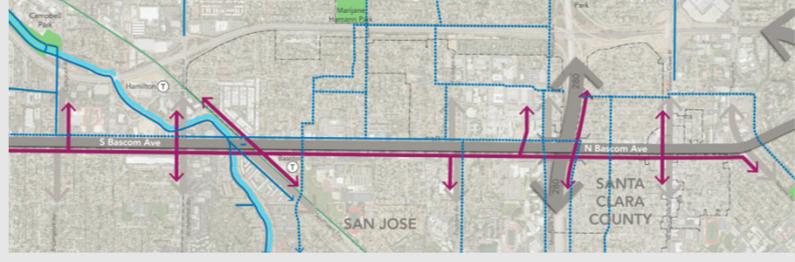




  
**BASCOM AVENUE**  
 COMPLETE STREETS STUDY



# ATTACHMENT C

## EXISTING TRANSIT CONDITIONS AND POTENTIAL IMPROVEMENTS

### EXISTING CONDITIONS AND OPPORTUNITIES REPORT

Public Review Draft | December 2017



a partnership of

## MEMORANDUM

Date: November 10, 2017

To:

From:

**Subject: Existing Transit Conditions and Potential Improvements on Bascom Avenue**

*SJ17-1708*

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This memorandum presents existing transit conditions along the Bascom Avenue corridor, which will inform the Bascom Avenue Complete Streets Study. The existing conditions covered in this memorandum include descriptions of the major destinations, route services, mode access to transit, bus stop conditions, and operational analysis of bus transit speeds and reliability.

The Bascom Avenue corridor extends six miles from the north at Interstate 880 to State Route 85 in the south. The street is designated as a "Class 1 Arterial" with three lanes in each direction. For most of the segment it is in either the City of San Jose or unincorporated Santa Clara County, but it passes through the City of Campbell for 1.5 miles. The north and central sections of the corridor are primarily commercial, civic, or hospital, with the remaining areas being largely residential.

### KEY FINDINGS

The existing transit system provides service to a majority of the north and central portions of Bascom Avenue. Although 54 stops are dispersed along the corridor, the major stops along Bascom Avenue, identified by ridership and transfer activity, were primarily located in the north and central portions of the corridor. The evaluation of major bus stops along Bascom Avenue have indicated that core bus stops are missing major amenities, such as seating and shelters, that would be expected for high ridership stops.

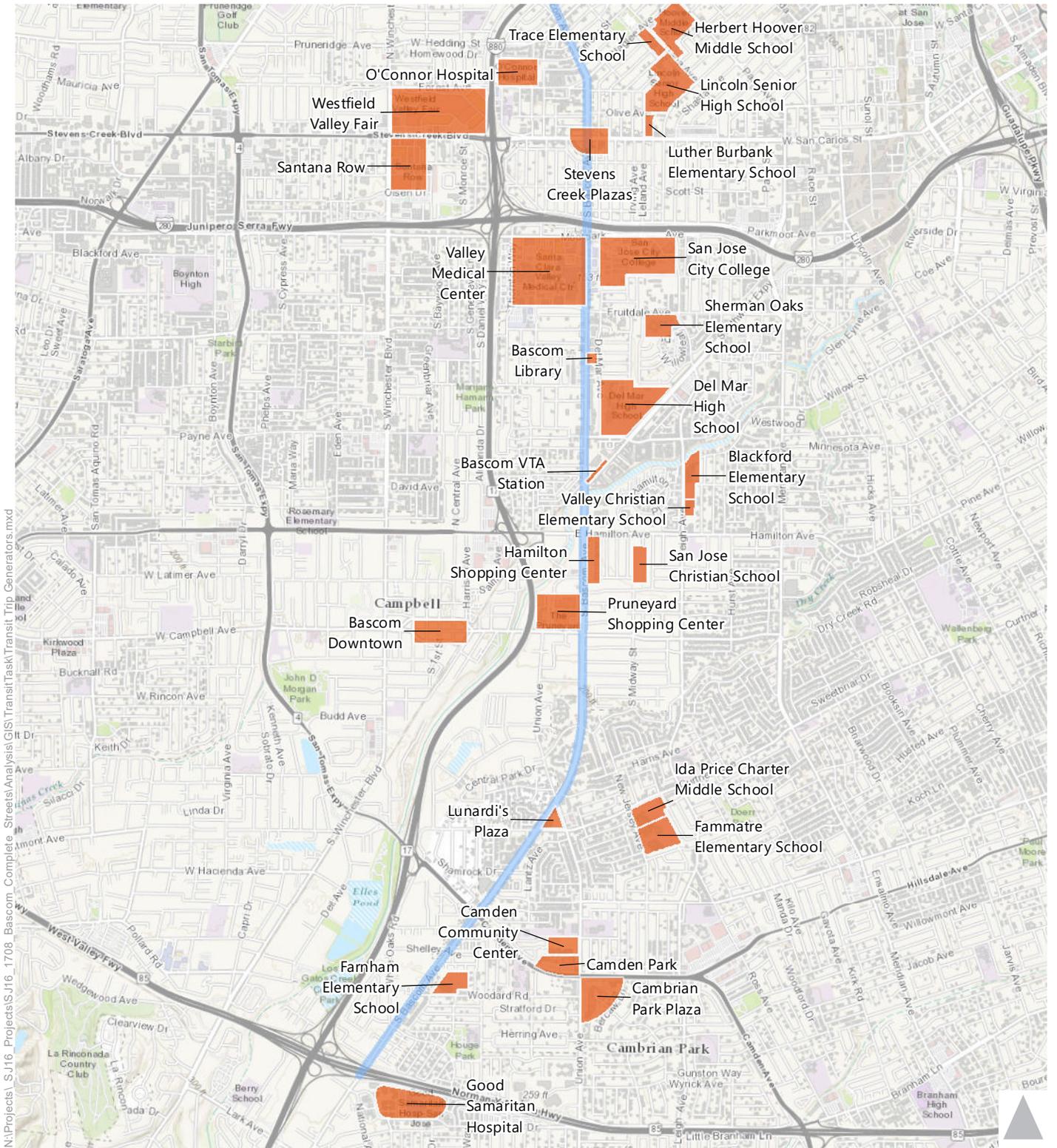
The operational analysis of the two primary bus routes, 61 and 62, show that intersecting major arterials are a large source of delay for buses during the midday to PM peak period in particular. Field observations indicated that much of the delay at intersections could be attributed to the curbside lane being used as a right-turn lane. Buses frequently get caught up in the queues in the



curbside lane caused by vehicles waiting to make a right-turn. A number of possible solutions for this have been identified, including shared bus/bike lanes, transit queue jump lanes, bus boarding bulbs, and dedicated turn lanes. Shared bus/bike lanes, and queue jump lanes would assist buses in avoiding congestion at the intersections caused by right-turn queues and could be most effective south of Stevens Creek Boulevard/San Carlos Street, where Bascom Avenue is currently a six-lane road. The effect of this design treatment on interactions with bicycles should be studied as a next step as part of the broader Complete Streets effort.

## **MAJOR DESTINATIONS**

There are many retail and commercial centers located primarily in the north and center portions of the corridor. The land uses in this corridor are primarily commercial, institutional, and residential. On Bascom Avenue itself, the major destinations include Hamilton Shopping Center and Pruneyard Shopping Center. Other major destinations consist of institutional centers such as the Valley Medical Center in the northern gateway of the corridor. Several schools, including San Jose City College, Del Mar High School, and Farnham Elementary School are located within a quarter mile of the corridor. Additional elementary and middle schools are within a half mile to a mile from the corridor. Major destinations along Bascom Avenue and its vicinity are shown in **Figure 1**.



**Legend**

- Trip Generators
- Bascom Avenue Corridor



Figure 1

**Transit Trip Generators**



## TRANSIT SERVICE

### EXISTING SERVICE

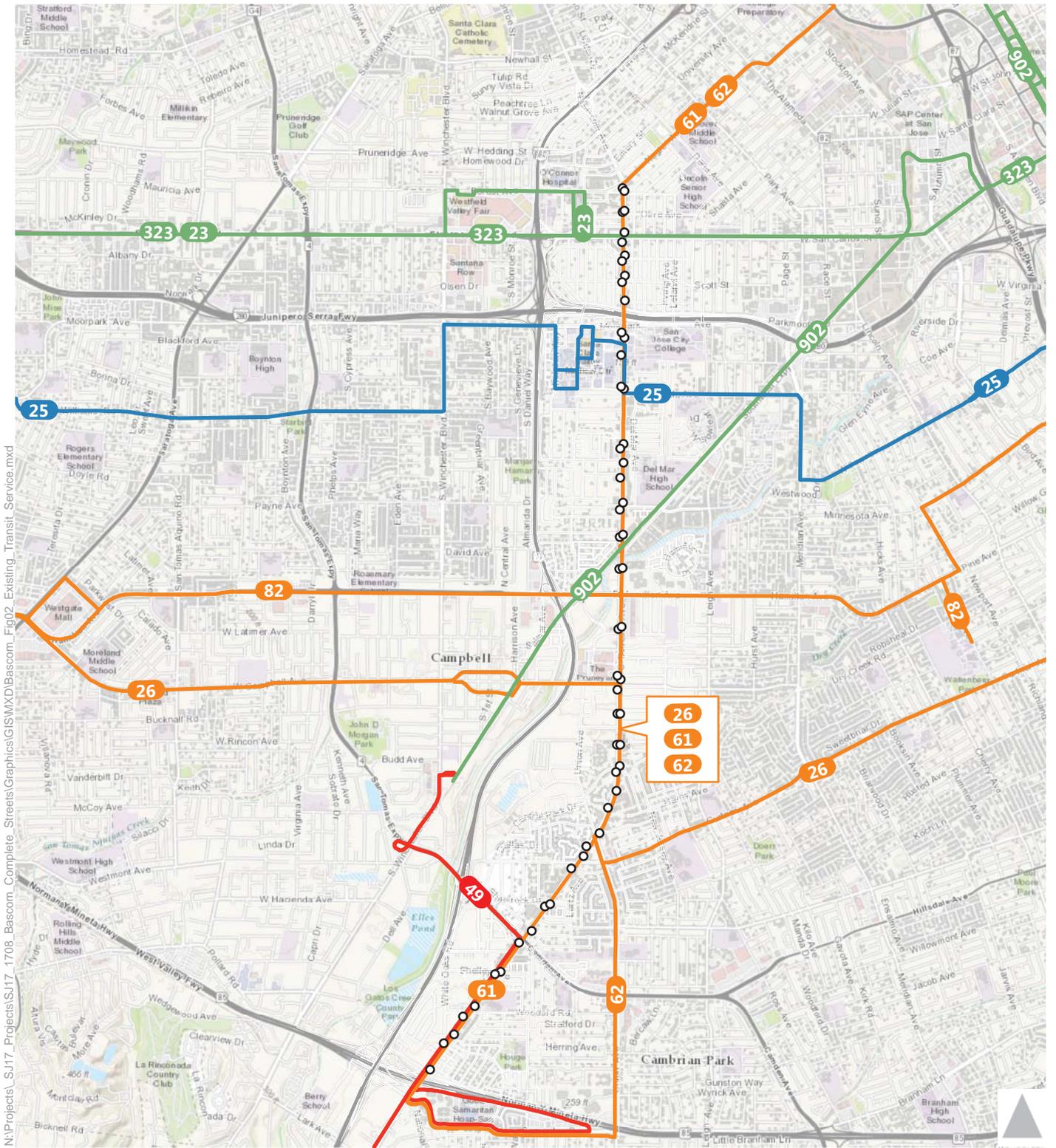
Public transit bus service along the Bascom Avenue corridor is provided by Santa Clara Valley Transportation Authority ("VTA"). There are several bus routes located near or on the Project corridor are shown on **Figure 2**.

Five bus routes travel partially along the corridor with 54 stops located on Bascom Avenue. Route 61 serves nearly the entire corridor, Route 62 serves a majority of the northern and central parts of the corridor, Route 26 travels along the center part of the corridor providing connections to the Mountain View Light Rail Station, downtown Campbell, and Eastridge Shopping Center, and Route 49 connects the southern end of the corridor to Winchester Light Rail Station and Los Gatos. Route 25 serves part of Bascom Avenue from Renova Drive to Fruitdale Avenue where Valley Medical Center and San Jose City College are located. Route 25 connects the northern section of Bascom Avenue to De Anza College in Cupertino and Alum Rock Transit Center in East San Jose.

Routes 23 and 323 intersect with the corridor and provide service to the Westfield Valley Fair and Santana Row, two major destinations identified near the corridor. Both routes connect the corridor to Cupertino and Downtown San Jose, with route 323 continuing further to Alum Rock Transit Center in East San Jose. Route 82 provides service in Campbell to Downtown San Jose and intersects with the center part of Bascom Avenue. The Mountain View to Winchester Light Rail intersects at the center of the corridor with two station a quarter mile from the corridor, Bascom Light Rail Station and Hamilton Light Rail Station.

Key characteristics, including peak hour headways, hours of operation, and major stop, of these routes are detailed in **Table 1**. Of the five routes along the corridor, only Route 25 has peak hour headways lower than 15 minutes. There are three intersecting routes, including the light rail from Mountain View to Winchester, that have peak hour headways at or less than 15 minutes. All routes, except for Route 49, provide service past 9:00 PM. A majority of the routes provide service for the bus stops on the north and center portions of Bascom Avenue.

**Figure 3** illustrates the ridership at the 54 bus stops on Bascom Avenue. Ridership is shown by boardings and alightings. Boardings are the number of riders boarding onto the bus, alightings are the number of riders boarding off the bus. Ridership data from VTA is found in **Appendix A**.



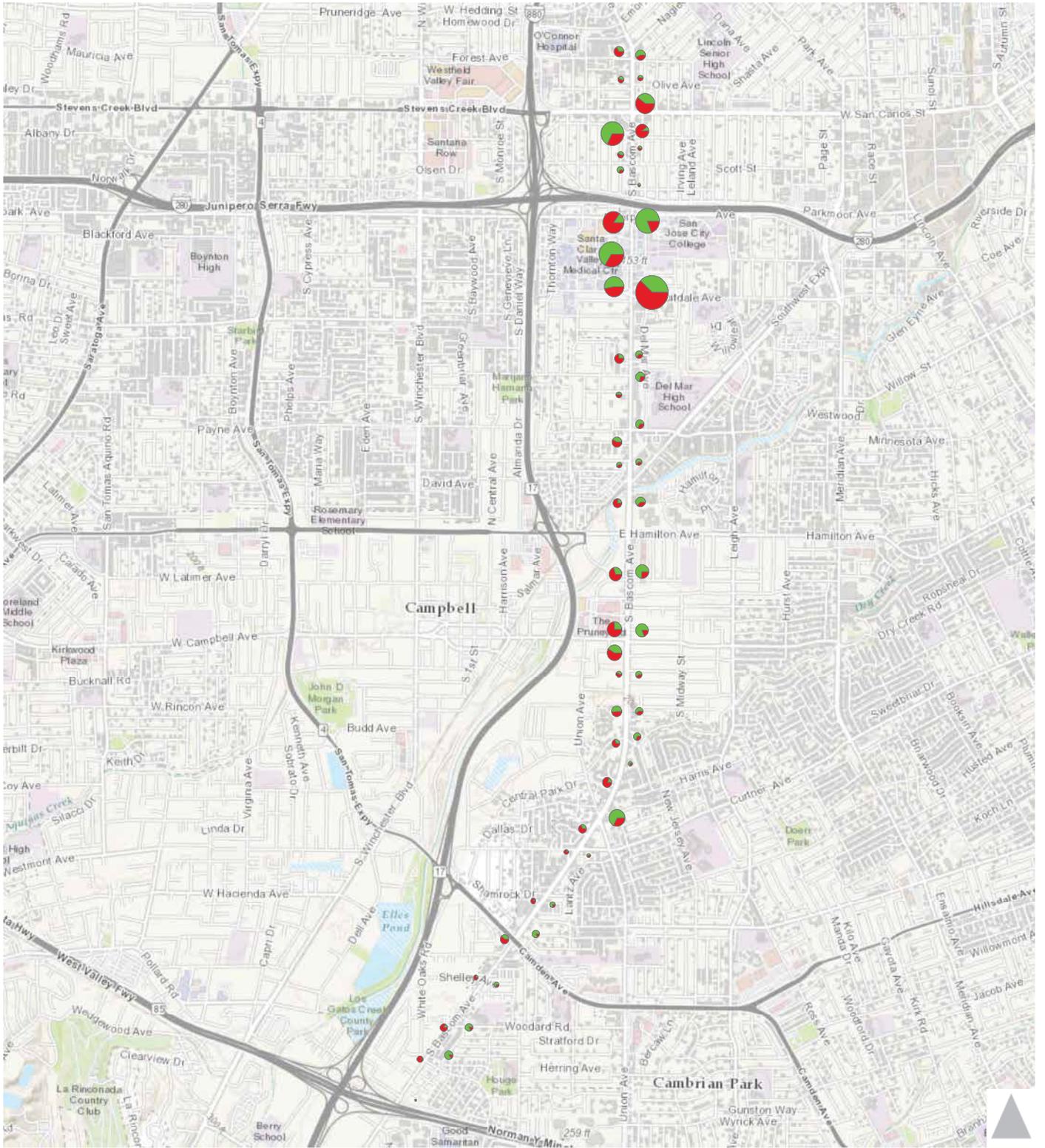
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**Route Frequencies (minutes)**

- 10
- 16 - 30
- 11 - 15
- 31 - 45
- Bus Stops Along Bascom Ave



Figure 2  
Existing Transit Service



Average Daily Ridership for Routes 61 and 62  
(Bascom Bus Stop)

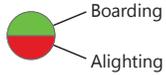


Figure 3  
Ridership by Bus Stop



**TABLE 1: LOCAL VTA OPERATIONS**

<b>Route Number</b>	<b>AM Peak Weekday Headways (7 AM – 9 AM)</b>	<b>Midday Peak Weekday Headways (12 PM – 2 PM)</b>	<b>PM Peak Weekday Headways (4 PM – 7 PM)</b>	<b>Hours of Operation</b>	<b>Major Stops</b>	<b>Points of Interest</b>	<b>Neighborhoods Served by Route</b>
<b>Along Corridor</b>							
25	10 min	10 min	11 min	5:11 AM – 12:34 AM	Fruitdale and Bascom	De Anza College, San Jose City College, Santa Clara Valley Medical Center	S. Bascom Avenue (North) Urban Village
26	30 min	30 min	30 min	5:20 AM – 11:11 PM	Campbell and Bascom	The Pruneyard Shopping Center, West Valley College, East Ridge Transit Center	Union, East Campbell
49	45 min	64 min	45 min	6:20 AM – 7:51 PM	Camden & Olympia (Bascom)	Downtown Los Gatos	S. Bascom Avenue (North) Urban Village, White Oaks
61	30 min	30 min	30 min	5:53 AM – 9:38 PM	Bascom and Palmer, Bascom and Campbell, Bascom and San Carlos, Bascom and Renova, Bascom and Fruitdale, Bascom and Eden	Prune Yard Shopping Center, Bascom Station, Santa Clara Valley Medical Center, San Jose City College, Good Samaritan Hospital, Hamilton Shopping Center, Bascom Branch Library	S. Bascom Avenue (North) Urban Village, Union, East Campbell, White Oaks



Route Number	AM Peak Weekday Headways (7 AM – 9 AM)	Midday Peak Weekday Headways (12 PM – 2 PM)	PM Peak Weekday Headways (4 PM – 7 PM)	Hours of Operation	Major Stops	Points of Interest	Neighborhoods Served by Route
62	30 min	30 min	30 min	5:30 AM – 11:00 PM	Bascom and Palmer, , Bascom and Campbell, Bascom and San Carlos, Bascom and Renova, Bascom and Fruitdale, Bascom and Eden	Santa Clara Valley Medical Center, San Jose City College, Good Samaritan Hospital, Hamilton Shopping Center , Prune Yard Shopping Center, Bascom Station, Pruneyard, Cambrian Park Plaza, Bascom Branch Library	S. Bascom Avenue Village, Union
<b>Intersect Corridor</b>							
23	12 min	12 min	12 min	5:21 AM – 1:05 AM	San Carlos and Topeka,	Santana Row, Cupertino Square , Westfield Valley Fair, San Jose Convention Center, De Anza College, San Jose State University	W. San Carlos Street Village, Valley Fair/Santana Row
82	30 min	30 min	30 min	5:54 AM – 9:27 PM	Hamilton and Bascom,	Hamilton Station, Westgate Shopping Center, San Jose State University	East Campbell, Hamilton Avenue/Meridian Avenue Village
323	15 min	15 min	15 min	6:20 AM – 10:48 PM	San Carlos and Topeka,	De Anza College, San Jose State University, Santana Row, Westfield Valley Fair, San Jose Convention Center	W. San Carlos Street Village, Valley Fair/Santana Row
Light Rail: Mountain View - Winchester	15 min	30 min	15 min	5:13 AM – 12:12 AM	Hamilton Station and Bascom Station	Del Mar High School, Hamilton Station, Bascom Station	East Campbell, Southwest Expressway Village

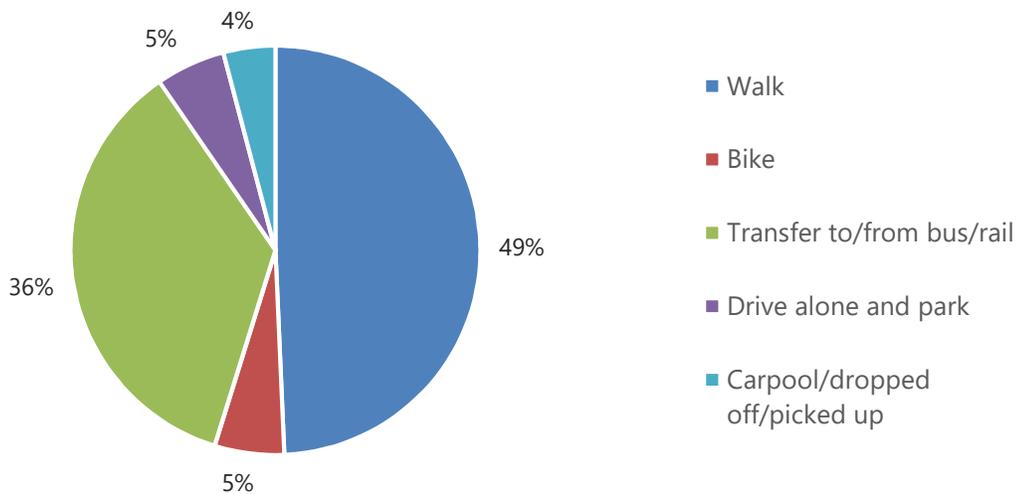


## MODE OF ACCESS

VTA provided data from on-board surveys conducted in 2013 on routes along and intersecting Bascom Avenue. The on-board survey includes the VTA route number the survey took place in, and rider answers to questions about the rider's starting location of the trip, and how the rider got to the VTA vehicle. The data was filtered for routes either along or intersecting Bascom Avenue, and starting locations around Bascom Avenue. The filtered routes include 23, 25, 26, 49, 61, 62, 82, and 323. The surveys were conducted on weekdays with a majority of surveys collected on Thursdays and Fridays. The surveys were conducted throughout the day with a majority of the surveys conducted from 5:00 AM to 7:00 PM. Over half of the surveys were conducted during the midday period (9:00 AM to 3:00 PM).

**Figure 4** summarizes the percentage of the modes surveyed riders used to access a bus stop along Bascom Avenue. Nearly half of the respondents indicated walking to the bus stop, and the second most common mode of access was transferring to or from another bus or rail. The mode access results for bus stops on Bascom Avenue are typical when compared to mode access for all bus stops in the VTA system. From VTA's *2013 On-Board Management Survey Report*, 51% of respondents walked to a stop and 37% transfer to or from another transit vehicle, which are similar to the results for Bascom Avenue bus stops.

Figure 4. Mode Access to Bus Stops for routes that serve Bascom Avenue





## PLANNED CHANGES

Planned changes for the VTA routes along and intersecting Bascom Avenue are included in VTA's FY 2014 – 2023 Short Range Transit Plan and VTA's Next Network Plan.

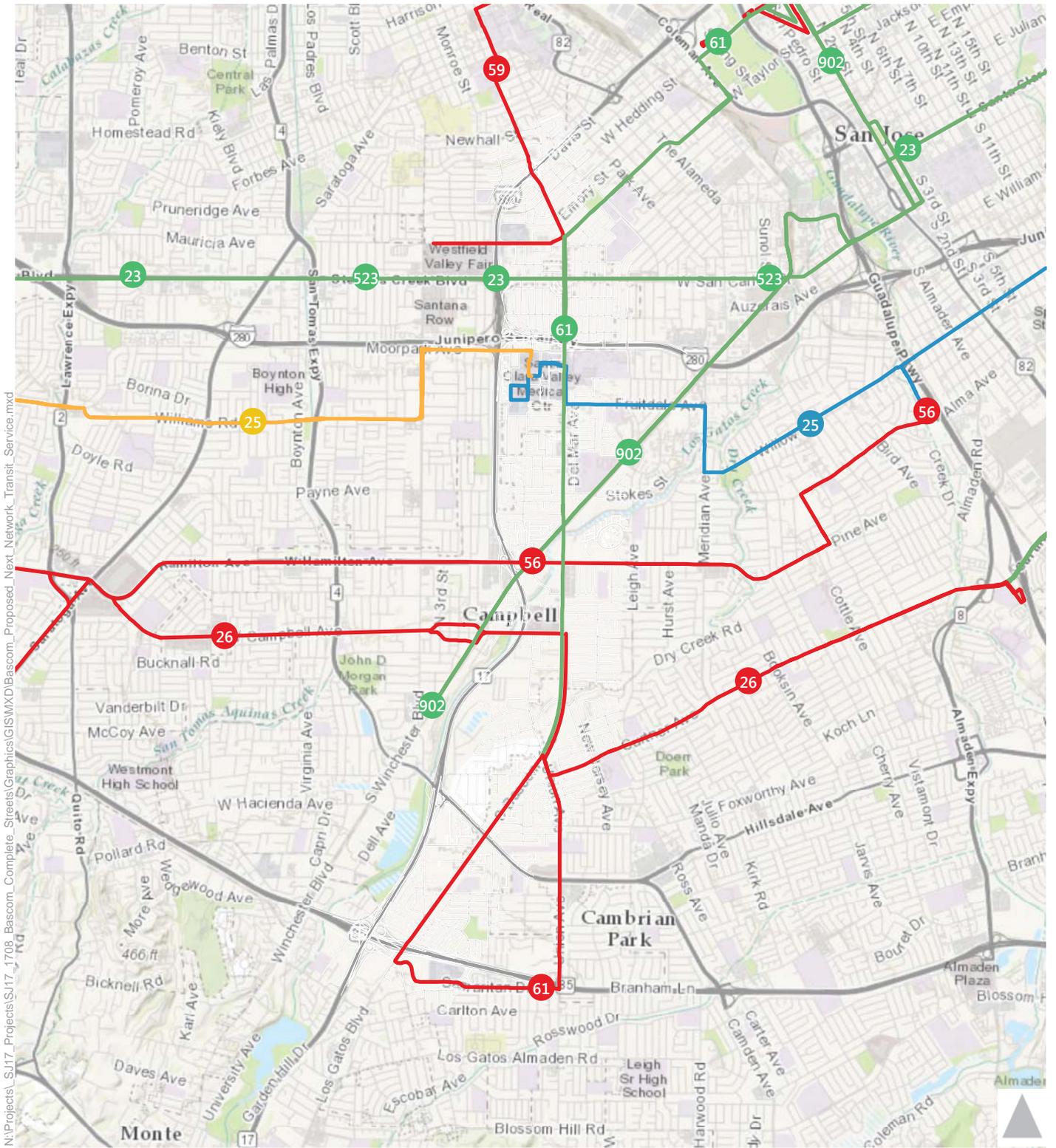
### Short Range Transit Plan

The Short Range Transit Plan (SRTP) adopted in August 2014 was prepared and submitted to the Metropolitan Transportation Commission (MTC) by VTA staff. The plan outlines an overview of the existing transit system, VTA's planning process, transit performance, operational plan, and capital improvement for the financial years 2014 to 2023. The SRTP presented planned services for the bus, light rail, and paratransit from FY 2014 to 2023.

Bus service changes in the SRTP include changes to two routes on Stevens Creek Blvd intersecting Bascom Avenue: Route 323 and Route 23. In the SRTP, Route 323 is proposed to be upgraded to a Bus Rapid Transit Route 523 from Lockheed Martin Transit Center to Berryessa BART Station. This change would include an increase in frequency from 15 minutes to 10 minute on the weekdays. The proposed change for Route 23 terminates the service in Downtown San Jose instead of the Alum Rock Light Rail Station.

### Next Network

VTA undertook the Next Network Final Transit Service Planning effort in 2016 and 2017 to redesign their entire transit network for the FY 2018 to 2019 transit service plan with the goals of increasing overall ridership, improving cost effectiveness, and connecting to the future BART Silicon Valley Extension stations. The Final Transit Service Plan was submitted to the VTA Board of Directors on April 7, 2017. VTA has finalized changes to the routes; though, bus stops have not been finalized. The Next Network Final Transit Service Plan contains changes in alignment, frequency, and span to all the transit routes along and intersecting Bascom Avenue. The changes proposed to Route 23 and Route 323 from the SRTP are included in the Next Network Plan. Prominent changes from the Next Network include a new Route 59 serving North Bascom, the discontinuation of route 49 and 82, and increased peak hour frequency from 30 minutes to 15 minute headways for Route 61. The changes in alignment and frequency to routes serving Bascom Avenue are shown in **Figure 5**. These changes from the Next Network Final Plan for routes serving Bascom Avenue are described in detail in **Table 2**.



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**Route Frequencies (minutes)**

- 
 12
 - 
 15
 - 
 24
 - 
 30
 


Figure 5  
Proposed Next Network Transit Service



**TABLE 2: PROPOSED VTA OPERATIONS**

Route	AM Peak Weekday Headways (7 AM – 9 AM)	Midday Peak Weekday Headways (12 PM – 2 PM)	PM Peak Weekday Headways (4 PM – 7 PM)	Hours of Operation	Changes
<b>Along Corridor</b>					
25	12 min <sup>1</sup>	12 min <sup>1</sup>	12 min <sup>1</sup>	5:30 AM – 12:00 AM	Frequency would decrease from 10 minutes to 12 minutes during weekday AM and Midday peak and 11 minutes to 12 minutes during weekday PM peak.
26	15 min <sup>2</sup>	30 min	15 min <sup>2</sup>	5:30 AM – 12:00 AM	Route 26 would be separated into two routes, 26 and 56, west of Bascom Avenue. Route 26 would continue to run along Bascom Avenue. Route 56 would intersect the corridor. Route 26 would no longer continue service north of Hamilton to the Lockheed Martin Station. Route 26 would provide service starting at West Valley College to the Eastridge Transit Center. Frequencies would increase from 30 minutes to 15 minutes during the AM and PM peak periods
49	–	–	–	–	Discontinued. Route 27 would replace Route 49 services from Winchester Station to Los Gatos. Route 61 would continue to provide services on Bascom from Campbell to SR 85.
59	30 min	30 min	30 min	5:30 AM – 10:00 PM	New route connecting Valley Fair, O'Connor Hospital, Santa Clara Caltrain Station, Mission College, and Baypointe Light Rail Station. The route would go along Bascom Avenue between Naglee Avenue and I-880.



Route	AM Peak Weekday Headways (7 AM – 9 AM)	Midday Peak Weekday Headways (12 PM – 2 PM)	PM Peak Weekday Headways (4 PM – 7 PM)	Hours of Operation	Changes
61	15 min <sup>3</sup>	15 min <sup>3</sup>	15 min <sup>3</sup>	5:30 AM – 12:00 AM	Frequency would increase along Bascom north of Union Avenue from 30 minutes to 15 minutes during weekday peak hours. A segment of the route would continue in a loop after Union Avenue to provide service to Los Gatos.
62	–	–	–	–	Discontinued, but offset by service increases for Route 61.
<b>Intersect Corridor</b>					
23	15 min	15 min	15 min	5:00 AM – 1:00 AM	Frequency changed to 15 minutes during weekday peak periods. Route would serve Stevens Creek Blvd instead of Forest Ave.
56	30 min	30 min	30 min	5:30 AM – 10:00 PM	Route would connect Lockheed Martin Transit Center to the Tamien Station. Route would replace Route 82 service along Hamilton Avenue.
82	–	–	–	–	Discontinued. Route 56 would provide service along Hamilton Avenue.
523	15 min	15 min	15 min	5:00 AM – 10:30 PM	Route 323 would be replaced with Bus Rapid Transit Route 523. Frequency increased to 15 minutes from 6 AM to 7 PM. Route extends from Lockheed Martin Transit Center to Berryessa BART Station.
902 - Green Line LRT	15 min	15 min	15 min	5:00 AM – 12:00 AM	Frequency increased to 15 minutes all day. Light Rail route would no longer provide service between Mountain View station and Old Ironside station. Route service would be provided from Old Ironside station to Winchester Station.

Notes:

1. Route 25 has 24 minute frequencies from De Anza College to Valley Medical Center. Split peak hour frequencies have not be finalized by VTA.
2. Route 26 has 30 minute frequencies from the West Valley College Transit Center to the Curtner Light Rail Station. Split peak hour frequencies have not be finalized by VTA.
3. Route 61 has 30 minute frequencies south of Union Avenue. Split peak hour frequencies have not be finalized by VTA.



## BUS STOPS

The following is a summary of the current conditions of the bus stops along Bascom Avenue and the potential improvements based on desired amenities levels identified in VTA's Transit Passenger Environment Plan (TPEP) and Pedestrian Access to Transit Plan Draft Final Plan.

### EXISTING CONDITIONS

VTA provided a bus stop inventory for all the routes along and intersecting the corridor. The inventory includes information of the routes that serve the bus stops, stop configuration, available sidewalk width, existing amenities at the bus stops, and photos. Existing amenities include benches, shelters, street lighting, trash receptacles, route real time identification (RTI) decal, and tactile signage. In **Appendix B**, the table summarizes the current conditions and missing amenities and streetscape elements for the 54 bus stops along Bascom Avenue.

Currently, 30 percent of the stops have bus pullout stop configurations, with the remaining having regular curbside stop configurations. More than half of the bus stops are mid-block bus stops. The remaining majority are located on the far-side of the block. Ten stops (19 percent) do not meet the TPEP recommended five feet of available sidewalk widths.

Amenities for the bus stops were assessed based on the bus stops types. The bus stop type was identified using ridership and the bus stop classifications for Suburban stops from VTA's TPEP. Basic bus stops average approximately 40 boardings per weekday and core bus stops average approximately between 40 and 200 boardings per weekday. From the 54 stops along Bascom Avenue, 45 bus stops classify as basic stops and nine bus stops classify as core stops.

After classifying the bus stops, the existing amenities and nearby streetscape elements were consolidated for each stop. Twelve stops along Bascom Avenue have shelters, including all the core bus stops. Currently, 32 bus stops have some type of seating. All the basic and core bus stops have nearby street lighting and trash receptacles that are not maintained by VTA.

Overall, many bus stops along Bascom Avenue are missing desired amenities outlined in the TPEP for core and basic stops. The next section provides details on missing amenities and potential improvements for the bus stops.



## POTENTIAL IMPROVEMENTS

We have identified potential improvements for the passenger waiting environment for ten priority stops along Bascom Avenue. High ridership, high transfer activity, and extent of needed improvements were the three variables used to identify the ten priority locations. The extent of needed improvements was defined by comparing existing conditions against desired amenities and streetscape elements for basic and core stops described in the TPEP. The guidelines and recommendations provided in the TPEP were used to identify potential improvements to the passenger waiting environment.

One of the ten priority locations is categorized as a “basic stop”. From the TPEP, basic stops should at a minimum have a standard bus stop sign, tactile signage, real-time information (RTI), and street lighting.

Nine of the ten priority locations are defined as “core stops”. Desired amenity levels for core stops are all the amenities required for a basic stop plus seating, lighting other than street lighting (e.g. in-shelter lighting), and shelters. Although a majority of the major stops currently have shelters, shelters with transparent walls are recommended at a minimum for core stops for improved passenger safety and visibility.

The ten stops and potential improvements based on TPEP guidelines and recommendations are provided in **Table 3**.



**TABLE 3: POTENTIAL IMPROVEMENTS FOR TEN MAJOR STOPS**

Cross Street	Average Weekday Boardings	Routes Served	Transfer Routes <sup>1</sup>	Type of Stop	Potential Improvements
W San Carlos Street (Northbound)	61	62, 61	23, 323	Core	Add a transparent shelter with in-shelter lighting over the existing benches and include tactile signage, map and map, and schedule information. Provide a recommended 5' of pedestrian walk space between stop amenities and curb.
W San Carlos Street (Southbound)	151	62, 61	23, 323	Core	In the existing shelter, add in-shelter seating and lighting with a standalone bench outside to serve the high boardings at this location. Provide tactile signage, map, and schedule information. Upgrade shelter to a transparent shelter.
Moorpark Ave/ Renova Dr (Northbound)	29	62, 61	25	Basic	Upgrade shelter to include a bench or leaning bar.
Moorpark Ave/ Renova Dr (Northbound)	194	62, 61, 25	-	Core	In the existing shelter, add in-shelter seating and lighting with a standalone bench outside to serve the high boardings at this location. Provide tactile signage, map, and schedule information. Upgrade shelter to a transparent shelter.
Renova Dr (Southbound)	172	62, 61, 25	-	Core	In the existing shelter, add in-shelter seating and lighting with a standalone bench outside to serve the high boardings at this location. Provide a trash receptacle near the passenger waiting area, tactile signage, map, and schedule information. Provide addition shade and shelter trees. Upgrade shelter to a transparent shelter.
Fruitdale Avenue (Southbound)	85	62, 61	25	Core	Add a transparent shelter with in-shelter lighting over the existing benches and include map and schedule information.



Cross Street	Average Weekday Boardings	Routes Served	Transfer Routes <sup>1</sup>	Type of Stop	Potential Improvements
Fruitdale Avenue (Northbound)	168	62, 61, 25	-	Core	In the existing shelter, add in-shelter seating and lighting with a standalone bench outside to serve the high boardings at this location. Provide tactile signage, map, and schedule information. Upgrade shelter to a transparent shelter.
Campisi Way	56	62, 61	82	Core	In the existing shelter, add in-shelter seating and lighting with a standalone bench outside to serve the high boardings at this location. Provide tactile signage, map, and schedule information. Upgrade shelter to a transparent shelter.
E Campbell Avenue	54	62, 61	26	Core	Upgrade to a transparent shelter with in-shelter seating and lighting, and a standalone bench outside to serve the high boardings at this location. Provide a trash receptacle, tactile signage, map, and schedule information.
Union Avenue	78	62, 61, 26	-	Core	Provide in-shelter seating and standalone bench, in-shelter lighting, RTI decal, tactile signage, and map and schedule information. Upgrade shelter to a transparent shelter.

Notes:

1. Transfer routes are identified as routes along the cross street near the bus stop.



## OPERATIONAL ANALYSIS

The following is a summary of the current operational conditions for VTA bus service along the Bascom Avenue corridor.

### EXISTING CONDITIONS

Using March 2016 automatic vehicle location (AVL) data provided by VTA, average bus speed and reliability were calculated for Routes 61 and 62, by study segment, by direction, and by time of day. While travel speeds and reliability were calculated for every time period, only AM (6-9 AM) and PM (4-7 PM) time periods were evaluated in detail as these are the two commute peaks during which buses are expected to experience the most delay due to vehicle congestion. The speed and reliability statistics consider the entire travel time from the start to the end of the segment; therefore, they include any delay caused by stopping at intersections or stops. A map of the study segments is shown in **Figure 6**.

#### Bus Speed and Reliability

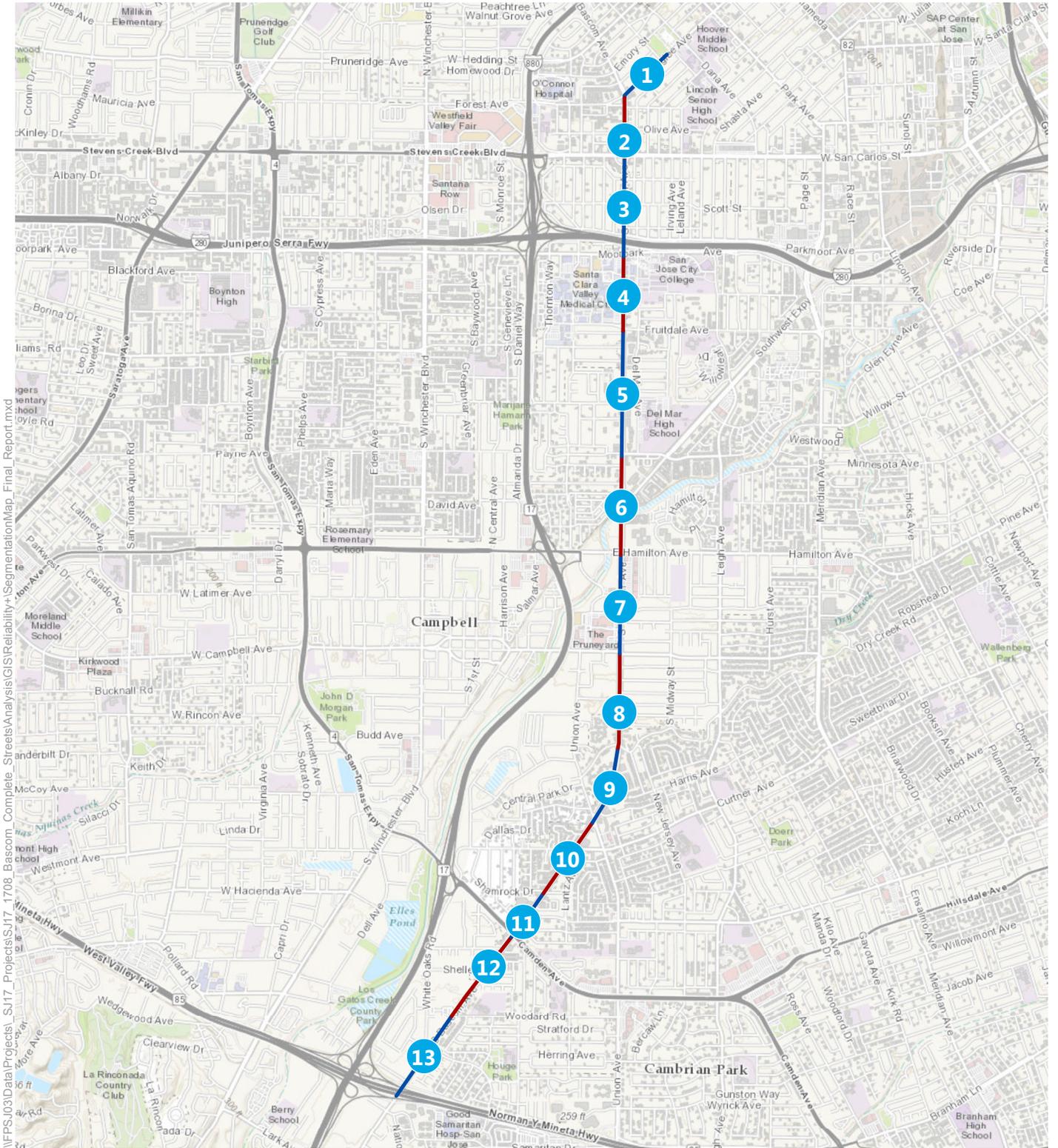
The corridor was partitioned into segments to isolate travel times and speeds between major intersections, key destinations, and bus stops. Average speed and travel time reliability were evaluated across each of the segments displayed in **Figure 7** and **Figure 8**. The average segment length is approximately 2,500'. A segmentation of this scale enabled the identification of hot spots of potentially unreliable or low speed route segments that could be used to isolate specific high delay intersections or coupled intersection pairs (depending on the block sizes along Bascom). The data was filtered for weekday travel only for routes 61 and 62.

Along the entire 5.7 mile long study corridor, the average northbound AM and PM peak period travel speeds are 10.9 MPH and 10.0 MPH respectively, while the average southbound AM and PM peak period travel speeds are 10.4 MPH and 9.1 MPH respectively. The average bus speeds per segment during the AM and PM peak periods vary from 7 MPH (AM) near the Santa Clara Valley Medical Center to 29 MPH (AM) between Camden Avenue and Woodard Road. Generally, speeds both northbound and southbound tend to be slower on segments north of Camden Avenue, near Hamilton Avenue, and near the Santa Clara Valley Medical Center and San Jose City College. Reliability along the corridor, measured by the coefficient of variation of travel time, is a statistic that normalizes the standard deviation of travel times by the mean travel time of buses traversing each study segment. A high reliability, reflected by lower coefficient of variation, is important because it helps buses to stay on schedule and not bunch, leads to a more predictable service for



patrons, and makes service easier to schedule. For example, the analysis shows that while buses tend to slow down near the Santa Clara Valley Medical Center and San Jose City College, this is done in a consistent manner, i.e. in this area the buses are “reliably slow”. However, notable reliability hotspots (where travel times vary significantly relative to average travel times) are clustered at the intersection of Naglee Avenue and Bascom Avenue and along portions of Bascom Corridor from Dry Creek Road to Woodard Road.

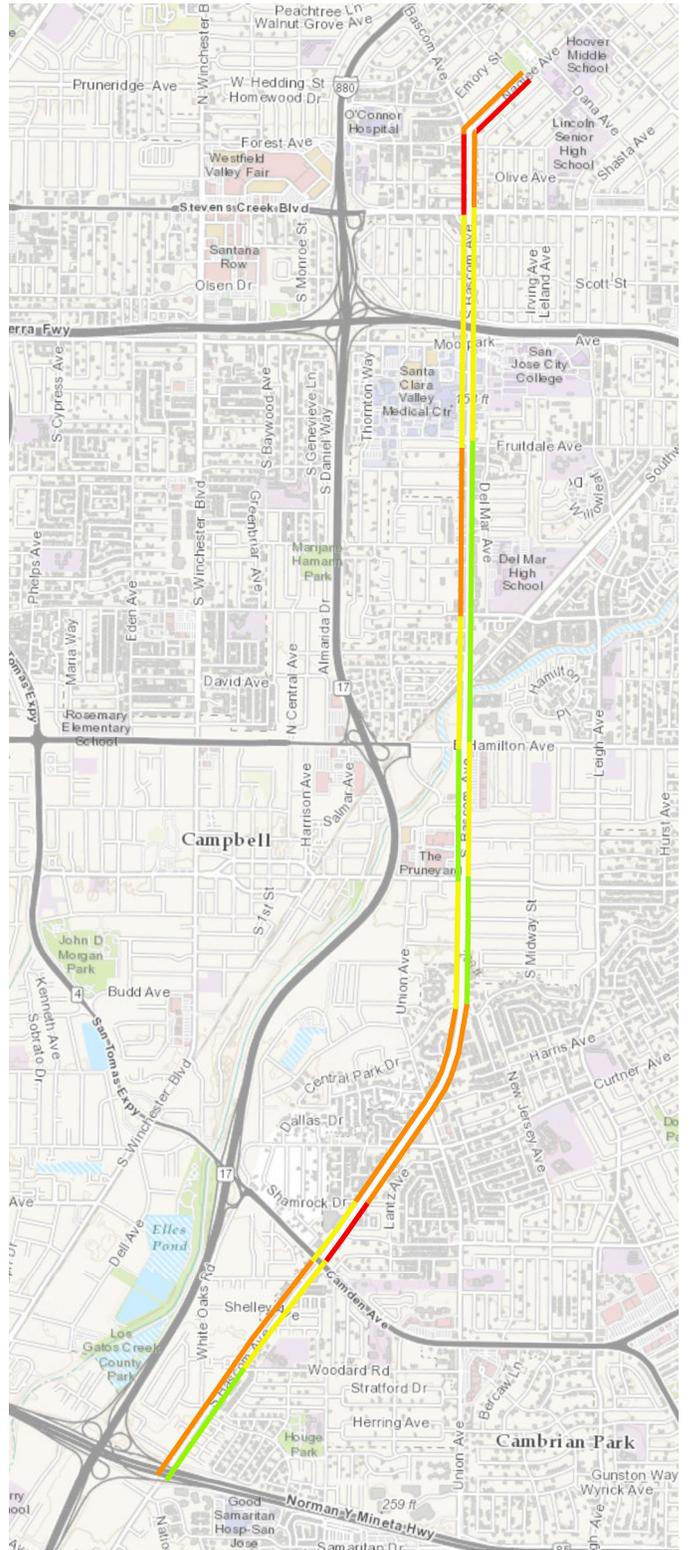
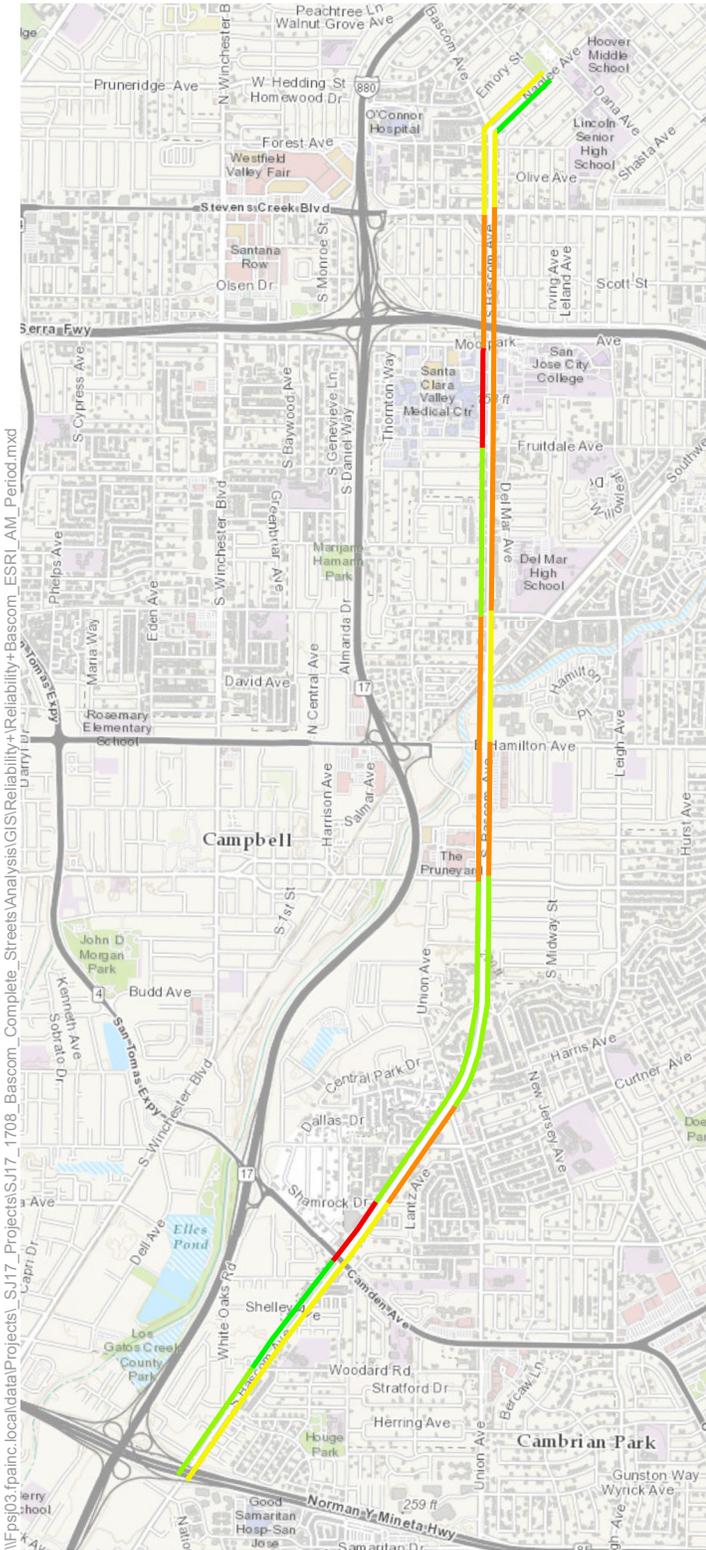
The travel speeds and reliability statistics for each of the study segments are summarized in **Appendix C**. The travel speeds represent the average speed in MPH during the AM and PM time periods, while the travel reliability statistics represent the coefficient of variation of travel times across the segments (standard deviation of travel time normalized by the mean travel time). **Figures 7** and **Figures 8** display both the average travel speeds and reliability statistics for the AM and PM peak periods respectively.



— Study Segments



Figure 6  
Segmentation Map



Average Travel Speed

- █ < 10
- █ 11 - 15
- █ 16 - 20
- █ 21 - 25
- █ > 25

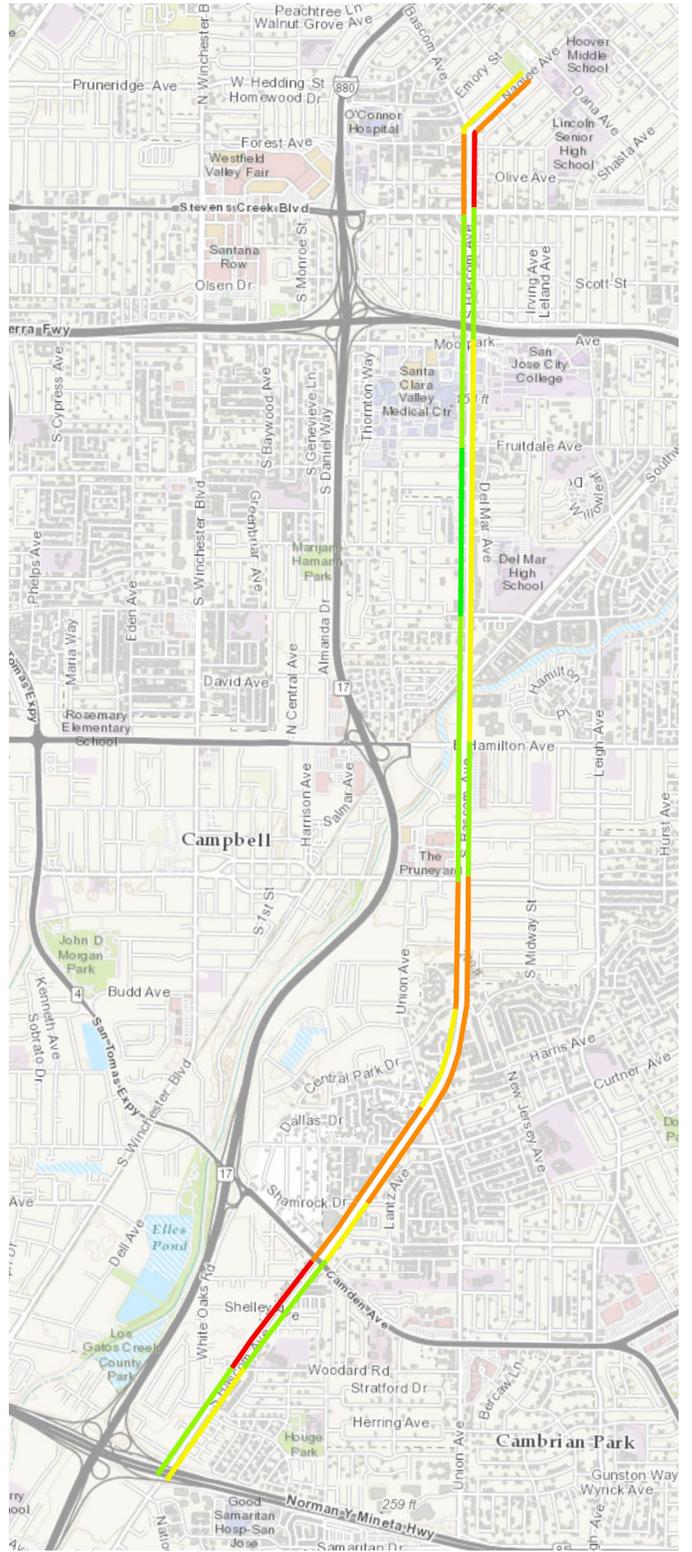
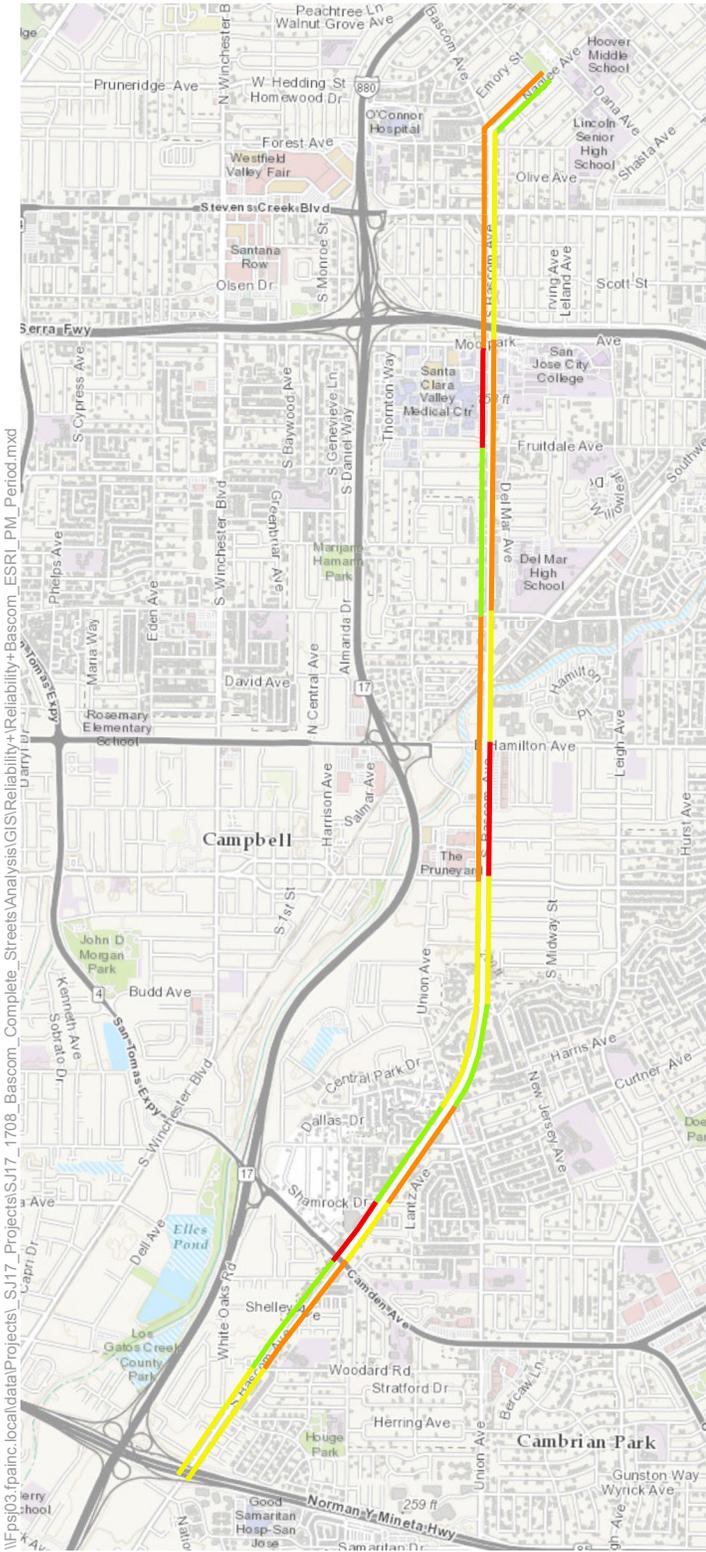
Reliability (Coefficient of Variation)

- █ < 0.50
- █ 0.50 - 0.75
- █ 0.75 - 1.0
- █ 1.00 - 1.25
- █ > 1.25

Figure 7

Transit Speed and Reliability (6-9 AM)





Average Speed

- < 10
- 11 - 15
- 16 - 20
- 21 - 25
- > 25

Reliability (Coefficient of Variation)

- < 0.50
- 0.50 - 0.75
- 0.75 - 1.0
- 1.00 - 1.25
- > 1.25

Figure 8

Transit Speed and Reliability (4-7 PM)



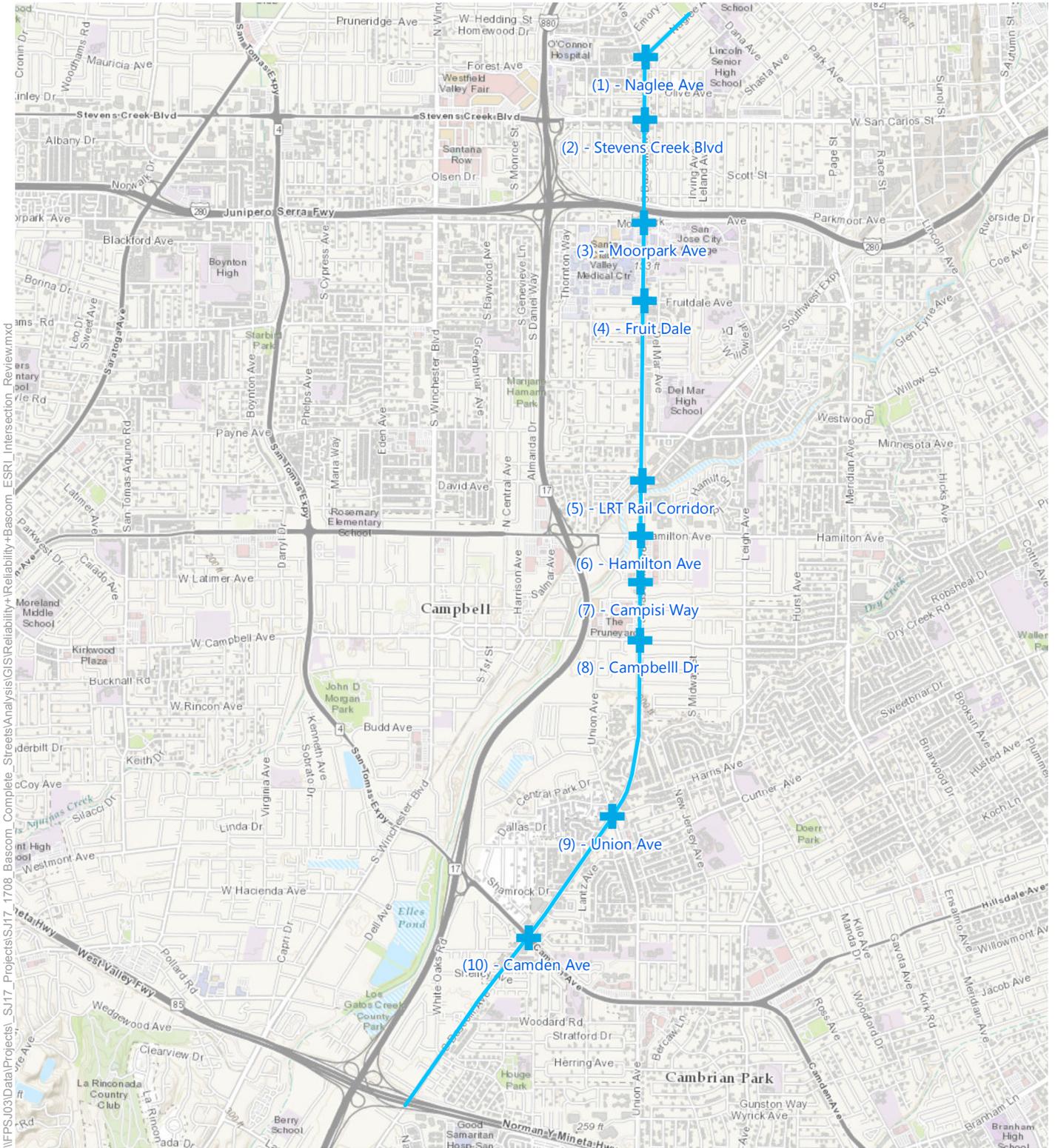


### Intersection Operations

Based upon the segment AVL analysis results, the functional class of cross streets, and ridership information provided by VTA, individual intersections were identified for more detailed AVL analysis of bus stops and delay during the AM and PM peak periods.

Ten signalized intersections were chosen for a focused analysis to determine the efficacy of the existing traffic signal operation for buses. The ten intersections included in this analysis are shown in **Figure 9**. Fehr & Peers has developed a GIS tool to determine the number of vehicle runs that were stopped at each of the selected signalized intersections. Using the AVL data with unique vehicle runs identified for the March 2016 time frame, the tool categorized each AVL data point by intersection and approach. Based on the percentage of stopped runs at each intersection approach and the mean delay at each intersection, we are able to identify which intersections are higher priority for more detailed field observations to inform potential future transit infrastructure improvements.

Each signalized intersection was assigned a buffer distance, typically the distance from the stop bar to the maximum intersection turn lane depth, to filter specific records that would be associated with a stopped bus. For example, the AVL data points for a northbound bus for a particular intersection included all records south of the intersection near the stop bar, with an appropriate buffer distance from the stop bar to account for variations in expected intersection queue lengths, distance to the stop bar, and vehicle speeds. For each intersection and route direction, the proportion of buses that stopped and the resulting average signal delay were calculated, as shown in **Table 4**.



- + Study Intersections
- Study Corridor



Figure 9  
Study Intersections



**TABLE 4: ROUTE 62 AND 61 INTERSECTION-LEVEL EVALUATION RESULTS<sup>1</sup>**

<b>Intersection ID</b>	<b>Cross Street</b>	<b>Direction</b>	<b>Mean Delay (sec)<sup>2</sup></b>	<b>Standard Deviation of Delay (sec)<sup>2</sup></b>	<b>Percentage of Bus Runs That Stop at Signal<sup>3</sup></b>
1	Naglee Avenue	NB	18	8	20%
		SB	<b>56</b>	40	28%
2	Stevens Creek Blvd	NB	37	27	28%
		SB	<b>48</b>	31	20%
3	Moorpark Avenue	NB	38	30	31%
		SB	40	26	15%
4	Fruitdale Avenue	NB	<b>51</b>	34	<b>57%</b>
		SB	43	29	<b>55%</b>
5	LRT Rail Corridor	NB	14	8	35%
		SB	20	12	36%
6	Hamilton Avenue	NB	<b>59</b>	44	38%
		SB	<b>60</b>	41	44%
7	Campisi Way	NB	30	19	22%
		SB	33	24	35%
8	Campbell Avenue	NB	29	17	27%
		SB	<b>50</b>	<b>49</b>	44%
9	Union Avenue	NB	43	36	24%
		SB	<b>46</b>	31	30%
10	Camden Avenue	NB	<b>48</b>	41	35%
		SB	<b>53</b>	<b>47</b>	<b>51%</b>

Notes:

1. Results reflect analysis results from all AVL points captured within the AM and PM peak periods combined.
2. All results that show a mean or standard deviation in delay times greater than 45 seconds are **bolded** for emphasis.
3. The percentage of buses that stop at a signal is derived from the subset of bus runs that have at least two pings with at least 10 seconds of time spent in the intersection search buffer. All percentage stop rates greater than 50% are **bolded** for emphasis.



## POTENTIAL IMPROVEMENTS

Six key areas along the corridor have been identified as areas with low speeds and reliability issues; therefore, they have high improvement potential and are appropriate locations to consider transit infrastructure improvements. Below the six areas are identified by cross street.

1. Naglee Avenue
2. Stevens Creek Boulevard/San Carlos Street
3. Fruitdale Avenue
4. Hamilton Avenue
5. Dry Creek Road
6. Union Avenue

Field observations were completed at the six intersections during the PM period on a typical weekday. During the PM peak period, congestion was largely observed in the north and middle segments of the corridor which is consistent with the speed and delay operational analysis. Throughout the corridor, through moving vehicles sometimes moved out of the curbside lane as it was predominantly used by right-turning vehicles. Buses were seen using the middle through lane for the intersection and moving to the curbside lane after the intersection to avoid the queues along the curbside lane. These observations, and operational justifications for the six key areas are provided for each potential improvement in **Table 5**.



**TABLE 5: POTENTIAL IMPROVEMENTS**

Treatment	Criteria/Condition	General Justification	Recommended Location	Observed Justification	Operational Justification
Shared Bus/Bike Lane	Queuing along curbside lane delaying bus from moving through intersections.	Would reduce delay in congested conditions as queues would not interfere with bus movement through intersections. Along with Transit Signal Priority, dwelling time at intersections would be reduced.	South of Stevens Creek Boulevard/San Carlos Street where there are currently three vehicle lanes in each direction (final extents to be determined).	Throughout the six lane segment of the corridor, vehicles primarily utilize the curbside lane for right-turn movements which causes queueing that prevents buses from moving through the intersection in one cycle. Providing a separated lane for buses would allow buses to move past the congestion caused by right-turn queues. A dedicated lane for both buses and bicycles to share would allow for both modes to travel separated from the flow of traffic. Application of the treatment would require removal of vehicle lane in conjunction with narrowing of other lanes and intersection design would be a particular area of focus.	The segment area around Fruitdale Avenue and Hamilton Avenue shows consistent slowdowns in speeds and moderate reliability concerns in the AM and PM peak periods. The level of mean intersection delay places the northbound approach at Fruitdale Avenue in the 80th percentile of the 20 evaluated approaches. The intersection at Hamilton Avenue has high mean delay, high delay variability, and a high rate of percentage stops relative to the other ten study intersections in areas of concern.



Treatment	Criteria/Condition	General Justification	Recommended Location	Observed Justification	Operational Justification
Stop Consolidation	Spacing <800' and Basic Stop (less than 40 average weekday boardings)	Would reduce bus stoppages to improve on-time performance, improve average speeds, and reduce dwell times.	Naglee Avenue - Remove northbound Forest Avenue Stop	Basic stop less than 550' from Naglee Avenue stop	This is a part of the route with poor reliability (between Steven's Creek to Naglee) (COV >1.25), and speeds are moderate (16-20 MPH) relative to the rest of the corridor during the AM and PM peak periods.
			Stevens Creek Blvd/San Carlos Street - Remove northbound and southbound Elliot Street Bus Stop	Basic stops less than 650' from Stevens Creek Blvd and Scott Street stops	The Stevens Creek southbound segment in the AM and PM peak period has poor reliability (COV >1.25). The northbound segments has poor reliability during the PM peak period. The mean delay for this intersection approach places it in the 70th percentile of the 20 evaluated approaches.
Bus Boarding Bulbs	Difficult bus movement back into travel lane. Parking obstructing bus loading zone.	Would eliminate bus exit and re-enter to the flow of traffic. Would provide additional area for passenger amenities.	Dry Creek Road - Northeast and Southwest corners  Fruitdale Avenue - Southbound	Congestion from the intersections making movement out of and into stop difficult. Driveway and parking in front of northbound Dry Creek Road stop restricting entry into traffic. Street parking near southbound Fruitdale Avenue stop restricting entry into traffic. Boarding bulbs would bring passengers closer so bus does not have exit travel. Bus	The Dry Creek road is an intersection that is located on study segments that experience moderate reliability concerns (COV .75 to 1.25) in the AM and PM peak periods.  Fruitdale Avenue study segment sees consistent reductions in speeds (11-15 MPH) in the AM and



Treatment	Criteria/Condition	General Justification	Recommended Location	Observed Justification	Operational Justification
				boarding island, instead of a bulb, should be considered with bicycle facility improvements.	PM peak periods. This level of mean intersection delay places this approach in the 80th percentile of the 20 evaluated approaches.
Transit Queue Jump Lane	3 or more auto approach lanes, with queuing that doesn't clear every cycle	Would reduce delay in congested conditions	Hamilton Avenue	Queuing from right-turn and through movements delays bus movement through the intersection. Curbside lane primarily used for right-turn movements. Reserving curbside lane for queue jump lane would assist transit movement past observed through and right-turn queues. This would result in removing a through lane; therefore, a traffic study should be undertaken to understand the effect. of the lane removal on traffic performance at the intersection.	Hamilton shows considerable slowdowns in speeds and moderate reliability concerns in the AM and PM peak periods. The intersection has high mean delay, high delay variability, and a high rate of percentage stops relative to the other ten study intersections in areas of concern.



Treatment	Criteria/Condition	General Justification	Recommended Location	Observed Justification	Operational Justification
Dedicated Turn Lanes	Right-turn queuing delaying bus at intersections	Would reduce delay time at intersection by providing a dedicated space for right-turning vehicles without blocking through-moving buses. Would also allow buses to move through the intersection along the through lane to access far-side stop without dwelling behind right-turn queues.	Dry Creek Road	Queuing from right-turn slip lane slows buses who are in the curbside lane moving through to reach far-side bus stop immediately after intersection. Adding a dedicated turn lane would remove the queues on the through lane near the curb and allow buses to use the through lane to continue to the far-side stop.	The Dry Creek road is an intersection that is located on study segments that had moderate reliability concerns (COV .75 to 1.25) in the AM and PM peak periods. .
			Hamilton Avenue	Northbound right-turn lane needs to be more visible and extended upstream for right-turn queuing. Existing curbside lane being used by both vehicles moving through and right-turn vehicles alongside the through vehicles.	Northbound and southbound approaches show moderate reductions in travel speeds (11-15 MPH) in the AM peak period, but moderate to severe reductions in the PM peak period (<10 MPH northbound and 11-15 MPH southbound). Hamilton Avenue and Bascom showed the highest ranking on a combined index of mean delay, delay variability, and the percentage stop rate.



Treatment	Criteria/Condition	General Justification	Recommended Location	Observed Justification	Operational Justification
Adjust Slip Lanes	On-coming vehicles aggressively merging into traffic conflicting with traffic flow, and vehicles in slip lane moving into receiving travel lane too soon or blocking receiving travel lane could be a source of obstruction.	Would slow turning vehicles and allow right-turning vehicles to see pedestrians, bicycles, and buses moving towards stops. Prevent vehicles from obstructing receiving travel lane.	Stevens Creek Blvd/San Carlos Street	Vehicles move at high speeds through the eastbound right slip lane into Bascom Avenue without yielding which conflicts with southbound traveling vehicles and buses moving back into the travel lane from the far-side stop area. Adjusting slip lane by widening angle from 40 to 55-60 degrees between right-turn and through traffic flows would increase visibility and lower turning vehicle speeds.	Slip Lanes have the potential to provide modest operational benefits, but their primary benefit is reducing bicycle and pedestrian conflicts or reduce the risk associated with them.
Removing Parking	Parking reduces the stop length available for buses to easily maneuver into and out of stop area. Parking limits use of curbside lane.	The removal of parking near these approaches would help reduce transit travel times by providing better curbside access to buses.	Stevens Creek Blvd/San Carlos Street	Southbound parking 250' before the intersection restricts access to the third through lane added before the intersection. Removing the parking would create space for vehicles to move into the curbside lane and reduce queuing for through vehicles.	The Stevens Creek southbound segment in the AM peak period has poor reliability (COV > 1.25) and in the PM peak period has both poor reliability and slow travel speeds. The mean delay for this intersection approach places it in the 70th percentile of the 20 evaluated approaches.

# **APPENDIX A**

## **RIDERSHIP BY STOP**

**Table A1: Ridership for Bus Stops along Bascom Avenue from Naglee Avenue to SR 85**

Route ID	Cross Street	Average Weekday Boardings	Average Weekday Alightings	Routes Served
60731	Kingman Ave	172	87	62, 61, 25
60815	Fruitdale Avenue	168	279	62, 61, 25
60913	E Campbell Avenue	39	54	62, 61, 26
60914	El Solyo Avenue	6	9	62, 61, 26
60915	Apricot Avenue	24	22	62, 61, 26
60916	Dry Creek Rd	8	19	62, 61, 26
60917	Surey Pl	7	32	62, 61, 26
60975	Union Ave	78	38	62, 61, 26
60976	Apricot Avenue	6	2	62, 61, 26
60977	Dry Creek Rd	16	7	62, 61, 26
60978	Apricot Avenue	14	9	62, 61, 26
60979	El Solyo Avenue	11	7	62, 61, 26
61688	Camden Ave	19	4	61
62801	E Mozart Ave	1	0	61, 49
62802	White Oak Rd	25	4	61, 49
62803	Woodard Rd	20	4	61, 49
62804	Shelley Avenue	7	3	61, 49
62805	Jewell Dr	9	3	61
62812	Cutner Ave	4	3	61
62813	E Campbell Avenue	54	12	62, 61
62814	Campus Way	56	20	62, 61
62815	E Hamilton Ave	24	14	62, 61
62816	Pamlar Ave	10	6	62, 61
62817	Stokes St	20	9	62, 61
62818	Downing Ave	27	10	62, 61
62819	Leon Dr	13	7	62, 61
62821	Moorpark Ave	194	47	62, 61
62822	Basile Ave	2	2	62, 61
62823	Scott St	7	10	62, 61
62824	Elliot St	8	63	62, 61
62825	W San Carlos St	61	93	62, 61
62826	Olive Avenue	6	7	62, 61
62827	Forest Avenue	23	17	62, 61
62869	Naglee Avenue	13	25	62, 61
62870	Bailey Ave	6	9	62, 61
62871	W San Carlos St	151	72	62, 61
62872	Elliot St	3	4	62, 61
62873	Scott St	12	6	62, 61
62874	Moorpark Ave	29	159	62, 61
62875	Fruitdale Avenue	85	76	62, 61
62876	Leon Dr	10	27	62, 61
62877	Eisenhower Dr	6	7	62, 61
62878	Stokes St	18	24	62, 61
62879	Pamlar Ave	8	5	62, 61
62880	E Hamilton Ave	8	25	62, 61
62881	Campus Way	21	49	62, 61
62882	E Campbell Avenue	23	65	62, 61
62886	Union Ave	8	19	61
62887	Cutner Ave	2	7	61
62888	Shamrock Dr	1	10	61
62889	Camden Ave	12	20	61, 49
62890	Shelley Avenue	2	7	61, 49
62891	Woodard Rd	4	18	61, 49
62892	White Oak Rd	1	15	61, 49

## **APPENDIX B**

### **BUS STOP INVENTORY**

**Table B1 - Bus Stop Inventory**

Route Stop ID	Average Boardings	Cross Street	Routes	Location	Stop Configuration	Type of Stop	Available Sidewalk Width (feet)	Existing Amenities	Nearby Streetscape Elements	Missing Amenities and Streetscape Elements	Intersection Improvements (PATP)	Segment Improvements (PATP)
62804	7	Shelley Ave	61,49	Far side	Regular Curbside Stop	Basic	2.5	RTI decal	street lighting	tactile signage, schedule information, bench or informal seating		
62801	1	E Mozart Ave	61,49	Far side	Regular Curbside Stop	Basic	2.8	RTI decal, tactile signage	street lighting	schedule information, bench or informal seating		
62879	8	Pamlar Ave	62,61	Mid-block	Regular Curbside Stop	Basic	3.5	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62888	1	Shamrock Dr	61	Mid-block	Regular Curbside Stop	Basic	3.5	RTI decal	street lighting	tactile signage, schedule information, bench or informal seating		
62881	21	Campus Way	62,61	Near side	Bus Pullout	Basic	4	shelter, RTI decal	street lighting	schedule information, bench or informal seating		
62870	6	Bailey Ave	62,61	Mid-block	Regular Curbside Stop	Basic	4	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62877	6	Eisenhower Dr	62,61	Far side	Regular Curbside Stop	Basic	4	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62825	61	W San Carlos St	62,61	Far side	Bus Pullout	Core	4.5	1 bench, RTI decal	street lighting, 1 trash receptacle	shelter, tactile signage, map and schedule information, in-shelter lighting	narrow right turn curb radii and reconstruct porkchops, add advanced yield pavement markings and signage at right turns, stripe ladder crosswalks	Widen sidewalks to 12' minimum on Bascom south of Moorpark, add landscaped buffers and shade trees
62817	20	Stokes St	62,61	Far side	Regular Curbside Stop	Basic	4.5	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62869	13	Naglee Ave	62,61	Mid-block	Regular Curbside Stop	Basic	4.5	1 bench, RTI decal	street lighting	schedule information, bench or informal seating		
62802	25	White Oak Rd	61,49	Mid-block	Regular Curbside Stop	Basic	5	1 bench, RTI decal	street lighting	tactile signage, schedule information		
62813	54	E Campbell Ave	62,61	Mid-block	Regular Curbside Stop	Core	5	shelter, RTI decal	street lighting	in-shelter or stand alone benches, tactile signage, map and schedule information, in-shelter lighting, trash receptacles		
62871	151	W San Carlos St	62,61	Far side	Regular Curbside Stop	Core	5	shelter, RTI decal	street lighting, 1 trash receptacle	in-shelter or stand alone benches, tactile signage, map and schedule information, in-shelter lighting	narrow right turn curb radii and reconstruct porkchops, reduce crossing distances and expand pedestrian waiting space, add advanced yield pavement markings and signage at right turns, stripe ladder crosswalks	Widen sidewalks to 12' minimum on Bascom south of Moorpark, add landscaped buffers and shade trees
62889	12	Camden Ave	61,49	Mid-block	Regular Curbside Stop	Basic	5	1 bench, RTI decal	street lighting	tactile signage, schedule information		
62803	20	Woodard Rd	61,49	Mid-block	Regular Curbside Stop	Basic	5	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62874	29	Renova Dr	62,61	Mid-block	Bus Pullout	Basic	5	shelter, RTI decal, tactile signage	shelter lighting, 1 trash receptacle	bench	Add pedestrian crossing to N leg, add curb extensions to all corners, stripe ladder all crosswalks	Widen sidewalks to 12' minimum on Bascom south of Moorpark, add landscaped buffers and shade trees
62890	2	Shelley Ave	61,49	Far side	Regular Curbside Stop	Basic	5	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62891	4	Woodard Rd	61,49	Mid-block	Regular Curbside Stop	Basic	5	1 bench, RTI decal, tactile signage	street lighting	schedule information		
61688	19	Camden Ave	61	Mid-block	Bus Pullout	Basic	5	shelter, RTI decal	street lighting, 1 trash receptacle	braille band and raised letters on bus stop, bench or informal seating		
62812	4	Cutner Ave	61	Mid-block	Regular Curbside Stop	Basic	5	1 bench	street lighting	tactile signage, schedule information, RTI decal		
60975	78	Union Ave	62,61,26	Near side	Bus Pullout	Core	5.5	shelter	street lighting, 1 trash receptacle	RTI decal, tactile signage, in-shelter or stand alone benches, map and schedule information, in-shelter lighting		
62892	1	White Oak Rd	61,49	Far side	Regular Curbside Stop	Basic	5.5	RTI decal	street lighting	tactile signage, schedule information, bench or informal seating		

62824	8	Elliot St	62,61	Far side	Regular Curbside Stop	Basic	6	1 bench, RTI decal, tactile signage	street lighting	schedule information	ladder crosswalk, advance yield markings/ shark's teeth, high-visibility pedestrian crossing signage, RRFB or Pedestrian Hybrid Beacon, curb extensions	Complete sidewalks, add landscaped buffers and shade trees, add pedestrian-scale lighting along corridor from W. San Carlos St to 1-280 overpass
62826	6	Olive Ave	62,61	Far side	Regular Curbside Stop	Basic	6	1 bench, RTI decal		schedule information, lighting		
62880	8	E Hamilton Ave	62,61	Mid-block	Regular Curbside Stop	Basic	6	1 bench, RTI decal	street lighting	tactile signage, schedule information		
60979	11	El Solyo Ave	62,61,26	Mid-block	Regular Curbside Stop	Basic	7	1 bench, RTI decal	street lighting	tactile signage, schedule information		
62814	56	Campus Way	62,61	Far side	Bus Pullout	Core	7	shelter, RTI decal	street lighting, 1 trash receptacle	in-shelter or stand alone benches, tactile signage, map and schedule information, in-shelter lighting		
62821	194	Moorpark Ave/Renova Dr	62,61	Mid-block	Bus Pullout	Core	7	shelter, RTI decal	street lighting, 1 trash receptacle	in-shelter or stand alone benches, tactile signage, map and schedule information, in-shelter lighting	Add pedestrian crossing to N leg, add curb extensions to all corners, stripe ladder all crosswalks, rebuild SW corner porkchop	Widen sidewalks to 12' minimum on Bascom south of Moorpark, add landscaped buffers and shade trees
62815	24	E Hamilton Ave	62,61	Mid-block	Regular Curbside Stop	Basic	7	1 bench, RTI decal	street lighting	tactile signage, schedule information		
62882	23	E Campbell Ave	62,61	Mid-block	Bus Pullout	Basic	7	shelter, RTI decal, tactile signage	street lighting	schedule information, bench or informal seating		
62818	27	Downing Ave	62,61	Near side	Regular Curbside Stop	Basic	7	1 bench, RTI decal	street lighting	tactile signage, schedule information		
62827	23	Forest Ave	62,61	Far side	Regular Curbside Stop	Basic	7	RTI decal	street lighting	tactile signage, schedule information, bench or informal seating		
62816	10	Pamlar Ave	62,61	Mid-block	Regular Curbside Stop	Basic	7	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62819	13	Leon Dr	62,61	Mid-block	Regular Curbside Stop	Basic	7	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62876	10	Leon Dr	62,61	Mid-block	Regular Curbside Stop	Basic	7	1 bench, RTI decal, tactile signage	street lighting, 1 trash receptacle	schedule information		
62878	18	Stokes St	62,61	Mid-block	Bus Pullout	Basic	7	1 bench, RTI decal	street lighting, 1 trash receptacle	tactile signage, schedule information		
62886	8	Union Ave	61	Mid-block	Regular Curbside Stop	Basic	7	1 bench, RTI decal, tactile signage	street lighting, 1 trash receptacle	schedule information		
60976	6	Apricot Ave	62,61,26	Mid-block	Bus Pullout	Basic	7.5	1 bench, RTI decal, tactile signage	street lighting	schedule information		
62887	2	Cutner Ave	61	Mid-block	Regular Curbside Stop	Basic	7.5	RTI decal, tactile signage	street lighting, planter strip	schedule information, bench or informal seating		
60731	172	Moorpark Ave/Renova Dr	62,61,25	Mid-block	Regular Curbside Stop	Core	8	shelter, RTI decal	street lighting	in-shelter or stand alone benches, tactile signage, map and schedule information, in-shelter lighting, trash receptacles	Add pedestrian crossing to N leg, add curb extensions to all corners, stripe ladder all crosswalks	Widen sidewalks to 12' minimum on Bascom south of Moorpark, add landscaped buffers and shade trees
62805	9	Jewell Dr	61	Mid-block	Bus Pullout	Basic	8	RTI decal	street lighting	tactile signage, schedule information, bench or informal seating		
62822	2	Basile Ave	62,61	Far side	Regular Curbside Stop	Basic	9	RTI decal	street lighting	tactile signage, schedule information, bench or informal seating		Complete sidewalks, add landscaped buffers and shade trees, add pedestrian-scale lighting along corridor from W. San Carlos St to 1-280 overpass
60917	7	Surey Pl	62,61,26	Mid-block	Bus Pullout	Basic	9.5	1 bench, RTI decal	street lighting, 1 trash receptacle	tactile signage, schedule information		
60913	39	E Campbell Ave	62,61,26	Mid-block	Regular Curbside Stop	Basic	10	shelter, RTI decal	shelter lighting, 1 trash receptacle	braille band and raised letters on bus stop		
60815	168	Fruitdale Ave	62,61,25	Far side	Bus Pullout	Core	10	shelter, RTI decal	street lighting	in-shelter or stand alone benches, tactile signage, map and schedule information, in-shelter lighting, trash receptacles	Add pedestrian crossing to S leg, add curb extensions to all corners, stripe ladder all crosswalks	Widen sidewalks to 12' minimum on Bascom south of Moorpark, add landscaped buffers and shade trees
60915	24	Apricot Ave	62,61,26	Mid-block	Regular Curbside Stop	Basic	10	1 bench, RTI decal	street lighting, 1 trash receptacle	tactile signage, schedule information		
60977	16	Dry Creek Rd	62,61,26	Far side	Bus Pullout	Basic	10	1 bench, RTI decal	street lighting	tactile signage, schedule information		
60914	6	El Solyo Ave	62,61,26	Mid-block	Regular Curbside Stop	Basic	10		street lighting	tactile signage, schedule information, RTI decal, bench or informal seating		

60916	8	Dry Creek Rd	62,61,26	Far side	Bus Pullout	Basic	10	1 bench, RTI decal	street lighting	tactile signage, schedule information		
60978	14	Apricot Ave	62,61,26	Mid-block	Regular Curbside Stop	Basic	10	1 bench, RTI decal	street lighting, 1 trash receptacle	tactile signage, schedule information		
62823	7	Scott St	62,61	Far side	Regular Curbside Stop	Basic	10	1 bench, RTI decal	street lighting, 1 trash receptacle	tactile signage, schedule information	Stripe ladder crosswalks at all four legs of intersection	Complete sidewalks, add landscaped buffers and shade trees, add pedestrian-scale lighting along corridor from W. San Carlos St to 1-280 overpass
62875	85	Fruitdale Ave	62,61	Near side	Regular Curbside Stop	Core	9.5*	2 benches, RTI decal, tactile signage	street lighting, 1 trash receptacle	shelter, map and schedule information, in-shelter lighting	Add pedestrian crossing to S leg, remove or redesign NW corner porkchop, stripe ladder sidewalks on all four legs of intersection	Widen sidewalks to 12' minimum on Bascom south of Moorpark, add landscaped buffers and shade trees
62872	3	Elliot St	62,61	Far side	Regular Curbside Stop	Basic	9*	RTI decal, tactile signage	street lighting	schedule information, bench or informal seating	ladder crosswalk, advance yield markings/shark's teeth, high-visibility pedestrian crossing signage, RRFB or Pedestrian Hybrid Beacon, curb extensions	Complete sidewalks, add landscaped buffers and shade trees, add pedestrian-scale lighting along corridor from W. San Carlos St to 1-280 overpass
62873	12	Scott St	62,61	Far side	Regular Curbside Stop	Basic	6.5*	1 bench, RTI decal, tactile signage	street lighting	schedule information	Stripe ladder crosswalks at all four legs of intersection	Complete sidewalks, add landscaped buffers and shade trees, add pedestrian-scale lighting along corridor from W. San Carlos St to 1-280 overpass

Note:

\*Data from VTA not available. Google Imagery was used to determine sidewalk widths.

## **APPENDIX C**

### **RELIABILITY RESULTS**

**TABLE C1: ROUTE 62 AND 61 SEGMENT-LEVEL EVALUATION RESULTS  
(AM/PM PEAK PERIOD)**

Segment ID	Direction	AM Speeds (MPH)	PM Speeds (MPH)	AM Reliability	PM Reliability
1	NB	26	23	1.3	1.2
	SB	18	14	1.2	0.9
2	NB	17	16	1.1	1.3
	SB	18	13	1.3	1.1
3	NB	14	16	0.9	0.6
	SB	12	14	0.8	0.6
4	NB	13	11	0.9	0.9
	SB	7	8	0.8	0.7
5	NB	14	13	0.7	0.8
	SB	24	24	1.2	0.5
6	NB	18	16	0.7	0.8
	SB	14	12	0.8	0.7
7	NB	13	8	0.8	0.5
	SB	14	11	0.7	0.7
8	NB	21	19	0.7	1.1
	SB	22	18	0.8	1.1
9	NB	23	23	1.2	1.1
	SB	24	18	1.1	1.0
10	NB	15	13	1.1	1.0
	SB	21	21	1.2	1.1
11	NB	19	19	1.3	0.9
	SB	9	9	0.9	1.1
12	NB	18	15	0.9	0.7
	SB	29	23	1.0	1.3
13	NB	17	19	0.5	0.8
	SB	23	18	1.2	0.5