Mini-Roundabouts

Background

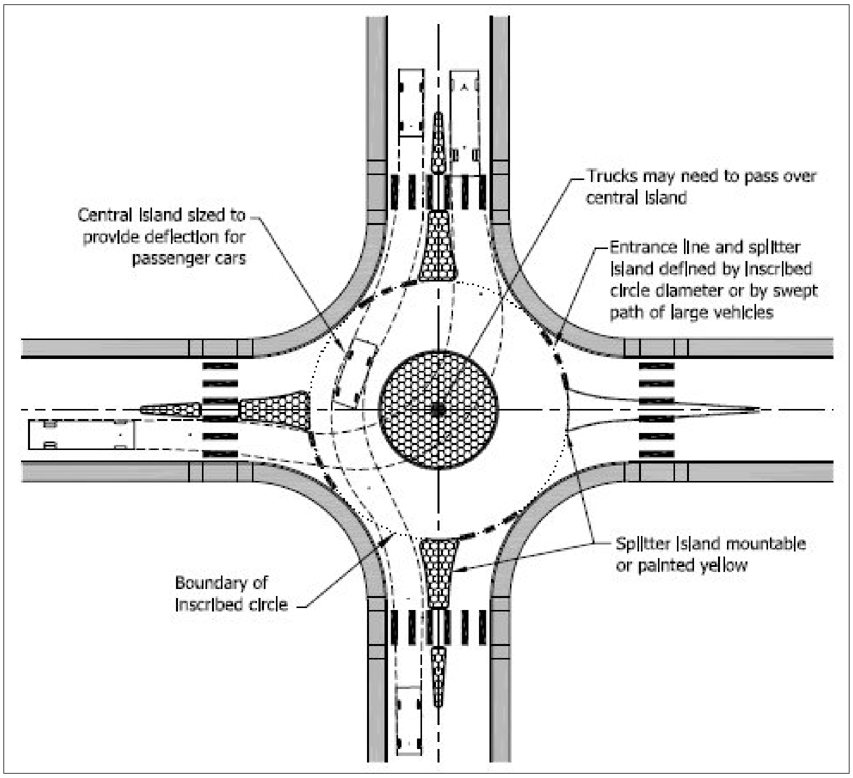
Alternatives for the corridor included consideration of Mini-Roundabouts, so background information on this traffic control option was developed since it not used as frequently as traffic signals. Mini-Roundabouts are small roundabout intersections with a fully traversable central island. They are most commonly used in low-speed urban environments with average operating speeds of 30 mph or less. They can be useful in such environments where conventional roundabout design is precluded by right-of-way constraints. In retrofit applications, mini-roundabouts are relatively inexpensive because they typically require minimal additional pavement at intersecting roads and minor widening at the corner curbs. More information on mini-roundabouts can be found in *Mini-Roundabouts Technical Summary*, FHWA, 2009 and *Roundabouts: An Informational Guide*, NCHRP Report 672.

Characteristics of Mini-Roundabouts

A mini-roundabout is a type of intersection that can be used at physically-constrained locations in place of stop-controlled or signalized intersections to help improve safety problems and reduce excessive delays at minor approaches. Mini-roundabouts generally have an inscribed circle that is small enough to stay within the existing right-of-way (or within the existing curb lines if adequate space is available). Mini-roundabouts operate in the same manner as larger roundabouts, with yield control on all entries and counterclockwise circulation around a mountable (traversable) central island.

Mini-roundabouts are distinguished from neighborhood traffic circles primarily by their traversable islands, geometric design for entry and exit, and yield control on all approaches, which allows them to function as other roundabouts do. Neighborhood traffic circles are typically built at the intersections of local streets for reasons of traffic calming and/or aesthetics. They typically are operated as two-way or all-way stop-controlled intersections and frequently do not include raised channelization to guide approaching traffic into the circulatory roadway. At some neighborhood traffic circles, left-turning vehicles must turn in front of the central island, potentially conflicting with other circulating traffic.

To help promote safe operations, the design of mini-roundabouts generally aligns passenger cars on the approach in such a way as to naturally follow the circulatory roadway and minimize running over the central island to the extent possible. Due to the small footprint, large vehicles are typically required to over-run the fully traversable central island.



Design Features of a Mini-Roundabout

Benefits of Mini-Roundabouts

Mini-roundabouts are emerging in the United States as a potential intersection type. They may be an optimal solution for a safety or operational issue at an existing stop-controlled or signalized intersection where there is insufficient right-of-way for a standard roundabout installation. The benefits of mini-roundabouts and some constraining factors are described below.

- **Compact size** – A mini-roundabout can often be developed to fit within existing right-of-way constraints. Note that mini-roundabouts are generally not recommended for intersections with more than four legs. However, in some cases there may be adequate spacing between legs to allow for two closely-spaced mini-roundabouts.

- **Operational Efficiency** – A mini-roundabout may provide less delay for a critical movement or for an overall intersection in comparison to other intersection alternatives. However, as with all roundabout types, mini-roundabouts do not provide explicit priority to specific users such as trains, transit, or emergency vehicles.

- **Traffic Safety** – Mini-roundabouts have been used successfully in the U.K. to improve safety at intersections with known crash problems, with reported crash rate reductions of approximately 30 percent as compared to signalized intersections.

- **Traffic Calming** – Designed properly, a mini-roundabout reduces speeds and can be implemented as part of a broader traffic calming scheme. The low-speed environment also enhances the intersection for non-motorized users.

- **Access Management** – A mini-roundabout can be used to provide efficient access to a new or existing development. However, in the cases of large trucks and other large vehicles, the diameter may be too small to accommodate U-turn maneuvers that would be readily accommodated at a larger roundabout.

- **Aesthetics** – In comparison to full-size roundabouts, mini-roundabouts do not allow opportunities for landscaping in the central island. As with comparably sized traditional intersections, landscaping opportunities are limited to the periphery of the intersection.

- **Environmental Benefits** – A mini-roundabout may offer an environmental benefit compared to conventional intersections through reduced delay, fuel consumption, and vehicle emissions.

Menlo Park Mini-Roundabout

Alternatives

Design Considerations

- All alternatives included a new access from Tierra Linda Middle School (TLMS) to Alameda de las Pulgas (ADLP).
- If the ADLP/Cranfield intersection were to be reconfigured as a four-legged roundabout intersection with a TLMS access, the roundabout would need to be designed with a larger diameter, perhaps in the 120-foot range. This larger diameter and the roundabout design needs would require that the single family residence adjacent to the TLMS property be acquired.
- Mini-roundabouts with a smaller 80-foot diameter were considered where applicable. See previous section on Mini-Roundabouts.
- If the ADLP/Cranfield intersection were to be reconfigured with a roundabout alignment as a three legged intersection without access to TLMS, a smaller 80 to 90-foot mini-roundabout would be feasible; this could be constructed within the existing right-of-way. A conceptual design for the intersection with a mini-roundabout is included in Appendix H.
- If ADLP/Chula Vista Way were converted to a mini-roundabout, the high school driveway entrance on the south side would need to be slightly re-aligned.
- If ADLP/El Verano Way were converted to a mini-roundabout, a small portion of the empty lot on the southeast corner would need to be acquired (across from the CHS baseball field).
- With a full four-way roundabout at Cranfield Avenue, the CHS access would need to be realigned with the connection to Cranfield Avenue moved south from its current position. This will present some constructability issues due to the change in grades and may result in a 12 percent grade for the realigned connection.
- With a smaller three-way roundabout at Cranfield Avenue, the CHS access is assumed to be realigned further to the west. The existing CHS connection at Cranfield Avenue is shown as an emergency vehicle access (EVA) connection only as it would have a grade change of approximately 8 percent.
- The existing pavement width on ADLP between Cranfield Avenue and Chula Vista Drive is approximately 48 feet. If drop-off/pick-up shoulders are provided either on one side of the street or both, the existing diagonal parking would need to be removed.
- All alternatives include new pedestrian sidewalks on the east side of ADLP between Cranfield Avenue and Chula Vista Way.

Alternative Descriptions

The following alternatives were evaluated with the various traffic control feature options developed to produce the most acceptable traffic operations possible. The objective of this effort was to develop traffic control alternatives to improve circulation, safety, and multi-modal transportation within the Four Corners project area. All of the alternatives include creating a second access point to Tierra Linda Middle School (TLMS) along Alameda de las Pulgas and improving safety and circulation through traffic controls at key intersections. Each alternative provides variations of traffic control measures at the study intersections including signalization, roundabouts, and turning restrictions.

The development of the alternatives evolved from the following:

- Analysis of the traffic data
- Issues identified during the field observations
- Input received at Community Workshops
- Input received from the Four Corners Subcommittee

The resulting alternatives for the study included the following:

- **Alternative 1** – Four-Way Cranfield Intersection
- **Alternative 2A** – Midpoint Access to CHS and TLMS with Traffic Signal
- **Alternative 2B** – Midpoint Access to CHS and TLMS with Roundabout
- **Alterative 3A** – Midpoint Access to CHS and TLMS with Turn Restrictions
- **Alternative 3B** – Offset Midpoint Access to CHS and TLMS with Turn Restrictions

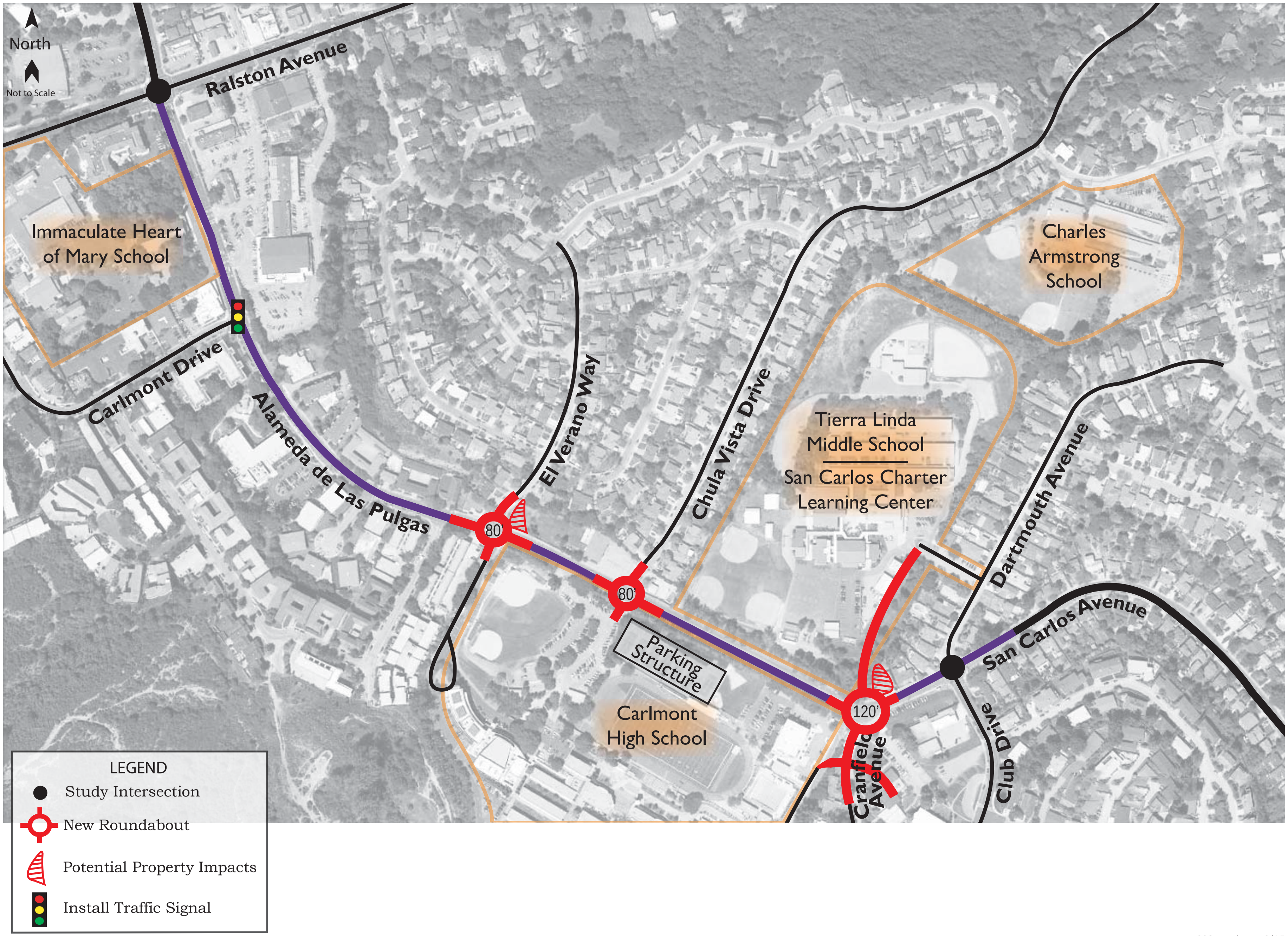
The alternatives are shown in Figures 3-7 with details of the design included in Appendix I.

Access Alternative # 1 - Four-Way Cranfield Avenue Intersection

- The four locations with all-way stop- controls would be changed to either signals or roundabouts.
- ADLP/Cranfield Drive would be converted to a four-legged intersection with a full-size roundabout of approximately 120 feet in diameter.
- The four-way intersection at ADLP/Cranfield Avenue would include new access to TLMS.
- The south side of Cranfield Avenue intersection would require realignment of the CHS and Church access points since they currently all converge on the same side of ADLP.
- The parcel on the northeast corner adjacent to the Cranfield Avenue roundabout would need to be acquired.
- The intersections with Chula Vista Drive and El Verano Way would be controlled by mini-roundabouts.
- Some land would need to be acquired from the parcel on the northeast corner adjacent to the El Verano Way intersection.
- A signal would be installed at the Carlmont Drive intersection.
- A new eight-foot sidewalk would be installed on the TLMS side of ADLP.
- Parking would be removed along the front of Carlmont High School on Alameda de las Pulgas and be replaced with parallel parking or drop off space for 20 vehicles.
- Existing bike lanes would be maintained.
- The total cross section on ADLP would be 52 feet, which would require 4 feet of widening.

Access Alternative #2A - Midpoint Access to CHS and TLMS with Traffic Signal

- The four locations with all-way stop controls would be converted to either signals or roundabouts.
- A new signalized intersection would be installed at the new the entrance of Carlmont High School and TLMS.
- A new midpoint access to TLMS off of Alameda de Las Pulgas would be provided through the existing field.
- A new access point to Carlmont High School would be created opposite the new TLMS access and diverting traffic through the existing parking lot then connecting it with its current path of travel.
- Alameda de las Pulgas at Cranfield Avenue would be restriped with a new two-way left-turn lane.
- The existing access to Carlmont High School near Cranfield Avenue would be limited to emergency vehicles only.
- The intersection at Chula Vista Drive would be controlled by a mini-roundabout.
- The intersection at El Verano Way would be controlled by a traffic signal.
- Traffic signals at San Carlos Avenue/Dartmouth, Alameda de las Pulgas/School Access and Alameda de las Pulgas/El Verano Way would be coordinated.
- Parking will be reduced along the frontage of Carlmont High School from 34 spaces to 16 spaces.
- Signal-controlled pedestrian crossings will be provided at the Carlmont High School and TLMS intersections.



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Alameda de Las Pulgas-San Carlos Avenue Corridor Study

Figure 3 – Access Alternative #1

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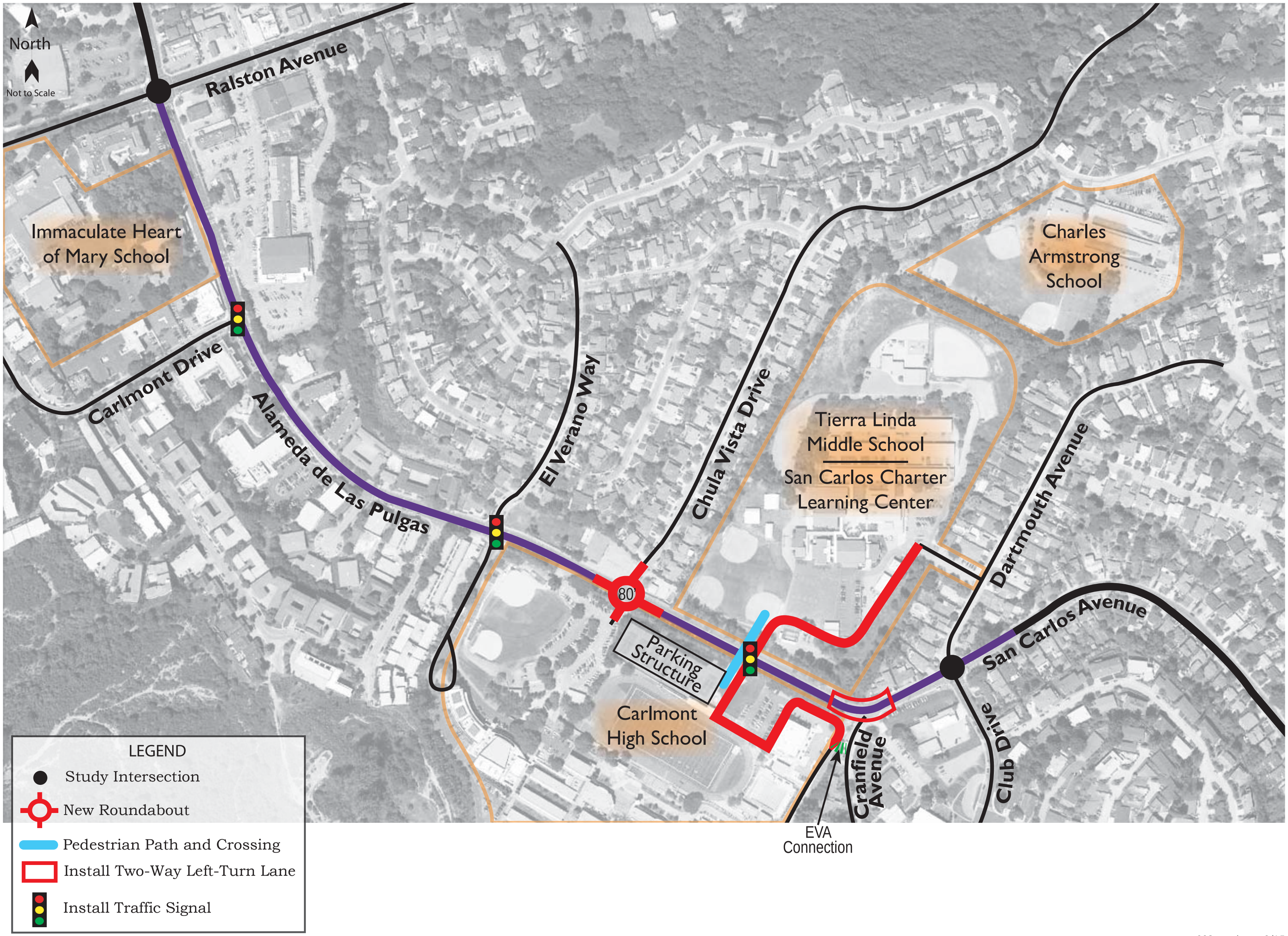

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Alameda de Las Pulgas-San Carlos Avenue Corridor Study

Figure 4 – Access Alternative #2A

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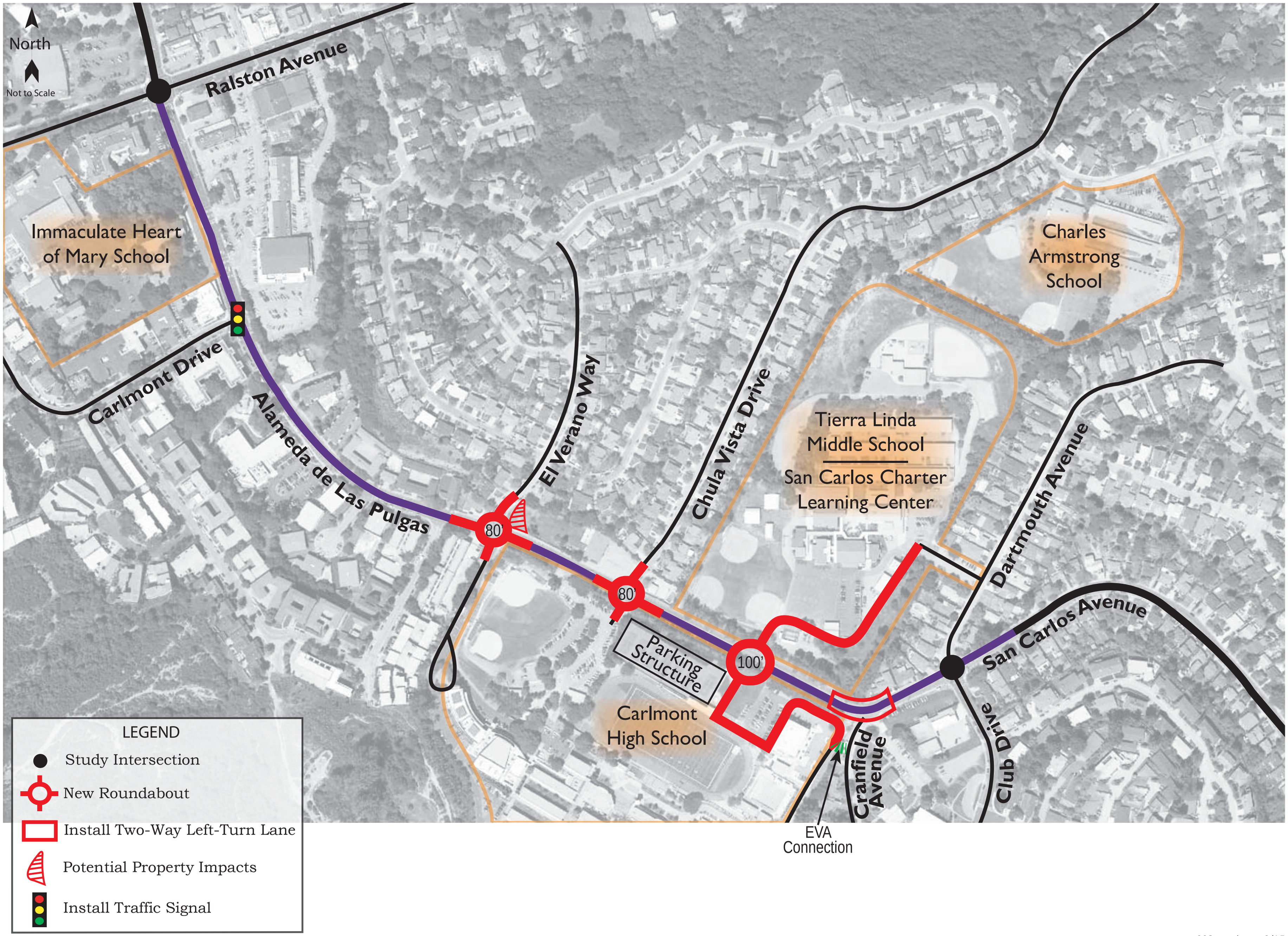

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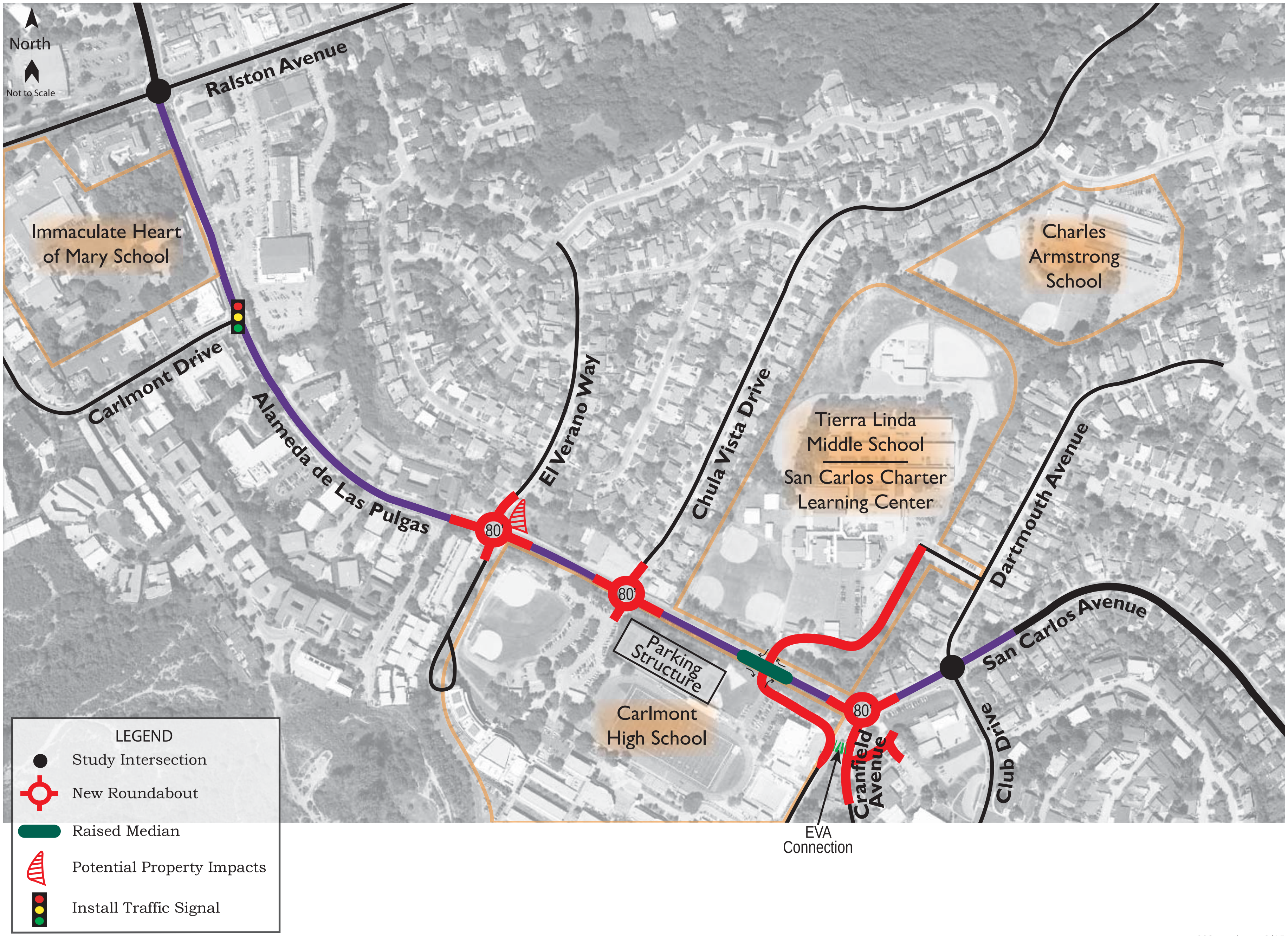
Alameda de Las Pulgas-San Carlos Avenue Corridor Study

Figure 5 – Access Alternative #2B



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Alameda de Las Pulgas-San Carlos Avenue Corridor Study

Figure 6 – Access Alternative #3A

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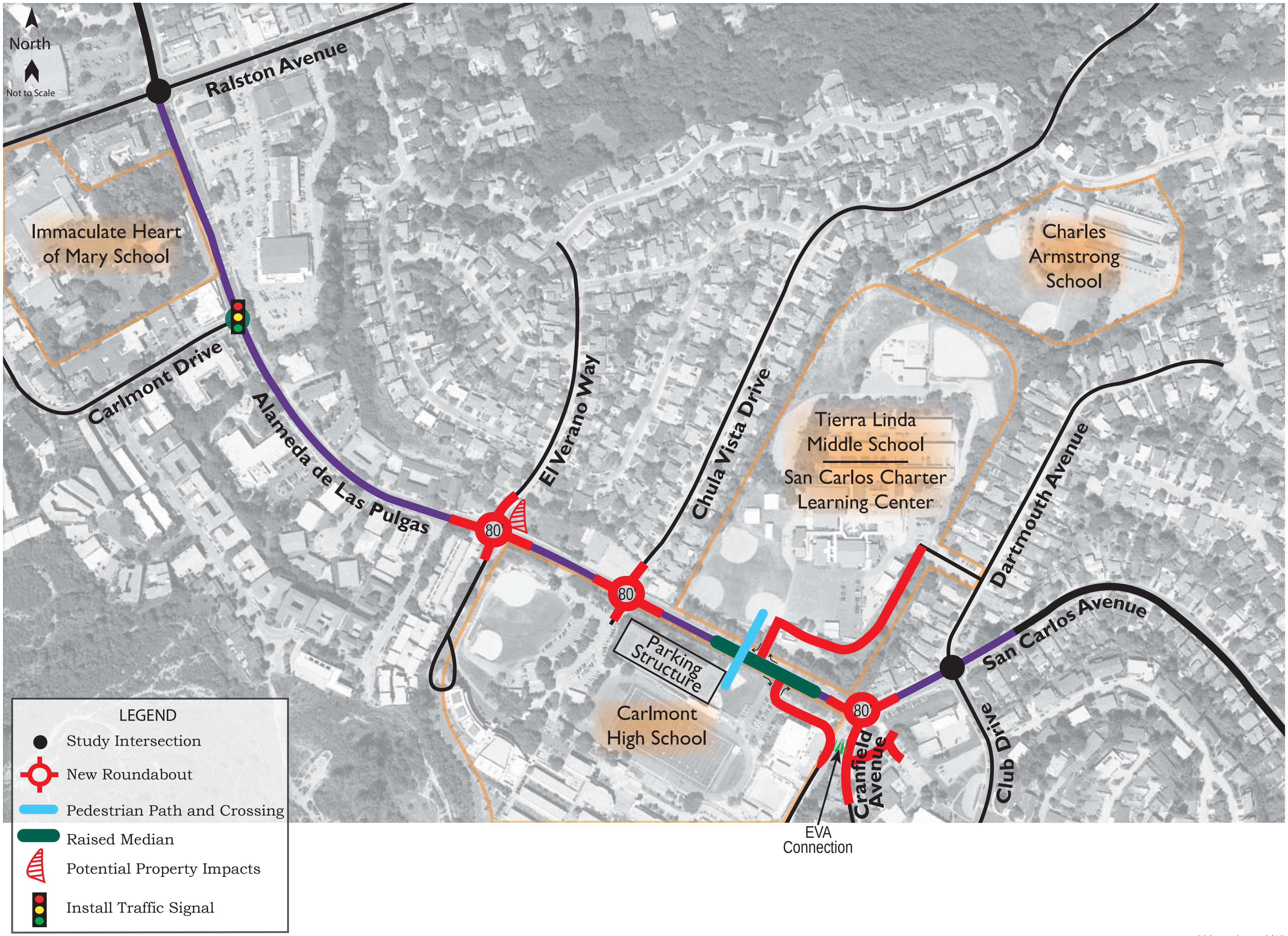

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Alameda de Las Pulgas-San Carlos Avenue Corridor Study

Figure 7 – Access Alternative #3B

W-Trans

- A traffic signal would be constructed at Carlmont Drive.
- Existing bike lanes would be maintained.
- The total cross section on ADLP would be 48 feet; this would not require any widening.

Access Alternative #2B – Midpoint Access to CHS and TLMS with Roundabout

- The four all-way stop-controlled intersections would be converted to signals or roundabouts.
- A new roundabout-controlled intersection would be created at the new the entrance to Carlmont High School and TLMS.
- A new midpoint access to TLMS off of Alameda de Las Pulgas would be provided through the existing field.
- A new access point to Carlmont High School would be created by diverting traffic through the existing parking lot.
- Alameda de las Pulgas at Cranfield Avenue would be restriped with a new two-way left-turn lane.
- The existing access point to Carlmont High School near Cranfield Avenue would be limited to emergency vehicles only.
- The intersections at Chula Vista Drive and El Verano Way would be controlled by mini-roundabouts.
- Some land would need to be acquired from the northeast parcel adjacent to the El Verano Way intersection.
- Parking will be reduced along the frontage of Carlmont High School from 34 spaces to 16 spaces.
- Pedestrian crossings would be provided at the Carlmont High School and TLMS intersection with medians at the roundabout.
- ADLP would include a traffic signal at Carlmont Drive.
- Existing bike lanes would be maintained.
- The total cross section on ADLP would be 48 feet; no widening would be required.

Access Alternative #3A – Midpoint Access to CHS and TLMS with Turn Restrictions

- The four all-way stop-controlled intersections would be converted to signal or roundabout controls.
- A new four-way intersection would be created at the new access points to Carlmont High School and TLMS with access restricted to right-turns in and out only.
- Turn restrictions at the Carlmont High School/TLMS intersection would be reinforced by a raised median on Alameda de las Pulgas.
- A new midpoint access to TLMS off of Alameda de Las Pulgas would be created through the existing field.
- Access to Carlmont High School from Alameda de las Pulgas would be created by diverting traffic through the existing parking lot.
- Alameda de las Pulgas/Cranfield Avenue would be controlled by a mini-roundabout.
- The access on the south side of Cranfield Avenue would be limited to emergency vehicles only (EVA).
- A signal would be installed at Alameda de las Pulgas and Carlmont Drive.
- The intersection at Chula Vista Drive would be controlled by a mini-roundabout.
- The intersection at El Verano Way would be controlled by a mini-roundabout.
- Some land would need to be acquired from the northeast parcel adjacent to El Verano Way intersection.
- The number of parking spaces along Alameda de las Pulgas on the Carlmont High School side would be reduced from 34 to 12, with drop off space for 19 vehicles.
- The total cross section on ADLP would be 56 feet, which would require 8 feet of widening.

Access Alternative #3B – Offset Midpoint Access to CHS and TLMS with Turn Restrictions

This alternative is the same as 3A except the new access points to the school at Alameda de las Pulgas would be offset.

Alternatives Analysis

Access Alternative # 1 – Four-Way Cranfield Avenue Intersection

- All intersections would operate acceptably.
- The westbound queue approaching the new four-way roundabout at Cranfield Avenue would extend to Dartmouth Avenue during a very short period in the morning school peak.
- On-street pick-up and drop-off along ADLP could be maximized between Cranfield Avenue and Chula Vista Drive.
- Roundabouts would allow for easy return for those dropping off curbside.
- ADLP between Cranfield Avenue and Chula Vista Drive could either be kept in its current configuration with diagonal parking on the south side, or converted to two travel lanes with drop-off/ pick-up shoulders on one side or both; this would require the removal of the diagonal parking.

Access Alternative #2A – Midpoint Access to CHS and TLMS with Traffic Signal

- All intersections would operate acceptably.
- On-street pick-up and drop-off along ADLP could be provided on both sides of access, but may require students to cross ADLP at some point.
- ADLP between Cranfield Avenue and Chula Vista Drive would need to be converted to two travel lanes plus left-turn pockets to serve turning vehicles at the traffic signal. The three-lane section would require removal of the existing diagonal parking. The remaining 7-8 foot shoulder could be used for drop-off/pick-up and/or parallel parking on both sides of the street.

Access Alternative #2B – Midpoint Access to CHS and TLMS with Roundabout

- All intersections would operate acceptably.
- On-street pick-up and drop-off along ADLP could be provided on both sides of the street, but may require students to cross ADLP at some point.
- Roundabouts would allow for easy return for those dropping off curbside.
- ADLP between Cranfield Avenue and Chula Vista Drive could either be kept in its current configuration with diagonal parking on the south side, or converted to two travel lanes with drop-off/pick-up shoulders on one side or both; this would require the removal of the diagonal parking.

Access Alternative #3A – Midpoint Access to CHS and TLMS with Turn Restrictions

- All intersections would operate acceptably.
- On-street pick-up and drop-off along ADLP could be provided on both sides of the street, but this may require students to cross ADLP at some point.
- Roundabouts would serve left-turn movements that would be prohibited by raised median.
- Raised medians could be used to enhance pedestrian crossings.
- ADLP between Cranfield Avenue and Chula Vista Drive could either be kept in its current configuration with diagonal parking on the south side except in the area of the median, or converted to two travel lanes with drop-off/pick-up shoulders on one side or both with elimination of the diagonal parking.

Access Alternative #3B – Offset Midpoint Access to CHS and TLMS with Turn Restrictions

- All intersections would operate acceptably.
- On-street pick-up and drop-off along ADLP could be provided on both sides of the street, but this may require students to cross ADLP at some point.

- Roundabouts would serve left-turn movements that would be prohibited by raised medians.
- Raised medians could be used to enhance pedestrian crossings.
- ADLP between Cranfield Avenue and Chula Vista Drive could either be kept in its current configuration with diagonal parking on the south side except in the area of the median, or converted to two travel lanes with drop-off/pick-up shoulders on one side or both; this would require the elimination of the diagonal parking.

Summary

The benefits and consequences of implementing each alternative were evaluated and weighed based upon its impact to key transportation issues. The results are summarized in Table 12.

Table 12 – Benefits and Consequences

Access Alternative		Congestion	Safety	Drop-off	Pedestrian	ROW	Benefits	Consequences
1	Four-way Cranfield Avenue Intersection	+	+	++	+	-	• Potential for largest street drop-off area. • Roundabouts would provide easy return travel after pick-up or drop-off.	• Cranfield roundabout requires property acquisition. • Short distance between Cranfield and Dartmouth may create queuing concerns.
2A	Midpoint Access with Signal	+	o	+	+	o	• Reduces congestion at Cranfield and Chula Vista. • No impact to private property. • Standard traffic signal operation familiar to the general public.	• Reduced pick-up/drop-off area on ADLP. • Traffic signal will create left-turn queuing on ADLP.
2B	Midpoint Access with Roundabout	+	+	+	+	o	• Reduces congestion at Cranfield and Chula Vista • No impact to private property. • Roundabout will minimize queuing on ADLP.	• Reduced pick-up/drop-off area on ADLP.
3A	Midpoint Access with Turn Restrictions	++	++	+	++	o	• Reduces congestion at Cranfield and Chula Vista. • Roundabouts would provide easy return travel after pick-up or drop-off. • Reduced conflicts at new access. • Median provides opportunity for safe pedestrian crossing.	• Reduced pick-up/drop-off area on ADLP. • Aligned access restricts access options for each school.
3B	Offset Midpoint Access with Turn Restrictions	++	++	+	++	o	• Reduces congestion at Cranfield and Chula Vista. • Roundabouts would provide easy return travel after pick-up or drop-off. • Reduced conflicts at new access. • Offset allows flexible access design for each school. • Median provides opportunity for safe pedestrian crossing.	• Reduced pick-up/drop-off area on ADLP.

Notes: **+** indicates a positive impact; **++** indicates a more substantial positive impact; – indicates a negative impact; o indicates no impact

Evaluation of Preferred Plan

Based on input received at the workshops and from the Four Corners Technical Advisory Committee, a preferred plan based on Alternative 3B was identified.

Alterative 3B includes the following:

- An offset midpoint access to CHS and TLMS with turn restrictions (right-turns in and out only)
- Mini-roundabouts at ADLP/Cranfield Avenue, ADLP/Chula Vista Drive, and ADLP/Verano Way

This alternative was more fully evaluated in terms of intersection levels of service, travel time and queuing. These conditions were assessed for the following scenarios:

- **Existing Conditions with Preferred Plan** – Existing traffic volumes with the Preferred Plan controls/lanes
- **School Expansion with Preferred Plan** – Existing volumes plus the school expansion traffic with the Preferred Plan controls/lanes

Intersection Levels of Service

The intersection levels of service were evaluated for the three scenarios based on volumes during the a.m., school p.m., and p.m. peak periods. Existing conditions were previously described and the levels of service for this scenario are shown in Table 3. The intersection level of service calculations for the Preferred Plan scenarios are summarized in Table 13 and Table 14. Copies of the Level of Service calculations are provided in Appendix J. As shown in Tables 13 and 14, all of the study intersections would be expected to operate at LOS D or better with the Preferred Plan under both Existing volumes and with the added traffic associated with the School Expansion.

Table 13 – Existing with Preferred Plan Peak Hour Intersection Levels of Service

Study Intersection	AM Peak		School PM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS
1. Alameda de las Pulgas/Ralston Ave	45.4	D	40.1	D	43.1	D
2. Alameda de las Pulgas/Carlmont Dr	11.7	B	10.0	A	8.2	A
3. Alameda de las Pulgas/El Verano Way	5.6	A	5.1	A	4.9	A
4. Alameda de las Pulgas/Chula Vista Dr	13.1	B	7.2	A	6.0	A
5. ADLP/Cranfield Ave	6.7	A	2.9	A	2.5	A
6. San Carlos Ave/Club Dr-Dartmouth Ave	21.5	C	19.5	C	20.3	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Table 14 – School Expansion with Preferred Plan Peak Hour Intersection Levels of Service				
Study Intersection	**AM Peak**		**School PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**
1. Alameda de las Pulgas/Ralston Ave	49.4	D	41.2	D
2. Alameda de las Pulgas/Carlmont Dr	12.2	B	10.3	B
3. Alameda de las Pulgas/El Verano Way	5.5	A	5.0	A
4. Alameda de las Pulgas/Chula Vista Dr	17.6	B	7.0	A
5. ADLP/Cranfield Ave	8.5	A	2.9	A
6. San Carlos Ave/Club Dr-Dartmouth Ave	26.2	C	21.0	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Bell Schedule Assumptions

For purposes of the evaluation, no changes were assumed in the start times for either Carlmont High School or Tierra Linda Middle School. Traffic analysis methodologies are based on peak hour conditions with some accounting for peaking within the hour. A shifting of start times by 10-15 minutes would likely result in no changes to the level of service ratings for the study intersections. However, shifting of start times would likely provide some benefit to those traveling during the school peak periods.

The intent of the traffic study was to evaluate worst-case conditions and determine if acceptable operation could be achieved for the Alameda corridor with the preferred plan. Based on the analysis performed, it is anticipated that the preferred plan would result in acceptable conditions even if the schools maintain their current schedules. Any shifting of start times may further improve conditions from what is documented in the report.

Corridor Travel Time

Travel time analysis was conducted with the Synchro software to assess the overall speed and delay of vehicular travel through the corridor. The northern limit of the travel time runs was at Ralston Avenue and the southern limit was at Kenton Avenue, one-quarter mile south of Club Drive-Dartmouth Avenue. The results of the travel-time analysis are summarized in Table 15 and copies are provided in Appendix K. As shown in Table 15, travel times in the corridor are expected to decrease, primarily due to the replacement of the all-way stop controls with the mini-roundabouts or traffic signals.

Table 15 – Travel Time Through Corridor (between Ralston Ave and Kenton Ave)			
Scenario	**Travel Time (mm:ss)**		
	Existing	**Existing with Preferred Plan**	**School Expansion with Preferred Plan**
Northbound			
AM Peak	5:06	3:22	3:55
School PM Peak	5:36	3:19	3:24
PM Peak	6:48	3:32	
Southbound			
AM Peak	4:28	2:27	2:30
School PM Peak	4:09	2:17	2:22
PM Peak	3:12	2:00	

Queuing

Queuing at the controlled intersections was determined using the Synchro and SimTraffic software. The results of the analysis are shown in Appendix L. Queues would be expected to be contained between intersections which acceptable storage conditions.

Corridor Recommendations

Alternative 3B was refined based on input from the Four Corners Technical Advisory Committee. Following is a list of the final corridor recommendations which are also shown in Figures 8 and 9.

Intesection Traffic Control

- **ADLP/Carlmont Drive** – Install a traffic signal and modify lane geometrics as shown on the plan.
- **ADLP/El Verano Way** – Install a mini-roundabout which will require acquisition of some property on the southeast corner.
- **ADLP/Chula Vista Drive** – Install a mini-roundabout which will require realignment of the high school parking lot access on the west leg of the intersection.
- **ADLP/Cranfield Avenue** – Install a mini-roundabout as shown on the plans with the west leg of the intersection consolidated with the church property driveway. (The CHS driveway would be closed. See discussion below.)
- **San Carlos Avenue/Dartmouth Avenue** – Modify the traffic signal timing.

Pedestrian Facilities

- **New Sidewalks** – Install new continuous sidewalks along the east side of ADLP between Chula Vista Drive and the terminus of the existing sidewalk near Cranfield Avenue. These should be a minimum of 8 feet in width to accommodate multiple school age pedestrians.
- **Reconstructed Sidewalks** – The City of Belmont should coordinate with the Carlmont Village Shopping Center to reconstruct the existing sidewalks along its frontage on ADLP with a minimum of 8-foot width between Carlmont Drive and Ralston Avenue. This may impact the parking configuration within the shopping center.
- **Crosswalks** – High visibility crosswalks should be considered for installation based on further coordination between the Cities of Belmont and San Carlos, public safety officials, SamTrans and the schools, at the following locations:
  - ADLP/Garden Court (south leg)
  - ADLP/El Verano Way (south leg)
  - ADLP/Chula Vista Drive (south leg)
  - ADLP/Cranfield Avenue (north leg)
- **Pedestrian Plaza** – CHS should modify the current driveway approach to the ADLP/Cranfield Avenue intersection to a pedestrian only plaza connecting the school to the crosswalk on the west leg of ADLP/Cranfield Avenue mini-roundabout at the western sidewalk along ADLP.
- **Crossing Guards** – Providing crossing guards at the three new mini-roundabouts will improve pedestrian crossings by organizing them into groups for crossing efficiency and to minimize disruption to the traffic flow on the ADLP corridor.

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Figure 8 – Preferred Plan

EXHIBIT 3A - Alameda de las Pulgas/San Carlos Avenue Corridor Plan

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Figure 9 – Preferred Plan (School Area)

W-Trans

- **Median and Fence** – A raised median with a short fence (meeting current standards) and ground landscaping or hardscape should be installed between ADLP/El Verano Way and ADLP/Cranfield Avenue to act as a barrier and channelize pedestrians to crosswalk locations.

Bicycle Facilities

- **Bike Lanes** – The existing bike lane alignment on the ADLP section between Chula Vista Drive and Cranfield Avenue should be modified based on the concept plans.

- **Mini-roundabouts** – The bike lanes should be terminated in advance of the mini-roundabouts in accordance with FHWA design guidelines.

- **School Bike Access and Parking** – Both TLMS and CHS should ensure that bike access is adequate and bike parking is provided on the school grounds.

- **Class III Bike Sharrows** – The City of San Carlos is installing bike sharrow markings and white edgelines on San Carlos Avenue between Dartmouth Avenue and Beverly Drive in late 2015/early 2016.

Parking

- **On-street Parking** – Maintain existing on-street parking in the corridor except on the section between Chula Vista Drive and Cranfield Avenue. On this section, the parking alignment should be reconfigured to parallel parking on both sides of ADLP as shown on the concept plans.

- **Off-street Parking** – CHS should work towards increasing parking on the school campus or on adjacent properties. The 300 student increase will generate a need for an additional 90 parking spaces. It would beneficial if the campus also provided an additional 100 to 150 spaces for a total of 190 to 240 new spaces to reduce the impact to adjacent neighborhood streets and slight loss of parking along the ADLP frontage.

Transit

- **Transit Stop** – The Cities should work with SamTrans to locate a bus stop at an appropriate location on the section of ADLP between Chula Vista Avenue and Cranfield Avenue.

School Access

- **New Access** – CHS and TLMS should design and install a new school access to ADLP between Chula Vista Avenue and Cranfield Avenue as shown on the concept plans. The location of these access points should allow a minimum of 250 feet of separation between the access points and Cranfield Avenue. The two access points do not need to align with one another. The new access points should be placed no closer to Cranfield Avenue than the "Separator Line" shown in Figure 8. This line would represent the centerline of the new access points.

- **Closed Access** – CHS should close the driveway access adjacent to Cranfield Avenue and replace it with a pedestrian plaza. This existing vehicle access would be routed to the new access to the north.

- **Maintain Existing Access** – TLMS should maintain the existing school access connecting to Dartmouth Avenue in addition to the new access to ADLP as discussed above. The school should allow two-way traffic at both access points and modify on-site circulation to accommodate these two points of access.

- **Staggered School Bells** – The two school districts should continue their efforts to stagger school schedules to spread the vehicle traffic demand as much as possible.

"The House" Church Property

"The House" church property (2811 San Carlos Avenue) located at the corner of San Carlos Avenue/Club Drive was sold and is in the process of obtaining approvals for redevelopment as residential units at the time of this analysis. The project would include eleven single family residential units and is proposed to have a single access onto Club Drive aligned with Exeter Avenue. The project would also include construction on the existing paved vehicle turnaround drive which currently exists opposite Bayview Drive. Parents generally use this turnaround for pick-up and drop-off of students in the area.