Clay Street Hangtown Creek Bridge Replacement Project

Transportation Analysis Report

Prepared for:
City of Placerville

February 2018

RS14-3213

FEHR PEERS

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EXECUTIVE SUMMARY

This transportation analysis report was prepared for the Clay Street Hangtown Creek Bridge Replacement project in Placerville, CA. The project proposes to replace the Clay Street Bridge at Hangtown Creek and realign the Clay Street to intersect Main Street at Cedar Ravine Road. Two intersection control options were evaluated: all way stop and signal control. This report describes the transportation and circulation conditions in the area surrounding the proposed project and identifies transportation impacts associated with the proposed project.

With one exception, the study intersections have level of service (LOS) C or better conditions during the peak hours under existing conditions. High traffic demands on US 50 are controlled by adjacent signals to the west. The Pacific Street/Cedar Ravine Road intersection has LOS D conditions during the AM peak hour due to traffic queues on northbound Cedar Ravine Road extending back from the Main Street intersection. During peak hours, bicycle volume was low – less than 4 bicycles per hour on Main Street, but pedestrian volumes are relatively high – up to 25 pedestrians per hour crossing at Main Street/Clay Street. The maximum occupancy for parking areas within about one-half mile of the project was less than 50 percent during the weekday evening and Saturday midday peak hour in March 2014. In September 2014, the peak occupancy for public parking areas on a Saturday was mostly full when the Ivy House lot was closed for a farmers market. In the past five years, 12 crashes have occurred at the Clay Street and Cedar Ravine Road intersections at Main Street, and the most common crash types are side swipe (associated with parking maneuvers), rear end (due to sudden stops at intersections), and hit object (such as the Druid Monument).

The proposed project was analyzed using the existing conditions volumes. This analysis included the addition of a separate left-turn lane on the Pacific Street approach at Cedar Ravine Road in 2015. As a result, all study intersections would have LOS C or better conditions.

Cumulative year (2035) traffic volumes were developed using the county's travel demand model that was calibrated and validated to the study area. Using these forecasts, two study intersections, Main Street/Bedford Avenue and Pacific Street/Cedar Ravine Road, were found to need signalization to provide reasonable traffic operations in the study area. Since funding has not been identified for these signals, the project is considered to have a significant and unavoidable impact at these intersections.

Even with the assumption of the two additional signals, the No Build Alternative would have congested conditions during both peak hours, with the PM peak hour having LOS F conditions at all study intersections. The Build Alternative with all way stop control would have higher delay than the No Build Alternative at the Main Street/Cedar Ravine Road/Clay Street intersection. Signalizing the intersection would improve conditions from LOS F to C/D, but queues from the signal would worsen conditions at the adjacent Pacific

Street/Cedar Ravine Road intersection. To further reduce vehicle delay, a northbound left-turn pocket lane could be provided to improve PM peak hour conditions from LOS F to D.

The proposed project is consistent with the city's non-motorized transportation plan for bicycle facilities, and the project will not affect transit facilities. The proposed project will provide sidewalks and on-street bicycle lanes on both sides of the realigned Clay Street consistent with city standards. The realignment of Clay Street will split the existing Ivy House parking lot. With reconfiguration, the parking area will have 16 fewer spaces. The loss will be offset by the addition of about 25 spaces at a new public lot on Locust Avenue.

Given the LOS C results under existing plus project conditions, all way stop control option is recommended. The cumulative conditions analysis shows that signalization will eventually be needed at the Main Street/Cedar Ravine Road/Clay Street intersection and at adjacent intersections as well. Traffic volumes should be monitored in the study area to determine when signalization is needed.

1. INTRODUCTION

This transportation analysis report was prepared for the Clay Street Hangtown Creek Bridge Replacement project in Placerville, CA. The report describes the transportation and circulation conditions in the area surrounding the proposed project and identifies transportation impacts associated with proposed project. The analysis focuses on potential impacts at the project site and adjacent intersections and also evaluates the project's consistency with the *City of Placerville General Plan* (2014). Significant transportation and circulation impacts are identified, as necessary, mitigation measures are identified to address those impacts.

This chapter describes the study area and project alternatives.

STUDY AREA

The location of the project study area and the surrounding roadway network are depicted in **Figure 1**. The project site, shown in **Figure 2**, is located at the east end of downtown Placerville, south of U.S. Highway 50 (US 50), and includes the Clay Street Bridge over Hangtown Creek, the Ivy House parking lot, Clay Street, and the intersections of Main Street, Cedar Ravine Road, and Clay Street. The adjacent transportation system is further described below.

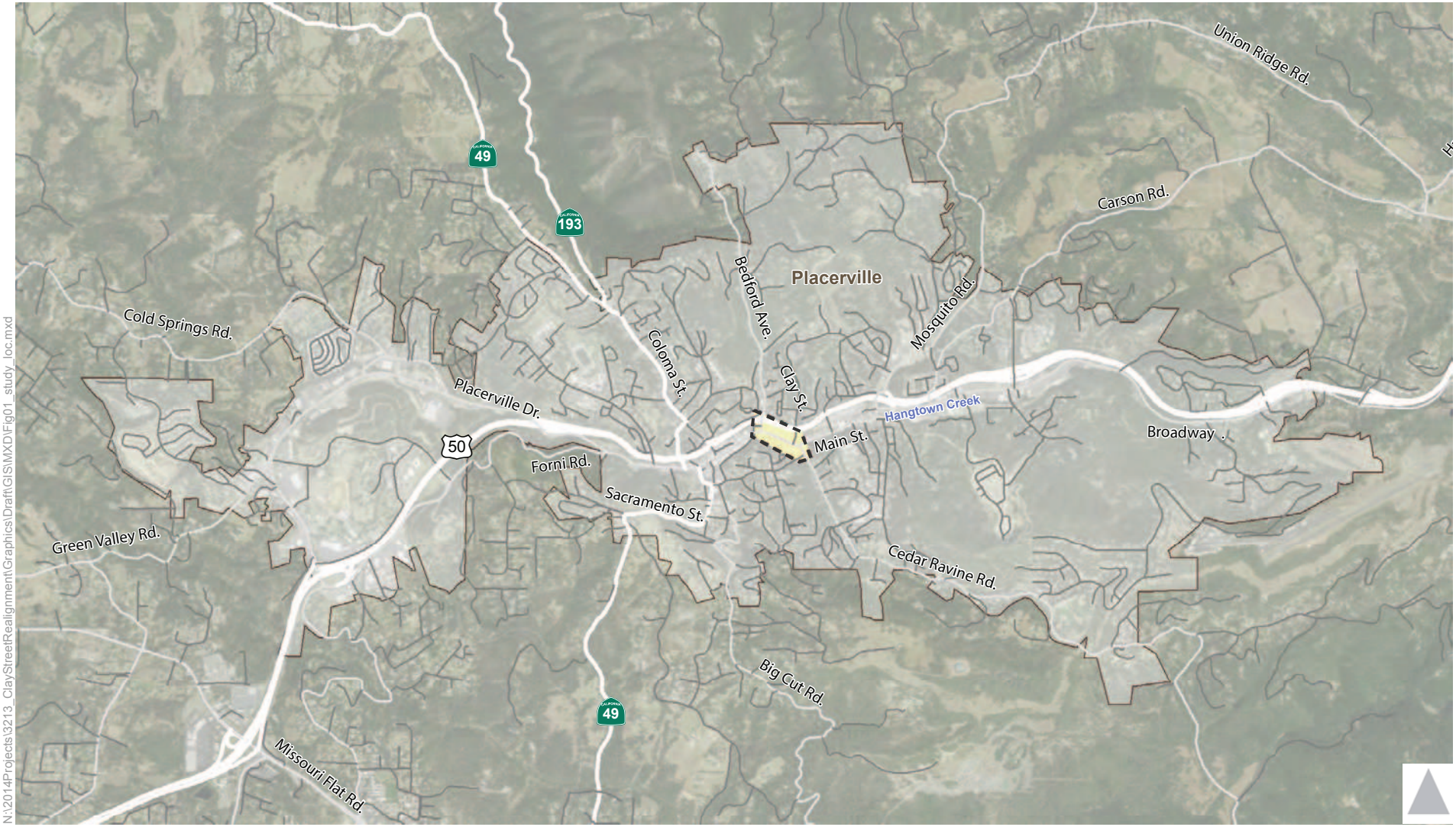

Figure 1

Project Location

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Figure 2

Project Site

The study intersections are listed below and shown in **Figure 4**.

1. US 50/Bedford Avenue
2. Bedford Avenue/Main Street
3. Clay Street/Main Street
4. Cedar Ravine Road/Main Street
5. Cedar Ravine Road/Pacific Street

The first study intersection is one of three signalized intersections on US 50 in Placerville. The other study intersections have stop control. The Bedford Avenue and Cedar Ravine Road intersections on Main Street have all-way stop control. The other two study intersections have stop signs only for the minor street approaches (Clay Street and Pacific Street, respectively), and the other approaches are uncontrolled.

PROJECT ALTERNATIVES

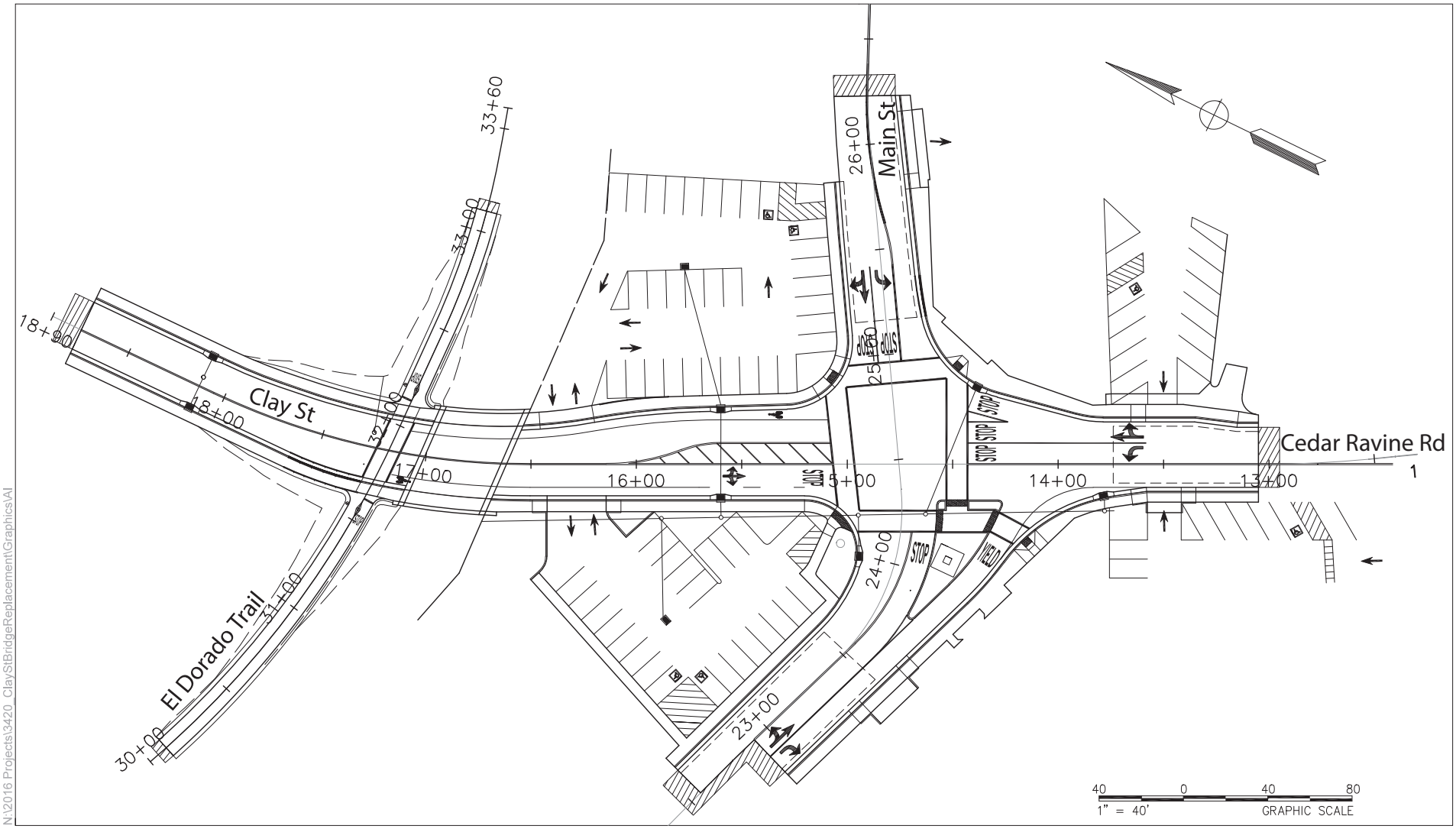
The project alternatives are summarized below. The first alternative is the No Build Alternative. The second alternative, the proposed project, would realign Clay Street to intersect Main Street at Cedar Ravine Road as shown in **Figure 3**. An alternative with Clay Street on its existing alignment was considered during an earlier project phase but discarded due to poor operations at the Main Street/Clay Street intersection.

NO BUILD ALTERNATIVE

In the No Build Alternative, the existing alignment of Clay Street would remain. The configuration of the Main Street intersections at Clay Street and Cedar Ravine would not be changed from the existing condition. The Clay Street Hangtown Creek Bridge would not be replaced. The existing narrow roadway and sidewalk on Clay Street would remain.

BUILD ALTERNATIVE

In the Build Alternative, the Clay Street Hangtown Creek Bridge would be replaced with a wider structure with the following cross-section: one vehicle travel lane and one Class II on-street bicycle lane in each direction. Clay Street would be realigned to the east to intersect Main Street at Cedar Ravine Road forming a four-leg intersection. At the intersection, the Druid Monument would be shifted to a traffic island on the eastbound approach. Crosswalks would be provided at the intersection on all four approaches.



Note: All way stop control is shown. The signal option would replace the stop control with signal control.

Figure 3

Build Alternative

The realignment of Clay Street would require reconstruction of the Ivy House parking lot and construction of a new parking lot on the former Clay Street right-of-way. The total parking spaces provided by these two lots (58) would be 16 fewer spaces than currently provided.

Two intersection control options were evaluated for the Main Street/Clay Street/Cedar Ravine Road intersection. The first option would have all way stop control, and the second option would install a traffic signal.

2. ANALYSIS METHODOLOGY

This chapter first provides background about the policies and planning documents that apply to the project. Based on this framework, the standards of significance are presented. Then, data collection activities are listed. Finally, the methods for traffic operations analysis and travel demand forecasting are presented.

REGULATORY FRAMEWORK

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Corridor System Management Plans are long-term planning documents produced by the California Department of Transportation (Caltrans) selected State Highways. These reports document existing and planned travel demand by mode and the supporting infrastructure on the highway and adjacent roadways. The existing, concept, and ultimate facility for US 50 at Bedford Avenue is a four-lane expressway as described in the Transportation Concept Report and Corridor System Management Place for United States Route 50 (Caltrans, 2014). The current configuration is expected to remain due to topographical and environmental constraints.

EL DORADO COUNTY TRANSPORTATION COMMISSION

The El Dorado County Transportation Commission (EDCTC) was designated as the Regional Transportation Planning Agency (RTPA) for El Dorado County on July 23, 1975. As the RTPA, the EDCTC serves as the planning and programming authority for transportation projects on the western slope of El Dorado County, excluding those areas within the Tahoe Regional Planning Agency boundaries. The Commission consists of three members of the El Dorado County Board of Supervisors and three members of the Placerville City Council. The Caltrans District 3 Director and a City of South Lake Tahoe Council member serve as ex-officio members of the Commission.

METROPOLITAN TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY

Regional transportation planning in western El Dorado County is the responsibility of the Sacramento Area Council of Governments (SACOG). SACOG prepares the Metropolitan Transportation Plan/Sustainable Communities Strategy to provide federally mandated long-range transportation planning for the six-county area that includes El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties. The 2016 MTP/SCS identifies $35 billion in funding to operate, maintain, and expand the roadway, bicycle, pedestrian, and transit facilities throughout the region.

CITY OF PLACERVILLE NON-MOTORIZED TRANSPORTATION PLAN

The City of Placerville adopted the Final Non-Motorized Transportation Plan (NMTP) in October 2010. This plan was created to address several issues related to non-motorized transportation. The NMTP is meant to provide a blueprint for the development of an ultimate bikeway system through the City, as well as providing for compliance with Caltrans Streets and Highways Code (Section 890-894.2). In addition, the Pedestrian Element of this plan is meant to identify some of the missing links in the City's pedestrian system and includes pedestrian friendly and traffic calming concepts that can be utilized to improve the conditions of pedestrian travel in the City.

CITY OF PLACERVILLE PEDESTRIAN CIRCULATION PLAN

The City of Placerville adopted the Pedestrian Circulation Plan (Ped Plan) on January 23, 2007. The Ped Plan is an extension of the NMTP and is meant to provide a more detailed analysis. The Ped Plan provides priorities and options for funding a subsequent "Pedestrian Circulation Improvement Program" for the ultimate construction and maintenance of an extensive sidewalk network throughout the City.

In order to improve the sidewalk system within Placerville, the City has increased the number of funding options to generate sufficient revenue to repair existing sidewalks. The three methods that the City uses to fund sidewalk improvements are:

1. Property-owner maintenance of existing sidewalks – Per City Code, maintenance of existing sidewalks is the responsibility of the adjacent property owners.

2. Deferred frontage improvement agreements – Improvement or construction of sidewalks is "deferred" until adjacent properties enter into agreements or construct sidewalks.

3. Conditions on development projects – New development is required to install sidewalks within the development area as a condition of project approval.

CITY OF PLACERVILLE MAIN STREET STREETSCAPE DESIGN DEVELOPMENT PLAN

The Main Street Streetscape Design Development Plan (City of Placerville, 2006) presents community design ideas for Main Street, as well as provides cost estimates and implementation guidance. The Plan recommends the adoption of a roundabout for the realignment of Clay Street as set forth in the Placerville Streetscape Concept Design (p. II-18 – II-20; III-5). Due to public opposition, the roundabout was removed as an alternative for this project on July 8, 2014 by City Council resolution.

SACRAMENTO-PLACERVILLE TRANSPORTATION CORRIDOR MASTER PLAN

The Sacramento-Placerville Transportation Corridor Master Plan (2003) outlines a strategy for interim and long-term uses for the former Sacramento-Placerville railroad corridor. This corridor was purchased by the Sacramento-Placerville Transportation Corridor Joint Powers Authority, which is comprised of representatives of El Dorado County, Sacramento County, the Sacramento Regional Transit District, and the City of Folsom. The Master Plan identifies multiple possible uses such as excursion trains, trails, and utility easements.

EL DORADO COUNTY LONG RANGE TRANSIT PLAN

The El Dorado County Long Range Transit Plan (2003) outlines long-term planning steps required in order for public transit service in the County to respond to continued growth of the County population. The plan recommends a focus on commuters traveling to Sacramento County, as well as key markets such as elderly/disabled services and activity center shuttles. The County's transit system serves the City of Placerville. Historic downtown Placerville is identified in the County's General Plan Transportation and Circulation Element as one of many attractions in El Dorado County responsible for most of the travel demand on the transportation system within the County.

CITY OF PLACERVILLE GENERAL PLAN

Section III (Transportation Element) of the City of Placerville General Plan identifies policies that provide guidance for and promote the development of a circulation system that is beneficial for all modes of transportation, correlated with the planned land use pattern in the City, and facilitates easy access through and within the City of Placerville. As part of the General Plan, the Circulation Plan Diagram is the roadway-specific map that illustrates the official classification of existing and proposed streets and roads within the Placerville General Plan Area. The General Plan classifies Main Street and Cedar Ravine Road as minor arterials and Clay Street as a local street.

According to the General Plan, the City defines minor arterials and local streets as such:

- Minor Arterial – A continuous street located to provide direct route between, but not through separate neighborhoods. Minor arterials should be planned to discourage through traffic in residential neighborhoods and adjacent to schools.
- Local Street – A street, other than a collector or arterial, providing access to abutting property and designed to discourage through traffic.

Applicable policies and the proposed project's consistency with those policies are provided in **Table 1** below. While this Draft EIR analyzes the proposed project's consistency with the General Plan pursuant to CEQA Guidelines Section 15125(d), the final authority for interpretation of these policy statements, and determination of the proposed project's General Plan consistency, rests with the Placerville City Council.

TABLE 1: PROJECT CONSISTENCY WITH GENERAL PLAN TRANSPORTATION POLICIES

General Plan Policies	Consistency	Discussion
Section I. Policy C.9.c: Provide for adequate parking and vehicular access.	Yes	The proposed project would result in a loss of approximately 16 spaces at the Ivy House parking lot, which is owned by the City. The City has other existing locations, including the Locust Avenue parking lot approximately 400 feet from Clay Street with access along El Dorado Trail.
Section III. Policy A.1: The City shall strive to attain the highest possible traffic levels of service consistent with the financial resources available and within the limits of technical feasibility.	Yes	The proposed project would improve traffic circulation on at the intersections of Main Street, Cedar Ravine Road, and Clay Street.

TABLE 1: PROJECT CONSISTENCY WITH GENERAL PLAN TRANSPORTATION POLICIES

General Plan Policies	Consistency	Discussion
Section III. Policy A.2: Streets shall be dedicated, widened, extended, and constructed according to the City's Master Street Plan and the street cross-sections shown in the Street Standards figures in Part I [of the Master Street Plan]. Rights-of-way shall be reserved according to the specifications of the Master Street Plan. Deviations from the street cross-sections shown in Part I shall be allowed based upon a determination by the Public Works Director that safe and adequate public access and circulation are preserved by such deviations.	Yes	The proposed project involves improvements to existing roadway facilities and bridge replacement. All project components shall be constructed in accordance with the requirements of the City Master Street Plan.
Section III. Policy A.9: The City shall aggressively pursue state and federal funding to implement the City's Circulation Plan.	Yes	Funding for the proposed project has been programmed from multiple federal, state, and local sources including the Highway Bridge Program (HBP), Regional Surface Transportation Program (RSTP) Exchange, and local developer Traffic Impact Mitigation (TIM) fees.
Section III. Policy B.2: In the development of new projects, the City shall give special attention to maintaining adequate corner-sight distances at city street intersections and at intersections of city streets and private access drives and roadways.	Yes	The proposed project design will be consistent with the City's street and parking standards. Additionally, the proposed project will provide a safer facility for vehicles as well as pedestrians.
Section III. Policy F.1: Pedestrian circulation needs and convenience in the downtown shall be given priority over the needs of through traffic.	Yes	The proposed project would provide a safer facility for vehicles as well as pedestrians.
Section VII. Policy C.9: The City shall promote design concepts which will contribute to better pedestrian convenience and safety	Yes	The project design includes pedestrian crosswalks at the intersection and new pedestrian facilities along Clay Street and the bridge, which will improve safety and provide more convenient access.

Source: *City of Placerville General Plan, 2014; Fehr & Peers, 2018*

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. According to CEQA Guidelines Appendix G, impacts to transportation and circulation are considered significant if implementation of the project would result in any of the following conditions:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

DATA COLLECTION

The volume of motor vehicles, bicycles, and pedestrians were counted at the study intersections during the morning (7:00 to 9:00 AM) and evening peak periods (4:00 to 6:00 PM) on a typical weekday in March 2014. Traffic volumes were determined using these counts, and this data was used to determine study intersection delay and LOS. The study intersections and their associated traffic counts are depicted in **Figures 4 and 5**.

Other input data for the traffic analysis was requested. Traffic signal timing plans for the US 50 intersections was provided by Caltrans. The City of Placerville provided collision data for the study area.

The parking facilities near the project were surveyed. For each parking area, the number of reserved (for vehicles displaying a disabled placard) and total parking spaces was counted. The occupancy of each lot was surveyed in 15 minute intervals during typical weekday afternoon (3:00 to 7:00 PM) and weekend midday (11:00 AM to 3:00 PM) periods in March 2014. A follow-up parking survey was conducted during

the morning of September 6, 2014 to determine parking demand on a Saturday while the farmers' market was operating in the Ivy House parking lot. The locations of the parking areas and the measured parking occupancy are shown in **Figure 7**.

TRAFFIC OPERATIONS ANALYSIS METHODOLOGY

To determine intersection delay and Level of service (LOS), Synchro/SimTraffic, a microsimulation analysis tool that models the interaction of vehicles, traffic control, and lane geometry, was utilized. The traffic volumes (vehicles, bicycles, and pedestrians), traffic control (signal and stop signs), and roadway configuration (number and type of turning lanes) was entered into a simulation model that accounts for interaction between adjacent intersections, between queues in turn pockets and through lanes, and between vehicles and pedestrians. This methodology is consistent with the intersection analysis procedures in the *Highway Capacity Manual* (Transportation Research Board, 2010).

Based on the intersection count data, the peak hour factor for existing conditions was set to 0.89 for the AM peak hour and 0.93 for the PM peak hour. Under cumulative conditions, the peak hour factor is assumed to be 0.95 to reflect the growth in traffic volume. The truck percentage is assumed to be 3 percent for the AM peak hour and 2 percent for the PM peak hour under all scenarios. These are default values recommended in the *Highway Capacity Manual*.

An eastbound right-turn lane has been installed at the Pacific Street/Cedar Ravine Road intersection since the collection of traffic counts and field observations in March 2014. This additional lane is included in the existing plus project and cumulative condition scenarios. No other widening improvements were assumed at the study intersections when analyzing cumulative conditions.

LOS is a qualitative measure describing the operating condition for vehicles at intersections. There are six levels of service, A through F, which represent driving conditions from best to worst, respectively. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion with stop-and-go conditions. For this analysis, intersections operating over capacity (LOS F) are considered to have unacceptable operations.

The LOS rating for intersections is based on the average delay expressed in seconds per vehicle. For signal-controlled and all-way stop-controlled intersections, LOS is based on the average delay experienced on all approaches and movements. At two-way or side-street stop-controlled intersections, intersection LOS is assigned using the highest delay for any turning movement rather than for the intersection as a whole. If an approach consists of a single lane from which multiple movements can be made, the LOS is based on

the average control delay for all movements from that approach. The criteria for each individual LOS is provided in **Table 2** below.

TABLE 2: INTERSECTION LOS CRITERIA

Level of Service	Average Delay (seconds per vehicle)		Description
	Stop Control	Signal Control	
A	< 10.0	< 10.0	Little or no delay
B	> 10.0 to 15.0	> 10.0 to 20.0	Short vehicle delays
C	> 15.0 to 25.0	> 20.0 to 35.0	Average vehicle delays
D	> 25.0 to 35.0	> 35.0 to 55.0	Long vehicle delays
E	> 35.0 to 50.0	> 55.0 to 80.0	Very long vehicle delays
F	> 50.0	> 80.0	Extreme vehicle delays – demand exceeds capacity

Source: *Highway Capacity Manual* (Transportation Research Board, 2010)

TRAFFIC FORECAST METHODOLOGY

The cumulative year traffic volumes were developed using the El Dorado County Travel Demand Forecasting Model (Version - EDC_CAT_03_2014). A detailed subarea model was prepared for the project study area by adding roadway links, adjusting how traffic accesses the network, and verifying land use data. The land use growth included in the model was found to be consistent with recently approved tentative maps including Cottonwood Park Phases 4 and 6. Adams Way, and Country Club/Cedar Ravine rezone sites. Consistent with the 2010 California Regional Transportation Plan Guidelines, the subarea model was validated to existing traffic volumes. The validated model was used to generate traffic volumes for cumulative conditions. The overall traffic growth rate from the travel demand forecasting model, approximately 2 percent per year, is consistent with growth in population (1 percent per year) and employment (4 percent per year) planned for the study area.

The project alternatives have essentially the same roadway connections. While the build alternatives will realign Clay Street, the change in travel distance is not significant enough to shift travel routes for average travel patterns. As a result, the same set of AM and PM peak hour travel demand forecasts are used to analyze the alternatives under cumulative year conditions.

3. EXISTING CONDITIONS

This chapter describes existing conditions in the study area. The roadway system is described first, followed by the bicycle, pedestrian, transit, and parking facilities. The roadway system section includes the signal warrant analysis for the study intersections, intersection capacity analysis, and crash records.

Figures 4 and 5 show the existing traffic volume (vehicles, bicycles, and pedestrians) at the study intersections. The volumes, lane configuration, and traffic control are inputs for the signal warrant and intersection capacity analyses.

ROADWAY SYSTEM

SIGNAL WARRANT

The peak hour traffic volumes at unsignalized intersections were evaluated to determine if the peak hour volume warrant for traffic signal installation (*California Manual of Uniform Traffic Control Devices*, 2014) has been met. The signal warrant analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on traffic data from throughout the day and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely upon the warrants since signal installation can increase the risk of certain types of collisions.

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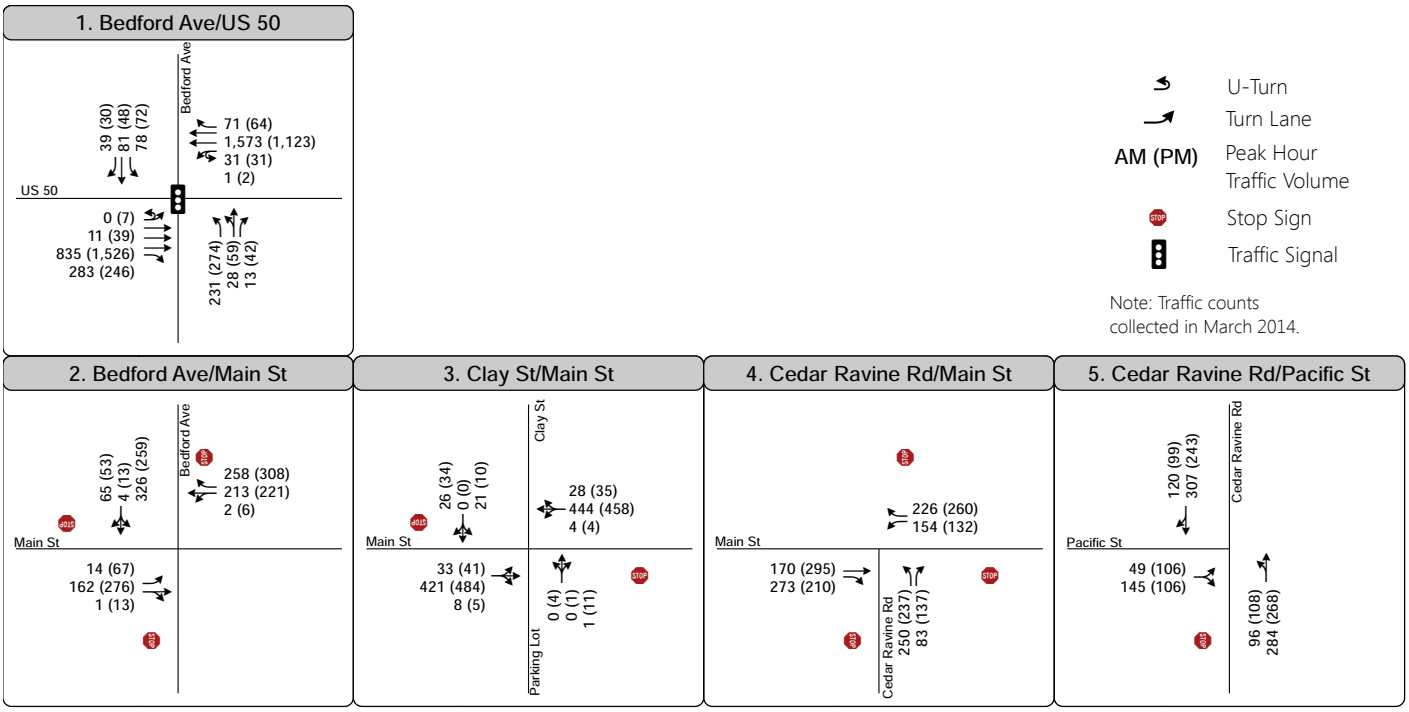


Figure 4

Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions

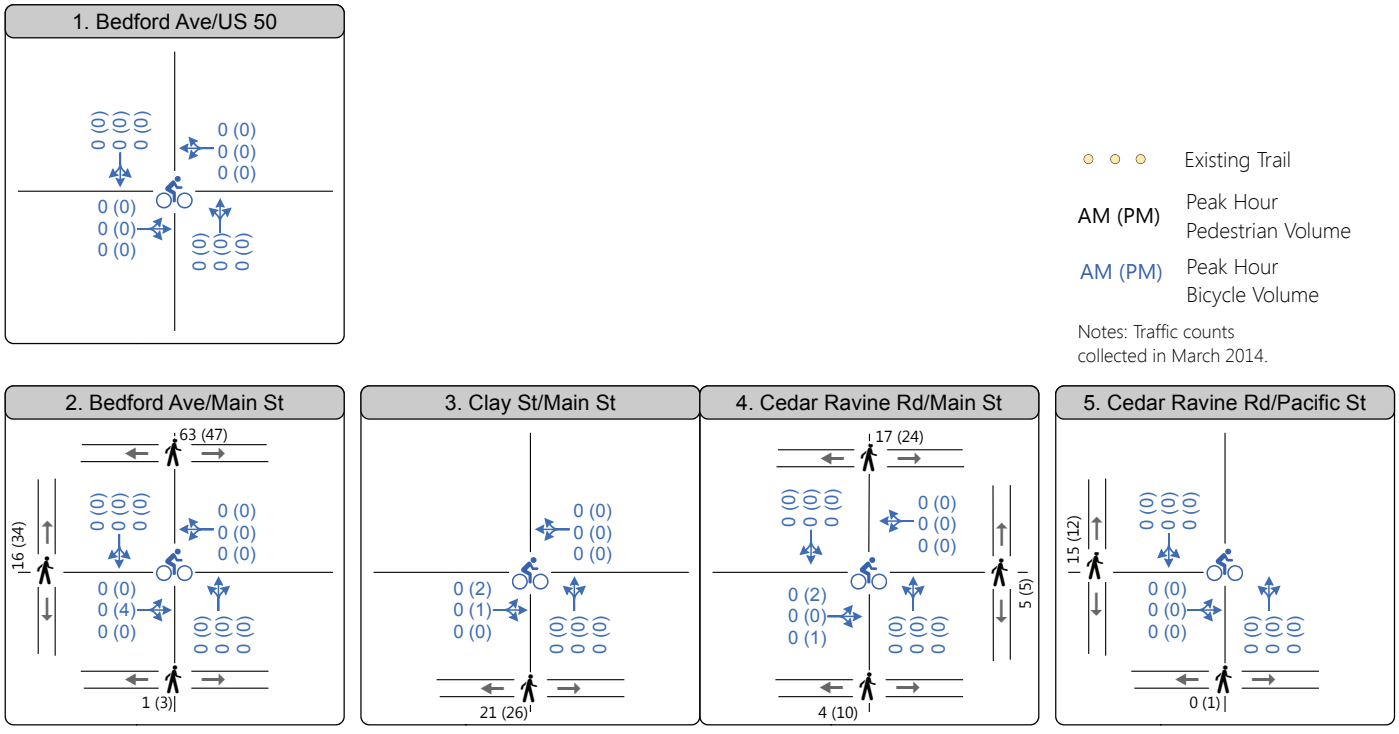


Figure 5

Peak Hour Pedestrian & Bicycle Volumes - Existing Conditions

As noted in **Table 3**, the Main Street/Bedford Avenue intersection satisfies the peak hour signal warrant during the PM peak hour. However, this does not necessarily indicate that a signal should be installed. Other factors beyond volume and capacity can supersede the traffic warrant, including intersection safety and ancillary traffic impacts.

CAPACITY ANALYSIS

Table 3 depicts the performance measures from the intersection capacity analysis, which are average vehicle delay and LOS.

TABLE 3: INTERSECTION OPERATIONS – EXISTING CONDITIONS

Intersection	Control	AM Peak Hour			PM Peak Hour		
		LOS	Delay[1]	Signal Warrant[2]	LOS	Delay[1]	Signal Warrant[2]
1. US 50/Bedford Ave	Signal	C	26	-	C	21	-
2. Main St/Bedford Ave	All Way Stop	C	18	No	C	22	Yes
3. Main St/Clay St	Side Street Stop	C	20	No	B	15	No
4. Main St/Cedar Ravine Rd	All Way Stop	A	8	No	B	10	No
5. Pacific St/Cedar Ravine Rd	Side Street Stop	D	30	No	C	24	No

Source: Fehr & Peers, 2018

Notes: 1. Average intersection delay, in seconds per vehicle, is reported for signal and all-way stop intersections. Worst movement delay, in seconds per vehicle, is reported for side-street stop intersections.

2. This indicates if the peak-hour volume warrant from the *California Manual of Uniform Traffic Control Devices* (2014) is met. Satisfying the peak-hour warrant should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of signal warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions.

During existing conditions, the US 50/Bedford Avenue intersection operates at LOS C during the AM and PM peak hours. Particularly during the PM peak hour, signal operations upstream at Spring Street constrains the traffic demand on the eastbound US 50 approach to Bedford Avenue. As a result, the average delay on the high-volume US 50 approaches is low, resulting in the overall LOS C conditions.

The remaining study intersections operate at LOS C or better during peak hour with one exception. The Pacific Street/Cedar Ravine Road intersection has LOS D during the AM peak hour due to high delay for the eastbound left turn movement. While operations are generally good, queues can build up during peak times on certain approaches. When this occurs, some drivers will use a parking lot to bypass the Main Street/Cedar Ravine Road intersection.

SAFETY

Table 4 lists crashes reported within 100 feet of the Clay Street and Cedar Ravine Road intersections with Main Street as provided by the City of Placerville for the 11-year period from January 2004 through December 2015. Figure 6 shows the reported location of these crashes and includes nearby crashes up to 200 feet from the intersections. A total of 23 crashes were reported in the 11-year period. The most prevalent crash type is a hit object crash (7) followed by sideswipe and rear-end crashes. Of the 23 crashes, two involved an injury (the head on and auto-pedestrian collisions), and the rest involved property damage only.

Four crashes (three of them sideswipes) involved parking maneuvers. At the Clay Street intersection, sideswipe and rear end collisions are more frequent and are likely related to the side-street stop control where drivers on Main Street do not expect to stop. At Cedar Ravine Road, the most-frequent collision type is hit object, which is related to the Druid Monument's location in the roadway.

TABLE 4: VEHICLE CRASHES BY TYPE

Intersection	Head On	Side Swipe	Rear End	Broad-side	Hit Object	Auto-Ped	Other	Total
3. Main St/Clay St	0	3	4	0	2	0	1	10
4. Main St/Cedar Ravine Rd	1	2	1	3	5	1	0	13

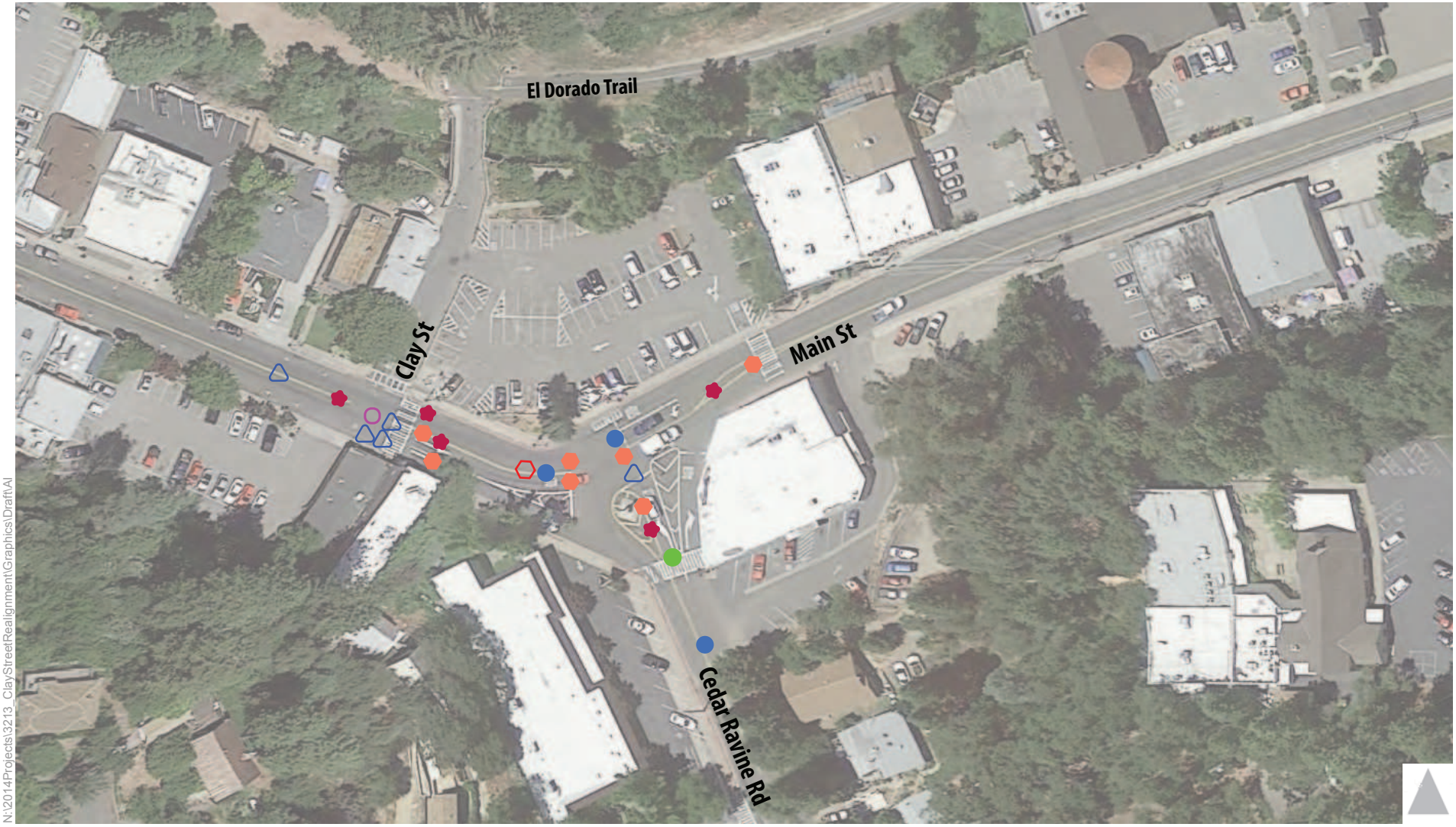
Source: Statewide Integrated Traffic Records System (SWITRS), January 2004 to December 2015

BICYCLE, PEDESTRIAN, AND TRANSIT SYSTEM

Figure 7 shows the bicycle, pedestrian, and transit facilities in the project study area. No on-street (Class II) bicycle lanes are marked in the study area. However, the El Dorado Trail, a Class I separated bikeway, starts at Bedford Street and heads east, parallel to and just south of US 50.

Current pedestrian facilities in the study area include sidewalks, crosswalks, and a pedestrian overcrossing. Sidewalks are provided in the study area with following three exceptions.

- the west side of Bedford Avenue between US 50 and Main Street
- the east side of Clay Street between US 50 and Main Street
- approximately midblock of the east side of Cedar Ravine Road between Main Street and Pacific Street



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Collision Type

- Auto-Pedestrian
- Hit Object
- Sideswipe
- Other
- Rear End
- Broadside
- Head on

Source: SWITRS, January 2004 - December 2015

Figure 6

Collision History

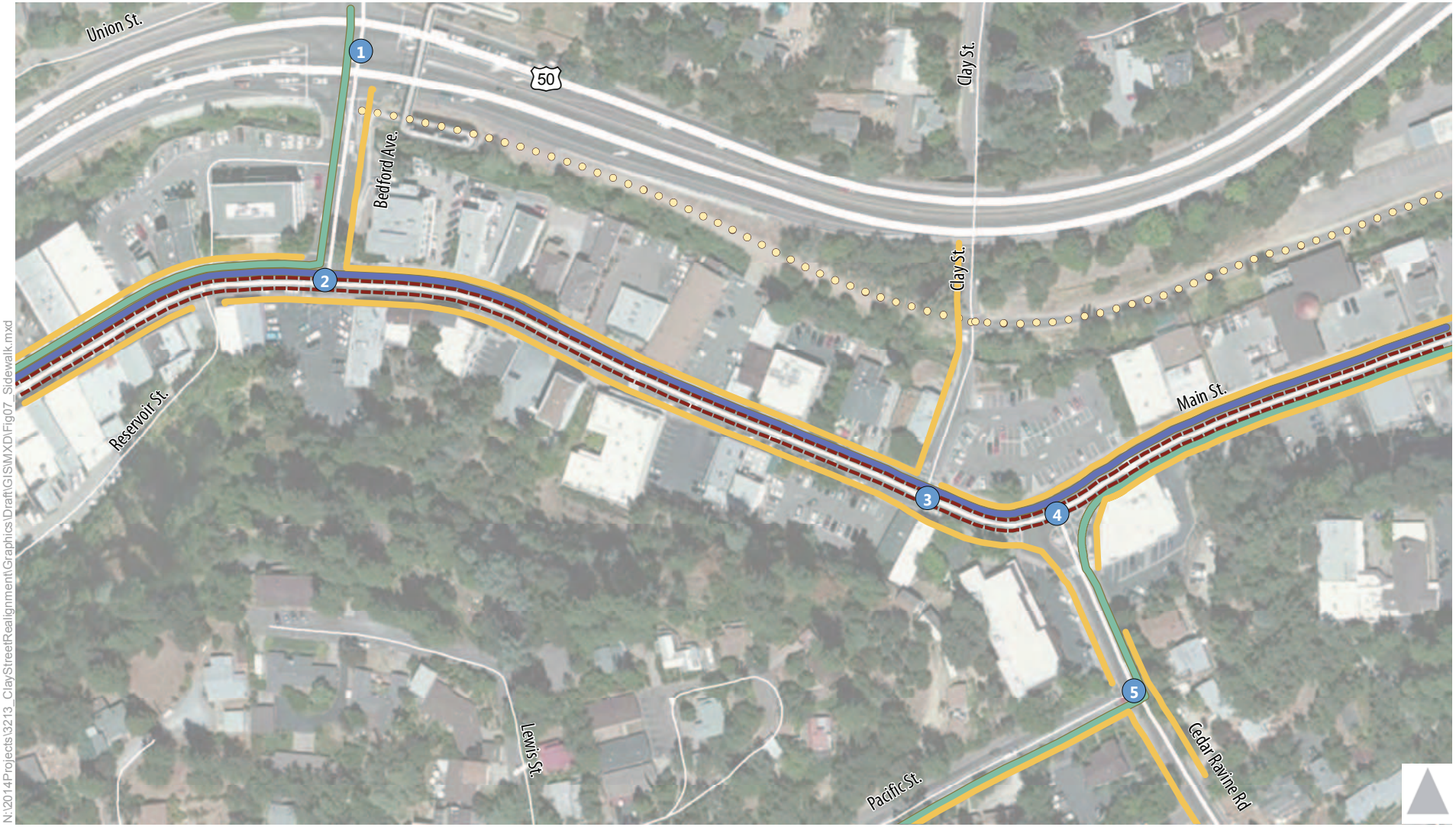


Figure 7

Bicycle, Pedestrian, and Transit Facilities

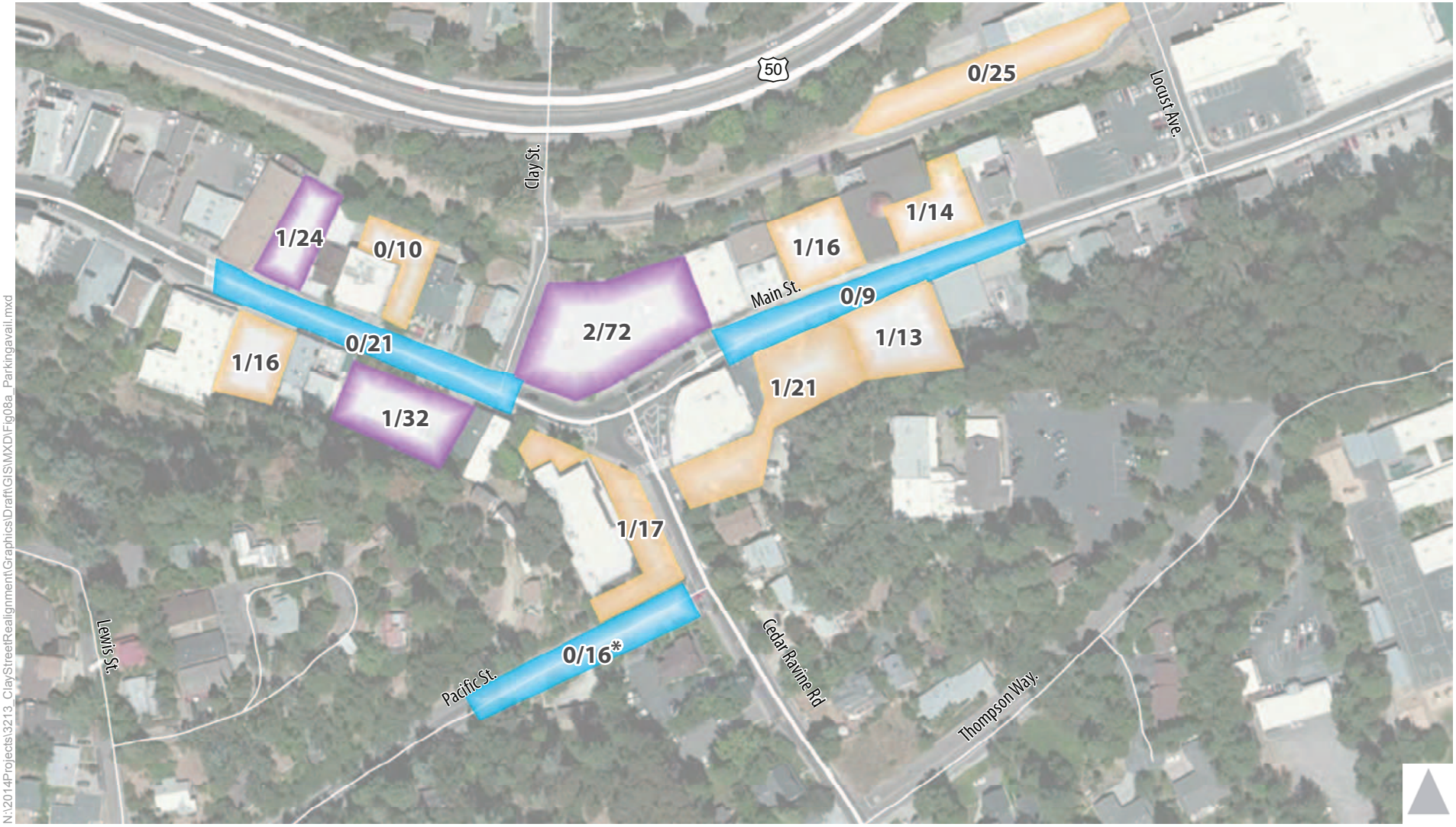
Pedestrians are restricted from crossing at some study intersections. At US 50/Bedford Avenue, pedestrians are prohibited from crossing; no crosswalks are provided. Instead, a pedestrian overcrossing of US 50 is provided just east of the intersection. At Bedford Avenue/Main Street, no crosswalk is provided on the east side of the intersection although crosswalks are provided on the other approaches and a midblock crosswalk exists about 350 feet to the east. No crosswalks are provided immediately at the Main Street/Cedar Ravine Road. Instead, the crossings are marked 50 to 100 feet upstream of the intersection. On the south leg, the upstream location is more convenient for pedestrian travel since it lines up with the sidewalk on Main Street and the crossing distance is shorter. For both upstream crosswalks, safety can be enhanced by separating vehicle-vehicle conflicts at the intersection from vehicle-pedestrian conflicts at the crosswalk.

The El Dorado Transit's Placerville Eastbound and Westbound routes provide hourly service weekdays 7:00 AM to 5:00 PM through the study area. The eastbound route travels south on Bedford Avenue at US 50 and then turns right onto Main Street. Later in the route, the bus turns left from Pacific Street to northbound Cedar Ravine Road, and then turns right onto Main Street. The westbound route follows westbound Main Street through the project area. The Saturday Express route provides hourly service on Saturdays from 9:00 AM to 5:00 PM in both directions along Main Street. No transit stops are located adjacent to the Clay Street and Cedar Ravine Road intersections at Main Street.

PARKING SUPPLY

The project site includes the Ivy House parking lot, and the proposed project would modify its parking supply. To determine the project's effect on parking supply, a survey of area parking facilities was conducted in March and September 2014 within approximately one-quarter mile of the project site. The surveyed parking areas or lots are shown in **Figure 8A**. For each parking area, the number of reserved (for vehicles displaying a disabled placard) and total parking spaces are listed. In addition to the on-street parking areas, the public parking lots are provided: Ivy House (north of the Main Street/Cedar Ravine Road intersection), Mooney (southwest of the Main Street/Clay Street intersection), and Town Hall (adjacent to the Town Hall about midway between Bedford Avenue and Clay Street on Main Street). The remaining lots are signed for customer and employee use.

The occupancy of each lot was surveyed in 15 minute intervals during typical weekday afternoon (3:00 to 7:00 PM) and weekend midday (11:00 AM to 3:00 PM) periods. For the typical midweek day (Wednesday) surveyed, the Ivy House lot had a maximum of 42 of the total 72 spaces occupied. All surveyed parking areas had less than 75 percent peak occupancy during the afternoon/evening period.



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Public Lot

Private Lot

On-Street Parking

5/25 Handicap/Unrestricted Spaces

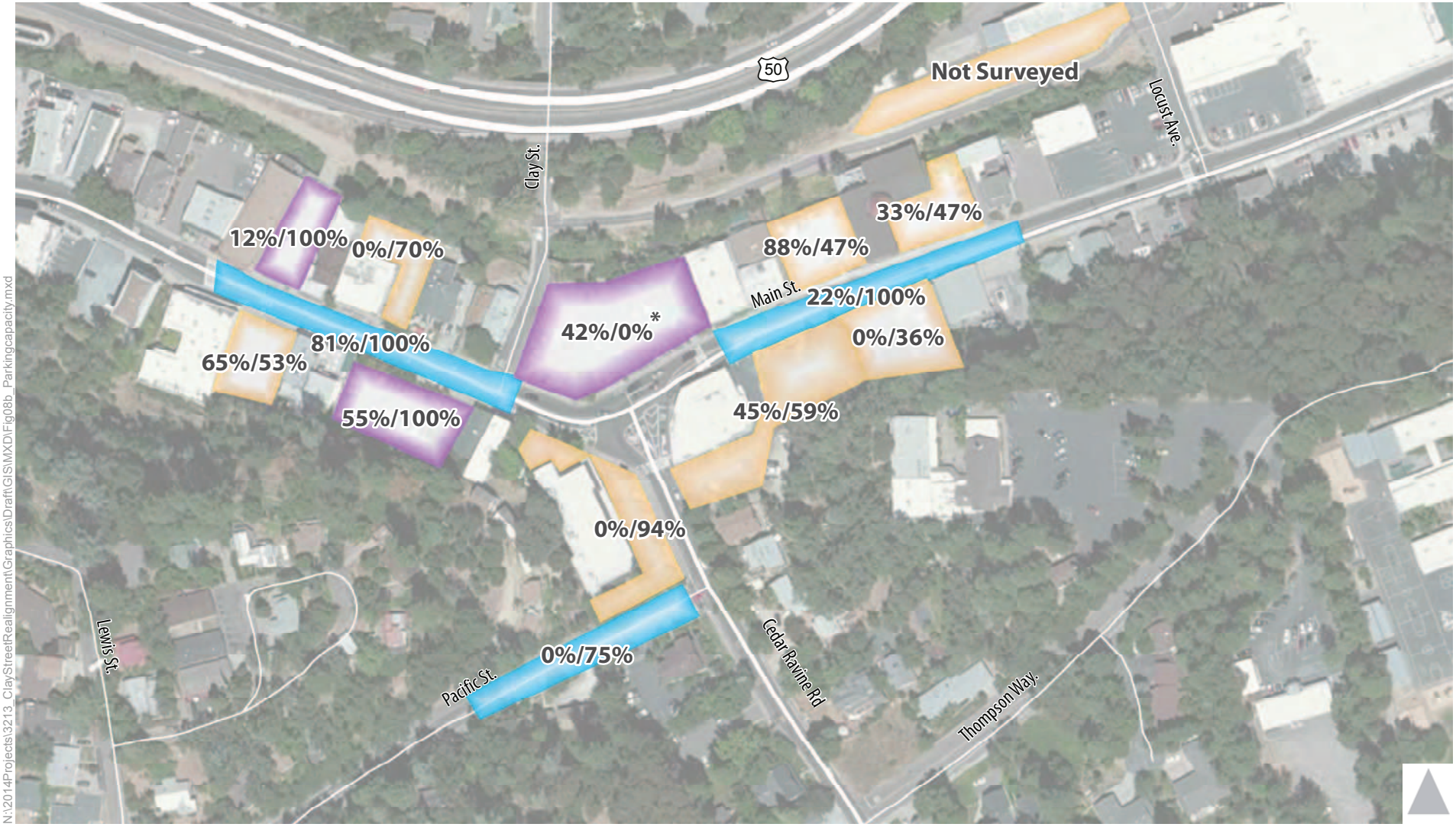
*Parking spaces were reduced with the installation of a left turn pocket in 2015.

Figure 8A

Parking Facilities Space Availablity

Figure 8B shows maximum parking occupancy for the weekend midday period from surveys conducted on two Saturdays: one in March and one in September 2014. In March, the Saturday peak occupancy at the Ivy House lot was lower than midweek, with 31 of 72 spaces occupied. Two parking lots and the on-street parking areas along Main Street west of Clay Street had peak utilizations of greater than 50 percent. The lot west of the Independent Restaurant and Bar had the highest utilization: 88 percent or 15 of 17 spaces occupied.

The September date represents a higher demand and lower supply due to a farmers' market operating in the Ivy House lot. As a result, parking spaces were completely occupied (100 percent) for the on-street parking areas along Main Street and at the Mooney and Town Hall public lots. The private lot on the southwest corner of the Main Street/Cedar Ravine Road intersection also had a high utilization.



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Public Lot

Private Lot

On-Street Parking

55%/100% March/September 2014 Percent Occupied

*Lot closed for Farmers' Market

Figure 8B

Parking Facilities
Peak Utilization - Saturday

4. EXISTING PLUS PROJECT CONDITIONS

This chapter describes existing conditions with the two project alternatives. As in the previous chapter, the roadway system is described first, followed by the bicycle, pedestrian, transit, and parking facilities. The effect of the project alternatives is evaluated on each of these transportation systems.

Figures 9 and 10 show the traffic volumes, lane configuration, and traffic control with the Build Alternative under existing conditions. Compared to the No Build Alternative, the build alternatives remove the Main Street/Clay Street intersection, and the add the Clay Street leg to the Main Street/Cedar Ravine Road intersection (see **Figure 3** for further details).

ROADWAY SYSTEM

SIGNAL WARRANT

The peak hour traffic volumes at the proposed Main Street/Cedar Ravine Road/Clay Street intersection were evaluated, and the peak hour volume warrant for traffic signal installation was not met. As noted previously, the signal warrant analysis should not serve as the only basis for deciding whether and when to install a signal.

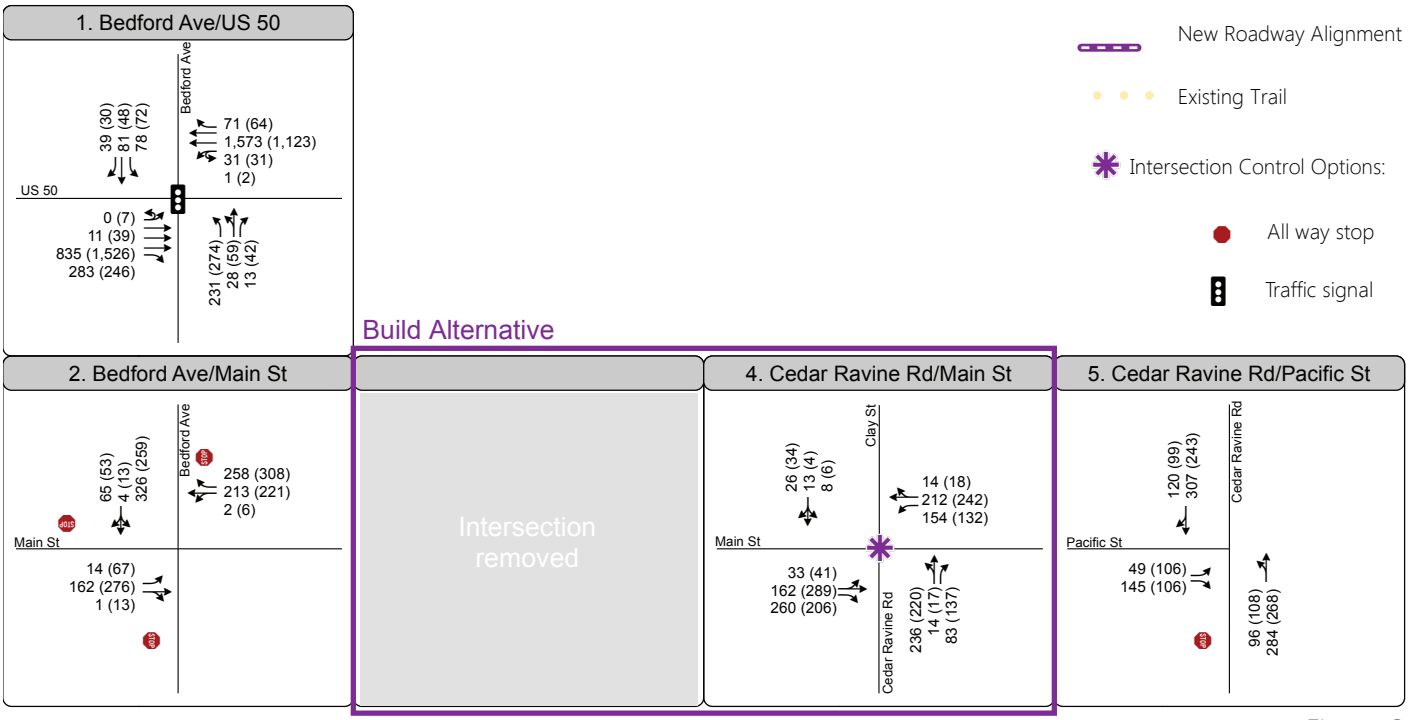

Figure 9

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

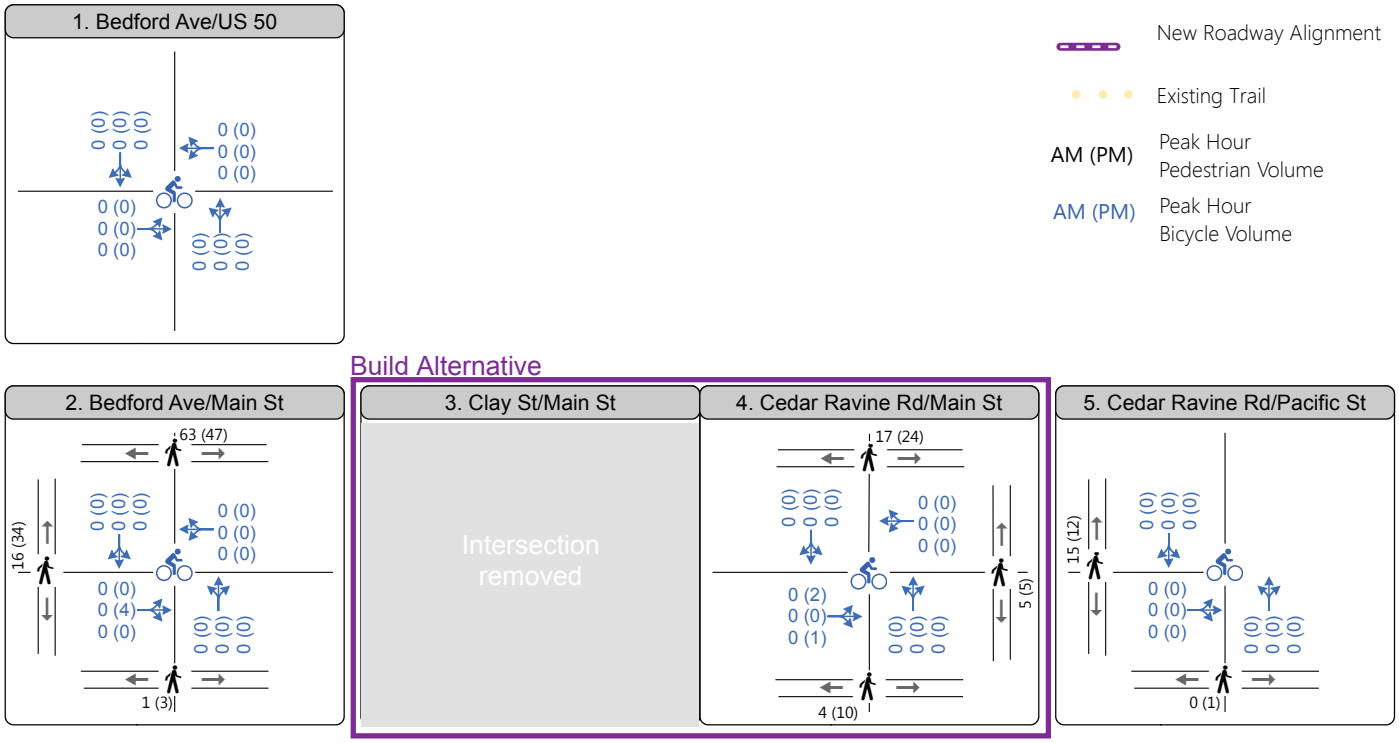

Figure 10

Peak Hour Pedestrian & Bicycle Volumes - Existing Plus Project Conditions

CAPACITY ANALYSIS

Table 5 compares the intersection average delay and LOS for existing traffic volumes for the current roadway network (No Build Alternative) to the proposed Clay Street realignment (Build Alternative) with all-way stop or signal control at Main Street/Cedar Ravine Road.

The Bedford Avenue intersections are primarily unaffected by the Build Alternative. The delay changes are negligible. With Clay Street realigned into the Main Street/Cedar Ravine Road intersection, the overall average delay would increase, but the resulting LOS B conditions would be acceptable. The signal control option would provide lower delay than the all-way stop control, but the LOS would remain the same.

The delay reduction shown for Pacific Street/Cedar Ravine Road with the Build Alternative is primarily the result of the recent re-striping of the Pacific Street approach to provide separate left and right turn lanes. Providing a signal at Main Street/Cedar Ravine Road would reduce queues on Cedar Ravine Road compared to all-way stop control, which would result in lower delay at the Pacific Street intersection. However, both intersection control options would provide acceptable LOS C conditions.

TABLE 5: INTERSECTION OPERATIONS – EXISTING PLUS PROJECT CONDITIONS

Intersection	Control	No Build Alternative		Build Alternative			
				All Way Stop		Signal	
		AM	PM	AM	PM	AM	PM
1. US 50/Bedford Ave	Signal	C/26	C/21	C/27	C/21	C/27	C/21
2. Main St/Bedford Ave	All Way Stop	C/18	C/22	C/17	C/20	C/18	C/21
3. Main St/Clay St	Side Street Stop	C/20	B/15	-	-	-	-
4. Main St/Cedar Ravine Rd[1]	All Way Stop[2]	A/8	B/10	B/12	B/15	B/11	B/11
5. Pacific St/Cedar Ravine Rd	Side Street Stop	D/30	C/24	C/20	C/18	C/17	C/17

Source: Fehr & Peers, 2018

Notes: LOS and average intersection delay, in seconds per vehicle, is reported for signal and all-way stop intersections. Worst movement delay, in seconds per vehicle, is reported for side-street stop intersections.
1. Intersection includes Clay Street as fourth leg in Build Alternative.
2. Intersection has signal control in signal option.

Although weekend conditions were not evaluated for this study, all alternatives should have similar conditions as under weekday conditions. That is, the Build Alternative would have similar travel conditions to the No Build Alternative. When US 50 is congested in Placerville, some drivers seek non-highway routes through Placerville, including Main Street at Clay Street and Cedar Ravine Road. For example, a westbound

diversion route using Main Street, Clay Street, and Lincoln Street to travel between US 50/Mosquito Road and US 50/Bedford Avenue would have the approximately 1.7-mile route shortened by about 120 feet (0.02 mile) and an delay reduction at the Main Street/Clay Street intersection of about 2 seconds, assuming that intersection delays would be comparable to weekday PM peak hour under existing conditions. With such a small change, the Build Alternative would not significantly reduce travel time on the alternate route.

SAFETY

The Build Alternative shifts Clay Street, adjusts the approaches to the Main Street/Cedar Ravine Road intersection, and modifies the crosswalks, which will affect vehicle-vehicle and vehicle-pedestrian conflicts. Bringing Clay Street into the Main Street/Cedar Ravine Road intersection would reduce the potential for sideswipe and rear end collisions compared to the side-street control at the existing Clay Street/Main Street intersection. Adjusting the northbound and westbound approaches at Cedar Ravine Road may help to reduce vehicle turning speed and reduce intersection conflicts. Moving the crosswalks up to the intersection may help to reduce pedestrians crossing outside of crosswalks.

Traffic signal control would have higher potential for broadside (due to red light violations) and rear-end collisions (sudden stops for red lights) than the all-way stop option. Additionally, the signal option could improve pedestrian safety by providing a controlled crossing through the use of pedestrian signals.

BICYCLE, PEDESTRIAN, AND TRANSIT SYSTEM

The proposed project will provide Class II on-street bicycle lanes on Clay Street to connect the El Dorado Trail (a Class I bicycle facility) to Main Street. The city's non-motorized transportation plan shows on-street Class III bikeway designations for Main Street (west of Cedar Ravine Road), Clay Street, and Cedar Ravine Road.

The proposed project will provide sidewalks on both sides of the realigned Clay Street consistent with city standards. This will connect the sidewalk network on Main Street with the El Dorado Trail and the neighborhood north of US 50. The project will extend the sidewalk south along Cedar Ravine Road to fill in the existing gap in the sidewalk on the east side of Cedar Ravine Road between Main Street and Pacific Street.

The proposed project will not affect bus routes or stops in the project area.

PARKING SUPPLY

The proposed project would realign Clay Street through the existing Ivy House parking lot. The project would provide two new parking lots: one to the east of the realigned roadway that would expand the remaining Ivy House parking lot and one to the west that would use the former Clay Street right-of-way. The east lot would have approximately 32 spaces, and the west lot would have approximately 26 spaces. The approximately 58 spaces provided after the project is constructed would be 16 fewer than currently provided at the existing lot.

In 2015, the City of Placerville acquired a parking lot on Locust Avenue adjacent to the El Dorado Trail (shown on **Figure 8A**). This lot will provide approximately 25 spaces for public parking that is intended to offset the loss of spaces at the Ivy House lot. The net result of the modifications to the Ivy House lot and the addition of the Locust Avenue lot would be a gain of 9 public parking spaces.

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5. CUMULATIVE CONDITIONS

This chapter describes cumulative conditions (2035) under the project alternatives. As in previous chapters, the roadway system is described first, followed by the bicycle, pedestrian, transit, and parking facilities. **Figures 11 and 12** show the traffic volumes, lane configuration, and traffic control with the proposed alternatives.

ROADWAY SYSTEM

SIGNAL WARRANT

The peak hour signal warrant was applied to the unsignalized study intersections under cumulative conditions. **Table 6** shows that the peak hour signal warrant is met for all study intersections except the Main Street/Clay Street intersection under the No Build Alternative. Initial intersection analysis showed very high delay with the existing stop control at the intersections where the signal warrant was met. As a result, signal control is assumed for the study intersections at Main Street/Bedford Avenue and Pacific Street/Cedar Ravine Road under cumulative conditions. Otherwise, poor operations at these intersections would cause vehicle queue spillback through adjacent intersections that would overwhelm project area traffic operations, which would diminish the effectiveness of the project-level analysis and render the analysis inconclusive.

Although warranted and necessary to provide acceptable operations under cumulative conditions with the No Build Alternative, traffic signal installation at Main Street/Bedford Avenue and Pacific Street/Cedar Ravine is not currently programmed in the City's Capital Improvement Program (CIP) or included in the City's traffic impact fee program. The City periodically updates its CIP with new projects in response to planned growth and anticipates that the identified traffic signal improvements would be candidate projects for inclusion in future CIP updates. However, because they are not included in the current CIP, their implementation is not certain. Without traffic signal control at the Main Street/Bedford Avenue and Pacific Street/Cedar Ravine intersections, the Main Street/Cedar Ravine Road/Clay Street intersection would operate unacceptably due to vehicle queue spillback from these intersections.

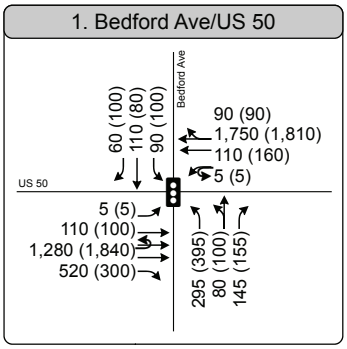
TABLE 6: PEAK HOUR SIGNAL WARRANT – CUMULATIVE CONDITIONS

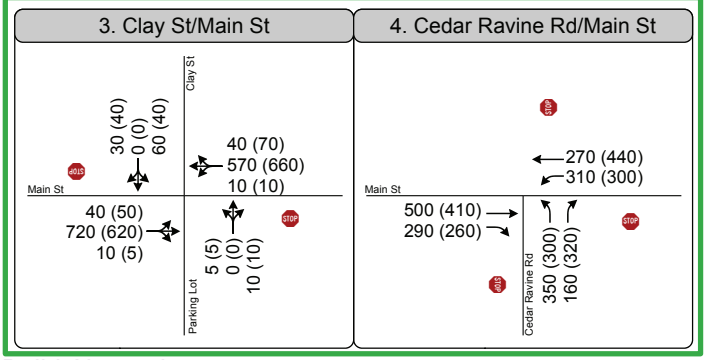
Intersection	Existing Control	AM Peak Hour	PM Peak Hour
1. US 50/Bedford Ave	Signal	-	-
2. Main St/Bedford Ave	All Way Stop	Yes	Yes
3. Main St/Clay St	Side Street Stop	No	No
4. Main St/Cedar Ravine Rd (Alternative 1)	All Way Stop	Yes	Yes
4. Main St/Cedar Ravine Rd/Clay St (Alternative 2)	All Way Stop	Yes	Yes
5. Pacific St/Cedar Ravine Rd	Side Street Stop	Yes	Yes

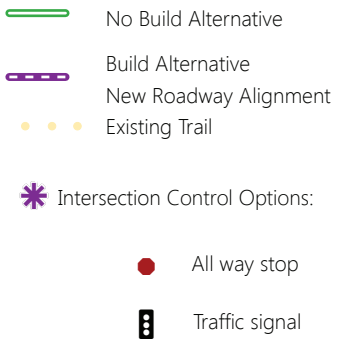
Source: Fehr & Peers, 2018

Notes: This indicates if the peak-hour volume warrant is met. Satisfying the peak-hour warrant should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of signal warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions.

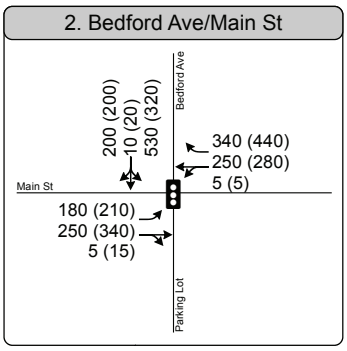
No Build Alternative

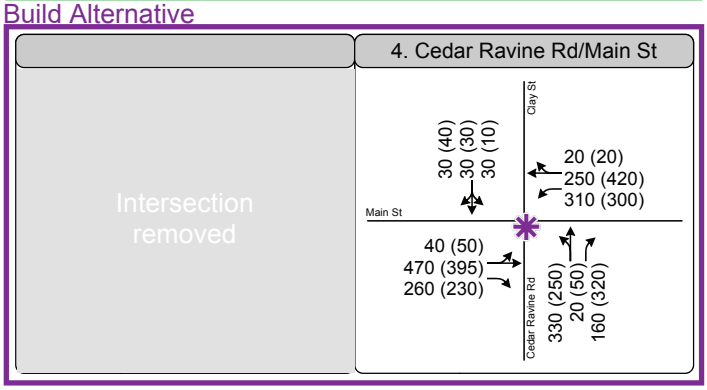


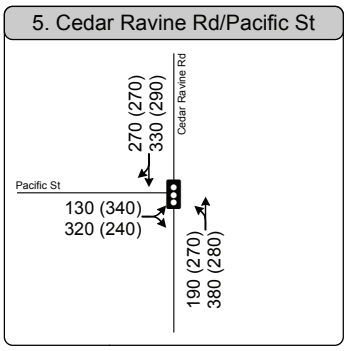




Build Alternative







U-Turn
Turn Lane
AM (PM) Peak Hour Traffic Volume
Stop Sign
Traffic Signal

Figure 11

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Conditions

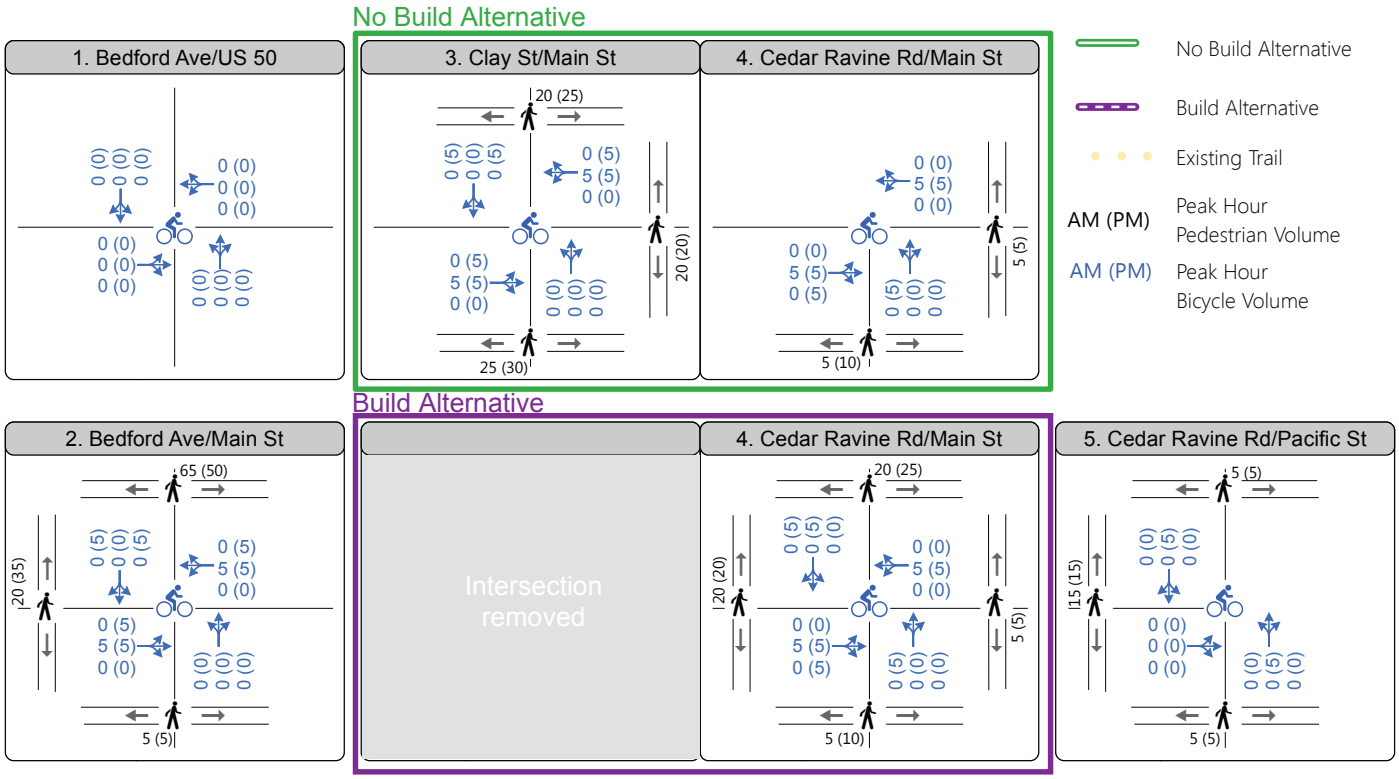


Figure 12

Pedestrian & Bicycle Volumes - Cumulative Conditions

CAPACITY ANALYSIS

Table 7 presents the intersection capacity analysis results for the project alternatives.

TABLE 7: INTERSECTION OPERATIONS – CUMULATIVE CONDITIONS

Intersection	Control	No Build Alternative		Build Alternative			
				All Way Stop		Signal	
		AM	PM	AM	PM	AM	PM
1. US 50/Bedford Ave	Signal	F/95	F/93	F/94	F/93	F/95	F/90
2. Main St/Bedford Ave	Signal	D/38	F/113	D/49	F/111	C/34	F/88
3. Main St/Clay St	Side Street Stop	F/53	F/79	-	-	-	-
4. Main St/Cedar Ravine Rd[1]	All Way Stop[2]	E/38	F/73	**F/68**	**F/88**	C/26	D/50
5. Pacific St/Cedar Ravine Rd	Signal	D/47	F/84	D/46	E/76	E/69	**F/90**

Source: Fehr & Peers, 2018

Notes: LOS and average intersection delay, in seconds per vehicle, is reported for signal and all-way stop intersections. Worst movement delay, in seconds per vehicle, is reported for side-street stop intersections. **Bold and underline font** indicates LOS F conditions in Build Alternative when the delay is worse than No Build Alternative.
1. Intersection includes Clay Street as fourth leg in Build Alternative.
2. Intersection has signal control in signal option.

Under cumulative conditions, congestion on US 50 during both peak hours would create queuing on Bedford Avenue that would extend upstream onto eastbound and westbound Main Street and to Clay Street and Cedar Ravine Road. As a result of the congestion, westbound Main Street at Bedford Avenue would serve about 88 and 70 percent of the traffic demand during the AM and PM peak hours, respectively. With the forecasted growth in traffic volume, average peak hour delay would increase at all study intersections, with all intersections having LOS D or worse conditions during both peak hours under the No Build Alternative.

Compared to the No Build Alternative, the Build Alternative with all way stop control would have worse operations along Main Street during the AM peak hour. Adding the Clay Street approach to the existing all-way stop control at Main Street/Cedar Ravine Road would worsen conditions from LOS E to F. This would cause queuing on all approaches. Vehicle queues on eastbound Main Street would extend into the Bedford Avenue intersection and increase intersection delay. During the PM peak hour, the 4-leg Main Street/Cedar Ravine Road/Clay Street intersection would have a higher delay than the No Build Alternative although both would have LOS F conditions. The delay at the other study intersections would be the same or lower than the No Build Alternative. The proposed design for the new Clay Street leg includes space for a southbound

left-turn pocket lane. Providing this left-turn lane would reduce southbound and overall intersection delay, but the intersection would still operate with LOS F conditions.

Providing signal control at the new 4-leg Main Street/Cedar Ravine Road/Clay Street intersection would result in lower delay at all study intersections but one during both peak hours. The Main Street/Cedar Ravine Road/Clay Street intersection would operate with LOS C and D conditions during the AM and PM peak hours, respectively. Adding a southbound left-turn pocket lane would reduce southbound approach delay, but LOS D conditions would remain for the PM peak hour. The Pacific Street/Cedar Ravine Road intersection would have higher delays due to vehicle queues from Main Street that would extend through Pacific Street and worsen operations.

Table 8 shows how the addition of a 100-foot northbound left-turn pocket lane to the Pacific Street/Cedar Ravine Road intersection would affect the signal control option's results. With this change, intersection operations would improve from LOS E/F conditions to LOS C/D conditions assuming traffic signals are installed at the Main Street/Bedford Avenue and Pacific Street/Cedar Ravine Road intersections. However, there may not be sufficient space to add a left-turn lane at Pacific Street/Cedar Ravine Road.

TABLE 8: INTERSECTION OPERATIONS – CUMULATIVE CONDITIONS WITH MODIFICATION

Intersection	Control	No Build Alternative		Build Alternative - Signal			
				Original		NB Left Added	
		AM	PM	AM	PM	AM	PM
1. US 50/Bedford Ave	Signal	F/95	F/93	F/95	F/90	F/94	F/88
2. Main St/Bedford Ave	Signal	D/38	F/113	C/34	F/88	D/38	E/76
3. Main St/Clay St	Side Street Stop	F/53	F/79	-	-	-	-
4. Main St/Cedar Ravine Rd[1]	Signal	E/38	F/73	C/26	D/50	C/32	D/45
5. Pacific St/Cedar Ravine Rd	Signal	D/47	F/84	E/69	**F/90**	C/29	D/50

Source: Fehr & Peers, 2018

Notes: LOS and average intersection delay, in seconds per vehicle, is reported for signal and all-way stop intersections. Worst movement delay, in seconds per vehicle, is reported for side-street stop intersections. **Bold and underline font** indicates LOS F conditions in Build Alternative when the delay is worse than No Build Alternative.
1. Intersection includes Clay Street as fourth leg in Build Alternative.

Under the Build Alternative, traffic signal installation at Main Street/Bedford Avenue and Pacific Street/Cedar Ravine Road is not currently programmed in the City's Capital Improvement Program (CIP) or included in the City's traffic impact fee program. The City periodically updates its CIP with new projects in response to planned growth and anticipates that the identified traffic signal improvements would be

candidate projects for inclusion in future CIP updates. However, the signal improvements at the two intersections are not included in the current CIP, their implementation is not certain.

SAFETY

Under cumulative conditions, the project alternatives would have similar safety performance as under existing conditions. The Build Alternative shifts Clay Street, adjusts the approaches to the Main Street/Cedar Ravine Road intersection, and modifies the crosswalks, which will affect vehicle-vehicle and vehicle-pedestrian conflicts. Bringing Clay Street into the Main Street/Cedar Ravine Road intersection would reduce the potential for sideswipe and rear end collisions compared to the side-street control at the existing Clay Street/Main Street intersection. Adjusting the northbound and westbound approaches at Cedar Ravine Road may help to reduce vehicle turning speed and reduce intersection conflicts. Moving the crosswalks up to the intersection may help to reduce pedestrians crossing outside of crosswalks.

Traffic signal control would have higher potential for broadside (due to red light violations) and rear-end collisions (sudden stops for red lights) than the all-way stop option. Additionally, the signal option could improve pedestrian safety by providing a controlled crossing through the use of pedestrian signals.

BICYCLE, PEDESTRIAN, AND TRANSIT SYSTEM

The proposed project will provide Class II on-street bicycle lanes on Clay Street to connect the El Dorado Trail (a Class I bicycle facility) to Main Street. The city's non-motorized transportation plan shows on-street Class III bikeway designations for Main Street (west of Cedar Ravine Road), Clay Street, and Cedar Ravine Road.

The proposed project will provide sidewalks on both sides of the realigned Clay Street consistent with city standards. This will connect the sidewalk network on Main Street with the El Dorado Trail and the neighborhood north of US 50. The project will extend the sidewalk south along Cedar Ravine Road to fill in the existing gap in the sidewalk on the east side of Cedar Ravine Road between Main Street and Pacific Street.

The proposed project will not affect bus routes or stops in the project area.

PARKING SUPPLY

The proposed project would realign Clay Street through the existing Ivy House parking lot. The project would provide two new parking lots: one to the east of the realigned roadway that would expand the remaining Ivy House parking lot and one to the west that would use the former Clay Street right-of-way. The east lot would have approximately 32 spaces, and the west lot would have approximately 26 spaces. The approximately 58 spaces provided after the project is constructed would be 16 fewer than currently provided at the existing lot.

In 2015, the City of Placerville acquired a parking lot on Locust Avenue adjacent to the El Dorado Trail (shown on **Figure 8A**). This lot will provide approximately 25 spaces for public parking that is intended to offset the loss of spaces at the Ivy House lot. The net result of the modifications to the Ivy House lot and the addition of the Locust Avenue lot would be a gain of 9 public parking spaces.

REFERENCES

The references used in the transportation analysis report are listed below.

- 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (Sacramento Area Council of Governments, 2016)
- *California Manual of Uniform Traffic Control Devices* (Caltrans, 2014)
- City of Placerville General Plan (2014)
- City of Placerville Non-Motorized Transportation Plan (October 2010)
- City of Placerville Pedestrian Circulation Plan (January 2007)
- El Dorado County Long Range Transit Plan (2003)
- *Highway Capacity Manual* (Transportation Research Board, 2010)
- Main Street Streetscape Design Development Plan (City of Placerville, 2006)
- Sacramento-Placerville Transportation Corridor Master Plan (2003)
- State CEQA Guidelines Appendix G (California Natural Resources Agency, 2007)
- Transportation Concept Report and Corridor System Management Place for United States Route 50 (Caltrans, 2014)

Clay Street Hangtown Creek Bridge Replacement Project

Transportation Analysis Report

APPENDIX

Prepared for:
City of Placerville

February 2018

RS14-3213

FEHR & PEERS

Table of Contents

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing
Peak Hour AM

Major Street Main St
Minor Street Bedford St

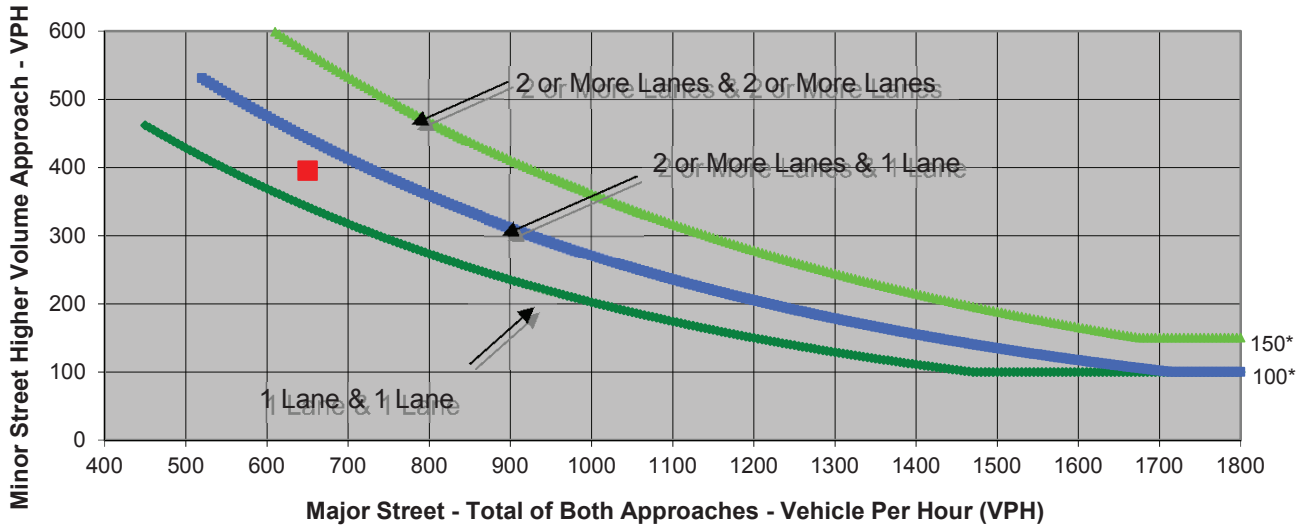
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	326	14	2
Through	0	4	162	213
Right	0	65	1	258
Total	0	395	177	473

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Bedford St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**650**	**395**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing
Peak Hour PM

Major Street Main St
Minor Street Bedford St

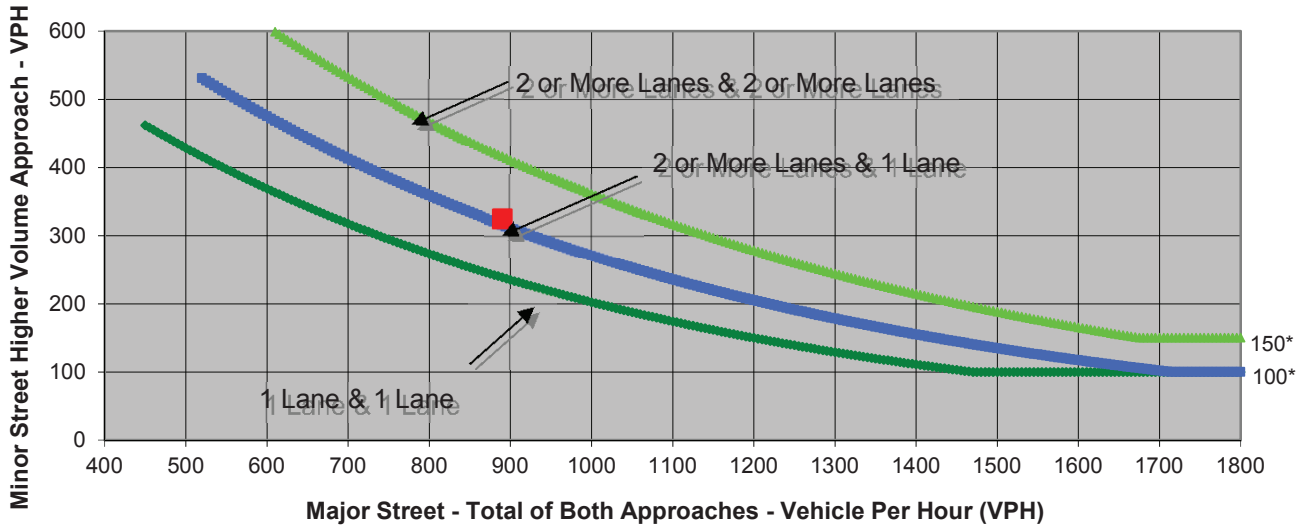
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	259	67	6
Through	0	13	276	221
Right	0	53	13	308
Total	0	325	356	535

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Bedford St	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**891**	**325**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing
Peak Hour AM

Major Street Main St
Minor Street Parking Lot/Clay St

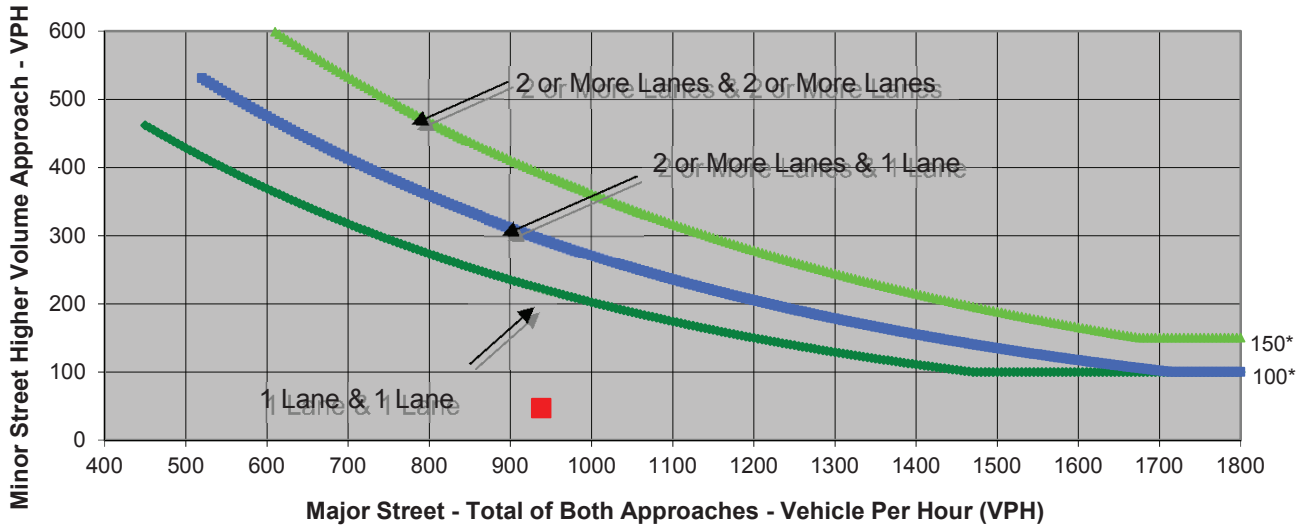
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	21	33	4
Through	0	0	421	444
Right	1	26	8	28
Total	1	47	462	476

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Parking Lot/Clay St	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**938**	**47**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 1

Major Street	Main Street
Minor Street	Parking Lot/Clay Street

Project	Clay St
Scenario	Existing
Peak Hour	PM

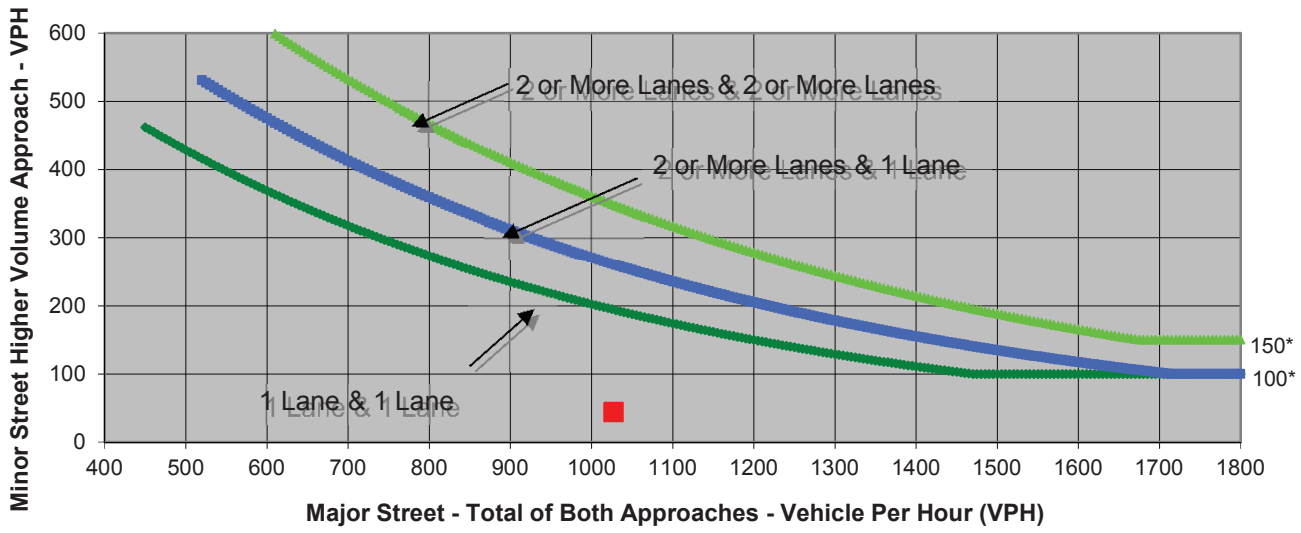
Turn Movement Volumes

	NB	SB	EB	WB
Left	4	10	41	4
Through	1	0	484	458
Right	11	34	5	35
Total	16	44	530	497

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main Street	Parking Lot/Clay Street	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,027**	**44**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing
Peak Hour AM

Major Street Main St
Minor Street Cedar Ravine Road

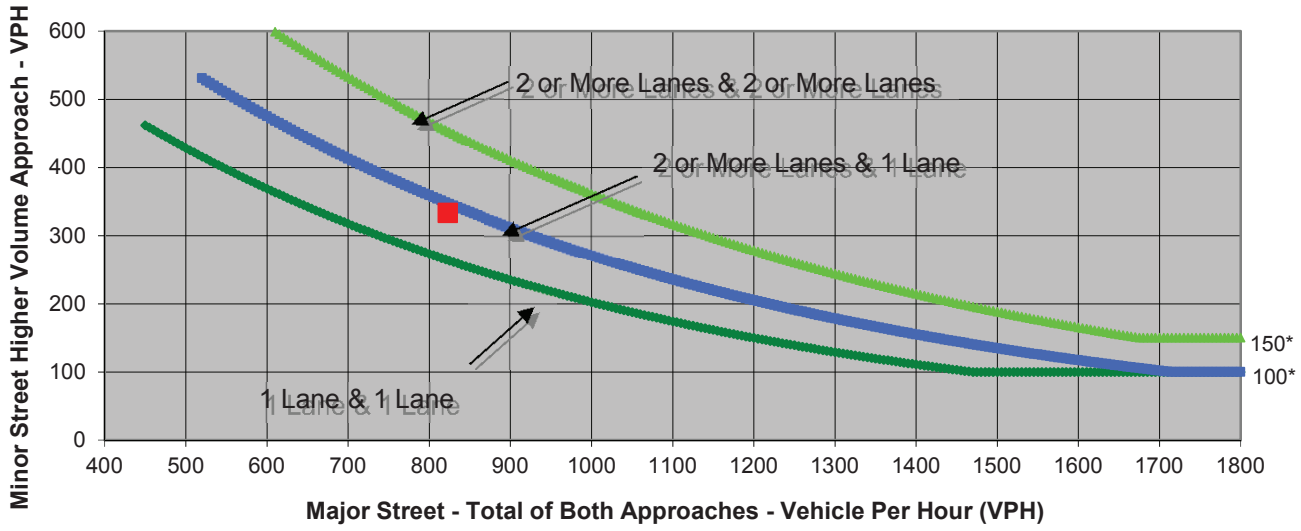
Turn Movement Volumes

	NB	SB	EB	WB
Left	250	0	0	154
Through	0	0	170	226
Right	83	0	273	0
Total	333	0	443	380

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Cedar Ravine Road	
Number of Approach Lanes	**2**	**2**	**NO**
Traffic Volume (VPH) *	**823**	**333**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing
Peak Hour PM

Major Street Main St
Minor Street Cedar Ravine Road

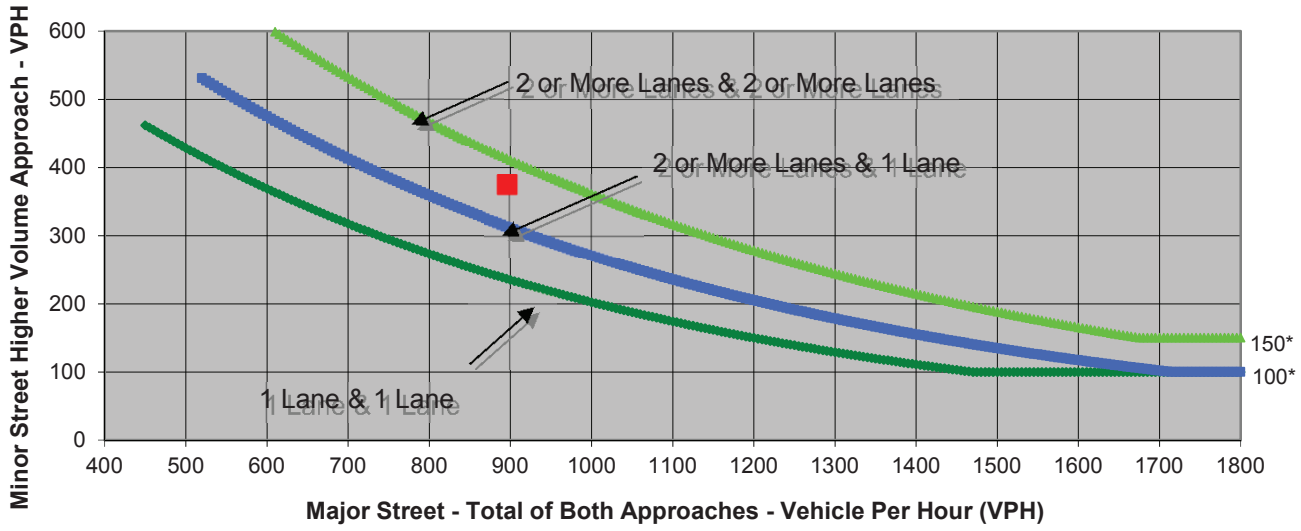
Turn Movement Volumes

	NB	SB	EB	WB
Left	237	0	0	132
Through	0	0	295	260
Right	137	0	210	0
Total	374	0	505	392

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Cedar Ravine Road	
Number of Approach Lanes	**2**	**2**	**NO**
Traffic Volume (VPH) *	**897**	**374**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing
Peak Hour AM

Major Street Cedar Ravine Rd
Minor Street Pacific St

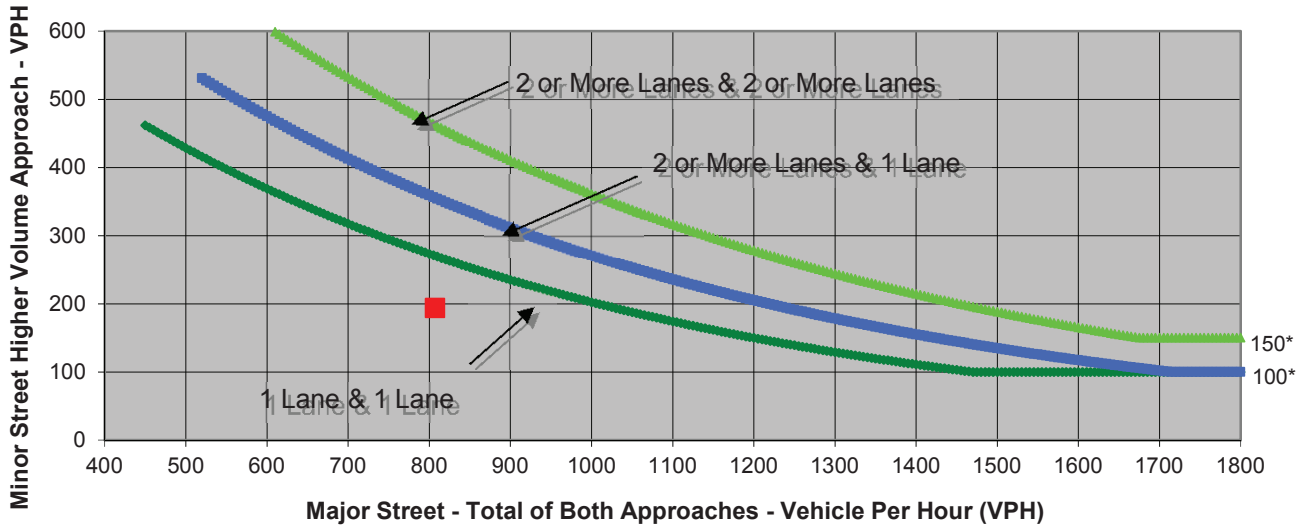
Turn Movement Volumes

	NB	SB	EB	WB
Left	96	0	49	0
Through	284	307	0	0
Right	0	120	145	0
Total	380	427	194	0

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Cedar Ravine Rd	Pacific St	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**807**	**194**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing
Peak Hour PM

Major Street Cedar Ravine Rd
Minor Street Pacific St

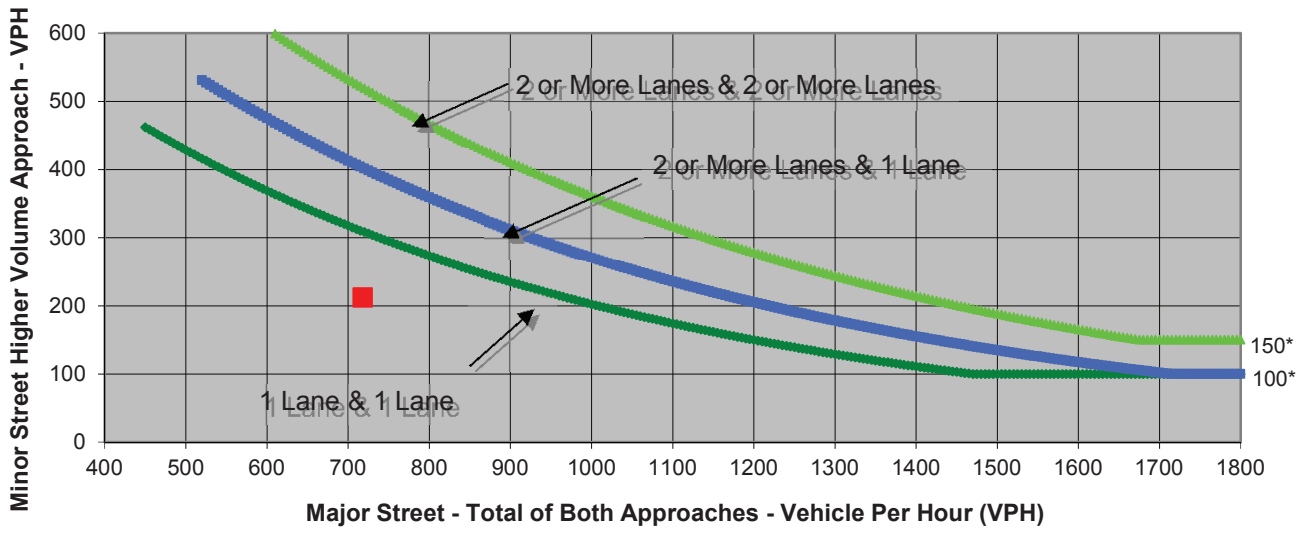
Turn Movement Volumes

	NB	SB	EB	WB
Left	108	0	106	0
Through	268	243	0	0
Right	0	99	106	0
Total	376	342	212	0

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Cedar Ravine Rd	Pacific St	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**718**	**212**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing Plus Project
Peak Hour AM

Major Street Main St
Minor Street Cedar Ravine Road

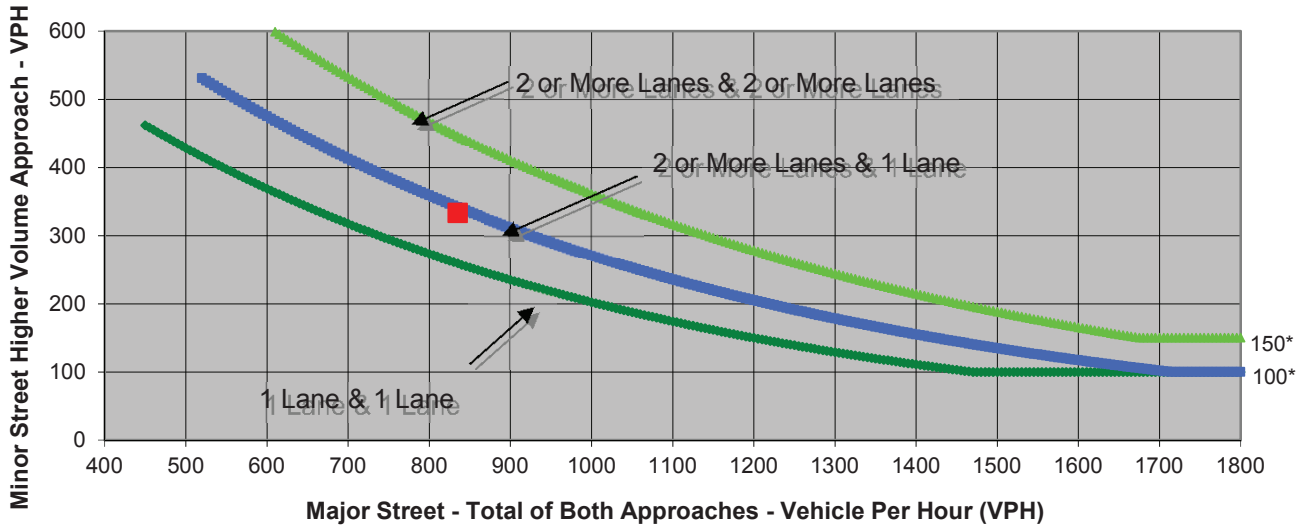
Turn Movement Volumes

	NB	SB	EB	WB
Left	236	8	33	154
Through	14	13	162	212
Right	83	26	260	14
Total	333	47	455	380

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Cedar Ravine Road	
Number of Approach Lanes	**2**	**2**	**NO**
Traffic Volume (VPH) *	**835**	**333**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Existing Plus Project
Peak Hour PM

Major Street Main St
Minor Street Cedar Ravine Road

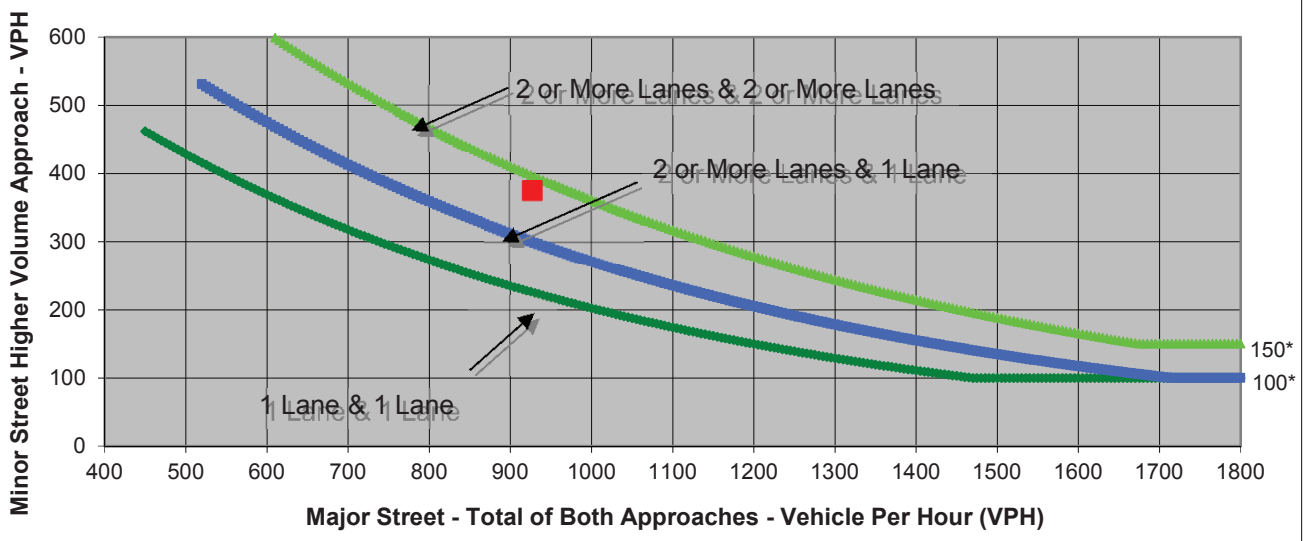
Turn Movement Volumes

	NB	SB	EB	WB
Left	220	6	41	132
Through	17	4	289	242
Right	137	34	206	18
Total	374	44	536	392

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Cedar Ravine Road	
Number of Approach Lanes	**2**	**2**	**NO**
Traffic Volume (VPH) *	**928**	**374**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative No Project
Peak Hour AM

Major Street Main St
Minor Street Bedford St

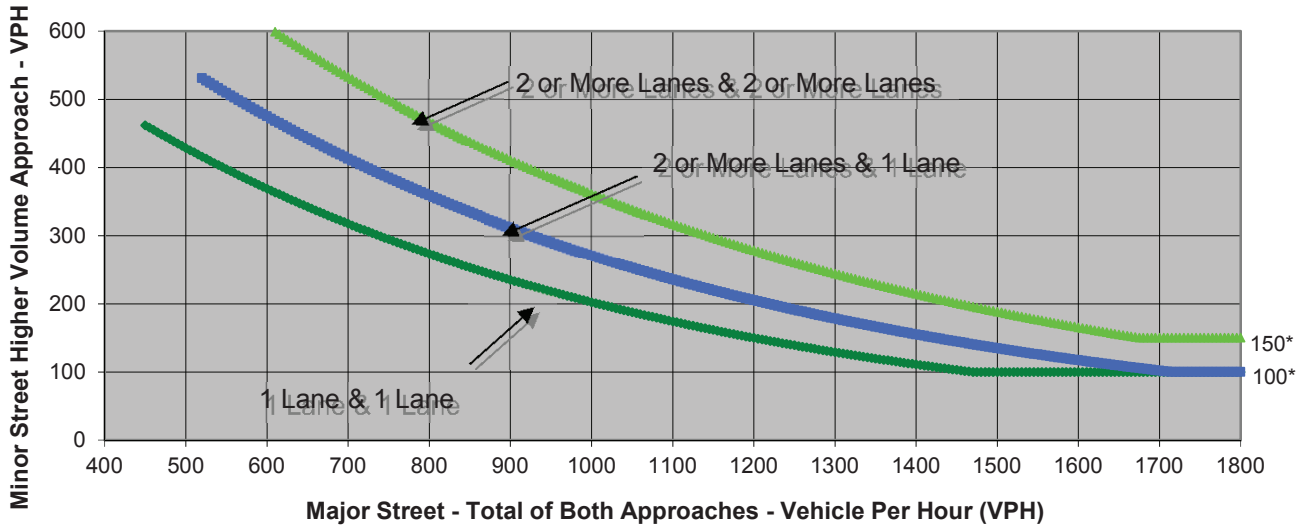
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	530	180	5
Through	0	10	250	250
Right	0	200	5	340
Total	0	740	435	595

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Bedford St	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,030**	**740**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative No Project
Peak Hour PM

Major Street Main St
Minor Street Bedford St

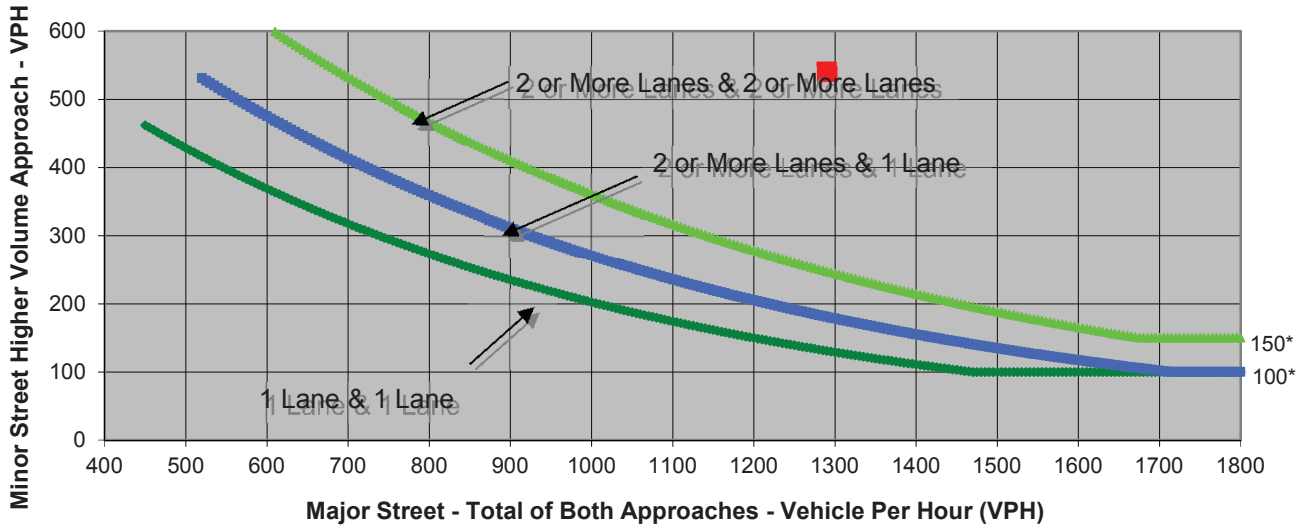
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	320	210	5
Through	0	20	340	280
Right	0	200	15	440
Total	0	540	565	725

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Bedford St	
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,290**	**540**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Major Street	Main St
Minor Street	Parking Lot/Clay St

Project	Clay St
Scenario	Cumulative No Project
Peak Hour	AM

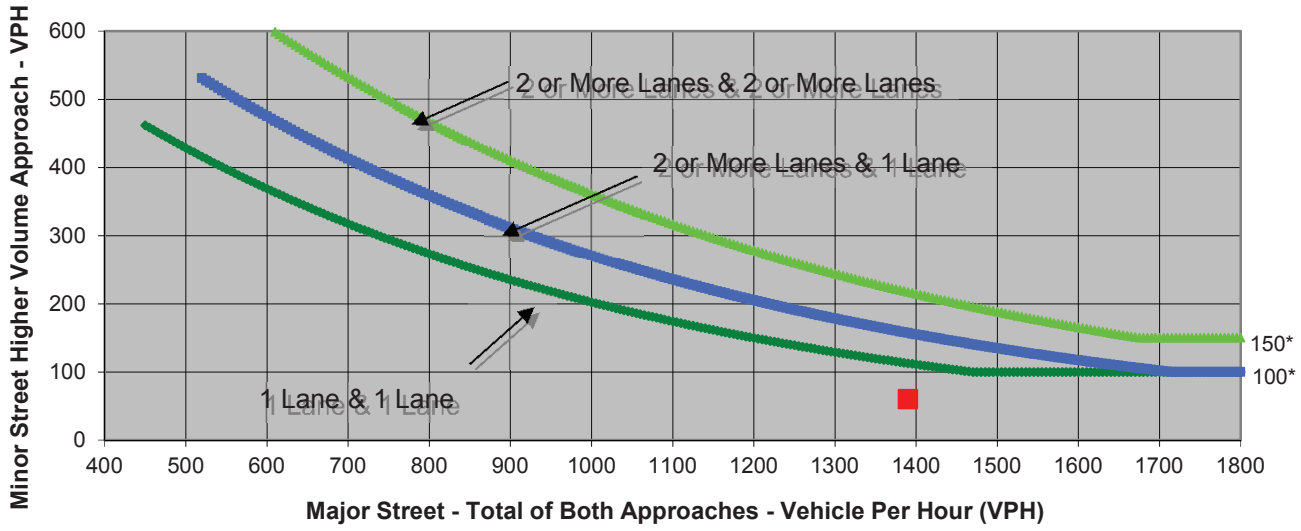
Turn Movement Volumes

	NB	SB	EB	WB
Left	5	30	40	10
Through	0	0	720	570
Right	10	30	10	40
Total	15	60	770	620

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Parking Lot/Clay St	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,390**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative No Project
Peak Hour PM

Major Street Main Street
Minor Street Parking Lot/Clay Street

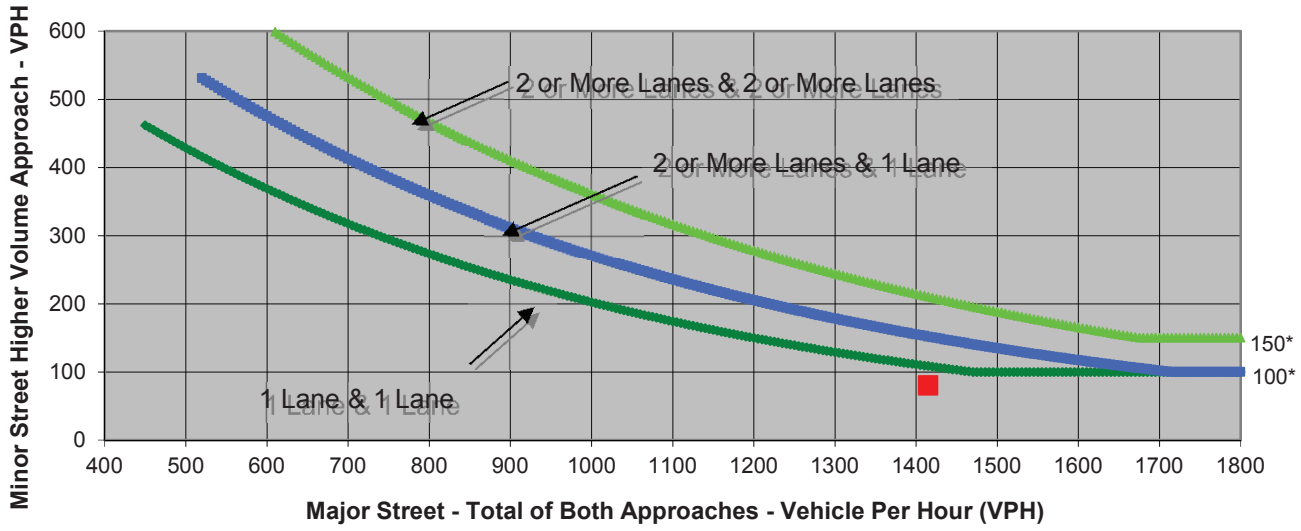
Turn Movement Volumes

	NB	SB	EB	WB
Left	5	40	50	10
Through	0	0	620	660
Right	10	40	5	70
Total	15	80	675	740

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main Street	Parking Lot/Clay Street	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,415**	**80**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative No Project
Peak Hour AM

Major Street Main St
Minor Street Cedar Ravine Road

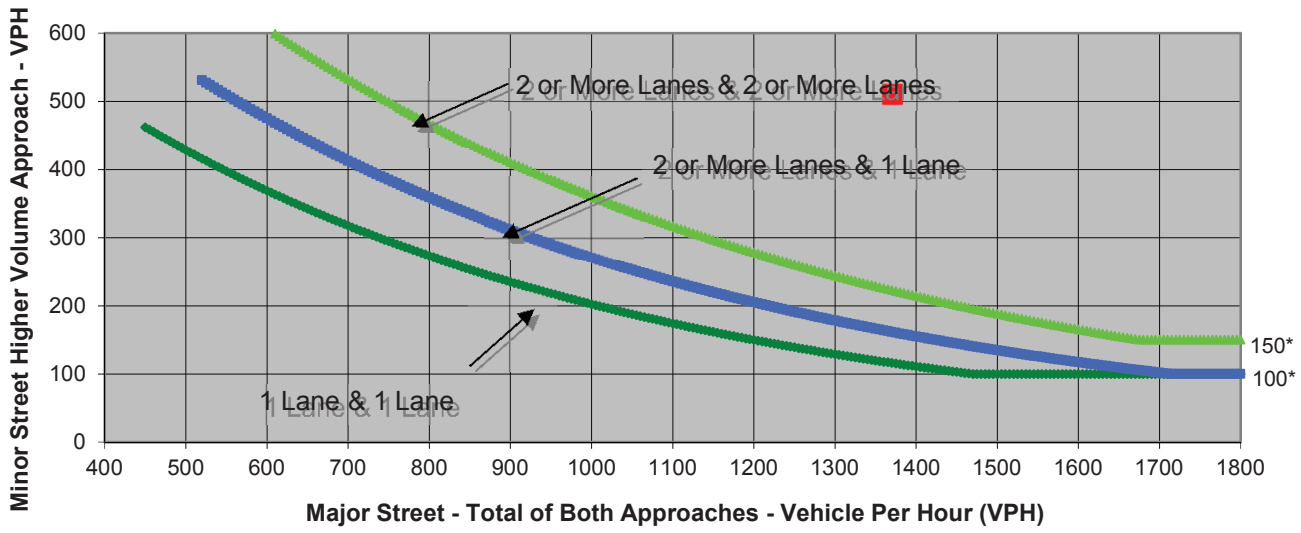
Turn Movement Volumes

	NB	SB	EB	WB
Left	350	0	0	310
Through	0	0	500	270
Right	160	0	290	0
Total	510	0	790	580

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Cedar Ravine Road	
Number of Approach Lanes	**2**	**2**	**YES**
Traffic Volume (VPH) *	**1,370**	**510**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative Plus Project
Peak Hour PM

Major Street Main St
Minor Street Cedar Ravine Road

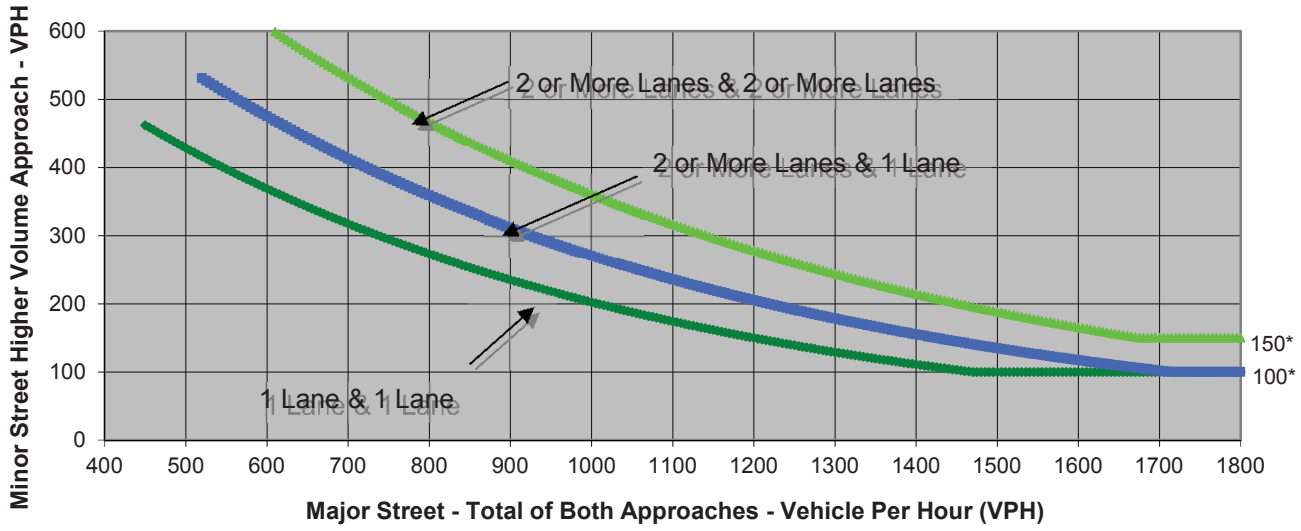
Turn Movement Volumes

	NB	SB	EB	WB
Left	250	10	50	300
Through	50	30	395	420
Right	320	40	230	20
Total	620	80	675	740

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Cedar Ravine Road	
Number of Approach Lanes	**2**	**2**	**YES**
Traffic Volume (VPH) *	**1,415**	**620**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative No Project
Peak Hour AM

Major Street Cedar Ravine Rd
Minor Street Pacific St

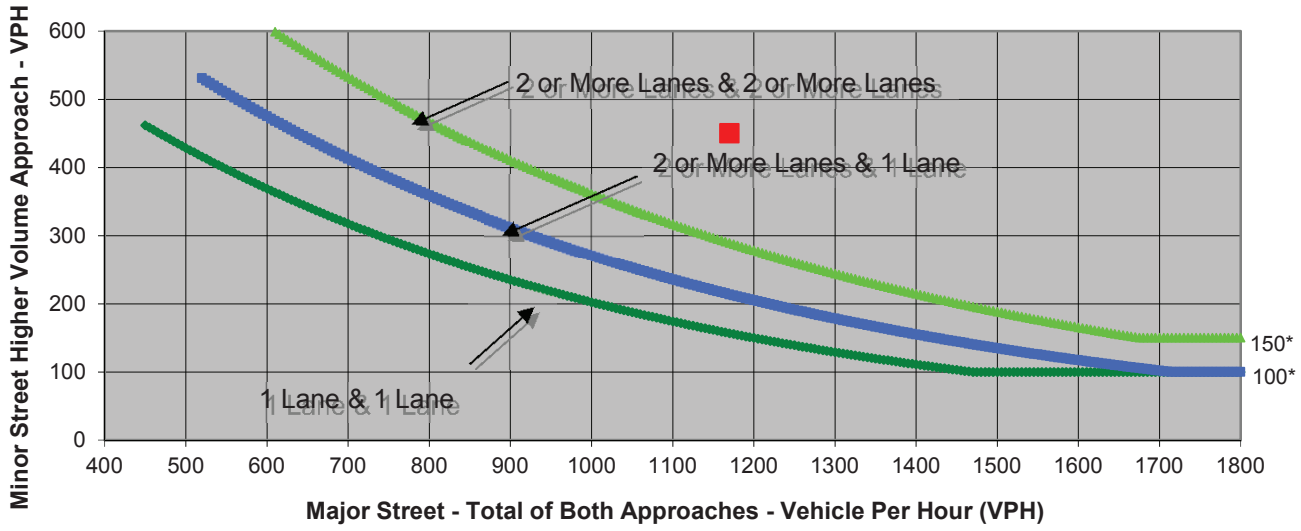
Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	130	0
Through	380	330	0	0
Right	0	270	320	0
Total	570	600	450	0

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street Cedar Ravine Rd	Minor Street Pacific St	Warrant Met
Number of Approach Lanes	**1**	**2**	**YES**
Traffic Volume (VPH) *	**1,170**	**450**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative No Project
Peak Hour PM

Major Street Cedar Ravine Rd
Minor Street Pacific St

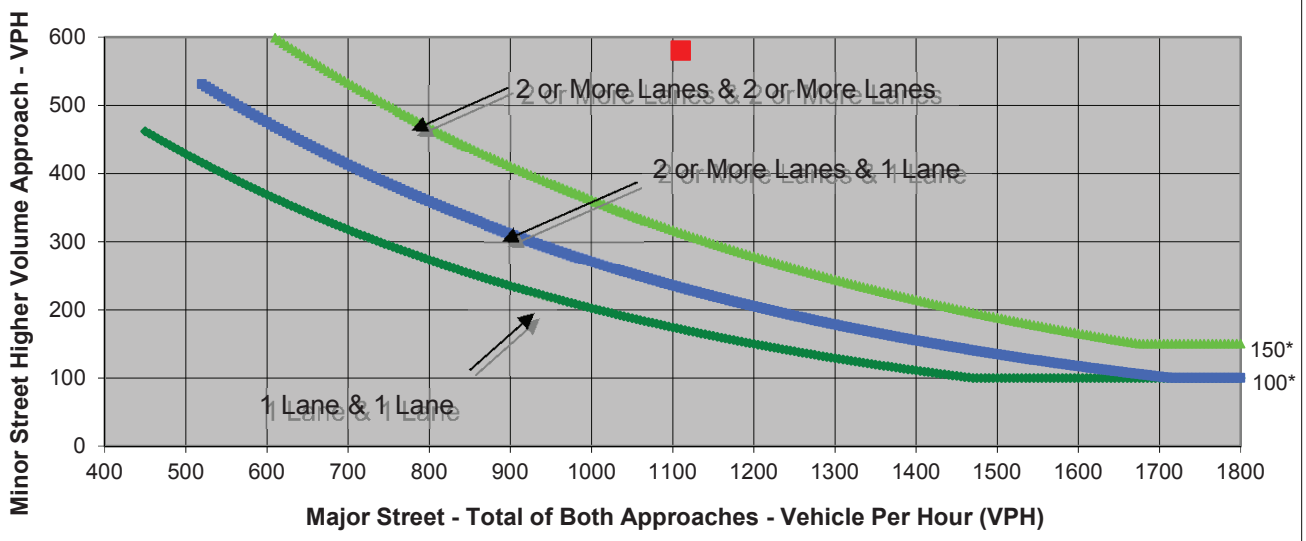
Turn Movement Volumes

	NB	SB	EB	WB
Left	270	0	340	0
Through	280	290	0	0
Right	0	270	240	0
Total	550	560	580	0

Major Street Direction

x North/South
East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Cedar Ravine Rd	Pacific St	
Number of Approach Lanes	**1**	**2**	**YES**
Traffic Volume (VPH) *	**1,110**	**580**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative Plus Project
Peak Hour AM

Major Street Main St
Minor Street Cedar Ravine Road

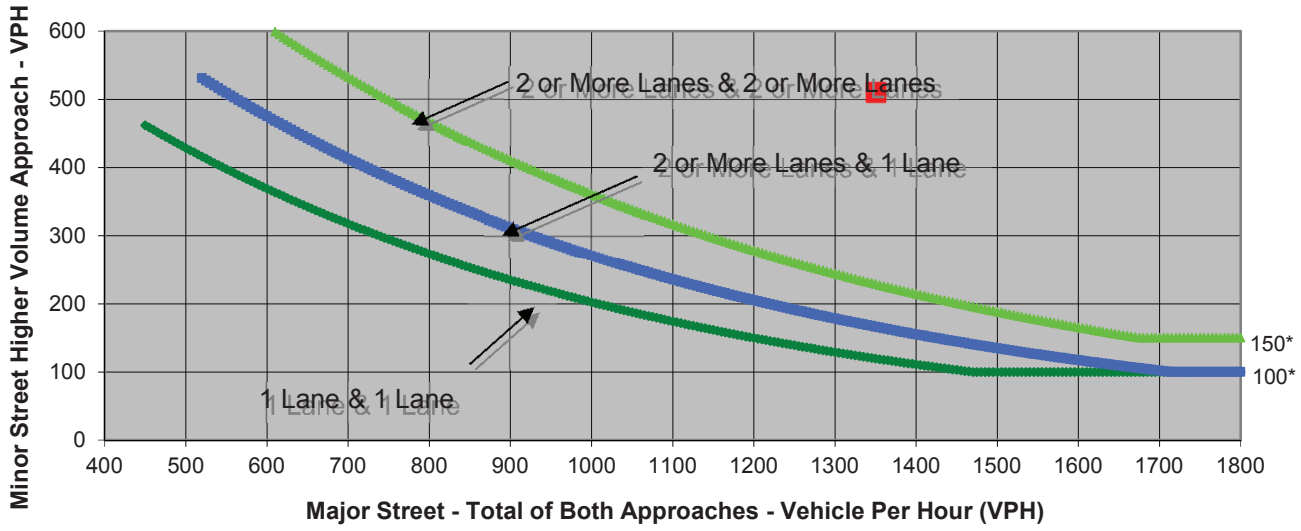
Turn Movement Volumes

	NB	SB	EB	WB
Left	330	30	40	310
Through	20	30	470	250
Right	160	30	260	20
Total	510	90	770	580

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Cedar Ravine Road	
Number of Approach Lanes	**2**	**2**	**YES**
Traffic Volume (VPH) *	**1,350**	**510**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Sheet No 1 of 1

Project Clay St
Scenario Cumulative Plus Project
Peak Hour PM

Major Street Main St
Minor Street Cedar Ravine Road

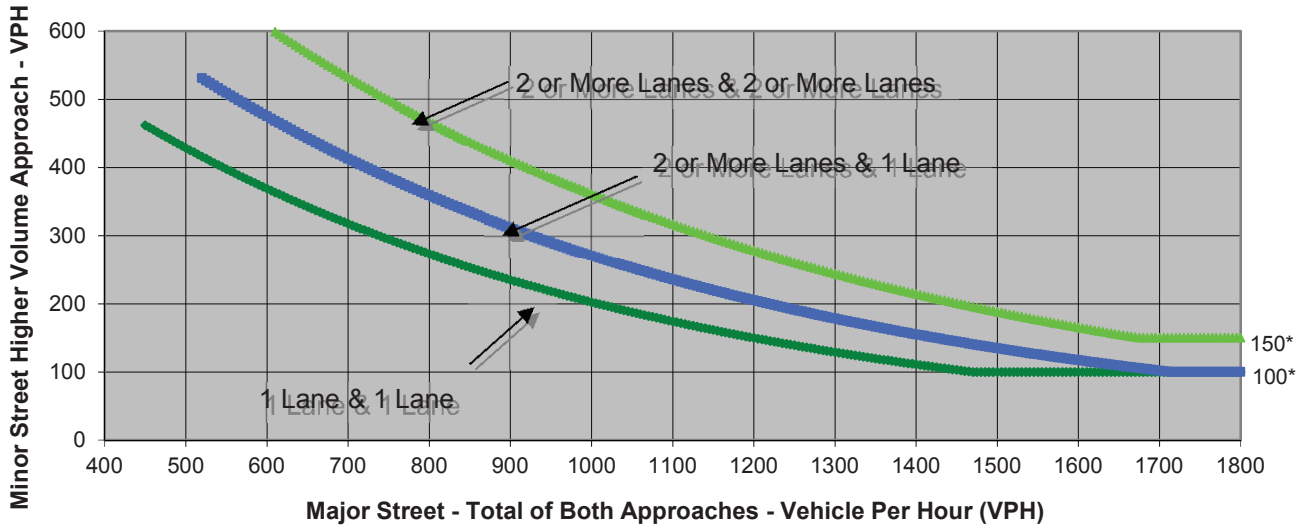
Turn Movement Volumes

	NB	SB	EB	WB
Left	250	10	50	300
Through	50	30	395	420
Right	320	40	230	20
Total	620	80	675	740

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Main St	Cedar Ravine Road	
Number of Approach Lanes	**2**	**2**	**YES**
Traffic Volume (VPH) *	**1,415**	**620**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Intersection 1 **Bedford Ave/US 50** **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	231	222	96.0%	46.3	4.4	D
	Through	28	29	103.0%	48.6	9.6	D
	Right Turn	13	11	87.6%	5.4	2.4	A
	Subtotal	272	262	96.3%	44.7	4.7	D
SB	Left Turn	78	66	84.9%	57.4	11.9	E
	Through	81	70	87.0%	57.5	25.5	E
	Right Turn	39	38	98.6%	39.6	20.2	D
	Subtotal	198	175	88.5%	53.8	19.4	D
EB	Left Turn	11	11	97.1%	61.4	27.7	E
	Through	835	832	99.7%	15.4	2.4	B
	Right Turn	283	275	97.2%	8.9	2.9	A
	Subtotal	1,129	1,118	99.0%	14.4	1.9	B
WB	Left Turn	32	31	97.9%	80.7	20.6	F
	Through	1,573	1,598	101.6%	27.3	2.8	C
	Right Turn	71	70	99.3%	24.0	4.5	C
	Subtotal	1,676	1,700	101.4%	28.1	2.6	C
Total		3,275	3,255	99.4%	26.2	1.5	C

Intersection 2 **Bedford Ave/Main St** **All-way 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						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	326	309	94.9%	25.9	7.8	D
	Through	4	2	53.4%	12.6	16.1	B
	Right Turn	65	58	89.8%	25.6	8.0	D
	Subtotal	395	370	93.6%	25.9	7.7	D
EB	Left Turn	14	13	91.5%	10.0	5.1	B
	Through	162	168	103.7%	11.2	2.7	B
	Right Turn	1	1	142.4%	2.2	3.4	A
	Subtotal	177	182	103.0%	11.2	2.5	B
WB	Left Turn	2	2	89.0%	5.6	7.9	A
	Through	213	208	97.6%	15.8	6.2	C
	Right Turn	258	250	96.7%	13.9	5.8	B
	Subtotal	473	459	97.1%	14.8	5.5	B
Total		1,045	1,011	96.8%	18.3	4.3	C

Intersection 3 **Clay St/Main St** **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						
	Through						
	Right Turn	1	2	249.2%	3.7	3.8	A
	Subtotal	1	2	249.2%	3.7	3.8	A
SB	Left Turn	21	20	93.2%	20.0	5.4	C
	Through						
	Right Turn	26	31	119.1%	7.8	2.8	A
	Subtotal	47	51	107.6%	12.8	3.8	B
EB	Left Turn	33	36	107.9%	6.6	2.0	A
	Through	421	411	97.7%	1.6	0.7	A
	Right Turn	8	8	97.9%	1.5	2.1	A
	Subtotal	462	455	98.4%	2.0	0.8	A
WB	Left Turn	4	3	80.1%	1.7	1.7	A
	Through	444	430	96.9%	2.3	0.3	A
	Right Turn	28	26	92.8%	1.5	0.7	A
	Subtotal	476	459	96.5%	2.3	0.3	A
Total		986	967	98.1%	2.7	0.4	A

Intersection 4 **Cedar Ravine Rd/Main St** **All-way 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	250	240	95.8%	12.0	3.0	B
	Through						
	Right Turn	83	77	93.1%	8.9	1.8	A
	Subtotal	333	317	95.1%	11.3	2.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	170	158	92.8%	8.5	1.1	A
	Right Turn	273	272	99.8%	4.6	1.3	A
	Subtotal	443	430	97.1%	6.1	1.1	A
WB	Left Turn	154	162	105.4%	6.9	1.2	A
	Through	226	219	96.7%	8.3	0.7	A
	Right Turn						
	Subtotal	380	381	100.2%	7.7	0.8	A
Total		1,156	1,128	97.6%	8.1	1.1	A

SimTraffic Post-Processor **Clay Street Realignment**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **AM Peak Hour**

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	96	103	107.2%	8.2	2.3	A
	Through	284	271	95.3%	4.3	1.4	A
	Right Turn						
	Subtotal	380	373	98.3%	5.3	1.6	A
SB	Left Turn						
	Through	307	305	99.5%	4.4	0.5	A
	Right Turn	120	129	107.7%	3.3	0.9	A
	Subtotal	427	435	101.8%	4.1	0.5	A
EB	Left Turn	49	48	98.1%	30.4	17.1	D
	Through						
	Right Turn	145	134	92.3%	18.3	12.6	C
	Subtotal	194	182	93.8%	21.5	14.0	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,001	990	98.9%	7.7	3.0	A

SimTraffic Post-Processor **Clay Street Realignment**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 1 **Bedford Ave/US 50** **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	274	272	99.4%	51.5	6.7	D
	Through	59	51	85.7%	51.2	12.6	D
	Right Turn	42	47	111.6%	10.2	4.7	B
	Subtotal	375	370	98.6%	46.1	6.1	D
SB	Left Turn	72	69	95.6%	60.0	35.7	E
	Through	48	54	111.6%	73.0	55.1	E
	Right Turn	30	29	98.0%	38.5	56.7	D
	Subtotal	150	152	101.2%	61.6	49.0	E
EB	Left Turn	46	39	85.7%	85.3	8.1	F
	Through	1,526	1,391	91.1%	10.1	0.8	B
	Right Turn	246	228	92.7%	11.4	3.3	B
	Subtotal	1,818	1,658	91.2%	12.1	1.2	B
WB	Left Turn	33	28	83.4%	67.5	15.0	E
	Through	1,123	1,136	101.2%	20.5	2.2	C
	Right Turn	64	67	104.6%	14.9	4.0	B
	Subtotal	1,220	1,231	100.9%	21.3	2.2	C
Total		3,563	3,410	95.7%	21.3	3.1	C

Intersection 2 **Bedford Ave/Main St** **All-way 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						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	259	251	96.8%	24.2	10.2	C
	Through	13	13	97.3%	18.0	13.8	C
	Right Turn	53	47	87.7%	20.7	6.6	C
	Subtotal	325	310	95.3%	23.5	9.5	C
EB	Left Turn	67	67	100.5%	17.4	4.3	C
	Through	276	276	99.9%	15.1	6.3	C
	Right Turn	13	12	88.7%	10.2	8.8	B
	Subtotal	356	355	99.6%	15.5	5.6	C
WB	Left Turn	6	6	105.4%	18.9	9.0	C
	Through	221	203	91.7%	22.0	17.9	C
	Right Turn	308	302	98.1%	26.8	18.4	D
	Subtotal	535	511	95.5%	24.8	17.9	C
Total		1,216	1,176	96.7%	21.8	10.1	C

Intersection 3 **Clay St/Main St** **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	4	3	83.7%	5.5	7.8	A
	Through	1	1	148.8%	5.5	10.8	A
	Right Turn	11	12	108.2%	5.8	2.8	A
	Subtotal	16	17	104.6%	7.1	4.2	A
SB	Left Turn	10	10	100.4%	15.0	14.9	B
	Through						
	Right Turn	34	31	89.7%	7.0	6.1	A
	Subtotal	44	41	92.2%	9.0	7.3	A
EB	Left Turn	41	33	80.8%	8.9	9.9	A
	Through	484	480	99.2%	3.1	3.9	A
	Right Turn	5	4	81.8%	3.1	7.2	A
	Subtotal	530	517	97.6%	3.4	4.4	A
WB	Left Turn	4	5	130.2%	3.9	2.7	A
	Through	458	455	99.4%	2.6	0.7	A
	Right Turn	35	36	102.0%	2.5	0.7	A
	Subtotal	497	496	99.8%	2.6	0.7	A
Total		1,087	1,071	98.5%	3.4	2.5	A

Intersection 4 **Cedar Ravine Rd/Main St** **All-way 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	237	225	95.0%	12.8	5.2	B
	Through						
	Right Turn	137	116	85.0%	12.8	7.4	B
	Subtotal	374	341	91.3%	12.9	5.7	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	295	303	102.6%	11.6	4.8	B
	Right Turn	210	199	94.6%	5.3	4.3	A
	Subtotal	505	501	99.3%	9.1	4.6	A
WB	Left Turn	132	135	102.6%	8.5	1.5	A
	Through	260	273	104.9%	9.6	0.9	A
	Right Turn						
	Subtotal	392	408	104.1%	9.2	1.0	A
Total		1,271	1,251	98.4%	10.2	2.6	B

SimTraffic Post-Processor **Clay Street Realignment**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	108	109	100.9%	5.5	1.9	A
	Through	268	244	90.9%	3.6	3.0	A
	Right Turn						
	Subtotal	376	353	93.8%	4.2	2.6	A
SB	Left Turn						
	Through	243	228	93.7%	3.4	0.5	A
	Right Turn	99	105	106.3%	2.6	0.6	A
	Subtotal	342	333	97.4%	3.2	0.5	A
EB	Left Turn	106	100	94.4%	23.6	8.6	C
	Through						
	Right Turn	106	114	107.7%	12.8	5.9	B
	Subtotal	212	214	101.1%	17.8	7.1	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		930	900	96.8%	7.0	2.5	A

Intersection 1 **Bedford Ave/US 50** **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	231	214	92.6%	46.0	2.1	D
	Through	28	38	134.8%	50.1	14.3	D
	Right Turn	13	14	109.5%	4.7	1.5	A
	Subtotal	272	266	97.8%	44.5	2.9	D
SB	Left Turn	78	70	90.4%	54.7	10.2	D
	Through	81	72	88.3%	66.2	20.5	E
	Right Turn	39	41	104.1%	44.2	17.0	D
	Subtotal	198	183	92.2%	57.1	12.0	E
EB	Left Turn	11	14	123.0%	58.4	15.6	E
	Through	835	827	99.0%	15.8	1.5	B
	Right Turn	283	278	98.2%	12.2	5.3	B
	Subtotal	1,129	1,118	99.0%	15.4	1.8	B
WB	Left Turn	31	31	98.8%	84.0	21.9	F
	Through	1,573	1,545	98.2%	27.3	3.1	C
	Right Turn	71	72	100.8%	22.5	4.1	C
	Subtotal	1,676	1,647	98.3%	28.1	3.1	C
Total		3,275	3,214	98.1%	26.7	1.6	C

Intersection 2 **Bedford Ave/Main St** **All-way 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						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	326	315	96.6%	26.1	7.2	D
	Through	4	4	97.9%	14.7	16.5	B
	Right Turn	65	57	88.2%	26.0	8.4	D
	Subtotal	395	376	95.3%	26.0	7.4	D
EB	Left Turn	14	15	104.3%	10.9	2.8	B
	Through	162	168	103.7%	11.3	1.9	B
	Right Turn	1	2	178.0%	1.5	2.1	A
	Subtotal	177	184	104.2%	11.2	1.8	B
WB	Left Turn	2	1	53.4%	2.4	4.8	A
	Through	213	192	90.3%	12.7	2.1	B
	Right Turn	258	251	97.3%	11.1	3.5	B
	Subtotal	473	444	93.9%	11.8	2.6	B
Total		1,045	1,005	96.2%	17.1	3.3	C

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **All-way 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	236	232	98.2%	17.0	3.5	C
	Through	14	15	106.8%	19.3	7.2	C
	Right Turn	83	80	96.1%	10.8	3.0	B
	Subtotal	333	326	98.0%	15.5	3.2	C
SB	Left Turn	8	5	62.3%	7.3	4.7	A
	Through	13	12	90.4%	10.5	2.6	B
	Right Turn	26	22	86.3%	5.9	1.4	A
	Subtotal	47	39	83.3%	7.7	1.7	A
EB	Left Turn	33	35	106.8%	11.5	4.7	B
	Through	162	161	99.5%	11.9	2.7	B
	Right Turn	260	250	96.3%	8.7	2.1	A
	Subtotal	455	447	98.2%	10.1	2.5	B
WB	Left Turn	154	157	101.7%	12.7	1.8	B
	Through	212	197	92.9%	11.9	2.0	B
	Right Turn	14	15	104.3%	9.4	3.7	A
	Subtotal	380	368	96.9%	12.1	1.7	B
Total		1,215	1,180	97.2%	12.3	1.8	B

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	96	92	96.0%	5.5	0.8	A
	Through	284	282	99.4%	3.0	0.8	A
	Right Turn						
	Subtotal	380	375	98.6%	3.6	0.8	A
SB	Left Turn						
	Through	307	299	97.5%	1.7	0.1	A
	Right Turn	120	117	97.3%	1.1	0.2	A
	Subtotal	427	416	97.5%	1.6	0.1	A
EB	Left Turn	49	45	92.3%	20.2	6.7	C
	Through						
	Right Turn	145	143	98.7%	6.2	1.4	A
	Subtotal	194	188	97.1%	9.6	2.0	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,001	979	97.8%	3.9	0.5	A

Intersection 1 **Bedford Ave/US 50** **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	274	275	100.5%	53.3	5.6	D
	Through	59	54	90.8%	57.9	10.1	E
	Right Turn	42	43	102.7%	10.7	3.9	B
	Subtotal	375	372	99.2%	48.8	4.6	D
SB	Left Turn	72	63	87.3%	53.1	13.4	D
	Through	48	46	95.3%	51.0	14.2	D
	Right Turn	30	35	116.6%	17.8	10.7	B
	Subtotal	150	144	95.7%	45.6	6.5	D
EB	Left Turn	46	41	88.1%	88.8	9.4	F
	Through	1,526	1,411	92.5%	9.9	0.9	A
	Right Turn	246	209	85.1%	10.0	1.1	A
	Subtotal	1,818	1,661	91.4%	11.8	1.1	B
WB	Left Turn	33	32	95.8%	67.7	10.4	E
	Through	1,123	1,116	99.4%	20.2	2.5	C
	Right Turn	64	70	109.9%	14.9	3.5	B
	Subtotal	1,220	1,218	99.9%	21.1	2.5	C
Total		3,563	3,395	95.3%	20.6	1.4	C

Intersection 2 **Bedford Ave/Main St** **All-way 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						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	259	231	89.2%	21.5	7.5	C
	Through	13	8	63.0%	21.6	18.7	C
	Right Turn	53	45	84.2%	20.7	10.1	C
	Subtotal	325	284	87.3%	21.5	8.0	C
EB	Left Turn	67	76	112.7%	18.0	10.5	C
	Through	276	292	105.7%	19.5	8.8	C
	Right Turn	13	12	94.4%	13.3	8.2	B
	Subtotal	356	379	106.6%	19.1	8.9	C
WB	Left Turn	6	6	105.4%	15.8	21.5	C
	Through	221	201	91.1%	18.1	6.9	C
	Right Turn	308	293	95.2%	20.7	8.9	C
	Subtotal	535	501	93.6%	19.8	7.7	C
Total		1,216	1,164	95.7%	20.2	6.3	C

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **All-way 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	220	211	95.7%	15.5	3.4	C
	Through	17	20	118.2%	18.4	5.3	C
	Right Turn	137	144	105.1%	10.7	2.1	B
	Subtotal	374	375	100.2%	13.9	2.8	B
SB	Left Turn	6	5	80.6%	6.2	6.6	A
	Through	4	2	46.5%	4.6	6.6	A
	Right Turn	34	33	96.3%	6.5	2.0	A
	Subtotal	44	39	89.6%	7.1	2.2	A
EB	Left Turn	41	41	99.8%	18.7	9.5	C
	Through	289	280	96.8%	20.2	9.4	C
	Right Turn	206	195	94.8%	12.3	7.1	B
	Subtotal	536	516	96.3%	17.2	8.8	C
WB	Left Turn	132	133	100.9%	14.1	3.8	B
	Through	242	227	93.8%	13.6	3.9	B
	Right Turn	18	14	76.5%	9.8	5.7	A
	Subtotal	392	374	95.4%	13.6	3.7	B
Total		1,346	1,304	96.9%	15.0	5.0	B

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	108	112	103.3%	4.2	0.6	A
	Through	268	274	102.3%	2.4	0.5	A
	Right Turn						
	Subtotal	376	386	102.6%	2.9	0.5	A
SB	Left Turn						
	Through	243	235	96.6%	1.4	0.2	A
	Right Turn	99	96	96.6%	0.9	0.1	A
	Subtotal	342	330	96.6%	1.3	0.1	A
EB	Left Turn	106	99	93.7%	18.3	5.6	C
	Through						
	Right Turn	106	108	101.8%	4.9	0.5	A
	Subtotal	212	207	97.7%	11.3	2.6	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		930	923	99.3%	4.2	0.6	A

Intersection 1 **Bedford Ave/US 50** **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	231	229	99.2%	45.4	2.7	D
	Through	28	28	100.4%	47.4	11.4	D
	Right Turn	13	18	136.9%	5.5	1.5	A
	Subtotal	272	275	101.2%	43.1	2.9	D
SB	Left Turn	78	70	89.5%	53.1	13.5	D
	Through	81	74	91.9%	63.3	21.3	E
	Right Turn	39	40	102.2%	40.7	13.8	D
	Subtotal	198	184	93.0%	54.7	16.0	D
EB	Left Turn	11	11	100.3%	66.2	15.8	E
	Through	835	830	99.4%	15.1	2.0	B
	Right Turn	283	295	104.2%	7.9	3.1	A
	Subtotal	1,129	1,136	100.6%	13.7	1.7	B
WB	Left Turn	31	28	89.6%	75.5	23.5	E
	Through	1,573	1,565	99.5%	29.2	7.3	C
	Right Turn	71	65	91.8%	24.4	8.4	C
	Subtotal	1,676	1,658	98.9%	29.9	7.4	C
Total		3,275	3,253	99.3%	26.8	4.8	C

Intersection 2 **Bedford Ave/Main St** **All-way 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						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	326	325	99.7%	21.1	4.7	C
	Through	4	5	115.7%	12.4	12.9	B
	Right Turn	65	67	103.0%	20.9	6.4	C
	Subtotal	395	397	100.4%	21.1	4.8	C
EB	Left Turn	14	21	147.5%	10.4	4.5	B
	Through	162	139	85.7%	9.8	1.3	A
	Right Turn	1	2	178.0%	1.8	3.6	A
	Subtotal	177	161	91.1%	9.9	1.3	A
WB	Left Turn	2	1	71.2%	7.9	9.4	A
	Through	213	203	95.3%	19.5	11.5	C
	Right Turn	258	257	99.5%	16.0	14.5	C
	Subtotal	473	461	97.5%	17.6	13.1	C
Total		1,045	1,019	97.5%	17.8	6.7	C

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **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	236	241	102.1%	19.3	2.9	B
	Through	14	15	109.3%	16.4	8.9	B
	Right Turn	83	77	92.6%	9.4	2.2	A
	Subtotal	333	333	100.1%	17.0	3.1	B
SB	Left Turn	8	9	111.3%	7.4	6.9	A
	Through	13	9	65.7%	8.1	4.4	A
	Right Turn	26	24	93.1%	4.1	2.0	A
	Subtotal	47	42	88.6%	6.5	2.6	A
EB	Left Turn	33	32	97.1%	11.8	4.0	B
	Through	162	158	97.4%	9.1	1.6	A
	Right Turn	260	249	95.7%	4.0	0.7	A
	Subtotal	455	439	96.4%	6.3	1.0	A
WB	Left Turn	154	151	98.0%	16.2	4.0	B
	Through	212	208	97.9%	8.9	1.9	A
	Right Turn	14	14	96.6%	5.0	3.1	A
	Subtotal	380	372	97.9%	11.8	2.3	B
Total		1,215	1,185	97.6%	11.0	1.4	B

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	96	93	96.8%	6.2	1.8	A
	Through	284	288	101.3%	3.5	1.2	A
	Right Turn						
	Subtotal	380	381	100.1%	4.1	1.2	A
SB	Left Turn						
	Through	307	286	93.1%	1.9	0.3	A
	Right Turn	120	119	99.4%	1.1	0.5	A
	Subtotal	427	405	94.9%	1.6	0.3	A
EB	Left Turn	49	48	98.1%	16.8	4.8	C
	Through						
	Right Turn	145	141	97.0%	5.8	0.6	A
	Subtotal	194	189	97.3%	8.7	1.4	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,001	974	97.3%	4.0	0.7	A

Intersection 1 **Bedford Ave/US 50** **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	274	280	102.4%	50.5	4.8	D
	Through	59	57	95.8%	54.8	8.4	D
	Right Turn	42	39	93.9%	13.5	3.0	B
	Subtotal	375	376	100.4%	47.1	3.9	D
SB	Left Turn	72	75	103.9%	56.4	5.0	E
	Through	48	46	96.1%	53.8	10.6	D
	Right Turn	30	31	101.7%	14.7	4.4	B
	Subtotal	150	151	100.9%	47.5	5.6	D
EB	Left Turn	46	43	93.8%	89.2	13.0	F
	Through	1,526	1,428	93.6%	10.3	1.2	B
	Right Turn	246	226	91.9%	11.0	1.7	B
	Subtotal	1,818	1,697	93.3%	12.4	1.4	B
WB	Left Turn	33	28	85.7%	68.3	10.5	E
	Through	1,123	1,109	98.8%	21.5	1.7	C
	Right Turn	64	62	97.7%	15.2	3.7	B
	Subtotal	1,220	1,200	98.4%	22.2	1.6	C
Total		3,563	3,425	96.1%	21.2	1.0	C

Intersection 2 **Bedford Ave/Main St** **All-way 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						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	259	242	93.5%	21.4	5.4	C
	Through	13	14	108.7%	20.3	7.6	C
	Right Turn	53	43	80.7%	21.8	8.3	C
	Subtotal	325	299	92.0%	21.4	5.4	C
EB	Left Turn	67	71	105.5%	15.6	4.2	C
	Through	276	259	93.7%	16.1	4.5	C
	Right Turn	13	13	103.0%	13.5	9.3	B
	Subtotal	356	343	96.2%	15.9	4.4	C
WB	Left Turn	6	5	80.6%	23.3	26.2	C
	Through	221	219	99.3%	22.5	5.1	C
	Right Turn	308	303	98.3%	23.4	9.5	C
	Subtotal	535	527	98.5%	23.4	7.5	C
Total		1,216	1,169	96.1%	20.7	4.7	C

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **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	220	225	102.1%	18.3	2.7	B
	Through	17	15	89.7%	21.4	8.8	C
	Right Turn	137	133	96.9%	9.3	1.3	A
	Subtotal	374	373	99.7%	15.3	2.4	B
SB	Left Turn	6	5	86.8%	10.8	11.4	B
	Through	4	2	55.8%	3.0	3.8	A
	Right Turn	34	36	106.1%	3.8	0.7	A
	Subtotal	44	44	98.9%	5.3	1.5	A
EB	Left Turn	41	39	96.2%	10.7	2.4	B
	Through	289	269	92.9%	9.3	0.9	A
	Right Turn	206	192	93.4%	4.4	0.8	A
	Subtotal	536	500	93.3%	7.5	0.7	A
WB	Left Turn	132	125	94.7%	17.0	5.6	B
	Through	242	236	97.6%	8.7	4.4	A
	Right Turn	18	15	80.6%	4.1	3.1	A
	Subtotal	392	376	95.8%	11.3	4.6	B
Total		1,346	1,292	96.0%	10.8	2.1	B

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	108	112	104.0%	4.5	0.8	A
	Through	268	261	97.3%	2.5	0.6	A
	Right Turn						
	Subtotal	376	373	99.2%	3.1	0.6	A
SB	Left Turn						
	Through	243	230	94.5%	1.2	0.1	A
	Right Turn	99	89	89.4%	0.9	0.2	A
	Subtotal	342	318	93.0%	1.1	0.1	A
EB	Left Turn	106	114	107.7%	16.6	3.6	C
	Through						
	Right Turn	106	104	98.3%	5.5	0.7	A
	Subtotal	212	218	103.0%	11.2	1.4	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		930	910	97.8%	4.3	0.6	A

SimTraffic Post-Processor **Clay Street Realignment**
Average Results from 10 Runs **Cumulative Conditions - No Build**
Volume and Delay by Movement **AM Peak Hour**

Intersection 1 **Bedford Ave/US 50** **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	295	279	94.5%	49.6	3.3	D
	Through	80	72	89.8%	53.4	9.0	D
	Right Turn	145	125	86.5%	11.2	2.6	B
	Subtotal	520	476	91.6%	40.3	3.3	D
SB	Left Turn	90	76	84.4%	123.2	39.3	F
	Through	110	91	82.6%	122.3	35.5	F
	Right Turn	60	62	103.2%	93.5	55.2	F
	Subtotal	260	229	88.0%	116.2	39.9	F
EB	Left Turn	115	105	90.9%	125.1	69.1	F
	Through	1,280	1,278	99.8%	32.5	8.8	C
	Right Turn	520	391	75.3%	160.9	39.8	F
	Subtotal	1,915	1,774	92.6%	66.4	13.2	E
WB	Left Turn	115	77	67.1%	236.4	47.5	F
	Through	1,750	1,416	80.9%	136.1	16.7	F
	Right Turn	90	67	74.3%	145.4	25.6	F
	Subtotal	1,955	1,560	79.8%	141.8	16.7	F
Total		4,650	4,039	86.9%	95.2	9.1	F

Intersection 2 **Bedford Ave/Main St** **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						
	Subtotal						
SB	Left Turn	530	405	76.4%	32.6	2.7	C
	Through	10	7	72.2%	25.7	14.1	C
	Right Turn	200	149	74.7%	27.8	3.1	C
	Subtotal	740	562	75.9%	31.3	2.6	C
EB	Left Turn	180	160	88.9%	54.1	30.1	D
	Through	250	233	93.2%	51.8	27.4	D
	Right Turn	5	5	106.4%	47.1	58.8	D
	Subtotal	435	398	91.5%	52.6	28.3	D
WB	Left Turn	5	2	45.6%	21.3	23.6	C
	Through	250	214	85.4%	38.5	12.7	D
	Right Turn	340	303	89.1%	28.4	12.1	C
	Subtotal	595	519	87.2%	32.6	12.0	C
Total		1,770	1,479	83.5%	37.5	11.0	D

Intersection 3 **Clay St/Main St** **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	5	7	136.8%	21.2	8.9	C
	Through						
	Right Turn	10	10	102.6%	11.1	6.9	B
	Subtotal	15	17	114.0%	16.2	5.8	C
SB	Left Turn	60	54	90.6%	52.8	48.3	F
	Through						
	Right Turn	30	30	101.3%	34.2	37.6	D
	Subtotal	90	85	94.2%	46.4	44.6	E
EB	Left Turn	40	28	70.3%	24.5	8.7	C
	Through	720	585	81.3%	22.0	9.4	C
	Right Turn	10	8	76.0%	13.6	12.4	B
	Subtotal	770	621	80.6%	22.0	9.3	C
WB	Left Turn	10	8	79.8%	5.5	4.3	A
	Through	570	512	89.8%	2.7	0.5	A
	Right Turn	40	37	92.2%	2.4	0.9	A
	Subtotal	620	557	89.8%	2.7	0.6	A
Total		1,495	1,279	85.6%	15.5	6.7	C

Intersection 4 **Cedar Ravine Rd/Main St** **All-way 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	350	294	84.0%	22.1	4.2	C
	Through						
	Right Turn	160	142	88.6%	12.9	5.4	B
	Subtotal	510	436	85.5%	19.1	4.2	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	500	395	79.0%	56.8	24.2	F
	Right Turn	290	254	87.5%	43.5	21.4	E
	Subtotal	790	649	82.1%	51.6	23.0	F
WB	Left Turn	310	305	98.4%	38.2	5.1	E
	Through	270	262	97.1%	33.9	6.4	D
	Right Turn						
	Subtotal	580	567	97.8%	36.2	5.4	E
Total		1,880	1,652	87.9%	37.8	8.4	E

SimTraffic Post-Processor **Clay Street Realignment**
Average Results from 10 Runs **Cumulative Conditions - No Build**
Volume and Delay by Movement **AM Peak Hour**

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	190	149	78.6%	126.3	46.2	F
	Through	380	307	80.9%	118.6	44.1	F
	Right Turn						
	Subtotal	570	457	80.1%	121.0	44.3	F
SB	Left Turn						
	Through	330	308	93.3%	10.2	1.1	B
	Right Turn	270	247	91.5%	7.1	1.2	A
	Subtotal	600	555	92.5%	8.8	1.1	A
EB	Left Turn	130	130	99.7%	24.5	3.9	C
	Through						
	Right Turn	320	304	95.0%	16.9	2.2	B
	Subtotal	450	434	96.4%	19.2	1.5	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,620	1,445	89.2%	46.7	11.7	D

Intersection 1 **Bedford Ave/US 50** **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	395	275	69.6%	70.7	5.7	E
	Through	100	75	74.9%	74.3	9.3	E
	Right Turn	155	110	71.1%	22.5	6.6	C
	Subtotal	650	460	70.7%	59.9	4.6	E
SB	Left Turn	100	82	82.1%	169.5	64.5	F
	Through	80	57	71.3%	170.6	71.4	F
	Right Turn	100	71	71.4%	140.5	73.1	F
	Subtotal	280	211	75.2%	161.9	68.0	F
EB	Left Turn	105	59	56.1%	60.9	10.2	E
	Through	1,840	1,293	70.3%	49.7	4.4	D
	Right Turn	300	221	73.6%	45.6	7.1	D
	Subtotal	2,245	1,573	70.1%	49.6	4.1	D
WB	Left Turn	165	138	83.8%	175.4	48.5	F
	Through	1,810	1,280	70.7%	136.7	49.5	F
	Right Turn	90	62	68.8%	144.6	52.4	F
	Subtotal	2,065	1,480	71.7%	140.7	48.8	F
Total		5,240	3,723	71.1%	92.9	19.2	F

Intersection 2 **Bedford Ave/Main St** **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						
	Subtotal						
SB	Left Turn	320	242	75.6%	24.5	2.2	C
	Through	20	14	70.3%	19.4	10.1	B
	Right Turn	200	156	78.1%	18.0	3.2	B
	Subtotal	540	412	76.4%	21.9	2.5	C
EB	Left Turn	210	167	79.6%	152.1	36.3	F
	Through	340	276	81.3%	139.8	32.1	F
	Right Turn	15	11	70.9%	119.1	61.3	F
	Subtotal	565	454	80.4%	144.4	32.5	F
WB	Left Turn	5	2	30.4%	106.6	73.0	F
	Through	280	190	68.0%	160.5	20.1	F
	Right Turn	440	293	66.6%	162.3	22.8	F
	Subtotal	725	485	66.9%	161.8	21.6	F
Total		1,830	1,351	73.8%	112.7	14.4	F

Intersection 3 **Clay St/Main St** **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	5	4	83.6%	25.9	23.4	D
	Through						
	Right Turn	10	9	91.2%	12.3	8.5	B
	Subtotal	15	13	88.7%	24.6	12.9	C
SB	Left Turn	40	40	100.7%	79.1	39.2	F
	Through						
	Right Turn	40	47	116.9%	59.9	38.7	F
	Subtotal	80	87	108.8%	69.5	38.2	F
EB	Left Turn	50	34	67.6%	15.4	6.5	C
	Through	620	492	79.4%	8.4	4.1	A
	Right Turn	5	5	91.2%	6.9	12.9	A
	Subtotal	675	531	78.6%	8.9	4.3	A
WB	Left Turn	10	7	68.4%	12.2	17.3	B
	Through	660	424	64.3%	19.7	3.8	C
	Right Turn	70	39	55.4%	13.0	7.6	B
	Subtotal	740	470	63.5%	19.3	4.0	C
Total		1,510	1,101	72.9%	18.2	3.3	C

Intersection 4 **Cedar Ravine Rd/Main St** **All-way 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	300	218	72.7%	42.3	8.8	E
	Through						
	Right Turn	320	220	68.8%	25.4	4.2	D
	Subtotal	620	438	70.7%	33.9	4.9	D
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	410	321	78.4%	22.8	7.3	C
	Right Turn	260	221	85.1%	14.7	5.8	B
	Subtotal	670	543	81.0%	19.5	6.7	C
WB	Left Turn	300	188	62.8%	171.7	49.0	F
	Through	440	261	59.3%	185.5	52.1	F
	Right Turn						
	Subtotal	740	450	60.7%	179.8	49.2	F
Total		2,030	1,430	70.5%	73.3	12.2	F

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	270	181	67.0%	172.9	57.2	F
	Through	280	179	63.9%	177.8	54.6	F
	Right Turn						
	Subtotal	550	360	65.4%	175.1	55.5	F
SB	Left Turn						
	Through	290	214	73.6%	10.2	0.8	B
	Right Turn	270	200	73.9%	7.1	1.3	A
	Subtotal	560	413	73.8%	8.7	0.9	A
EB	Left Turn	340	264	77.7%	104.9	36.4	F
	Through						
	Right Turn	240	201	83.6%	58.9	32.3	E
	Subtotal	580	465	80.1%	85.0	33.8	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,690	1,238	73.2%	84.2	23.3	F

SimTraffic Post-Processor **Clay Street Realignment**
Average Results from 10 Runs **Cumulative Conditions - All Way Stop**
Volume and Delay by Movement **AM Peak Hour**

Intersection 1 **Bedford Ave/US 50** **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	295	246	83.5%	43.0	5.3	D
	Through	80	68	85.0%	47.6	12.6	D
	Right Turn	145	122	84.1%	7.3	1.4	A
	Subtotal	520	436	83.9%	33.8	5.5	C
SB	Left Turn	90	84	93.7%	63.2	12.1	E
	Through	110	106	96.0%	67.3	18.3	E
	Right Turn	60	56	93.7%	40.8	20.6	D
	Subtotal	260	246	94.7%	59.9	16.3	E
EB	Left Turn	115	111	96.2%	100.0	31.3	F
	Through	1,280	1,281	100.1%	32.2	2.3	C
	Right Turn	520	358	68.8%	183.2	52.0	F
	Subtotal	1,915	1,750	91.4%	67.4	9.5	E
WB	Left Turn	115	48	42.0%	333.4	82.4	F
	Through	1,750	1,302	74.4%	146.7	12.1	F
	Right Turn	90	67	74.7%	145.4	18.9	F
	Subtotal	1,955	1,417	72.5%	152.7	12.9	F
Total		4,650	3,849	82.8%	94.4	3.8	F

Intersection 2 **Bedford Ave/Main St** **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						
	Subtotal						
SB	Left Turn	530	363	68.5%	37.4	5.9	D
	Through	10	7	68.4%	29.6	16.7	C
	Right Turn	200	135	67.5%	32.1	6.2	C
	Subtotal	740	505	68.2%	36.0	5.9	D
EB	Left Turn	180	147	81.7%	108.0	45.2	F
	Through	250	196	78.4%	112.9	50.0	F
	Right Turn	5	4	83.6%	114.9	123.8	F
	Subtotal	435	347	79.8%	111.3	47.9	F
WB	Left Turn	5	4	76.0%	22.8	26.3	C
	Through	250	230	92.1%	28.6	3.8	C
	Right Turn	340	288	84.6%	17.3	7.1	B
	Subtotal	595	522	87.7%	22.6	5.3	C
Total		1,770	1,374	77.6%	48.7	11.1	D

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **All-way 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	330	268	81.1%	32.8	5.5	D
	Through	20	21	102.6%	30.1	13.5	D
	Right Turn	160	152	95.2%	17.8	2.9	C
	Subtotal	510	440	86.4%	27.7	5.2	D
SB	Left Turn	30	28	93.7%	13.3	5.9	B
	Through	30	27	91.2%	15.5	3.8	C
	Right Turn	30	30	98.8%	8.0	1.3	A
	Subtotal	90	85	94.6%	12.4	2.8	B
EB	Left Turn	40	26	65.6%	121.8	49.9	F
	Through	470	304	64.8%	126.0	48.1	F
	Right Turn	260	176	67.8%	92.6	41.6	F
	Subtotal	770	507	65.8%	114.6	47.6	F
WB	Left Turn	310	286	92.2%	71.3	25.7	F
	Through	250	240	95.9%	62.5	23.0	F
	Right Turn	20	19	95.0%	57.5	19.7	F
	Subtotal	580	545	93.9%	67.1	24.0	F
Total		1,950	1,577	80.9%	67.7	17.5	F

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	190	164	86.4%	110.9	53.2	F
	Through	380	308	81.0%	115.6	58.6	F
	Right Turn						
	Subtotal	570	472	82.8%	114.1	56.8	F
SB	Left Turn						
	Through	330	266	80.6%	9.2	1.5	A
	Right Turn	270	223	82.5%	6.6	1.3	A
	Subtotal	600	489	81.4%	8.0	1.2	A
EB	Left Turn	130	134	103.2%	30.0	7.2	C
	Through						
	Right Turn	320	302	94.3%	16.7	2.5	B
	Subtotal	450	436	96.9%	20.9	3.0	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,620	1,397	86.2%	45.7	15.0	D

Intersection 1 **Bedford Ave/US 50** **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	395	282	71.5%	70.6	5.5	E
	Through	100	68	67.6%	74.2	6.8	E
	Right Turn	155	105	67.4%	22.2	4.1	C
	Subtotal	650	454	69.9%	60.2	4.2	E
SB	Left Turn	100	78	77.5%	183.3	49.4	F
	Through	80	63	78.9%	173.4	54.8	F
	Right Turn	100	86	86.3%	155.0	65.9	F
	Subtotal	280	227	81.0%	169.2	56.7	F
EB	Left Turn	105	64	61.2%	73.9	18.2	E
	Through	1,840	1,318	71.6%	49.8	3.6	D
	Right Turn	300	210	70.0%	47.3	6.7	D
	Subtotal	2,245	1,592	70.9%	50.6	3.7	D
WB	Left Turn	165	130	78.8%	163.5	26.8	F
	Through	1,810	1,222	67.5%	136.2	19.5	F
	Right Turn	90	55	60.8%	136.8	30.0	F
	Subtotal	2,065	1,407	68.1%	138.9	19.3	F
Total		5,240	3,681	70.2%	92.7	7.9	F

Intersection 2 **Bedford Ave/Main St** **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						
	Subtotal						
SB	Left Turn	320	231	72.3%	24.1	3.8	C
	Through	20	15	74.1%	27.8	6.6	C
	Right Turn	200	153	76.4%	16.8	4.0	B
	Subtotal	540	399	73.9%	21.4	3.5	C
EB	Left Turn	210	166	79.3%	167.5	39.0	F
	Through	340	257	75.4%	165.1	38.7	F
	Right Turn	15	16	108.9%	181.2	59.0	F
	Subtotal	565	439	77.7%	166.4	38.7	F
WB	Left Turn	5	4	83.6%	110.4	58.5	F
	Through	280	175	62.4%	136.7	63.6	F
	Right Turn	440	290	66.0%	138.0	65.3	F
	Subtotal	725	469	64.7%	137.7	64.5	F
Total		1,830	1,308	71.5%	110.6	27.0	F

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **All-way 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	250	183	73.3%	41.3	15.5	E
	Through	50	38	75.2%	37.2	13.4	E
	Right Turn	320	251	78.5%	24.8	3.5	C
	Subtotal	620	472	76.1%	32.5	8.0	D
SB	Left Turn	10	10	102.6%	9.6	2.7	A
	Through	30	34	112.7%	25.5	25.3	D
	Right Turn	40	46	114.0%	21.3	18.1	C
	Subtotal	80	90	112.1%	22.4	20.5	C
EB	Left Turn	50	33	66.9%	70.2	51.8	F
	Through	395	286	72.3%	75.7	51.8	F
	Right Turn	230	155	67.2%	48.3	43.3	E
	Subtotal	675	474	70.2%	66.3	49.0	F
WB	Left Turn	300	199	66.4%	177.5	63.2	F
	Through	420	269	64.1%	185.4	74.8	F
	Right Turn	20	12	58.9%	202.2	85.8	F
	Subtotal	740	480	64.9%	182.5	69.7	F
Total		2,115	1,515	71.7%	87.7	28.2	F

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	270	204	75.7%	130.4	50.7	F
	Through	280	209	74.5%	139.8	55.8	F
	Right Turn						
	Subtotal	550	413	75.1%	135.3	52.6	F
SB	Left Turn						
	Through	290	205	70.8%	9.4	0.9	A
	Right Turn	270	186	68.8%	6.6	1.1	A
	Subtotal	560	391	69.8%	8.1	0.5	A
EB	Left Turn	340	274	80.6%	99.4	35.4	F
	Through						
	Right Turn	240	210	87.4%	60.2	32.1	E
	Subtotal	580	484	83.4%	82.4	33.8	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,690	1,288	76.2%	75.9	21.6	E

Intersection 1 **Bedford Ave/US 50** **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	295	255	86.6%	51.5	6.0	D
	Through	80	75	93.6%	49.5	9.6	D
	Right Turn	145	125	86.0%	9.2	2.3	A
	Subtotal	520	455	87.5%	39.7	3.3	D
SB	Left Turn	90	74	82.8%	104.9	40.4	F
	Through	110	92	83.9%	103.9	37.8	F
	Right Turn	60	52	86.1%	74.4	33.3	E
	Subtotal	260	219	84.0%	97.6	36.8	F
EB	Left Turn	115	114	98.8%	103.7	23.9	F
	Through	1,280	1,262	98.6%	32.2	4.4	C
	Right Turn	520	408	78.5%	158.3	39.4	F
	Subtotal	1,915	1,784	93.2%	65.7	10.7	E
WB	Left Turn	115	78	67.7%	213.9	43.8	F
	Through	1,750	1,454	83.1%	140.0	14.7	F
	Right Turn	90	67	73.9%	141.4	28.3	F
	Subtotal	1,955	1,598	81.8%	143.7	15.4	F
Total		4,650	4,056	87.2%	95.3	6.6	F

Intersection 2 **Bedford Ave/Main St** **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						
	Subtotal						
SB	Left Turn	530	418	78.9%	30.2	1.6	C
	Through	10	6	64.6%	26.3	17.1	C
	Right Turn	200	157	78.3%	26.5	2.8	C
	Subtotal	740	581	78.5%	29.2	1.9	C
EB	Left Turn	180	172	95.6%	45.4	19.5	D
	Through	250	249	99.4%	40.0	15.1	D
	Right Turn	5	5	98.8%	39.2	27.2	D
	Subtotal	435	426	97.8%	42.2	16.6	D
WB	Left Turn	5	3	60.8%	33.5	21.8	C
	Through	250	215	86.0%	38.1	10.9	D
	Right Turn	340	290	85.4%	29.6	12.3	C
	Subtotal	595	508	85.5%	33.2	11.2	C
Total		1,770	1,515	85.6%	34.4	8.1	C

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **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	330	268	81.1%	27.5	2.1	C
	Through	20	17	85.5%	22.0	10.4	C
	Right Turn	160	116	72.2%	13.4	1.7	B
	Subtotal	510	400	78.5%	23.4	1.4	C
SB	Left Turn	30	26	87.4%	17.0	4.6	B
	Through	30	37	122.9%	18.0	3.6	B
	Right Turn	30	33	108.9%	8.2	3.4	A
	Subtotal	90	96	106.4%	14.3	2.6	B
EB	Left Turn	40	29	71.3%	12.3	3.5	B
	Through	470	380	80.9%	10.8	1.1	B
	Right Turn	260	235	90.5%	8.9	1.2	A
	Subtotal	770	644	83.6%	10.2	0.9	B
WB	Left Turn	310	298	96.2%	52.2	11.3	D
	Through	250	245	97.9%	43.3	12.8	D
	Right Turn	20	19	95.0%	30.9	8.4	C
	Subtotal	580	562	96.9%	47.6	11.8	D
Total		1,950	1,702	87.3%	25.9	3.9	C

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	190	122	64.2%	229.8	73.7	F
	Through	380	254	66.9%	223.1	54.6	F
	Right Turn						
	Subtotal	570	376	66.0%	225.9	60.4	F
SB	Left Turn						
	Through	330	311	94.3%	8.3	1.5	A
	Right Turn	270	256	94.7%	5.6	0.9	A
	Subtotal	600	567	94.5%	7.1	1.0	A
EB	Left Turn	130	133	102.3%	25.6	4.3	C
	Through						
	Right Turn	320	310	97.0%	17.5	1.2	B
	Subtotal	450	443	98.5%	20.0	1.5	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,620	1,387	85.6%	69.4	12.2	E

Intersection 1 **Bedford Ave/US 50** **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	395	273	69.2%	68.8	3.6	E
	Through	100	75	74.9%	71.0	9.3	E
	Right Turn	155	121	78.2%	21.4	4.3	C
	Subtotal	650	469	72.2%	57.1	4.3	E
SB	Left Turn	100	73	73.0%	175.1	62.4	F
	Through	80	61	76.0%	177.0	68.6	F
	Right Turn	100	79	79.0%	150.3	54.6	F
	Subtotal	280	213	76.0%	166.0	59.5	F
EB	Left Turn	105	58	55.4%	66.9	16.4	E
	Through	1,840	1,362	74.0%	47.5	2.2	D
	Right Turn	300	223	74.2%	44.5	3.7	D
	Subtotal	2,245	1,643	73.2%	47.8	2.1	D
WB	Left Turn	165	116	70.5%	158.3	20.1	F
	Through	1,810	1,245	68.8%	136.8	22.7	F
	Right Turn	90	59	65.4%	142.3	35.7	F
	Subtotal	2,065	1,420	68.7%	138.8	22.7	F
Total		5,240	3,745	71.5%	90.1	10.9	F

Intersection 2 **Bedford Ave/Main St** **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						
	Subtotal						
SB	Left Turn	320	233	72.9%	23.5	2.4	C
	Through	20	18	91.2%	20.5	8.6	C
	Right Turn	200	150	74.9%	18.8	1.6	B
	Subtotal	540	401	74.3%	21.6	1.4	C
EB	Left Turn	210	169	80.5%	150.1	47.1	F
	Through	340	278	81.7%	141.8	44.3	F
	Right Turn	15	19	124.1%	146.2	60.5	F
	Subtotal	565	466	82.4%	145.3	45.4	F
WB	Left Turn	5	5	98.8%	77.0	63.8	E
	Through	280	186	66.5%	90.3	12.6	F
	Right Turn	440	302	68.7%	90.3	16.7	F
	Subtotal	725	493	68.0%	90.6	15.0	F
Total		1,830	1,360	74.3%	88.3	17.2	F

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **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	250	174	69.5%	43.5	9.8	D
	Through	50	41	81.3%	43.1	8.6	D
	Right Turn	320	245	76.7%	19.5	4.3	B
	Subtotal	620	460	74.2%	30.8	6.7	C
SB	Left Turn	10	11	114.0%	21.9	9.4	C
	Through	30	33	111.5%	19.3	8.9	B
	Right Turn	40	36	90.3%	15.3	7.7	B
	Subtotal	80	81	101.2%	17.9	6.8	B
EB	Left Turn	50	44	87.4%	10.4	4.0	B
	Through	395	306	77.4%	9.4	1.3	A
	Right Turn	230	180	78.3%	4.2	1.0	A
	Subtotal	675	530	78.5%	7.8	1.0	A
WB	Left Turn	300	212	70.7%	118.4	66.8	F
	Through	420	301	71.7%	119.4	63.3	F
	Right Turn	20	16	79.8%	136.4	108.4	F
	Subtotal	740	529	71.5%	119.5	64.9	F
Total		2,115	1,600	75.6%	49.9	18.9	D

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	270	188	69.5%	188.9	75.1	F
	Through	280	171	61.2%	186.9	63.8	F
	Right Turn						
	Subtotal	550	359	65.3%	188.1	69.6	F
SB	Left Turn						
	Through	290	212	73.2%	8.7	1.8	A
	Right Turn	270	212	78.5%	5.9	1.4	A
	Subtotal	560	424	75.8%	7.2	1.6	A
EB	Left Turn	340	298	87.5%	105.8	39.7	F
	Through						
	Right Turn	240	211	88.0%	69.7	47.1	E
	Subtotal	580	509	87.7%	91.2	42.3	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,690	1,292	76.5%	90.3	28.5	F

Intersection 1 **Bedford Ave/US 50** **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	295	277	93.9%	49.0	3.9	D
	Through	80	82	102.1%	53.8	6.9	D
	Right Turn	145	143	98.3%	8.3	1.2	A
	Subtotal	520	501	96.4%	38.3	3.8	D
SB	Left Turn	90	72	80.2%	129.1	70.6	F
	Through	110	95	86.7%	133.7	76.2	F
	Right Turn	60	48	80.4%	109.7	85.6	F
	Subtotal	260	216	83.0%	127.2	76.2	F
EB	Left Turn	115	104	90.5%	128.0	33.5	F
	Through	1,280	1,293	101.0%	35.8	6.1	D
	Right Turn	520	398	76.6%	177.5	55.4	F
	Subtotal	1,915	1,795	93.7%	72.4	11.8	E
WB	Left Turn	115	77	66.7%	223.8	55.8	F
	Through	1,750	1,399	80.0%	126.2	16.5	F
	Right Turn	90	81	90.4%	129.9	24.3	F
	Subtotal	1,955	1,557	79.7%	131.4	17.7	F
Total		4,650	4,069	87.5%	93.8	10.3	F

Intersection 2 **Bedford Ave/Main St** **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						
	Subtotal						
SB	Left Turn	530	401	75.7%	30.8	1.1	C
	Through	10	6	64.6%	34.3	13.9	C
	Right Turn	200	159	79.4%	28.0	1.6	C
	Subtotal	740	567	76.6%	30.1	1.1	C
EB	Left Turn	180	186	103.4%	47.5	23.5	D
	Through	250	250	100.2%	47.5	23.6	D
	Right Turn	5	8	152.0%	39.7	29.9	D
	Subtotal	435	444	102.1%	47.4	23.5	D
WB	Left Turn	5	4	76.0%	28.7	32.8	C
	Through	250	224	89.7%	44.6	16.3	D
	Right Turn	340	315	92.7%	36.3	22.1	D
	Subtotal	595	543	91.3%	39.8	19.5	D
Total		1,770	1,554	87.8%	38.4	11.0	D

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **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	330	317	96.2%	26.6	2.1	C
	Through	20	20	100.7%	26.5	8.6	C
	Right Turn	160	147	91.7%	15.9	3.5	B
	Subtotal	510	484	94.9%	23.3	2.3	C
SB	Left Turn	30	31	103.9%	15.6	5.7	B
	Through	30	29	96.3%	17.5	9.2	B
	Right Turn	30	30	100.1%	5.9	2.2	A
	Subtotal	90	90	100.1%	12.3	3.3	B
EB	Left Turn	40	33	81.7%	12.7	2.8	B
	Through	470	397	84.5%	12.2	1.2	B
	Right Turn	260	202	77.8%	8.8	2.0	A
	Subtotal	770	632	82.1%	11.1	1.1	B
WB	Left Turn	310	298	96.2%	70.9	40.5	E
	Through	250	238	95.2%	62.5	40.0	E
	Right Turn	20	21	104.5%	67.6	45.1	E
	Subtotal	580	557	96.0%	67.1	40.2	E
Total		1,950	1,763	90.4%	32.1	12.7	C

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	190	190	100.2%	63.1	29.8	E
	Through	380	347	91.3%	52.9	31.7	D
	Right Turn						
	Subtotal	570	537	94.3%	56.6	30.6	E
SB	Left Turn						
	Through	330	278	84.2%	8.5	0.8	A
	Right Turn	270	251	92.9%	5.8	0.6	A
	Subtotal	600	529	88.1%	7.3	0.7	A
EB	Left Turn	130	127	97.3%	25.5	5.0	C
	Through						
	Right Turn	320	318	99.4%	18.0	2.1	B
	Subtotal	450	445	98.8%	20.3	1.7	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,620	1,511	93.2%	28.6	10.6	C

Intersection 1 **Bedford Ave/US 50** **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	395	270	68.4%	66.9	4.8	E
	Through	100	73	73.3%	67.9	7.7	E
	Right Turn	155	124	79.9%	23.5	3.8	C
	Subtotal	650	467	71.9%	55.6	3.3	E
SB	Left Turn	100	73	73.3%	198.8	64.7	F
	Through	80	64	79.8%	187.7	65.2	F
	Right Turn	100	78	78.3%	178.4	80.3	F
	Subtotal	280	215	77.0%	190.1	66.1	F
EB	Left Turn	105	59	55.7%	76.1	22.0	E
	Through	1,840	1,364	74.1%	49.2	3.1	D
	Right Turn	300	237	78.9%	47.3	7.0	D
	Subtotal	2,245	1,659	73.9%	49.9	3.5	D
WB	Left Turn	165	119	72.1%	153.7	22.3	F
	Through	1,810	1,252	69.2%	124.7	21.6	F
	Right Turn	90	68	76.0%	131.7	31.3	F
	Subtotal	2,065	1,439	69.7%	127.4	21.7	F
Total		5,240	3,781	72.2%	87.8	8.8	F

Intersection 2 **Bedford Ave/Main St** **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						
	Subtotal						
SB	Left Turn	320	257	80.4%	24.2	2.8	C
	Through	20	18	91.2%	22.4	10.0	C
	Right Turn	200	146	73.0%	16.6	3.9	B
	Subtotal	540	421	78.0%	21.5	2.6	C
EB	Left Turn	210	176	83.6%	124.5	44.2	F
	Through	340	280	82.5%	117.3	49.2	F
	Right Turn	15	15	98.8%	100.8	55.8	F
	Subtotal	565	471	83.3%	119.6	47.4	F
WB	Left Turn	5	4	76.0%	45.5	32.8	D
	Through	280	196	70.2%	78.3	19.3	E
	Right Turn	440	296	67.3%	81.7	16.7	F
	Subtotal	725	496	68.5%	80.4	17.5	F
Total		1,830	1,389	75.9%	75.9	19.5	E

Intersection 4 **Clay St-Cedar Ravine Rd/Main St** **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	250	193	77.4%	40.7	13.7	D
	Through	50	46	92.7%	38.8	15.9	D
	Right Turn	320	256	80.0%	18.7	4.3	B
	Subtotal	620	496	80.0%	29.4	9.2	C
SB	Left Turn	10	11	110.2%	20.1	10.1	C
	Through	30	30	100.1%	18.0	10.5	B
	Right Turn	40	38	96.0%	13.8	7.9	B
	Subtotal	80	79	99.3%	16.4	6.1	B
EB	Left Turn	50	44	87.4%	13.8	6.1	B
	Through	395	333	84.3%	11.1	2.0	B
	Right Turn	230	183	79.6%	5.4	1.7	A
	Subtotal	675	560	82.9%	9.5	1.9	A
WB	Left Turn	300	252	84.1%	98.8	43.8	F
	Through	420	316	75.2%	96.5	44.6	F
	Right Turn	20	16	77.9%	87.6	70.2	F
	Subtotal	740	584	78.9%	97.9	44.2	F
Total		2,115	1,719	81.3%	45.1	16.3	D

Intersection 5 **Cedar Ravine Rd/Pacific St** **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	270	237	87.7%	63.2	30.1	E
	Through	280	210	74.9%	60.9	30.2	E
	Right Turn						
	Subtotal	550	447	81.2%	61.9	29.0	E
SB	Left Turn						
	Through	290	235	81.1%	8.6	1.6	A
	Right Turn	270	224	82.9%	6.5	1.2	A
	Subtotal	560	459	82.0%	7.6	1.4	A
EB	Left Turn	340	296	87.2%	92.6	39.5	F
	Through						
	Right Turn	240	218	90.7%	59.2	34.5	E
	Subtotal	580	514	88.6%	78.5	37.6	E
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,690	1,420	84.0%	49.8	18.5	D