Downtown Pedestrian and Bicycle Planning Study
City of Covina

Prepared for:

City of Covina

Prepared by:

ADVANTEC Consulting Engineers

21700 Copley Drive, Suite 350
Diamond Bar, CA 91765

In Conjunction with:

Alta Planning + Design
453 S Spring St. Ste. 804, Los Angeles CA 90013

September 2011

PEDESTRIAN & BICYCLE PLANNING STUDY

September 2011

TABLE OF CONTENTS

List of Figures

List of Tables:

Release Version:

Release Date	Version	Prepared by:	Reviewed by:
12/15/2010	1. Draft Report	Vikas Sharma	Kenny Chao
5/10/2011	2. Revised Report – v1	Billy Shum	Kenny Chao
9/7/2011	3. Revised Report – v2	Billy Shum	Kenny Chao

Executive Summary

Purpose and Background

The purpose of this study is to develop measures for improving pedestrian, bicycle, and vehicular access at the Covina Metrolink Station and circulation within Downtown Covina.

Through discussions with City staff, there are three distinct project subareas each with their own unique pedestrian, bicycle, and vehicular issues to address. These subareas are the Metrolink Station, Downtown Covina, and the Peripheral Arterial Streets. The project study limits for each of the subareas are as follows:

Metrolink Station - This subarea encompasses Citrus Avenue from Front Street to Edna Place and the Metrolink Station Plaza.

Downtown Covina - This subarea encompasses Citrus Avenue from San Bernardino Road to Badillo Street.

Peripheral Arterial Streets - This subarea consists of the four arterial streets surrounding Downtown Covina: Badillo Street to the south, Cypress Street to the north, Hollenbeck Avenue to the east, and Barranca Avenue to the west.

For analysis purposes, 22 study intersections, signalized or stop-controlled are identified within the City limits as illustrated in Figure ES1.

Project Objectives

The main objectives of this project are:

- Inventory existing pedestrian, bicycle, and vehicular facilities within all three subareas.
- Establish existing weekday and weekend AM, Mid-Day, and PM peak hour volumes of bicycles and pedestrians around the Covina Metrolink Station and Downtown Covina.
- For analysis of the first two subareas, identify improvements for enhancing, expanding, and creating safe walking and bicycling opportunities within the Metrolink Station and around the Downtown Covina including opportunities with public transit enhancements and development.
- Identify vehicular accidents, including accidents involving bicyclists and pedestrians, for all three sub-areas.
- Ensure that the proposed improvements conform to the City of Covina's Specific and General Plans for the subareas, particularly with the City of Covina Bikeway Network Study and Downtown Parking Study.
- For analysis of the Third subarea, establish existing (year 2010) and future (years 2017 and 2035) AM and PM peak hour volumes (including trips from three residential projects within Downtown Covina) and Levels-of-Service (LOS) for the 22 study intersections.

Results

The following items have been identified from our analysis for the existing and/or future bicycle, pedestrian, and vehicular conditions within the three subareas:

- Metrolink Station (First subarea)
  - Under the current conditions, the ingress traffic flow heading to the apron is often impeded by the impact of platooning of pedestrian travel behavior. Instead of using the existing landing apron and contiguous street sidewalk to reach the boarding platform, the majority of pedestrians encroach into the landscaped and driveable areas as described in Figure ES2.
  - Proposed access and pedestrian plaza improvements suggested by this study would eliminate the conflicts between the ingress traffic and pedestrian movements.
  - The existing bi-directional flow within the parking aisles often gets impeded by parking maneuvers. A proposed head-in/back-out one way angled-parking layout made by this study would effectively eliminate this conflict.
- Downtown Covina (Second subarea)
  - Existing pedestrian and bicycle volumes were higher than anticipated for Downtown Covina.
  - Proposed pedestrian and bicycle improvements made by this study would enhance safe walking and bicycling opportunities around Metrolink Station and through Downtown Covina.
  - Proposed pedestrian, bicycle, and vehicular improvements made by this study are in conformance with the City of Covina's General and Specific Plans, and would further enhance public transit (i.e. Bus Rapid Transit, Foothill Transit and Metrolink) growth in the area.
- Peripheral Arterial Streets (Third subarea)
  - Existing (year 2010) AM, Mid-Day, and PM peak period LOS for all 22 study intersections is LOS "D" or better.
  - Future (year 2017) AM and PM peak period LOS for all 22 intersections, with Citrus Walk, Vintage Walk and Theater Lofts developments in place, is LOS "D" or better with the exception of following intersection:
    - #15 - Citrus Avenue and Badillo Street - LOS "E" (AM peak hour)
  - Future (year 2035) AM and PM peak period LOS for 18 out of 22 study intersections with Citrus Walk, Vintage Walk and Theater Lofts developments in place, is LOS "D" or better. The intersections that are projected to operate with poorer LOS include:
    - #2 - Hollenbeck Avenue and San Bernardino Road - LOS "E" (both AM and PM peak hours)
    - #3 - Hollenbeck Avenue and Badillo Street - LOS "E" (PM peak hour)
    - #6 - 3rd Avenue and Badillo Street - LOS "F" (PM peak hour)
    - #15 - Citrus Avenue and Badillo Street - LOS "E" (AM & PM peak hours)

Recommendations

Following are recommendations for improving the walking and bicycling environment in and around the Covina Metrolink Station and the Downtown Covina:

Pedestrian Improvements

Metrolink Pedestrian Plaza (First subarea)

This study recommends removing the landscaped area and first three general-use parking spaces along the beginning portion of the ingress parking aisle (Refer to Figure ES2), and constructing a pedestrian plaza that would provide direct pedestrian access between the sidewalk and loading platform (Refer to Figure ES3). The plaza would connect to the station platform via a new sidewalk, which would move the disabled parking spaces outward into the parking aisle. There is sufficient space to move the disabled parking outward while maintaining ADA compliance.

The new sidewalk connecting the boarding platform and plaza would allow passengers to avoid walking through the parking aisle. With introduction of the proposed pedestrian handrail along the boundary of the pedestrian plaza, vehicular traffic would continue to circulate within the parking lot as the pedestrians would no longer encroach into the parking aisles. The designated path for pedestrians between the platform and plaza / Citrus Avenue would reduce auto-pedestrian conflicts within the parking aisle and improve overall station operations. The pedestrian plaza would also include signage and other design features that would direct commuters toward the crosswalk recommended by this study at Citrus Avenue / Front Street.

Sidewalk Widening With Curb Ramp at Citrus Avenue/Metrolink Station Driveway (First subarea)

The existing pedestrian cross-walk serving the west side of Citrus Avenue at the Metrolink Station driveway intersection does not provide curb ramp for wheelchair users and other mobility-impaired users. The sidewalk on the west side of Citrus Avenue, opposite to the Metrolink Station Driveway, contains street lights and traffic signal poles which may impede pedestrian movement.

As illustrated in Figure ES4, the city would widen the sidewalk and install new curb ramps along the east side of Citrus Avenue between Front Street and the Metrolink Station driveway intersection. The new widened boundary will reduce the pedestrian crossing distance across Citrus Avenue.

Crosswalk at Citrus Avenue/Front Street and Rail-Track at Citrus Avenue (First subarea)

During the pedestrian counts, a number of morning commuters were observed rushing to board a Metrolink train. Some commuters crossed Citrus Avenue at the railroad tracks, taking advantage of the crossing arms being down to cross the street. Of even greater concerns are commuters that were observed attempting to jaywalk or cross the tracks and Citrus Avenue simultaneously by running along the Metrolink tracks. (Refer to Figure ES2)

As illustrated in Figure ES4, the City would install a new crosswalk crossing over the north leg of the Citrus Avenue / Front Street intersection. This location currently has crosswalks on the other three intersection legs. The proposed crosswalk on the north leg of the intersection will encourage commuters to walk across Citrus Avenue within the pedestrian accessible path and thereby effectively address the above noted jay-walking scenario.

Sidewalk Widening on Citrus Avenue, between School Street and San Bernardino Road (Second subarea)

In order to connect Downtown to the Metrolink Station, this study recommends the City to provide a more consistent and pedestrian-oriented streetscape. Beginning from north of School Street and progressing to the Metrolink Station, the City would reduce the street widths, using the space to widen the sidewalk. The City would also enact policies to encourage development with street-fronting buildings, rather than parking lots. New developments would consolidate or share parking in common lots or parking structures, which will encourage pedestrians to circulate through the corridor, rather than parking immediately adjacent to their destinations.

Curb Extension / Bulb-outs at CrossWalk locations (Second subarea)

The City would construct bulb-outs at mid-block crosswalk locations (Refer to Note A of Figure ES6 and ES7) in Downtown Covina to improve pedestrian visibility. At this time, the mid-block crosswalks consist of transverse line striping and textured concrete, and these treatments guide pedestrians on where to cross. Introduction of bulb-outs at these localized areas will not only shorten the crossing distance, but will also enable pedestrians to walk closer to the vehicular travel way before being seen by oncoming traffic.

Pedestrian Countdown Timers (Second subarea)

The city would upgrade all existing pedestrian signal heads within the study area to countdown signals, which indicate the time remaining for pedestrians to cross. Countdown timers reduce the number of pedestrians crossing late in the cycle, which reduces the risk for pedestrians remaining in the crosswalk when opposing traffic begins to enter the intersection. Wide intersections, especially along Second Avenue and along Badillo Street, would receive the priority for installing this improvement.

Bulbouts (Second subarea)

The study recommends installing Class II Bike Lanes, which will act as a traffic calming measure, on both sides of Second Avenue. The study also recommends installing high-visibility crosswalks, and bulb-outs at Second Avenue's intersections with Badillo Street, College Street, Italia Street, School Street, and San Bernardino Road. The bulb-outs improvements is funded under the 2011 Call for Project funding program, and this feature can incorporate into the bus stops at Badillo Street and College Street to create bus shelters.

Bicycle Improvements

Installation of Bikeway Facilities

As presented in the *Covina Bikeway Network Study*, the bicycle facilities are recommended for installation as follows:

Class II Bike Lanes

- Citrus Avenue north of Edna Place
- Citrus Avenue south of Badillo Street
- Front Street from Citrus Avenue to Second Avenue
- Second Avenue south of Front Street
- Badillo Street through the project study area

Class III Bike Routes / Sharrows

- Fourth Avenue south of San Bernardino Road
- San Bernardino Road through the project study area
- Edna Place through the project study area

Bicycle Parking
(Second subarea)

This study proposes to install bicycle parking throughout Downtown. Bicycle parking would be sited in prominent places with existing bicycling demand such as coffee shops, restaurants, and book stores. Providing bicycle racks encourages people to bike Downtown and improves security for parked bicycles from theft and vandalism. Sidewalk bike racks would be installed within the street furnishing zone and oriented so parked bicycles do not interfere with pedestrian circulation, and are set back sufficiently from the curb to not risk being hit by parking cars.

Another option for consolidated bike parking is to remove one or more on-street curb parking spaces to install a bike corral. A bike corral can accommodate five to ten times the number of bicycles than autos in the same space, which greatly increases the parking capacity. On-street bike parking signals that cyclists are welcome and considered a priority within Downtown. Depending on the rack style and placement, bike parking can help create a public space, e.g. a corner plaza.

In the 2011 Call for Projects, LA Metro awarded the City of Covina $827,437 to construct 8.0 miles of Class II Bicycle Lanes along major arterials with connections to commuter rail and BRT facilities, and to install a modular bicycle parking facility in Downtown Covina. The total project cost (escalated) will be $1,034,296 in fiscal year 2015-2016 and fiscal year 2016-2017. The City has installed over 20 additional bicycle racks in the Downtown area using Prop A funds. (Figure ES8)

Another bike station, very similar to the one established within the Covina Metrolink Station, would be constructed under the 2011 Call for Project funding program. (Refer to Figure ES9)

Class III Bicycle Routes/Sharrows & Signage
(Third subarea)
The local roads connecting to the Citrus Avenue corridor provide additional east-west connectivity between several parks, the hospital, and schools. Designating Front, School, Italia, College, and Center Streets as Class III bike routes and installing "Sharrow" markings (also known as "Shared Roadway Bicycle Markings) and/or wayfinding signage will encourage cyclists to bike Downtown. Sharrows and/or signage would also assist casual cyclists to avoid high-traffic roads like San Bernardino Road and Badillo Street, and connect to the proposed bike lane facilities on Second Avenue, Badillo Street, and Citrus Avenue.

Traffic Related Improvements

Metrolink Pedestrian Plaza (First subarea)

It is imperative to enable the inbound traffic to observe the upcoming traffic queue conditions prior to encroaching into the parking access. In principle, all obstacles (e.g. ticket machines, pedestrian hand-rails, shrubs, signage, etc.) within the modified pedestrian plaza must be carefully planned and be subject to vertical line-of-sight restrictions. (e.g. maximum 3.5 feet in height) Specifically, no trees are recommended to be planted surrounding or within the modified curb radii.

The study has evaluated two parking-lot redevelopment schemes (Refer to Figure ES3 and ES10), and the design criteria for the final recommendation (Refer to Figure ES3) are described herein:

- To minimize the conflict points or delay associated with parking maneuvers in this sensitive area, a few parking stalls will be removed including application of front-in parking restrictions to the existing handicap parking stalls.
- Construction of pedestrian handrails along the boundary of the proposed pedestrian plaza, as indicated, to effectively channelize pedestrian traffic to/from the boarding platform and to provide physical separation between the vehicular and pedestrian traffic.
- Application of a one-way flow of traffic within the parking lot, as indicated, to avoid conflict points or delays associated with the existing bi-directional traffic flow.
- Modification of the existing standard perpendicular parking to angled parking, as indicated, in support of the proposed single direction on-site circulation. Application of angle parking can significantly help reduce the delay and congestion associated with parking maneuvers especially during the AM peak drop-off period where the majority of drivers are in hurry of parking their vehicles.
- Installation of traffic control devices (i.e. adhesive channelizes or delineators) at the access area, as indicated, to effectively channelize ingress and egress traffic movements. This design element can avoid the egress right-turners from being blocked by the egress left turners.
- Removal of conflicting pavement marking (e.g. bi-directional speed limits), and installation of appropriate pavement marking and control signage (e.g. Do Not Enter or Right Turn Only) in support of the proposed one-way direction circulation.

Traffic Signal Synchronization around the Downtown Covina (Second subarea) and Peripheral Arterial Streets (Third subarea)

Important streets within the study area such as Barranca Avenue, Cypress Avenue, San Bernardino Road, Hollenbeck Avenue, and Badillo Street have been identified for improved signal timing by optimizing signal timing parameters. For these streets, the traffic signal timing parameters would be optimized under the on-going County's signal timing maintenance program. The objective of conducting the signal system synchronization is to reduce the overall travel time, delay, and number of stops.

The study recommends that traffic signal timing parameters be optimized to achieve equal progression in north-south directions and directional progression for the east-west streets during the AM and PM peak hours of traffic

2nd Avenue As an Alternate North-South Thoroughfare (Second subarea)

2nd Avenue is a north-south street located just to the east of Citrus Avenue and has two travel lanes in each direction and low traffic volumes. Due to the available right-of-way, 2nd Avenue could easily accomodate the traffic shift from Citrus Avenue and serve as a quick alternate thoroughfare for vehicles traveling north-south providing motorists with a by-pass route through Downtown Covina. To make this feasible, installation of way-finding signage describing this recommended Downtown alternative route, and estalablishment of corridor progression signal timing settings are necessary.

Traffic signal timing at Barranca Avenue/Cypress Street (Third subarea)

A Simtraffic based simulation model was developed to measure the effectiveness of current split phasing scheme at the intersection of Barranca Avenue and Cypress Street. It was established through simulation model that split phasing is not suitable for this intersection due to resulting queuing and delay. With rise in traffic volumes in future, the traffic operations on this intersection will continue to deteriorate with the current split-phasing. A protected-permissive phasing is recommended for east-west direction at this intersection.

Retain Localized Parking Arrangement

Head-In Angled Parking in Covina Downtown (Second subarea)

Within Downtown Covina, there is currently head-in angled parking along Citrus Avenue. This parking method allows drivers to quickly pull into parking spaces. The possibility of installing back-in angled parking was evaluated in this study. At this time, the city recommends that no improvements be made to the current head-in angled parking conditions.

Restriping and Special Signage Installation (Second subarea)
In order to prevent excessive vehicular queuing on Citrus Avenue during peak hours, restriping and additional signage is recommended at the following locations:

1. Citrus Avenue and Geneva Place / San Bernardino Road - southbound direction
2. Citrus Avenue and Badillo Street - northbound direction

The details of recommended striping patterns and traffic signage for these locations are provided in Figures ES5, ES6, and ES7 of the study report.

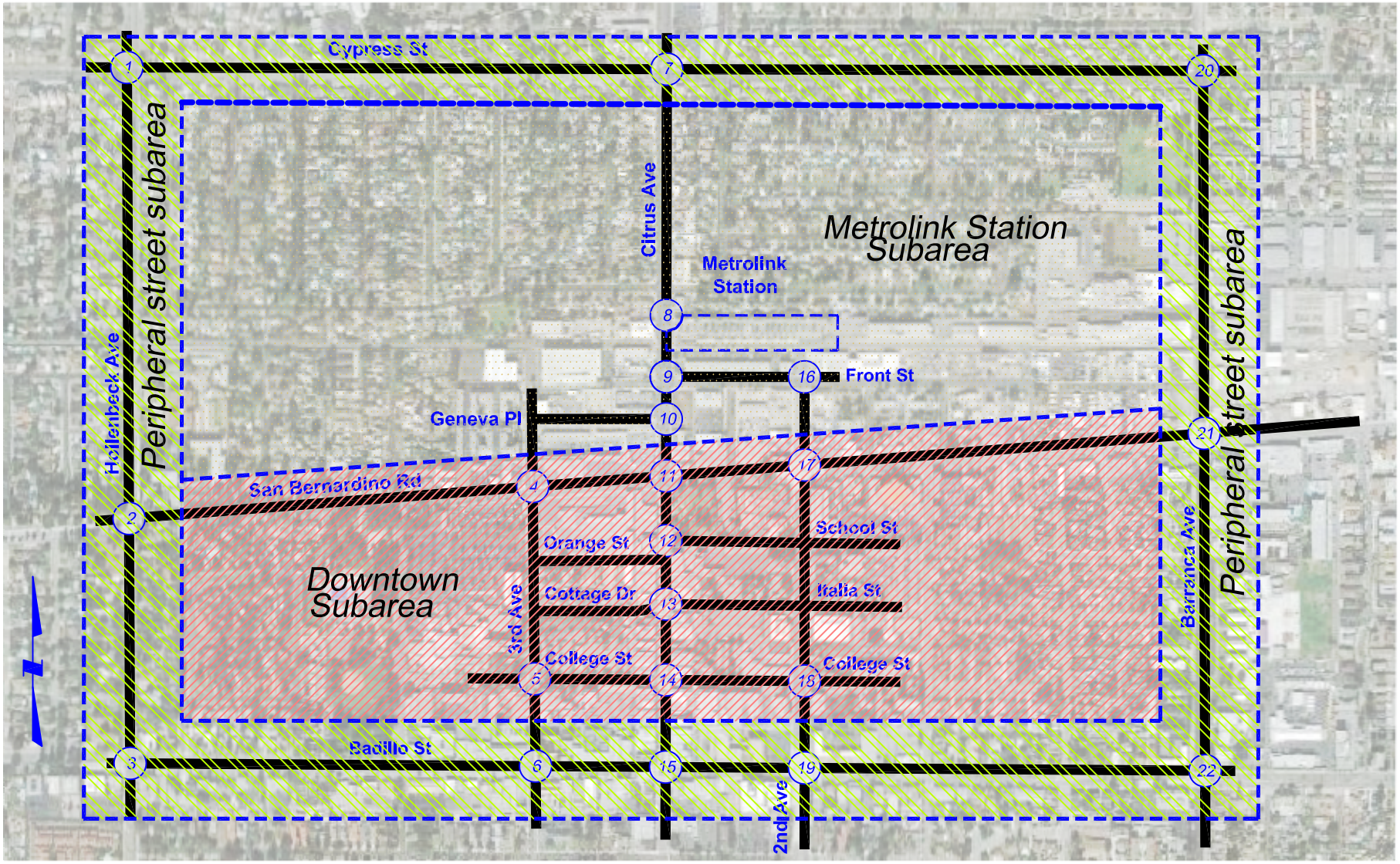


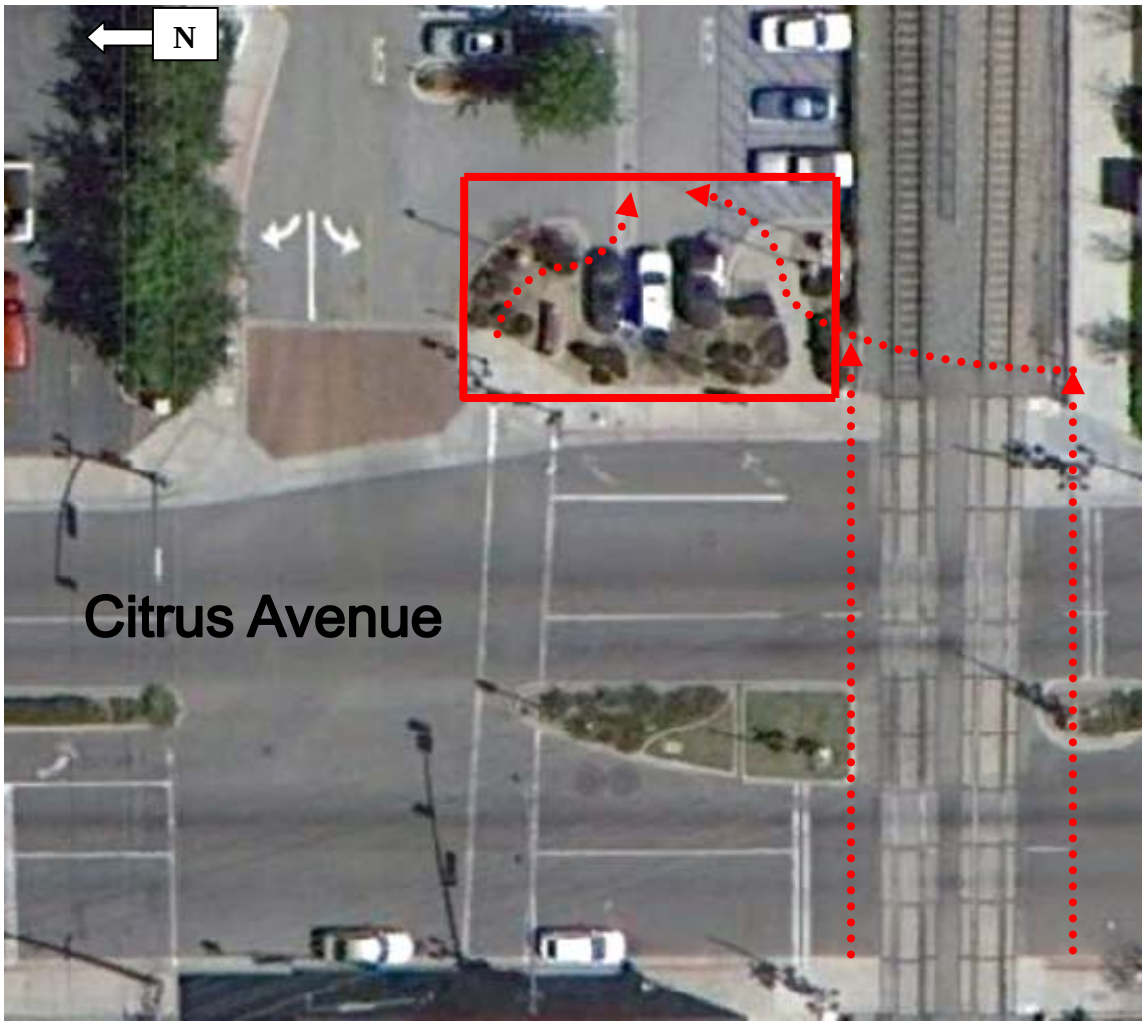
FIGURE ES1 STUDY AREA

Pedestrian and Bicycle Planning Study - City of Covina

Date: SEPTEMBER 2011

PREPARED BY:

ADVANTEC Consulting Engineers



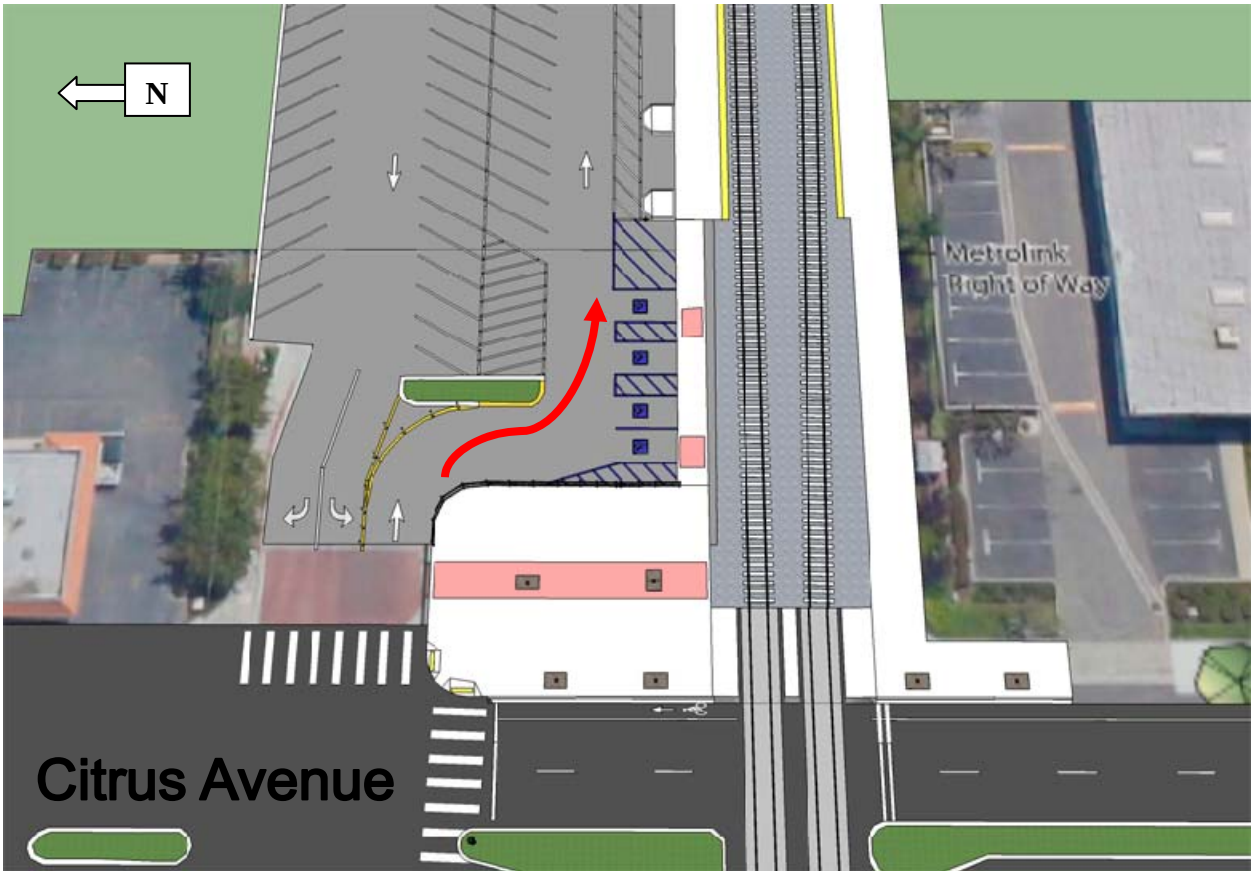
EXISTING CONDITIONS

Legend

Removal of the landscaped area and three general-use parking stalls

Observed jay-walking activities during gate-down period

Figure ES2 – Metrolink Station Access



OPTION 1

Legend

Added throat length

Figure ES3 – Metrolink Station Access Redevelopment: Option 1

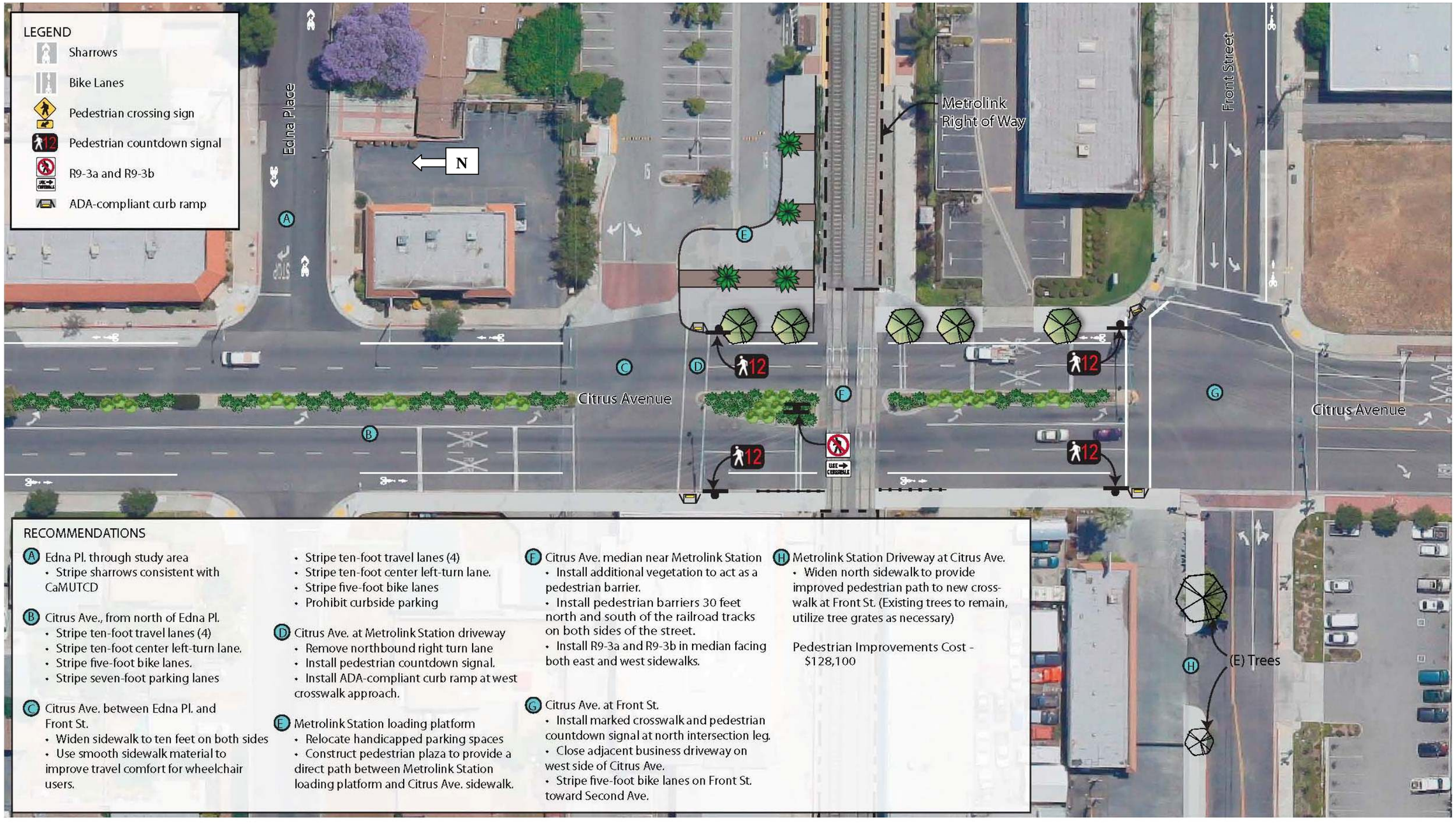


Figure ES4 Citrus Avenue Concept S-01

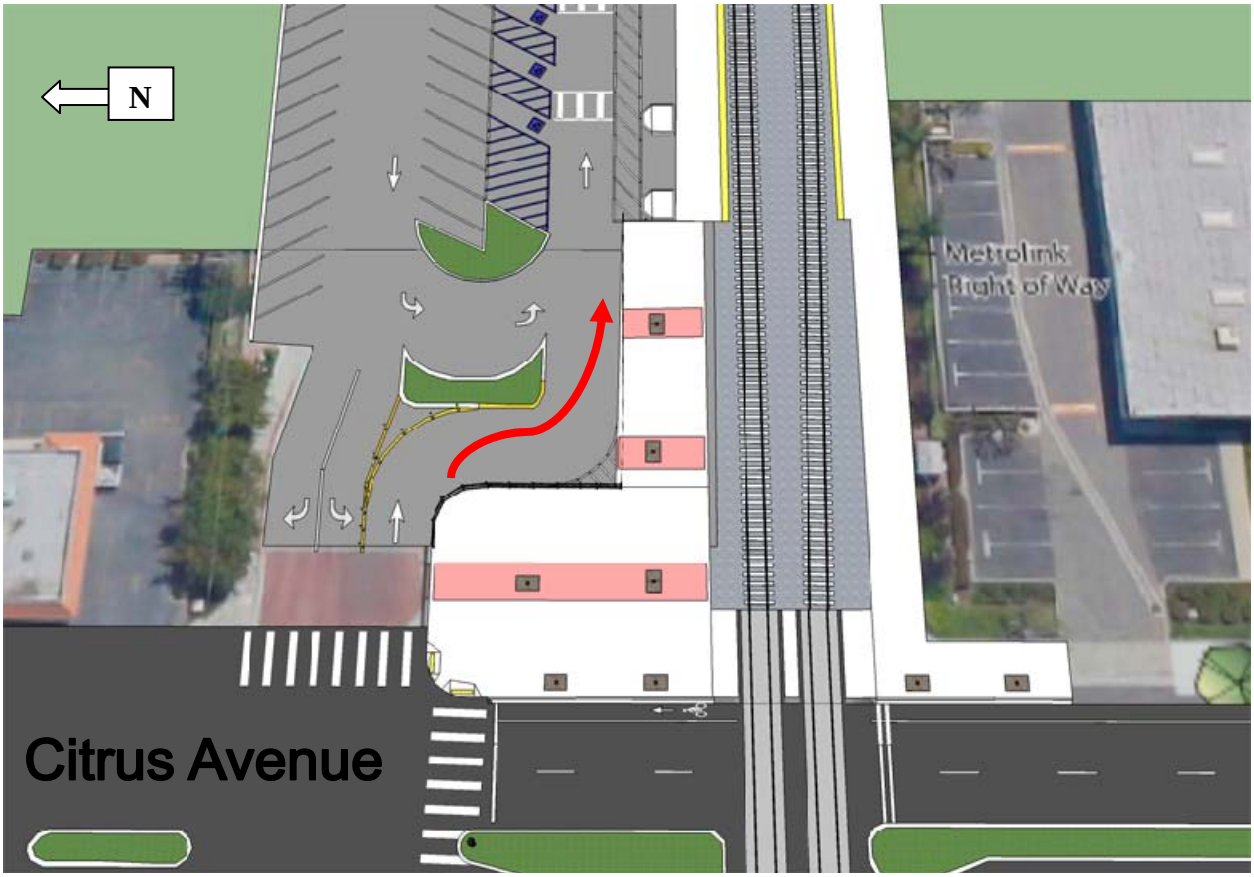
Figure ES5 Citrus Avenue Concept S-02

Figure ES6 Citrus Avenue Concept S-03

Figure ES7 Citrus Avenue Concept S-04

Figure ES8 Recently installed bicycle rack in Covina Downtown

Figure ES9 Covina Metrolink Bike station



OPTION 2

Legend

Added throat length

Figure ES10 – Metrolink Station Access Redevelopment: Option 2

1.0 Introduction

1.1 Purpose

The purpose of this study is to develop measures for improving pedestrian, bicycle, and vehicular access and circulation at the Covina Metrolink Station and within Downtown Covina.

1.2 Background

Through discussions with City staff, there are three distinct project subareas each with their own unique pedestrian, bicycle and/or vehicular issues to address. These subareas are the Metrolink Station, Downtown Covina, and the Peripheral Arterial Streets. The project study limits for each of the subareas along with their individual issues to be addressed in this report are presented herein:

Metrolink Station (First subarea) - This subarea encompasses Citrus Avenue from Front Street to Edna Place and the Metrolink Station Plaza. The pedestrian and bicycle access and safety issues would be identified and addressed for this subarea. Vehicular circulation issues with the Metrolink Station parking lot would also be identified and addressed.

Downtown Covina (Second subarea) - This subarea encompasses Citrus Avenue from San Bernardino Road to Badillo Street. Pedestrian and bicycle access and safety issues would be identified and addressed for this subarea.

Peripheral Arterial Streets (Third subarea) - This subarea consists of the four arterial streets surrounding Downtown Covina: Badillo Street to the south, Cypress Street to the north, Hollenbeck Avenue to the east, and Barranca Avenue to the west. Traffic circulation issues would be identified and addressed for this subarea.

For analysis purposes, the following 22 study intersections are identified within the three above noted subareas:

1. *Hollenbeck Avenue and Cypress Street (Signalized)*
2. *Hollenbeck Avenue and San Bernardino Road (Signalized)*
3. *Hollenbeck Avenue and Badillo Street (Signalized)*
4. *3rd Avenue and San Bernardino Road (Signalized)*
5. *3rd Avenue and College Street (Stop - Controlled)*
6. *3rd Avenue and Badillo Street (Stop - Controlled)*
7. *Citrus Avenue and Cypress Street (Signalized)*
8. *Citrus Avenue and Metrolink Station (Signalized)*
9. *Citrus Avenue and Front Street (Signalized)*
10. *Citrus Avenue and Geneva Place (Stop - Controlled)*
11. *Citrus Avenue and San Bernardino Road (Signalized)*
12. *Citrus Avenue and Orange Street/School Street (Stop -Controlled)*
13. *Citrus Avenue and Cottage Drive (Stop - Controlled)*
14. *Citrus Avenue and College Street (Signalized)*
15. *Citrus Avenue and Badillo Street (Signalized)*
16. *2nd Avenue and Front Street (Stop - Controlled)*
17. *2nd Avenue and San Bernardino Road (Signalized)*

18. 2nd Avenue and College Street (Signalized)
19. 2nd Avenue and Badillo Street (Signalized)
20. Barranca Avenue and Cypress Street (Signalized)
21. Barranca Avenue and San Bernardino Road (Signalized)
22. Barranca Road and Badillo Street (Signalized)

Figure 1.1 on the following page shows the study area with the locations of the study intersections. The numbering sequence for the intersections, 1 through 22, directly correlate to the number sequence noted above. This numbering has been followed throughout the study report.

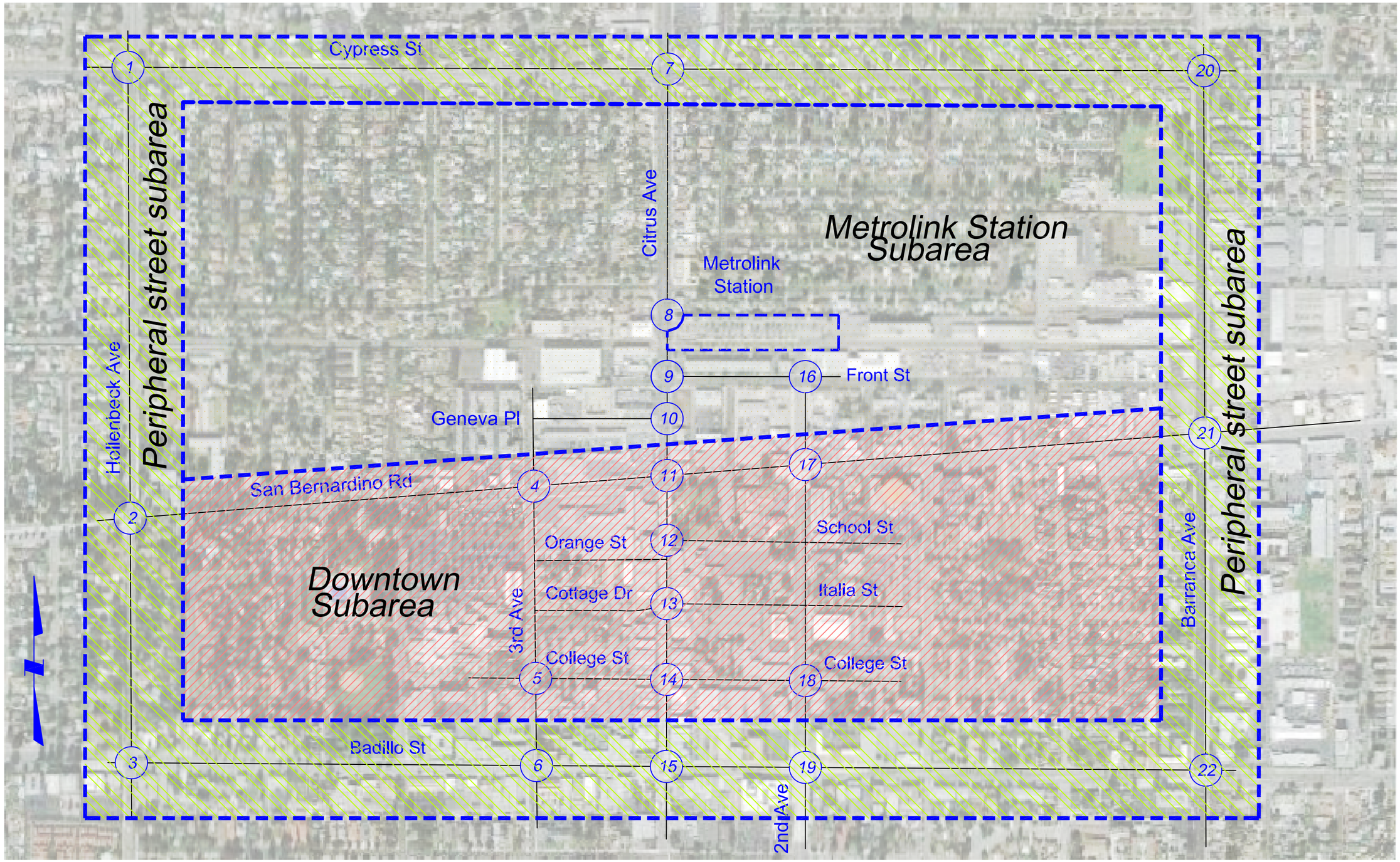


FIGURE 1.1 STUDY AREA

Pedestrian and Bicycle Planning Study - City of Covina
Date: May 2011

PREPARED BY:
ADVANTEC Consulting Engineers

2.0 Data Collection

Existing Conditions Inventory

An inventory of current conditions is essential to the success of this study, since the information also provides a foundation for subsequent evaluations. The project team conducted a detailed inventory of the existing transportation facilities during October 2010, and this section documents the findings of this effort.

2.1 Data Collection – Pedestrian and Bicycle Counts

This section summarizes the results of bicyclist and pedestrian counts taken at nine locations in the study area. These counts serve as a baseline to evaluate effects of future infrastructure improvements and programs in Covina. The count methodology draws on the National Bicycle & Pedestrian Documentation Project (NBPD), which aims to establish consistent national bicycle and pedestrian count and survey methodologies, and to generate a national database of bicycle and pedestrian count information.

Collection Methodology

The Covina count methodology uses the NBPD methodology, which draws on knowledge from the Institute of Transportation Engineers, other transportation professionals, and best practices nationwide. The core of the NBPD methodology is:

- *Consistent count days and times;*
- *Consistent count methods and materials;*
- *Centralized data collection and analysis; and*
- *Open access to all research professionals and public agencies.*

The counts occurred on Thursday, September 30, and Saturday, October 2, 2010. Two types of counts were conducted: screenline counts in which the number of bicyclists and pedestrians crossing an imaginary line on the road and sidewalk were tallied, and intersection counts in which bicycle and pedestrian movement through intersections was counted. The screenline counts focused on capturing behavior around the Covina Metrolink Station, with scheduled times aimed at capturing commuters walking or bicycling to and from the station during the AM and PM peak commute hours. The screenline counts took place from 7:00 am to 10:00 am and 4:00 pm to 8:00 pm. The intersection counts focused on capturing behavior around the Covina Downtown corridor during the midday and PM peak. The intersection counts took place from 11:00 am to 1:00 pm and 4:00 pm to 8:00 pm. **Table 2.1** lists the Covina count locations and **Figure 2.1** shows their locations.

Counts were conducted manually at each of the 9 locations using standardized count forms. Maps guided counters to the exact intersections or screenlines to monitor. Counts recorded volumes of pedestrians and cyclists, along with observations regarding bicycling behavior, including wrong-way riding, helmet use, and riding on the sidewalk.

Table 2.1 Bicycle and Pedestrian Count Locations

Screenline Counts	Intersection Counts
1 Citrus Avenue south of Edna Place	A Citrus Avenue / Badillo Street
2 Citrus Avenue north of Front Street	B Citrus Avenue / College Street
3 Second Avenue south of Front Street	C Citrus Avenue / Italia Street / Cottage Drive
4 Front Street east of Second Avenue	D Citrus Avenue / School Street / Orange Street
	E Citrus Avenue / San Bernardino Road

Figure 2.1 Bicycle and Pedestrian Count Locations

2.2 Data Collection – Vehicular/Traffic Counts

Traffic counts were conducted to determine the number, movements, and classifications of vehicles in the study area. This data helps identify critical time periods, determines the influence of large vehicles or pedestrians on vehicular traffic flow, or documents traffic volume trends.

Average Daily Traffic (ADT)

Average Daily Traffic (ADT) volumes represent a 24-hour "count" at a specified location. In 2009, ADVANTEC completed a 24 hour traffic count study for all major and minor roadways within the City of Covina. This ADT information was utilized in determining the peak hour periods for this study as explained in the following section. These ADT counts are included in **Appendix A** of this report.

Peak Hour Selection

To understand existing traffic conditions within the study area and to develop recommendations for reaching optimal flow of motorized and non-motorized traffic, the Average Daily Traffic (ADT) volumes were carefully studied. Trend charts from the ADT data were utilized to determine the peak hours. Review of ADT counts indicated the following peak periods for the study intersections:

- *AM Peak Period – 7:00 AM to 9:00 AM*
- *Mid Day Peak Period – 12:00 PM to 2:00 PM*
- *PM Peak Period – 4:00 PM to 6:00 PM*

Intersection Peak Hour

To define existing traffic conditions at the study intersections, peak hour turning movement counts were collected at the 22 study intersections on Thursday, September 30, 2010 during the hours of 7:00 AM to 9:00 AM, 12:00 PM to 2:00 PM, and 4:00 PM to 6:00 PM. These traffic counts were carefully analyzed to identify the peak one hour counts for AM, Mid-Day, and PM peak periods at each intersection. These peak one hour turning movement counts along with the signal timing data were used in the Level of Service (LOS) analysis and micro-simulation of existing and future scenarios in **Traffix** and **Simtraffic**, respectively.

The turning movement counts are included in **Appendix A** of this report.

3.0 Metrolink Station (First subarea)

This section describes existing pedestrian facilities and amenities within the study area and discusses their condition and utility.

In California a "crosswalk" is defined to include both marked facilities as well as the unmarked extension of the sidewalk across the street at an intersection ("unmarked crosswalk"). Unless expressly prohibited, pedestrians can cross at a right angle between any two corners of an intersection, whether marked or not.

3.1 Existing Infrastructure

All major streets adjacent to the Covina Metrolink Station have six-foot sidewalks, including Citrus Avenue, Front Street, and Second Avenue. These streets do not provide a buffer setback. Some residential streets in the study area, including Edna Place, Viceroy Avenue, and Park Avenue, do not have sidewalks.

Pedestrian Crosswalk at
Citrus Avenue/Covina Metrolink Driveway

Most pedestrians enter the station near where Citrus Avenue intersects with the station parking lot driveway. There is no walkway between the driveway entrance and the station platform, and most pedestrians walk through the parking aisle and disabled parking stalls to access the platform. The pedestrians walking through the parking aisle impede vehicles circulating through the parking lot and create conflicts during peak commute hours.

The intersection of Citrus Avenue and the station parking lot has a marked transverse crosswalk on the south leg only. This crosswalk has a push-button-activated audible crossing signal with a countdown timer. The west landing of this crosswalk does not have a curb ramp, which may prevent disabled persons from accessing the Metrolink Station using this crossing.

Just south of the station, the signalized Citrus Avenue / Front Street intersection has standard transverse crosswalks on its east and south legs, and a stamped, colored asphalt crosswalk on the west leg. The intersection lacks a marked crosswalk at its north leg, which is also the most direct corner facing the Metrolink parking structure. The crossing aligned to the station sidewalk prohibits pedestrian crossings, which may contribute to the number of pedestrians en route to the Metrolink Station that cross Citrus Avenue mid-block. The crossings at Citrus Avenue/Front Street have curb ramps; those on the northeast and southeast corners have yellow truncated domes.

North of the station, the intersection of Edna Place / Citrus Avenue is stop controlled on the minor approaches. There are no marked crosswalks at any legs of this intersection. This has a landscaped median that prevents automobiles from making left turns and east-west through-movements at Edna Place. Pedestrians frequently cross Citrus Avenue at the unmarked crosswalk at this intersection, stepping through the landscaped median. The lack of a marked crosswalk and cut-through in the median contribute to the perception that pedestrians are "jaywalking" across Citrus Avenue at this location, even though this is a legal crossing point. The crossings Citrus Avenue/Edna Place have curb ramps with truncated domes at all corners.

The intersection of West Geneva Place / Citrus Avenue is stop controlled on the minor approach. The west and north legs of the intersection have marked transverse crosswalks. The south leg of the intersection has an unmarked crosswalk.

The intersection of Second Avenue / Front Street is all-way stop controlled. The intersection has a marked transverse crosswalk on the south leg only. Street lighting is generally present in the study area, with the exception of Front Street and Second Avenue.

3.2 Count Results for Metrolink Station Subarea

Table 3.1 presents the pedestrian and bicyclist counts at the peak hour of activity for each screenline location adjacent to the Covina Metrolink Station. Citrus Avenue, north of Front Street, had the highest recorded activity because Metrolink commuters pass by when walking between the station platform and the parking garage.

Pedestrian activity generally corresponded with station activity: the greatest observed activity occurred during commute hours on Thursday and was far less on Saturday, as fewer riders took the train to work. Periodic peaks of activity corresponded with when trains arrived at the station. The evening peak period pedestrian counts showed higher activity than the morning peak period pedestrian counts. The count data reveal about 10 times more pedestrian activity on Citrus Avenue than on Second Avenue or Front Street. Bicyclists represented less than five percent of the Covina Metrolink Station's non-motorized activity. Bicycling activity was heaviest along Citrus Avenue. Second Avenue and Front Street did not have many cyclists.

Table 3.1 Covina Metrolink Counts

Location		7:00 - 10:00 am				4:00 - 8:00 pm			
		Peak Hour		Three – Hour		Peak Hour		Three – Hour	
		Peds	Bikes	Peds	Bikes	Peds	Bikes	Peds	Bikes
Thursday, September 30, 2010									
1	Citrus Avenue s/o Edna Place	25	7	68	13	33	10	114	35
2	Citrus Avenue n/o Front Street	153	5	252	19	215	10	468	41
3	Second Avenue s/o Front Street	9	1	20	3	13	5	35	11
4	Front Street e/o Second Avenue	4	1	11	1	11	3	28	10
Saturday, October 1, 2010									
1	Citrus Avenue s/o Edna Place	28	7	61	24	31	10	76	48
2	Citrus Avenue n/o Front Street	37	9	74	26	35	5	86	36
3	Second Avenue s/o Front Street	4	1	5	1	5	0	8	0
4	Front Street e/o Second Avenue	3	4	11	5	3	3	7	3

**Peak-hour values represent the sum of the four consecutive 15-minute intervals, within the total count period, recording the highest volumes of cyclists or pedestrians. This methodology creates a buffer zone for the "peak-hour" rate, which may vary within the two-hour period.*

In addition to counting the number of bicyclists and pedestrians at each location, counters also made observations about bicyclist and pedestrian behavior. **Table 3.2** presents detailed observations about bicyclist behavior near the Covina Metrolink Station. As shown, nearly 80% of cyclists were male, 70% rode without helmets, and nearly half rode on the sidewalk.

Table 3.2 Covina Metrolink Cyclist Behavior

Intersection		Total Cyclists	Male	Female	Child	No Helmet	Sidewalk Riding	Wrong-way Riding	Gate Viol.
Thursday, 7-10 am									
1	Citrus Avenue s/o Edna Place	13	10	3	0	11	3	5	--
2	Citrus Avenue n/o Front Street	19	15	2	2	12	11	1	1
3	Second Avenue s/o Front Street	3	3	0	0	2	0	0	--
4	Front Street e/o Second Avenue	1	1	0	0	1	0	0	--
	TOTAL	**36**	**29**	**5**	**2**	**26**	**14**	**6**	**1**
Thursday, 4-8 pm									
1	Citrus Avenue s/o Edna Place	35	25	8	2	27	18	6	--
2	Citrus Avenue n/o Front Street	41	30	8	3	32	24	3	1
3	Second Avenue s/o Front Street	11	8	3	0	10	0	1	--
4	Front Street e/o Second Avenue	10	8	2	0	7	4	2	--
	TOTAL	**97**	**71**	**21**	**5**	**76**	**46**	**12**	**1**
Saturday, 7-10 am									
1	Citrus Avenue s/o Edna Place	24	20	4	0	9	12	8	--
2	Citrus Avenue n/o Front Street	26	22	4	0	10	6	4	1
3	Second Avenue s/o Front Street	1	1	0	0	1	0	0	--
4	Front Street e/o Second Avenue	5	3	2	0	5	4	0	--
	TOTAL	**56**	**46**	**10**	**0**	**25**	**22**	**12**	**1**
Saturday, 4-8 pm									
1	Citrus Avenue s/o Edna Place	48	40	4	4	32	22	16	--
2	Citrus Avenue n/o Front Street	36	27	3	6	32	22	3	1
3	Second Avenue s/o Front Street	0	0	0	0	0	0	0	--
4	Front Street e/o Second Avenue	3	3	0	0	3	3	0	--
	TOTAL	**87**	**70**	**7**	**10**	**67**	**47**	**19**	**1**
	OVERALL TOTAL	276	216	43	17	194	129	49	4
	PERCENT		78%	16%	6%	70%	47%	18%	1%

Table 3.3 presents detailed observations about pedestrian behavior near the Covina Metrolink Station. There were slightly more men than women commuting at the station (53 percent men versus 47 percent women). Counters observed risky pedestrian activities at Citrus Avenue, north of Front Street, including crossing the railroad tracks with the gates down and crossing midblock (i.e. not at a crosswalk or signalized intersection) on Citrus Avenue along the tracks. Pedestrians tended to engage in risky behavior more in the morning, when rushing to the outbound train, rather than during the evening when walking back to their parked car. Several pedestrians crossed Citrus Avenue at Edna Place. This intersection has a landscaped median that prevents vehicular cross-traffic and blocks pedestrians from crossing. The counters seldom observed children near the station.

Table 3.3 Covina Metrolink Pedestrian Behavior

Intersection	7–10am					4–8pm				
	Male	Female	Child	Midblock Crossing	Gate Violation	Male	Female	Child	Mid Block Crossing	Gate Violations
Thursday, September 30, 2010										
1 Citrus Avenue s/o Edna Place	46	22	0	5	--	70	44	3	4	--
2 Citrus Avenue n/o Front Street	120	132	0	10	16	269	199	7	35	2
3 Second Avenue s/o Front Street	12	8	0	8	--	21	14	0	4	--
4 Front Street e/o Second Avenue	7	4	0	3	--	14	14	0	3	--
TOTAL	**185**	**166**	**0**	**26**	**16**	**374**	**271**	**10**	**46**	**2**
Saturday, October 1, 2010										
1 Citrus Avenue s/o Edna Place	32	29	0	5	--	40	36	5	6	--
2 Citrus Avenue n/o Front Street	39	35	2	5	1	44	42	5	1	2
3 Second Avenue s/o Front Street	3	2	0	4	--	4	4	0	3	--
4 Front Street e/o Second Avenue	6	5	0	2	--	4	3	0	0	--
TOTAL	**80**	**71**	**2**	**16**	**1**	**92**	**85**	**10**	**10**	**2**
OVERALL TOTAL	265	237	2	42	17	466	356	20	56	4
PERCENT	53%	47%	0%	8%	3%	93%	71%	4%	11%	1%

3.3 On-site Circulation and Queuing Characteristics

The top five causes of traffic congestion and queuing within the station during the drop-off/pick-up operations include operational delay associated with parking maneuvers and pedestrian movements, control delay associated with traffic signal operations, stopped delay associated with headway controlled vehicle (e.g. shuttles), and delay associated with bi-directional traffic operations. As with the existing standard perpendicular parking, the inbound traffic are often impeded by vehicles' parking maneuvers (e.g. back-in/head-out operations). During the rail-gate closure period, a flashing red signal light would be served at the signalized access creating an unavoidable delay to the egress traffic. Vehicular delay is mainly attributable to stopped or slow-moving vehicles with relatively longer headway when compared to regular passenger cars. Other types of delays resulting in traffic congestion and queuing include vehicles travelling in opposite direction along the parking aisles. This delay effect becomes more complicated when pedestrians attempting to cross the bi-directional traffic to reach the boarding platform.

One of the vehicular conflict areas is located at where the parking aisles connect to the signalized access (also known as the first internal intersection area). At this time, bi-directional traffic flow is permitted on both parallel parking aisles. Without timely and appropriate assignment of right-of-ways in this uncontrolled internal intersection area, the inbound traffic flow would sometimes compete with opposite traffic flow. Very often, the inbound traffic flow heading to the boarding platform is disrupted by the impact of platooning of pedestrian travel behavior. It was observed that dispersion of pedestrian platoons typically begins at the southeast quadrant of the signalized access. (Refer to the highlighted area in Figure 3.0) Instead of using the landing apron and contiguous street sidewalk to reach the boarding platform, the majority of pedestrians would encroach into the landscaped and pavement areas (e.g. handicapped parking stalls). This scenario also poses a line-of-sight problem and a potential pedestrian safety issue to inbound traffic flow when perceiving the walking pedestrians and negotiating the curb returns. As indicated earlier, another common conflict point between pedestrians and vehicles can be seen when pedestrians attempting to cross the bi-directional traffic flow on the parking aisles. Unavoidable vehicular conflict scenario includes parking maneuvering situations confronting the opposite direction of traffic flow during the rear back-out operations.

Due to the existing bi-directional traffic flow design at the parking-lot access, the left turn egress traffic queue may sometimes extend into the parking stalls, resulting in blockage of right-turners getting into the dedicated driveway right turn lane.

3.4 Proposed Improvements – Pedestrian Safety Countermeasures

This section presents recommended pedestrian improvements for the project study area, focusing on the Metrolink Station area.

Metrolink Pedestrian Plaza

The Covina Metrolink Station currently does not provide a direct pedestrian pathway between the crosswalk on Citrus Avenue and the north passenger loading platform. The loading platform is separated from the sidewalk by a landscaped area and several disabled parking spaces. Commuters seeking to cross Citrus Avenue at the traffic signal typically walk through the parking aisles in the station parking lot or through the landscaped area. The lack of a defined

walkway between the loading platform and Citrus Avenue leads some pedestrians to cross the road at unmarked mid-block locations, either through the landscaped median or along the railroad tracks.

This study recommends removal of the landscaped area and disabled parking spaces and installation of a pedestrian plaza that would provide direct pedestrian access between the sidewalk and loading platform. The pedestrian plaza would also include signage and other design features that would direct commuters toward the crosswalk at Citrus Avenue / Front Street recommended by this study.

Sidewalk Widening With Curb Ramp at Citrus Avenue / Metrolink Station Driveway

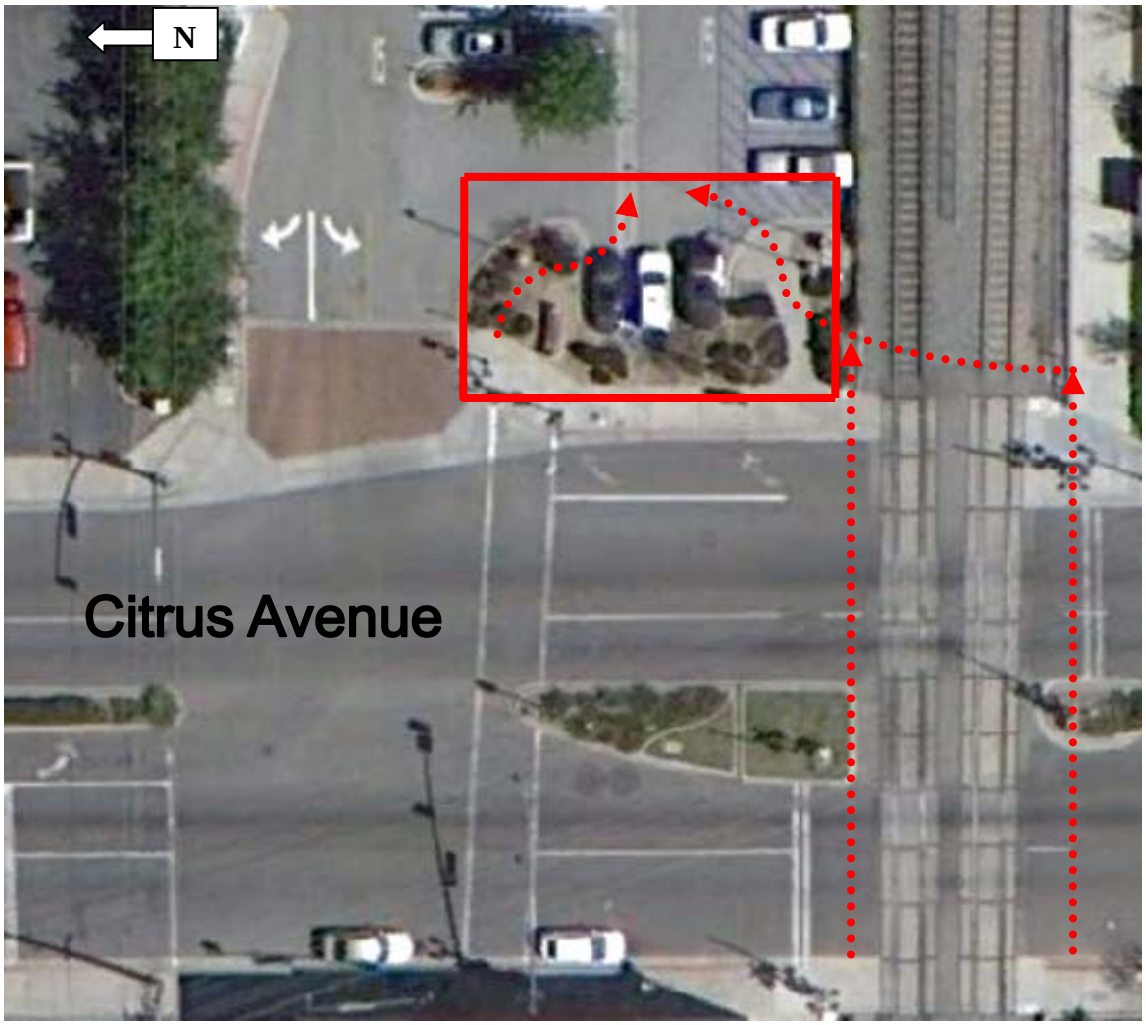
The existing pedestrian cross-walk crossing over Citrus Avenue at the Metrolink Station driveway intersection does not provide curb ramp for wheelchair users and other mobility-impaired users. The sidewalk on the west side of Citrus Avenue contains street lights and traffic signal poles which may impede pedestrian movement

The city would widen the sidewalk and install a curb ramp at the west end of the pedestrian crossing. The curb extension will reduce the crossing distance perpendicular to Citrus Avenue, while also allowing the City to install the curb ramp without having to move the traffic signal.

3.5 Proposed Improvements – Access Management

Throat length is the distance between the street and the end of the driveway inside the land development. Inadequate throat length can lead to situations in which traffic turning into the parking lot queues on the arterial roadway while waiting for vehicles to clear the short driveway.

The following two proposed options, as illustrated in Figure 3.1 and Figure 3.2, share a common characteristic of lengthening the existing throat length:



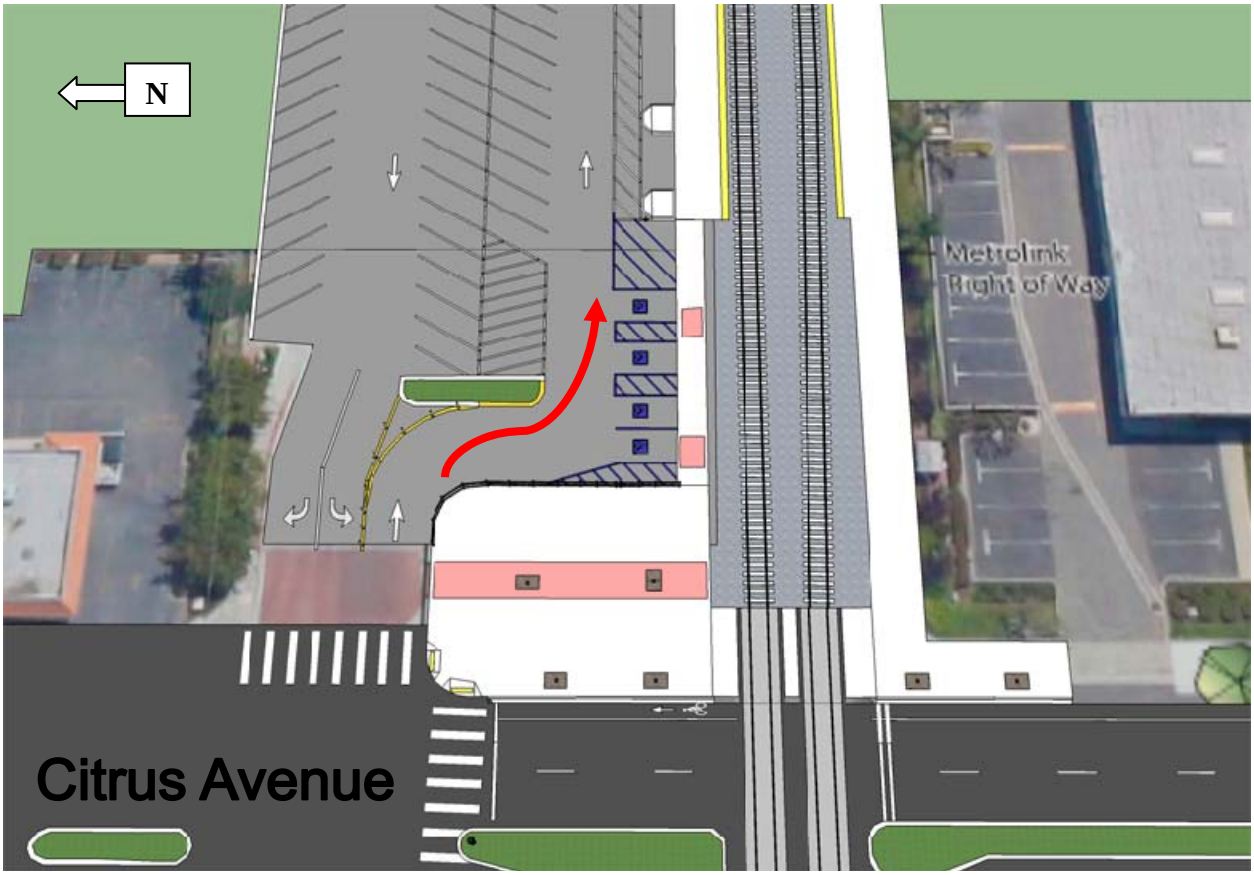
EXISTING CONDITIONS

Legend

Removal of the landscaped area and three general-use parking stalls

Observed jay-walking activities during gate-down period

Figure 3.0 – Metrolink Station Access

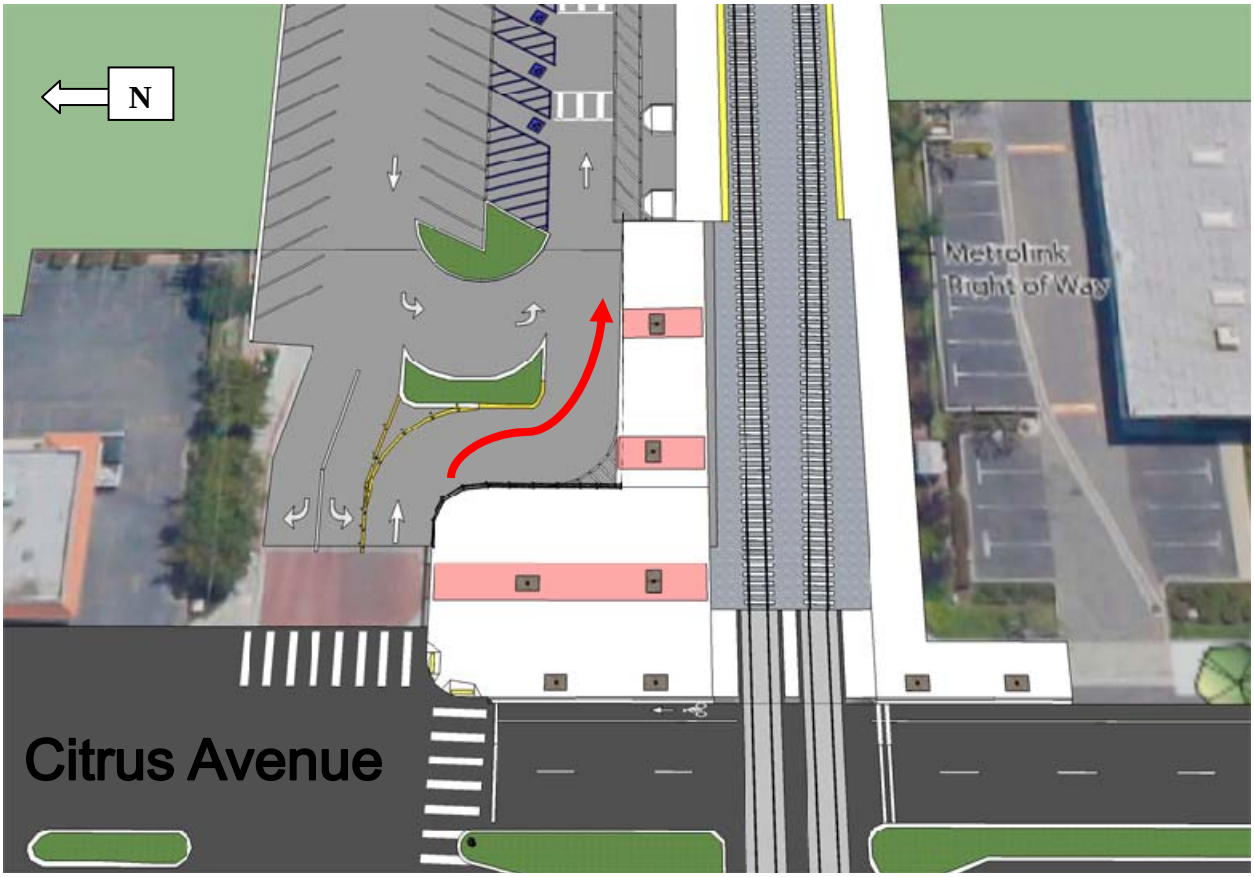


OPTION 1

Legend

Added throat length

Figure 3.1 – Metrolink Station Access Redevelopment: Option 1



OPTION 2

Legend

Added throat length

Figure 3.2 – Metrolink Station Access Redevelopment: Option 2

3.6 Proposed Improvements – Vehicular Circulation

It is imperative to enable the inbound traffic to observe the upcoming traffic queue conditions prior to encroaching the driveway. In principle, all obstacles (e.g. ticket machines, pedestrian hand-rails, shrubs, signage, etc.) within the modified pedestrian plaza must be carefully planned and be subject to vertical line-of-sight restrictions. (e.g. maximum 3.5 feet in height) Specifically, no trees are recommended to be planted surrounding or within the modified curb radii. Access area(s) subject to line-of-sight restrictions are highlighted in the two above noted exhibits.

As for OPTION 1 (Refer to Figure 3.1, and Figure 3.3 and 3.4 below), the following improvements are suggested:

- Construction of a pedestrian plaza and an 8 feet wide accessible path along the frontage of the handicap parking spaces is recommended. To minimize the conflict points or delay associated with parking maneuvers in this sensitive area, three handicap parking stalls need to be removed. Application of front-in parking restrictions is required in the handicap parking stalls between the plaza and boarding platform.
- Construction of pedestrian handrails along the boundary between the proposed plaza and boarding platform of the proposed pedestrian plaza, as indicated, to effectively channelize pedestrian traffic to/from the boarding platform and to provide physical separation between the vehicular and pedestrian traffic.

Figure 3.3 – Pedestrian Plaza Improvement: Option 1

- Per the Downtown Covina Parking Study completed in July 2010, the recorded parking utilization rate is approximately 83% translating to 40 unused parking stalls. Another site observation was made on April 19, 2011 and a maximum of 72% of parking utilization rate was observed. Implementation of this option would require removal of

approximately 20 parking stalls. Given that the existing nearby Metrolink Parking Structure is currently under-utilized (i.e. 63% of 653 parking spaces was used per the Downtown Covina Parking Study completed in July 2010), the impact to the overall on-site parking sufficiency is negligible.

Figure 3.4 – 8 Feet wide Sidewalk Connection: Option 1

- Application of an one-way flow of traffic within the parking lot, as indicated, to avoid conflict points or delays in connection with the bi-directional traffic flow.
- Modification of the existing standard perpendicular parking to angle parking, as indicated, in support of the proposed single direction on-site circulation. Application of angle parking can significantly help reduce the delay and congestion associated with parking maneuvers especially during the peak drop-off period where the majority of drivers are in hurry of parking their vehicles.
- Installation of traffic control devices (i.e. adhesive channelizes or delineators) at the access area, as indicated, to effectively channelize ingress and egress traffic movements. This design element can avoid the right-turners from being blocked by the egress left turners.
- Installation of white-chevron pavement parking zone along the rail-apron frontage, as indicated, to clearly define the pedestrian loading area.
- Removal of conflicting pavement marking (e.g. bi-directional speed limits), and installation of appropriate pavement marking and control signage (e.g. Do not enter or right turn only) in support of the proposed one-way direction circulation.

As for OPTION 2 (Refer to Figure 3.2 and Figure 3.5 and Figure 3.6 below), the following improvements are suggested:

- Construction of a pedestrian plaza and a 24 feet wide accessible path along the frontage of the handicap parking spaces is recommended. To minimize the conflict points or delay associated with parking maneuvers in this sensitive area, three handicap parking stalls need to be removed. The existing handicap parking stalls between the plaza and boarding platform need to be relocated.
- Construction of pedestrian handrails along the boundary of the proposed pedestrian plaza and accessible corridor, as indicated, to effectively channelize pedestrian traffic to/from the boarding platform and to provide physical separation between the vehicular and pedestrian traffic.

Figure 3.5 – Pedestrian Plaza Expansion: Option 2

Figure 3.6 – 24 feet wide Sidewalk Connection: Option 2

- Per the Downtown Covina Parking Study completed in July 2010, the recorded parking utilization rate is approximately 83% translating to 40 unused parking stalls. Another site observation was made during the peak periods on April 19, 2011, and a maximum 72% of parking utilization rate was observed. Implementation of this option would require removal of approximately 20 parking stalls. Given that the existing nearby Metrolink Parking Structure is currently under-utilized (i.e. 63% of 653 parking spaces was used per the Downtown Covina Parking Study), the impact to the overall on-site parking sufficiency is negligible.
- Application of an one-way flow of traffic within the parking lot, as indicated, to avoid conflict points or delays in connection with the bi-directional traffic flow.
- Modification of the existing standard perpendicular parking to angle parking, as indicated, in support of the proposed single direction circulation. Application of angle parking can significantly help reduce the delay and congestion associated with parking maneuvers especially during the peak drop-off period where the majority of drivers are in hurry of parking their vehicles.
- Installation of traffic control devices (i.e. adhesive channelizes or delineators) at the access area, as indicated, to effectively channelize ingress and egress traffic movements. This design element can avoid the right-turners from being blocked by the egress left turners.
- Installation of white-chevron pavement parking zone along the rail-apron frontage, as indicated, to clearly define the pedestrian loading area.
- Removal of conflicting pavement marking (e.g. bi-directional speed limits), and installation of appropriate pavement marking and control signage (e.g. Do not enter or right turn only) in support of the proposed one-way direction circulation.
- Reconstruction of raised medians including construction of a yield-control intersection to enable U-Turn capability, as indicated in Figure 3.7.

Final Recommended Parking Lot Scheme

In review of the above two parking lot schemes, the City recommends adoption of Option 1 as the most preferred design scheme. The reason is mainly due to its direct accessibility design between the disabled parking stalls and proposed contiguous sidewalk. (Refer to Figure 3.7) It is determined that Option 1 presents a shorter and safer accessible path for disabled individuals to reach the station apron. Note that adoption of Option 1 would eliminate the on-site U-turn capability as proposed in Option 2 design scheme.

Figure 3.7 below illustrates the proposed two parking-lot alternatives of the Metrolink Station:

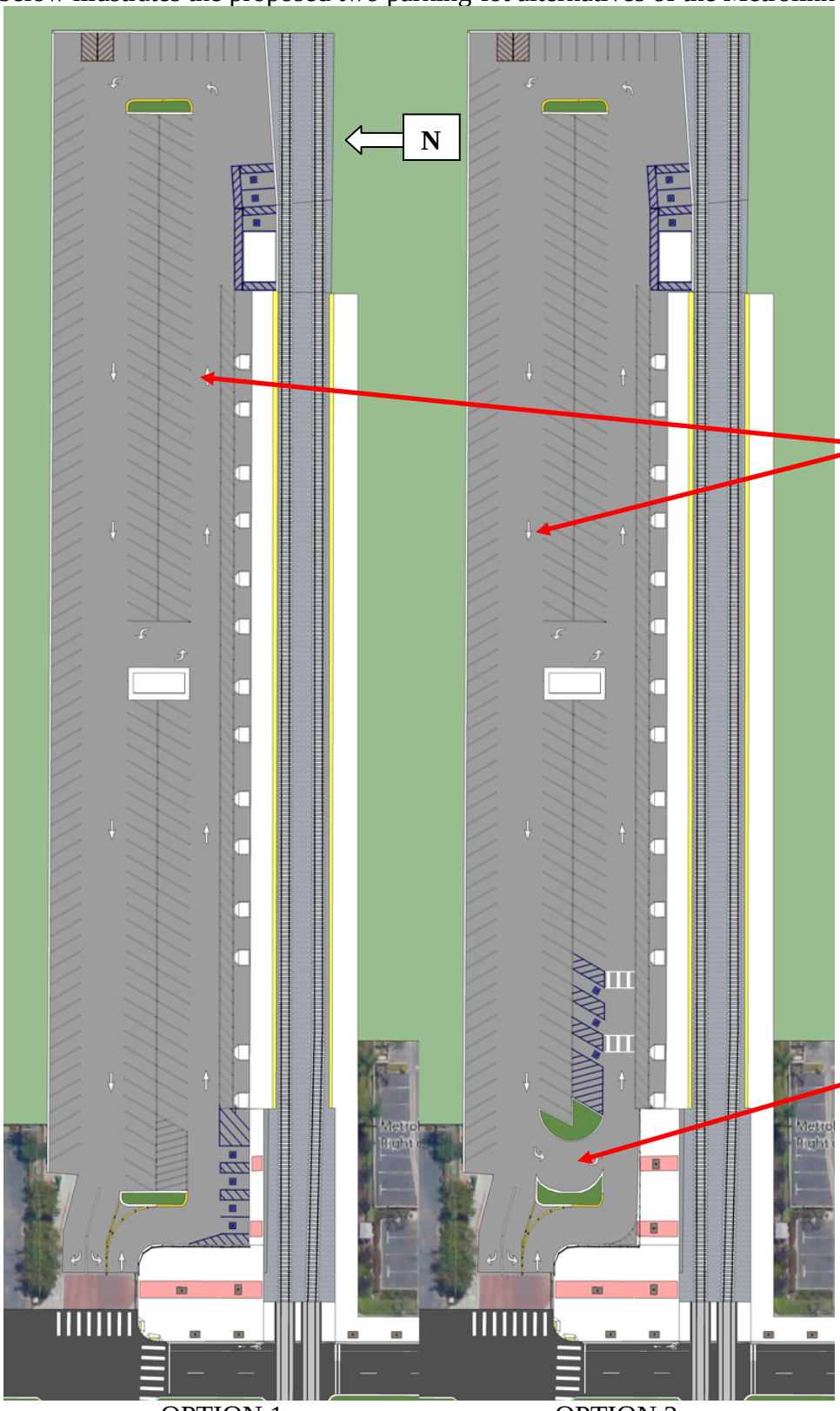


Figure 3.7 – Redesigned Parking Lot Layouts

4.0 Downtown Covina (Second subarea)

4.1 Existing Infrastructure

All streets within Downtown Covina have ten-foot sidewalks with a street-furniture zone. All marked crosswalks along Citrus Avenue have red colored and textured pavers. The signalized intersections along Citrus Avenue have push-button activated audible countdown signals for pedestrians and perpendicular curb cuts at each corner. Midblock crosswalks have no traffic control other than the crosswalk markings. Existing crosswalk spacing along Citrus Avenue provides opportunities to cross approximately every 200 feet. Citrus Avenue has head-in, back-out angled parking on both sides of the street.

Second Avenue has no mid-block crosswalks, and intersection spacing ranges from 300 to 400 feet. The street provides two travel lanes in each direction, a center left-turn lane, and parallel curbside parking. Badillo Street and San Bernardino Road have curb-to-curb cross-sections of around 50 feet. The streets have intersection spacing exceeding 600 feet and no mid-block crosswalks.

Side access streets such as Third Avenue, Orange/School Street, and Cottage Drive/Italia Street have one travel lane in each direction. These streets all feature parallel curbside parking. They do not provide mid-block crosswalks, but are narrow enough for most pedestrians to cross safely at the middle of the block.

ADVANTEC conducted field reviews of each subarea to identify specific issues related to vehicular traffic flow. For all study intersections, the line-of-sight for all directions was observed to be adequate. It was observed that the land use mix and the variety of travel modes (vehicles, bicycles, pedestrians and Metrolink) tend to produce various conflict points. Numerous closely spaced traffic signals exist on Citrus Avenue in the Downtown area, further exacerbating these conditions. From field observations, ADVANTEC identified the following issues:

- There is limited right-of-way available to separate conflicts or modes due to the parking on Citrus Avenue in the Downtown subarea. This limitation restricts the City's ability to add dedicated left-turn lanes along Citrus Avenue resulting in severe queuing during the peak hours.

- The volume of traffic on Citrus Avenue creates a "physical barrier" for pedestrians and bicyclists wishing to cross the street, especially during peak hours. There are concerns at Downtown intersection locations where pedestrians frequently cross. One such location is the intersection of Citrus Avenue and College Street. Given its cross-section (two through lanes with angled parking) and right-of-way constraints, a median is not available to provide a pedestrian refuge, forcing pedestrians to cross four lane width of

Citrus Avenue at once. This, coupled with the significant traffic volumes along Citrus Avenue, creates a difficult environment for pedestrians and bicyclists to negotiate, especially during peak hours.

- Metrolink operates six commuter trains during AM and PM peak hours each on tracks located north of Downtown. These operations affect the traffic flow and operations on Citrus Avenue between Edna Place and San Bernardino Road during peak hours resulting in queuing and delay to drivers.

4.2 Existing Bicycle Facilities

This section describes existing cyclist facilities, and evaluates their safety and utility.

Bikeway Definitions

The California Department of Transportation (Caltrans) classifies three types of bikeways in their Highway Design Manual.

- **Class I Bikeway** – A Class I Bikeway or "bike path" provides for two-way bicycle travel (as well as travel for other non-motorized users) on a paved right-of-way completely separated from street vehicle traffic. Class I bikeways must be a minimum of 8 feet in width, although wider widths are recommended particularly where heavy use or a mix of users are expected.
- **Class II Bikeway** - A Class II Bikeway or "bike lane" provides for a striped and stenciled lane for one-way travel on a street or highway. Bike lanes may be striped next to the curb where no parking is present, or to the left of the parking lane where on-street parking exists. Bike lanes must be a minimum of 5' in width next to a curb or parking lane, although 6' is preferred for additional separation and visibility.
- **Class III Bikeway** - A Class III Bikeway or "bike route" provides for shared use with motor vehicle traffic and is identified only by signage. On lower traffic streets bicyclists can generally adequately share a standard width motor vehicle lane; on higher traffic roadways a wider outside lane width of 14' is recommended for Class III designation.

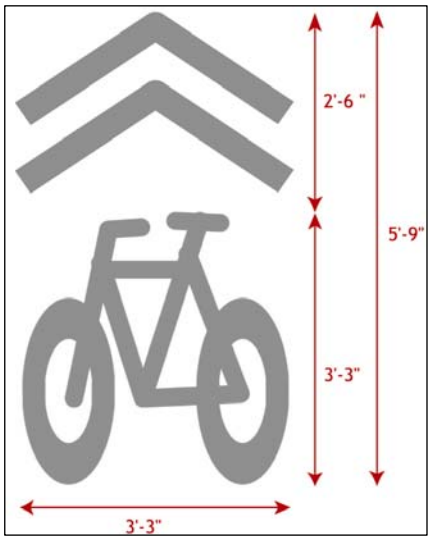


Figure 4.1

Caltrans Approved Shared Roadway Bicycle Marking Stencil

Cyclists may travel throughout the City of Covina's roadway network regardless of whether bikeway facilities are present on a given street. A Class II or III bikeway designation does not imply that cyclists may only traverse these roadways. Rather, a designated network of Class II and III bikeways indicates that certain roadways may be preferable routes based on their characteristics, destinations, and directness of travel. Bicycle infrastructure, such as pavement markings and signage, also reminds motorists of bicyclists' presence and delineates exclusive or shared space. Increasing mutual awareness can reduce auto-bicycle conflict and improve safety.

Caltrans has approved the use of the Shared Roadway Bicycle Marking (also referred to as the "sharrow") **(Shown in Figure 4.1)** for use on Class III bike routes to enhance visibility and safety. The sharrow marking may only be used on streets with on-street parallel parking, with the markings placed a minimum of 11 feet from the curb to guide cyclists away from opening car doors. Caltrans recommends that sharrows be placed at each intersection and every 250 feet afterward, although more frequent spacing may be warranted in some situations. **Figure 4.2** provides graphic descriptions of each bikeway type.

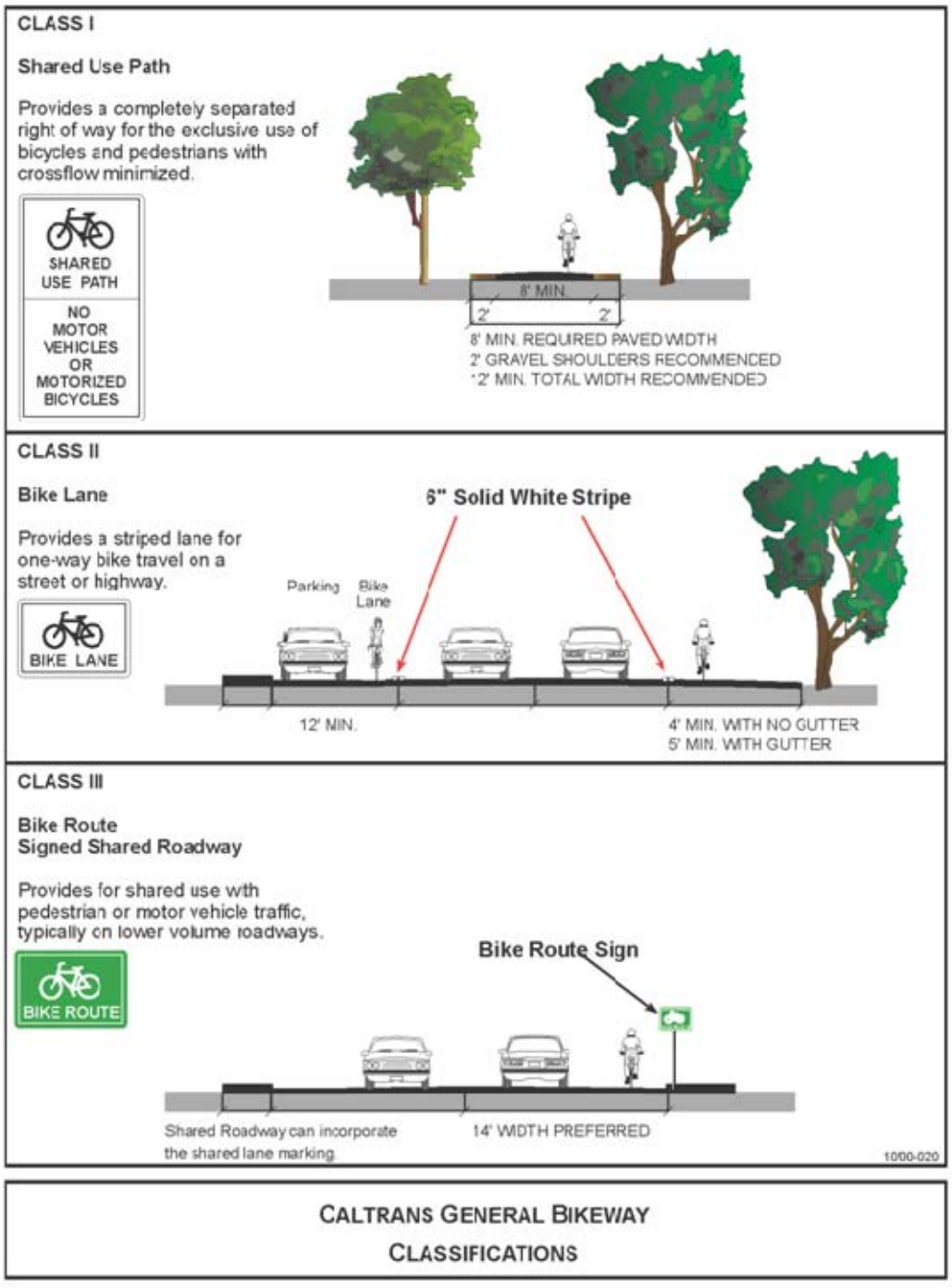


Figure 4.2 Bikeway Facility Types

4.3 Existing Bikeways in Covina

There are no existing bicycle lanes or bike paths within the study area. There is one signed Class III bicycle route on Badillo Street, but the facility does not provide additional indicators for bicycle traffic (e.g. sharrows markings and bike lanes).[1]

Outside the study area, there is a Class II bike lane located along Glendora Avenue, between Arrow Highway and Covina Boulevard. This Class II bike lane is about 1.5 miles east of Citrus Avenue.[2] There is also a signed Class III Bike Route that runs through the Los Angeles County unincorporated area half a mile west of Citrus Avenue on Hollenbeck Ave, between the Metrolink railroad tracks and Covina Blvd.[3]

Bicycle Parking and Services

The Covina Metrolink Station provides unsheltered bike rack parking for 18 bicycles and an unattended, automated-entry Bikestation facility with parking for 36 bicycles. The Bikestation is in the center of the parking lot, and is depicted in Figure 4.3. Users must register and pay a fee to park inside. Although overnight storage is available, the Bikestation primarily serves train commuters parking their bikes during the day. The Bikestation currently does not provide bicycle services, such as repair or equipment for purchase, although the facility design can accommodate additions that may offer such services.[4]

Figure 4.3 Covina Metrolink Bike station

In the 2011 Call for Projects, LA Metro awarded the City of Covina $827,437to construct bicycle lanes and to install a modular bicycle parking facility in Downtown Covina. The City has installed over 20 additional bicycle racks in the Downtown area using Prop A funds.

Within Downtown Covina, there is one bike rack along Citrus Avenue next to a bike shop, near the Citrus Avenue / Orange Street intersection. There are also bike racks inside the City Hall courtyard / fountain area, and outside the Covina Public Library. The bike shop sells bicycles and accessories, and provides repair services.

[1] City of Covina Town Center Specific Plan. (Nov. 2004) p. III-12 (71/208).
[2] City of Covina Bikeway Network Study (June 2010) p 4.
[3] Z:\Projects\Active\09-74 LA County BMP\Deliverables\Existing Conditions\Existing Only Maps Map1-3 Eastern3.pdf. See also the LA County Bike Map produced by Metro.
[4] http://www.bikestation.org/covinaca/index.asp

4.4 Count Results for Downtown Covina Subarea

Table 4.1 presents the pedestrian and bicyclist counts at the peak hour of activity for each intersection in Downtown Covina. Pedestrian activity is highest around the Citrus Avenue / College Street intersection and decreases in either direction. Citrus Avenue has the highest concentration of shopping and dining opportunities, and the pedestrian activity follows these opportunities. Bicycling did not appear to follow the same concentration as walking in the Downtown area. The relatively low numbers of cyclists does not provide strong indications about behavioral trends. The midday peak hour tended to have more activity than the evening peak hour. Pedestrian and cyclist activity was comparable between Thursday and Saturday.

Table 4.1 Downtown Covina Peak Hour Counts

Intersection	11:00 am-1:00 pm			4:00-8:00 pm		
	Peds	Bikes	Total	Peds	Bikes	Total
Thursday, September 30, 2010						
A Citrus Avenue / Badillo Street	78	6	84	62	7	69
B Citrus Avenue / College Street	195	8	203	187	5	192
C Citrus Avenue / Italia Street	125	3	128	135	10	145
D Citrus Avenue / School Street	50	7	57	71	9	80
E Citrus Avenue / San Bernardino Road	30	8	38	53	7	60
Saturday, October 1, 2010						
A Citrus Avenue / Badillo Street	55	17	72	83	10	93
B Citrus Avenue / College Street	287	5	292	155	8	163
C Citrus Avenue / Italia Street	174	25	199	138	21	159
D Citrus Avenue / School Street	89	18	107	68	3	71
E Citrus Avenue / San Bernardino Road	32	9	41	51	4	55

**Peak-hour values represent the sum of the four consecutive 15-minute intervals, within the total count period, recording the highest volumes of cyclists or pedestrians. This methodology creates a buffer zone for the "peak-hour" rate, which may vary within the two-hour period.*

Table 4.2 presents detailed observations about cyclist behavior Downtown. Only about a quarter of cyclists rode with helmets. Counters observed that about half (50 percent) of cyclists rode on the sidewalk during the midday; this number rose to three-quarters (75 percent) during the evening. Covina's current cyclists are overwhelmingly male as male cyclists represented between 70 to 80 percent of the observations.

Table 4.2 Downtown Covina Cyclist Behavior

Intersection	11am-1pm				4-8pm			
	Total Cyclists	Wrong-way Riding	No Helmet	Sidewalk Riding	Total Cyclists	Wrong-way Riding	No Helmet	Sidewalk Riding
Thursday, September 30, 2010								
A Citrus Avenue / Badillo Street	15	4	9	8	32	6	27	28
B Citrus Avenue / College Street	16	3	11	10	27	9	26	26
C Citrus Avenue / Italia Street	13	2	9	5	28	4	24	20
D Citrus Avenue / School Street	19	6	16	9	25	1	19	16
E Citrus Avenue / San Bernardino Road	16	0	15	11	36	0	30	25
TOTAL	**79**	**15**	**60**	**43**	**148**	**20**	**126**	**115**
%	**100%**	**19%**	**76%**	**54%**	**100%**	**14%**	**85%**	**78%**
Saturday, October 1, 2010								
A Citrus Avenue / Badillo Street	24	3	15	9	39	15	31	26
B Citrus Avenue / College Street	8	2	6	5	30	1	21	18
C Citrus Avenue / Italia Street	27	0	24	10	38	12	35	31
D Citrus Avenue / School Street	27	2	14	8	36	6	27	19
E Citrus Avenue / San Bernardino Road	10	0	10	6	31	0	26	28
TOTAL	**96**	**7**	**69**	**38**	**174**	**34**	**140**	**122**
%	**100%**	**7%**	**72%**	**40%**	**100%**	**20%**	**80%**	**70%**

4.5 Cyclist and Pedestrian Involved Accidents

There were four pedestrian-involved collisions and nine cyclist-involved collisions in the study area over the past five years (2004 - 2009, see **Table 4.3**). The police reports cited the pedestrian as being at fault two times; one incident was the driver's fault, and the remaining two reports did not cite the person at fault. Among the nine cyclist collisions, there were no severe injuries. Many cyclist-involved collisions related in some manner to the cyclist's action, e.g. riding on the wrong side of the road. **Figure 4.4** illustrates the collision locations within the study area.

Table 4.3 Summary of Accidents Involving Pedestrians and Bicyclists

Pedestrians		Cyclists	
Total collisions	4	**Total collisions**	9
Severity	1 moderate	**Severity**	2 complaints of pain
	3 complaints of pain		5 visible injury (non-severe)
			1 no injury
Violation	2 pedestrian violation	**Violation**	6 wrong side of the road
			1 improper turning
	2 unknown		1 auto right-of-way
			1 traffic signal and signs
Pedestrian Action	2 crossing not in sidewalk	**Type of Collision**	1 sideswipe
	1 crossing in sidewalk at intersection		8 broadside
	1 not in road		
Lighting	2 daytime	**Lighting**	7 daytime
	2 nighttime with streetlights		1 nighttime with streetlights
Alcohol	3 involved	**Alcohol**	N/A

Source: California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS)

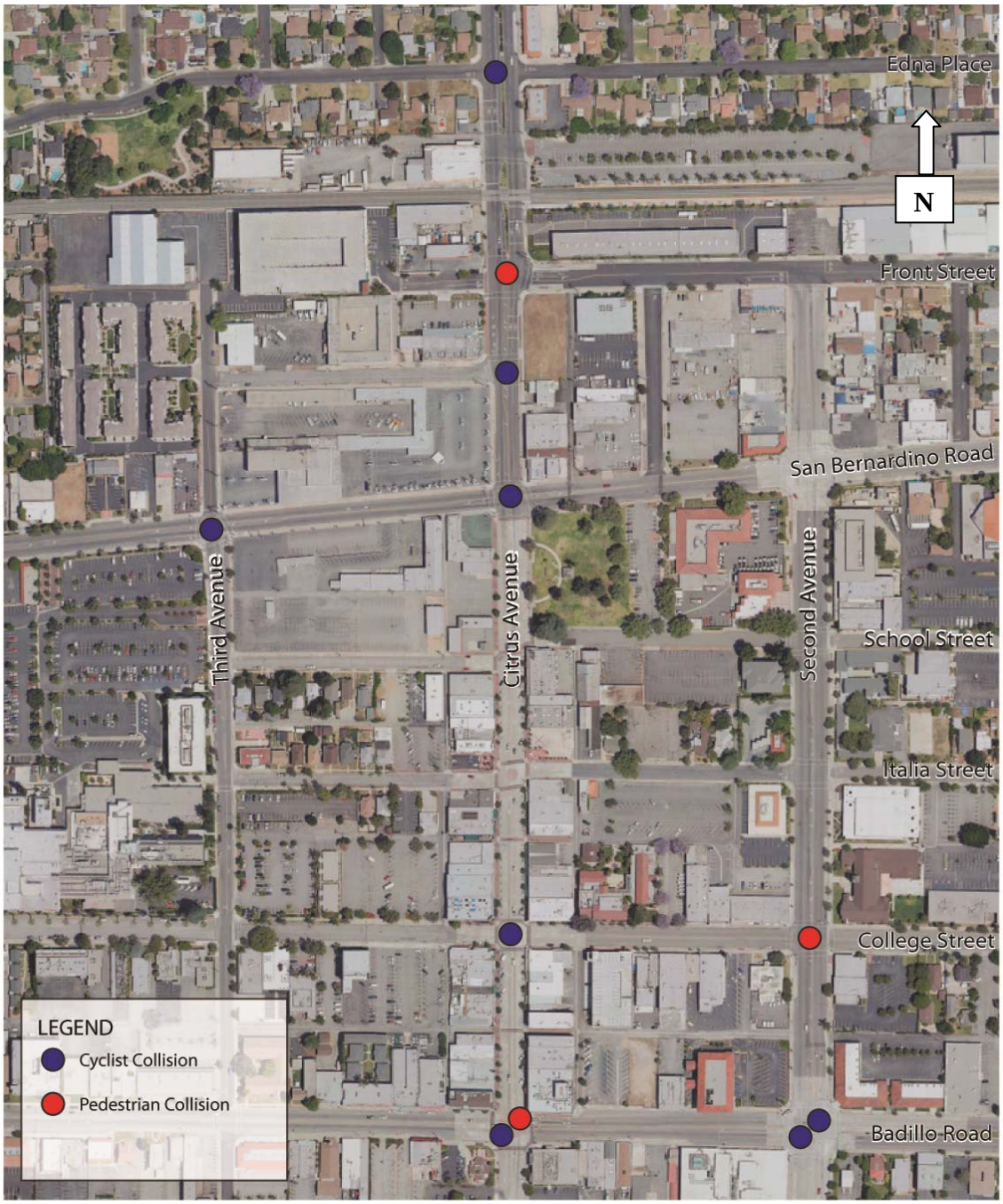


Figure 4.4 Locations of Accidents Involving Pedestrians and Bicyclists

4.6 Vehicular Accidents

From discussions with the City staff, no accidents involving motor vehicles have been reported in the recent 12-month period (in accordance to accident analysis criteria defined in the (California Manual of Uniform Traffic Control Devices) within the study area.

4.7 Opportunities and Constraints

This section provides an evaluation of existing bicycle and pedestrian facilities by utilizing all existing data and identifies opportunities and constraints for future improvements.

The analysis provides a comprehensive approach to identifying improvements for enhancing, expanding, and creating walking and bicycling opportunities throughout the study area. The purpose is to define a system for creating a transportation network that connects neighborhoods and amenities to allow residents and visitors, of all ages and abilities, ample choices for moving about the City via variety of travel modes.

Opportunities - Feasible Improvement Options

- *The City's network of grid streets in the center of town will continue to provide convenient access to many destinations.*
- *Streets with low traffic volume will continue to provide comfort for most bicyclists.*
- *The City of Covina will continue to actively seek federal, state, regional and other funding for bicyclist and pedestrian projects.*
- *Multi-modal access will be provided at the Metrolink Station and the proposed Bus Rapid Transit stops at the intersection of Badillo Street and 2nd Avenue.*
- *Improved inter-county connections will result from the Countywide Bicycle and Pedestrian Plan.*
- *The installation of warning and way-finding signs for pedestrians and bicyclists as planned by City.*
- *New pedestrian and bicyclist facilities will be provided as a component of future development and street capital improvements.*
- *Safety in the Downtown pedestrian district will be further enhanced with pedestrian-activated warning lights at the intersection of Citrus Avenue and College Street and also at the mid-block pedestrian crossings and other unsignalized intersections.*
- *Sidewalks to be widened and curb ramps upgraded over time by the City and developers.*
- *Pedestrian crossing enhancements at Citrus Avenue and Metrolink Station at-grade railroad crossing.*
- *Wayfinding and directional signing for pedestrians and bicyclists.*

- *New pedestrian and bicycle facilities are recognized as major component of future development by City.*
- *The installation of dynamic signage for multi modal access locations (Metrolink, BRT, Park & Ride etc.).*

Constraints

- *Insufficient traffic signage throughout the City.*
- *Limited Right-of-Way within the Downtown subarea.*
- *Lack of warning signs at the Metrolink station prohibiting commuters from jaywalking.*
- *Right-of-way for Class II bike lanes through Downtown is limited.*
- *Existing street geometrics in some locations cannot accommodate bicycle lanes.*
- *Few bicycle parking and long-term bicycle storage facilities are provided at destinations throughout town.*
- *Sidewalk gaps and obstructions and non-ADA compliant curbs exist.*
- *Physical barriers to cyclists and pedestrians exist, such as the at-grade crossing at the Metrolink station.*
- *High volume roadways need pedestrian crossing enhancements.*
- *On-going maintenance needs of surfaces, markings, and vegetation*

4.8 Specific/General Plan

The General Plan update was adopted by the City in 2000, although the Housing Element was last updated in 1994. The General Plan covers the ten-square-mile Planning Area of Covina. The Plan contains chapters addressing land use, circulation, housing, natural resources and open space, safety, and noise, and establishes the city's goals and accompanying policy direction for each of these issue areas and related topics. The General Plan indicates that the City is mostly built out, and in future years the focus will be on redevelopment, a small amount of new development, and future needs for public services and public facilities. This information was utilized to arrive at an ambient growth factor for estimating traffic for future years in this study.

Through this study, the City aims to have a transportation system that preserves the low-density character of the community and furthers the unique character of the Downtown area.

City of Covina Town Center Specific Plan

The most recent study concerning this project study area is the Covina Town Center Specific Plan completed in November 2004. The first vision statement in this document is that Downtown Covina will be "a place where people can live, work, shop, and play without needing their cars."

The plan contains Goals, Policies, and Objectives[5] that relate to improving bicycling and walking facilities within this project study area:

- **Land Use Goal 3**: "Maintenance of the Specific Plan Area as a traditional Downtown with a small-town ambiance and pedestrian access."
- **Land Use Policy 16**: "The City shall … establish pedestrian routes, improved pedestrian alleyways, and other pedestrian features to increase walkability and access in the Downtown area among major destination points."
- **Land Use Policy 17**: "The City shall encourage and accommodate orientation of proposed buildings to pedestrian ways."
- **Circulation Goal 1**: "A balanced circulation system that offers multiple travel options so that people can live, work, shop, and play without relying on private vehicles."
- **Circulation Policy 1**: "The City shall develop a Downtown transportation improvements program funded by contributions from developers to … increase pedestrian access and amenities between major destination points"
- **Circulation Policy 2:** "The City shall give credit in its assessment of impact fees, for … pedestrian amenities, bicycle facilities, and other elements that reduce the trip generation or that accommodate or encourage alternative modes of travel."
- **Circulation Policy 3**: "The City shall develop a bicycle route in the Town Center Specific Plan Area that links with other City bicycle routes and links to public transit."
- **Circulation Policy 6**: "The City shall require the provision of adequate pedestrian and bicycle access for new development projects through the plan review process."
- **Circulation Policy 9**: "The City shall consider street reconfigurations and/or the establishment of pedestrian improvements at the intersection of Third Avenue and Geneva Street, Second Avenue and Front Street, and First Avenue and Front Street.
- **Circulation Objective 1**: "Balancing of the street system to serve all users well regardless of their mode of travel.
- **Circulation Objective 2**: "Stronger pedestrian and bicycle linkages through the Downtown."
- **Circulation Objective 5**: "Management of parking to encourage alternative travel modes."

Streetscape Revitalization Program

The Town Center Specific Plan calls for extending the current Streetscape Revitalization Program northward along Citrus Avenue towards the Metrolink Station (p. I-22) and also onto Second Avenue (p. I-22). The Streetscape Revitalization Program follows pedestrian improvement "principles", including wide continuous pathways; enhanced intersections; mid-block crossings; and overhead weather protection (p. I-30). The Program uses red brick treatment for sidewalks and crosswalks, common-themed street furniture, and old-fashioned street lights (p. III-24).

The Specific Plan calls for additional pedestrian improvements at San Bernardino Road / Citrus Avenue, San Bernardino Road / Third Avenue, Citrus Avenue /School Street, Citrus Avenue /

[5] City of Covina. (Nov. 2004) *Town Center Specific Plan.* Chapter 1 Executive Summary, pp. I-14 – I-16, I-21 – I-22.

Italia Street, and other intersections (p. I-24). Some possible improvements to explore include removing some parking spaces on Citrus Avenue to create bulb-outs for facilitating pedestrian crossing (p. V-17). However, this improvement may conflict with another Specific Plan recommendation to explore removing diagonal parking on Citrus Avenue to provide additional automobile capacity (Circulation Policy 8, p. I-21). The Specific Plan also calls for pedestrian plazas on Front Street at First and Second Avenue, and Geneva Place and Third Avenue (p. V-22).

Network Improvements

The Town Center Specific Plan provides direction for improving the Downtown connectivity for pedestrians and cyclists. The Specific Plan calls for connecting major Downtown activity centers, like the Citrus Valley Medical Center, City offices, commercial retail core, Metrolink Station, Covina Library, and professional office complexes (p. III-46). For instance, the plan calls for improving the streetscape on Second Avenue by possibly adding bike lanes (p. I-22). It also calls for a bike route on Badillo Street (III-12) and extending the pedestrian alleyway between Italia Street and College Street to span Second and Third Avenue (p. V-22)

Land Use

The Town Center Specific Plan covers current and future zoning for the study area. It calls for mixed-use zoning and transition areas, and increased density in the Downtown.

Vacant Uses

As outlined in the Town Center Specific Plan, much of the area in the northern Downtown is underdeveloped. Some larger, underutilized parcels are potentially available for future redevelopment activities Downtown. The several properties that comprise the Chevrolet and Ford auto dealerships north and south of San Bernardino and west of Citrus Avenue represent the largest contiguous and can easily accommodate new developments in future.

4.9 Proposed Improvements – Pedestrian Safety Countermeasures

Sidewalk Widening on Citrus Avenue, Between School Street and San Bernardino Road

Most of Downtown Covina provides a consistent streetscape with a 55-foot curb-to-curb width and street-fronting commercial buildings. The Downtown streetscape changes dramatically north of School Street as northbound Citrus Avenue widens to two lanes, resulting in a 70-foot curb-to-curb width. As Citrus Avenue progresses north of San Bernardino Road, the streetscape continues to widen as the streets are fronted by parking lots rather than buildings. Citrus Avenue is four lanes with a center turn lane or median when it reaches the Metrolink Station.

In order to connect Downtown to the Metrolink Station, this study recommends the City provide a more consistent, pedestrian-oriented streetscape. Beginning from north of School Street and progressing to the Metrolink Station, the City would reduce the street widths, using the space to widen the sidewalk. The City would also enact policies to encourage development with street-fronting buildings, rather than parking lots. New development would consolidate or share parking in common lots or parking structures, which will encourage pedestrians to circulate through the corridor, rather than parking immediately adjacent to their destination.

Curb Extension / Bulb-outs at CrossWalk Locations

The City would construct bulb-outs at mid-block crosswalk locations (Refer to Note A of Figure 4.12 and 4.13) in Downtown Covina to improve pedestrian visibility. At this time, the mid-block crosswalks consist of transverse line striping and textured concrete, and these treatments guide pedestrians on where to cross. Introduction of bulb-outs at these localized areas will not only shorten the crossing distance, but will also enable pedestrians to walk closer to the vehicular travel way before being seen by oncoming traffic.

Pedestrian Countdown Timers

The city would upgrade all existing pedestrian signal heads within the study area to countdown signals, which indicate the time remaining for pedestrians to cross. Countdown timers reduce the number of pedestrians crossing late in the cycle, which reduces the risk for pedestrians remaining in the crosswalk when opposing traffic begins to enter the intersection. Wide intersections, especially along Second Avenue and along Badillo Street, would receive the priority for installing this improvement.

Bulb-Outs

Second Avenue currently has an 80-foot cross-section width, with parking on both sides, two travel lanes in both directions, and a center left-turn lane. This wide cross section is challenging for crossing pedestrians due to the extended exposure to oncoming traffic. At an average walking speed of 3.5 ft/s, it would take the pedestrian 23 seconds to cross. For slower moving pedestrians like children and elderly persons walking at 2.8 ft/s, it would take them nearly 30 seconds to cross.

The *Bikeway Network Report* recommends installing Class II Bike Lanes, which will act as a traffic calming measure, on both sides of Second Avenue. This study also recommends installing high-visibility crosswalks, and bulb-outs at Second Avenue's intersections with Badillo Street, College Street, Italia Street, School Street, and San Bernardino Road. The bulb-outs can incorporate into the bus stops at Badillo Street and College Street to create bus shelters.

4.10 Proposed Improvements – Bicycle Safety Countermeasures

The following section presents recommendations for improving the bicycling and walking environment in and around the Downtown Covina and the Covina Metrolink Station.

Bicycle Improvements

Most recommended bicycle improvements follow the *Covina Bike Network Study*, which proposes Class II bike lanes and Class III bike routes / sharrows through the project study area. This report proposes additional improvements to build on the Network Study recommendations.

Bikeway Network Study

In the 2011 Call for Projects, LA Metro awarded the City of Covina $827,437 to construct 8.0 miles of Class II Bicycle Lanes along major arterials with connections to commuter rail and BRT facilities, and to install a modular bicycle parking facility in Downtown Covina. The total project cost (escalated) will be $1,034,296 in fiscal year 2015-2016 and fiscal year 2016-2017. The City has already installed over 20 additional bicycle racks in the Downtown area. (Refer to Figure 4.3b)

As presented in an earlier section, the *Covina Bikeway Network Study* recommends installing bicycle facilities on the following facilities.

Class II Bike Lanes

- Citrus Avenue north of Edna Place
- Citrus Avenue south of Badillo Street
- Front Street from Citrus Avenue to Second Avenue
- Second Avenue south of Front Street
- Badillo Street through the project study area

Class III Bike Routes / Sharrows

- Fourth Avenue south of San Bernardino Road
- San Bernardino Road through the project study area
- Edna Place through the project study area

Bike Parking

This study proposes to install bicycle parking throughout Downtown. Bicycle parking would be sited in prominent places with existing bicycling demand such as coffee shops, restaurants, and book stores. Providing bicycle racks encourages people to bike Downtown and improves security for parked bicycles from theft and vandalism. Sidewalk bike racks would be installed within the street furnishing zone and oriented so parked bicycles do not interfere with pedestrian circulation, and are set back sufficiently from the curb to not risk being hit by parking cars.

Another option for consolidated bike parking is to remove one or more on-street curb parking spaces to install a bike corral. A bike corral can accommodate five to ten times the number of bicycles than autos in the same space, which greatly increases the parking capacity. On-street bike parking signals that cyclists are welcome and considered a priority within Downtown. Depending on the rack style and placement, bike parking can help create a public space, e.g. a corner plaza.

Figure 4.5 Recently installed bicycle rack in Covina Downtown

Class III Bike Routes / Sharrows & Signage

The local roads connecting to the Citrus Avenue corridor provide additional east-west connectivity between several parks, the hospital, and schools. Designating Front, School, Italia, College, and Center Streets as Class III bike routes and installing "Sharrow" markings (also known as "Shared Roadway Bicycle Markings) and/or wayfinding signage will encourage cyclists to bike Downtown. Sharrows and/or signage would also assist casual cyclists to avoid high-traffic roads like San Bernardino Road and Badillo Street, and connect to proposed bike lane facilities on Second Avenue, Badillo Street, and Citrus Avenue.

4.11 Proposed Improvements – Traffic and Parking Countermeasures

Parking Occupancy/Availability to Estimate for Future Traffic

ADVANTEC completed a Parking Study for Covina Downtown earlier in 2010 which included conducting an inventory of on-street and parking lots/structures within the Downtown Covina area including Shoppers Lane, conducted in November 2009. A total of 4,077 parking spaces were identified in the inventory, which included on-street spaces and spaces within the parking lots and structures. Additionally, the on-street supply inventory that has no marking or striping and unmarked parking stalls were estimated. Based on the analysis, following were the key findings of the study:

- The Downtown subarea, in its entirety, was observed to have sufficient parking capacity (approximately 2,600 parking spaces) to accommodate typical parking demand (estimated peak at 59%).
- City-owned public parking lots within the Downtown subarea, which include Lots 1 through 10 and the Civic Center parking structure, were observed to have an overall peak parking utilization of 52% based on estimated parking supply of approximately 675 parking spaces.

Based on these findings, the parking supply within the Downtown area is adequate to meet additional parking demand due to future growth.

Increase in Metrolink Parking Structure Use

Following observations were made by project team for the Metrolink parking facilities:

- Surface parking lot adjacent to the station is effectively "at-capacity" throughout the day.
- Parking structure has ample capacity to accommodate future increase of commuters at the station.
- Parking structure is only utilized for long-term use (i.e., four hours or more)

With an increase in regional population in the coming years, ridership on the Metrolink lines running through Covina is expected to increase. This may bring an dramatic increase in the pedestrian and bicycle traffic at the Metrolink Station and the existing bicycle and parking facilities maybe inadequate. This study provides an approach to improve the bicycle and pedestrian facilities to accommodate the expected increase in pedestrian and bicycle traffic utilizing the Metrolink facilities.

2nd Avenue as Alternate North-South Thoroughfare

A secondary objective of this study is to identify measures to promote multi-modal transportation efficiency and improve safety by eliminating both existing and projected deficiencies in the City's transportation system. Currently, Citrus Avenue serves as a major north-south route through the Downtown area. However, the number of travel lanes on Citrus Avenue between San Bernardino Road and Badillo Street drops from two lanes in each direction to one lane in each direction which causes disruption to traffic flow in the Downtown area during the peak hours.

2nd Avenue is a north-south street located just to the east of Citrus Avenue and has two travel lanes in each direction and low traffic volumes. Due to the available right-of-way, 2nd Avenue could easily accomodate the traffic shift from Citrus Avenue and serve as a quick alternate thoroughfare for vehicles traveling north-south providing motorists with a by-pass route through Downtown Covina. To make this feasible, estalablishment of corridor progression signal timing settings to facilitate throughput traffic volume is necessary. Additionally, new traffic signage is recommended south of Badillo Street and to the north of San Bernardino Road providing clear directions to drivers regarding this recommended alternative route to the Downtown.

Although this option would provide motorists with an alternate route to by-pass the Downtown area, new signage will be needed throughout the route (as shown in **Figure 4.6**). Additionally,

regular maintenance in terms of signal timing adjustments by the City staff will be a key step towards making this measure successful.

Head-In Angled Parking in Covina Downtown

Retain Localized Parking Arrangement

Within Downtown Covina, there is currently head-in angled parking along Citrus Avenue. This parking method allows drivers to quickly pull into parking spaces. Switching from head-in angled parking to back-in angled parking is an option to possibly improve safety for drivers and cyclists on Citrus Avenue. However, the disadvantage associated with implementing this proposal is described herein:

- *Creates impedance to the through traffic movement during parking maneuvers.*
- *Back-in parking maneuvers may possibly encroach into the existing parkway area, which would necessitate relocation of existing street furniture.*

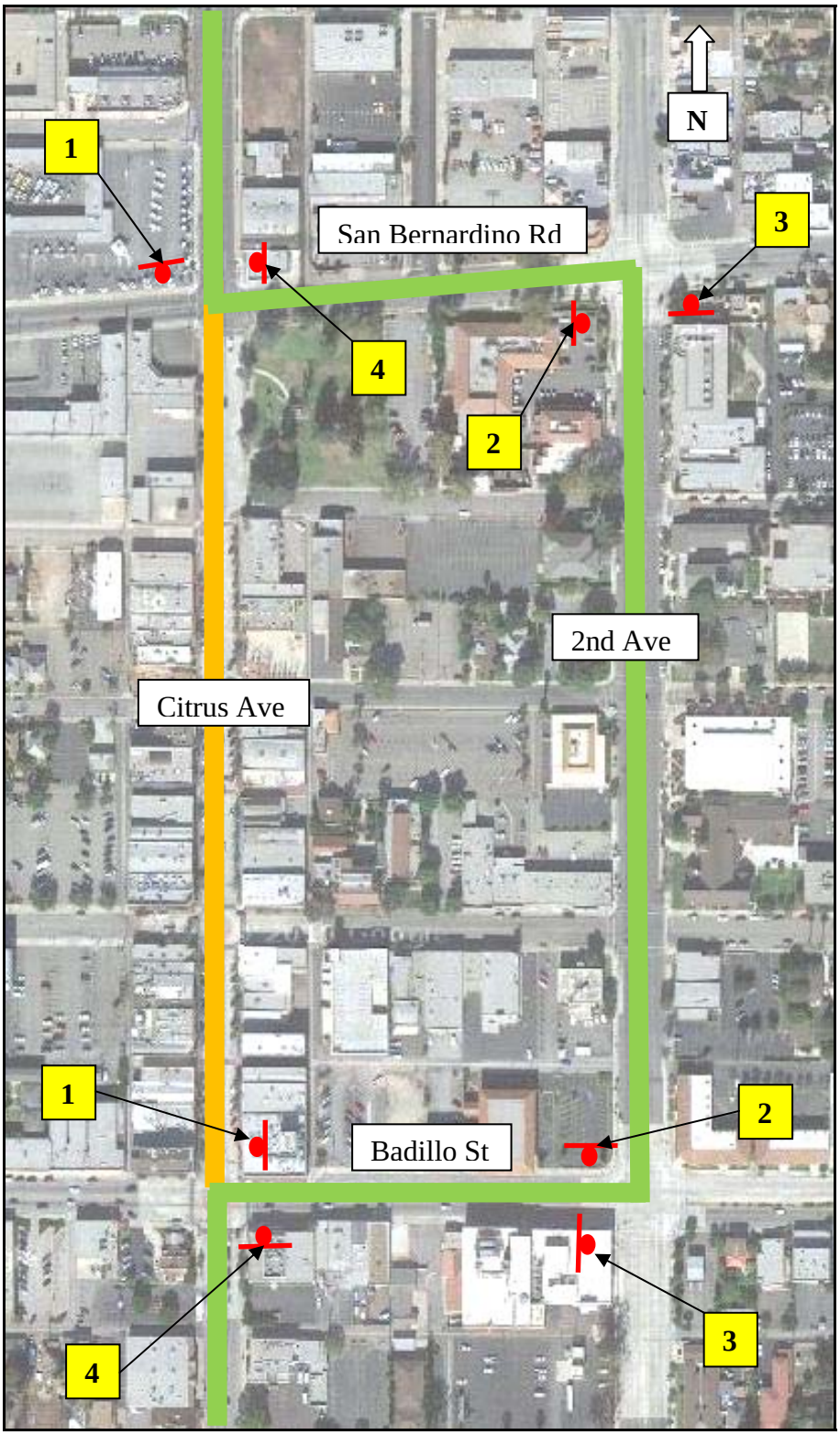
At this time, the city recommends that no improvements be made to the current head-in angled parking arrangement.

Restriping and Special Signage Installation

In order to prevent excessive vehicular queuing on Citrus Avenue during peak hours, restriping and additional signage is recommended at the following locations:

3. Citrus Avenue and Geneva Place / San Bernardino Road - southbound direction
4. Citrus Avenue and Badillo Street - northbound direction

The details of recommended striping patterns and traffic signage for these locations are provided in **Figures 4.6** and **4.7**.



Legend

Downtown Route

Alternate Route

Proposed Signage as:

1 → ALT TO 10

2 → ALT TO 10

3 → ALT TO 210

4 → ALT TO 210

Figure 4.6 Recommended Alternate North-South Thoroughfare

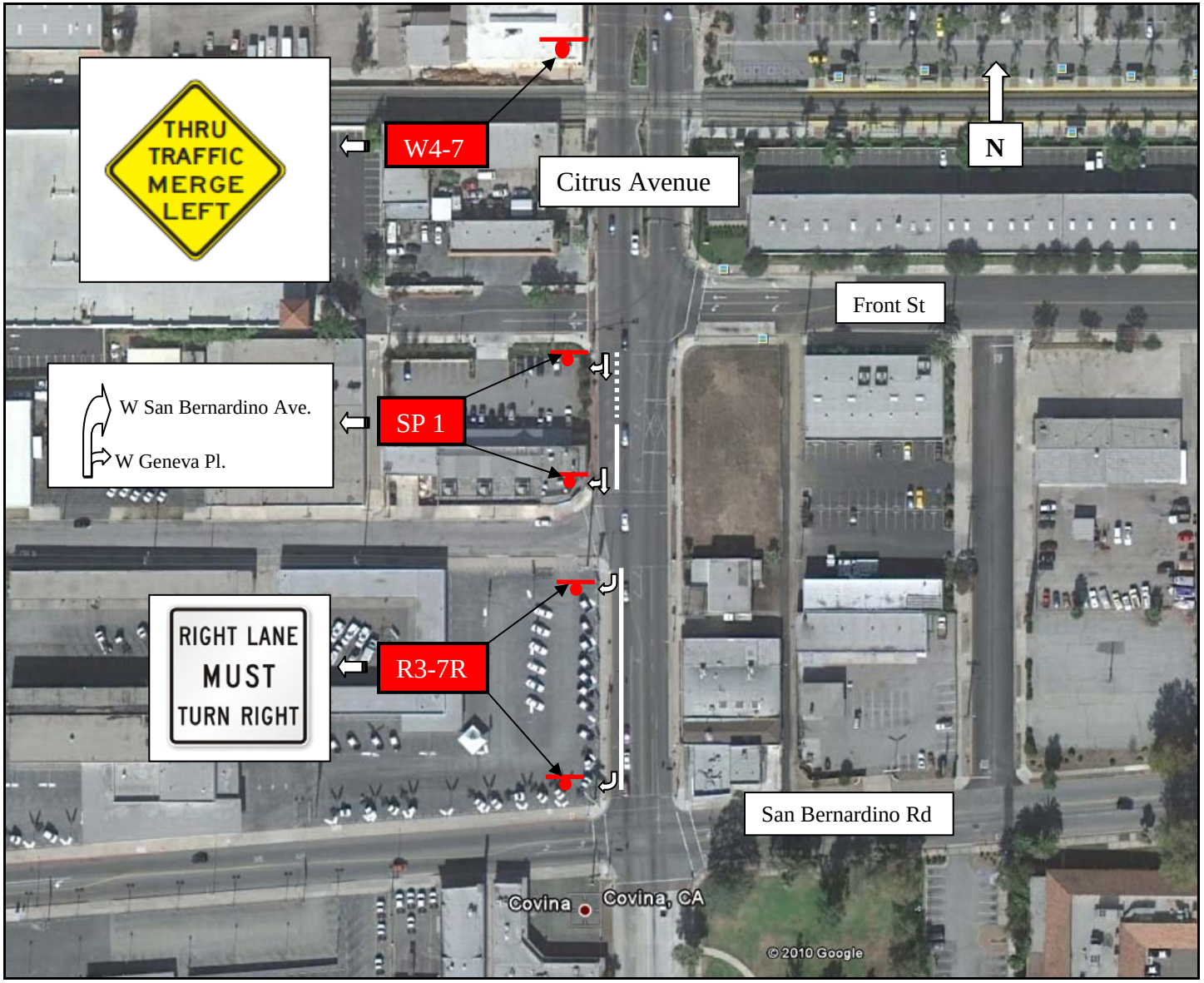


Figure 4.7 Recommended Striping & Signage at Citrus Ave / Geneva Pl / San Bernardino Rd

Figure 4.8 Recommended Striping & Signage at Citrus Ave / Badillo St

4.12 Proposed Improvements – Other Improvement Concepts

This section describes specific areas or corridors recommended for improvement. The recommendations include conceptual plans. **Figure 4.9** presents the improvements summary for the project study area and also serves as an index for the improvement detail sheets. **Figures 4.10** through **4.13** present improvement concepts for the Citrus Avenue corridor, including the Metrolink Station and Downtown Covina. **Figures 4.14** through **4.16** present the improvement concepts for the 3rd Avenue corridor. **Figures 4.17** through **4.19** present the improvement concepts for the 2nd Avenue corridor.

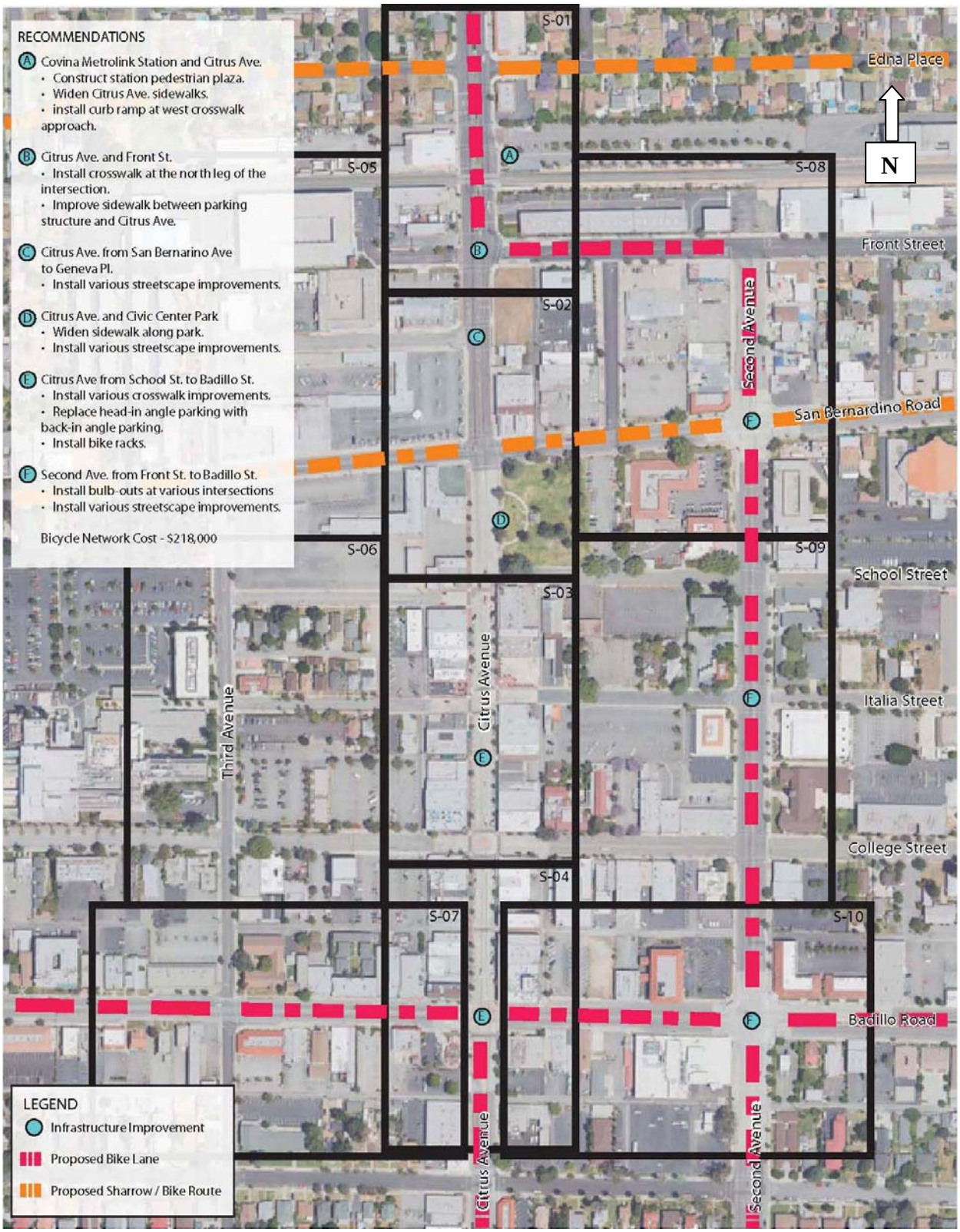


Figure 4.9 Concept Overview

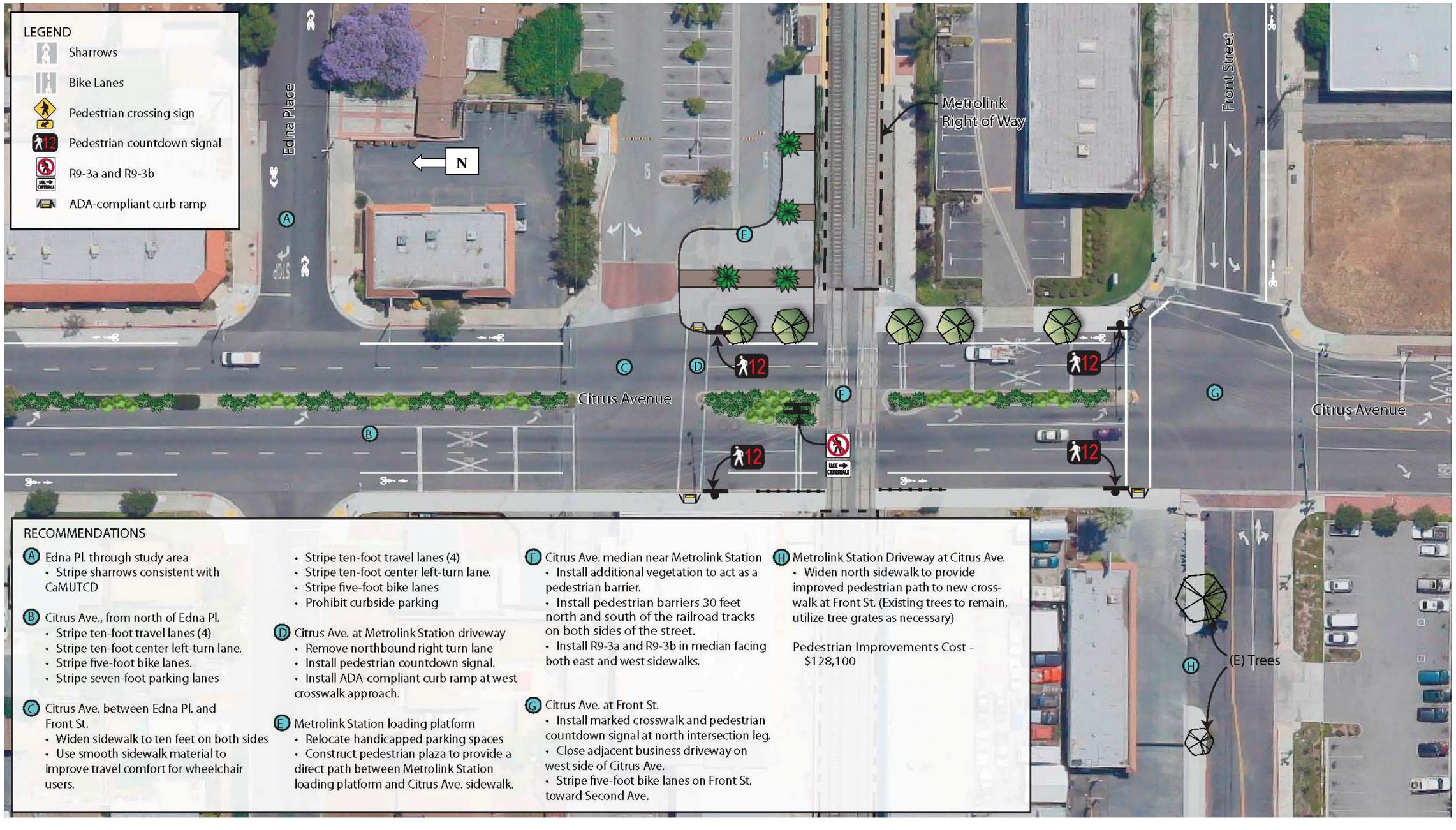


Figure 4.10 Citrus Avenue Concept S-01

Figure 4.11 Citrus Avenue Concept S-02

Figure 4.12 Citrus Avenue Concept S-03

Figure 4.13 Citrus Avenue Concept S-04

Figure 4.14 3rd Avenue at Front St. / San Bernardino Rd. Concept S-05

Figure 4.15 3rd Avenue at Orange / Cottage / College Concept S-06

Figure 4.16 3rd Avenue at Badillo St. Concept S-07

Figure 4.17 2nd Avenue at Front St / San Bernardino Rd Concept S-08

Figure 4.18 2nd Avenue at School / Italia / College St. Concept S-09

Figure 4.19 2nd Avenue at Badillo St. Concept S-10

5.0 Peripheral Arterial Streets (Third subarea)

Streets are the backbone of a transportation system. Cars, trucks, transit buses, bicyclists and pedestrians all utilize streets. The most effective streets, called "complete streets", accommodate all of these travel modes. One of the goals of this study is to apply the complete street concept to the study area and develop pedestrian and bicycle "friendly facilities" without severely compromising the vehicular flow through the study area. The following sections discuss the characteristics of existing transportation facilities within the study area.

Street Classification/Characteristics

The streets within the study area are either arterial, collector or local streets:

Arterial - The primary function of an arterial is to provide for regional, sub-regional, and inter-city travel, carrying approximately 20,000 to 50,000 vehicles per day. Arterials generally consist of four to six travel lanes (two to three in each direction) with speed limits ranging from 35 to 55 miles per hour. The category is often subdivided into primary arterial roads and secondary arterial roads, with the former category being for the more important and busier roads. ***Primary arterials*** facilitate relatively longer trips at moderate to high operating speeds with somewhat limited access to adjacent properties. Major arterials generally serve major centers of activity in urban areas and have the highest traffic volume corridors. **Secondary arterials** provide shorter trips than major arterials and generally interconnect and augment, major arterial routes at moderate operating speeds allowing somewhat greater access to adjacent properties than major arterials

Collector - Collectors are designed to carry traffic between local streets and the arterial roadway network. This category of roadway generally consists of two to four travel lanes (one to two in each direction) with posted speed limits ranging anywhere between 25 to 40 miles per hour. Collectors typically carry approximately 12,000 to 20,000 vehicles per day.

Local - Local streets are designed to provide direct access to individual properties not served by arterial and collector roadways. A local street generally consists of two travel lanes (one in each direction). Local streets generally have posted speed limits ranging from 25 to 30 miles per hour. Based upon this information and as identified in the City of Covina's *Town Center Specific Plan*, the street classification within the study areas are provided below in **Table 5.1** and, shown in **Figure 5.1**.

Table 5.1 Functional Classifications and Posted Speed Limits

Roadway	Direction	Functional Classification	Posted Speed Limit
Barranca Avenue	North - South	Primary Arterial	35-40 mph
2nd Avenue	North - South	Secondary Arterial	30-35 mph
Citrus Avenue	North - South	Secondary Arterial	25 - 40* mph
Hollenbeck Avenue	North - South	Secondary Arterial	35-40 mph
Badillo Street	East - West	Secondary Arterial	30 - 45* mph
College Street	East - West	Local	25 mph
San Bernardino Road	East - West	Collector	30-40 mph
Front Street	East - West	Local	25 mph
Cypress Street	East - West	Collector	35-40 mph

** Lower posted speed limit in Downtown Covina*

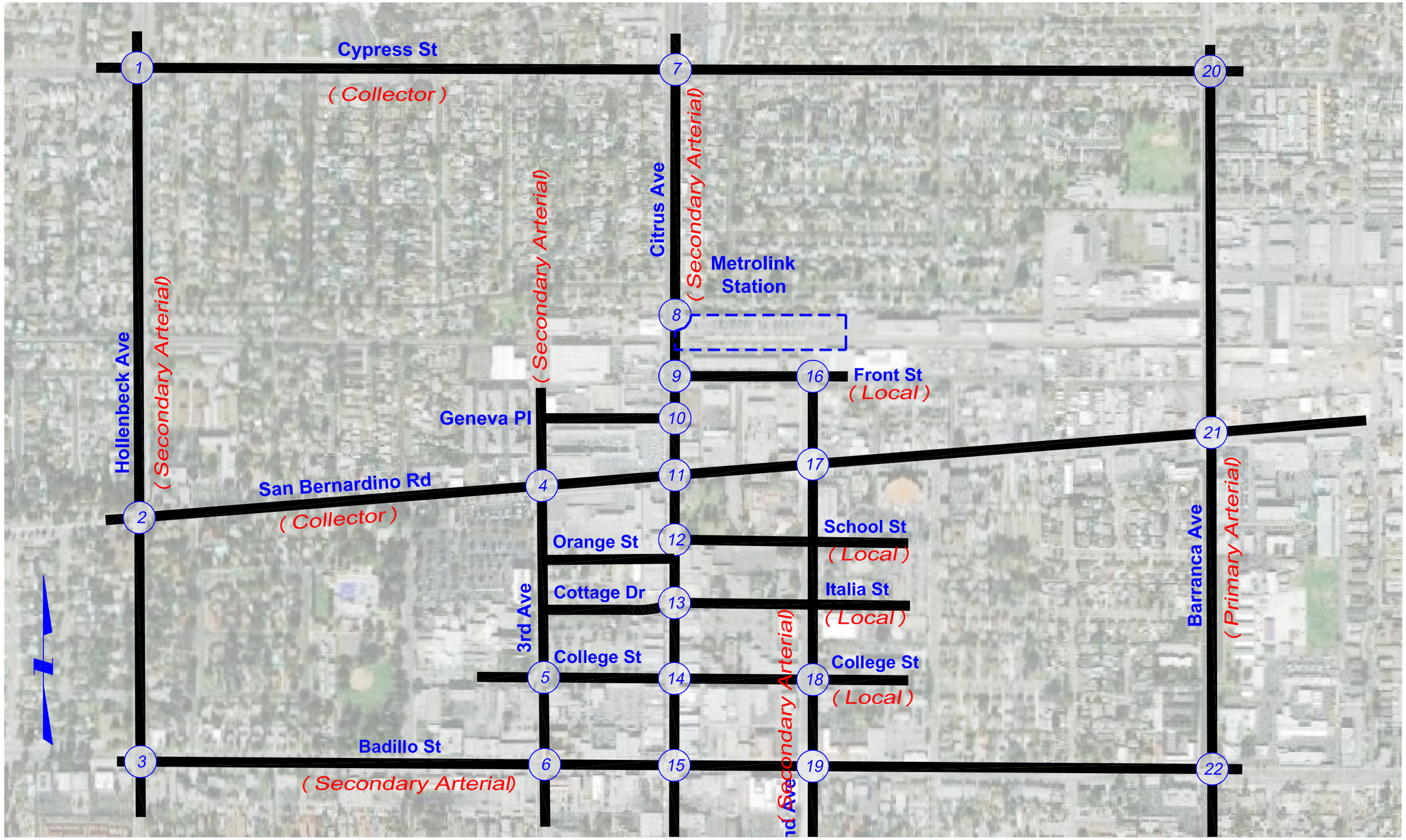


FIGURE 5.1 FUNCTIONAL CLASSIFICATION OF STREETS

Pedestrian and Bicycle Planning Study - City of Covina
Date: May 2011

PREPARED BY:
ADVANTEC Consulting Engineers

5.1 Existing Roadway Infrastructure

Major Streets

Citrus Avenue is an existing pedestrian-friendly corridor because it has a pedestrian-scale streetscape and activity-generating land uses (e.g. restaurants, bookstores, theaters, and shops). During peak hours, Citrus Avenue receives heavy auto traffic as a regional north-south route between the I-10 and I-210 freeways. The street currently has curbside head-in angled parking along both sides within the Downtown area. Head-in angled parking provides more curbside parking spaces than parallel parking, but takes space away from other potential improvements like installing bike lanes or wider sidewalks. Head-in angled parking is also challenging for bicyclists because exiting drivers tend to have more difficulty seeing bicyclists approaching when they are backing out in the street.

Citrus Avenue is a recommended Class II bike lane within the *Covina Bikeway Network Study* (Alta Planning + Design, July 2010) north of Front Street and south of Badillo Street.

Second Avenue is a low-traffic local road with a wide cross-section. The road width is a problem for pedestrians exposed to conflicting traffic. However, the available public right-of-way can accommodate additional improvements, such as bulb-outs, median islands, and bike lanes. Second Avenue has few shopping and dining opportunities, but has several houses of worship and the Public Library. Foothill Transit routes run along Second Avenue to bypass Citrus Avenue near Downtown.

Citrus Avenue is a recommended Class II bike lane within the *Covina Bikeway Network Study* from south of Front Street.

Badillo Street is a heavily trafficked regional roadway. The local transit agency has plans to provide express bus service along Badillo Street, with a stop west of its intersection with Citrus Avenue. Badillo Street is a recommended Class II bike lane within the *Covina Bikeway Network Study* through the extent of this study area.

San Bernardino Road is a regionally significant road that connects several commercial corridors, particularly the areas east of Citrus Avenue and west of Azusa Avenue. San Bernardino Road passes through a residential area between these two major activity centers. San Bernardino Road is a recommended Class II bike lane within the *Covina Bikeway Network Study* through the extents of this study area.

Minor Streets

East-west streets like ***Orange/School Street, Cottage/Italia Street, College Street,*** and ***Front Street*** provide local connectivity to Downtown Covina, City Hall, the Citrus Valley Medical Center, several parks, and schools.

Edna Place runs parallel on the north side of the Metrolink railroad tracks. This street receives light traffic and is a recommended Class III bike route / sharrow within the *Covina Bikeway Network*.

North-south streets like ***First, Third,*** and ***Fourth Street*** provide local connectivity to parks, hospitals, and school. These facilities are low-speed, primarily residential routes that receive little traffic. Fourth Street is a proposed Class III bike route / sharrow within the *Covina Bikeway Network Study* from south of San Bernardino Road.

Public Transit

The ***Covina Metrolink Station*** is a natural intermodal transit hub because the trains can accommodate passengers bringing their bike aboard. Passenger choosing to leave their bikes behind can house their bikes securely inside the Bikestation or at outdoor bike racks. However, the ***Metrolink*** railroad tracks prohibit cyclist and pedestrian crossings apart from Citrus Avenue within the study area, and Hollenbeck Avenue and Barranca Avenue outside the study area. Improvements must provide special consideration for cyclists and pedestrians when funneling through the railroad crossing. The railroad tracks limit the utility of parallel routes, like Second and Third Avenue, for regional connectivity purposes.

Foothill Transit bus lines run along Badillo Avenue and Second Avenue. Transit stops are activity-generating uses. Improvements would both fulfill existing needs, e.g. providing lighting and bus shelters at bus stops, and build on potential synergy, e.g. Transit-Oriented Development.

Adjacent Near-Term Developments

Vacant/underdeveloped land between San Bernardino Road and the Metrolink railroad tracks can accommodate higher-density development that will improve connectivity between the Metrolink Station and the Downtown. The Downtown also has several parking lots that could accommodate additional development, provided the City pursues policies that encourage consolidating parking into existing parking structures and implementing a pricing strategy that manages the parking supply against other travel modes, e.g. public transit, walking, and cycling.

Parking and Median Types

For this study, ADVANTEC conducted a field review of on-street parking of the main thoroughfares. For medians, streets within the study area fall into mainly two categories: Undivided, with no physical separation between opposing lanes of travel, and Divided, in which the opposing directions of traffic are separated by a barrier or striping. **Table 5.2** provides the summary of parking review along with the median types:

Table 5.2 On-Street Parking Availability and Median Types

Street	Limits		Median	On-Street Parking?
	From	To		
Barranca Avenue	Badillo St.	Cypress St.	Undivided	Yes
2nd Avenue	Badillo St.	Front St.	Undivided	Yes
Citrus Avenue	Badillo St.	San Bernardino Rd.	Undivided	Yes
Citrus Avenue	San Bernardino Rd.	Front St.	Undivided	Yes
Citrus Avenue	Front St.	Cypress St.	Divided	Yes
Hollenbeck Avenue	Badillo St.	Cypress St.	Undivided	Yes
Badillo Street	Hollenbeck Ave.	2nd Ave.	Undivided	Yes
Badillo Street	2nd Ave.	Barranca Ave.	Undivided	Yes
College Street	Fourth Ave.	San Jose Ave.	Undivided	Yes
San Bernardino Road	Barranca Ave.	2nd Ave.	Undivided	Yes
San Bernardino Road	2nd Ave.	Hollenbeck Ave.	Undivided	Yes
Front Street	Barranca Ave.	Citrus Ave.	Undivided	Yes
Cypress Street	Barranca Ave.	Hollenbeck Ave.	Undivided	Yes

There are currently 10 City owned/leased surface parking lots located Downtown with approximately 555 parking spaces. In addition, street parking exists along several Downtown roadways with both parallel and angled alignment.

The existing lane configurations for the intersections within the Metrolink Station, Downtown Covina and Peripheral Arterial Streets subareas are shown in **Figure 5.2**.

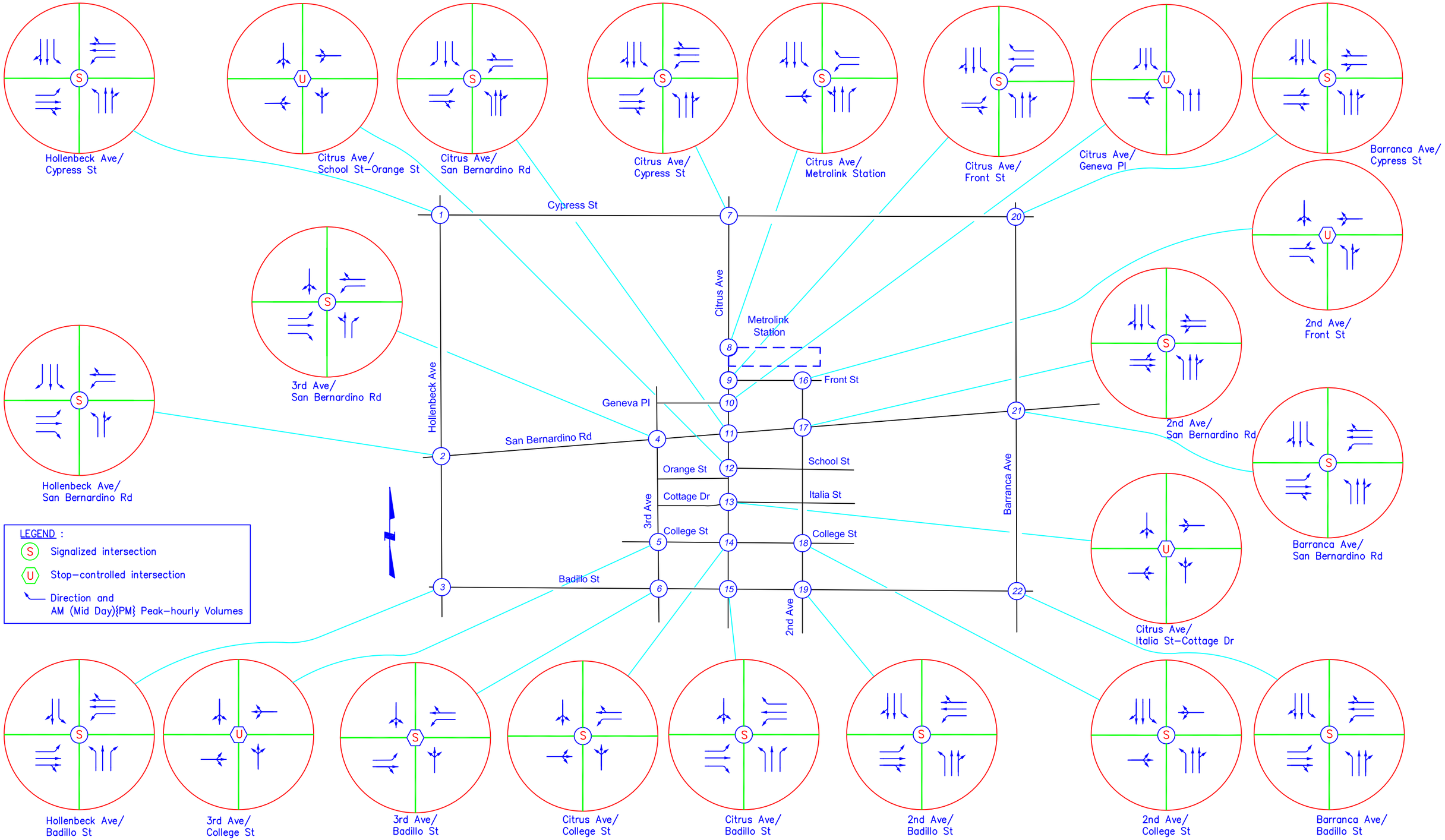


FIGURE 5.2 EXISTING LANE GEOMETRY AT THE STUDY INTERSECTIONS

PREPARED BY:
ADVANTEC Consulting Engineers

5.2 Count Results for Peripheral Arterial Streets

The AM, Mid-Day, and PM peak hour turning movement counts for the intersections within Metrolink Station subarea, Downtown Covina subarea and Peripheral Arterials subarea are provided in **Figure 5.3.**

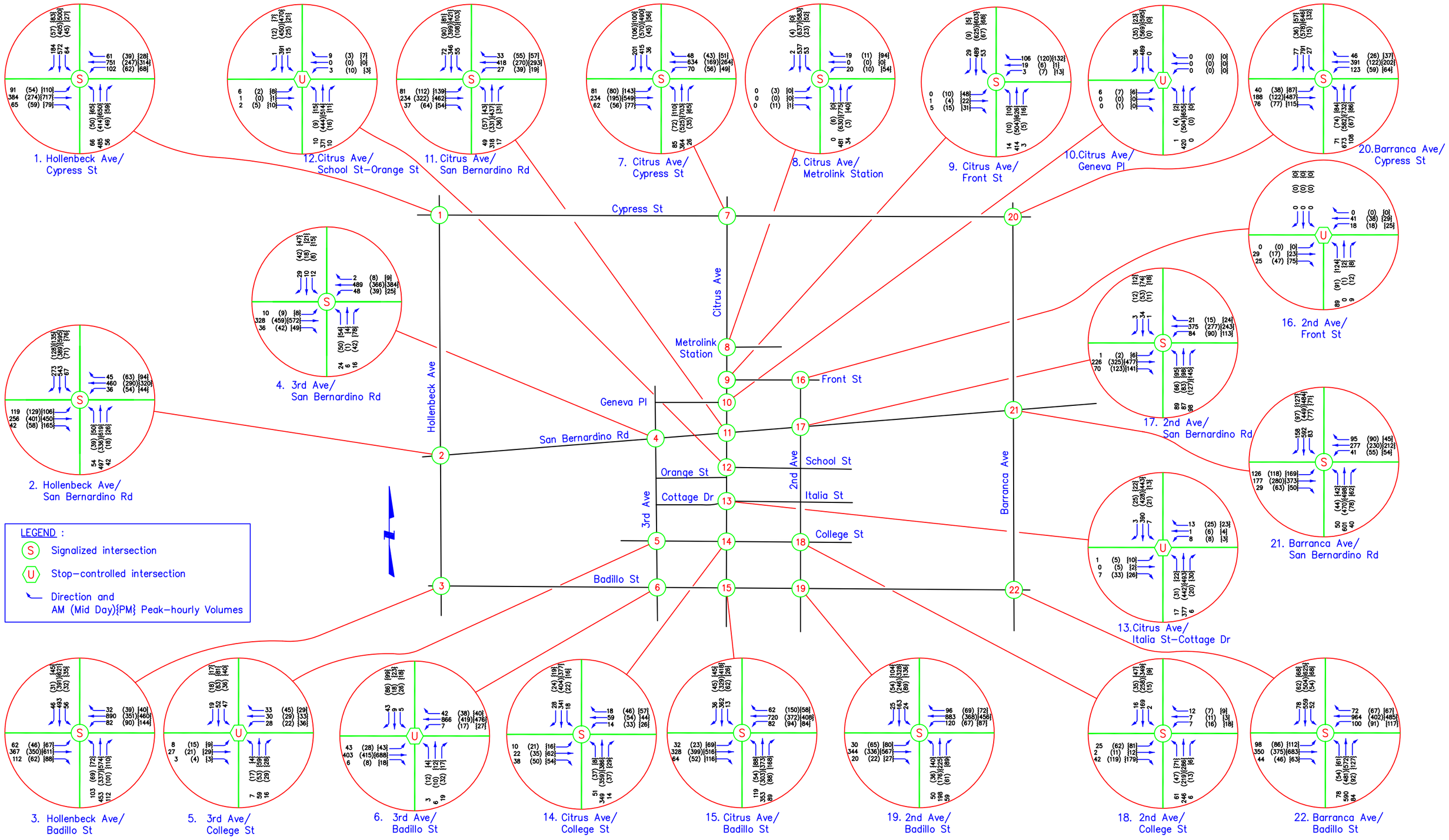


FIGURE 5.3 EXISTING 2010 PEAK HOURLY VOLUMES

Pedestrian and Bicycle Planning Study - City of Covina
Date: May 2011

PREPARED BY:
ADVANTEC Consulting Engineers

5.3 Existing Traffic Conditions Analysis

Vehicular Levels of Service

Level of Service (LOS) analysis quantifies how well an intersection is operating during peak hours. In other words, LOS is based on calculating the quality or efficiency of the traffic flow for the driver.

The determination as to whether the existing intersections can adequately serve the existing and future demands is predicted on the ability to estimate the maximum traffic volume they can safely accommodate. The establishment of LOS standards is used to identify needed system improvements. For this study, the LOS analysis of study intersections was conducted using *Intersection Capacity Utilization (ICU)* methodology for signalized intersections and *Highway Capacity Manual (HCM 2000)* methodology for stop-controlled intersections for both existing and future conditions analysis in ***Traffix*** software.

Analysis Methodology

The Intersection Capacity Utilization (ICU) methodology was used to determine the level of service for signalized intersections. A saturation flow rate of 1700 vehicles per lane per hour and a lost time factor of 0.05 (5%) was applied to the ICU calculations. For the stop-controlled intersections, Levels of Service were evaluated using stop-controlled methodologies from the 2000 Highway Capacity Manual.

Level of service (LOS) values range from LOS A to LOS F. LOS A indicates excellent operating conditions with little delay to motorists, whereas LOS F represents congested conditions with excessive vehicle delay. LOS E is typically defined as the operating "capacity" of a roadway. **Table 5.3** summarizes the LOS definitions for signalized and stop-controlled intersections.

Table 5.3 Intersection Level of Service Definition

Level of Service	Signalized Intersection Based on Volume/Capacity Ratio	Stop-Controlled Intersection Based on Vehicle Delay (sec)	Definition
A	<0.600	<10	EXCELLENT. No vehicle wait is longer than one red light, and no approach phase is fully used.
B	0.601-0.700	>10 and <15	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles
C	0.701-0.800	>15 and <25	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801-0.900	>25 and <35	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901-1.000	>35 and <50	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	>1.00	>50	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays

5.4 Existing 2010 Intersection LOS Results

The results of the existing conditions LOS analysis under existing conditions are summarized in **Table 5.4** below. The results show that all the study intersections are operating with a LOS D or better under the current traffic conditions. The level of service calculation sheets are included in **Appendix B**.

Table 5.4 Existing 2010 Level of Service

Loc. #	Intersection	AM Peak Hour		Midday Peak Hour		PM Peak Hour	
		V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS
1	Hollenbeck Avenue and Cypress Street	0.638	B	0.368	A	0.580	A
2	Hollenbeck Avenue and San Bernardino Road	0.819	D	0.617	B	0.862	D
3	Hollenbeck Avenue and Badillo Street	0.797	C	0.555	A	0.826	D
4	3rd Avenue and San Bernardino Road	0.410	A	0.435	A	0.509	A
5	3rd Avenue and College Street*	7.8	A	7.9	A	7.9	A
6	3rd Avenue and Badillo Street*	24.8	C	18.8	C	29.6	D
7	Citrus Avenue and Cypress Street	0.593	A	0.456	A	0.585	A
8	Citrus Avenue and Metrolink Station	0.279	A	0.311	A	0.417	A
9	Citrus Avenue and Front Street	0.320	A	0.369	A	0.439	A
10	Citrus Avenue and Geneva Place*	14.0	B	15.3	C	17.2	C
11	Citrus Avenue and San Bernardino Road	0.663	B	0.641	B	0.708	C
12	Citrus Avenue and Orange Street/School Street*	16.2	C	15.3	C	17.7	C
13	Citrus Avenue and Cottage Drive*	13.7	B	16.1	C	15.9	C
14	Citrus Avenue and College Street	0.411	A	0.475	A	0.456	A
15	Citrus Avenue and Badillo Street	0.885	D	0.698	B	0.819	D
16	2nd Avenue and Front Street*	8.2	A	8.1	A	8.4	A
17	2nd Avenue and San Bernardino Road	0.418	A	0.333	A	0.418	A
18	2nd Avenue and College Street	0.178	A	0.301	A	0.399	A
19	2nd Avenue and Badillo Street	0.482	A	0.369	A	0.486	A
20	Barranca Avenue Cypress Street	0.648	B	0.439	A	0.648	B
21	Barranca Avenue and San Bernardino Road	0.523	A	0.456	A	0.468	A
22	Barranca Road and Badillo Street	0.688	B	0.466	A	0.616	B

** Stop Controlled Intersection*

As shown in **Table 5.4** above, all 22 study intersections are currently operating with a minimum acceptable level-of-service "D" or better in the AM, Mid-Day and PM peak hours of traffic.

5.5 Future Traffic Conditions Analysis

This section describes future traffic conditions. The future year analysis has been conducted for the following scenarios:

- *Future Year 2017 Without Proposed Downtown Residential Developments*

- *Future Year 2017 With Proposed Downtown Residential Developments*
- *Horizon Year 2035 Without Proposed Downtown Residential Developments*
- *Horizon Year 2035 With Proposed Downtown Residential Developments*

Traffic volumes for future and horizon year with project conditions comprise volumes from existing traffic counts plus traffic generated by other approved developments within the study limits. This section describes the procedure used to determine future traffic volumes and the resulting traffic conditions.

Future Roadway Network

From discussions between the project team and City staff it was determined the existing street network within the study limits would remain the same for future conditions analysis.

Future Conditions LOS Analysis

From discussions with City staff, three major residential developments have been approved within the Downtown area and are assumed to be completed by year 2017. These developments are:

- *Citrus Walk at the corner of Citrus Avenue and School Street*
- *Vintage Walk on 3rd Avenue*
- *Theater Lofts on Badillo Street (current site of City parking lot #8)*

The *Institute of Transportation Engineers (ITE) Trip Generation Manual, 8th Edition* was used to estimate the AM and PM peak hour trips expected to be generated from these developments. Since the ITE Trip Generation manual does not provide information on Mid-Day traffic, only the AM and PM peak periods were analyzed for the future with developments scenarios.

Future Traffic Without Proposed Downtown Residential Developments

This section summarizes the assumptions, methodology, and analysis related to future conditions without the three (3) proposed residential projects. This will serve as a basis for estimating impacts of the proposed residential projects on background conditions. The projection of years 2017 and 2035 Future Without Proposed Developments traffic consists of existing (2010) traffic plus ambient traffic growth (general background regional growth). The following describes the ambient traffic growth component.

Ambient Traffic Growth

Ambient traffic growth is the traffic growth that will occur in the study area due to general growth in regional through trips in the San Gabriel Valley. As agreed upon with City staff, a 0.5% percent per year ambient growth rate was identified as a conservative estimate of traffic increase in the study area. Existing 2010 traffic volumes were increased by 3.5% and 12.5% to estimate base traffic in the years 2017 and 2035 respectively.

Figure 5.4 and **Figure 5.5** show the traffic volumes for Future 2017 and 2035 Without Proposed Developments respectively.

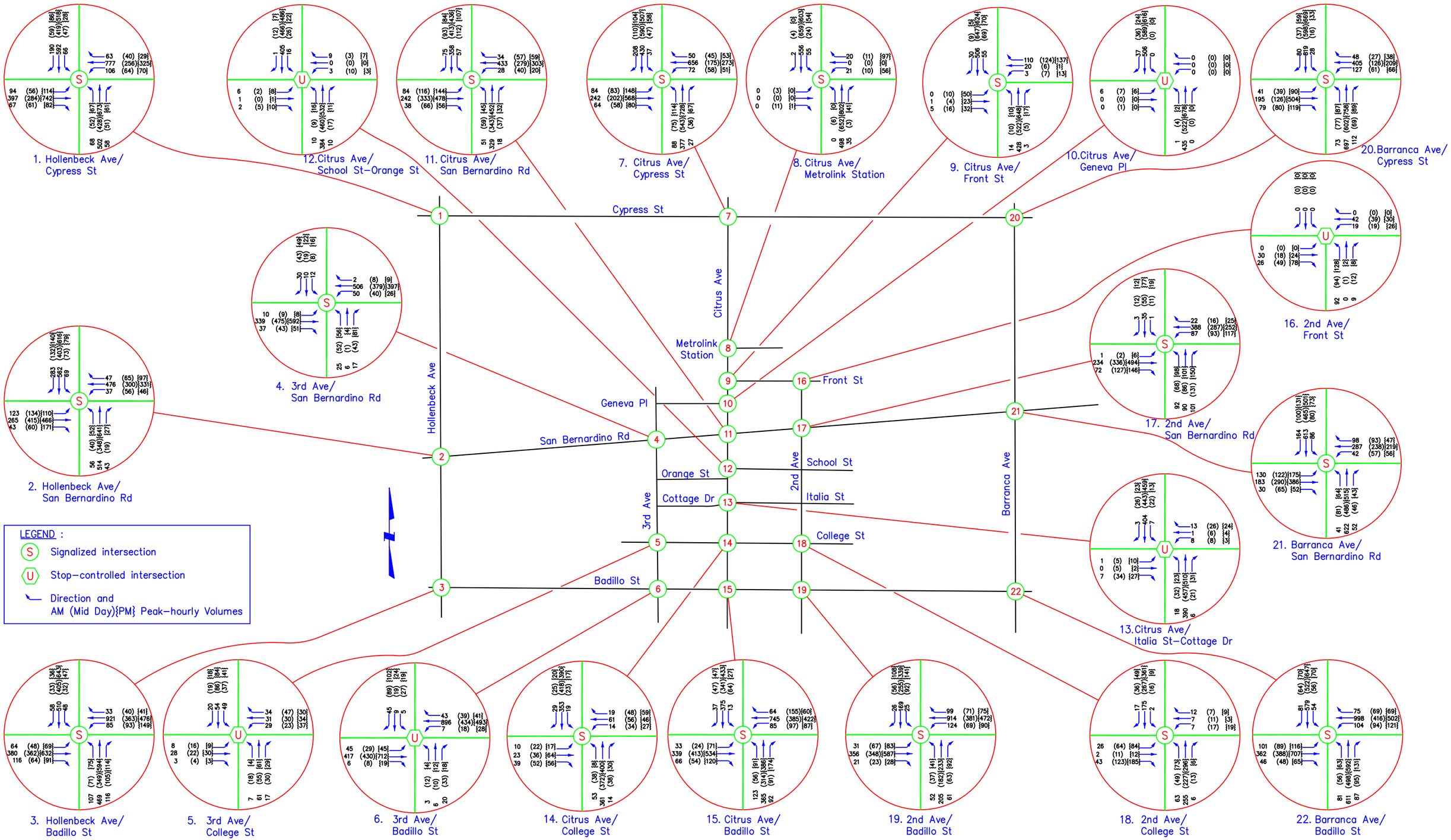


FIGURE 5.4 FUTURE 2017 BASE PEAK HOURLY VOLUMES

Pedestrian and Bicycle Planning Study - City of Covina

Date: May 2011

PREPARED BY:

ADVANTEC Consulting Engineers

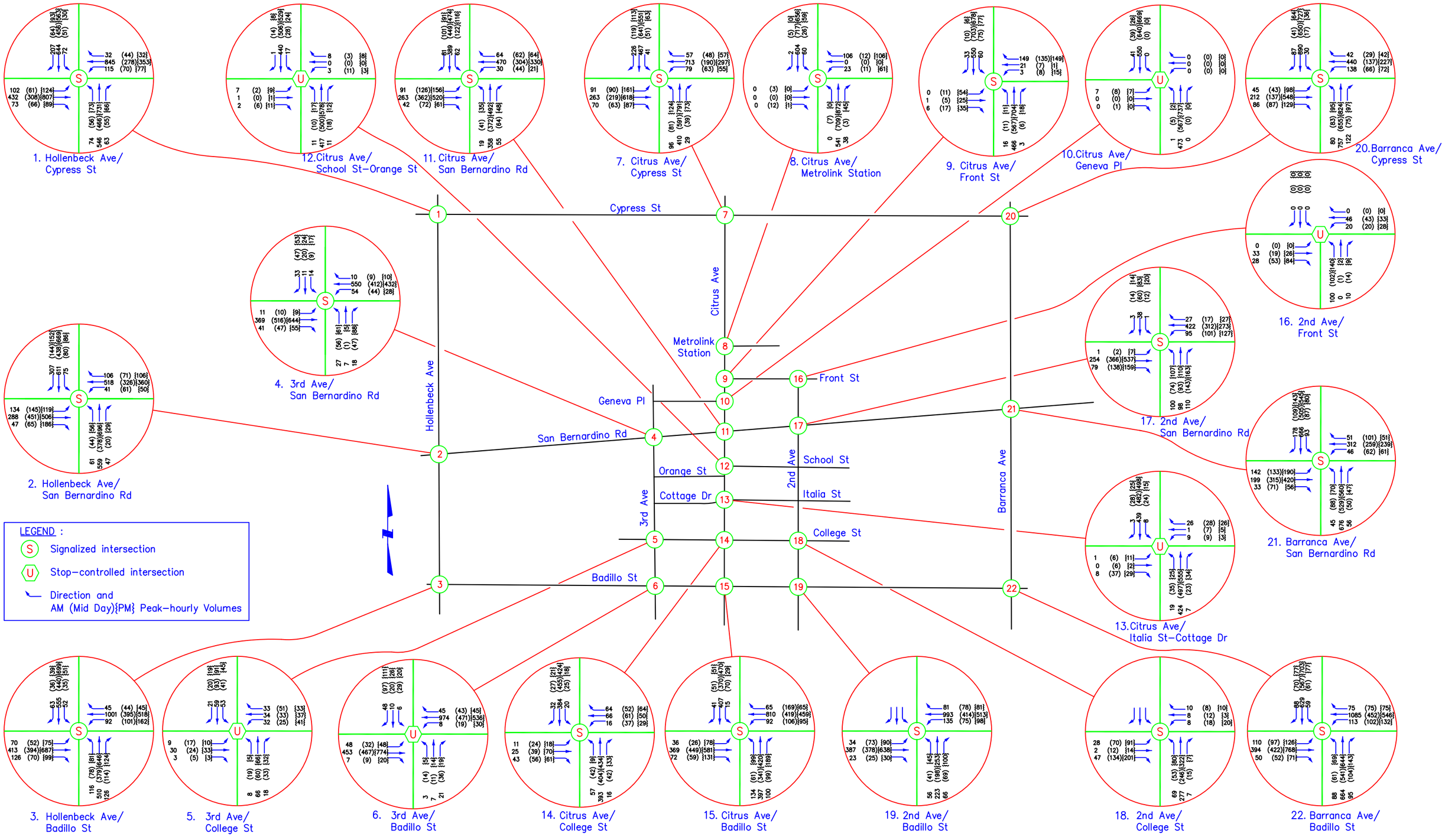


FIGURE 5.5 FUTURE 2035 BASE PEAK HOURLY VOLUMES

PREPARED BY:
ADVANTEC Consulting Engineers

The results of LOS analysis for the Future Years 2017 and 2035 are shown in **Table 5.5 and Table 5.6,** respectively.

Table 5.5 Future 2017 Base Conditions LOS Results

Loc. #	Intersection	AM Peak Hour		Midday Peak Hour		PM Peak Hour	
		V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS
1	Hollenbeck Avenue and Cypress Street	0.658	B	0.380	A	0.598	A
2	Hollenbeck Avenue and San Bernardino Road	0.840	D	0.637	B	0.853	D
3	Hollenbeck Avenue and Badillo Street	0.823	D	0.572	A	0.853	D
4	3rd Avenue and San Bernardino Road	0.422	A	0.448	A	0.526	A
5	3rd Avenue and College Street*	7.8	A	7.9	A	8.0	A
6	3rd Avenue and Badillo Street*	26.3	D	20.0	C	34.1	D
7	Citrus Avenue and Cypress Street	0.611	B	0.470	A	0.602	B
8	Citrus Avenue and Metrolink Station	0.286	A	0.319	A	0.428	A
9	Citrus Avenue and Front Street	0.328	A	0.378	A	0.452	A
10	Citrus Avenue and Geneva Place*	14.3	B	15.7	C	17.8	C
11	Citrus Avenue and San Bernardino Road	0.683	B	0.661	B	0.730	C
12	Citrus Avenue and Orange Street/School Street*	16.7	C	20.2	C	18.4	C
13	Citrus Avenue and Cottage Drive*	14.0	B	16.6	C	16.4	C
14	Citrus Avenue and College Street	0.423	A	0.488	A	0.470	A
15	Citrus Avenue and Badillo Street**	0.912	E	0.720	C	0.845	D
16	2nd Avenue and Front Street*	8.2	A	8.1	A	8.4	A
17	2nd Avenue and San Bernardino Road	0.275	A	0.342	A	0.431	A
18	2nd Avenue and College Street	0.182	A	0.310	A	0.411	A
19	2nd Avenue and Badillo Street	0.497	A	0.380	A	0.501	A
20	Barranca Avenue Cypress Street	0.669	B	0.452	A	0.665	B
21	Barranca Avenue and San Bernardino Road	0.539	A	0.469	A	0.479	A
22	Barranca Road and Badillo Street	0.711	C	0.483	A	0.642	B

** Stop Controlled Intersection*

** Oversaturated Condition

The intersections that are already operating at a poor level-of-service under current traffic conditions and lane configuration, are bound to deteriorate further with future traffic growth. For example, the intersection of Citrus Avenue and Badillo Street, which is currently operating at a level-of-service "D" is expected to operate with a level-of-servcie "E" in the year 2017 if no geometric improvements are made to the intersection. Mitigation measures, e.g. additional travel lanes and operational changes etc, may be required in future years to offset the projected increase in traffic volumes in years 2017 and 2035.

Table 5.6 Future 2035 Base Conditions LOS Results

Loc. #	Intersection	AM Peak Hour		Midday Peak Hour		PM Peak Hour	
		V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS
1	Hollenbeck Avenue and Cypress Street	0.712	C	0.408	A	0.646	B
2	Hollenbeck Avenue and San Bernardino Road**	0.915	E	0.690	B	0.923	E
3	Hollenbeck Avenue and Badillo Street**	0.889	D	0.617	B	0.921	E
4	3rd Avenue and San Bernardino Road	0.455	A	0.483	A	0.567	A
5	3rd Avenue and College Street*	7.9	A	8.1	A	8.1	A
6	3rd Avenue and Badillo Street**	33.1	D	23.6	C	50.2	F
7	Citrus Avenue and Cypress Street	0.656	B	0.502	A	0.647	B
8	Citrus Avenue and Metrolink Station	0.346	A	0.340	A	0.459	A
9	Citrus Avenue and Front Street	0.342	A	0.404	A	0.484	A
10	Citrus Avenue and Geneva Place*	15.1	C	17.0	C	19.4	C
11	Citrus Avenue and San Bernardino Road	0.735	C	0.711	C	0.786	C
12	Citrus Avenue and Orange Street/School Street*	18.4	C	22.9	C	20.6	C
13	Citrus Avenue and Cottage Drive*	14.9	B	18.7	C	18.2	C
14	Citrus Avenue and College Street	0.452	A	0.512	A	0.503	A
15	Citrus Avenue and Badillo Street**	0.985	E	0.775	C	0.911	E
16	2nd Avenue and Front Street*	8.3	A	8.2	A	8.6	A
17	2nd Avenue and San Bernardino Road	0.289	A	0.368	A	0.463	A
18	2nd Avenue and College Street	0.211	A	0.332	A	0.443	A
19	2nd Avenue and Badillo Street	0.529	A	0.408	A	0.538	A
20	Barranca Avenue Cypress Street	0.722	C	0.486	A	0.718	C
21	Barranca Avenue and San Bernardino Road	0.581	A	0.505	A	0.519	A
22	Barranca Road and Badillo Street	0.768	C	0.518	A	0.694	B

** Stop Controlled Intersection*

** Oversaturated Condition

Future Traffic With Proposed Downtown Residential Developments

The following section describes the resulting traffic conditions with the three (3) proposed residential projects at the study intersections. **Table 5.7** below summarizes the trip generation for the 3 residential developments. Additional details regarding the three (3) residential projects are provided in **Appendix C**.

Table 5.7 Trips From Proposed Downtown Developments

	Property Name		Type of Land Use	Land Use Code	No of Units (X)	Square Footage (X)	Calculated Trips from Equation/Average Rate		No of Trips			
							AM Peak	PM Peak	AM Peak		PM Peak	
									Entering	Exiting	Entering	Exiting
1	Citrus Walk	a	Rowhomes and Mixed Use Residential	230	49		29	33	5	24	22	11
		b	High Turn Over Sit Down Restaurant	932		8270	95	92	50	46	54	38
2	Vintage Walk		Residential Units	220	30		18	34	4	15	22	12
3	Theater Lofts		Mid-Rise Apartments	223	16		5	6	1	3	4	3

Figure 5.6 and **Figure 5.7** show the traffic volumes for Future 2017 and 2035 With Proposed Developments respectively. The projection of years 2017 and 2035 Future With Proposed Developments traffic consists of Future base traffic plus projected trip generation from the 3 residential developments.

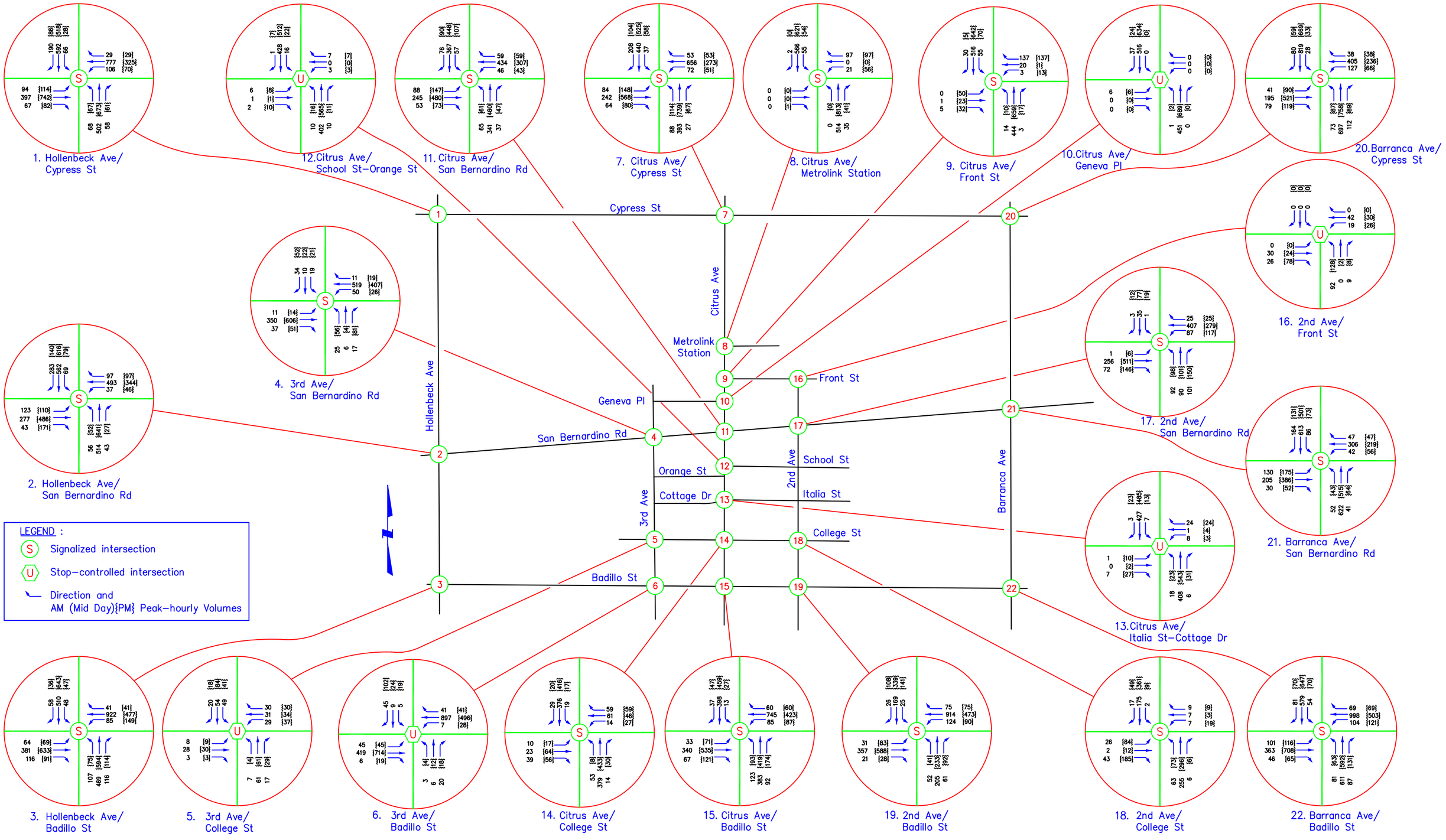


FIGURE 5.6 FUTURE 2017 PEAK HOURLY VOLUMES WITH PROPOSED DEVELOPMENTS

Pedestrian and Bicycle Planning Study - City of Covina
Date: May 2011

PREPARED BY:
ADVANTEC Consulting Engineers

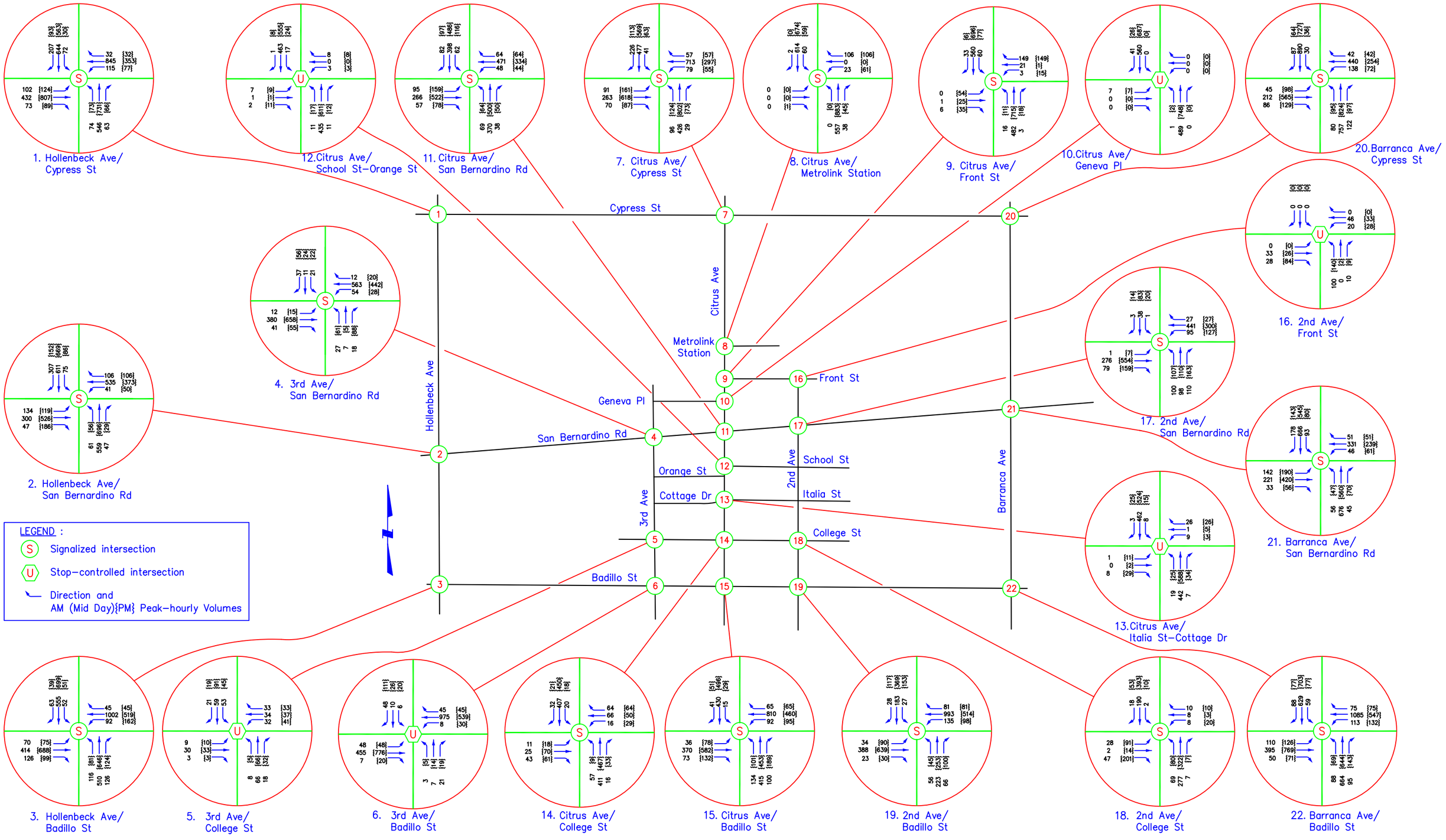


FIGURE 5.7 FUTURE 2035 PEAK HOURLY VOLUMES WITH PROPOSED DEVELOPMENTS

PREPARED BY:
ADVANTEC Consulting Engineers

The results of LOS analysis for the Future Years 2017 and 2035 With Developments are shown in **Table 5.8** and **Table 5.9,** respectively.

Table 5.8 Future 2017 With Developments LOS Results

Loc. #	Intersection	AM Peak Hour		PM Peak Hour	
		V/C or Delay	LOS	V/C or Delay	LOS
1	Hollenbeck Avenue and Cypress Street	0.658	B	0.598	A
2	Hollenbeck Avenue and San Bernardino Road	0.851	D	0.861	D
3	Hollenbeck Avenue and Badillo Street	0.823	D	0.853	D
4	3rd Avenue and San Bernardino Road	0.439	A	0.539	A
5	3rd Avenue and College Street*	7.8	A	8.0	A
6	3rd Avenue and Badillo Street*	26.4	D	34.5	D
7	Citrus Avenue and Cypress Street	0.614	B	0.606	B
8	Citrus Avenue and Metrolink Station	0.291	A	0.432	A
9	Citrus Avenue and Front Street	0.331	A	0.455	A
10	Citrus Avenue and Geneva Place*	14.5	B	18.2	C
11	Citrus Avenue and San Bernardino Road	0.701	C	0.774	C
12	Citrus Avenue and Orange Street/School Street*	17.4	C	19.6	C
13	Citrus Avenue and Cottage Drive*	14.5	B	17.3	C
14	Citrus Avenue and College Street	0.438	A	0.491	A
15	Citrus Avenue and Badillo Street**	0.926	E	0.863	D
16	2nd Avenue and Front Street*	8.2	A	8.4	A
17	2nd Avenue and San Bernardino Road	0.281	A	0.436	A
18	2nd Avenue and College Street	0.182	A	0.411	A
19	2nd Avenue and Badillo Street	0.497	A	0.501	A
20	Barranca Avenue Cypress Street	0.669	B	0.679	B
21	Barranca Avenue and San Bernardino Road	0.545	A	0.479	A
22	Barranca Road and Badillo Street	0.711	C	0.642	B

** Stop Controlled Intersection*

** Oversaturated Condition

As shown above in **Table 5.8**, all study intersections except Citrus Avenue and Badillo Street are expected to operate with a level-of-service "D" or better even after the inclusion of trips from the proposed Downtown developments. Additionally, with the planned Bus Rapid Transit (BRT) route along Citrus Avenue in near future, the level-of service for intersections along Citrus Avenue will continue to worsen without planned improvements in place.

Table 5.9 Future 2035 With Developments LOS Results

Loc. #	Intersection	AM Peak Hour		PM Peak Hour	
		V/C or Delay	LOS	V/C or Delay	LOS
1	Hollenbeck Avenue and Cypress Street	0.712	C	0.646	B
2	Hollenbeck Avenue and San Bernardino Road**	0.926	E	0.931	E
3	Hollenbeck Avenue and Badillo Street**	0.889	D	0.922	E
4	3rd Avenue and San Bernardino Road	0.472	A	0.581	A
5	3rd Avenue and College Street*	7.9	A	8.1	A
6	3rd Avenue and Badillo Street**	33.3	D	50.9	F
7	Citrus Avenue and Cypress Street	0.660	B	0.651	B
8	Citrus Avenue and Metrolink Station	0.309	A	0.462	A
9	Citrus Avenue and Front Street	0.353	A	0.487	A
10	Citrus Avenue and Geneva Place*	15.4	C	19.9	C
11	Citrus Avenue and San Bernardino Road	0.752	C	0.830	D
12	Citrus Avenue and Orange Street/School Street*	19.2	C	22.1	C
13	Citrus Avenue and Cottage Drive*	15.5	C	19.4	C
14	Citrus Avenue and College Street	0.466	A	0.524	A
15	Citrus Avenue and Badillo Street**	1.000	E	0.930	E
16	2nd Avenue and Front Street*	8.3	A	8.6	A
17	2nd Avenue and San Bernardino Road	0.295	A	0.469	A
18	2nd Avenue and College Street	0.211	A	0.443	A
19	2nd Avenue and Badillo Street	0.529	A	0.539	A
20	Barranca Avenue Cypress Street	0.722	C	0.760	C
21	Barranca Avenue and San Bernardino Road	0.587	A	0.519	A
22	Barranca Road and Badillo Street	0.768	C	0.695	B

** Stop Controlled Intersection*

** Oversaturated Condition

For the year 2035, 18 out of 22 study intersections are expected to operate at a level-of-service "D" or better for the AM and PM peak periods. The four failing intersections will require geometric improvements (additional travel lanes) and/or operational enhancements (signal timing adjustments) to mitigate the impacts of future traffic growth within the study area.

5.6 Proposed Improvements – Bicycle and Pedestrian Improvements

The ultimate goal of this study is to improve the current transportation system to support the growing pedestrian and bicycle usage within the City. The best way to improve transportation systems is to improve walking and bicycling access to transit as well as employment centers, schools and other major destinations. As the City's population grows and activity centers become congested, all modes will complement each other, serving specific types of trips, instead of competing. The City of Covina completed a *Bikeway Network Study* in July 2010. **Table 5.10** summarizes the proposed bikeway improvements within this project study area, specifically a half-mile on either side of Citrus Avenue, and a half mile north and south of Edna Place and Badillo Street, respectively.

Table 5.10 Proposed Arterial Bikeway Network (North-South)

Roadway	Class	From	To	Length (miles)	Planning-Level Cost Estimate
Vincent Ave	2	Edna Place	Badillo St	0.45	$45,000
Lark Ellen Ave	2	Edna Place	Grovecenter St	0.52	$52,000
Azusa Ave	2	Arrow Hwy	200' south of Grovecenter St	1.52	$152,000
Hollenbeck Ave	2	Arrow Hwy	Workman Ave	2.16	$216,000
Hollenbeck Ave (Northbound Only)	2	Workman Ave	Mardina St	0.11	$11,000
4th Ave	3	San Bernardino Rd	Puente St	0.49	$13,790
Citrus Ave	2	Arrow Hwy	Front St	1.05	$105,000
	2	Badillo St	Workman Ave	0.75	$75,000
Second Ave	2	Front St	Rowland Ave	0.87	$87,000
Barranca Ave	2	Arrow Hwy	Workman Ave	2.16	$216,000
Grand Ave	2	Arrow Hwy	Walnut Creek channel	2.15	$215,000
Glendora Ave (Bike Lane Improvements)	2	Arrow Hwy	Badillo St	1.41	$141,000
Bonnie Cove Ave	2	Badillo St	Puente St	0.25	$25,000
	3	Cienega Ave	Covina Blvd	0.25	$7,000
Reeder Ave	2	Covina Blvd	Cypress St	0.25	$25,000
	2	Cypress St	Farland St	0.12	$12,000
Sunflower Ave	3	Farland St	Sachs Pl	0.07	$2,070
	2	Sachs Pl	350' south of Sachs Pl	0.07	$7,000
	3	350' s/o Sachs Pl	Ruddock St	0.15	$4,140
	2	Ruddock St	Old Badillo St	0.25	$25,000
	3	Old Badillo St	Puente St	0.28	$7,800
	2	Cienega Ave	Badillo St	0.69	$69,000
			TOTAL	16.0	$1,512,800

Table 5.11 Proposed Arterial Bikeway Network (East-West)

Roadway	Class	From	To	Length (miles)	Planning-Level Cost Estimate
Arrow Hwy	2	Enid Ave	1000' e/o Grand Ave	2.6	$260,000
Cienega Ave	2	Barranca Ave	Starcrest Dr	0.21	$21,000
	3	Starcrest Dr	200' e/o Starcrest Dr	0.04	$1,060
	2	200' e/o Starcrest Dr	Sunflower Ave	1.77	$177,000
Covina Blvd	2	Azusa Ave	Asherton Ave	3.76	$376,000
Cypress Ave	2	Leaf Ave	Badillo St	4.19	$419,000
Edna Pl	2	Barranca Ave	Grand Ave	0.49	$49,000
Front St	2	Citrus Ave	Second Ave	0.12	$12,000
San Bernardino Rd	2	Morada Ave	Hollenbeck Ave	1.64	$164,000
	3	Hollenbeck Ave	Second Ave	0.63	$17,550
	2	Second Ave	Grand Ave	0.87	$87,000
Badillo St	2	250' w/o Vincent Ave	600' e/o Vincent Ave	0.2	$20,000
	2	Lark Ellen Ave	San Dimas city limit	4.05	$405,000
Puente St	3	Armel Dr	Heathdale Ave	0.09	$2,650
	2	Heathdale Ave	Hollenbeck Ave	0.13	$13,000
	3	Hollenbeck Ave	3rd Ave	0.39	$10,870
	2	3rd Ave	Citrus Ave	0.13	$13,000
	3	Citrus Ave	Barranca Ave	0.51	$14,210
	2	Barranca Ave	Glendora Ave	1.00	$100,000
	3	Glendora Ave	400' e/o Shouse Ave	0.20	$5,570
	3	300' w/o Starglen Dr	Starglen Dr	0.06	$1,700
	3	Reeder St	San Dimas city limit	0.26	$7,320
Rowland Ave	2	Armel Dr	Grand Ave	1.73	$173,000
Covina Hills Rd	3	Grand Ave	Oak Canyon Rd	0.22	$6,100
	2	Oak Canyon Rd	Rancho Sinaloa Dr	0.33	$33,000
	3	Rancho Sinaloa Dr	San Dimas city limit	0.41	$11,450
Workman Ave	3	150' w/o Armel Dr	Citrus Ave	0.89	$24,820
	2	Citrus Ave	Workman St/ Workman Ln	0.82	$260,000
	3	Workman St/ Workman Ln	400' e/o Workman St/Ln	0.08	$2,120
Holt Ave	3	Garvey Ave N	Covina Hills Rd	0.56	$15,800
			TOTAL	28.4	$2,703,220

In the north-south direction, the Bikeway Network Study recommends bike lanes for Citrus Avenue immediately adjacent to the Metrolink Station. These planned bike lanes will connect to

Front Street and Badillo Street are within the project study area and the Bikeway Network Study recommends Class II bike lanes on these roadways. On San Bernardino Road, the Bikeway Network Study proposes Class II bike lanes from Second Avenue to Grand Avenue and a Class III bike route from Second Avenue to Hollenbeck Avenue, which is also in the project study area. In the north-south direction, the Bikeway Network Study recommends Class II bike lanes for Citrus Avenue immediately adjacent to the Metrolink Station. These planned bike lanes will connect to Front Street, run parallel to the Downtown Covina corridor on Second Avenue, and resume on Citrus Avenue at Badillo Street.

Citrus Avenue is currently two lanes in each direction with a center left-turn lane or raised median north of San Bernardino Road and south of Badillo Street. The curb lane is wide and can accommodate both on-street parking and bike lanes on both sides in most locations, provided the adjacent lanes and median are narrowed. However, the segment between Front Street and Badillo Street in the downtown area is not appropriate for bike lanes because of the existing angled parking and corresponding lack of roadway width. The Bikeway Network Study recommends implementing Class II bike lanes to the east on Second Avenue in this area instead.

Second Avenue is currently two lanes in each direction with a center left-turn lane north of Puente Street and a center stripe south to Rowland Avenue. The curb lane is wide and can accommodate both on-street parking and bike lanes on both sides north of Puente. **Figure 5.8** illustrates the cross-sections of the existing and proposed lane configurations.

Figure 5.9 presents the Proposed Citywide Bikeway Network, with coloring based on project priority.

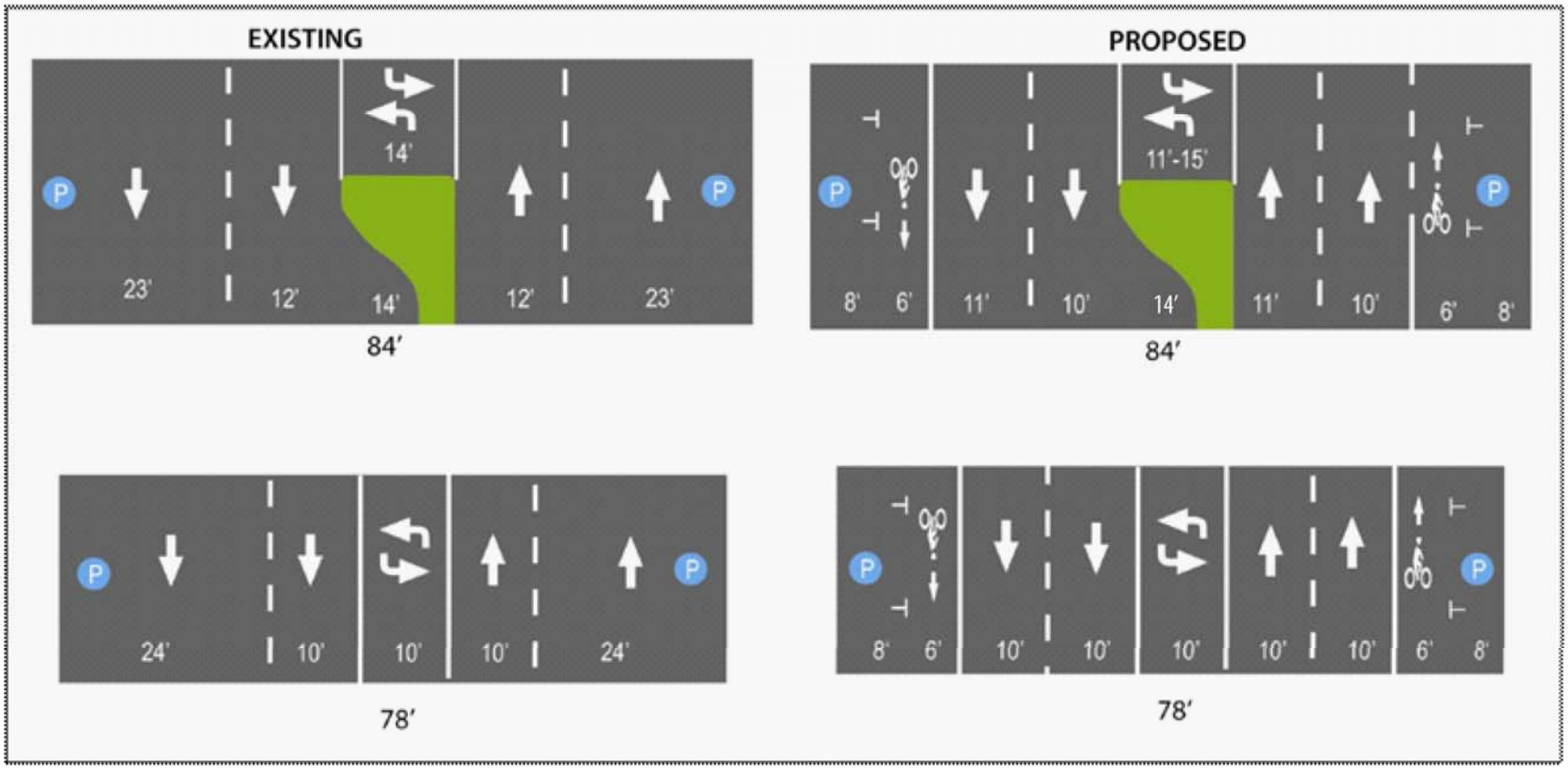


Figure 5.8 Cross Section of Proposed Class II Bikeway on 2nd Avenue

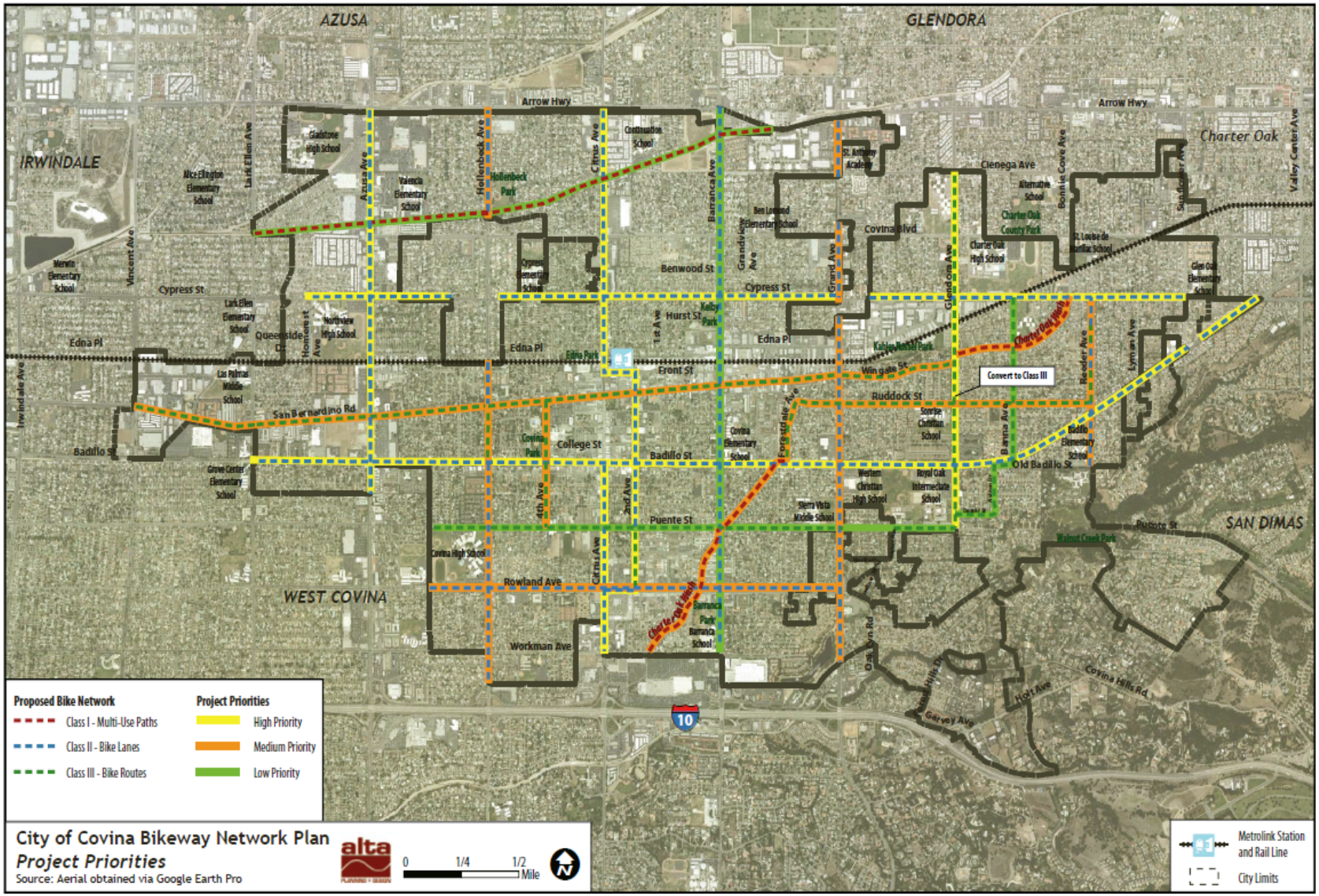


Figure 5.9 Proposed Citywide Bikeway Network

5.7 Proposed Improvements – Traffic Signal Improvements

The City needs a traffic signal system designed to make the most efficient use of the City's traffic signals by synchronizing traffic signals. "Synchronization" in this context refers to adjusting the timing parameters of signals along a corridor to minimize stops and delay. This is achieved by ensuring maximum green light times for the heaviest traffic flows and allows signal cycle time to adjust based on changing demands during peak hours.

Based upon the on-site observations of the study intersections and a review of timing plans by ADVANTEC staff in November 2010, the currently implemented timing plans for the AM and PM peak period are outdated and need refinement based on the existing traffic flow patterns. Important streets within the study area such as Barranca Avenue, Cypress Avenue, San Bernardino Road, Hollenbeck Avenue and Badillo Street have been identified specifically for improved signal timing by optimizing signal timing parameters.

The traffic counts indicate that the east-west traffic flow through the study area is directional in nature (e.g. heavy westbound traffic on Badillo Street and San Bernardino Road in the AM peak and heavy eastbound traffic in the PM peak period). Accordingly, **Figure 5.10** shows the recommended direction-wise synchronization schemes for the streets within the study area. For these streets, the phase splits and intersection offsets would to be optimized for favoring the direction of heavy traffic volumes in each peak period thereby reducing travel time, delay and number of stops. The north-south streets demonstrate balanced traffic flows whereas east-west streets show a directional shift in the AM and PM peak hours. Likewise, traffic signal timing parameters would be optimized to achieve equal progression in north-south directions and directional progression for the east-west streets during the AM and PM peak hours of traffic. However, since synchronization involves creating design stops to form platoons, synchronization of signals just within the study area limits may cause disruption to the regional traffic flow. A city-wide signal synchronization effort could eliminate that problem.

Overall, synchronization of signals will improve the quality of life and bring direct savings to the residents by reduction in emissions and fuel consumption.

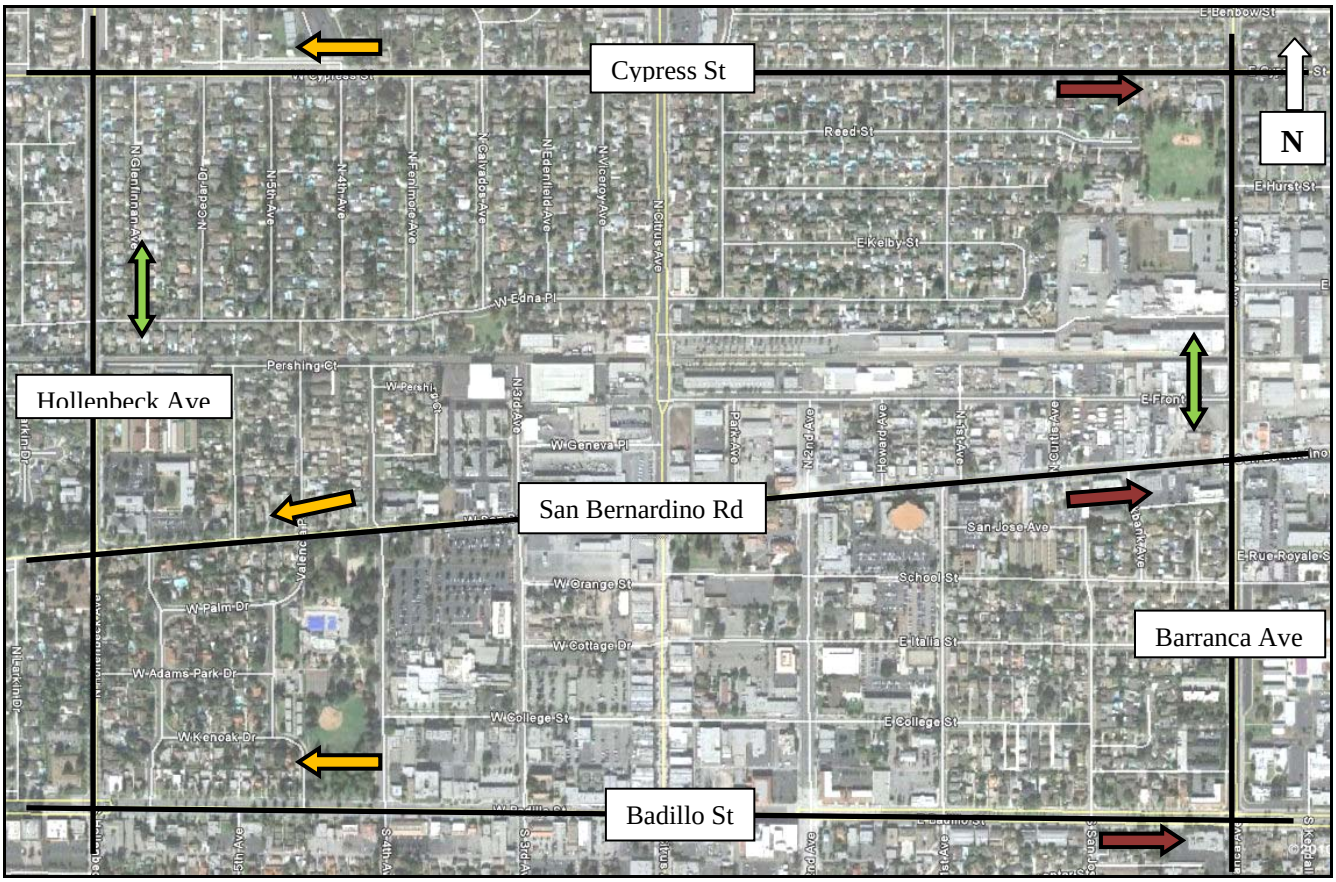


Figure 5.10 Recommended Signal Synchronization Scheme

Remove Split Phasing at Barranca Avenue / Cypress Street

Currently, the intersection of Barranca Avenue and Cypress Street is signalized and is operating with a split phasing for east-west movements. The signal control allows Cypress Street to flow eastbound, then westbound, but never concurrently. This results in queuing and delay to the commuters during peak hours in the east-west direction. A Simtraffic based simulation model was developed to measure the effectiveness of current split phasing scheme. It was established through simulation model that split phasing is not suitable for this intersection. With rise in traffic volumes in future, the traffic operations on this intersection will continue to deteriorate with the current split-phasing. A protected-permissive phasing is recommended for east-west direction at this intersection, as illustrated in **Figure 5.11**.

Although a protected-permissive phasing will regulate the flow in the east-west directions better than the current split phasing, the existing north-south synchronization on Barranca Avenue will be impacted due to lesser green times available to the north-south movements.

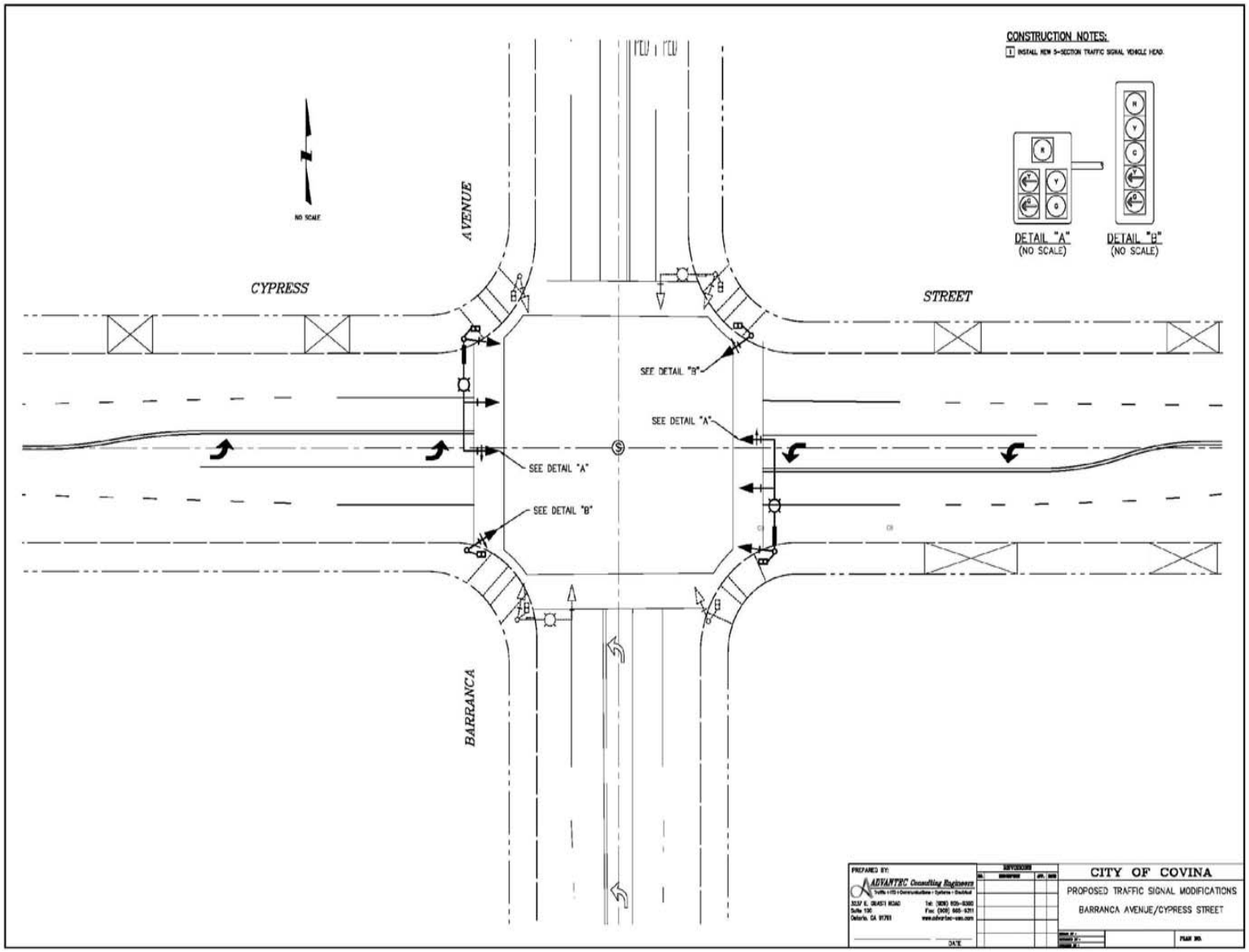


Figure 5.11 Proposed Signal Phasing Changes at Barranca Ave / Cypress St

6.0 Cost Estimates for Design Alternatives

This section presents unit costs and project concept cost estimates for the improvements presented in the previous section. Table 6.1 presents industry-standard planning-level unit cost estimates.

Table 6.1 Unit Costs

Improvement	Unit	Cost / Unit	Notes
Bike Lanes	miles	$120,000	Includes cost of restriping auto travel lanes
Bike Racks	ea	$500	
City-Wide Traffic Signal Synchronization	ea	$175,000	
Crosswalk Striping, High Visibility	LF	$15	
Crosswalk Striping, Parallel	ea	$300	
Crosswalk, Midblock signal	ea	$60,000	
Curb Extension, Major	ea	$25,000	
Curb Ramps	pair	$10,000	
Lighting	ea	$3,000	
Median Landscaping	SF	$1.50	Five-gallon low spreading shrub
Metrolink Station Parking Lot Improvements	ea	$195,000	
New Sidewalk	LF	$100	
Parking Restriping	LF	$20	
Ped Countdown Signals	ea	$800	
Pedestrian Plaza	ea	$95,000	Includes costs for concrete, colored concrete, 4 palms, 4 benches, trash + 10% design and contingency
Railings	LF	$30	
Refuge Island	ea	$20,000	
Sharrows	miles	$20,000	Includes lane markings and signs
Sidewalk Widening	LF	$40	2' width of sidewalk widening
Signs, Pedestrian Warning	ea	$200	
Street Trees	ea	$1500	

Table 6.2 presents planning-level cost estimates for the overall bikeway system in the Metrolink Station and Downtown area and for each project concept sheet. The total project cost for the Metrolink Station and Downtown area improvements is approximately $**1.2 million**.

Table 6.2 Planning-Level Cost Estimates

Sheet	Facility	Extents	Improvement	Qtty	Unit	Cost / Unit	Total Cost
Overview	Edna Pl	First Ave to Fenimore Ave	Sharrows	0.5	miles	$23,000	$10,000
	San Bernardino St	First Ave to Fourth Ave		0.5	miles		$10,000
	Citrus Ave	Cypress St to Edna Pl	Bike Lanes	0.2	miles	$120,000	$24,000
	Citrus Ave	Badillo St to El Puente St		0.25	miles		$30,000
	Badillo St	First Ave to Fourth Ave		0.5	miles		$60,000
	Front St	Citrus Ave to Second Ave		0.1	miles		$12,000
	Second Ave	Front St to El Puente St		0.6	miles		$72,000
						Subtotal	$198,000
						Sheet Total	**$218,000**
S-01	Citrus Ave	Metrolink Station	Pedestrian Plaza	1	ea	$95,000	$95,000
			Railings		LF	$30	$15,000
			Curb Ramps	1	pair	$10,000	$10,000
			Ped Countdown Signals	2	ea	$800	$1,600
			Signs, Pedestrian Warning	1	ea	$200	$200
			Median Landscaping	1,000	SF	$1.50	$1,500
			Stall Striping	1	ea	$40,000	$40,000
		@ Citrus west sidewalk	Sidewalk Widening	375	LF	$40	$15,000
		@ Citrus east sidewalk	Sidewalk Widening	125	LF	$40	$5,000
		@ Citrus east sidewalk	New Sidewalk	60	LF	$100	$6,000
			Street Trees	5	Ea	$1,500	$7,500
						Subtotal	$196,800
	Citrus Ave	Front St	Curb Ramps	1	pair	$10,000	$10,000
		@ Metrolink Parking Dwy	Sidewalk Widening	150	LF	$40	$6,000
			Crosswalk Striping, Parallel	1	ea	$300	$300
						Subtotal	$16,300
						Sheet Total	**$213,100**

Sheet	Facility	Extents	Improvement	Qtty	Unit	Cost / Unit	Total Cost
S-02	Citrus Ave	Geneva Pl	Sidewalk Widening	130	LF	$40	$5,200
			Curb Extension, Major	1	ea	$25,000	$25,000
						Subtotal	$30,200
	Citrus Ave	San Bernardino Rd	Curb Extension, Major	1	ea	$25,000	$25,000
		@ Citrus east sidewalk	New Sidewalk	225	LF	$100	$22,500
			Street Trees	12	ea	$1,500	$18,000
						Subtotal	$47,500
						Sheet Total	**$95,700**
S-03	Citrus Ave	Orange St	Crosswalk Striping, High Vis.	50	LF	$15	$750
		Orange St to College St	Parking Restriping	580	LF	$20	$11,600
			Bike Racks	3	ea	$500	$1,500
		Italia / Cottage St	Ped Countdown Signals	4	ea	$800	$3,200
		College St	Ped Countdown Signals	4	ea	$800	$3,200
						Sheet Total	**$20,250**
S-04	Citrus Ave	College St to Badillo St	Parking Restriping	370	LF	$20	$7,400
			Crosswalk Striping, High Vis.	50	LF	$15	$750
			Signs, Pedestrian Warning	2	ea	$200	$400
			Bike Racks	1	ea	$500	$500
						Subtotal	$9,050
		Badillo St	Ped Countdown Signals	8	ea	$800	$6,400
			Curb Extension, Major	2	ea	$25,000	$50,000
						Subtotal	$56,400
						Sheet Total	**$65,450**
S-05	San Bernardino Rd	Third Ave	Ped Countdown Signals	8	ea	$800	$6,400
	Geneva Pl	Citrus Ave to Third Ave	Lighting	10	ea	$3,000	$30,000
						Sheet Total	**$36,400**
S-06	Third Ave	Cottage Dr	Signs, Pedestrian Warning	2	ea	$200	$400

Sheet	Facility	Extents	Improvement	Qtty	Unit	Cost / Unit	Total Cost
			Crosswalk Striping, High Vis.	35	LF	$15	$525
		College St	Crosswalk Striping, Parallel	4	ea	$300	$1,200
						Sheet Total	**$2,125**
S-07	Badillo St	Third Ave	Signs, Pedestrian Warning	2	ea	$200	$400
			Crosswalk Striping, High Vis.	130	LF	$15	$1,950
			Curb Extension, Major	1	ea	$25,000	$25,000
						Sheet Total	**$27,350**
S-08	Second Ave	San Bernardino Rd	Ped Countdown Signals	8	ea	$800	$6,400
			Curb Extension, Major	4	ea	$25,000	$100,000
						Sheet Total	**$106,400**
S-09	Second Ave	School / Italia / College St	Curb Extension, Major	12	ea	$25,000	$300,000
				4	ea	$800	$3,200
						Sheet Total	**$303,200**
S-10	Badillo St	Second Ave	Ped Countdown Signals	8	ea	$800	$6,400
			Curb Extension, Major	4	ea	$25,000	$100,000
						Sheet Total	**$106,400**
					Overall Total		**$1,194,375**

7.0 Recommended Programs

This chapter describes programs that will enhance the improvements proposed in this plan through education about bicyclists' rights and responsibilities, safe walking practices and bicycle operation; existing walking and bicycling resources; and encouragement programs.

Enforcement

Bicyclists, pedestrians, and motorists alike are sometimes unaware of each other's rights as they travel city streets. Enforcement programs target unsafe bicyclist and motorist behaviors and enforce laws that reduce bicycle/motor vehicle collisions and conflicts. Enforcement fosters mutual respect between roadway users and improves safety. These programs generally require coordination between law enforcement, transportation agencies, and bicycling organizations. Educating the public through enforcement policies will supplement the physical improvements made in Downtown Covina.

Targeted enforcement

Target Audience: Cyclists and motorists

Traffic enforcement agencies, e.g. the Police Department, enforce laws pertaining to bicycles as part of the responsible normal operations. Targeted enforcement is one way to publicize bicycle laws in a highly visible and public manner. Targeted enforcement may take the form of intersection stings, handing out informational sheets to motorists, bicyclists and pedestrians; and enforcing speed limits and right-of-way. This program is particularly applicable at the Citrus Avenue / Metrolink Station crossing. The City police department would work with motorists, bicyclists, and pedestrians to identify and enforce traffic regulations at problematic locations. The City would consider the option of a roadway safety course in lieu of a fine.

Speed Radar Trailer / Permanent Speed Signs

Target Audience: Motorists

Speed radar trailers can help reduce traffic speeds and enforce speed limits in areas with speeding problems. Police set up an unmanned trailer that displays the speed of approaching motorists along with a speed limit sign. Speed trailers may be effective on busier arterial roads without bikeway facilities or near schools with reported speeding. The speed trailer's roadway placement would not obstruct bicycle traffic.

Speed trailers work as both an educational and enforcement tool. By itself, the unmanned trailer educates motorists about their current speed in relation to the speed limit.

Speed Radar Trailer

Speed trailers can transport easily to streets where local residents complain about speeding problems. The Sheriff's Department may station an officer near the trailer to issue speeding citations when speeding continues to occur.
City staff may provide the management role for this program, working with the public and determine which locations are in most need. This program can administer randomly, cyclically, or as demand necessitates because of the speed trailers' portability.

Portland, OR Bicycle Patrol Officer

Bicycle Patrol Units

Target Audience: Cyclists and motorists On-bike officers are an excellent tool for community and neighborhood policing because they are more accessible to the public and able to mobilize in areas where patrol cars cannot (e.g., overcrossings and paths). Bike officers undergo special training in bicycle safety and bicycle-related traffic laws and are therefore especially equipped to enforce laws pertaining to bicycling. Bicycle officers help educate cyclists and motorists through enforcement and also serve as excellent outreach personnel to the public at parades, street fairs, and other gatherings.

The City of Covina Police Department currently includes bicycle officers. The City would work with the Police Department to provide bicycle patrol units at prominent public events and to provide instruction on the "rules of the road" at schools and other events. Bicycle patrol units can also periodically monitor pedestrian and bicyclist behavior through Downtown and at the Metrolink Station.

Bicycle Light Enforcement

Target Audience: Cyclists
California Vehicle Code (CVC) §21201 requires bicycles to mount a front white light and red rear reflectors. Bicycling without lights reduces bicyclists' visibility and visibility to motor vehicles, and therefore increases bicyclists' risks of being involved in bicycle-car crashes. For these reasons, increasing bicycle light use would be a top priority for improving bicycle safety in the City of Covina.
Bicycle light enforcement can effectively impact behavior particularly if bicyclists can avoid penalty by obtaining a bike light. One option is for officers to give offenders warnings, explain the law, and install a free bike light at the time of citation. Alternatively, officers can write "fix it tickets" and waive the fine if bicyclists can prove that they have purchased a bike light within a specified timeframe. When citing bicyclists, officers can also provide coupons for free or discounted lights at a local bike shops, if available.
Bicycle light enforcement can work in tandem with outreach efforts. The Los Angeles County Bicycle Coalition (LACBC) administers a program called "City Lights" that features free bicycle lights in conjunction with educational materials. The City can tailor this program to fit its unique needs.

Bike light outreach campaigns can include the following components:

- Placing advertisements on transit benches, transit vehicles, and local newspapers reminding bicyclists about the importance of bike lights.
- Distributing media releases with statistics about the importance of using bike lights and relevant legal statutes.
- Partnering with local cycling groups to publicize bicycle light use, especially at schools. Groups would receive campaign materials to distribute to constituents along with coupons for free or discounted bike lights.
- Stationing volunteers at key intersections and paths to thank bicyclists for bike lights, rewarding cyclists with a small gift.
- Organizing a community bike light parade with prizes.
- Providing discounts on bike lights and reflective gear at local bike shops.

The City of Covina would work through the Police Department and local bike shops to offer incentives for mounting bike lights, including staging bike light giveaways and providing coupons rather than tickets to offenders.

Education

Education programs enable bicyclists, pedestrians, and motorists to understand how to travel safely in the roadway environment according to the law. Education programs are available in an array of mediums, from long-term courses with detailed instruction to single sessions focusing on a specific topic. Curriculums would be appropriate to the target audience and to the format of instruction.

Youth Bicycle Safety Education

Target Audience: Youth

Youth bicycle safety programs educate students about the rules of the road, proper use of bicycle equipment, biking skills, street crossing skills, and the benefits of bicycling. Such education programs are frequently part of Safe Routes to School programs. Bicycle safety education can integrate into classroom time, physical education periods, or after school. Classroom lessons administered by a volunteer, trained professional, law enforcement officer, or teacher can teach children about bicycling and traffic safety. Individual lessons would focus on one or two key issues and include activities that are fun and engaging. Bicycle safety lessons are most appropriate for fourth through eighth grade students[6]. The National Center for Safe Routes to School (SR2S) online guide summarizes key messages to include in pedestrian and bicycle safety curriculums.[7]

[6] Safe Routes to School National Partnership, http://www.saferoutespartnership.org/state/bestpractices/personalsafety

[7] http://www.saferoutesinfo.org/guide/education/key_messages_for_children.cfm

In addition to classroom-based activities, periodic "safety assemblies" can also provide bicycle safety education. Safety assemblies convey a safety message through the use of engaging and visually stimulating presentations, videos, skits, guest speakers, or artistic displays. Assemblies would be relatively brief and focus on one or two topics. Classes receiving on-going instruction on related topics can participate by presenting their lessons to the rest of the school. Schools can reinforce safety assembly lessons by reiterating the message in school announcements, school newsletters, posters, or other means. Beyond providing safety instruction, safety assemblies are a good avenue to generate enthusiasm about biking in children.

Apart from Safe Routes to School programs, the City would generally provide youth bicycle safety education on a citywide basis during critical periods, such as at the beginning of the school year.

Bicycle Skills Courses

Target Audience: General public

Most bicyclists do not receive comprehensive instruction on safe and effective bicycling techniques, laws, or bicycle maintenance. Bike skill training courses are an excellent way to improve both cyclist confidence and safety. The League of American Bicyclists (LAB) developed a comprehensive bicycle skills curriculum considered the national standard for adults seeking to improve their on-bike skills. The classes include bicycle safety checks and basic maintenance, basic and advanced on-road skills, commuting, and driver education.[8] Non-profit organizations like the LACBC typically partner with LAB-certified instructors to offer bicycle skills courses. Another local area bicycle advocacy organization, CICLE (Cyclists Inciting Change thru Live Exchange), offers skills instruction courses.[9]

The City would partner with non-profit organizations such as the LACBC and CICLE to incorporating bicycle skills courses into recreation center programs or other city programs, especially in conjunction with opening new bicycle facilities and other bicycle-involved special events.

Bicycle Rodeos

Target Audience: Children

Bicycle Rodeos are individual events that help students develop basic bicycling techniques and safety skills through the use of a bicycle safety course. Rodeos use playgrounds or parking lots set-up with stop signs, traffic cones, and other props to simulate the roadway environment. Students receive instruction on how to maneuver, observe stop signs, and look for on-coming traffic before proceeding through intersections. Bicycle Rodeos also provide an opportunity for instructors to ensure children's helmets and bicycles are appropriately sized. Events can include free or low-cost helmet distribution and bike safety checks. Trained adult volunteers, local police, and the fire department can administer Rodeos.

The City of Covina would administer Bicycle Rodeos as stand-alone events and as events incorporated into health fairs, back-to-school events, and Walk and Bike to School days.

[8] www.bikeleague.org/programs/education/courses.php.
[9] http://www.cicle.org/bike_now/ed_program_page.php

Sample Bicycle Signage, Berkeley, CA

Encouragement

Encouragement programs focus on encouraging people to bicycle more frequently by providing incentives, recognition, or services that make bicycling a more convenient transportation mode.

Signage Program

A signage program can support individuals choosing to make non-motorized trips by advertising routes and popular destinations. The City may develop a uniform signage concept and plan for bikeways and walkways, including uniform sign designs, placement guidelines (e.g. sign location and frequency), a map of proposed corridors to receive signage, and guides on avoiding placing excessive signage. Signage posted along bikeways and walkways would be consistent with other City signage standards. The City would implement a signage plan for the Downtown corridor specifically, or as part of implementing an overall Bicycle Master Plan.

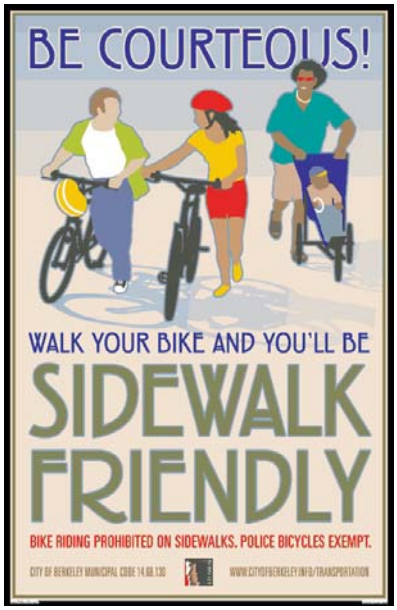
Share the Road Education Campaign

A Share the Road campaign educates motorists, bicyclists and pedestrians about their legal rights and responsibilities on the road, and the need for increased courtesy and cooperation among all users. Share the Road campaigns often hold periodic traffic checkpoints along roadways with concentrated bicycle and pedestrian activity. Motorists, bicyclists and pedestrians stop at these checkpoints to receive a Share the Road flyer and can give feedback to officers regarding the campaign. Checkpoints can also occur along local bikeways and paths. Public service announcements on radio and television can help promote the Share the Road campaign. The Marin County Bicycle Coalition offers an example of a successful Share the Road campaign.[10]
The City may implement a citywide Share the Road campaign in conjunction with a new bicycle facility. Alternatively, the City may introduce a targeted campaign that includes law enforcement to respond to roadways with heightened potential for conflict. In support of the Share the Road campaign, a very similar Share the Sidewalk campaign focusing on the public's legal rights on the use of sidewalk is scheduled to be undertaken by the City in this fall.

[10] www.marinbike.org/Campaigns/ShareTheRoad/Index.shtml.

Share the Road Education Campaign

A Share the Sidewalk campaign will educate bicyclists, pedestrians, and motorists that the City of Covina's Municipal Code requires that bicycles be ridden on the street with traffic flow or that bicyclists dismount and walk their bicycles on the sidewalk. Through posters, signage, flyers, and other various forms of outreach, the campaign will inform bicyclists to share the sidewalk with pedestrians. The City may also choose to engage in targeted enforcement on sidewalks to alert bicyclists of sidewalk riding restrictions. The City of Berkeley uses signage and posters to remind bicyclists to walk their bicycles on sidewalks.



City of Berkeley's Share the Sidewalk Campaign

Multi-Modal Access Guide

A multi-modal access guide provides information on accessing specific destinations using bicycling, walking and public transit. An access guide can be as simple as a map printed on the back of a business card, or as complicated as multi-page packets. Items commonly included in access guides include:

- An area map depicting bus stops, recommended routes, landmarks, facilities such as restrooms and drinking fountains, bicycle parking, and major roads
- Information on transit service frequency, fares, accepted payment, schedules, and transit service provider contact information
- Information on walk or bike travel time from a transit center to a destination
- Accessibility information for people with disabilities

An effective guide would provide graphics, specific step-by-step travel directions, parking location and pricing information, and information about the benefits of walking and bicycling. High quality access guides would be concise and accurate, and would incorporate input from key stakeholders including public transportation operators, public officials, public and private employees, guide distributors, and those with disabilities. The Metro website provides additional resources on bicycle-public transit connections.[11]

The City of Covina would work with Foothill Transit and Metrolink to integrate these transit providers' information with the City's Downtown and citywide bicycle network map to create a citywide multi-modal access guide.

Community Bikeway/Walkway Adoption

Community Bikeway/Walkway Adoption programs resemble the widely instituted Adopt-a-Highway programs throughout the country. These programs identify local individuals, organizations, or businesses interested in "adopting" a bikeway, walkway, or shared-use path. "Adopting" a facility means that a person or group is responsible for the facility's maintenance,

[11] http://www.metro.net/around/bikes/bikes-metro/

either through direct action or funding the City's maintenance of that facility. For example, members of a local recreation group may volunteer every other weekend to sweep a bikeway and identify larger maintenance needs. Alternatively, a local bike shop may adopt a bikeway by providing funding for the maintenance costs. Some adopted bikeways post sponsors' names on bikeway signs to display their commitment to bicycling.

The City of Covina would actively seek sponsorship and/or adoption relationships when implementing suitable bikeway facilities. For instance, Downtown merchants can sponsor bicycle improvements and programs on Citrus and Second Avenue.

Community Walks/Bike Tours

Community walks and tours are healthy ways to promote historical and cultural aspects of the City. Groups that can organize community tours include City staff, neighborhood organizations, schools, and other groups that want the public to interact with the physical environment. Community walks and bike tours are effective tools for examining potential improvements to the physical environment and educating participants on resources/amenities available within the City. The City of Covina would organize community walk/bike tours through community and business groups, such as the local chamber of commerce and the Covina Downtown Association.

Bicycling Campaigns[12]

Bike to Work and School events are high profile, encouragement programs that introduce people to bicycle commuting. These events also serve to change the general public's perceptions and attitudes toward bicycle commuting. Common elements of Bike to Work events include commuting workshops, guided commutes, and group rides to increase comfort and familiarity with bicycling routes. Organizers can supplement these events with stations or bicycle pit stops to reward bicycle commuters with treats and other incentives, team bicycling challenges, and celebrity events (e.g., Mayor bikes to work).

Bike to School event

The City of Covina would implement Bike to Work and School events in conjunction with Safe Routes to School programs and other regional, statewide, and nationwide events. For instance, the League of American Cyclists promotes May as National Bike Month, during which they designate a Bike-to-Work Week and Bike-to-Work Day.[13] The Downtown corridor is a good location to host a "bicycle pit-stop" for Bike-to-Work Week and other events.

[12] http://www.metro.net/around/bikes/bikes-metro/bike-to-work/
[13] http://www.bikeleague.org/programs/bikemonth/

Bicycling Maps

One of the most effective ways of encouraging people to bicycle is to distribute maps and guides to show that bicycle infrastructure exists. A map can also demonstrate the ease in accessing different parts of the community by bike, and highlight unique areas, shopping districts, or recreational areas. Maps can be countywide, community-specific, or neighborhood maps, and can be available on paper and/or online.

Schools may create specialized biking and walking maps to direct students to walk and bicycle along the safest routes to school. These specialized maps may include arrows to indicate the routes and show stop signs, signals, crosswalks, sidewalks, trails, overcrossings, and crossing guard locations surrounding the school. The maps would focus on the attendance boundary of a particular school. Routes would take advantage of low volume residential streets and off-street facilities such as bike paths, sidewalks, and pedestrian bridges.

The City will work with Los Angeles County to include the City of Covina's proposed Downtown and citywide bikeways in regional existing and proposed bikeway network maps. The Metro website provides bike maps for the region.[14]

Event Bicycle Parking

Providing safe and secure bicycle parking helps encourage individuals to bicycle. San Francisco passed a city ordinance that requires all major city events to provide bike parking and pioneered an innovative tool for stacking hundreds of bicycles without racks.[15] The City of Covina contracted with the Los Angeles County Bicycle Coalition to provide bike valet services at the City's inaugural Green Fair in March 2011. As a way to accommodate more residents and visitors traveling by bicycle and as a way to encourage others to take up bicycling, the City would integrate event bicycle parking in future events, such as the Farmers' Market and Family Night event held at Civic Center Park.

Ciclovias/ "Sunday Streets" [16]

First implemented in Bogota, Colombia, the Ciclovia is a community event based around a street closure. Ciclovias provide local recreational and business opportunities for the community and are increasingly popular citywide events. Ciclovias can combine with other popular community events to promote walking and bicycling as a form of viable transportation. Ideally, Ciclovias would provide access to civic, cultural, or commercial destinations.

The City of Covina would pursue implementing a regional Ciclovia with adjacent municipalities on a common roadway, like Badillo Road. Alternatively, the City would consider facilitating a Ciclovia in conjunction with other environmentally-friendly events, e.g. the Covina Green Fair and Earth Day.

Inaugural CicLAvia, Los Angeles, CA
October 10, 2010

Citrus Avenue and Second Avenue are suitable facilities for hosting Covina-specific events.

[14] http://www.metro.net/around/bikes/bikes-metro/
[15] www.sfbike.org/?valet
[16] More information is available at www.healthystreets.org/pages/sunday_parkways.htm and http://www.ciclavia.org

8.0 Funding Programs

Funding

The following section summarizes potential federal, state, local, and other funding sources that can assist with the implementation of the facilities proposed within this report. The discussion includes a summary table listing each source of funding, amounts granted or earned in the last five years, and appropriate project opportunities for the City. This narrative also examines existing and potential federal, state, and local funding sources, and strategies available or recommended for pursuit. Finally, this section outlines a strategic approach to using the funding sources discussed.

All levels of government administer programs that may fund bicycle projects, programs, and plans. This section serves as a general guide to these federal, state, regional and non-traditional funding sources. Staff would refer to current guidelines provided by the granting agency when pursuing any funding opportunity. **Table 8.1** is a summary of the funding sources discussed in the subsequent sections.

Table 8.1 Bikeway Improvements Funding Summary

Granting Agency	Due Date	Fund Source(s)	Annual Funding (approx)	Matching Requirement	Eligible Bikeway Projects			Notes
					Comm-ute	Recre ation	Safety/ Educ	
Federal								
Regional Surface Transportation Program (RSTP)	Late winter / early spring (odd numbered years)	FHWA (via LAMTA)	$351 m (56% of CA 2010 STP funds totaling $626.5m)	11.47% (federal req.); 20% (LAMTA req.)	X			Apply through LAMTA Call for Projects, Bikeway category
Congestion Mitigation and Air Quality Program (CMAQ)	Late winter / early spring (odd numbered years)	FHWA (via LAMTA)	$365 m (CA 2010)	11.47% (federal req.); 20% (LAMTA req.)	X			Apply through LAMTA Call for Projects, TDM category
Highway Safety Improvement Program (HSIP)	December	FHWA (via Caltrans)	$74.5m (CA Cycle 4, 2011)	10%	X		X	Apply through Caltrans Call for Projects
Safe Routes to School - Federal	Early 2011	FHWA (via Caltrans)	$23 m nationwide	N/A	X	X	X	Infrastructure improvements must be within 2 miles of elementary or middle school.
New Freedom		FHWA			X		X	Improvements must address barriers to accessibility.

Table 8.1 Bikeway Improvements Funding Summary

Granting Agency	Due Date	Fund Source(s)	Annual Funding (approx)	Matching Requirement	Eligible Bikeway Projects			Notes
					Comm-ute	Recre ation	Safety/ Educ	
Transportation and Community and System Preservation Program (TCSP)	July	FHWA	$61.25 m nationwide (FY 2009)	20%	X	X		Solicitation request through Caltrans or via Congressional designation
State								
Transportation Enhancement Activities Program (TEA)	Late winter / early spring (odd numbered years)	State (via LAMTA)	$63 m (10% of CA 2010 STP funds totaling $626.5m)	11.47% (federal req.); 20% (LAMTA req.)	X			Apply through LAMTA Call for Projects, Bikeway category
Bicycle Transportation Account (BTA)	March	State(via Caltrans)	$7.2 m (FY 2010-2011)	min. 10% local match on construction	X		X	Apply through Caltrans Call for Projects
Safe Routes to School – State	June or July	State (via Caltrans	$24 m	10% min.	X	X	X	Primarily construction program to enhance safety of pedestrian and bicycle facilities.

Table 8.1 Bikeway Improvements Funding Summary

Granting Agency	Due Date	Fund Source(s)	Annual Funding (approx)	Matching Requirement	Eligible Bikeway Projects			Notes
					Comm-ute	Recre ation	Safety/ Educ	
Regional Transportation Improvement Program	Sept. (odd numbered years)	State (via LAMTA)	$700+m thru 2013, $400m thru 2015[17]	20% (LAMTA req.)	X			Submit candidate projects to Metro for evaluation and inclusion in the STIP.
AB 2766 Subvention Funds	February	AQMD	$56K (Covina, FY '08-09)	NA	X			Projects must reduce single occupancy vehicle trips.
Community-Based Transportation Planning (CBTP) Grant Program	March	State	$3m statewide (FY 2010-2011)	10%	X	X	X	Grant projects must demonstrate how they meet State and Regional Transportation Planning Goals.
Transportation Development Act (TDA) Article 3 (2% of total TDA)	End of FY (June)	Metro	Per capita, $4.9m statewide	N/A	X	X	X	Agencies must submit a claim form to Metro by the end of the fiscal year in which they are allocated. Failure to do so may result in the lapse of these allocations.
Regional								

[17] State of California (2010) 2010 State Transportation Improvement Program Fund Estimate. http://www.catc.ca.gov/programs/STIP/2010_STIP_FE_G-09-10.pdf

Table 8.1 Bikeway Improvements Funding Summary

Granting Agency	Due Date	Fund Source(s)	Annual Funding (approx)	Matching Requirement	Eligible Bikeway Projects			Notes
					Comm-ute	Recre ation	Safety/ Educ	
Metro Call for Projects: Bikeway Improvements	Late winter / early spring (biennial, next call in 2013)	Metro	$17.5 m	20% local match	X			Refer to latest Call for Projects Application Package for eligibility requirements.
Metro Call for Projects: Regional Surface Transportation Improvements (RSTI)	Late winter / early spring (biennial, next call in 2013)	Metro	$110 m	35% local match	X			Refer to latest Call for Projects Application Package for eligibility requirements.
Metro Call for Projects: Transportation Enhancement Activities (TEA)	Late winter / early spring (biennial, next call in 2013)	Metro	$6.5 m	20% local match	X		X	Refer to latest Call for Projects Application Package for eligibility requirements.

Table 8.1 Bikeway Improvements Funding Summary

Granting Agency	Due Date	Fund Source(s)	Annual Funding (approx)	Matching Requirement	Eligible Bikeway Projects			Notes
					Comm-ute	Recre ation	Safety/ Educ	
Metro CALL: Transportation Demand Management (TDM)	Late winter / early spring (biennial, next call in 2013)	FHWA - CMAQ	$3.5 m	20% local match	X			Refer to latest Call for Projects Application Package for eligibility requirements.
Local								
Development Impact Fee / Vehicle Trip Fee	Ongoing	Cities or County			X	X	X	Assessed on new development. May allow developer to provide bicycle infrastructure in lieu of other environmental mitigation.
Mello-Roos Community Facilities Act	Ongoing	Tax revenue approved by 2/3 vote			X	X	X	

CMAQ = Congestion Mitigation and Air Quality, RTPA = Regional Transportation Planning Agency, RSTP = Regional Surface Transportation Program, SLPP = State Local Partnership Program, TEA = Transportation Equity Act

8.1 Federal

Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU)[18]

The Federal government distributes funding through a number of different programs established by Congress. The latest act, the Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU) was enacted in August 2005 as Public Law 109-59.
SAFETEA-LU authorized the federal surface transportation programs for highways, highway safety, and transit for the five-year period 2005-2009. SAFETEA-LU legislation expired on September 30, 2009, but at the time of writing, Congress extended funding to September 30, 2011. Congress will likely extend the bill into 2011 or reauthorize the legislation. Until then, there is no guarantee that the SAFETEA-LU programs listed will continue beyond September 2011, nor is it possible to predict future funding levels or policy guidance. Nevertheless, prior federal transportation reauthorization acts contain many of the programs listed in some form, and thus they may continue to provide capital for improvements.

The California Department of Transportation (Caltrans) and regional planning agencies (e.g. LAMTA and SCAG) administer federal monies in California. Most, but not all, of these programs focus on funding transportation rather than recreation projects, with an emphasis on reducing auto trips and providing intermodal connections. Federal funding rules may sometimes limit how municipalities can use awarded funds, e.g. specific to project types, such as capital improvements or safety and education programs. Projects must relate to the surface transportation system.
Specific funding programs under SAFETEA-LU that apply to bicycle and pedestrian project include, but are not limited to:

- Surface Transportation Program (STP)
- Congestion Mitigation and Air Quality (CMAQ)
- Highway Safety Improvement Program (HSIP)
- Recreational Trails Program (RTP)
- Safe Routes to School Program (SRTS)
- New Freedom Program

The following sections describe these and other federal funding sources.

[18] http://www.fhwa.dot.gov/safetealu/index.htm

Surface Transportation Program (STP)

The Surface Transportation Program (STP) provides states with flexible funds which may be used for a variety of projects on any Federal-aid Highway including the National Highway System, bridges on any public road, and transit facilities. Bicycle and pedestrian improvements are eligible activities under the STP. This covers a wide variety of projects such as on-street facilities, off-road trails, sidewalks, crosswalks, bicycle and pedestrian signals, parking, and other ancillary facilities. SAFETEA-LU also specifically clarifies that the modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is an eligible activity.

As an exception to the general rule described above, STP-funded bicycle and pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. In addition, bicycle-related non-construction projects, such as maps, coordinator positions, and encouragement programs, are eligible for STP monies. Metro administers STP funds during its biennial Call for Projects. The Regional funding source section provides greater detail on the Metro Call for Projects application.

Congestion Mitigation and Air Quality (CMAQ)[19]

First established by Congress in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and last renewed by SAFETEA-LU in 2005, the CMAQ program supports surface transportation projects and other related efforts to improve air quality and provide congestion relief. Metro administers CMAQ funds during its biennial Call for Projects within the Transportation Demand Management (TDM) applications. Proposals submitted under the TDM category must meet federal CMAQ requirements to be eligible for the grant award. The Regional funding source section provides greater detail on the Metro Call for Projects application.

Highway Safety Improvement Program (HSIP)[20]

The Highway Safety Improvement Program (HSIP) funds safety improvements on all public roads and highways. Local agencies compete for HSIP funds each year by submitting candidate safety projects to Caltrans for review and analysis. Caltrans prioritizes these projects statewide and releases an annual HSIP Program Plan that identifies the approved projects. The State disperses funding annually following the federal fiscal year. Approximately $74.5 million dollars were available in the 2010/2011 funding cycle.

The HSIP considers funding two project types: Safety Index and Work Type. Safety Index Projects qualify for funding based on a State-calculated safety index. These projects receive a statewide priority with this index. A project that fails to receive funding under the Safety Index category automatically moves into the Work Type category and competes for funding with other projects in this category. Work Type projects receive approximately 25 percent of the available HSIP funds, while State-calculated safety index projects receive about 75 percent.

Projects in the Safety Index category include installing raised median islands, protected left-turn phasing, and widened roadways. Work Type Projects include curb ramps, crosswalks, installation of right turn lanes and construction of new bus stop aprons. The City of Covina would pursue HSIP funds to mitigate areas with high collision rates.

[19] http://www.fhwa.dot.gov/environment/air_quality/cmaq/
[20] http://www.dot.ca.gov/hq/LocalPrograms/hsip.htm

Safe Routes to School (SRTS) Program[21]

Safe Routes To School (SRTS) began under Section 1404 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SRTS aims to encourage children in grades Kindergarten through Eighth (K-8) to walk and bike to school. Consistent with other federal-aid programs, individual State Departments of Transportation (DOT) are responsible for the development and implementation of grant funds. The Federal SRTS program is separate from the State funded Safe Routes to School Program, described later in the document. Some expected outcomes of the program include:

- Improved bicycle, pedestrian, and traffic safety around schools
- Increased numbers of children walking and bicycling to and from schools
- Decreased traffic congestion around schools
- Reduced childhood obesity
- Improved air quality, community safety and security, and community involvement
- Improved partnerships among schools, local agencies, parents, community groups, and nonprofit organizations

A minimum of 70 percent of each year's apportionment is available for infrastructure projects, with up to 30 percent for non-infrastructure projects. The City of Covina may pursue infrastructure project funds to construct bicycle facilities within two miles of schools, and non-infrastructure funds for education, enforcement, and encouragement programs.

New Freedom Initiative[22]

SAFETEA-LU created a new formula grant program that provides capital and operating costs to provide transportation services and facility improvements that exceed those required by the Americans with Disabilities Act. Examples of pedestrian/accessibility projects funded in other communities through the New Freedom Initiative include installing Accessible Pedestrian Signals (APS), enhancing transit stops to improve accessibility, and establishing a mobility coordinator position. Eligible improvements within Downtown Covina include the proposed mid-block and high-visibility crossing improvements.

Transportation, Community, and System Preservation (TCSP)[23]

The Transportation, Community, and System Preservation (TCSP) Program provides federal funding for transit-oriented development, traffic calming, and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services, and trade centers. The program is intended to provide communities with the resources to explore the integration of their transportation system with community preservation and environmental activities. The TCSP program funds require a 20 percent match.

[21] http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm
[22] http://www.fta.dot.gov/funding/grants/grants_financing_3624.html
[23] http://www.fhwa.dot.gov/tcsp/

Congress has the discretion to directly allocate TCSP funds for specific projects in the annual transportation appropriations act. If Congress does not fully allocate TCSP funds, the FHWA will request candidate project applications from the States. Covina must apply for TCSP funds through Caltrans.

Partnership for Sustainable Communities[24]

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to "improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide." The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure ("Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health").

The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including both TIGER I and TIGER II grants). Initiatives that speak to multiple livability goals are more likely to score well than initiatives that are narrowly limited in scope to bicycle and pedestrian efforts.

Community Development Block Grants

The Community Development Block Grants (CDBG) program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal CDBG grantees may "use Community Development Block Grants funds for activities that include (but are not limited to): acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities; paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grants funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs."

8.2 State of California

Transportation Enhancements Activities Program (TEA)

Collected by the Federal government, but administered by the State, TEA funds are for the design and construction of improvements that beautify or enhance the interface between transportation systems and adjacent communities. Eligible enhancement projects include provisions of pedestrian and bicycle facilities and safety and educational activities; scenic easement and/or historic site acquisition; landscaping and other scenic beautification; preservation of abandoned railway corridors; and environmental mitigation. Metro administers STP funds during its biennial Call for Projects. The Regional funding source section provides greater detail on the Metro Call for Projects application.

[24] http://www.epa.gov/smartgrowth/partnership/

Bicycle Transportation Account (BTA)

The State of California Bicycle Transportation Account (BTA) is an annual statewide discretionary program that funds bicycle projects through the Caltrans Bicycle Facilities Unit. Available as grants to local jurisdictions, the program emphasizes projects that benefit bicycling for commuting purposes. The BTA has $7.2 million in funds available each year, with a 10 percent local match requirement of the total project cost.

BTA projects would improve safety and convenience for bicycle commuters and can include:

- New bikeways serving major transportation corridors
- New bikeways removing travel barriers to potential bicycle commuters
- Secure bicycle parking at employment centers, park-and-ride lots, rail and transit terminals, and ferry docks and landings
- Bicycle-carrying facilities on public transit vehicles
- Installation of traffic control devices to improve the safety and efficiency of bicycle travel
- Elimination of hazardous conditions on existing bikeways
- Planning
- Improvement and maintenance of bikeways

Eligible project activities include:

- Project planning
- Preliminary engineering
- Final design
- Right-of-way acquisition
- Construction and/or rehabilitation

Safe Routes to School (SR2S) Program[25]

The State-legislated Safe Routes to School (SR2S) program began in 1999 and has since completed nine funding cycles. The State typically announces the list of awarded projects in the fall. Although both the federal and state programs have similar goals and objectives, they have different funding sources, local funding match requirements, and other program requirements (see previous section).

The SR2S program aims to reduce injuries and fatalities to schoolchildren and to encourage increased walking and bicycling among students. The program achieves these goals by constructing facilities that enhance safety for students in grades K-12 who walk or bicycle to school. Enhancing the safety of the pathways, trails, sidewalks, and crossings also attracts and encourages other students to walk and bicycle.

[25] http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm

The SR2S program is primarily a construction program. Construction improvements must occur on public property. Improvements can occur on public school grounds provided the cost is incidental to the overall project cost. Statewide, the program typically provides approximately $25 million annually. The maximum reimbursement percentage for any SR2S project is ninety percent. The maximum amount that SR2S funds to any single project is $900,000. Eligible project elements include bicycle facilities, traffic control devices and traffic calming measures. Up to ten percent of project funding can go toward outreach, education, encouragement, and/or enforcement activities.

As with the Federal SRTS program, The City of Covina may pursue infrastructure project funds to construct bicycle facilities within two miles of schools, and non-infrastructure funds for education, enforcement, and encouragement programs.

Regional Transportation Improvement Program (RTIP)[26]

The Regional Transportation Improvement Program (RTIP) is a capital listing of all transportation projects proposed over a six-year period for the SCAG region. SCAG produces a biennial RTIP update on an even-year cycle. Within Los Angeles County, Metro has the responsibility to evaluate and submit locally prioritized project lists to SCAG for review. Metro solicits project applications in September of odd numbered years. From this list, SCAG develops the RTIP based on consistency with the current RTP, inter-county connectivity, financial constraint and conformity satisfaction. Bicycle-oriented projects funded by the RTIP include installing bicycle-friendly roadway grates, constructing bike parking and filling gaps in the Los Angeles River Bike Path.

The State of California allocates RTIP funding from the greater State Transportation Improvement Program (STIP). The Federal government contributes to STIP funding via the Transportation Enhancements program, which is a setaside from the annual Surface Transportation Program.[27]

AB 2766 Subvention Funds

Within Los Angeles County, the South Coast Air Quality Management District (AQMD) distributes a portion of automobile registration fees directly to cities for programs that reduce mobile source emissions. AQMD calculates each city's allocation based on the prorated share of population. Subvention Funds projects must demonstrably reduce mobile source emissions, particularly of single-occupancy vehicles. Eligible projects include bike lane, end of trip facilities, bike sharing, and bike-oriented research and development. The City of Covina received approximately $56,000 in motor vehicle funds in FY 2008-2009.[28]

Community-Based Transportation Planning (CBTP) Grant[29]

The Community-Based Transportation Planning (CBTP) Grant Program funds transportation and land use projects that encourage community involvement, support livable community concepts with a transportation objective, and promote community identity. Grant projects must demonstrate how they meet State and Regional Transportation Planning Goals.

[26] http://www.metro.net/projects/transport_improvement_pgm/
[27] http://www.fhwa.dot.gov/safetealu/factsheets/transenh.htm
[28] South Coast Air Quality Management District (2010) Staff report: AB 2766 Funds Annual Report from Motor Vehicle Registration Fees for FY 2008-2009. http://www.aqmd.gov/trans/ab2766/staff_rep_fy0809.pdf.
[29] http://www.dot.ca.gov/hq/tpp/grants.html

CBTP grant funded projects would include innovative public and stakeholder participation in the planning and decision-making process. Each project would be a smart growth - livable community demonstration approach to collaborative planning. Completed CBTP products would contribute to positive local planning practice by influencing and integrating those products into the larger regional or blueprint plan. CBTP projects would also set an example, and provide best practice planning solutions for communities statewide.
The City would pursue CBTP funding for projects that incorporate bikeway improvements into an overall community improvement concept, especially ones that involve significant community outreach.

TDA Article III (SB 821)[30]

The State of California distributes Transportation Development Act Article 3 funds for application at the county level. Locally, the Los Angeles County Metropolitan Transportation Authority (Metro) administers this program and establishes its policies. Cities can use the funds for planning and constructing bicycle and pedestrian facilities. Metro allocates the fund amounts based on population. Local agencies may either draw down these funds or place them on reserve. Agencies must submit a claim form to Metro by the end of the allocated fiscal year. Failure to do so may result in losing the allocated funds.
TDA Article 3 funds may go towards the following activities related to the planning and construction of bicycle and pedestrian facilities:

- Engineering expenses leading to construction
- Right-of-way acquisition
- Construction and reconstruction
- Retrofitting existing bicycle and pedestrian facilities, including installation of signage, to comply with the Americans with Disabilities Act (ADA)
- Route improvements such as signal controls for bicyclists, bicycle loop detectors, rubberized rail crossings and bicycle-friendly drainage grates
- Purchase and installation of bicycle facilities, such as secure bicycle parking, benches, drinking fountains, changing rooms, rest rooms and showers which are adjacent to bicycle trails, employment centers, park-and-ride lots, and/or transit terminals (must be accessible to the general public).

8.3 Regional

Metro Call for Projects (CFP)

Metro is responsible for allocating discretionary federal, state and local transportation funds to improve all modes of surface transportation. Metro also prepares the Los Angeles County Transportation Improvement Program (TIP). A key component of TIP is the Call for Projects program, a competitive process that distributes the discretionary capital transportation funds to regionally significant projects.

[30] http://www.metro.net/projects/tda/

Every other year (pending funding availability), Metro accepts Call for Projects (CFP) applications in several modal categories. The Metro Long Range Transportation Plan (LRTP) determines funding levels based on mode share. As of the writing of this Plan, the Call is currently on an odd-year funding cycle with applications typically due early in the odd years (next anticipated call is in 2011). Local jurisdictions, transit operators, and other eligible public agencies may submit applications proposing projects for funding. Metro staff ranks eligible projects and presents preliminary scores to Metro's Technical Advisory Committee, comprised of members of public agencies, and the Metro Board of Directors for approval. Upon approval, SCAG updates and formally transmits the TIP to the Southern California Association of Governments (SCAG) and the California Transportation Commission (CTC). The TIP becomes part of the five-year program of projects scheduled for implementation in Los Angeles County.

The modal categories relevant to implementing the proposed Downtown and Metrolink Station improvements are Bikeway Improvements, Pedestrian Improvements, Regional Surface Transportation Improvements (RSTI), Transportation Enhancements Activation (TEA), and Transportation Demand Management (TDM). Typically, funding provided for bicycle and pedestrian improvements include funds from SAFETEA-LU, TDA, and CMAQ categories.

Metro's 2009 Long Range Transportation Plan identifies funding totaling $287 million over the next 30 years in the pedestrian mode through the Call for Projects program. Eligible projects under the Pedestrian Improvements category include pedestrian improvements that promote walking for utilitarian travel, pedestrian safety, and linkages to the overall transportation system. Wherever possible, the proposed Downtown / Metrolink projects would incorporate large arterial improvements and submit under the RSTI category.

Table 8.2 provides information on each of the relevant modal categories within the Metro Call for Projects as of 2009.

Table 8.2 Metro Call For Projects Funding Summary

Modal Category	Share of Funding*	Eligible Projects**
Bikeway Improvements	8%	Regionally significant projects that provide access and mobility through bike-to-transit improvements, gap closures in the inter-jurisdictional bikeway network, bicycle parking, and first-time implementation of bicycle racks on buses.
Regional Surface Transportation Improvements (RSTI)	40%	On-street bicycle lanes may be eligible if included as part of a larger capacity-enhancing arterial improvement project. Bikeway grade-separation projects may be eligible as part of larger arterial grade-separation projects.
Transportation Enhancement Activities (TEA)	2%	Bicycle-related safety and education programs. Bikeway projects implemented as part of a scenic or historic highway, and landscaping or scenic beautification along existing bikeways may also be eligible.
Transportation Demand Management (TDM)	7%	Technology and/or innovation-based bicycle transportation projects such as Bicycle Commuter Centers and modern bicycle sharing infrastructure. Larger TDM strategies with bicycle transportation components would also be eligible.
Pedestrian Improvements	8%	Pedestrian improvements that promote walking for utilitarian travel, pedestrian safety, and linkages to the overall transportation system.

**Funding estimate is biennial (every other year) based on the approved funding from the 2009 Call.*
***The discussion of eligible projects is based on 2009 CFP requirements and assumes all eligibility requirements are met and the questions in the Call application are adequately addressed. These requirements are subject to change in future cycles. City staff would refer to the latest Call Application Package for detailed eligibility requirements.*

8.4 Local

The following section lists fees that the City of Covina would collect through its discretionary permit process or other local processes:

Development Impact Fee / Vehicle Trip Fees

One potential local funding source is developer vehicle trip impact fees, typically tied to trip generation rates and traffic impacts produced by new development. A developer may reduce or mitigate the number of trips (and hence impacts and cost) by paying for on- and off-site bikeway improvements that encourage residents to bicycle rather than drive. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical.

For instance, the City would consider allowing new development to reduce auto parking in exchange for upgraded bike parking (secure room or bike lockers). Developers could also agree to construct locker and shower facilities at non-residential projects in exchange for reduced auto parking or as a factor justifying a reduction in project-generated trips.

Mello-Roos Community Facilities District Act

The California State Legislature enacted the Community Facilities District Act (more commonly known as Mello-Roos) in 1982. The Act enables local government agencies to establish Community Facilities Districts (CFDs) as a means of obtaining community funding. A CFD is an area where an additional tax on property is imposed on those real property owners within the CFD. This local assessment can fund bicycle paths and bicycle lanes. Defining the boundaries of the benefit district may be difficult unless the facility is part of a larger parks and recreation or public infrastructure program with broad community benefits and support. Establishing CFDs requires detailed analysis and outreach, and CFDs may have limited application in the City of Covina.