Appendix D

Existing Conditions Analysis Memorandum

Memorandum

To:	City of Arroyo Grande	**Date:**	April 18, 2018
Attn:	Matt Downing, Planning Manager	**Project:**	Halcyon Road Complete Streets Plan
From:	Martin Inouye Rosanna Southern, EIT	**Job No.:**	11144937
Re:	Existing Conditions Analysis	**File No.:**	C2170MEM003.DOCX

Introduction

Funded in large part by the Caltrans Sustainable Transportation Planning Grant Program, the City of Arroyo Grande has retained Omni-Means to prepare the Halcyon Road Complete Streets Plan (Plan) for the Halcyon Road corridor in the City of Arroyo Grande and the County of San Luis Obispo. The California Complete Streets Act (AB 1358) of 2008 was signed into law on September 30, 2008. Beginning January 1, 2011, AB 1358 requires circulation elements to address the transportation system from a multimodal perspective. This project will develop a plan for an improved transportation corridor that provides for multi-modal safety, mobility, and accessibility needs.

This memorandum summarizes the existing transportation (vehicle, pedestrian, and bicycle) conditions for the Halcyon Road corridor and identifies deficiencies in relation to complete streets and multi-modal circulation priorities. The results of this analysis will inform subsequent project objectives to improve circulation through all modes of travel, and will be used in the development of a comprehensive complete streets plan for the Halcyon Road corridor.

Setting

The City of Arroyo Grande is an incorporated city located approximately 10 miles south of the City of San Luis Obispo, in the County of San Luis Obispo. The City is 5.84 square miles in area, and is adjacent to the incorporated areas of the City of Pismo Beach to the northwest and the City of Grover Beach to the west.

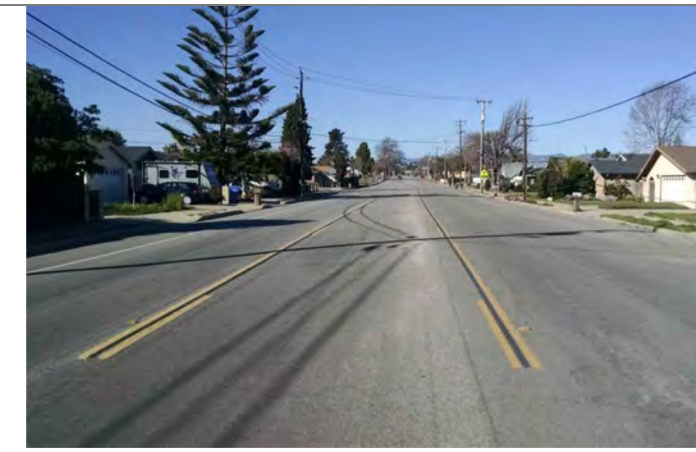
The Halcyon Road study corridor extends approximately 1.7 miles north-to-south from its junction with US Route 101/El Camino Real in Arroyo Grande, to its junction with State Route (SR) 1 in the County of San Luis Obispo. For the purposes of this report "Halcyon Road" will be used for both North Halcyon Road (north of E. Grand Avenue) and South Halcyon Road (south of Grand Avenue). Halcyon Road transitions from City to County jurisdiction at The Pike, and reaches Caltrans jurisdiction at its junction with SR 1. Further south beyond the study area, Halcyon Road continues south to the community of Nipomo. For the purposes of this plan, the study corridor is divided into four (4) Context Zones to illustrate the changes in adjacent land uses and roadway character along the corridor. The Context Zones are identified as follows, and as shown on Figure 1.

- Context Zone 1: Urban (El Camino Real to E. Grand Avenue)
- Context Zone 2: Urban Transition (E. Grand Avenue to Fair Oaks Avenue)
- Context Zone 3: Neighborhood (Fair Oaks Avenue to The Pike)
- Context Zone 4: Rural (The Pike to SR 1)

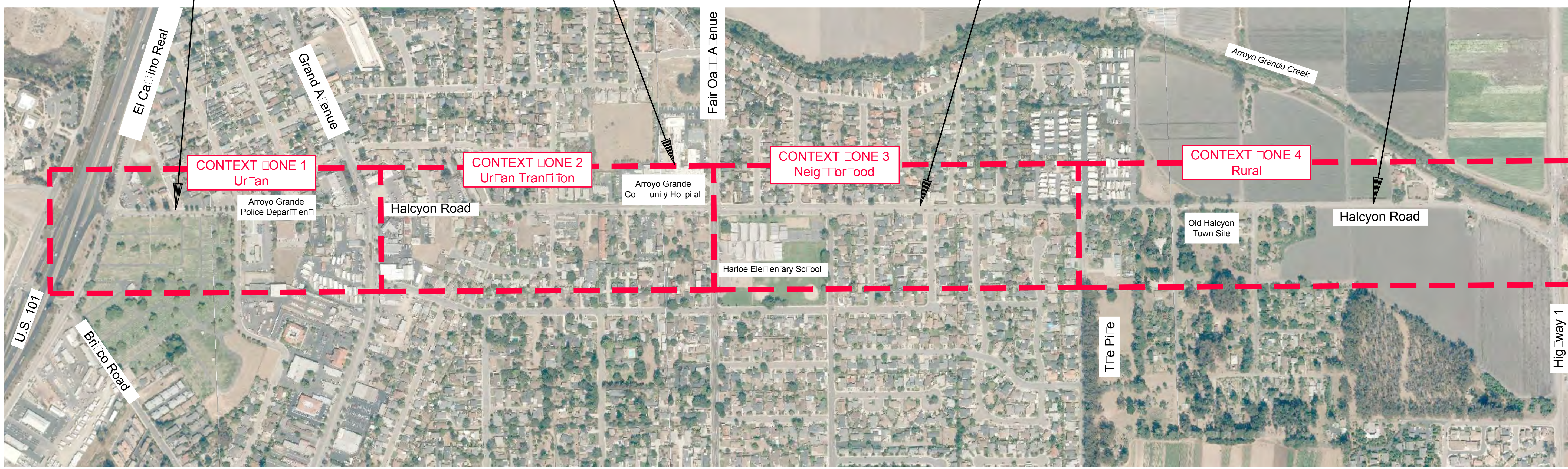
HALCYON ROAD CONTEXT ZONES


Context Zone 1 (Looking Southbound)


Context Zone 2 (Looking Northbound)


Context Zone 3 (Looking Northbound)


Context Zone 4 (Looking Northbound)



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HALCYON ROAD COMPLETE STREETS PLAN

Figure 1

omni·means
ENGINEERING SOLUTIONS

Arroyo Grande, California

July 18, 2016
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Context Zones

The Halcyon Road Complete Streets Plan will evaluate the corridor relative to each segment's context, and the four distinct contexts found in the study corridor are discussed in detail below. Figures A-1 through A-4 illustrating each context zone are included in the Appendix.

Context Zone 1: Urban

The urban context zone on Halcyon Road extends approximately 0.3 miles from El Camino Real to E. Grand Avenue. Both El Camino Real and E. Grand Avenue are signalized intersections, and the posted speed limit is 35 mph. Halcyon Road through this context zone is a two-lane roadway with on-street parking permitted on approximately 25% of the curb faces, and approximately 20 access points including private driveways and three local roads. There is completed sidewalk infrastructure in the southbound direction, and incomplete sidewalk infrastructure in the northbound direction. Sidewalk width ranges from 5 feet to 10 feet. There are no designated bike lanes in this zone.

The following land uses are located within this context zone: Arroyo Grande Police Department; a church; a cemetery; professional office buildings; commercial buildings; and a convenience store.

Context Zone 2: Urban Transition

The urban transition context zone on Halcyon Road extends approximately 0.4 miles from E. Grand Avenue to Fair Oaks Avenue. Both E. Grand Avenue and Fair Oaks Avenue are signalized intersections. The posted speed limit is 35 mph south of E. Grand Avenue and transitions to 40 mph south of Dodson Way, with a school zone speed limit of 25 mph beginning just north of Fair Oaks Avenue. Halcyon Road through this context zone is a four-lane roadway with a two-way left-turn lane begins south of Dodson Way, and continues south to Fair Oaks Avenue. On-street parking is permitted on approximately 60% of the curb faces, and there are approximately 26 access points including private driveways, two local roads, and several side streets. There is completed sidewalk infrastructure in both the southbound and northbound directions. Sidewalk width ranges from 5 feet to 7 feet. There are no designated bike lanes in the urban transition context zone.

A marked pedestrian crossing with signage is located at the Halcyon Road/Dodson Way intersection, which is side-street stop-controlled. Harloe Elementary School is located just south of the Halcyon Road/Fair Oaks Avenue intersection, and the school zone begins just north of Fair Oaks Avenue, with a posted 35 mph/25 mph when children are present speed limit. Marked pedestrian crossings and pedestrian signal phases are provided across all legs of the Fair Oaks Avenue intersection.

The following land uses are located within this context zone: Arroyo Grande Community Hospital; residential houses and apartment buildings; professional office buildings; and commercial buildings.

Context Zone 3: Neighborhood

The neighborhood context zone on Halcyon Road extends approximately 0.44 miles from Fair Oaks Avenue to The Pike. The Halcyon Road/The Pike intersection is two-way stop controlled for The Pike (note the driveway on the east side of the intersection forms the fourth leg). The posted speed limit on Halcyon Road is 40 mph, with a school zone speed limit of 25 mph beginning just north of Sandalwood Avenue to Fair Oaks Avenue for Harloe Elementary School. Halcyon Road through this context zone transitions from a four-lane roadway to a two-lane roadway with a two-way left-turn lane just south of Olive Street. The two-way left-turn lane ends just south of Virginia Drive. There are approximately ten local roads that connect with Halcyon Road within this context zone, and approximately 16 private driveways with direct access to Halcyon Road. There is completed sidewalk infrastructure in the southbound direction, and incomplete sidewalk infrastructure in the northbound direction, ranging from 5 feet to 7 feet in width.

There is a bike route sign on Halcyon Road at The Pike and another just north of Farroll Avenue; there is a bike route sign at the Halcyon Road/Fair Oaks Avenue intersection directing bicycle traffic eastbound on Fair Oaks Avenue. Fair Oaks Avenue has Class II bike lanes west of Halcyon Road, and east of Halcyon Road a Class II bike lane exists in the eastbound direction. In the westbound direction, the Class II bike lane on Fair Oaks Avenue terminates at the Arroyo Grande Community Hospital Driveway. There are no designated bike lanes along Halcyon Road in the neighborhood context zone.

Harloe Elementary School is located on the west side of Halcyon Road, just south of the Halcyon Road/Fair Oaks Avenue intersection. Arroyo Grande High School is located approximately 0.8 miles east of Halcyon Road along Fair Oaks Avenue. The neighborhood context zone is residential south of Fair Oaks Avenue.

Context Zone 4: Rural

The rural context zone on Halcyon Road extends approximately 0.58 miles from The Pike to State Route (SR) 1, and falls within County jurisdiction. There is a Class II bike lane sign in the southbound direction; however, no bike lane markings are provide, the edge line stripe is four inches, and the shoulder width between The Pike and SR 1 varies and in most cases is less than the required minimum for Class II bike lanes. There is no existing sidewalk infrastructure along Halcyon Road within this rural context zone. There is no allowed on-street parking within this rural context zone.

South of Temple Street, there are three residential houses with direct access to Halcyon Road, with residential density increasing north of Temple Street to The Pike. The surrounding landscape is primarily open space and agriculture land.

Existing Transportation System

According to the City of Arroyo Grande *2001 General Plan Update,* Halcyon Road is classified as a two-lane and four-lane arterial in the City of Arroyo Grande. According to the County of San Luis Obispo 2014 circulation map for Oceano Urban Reserve Limit, Halcyon Road is classified as a two-lane collector.

Roadway Facilities

The following roadway facilities service the existing Halcyon Road corridor in the study area.

State Freeways

Controlled access facilities whose junctions are free of at-grade crossing with other roadways, railways, or pedestrian pathways, and instead are served by interchange facilities are classified as Freeways. Freeways usually have posted speed limits up to 70 mph. The following freeway services the Halcyon Road corridor:

> ***U.S. Highway 101 (US 101)*** is a major north-south interstate that traverses along coastal California. US 101 serves as the principal inter-regional auto and truck travel route that connects San Luis Obispo County (and other portions of the Central Coast) with the Los Angeles urban basin to the south, the San Francisco Bay Area to the north, and beyond to Oregon and Washington. Within San Luis Obispo County, US 101 provides major connections between and through several cities. Through South County, US 101 represents a major commuter travel route and has a four-lane divided cross-section. Within the study area of Nipomo, US 101 forms full access interchanges with Los Berros Road/Thompson Avenue, Willow Road, Tefft Street, and SR 166. Between the Los Berros Road/Thompson Avenue and Traffic Way interchanges, US 101 is an expressway with at-grade intersections.

State Highways

Controlled access facilities whose junctions with cross streets are characterized by at grade intersections rather than interchanges are classified as highways. Highways can either be divided or undivided roadways, with speed limits up to 55 mph. The following highway services the Halcyon Road corridor:

> ***State Route 1 (SR 1/Highway 1)*** is a state highway that runs predominantly in a north-south direction. SR 1 branches off of US 101 within Pismo Beach and traverses south through the Fee Study Area and beyond, to the southern County line. SR 1 connects the South County area to the Five Cities area to the north, and connects to Guadalupe and Santa Maria to the south. SR 1 represents a significant parallel commuter route to US 101, as well as a recreational travel route. Through South County, SR 1 is a conventional two-lane highway.

Arterial Streets

Major arterial facilities serve to connect areas of major activity within the urban area and function primarily to distribute cross-town traffic from freeways/highways to collector streets. In addition, two lane arterial facilities with two-way left-turn lanes generally have limited access to

adjacent land uses and have a maximum design capacity of 15,000 vehicles per day. ***E. Grand Avenue, Fair Oaks Avenue,*** *and* ***The Pike*** service the Halcyon Road corridor, and are considered arterials in the City of Arroyo Grande.

Collectors and Local Streets

Collectors function as connector routes between local and arterial streets providing access to residential, commercial, and industrial property. Local streets provide direct access to abutting properties and allow for localized movement of traffic. Local streets are characterized by low daily volumes. A network of collectors and local streets service the Halcyon Road corridor.

Existing Multi-Modal Facilities

Along the study corridor, there are three signalized intersections with crosswalks, and two unsignalized pedestrian crossings, including one near the elementary school. There are currently no classified bike routes on Halcyon Road in the City of Arroyo Grande. South of The Pike, signs are installed along Halcyon Road indicating Class II bike lanes, however the width of the paved bike lane is below the required minimum of 4 feet. Class II bike lanes are located along El Camino Real and pass east-west through the Halcyon Road/US Route 101/El Camino Real intersection. Similarly, Fair Oaks Avenue provides Class II bike lanes on either side of Halcyon Road. Sidewalk infrastructure is incomplete or non-existent north of Bennett Avenue and south of The Pike.

The City of Arroyo Grande *2012 Bicycle & Trail Master Plan* recognizes three classes of bikeways:

> **Class I Multi Use Path** typically known as bike paths, Class I facilities are multi-use facilities that provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
>
> **Class II Bike Lane** known as bike lanes, Class II facilities provide a striped and signed lane for one way bicycle travel on each side of a street or highway. The minimum width for bike lanes ranges between four and five feet. Bike lanes are demarcated by a six-inch white stripe, signage and pavement legends.
>
> **Class III Bike Route** known as bike routes, Class III facilities provide signs for shared use with motor vehicles within the same travel lane on a street or highway. Bike routes may be enhanced with warning or guide signs and shared lane marking pavement stencils. While Class III routes do not provide measures of separation, they have an important function in providing continuity to the bikeway network.

Note the City's Bicycle & Trails Master Plan identifies the entire length of Halcyon Road within the City Limits as a proposed Class II bike facility. The County of San Luis Obispo *Bikeways Plan, 2016 Update* (adopted August 9, 2016) recognizes the above classes of bikeways and adds a fourth:

> **Class IV Bikeway (Cycle Tracks or Separated Bikeways)** promote active transportation and provide a right-of-way designated exclusively for bicycle travel adjacent to a roadway and which are protected from vehicular traffic. Types of separation include, but are not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

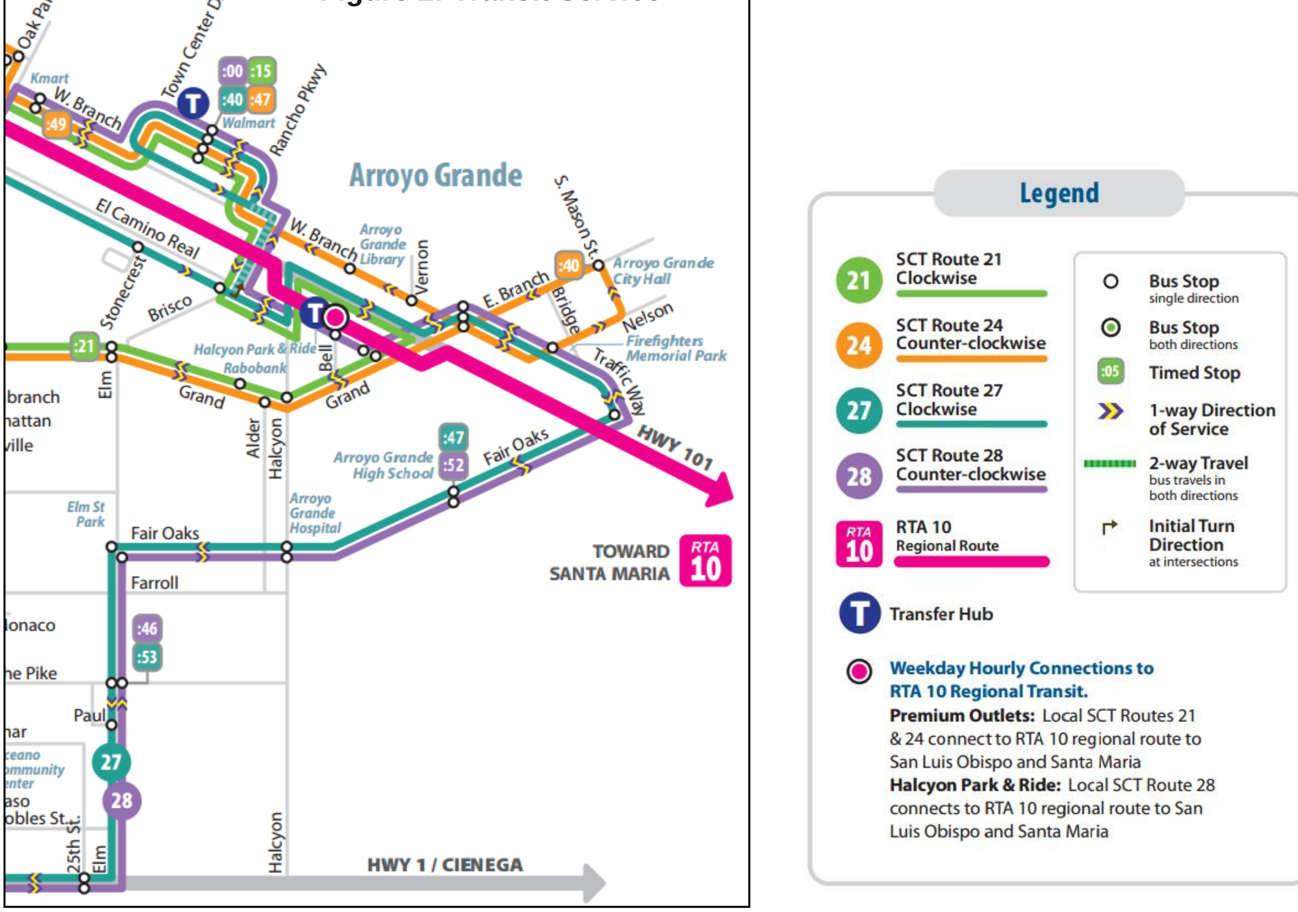
Transit Facilities

San Luis Obispo Regional Transit Authority (SLORTA) operates numerous routes which serve the study corridor. As shown in Figure 2, Routes 21, 23, 24, and Regional RTA Route 10 provide service stops near Halcyon Road.

Nearby transit stops are at the following locations:

- El Camino Real (Route 28 and Route 10 located at the Park & Ride Lot)
- E. Grand Avenue (westbound Route 21 located east of Halcyon Road, and eastbound Route 24 located west of Halcyon Road at Alder Street), and El Camino Real (RTA Route 10 and westbound Route 23 at the park and ride lot on El Camino Real east of Halcyon Road), and
- Fair Oaks Ave (westbound Route 27 and, eastbound Route 28, both located east of Halcyon Road).

Figure 2: Transit Service



Park and Ride Facilities

The Halcyon Park and Ride Lot located on the north side of El Camino Real just east of Halcyon Road is one of 15 formal park & ride lots in San Luis Obispo County. The lot has 85 parking spaces and includes 8 bike lockers. A bus stop at the facility is served by RTA Route 10 and SCAT Route 23.

Analysis Methodology and Technical Parameters

The following section outlines the analysis methodology and technical parameters used to quantify operations for all transportation modes using Level of Service (LOS) determined using methodologies within the Transportation Research Board publication *Highway Capacity Manual, Sixth Edition*: *A Guide for Multimodal Mobility Analysis* (HCM 6). The following subsections outline the methodology and analysis parameters used to quantify the multi-modal traffic operations on roadway segments and at study intersections.

Roadway LOS Methodologies

Roadway segment LOS is estimated using HCM 6 methodologies. Table 1 presents the ADT-based capacity thresholds applied in this study (for determining roadway capacity conditions).

TABLE 1: DAILY ROADWAY CAPACITIES BY FACILITY TYPE

Roadway Segment Type	Total Two-Way Average Daily Traffic (ADT)				
	LOS A	LOS B	LOS C	LOS D	LOS E
4-Lane Arterial (with left-turn lane)	22,000	25,000	29,000	32,500	36,000
4-Lane Arterial (no left-turn lane)	18,000	21,000	24,000	27,000	30,000
2-Lane Roundabout Arterial	14,300	16,250	18,850	20,800	23,400
2-Lane Arterial (with left-turn lane)	11,000	12,500	14,500	16,000	18,000
2-Lane Arterial (no left-turn lane)	9,000	10,500	12,000	13,500	15,000
2-Lane Roundabout Collector	7,800	9,750	11,700	13,650	15,600
2-Lane Collector	6,000	7,500	9,000	10,500	12,000

Note: All volumes are approximate and assume ideal roadway characteristics. Actual threshold volumes for each Level of Service listed above may vary depending on a variety of factors including curvature and grade, intersection or interchange spacing, driveway spacing, percentage of trucks and other heavy vehicles, travel lane widths, signal timing characteristics, on-street parking, volume of cross traffic and pedestrians, etc. Traffic exceeding LOS E thresholds is LOS F.

Based on methodologies within the *Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis,* Transportation Research Board, 2016.

Intersection LOS Methodologies

LOS are calculated for various intersection control types using the methods documented in the HCM 6. Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade A through F is assigned to an intersection or roadway segment representing progressively worsening traffic conditions.

Vehicular Parameters

For signalized intersections and All-Way-Stop-Controlled (AWSC) intersection, the intersection delays and LOS are average values for all intersection movements. For Two-Way-Stop-Controlled (TWSC) intersections, the intersection delays and LOS is representative of those for the worst-case movement. LOS definitions for different types of intersection controls and vehicular threshold criteria are outlined in Table 2 on the following page.

The Synchro Version 10 software suite by Trafficware has been used to implement the HCM 6 analysis methodologies. The peak hour capacity tables contained in this report present the intersection delay and LOS estimates as calculated using the Synchro software. Existing traffic signal timing information was obtained from the City and Caltrans and is input into the Synchro model to accurately represent the existing conditions at the signalized intersections.

TABLE 2: VEHICULAR LOS CRITERIA FOR INTERSECTIONS

Level of Service	Type of Flow	Delay	Maneuverability	Stopped Delay/Vehicle		
				Signalized	Two-Way Stop	All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	< 10.0	< 10.0	< 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and < 20.0	>10.0 and < 15.0	>10.0 and < 15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20.0 and < 35.0	>15.0 and < 25.0	>15.0 and < 25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and < 55.0	>25.0 and < 35.0	>25.0 and < 35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and < 80.0	>35.0 and < 50.0	>35.0 and < 50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	> 80.0	> 50.0	> 50.0

Multi-Modal Level of Service

LOS for bicyclists and pedestrians is calculated using HCM 6 analysis methodologies within Synchro. Bicycle and pedestrian LOS is calculated based on existing bicyclist and pedestrian volumes at signalized intersections. Pedestrian LOS is further determined for each approach based on the available pedestrian area at the corner which corresponds to the crosswalk, the effective walk time, crosswalk length, and the permitted vehicular flow rate during the pedestrian phase. The bicycle LOS is further determined for each approach based on the bicycle lane and shoulder widths, cross-street width, curb presence, effective green time, and on-street parking presence.

Pedestrian Parameters

Pedestrian LOS at intersections was also determined using Synchro 10. Synchro 10 uses HCM 6 methodologies for determining pedestrian LOS, and requires technical inputs beyond those included for vehicular LOS. Table 3 presents critical technical parameters required and our assumptions. Any parameters not included in Table 3 will use software default values. For signalized intersections, LOS determination is based on the Pedestrian LOS Score for each crosswalk, which is influenced by the traffic signal timings, right and left turning vehicles allowed during the pedestrian phase, crosswalk length, and pedestrian areas at corners. Table 4 presents the pedestrian LOS criteria for intersections, per HCM 6.

TABLE 3:
PEDESTRIAN TECHNICAL PARAMETERS FOR INTERSECTION ANALYSIS

Parameter	Assumption
1. Right Corner Size A, Size B, and Curb Radius	Estimated from Aerials
2. Number of Right-Turn Islands	Identified from Aerials
3. Crosswalk Widths	Default Value of 10 feet
4. Ped Left-Right Flow Rate	Half of Two-Way Flow Rate
5. Ped Right-Left Flow Rate	Half of Two-Way Flow Rate
6. Ped R Sidewalk Flow Rate	Same as Crossing Volume
7. Vehicle Perm Left Flow in Ped Phase	Based on Synchro Calculations
8. Vehicle Perm Right Flow in Ped Phase	Based on Synchro Calculations
9. Vehicle Right Turn on Red	Based on Synchro Calculations

TABLE 4: PEDESTRIAN LOS CRITERIA FOR INTERSECTIONS

Ped LOS Score	LOS by Average Pedestrian Space (ft^2/p)					
	>60	>40-60	>24-40	>15-24	>8.0-15[a]	<8.0[a]
≤2.00	A	B	C	D	E	F
>2.00-2.75	B	B	C	D	E	F
>2.75-3.5	C	C	C	D	E	F
>3.5-4.25	D	D	D	D	E	F
>4.25-5.00	E	E	E	E	E	F
>5.00	F	F	F	F	F	F

Notes: 1. Based on Highway Capacity Manual, Sixth Edition: A Guide on Multimodal Mobility Analysis, Transportation Research Board, 2016
2. All thresholds are approximate and assume ideal roadway characteristics. Actual thresholds for each LOS listed above may vary depending on a variety of factors including (but not limited to) roadway curvature and grade, intersection or interchange
[a] In Cross-Flow situations, the LOS E/F threshold is 13 ft^2/p

Procedures have not been developed yet to address the effect of all-way stop control or yield control on intersection performance from a pedestrian or bicycle perspective. HCM 6 Methodologies for the pedestrian mode at two-way stop-controlled intersections is limited to the uncontrolled crossing. No methodology exists for evaluating pedestrian performance for the stop-controlled approach (cross-street). However, it is reasoned that this type of control has negligible influence on pedestrian service along the segment.

Bicycle Parameters

Intersection bicycle LOS was also determined using Synchro 10. Synchro 10 uses HCM 6 methodologies for determining bicycle LOS, and requires technical inputs beyond those included for vehicular and pedestrian LOS. Table 5 presents critical technical parameters required and our assumptions. Any parameters not included in Table 5 will use software default values. For signalized intersections, LOS determination is based on the Bicycle LOS Score for each approach. The Bicycle LOS Score is influenced primarily by the traffic signal timings, but also takes into account the roadway cross-section including number of lanes, width of the cross-street, presence of curb and gutter, on-street parking and occupancy, vehicular lane width, bicycle lane width (if present), paved shoulder width, and vehicular demand flow rates. The Bicycle LOS Score can be calculated for any intersection approach, regardless of whether it has marked bike lanes. However, this calculation does not take into account any delay cyclists incur due to weaving with vehicles turning right, or if drivers do not acknowledge the bicycle right-of-way. Table 6 presents the bicycle LOS criteria for intersections, per HCM 6.

TABLE 5: BICYCLE TECHNICAL LOS PARAMETERS FOR INTERSECTION ANALYSIS

Parameter	Assumption
1. Bike Flow Rate	From Counts
2. Bike Lane Width	Measured from Aerials
3. Paved Shoulder Width	Measured from Aerials
4. Curb is Present	Identified from Aerials
5. On Street Parking	Identified from Aerials
6. Pavment Condition	Identified from Aerials

TABLE 6: BICYCLE LOS CRITERIA FOR INTERSECTIONS

LOS Criteria for Bicycle and Transit Modes	
LOS	LOS SCORE
A	≤2.00
B	>2.00-2.75
C	>2.75-3.5
D	>3.50-4.25
E	>4.25-5.00
F	>5.00

Notes:
1. Based on Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis, Transportation Research Board, 2016

Level of Service Policies

The *City of Arroyo Grande General Plan Circulation Element* specifies minimum level-of-service standards for all the streets and intersections within the City's jurisdiction. In section CT2, the City establishes the following performance standards for acceptable LOS:

> "CT2: Attain and maintain Level of Service (LOS) 'C' or better on all streets and controlled intersections.
>
> CT2-1: Where deficiencies exist, mitigate to an LOS 'D' at a minimum and plan improvement to achieve LOS 'C' (LOS 'E' or 'F' unacceptable = significant adverse impact unless Statement of Overriding Considerations or CEQA Findings approved). The design and funding for such planned improvements shall be sufficiently definite to enable construction within a reasonable period of time."

Per the County of San Luis Obispo 2004 South County Circulation Study Update:

> *"The current County policy calls for LOS "D" or better service on roadways in urban areas and LOS "C" on rural roads."*

Halcyon Road south of The Pike is classified as rural in the Circulation Element of the County's General Plan and therefore LOS "C" will be used as the minimum acceptable in Context Zone 4.

In addition to the City of Arroyo Grande designated LOS "C" as the minimum acceptable LOS standard on City facilities, Caltrans LOS policy for state highways will also be considered. The Caltrans published Guide for the Preparation of Traffic Impact Studies (dated December 2002) states the following:

> "Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not be always feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS."

Consistent with Caltrans policies quoted above and City policies, LOS "C" has been taken as the general threshold for acceptable operations at study intersections and roadway segments maintained by the City, and at study intersections and roadways maintained by the State. Halcyon Road south of The Pike is classified as rural in the Circulation Element of the County's General Plan and therefore LOS "C" was used as the minimum acceptable service level in Context Zone 4.

Bicycle and Pedestrian Level of Service

Multi-modal objectives and level of service thresholds are in development in agencies across the state, however at this time neither the City of Arroyo Grande nor County of San Luis Obispo have bicycle and pedestrian Level of Service policies.

Existing Traffic Operations

Study Intersections and Roadway Segments

The following intersections were selected for analysis within this study for weekday AM and PM peak hour conditions:

1. Halcyon Road/El Camino Real
2. Halcyon Road/Bennett Avenue
3. Halcyon Road/E. Grand Avenue
4. Halcyon Road/Dodson Way
5. Halcyon Road/Farroll Avenue

6. Halcyon Road/Fair Oaks Avenue
7. Halcyon Road/Sycamore Drive
8. Halcyon Road/The Pike
9. Halcyon Road/La Due Street
10. Halcyon Road (North leg)/SR 1
11. Halcyon Road (South leg)/SR 1

The following roadway segments along Halcyon Road were selected for analysis for average daily travel (ADT) conditions:

1. Between El Camino Real and Bennett Avenue
2. Between Bennett Avenue and E. Grand Avenue
3. Between E. Grand Avenue and Dodson Way
4. Between Dodson Way and Fair Oaks Avenue
5. Between Fair Oaks Avenue and Farroll Avenue
6. Between Farroll Avenue and Sycamore Drive
7. Between The Pike and La Due Street
8. Between La Due Street and SR 1

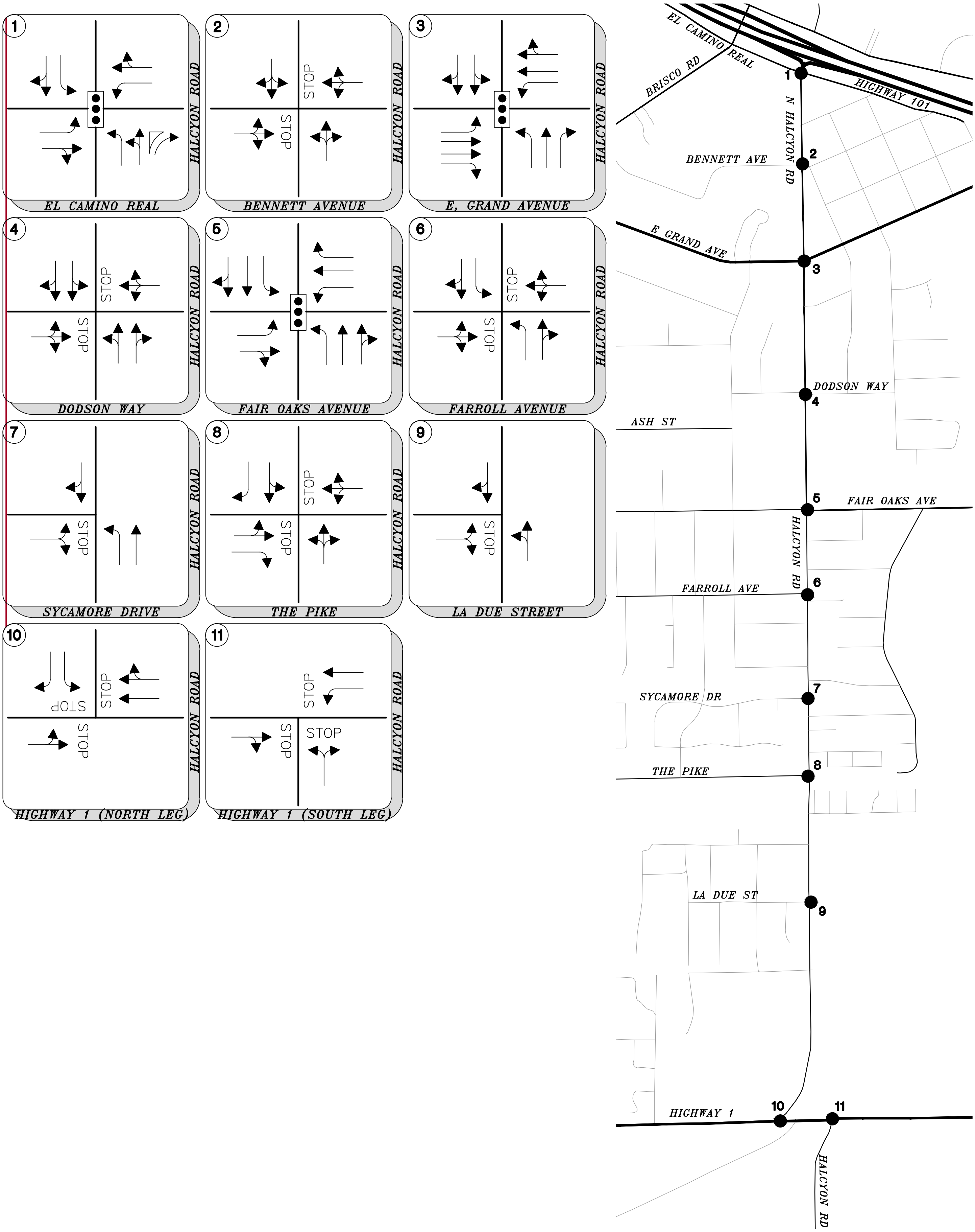
Existing Volumes

Existing weekday AM and PM peak hour traffic volume counts for the study intersections of Halcyon Road/Fair Oaks Avenue, Halcyon Road/Farroll Avenue, and Halcyon Road/The Pike were collected by Omni-Means in September 2014. Existing weekday AM and PM traffic volume counts for the remaining study intersections were collected by Omni-Means in May 2016. Bicycle and pedestrian volumes were collected at all study intersections.

The AM peak hour is defined as one hour of peak traffic flow (which is the highest total volume count over four consecutive 15-minute count periods) counted between 7:00 am and 9:00 am on a typical weekday. The PM peak hour is defined as one hour of peak traffic flow counted between 4:00 pm and 6:00 pm on a typical weekday.

Existing roadway segment counts on Halcyon Road between El Camino Real and Bennett Avenue were conducted in September 2015. Existing counts for the remaining roadway segments were conducted in May 2016.

Figure 3 shows the existing intersection lane geometrics and traffic control for all study intersections. **Figure 4** shows the existing peak hour traffic volumes.



Halcyon Road Complete Streets Plan

Figure 3

Existing Lane Geometrics and Control

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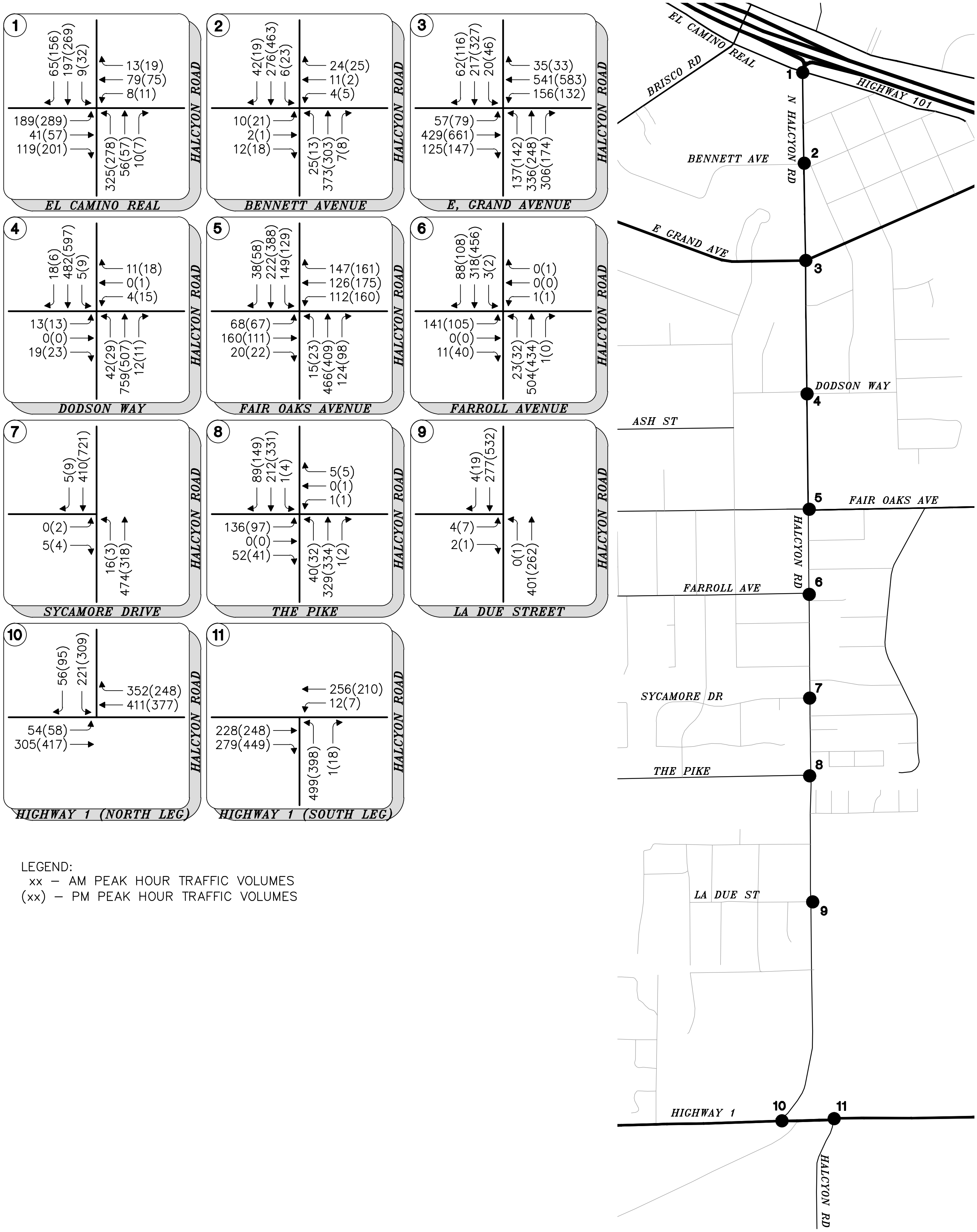
Figure 4



LEGEND:
xx – AM PEAK HOUR TRAFFIC VOLUMES
(xx) – PM PEAK HOUR TRAFFIC VOLUMES

Halcyon Road Complete Streets Plan

Existing Peak Hour Traffic Volumes

Existing Intersection Operations

Tables 3, 4, and **5** present existing intersection LOS conditions for vehicle, pedestrians, and bicyclists, respectively. As shown in **Table 3**, Halcyon Road S/SR 1 is currently operating at unacceptable LOS in the AM peak hour, and Halcyon Road N/SR 1 and Halcyon Road S/SR 1 are currently operating at unacceptable LOS in the PM peak hour. All other intersections are currently operating at acceptable LOS in both the AM and PM peak hours. As shown in **Table 4**, under AM and PM peak hour conditions, the three signalized intersections along the study Halcyon Corridor are currently operating at acceptable LOS B for pedestrians.

TABLE 3
EXISTING CONDITIONS: VEHICULAR LEVEL OF SERVICE

#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour Delay	AM Peak Hour LOS	PM Peak Hour Delay	PM Peak Hour LOS
1	N. Halcyon Road & El Camino Real[3]	SIGNAL	C	22.7	C	29.2	C
2	N. Halcyon Road & Bennett Ave	TWSC	C	15.3	C	18.7	C
3	Halcyon Road & E. Grand Ave	SIGNAL	C	24.2	C	27.2	C
4	S. Halcyon Road & Dodson Way	TWSC	C	18.2	C	18.6	C
5	S. Halcyon Road & Fair Oaks Ave	SIGNAL	C	20.8	C	22.6	C
6	S. Halcyon Road & Farroll Ave	TWSC	C	16.6	C	17.7	C
7	S. Halcyon Road & Sycamore Drive	TWSC	C	10.4	B	12.4	B
8	S. Halcyon Road & The Pike	TWSC	C	19.2	C	19.8	C
9	S. Halcyon Road & La Due Street	TWSC	C	13.0	B	14.2	B
10	**S. Halcyon Road (N leg) & SR 1**	**AWSC**	**C**	24.3	C	**38.6**	**E**
11	**S. Halcyon Road (S leg) & SR 1**	**AWSC**	**C**	**57.3**	**F**	**96.7**	**F**

Notes:
1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; RNDBT = Roundabout
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal, RNDBT
3. Operations calculated using Synchro and HCM 2000 methodology for signalized intersections due to non-standard NEMA phasing

TABLE 4
EXISTING CONDITIONS: PEDESTRIAN LEVEL OF SERVICE

#	Intersection	Approach	AM Peak Hour Ped. Crosswalk Score	AM Peak Hour LOS	PM Peak Hour Ped. Crosswalk Score	PM Peak Hour LOS
1	Halcyon Road/El Camino Real	EB	NP[1]	-	NP[1]	-
		WB	2.01	B	2.04	B
		NB	2.27	B	2.29	B
		SB	NP[1]	-	NP[1]	-
3	Halcyon Road/E. Grand Avenue	EB	2.69	B	2.76	C
		WB	2.61	B	2.65	B
		NB	2.62	B	2.59	B
		SB	2.23	B	2.29	B
5	Halcyon Road/Fair Oaks Avenue	EB	2.09	B	2.07	B
		WB	2.23	B	2.19	B
		NB	2.57	B	2.61	B
		SB	2.57	B	2.57	B

1. NP = Pedestrian crossing not permitted.

TABLE 5: EXISTING CONDITIONS BICYCLE LEVEL OF SERVICE

#	Intersection	Approach	AM Peak Hour Bicycle LOS Score	AM Peak Hour LOS	PM Peak Hour Bicycle LOS Score	PM Peak Hour LOS
1	N. Halcyon Road/El Camino Real	EB	1.70	A	2.03	B
		WB	1.38	A	1.41	A
		NB	2.80	C	2.73	B
		SB	NP[1]	-	NP[1]	-
3	Halcyon Road/E. Grand Avenue	EB	3.10	C	3.33	C
		WB	2.90	C	2.96	C
		NB	**3.92**	**D**	**3.52**	**D**
		SB	2.92	C	3.10	C
5	S. Halycon Road/Fair Oaks Avenue	EB	1.85	A	1.64	A
		WB	3.16	C	3.21	C
		NB	2.65	B	2.59	B
		SB	2.48	B	2.63	B

1. NP = Bicycle acces not permitted on US 101.

As shown in **Table 5**, the three signalized intersections along the study Halcyon Corridor are currently operating at LOS C or higher for bicyclists in the AM and PM peak hours, with the exception of the northbound Halcyon Road at E. Grand Avenue, which is operating at LOS D in the AM and PM peak hours.

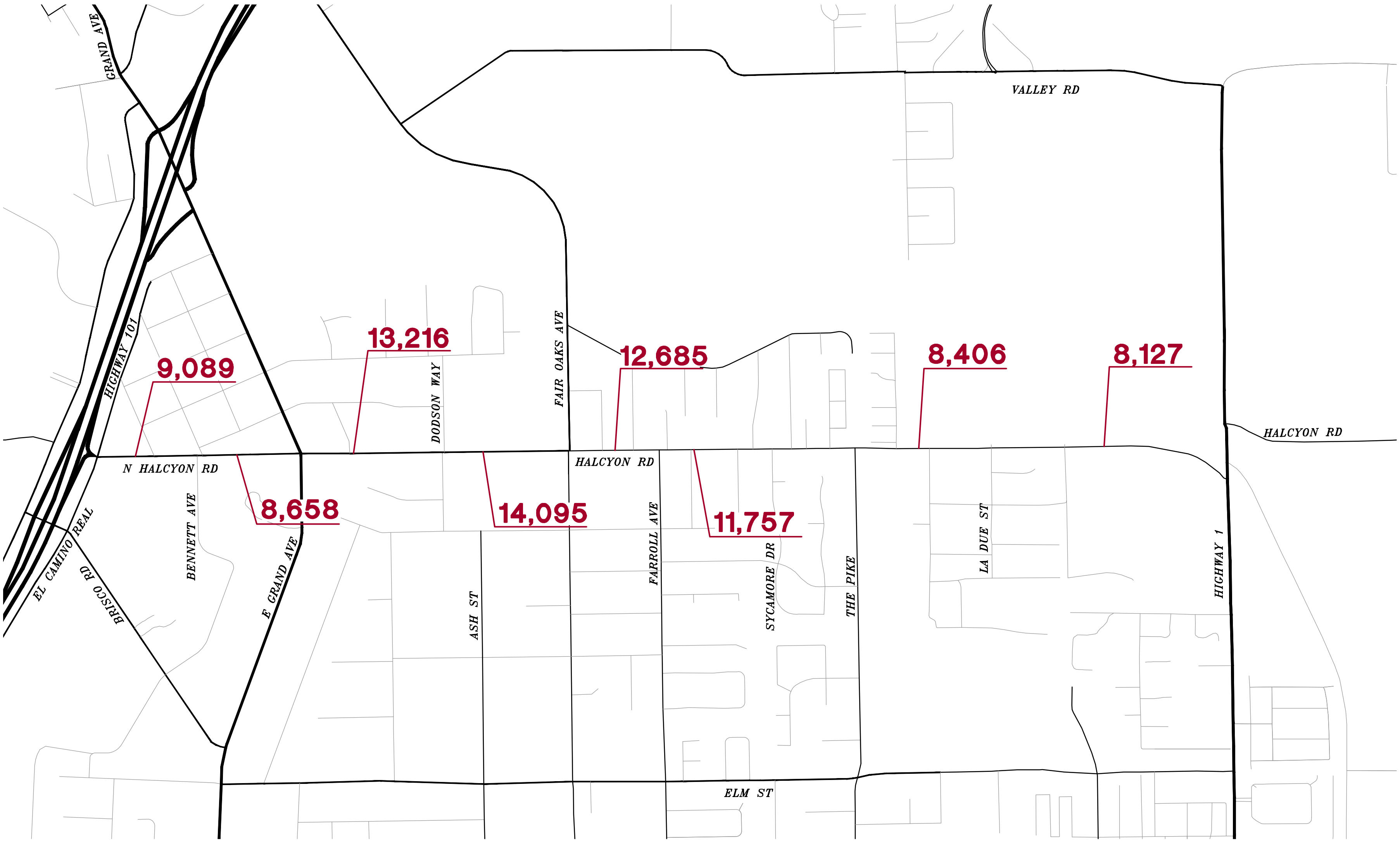
Existing Roadway Segment Operations

The LOS for the eight roadway segments along the Halcyon Road corridor were established using the capacities in **Table 1**. **Table 6** presents existing roadway average daily traffic (ADT) and LOS conditions. **Figure 5** shows the existing ADT along the study corridor.

TABLE 6
EXISTING CONDITIONS: ROADWAY SEGMENTS VEHICULAR LEVEL OF SERVICE

	Street	Segment	No. Lanes	Target LOS	Average Daily Traffic Volume	Average Daily Traffic LOS
1	Halcyon Road	El Camino Real to Bennett Avenue	2	C	9,089	B
2	Halcyon Road	Bennett Avenue to E. Grand Avenue	2	C	8,658	A
3	Halcyon Road	E. Grand Avenue to Dodson Way	4	C	13,216	A
4	Halcyon Road	Dodson Way to Fair Oaks Avenue	4	C	14,095	A
5	Halcyon Road	Fair Oaks Avenue to Farroll Avenue	4	C	12,685	A
6	Halcyon Road	Farroll Avenue to The Pike	2	C	11,757	B
7	Halcyon Road	The Pike to La Due Street	2	C	8,406	A
8	Halcyon Road	La Due Street to SR 1	2	C	8,127	C

As presented in **Table 6**, all segments along Halcyon Road are currently operating at acceptable LOC C or better for vehicular traffic. Bicycle and pedestrian facilities are not evaluated using LOS criteria for roadway segments in this memorandum, rather an inventory of existing bicycle lane and sidewalk facilities, any gaps in the network, are discussed in the Context Zones section of this memorandum and presented on Figures A-1 through A-4 in the Appendix.



Halcyon Road Complete Streets Plan

Figure 5

Existing ADT Volumes

Collision History

Collision data within the Halcyon Road study corridor was obtained from California Highway Patrol's Statewide Integrated Traffic Records Systems (SWITRS) and from the Traffic Accident Surveillance and Analysis System (TASAS) database (Caltrans) for a 5-year period between January 1, 2011 and December 31, 2015. A review of the data shows that approximately 120 total collisions occurred along the Halcyon Road study corridor during this 5-year period. **Table 7** presents the collision type and severity of the 120 total reported collisions. No fatalities were reported during this 5-year period.

TABLE 7
5-YEAR: COLLISION TYPE AND SEVERITY

	Injury (Compaint of Pain)	Injury (Other Visible)	Injury (Severe)	Property Damage Only	Total
2011	**3**	**1**		**4**	**8**
Hit Object	1	1			2
Rear End	2			4	6
2012	**3**	**1**		**5**	**9**
Broadside	1			2	3
Head-On	1				1
Overturned		1			1
Rear End	1				1
Sideswipe				3	3
2013	**13**		**2**	**24**	**39**
Broadside	5		1	4	10
Hit Object	2			4	6
Overturned	1			1	2
Rear End	3		1	12	16
Sideswipe	2			3	5
2014	**11**	**1**		**23**	**35**
Broadside	4			5	9
Head-On	1			2	3
Hit Object		1		4	5
Rear End	6			8	14
Sideswipe				2	2
Other				2	2
2015	**6**	**3**		**20**	**29**
Broadside	1	1		1	3
Head-On				2	2
Hit Object		1		5	6
Rear End	4	1		6	11
Sideswipe				5	5
Vehicle/Ped	1				1
Other				1	1
Total	**36**	**6**	**2**	**76**	**120**

As shown in **Table 7**, 73 collisions were reported as occurring on Halcyon Road from El Camino Real to The Pike, in the City of Arroyo Grande, during this 5-year period. Of the 73 total collisions, there were zero fatalities, 2 resulted in serious injuries, 26 resulted in non-serious injury, and 45 involved property damage only (PDO). One collision involved a bicycle, and no collisions involved a pedestrian. One collision in 2015 involved a pedestrian at Halcyon Road/The Pike intersection. Approximately 47 collisions were reported as occurring on Halcyon Road from The Pike to State Route 1, in the County of San Luis Obispo, during this 5-year period. Of the 47 collisions, 31 involved property damage only (PDO) accidents, and 16 resulted in some degree of injury.

Intersection Collisions

Approximately 76 of the 120 reported collisions occurred within 100 feet of an intersection along the Halcyon Road study corridor. To account for collisions resulting from rear-ends within 300 feet of an intersection, an additional 16 collisions are considered to have occurred at an intersection along the Halcyon Road study corridor, with a total of 92 collisions. Of the 92 intersection collisions, the majority occurred at E. Grand Avenue (14 collisions), Fair Oaks Avenue (8), Farroll Avenue (8), The Pike (14), and State Route (SR) 1 (28). (*Note: There are two intersections at Halcyon Road/SR1 within 235 feet of each other; these collisions recorded at Halcyon Road/SR 1 occurring at the western or eastern intersection are not distinguished. However, due to the proximity of these intersections to one another, collisions occurring at either intersection are assumed within the abovementioned total number of collisions (28).*)

Bicycle and Pedestrian Accidents

Of those collisions that occurred at intersections along the Halcyon Road study corridor, one (1) collision at E. Grand Avenue involved a bicycle being struck by a westbound vehicle making a right-turn while the bicyclist was travelling eastbound on the wrong side of the road. One (1) collision at The Pike involved a pedestrian being struck by a vehicle traveling southbound on Halcyon Road. The pedestrian was reported to be at fault.

Turning Movement Collisions

Twenty-two (22) of the 92 intersection collisions resulted from a left-turn movement, with 10 vehicles making left turns from Halcyon Road onto a side street, and 12 vehicles making left turns onto Halcyon Road from a side street. Five (5) left-turn collisions occurred at Halcyon Road/The Pike; four (4) left-turn collisions occurred at Halcyon Road/Farroll Avenue; and 11 left-turn collisions occurred at Halcyon Road/SR 1 (*see Note above)*. Four (4) collisions resulted from a right-turn movement, with one (1) making a right turn off of Halcyon Road onto E. Grand Avenue, and one (1) making a right turn onto Halcyon Road from The Pike.

Rear End Collisions

Forty-six (46) of the 92 intersection collisions resulted from a rear end incident. The majority of those collisions involved vehicles proceeding straight, and one involved vehicles changing lanes, one entering traffic, or 7 stopping or slowing in the travel lane. Eight (8) rear end collisions occurred at the E. Grand Avenue/Halcyon Road intersection, with 3 in the northbound, 1 in the southbound, 2 in the westbound, and 2 in the eastbound direction (1 proceeding direction was not reported). Twelve (12) rear end collisions occurred at the SR1/Halcyon Road intersection, with 3 in the northbound, 3 in the southbound, 3 in the westbound, and 3 in the eastbound direction.

Roadway Segment Collisions

In addition to collisions occurring at intersections along the Halcyon Road study corridor, approximately 24 collisions occurred on Halcyon Road, located more than 100 feet from the nearest intersection and not resulting from a rear end incident. As such, these collisions are not analyzed as intersection collisions, but rather as roadway collisions. Fourteen (14) additional collisions occurred on major side streets intersecting with Halcyon Road, located more than 100 feet from the intersection and not resulting from a rear end incident.

Context Zone 1: Urban

One (1) collision occurred on Halcyon Road between El Camino Real and E. Grand Avenue in 2015, when a northbound vehicle struck a parked vehicle while proceeding straight on Halcyon Road.

Context Zone 2: Urban Transition

Nine (9) collisions occurred on Halcyon Road between E. Grand Avenue and Fair Oaks Avenue, resulting in 5 accidents with one or more injuries, and 4 property damage reports. No collisions involved a bicyclist or pedestrian. **Table 8** provides a summary of collisions that occurred within the urban transition zone.

TABLE 8
CONTEXT ZONE 2 ROADWAY SEGMENT COLLISIONS

Year	Location	Description (Collision type: Proceeding movement, direction of travel)
2013	Park Wy 130 ft S of Halcyon Rd	Broadside: Making Left Turn, traveling in the Northbound direction
2013	Dodson Wy 352 ft S of Halcyon Rd	Broadside: Entering Traffic, traveling in the Eastbound direction
2013	East Grand Av 364 ft S of Halcyon Rd	Broadside: Entering Traffic, traveling in the Eastbound direction
2014	Fair Oaks Av 400 ft N of Halcyon Rd	Broadside: Making Left Turn, traveling in the Westbound direction
2014	Dodson Wy 237 ft N of Halcyon Rd	Hit Object: Proceeding Straight, traveling in the Southbound direction
2014	Dodson Wy 250 ft S of Halcyon Rd	Other: Parking Maneuver, traveling in the Southbound direction
2014	Park Wy 149 ft S of Halcyon Rd	Broadside: Making Left Turn, traveling in the Eastbound direction
2015	Dodson Wy 345 ft S of Halcyon Rd	Rear End: Proceeding Straight, traveling in the Northbound direction
2015	Fair Oaks Av 202 ft N of Halcyon Rd	Hit Object: Ran Off Road, traveling in the Southbound direction

Context Zone 3: Neighborhood

One (1) collision occurred on Halcyon Road between Fair Oaks Avenue and The Pike in 2013, when a northbound vehicle was changing lanes and sideswiped a highway construction equipment vehicle proceeding straight in the lane of travel.

Context Zone 4: Rural

Approximately seven (7) collisions occurred on Halcyon Road between The Pike and State Route 1, five (5) of which occurred near State Route 1, and two (2) occurred south of The Pike. Five resulted in property damage only, and two resulted in injury (complaint of pain). Four (4) were caused by a vehicle hitting a stationary object, two (2) were caused by a vehicle sideswiping another vehicle, and one was caused by a broadside collision.

Collision Rates

Collision data for the study roadway segments including intersections on Halcyon Road was derived from SWITRS for a five year period between January 2011 to December 2015, and include roadway collisions and intersection collisions within the study corridor. Average daily traffic (ADT) data is provided for the study roadway segments based on traffic counts on Halcyon Road between El Camino Real and Bennett Avenue conducted in September 2015, and counts for the remaining roadway segments conducted in May 2016. Collision rates were calculated in terms of "accidents per million vehicle miles traveled", and are based on the number of collisions per year, and the vehicle miles traveled per year (equal to the average daily traffic (ADT) volumes multiplied by the length of the segment), as shown in the following equation:

$$Collision\ Rate\ = \frac{(\text{Number of Collisions})\ \text{x}\ (1{,}000{,}000)}{\text{Vehicle Miles Traveled}}$$

The calculated collision rates were compared with statewide average rates compiled by the California Department of Transportation (Caltrans) as published in their most recent document

2012 Collision Data on California State Highways[1]. The document provides basic average accident rates for various types of roadways and intersections categorized by number of lanes, travel speed, etc., and are derived from the California Statewide Integrated Traffic Records System (SWITRS). Fatality and injury rates were calculated as a percentage of total recorded collisions.

Table 9 summarizes the resulting study roadway segment injury and "fatality plus injury" (F+I) percentages and collision rates compared against statewide averages for each context zone along the Halcyon Road study corridor. Context Zone 1 was analyzed as an urban two-lane roadway; Context Zones 2-4 were analyzed as suburban 2-lane roadways. Note that intersection collisions are included in the summary, excepting those which occurred on the side street and not on Halcyon Road itself. Collisions which occurred at an intersection at a Context Zone boundary (i.e. Grand Ave., Fair Oaks Ave and The Pike) where assigned to the Context Zone based on which side of the intersection the collision occurred.

TABLE 9
HALCYON ROAD CORRIDOR COLLISION RATES

Study Roadway Segments	Length (mi)	Total Collisions (5 year)	Total # Injury (5 year)	Fatality (F) + Injury (I) (5 year)	Average % F + I	Statewide % F + I	ADT	Collision Rate (ACC/MVM)	Statewide Basic Average Rate
Context Zone 1: Urban	0.3	**10**	**4**	**4**	0.400	0.425	8874	2.06	2.21
Context Zone 2: Urban Transition	0.4	**27**	**13**	**13**	0.481	0.425	13656	2.71	2.39
Context Zone 3: Neighborhood	0.44	**20**	**6**	**6**	0.300	0.425	11757	2.12	2.39
Context Zone 4: Rural	0.58	**15**	**8**	**8**	0.533	0.425	8267	1.71	2.39

As can be seen in **Table 9**, Context Zone 2 exceeds both the statewide F+I rate and the collision rate for similar roadway facilities. Context Zone 4 exceeds the statewide F+I rate.

[1] California Department of Transportation 2012 Collision Data on California State Highways (road miles, travel, collisions, collision rates), Division of Traffic Operations, Sacramento, CA.

Multi-Way Stop Control Warrants

The intersection at Halcyon Road/The Pike is currently a two-way stop controlled intersection. Due to the number of collisions which have occurred at this intersection, factors supporting the employment of an multi-way stop control measure were reviewed. The Manual on Uniform Traffic Control Devices (MUTCD) Section 2B.07 states the following as a criterion which could on its own warrant installation of a multi-way stop control:

> *Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.*

Table 10 presents a collision summary for Halcyon Road/The Pike from January 2011 to December 2015. As shown, nine (9) collisions occurred within a 12-month period between March 2014 and March 2015, and each collision appears to be of a type susceptible to correction with installation of an all-way stop. This includes the March 2015 collision which identified the pedestrian at fault. Providing a controlled intersection and crosswalk may have reduced the likelihood of this type of collision. With the nearest existing pedestrian crosswalk located 1,300 feet to the north at Sandalwood Avenue, pedestrians are currently expected to cross at uncontrolled locations.

TABLE 10
5-YR COLLISION HISTORY AT THE INTERSECTION OF HALCYON ROAD/THE PIKE

Halcyon Road/The Pike

Year	Month	Day	Collision Type	Proceeding movement, direction of travel
2011	05	Monday	Rear End	Driver: Proceeding Straight, traveling in the Eastbound direction Involved Party: Slowing/Stopping, traveling in the Eastbound direction
2013	02	Tuesday	Rear End	Driver: Proceeding Straight, traveling in the Southbound direction Involved Party: N/A
2013	04	Sunday	Broadside	Driver: Making Left Turn, traveling in the Northbound direction Involved Party: Proceeding Straight, traveling in the Southbound direction
2013	11	Wednesday	Broadside	Driver: Making Left Turn, traveling in the Eastbound direction Involved Party: Proceeding Straight, traveling in the Southbound direction
2014	03	Friday	Broadside	Driver: Making Left Turn, traveling in the Eastbound direction Involved Party: Proceeding Straight, traveling in the Northbound direction
2014	04	Friday	Rear End	Driver: Proceeding Straight, traveling in the Northbound direction Involved Party: N/A
2014	04	Friday	Broadside	Driver: Making Right Turn, traveling in the Eastbound direction Involved Party: Proceeding Straight, traveling in the Southbound direction
2014	07	Tuesday	Rear End	Driver: Proceeding Straight, traveling in the Southbound direction Involved Party: (2 vehicles) Slowing/Stopping, traveling in the Southbound direction
2014	07	Tuesday	Rear End	Driver: Proceeding Straight, traveling in the Southbound direction Involved Party: Slowing/Stopping, traveling in the Southbound direction
2014	10	Thursday	Rear End	Driver: Proceeding Straight, traveling in the Southbound direction Involved Party: N/A
2014	10	Thursday	Head-On	Driver: Making Left Turn, traveling in the Eastbound direction Involved Party: Proceeding Straight, traveling in the Southbound direction
2015	01	Friday	Sideswipe	Driver: Making Left Turn, traveling in the Westbound direction Involved Party: Proceeding Straight, traveling in the Southbound direction
2015	03	Thursday	Vehicle/Ped	Driver: Proceeding Straight, traveling in the Southbound direction Involved Party: Pedestrian at fault
2015	08	Tuesday	Rear End	Driver: N/A Involved Party: N/A

Based on the information presented in **Table 10**, installation of an all-way stop is warranted at the intersection of Halcyon Road and The Pike based on collision history. An engineering study is recommended by the MUTCD in support of a decision to install multi-way stop control.

Speed Surveys

Recent speed surveys have been conducted within the City and County for the following segments of Halcyon Road:

- Context Zone 1 between E. Grand Avenue and Bennett Avenue (2014);
- Context Zone 2 between Park Way and Dodson Way (2014);
- Context Zone 2 between Dodson Way and Fair Oaks Avenue (2016);
- Context Zone 3 between Fair Oaks Avenue and The Pike (2014); and
- Context Zone 4 between The Pike and State Route 1.

The posted speed limit on Halcyon Road from E. Grand Avenue to Bennett Avenue is 35 mph, and the 85th percentile directional speeds were measured at 35.6 mph (northbound) and 35.1 mph (southbound). The posted speed limit on Halcyon Road between Park Way and Dodson Way is 35 mph and the 85th percentile speed was measured at 37.0 mph in both northbound and southbound directions. The posted speed limit on Halcyon Road between Dodson Way and Fair Oaks Avenue is 40 mph and the 85th percentile speed was measured at 38.0 mph in both northbound and southbound directions. The posted speed limit on Halcyon Road from The Pike to State Route 1 is 45 mph based on the most recent speed survey conducted by the County. The County does not currently have 85th percentile speed data on Halcyon Road between The Pike and SR 1.

The posted speed limits are in conformance with the California Vehicle Code whereby the posted speed is the nearest 5 mph increment from the measured 85th percentile speed. Note that a slight reduction (1 mph or more) in the 85th percentile speed on Halcyon Road between Dodson Way and Fair Oaks Avenue would result in a reduction in a 5 mph reduction in the posted speed limit, from 40 mph to 35 mph.

Conclusion

The key findings of this existing conditions analysis of Halcyon Road between El Camino Real in the City of Arroyo Grande and State Route 1 in the County of San Luis Obispo are as follow:

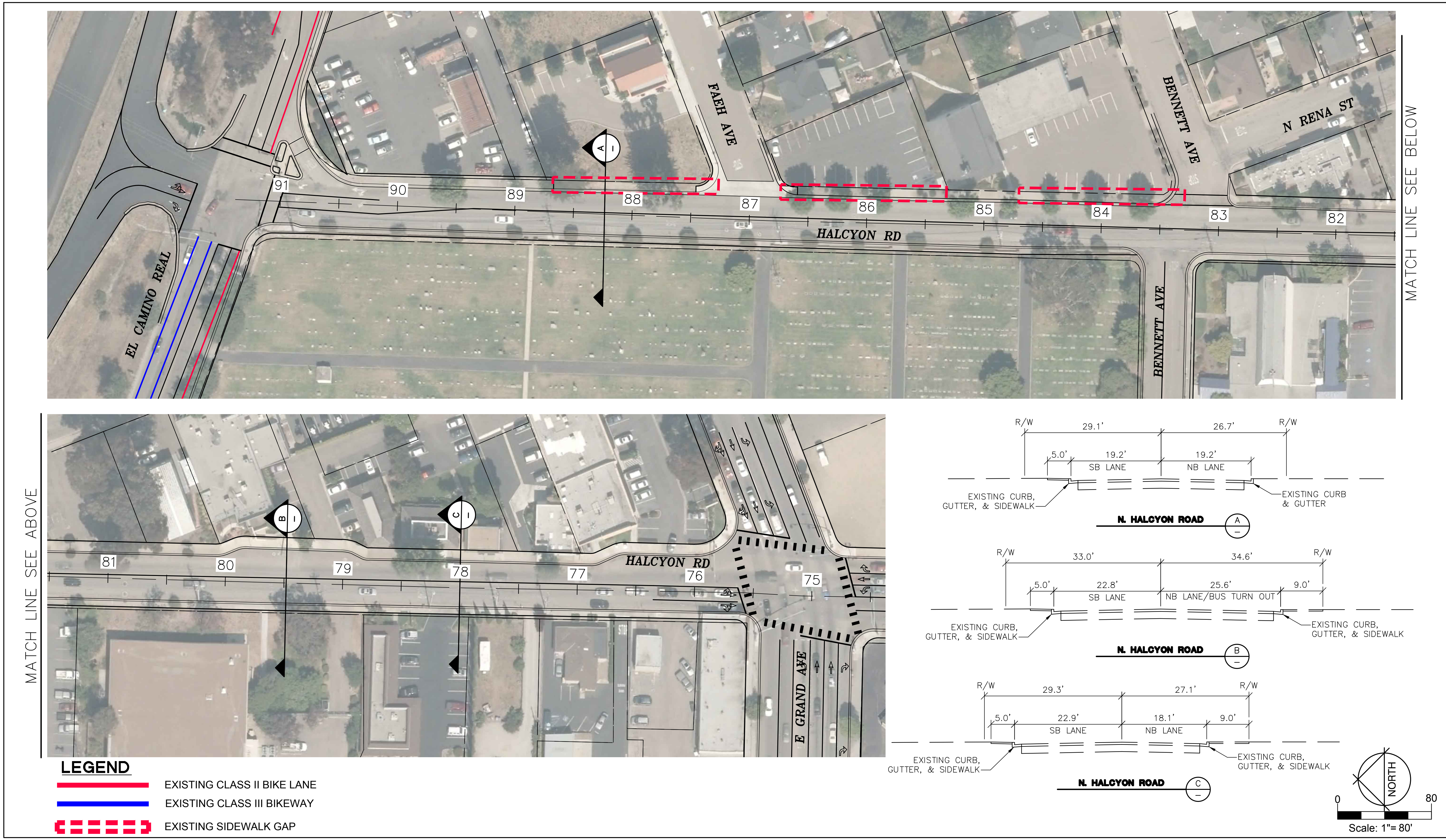
- Vehicular Level of Service is adequate at all study intersections and roadway segments with the exception of at the Halcyon Road / State Route 1 intersections which experience LOS D in the PM peak hour at the western intersection and LOS F in both the AM and PM peak hours at the eastern intersection;
- Although pedestrian LOS is adequate at signalized intersections, unsignalized crossings are long and do not provide median refuge;
- Bicycle LOS at the signalized intersection of Halcyon Road and East Grand Avenue is calculated to be LOS D in the AM peak hour; Bicycle LOS is adequate at all study intersections with the exception of at Halcyon Road northbound at E. Grand Avenue which is calculated to be LOS D in the AM and PM peak hours;
- No dedicated bicycle facilities currently exist on Halcyon Road in the City of Arroyo Grande;
- South of The Pike in the County of San Luis Obispo "bike lane" signs are in place however the shoulder width is less than Class II minimums in most locations;
- In the City of Arroyo Grande, the sidewalk network has numerous gaps as shown on Figures A-1 through A-4;
- Continuous pedestrian access is also key for transit accessibility. Currently, pedestrian access is provided on Halcyon Road near the East Grand Avenue and Fair Oaks Avenue bus stops. However, continuous pedestrian facilities are not provided further

south in the residential areas of the City (Context Zone 3). In Context Zone 1, there are several gaps in the sidewalk for access to the Park & Ride lot on El Camino Real.

- Pedestrians have made evident pathways adjacent to the roadway where there are gaps in the sidewalk.
- Harloe Elementary schoolchildren and parents, Arroyo Grande High School students, hospital employees, and residents have expressed concerns for safely crossing Halcyon Road; The collision rate in Context Zone 2 exceeds the statewide average for similar facilities and the rate of injury collisions in both Context Zone 2 and Context Zone 4 exceeds the statewide average;
- The collision rate in Context Zone 2 exceeds the statewide average for similar facilities, and the rate of fatality and injury collisions in both Context Zone 2 and Context Zone 4 exceed the statewide average; and
- The intersection of Halcyon Road and The Pike meets collision warrants for installation of multi-way (all-way) stop control.

Presently, the Halcyon Road corridor does not provide necessary bicycle accommodations and lacks adequate pedestrian accommodations. Unsignalized crossings and intersections with poor visibility, lack of sidewalk connectivity, the absence of bike lanes, unclear or poorly marked lane markings, and high vehicle speeds present challenges to overall corridor safety.

EXISTING CONDITIONS - CONTEXT ZONE 1



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HALCYON ROAD COMPLETE STREETS PLAN

Figure A-1

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Arroyo Grande, California

April 25, 2018
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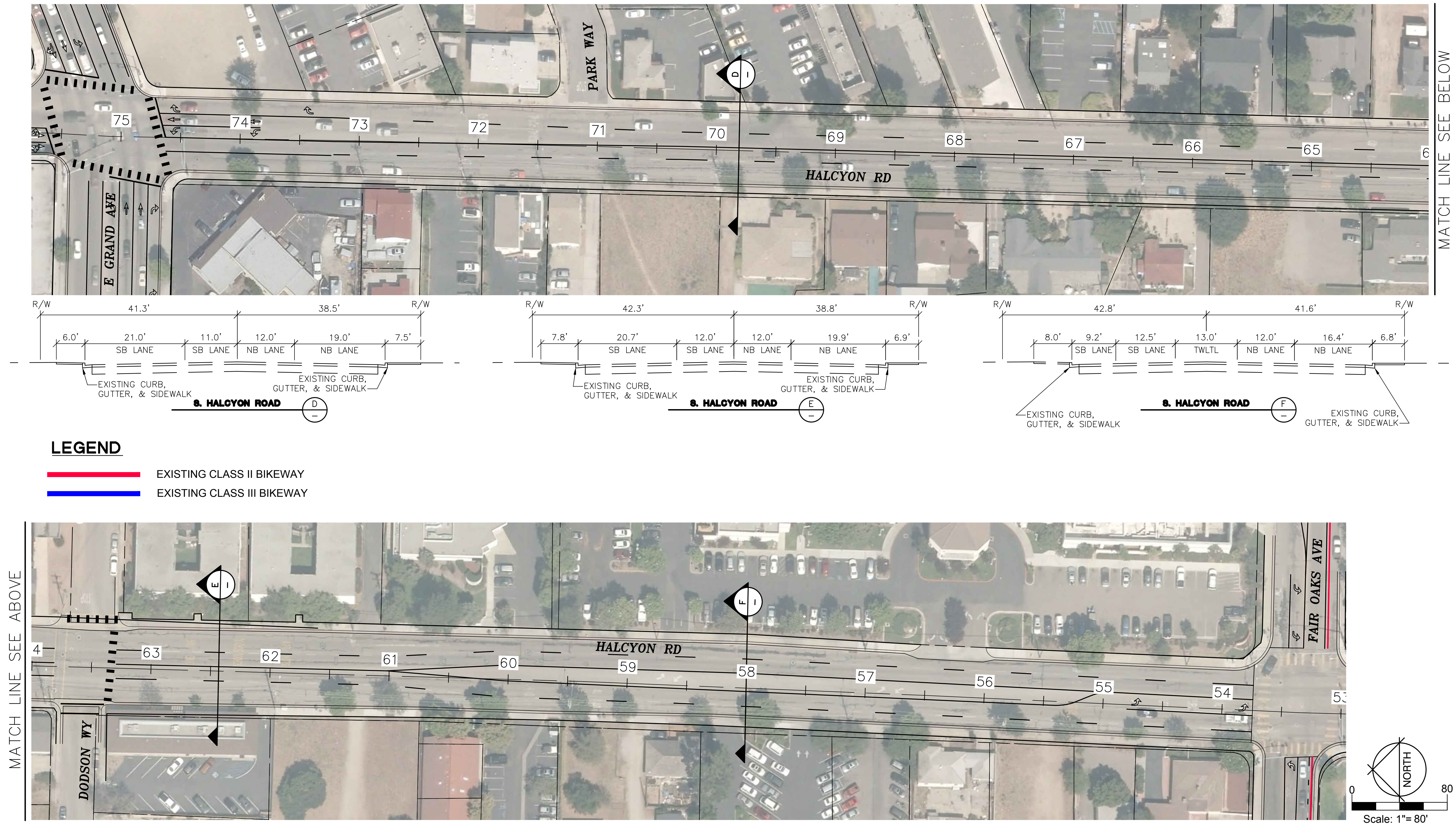
EXISTING CONDITIONS - CONTEXT ZONE 2



HALCYON ROAD COMPLETE STREETS PLAN

Figure A-2

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April 25, 2018
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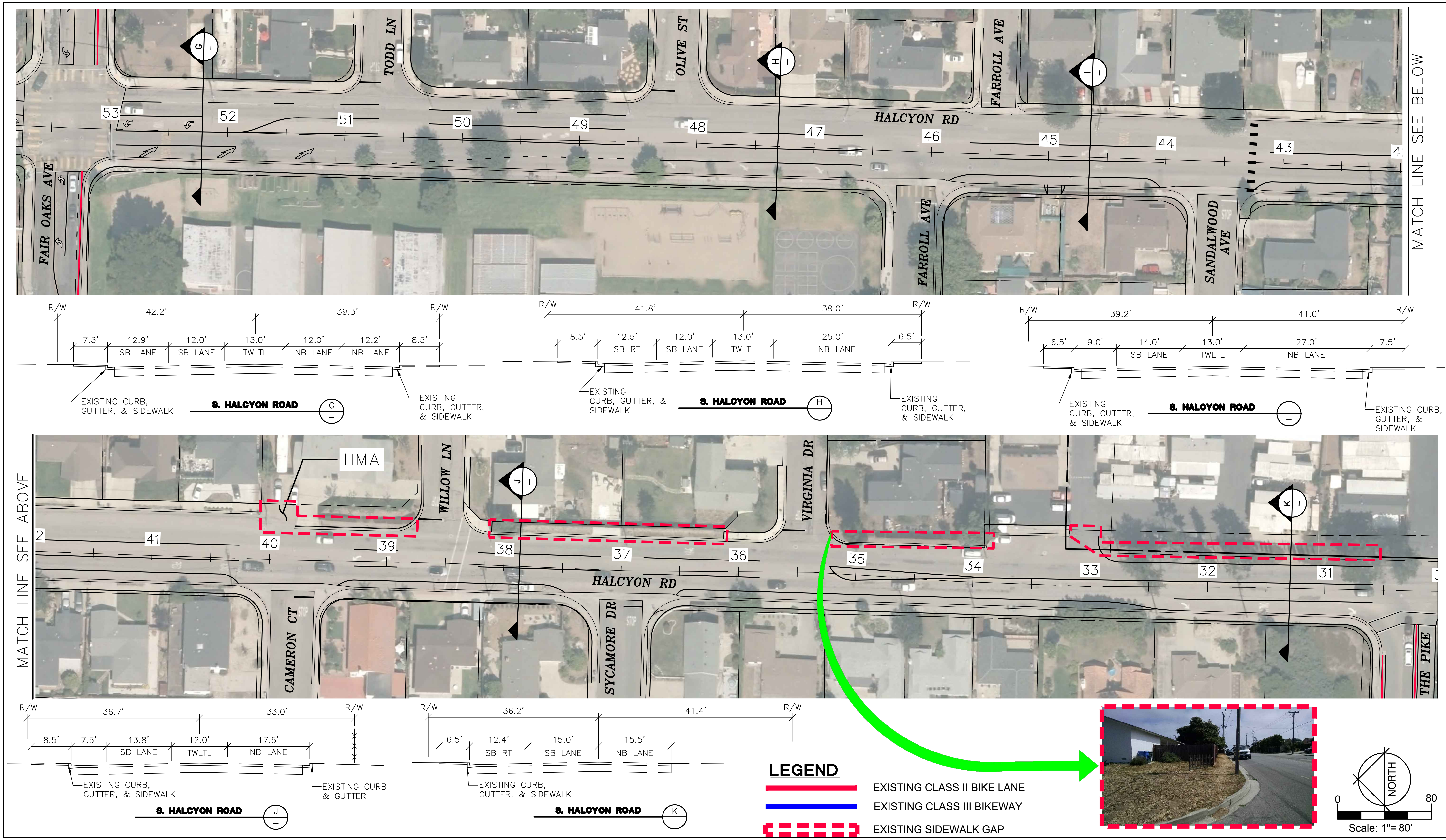
EXISTING CONDITIONS - CONTEXT ZONE 3



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HALCYON ROAD COMPLETE STREETS PLAN

Figure A-3

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April 25, 2018
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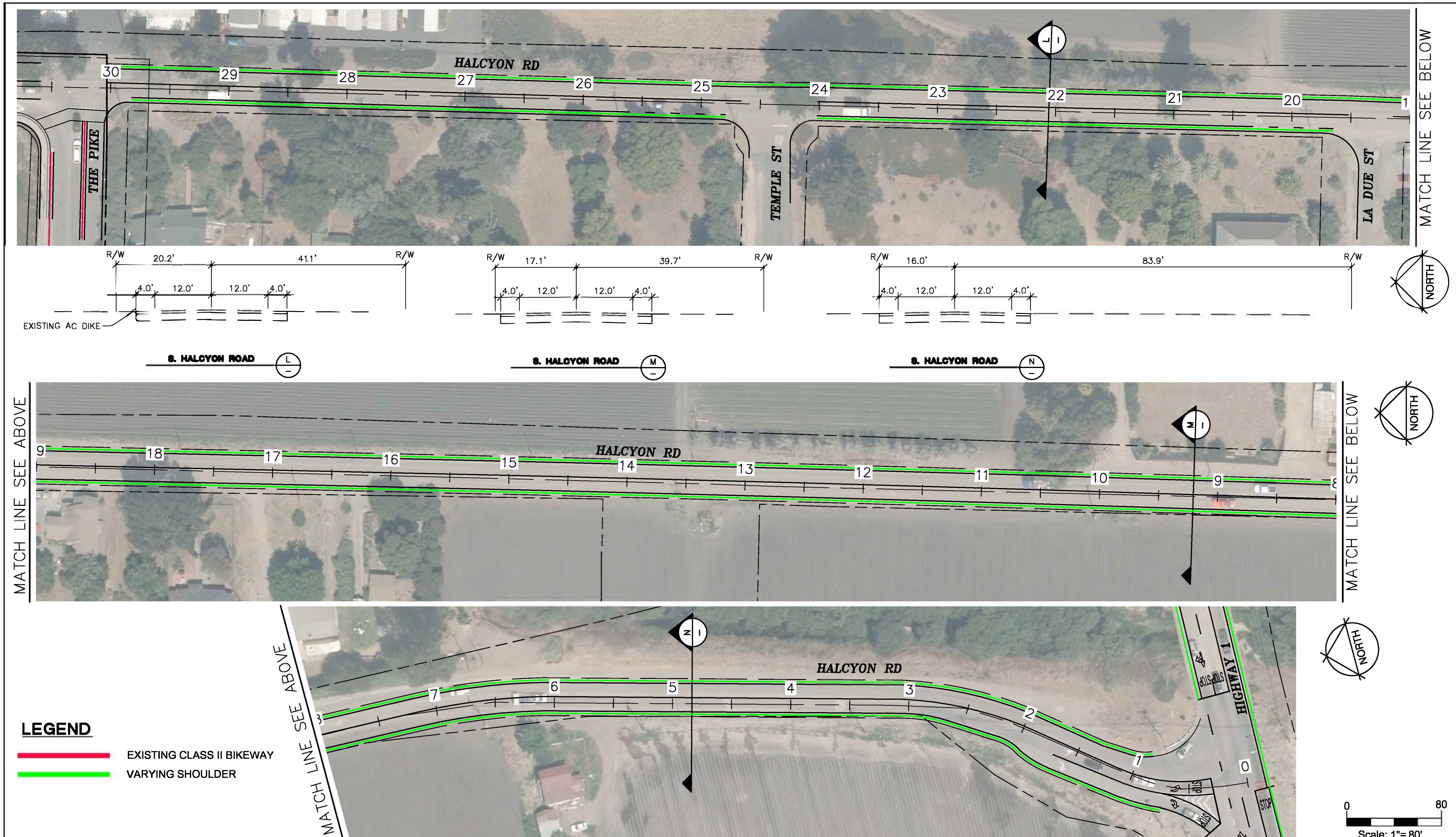
EXISTING CONDITIONS - CONTEXT ZONE 4



HALCYON ROAD COMPLETE STREETS PLAN

Figure A-4

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Arroyo Grande, California

April 25, 2018
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Appendix E

Bicycle LTS Analysis

MEMORANDUM

617 W 7th Street, Suite 505
Los Angeles, CA 90017
(213) 489-7443

To: Nate Stong, PE, Omni-Means

From: Marc Caswell & Kim Voros, Alta Planning + Design

Date: April 4, 2017

Re: Halcyon Road Complete Streets Plan Bicycle Level of Traffic Stress Analysis

Introduction

To help inform the design of the Halcyon Road Complete Streets Plan, an investigation of existing bicycle riding conditions was completed using a standardized Bicycle Level of Traffic Stress (LTS) Analysis. This analysis uses street characteristics to rate the roadway on a scale of 1 being most comfortable to 4 being least comfortable. The LTS analysis framework was then used to evaluate two alternative roadway configurations. The resulting analysis performed and detailed below will help highlight locations where potential improvements are expected to have the biggest effect on the experience of bicycle users along Halcyon Road.

This analysis compared the existing facilities on Halcyon Road, as well as two proposed alternatives. Broadly, the designs which were compared are as follows:

- Existing condition of Halcyon Road includes only a standard Class II bike lane in Context Zone 4; the remainder of the corridor have no bicycle facilities.
- Alternative 1 proposes the installation of Buffered Bike lanes throughout the corridor, and a 'Road Diet' in Zone 2. The bike lane is widened in Zone 4.
- Alternative 2 proposes the installation of Buffered Bike lanes in Zone 1 and standard Class II bike lanes throughout the corridor with intermittent buffers in Zone 2. The bike lane is widened in Zone 4.

This analysis found that the existing conditions of Halcyon Road do not provide adequate comfort to bicyclists, and the corridor consistently scored an LTS 4 throughout the corridor. While both alternatives improved the comfort of bicyclists over the existing conditions, the analysis found that Alternative 1 provided the greatest benefit to people who walk and bike, both in terms of travel along and across Halcyon Road. A map detailing these findings is included at the end of this memorandum.

While the LTS completed focuses on bicycle travel, improvements for bicyclists generally translate into improved conditions for pedestrians, as well. This is particularly true for crossing conditions, as improvements are measured in terms of reduced exposure to motor vehicle travel speed and the number of travel lanes crossed.

The methods used for the Level of Traffic Stress Analysis were adapted from the 2016 Oregon Department of Transportation (ODOT) *Analysis Procedure Manual*.[1]. The approach outlined in the ODOT report uses roadway network data, including posted speed limit, the number of travel lanes, and the presence and character of bicycle lanes, as a proxy for bicyclist comfort level in urban context and ADT and shoulder or bike lane width in rural settings. Road segments are classified into one of four levels of traffic stress based on these factors.

The lowest level of traffic stress, LTS 1, is assigned to roads that would be suitable for most children to ride, and also to multi-use paths that are separated from motorized traffic. LTS 2 roads are those that could be comfortably ridden by the average adult population.

The higher levels of traffic stress, LTS 3 and 4, correspond to types of cyclists characterized by Portland's bicycle coordinator Roger Geller in his *Four Types of Cyclists* report,[2] a categorization of cyclist types which is commonly accepted throughout the U.S. bicycle planning field. LTS 3 is the level assigned to roads that would be acceptable to current "enthused and confident" cyclists while LTS 4 is assigned to segments that are only acceptable to "strong and fearless" bicyclists, who will tolerate riding on roadways with higher motor traffic volumes and speeds. The definitions for each level of traffic stress are shown in Table 1. Figure 1 shows examples of each LTS level using streets found in Rochester, New York.

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[1] *Analysis Procedure Manual* methodology relies heavily on the 2012 Mineta Transportation Institute *Report 11-19: Low-Stress Bicycling and Network Connectivity*

[2] Source: Roger Geller. *Four Types of Cyclists*.
http://www.portlandoregon.gov/transportation/article/237507

Table 1. Levels of Traffic Stress Definitions Source: ODOT Analysis Procedure Manual, Version 2

LTS 1	Represents little traffic stress and requires less attention, so is suitable for all cyclists. This includes children that are trained to safely cross intersections (around 10 yrs. old/5th grade) alone and supervising riding parents of younger children. Generally, the age of 10 is the earliest age that children can adequately understand traffic and make safe decisions which is also the reason that many youth bike safety programs target this age level. Traffic speeds are low and there is no more than one lane in each direction. Intersections are easy to cross by children and adults. Typical locations include residential local streets and separated bike paths/cycle tracks.
LTS 2	Represents little traffic stress but requires more attention than young children can handle, so is suitable for teen and adult cyclists with adequate bike handling skills. Traffic speeds are slightly higher but speed differentials are still low and roadways can be up to three lanes wide in total for both directions. Intersections are not difficult to cross for most teenagers and adults. Typical locations include collector-level streets with bike lanes or a central business district.
LTS 3	Represents moderate stress and suitable for most observant adult cyclists. Traffic speeds are moderate but can be on roadways up to five lanes wide in both directions. Intersections are still perceived to be safe by most adults. Typical locations include low-speed arterials with bike lanes or moderate speed non-multilane roadways.
LTS 4	Represents high stress and suitable for experienced and skilled cyclists. Traffic speeds are moderate to high and can be on roadways from two to over five lanes wide in both directions. Intersections can be complex, wide, and or high volume/speed that can be perceived as unsafe by adults and are difficult to cross. Typical locations include high-speed or multilane roadways with narrow or no bike lanes.

Figure 1. The four urban/suburban LTS levels visualized

Methodology

The categorization of Halcyon Road completed through an analysis of street segments, intersections, and approaches using spatial data, aerial imagery and proposed designs. The Halcyon Road corridor was analyzed using the four Context Zones developed previously. The urban/suburban LTS methodology was used to assess Context Zones 1 – 3 while the rural LTS method was used to assess Context Zone 4.

Broadly, every street link (a section of roadway) received *up to* three scores based on its characteristics. One score was based on its segment, the space of roadway between intersecting streets. Another score was based on its approach, the area of the segment with turn lanes, where present. A third score was based on its intersection, where one segment crosses another. All roadways received a segment score. However, not all roadways received an intersection or an approach score. For example, a midblock portion of a street link received a segment score, but because it doesn't intersect another street, nor does it have turn lanes, neither an intersection nor approach score was assigned. Figure 2 helps illustrate the three possible sections of a roadway that were scored.

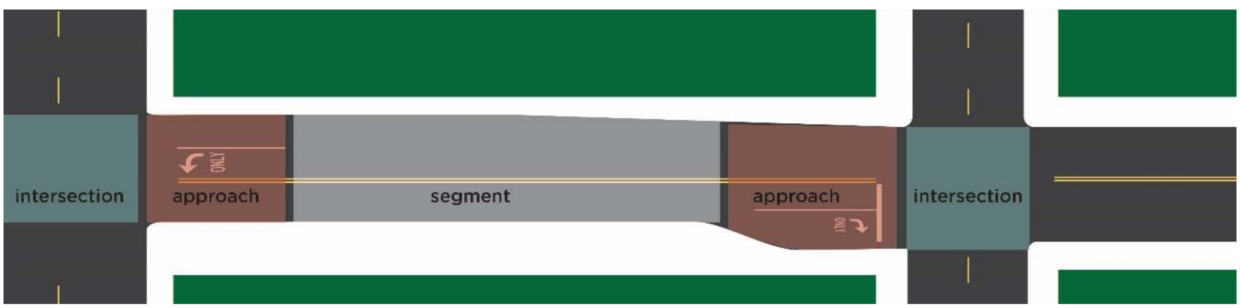

Figure 2. A street link showing the three possible scores it could receive. Because not all links have these three sections, some links may instead receive one or two scores.

The three scores assigned were based on a link's characteristics that affect a bicyclist's feeling of safety and comfort. The scores ranged from 1 to 4, where 1 represents the lowest stress, and 4 represents highest stress and discomfort. These three scores, (when all were assigned), determined the overall LTS score. The overall LTS score a link received was based on a "weakest link" methodology. That is, if a link received a segment score of 2, an approach score of 4, and an intersection score of 3, the overall link score assigned was LTS 4.

The following list is a summary of street characteristics that affect a segment, approach, and intersection LTS score a link received, thereby affecting the overall LTS score assigned. Tables 2-8 include detailed descriptions of how street characteristics affected urban/suburban LTS while Tables 9 and 10 detail the rural LTS.

Urban/Suburban Segment

- Bike lane or mixed traffic
- Width of bike lane, if present
- Bike lane along parking lane or curb, if present
- Posted speed limit
- Number of travel lanes
- Frequent lane blockage (commercial vehicles, transit vehicles, etc.)
- Presence of centerline
- Presence of sharrow markings

Table 2. Scoring criteria for bike lane segments without adjacent parking lane (ODOT)

1 Lane per direction					≥2 lanes per direction	
Prevailing or Posted Speed	≥ 7' (Buffered bike lane)	5.5' – 7' Bike lane	≤ 5.5' Bike lane	Frequent bike lane blockage1	≥ 7' (Buffered bike lane)	<7' bike lane or frequent blockage[1]
≤30 mph	LTS 1	LTS 1	LTS 2	LTS 3	LTS 1	LTS 3
35 mph	LTS 2	LTS 3	LTS 3	LTS 3	LTS 2	LTS 3
≥40 mph	LTS 3	LTS 4	LTS 4	LTS 4	LTS 3	LTS 4

[1]Typically occurs in urban areas (i.e. delivery trucks, parking maneuvers, stopped buses).

Table 3. Scoring criteria for bike lane segments with adjacent parking lane

1 Lane per direction				≥2 lanes per direction	
Prevailing or Posted Speed	≥ 15' bike lane + parking	14' – 14.5' bike lane + parking	≤ 13' bike lane + parking or Frequent blockage	≥ 15' bike lane + parking	≤ 14.5' bike lane + parking or Frequent blockage[1]
≤25 mph	LTS 1	LTS 2	LTS 3	LTS 2	LTS 3
30 mph	LTS 1	LTS 2	LTS 3	LTS 2	LTS 3
35 mph	LTS 2	LTS 3	LTS 3	LTS 3	LTS 3
≥40 mph	LTS 2	LTS 4	LTS 4	LTS 3	LTS 4

[1]Typically occurs in urban areas (i.e. delivery trucks, parking maneuvers, stopped buses).

Table 4. Scoring criteria for urban/suburban mixed traffic

Prevailing Speed or Speed Limit (mph)	Unmarked Centerline	1 lane per direction	2 lanes per direction	3+ lanes per direction
≤ 25[1]	LTS 1	LTS 2	LTS 3	LTS 4
30	LTS 2	LTS 3	LTS 4	LTS 4
≥ 35	LTS 3	LTS 4	LTS 4	LTS 4

[1]Presesence of "sharrow" markings may reduce the LTS by a level for 25 mph or less sections depending on overall area context.

Urban/Suburban Approach

- Presence of right turn lanes (where bikes and cars might mix)
- Presence of left turn lanes (where a bike must merge/cross to reach left turn)
- Length of turn lane
- Posted speed limit

Table 5. Scoring criteria for approaches with right turn lanes

Right-turn lane configuration	Right-turn lane length (ft)	Bike Lane Approach Alignment	Vehicle Turning Speed (mph)[2]	LTS
Single	≤ 150	Straight	≤ 15	2
Single	>150	Straight	≤ 20	3
Single	Any	Left	≤ 15	3
Single[1] or Dual Exclusive/ Shared	Any	Any	Any	4

[1]Any other single right turn lane configuration not shown above.
[2]This is vehicle speed at the corner, not the speed crossing the bike lane. Corner radius can also be used as a proxy for turning speeds.

Table 6. Scoring criteria for approaches with left turn lanes

Left Turn Lane Criteria Prevailing Speed or Speed Limit (mph)	No lane crossed[1]	1 lane crossed	2+ lanes crossed	Dual shared or exclusive left turn lane[2]
≤25	LTS 2	LTS 2	LTS 3	LTS 4
30	LTS 2	LTS 3	LTS 4	LTS 4
≥ 35	LTS 3	LTS 4	LTS 4	LTS 4

[1]For shared through left lanes or where mixed traffic conditions occur (no bike lanes)
[2]Any other single left turn lane configuration not shown above.

Urban/Suburban Intersection

- Presence of traffic signal
- Number of lanes crossed
- Posted speed limit
- Presence of median island

Table 7. Scoring criteria for unsignalized intersection crossing without median refuge

Prevailing Speed or Speed Limit (mph)	Total Lanes Crossed (Both Directions)		
	≤ 3 Lanes	4 -5 Lanes	≥ 6 Lanes
≤ 25	LTS 1	LTS 2	LTS 4
30	LTS 1	LTS 2	LTS 4
35	LTS 2	LTS 3	LTS 4
≥ 40	LTS 3	LTS 4	LTS 4

Table 8. Scoring criteria for unsignalized intersection crossing with median refuge

Prevailing Speed or Speed Limit (mph)	Maximum Through/Turn Lanes Crossed per Direction		
	1-2 Lanes	2-3 Lanes	4+ Lanes
≤ 25	LTS 1[1]	LTS 1[1]	LTS 2
30	LTS 1[1]	LTS 2	LTS 3
35	LTS 2	LTS 3	LTS 4
≥ 40	LTS 3	LTS 4	LTS 4

[1]Refuge should be at least 10 feet to accommodate a wide range of bicyclists (i.e. bicycle with a trailer) for LTS 1, otherwise LTS=2 for refuges 6 to <10 feet.

Rural Segment

- Posted speed of 45 mph or higher
- Daily motor vehicle volume
- Presence and width of paved shoulder or bike lane

Table 9. Unsignalized rural section with posted speeds 45 mph or greater [1,2,3]

Daily Volume (vpd)	Paved Shoulder Width			
	0 - < 2 ft	2 - < 4 ft	4 - < 6 ft	> 6ft
< 400	LTS 2	LTS 2	LTS 2	LTS 2
400 – 1500	LTS 3	LTS 2	LTS 2	LTS 2
1500 – 7000 [4]	LTS 4	LTS 3	LTS 2	LTS 2
7000 +	LTS 4	LTS 4	LTS 3	LTS 3

[1] Based on p1-3 & Table 1-2 from the Oregon Bicycle and Pedestrian Design Guide, 2011.
[2] Adequate stopping sight distances on curves and grades assumed. A high frequency of sharper curves and short vertical transitions can increase the stress level especially on roadways with less than 6' shoulders. Engineering judgement will be needed to determine what impact this will have on LTS level on a particular segment.
[3] Segments with flashing warning beacons announcing presence of bicyclists (typically done on narrow long bridges or tunnels) may, depending on judgement, reduce the LTS by one, but no less than LTS 2.
[4] Over 1500 AADT, the Oregon Bicycle and Pedestrian Design Guide indicates the need for shoulders.

Rural Intersection

- Posted speed of 45 mph or higher
- Daily motor vehicle volume
- Number of travel lanes

Table 10. Scoring criteria for unsignalized intersection crossing with median refuge[1]

Daily Volume (vpd)	≤ 3 Lanes	4 – 5 Lanes	≥ 6 Lanes
< 400	LTS 2	n/a	n/a
400 – 1500	LTS 2	n/a	n/a
1500 – 7000 [4]	LTS 2	LTS 3	n/a
7000 +	LTS 3	LTS 4	LTS 4

1 For roadway being crossed

Results

Maps showing the results of the corridor analysis are attached to this memorandum. Overall, while both Alternatives provide an improvement over the existing condition, Alternative 1 provides a greater overall improvement for travel conditions along and across the corridor. Table 11 shows the average LTS score for each zone under existing conditions and each alternative.

Table 11. Summary of LTS Alternatives Assessment for Halcyon Corridor

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	Zone 1		Zone 2		Zone 3		Zone 4	
	Along	Across	Along	Across	Along	Across	Along	Across
Existing Conditions	4	2	4	3	4	3	4	3
Alternative 1	2	2	2/3	3	3	3	3	3
Alternative 2	2	2	3/4	3	3/4	3	3	3

LTS 1 roadways, which would be shown in dark green are not present along the Halcyon Corridor. Generally LTS 1 facilities are completely separated from motor vehicle traffic or present only on very low traffic local roadways. This condition is not present on the Halcyon Road corridor in either existing or proposed designs.

LTS 2 roadways, shown in lighter green, made up a significant portion of improved conditions in zones 1 and portions of zone 2 in Alternative 1. Wide buffered bikeways are the key improvement.

LTS 3 roadways, shown in orange, are the prevailing condition in zones 3 and 4 in both improvement alternatives and zone 2 in alternative 2. The proximity and speed of motor vehicle traffic is likely to deter most average adults from these portions of Halcyon Road.

LTS 4 roadways, shown in red, represent the existing conditions throughout the corridor at the present time as well as the southern part of zone 2 and northern part of zone 3 in alternative 2. The proximity and speed of motor vehicle traffic is very likely to deter most average adults from these portions of Halcyon Road.

Discussion of Improvements

Zone 1, Alternatives 1 and 2 (Urban/Suburban LTS)

Both proposed alternatives for Zone 1 were identical, so a distinction could not be drawn from this analysis. A summary of the potential improvements over the existing conditions is discussed.

Along. Conditions in zone 1 are improved significantly by a buffered bike lanes in both directions.

Across. Intersection crossing conditions are still an LTS 2, based on posted speed and number of lanes. Addition of the bicycle lane and subsequently narrowing of the motor vehicle travel lanes may produce some improvement but is not considered within the LTS framework. The improvements created at El Camino Real by the bike box are mitigated by the retention of the slip lane for eastbound traffic.

Zone 2, Alternative 1 (Urban/Suburban LTS)

Along. Conditions in zone 2 are improved somewhat by standard bike lanes installed in the northern end of the alignment until about 200' south of Park Way. Buffered bike lanes extend south to the roundabout at Fair Oaks Avenue. Most adults would feel comfortable bicycling in this area. At the roundabout bicyclists have the option to take the lane and mix with motor vehicle traffic or take the shared use pathway, which would be comfortable for most users. This alternative assumes a slowed travel speed of 35 mph south of Dodson Way.

Across. Both bicyclists and pedestrians crossing Halcyon Way would benefit from the reduced exposure afforded by the road diet.

Zone 2, Alternative 2 (Urban/Suburban LTS)

Along. Conditions in zone 2 are improved somewhat by standard bike lanes installed in the northern end of the alignment until about 200' south of Park Way. Buffered bike lanes extend south to the roundabout at Fair Oaks Avenue. Most adults would feel comfortable bicycling in this area.

Across. Both bicyclists and pedestrians crossing Halcyon Way would benefit from the reduced exposure afforded by the road diet.

Zone 3, Alternative 1 (Urban/Suburban LTS)

Along. The dual lane approach to the roundabout at Fair Oaks Avenue would require cyclists to cross the right turn lane to enter the roundabout and make through or left turn movements, which results in LTS 3 for this northern portion of zone 3. Removing the exclusive right turn "slip lane" and making the approach as a single lane entry would result in all approaches of LTS 2. In either case, the roundabout includes an LTS 1 pathway for all movements whereby inexperienced cyclists can navigate around the roundabout on a shared use path and cross as a pedestrian at the crosswalks.

The existing posted speed limit of 40 mph in zone 3 results in LTS 3 despite the buffered bike lanes throughout. There is the potential for prevailing speeds to be reduced with the proposed addition of an all-way stop at The Pike, a roundabout at Fair Oaks Avenue, narrowing of travel lanes to 11 feet, curb extensions at Farroll Ave and Sandalwood Ave, and crosswalk enhancements such as RRFBs. Although it is not possible to quantify the speed reduction at this time, driver behavior is influenced by the physical roadway environment and the proposed changes have the potential to result in some speed reduction. Should prevailing speeds be reduced by 5 mph to 35 mph, the result for zone 3 would be LTS 2.

Across. While bicyclists and pedestrians benefit from reduced exposure (number of motor vehicle lanes crossed) the posted travel speed of 40 mph results in a score of LTS 3. There is an improvement over Alternative 2, though not enough to result in a score change. If prevailing speeds were reduced to 35 mph, the score would like be improved to a result of LTS 2.

Zone 3, Alternative 2 (Urban/Suburban LTS)

Along. Buffered bike lanes and a posted travel posted of 40 MPH result in an LTS score of 3. Intermittent buffer in the northern end of the corridor results in an LTS score of 4. However, there is potential for the proposed intersection treatments at Fair Oaks Avenue and The Pike in combination with roadway reconfiguration to translate to lower motor vehicle speeds.

Across. Posted speed and number of lanes results in a crossing score of LTS 3.

Zone 4, Alternatives 1 and 2 (Rural LTS)

Both proposed alternatives for Zone 4 were identical, so a distinction could not be drawn from this analysis. A summary of the potential improvements over the existing conditions is discussed.

Along. Both alternatives propose the installation of wide dedicated bike lanes. This results in a score of LTS 3.

Across. The roadway speed and ADT indicate an LTS 3 for the difficulty of crossing. While actual conditions are likely to be better during not peak hours. Traffic during peak times is likely to afford few gaps and create more challenging conditions.

Conclusion

Based on this LTS assessment by the project team we recommend improvements to Halcyon Road. While both Proposed Alternatives may not address all more stressful locations (e.g., the double right turn lanes into the roundabout at Fair Oaks Avenue or the slip lane at El Camino Real), both proposed designs would significantly improve the comfort of people bicycling and walking along Halcyon Road compared to the existing conditions. Comparing the two Proposed Alternatives, the LTS analysis shows that buffered bike lanes and reduction in the number of travel lanes as described in Alternative 1 would be the preferred option for improved bicycle and pedestrian conditions.

Halcyon Road

HALCYON ROAD COMPLETE STREETS PLAN

LEVEL OF TRAFFIC STRESS ANALYSIS (ALONG CORRIDOR)

Level of Traffic Stress (LTS) is a measure of bicyclist comfort. A corrdor can be rated on comfort of travel along the corridor and across the corridor. The scores for each direction of travel may be different (e.g., a segment may score LTS 2 in the middle of a segment and an LTS 3 on the intersection approach. The higher score, LTS 3 is used for the overall travel along score. The same segment may score an LTS 4 for travel across.)

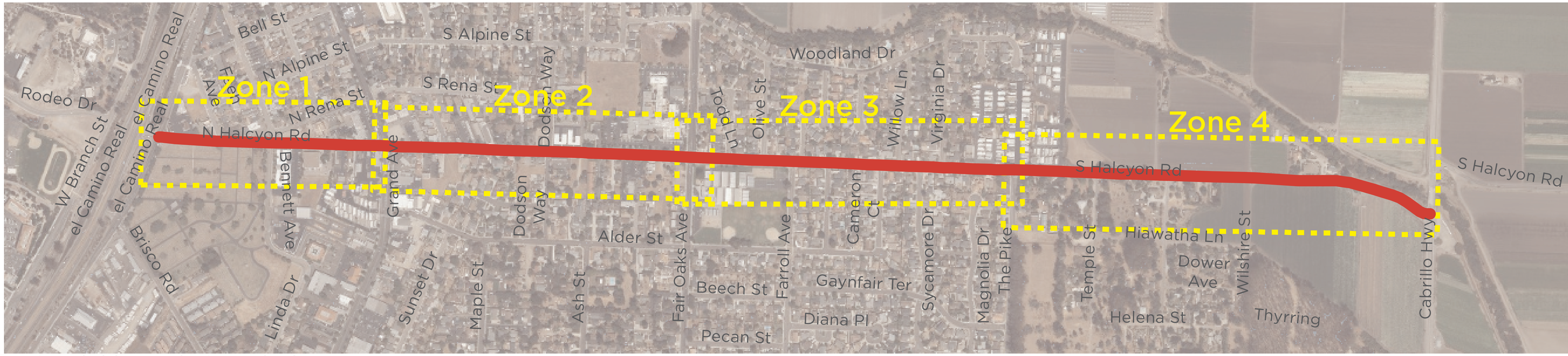
LTS - Rider Type

- 1 - All Ages and Abilities
- 2 - Most Adults
- 3 - Confident Adults
- 4 - Fearless Adults

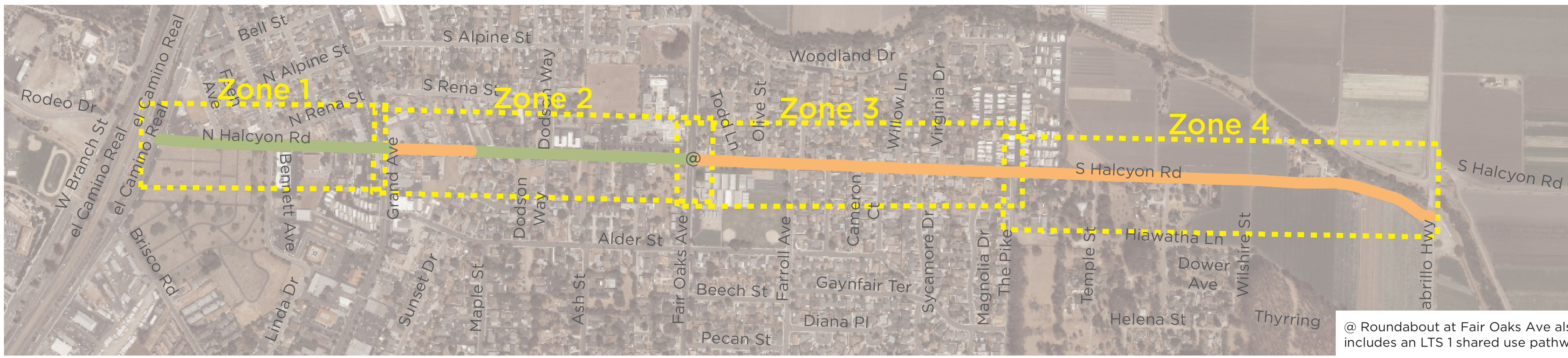
LTS SCORES WERE CALCULATED USING LTS METHODS DEVELOPED BY THE OREGON DEPARTMENT OFTRANSPORTATION (ODOT) AND DOCUMENTED IN THE ANALYSIS PROCEDURE MANUAL.

0 0.1 0.2 MILES

alta PLANNING + DESIGN
Data provided by the ESRI, Omni Means, Alta
Map produced March, 2017.

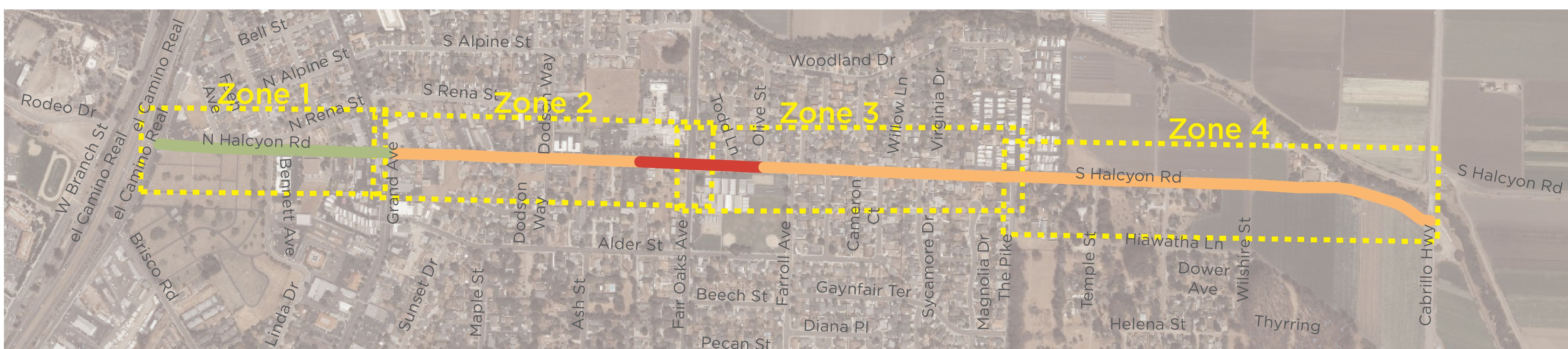


EXISTING CONDITIONS - ALONG



@ Roundabout at Fair Oaks Ave also includes an LTS 1 shared use pathway

ALTERNATIVE 1 - ALONG



ALTERNATIVE 2 - ALONG

Halcyon Road

HALCYON ROAD COMPLETE STREETS PLAN

LEVEL OF TRAFFIC STRESS ANALYSIS (ACROSS CORRIDOR)

Level of Traffic Stress (LTS) is a measure of bicyclist comfort. A corrdor can be rated on comfort of travel along the corridor and across the corridor. The scores for each direction of travel may be different (e.g., a segment may score LTS 2 in the middle of a segment and an LTS 3 on the intersection approach. The higher score, LTS 3 is used for the overall travel along score. The same segment may score an LTS 4 for travel across.)

NOTE: Signalized intersections do not receive an intersection score.

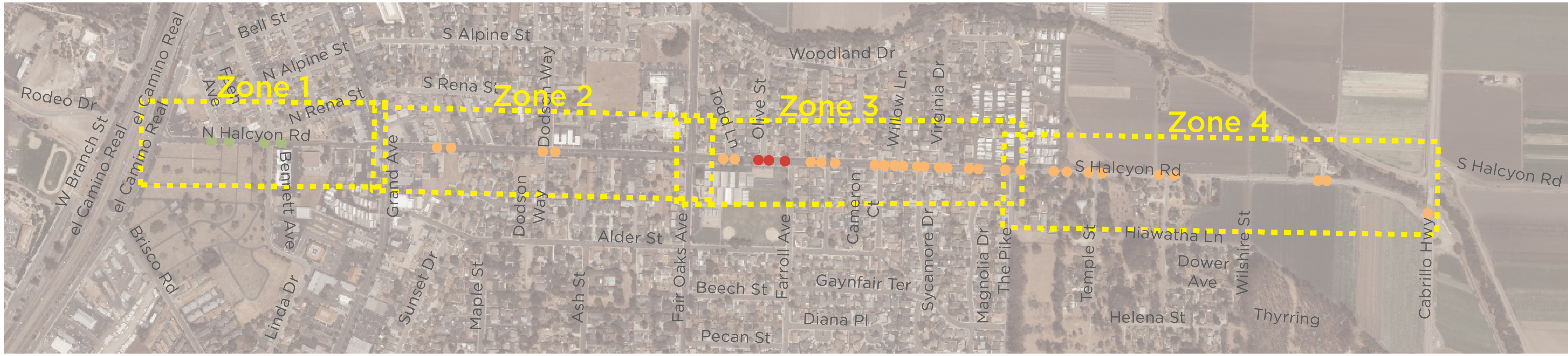
LTS - Rider Type

- 1 - All Ages and Abilities
- 2 - Most Adults
- 3 - Confident Adults
- 4 - Fearless Adults

LTS SCORES WERE CALCULATED USING LTS METHODS DEVELOPED BY THE OREGON DEPARTMENT OFTRANSPORTATION (ODOT) AND DOCUMENTED IN THE ANALYSIS PROCEDURE MANUAL.

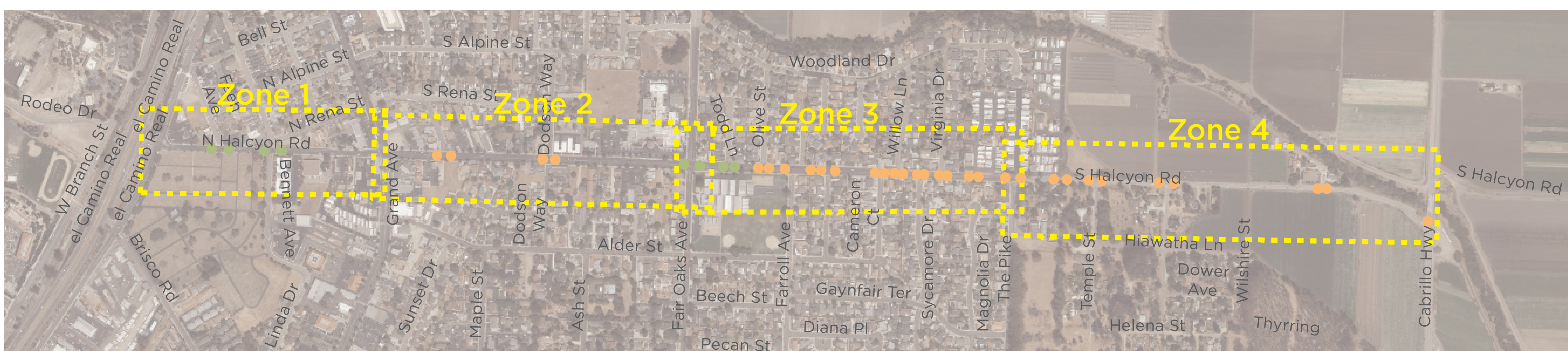
0 0.1 0.2 MILES

Data provided by the ESRI, Omni Means, Alta
Map produced March, 2017.



EXISTING CONDITIONS - ACROSS

ALTERNATIVE 1 - ACROSS



ALTERNATIVE 2 - ACROSS

Appendix F

Outreach Memorandum

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MEMORANDUM

To: Nate Stong, Omni Means

From: Connery Cepeda and Marc Caswell, Alta Planning + Design

Date: July 7, 2017

Re: Outreach Summary for Halcyon Road Complete Streets Plan

Summary

The Halcyon Road Complete Streets Plan includes a variety of types of outreach and opportunities for community input. In advance of any planning efforts, the City of Arroyo Grande hired a team of consultants to conduct outreach and solicit feedback from residents, visitors, and other people who use Halcyon Road. This memo serves to summarize many of those responses.

Contents

Section I describes the responses from the Pop-Up Outreach Survey, conducted between August 12th and 14th at various community events. This 14-question survey asked respondents for their familiarity with the project area, and their desire for changes. The survey was also distributed to nine members of the Stakeholder Advisory Group (SAG), whose responses are described in the narrative below. The SAG responses were not included the full analysis.

Section II describes the responses from the attendees at the four community charrettes on September 14th & 15th, 2016 and April 12th & 13th, 2017 at Harloe Elementary School. A total of 66 people signed in at the September 2016 charrettes and 45 people signed in at the April 2017. The responses were collected as meeting notes, votes on interactive poster boards, interactive polling, and comment cards.

Section III serves as a placeholder for feedback received from the project website, which is still in progress and open to the public as of the date of this memo.

I. Pop-Up Outreach Survey Results Summary

Alta Planning + Design (Alta) staff created a 14-question survey that was conducted at community events on August 12th through the 14th, 2016. Alta staff attended three community events and collected 45 responses to the surveys. The events were:

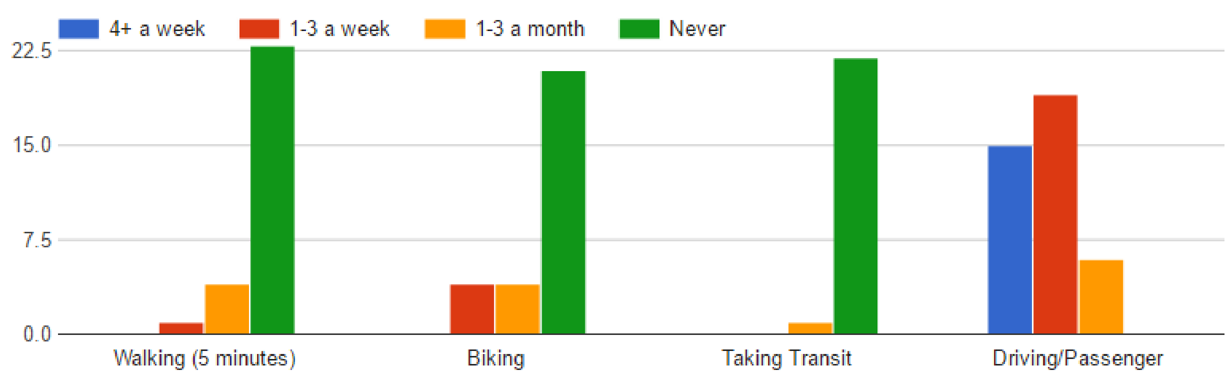
1. Arroyo Grande Summer Carnival at Elm Street Park (Friday, August 12th);
2. Olohan Alley Farmers' Market (Saturday, August 13th), and
3. Summer Concert at the Heritage Square Park (Sunday, August 14th).

The respondents were screened by asking if they were familiar with Halcyon Road, and if they would be interested in taking survey about their use of the road. Many members of the public declined to participate due to lack of familiarity with the corridor, but were still given a "teaser" flyer to inform them of the upcoming community charrettes.

Familiarity with Halcyon Road

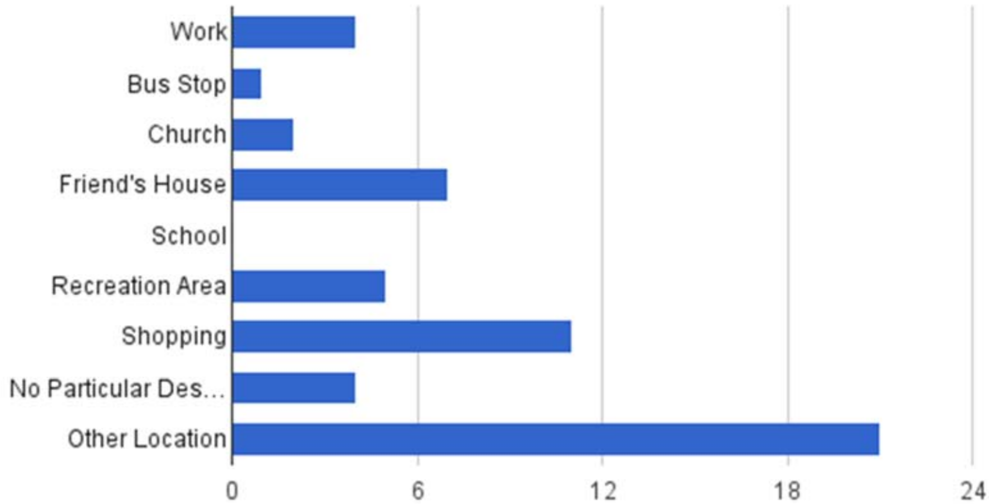
The majority of the respondents lived close to Halcyon Road. 37% lived within one mile of the road, and an additional 51% lived within 1-5 miles. A third of respondents use Halcyon Road more than 4 times a week, and an additional 44% use it 1-3 times a week. The overwhelming majority of respondents use Halcyon Road in a motor vehicle. These results correspond to additional questions on general travel behavior that found that the majority of respondents (59%) never ride a bike and 22% never walk for more than 5 minutes in a single trip. For the stakeholder group, half lived less than 5 miles from the road, and the other half lived greater than 10 miles away. For those lived close, all used Halcyon Road at least 4+ times per week, mostly by motor vehicle. Those who lived farther away, they used the road less frequently, but a higher percentage use the road for bicycling than those who lived closer.

When using Halcyon Road, how often are you:



Respondents were asked to identify their destinations on Halcyon Road. The majority of respondents (54%) stated that they did not stop on Halcyon Road, but used it primarily to get to destinations in other places. Interestingly, no respondents stated that they used Halcyon Road to get to school, which seems like an anomaly, since Harloe Elementary School is located on the corner of Halcyon Road and Fair Oaks Avenue. Stakeholder group members stated that work and shopping were their most frequent destinations along Halcyon Road.

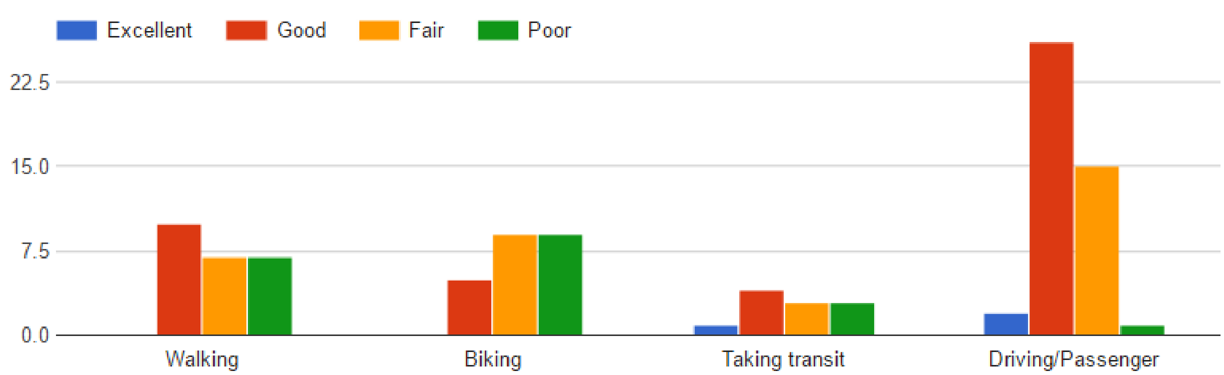
What are your key destinations along Halcyon Road? (check all that apply)



Conditions of Halcyon Road

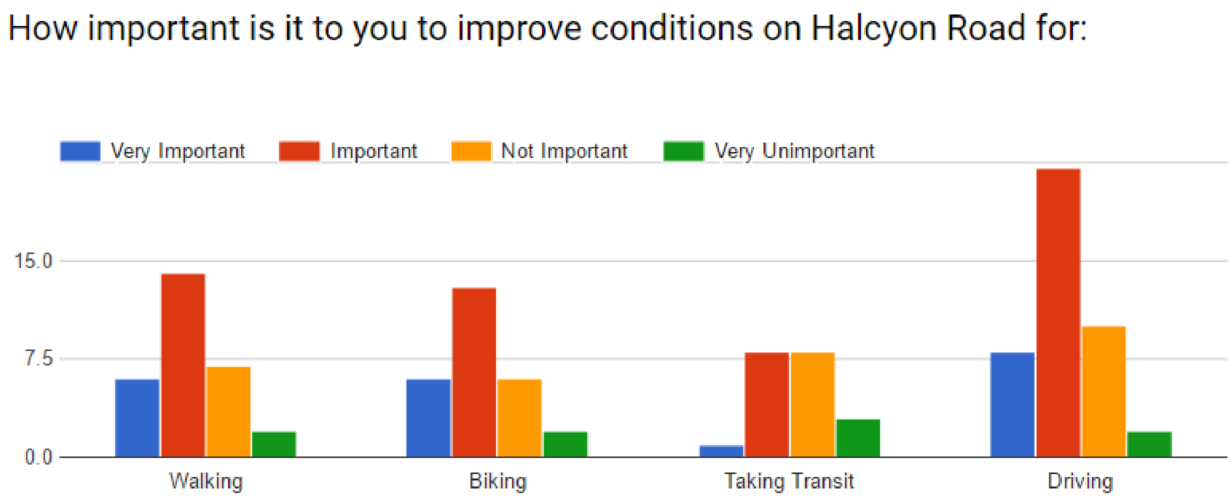
The surveys asked respondents to rate the conditions on Halcyon road by each mode (walking, bicycling, transit, and driving). Many of the respondents stated that they could not sufficiently answer the question if they had not used that mode on the corridor, so the amount of responses for driving is much higher than the other modes. However, those who reported waking or bicycling on Halcyon Road rated the conditions as 'Fair' or 'Poor' – with no one rating the conditions for waking or bicycling as 'Excellent.' Those who drove generally rated the street as 'Good' and 'Fair' with two rating it as 'Excellent' and one rating it as 'Poor.' Among the stakeholder group, walking conditions were rated poor or fair, but never excellent, while all but one respondent rated bicycling conditions as 'Poor.'

How would you rate conditions on Halcyon Road?



Desire to Improve Halcyon Road

The survey also asked respondents to rate how important it was to improve the conditions on Halcyon road for each mode (walking, bicycling, transit, and driving). Similar to the previous question asking respondents to rate conditions, many felt that they could not sufficiently answer this question if they had not used this mode on Halcyon Road. For walking, bicycling, and driving, the majority (between 68-71%) responded that it was 'Very Important' or 'Important' to improve conditions for each mode. Unsurprisingly, all members of the stakeholder group felt that walkability and bikeability improvements along Halcyon Road were 'Important' or 'Very Important.'



II. Community Charrettes Summary

Omni-Trans, Alta Planning + Design, and Strategic Initiatives held two rounds of community charrettes (September 14th & 15th, 2016 and April 12th & 13th, 2017) at Harloe Elementary. At 41 people signed in on the September 14th charrette and 25 people signed in on the 15th. 23 people signed in on the April 12th charrette and 22 people signed in on the 13th.

At the beginning of all four meetings attendees reviewed and provided insightful comments on aerial maps and cross sections along the corridor. At the first round of meetings, they were given three stickers and asked to place them next to their preferred examples of typical Complete Streets engineering treatments on a "What is a Complete Street" board. The stickers were used to show their support for one or more treatments they would like to see along Halcyon Road.

Consultants then led a Powerpoint presentation to explain the challenges and opportunities along Halcyon Road and gathered feedback on each of the four "Context Zones" along the corridor. At the first round of meetings, the presentation and discussion was focused around community priorities and potential locations in need of improvement. At the second round of meetings, the presentation and discussion was focused around proposed designs and improvements that addressed the initial input.

Strategic Initiatives provided "clickers" for attendees to anonymously answer questions about their interaction with Halcyon Road. After opinions were collected, Strategic Initiatives opened the floor up for discussion where attendees shared their specific concerns and brought attention to problem areas along the corridor. These concerns were written down by Alta Planning + Design.

This section summarizes the feedback from the two charrettes and is organized by type of feedback received.

Meeting Notes

Throughout the community charrettes, note takers chronicled participants' preferred areas of improvements and recommendations. Overall, participants recognized the need for more bicycle safety, enforcement and beautification on Halcyon Road. Halcyon Road was subdivided into 4 context zones for identification purposes during the activities. A summary of all comments received during the Charrettes is provided in the Appendix of this document.

In Zone 1, attendees of the first round of meetings commented that poor traffic signal timing coupled with long waits for pedestrians to cross create unsafe roads for all users. People also shared their confusion on whether the 100 N. Halcyon Road block was a parking lane or a travel lane. At the second round, attendees expressed their approval of improved traffic flow, but some were skeptical of the need for any bike lanes along Halcyon.

In Zone 2, multiple participants at the first round of meetings reported increased speeding, inconsistent speed limits, low driver visibility when entering shopping centers and hospitals, and road and sidewalk damage caused by tree roots. A road diet was encouraged for this stretch of the road. At the second round, there was mixed opinions on the roundabout, with some stating they liked the reduced speeds and smoother traffic flow, while others were concerned about the ability for students to cross a roundabout. The lane reduction ('Road Diet') was perceived as mostly positive, though concerns about increased traffic from future developments and hospital access were raised.

In Zone 3, participants at the first round of meetings vocalized that low visibility and speeding has created dangerous crossings for pedestrians at the intersections of Virginia Drive and Farroll Avenue. Midblock crosswalk improvements need enhanced lighting and school zones could benefit from higher visibility crosswalks, crossing guards, lower speed limits and more traffic enforcement. At the second round, the parking near intersections Farroll were still a concern and additional crosswalks between The Pike and Fair Oaks were requested.

In Zone 4, attendees of the first round of meetings commented that the intersection at Halcyon Road and The Pike is unsafe for all users due to high speeds and reduced visibility caused by the guardrail and terrain. People suggested a roundabout at Highway 1 and Halcyon Road, but prefer to not lose farmland for these improvements. Although bike lanes run through the area, they are substandard in quality and could use improvement. At the second meeting, there was boisterous applause for the proposed stop sign at the Pike and a desire for immediate improvements to that intersection, regardless of the rest of this project. There were requests for more sidewalks along the eastern side of Halcyon Road and concerns around the projects' potential impact to the historic Post Office.

Existing Conditions Map

Attendees used aerial maps and cross sections of the corridor to identify specific intersections or stretches that could benefit most from improvements to enhance driver and pedestrian safety. A comment focused on the difficulty walking due to narrow sidewalks and large utility poles on Fair Oaks Avenue. Inadequate signal timings result in long wait times for drivers, and cause increased traffic congestion at the intersection of Grand Avenue. Lack of pedestrian facilities like crosswalks, warning lights and sidewalks at Dodson Way make the crossing difficult and dangerous. For drivers, inconsistent numbers of lanes are confusing and used by speeding drivers to unsafely pass slower cars. Poor visibility on Virginia Drive, Sycamore Drive, The Pike, Sandalwood Avenue, Farroll Avenue and Halcyon Drive put drivers and pedestrians at increased risk for collisions.

Storyboard Dot Tallies

Of all design elements, high visibility crosswalks had the most support over the two-day charrette period with 12 dots total. The next most popular was On-Street Separated Bikeways, which had 11 dots. Crossing beacons came in third with eight dots; planted medians and street trees had six dots, bike lanes had six dots, protected intersections had five dots, road diets had four dots, roundabouts had three dots, curb extensions and median refuges had one dot, and shared lane markings received no dots. The board, with the total votes from the two charrettes is featured below.

Interactive Polling

Using interactive polling, participants at both community charrettes shared their thoughts and experiences about Halcyon Road's bikeability and walkability. Of those polled, male-identified individuals represented a marginal majority with 52% and over 60% identified being over 51 years of age. Only 14% completed the survey prior to polling. Sixty-nine percent reported living in Arroyo Grande and almost 90% live within 5 miles of Halcyon Road. Nearly all of those polled are long-term residents of the area with 22% living on the Central Coast for 10-20 years and 66% for more than 20 years.

Residents reported high rates of walking a significant distance, with over half reporting they walk 4 or more times per week. However, few do so on Halcyon Road. 66% of respondents reported that they walk on Halcyon Road less than 3 times a month, and 80% never bike along Halcyon Road. Most respondents travel along Halcyon Road by car, with 69% stating they drive on the road at least 4 times per week.

About 45% of those polled report living or working near Zone 3: Fair Oaks Avenue to the Pike, the zone with the highest amount of housing in the study area. In all context zones, safety was ranked the highest and most pressing concern. Traffic congestion was the second most important concern in zones 1, 2, and 4. Zone 3 differed in that respondents heavily weighed walkability as a concern.

The stakeholder advisory group similarly cast their votes in an interactive polling activity separate from the community charrettes. Although SAG members shared similar demographics and relationships with the area, a majority reported living further away from Halcyon Road but showed an equal frequency of driving trips along Halcyon Road. About 64% of stakeholder group members used their bike for any purpose but 71% never biked along Halcyon Road. Unlike community charrette participants, members of the stakeholder group identified the hospital as their most popular destination. A significant majority of stakeholders reported not living within the context zones analyzed, but similarly chose safety as the priority concern for zones 2, 3, and 4. Details of the Interactive Polling results can be found in the Appendix.

Comment Cards

Participants used comment cards to voice their opinions on issues of bikeability and walkability in the community and suggest potential improvements. People favored increasing safety for pedestrians by installing more traffic calming devices like warning lights, traffic signals and stop signs. Participants specifically called for stop signs in all directions at The Pike, and a road diet along Halcyon Road. One comment emphasized the need for better sidewalks connecting Harloe Elementary School to housing in Zone 3. Comments around congestion relief on Halcyon Road focused on stacking lanes on Grand Avenue, eliminating parking between Sandalwood Avenue and Farroll Avenue, and installing an additional access points to AGHS to avoid Halcyon Road altogether. Participants were also concerned with aggressive drivers running red lights and not yielding at crosswalks.

III. Online Feedback Summary

As part of the Halcyon Road Complete Streets Plan project, Alta staff also created a website (HalcyonCompleteStreets.com) for posting project information and allowing the public to provide further input in addition to the pop-up outreach and community charrettes.

User Survey

With input from the City and Omni Means, Alta developed a 5-page, 59-question online survey to help create an understanding of key issues that are discouraging people from walking and bicycling, and improvements that would encourage greater use of existing or new facilities. The survey was provided in English and Spanish through third-party provider SurveyMonkey. As of March 13, 2017, 17 people have completed the survey.

Of the 17 respondents, 15 responded that they live less than one mile from Halcyon Road, and the remaining two stated they lived less than 5 miles from the project. The majority of respondents use Halcyon Road by car more than 4 times per week and 2/3 of the respondents use a bicycle more than once a month.

There clearly was an appetite for changes to Halcyon Road, however, with 56% of respondents disagreed or strongly disagreed with the statement "The transportation options available to me along Halcyon Road are suitable to my needs." Combined, 93% of respondents felt it is important or very important to improve walking conditions along Halcyon Road, and 73% feel the same way about bicycling conditions.

Other questions showed strong favorability towards building more sidewalks (100%) and Traffic Calming (93%) and crosswalks (86%). There is clearly overwhelming support to improve the safety of bicycling and walking along Halcyon Road, though the exact design features were not as clear cut.

Thought 44% of people stated that they never bike on Halcyon Road, when asked if specific designs would improve their travel experiences, the respondents clearly favored more physical separation from motor vehicles. When asked “Would the following changes to Halcyon Road improve your travel experience?”

- 37% said ‘yes’ to Sharrows
- 56% said ‘yes’ to bike lanes
- 68% said ‘yes’ to buffered bike lanes
- 81% said ‘yes’ to a wide bike lane separated from traffic by a curb or parked cars
- 94% said ‘yes’ to a multi-use path completely separated from traffic

When asked if roundabouts replaced four way stops and traffic lights, 44% agreed that it would improve their experience along Halcyon Road. 43% stated they would not like a travel lane removed, but 19% stated that they were not sure. Nearly all respondents (88%) favored the addition of sidewalks along the entire corridor.

Interactive Map

The interactive map (HalcyonCompleteStreets.com/Map/) is another method for the public to provide comments at specific locations, and view others' comments. The map appears to have attracted a more technical crowd, who provided detailed design recommendations. There were 6 unique and relevant comments, which are detailed below:

Zone 1:

- Request for a Class II Bike Lane on El Camino Real
- At Grand Avenue: remove parking in southbound direction of Halcyon, just north of East Grand Avenue.
- At Grand Avenue: "Increase intersection efficiency. Purchase property on northwest side of intersection to increase intersection visibility. Overlap northbound/southbound phasing or provide roundabout."

Zone 2:

- At Fair Oaks Avenue: "S. Halcyon Rd. is a very busy roadway with two lanes traveling south (with a third turn lane at the intersection). Reducing it to one lane for the "round about" will cause significant traffic congestion. Additionally, without the traffic signals, it reduces the control and safety of the elementary school children walking to/from school and crossing this busy roadway. For example, a vehicle entering the roundabout southbound, wanting to turn right onto Fair Oaks, will be traveling at speed making the right turn and exiting, with no time to react if a child is stepping in to the crosswalk from the north curb of Fair Oaks trying to get to school. The same is true on each corner."
- "Comment for both zone 2 and 3. Remove parking on both sides of roadway. Provide two-way left hand turn lane and one travel lane in each direction. Provide bike lanes. Increase intersection efficiency at Halcyon/Fair Oaks. Provide adequate pedestrian crossings for children."

Zone 3:

- "Removing parking Fair Oaks would significantly increase traffic during school drop-off and pick-up"

Zone 4:

[No comments]

General Website Comments

The website also allowed for people to submit comments on the project in a generalized or specific form. The open format of the prompt allowed for a wide range of comments, detailed below.

- NO all-way stop at Pike/S. Halcyon!
  Reduce speed/increase visibility!

- Plant more trees.
  Install ADA compliant sidewalk on S. Halcyon all the way to city limit.
  Increase buffer zone between S. Halcyon oncoming traffic and vehicles turning left onto Virginia Dr -or- prohibit traffic leaving Virginia Dr onto S. Halcyon altogether.

- Reduce speed limit on County section of S. Halcyon to 40 mph. Reduce speed limit between Pike and Hwy 101 to 35 mph. Increase school zone size. Re-install crosswalk at Willow Ln. with flashing beacon.

- I bike/commute along this corridor, south towards highway 1. Both of my children attend Harloe elementary school. Our entire family walks and bikes along Halcyon road in both directions. Any idea involving widening bike lanes, lighted cross walks (like in the village), sidewalks being extended where there are none, sidewalk improvements, road improvements, anything to make the area safer! I am definitely going to make an effort to attend one of the two meetings. Thanks for involving the community.

- My wife and I own the house at [Removed for privacy] South Halcyon Road in Arroyo Grande. We were unable to attend the meetings this week at Harloe Elementary School concerning Halcyon Street improvements. However, we do have major issues with recent changes made on Halcyon Road.

  Since moving into this house in June of 2006 we have been disturbed by the increase in the amount of traffic in front of our house and the speed in which these vehicles pass down Halcyon Road. It is necessary for us to back out of our driveway onto Halcyon when leaving the house. Many time the vehicles are driving so fast we have little time to make the turn out of the driveway. If there is any way to decrease traffic and/so slow down the large amount of traffic taking that portion of Halcyon Road, we would be in favor. Decreasing the speed limit to 30 to 35 mpg would be helpful. When we moved in the speed limit was lower than it is now. I don't know the rationale for the higher speed limit on Halcyon Road given the location of Harloe Elementary School and the Hospital. A greater police enforcement of speeds along Halcyon would also be a deterrent to speeders.

- i attended the thursday nite meeting at harloe.
  i didnt want to be tar and feathered so i kept a couple ideas private.
  obviously we are a growing community.that means more traffic inwhich means tough choices.one of the most obvious things to do to lesson traffic onhalcyon is to build a road across from the highschool to grand.that would be the route of choice from the mesa. also,the powers to be of halcyon were not truthful.there are 2 existing dirt roads still used and another overgrown.2 exit onto the pike near gaynfair.
  regarding the pike halcyon intersection ,i feel if the road was graded down to a visable level it would help,traffic light needed.also a center turn lane for the pike and also the post office

- I frequently walk from my house on S. Alpine up Halcyon under the freeway and up the hill to Trader Joe's for small errands. Good for my body.

- Your website give no indication on the length of time tht this project is projected to take. how long will this be 'in progress'?

- Came away from the meeting tonight at Harloe with the distinct feeling this whole project is geared around getting bike lanes on Halcyon. My feeling is we have a LONG way to go in correcting the traffic and safety problems before anymore devolpment OR bike lanes are added to the equation.

Appendix

Appendix A: Raw Meeting Notes from Charrettes 1 & 2 (September 14 & 15, 2016)

Appendix B: Interactive Polling from Charrettes 1 & 2 (September 14 & 15, 2016).

Appendix C: Interactive Polling from Stakeholder Advisory Committee (October 10, 2016)

Appendix D: Raw Meeting Notes from Charrettes 3 & 4 (April 12 & 13, 2017)

Appendix E: Interactive Polling from Charrettes 3 & 4 (April 12 & 13, 2017)

Appendix F: Results from Online Survey (Up through March 13, 2017)

617 West 7th Street
Los Angeles, CA 90017
www.altaplanning.com

December 12, 2016

Meeting Notes
Halcyon Road Complete Street Charrettes Round 1

Location
Harloe Elementary, Halcyon Road, Arroyo Grande, CA

Attendees
41 attendees on 9/14/2016; 25 attendees on 9/15/2016

Meeting facilitated by Nate Stong, Omni-Means Engineering

Overall Feedback

- How many people use Halcyon daily? (ADT)
- Not a safe road to bike
- Add hospital as a destination
- Where can we find the survey? Halcyoncompletestreets.com
- Paper survey? Contact Info. in Sign-in
- Told no stop lights or other improvements 2 years ago
- Bulbouts possible? Possible
- Traffic study completed? → Existing conditions analysis
    - Especially for medical facility on Fair Oaks
    - Forecast
- Briscoe access to 101

Zone 1

- Cigar shop with parking in front
    - Odd spot- one lane or two? Lane narrows
- Signal timing bad for driving and walking and long wait to turn left to Halcyon from Grand
    - Long wait to turn left to Halcyon from Grand
    - 7/11 nothing to prevent drivers from crossing double yellow and blocking traffic
    - Left and straight lane not well marked
- NB Halcyon at Grand- lane markings faded
    - Congestion at lane bottleneck (2→1)
    - Lane striping not well aligned.- head on collisions (continuity of traffic lanes)
- El Camino failed intersection for bicycling
    - Taking life into one's hand
- By cemetery- crosswalk needed for walking
- Opening of Briscoe Ave access to 101?
    - Studied- environmental doc later this year unknown at this time

- Closing off SB Ramps from 101? No plans
- Signals do not detect scooters by hospital increase sensitivity
- Bennett St development traffic impacts?
    - No plans now, but good suggestion for this plan
- Oak Tree across cemetery- hawks nest (do not disturb)
- Separate 'speed' from 'safety' option
- Make it inspirational to bike and walk
- Roundabouts should be considered
- Parking dangerous Bennett to Grand NB and SB by 7/11
- Few places to park
- Aggressive driving in AM peak
- No bike lanes
- Left-turns from SB 101 not safe- conflict points
- El Camino Real has great paving and bike lanes
- Halcyon missing connectivity and safety is always #1
- Traffic conflicts from Briscoe closure confusion
- Ride bike thru parking lots and paths instead of Halcyon
- Drivers run red lights
- 18-wheelers turning to Grand- tough turn over median
- Traffic shown on Google Street View at El Camino Real
- Congestion and safety are related
- Cemetery as Gateway/ Landmark
- Beautification potential- two narrow road

Zone 2

- No access NB to residential driveway without double yellow
- Consistent speed limit, instead of 35/40/25
- Speeding issue: brought up 2 years ago- city said no studies to be done
    - Traffic calming?
- Left-turn lane storage short at Fair Oaks
- Low visibility from left-turns by liquor store/laundromat
- More signs, instead of markings
- Lane alignment issues by hospital
- Higher traffic when school is in session
    - When were traffic counts done? When school was in
- 17,000 ADT→ high collisions? Rate less than state average except at the Pike
- SB from Dodson challenging
- Root damage to sidewalk by hospital
- Center-turn lane cuts short by business
- Speeding
- Flashing lights by school zone? Advance warning
- Bollards by school indicate danger zone
- Not turn SB by Dodson

- More markings on where people can cross safely by eye doctor
  - With push button to activate
- Between 7:50-8, students crossings without guard
- NB Left-turn lane does not have enough storage
- Speed limit- 35-40- 25 school zone
- Lot of driveways/curb cuts a safety issue for walking
  - Low visibility for drivers exiting hospital
- Should be consistently 35mph
- Road diet potential to 1 lane each way (11' wide)
- High-volume arterial
- Sidewalks uneven
- Drainage runoff issues by hospital- bulbouts and landscaping (infiltration)
- Consider undergrounding utilities

Zone 3

- NB/SB splits? Comparable 11,000 ADT
- Crosswalk moved- sandalwood
- Parents ignore no parking signs to pick up students
- Traffic has quadrupled in 15 years
  - Will county study alternative route to access 101
- Speeding
- Virginia Dr. difficult to turn left to Halcyon
  - Speeding and low visibility
- Halcyon SB to Virginia- head on collision potential at counter-turn lane
- 3-way stop at the Pike?
- 2 accidents in recent was at Farroll
  - Drivers do not slow for school crosswalk- nothings been done
  - Police do not enforce
- Vehicles larger then cars parked on-street block visibility
- Trailers RVs and oversized vehicles speeding
- One has to drive over yellow line if cars parked on-street in places
- Speed limit one of highest in city
- Lack of enforcement
- Flashing light at crosswalk not effective
- Crosswalk at multi-lane dangerous
- Lack of sidewalks→ with ADA ramps (for strollers)
- Crossing guard needed at Farroll
- Expand school zone area
- Continuation of road diet potential
  - Lack of lane consistency a safety concern
- Make it safe for children- vs. bollards and k-rail at corner (bad design)
- Parents do not let children walk/bike at the pike
- High-visibility crosswalk with flashing lights at the Pike needed

- High speeds during school hours
- Mid-block crosswalk with multiple lanes a safety issue and uncontrolled intersection
    - False sense of security for children
- Speed limit should not be 40 in a residential neighborhood
- Known as acceleration/racing zone as drivers head to SR-1
- Tons of close calls- especially with on-street parking
- Why was crosswalk relocated away from school?
    - Instead of closer
- Lack of enforcement – 15 mph/ $200 fine in Nevada
- Push button crosswalk, like in the village?
- Street design important- raised crosswalks for traffic calming
- Ambulances can get to hospital quickly- prioritize access
- Awful visibility at Farroll
- Evolution of corridor as arterial- balance residents vs. commuters
    - "highway/arterial" in general plan
- Merge area by school does not make sense

Zone 4

- Speed
- Congestion on 1 when something happened on 101
    - signal
- 3-way stop or signal at Pike
- Overpass by Creek?
- Lot of cyclists using sub-standard bike lanes
    - Tourists and children
- 99% of collisions rear-end someone waiting to turn left
    - Flashing lights? Stop ahead
- I avoid Pike intersection when possible
- Will speed be analyzed?
    - Speed surveys done 40mph not appropriate for residential
- I drive to post office instead of walk- not safe
- Outside of city limits- coordination w/county
- Connectivity- improve bike lane condition
- SW corner of the pike (w/guard rail) a blind corner
    - Tons of collisions by trailer park
- Both intersections at Highway 1 part of study
- Roundabout at the pike? Note elevation change
- Congestion at highway 1- especially when 101 closes
    - Emergency access concern
- Add right-turn lane from Mesa to Highway 1
- $2 million + on studies at Highway 1- realign bridge?
- NO loss of farmland→ roundabout? By Highway 1
- The Pike has been discussed for over 40 years

  - Signal potential solution
- By general store: passing over double yellow line
- Another entry/exit for Halcyon community?

Mapping Exercise

- Left turns coming out of 7-11 to go southbound- cross double yellow lines. Jams up southbound Halcyon.
- Street parking (1 spot?) in front of Cigar shop. Needs to go. It's awkward, unsafe, confusing. There's not enough room for traffic, when southbound wanting to
- Leaving this lot- going southbound is dangerous left. Have to cross 2+ lanes, poor visibility
- Longer left hand turn lane
- This turn lane is too short (E Grand Ave) Sometimes have to wait 2-3 light cycles to get into the lane and on the way…
- Need advance warning lights. Need crosswalks on both sides of intersection missing sidewalk. (Dodson Way)
- Very difficult to turn left out of Dodson way at 7:30-9am, 2-3:30 pm, 4:30-6pm
- Need better crossing assistance for students before and after school (Fair Oaks Ave)
- Sidewalk too narrow utility poles (Fair Oaks Ave)
- High speeds in lane drop area
- Farroll Ave and Halcyon Rd
  - Dip
  - Poor sight distance
- Halcyon Rd- need lane delineation
- Crosswalk (Sandalwood Ave across Halcyon)
- Inaccurate extent of striping! (Halcyon Rd.)
- Sight distance speed of thru traffic (Halcyon Rd.)
- Sight distance problem, uneven pavement (Willow Lane)
- Left turns into and out of Virginia Drive are dangerous. When Southbound going head on with a car turning left onto Sycamore. From Virginia to Halcyon more visibility
- Visibility turning left at Pike and Halcyon is very poor. Maybe a good spot for a roundabout?
- Cars parked near corners reduce already bad visibility. Case in point!
- Many accidents (the Pike)
- Speed transition (the Pike)

Comment Cards

- Great job- good turnout
- City used to provide crossing guard. Now they're provided by district. Less pay, less training.
- I used my stickers for my idealistic idea of what Halcyon could/should look like. I think road diets are what would work best in reality for this project.
- I think you needed to list the hospital people go for rehab, outpatient surgery visit patients etc. so it is a major destination and needs to be considered.
- Need longer stacking lanes on Corand to turn left on Halcyon
- Warning lights near Pike stating stop sign up ahead

- 3-way stop at the Pike. On the block between Farrell and Sandalwood on W. side that is no parking- Please print curb road. I live on Sandalwood. Cars park there to pick up kids and block visibility of the crosswalk and I have witnessed near misses of kids getting ready to cross (even with lights flashing at crosswalk). Also going N to S on Halcyon- indicate 35 mile zone ahead. Going S to N from Grand it starts at 35 miles per hour (painted on street) which is great then there are posted 40 “poles” just before the hospital. Very confusing.
- Going North on Halcyon Road from the Pike-only driveway is directly across from Virginia Street. The only options I have to turn left into my driveway is “pray” none come barreling from the South and hits me or illegally enter the solid yellow lines of the diamond <> to be out of traffic.
- 2 foot camera should be placed at Halcyon and El Camino because numerous people run the red lights- not just when it turns yellow but speeding through long after light has turned red!
- 17,000 daily trips at Halcyon and Grand intersection
- Please keep the walkability/bikeability at the utmost importance especially in Zone 3 around the school. If we encourage safe walking/biking it will cut down on congestion! Harloe has the highest number of students in attendance and this needs to be extra safe! Sidewalks definitely need to be put in safe, and protected. Please force people to slow down.
- The blinking light at Sycamore and Halcyon need to be take more serious by the drivers. Harloe has the highest number of children at an Elementary School in the 5 cities with 670 children. Making Halcyon a safer place would not be a waste of money. Thank you! Tori Perkins- 670 Woodland Ct.
- Thank you for your efforts to help make Halcyon Road a safer place for everyone. – Karen M. White
- Road from AGHS to Grand Ave across fields and creek would alleviate traffic on Halcyon
- Pike and Halcyon on- Traffic Signal, crosswalks poor visibility due to hill. Shave hill down.
- Halcyon traffic access to Pike, 2 existing dirt roads already.
- Good presentation.
- Worried about taking land Halcyon store, office.
- Congestion go to and leaving Halcyon.
- Halcyon is a major artery. I like that I can use it to get to 101 quickly.
- Put a light at the Pike to solve the problem with visibility and to introduce traffic breaks for turning onto the street in zone 3.

Text Message

"Strip the parking and add Two-Way Left Turn Lane within City reach. Add buffered bike lane through entire reach. Provide wide sidewalk on both sides of the street through city limits. Improve intersection efficiency at Halcyon/Fair Oaks Ave to discourage cut-through traffic on Todd and Olive Streets. Add enhanced ped crossings throughout reach. Buy property at Halcyon/Grand and fix the signal."

Dot Tallies

Bike Lanes	6
Crossing Beacons	8
Curb Extensions and Median Refuge	1
High Visibility Crosswalks	12
On-Street Separated Bikeways	5
Planted Medians and Street Trees	6
Protected Intersections	5
Road Diets	4
Roundabouts	3
Shared Lane Markings ("Sharrows")	0
Grand Total	**50**

Session Name
Halcyon Rd Charrettes Merged Sessions 9-14-15-2016

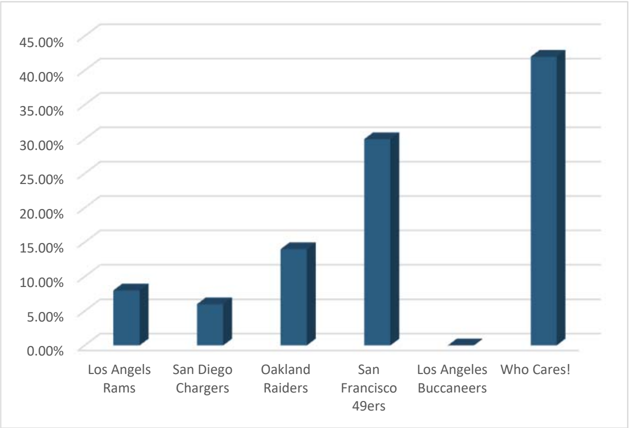
Date Created	Active Participants	Total Participants
9/22/2016 1:10:56 PM	66	66

Average Score	Questions
0.00%	22

Results by Question

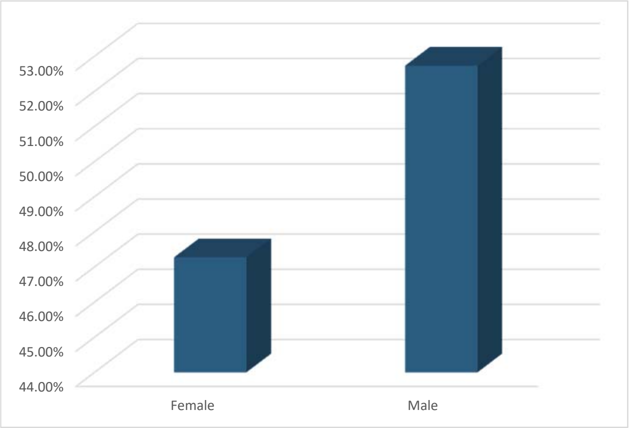
1. What is your favorite football team? (Select One)

	Responses	
	Percent	Count
Los Angels Rams	8.00%	4
San Diego Chargers	6.00%	3
Oakland Raiders	14.00%	7
San Francisco 49ers	30.00%	15
Los Angeles Buccaneers	0.00%	0
Who Cares!	42.00%	21
Totals	**100%**	**50**



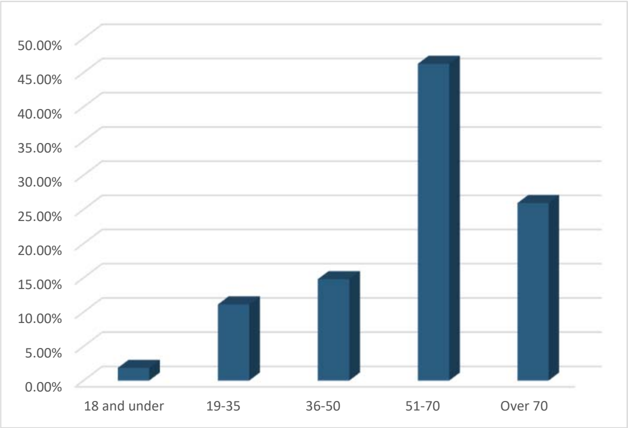
2. What is your gender? (Select One)

	Responses	
	Percent	Count
Female	47.27%	26
Male	52.73%	29
Totals	**100%**	**55**



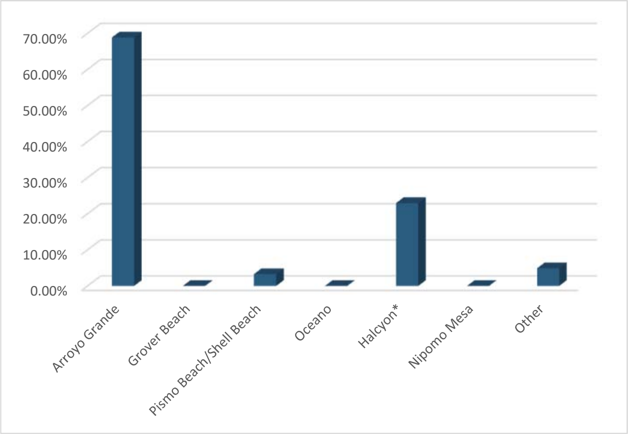
3. What is your age? (Select One)

	Responses	
	Percent	Count
18 and under	1.85%	1
19-35	11.11%	6
36-50	14.81%	8
51-70	46.30%	25
Over 70	25.93%	14
Totals	**100%**	**54**



4. Where do you live? (Select One)

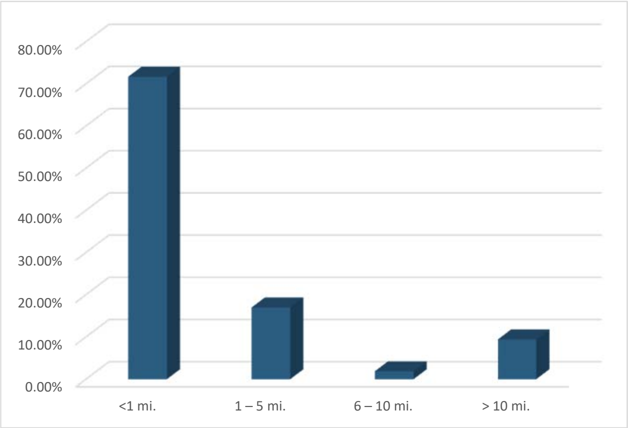
	Responses	
	Percent	Count
Arroyo Grande	68.85%	42
Grover Beach	0.00%	0
Pismo Beach/Shell Beach	3.28%	2
Oceano	0.00%	0
Halcyon*	22.95%	14
Nipomo Mesa	0.00%	0
Other	4.92%	3
Totals	**100%**	**61**



*NOTE: Based on comments at the 9/14/16 charrette, the polling choice "Nipomo" was changed to "Halcyon" for the 9/15/16 charrette. The number of participants who chose "Nipomo" on 9/14/16 was "0" while 11 participants chose "Other," including those whose choice would have been "Halcyon." On 9/15/16, 5 participants chose "Halcyon" while 1 chose "Other." Therefore, in order to estimate the number of participants who would have chosen "Halcyon" and "Other" on 9/14/16, the results from the 9/14/16 charrette were adjusted based on the results from 9/15/16. The percent of participants choosing "Halcyon" in the "Halcyon" plus "Other" categories on 9/15/16 was 5/(5+1) = 83.33%. Assuming the number of participants who would have chosen “Halcyon” was in the same ratio on 9/14/16 as 9/15/16, the number of participants who would have chosen “Halcyon” on 9/14/16 can be estimated by multiplying the number of participants who selected "Other" by 83.33%, which is 11 x 83.33% = 9.16. Therefore, the total number of participants who would have chosen "Halcyon" is estimated to be 9+5=14 and the total number of participants who would have chosen "Other" is estimated to be 2+1 = 3.

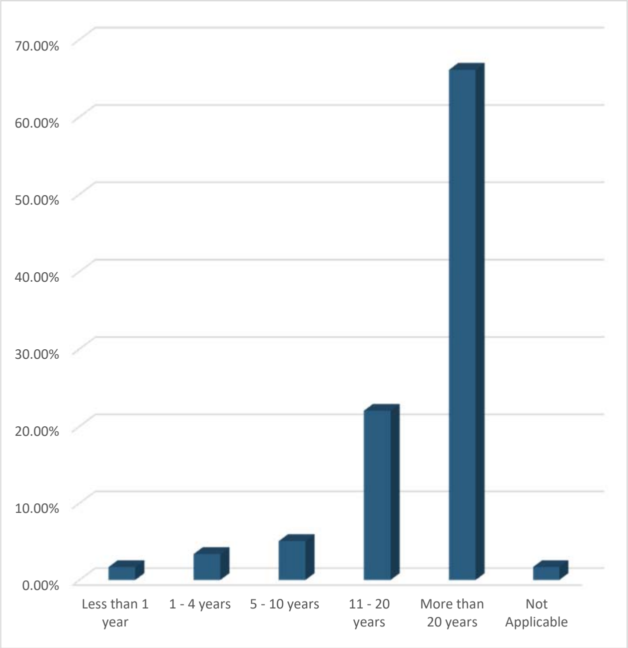
5. How close do you live to Halcyon Rd? (Select One)

	Responses	
	Percent	Count
<1 mi.	71.70%	38
1 – 5 mi.	16.98%	9
6 – 10 mi.	1.89%	1
> 10 mi.	9.43%	5
Totals	**100%**	**53**



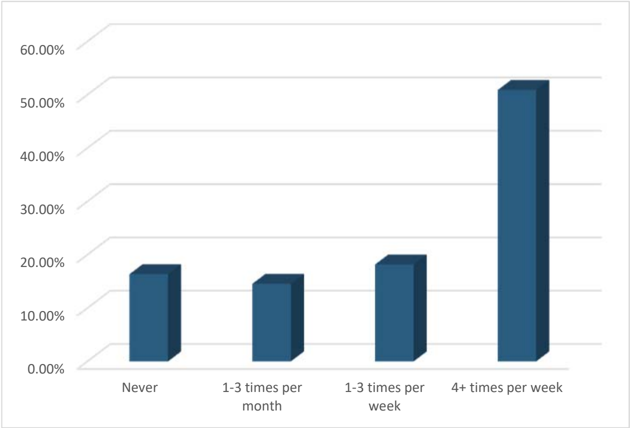
6. How long have you lived on the Central Coast? (Select One)

	Responses	
	Percent	Count
Less than 1 year	1.69%	1
1 - 4 years	3.39%	2
5 - 10 years	5.08%	3
11 - 20 years	22.03%	13
More than 20 years	66.10%	39
Not Applicable	1.69%	1
Totals	**100%**	**59**



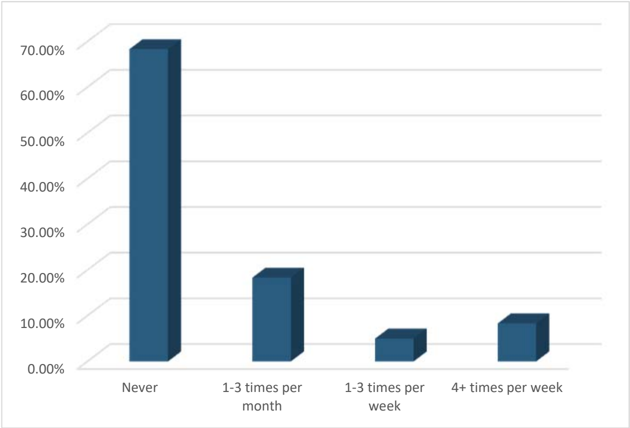
7. How often do you walk for a significant distance, i.e., more than 5 minutes for a single trip? (Select One)

	Responses	
	Percent	Count
Never	16.36%	9
1-3 times per month	14.55%	8
1-3 times per week	18.18%	10
4+ times per week	50.91%	28
Totals	**100%**	**55**



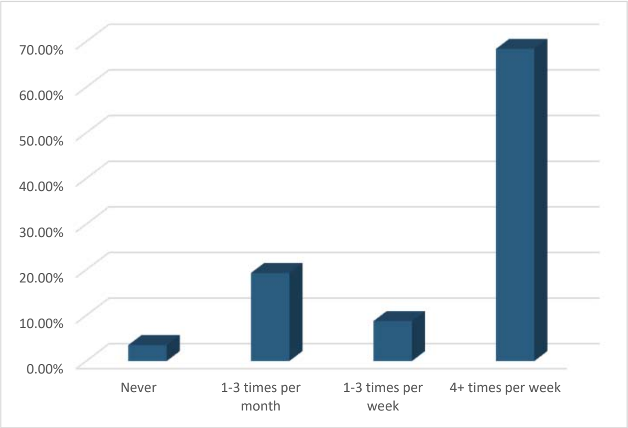
8. How often do you bike for any purpose? (Select One)

	Responses	
	Percent	Count
Never	68.33%	41
1-3 times per month	18.33%	11
1-3 times per week	5.00%	3
4+ times per week	8.33%	5
Totals	**100%**	**60**



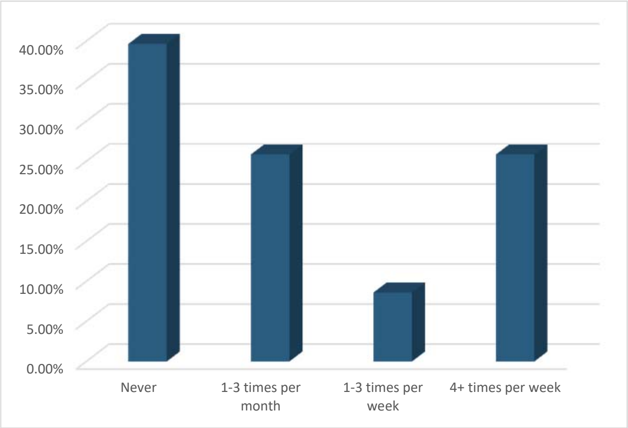
9. How often do you drive along Halcyon Road? (Select One)

	Responses	
	Percent	**Count**
Never	3.51%	2
1-3 times per month	19.30%	11
1-3 times per week	8.77%	5
4+ times per week	68.42%	39
Totals	**100%**	**57**



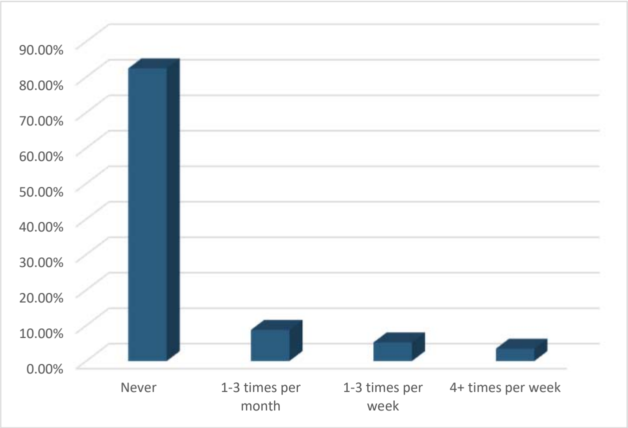
10. How often do you walk along Halcyon Road? (Select One)

	Responses	
	Percent	**Count**
Never	39.66%	23
1-3 times per month	25.86%	15
1-3 times per week	8.62%	5
4+ times per week	25.86%	15
Totals	**100%**	**58**



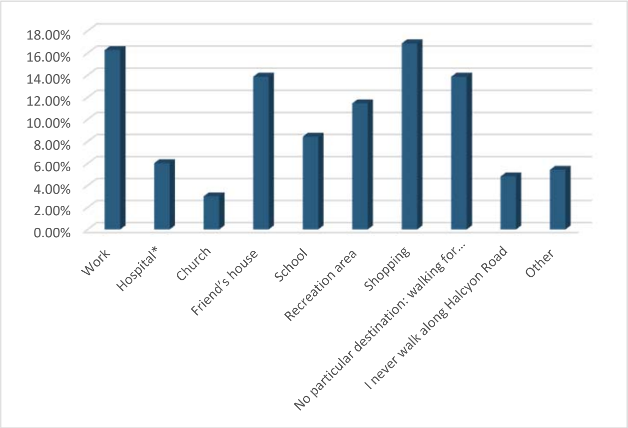
11. How often do you bike along Halcyon Road? (Select One)

	Responses	
	Percent	Count
Never	82.46%	47
1-3 times per month	8.77%	5
1-3 times per week	5.26%	3
4+ times per week	3.51%	2
Totals	**100%**	**57**



12. What are your key destinations along Halcyon Road? (Select all that apply)

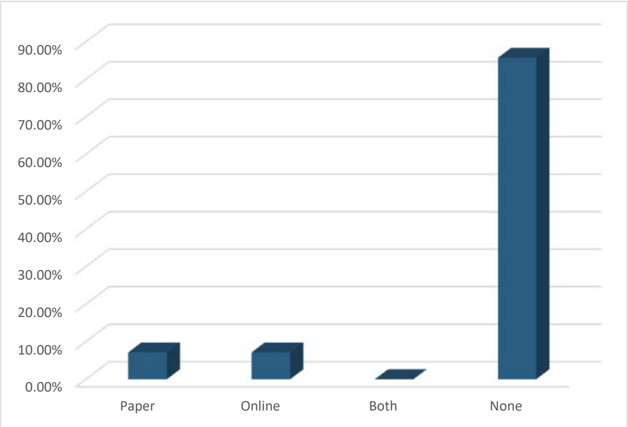
	Responses	
	Percent	Count
Work	16.27%	27
Hospital*	6.02%	10
Church	3.01%	5
Friend's house	13.86%	23
School	8.43%	14
Recreation area	11.45%	19
Shopping	16.87%	28
destination: walking for fitness or leisure	13.86%	23
I never walk along Halcyon Road	4.82%	8
Other	5.42%	9
Totals	**100%**	**166**



*NOTE: Based on comments at the 9/14/16 charrette, the polling choice "Bus Stop" was changed to "Hospital" for the 9/15/16 charrette. The number of participants who chose "Bus Stop" on 9/14/16 was "0" while 13 participants chose "Other," including those whose choice would have been "Hospital." On 9/15/16, 3 participants chose "Hospital" while 3 chose "Other." Therefore, in order to estimate the number of participants who would have chosen "Hospital" and "Other" on 9/14/16, the results from the 9/14/16 charrette were adjusted based on the results from 9/15/16. The percent of participants choosing "Hospital" in the "Hospital" plus "Other" categories on 9/15/16 was 3/(3+3) = 50%. Assuming the number of participants who would have chosen "Hospital" was in the same ratio on 9/14/16 as 9/15/16, the number of participants who would have chosen "Hospital" on 9/14/16 can be estimated by multiplying the number of participants who selected "Other" by 50%, which is 13 x 50% = 6.5. Therefore, the total number of participants who would have chosen "Hospital" is estimated to be 7+3=10 and the total number of participants who would have chosen "Other" is estimated to be 6+3 = 9.

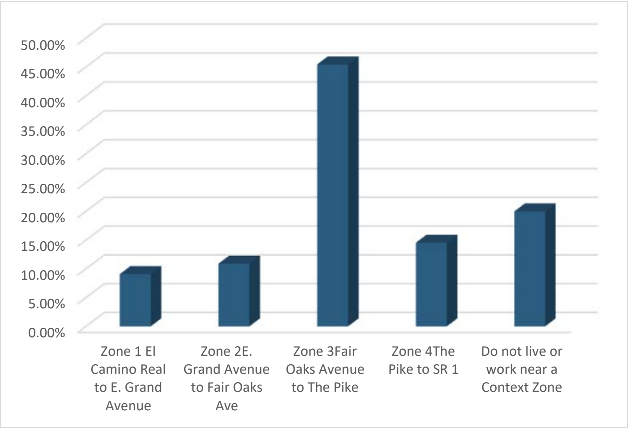
13. Did you complete a survey? (Select One)

	Responses	
	Percent	Count
Paper	7.14%	4
Online	7.14%	4
Both	0.00%	0
None	85.71%	48
Totals	**100%**	**56**



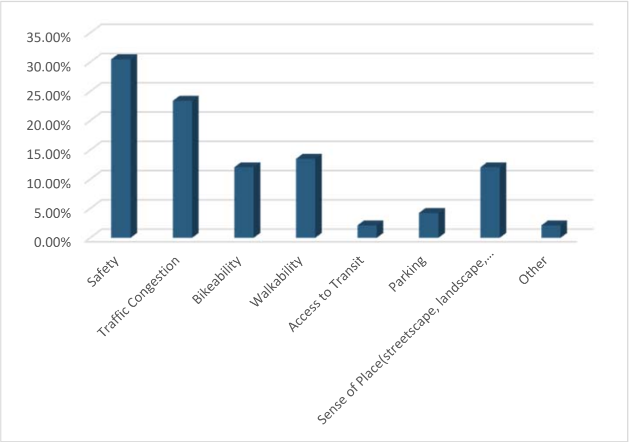
14. Do you live or work in or near a Context Zone? (Select One)

	Responses	
	Percent	Count
e 1 El Camino Real to E. Grand Avenue	9.09%	5
ne 2E. Grand Avenue to Fair Oaks Ave	10.91%	6
Zone 3Fair Oaks Avenue to The Pike	45.45%	25
Zone 4The Pike to SR 1	14.55%	8
Do not live or work near a Context Zone	20.00%	11
Totals	**100%**	**55**



15. Context Zone 1 - El Camino Real to E. Grand Avenue (Select top three)

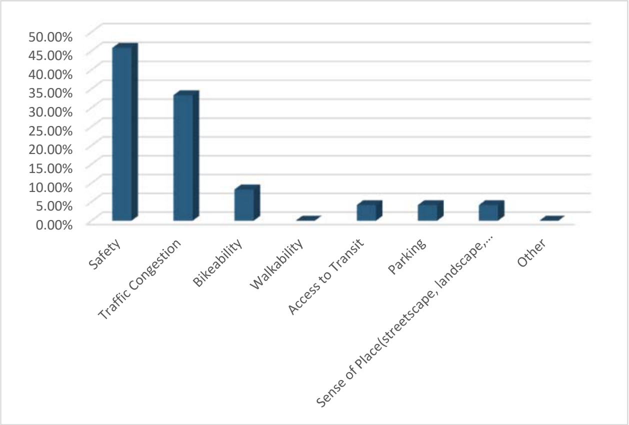
	Responses	
	Percent	Count
Safety	30.50%	43
Traffic Congestion	23.40%	33
Bikeability	12.06%	17
Walkability	13.48%	19
Access to Transit	2.13%	3
Parking	4.26%	6
of Place(streetscape, landscape, noise)	12.06%	17
Other	2.13%	3
Totals	**100%**	**141**



16. Context Zone 1 - El Camino Real to E. Grand Avenue (Select most important)*

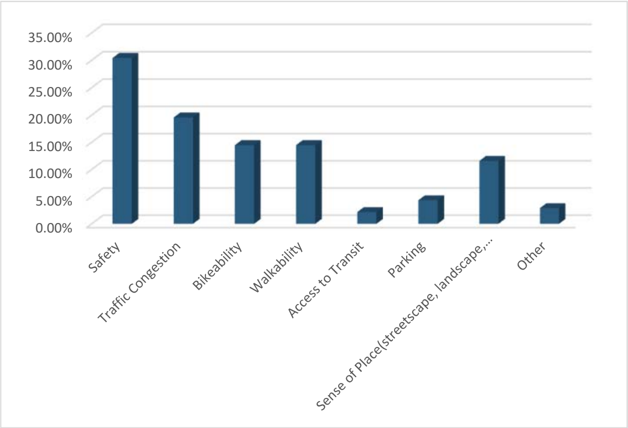
	Responses	
	Percent	Count
Safety	45.83%	11
Traffic Congestion	33.33%	8
Bikeability	8.33%	2
Walkability	0.00%	0
Access to Transit	4.17%	1
Parking	4.17%	1
of Place(streetscape, landscape, noise)	4.17%	1
Other	0.00%	0
Totals	**100%**	**24**

*NOTE: Includes data from 9/15/16 only. No polling data was collected on this question at the 9/14/16 charrette.



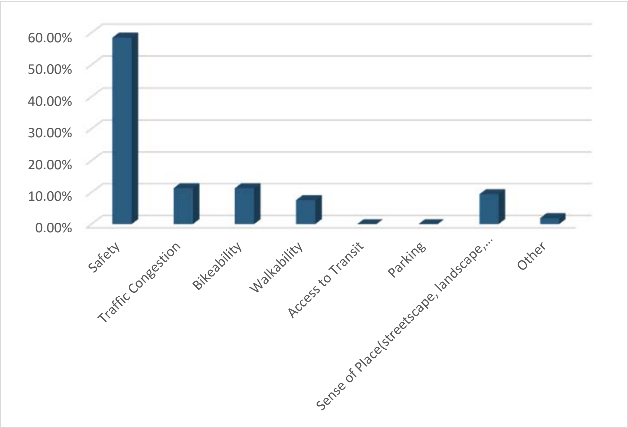
17. Context Zone 2 - E. Grand Avenue to Fair Oaks Avenue (Select top three)

	Responses	
	Percent	Count
Safety	30.43%	42
Traffic Congestion	19.57%	27
Bikeability	14.49%	20
Walkability	14.49%	20
Access to Transit	2.17%	3
Parking	4.35%	6
of Place(streetscape, landscape, noise)	11.59%	16
Other	2.90%	4
Totals	**100%**	**138**



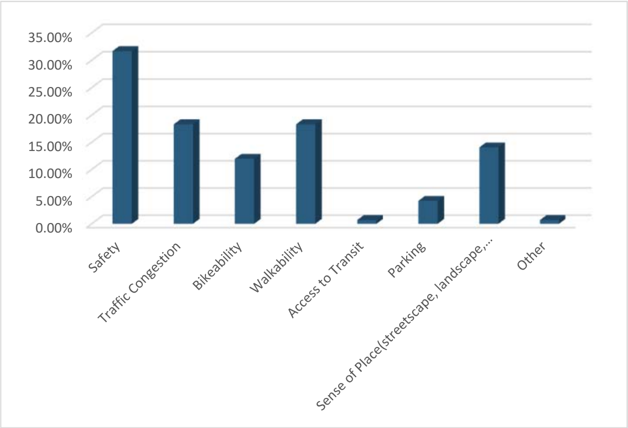
18. Context Zone 2 - E. Grand Avenue to Fair Oaks Avenue (Select most important)

	Responses	
	Percent	Count
Safety	58.49%	31
Traffic Congestion	11.32%	6
Bikeability	11.32%	6
Walkability	7.55%	4
Access to Transit	0.00%	0
Parking	0.00%	0
of Place(streetscape, landscape, noise)	9.43%	5
Other	1.89%	1
Totals	**100%**	**53**



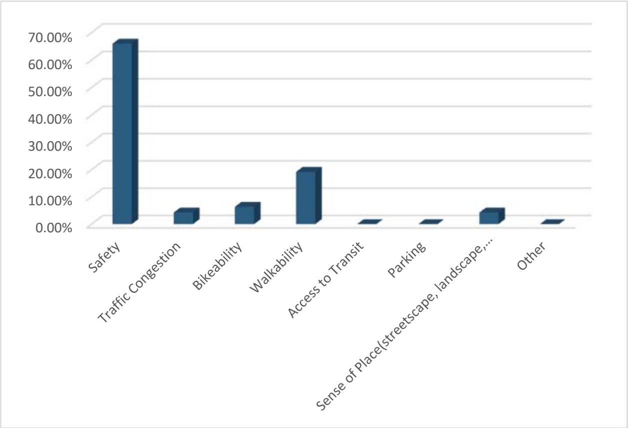
19. Context Zone 3 - Fair Oaks Avenue to The Pike (Select top three)

	Responses	
	Percent	Count
Safety	31.69%	45
Traffic Congestion	18.31%	26
Bikeability	11.97%	17
Walkability	18.31%	26
Access to Transit	0.70%	1
Parking	4.23%	6
of Place(streetscape, landscape, noise)	14.08%	20
Other	0.70%	1
Totals	**100%**	**142**



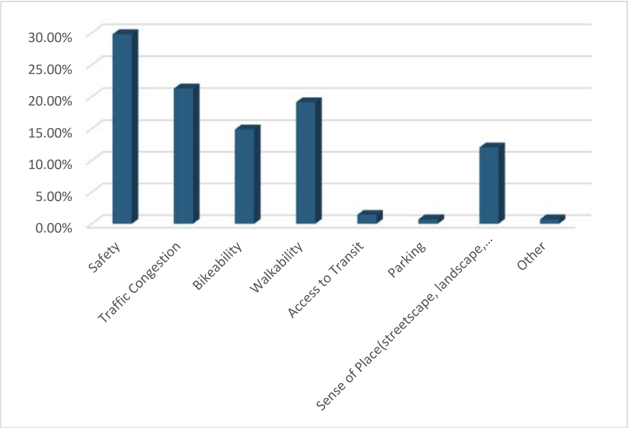
20. Context Zone 3Fair Oaks Avenue to The Pike (Select most important)

	Responses	
	Percent	Count
Safety	65.96%	31
Traffic Congestion	4.26%	2
Bikeability	6.38%	3
Walkability	19.15%	9
Access to Transit	0.00%	0
Parking	0.00%	0
of Place(streetscape, landscape, noise)	4.26%	2
Other	0.00%	0
Totals	**100%**	**47**



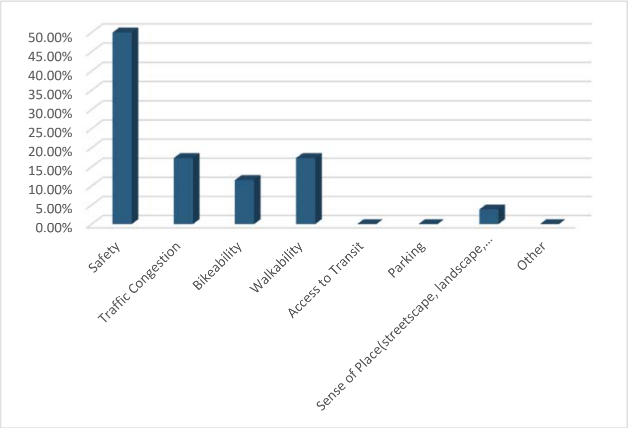
21. Context Zone 4The Pike to SR 1 (Select top three)

	Responses	
	Percent	Count
Safety	29.79%	42
Traffic Congestion	21.28%	30
Bikeability	14.89%	21
Walkability	19.15%	27
Access to Transit	1.42%	2
Parking	0.71%	1
of Place(streetscape, landscape, noise)	12.06%	17
Other	0.71%	1
Totals	**100%**	**141**



22. Context Zone 4The Pike to SR 1 (Select most important)

	Responses	
	Percent	Count
Safety	50.00%	26
Traffic Congestion	17.31%	9
Bikeability	11.54%	6
Walkability	17.31%	9
Access to Transit	0.00%	0
Parking	0.00%	0
of Place(streetscape, landscape, noise)	3.85%	2
Other	0.00%	0
Totals	**100%**	**52**



Session Name: SAG Meeting Results 10-10-2016 5-42 PM

Date Created: 10/10/2016 3:46:17 PM **Active Participants:** 15 of 15

Average Score: 0.00% **Questions:** 24

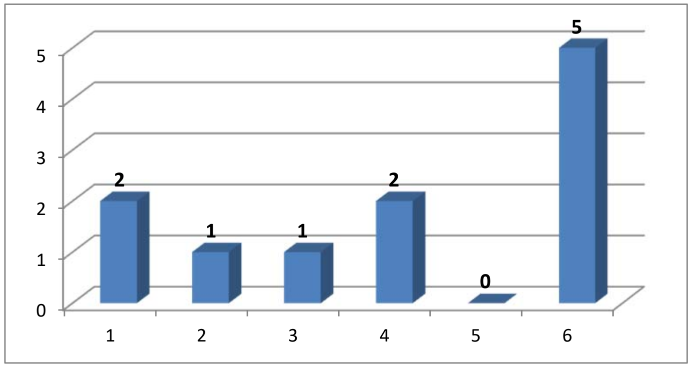
Results By Question

1.) Did you attend a charrette?

	Responses	
	Percent	Count
Yes – Wed. (9/14)	15%	2
Yes – Thurs. (9/15)	31%	4
Did not participate	54%	7
Totals	100%	13

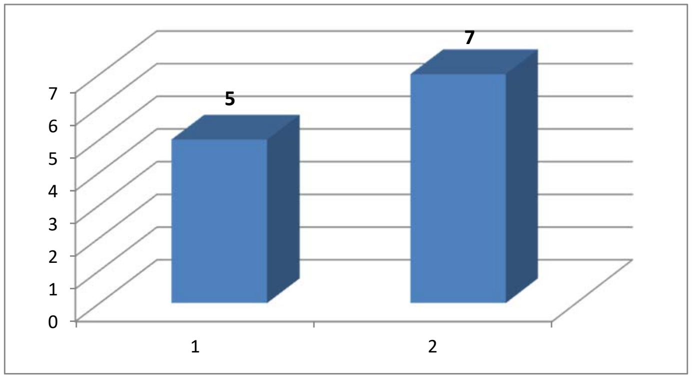
2.) What is your favorite football team?

	Responses	
	Percent	Count
Los Angels Rams	18%	2
San Diego Chargers	9%	1
Oakland Raiders	9%	1
San Francisco 49ers	18%	2
Los Angeles Buccaneers	0%	0
Who Cares!	45%	5
Totals	100%	11



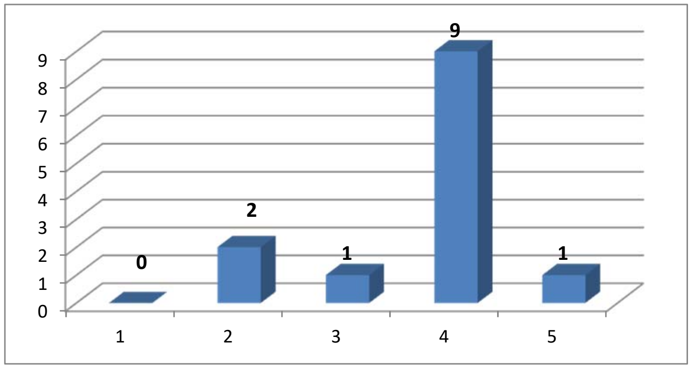
3.) What is your gender?

	Responses	
	Percent	Count
Female	42%	5
Male	58%	7
Totals	100%	12



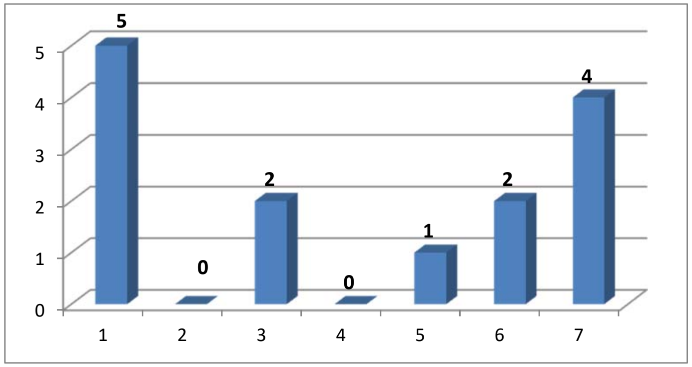
4.) What is your age?

	Responses	
	Percent	Count
18 and under	0%	0
19-35	15%	2
36-50	8%	1
51-70	69%	9
Over 70	8%	1
Totals	100%	13



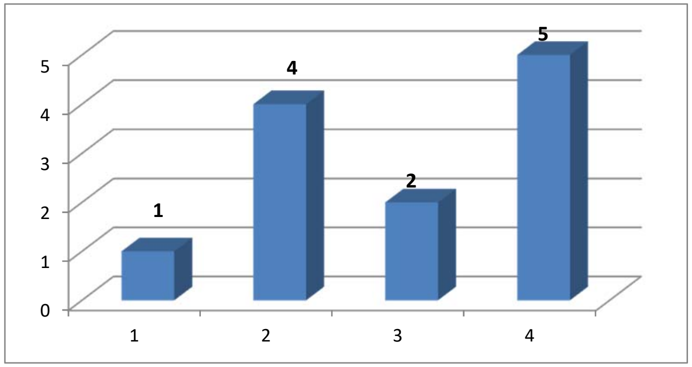
5.) Where do you live?

	Responses	
	Percent	Count
Arroyo Grande	36%	5
Grover Beach	0%	0
Pismo Beach/Shell Beach	14%	2
Oceano	0%	0
Halcyon	7%	1
Nipomo / Nipomo Mesa	14%	2
Other	29%	4
Totals	100%	14



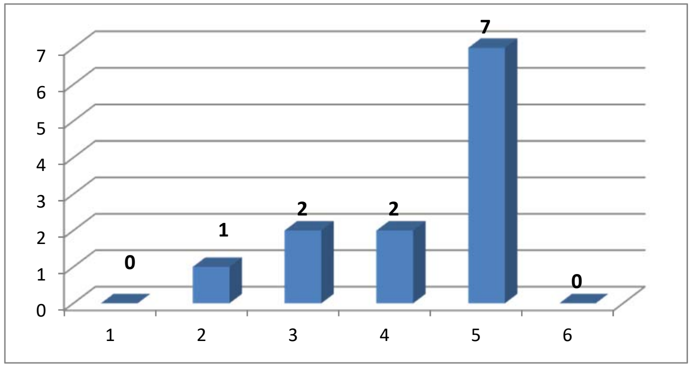
6.) How close do you live to Halcyon Rd?

	Responses	
	Percent	Count
<1 mi.	8%	1
1 – 5 mi.	33%	4
6 – 10 mi.	17%	2
> 10 mi.	42%	5
Totals	100%	12



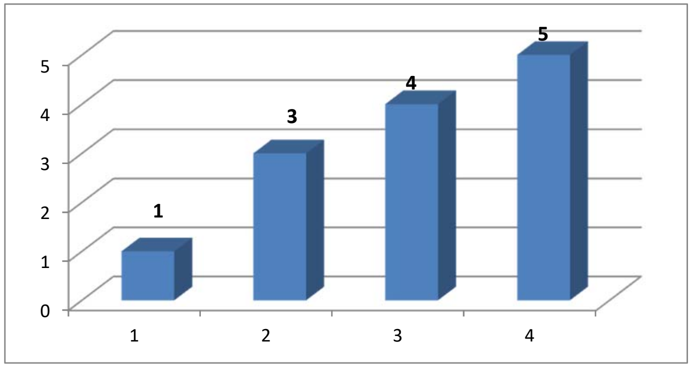
7.) How long have you lived on the Central Coast?

	Responses	
	Percent	Count
Less than 1 year	0%	0
1 - 4 years	8%	1
5 - 10 years	17%	2
11 - 20 years	17%	2
More than 20 years	58%	7
Not Applicable	0%	0
Totals	100%	12



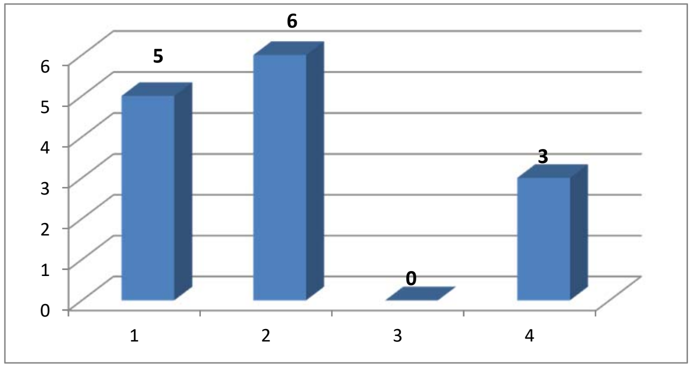
8.) How often do you walk for a significant distance, i.e., more than 5 minutes for a single trip?

	Responses	
	Percent	Count
Never	8%	1
1-3 times per month	23%	3
1-3 times per week	31%	4
4+ times per week	38%	5
Totals	100%	13



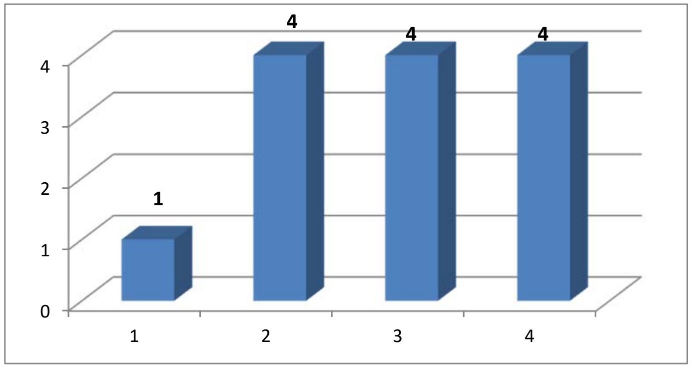
9.) How often do you bike for any purpose?

	Responses	
	Percent	Count
Never	36%	5
1-3 times per month	43%	6
1-3 times per week	0%	0
4+ times per week	21%	3
Totals	100%	14



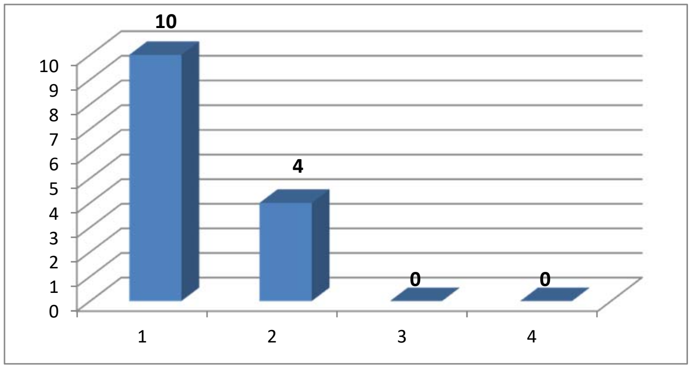
10.) How often do you drive along Halcyon Road?

	Responses	
	Percent	Count
Never	8%	1
1-3 times per month	31%	4
1-3 times per week	31%	4
4+ times per week	31%	4
Totals	100%	13



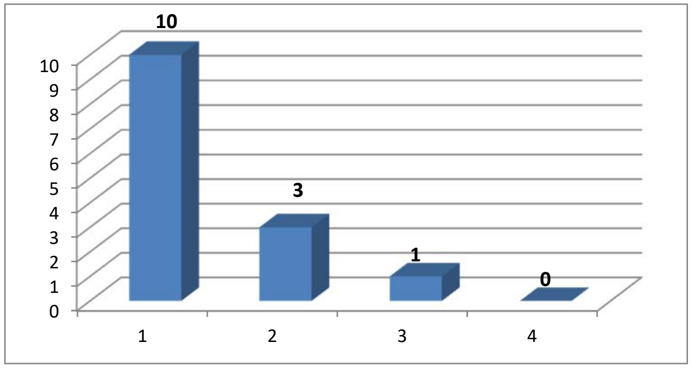
11.) How often do you walk along Halcyon Road?

	Responses	
	Percent	Count
Never	71%	10
1-3 times per month	29%	4
1-3 times per week	0%	0
4+ times per week	0%	0
Totals	100%	14



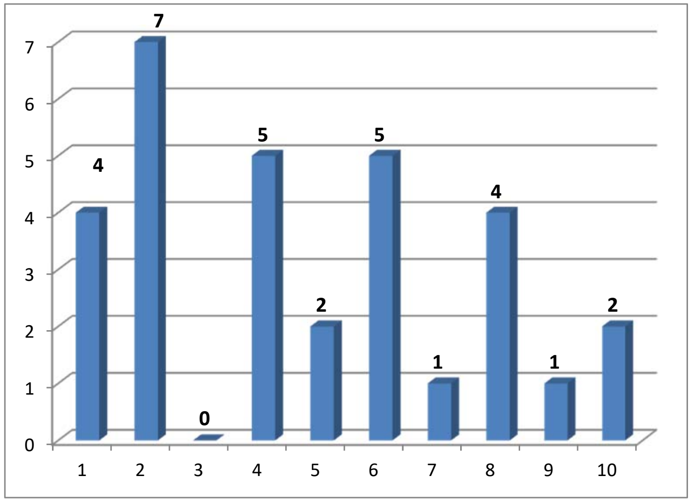
12.) How often do you bike along Halcyon Road?

	Responses	
	Percent	Count
Never	71%	10
1-3 times per month	21%	3
1-3 times per week	7%	1
4+ times per week	0%	0
Totals	100%	14



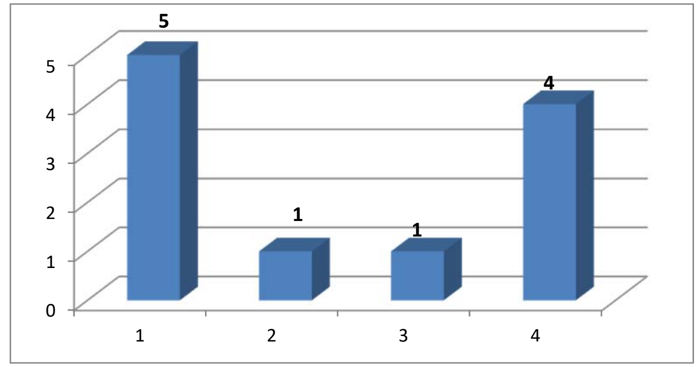
13.) What are your key destinations along Halcyon Road? (Select all that apply)

	Responses	
	Percent	Count
Work	13%	4
Hospital	23%	7
Church	0%	0
Friend's house	16%	5
School	6%	2
Recreation area	16%	5
Shopping	3%	1
No particular destination: (e.g., walking/biking for fitness or leisure)	13%	4
None	3%	1
Other	6%	2
Totals	100%	31



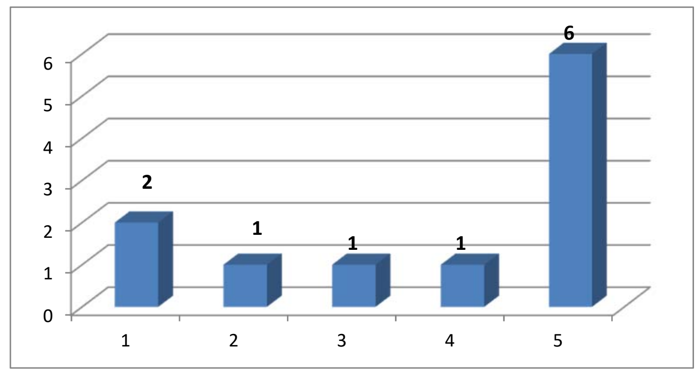
14.) Did you complete a survey?

	Responses	
	Percent	Count
Paper	45%	5
Online	9%	1
Both	9%	1
None	36%	4
Totals	100%	11



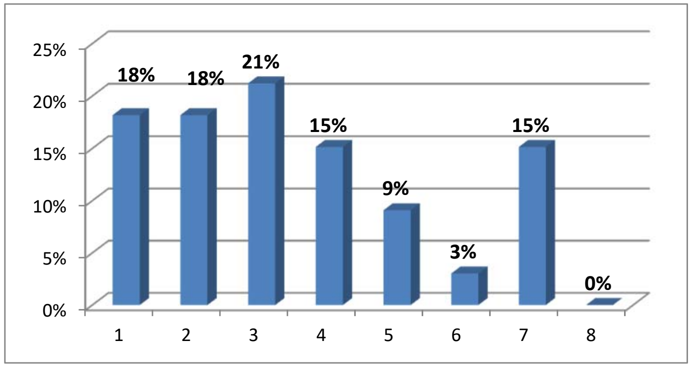
15.) Do you live or work in or near a Context Zone?

	Responses	
	Percent	Count
Zone 1 El Camino Real to E. Grand Avenue	18%	2
Zone 2E. Grand Avenue to Fair Oaks Ave	9%	1
Zone 3Fair Oaks Avenue to The Pike	9%	1
Zone 4The Pike to SR 1	9%	1
Do not live or work near a Context Zone	55%	6
Totals	100%	11



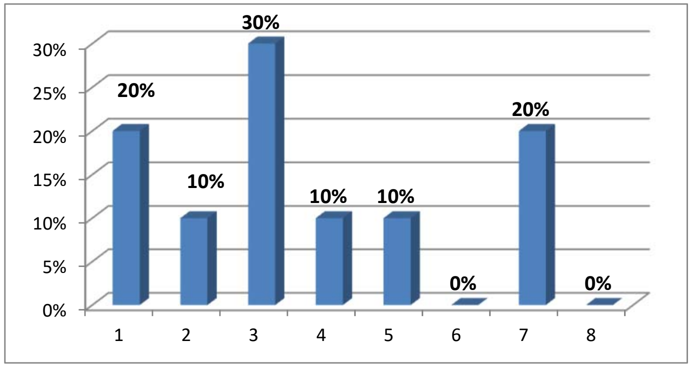
16.) Context Zone 1 - El Camino Real to E. Grand Avenue (Top Three)

	Responses	
	Percent	Count
Safety	18%	6
Traffic Congestion	18%	6
Bikeability	21%	7
Walkability	15%	5
Access to Transit	9%	3
Parking	3%	1
Sense of Place(streetscape, landscape, noise)	15%	5
Other	0%	0
Totals	100%	33



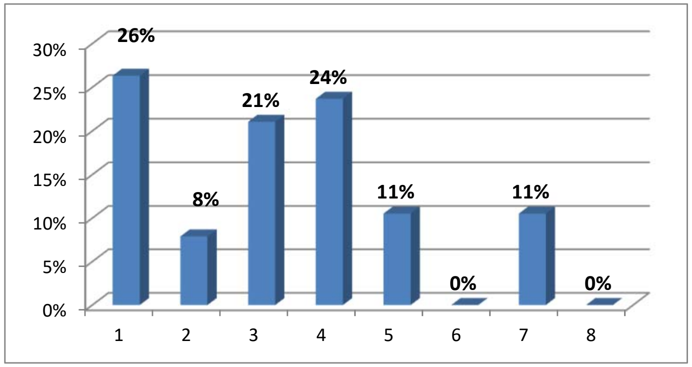
17.) Context Zone 1 - El Camino Real to E. Grand Avenue (Single Most Important)

	Responses	
	Percent	Count
Safety	20%	2
Traffic Congestion	10%	1
Bikeability	30%	3
Walkability	10%	1
Access to Transit	10%	1
Parking	0%	0
Sense of Place(streetscape, landscape, noise)	20%	2
Other	0%	0
Totals	100%	10



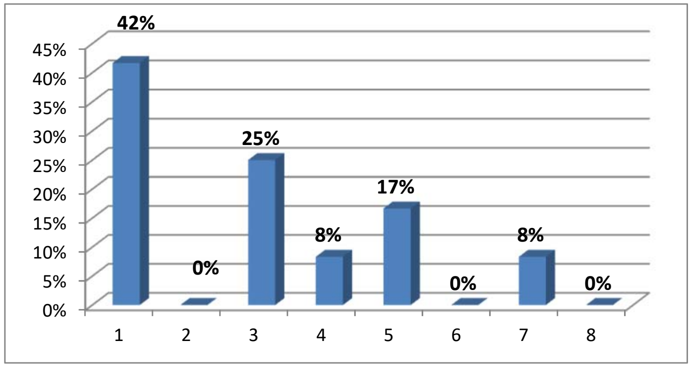
18.) Context Zone 2 - E. Grand Avenue to Fair Oaks Avenue (Top Three)

	Responses	
	Percent	Count
Safety	26%	10
Traffic Congestion	8%	3
Bikeability	21%	8
Walkability	24%	9
Access to Transit	11%	4
Parking	0%	0
Sense of Place(streetscape, landscape, noise)	11%	4
Other	0%	0
Totals	100%	38



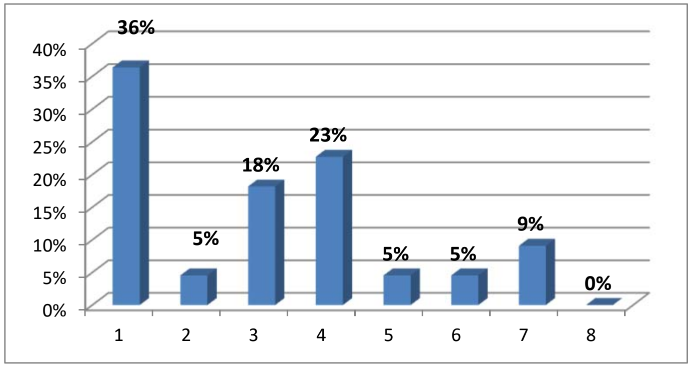
19.) Context Zone 2 - E. Grand Avenue to Fair Oaks Avenue (Single Most Important)

	Responses	
	Percent	Count
Safety	42%	5
Traffic Congestion	0%	0
Bikeability	25%	3
Walkability	8%	1
Access to Transit	17%	2
Parking	0%	0
Sense of Place(streetscape, landscape, noise)	8%	1
Other	0%	0
Totals	100%	12



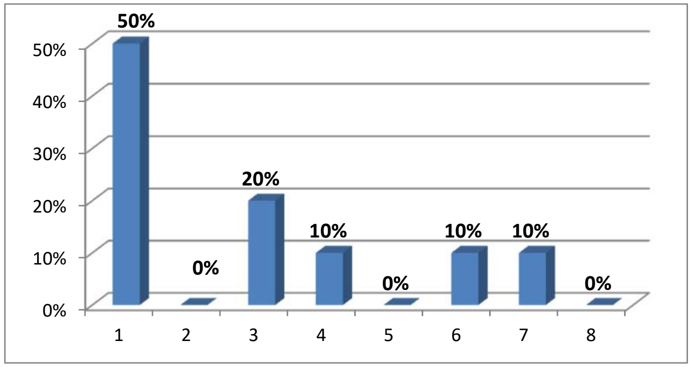
20.) Context Zone 3 - Fair Oaks Avenue to The Pike (Top Three)

	Responses	
	Percent	Count
Safety	36%	8
Traffic Congestion	5%	1
Bikeability	18%	4
Walkability	23%	5
Access to Transit	5%	1
Parking	5%	1
Sense of Place(streetscape, landscape, noise)	9%	2
Other	0%	0
Totals	100%	22



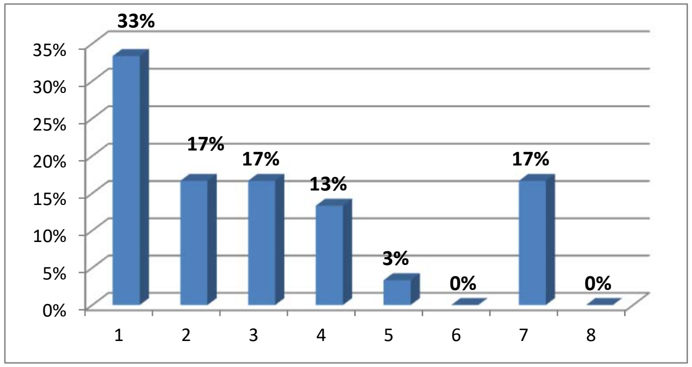
21.) Context Zone 3 - Fair Oaks Avenue to The Pike (Single Most Important)

	Responses	
	Percent	Count
Safety	50%	5
Traffic Congestion	0%	0
Bikeability	20%	2
Walkability	10%	1
Access to Transit	0%	0
Parking	10%	1
Sense of Place(streetscape, landscape, noise)	10%	1
Other	0%	0
Totals	100%	10



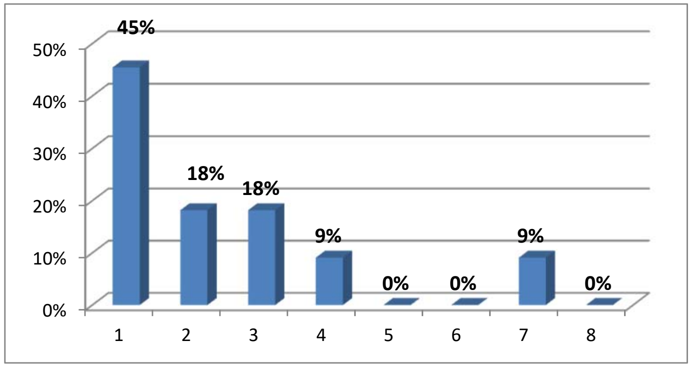
22.) Context Zone 4 - The Pike to SR 1 (Top Three)

	Responses	
	Percent	Count
Safety	33%	10
Traffic Congestion	17%	5
Bikeability	17%	5
Walkability	13%	4
Access to Transit	3%	1
Parking	0%	0
Sense of Place(streetscape, landscape, noise)	17%	5
Other	0%	0
Totals	100%	30



23.) Context Zone 4 - The Pike to SR 1 (Single Most Important)

	Responses	
	Percent	Count
Safety	45%	5
Traffic Congestion	18%	2
Bikeability	18%	2
Walkability	9%	1
Access to Transit	0%	0
Parking	0%	0
Sense of Place(streetscape, landscape, noise)	9%	1
Other	0%	0
Totals	100%	11



617 West 7th Street
Los Angeles, CA 90017
www.altaplanning.com

July 6, 2017

Meeting Notes
Halcyon Road Complete Street Charrettes Round 2

Location
Harloe Elementary, Halcyon Road, Arroyo Grande, CA

Attendees
23 attendees 4/12/2017; 22 attendees 4/13/2017

Meeting facilitated by Nate Stong, Omni-Means Engineering

Written Notes (April 12, 2017)

Zone 1

- Like the more controlled traffic flow
- Eliminating parking: positive
- Need to cut the volume of traffic
- Bike lanes unnecessary and/or dangerous
- Precedence of bikes over cars is a bad idea. There aren't many bikes.
- Traffic flow more important than bike lanes
- Traffic too heavy for this plan
- Why not keep Halcyon for cars and put bikes on other roads?
- Like that it clears up El Camino Real intersection
- Need to improve turn lane signage at Camino Real
- Bike Box is confusing
- Lane shift at Grand should be fixed
- Northwest Corner building at Grand needs to be removed
- Can the Halcyon exit be extended?
- Bikes are there, so build lanes
- Bikes are on sidewalk – bike lanes give people place to ride
- Training for bikes
- Bikes need safe streets; they are not surrounded by armor like cars
- Protected bike lanes -- at least buffer
- Bike ridership is increasing - this is a good investment for the future
- Inadequate access for bikes currently
- Need to address uses in area
    - Schools, hospital, houses = bike lanes
    - Rural = no biking needed
- Don't want to take property
    - Protect Cemetery Wall
    - Longer left pockets at El Camino Real

Zone 2

- Jockeying Northbound at north of Fair Oaks
- Roundabout: Have ambulances been considered & hospital consulted?
- Roundabout: Will roundabout be an issue for large vehicles and buses?
- Likes that it slows, but doesn't stop.
  - Flows nicely. Gives neighborhood feel and safety for bike/ pedestrian
- Like reduction of speed, smoother flow
  - Worry about students walking cross
- Light provides stop in traffic, making it easier to get through as child pedestrian
- High school release same as Elementary – High School kids tend to drive poorly
- SE corner at Grand: future development impacts?
- Road Diet Support
  - Does the Road Diet work without roundabout?
  - Has proposed development at NW corner of Fair Oaks driveways been considered?
- Road diets: Yes.
  - Roundabout: Pedestrian safety
- Request for Crossing guards to stay
- How to handle so many kids to/from school. Was Traffic Count during school year?
- All four crossings at Dodson is great (reiterated by two other people)
- Likes improvements, but worry at Grand – specifically turns onto Grand
- Also concerned about turns into/out of hospital
- Is projected 23% increase in traffic enough? Does it take into account future development?
- Like the roundabout
- Try one ride on Halcyon as is, and everyone will like bike lanes
- Kids bike on sidewalk – will this keep them safe?
- Signage for pedestrians

<u>Digital Voting System had Error at April 13 meeting. Vote by Hand for prefer Roundabout or Signal:</u>

- Prefer Roundabout: 12
- Prefer Signal: 1
- Neutral: 1

Zone 3

- Parking just South of Farroll, limits visibility for southbound traffic. Lots of crashes.
- Need another Crosswalk closer to school. Olive Street?
- Crosswalk at Virginia would be good for Students
- Add stop signs at Sandalwood or between Pike and Fair Oaks
- Will this design improve backing out of driveways?

Zone 4

- All-Way Stop at Pike: Woohoo! Yes!
- The Pike stop sign is essential (reiterated by at least three people)
- Need crosswalks at Pike on all three legs
- What happens to Barricade at Pike?
- Been hit twice at Pike. Needs safer.
- Mobile Home Residents should have stop too, so call it Four Way Stop at Pike
- Regrade Pike to make flat to increase visibility

- How about adding a roundabout to the Pike?
- Need improvements to the Pike now! Not later.
- How will Stop at Pike affect circular driveway just south?
- Left turns to/from Temple Street onto Halcyon are difficult/dangerous
- Speed limits should be decreased
- Mobile home walks to High School, need sidewalks northbound
- Mobile home walk to Post Office, need sidewalks south to Post Office
- Sidewalk on West side to access Post office by foot
- Road widening could compromise historic Post Office
- Archeological area near mobile homes may make widening difficult
- Property taking for widening?
- Need space to decelerate/join road for left turns on/off La Due
- Bike lane narrow due to mud – needs to be widened

Note: Due to a technical issues, data was not saved for the 4/13/17 meeting. Results generally mirrored those of the previous night, found here.

Session Name: Halcyon Charrette Results 4-12-2017 8-33 PM

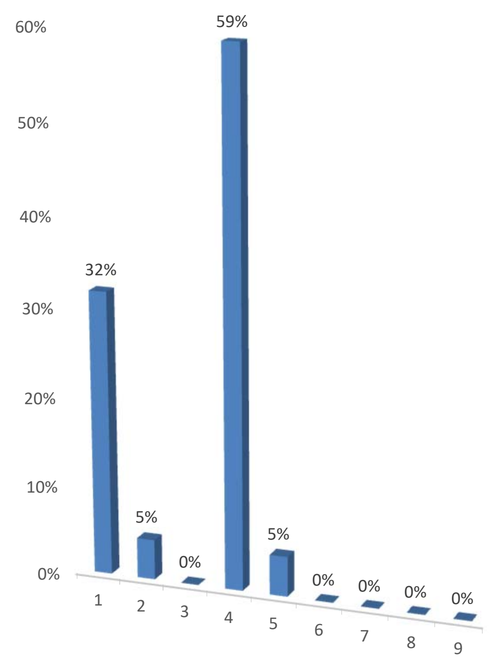
Date Created: 4/12/2017 5:28:07 PM **Active Participants:** 33 of 33

Questions: 21

Results By Question

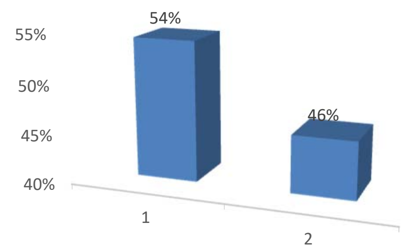
1.) How did you get here tonight? (Multiple Choice)

	Responses	
	Percent	Count
Walk	32%	7
Bike	5%	1
Skateboard	0%	0
Car	59%	13
Bus	5%	1
Horse	0%	0
Motorcycle	0%	0
Airplane	0%	0
Other	0%	0
Totals	100%	22



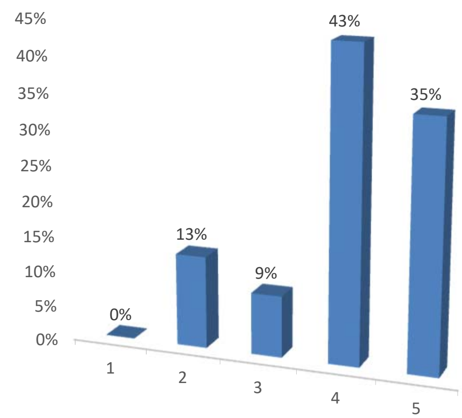
2.) What is your gender? (Demographic Assignment)

	Responses	
	Percent	Count
Female	54%	13
Male	46%	11
Totals	100%	24



3.) What is your age? (Demographic Assignment)

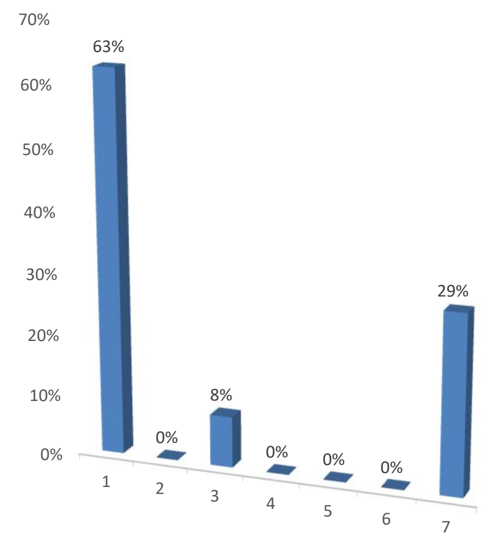
	Responses	
	Percent	Count
18 and under	0%	0
19-35	13%	3
36-50	9%	2
51-70	43%	10
Over 70	35%	8
Totals	100%	23



4.) Where do you live? (Demographic Assignment)

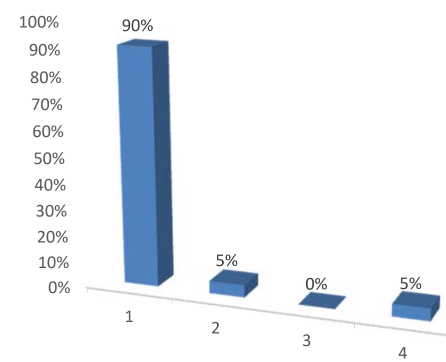
	Responses	
	Percent	Count
Arroyo Grande	63%	15
Grover Beach	0%	0
Pismo Beach/Shell Beach	8%	2
Oceano	0%	0
Nipomo	0%	0
Nipomo Mesa	0%	0
Other	29%	7
Totals	100%	24

NOTE: Other includes Halcyon



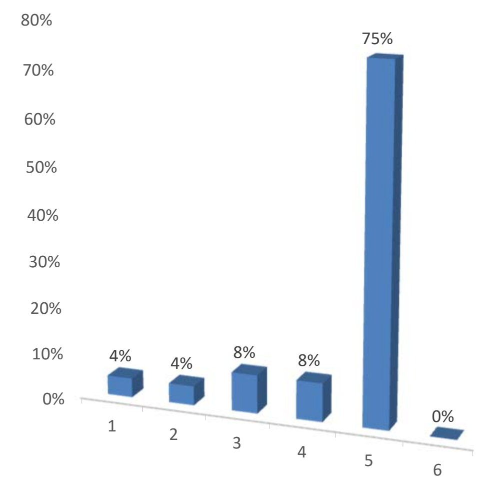
5.) How close do you live to Halcyon Rd? (Demographic Assignment)

	Responses	
	Percent	Count
<1 mi.	90%	19
1 – 5 mi.	5%	1
6 – 10 mi.	0%	0
> 10 mi.	5%	1
Totals	100%	21



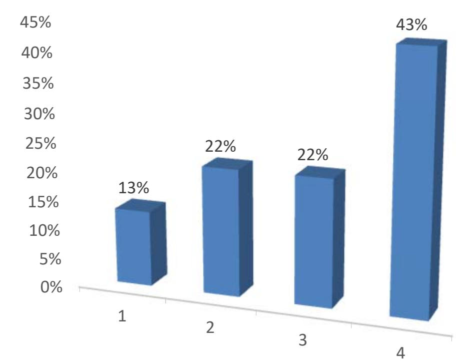
6.) How long have you lived on the Central Coast? (Demographic Assignment)

	Responses	
	Percent	Count
Less than 1 year	4%	1
1 - 4 years	4%	1
5 - 10 years	8%	2
11 - 20 years	8%	2
More than 20 years	75%	18
Not Applicable	0%	0
Totals	100%	24



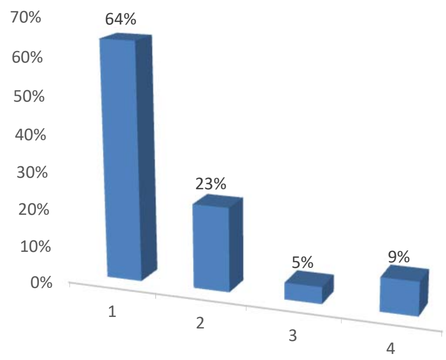
7.) How often do you walk for a significant distance, i.e., more than 5 minutes for a single trip? (Demographic Assignment)

	Responses	
	Percent	Count
Never	13%	3
1-3 times per month	22%	5
1-3 times per week	22%	5
4+ times per week	43%	10
Totals	100%	23



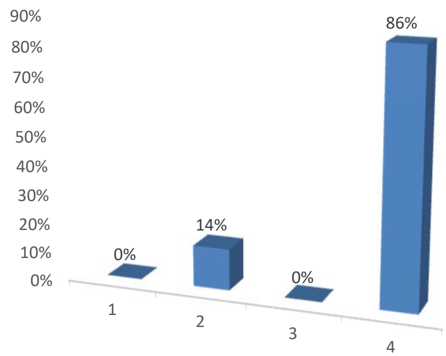
8.) How often do you bike for any purpose? (Demographic Assignment)

	Responses	
	Percent	Count
Never	64%	14
1-3 times per month	23%	5
1-3 times per week	5%	1
4+ times per week	9%	2
Totals	100%	22



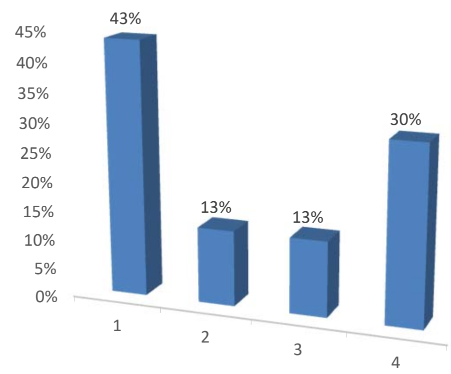
9.) How often do you drive along Halcyon Road? (Demographic Assignment)

	Responses	
	Percent	Count
Never	0%	0
1-3 times per month	14%	3
1-3 times per week	0%	0
4+ times per week	86%	18
Totals	100%	21



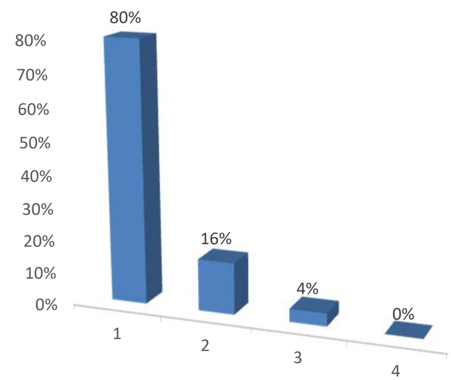
10.) How often do you walk along Halcyon Road? (Demographic Assignment)

	Responses	
	Percent	Count
Never	43%	10
1-3 times per month	13%	3
1-3 times per week	13%	3
4+ times per week	30%	7
Totals	100%	23



11.) How often do you bike along Halcyon Road? (Demographic Assignment)

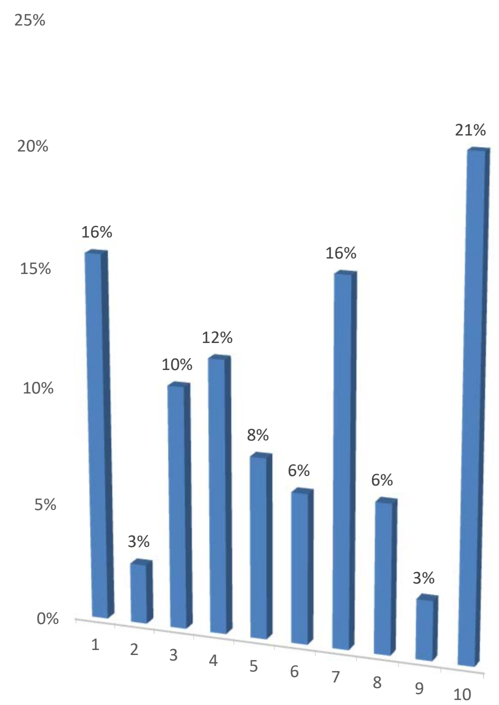
	Responses	
	Percent	Count
Never	80%	20
1-3 times per month	16%	4
1-3 times per week	4%	1
4+ times per week	0%	0
Totals	100%	25



12.) What are your key destinations along Halcyon Road? (check all that apply) (Multiple Choice - Multiple Response)

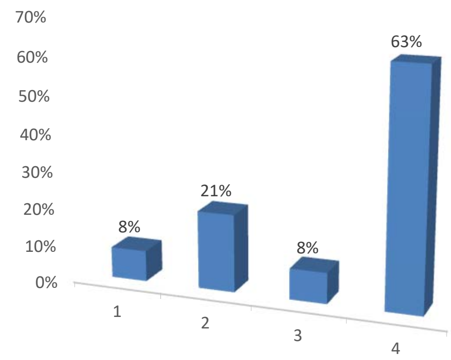
	Responses	
	Percent	Count
Work	16%	12
Bus stop	3%	2
Church	10%	8
Friend's house	12%	9
School	8%	6
Recreation area	6%	5
Shopping	16%	12
No particular destination: walking for fitness or leisure	6%	5
I never walk along Halcyon Road	3%	2
Other	21%	16
Totals	100%	77

NOTE: Other includes Hospital



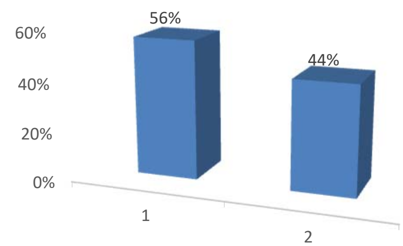
13.) Did you complete a survey? (Demographic Assignment)

	Responses	
	Percent	Count
Paper	8%	2
Online	21%	5
Both	8%	2
None	63%	15
Totals	100%	24



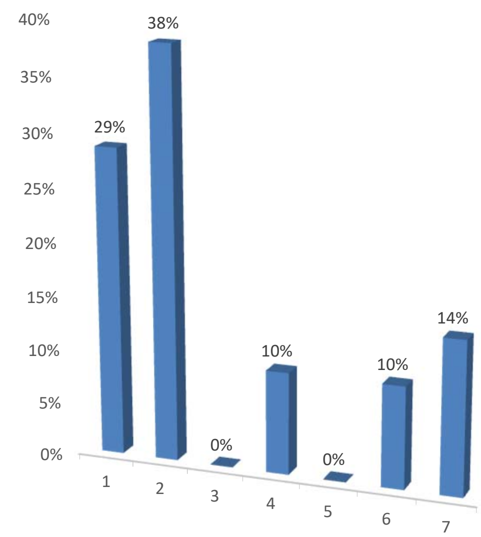
14.) Did you attend a workshop in September 2016? (Demographic Assignment)

	Responses	
	Percent	Count
Yes	56%	14
No	44%	11
Totals	100%	25



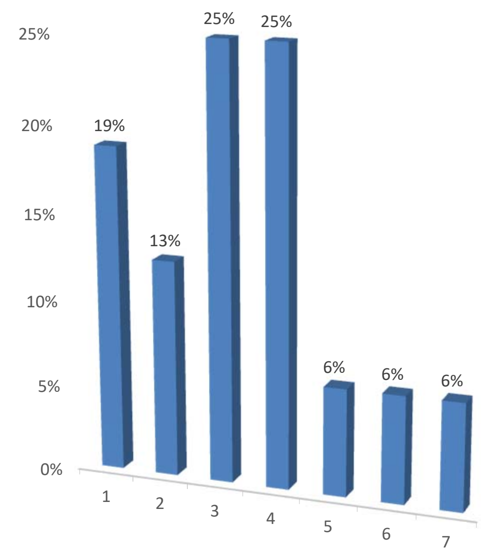
15.) Context Zone 1 - To what extent do you support the proposed concept? (Multiple Choice)

	Responses	
	Percent	Count
Strongly Support	29%	6
Support	38%	8
Somewhat Support	0%	0
Neutral	10%	2
Somewhat Oppose	0%	0
Oppose	10%	2
Strongly Oppose	14%	3
Totals	100%	21



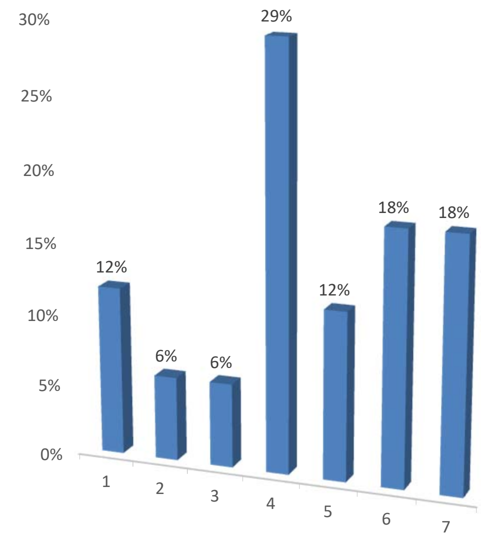
16.) Context Zone 2 - To what extent do you support the proposed concept? (Multiple Choice)

	Responses	
	Percent	Count
Strongly Support	19%	3
Support	13%	2
Somewhat Support	25%	4
Neutral	25%	4
Somewhat Oppose	6%	1
Oppose	6%	1
Strongly Oppose	6%	1
Totals	100%	16



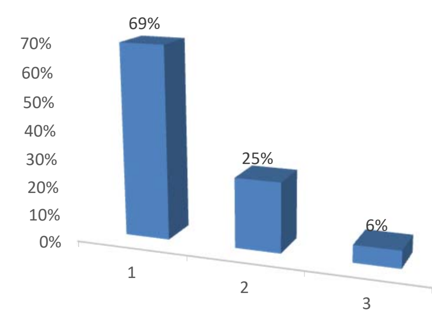
17.) Context Zone 2 - To what extent do you support the signalized alternative? (Multiple Choice)

	Responses	
	Percent	Count
Strongly Support	12%	2
Support	6%	1
Somewhat Support	6%	1
Neutral	29%	5
Somewhat Oppose	12%	2
Oppose	18%	3
Strongly Oppose	18%	3
Totals	100%	17



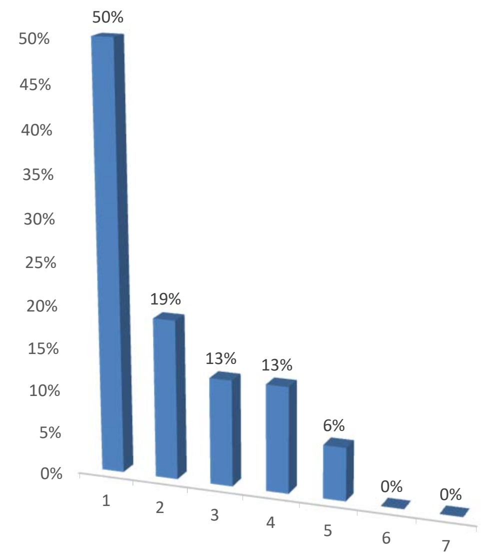
18.) Which alternative do you prefer? (Multiple Choice)

	Responses	
	Percent	Count
Alt 1 – Road Diet / Roundabout	69%	11
Alt 2 – Signalized Intersection	25%	4
Other	6%	1
Totals	100%	16



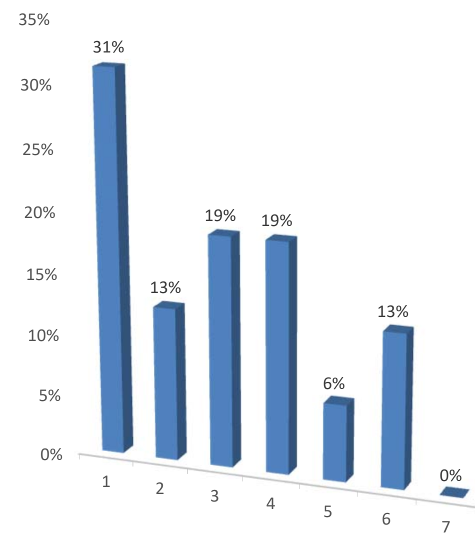
19.) Context Zone 3 - To what extent do you support the proposed concept? (Multiple Choice)

	Responses	
	Percent	Count
Strongly Support	50%	8
Support	19%	3
Somewhat Support	13%	2
Neutral	13%	2
Somewhat Oppose	6%	1
Oppose	0%	0
Strongly Oppose	0%	0
Totals	100%	16



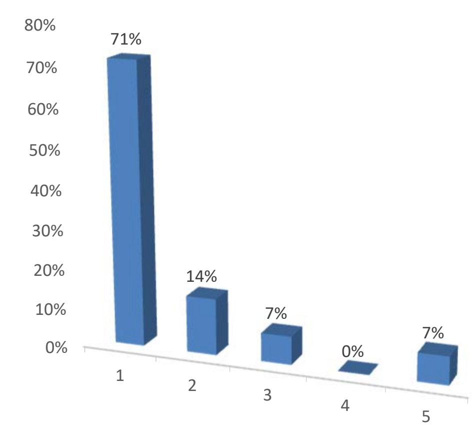
20.) Context Zone 4 - To what extent do you support the proposed concept? (Multiple Choice)

	Responses	
	Percent	Count
Strongly Support	31%	5
Support	13%	2
Somewhat Support	19%	3
Neutral	19%	3
Somewhat Oppose	6%	1
Oppose	13%	2
Strongly Oppose	0%	0
Totals	100%	16



21.) How effective was this meeting to understand and discuss alternatives for Halcyon Rd. (Multiple Choice)

	Responses	
	Percent	Count
Very effective	71%	10
Effective	14%	2
Somewhat effective	7%	1
Not very effective	0%	0
Not at all effective	7%	1
Totals	100%	14



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Arroyo Grande Halcyon Road Complete Streets Plan (English)

Summary → Design Survey → Collect Responses → Analyze Results

CURRENT VIEW

+ FILTER + COMPARE + SHOW

No rules applied

Rules allow you to **FILTER**, **COMPARE** and **SHOW** results to see trends and patterns. Learn more »

SAVED VIEWS (1)

Original View (No rules applied)

+ Save as...

EXPORTS

SHARED DATA

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Sharing allows you to share your survey results with others. You can share all data, a saved view, or a single question summary. Learn more »

Share All

RESPONDENTS: 17 of 17 Export All Share All

Question Summaries Data Trends Individual Responses

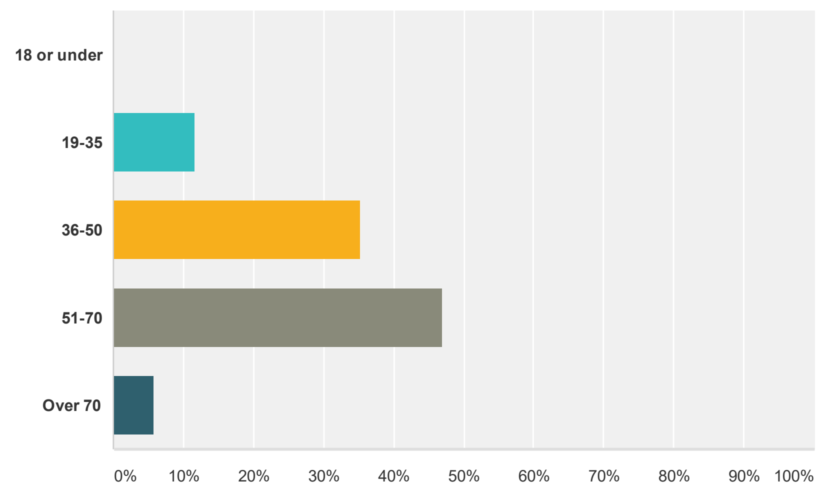
All Pages

PAGE 1: Demographics

Q1 Customize Export

Which age group are you in?

Answered: 17 Skipped: 0



Answer Choices	Responses	
18 or under	0.00%	0
19-35	11.76%	2
36-50	35.29%	6
51-70	47.06%	8
Over 70	5.88%	1
Total		17

Q2 Export

How many children under the age of 13 are in your household?

Answered: 15 Skipped: 2

Responses (15) Text Analysis My Categories (0)

Categorize as... Filter by Category Search responses

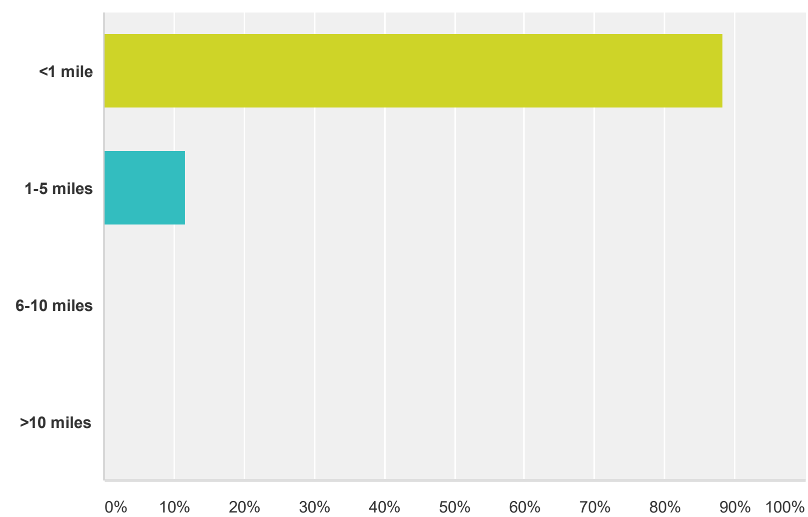
Showing **15** responses

2 3/2/2017 2:47 PM	View respondent's answers	Categorize as...
2 2/17/2017 8:50 PM	View respondent's answers	Categorize as...
2 2/10/2017 4:15 PM	View respondent's answers	Categorize as...
0 12/1/2016 1:55 PM	View respondent's answers	Categorize as...
2 11/23/2016 2:44 PM	View respondent's answers	Categorize as...
0 10/29/2016 8:21 AM	View respondent's answers	Categorize as...
0 10/18/2016 8:28 PM	View respondent's answers	Categorize as...

Q3 Customize Export

How close do you live to Halcyon Road?

Answered: 17 Skipped: 0

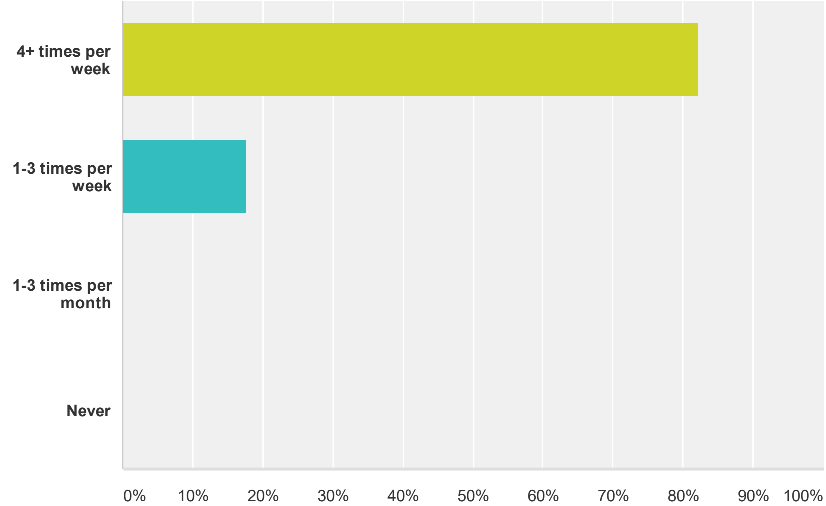


Answer Choices	Responses	
<1 mile	**88.24%**	15
1-5 miles	**11.76%**	2
6-10 miles	**0.00%**	0
>10 miles	**0.00%**	0
Total		17

Q4 Customize Export

How often do you drive, walk, or bike along Halcyon Road?

Answered: 17 Skipped: 0



Answer Choices	Responses	
4+ times per week	82.35%	14
1-3 times per week	17.65%	3
1-3 times per month	0.00%	0
Never	0.00%	0
Total		17

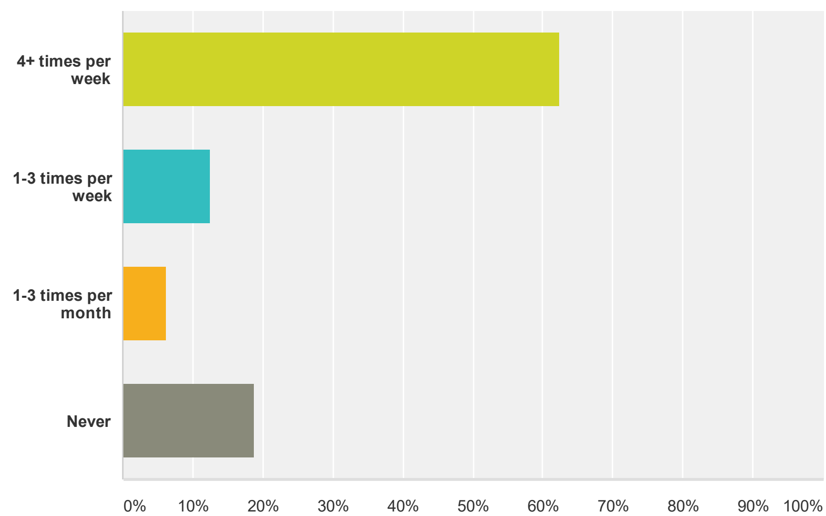
PAGE 2: General Travel Behavior

Q5

Customize Export

How often do you walk for a significant distance, i.e., more than 5 minutes for a single trip?

Answered: 16 Skipped: 1



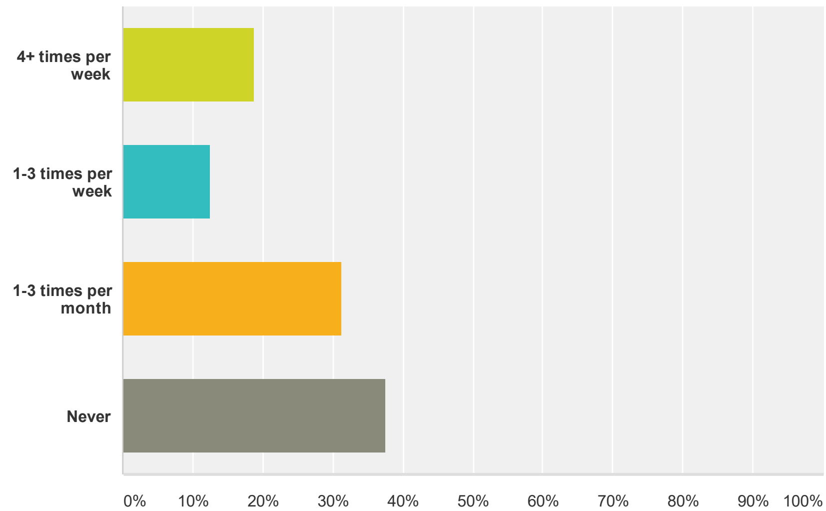
Answer Choices	Responses	
4+ times per week	62.50%	10
1-3 times per week	12.50%	2
1-3 times per month	6.25%	1
Never	18.75%	3
Total		16

Q6

Customize Export

How often do you bike for any purpose?

Answered: 16 Skipped: 1



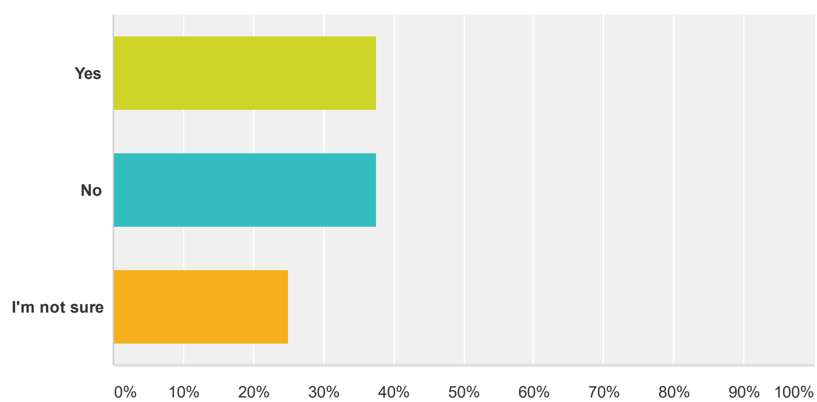
Answer Choices	Responses	
4+ times per week	18.75%	3
1-3 times per week	12.50%	2
1-3 times per month	31.25%	5
Never	37.50%	6
Total		16

Q7

Customize Export

What if bike markings ("sharrows" as pictured above) were added?

Answered: 16 Skipped: 1



Answer Choices	Responses	
Yes	37.50%	6
No	37.50%	6

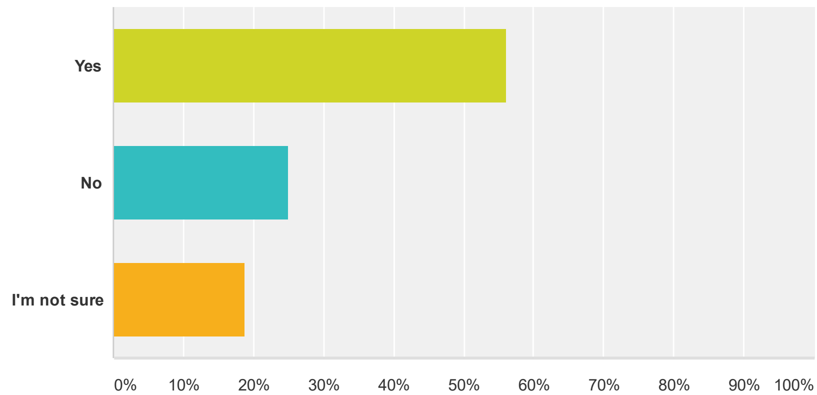
I'm not sure	25.00%	4
Total		16

Q8

Customize Export

What if a bike lane (as pictured above) was added?

Answered: 16 Skipped: 1



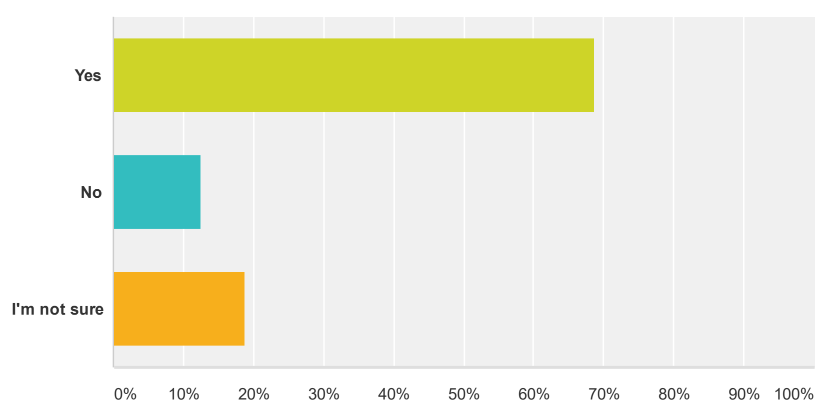
Answer Choices	Responses	
Yes	56.25%	9
No	25.00%	4
I'm not sure	18.75%	3
Total		16

Q9

Customize Export

What if a buffered bike lane (as pictured above) was added?

Answered: 16 Skipped: 1



Answer Choices	Responses	
Yes	68.75%	11
No	12.50%	2

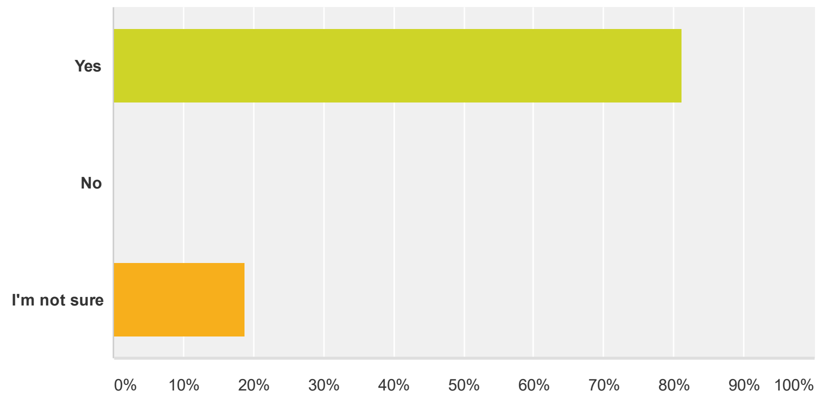
I'm not sure	18.75%	3
Total		16

Q10

Customize Export

What if a wide bike lane separated from traffic by a curb or parked cars (as pictured above) was added?

Answered: 16 Skipped: 1



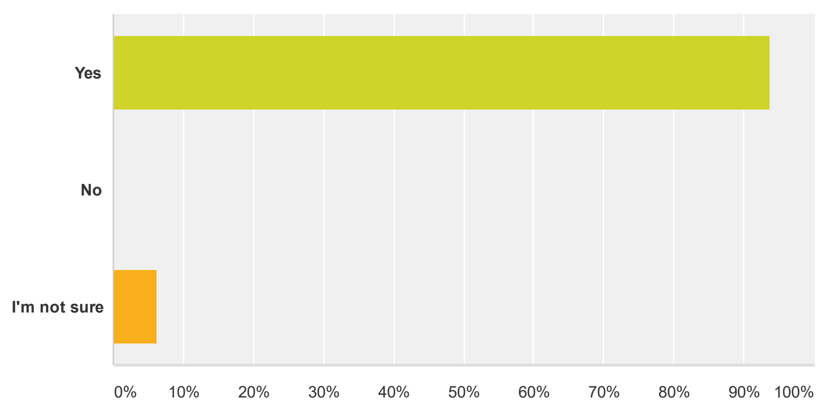
Answer Choices	Responses	
Yes	81.25%	13
No	0.00%	0
I'm not sure	18.75%	3
Total		16

Q11

Customize Export

What if a multi-use path completely separated from traffic (as pictured above) was added?

Answered: 16 Skipped: 1



Answer Choices	Responses	
Yes	93.75%	15

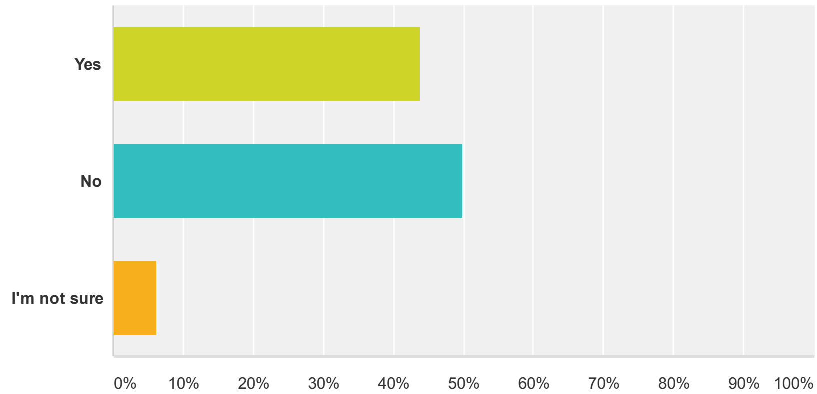
No	0.00% 0
I'm not sure	6.25% 1
Total	16

Q12

Customize Export

What if roundabouts replaced four-way stops and traffic lights (as pictured above)?

Answered: 16 Skipped: 1



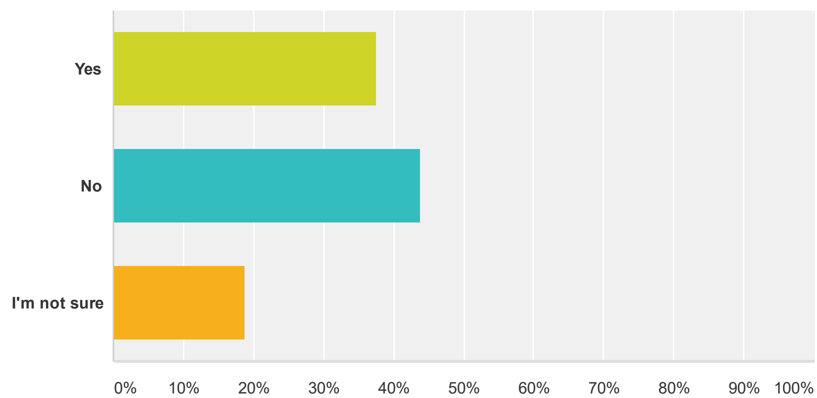
Answer Choices	Responses	
Yes	43.75%	7
No	50.00%	8
I'm not sure	6.25%	1
Total		16

Q13

Customize Export

What if a traffic lane were removed (as pictured above)?

Answered: 16 Skipped: 1



Answer Choices	Responses	
Yes	37.50%	6

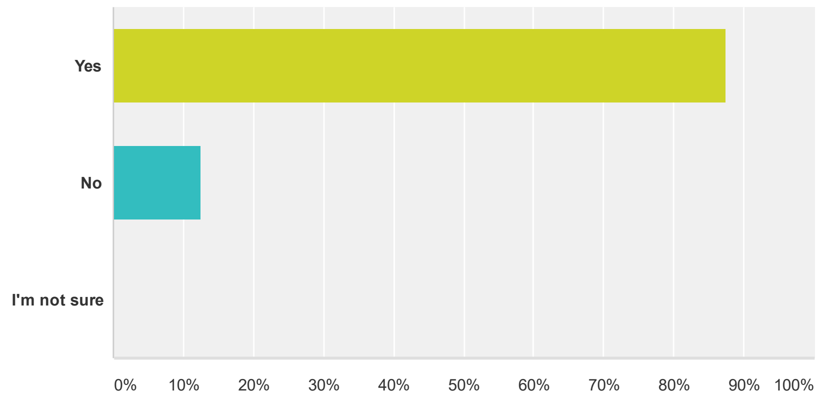
No	43.75%	7
I'm not sure	18.75%	3
Total		16

Q14

Customize Export

What if sidewalks (as pictured above) were added?

Answered: 16 Skipped: 1



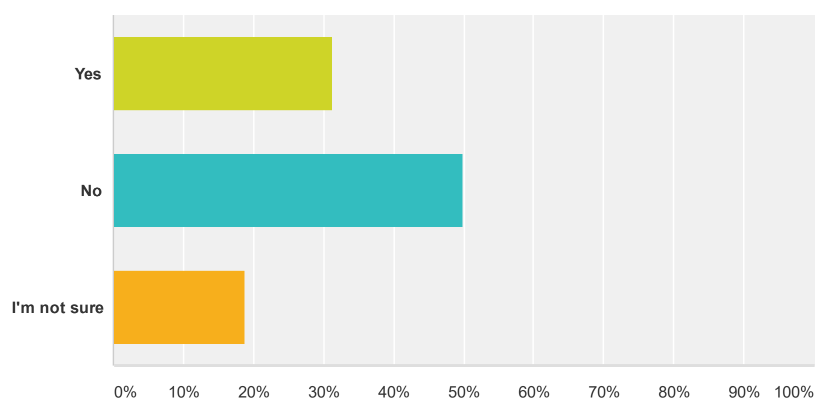
Answer Choices	Responses	
Yes	87.50%	14
No	12.50%	2
I'm not sure	0.00%	0
Total		16

Q15

Customize Export

What if benches and other street furniture (similar to what is pictured above) were added?

Answered: 16 Skipped: 1



Answer Choices	Responses	
Yes	31.25%	5

No	50.00%	8
I'm not sure	18.75%	3
Total		16

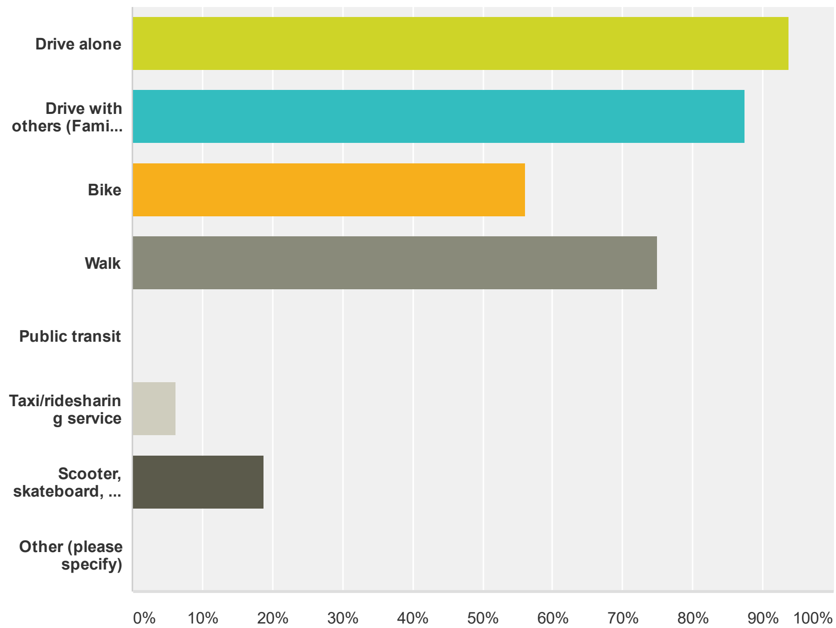
PAGE 3: Halcyon Road Travel Behavior

Q16

Customize Export

Please indicate what modes of transportation you use to travel along Halcyon Road (select all that apply)

Answered: 16 Skipped: 1



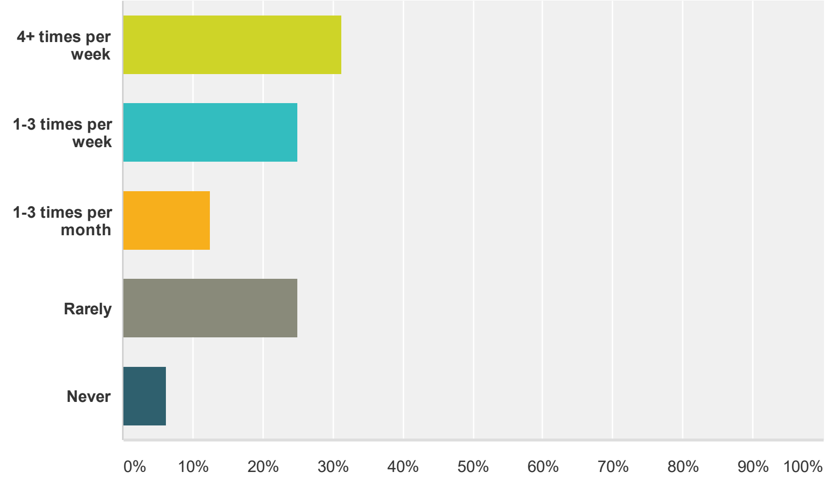
Answer Choices		Responses	
Drive alone		93.75%	15
Drive with others (Family, Friends or Carpool)		87.50%	14
Bike		56.25%	9
Walk		75.00%	12
Public transit		0.00%	0
Taxi/ridesharing service		6.25%	1
Scooter, skateboard, or low speed electric device		18.75%	3
Other (please specify)	Responses	0.00%	0
Total Respondents: 16			

Q17

Customize Export

How Often do you walk along Halcyon Road for a significant distance, i.e., more than 5 minutes for a single trip?

Answered: 16 Skipped: 1

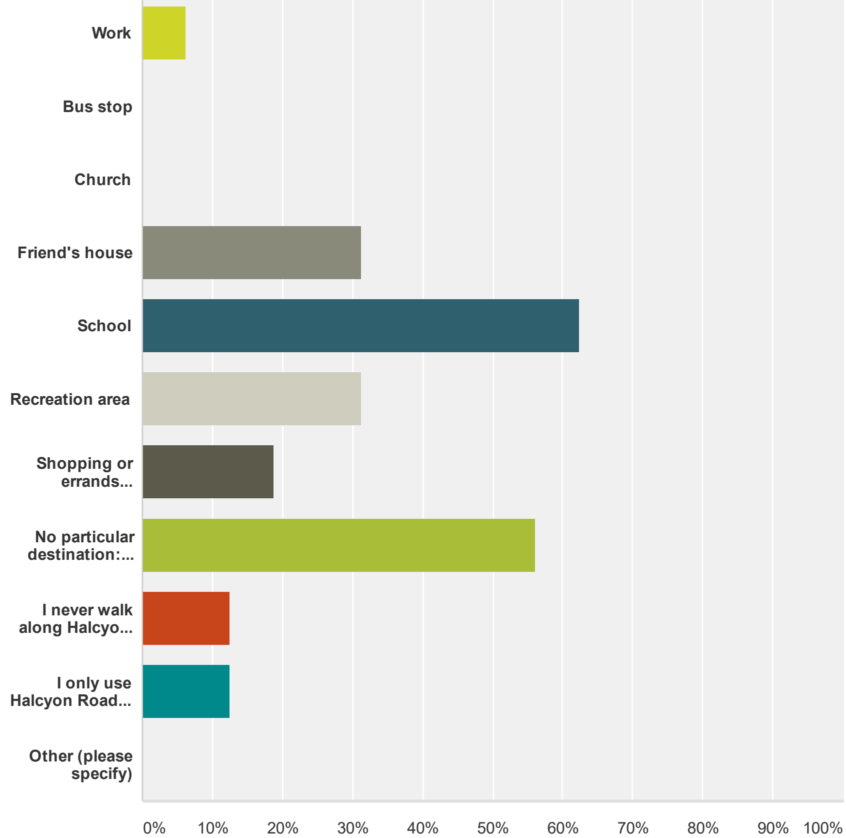


Answer Choices	Responses	
4+ times per week	31.25%	5
1-3 times per week	25.00%	4
1-3 times per month	12.50%	2
Rarely	25.00%	4
Never	6.25%	1
Total		16

Q18 Customize Export

What are your key walking destinations along Halcyon Road? (check all that apply)

Answered: 16 Skipped: 1



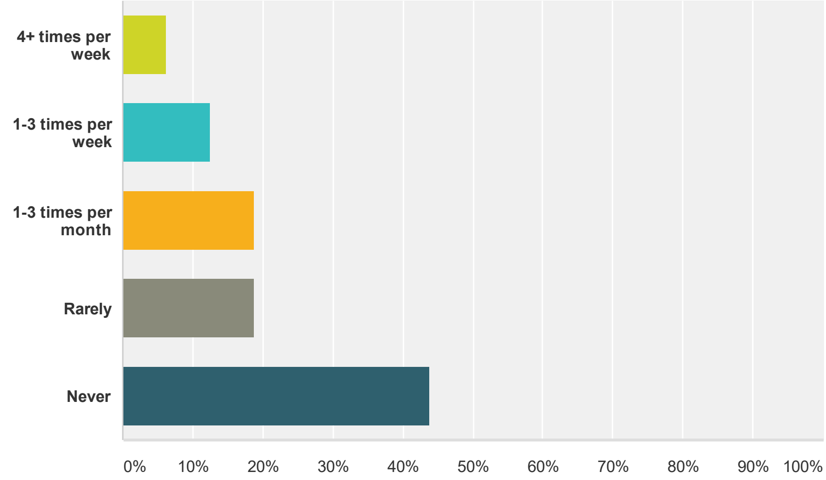
Answer Choices		Responses	
Work		6.25%	1
Bus stop		0.00%	0
Church		0.00%	0
Friend's house		31.25%	5
School		62.50%	10
Recreation area		31.25%	5
Shopping or errands (including medical services)		18.75%	3
No particular destination: walking for fitness or leisure		56.25%	9
I never walk along Halcyon Road		12.50%	2
I only use Halcyon Road to access other areas		12.50%	2
Other (please specify)	Responses	0.00%	0
Total Respondents: 16			

Q19

Customize Export

How often do you bike along Halcyon Road?

Answered: 16 Skipped: 1



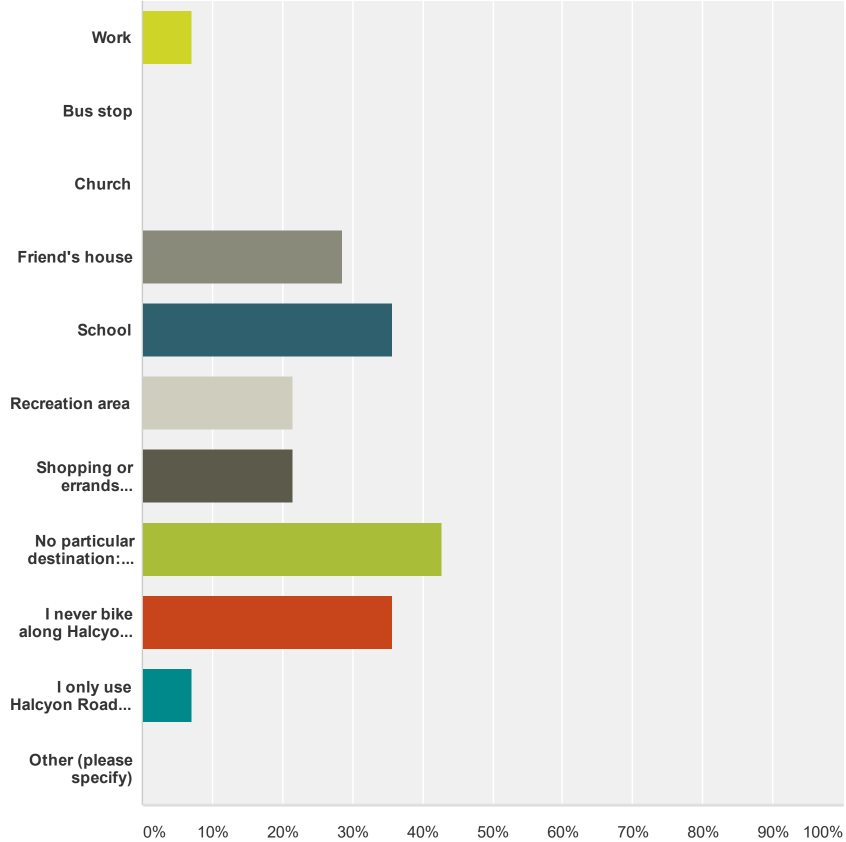
Answer Choices	Responses	
4+ times per week	6.25%	1
1-3 times per week	12.50%	2
1-3 times per month	18.75%	3
Rarely	18.75%	3
Never	43.75%	7
Total		16

Q20

Customize Export

What are your key biking destinations along Halcyon Road? (check all that apply)

Answered: 14 Skipped: 3



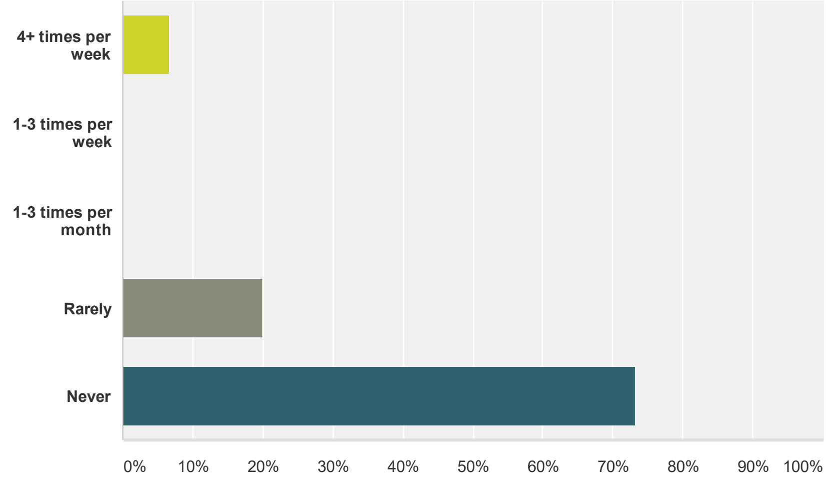
Answer Choices		Responses	
Work		7.14%	1
Bus stop		0.00%	0
Church		0.00%	0
Friend's house		28.57%	4
School		35.71%	5
Recreation area		21.43%	3
Shopping or errands (including medical services)		21.43%	3
No particular destination: biking for fitness or leisure		42.86%	6
I never bike along Halcyon Road		35.71%	5
I only use Halcyon Road to access other areas		7.14%	1
Other (please specify)	Responses	0.00%	0
Total Respondents: 14			

Q21

Customize Export

How often do you take transit to Halcyon Road for any purpose?

Answered: 15 Skipped: 2



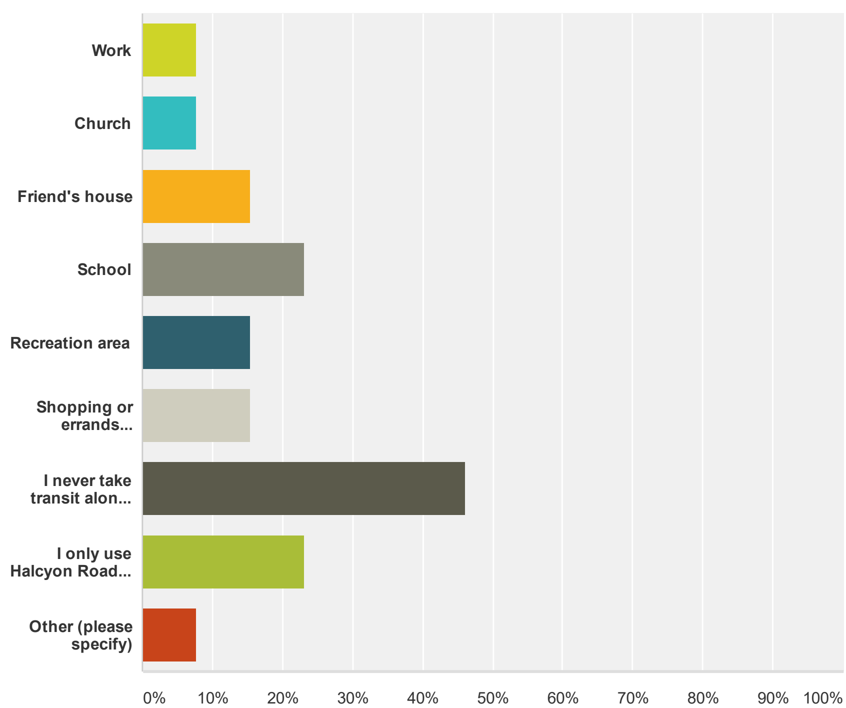
Answer Choices	Responses	
4+ times per week	6.67%	1
1-3 times per week	0.00%	0
1-3 times per month	0.00%	0
Rarely	20.00%	3
Never	73.33%	11
Total		15

Q22

Customize Export

What are your key transit destinations along Halcyon Road? (check all that apply)

Answered: 13 Skipped: 4



Answer Choices	Responses	
Work	7.69%	1

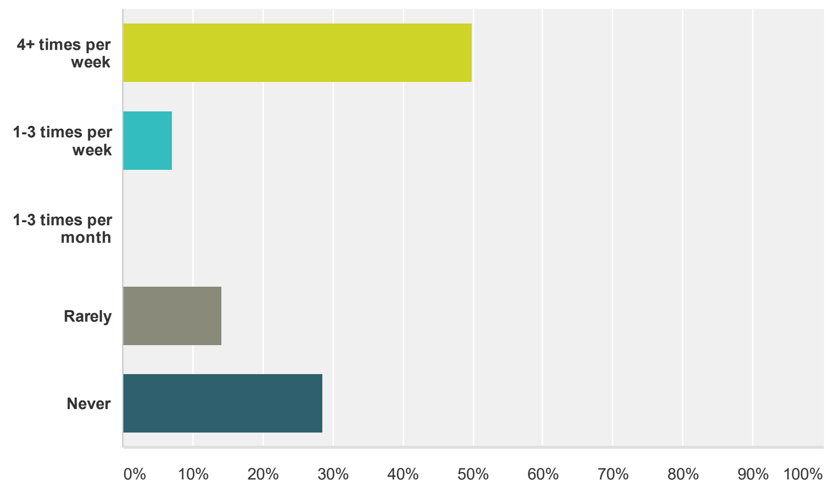
Church	7.69%	1
Friend's house	15.38%	2
School	23.08%	3
Recreation area	15.38%	2
Shopping or errands (including medical services)	15.38%	2
I never take transit along Halcyon Road	46.15%	6
I only use Halcyon Road to access other areas	23.08%	3
Other (please specify) Responses	7.69%	1
Total Respondents: 13		

Q23

Customize Export

How often do you take transit to/from Halcyon Road for any purpose?

Answered: 14 Skipped: 3



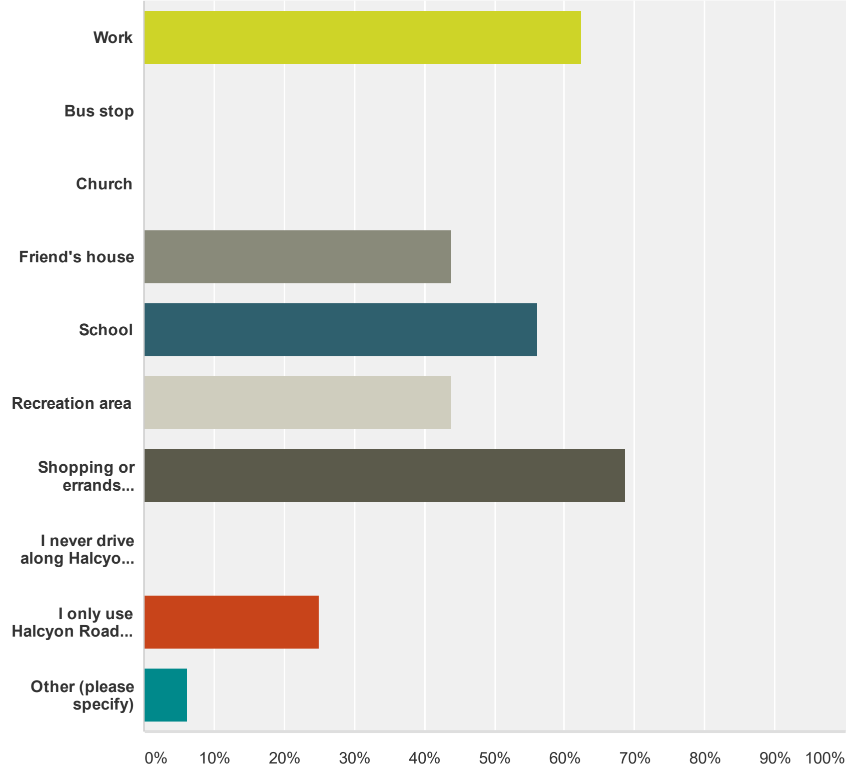
Answer Choices	Responses	
4+ times per week	50.00%	7
1-3 times per week	7.14%	1
1-3 times per month	0.00%	0
Rarely	14.29%	2
Never	28.57%	4
Total		14

Q24

Customize Export

What are your key driving destinations along Halcyon Road? (check all that apply)

Answered: 16 Skipped: 1



Answer Choices		Responses	
Work		62.50%	10
Bus stop		0.00%	0
Church		0.00%	0
Friend's house		43.75%	7
School		56.25%	9
Recreation area		43.75%	7
Shopping or errands (including medical services)		68.75%	11
I never drive along Halcyon Road		0.00%	0
I only use Halcyon Road to access other areas		25.00%	4
Other (please specify)	Responses	6.25%	1
Total Respondents: 16			

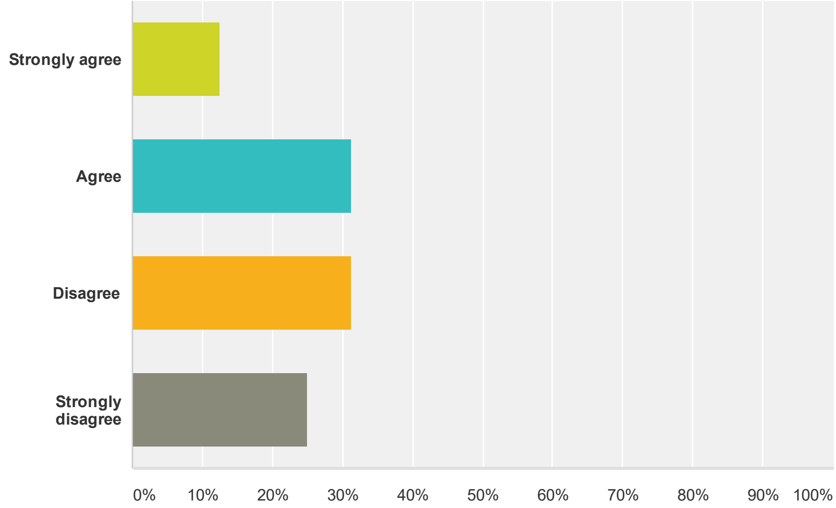
PAGE 4: Halcyon Road Key Issues

Q25

Customize Export

The transportation options available to me along Halcyon Road are suitable to my needs:

Answered: 16 Skipped: 1



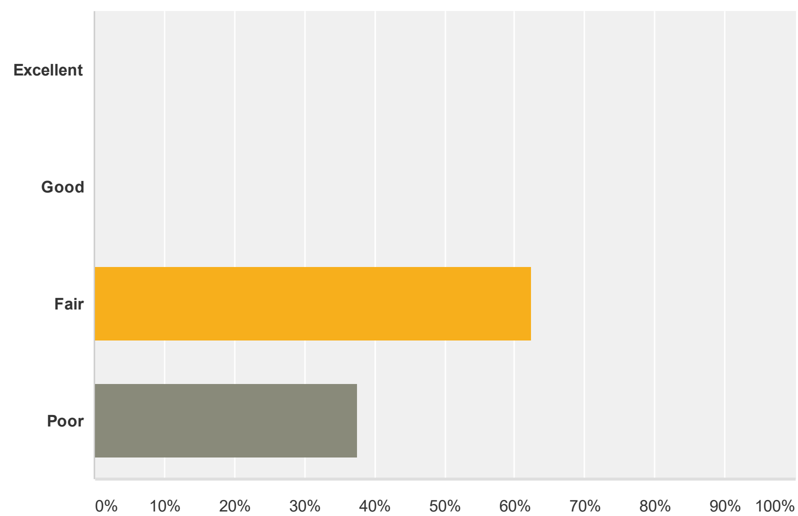
Answer Choices	Responses	
Strongly agree	12.50%	2
Agree	31.25%	5
Disagree	31.25%	5
Strongly disagree	25.00%	4
Total		16

Q26

Customize Export

How would you rate overall walking conditions along Halcyon Road?

Answered: 16 Skipped: 1



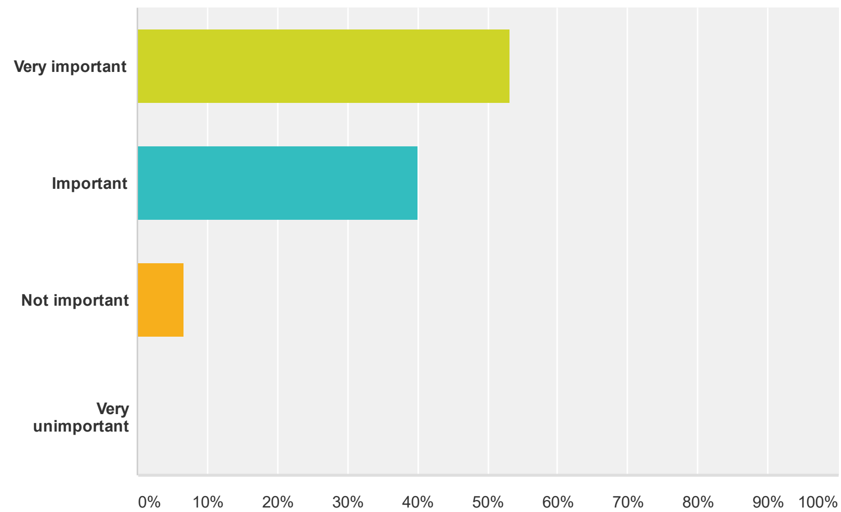
Answer Choices	Responses	
Excellent	0.00%	0
Good	0.00%	0
Fair	62.50%	10
Poor	37.50%	6
Total		16

Q27

Customize Export

How important is it to you to improve walking conditions along Halcyon Road?

Answered: 15 Skipped: 2



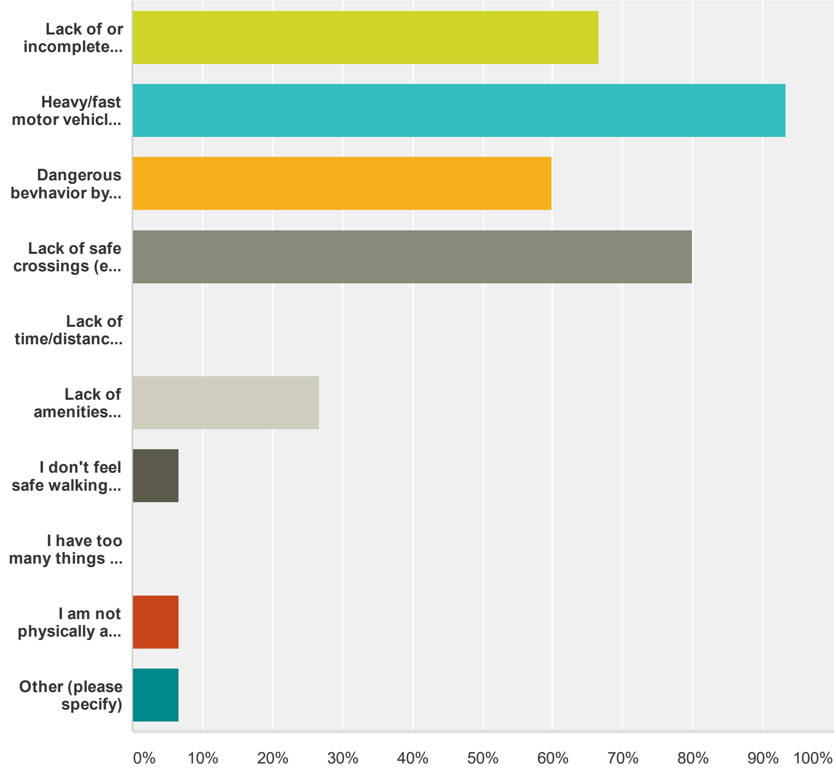
Answer Choices	Responses	
Very important	53.33%	8
Important	40.00%	6
Not important	6.67%	1
Very unimportant	0.00%	0
Total		15

Q28

Customize Export

What discourages you the most from walking along Halcyon Road? Please select up to five (5) factors.

Answered: 15 Skipped: 2

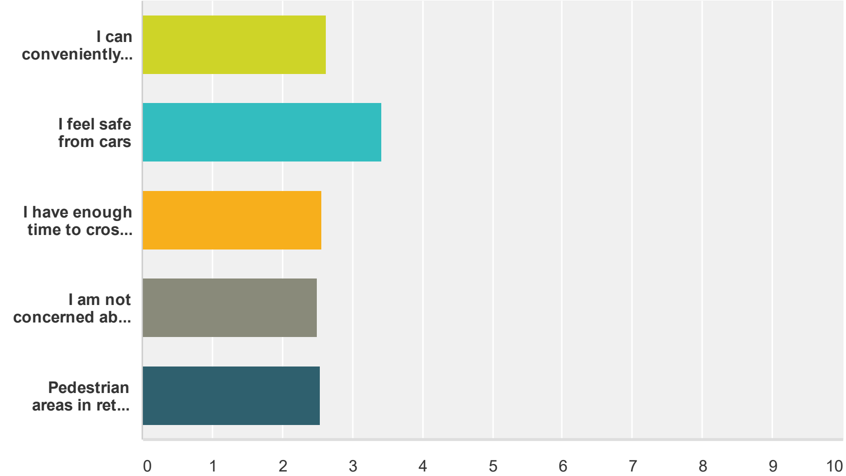


Answer Choices		Responses	
Lack of or incomplete sidewalks		66.67%	10
Heavy/fast motor vehicle traffic		93.33%	14
Dangerous bevhavior by people driving (e.g., speeding, not yielding, etc.)		60.00%	9
Lack of safe crossings (e.g. marked crosswalks or traffic signals)		80.00%	12
Lack of time/distance to walk is too far		0.00%	0
Lack of amenities (benches, trees/shade, streetlights)		26.67%	4
I don't feel safe walking (e.g. crime, personal safety)		6.67%	1
I have too many things to carry		0.00%	0
I am not physically able to walk		6.67%	1
Other (please specify)	Responses	6.67%	1
Total Respondents: 15			

Q29 Customize Export

Tell us about walking along Halcyon Road

Answered: 14 Skipped: 3



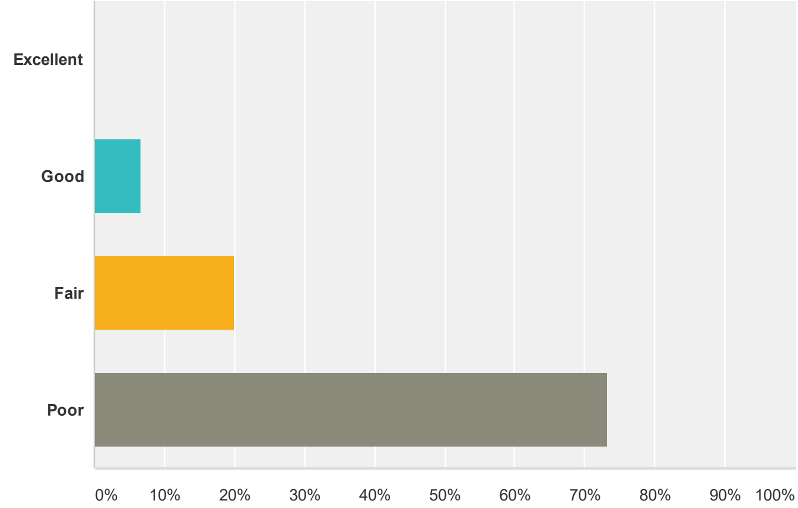
	Strongly agree	Agree	Disagree	Strongly disagree	Total	Weighted Average
I can conveniently walk where I want	0.00% 0	57.14% 8	21.43% 3	21.43% 3	14	2.64
I feel safe from cars	0.00% 0	14.29% 2	28.57% 4	57.14% 8	14	3.43
I have enough time to cross roads at traffic signals	0.00% 0	57.14% 8	28.57% 4	14.29% 2	14	2.57
I am not concerned about my safety (i.e., I feel safe from other people)	14.29% 2	42.86% 6	21.43% 3	21.43% 3	14	2.50
Pedestrian areas in retail or commercial areas are well lit	0.00% 0	53.85% 7	38.46% 5	7.69% 1	13	2.54

Q30

Customize Export

How would you rank overall biking conditions along Halcyon Road?

Answered: 15 Skipped: 2



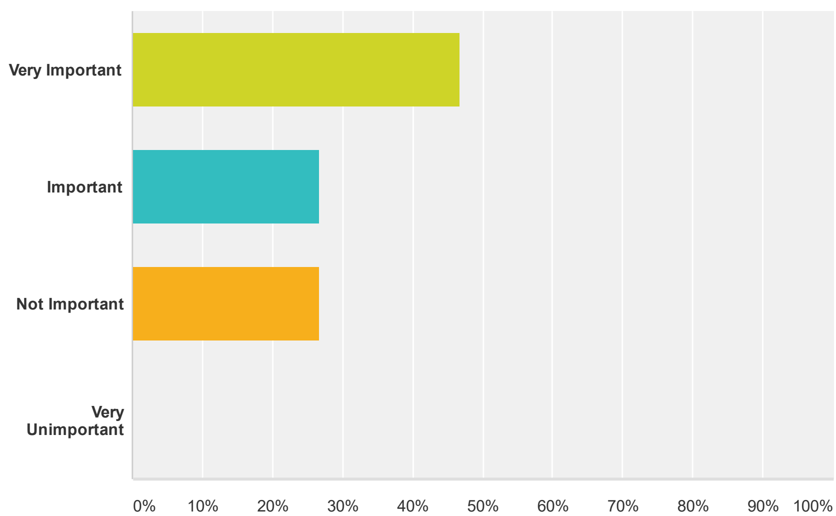
Answer Choices	Responses	
Excellent	0.00%	0
Good	6.67%	1
Fair	20.00%	3
Poor	73.33%	11
Total		15

Q31

Customize Export

How important is it to you to improve biking conditions along Halcyon Road?

Answered: 15 Skipped: 2



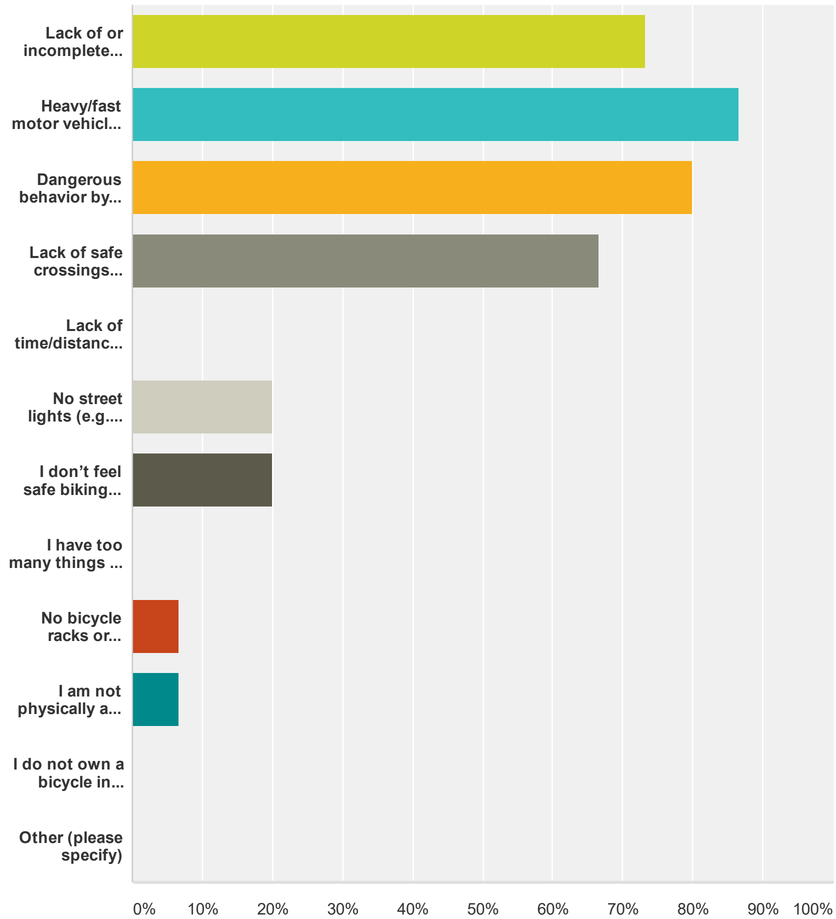
Answer Choices	Responses	
Very Important	46.67%	7
Important	26.67%	4
Not Important	26.67%	4
Very Unimportant	0.00%	0
Total		15

Q32

Customize Export

What discourages you most from biking along Halcyon Road? Please select up to five (5) factors.

Answered: 15 Skipped: 2



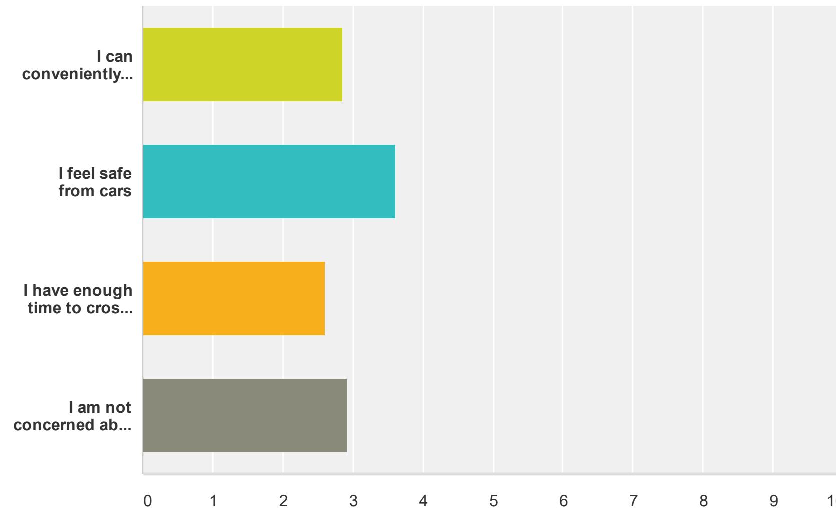
Answer Choices	Responses	
Lack of or incomplete bicycle route	73.33%	11
Heavy/fast motor vehicle traffic	86.67%	13
Dangerous behavior by people driving (e.g., speeding, not yielding, etc.)	80.00%	12
Lack of safe crossings (e.g., marked lanes or traffic signal detection)	66.67%	10
Lack of time/distance to bike is too far	0.00%	0
No street lights (e.g., too dark)	20.00%	3
I don't feel safe biking (e.g., crime, personal safety)	20.00%	3
I have too many things to carry	0.00%	0
No bicycle racks or insufficient bicycle parking at my destination	6.67%	1
I am not physically able to bike	6.67%	1
I do not own a bicycle in working condition	0.00%	0
Other (please specify) Responses	0.00%	0
Total Respondents: 15		

Q33

Customize Export

Tell us about biking along Halcyon Road

Answered: 13 Skipped: 4

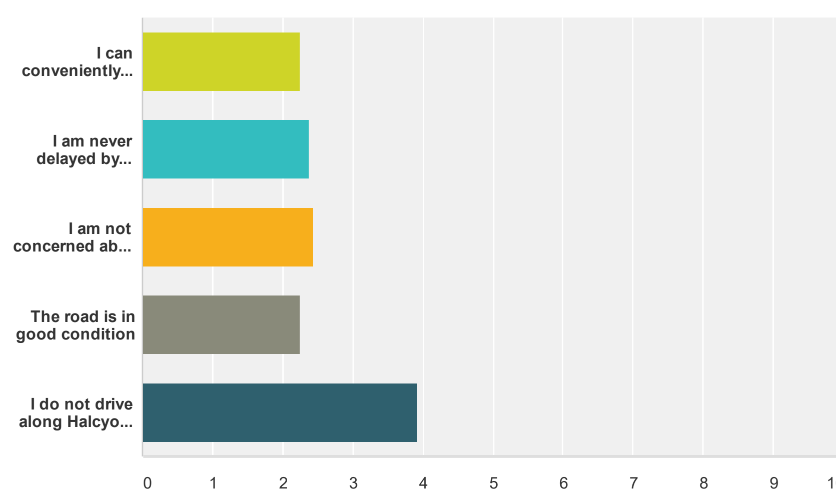


	Strongly agree	Agree	Disagree	Strongly disagree	Total	Weighted Average
I can conveniently bike where I want	7.69% 1	30.77% 4	30.77% 4	30.77% 4	13	2.85
I feel safe from cars	0.00% 0	0.00% 0	38.46% 5	61.54% 8	13	3.62
I have enough time to cross roads at traffic signals	0.00% 0	61.54% 8	15.38% 2	23.08% 3	13	2.62
I am not concerned about my safety (i.e., I feel safe from other people)	7.69% 1	30.77% 4	23.08% 3	38.46% 5	13	2.92

Q34 Customize Export

Tell us about driving along Halcyon Road

Answered: 16 Skipped: 1



	Strongly agree	Agree	Disagree	Strongly disagree	Total	Weighted Average
I can conveniently drive and park where I want along the corridor	18.75% 3	37.50% 6	43.75% 7	0.00% 0	16	2.25
I am never delayed by traffic or traffic signal timing along the corridor	18.75% 3	37.50% 6	31.25% 5	12.50% 2	16	2.38
I am not concerned about my safety (I feel safe)	12.50% 2	43.75% 7	31.25% 5	12.50% 2	16	2.44
The road is in good condition	0.00% 0	81.25% 13	12.50% 2	6.25% 1	16	2.25
I do not drive along Halcyon Road	0.00% 0	0.00% 0	8.33% 1	91.67% 11	12	3.92

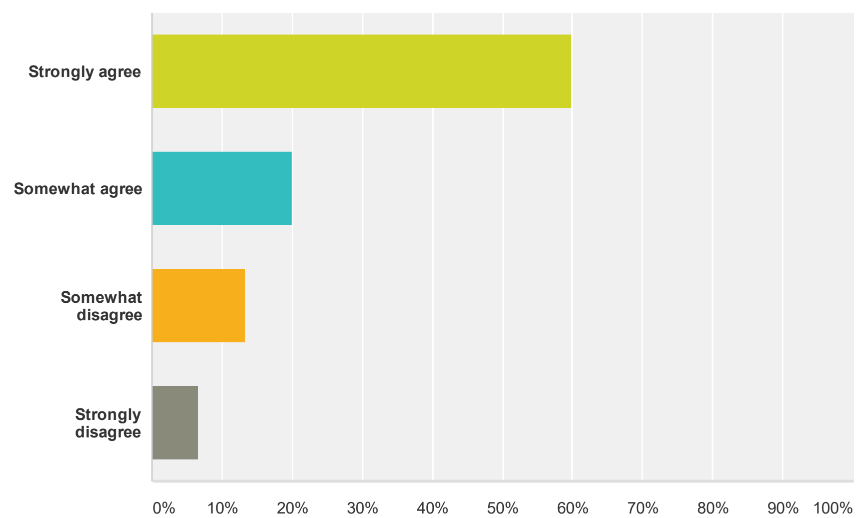
PAGE 5: Halcyon Road Potential Improvements

Q35

Customize Export

Do you agree or disagree (strongly/somewhat) with the statement, "I would like to walk along Halcyon Road more than I do now."

Answered: 15 Skipped: 2



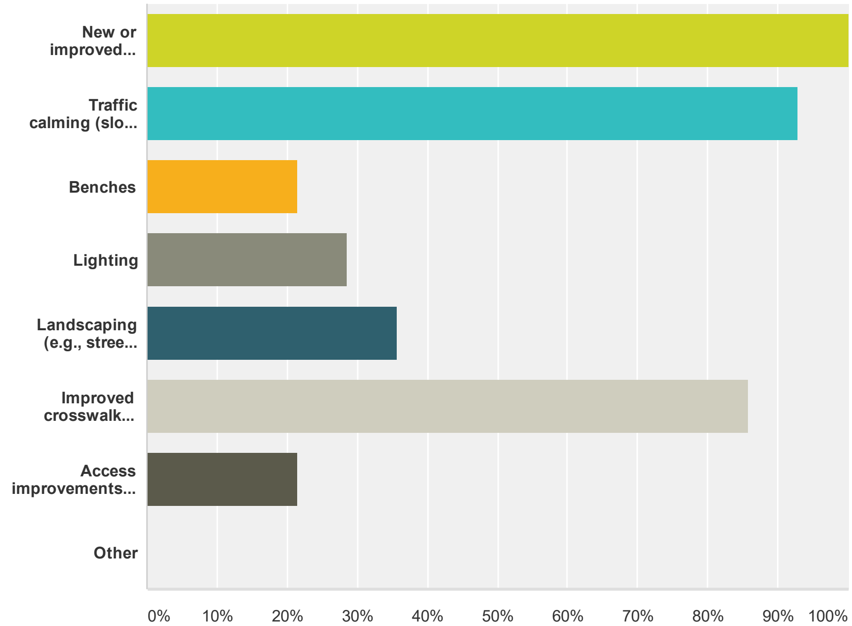
Answer Choices	Responses	
Strongly agree	60.00%	9
Somewhat agree	20.00%	3
Somewhat disagree	13.33%	2
Strongly disagree	6.67%	1
Total		15

Q36

Customize Export

What physical improvements would encourage you to walk more along Halcyon Road? Please select your top three.

Answered: 14 Skipped: 3



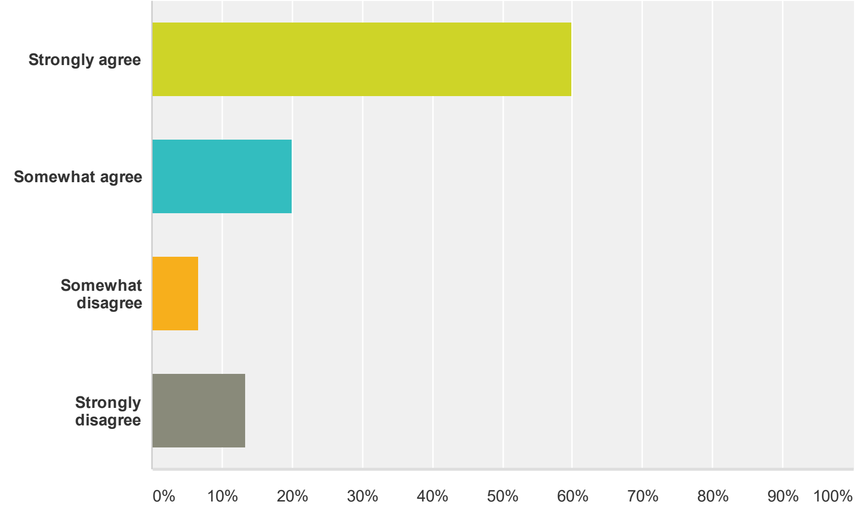
Answer Choices	Responses	
New or improved sidewalks	100.00%	14
Traffic calming (slower speeds)	92.86%	13
Benches	21.43%	3
Lighting	28.57%	4
Landscaping (e.g., street trees, planted areas)	35.71%	5
Improved crosswalk facilities	85.71%	12
Access improvements for people with limited mobility (ADA compliance)	21.43%	3
Other	0.00%	0
Total Respondents: 14		

Q37

Customize Export

Do you agree or disagree (strongly/somewhat) with the statement, "I would like to bike along Halcyon Road more than I do now."

Answered: 15 Skipped: 2



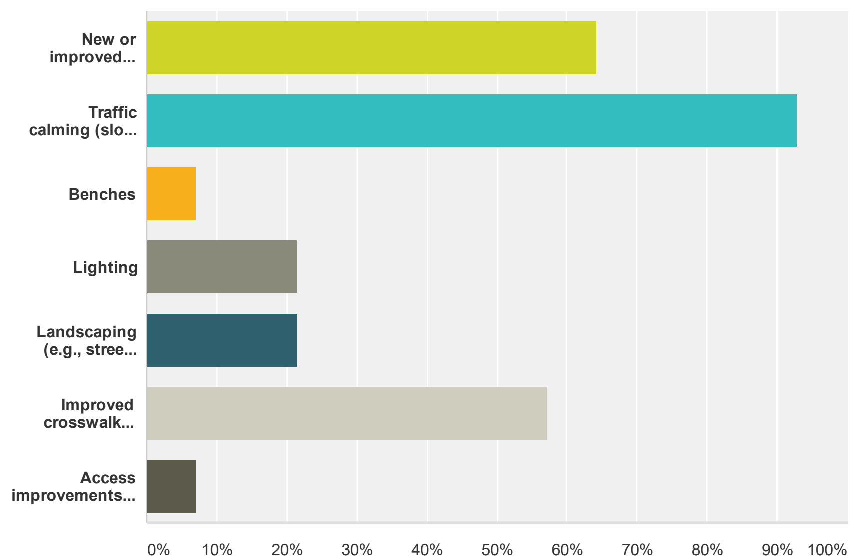
Answer Choices	Responses	
Strongly agree	**60.00%**	9
Somewhat agree	**20.00%**	3
Somewhat disagree	**6.67%**	1
Strongly disagree	**13.33%**	2
Total		15

Q38

Customize Export

What physical improvements would encourage you to bike more along Halcyon Road? Please select your top three.

Answered: 14 Skipped: 3



Answer Choices	Responses	
New or improved sidewalks	**64.29%**	9
Traffic calming (slower speeds)	**92.86%**	13
Benches	**7.14%**	1
Lighting	**21.43%**	3

Landscaping (e.g., street trees, planted areas)	21.43%	3
Improved crosswalk facilities	57.14%	8
Access improvements for people with limited mobility (ADA compliance)	7.14%	1

Total Respondents: 14

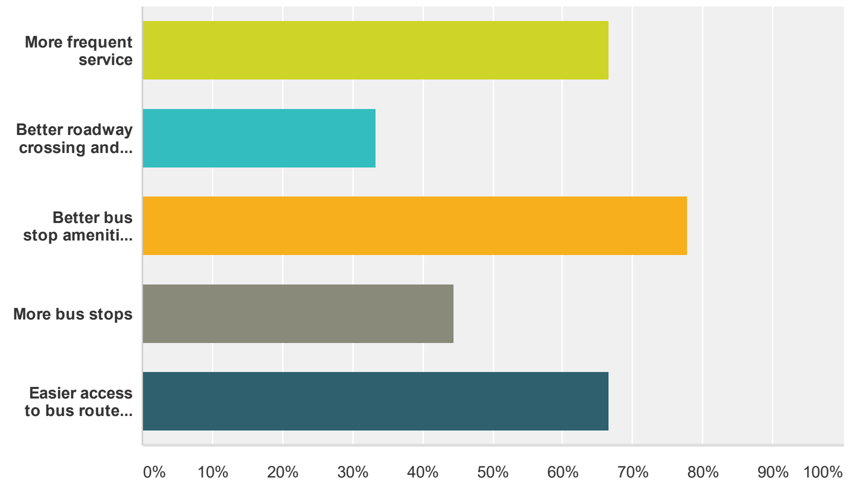
Comments (3)

Q39

Customize Export

What improvements would encourage you to take transit to/from Halcyon Road more often? Please select your top three.

Answered: 9 Skipped: 8



Answer Choices	Responses	
More frequent service	66.67%	6
Better roadway crossing and sidewalk access	33.33%	3
Better bus stop amenities (e.g., bus shelters, benches, lighting, landscaping)	77.78%	7
More bus stops	44.44%	4
Easier access to bus route information via website, cell phone, or LED reader board at bus stop	66.67%	6

Total Respondents: 9

Comments (0)

Appendix G

Cost Estimates

Preliminary Opinion of Costs (Capital & Support)

Halcyon Road - Context Zone 1

City of Arroyo Grande 10/12/2022

Construction Costs

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$50,000.00	$50,000.00
2	Remove Tree	EA	3	$2,000.00	$6,000.00
3	Remove Concrete (Curb & Gutter)	LF	700	$33.00	$23,100.00
4	Remove Concrete Sidewalk	SQFT	3450	$8.00	$27,600.00
5	Roadway Excavation	CY	180	$235.00	$42,300.00
6	Class 2 Aggregate Base	CY	230	$136.00	$31,280.00
7	Micro-Surfacing	SY	9644	$3.60	$34,720.00
8	Hot Mix Asphalt (Type A)	TON	120	$200.00	$24,000.00
9	Detectable Warning Surface	SQFT	135	$50.00	$6,750.00
10	Minor Concrete (Curb)	LF	65	$50.00	$3,250.00
11	Minor Concrete (Curb and Gutter)	LF	500	$54.00	$27,000.00
12	Minor Concrete (Curb Ramp)	SQFT	625	$18.00	$11,250.00
13	Minor Concrete (Sidewalk)	SQFT	5080	$12.00	$60,960.00
14	Minor Concrete (Driveway)	SQFT	250	$18.00	$4,500.00
15	Reconstruct Drainage Facility	LS	1	$25,000.00	$25,000.00
16	Pavement Marker (Retroreflective)	EA	65	$17.00	$1,106.77
17	Thermoplastic Traffic Stripe	LF	6250	$2.00	$12,500.00
18	Thermoplastic Pavement Marking	SQFT	2434	$8.00	$19,472.00
19	Signs	EA	13	$382.00	$4,966.00
20	Traffic Signal Replacement	EA	2	$500,000.00	$1,000,000.00
21	Planting and Irrigation	SQFT	0	$10.00	$0.00
22	Mobilization	LS	10%	$1,365,800.00	$142,830.00
23	Minor/ Supplemental Items	LS	25%	$1,365,800.00	$357,075.00
24	Adjust Utilities to Grade	LS	1	$62,500.00	$62,500.00
	Subtotal (Construction Costs)				$ 1,978,159.77
	Construction Contingency			25%	$ 357,063.69
	Total Construction Costs				**$ 2,335,223.46**
	Total Construction Budget (Rounded)				**$ 2,335,300.00**
Right of Way (Capital) and Utility Relocation Costs:					
1	Right Of Way	SQFT	2830	$20.00	$56,600.00
2	Utility Relocation (by Utility Owner)	ALLOW	0	$0.00	$0.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 56,600.00**
	Total Project Capital Cost				**$ 2,391,900.00**
Project Support Costs					
1	Environmental Clearance (CEQA/NEPA)		Capital Costs	5%	$ 119,600.00
2	PS&E		Con. Costs	12%	$ 280,300.00
3	Right of Way Engineering & Acquisition		3-Parcels	$15k/EA	$ 45,000.00
4	Construction Support and Management		Con. Costs	10%	$ 233,600.00
	Total Project Support Costs				**$ 678,500.00**
	Total Estimated Project Costs				**$ 3,070,400.00**
	Rounded				**$ 3,080,000.00**

Assumptions:

1. Existing power/utility poles located ouside the limits of the roundabout to remain in place.

Preliminary Opinion of Costs (Capital & Support)

Halcyon Road - Context Zone 2 (outside Roundabout Option)

City of Arroyo Grande 6/22/2018

0-Jan-1900

Construction Costs (*Outside Roundabout limits*)

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$50,000.00	$50,000.00
2	Remove Tree	EA	0	$2,000.00	$0.00
3	Remove Concrete (Curb & Gutter)	LF	110	$33.00	$3,630.00
4	Remove Concrete Sidewalk	SQFT	400	$8.00	$3,200.00
5	Roadway Excavation	CY	220	$235.00	$51,700.00
6	Class 2 Aggregate Base	CY	200	$136.00	$27,200.00
7	Micro-Surfacing	SY	15133	$3.60	$54,480.00
8	Hot Mix Asphalt (Type A)	TON	170	$200.00	$34,000.00
9	Retaiing Wall	SQFT	0	$90.00	$0.00
10	Detectable Warning Surface	SQFT	150	$50.00	$7,500.00
11	Minor Concrete (Curb)	LF	595	$50.00	$29,750.00
12	Minor Concrete (Curb and Gutter)	LF	340	$54.00	$18,360.00
13	Minor Concrete (Curb Ramp)	SQFT	615	$18.00	$11,070.00
14	Minor Concrete (Sidewalk)	SQFT	2080	$12.00	$24,960.00
15	Minor Concrete (Driveway)	SQFT	0	$18.00	$0.00
16	Minor Concrete (Miscellaneous Construction)	SQFT	630	$20.00	$12,600.00
17	Reconstruct Drainage Facility	LS	1	$25,000.00	$25,000.00
18	Pavement Marker (Retroreflective)	EA	124	$17.00	$2,108.40
19	Thermoplastic Traffic Stripe	LF	11906	$2.00	$23,812.50
20	Thermoplastic Pavement Marking	SQFT	2098	$8.00	$16,784.00
21	Signs	EA	10	$382.00	$3,820.00
22	Lighting System	LS	0	$0.00	$0.00
23	Planting and Irrigation	SQFT	1265	$10.00	$12,650.00
24	Mobilization	LS	10%	$425,200.00	$42,520.00
25	Minor/ Supplemental Items	LS	25%	$425,200.00	$106,300.00
26	Adjust Utilities to Grade	LS	1	$62,500.00	$62,500.00
	Subtotal (Construction Costs)				$ 623,944.90
	Construction Contingency			25%	$ 106,281.22
	Total Construction Costs				**$ 730,226.12**
	Total Construction Budget (Rounded)				**$ 730,300.00**
Right of Way (Capital) and Utility Relocation Costs (Outside Roundabout Limits)					
1	Right Of Way	SQFT	1050	$20.00	$21,000.00
2	Utility Relocation (by Utility Owner)	ALLOW	0	$0.00	$0.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 21,000.00**
	Total Project Capital Cost				**$ 751,300.00**
Project Support Costs (*Outside Roundabout Limits*)					
1	Environmental Clearance (CEQA/NEPA)		Capital Costs	5%	$ 37,600.00
2	PS&E		Con. Costs	12%	$ 87,700.00
3	Right of Way Engineering & Acquisition		2-Parcels	$15k/EA	$ 30,000.00
4	Construction Support and Management		Con. Costs	10%	$ 73,100.00
	Total Project Support Costs				**$ 228,400.00**
	Total Estimated Project Costs				**$ 979,700.00**
	Rounded				**$ 980,000.00**

Assuptions:

1. Existing power/utility poles located outside the limits of the roundabout to remain in place.

Preliminary Opinion of Costs (Capital & Support)

Fair Oaks Avenue / Halcyon Road Intersection Alt with Road Diet - Context Zone 2

City of Arroyo Grande 10/12/2022

Construction Costs (*Signal only*)

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$100,000.00	$100,000.00
2	Remove Tree	EA	3	$2,000.00	$6,000.00
3	Remove Concrete (Curb & Gutter)	LF	291	$33.00	$9,592.77
4	Remove Concrete Sidewalk	SQFT	2000	$8.00	$16,000.00
5	Roadway Excavation	CY	120	$235.00	$28,200.00
6	Class 2 Aggregate Base	CY	100	$136.00	$13,600.00
7	Micro-Surfacing	SY	6155	$3.60	$22,159.47
8	Hot Mix Asphalt (Type A)	TON	70	$200.00	$14,000.00
9	Retaining Wall	SQFT	0	$120.00	$0.00
10	Detectable Warning Surface	SQFT	113	$50.00	$5,646.50
11	Minor Concrete (Curb)	LF	0	$50.00	$0.00
12	Minor Concrete (Curb - Ramp)	SQFT	420	$18.00	$7,560.00
13	Minor Concrete (Curb and Gutter)	LF	286	$54.00	$15,419.16
14	Minor Concrete (Stamped Concrete - Truck Apron)	CY	0	$1,200.00	$0.00
15	Minor Concrete (Sidewalk)	SQFT	1330	$12.00	$15,965.49
16	Minor Concrete (Cross Gutter)	SQFT	0	$25.00	$0.00
17	Minor Concrete (Driveway)	SQFT	0	$18.00	$0.00
18	Drainage Facilities	LS	1	$40,000.00	$40,000.00
19	Thermoplastic Traffic Stripe	LF	6634	$2.00	$13,267.28
20	Thermoplastic Pavement Marking	SQFT	5925	$8.00	$47,397.89
21	Signs	EA	12	$382.00	$4,584.00
22	Traffic Signal replacement	EA	1	$500,000.00	$500,000.00
23	Planting and Irrigation	SQFT	0	$10.00	$0.00
24	Mobilization	LS	10%	$809,400.00	$80,940.00
25	Minor/ Supplemental Items	%	25%	$809,400.00	$202,350.00
26	Adjust Utilities	LS	1	$50,000.00	$50,000.00
26	Relocate Backflow and Water Meter	EA	0	$30,000.00	$0.00
	Subtotal (Construction Costs)				$ 1,192,682.56
	Construction Contingency			25%	$ 298,170.64
	Total Construction Costs				**$ 1,490,853.20**
	Total Construction Budget (Rounded)				**$ 1,490,900.00**
Right of Way (Capital) and Utility Relocation Costs (Signal Only):					
1	Right Of Way	SQFT	100	$20.00	$2,000.00
2	Utility Relocation (by Utility Owner)	ALLOW	0	$300,000.00	$0.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 2,000.00**
	Total Project Capital Cost				**$ 1,492,900.00**
Project Support Costs (*Roundabout Only*)					
1	Environmental Clearance (CEQA/NEPA)		Capital Costs	5%	$ 74,700.00
2	PS&E		Con. Costs	7.5%	$ 111,900.00
3	Right of Way Engineering & Acquisition		1-parcel	$15k/EA	$ 15,000.00
4	Construction Support and Management		Con. Costs	10%	$ 149,100.00
	Total Project Support Costs				**$ 350,700.00**
	Total Estimated Project Costs				**$ 1,843,600.00**
	Rounded				**$ 1,850,000.00**

Preliminary Opinion of Costs (Capital & Support)

Fair Oaks Avenue / Halcyon Road ROUNDABOUT - Context Zone 2

City of Arroyo Grande 5/16/2022

0-Jan-1900

Construction Costs (*Roundabout only*) *updated 6/22/18_DZ*

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$200,000.00	$200,000.00
2	Remove Tree	EA	9	$2,000.00	$18,000.00
3	Remove Concrete (Curb & Gutter)	LF	1410	$33.00	$46,530.00
4	Remove Concrete Sidewalk	SQFT	7640	$8.00	$61,120.00
5	Roadway Excavation	CY	1620	$235.00	$380,700.00
6	Class 2 Aggregate Base	CY	1130	$136.00	$153,680.00
7	Hot Mix Asphalt (Type A)	TON	930	$200.00	$186,000.00
9	Detectable Warning Surface	SQFT	480	$50.00	$24,000.00
10	Minor Concrete (Curb)	LF	1040	$50.00	$51,995.50
11	Minor Concrete (Curb - Truck Apron)	CY	14	$700.00	$9,800.00
12	Minor Concrete (Curb and Gutter)	LF	1344	$54.00	$72,570.06
13	Minor Concrete (Stamped Concrete - Truck Apron)	CY	50	$1,200.00	$60,000.00
14	Minor Concrete (Sidewalk)	SQFT	10986	$12.00	$131,836.44
15	Minor Concrete (Bus Pad)	SQFT	1639	$25.00	$40,985.25
16	Minor Concrete (Driveway)	SQFT	388	$18.00	$6,978.06
17	Reconstruct Drainage Facility	LS	1	$75,000.00	$75,000.00
18	Thermoplastic Traffic Stripe	LF	6300	$2.00	$12,600.00
19	Thermoplastic Pavement Marking	SQFT	244	$8.00	$1,952.00
20	Signs	EA	50	$382.00	$19,100.00
21	Lighting System	LS	1	$112,500.00	$112,500.00
22	Planting and Irrigation	SQFT	10400	$10.00	$104,000.00
23	Mobilization	LS	10%	$1,631,900.00	$163,190.00
24	Minor/ Supplemental Items	LS	25%	$1,631,900.00	$407,975.00
25	Adjust Utilities to Grade	LS	1	$62,500.00	$62,500.00
	Subtotal (Construction Costs)				$ 2,403,012.31
	Construction Contingency			25%	$ 407,961.83
	Total Construction Costs				**$ 2,810,974.14**
	Total Construction Budget (Rounded)				**$ 2,811,000.00**
Right of Way (Capital) and Utility Relocation Costs (Roundabout Only):					
1	Right Of Way	SQFT	9260	$20.00	$185,200.00
2	Utility Relocation (by Utility Owner)	ALLOW	1	$200,000.00	$200,000.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 385,200.00**
	Total Project Capital Cost				**$ 3,196,200.00**
Project Support Costs (*Roundabout Only*)					
1	Environmental Clearance (CEQA/NEPA)		Capital Costs	5%	$ 159,900.00
2	PS&E		Con. Costs	7.5%	$ 210,900.00
3	Right of Way Engineering & Acquisition		4-Parcels	$15k/EA	$ 60,000.00
4	Construction Support and Management		Con. Costs	10%	$ 281,100.00
	Total Project Support Costs				**$ 711,900.00**
	Total Estimated Project Costs				**$ 3,908,100.00**
	Rounded				**$ 3,910,000.00**

Preliminary Opinion of Costs (Capital & Support)

Halcyon Road - Context Zone 3

City of Arroyo Grande 5/16/2022

Construction Costs

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$42,000.00	$42,000.00
2	Remove Tree	EA	4	$2,000.00	$8,000.00
3	Remove Concrete (Curb & Gutter)	LF	750	$33.00	$24,750.00
4	Remove Concrete Sidewalk	SQFT	3270	$8.00	$26,160.00
5	Roadway Excavation	CY	190	$235.00	$44,650.00
6	Class 2 Aggregate Base	CY	290	$136.00	$39,440.00
7	Micro-Surfacing	SY	12134	$3.60	$43,681.96
8	Hot Mix Asphalt (Type A)	TON	140	$200.00	$28,000.00
9	Retaining Wall	SQFT	1250	$120.00	$150,000.00
10	Detectable Warning Surface	SQFT	276	$50.00	$13,800.00
11	Minor Concrete (Curb)	LF	710	$50.00	$35,500.00
12	Minor Concrete (Curb and Gutter)	LF	805	$54.00	$43,470.00
13	Minor Concrete (Curb Ramp)	SQFT	5600	$18.00	$100,800.00
14	Minor Concrete (Sidewalk)	SQFT	4583	$12.00	$54,996.00
15	Minor Concrete (Driveway)	SQFT	347	$18.00	$6,246.00
16	Minor Concrete (Miscellaneous Construction)	SQFT	1400	$20.00	$28,000.00
17	Reconstruct Drainage Facility	LS	1	$45,000.00	$45,000.00
18	Pavement Marker (Retroreflective)	EA	96	$17.00	$1,632.00
19	Thermoplastic Traffic Stripe	LF	9203	$2.00	$18,406.00
20	Thermoplastic Pavement Marking	SQFT	3075	$8.00	$24,602.00
21	Signs	EA	12	$382.00	$4,584.00
22	Signals/Lighting - Rapid Flashing Beacons	LS	2	$7,500.00	$15,000.00
23	Planting and Irrigation	SQFT	1940	$10.00	$19,400.00
24	Mobilization	LS	10%	$832,200.00	$83,220.00
25	Minor/ Supplemental Items	LS	25%	$832,200.00	$208,050.00
26	Adjust Utilities to Grade	LS	1	$56,000.00	$56,000.00
	Subtotal (Construction Costs)				$ 1,165,387.96
	Construction Contingency			25%	$ 208,029.49
	Total Construction Costs				**$ 1,373,417.46**
	Total Construction Budget (Rounded)				**$ 1,373,500.00**
Right of Way (Capital) and Utility Relocation Costs:					
1	Right Of Way	SQFT	1400	$20.00	$28,000.00
2	Utility Relocation (by Utility Owner)	ALLOW	0	$0.00	$0.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 28,000.00**
	Total Project Capital Cost				**$ 1,401,500.00**
Project Support Costs					
1	Environmental Clearance (CEQA/NEPA)		Capital Costs	5%	$ 70,100.00
2	PS&E		Con. Costs	12%	$ 164,900.00
3	Right of Way Engineering & Acquisition		2-Parcels	$15k/EA	$ 30,000.00
4	Construction Support and Management		Con. Costs	10%	$ 137,400.00
	Total Project Support Costs				**$ 402,400.00**
	Total Estimated Project Costs				**$ 1,803,900.00**
	Rounded				**$ 1,810,000.00**

Assuptions:

1. Existing power/utility poles located outside the limits of the Roundabout to remain in place.

Preliminary Opinion of Costs (Capital Only)

Halcyon Road - Context Zone 3 - Fair Oaks to Virginia for SLOCOG CBG

City of Arroyo Grande

5/5/2022

Construction Costs Only:

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$ 42,000.00	$ 42,000.00
2	Remove Tree	EA	0	$ 2,000.00	$ -
3	Remove Concrete (Curb & Gutter)	LF	750	$ 33.00	$ 24,750.00
4	Remove Concrete Sidewalk	SQFT	3270	$ 8.00	$ 26,160.00
5	Roadway Excavation	CY	130	$ 235.00	$ 30,550.00
6	Class 2 Aggregate Base	CY	170	$ 136.00	$ 23,120.00
7	Micro-Surfacing	SY	12134	$ 3.60	$ 43,682.40
8	Hot Mix Asphalt (Type A)	TON	100	$ 200.00	$ 20,000.00
9	Retaining Wall	SQFT	0	$ 120.00	$ -
10	Detectable Warning Surface	SQFT	216	$ 50.00	$ 10,800.00
11	Minor Concrete (Curb)	LF	710	$ 50.00	$ 35,500.00
12	Minor Concrete (Curb and Gutter)	LF	148	$ 54.00	$ 7,992.00
13	Minor Concrete (Curb Ramp)	SQFT	3850	$ 18.00	$ 69,300.00
14	Minor Concrete (Sidewalk)	SQFT	105	$ 12.00	$ 1,260.00
15	Minor Concrete (Driveway)	SQFT	0	$ 18.00	$ -
16	Minor Concrete (Cross Gutters)	SQFT	1400	$ 20.00	$ 28,000.00
17	Storm Drain System	LS	1	$ 20,000.00	$ 20,000.00
18	Pavement Marker (Retroreflective)	EA	69	$ 17.00	$ 1,173.00
19	Thermoplastic Traffic Stripe	LF	7000	$ 2.00	$ 14,000.00
20	Thermoplastic Pavement Marking	SQFT	1750	$ 8.00	$ 14,000.00
21	Signs	EA	10	$ 382.00	$ 3,820.00
22	Rapid Flashing Beacons	LS	2	$ 7,500.00	$ 15,000.00
23	Median Zero Scape	SQFT	1940	$ 10.00	$ 19,400.00
24	Mobilization	LS	10%	$ 408,500.00	$ 40,850.00
25	Minor/ Supplemental Items	LS	25%	$ 408,500.00	$ 102,125.00
26	Adjust Covers	LS	1	$ 6,000.00	$ 6,000.00
	Subtotal (Construction Costs)				$ 599,482.40
	Construction Contingency			25%	$ 149,870.60
	Construction Support (CE)			0%	$ -
	Total Construction & Support				**$ 749,353.00**
	Total Construction Budget (Rounded)				**$ 749,400.00**

Assuptions:

1. Construction Support Not Included

Appendix H

LOS and Queue Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	179	28	164	170	212	19	523	185	151	236	38
Future Volume (veh/h)	58	179	28	164	170	212	19	523	185	151	236	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	236	30	216	224	51	25	688	209	199	311	39
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	98	304	39	255	515	425	47	877	266	248	1400	174
Arrive On Green	0.06	0.19	0.19	0.14	0.28	0.28	0.03	0.33	0.33	0.14	0.44	0.44
Sat Flow, veh/h	1781	1623	206	1781	1870	1544	1781	2677	813	1781	3180	395
Grp Volume(v), veh/h	76	0	266	216	224	51	25	457	440	199	173	177
Grp Sat Flow(s),veh/h/ln	1781	0	1829	1781	1870	1544	1781	1777	1714	1781	1777	1798
Q Serve(g_s), s	3.5	0.0	11.5	9.8	8.2	2.1	1.1	19.3	19.3	9.0	5.0	5.1
Cycle Q Clear(g_c), s	3.5	0.0	11.5	9.8	8.2	2.1	1.1	19.3	19.3	9.0	5.0	5.1
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.47	1.00		0.22
Lane Grp Cap(c), veh/h	98	0	343	255	515	425	47	582	561	248	782	792
V/C Ratio(X)	0.77	0.00	0.78	0.85	0.44	0.12	0.53	0.78	0.78	0.80	0.22	0.22
Avail Cap(c_a), veh/h	355	0	574	355	587	485	678	646	623	678	782	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	32.0	34.6	24.7	22.5	39.8	25.2	25.2	34.5	14.4	14.4
Incr Delay (d2), s/veh	4.8	0.0	1.4	9.7	0.2	0.0	10.8	7.5	7.7	7.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	5.1	4.8	3.5	0.7	0.6	9.1	8.8	4.3	2.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.4	0.0	33.4	44.3	24.9	22.5	50.6	32.7	32.9	41.7	14.7	14.7
LnGrp LOS	D	A	C	D	C	C	D	C	C	D	B	B
Approach Vol, veh/h		342			491			922			549	
Approach Delay, s/veh		35.6			33.2			33.3			24.5	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	32.0	8.1	27.7	5.7	41.4	15.3	20.4
Change Period (Y+Rc), s	3.5	4.9	3.5	4.9	3.5	4.9	3.5	* 4.9
Max Green Setting (Gmax), s	31.5	30.1	16.5	26.0	31.5	30.1	16.5	* 26
Max Q Clear Time (g_c+I1), s	11.0	21.3	5.5	10.2	3.1	7.1	11.8	13.5
Green Ext Time (p_c), s	0.7	5.9	0.1	0.8	0.1	4.0	0.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	31.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	124	17	205	181	98	18	286	172	117	487	45
Future Volume (veh/h)	28	124	17	205	181	98	18	286	172	117	487	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	128	14	211	187	32	19	295	103	121	502	41
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	226	25	269	475	391	42	676	231	166	1101	90
Arrive On Green	0.03	0.14	0.14	0.15	0.25	0.25	0.02	0.26	0.26	0.09	0.33	0.33
Sat Flow, veh/h	1781	1652	181	1781	1870	1540	1781	2590	884	1781	3327	271
Grp Volume(v), veh/h	29	0	142	211	187	32	19	200	198	121	267	276
Grp Sat Flow(s),veh/h/ln	1781	0	1833	1781	1870	1540	1781	1777	1697	1781	1777	1821
Q Serve(g_s), s	0.7	0.0	3.4	5.3	3.9	0.7	0.5	4.4	4.6	3.1	5.6	5.6
Cycle Q Clear(g_c), s	0.7	0.0	3.4	5.3	3.9	0.7	0.5	4.4	4.6	3.1	5.6	5.6
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.52	1.00		0.15
Lane Grp Cap(c), veh/h	60	0	250	269	475	391	42	464	443	166	588	603
V/C Ratio(X)	0.49	0.00	0.57	0.79	0.39	0.08	0.46	0.43	0.45	0.73	0.45	0.46
Avail Cap(c_a), veh/h	627	0	1017	627	1037	854	1197	1141	1090	1197	1141	1169
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	18.9	19.2	14.5	13.3	22.6	14.4	14.5	20.7	12.4	12.4
Incr Delay (d2), s/veh	2.3	0.0	0.8	1.9	0.2	0.0	9.1	1.5	1.7	7.2	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.3	2.1	1.4	0.2	0.3	1.8	1.8	1.5	2.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.5	0.0	19.7	21.1	14.7	13.4	31.7	15.9	16.1	27.9	13.6	13.6
LnGrp LOS	C	A	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		171			430			417			664	
Approach Delay, s/veh		20.5			17.7			16.7			16.2	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	17.1	5.1	16.8	4.6	20.4	10.6	11.3
Change Period (Y+Rc), s	3.5	4.9	3.5	4.9	3.5	4.9	3.5	* 4.9
Max Green Setting (Gmax), s	31.5	30.1	16.5	26.0	31.5	30.1	16.5	* 26
Max Q Clear Time (g_c+I1), s	5.1	6.6	2.7	5.9	2.5	7.6	7.3	5.4
Green Ext Time (p_c), s	0.4	4.9	0.0	0.7	0.0	6.5	0.2	0.4

Intersection Summary	
HCM 6th Ctrl Delay	17.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	185	30	180	175	225	20	575	200	165	255	40
Future Volume (veh/h)	60	185	30	180	175	225	20	575	200	165	255	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	243	32	237	230	68	26	757	229	217	336	42
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	304	40	272	531	438	47	868	263	264	1417	176
Arrive On Green	0.06	0.19	0.19	0.15	0.28	0.28	0.03	0.32	0.32	0.15	0.45	0.45
Sat Flow, veh/h	1781	1615	213	1781	1870	1545	1781	2680	811	1781	3181	394
Grp Volume(v), veh/h	79	0	275	237	230	68	26	502	484	217	186	192
Grp Sat Flow(s),veh/h/ln	1781	0	1828	1781	1870	1545	1781	1777	1714	1781	1777	1798
Q Serve(g_s), s	3.9	0.0	12.9	11.7	9.0	3.0	1.3	23.9	23.9	10.6	5.8	5.9
Cycle Q Clear(g_c), s	3.9	0.0	12.9	11.7	9.0	3.0	1.3	23.9	23.9	10.6	5.8	5.9
Prop In Lane	1.00		0.12	1.00		1.00	1.00		0.47	1.00		0.22
Lane Grp Cap(c), veh/h	102	0	344	272	531	438	47	576	555	264	791	801
V/C Ratio(X)	0.77	0.00	0.80	0.87	0.43	0.16	0.55	0.87	0.87	0.82	0.24	0.24
Avail Cap(c_a), veh/h	327	0	529	327	541	447	624	595	574	624	791	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	0.0	34.9	37.2	26.3	24.1	43.2	28.6	28.6	37.2	15.4	15.5
Incr Delay (d2), s/veh	4.6	0.0	2.4	16.9	0.2	0.1	11.5	14.4	14.8	7.6	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	5.9	6.3	4.0	1.1	0.7	12.2	11.9	5.1	2.4	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	0.0	37.3	54.1	26.5	24.2	54.7	43.0	43.5	44.7	15.8	15.8
LnGrp LOS	D	A	D	D	C	C	D	D	D	D	B	B
Approach Vol, veh/h		354			535			1012			595	
Approach Delay, s/veh		39.3			38.4			43.5			26.4	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.8	34.0	8.7	30.4	5.9	45.0	17.3	21.8
Change Period (Y+Rc), s	3.5	4.9	3.5	4.9	3.5	4.9	3.5	* 4.9
Max Green Setting (Gmax), s	31.5	30.1	16.5	26.0	31.5	30.1	16.5	* 26
Max Q Clear Time (g_c+I1), s	12.6	25.9	5.9	11.0	3.3	7.9	13.7	14.9
Green Ext Time (p_c), s	0.7	3.2	0.1	0.8	0.1	4.3	0.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	37.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	130	0	225	185	115	20	335	190	135	475	45
Future Volume (veh/h)	30	130	0	225	185	115	20	335	190	135	475	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	134	0	232	191	37	21	345	132	139	490	41
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	238	0	289	476	392	45	707	266	190	1203	100
Arrive On Green	0.03	0.13	0.00	0.16	0.25	0.25	0.03	0.28	0.28	0.11	0.36	0.36
Sat Flow, veh/h	1781	1870	0	1781	1870	1540	1781	2517	946	1781	3320	277
Grp Volume(v), veh/h	31	134	0	232	191	37	21	242	235	139	262	269
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	1540	1781	1777	1686	1781	1777	1820
Q Serve(g_s), s	0.9	3.5	0.0	6.5	4.4	1.0	0.6	5.9	6.1	3.9	5.7	5.8
Cycle Q Clear(g_c), s	0.9	3.5	0.0	6.5	4.4	1.0	0.6	5.9	6.1	3.9	5.7	5.8
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.56	1.00		0.15
Lane Grp Cap(c), veh/h	62	238	0	289	476	392	45	499	474	190	644	659
V/C Ratio(X)	0.50	0.56	0.00	0.80	0.40	0.09	0.47	0.48	0.50	0.73	0.41	0.41
Avail Cap(c_a), veh/h	565	935	0	565	935	770	1079	1029	976	1079	1029	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	21.3	0.0	21.0	16.1	14.8	25.0	15.6	15.6	22.5	12.4	12.4
Incr Delay (d2), s/veh	2.3	0.8	0.0	2.0	0.2	0.0	8.9	1.7	1.9	6.4	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	0.0	2.6	1.7	0.3	0.4	2.4	2.4	1.8	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	22.1	0.0	23.0	16.3	14.8	33.9	17.3	17.5	28.9	13.4	13.4
LnGrp LOS	C	C	A	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		165			460			498			670	
Approach Delay, s/veh		23.0			19.5			18.1			16.6	
Approach LOS		C			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	19.5	5.3	18.1	4.8	23.7	11.9	11.5				
Change Period (Y+Rc), s	3.5	4.9	3.5	4.9	3.5	4.9	3.5	* 4.9				
Max Green Setting (Gmax), s	31.5	30.1	16.5	26.0	31.5	30.1	16.5	* 26				
Max Q Clear Time (g_c+I1), s	5.9	8.1	2.9	6.4	2.6	7.8	8.5	5.5				
Green Ext Time (p_c), s	0.5	5.8	0.0	0.7	0.0	6.3	0.2	0.4				

Intersection Summary		
HCM 6th Ctrl Delay		18.4
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	220	30	180	175	225	20	485	165	165	255	40
Future Volume (veh/h)	150	220	30	180	175	225	20	485	165	165	255	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	197	289	34	237	230	38	26	638	125	217	336	17
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	325	38	264	413	331	44	698	586	240	904	764
Arrive On Green	0.13	0.20	0.20	0.15	0.22	0.22	0.02	0.37	0.37	0.13	0.48	0.48
Sat Flow, veh/h	1781	1637	193	1781	1870	1499	1781	1870	1570	1781	1870	1582
Grp Volume(v), veh/h	197	0	323	237	230	38	26	638	125	217	336	17
Grp Sat Flow(s),veh/h/ln	1781	0	1830	1781	1870	1499	1781	1870	1570	1781	1870	1582
Q Serve(g_s), s	12.5	0.0	19.8	15.1	12.6	2.3	1.7	37.4	6.2	13.8	13.0	0.6
Cycle Q Clear(g_c), s	12.5	0.0	19.8	15.1	12.6	2.3	1.7	37.4	6.2	13.8	13.0	0.6
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	0	363	264	413	331	44	698	586	240	904	764
V/C Ratio(X)	0.88	0.00	0.89	0.90	0.56	0.11	0.60	0.91	0.21	0.91	0.37	0.02
Avail Cap(c_a), veh/h	227	0	413	271	463	371	85	732	615	240	904	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	44.9	48.2	39.9	35.9	55.6	34.4	24.6	49.1	18.8	15.6
Incr Delay (d2), s/veh	28.7	0.0	17.7	28.5	0.4	0.1	14.6	16.8	0.4	34.2	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.0	10.7	8.8	5.8	0.9	0.9	20.1	2.4	8.4	5.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.2	0.0	62.6	76.7	40.3	35.9	70.3	51.1	25.0	83.4	19.4	15.6
LnGrp LOS	E	A	E	E	D	D	E	D	C	F	B	B
Approach Vol, veh/h		520			505			789			570	
Approach Delay, s/veh		68.5			57.1			47.6			43.6	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	47.9	18.0	30.3	6.3	60.5	20.6	27.8
Change Period (Y+Rc), s	3.5	4.9	3.5	4.9	3.5	4.9	3.5	* 4.9
Max Green Setting (Gmax), s	15.5	45.1	14.7	28.5	5.5	55.1	17.5	* 26
Max Q Clear Time (g_c+I1), s	15.8	39.4	14.5	14.6	3.7	15.0	17.1	21.8
Green Ext Time (p_c), s	0.0	3.6	0.0	0.8	0.0	4.9	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	53.2
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	175	15	225	185	115	20	255	145	135	475	45
Future Volume (veh/h)	110	175	15	225	185	115	20	255	145	135	475	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	113	180	13	232	191	29	21	263	41	139	490	18
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	275	20	283	443	356	44	566	474	183	712	602
Arrive On Green	0.08	0.16	0.16	0.16	0.24	0.24	0.02	0.30	0.30	0.10	0.38	0.38
Sat Flow, veh/h	1781	1719	124	1781	1870	1505	1781	1870	1567	1781	1870	1581
Grp Volume(v), veh/h	113	0	193	232	191	29	21	263	41	139	490	18
Grp Sat Flow(s),veh/h/ln	1781	0	1843	1781	1870	1505	1781	1870	1567	1781	1870	1581
Q Serve(g_s), s	3.8	0.0	6.0	7.7	5.3	0.9	0.7	6.9	1.1	4.6	13.4	0.4
Cycle Q Clear(g_c), s	3.8	0.0	6.0	7.7	5.3	0.9	0.7	6.9	1.1	4.6	13.4	0.4
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	146	0	295	283	443	356	44	566	474	183	712	602
V/C Ratio(X)	0.77	0.00	0.65	0.82	0.43	0.08	0.48	0.46	0.09	0.76	0.69	0.03
Avail Cap(c_a), veh/h	430	0	787	512	875	704	161	1385	1160	453	1693	1431
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	24.0	24.8	19.8	18.1	29.3	17.2	15.2	26.6	15.8	11.8
Incr Delay (d2), s/veh	3.2	0.0	0.9	2.2	0.2	0.0	9.5	1.4	0.2	7.7	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	2.5	3.2	2.2	0.3	0.4	3.0	0.4	2.2	5.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	0.0	24.9	27.0	20.0	18.1	38.8	18.6	15.4	34.2	18.6	11.9
LnGrp LOS	C	A	C	C	B	B	D	B	B	C	B	B
Approach Vol, veh/h		306			452			325			647	
Approach Delay, s/veh		27.0			23.5			19.5			21.8	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	23.3	8.5	19.3	5.0	28.1	13.2	14.6
Change Period (Y+Rc), s	3.5	4.9	3.5	4.9	3.5	4.9	3.5	* 4.9
Max Green Setting (Gmax), s	15.5	45.1	14.7	28.5	5.5	55.1	17.5	* 26
Max Q Clear Time (g_c+I1), s	6.6	8.9	5.8	7.3	2.7	15.4	9.7	8.0
Green Ext Time (p_c), s	0.3	4.0	0.1	0.7	0.0	7.8	0.2	0.6

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 31: Halcyon Rd & Fair Oaks Ave

Movement	EB	EB	WB	WB	WB	NB	NB	NB	B66	B66	SB	SB
Directions Served	L	TR	L	T	R	L	T	TR	T	T	L	T
Maximum Queue (ft)	94	238	125	972	125	117	213	204	170	207	164	275
Average Queue (ft)	49	121	104	274	84	29	154	165	33	44	98	100
95th Queue (ft)	99	213	146	738	147	91	222	219	124	153	165	217
Link Distance (ft)		1278		1650			118	118	509	509		1126
Upstream Blk Time (%)						0	25	31				
Queuing Penalty (veh)						0	105	129				
Storage Bay Dist (ft)	70		70		100	85					100	
Storage Blk Time (%)	6	26	40	21	1	0	34				10	5
Queuing Penalty (veh)	14	16	165	89	5	0	7				14	9

Intersection: 31: Halcyon Rd & Fair Oaks Ave

Movement	SB
Directions Served	TR
Maximum Queue (ft)	96
Average Queue (ft)	13
95th Queue (ft)	61
Link Distance (ft)	1126
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 31: Halcyon Rd & Fair Oaks Ave

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	T	R
Maximum Queue (ft)	175	476	290	442	125	237	703	175	265	283	134
Average Queue (ft)	116	176	136	142	81	25	330	111	129	101	20
95th Queue (ft)	195	371	255	353	142	125	622	221	238	217	71
Link Distance (ft)		1279		1652			684			1598	
Upstream Blk Time (%)							1				
Queuing Penalty (veh)							9				
Storage Bay Dist (ft)	150		250		100	450		150	250		110
Storage Blk Time (%)	9	12	4	10	5		29	0	3	6	0
Queuing Penalty (veh)	26	20	18	45	21		57	1	11	14	0

Intersection: 31: Halcyon Rd & Fair Oaks Ave

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	T	R
Maximum Queue (ft)	149	225	252	262	125	56	269	175	203	294	135
Average Queue (ft)	74	96	140	96	52	19	117	57	81	170	34
95th Queue (ft)	135	178	228	186	118	48	211	128	154	279	120
Link Distance (ft)		1279		1652			684			1598	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	150		250		100	450		150	250		110
Storage Blk Time (%)	0	2	1	6	0		4	0	0	19	0
Queuing Penalty (veh)	1	3	3	19	0		6	0	0	35	0

LANE SUMMARY

Site: 1 [Halcyon Rd at Fair Oaks Ave_2040 AM Peak (Site Folder: RNDBT)]

Halcyon Rd at Fair Oaks Ave
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total	HV]	Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh	Dist]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: Halcyon Road													
Lane 1[d]	728	2.0	841	0.866	100	19.4	LOS B	15.1	382.4	Full	1600	0.0	0.0
Approach	728	2.0		0.866		19.4	LOS B	15.1	382.4				
East: Fair Oaks Avenue													
Lane 1[d]	444	2.0	936	0.474	100	11.1	LOS B	4.3	108.0	Full	1600	0.0	0.0
Lane 2	281	2.0	708	0.397	100	8.9	LOS A	2.9	73.4	Short	200	0.0	NA
Approach	725	2.0		0.474		10.2	LOS B	4.3	108.0				
North: Halcyon Road													
Lane 1[d]	575	2.0	986	0.583	100	9.6	LOS A	5.2	133.0	Full	1600	0.0	0.0
Approach	575	2.0		0.583		9.6	LOS A	5.2	133.0				
West: Fair Oaks Avenue													
Lane 1[d]	500	2.0	770	0.650	100	15.2	LOS B	7.0	177.7	Full	1600	0.0	0.0
Approach	500	2.0		0.650		15.2	LOS B	7.0	177.7				
Intersection	2528	2.0		0.866		13.7	LOS B	15.1	382.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Halcyon Road

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	22	527	179	728	2.0	841	0.866	100	NA	NA
Approach	22	527	179	728	2.0		0.866			

East: Fair Oaks Avenue

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	225	219	-	444	2.0	936	0.474	100	NA	NA

Lane 2	-	-	281	281	2.0	708	0.397	100	0.0	1
Approach	225	219	281	725	2.0		0.474			
North: Halcyon Road										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	206	319	50	575	2.0	986	0.583	100	NA	NA
Approach	206	319	50	575	2.0		0.583			
West: Fair Oaks Avenue										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	188	275	38	500	2.0	770	0.650	100	NA	NA
Approach	188	275	38	500	2.0		0.650			

	Total	%HV	Deg.Satn (v/c)
Intersection	2528	2.0	0.866

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Halcyon Road Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: Fair Oaks Avenue Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
North Exit: Halcyon Road Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: Fair Oaks Avenue Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 1 [Halcyon Rd at Fair Oaks Ave_2040 PM Peak (Site Folder: RNDBT)]

Halcyon Rd at Fair Oaks Ave
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total	HV]	Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh	Dist]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: Halcyon Road													
Lane 1[d]	457	2.0	969	0.471	100	7.1	LOS A	3.5	89.4	Full	1600	0.0	0.0
Approach	457	2.0		0.471		7.1	LOS A	3.5	89.4				
East: Fair Oaks Avenue													
Lane 1[d]	446	2.0	1262	0.353	100	8.9	LOS A	2.5	63.3	Full	1600	0.0	0.0
Lane 2	125	2.0	879	0.142	100	6.5	LOS A	0.8	19.7	Short	200	0.0	NA
Approach	571	2.0		0.353		8.4	LOS A	2.5	63.3				
North: Halcyon Road													
Lane 1[d]	712	2.0	978	0.728	100	12.0	LOS B	9.2	232.8	Full	1600	0.0	0.0
Approach	712	2.0		0.728		12.0	LOS B	9.2	232.8				
West: Fair Oaks Avenue													
Lane 1[d]	326	2.0	589	0.553	100	16.7	LOS B	5.3	135.1	Full	1600	0.0	0.0
Approach	326	2.0		0.553		16.7	LOS B	5.3	135.1				
Intersection	2065	2.0		0.728		10.7	LOS B	9.2	232.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Halcyon Road

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	22	277	158	457	2.0	969	0.471	100	NA	NA
Approach	22	277	158	457	2.0		0.471			

East: Fair Oaks Avenue

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	245	201	-	446	2.0	1262	0.353	100	NA	NA

Lane 2	-	-	125	125	2.0	879	0.142	100	0.0	1
Approach	245	201	125	571	2.0		0.353			
North: Halcyon Road										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	147	516	49	712	2.0	978	0.728	100	NA	NA
Approach	147	516	49	712	2.0		0.728			
West: Fair Oaks Avenue										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	120	190	16	326	2.0	589	0.553	100	NA	NA
Approach	120	190	16	326	2.0		0.553			

	Total	%HV	Deg.Satn (v/c)
Intersection	2065	2.0	0.728

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Halcyon Road Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
East Exit: Fair Oaks Avenue Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
North Exit: Halcyon Road Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: Fair Oaks Avenue Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

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