.8	C
	Through	1,077	1,042	96.8%	15.7	2.7	B
	Right Turn	91	92	100.6%	9.8	2.7	A
	Subtotal	1,180	1,144	97.0%	15.4	2.5	B
SB	Left Turn	144	129	89.5%	38.0	7.8	D
	Through	1,355	1,301	96.0%	15.5	4.6	B
	Right Turn	14	11	81.4%	8.0	3.7	A
	Subtotal	1,513	1,441	95.3%	17.5	4.1	B
EB	Left Turn	5	5	91.2%	27.7	22.5	C
	Through	2	3	133.0%	29.3	32.2	C
	Right Turn	9	9	97.1%	16.4	13.9	B
	Subtotal	16	16	99.8%	26.9	12.8	C
WB	Left Turn	82	86	104.7%	26.3	6.0	C
	Through	2	3	152.0%	12.6	17.8	B
	Right Turn	150	147	97.8%	11.3	1.5	B
	Subtotal	234	236	100.7%	16.8	2.4	B
Total		2,943	2,837	96.4%	16.7	2.6	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour (Mitigated)**

Intersection 3 **Washington Blvd/Kaseberg Dr** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	34	33	98.4%	18.6	7.9	C
	Through	1,170	1,139	97.3%	3.1	0.5	A
	Right Turn						
	Subtotal	1,204	1,172	97.4%	3.5	0.5	A
SB	Left Turn						
	Through	1,416	1,363	96.3%	8.4	1.2	A
	Right Turn	30	31	102.6%	7.6	1.2	A
	Subtotal	1,446	1,394	96.4%	8.4	1.2	A
EB	Left Turn	10	11	110.2%	33.5	26.1	D
	Through						
	Right Turn	42	42	99.5%	17.7	7.6	C
	Subtotal	52	53	101.6%	22.4	10.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,702	2,619	96.9%	6.5	0.7	A

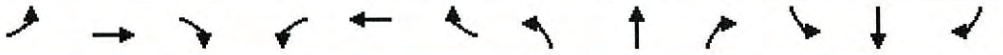
Intersection 4 **Washington Blvd/Sawtell Rd-Derek Pl** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	50	50	99.6%	42.3	7.5	D
	Through	1,123	1,096	97.6%	6.4	0.9	A
	Right Turn	22	25	114.0%	3.5	1.7	A
	Subtotal	1,195	1,170	97.9%	7.9	0.7	A
SB	Left Turn	17	14	84.9%	45.6	19.3	D
	Through	1,407	1,358	96.5%	13.4	2.1	B
	Right Turn	34	37	108.4%	11.8	1.8	B
	Subtotal	1,458	1,409	96.7%	13.7	2.0	B
EB	Left Turn	62	53	85.8%	33.5	8.2	C
	Through	1	0	38.0%	0.1	0.2	A
	Right Turn	25	23	92.7%	16.5	8.7	B
	Subtotal	88	77	87.2%	28.3	5.7	C
WB	Left Turn	35	38	108.6%	33.4	7.8	C
	Through	3	3	88.7%	17.6	27.8	B
	Right Turn	19	21	110.0%	9.5	4.9	A
	Subtotal	57	62	108.0%	25.5	5.3	C
Total		2,798	2,718	97.1%	11.9	1.3	B

SimTraffic Post-Processor **Washington Andora Widening**
Average Results from 10 Runs **Existing Plus Project Conditions**
Volume and Delay by Movement **PM Peak Hour (Mitigated)**

Intersection 5 **Washington Blvd/Junction Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	462	469	101.5%	35.9	2.3	D
	Through	731	714	97.7%	12.3	1.9	B
	Right Turn						
	Subtotal	1,193	1,183	99.2%	21.6	1.9	C
SB	Left Turn	4	4	95.0%	43.8	38.9	D
	Through	920	896	97.4%	28.4	10.9	C
	Right Turn	543	506	93.2%	23.9	8.2	C
	Subtotal	1,467	1,406	95.9%	26.9	9.7	C
EB	Left Turn	461	457	99.1%	32.8	4.9	C
	Through	1	0	0.0%	0.0	0.0	A
	Right Turn	224	215	95.8%	2.1	0.3	A
	Subtotal	686	671	97.9%	23.0	4.1	C
WB	Left Turn	4	3	76.0%	21.1	24.1	C
	Through	4	4	104.5%	15.4	13.9	B
	Right Turn	3	4	139.3%	4.5	6.9	A
	Subtotal	11	11	103.6%	19.4	14.7	B
Total		3,357	3,273	97.5%	24.2	5.1	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	167	91	98	354	659	148	1238	68	737	1279	210
Future Volume (veh/h)	203	167	91	98	354	659	148	1238	68	737	1279	210
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	226	186	20	109	393	409	164	1376	0	819	1421	0
Adj No. of Lanes	1	2	1	1	2	1	1	3	1	2	3	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	1041	461	148	894	395	205	1915	570	803	2515	757
Arrive On Green	0.13	0.29	0.29	0.08	0.25	0.25	0.12	0.38	0.00	0.23	0.49	0.00
Sat Flow, veh/h	1774	3539	1567	1774	3539	1565	1774	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	226	186	20	109	393	409	164	1376	0	819	1421	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1567	1774	1770	1565	1774	1695	1583	1721	1695	1583
Q Serve(g_s), s	15.0	4.7	1.1	7.2	11.2	30.3	10.8	27.7	0.0	28.0	23.5	0.0
Cycle Q Clear(g_c), s	15.0	4.7	1.1	7.2	11.2	30.3	10.8	27.7	0.0	28.0	23.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	222	1041	461	148	894	395	205	1915	570	803	2515	757
V/C Ratio(X)	1.02	0.18	0.04	0.74	0.44	1.04	0.80	0.72	0.00	1.02	0.57	0.00
Avail Cap(c_a), veh/h	222	1041	461	207	894	395	266	1915	570	803	2515	757
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.5	31.6	30.3	53.7	37.7	44.8	51.7	32.0	0.0	46.0	21.3	0.0
Incr Delay (d2), s/veh	65.5	0.1	0.0	4.2	0.4	54.7	9.4	2.4	0.0	36.9	0.9	0.0
Initial Q Delay(d3),s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	2.3	0.5	3.7	5.5	19.0	5.8	13.4	0.0	17.4	11.1	0.0
LnGrp Delay(d),s/veh	118.1	31.7	30.3	58.0	38.1	99.6	61.1	34.3	0.0	82.9	22.2	0.0
LnGrp LOS	F	C	C	E	D	F	E	C		F	C	
Approach Vol, veh/h		432			911			1540			2240	
Approach Delay, s/veh		76.8			68.1			37.2			44.4	
Approach LOS		E			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.9	62.6	18.0	33.0	31.0	48.5	13.0	38.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.7	4.0	* 6	4.0	5.7
Max Green Setting (Gmax), s	17.0	42.0	14.0	27.3	27.0	* 32	13.0	28.3
Max Q Clear Time (g_c+I1), s	12.8	25.5	17.0	32.3	30.0	29.7	9.2	6.7
Green Ext Time (p_c), s	0.1	14.8	0.0	0.0	0.0	2.5	0.1	5.8

Intersection Summary	
HCM 2010 Ctrl Delay	49.2
HCM 2010 LOS	D

Notes

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Washington Blvd Widening
Option 3 - Mitigation
PM Peak Hour

Intersection 58 **Foothills Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	493	489	99.2%	96.2	24.6	F
	Through	476	504	105.8%	44.4	4.3	D
	Right Turn	942	910	96.6%	7.6	1.3	A
	Subtotal	1,911	1,902	99.5%	40.2	7.8	D
SB	Left Turn	165	173	104.7%	60.2	8.1	E
	Through	807	834	103.3%	91.3	21.3	F
	Right Turn	173	170	98.2%	3.3	0.5	A
	Subtotal	1,145	1,176	102.7%	74.0	15.8	E
EB	Left Turn	134	143	106.7%	49.6	5.4	D
	Through	891	866	97.2%	45.9	2.4	D
	Right Turn	328	321	97.9%	4.6	0.7	A
	Subtotal	1,353	1,330	98.3%	36.3	1.9	D
WB	Left Turn	1,215	1,036	85.3%	120.0	23.5	F
	Through	1,215	1,096	90.2%	55.8	9.4	E
	Right Turn	42	37	87.4%	15.9	6.5	B
	Subtotal	2,472	2,169	87.7%	86.0	11.9	F
Total		6,881	6,578	95.6%	60.6	5.0	E

Fehr & Peers' Technical Memorandum dated April 10, 2019

FEHR PEERS

TECHNICAL MEMORANDUM

Date: April 10, 2019
To: Zach Siviglia & Garry Horton – Mark Thomas
From: John Gard – Fehr & Peers
Subject: ***Phasing of Washington / Andora Widening Project***

RS16-3431

This memorandum evaluates the effects on the transportation system of separating the Washington / Andora Widening Project into two distinct construction phases. Full buildout of the project was analyzed under cumulative conditions in the *Final Transportation Study for the Washington / Andora Widening Project* (Fehr & Peers, September 18, 2018). The current plan for constructing the project in two phases does not affect or alter that particular analysis.

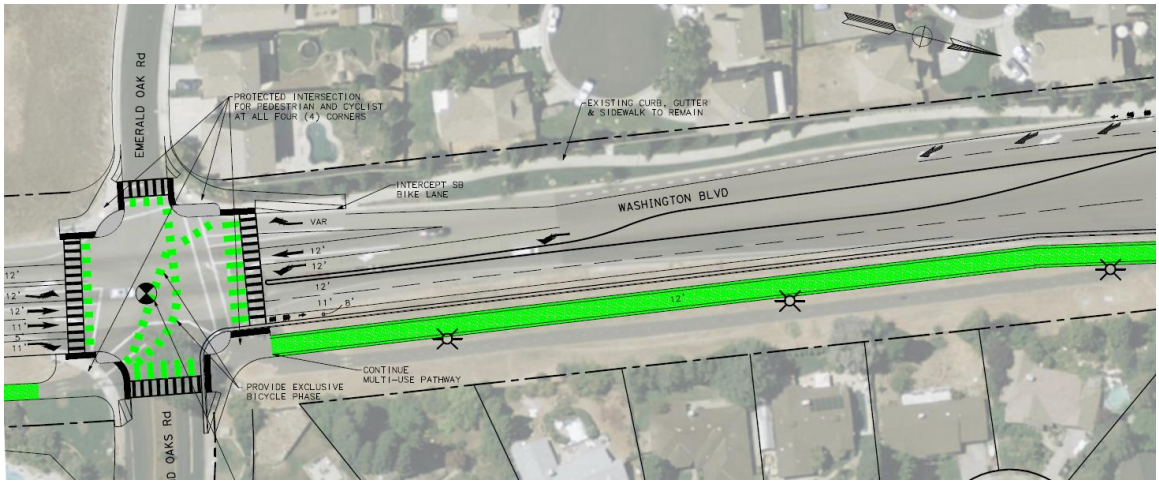
The *Final Transportation Study for the Washington / Andora Widening Project* also analyzed full buildout of the project under existing conditions. The results of that analysis would change if only Phase 1 of the project were considered. The remainder of this memorandum describes Phase 1 of the project, and evaluates how it would affect the transportation system under existing conditions (relative to the effects that were identified for full buildout of the project).

Phase 1 of Washington / Andora Project

Phase 1 would include the widening of Washington Boulevard from two to four lanes from Sawtell Drive to Pleasant Grove Boulevard, with the exception of the UPRR Andora Underpass (and portions of Washington Boulevard immediately to the north and south), which would be completed as part of Phase 2.

The following page contains an image from the Washington / Andora Widening Project (Mark Thomas, March 3, 2019) showing the Phase 1 improvements at the Washington Boulevard/Diamond Oaks Road intersection. Key aspects of this improvement include:

- The second northbound lane would begin a short distance south of Diamond Oaks Road.
- Southbound Washington Boulevard would continue to have two lanes departing Pleasant Grove Boulevard that narrow to a single lane prior to Diamond Oaks Road.
- Washington Boulevard/Diamond Oaks Road would be designed as a 'protected intersection', featuring crosswalks, and bike paths across and within the intersection as shown. These features are intended to enable bicyclists to access the Class I path on the east side of the roadway.



Existing Plus Phase 1 of Washington / Andora Project

Effects on Travel Demand

The *Final Transportation Study for the Washington / Andora Widening Project* concluded that the full Washington / Andora Project would cause the daily traffic volume on Washington Boulevard to increase from 20,300 vehicles per day (existing) to 28,000 vehicles per day, with much of this shift coming from parallel facilities.

By virtue of not widening the roadway to a continuous four-lane facility, Phase 1 will not cause the same degree of volume increase. The following describes the expected travel demand in each direction of Washington Boulevard:

- Northbound travel – a modest increase is expected due to the added capacity provided by the second northbound through lane at Diamond Oaks Road. Northbound traffic often queues back from this intersection through the Andora Underpass during peak periods.
- Southbound travel – little to no change in travel demand is expected because the roadway will feel very similar to how it currently operates. Namely, the lane drop between Pleasant Grove Boulevard and Diamond Oaks Road, combined with queuing from the signal at Diamond Oaks Road becomes a pinch-point during peak periods.

The widening to four lanes from Sawtell Drive to just north of Kaseberg Drive would cause relatively little overall corridor travel increase because it would not be coupled with further widening to the north.

This memo does not attempt to quantify Phase 1's change in travel demand because travel demand models are not capable of accurately predicting shifts in travel for such subtle changes.

Effects on Roadway Operations

The following describes expected traffic conditions in each direction of Washington Boulevard:

- Northbound traffic conditions – Vehicle delays approaching Diamond Oaks Road are expected to be lower than under existing (no project) conditions by virtue of the second northbound through lane being added. Although the added capacity may induce slightly more vehicles per hour to use this route, that increase would be considerably less than the capacity increase provided by the second through lane.
- Southbound traffic conditions – Vehicle delays approaching Diamond Oaks Road would be similar to existing (no project) conditions. However, delays on this approach would likely be greater than for full buildout of the Washington / Andora Widening Project, which would provide a continuous second southbound lane through the intersection and Andora Underpass.

The net effect of the Phase 1 Project at the Washington Boulevard/Diamond Oaks Road intersection would be reduced delays when compared to existing (no project) conditions, but slightly greater delays when compared to an Existing Plus Full Project Buildout scenario. As shown in Table 6 of the *Final Transportation Study for the Washington / Andora Widening Project*, this intersection operated at Level of Service (LOS) B during the AM and PM peak hours under Existing Plus Full Project Buildout conditions. The slight increase in delay would likely maintain LOS B conditions (and certainly maintain a LOS C). Therefore, the Phase 1 Project would not adversely affect operations at this intersection.

Table 6 also notes that Full Buildout under existing conditions would worsen the Washington Boulevard/Pleasant Grove Boulevard intersection from LOS D to E during the PM peak hour. Much of the degraded operations are caused by increases in the southbound through and westbound left-turn movements, which are the result of added capacity on Washington Boulevard. Phase 1 would not degrade this intersection to the same degree by virtue of having little effect on travel demand in the southbound direction of Washington Boulevard.

In summary, Phase 1 would not adversely affect any intersections within the study corridor.

Effects on Bicycle and Pedestrian Travel

Phase 1 would improve travel conditions in the Washington Boulevard corridor for bicyclists and pedestrians over existing conditions. While it would not build all bicycle and pedestrian facilities that would be constructed with Full Buildout, conditions nonetheless would represent an improvement over what currently exists.

Appendix C

Air Quality Analysis Assumptions

Construction Equipment Assumptions for Phase 1

Equipment	Number of equipment pieces per phase			
	Grubbing/ land clearing	Grading/ excavation	Drainage/ utilities/sub-grade	Paving
Crawler Tractor	1			
Excavator	1			
Crawler Tractor		1		
Excavator		1		
Grader		1		
Roller		1		
Loader		1		
Scraper				
Tractors/Backhoe		1		
Air Compressor			1	
Generator Set			1	
Grader			1	
Plate Compactor			1	
Pump				
Forklift				
Tractors/Backhoe			1	
Pavers				1
Paving Equipment				1
Rollers				2
Tractors/Backhoe				1

Construction Modeling Assumptions for Phase 1

Assumption	Project
Construction start date (year)	2020
Number of months of construction	6.5
Project length (miles)	1.5
Total project area (acres)	11.5
Use of water trucks	Yes
Predominant soil type	Weathered Rock
Duration of construction activities per phase	
1. Grubbing/land clearing	1/2 Month
2. Grading/excavation	2 Month
3. Drainage/utilities/sub-grade	2 Months
4. Paving	2 Months
Soil import/export per phase (Total CYs)	
1. Grubbing/land clearing	400 CY
2. Grading/excavation	16,000 CY
3. Drainage/utilities/sub-grade	650 CY
Asphalt import/export per phase	
4. Paving	6,300 CY

Construction Equipment Assumptions for the Proposed Project and Alternative 1 (Phase 2)

Equipment	Number of equipment pieces per phase			
	Grubbing/ land clearing	Grading/ excavation	Drainage/ utilities/sub-grade	Paving
Crawler Tractor	2			
Excavator	2			
Crawler Tractor		1		
Excavator		1		
Grader		2		
Roller		2		
Loader		1		
Scraper		2		
Tractors/Backhoe		4		
Air Compressor			1	
Generator Set			1	
Grader			1	
Plate Compactor			1	
Pump			1	
Forklift			1	
Tractors/Backhoe			2	
Pavers				1
Paving Equipment				1
Rollers				2
Tractors/Backhoe				2

Construction Modeling Assumptions for the Proposed Project and Alternative 1 (Phase 2)

Assumption	Project	Alternative 1
Construction start date (year)	2023	2023
Number of months of construction	13	20
Project length (miles)	0.3 mile	0.3 mile
Total project area (acres)	15 acres	15 acres
Use of water trucks	Yes	Yes
Predominant soil type	Weathered Rock	Weathered Rock
Duration of construction activities per phase		
5. Grubbing/land clearing	1.30 months	2.00 months
6. Grading/excavation	5.85 months	9.00 months
7. Drainage/utilities/sub-grade	3.90 months	6.00 months
8. Paving	1.95 months	3.00 months
Soil import/export per phase (Total CY's)		
5. Grubbing/land clearing	180 cubic yards	180 cubic yards
6. Grading/excavation	92,000 cubic yards	91,000 cubic yards
7. Drainage/utilities/sub-grade	2,000 cubic yards	2,000 cubic yards
Asphalt import/export per phase		
8. Paving	21,900 cubic yards	23,200 cubic yards
Bridge demolition (cubic yards)	850 cubic yards	850 cubic yards

Daily VMT Distribution by Speed Bin

Speed		2016	2016 Plus Project	2035 No Project	2035 Plus Project
>0	<=5	59,504	60,825	142,743	142,894
>5	<=10	215,738	214,724	454,007	455,659
>10	<=15	557,270	555,540	813,036	841,270
>15	<=20	6,322,369	6,313,951	9,592,960	9,479,274
>20	<=25	2,681,083	2,680,514	5,213,647	5,333,591
>25	<=30	3,135,781	3,187,792	4,700,428	4,700,826
>30	<=35	4,763,307	4,780,631	8,342,685	8,266,886
>35	<=40	5,113,326	5,041,862	11,628,882	11,662,611
>40	<=45	4,959,185	4,954,825	7,055,879	7,054,600
>45	<=50	5,380,232	5,397,389	7,706,144	7,627,113
>50	<=55	10,238,611	10,235,833	8,548,859	8,659,579
>55	<=60	5,277,378	5,290,272	5,855,494	5,829,879
>60	<=65	1,521,616	1,517,241	3,723,569	3,724,924
>65	<=70	1,873,052	1,872,721	212,251	212,259
>70	<=75	0	0	0	0
>75		0	0	0	0
Total		**52,098,452**	**52,104,120**	**73,990,584**	**73,991,365**

CTEMFAC2017 Emission Factors, grams per mile (2035)

Speed	ROG	CO	NOx	CO2	CH4	N2O	PM10	PM2.5
0-5	0.40	3.06	1.03	975.05	0.06	0.05	0.21	0.07
5-10	0.28	2.59	0.88	800.00	0.04	0.04	0.21	0.06
10-15	0.18	2.21	0.70	647.17	0.03	0.03	0.20	0.06
15-20	0.12	1.94	0.60	539.85	0.02	0.03	0.19	0.05
20-25	0.09	1.73	0.55	464.51	0.02	0.02	0.19	0.05
25-30	0.07	1.57	0.52	413.64	0.01	0.02	0.19	0.05
30-35	0.06	1.45	0.50	384.08	0.01	0.02	0.19	0.05
35-40	0.05	1.35	0.49	369.86	0.01	0.02	0.19	0.05
40-45	0.05	1.27	0.48	367.95	0.01	0.02	0.19	0.05
45-50	0.05	1.21	0.48	376.29	0.01	0.02	0.19	0.05
50-55	0.05	1.17	0.49	389.92	0.01	0.02	0.19	0.05
55-60	0.05	1.17	0.51	404.64	0.01	0.02	0.19	0.05
60-65	0.06	1.19	0.53	417.75	0.01	0.02	0.19	0.05
65-70	0.06	1.23	0.53	420.97	0.01	0.02	0.19	0.05
70-75	0.06	1.23	0.53	420.97	0.01	0.02	0.19	0.05

CTEMFAC2017 Emission Factors, grams per mile (2016)

Speed	ROG	CO	NOx	CO2	CH4	N2O	PM10	PM2.5
0-5	0.09	1.05	0.66	648.04	0.02	0.03	0.20	0.05
5-10	0.06	0.89	0.51	529.54	0.01	0.03	0.19	0.05
10-15	0.04	0.74	0.37	426.96	0.01	0.02	0.19	0.04
15-20	0.03	0.65	0.29	357.37	0.01	0.02	0.19	0.04
20-25	0.02	0.58	0.24	307.34	0.01	0.02	0.19	0.04
25-30	0.02	0.53	0.19	272.26	0.00	0.02	0.19	0.04
30-35	0.01	0.49	0.14	250.77	0.00	0.01	0.19	0.04
35-40	0.01	0.45	0.11	239.77	0.00	0.01	0.19	0.04
40-45	0.01	0.42	0.09	237.38	0.00	0.01	0.19	0.04
45-50	0.01	0.40	0.08	242.19	0.00	0.01	0.19	0.04
50-55	0.01	0.38	0.09	251.45	0.00	0.01	0.19	0.04
55-60	0.01	0.37	0.10	262.81	0.00	0.01	0.19	0.04
60-65	0.01	0.37	0.12	274.67	0.00	0.01	0.19	0.04
65-70	0.01	0.37	0.12	276.67	0.00	0.01	0.19	0.04
70-75	0.01	0.37	0.12	276.67	0.00	0.01	0.19	0.04