Item No. 13
Town of Atherton

CITY COUNCIL STAFF REPORT – REGULAR AGENDA

TO: **HONORABLE MAYOR AND CITY COUNCIL**
GEORGE RODERICKS, CITY MANAGER

THROUGH: **ROBERT OVADIA, PUBLIC WORKS DIRECTOR**

FROM: **MARTY HANNEMAN, INTERWEST CONSULTING ENGINEER**

DATE: **APRIL 17, 2019**

SUBJECT: **RECEIVE AND PROVIDE FEEDBACK ON ALAMEDA DE LAS PULGAS CORRIDOR STUDY AND LOCAL TRAFFIC FLOW/LONG RANGE PLANNING SOLUTIONS STUDY**

RECOMMENDATION

Receive and provide feedback on Alameda de las Pulgas Corridor study and Local Traffic Flow/Long Range Planning Solutions study.

BACKGROUND

The City Council has expressed concern regarding local and regional traffic flow utilizing the Town's roadway network. El Camino Real, Middlefield Road, Alameda de las Pulgas, Marsh Road, Atherton Avenue, Valparaiso Avenue, and Stockbridge Avenue are major streets frequently mentioned in complaints regarding by-pass traffic and speeding (list is not all inclusive). Other local residential streets are also impacted as drivers try to find ways around congested major roadways during peak hours. There are currently many large commercial and residential projects that are either being designed or under construction in adjacent communities that will further impact traffic flow in the Town of Atherton. Although the Town provides comments on a regional project's environmental impact reports (EIR), the Town has no jurisdiction to require mitigation impacts. The Town requested that staff engage a consultant to review the Alameda de las Pulgas Corridor and to conduct a Town-wide Traffic Mitigation Study.

At the October 4, 2017 City Council Study Session, staff presented a report requesting Council feedback on what additional issues a Request for Proposal (RFP) should include.

The Council provided the following feedback:

- The purpose of this study should be to learn what is going on with the traffic flows in Atherton to make informed decisions.
- The traffic study methodology should be able to capture the traffic flows accurately and assess the impact of cut through traffic.
- The use of cell-phone based Origin/Destination should be investigated.
- The study should investigate restrictions on turning movements onto local neighborhood streets.
- Consultant needs to incorporate existing and proposed development projects traffic in the Region that may impact traffic flow in Atherton.
- Conflict zones at or near local schools need to be included in the analysis.
- The RFP should clearly identify the expected final work product that should include recommendations and strategies that the Town can employ as solutions.
- Once complete, the Council needs to have a discussion on the goals for traffic patterns and potential restrictions and traffic calming measures that can be employed.
- The Town should use the data gathered to develop strategies to take stronger action on development projects in adjacent communities.
- Consultant should develop recommendations for the Towns Circulation Element of the General Plan to develop strategies to mitigate cut through traffic and address EIR comments.

On September 20, 2017 Council authorized staff to issue a Request for Proposal (RFP) to prepare a traffic study/safety analysis along the Alameda de las Pulgas corridor between Valparaiso Avenue and Woodside Road and on October 18, 2017, the Council authorized the issuance of the RFP for a Town wide study for planning solutions to address the Town's local traffic flow concerns.

On December 20, 2017 City Council authorized the City Attorney to prepare and the City Manager to execute professional services agreements with:

- Stantec Consulting Services Inc. for a not to exceed fee of $30,000 to perform traffic engineering services necessary to prepare a traffic study/safety analysis along the Alameda de las Pulgas corridor between Valparaiso Avenue and Woodside Road. This contract was later reassigned to Advanced Mobility Group (AMG) in March 2018.
- TJKM Transportation Consultants (TJKM), for a not to exceed fee of $55,000 to perform traffic engineering services and necessary for the completion of a Town wide local traffic flow / long range planning solutions study.

FINDINGS/ANALYSIS

On February 12, 2019, the Transportation Committee (TC) received a presentation on the Alameda de las Pulgas Corridor Traffic Study. The Study reviewed the existing conditions along Alameda de ls Pulgas and recommends several improvements along the corridor, both within Town limits and in neighboring jurisdictions. The recommendations included the installation of new signals or

round-a-bouts at Stockbridge Avenue and Atherton Avenue, a new signal at Camino al Lago to replace the existing signal south of the intersection, signal timing and phasing improvements at existing signals (outside of the town limits), bus stop relocations, green pavement markings in bike lanes, and other improvements. The AMG (Advanced Mobility Group) presented this study and received the following general feedback:

- The TC members generally agreed with the recommendations in the report for intersections within Atherton.
- For intersections outside of Atherton, the TC would like staff to reach out to those jurisdictions with the recommendations contained in the report.
- The priority will be the intersection of Alameda de las Pulgas and Atherton Avenue, except the TC would like the data adjusted for different sized roundabouts.
- The second priority will be the intersection of Alameda de las Pulgas and Stockbridge Avenue.
- The third priority will be the intersection of Alameda de las Pulgas and Camino Al Lago.

Also, on February 12, 2019, the TC received a presentation on the Local Traffic Flow/Long Range Planning Solutions Study from TJKM. The Study evaluated existing traffic operations and origin-destination patterns within Town and recommends short- and long-term measures for efficient circulation, improved operations and safety for all modes of transportation. The recommendations included: updating street functional classifications and describing their roles in serving key modes of travel: bicycle, motor vehicle, pedestrian and transit; updating general street design standards to incorporate complete streets components; suggested language for regarding impact criteria related to determining the significance of environmental impacts under CEQA; turning restrictions at key intersections along Alameda de las Pulgas, Valparaiso Avenue, and Middlefield Road; signalization and other improvements at the Alameda de las Pulgas/Atherton Avenue intersection, Middlefield Road at Fair Oaks Lane and Watkins, signal timing and other improvements.

<u>For the Alameda de las Pulgas corridor, the TC recommended as follows:</u>

- No support for Left-turn restrictions from southbound Alameda de las Pulgas to Stockbridge Avenue and Polhemus Avenue during the morning commute period.
- Support for signalization of Alameda de las Pulgas and Atherton Avenue.
- Support to square out the intersection of Alameda de las Pulgas and Atherton Avenue.
- Support to provide a protected left-hand turn phase along Alameda de las Pulgas with westbound right turn overlap for Atherton Avenue.
- Support for metering traffic upon signalization to deter pass through traffic.
- Support for installation of Class II Bike Lanes in one direction along Atherton Avenue.

<u>For the Valparaiso Avenue corridor:</u>

- Support for traffic signals at the intersection of Valparaiso and Elena and the intersection of Valparaiso and Emilie, depending on overall ranking, but with left and right turn lanes on Emilie Avenue at Valparaiso Avenue and Elena Avenue at Valparaiso Avenue.
- No support for a One-way circulation loop between Elena Avenue and Emilie Avenue.

- No support to analyze the intersection of Alameda de las Pulgas and Valparaiso Avenue to provide turn restrictions.

For the Middlefield Road corridor:

- No support for a northbound Middlefield Road left-turn restriction onto Glenwood Avenue during the morning commute.
- Continue to study traffic signals at the intersections of Middlefield Road and Fair Oaks Lane and at the intersection of Middlefield Road and Watkins Avenue.

- No recommendation for signal metering at the intersections of Middlefield Road and Fair Oaks Lane, Middlefield Road and Marsh Road, and Middlefield Road and Oak Grove Avenue.
- No recommendation to improve signal timing along Middlefield Road.

Due to time constraints at the February 12 TC meeting, TJKM presented at the March 12 TC meeting, recommendations to develop short and long-term strategies to address current and future congestion from traffic generated by neighboring projects that may be mitigated through commenting on CEQA Environmental documents, creation of Level of Service (LOS), Vehicle Miles Traveled (VMT) or other applicable significance threshold criteria for the Town to utilize in the CEQA environmental reviews of future development within the Town and/or neighboring jurisdictions. The TC asked questions related to street classifications, particularly if they tied the Town down to minimum street widths and required improvements within a timeframe and discussed the impact thresholds.

The consultants are here tonight to present both traffic studies for City Council's feedback.

POLICY FOCUS

The studies are consistent with the primary goal of advancing projects that promote increased safety and levels of non-motorized activity throughout the Town.

FISCAL IMPACT

Funding for these studies come from the 2017/18 CIP – Traffic Safety Improvement Program Project No. 56064 - Town-wide Traffic Mitigation using Gas Tax Funds. The City Council allocated $50,000 to look at traffic flow issues in the 5-Year CIP 2017/2021 in this funding area.

PUBLIC NOTICE

Public notification was achieved by posting the agenda, with this agenda item being listed, at least 72 hours prior to the meeting in print and electronically. Information about the project is also disseminated via the Town's electronic News Flash and Atherton Online. There are approximately 1,200 subscribers to the Town's electronic News Flash publications. Subscribers include residents as well as stakeholders – to include, but be not limited to, media outlets, school districts, Menlo Park Fire District, service provides (water, power, and sewer), and regional elected officials.

Residents in the immediate vicinity of the project area are notified by mail. Project information has also been provided on the Town of Atherton's website at http://www.ci.atherton.ca.us/474/Middlefield-Bicycle-Lanes.

COMMISSION/COMMITTEE FEEDBACK/REFERRAL

This item __X__ has or ___ has not been before a Town Committee or Commission.

____ Audit/Finance Committee (meets every other month)
____ Bicycle/Pedestrian Committee (meets as needed)
____ Civic Center Advisory Committee (meets as needed)
____ Environmental Programs Committee (meets every other month)
____ Park and Recreation Committee (meets each month)
____ Planning Commission (meets each month)
____ Rail Committee (meets every other month)
__X Transportation Committee (meets every other month)

ATTACHMENTS

- Attachment 1: Alameda de las Pulgas Corridor Traffic Study Presentation
- Attachment 2: Local Traffic Flow/Long Range Planning Solutions Study Presentation

Alameda De Las Pulgas Corridor Traffic Study

Prepared for

Town of Atherton

Redefining Mobility

AMG ADVANCED MOBILITY GROUP

TOWN OF ATHERTON
INCORPORATED SEPTEMBER 12, 1923
CALIFORNIA

Introduction

Study Corridor

- Alameda De Las Pulgas (ADLP) from Woodside Road to Valparaiso Avenue
- Stockbridge Avenue to Camino Al Lago is within Town of Atherton

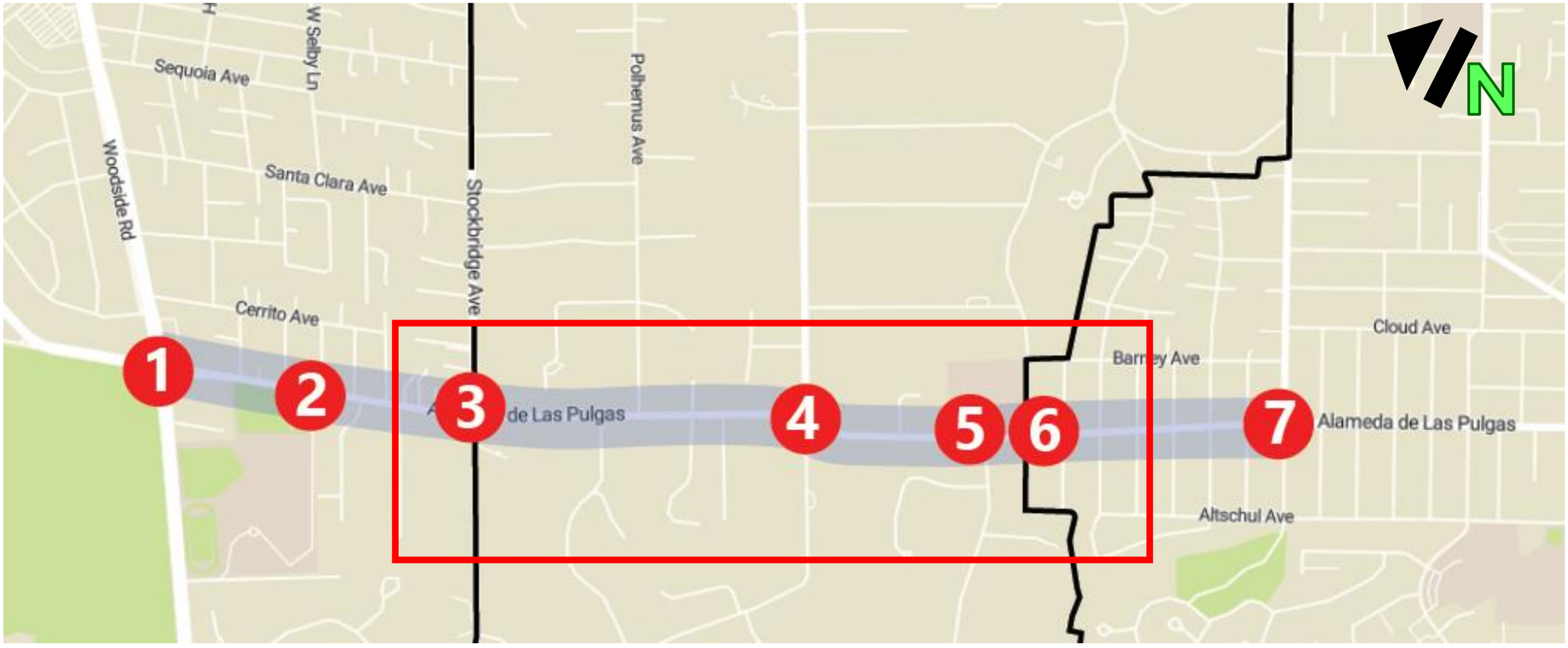
Concerns

- Traffic flow and traffic operations along the corridor within town limits
- Traffic queueing

Purpose

Investigate potential improvements to improve traffic flow and enhance safety

Study Corridor



Redefining Mobility.

Intersection Control Evaluation

Data Collection

- Field Review
- Turning Movement Counts (TMC) during AM and PM peak and 24-hr Volume
- Collision Data - Statewide Integrated Traffic Records System (SWITRS)
- Travel Time Runs
- Signal Timing

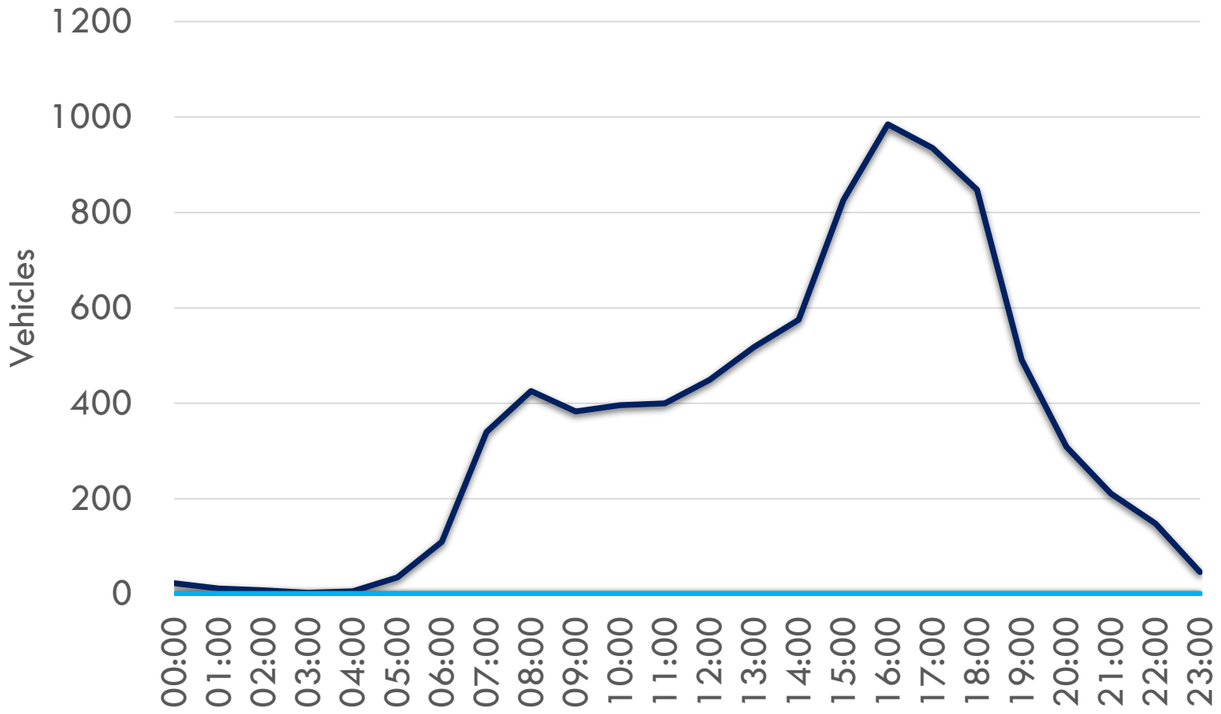
Warrant Analysis

- Traffic Signal Warrant
- Protected Left-Turn Warrant

Operational and Safety Analysis

- Collision Analysis
- Operational Analysis (LOS)
- Performance check for vehicle, pedestrians, bicyclists

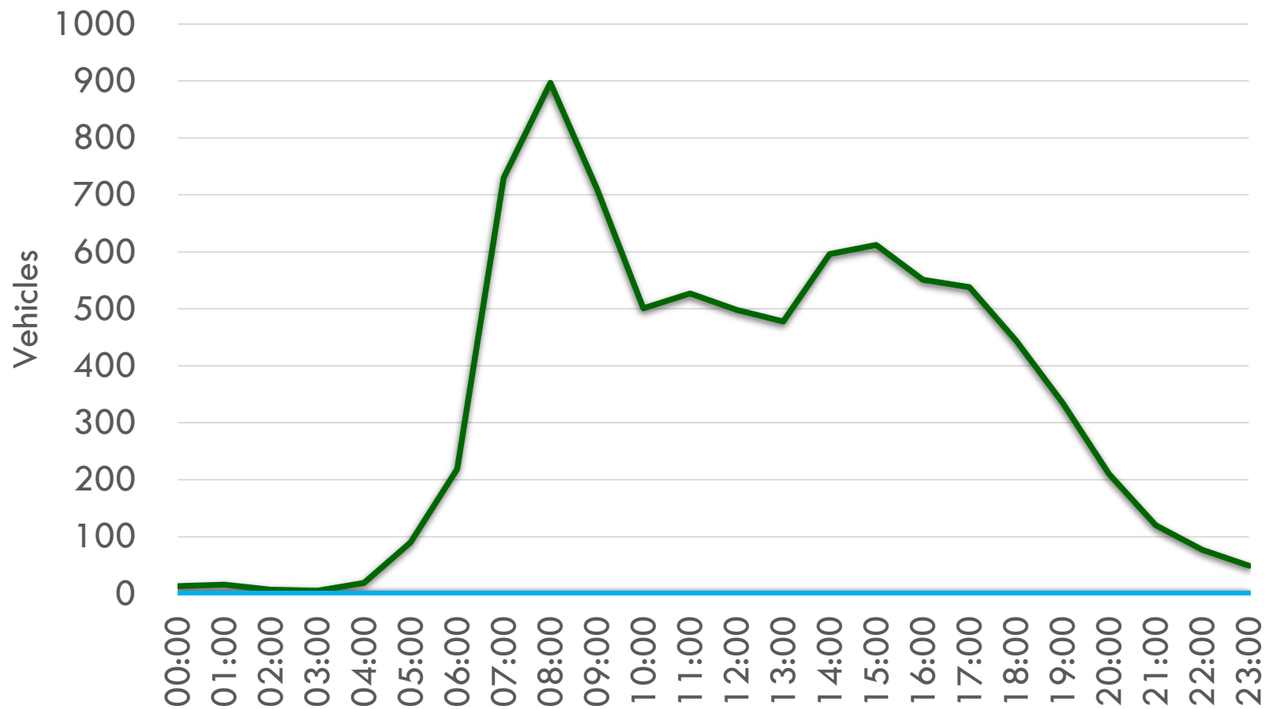
Recommendations



Northbound

AMG ADVANCED MOBILITY GROUP

Southbound



Redefining Mobility.

Field Observations – ADLP / Atherton

Redefining Mobility.

Traffic Signal Warrant

ADLP / Stockbridge Avenue (Two-Way Stop Control)

– Met Eight Hour, Four-Hour, and Peak Hour

ADLP / Camino Al Lago (Two-Way Stop Control)

- Met Pedestrian Warrant

ADLP / Atherton

– Met based on previous study*

Redefining Mobility.

* Los Lomitas Elementary School Study

LOS Analysis

ID	Int Name	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
1	ADLP / Woodside Road	Signal	46.5	D	46.5	D
2	ADLP / Hull Avenue	Signal (Free)	11.8	B	3.7	A
3	ADLP / Stockbridge Avenue	TWSC	**49.3**	**E**	**37.9**	**E**
4	ADLP / Atherton Avenue	AWSC	**87.2**	**F**	**91.9**	**F**
5*	ADLP / Walsh Road	OWSC	17.8	C	13.5	B
	ADLP / Las Lomitas School Driveway	OWSC	14.0	B	14.1	B
6	ADLP / Camino Al Lago	TWSC	18.0	C	16.7	C
7	ADLP / Valparaiso Avenue	Signal (Actd-Coord)	18.2	B	23.8	C

ADLP and Stockbridge

Traffic Control	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
TWSC (Existing)	49.3	**E**	37.9	**E**
Alt 1 – Signal	9.8	A	9.6	A
Alt 2 – Roundabout	12.8	B	31.6	D
Alt 3 - AWSC	144.1	**F**	186.0	**F**

Notes:
TWSC = Two-Way Stop Control; AWSC = All-Way Stop Control
Bold indicates unacceptable level of service.

Recommendations

- Install a traffic signal at this intersection

- Set signal timings to accommodate pedestrians and bicyclists

ADLP and Atherton

Traffic Control	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
AWSC (Existing)	87.2	**F**	91.9	**F**
Alt 1 – Signal	17.6	B	16.8	B
Alt 2 – Roundabout	12.3	B	7.1	A

Notes:
AWSC = All-Way Stop Control
Bold indicates unacceptable level of service.

Recommendations

- **Install a traffic signal at this intersection**
- **Set signal timings to accommodate pedestrians and bicyclists**

ADLP and Camino Al Lago

Traffic Control	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
TWSC (Existing)	18.0	C	16.7	C
Alt 1 – Signal	3.5	A	3.6	A
Alt 2 – Roundabout	16.3	C	13.7	B
Alt 3 - AWSC	95.3	**F**	66.4	**F**

Notes:
TWSC = Two-Way Stop Control; AWSC = All-Way Stop Control
Bold indicates unacceptable level of service.

Recommendations

- **Install a traffic signal at this intersection**
- **Remove existing mid-block crosswalk and signal located 150 feet south**
- **Redesign intersection to shorten pedestrian crossing distance**


Alameda de las Pulgas
Cam Al Lago
Cam Al Lago
Alameda de las Pulgas
Alameda de las Pulgas
Cam Al Lago
Mills Ave

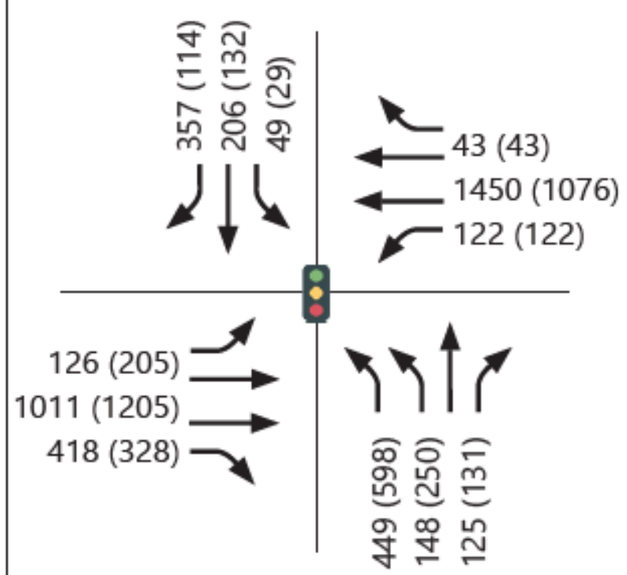
General Recommendations

- **Review bicycle timing and pedestrian change interval timing**
- **Review the red and yellow clearance intervals**
- **Provide green color surface treatment in bike lanes where potential bike/vehicle conflicts could occur**
- **Move bus stops from near-side to far-side**
- **Replace 8-inch signal head with 12-inch head**

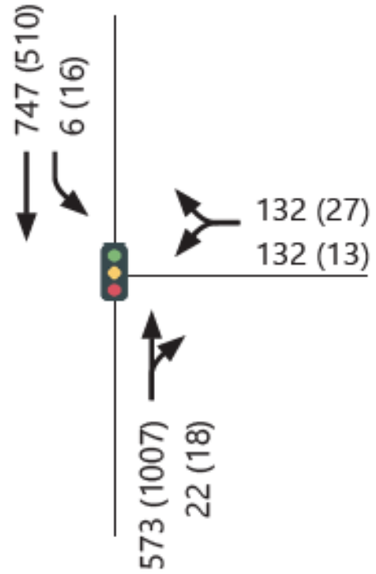
Feedback from Transportation Committee (TC)

- Agreed with the recommendations in the report for intersections within Atherton
- For intersections outside of Atherton, the TC would like staff to reach out to those jurisdictions with the recommendations contained in the report.
- The first priority will be the intersection of Alameda de las Pulgas and Atherton Avenue, except the Transportation Committee would like the data adjusted for different sized roundabouts.
- The second priority will be the intersection of Alameda de las Pulgas and Stockbridge Avenue.
- The third priority will be the intersection of Alameda de las Pulgas and Camino Al Lago.

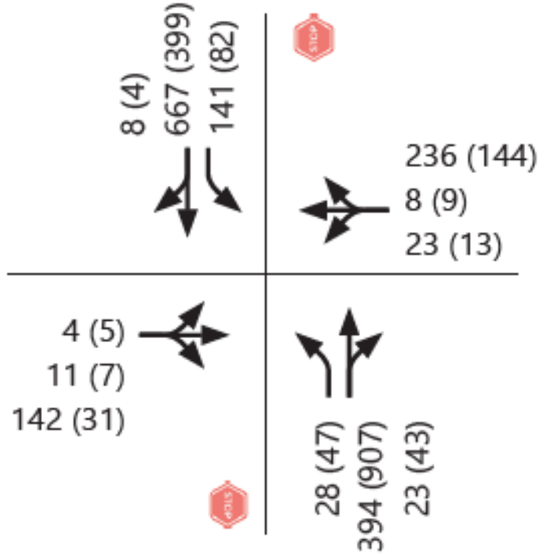
Intersection #1
ADLP at Woodside Road



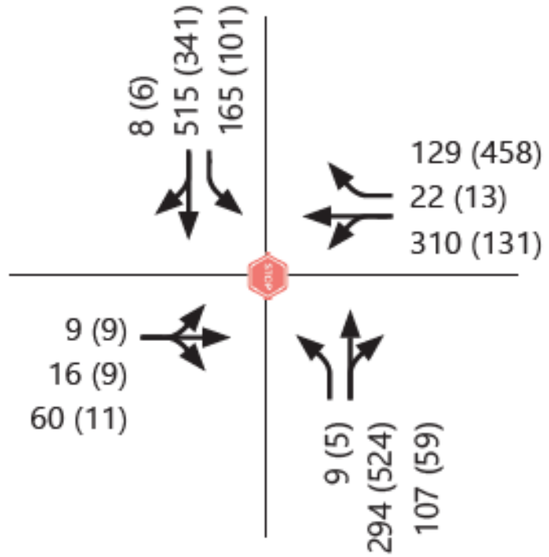
Intersection #2
ADLP at Hull Ave



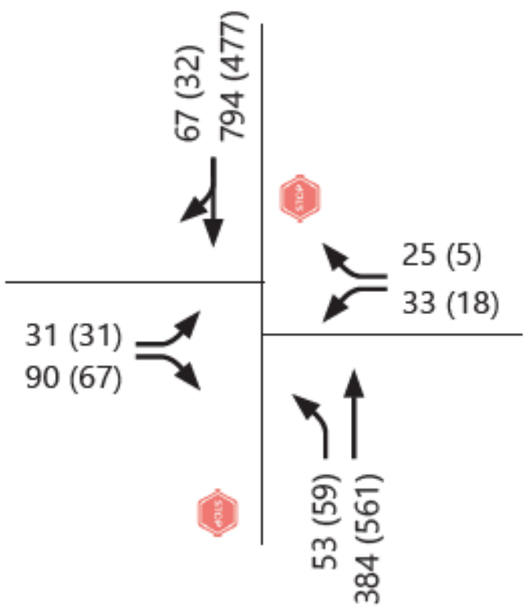
Intersection #3
ADLP at Stockbridge Ave



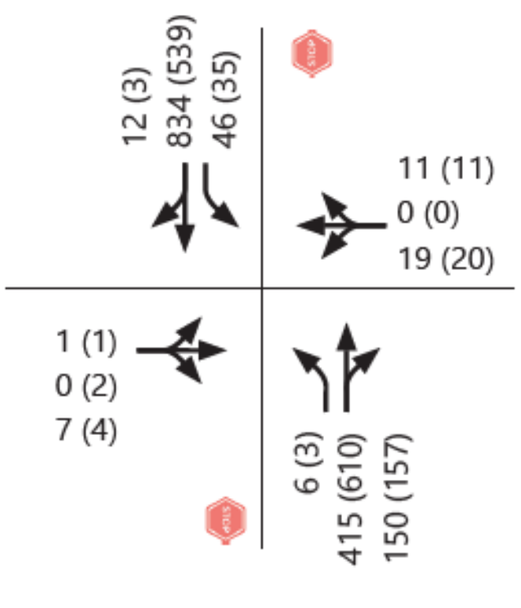
Intersection #4
ADLP at Atherton Ave



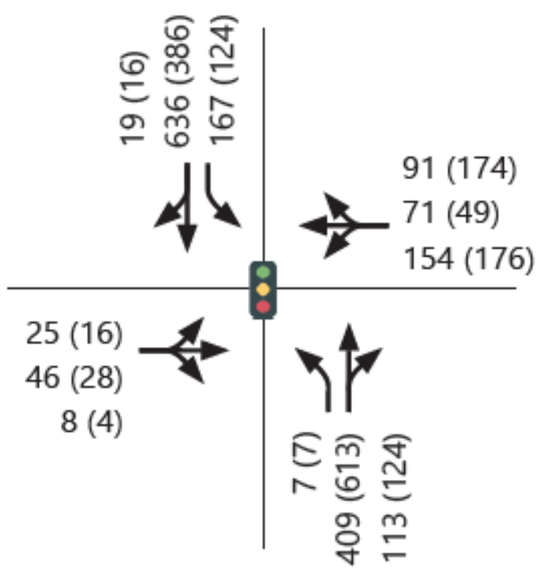
Intersection #5
ADLP at Walsh Rd / Las Lomitas School Drwy



Intersection #6
ADLP at Camino Al Lago



Intersection #7
ADLP at Valpariso Ave



N

Traffic Volumes

ID	Intersection Name	Traffic Control	Total			Injury + Fatal				
			#	Collision Rate (per million entering vehicles)	Statewide Avg Rate (per million entering vehicles)	Injury #	Fatal #	Injury + Fatal #	Collision Rate (per million entering vehicles)	Statewide Avg Rate (per million entering vehicles)
1	ADLP / Woodside Road	Signalized	0	0.00	0.27	0	0	0	0.00	0.114
2	ADLP / Hull Avenue	Signalized	0	0.00	0.27	0	0	0	0.00	0.114
3	ADLP / Stockbridge Avenue	TWSC	4	0.13	0.15	2	0	2	0.06	0.064
4	ADLP / Atherton Avenue	AWSC	9	**0.30**	0.21	2	0	2	0.07	0.076
5.a	ADLP / Walsh Road	OWSC	3	0.12	0.15	1	0	1	0.04	0.064
5.b	ADLP / Las Lomitas School Driveway	OWSC	1	0.04	0.15	0	0	0	0.00	0.064
6	ADLP / Camino Al Lago	TWSC	2	0.08	0.15	1	0	1	0.04	0.064
7	ADLP / Valparaiso Avenue	Signalized	0	0.00	0.27	0	0	0	0.00	0.114

AMG ADVANCED MOBILITY GROUP

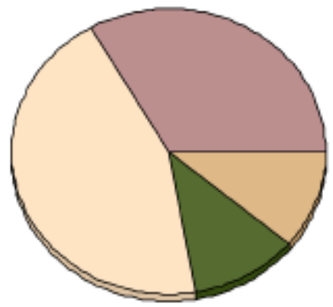
Figure 4

04.00 ADLP & Atherton Ave
1/1/2013 - 12/31/2017

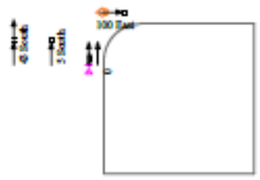
9 Crashes

Distance less than

PCF Category



- 3 Drive/Bike Under Infl Alcohol/Dr
- 4 Unsafe Speed
- 1 Automobile Right Of Way
- 1 Traffic Signals And Signs



(0) crashes could not be placed in this schematic

- Straight
- Stopped
- Unknown
- Backing
- Overtaking
- Sideswipe
- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn
- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal

- 3rd vehicle
- Extra data

Pdf Programming, Inc. 11/20/2018

Type of Collision

- 0 Collision Type
- 1 Head-On
- 2 Sideswipe
- 2 Rear End
- 0 Broadside
- 3 Hit Object
- 0 Overturned
- 0 Vehicle/Pedestria
- 1 Other
- 0 Other_Or_Null

Protected Left-Turn Warrant

- Collisions
- Left Turn Delay
- Volume
- Other Factors
  - sight distance, curves, trucks, etc.

ADLP and Valparaiso meets the warrant

ID	Int Name	Traffic Control	AM Peak Hour				PM Peak Hour			
			Delay (sec/veh)	LOS	Signal Warrant?	Protected LT Warrant?	Delay (sec/veh)	LOS	Signal Warrant?	Protected LT Warrant?
1	ADLP / Woodside Road	Signal	46.5	D	-	-	46.5	D	-	-
2	ADLP / Hull Avenue	Signal (Free)	11.8	B	-	N	3.7	A	-	N
3	ADLP / Stockbridge Avenue	TWSC	49.3	**E**	Y	N **	37.9	**E**	Y	N **
4	ADLP / Atherton Avenue	AWSC	87.2	**F**	Y	N **	91.9	**F**	Y	N **
5*	ADLP / Walsh Road	OWSC	17.8	C	-	-	13.5	B	-	-
	ADLP / Las Lomitas School Driveway	OWSC	14.0	B	-	-	14.1	B	-	-
6	ADLP / Camino Al Lago	TWSC	18.0	C	Y	N **	16.7	C	Y	N **
7	ADLP / Valparaiso Avenue	Signal (Actd-Coord)	18.2	B	-	NBL	23.8	C	-	NBL

Notes:

OWSC = One-Way Stop Control; TWSC = Two-Way Stop Control; AWSC = All-Way Stop Control

Bold indicates unacceptable level of service.

*Per Las Lomitas School, the existing Las Lomitas School Driveway will not be realigned with Walsh Road to form a new four-way intersection for a new signal.

** Assuming the traffic-actuated signal is installed.

ADLP and Woodside

Recommendations

- **Coordinate with Caltrans**
- **Update signal timing**
- **Provide traffic signal coordination between Woodside Road and Hull Avenue.**

ADLP and Hull

Recommendations

- **Provide traffic signal coordination between Woodside Road and Hull Avenue.**
- **Reconstruct all the corner ramps at this intersection to meet current ADA standards.**

ADLP and Valparaiso

Traffic Control	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Signal No Protected LTs (Existing)	18.2	B	23.8	C
Alt 1 – Signal with Protected LTs	28.7	C	40.7	D

Source: AMG, 2018

Recommendations

- **Install protected left-turn phases for ADLP approaches**
- **Set signal timings to accommodate pedestrians and bicyclists**

Field Observations – ADLP / Hull

Redefining Mobility.

Field Observations – ADLP / Woodside

Redefining Mobility.

Local Traffic Flow/Long Range Planning Solutions

Town of Atherton

April 17, 2019

Agenda

- Goals And Objectives
- Circulation and Safety Elements
  - Existing Conditions
  - Recommendations
- Street Classifications
  - Recommended Changes for General Plan Update

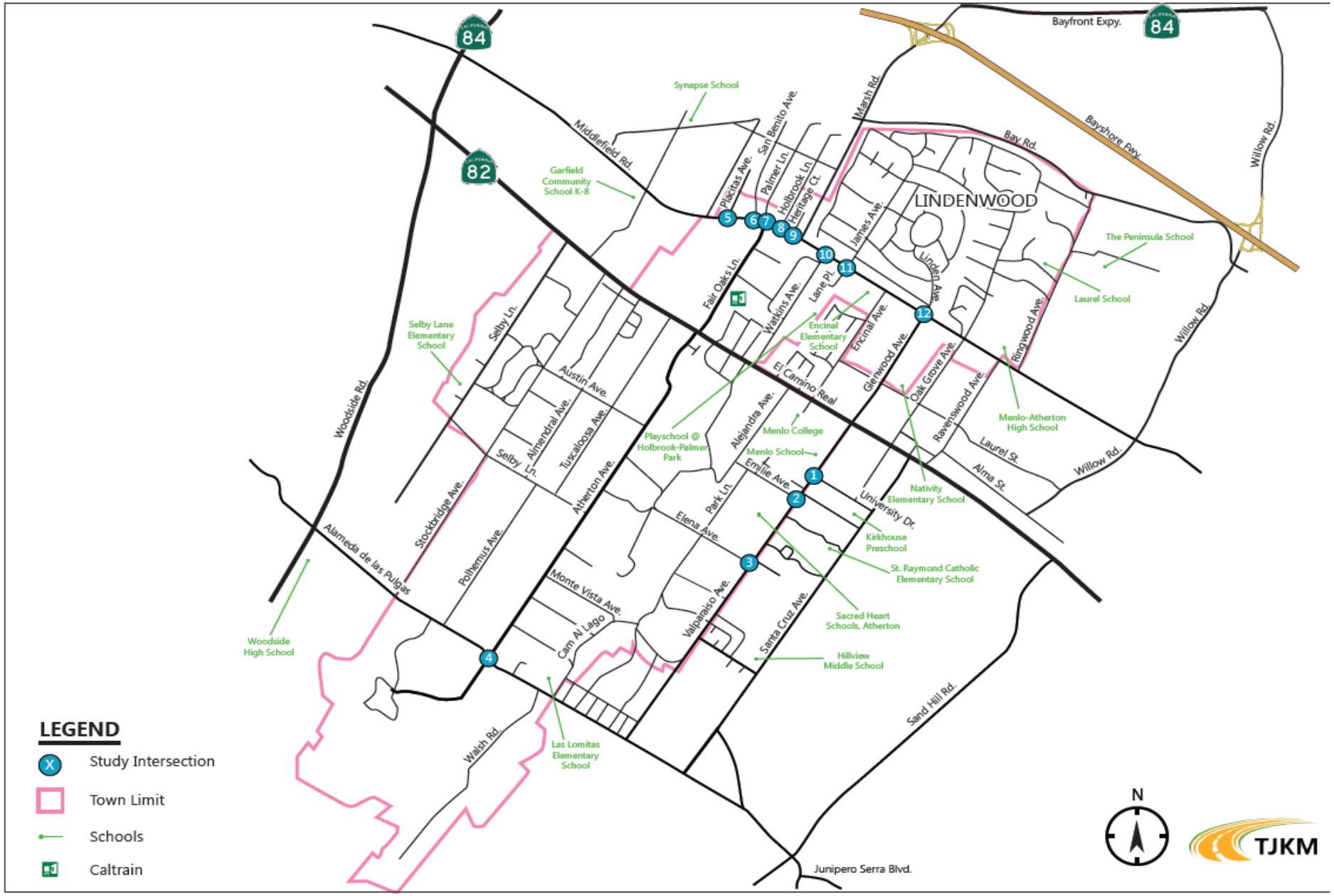
TJKM

Goals and Objectives

- Evaluate Existing Traffic Operations
- Evaluate Existing Travel Patterns
- Recommend Short and Long Term Improvements for Efficient Circulation
  - Improve Operations
  - Increase Safety for all Modes
- Recommend Changes to Street Classifications for General Plan update
  - Modernize to include all modes
  - Match adjacent jurisdications

TJKM

Study Area


84
82
Bayfront Expy.
Bayshore Fwy.
Middlefield Rd.
Synapse School
Garfield Community School K-8
San Benito Ave.
Placitas Ave.
Palmer Ln.
Holbrook Ln.
Heritage Ct.
Marsh Rd.
Bay Rd.
Willow Rd.
LINDENWOOD
James Ave.
Linden Ave.
The Peninsula School
Laurel School
Fair Oaks Ln.
Lane Pl.
Watkins Ave.
Encinal Elementary School
Encinal Ave.
Glenwood Ave.
Oak Grove Ave.
Ringwood Ave.
Ravenswood Ave.
Menlo-Atherton High School
Laurel St.
Alma St.
Willow Rd.
Selby Lane Elementary School
Selby Ln.
Austin Ave.
Almendral Ave.
Tuscaloosa Ave.
Woodside Rd.
El Camino Real
Playschool @ Holbrook-Palmer Park
Alejandra Ave.
Menlo College
Menlo School
Emilie Ave.
Atherton Ave.
Park Ln.
Stockbridge Ave.
Polhemus Ave.
Elena Ave.
University Dr.
Nativity Elementary School
Kirkhouse Preschool
St. Raymond Catholic Elementary School
Alameda de las Pulgas
Monte Vista Ave.
Cam Al Lago
Valparaiso Ave.
Santa Cruz Ave.
Sacred Heart Schools, Atherton
Hillview Middle School
Woodside High School
Las Lomitas Elementary School
Walsh Rd.
Sand Hill Rd.
Junipero Serra Blvd.
1
2
3
4
5
6
7
8
9
10
11
12
LEGEND
Study Intersection
Town Limit
Schools
Caltrain
N
TJKM
TJKM

Findings from Existing Conditions Analysis

- **Signal is warranted**
  - Alameda de las Pulgas/Atherton Avenue
  - Valparaiso Avenue/Emilie Avenue
  - Valparaiso Avenue/Elena Avenue
  - Middlefield Road/Fair Oaks Lane-Palmer Lane
  - Middlefield Road/Watkins Avenue

Acceptable LOS

1. Valparaiso Avenue/University Drive
2. Middlefield Road/Placitas Avenue
3. Middlefield Road/San Benito Avenue
4. Middlefield Road/Heritage Court

Unacceptable LOS

1. Valparaiso Avenue/Emilie Avenue
2. Valparaiso Avenue/Elena Avenue
3. Alameda De Las Pulgas/Atherton Avenue
4. Middlefield Road/Fair Oaks Lane-Palmer Lane
5. Middlefield Road/Holbrook Lane
6. Middlefield Road/Watkins Avenue
7. Middlefield Road/James Avenue-Lane Place
8. Middlefield Road/Glenwood Avenue-Linden Avenue

TJKM

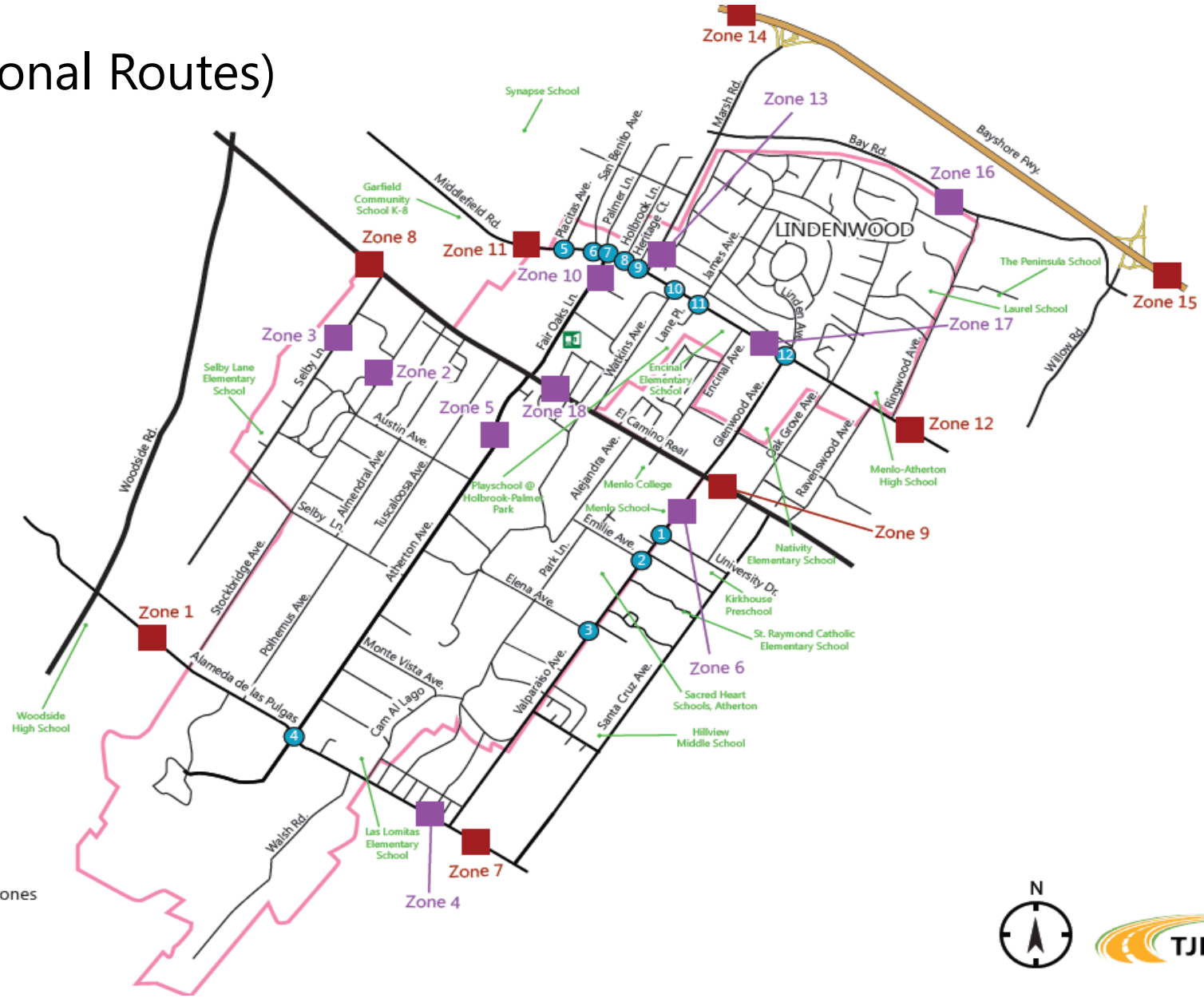
Origin – Destination Analysis

- StreetLight Insight® Data platform used for evaluation of trip patterns for the study area
- Need for the O-D study
  - Validate the assumption of cut-through within Town of Atherton
- Data Collection
  - Data was collected for the month of April 2017
  - O-D gates were strategically placed to capture the cut-through traffic
- Result
  - Pass through – vehicular traffic that passes through Atherton by entering and exiting the town on the same street
  - Cut through – vehicular traffic that passes through Atherton via multiple streets

TJKM

Origin, Destination and Middle Filter Zones

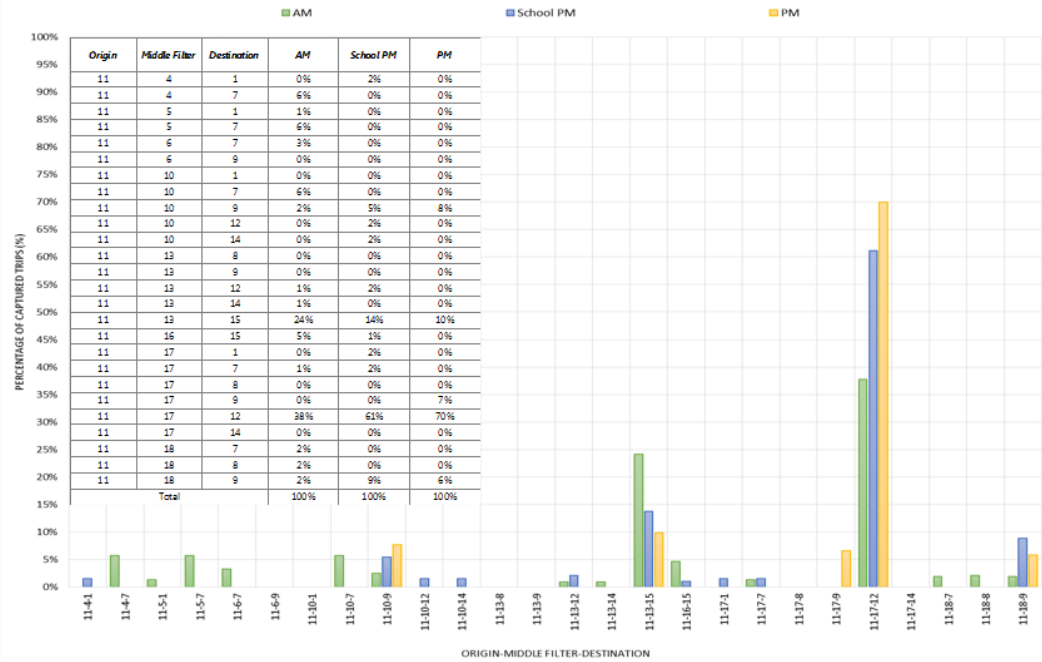
- Gateways Evaluated (Regional Routes)
  - Alameda de las Pulgas
  - El Camino Real
  - Middlefield Road



Middlefield Road

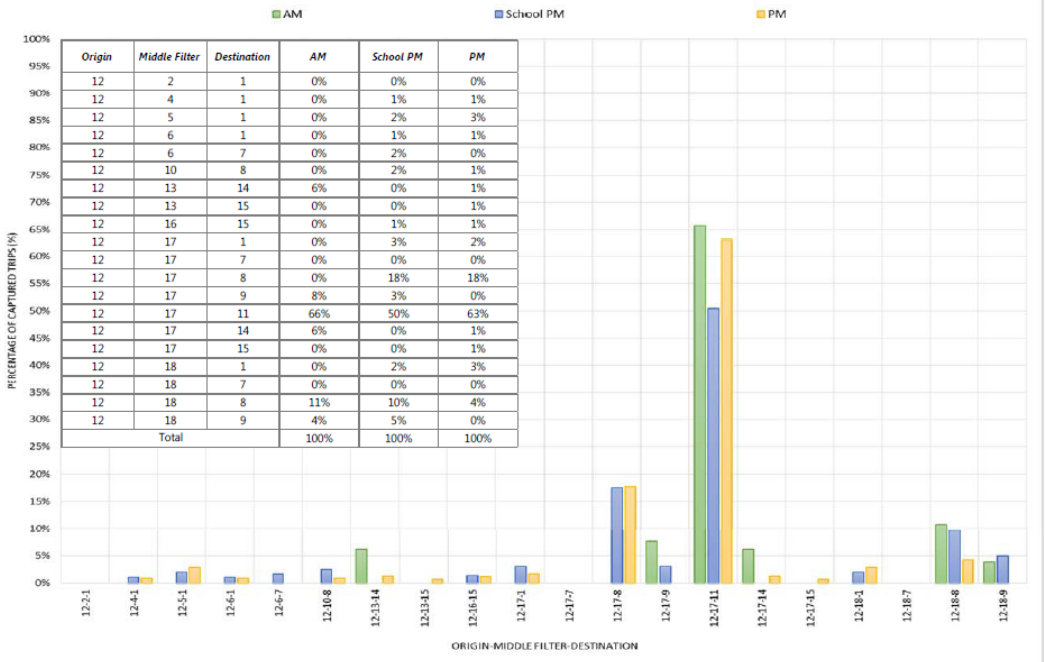
- Peak direction SB in AM and NB in PM

Figure 11: Preferred Route Choices from Origin Zone 11 (Middlefield Road)



Origin	Middle Filter	Destination	AM	School PM	PM
11	4	1	0%	2%	0%
11	4	7	6%	0%	0%
11	5	1	1%	0%	0%
11	5	7	6%	0%	0%
11	6	7	3%	0%	0%
11	6	9	0%	0%	0%
11	10	1	0%	0%	0%
11	10	7	6%	0%	0%
11	10	9	2%	5%	8%
11	10	12	0%	2%	0%
11	10	14	0%	2%	0%
11	13	8	0%	0%	0%
11	13	9	0%	0%	0%
11	13	12	1%	2%	0%
11	13	14	1%	0%	0%
11	13	15	24%	14%	10%
11	16	15	5%	1%	0%
11	17	1	0%	2%	0%
11	17	7	1%	2%	0%
11	17	8	0%	0%	0%
11	17	9	0%	0%	7%
11	17	12	38%	61%	70%
11	17	14	0%	0%	0%
11	18	7	2%	0%	0%
11	18	8	2%	0%	0%
11	18	9	2%	9%	6%
Total			100%	100%	100%

Figure 12: Preferred Route Choices from Origin Zone 12 (Middlefield Road)



Origin	Middle Filter	Destination	AM	School PM	PM
12	2	1	0%	0%	0%
12	4	1	0%	1%	1%
12	5	1	0%	2%	3%
12	6	1	0%	1%	1%
12	6	7	0%	2%	0%
12	10	8	0%	2%	1%
12	13	14	6%	0%	1%
12	13	15	0%	0%	1%
12	16	15	0%	1%	1%
12	17	1	0%	3%	2%
12	17	7	0%	0%	0%
12	17	8	0%	18%	18%
12	17	9	8%	3%	0%
12	17	11	66%	50%	63%
12	17	14	6%	0%	1%
12	17	15	0%	0%	1%
12	18	1	0%	2%	3%
12	18	7	0%	0%	0%
12	18	8	11%	10%	4%
12	18	9	4%	5%	0%
Total			100%	100%	100%

Peak Period	Pass-through	Cut-through	Route Choice#	Roadway Segment
A.M.	38%	30%	11-13-15, 11-10-7	Marsh Road, Fair Oaks Lane
School P.M.	61%	19%	11-13-15, 11-10-9	Marsh Road, Fair Oaks Lane
P.M.	70%	18%	11-13-15, 11-10-9	Marsh Road, Fair Oaks Lane
Average	**56%**	**22%**		

Peak Period	Pass-through	Cut-through	Route Choice#	Roadway Segment
A.M.	66%	19%	12-18-8,12-17-9	El Camino Real, Middlefield Road
School P.M.	50%	21%	12-17-8,12-17-9	Middlefield Road
P.M.	63%	18%	12-17-8	Middlefield Road
Average	**60%**	**19%**		

Alameda de las Pulgas

Alameda de las Pulgas

- AM and PM Peak Direction of Travel is SB and NB respectively
- Average Daily Traffic is approximately 14,500 vehicles
- Stop-and-go traffic conditions during AM Peak with limited gaps for conflicting left-turns on major street and side-street left-turn movements
- Alameda de las Pulgas/ Atherton Avenue – Controlling Intersection
  - Unacceptable LOS F for all peak periods (all-way stop control)
- O-D study indicates, SB direction has approx. 89% were pass-thru and 6% cut-thru (Stockbridge Avenue, Atherton Avenue, Valparaiso Avenue)
- O-D study indicates, NB direction has approx. 70% were pass-thru and 20% cut-thru (Stockbridge Avenue, Atherton Avenue, Valparaiso Avenue)

TJKM

Recommendations

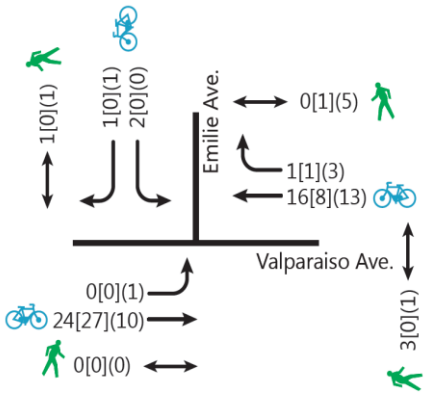
- SBL restriction from Alameda de las Pulgas onto
  - Stockbridge Avenue (only a.m. peak period)
  - Polhemus Avenue (only a.m. peak period)
- Alameda de las Pulgas/Atherton Avenue
  - Signalization of the intersection (peak hour signal warrants met) results to LOS C
  - Square-out intersection, removing pork-chop and add exclusive westbound right-turn (WBR) lane with overlap
  - Provide protected left-turn phasing NB and SB with WBR turn overlap
  - Adjust the signal timing to metering the traffic to reduce cut-through
- Traffic Calming Improvements
  - Install Class II Bike Lanes in one direction along Atherton Avenue
  - Roundabout at the intersection (not enough right-of-way)

Valparaiso Avenue

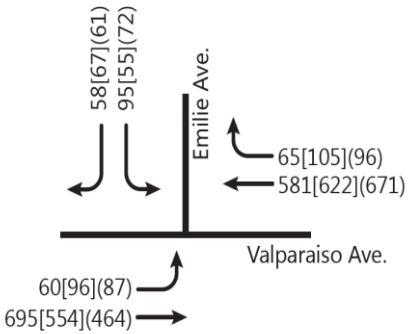
Valparaiso Avenue

- AM and PM Peak Direction of Travel is EB and WB respectively
- Average Daily Traffic is approximately 12,000 vehicles
- Stop-and-go traffic conditions during AM Peak with limited gaps for conflicting left-turns on major street and side-street left-turn movements
- Controlling Intersections (unacceptable LOS F)
  - Valparaiso Avenue/ Emilie Avenue
  - Valparaiso Avenue/ Elena Avenue

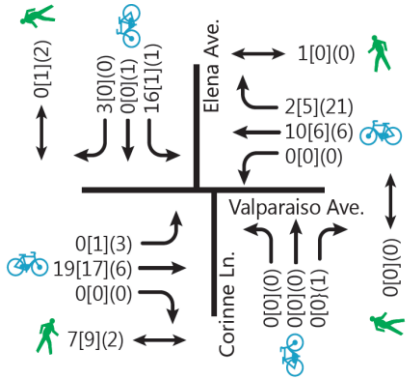
Ped & Bike Volumes



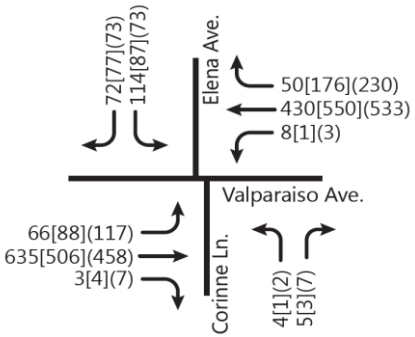
Traffic Volumes



Ped & Bike Volumes



Traffic Volumes



***Percentage % (No. of Vehicles)**

Direction	AM	School PM	PM
EB	13% (138)	18% (170)	6% (50)
WB	26% (188)	15% (161)	8% (73)

Short Term and Long Term Recommendations

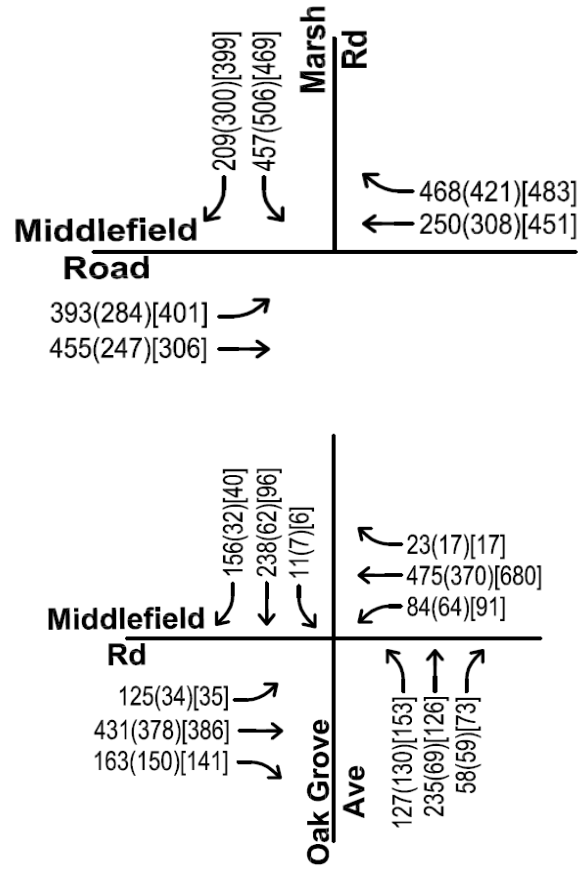
- Valparaiso Avenue/Emilie Avenue and Valparaiso Avenue/Elena Avenue
  - Signalization of the intersections (peak hour signal warrants met) results acceptable LOS
    - Exclusive EB & WB left-turn lanes (require additional right-of-way)
- Traffic Operations
  - One way circulation loop between Elena Avenue and Emilie Avenue
    - additional evaluation
    - consensus with stakeholders (City of Menlo Park, School…)
  - Turn restrictions at Alameda de las Pulgas/Valparaiso Avenue
    - consensus with stakeholders (City of Menlo Park)

Middlefield Road

Middlefield Road

- AM and PM Peak Direction of Travel is SB and NB respectively
- Average Daily Traffic is approximately 19,500 vehicles
- Stop-and-go traffic conditions during AM Peak with limited gaps for conflicting left-turns on major street and side-street left-turn movements
- O-D study indicates, SB and NB direction has approx. 75% were pass-thru and 20% cut-thru
- Controlling Intersections
  - Middlefield Road/Fair Oaks Lane (unacceptable LOS E/F for all peak periods)
  - Middlefield Road/Marsh Road
  - Middlefield Road/Watkins Avenue
    - unacceptable LOS E/F for all peak periods
    - collision rate higher than state average
  - Middlefield Road/Glenwood Avenue
    - unacceptable LOS F for all peak periods
    - collision rate higher than state average
  - Middlefield Road/Oak Grove Avenue

Traffic Volumes



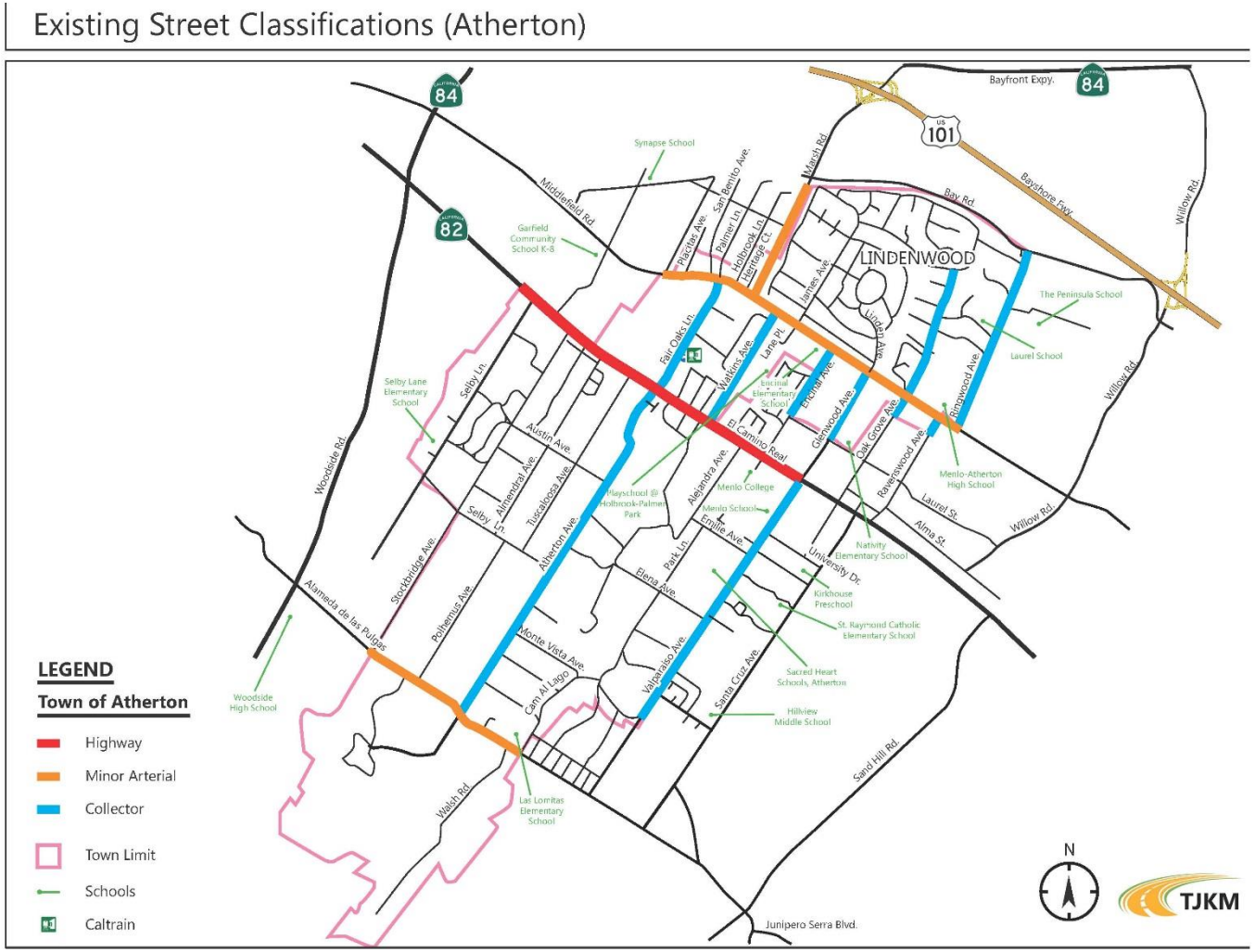
Short Term and Long Term Recommendations

- Middlefield Road/Glenwood Avenue
  - NBL restriction from Middlefield Road onto Glenwood Avenue (only a.m. peak period)
- Signalization of the intersection (peak hour signal warrants met) results to acceptable LOS
  - Middlefield Road/Fair Oaks Lane
  - Middlefield Road/Watkins Avenue
- Adjust the signal timing to meter the traffic to reduce cut-through
  - Middlefield Road/Fair Oaks Lane
  - Middlefield Road/Marsh Road
  - Middlefield Road/Oak Grove Avenue
- Traffic Operations
  - Improve signal timings along Middlefield Road by updating the coordination plans

Street Classifications

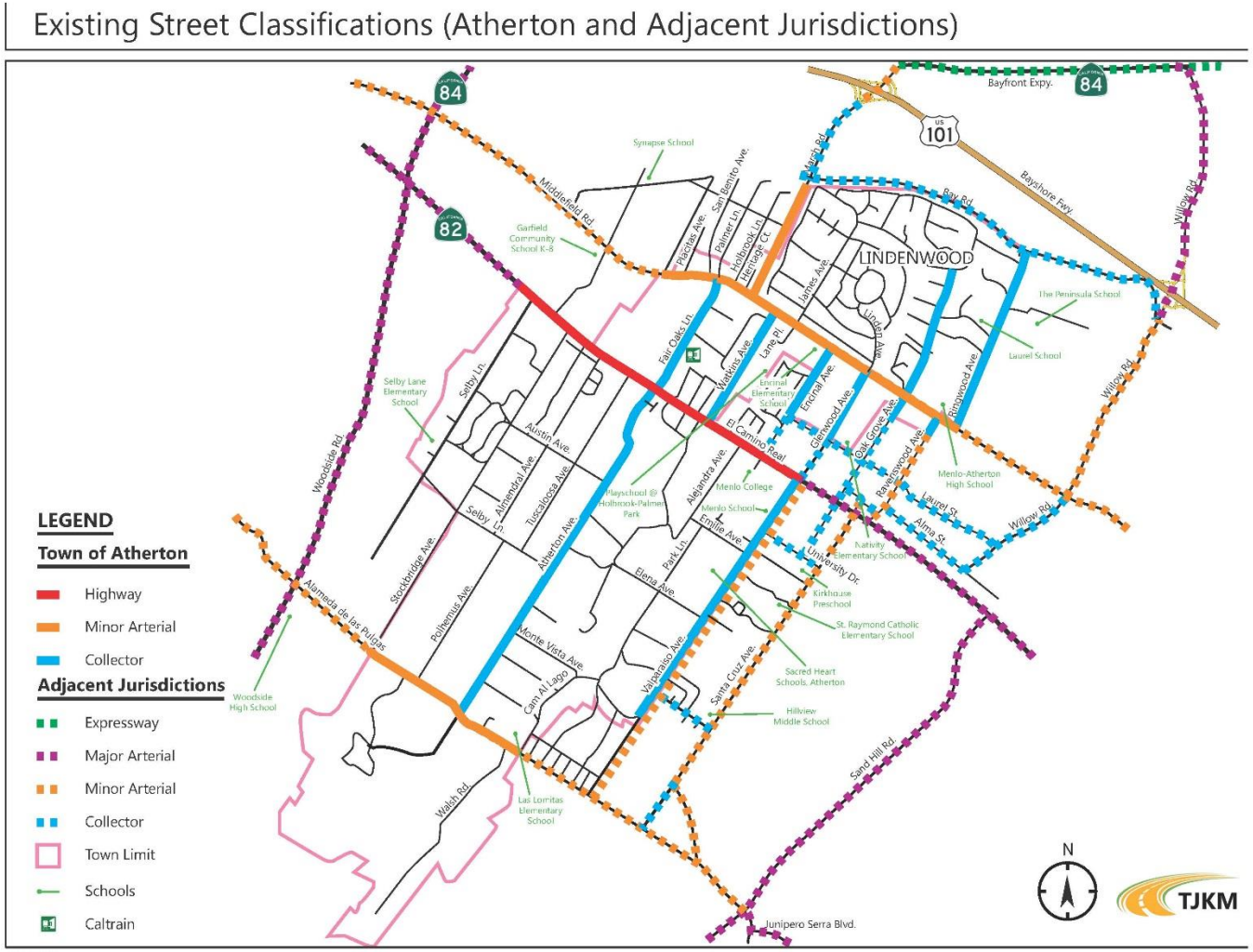
Street Classifications

- Proposed Street Classification changes for General Plan update:
  - Modernize to include all modes of travel and implement *Bicycle & Pedestrian Master Plan*
  - Better conform with Complete Streets Act
  - Provide consistency with adjacent jurisdictions for specific streets



Street Classifications

- Consistency with adjacent jurisdictions
  - El Camino Real: Boulevard (Atherton: Highway)
  - Ravenswood Ave: Minor Arterial (Atherton: Collector)
  - Valparaiso Ave: Minor Arterial (Atherton: Collector)



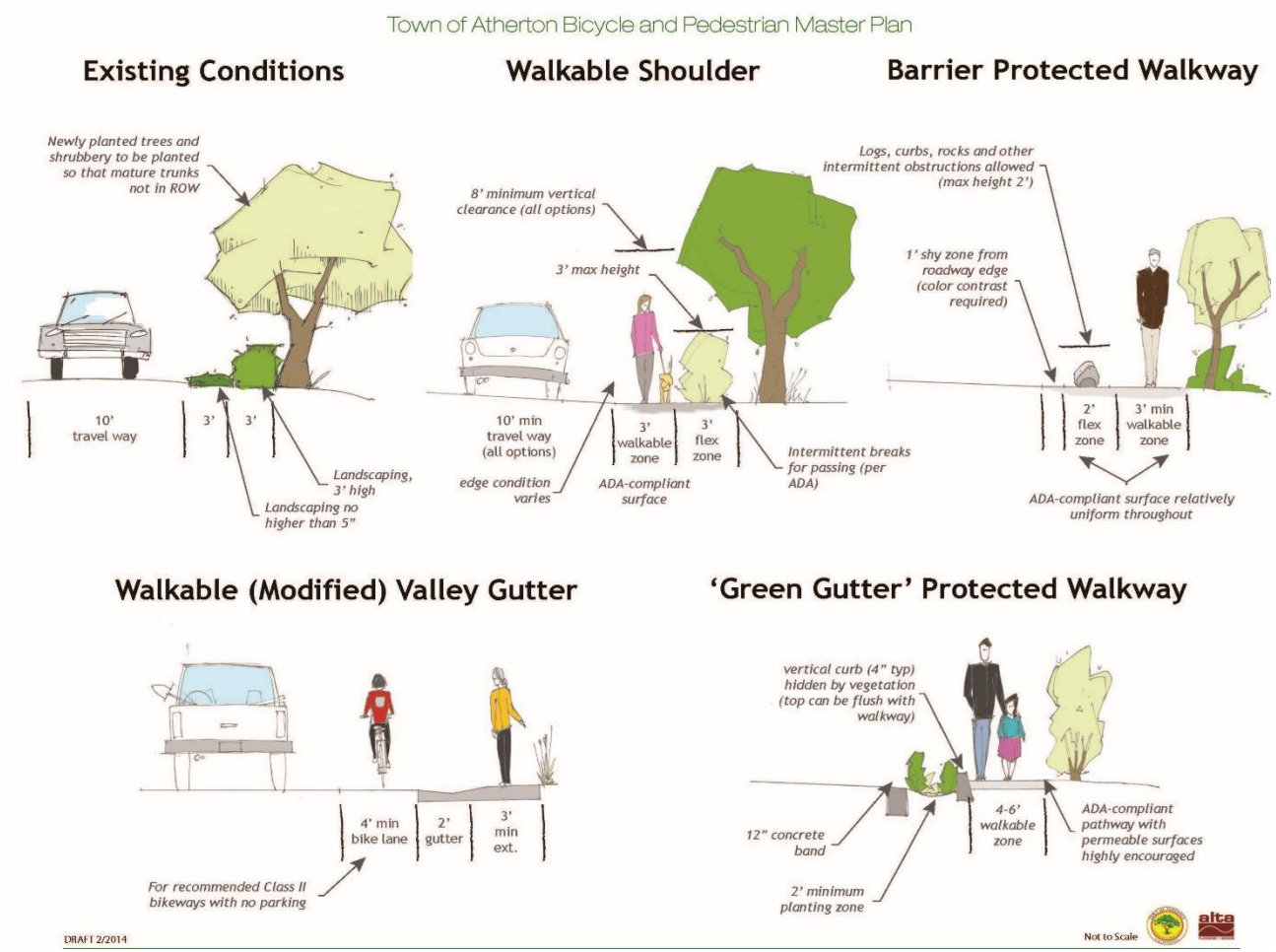
Street Classifications

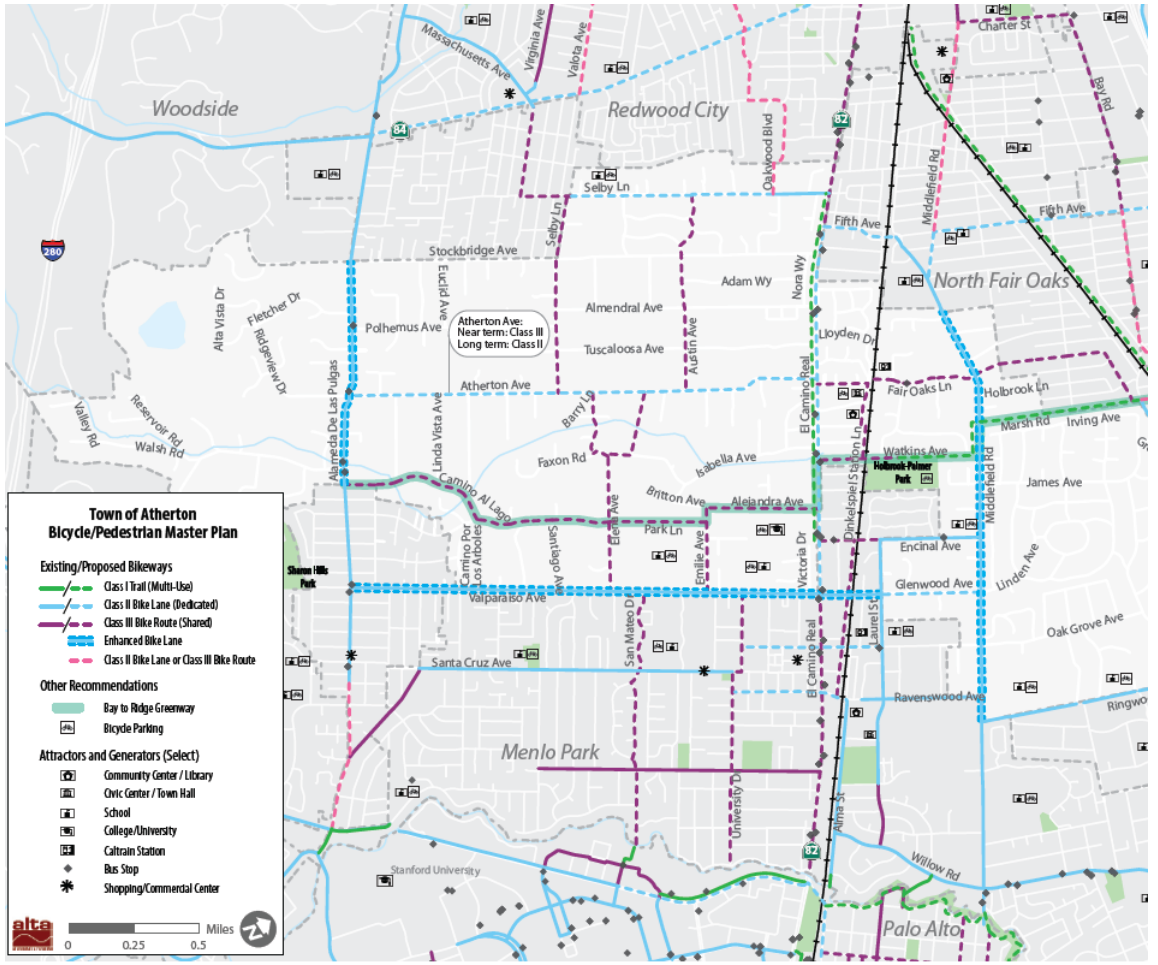
- General Design Standards (2002 General Plan)

Functional Classification	*Right-of-Way Width*	*Roadway Width*	*Number of Motor Vehicle Lanes*	*Pedestrian Path Width*	*Bicycle Lane included?*	*Desired Traffic Capacity (ADT)*
Freeways and Highways	Not specified	Not specified	4 to 10	Not specified	No	>50,000 daily vehicles
Minor Arterial	60 feet	24 feet	2	Not specified	No	10,000 to 25,000
Collector	50 feet	24 feet	2	Not specified	No	2,500 to 12,000
Local	40 feet	20 feet	2	Not specified	Not applicable	<1,000

Street Classifications

- Bicycle & Pedestrian Master Plan (2014)



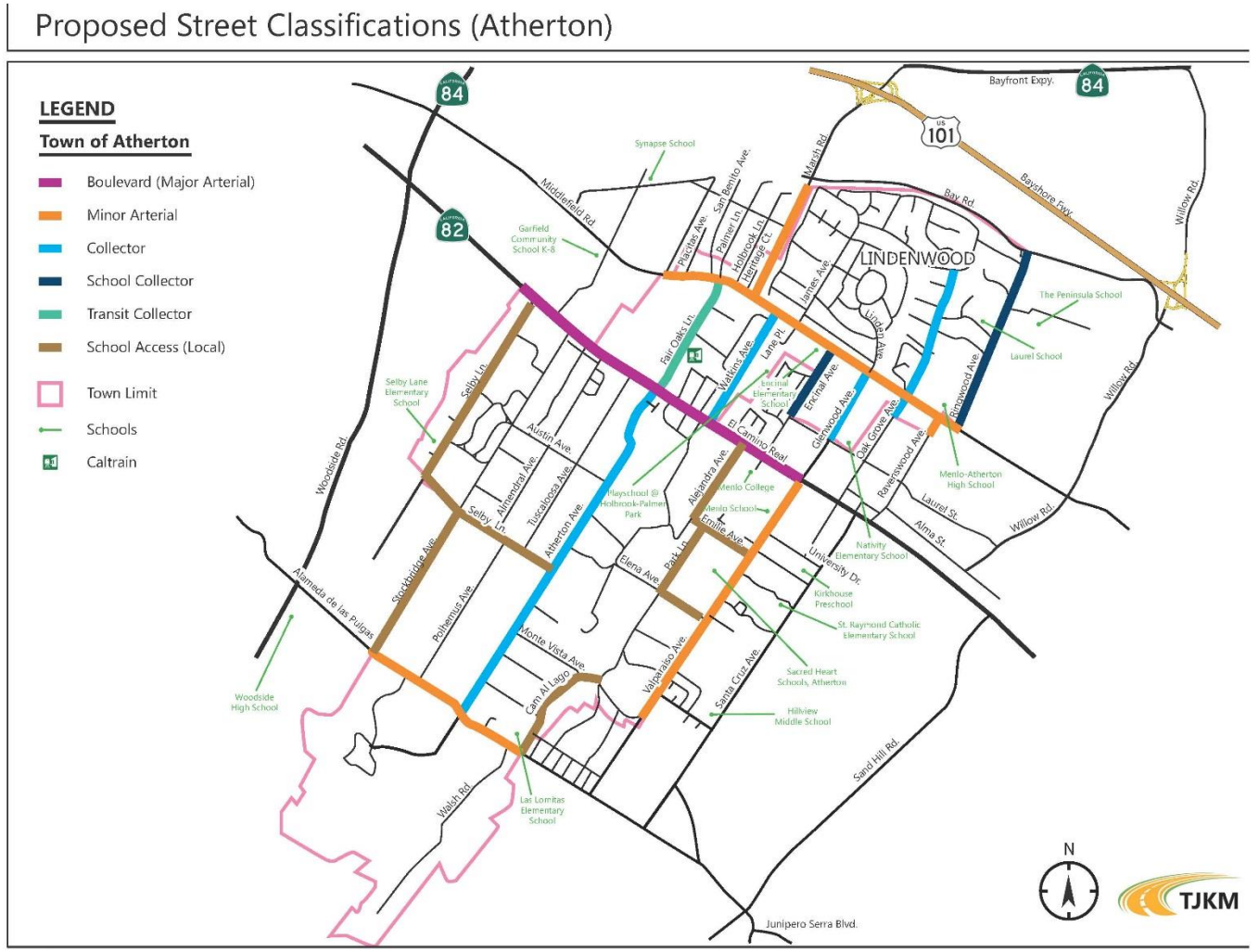


Street Classifications

- Complete Streets Act
  - California Complete Streets Act (AB 1358) adopted in 2008
  - Requires that cities and other public agencies incorporate "complete street" policies when updating their General Plan Circulation Element, to ensure that Complete Streets principles are incorporated.
  - Atherton's current street classifications and general street design standards were adopted prior to the Complete Streets Act

Street Classifications

- Proposed Classifications
  - Boulevard
  - Minor Arterial
  - Collector
    - School Collector
    - Transit Collector
  - Local Streets
    - School Access Lanes



Street Classifications

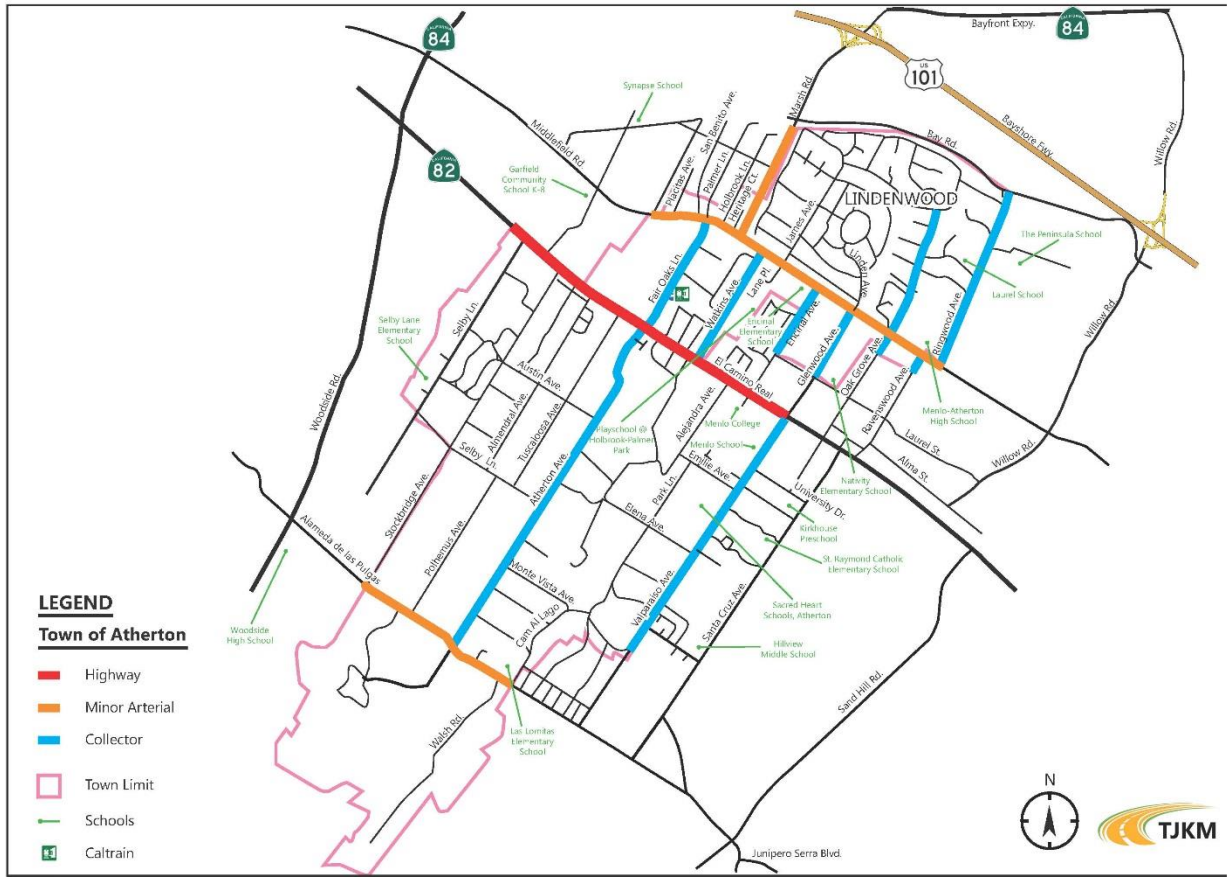
- Update General Street Design Standards to include:
  - Bicycle Lanes
  - Pedestrian Paths

Functional Classification	*Right-of-Way Width*	*Minimum Roadway Width[1]*	*Number of Motor Vehicle Lanes*	*Pedestrian Path Width[2]*	*Bicycle Lane*	*Desired Traffic Capacity (ADT)*
Boulevard	120 feet	Varies	4 to 6	6 to 10 feet	6 feet	<40,000
Minor Arterial	60 feet	32 feet including bicycle lanes	2	6 feet	5 feet	10,000 to 25,000
Collector	50 feet	24 feet, or 32 feet with bicycle lanes	2	4 to 6 feet	5 feet	2,500 to 12,000
School Collector	50 feet	32 feet including bicycle lanes	2	6 feet	5 feet	2,500 to 12,000
Transit Collector	50 feet	32 feet including bicycle lanes	2	4 to 6 feet	5 feet	2,500 to 12,000
School Access Lane (Local Street)	40 feet	20 feet	2	6 feet	Not applicable	<1,000
Local	40 feet	20 feet	2	4 to 6 feet	Not applicable	<1,000

Street Classifications

- Comparison of Existing & Proposed

Existing Street Classifications (Atherton)



Proposed Street Classifications (Atherton)