

NORWOOD STREET  
A Good School

# Improved School and Neighborhood Pedestrian Safety Planning: Norwood Elementary School

*A Report on Recommendations from  
Community Design Workshops*



**February 2010**

*Prepared for:*  
City of Los Angeles  
Los Angeles Unified School District  
Healthy Eating, Active Communities

*Prepared by:*  
Local Government Commission  
Glattig Jackson Kercher Anglin  
Ryan Snyder Associates  
PlanVision Studios



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*A Report on Recommendations from Community Design Workshops*

## ACKNOWLEDGEMENTS

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### ***Disclaimer***

Adherence to the principles found in this report can lead to an overall improvement in neighborhood safety and livability. This report does not constitute a standard, specification or regulation, and is not intended to be used as a basis for establishing civil liability. This report is not a substitute for sound engineering judgment. The decision to implement any particular measure should be made on the basis of engineering studies of the location.

*Funding provided by a California Department of Transportation (Caltrans) Environmental Justice: Context-Sensitive Transportation Planning Grant and by Healthy Eating, Active Communities, a project funded by The California Endowment. Views and opinions expressed in this report do not necessarily represent the views of opinions of the California Department of Transportation (Caltrans) or the California Business, Transportation, and Housing Agency.*

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# INTRODUCTION

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## Project Description and Goals

In California as many as 5,000 child pedestrians are injured each year. Pedestrian accidents are the second leading cause of fatal injuries among 5-12 year olds statewide. Additionally, childhood obesity is becoming an increasing problem in the state of California. Of the children in Assembly District 46, 39.1% of them are overweight, which is the highest percentage in the state of California. This project aims to reduce these figures by working with three elementary schools: Norwood Elementary School, 20th Street Elementary School, and The Accelerated School. All of the schools are located in the Los Angeles Unified School District. Norwood Elementary is part of Local District 7; 20th Street Elementary is part of Local District 5; and The Accelerated School (a charter school) is in Local District R.

The project area includes the neighborhoods immediately surrounding the aforementioned schools. Initial work with the three schools has already begun under the Healthy Eating, Active Communities' (HEAC) South Los Angeles Childhood Obesity Brain Trust (COBT). This project will build on efforts to date and provide much needed technical support to advance solutions to infrastructure inadequacies in these underserved neighborhoods.

The project is funded through an Environmental Justice: Context Sensitive Planning grant from the California Department of Transportation. Lead partners include the Local Government Commission (LGC), Glatting Jackson/Walkable Communities, Ryan Snyder Associates, PlanVision Studios, and Healthy Eating, Active Communities (HEAC). Matching funds were provided by Healthy Eating, Active Communities, a project funded by The California Endowment.





## The Charrette Process

From September 21 - 25, 2009, project partners held a series of interactive neighborhood planning exercises at Norwood Elementary involving students, parents, teachers and community leaders.

### *Outreach*

The LGC and members of HEAC extended outreach efforts to parents of the Norwood Elementary students, and residents and businesses in the surrounding neighborhood. English and Spanish flyers were sent home with students, and directly mailed to residences and businesses within half a mile from the school. Email versions of the flyers were also distributed to different community groups with an interest in pedestrian and child safety. Perhaps the best method of outreach was through word of mouth by HEAC members.



### **Walk Audit and Design Session**

Activities kicked off at Norwood with a Walk Audit and Design Session on September 21. Dan Burden of Glatting Jackson/Walkable Communities and Paul Zykofsky of the LGC conducted a bilingual (English/Spanish) presentation on the principles and elements of walkability and safe routes to school. This was followed by a walk audit of the surrounding neighborhood, where at numerous stops along the way the group assembled around the design team to discuss mobility issues at each location, look at traffic on the streets, and listen as possible solutions to improve conditions at each location were considered.

After the walk audit, participants broke into four table groups and began the complex task of discussing how to improve students' routes to the school. Each table group held energetic conversations as they discussed detailed recommendations and general concerns. These



thoughts were then translated into their own design recommendations, which they drew on large aerial maps.

Workshop attendees cited the following issues that affect or discourage more students from walking and bicycling to school:

- Crossing Washington Boulevard
- Crossing Hoover Street
- Crossing 23rd Street
- Crossing Figueroa Street
- Crossing Adams Boulevard
- Closer to school, walking through neighborhood intersections with many parents driving to drop off and pick up children

Copies of the Table Maps are included in the Appendix.

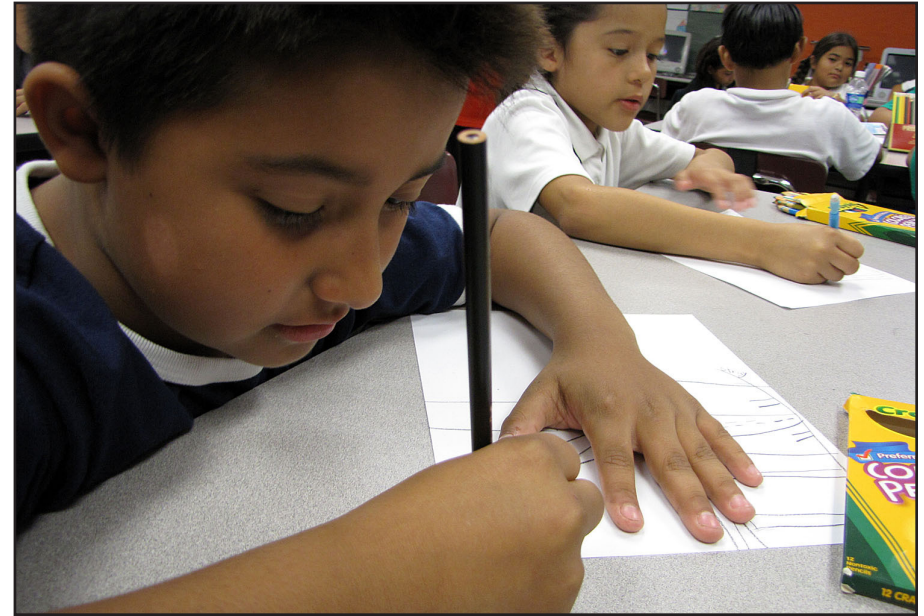


### ***Focus Groups***

Focus group meetings were also held with stakeholders who have a common interest relevant to the project. These groups typically range from five to ten individuals, a size that allows for comfortable conversations about street and safety issues in general. During the charrette we held focus groups sessions with two groups: 1) Agencies and Pedestrian Advisory Committee, which consists of City Staff and members of the Los Angeles Pedestrian Advisory Committee; and 2) Ms. Anguiano's 5th grade class at Norwood. For the 5th grade class session the children got to draw maps of their routes to the school, and write a story to go along with it.

### ***Closing Presentation***

After getting public input and analyzing existing conditions and data, the design team developed a series of traffic-calming measures and other context-sensitive design solutions to help create safer routes to the school. On September 25, the design team presented initial recommendations to the public. Participants were then provided an opportunity to give additional input into the recommendations.





## Benefits of Safer Routes

The recommendations highlighted in this report will have numerous benefits if implemented. Most importantly, these recommendations will reduce vehicle and pedestrian conflicts along routes to school, ensuring safer travel and fewer child pedestrian injuries and deaths.

They will also encourage physical activity and reduce obesity among schoolchildren. A Surgeon General report found that 78% of children fall short of the recommended amount of physical activity, thus contributing to unprecedented levels of childhood obesity.

The recommended minimum amount of activity can be met, fully or partially, if children can walk and bicycle to school. Safer routes to school will result in more students and parents choosing to walk or

bicycle, thus reducing congestion and traffic incidents and improving the transportation network.

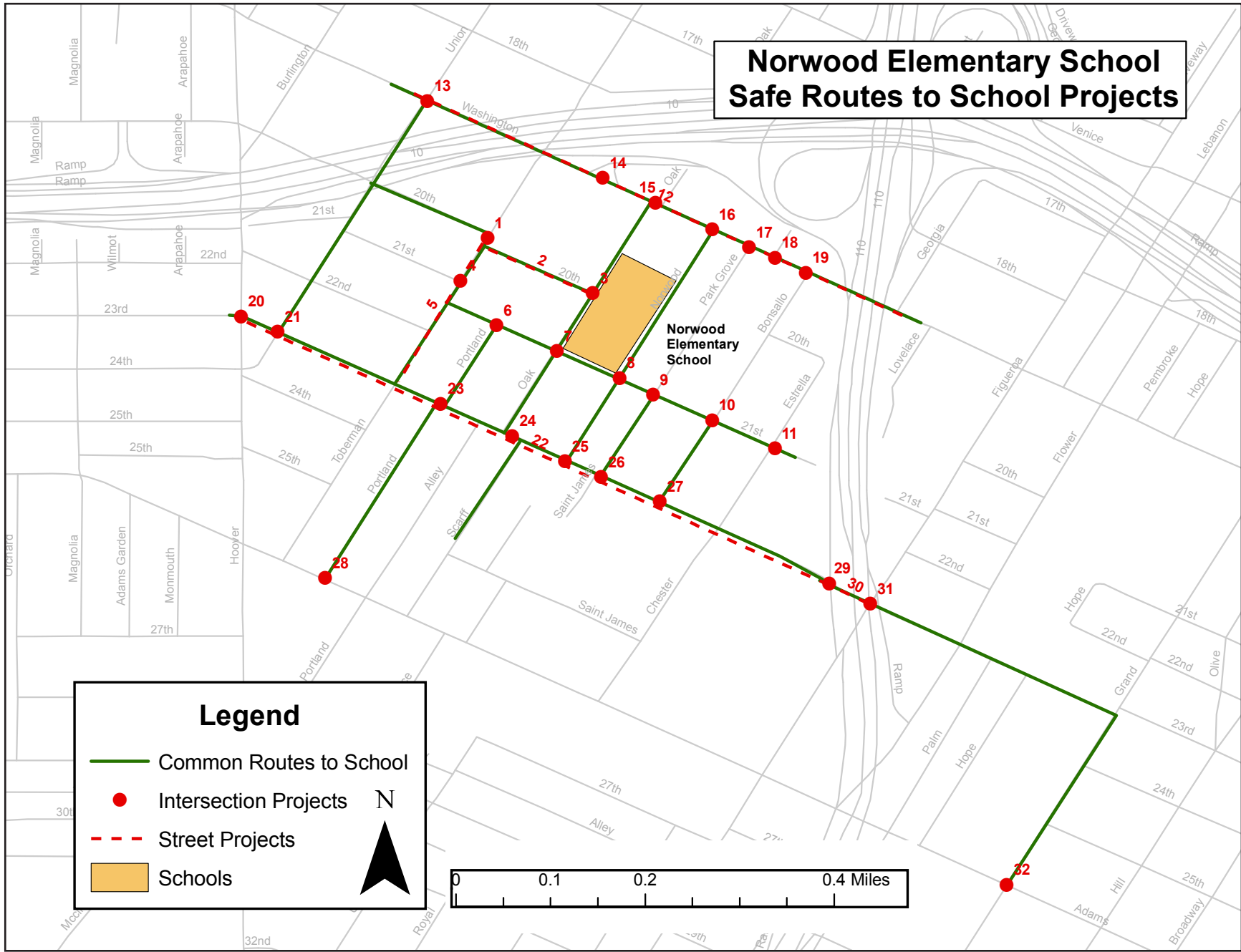
In today's automobile-dominated culture, the implications of training a new generation of pedestrians and bicyclists are profound. If children are provided with transportation options now, they will be more inclined to use them in the future.

In the meantime, we all benefit from reduced auto emissions and less road congestion. A study from the National Highway Traffic Safety Administration-funded Safe Routes to School National Model Project in Marin County revealed that at least 21-27% of morning traffic is attributable to parents driving their children to school. It is ironic that parents concerned about their child getting safely to school and who decide to drive them, may contribute significantly to the risk of walking or biking to school.



## References

- 1996 Surgeon General's report on physical activity and health
- California Department of Health Services, EPICenter, California Injury Data Online, 2005-2007
- California Center for Public Health Advocacy, Overweight Children in California, 2004

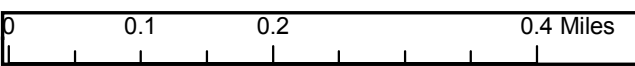


**Norwood Elementary School  
Safe Routes to School Projects**

**Legend**

- Common Routes to School
- Intersection Projects
- - - Street Projects
- Schools

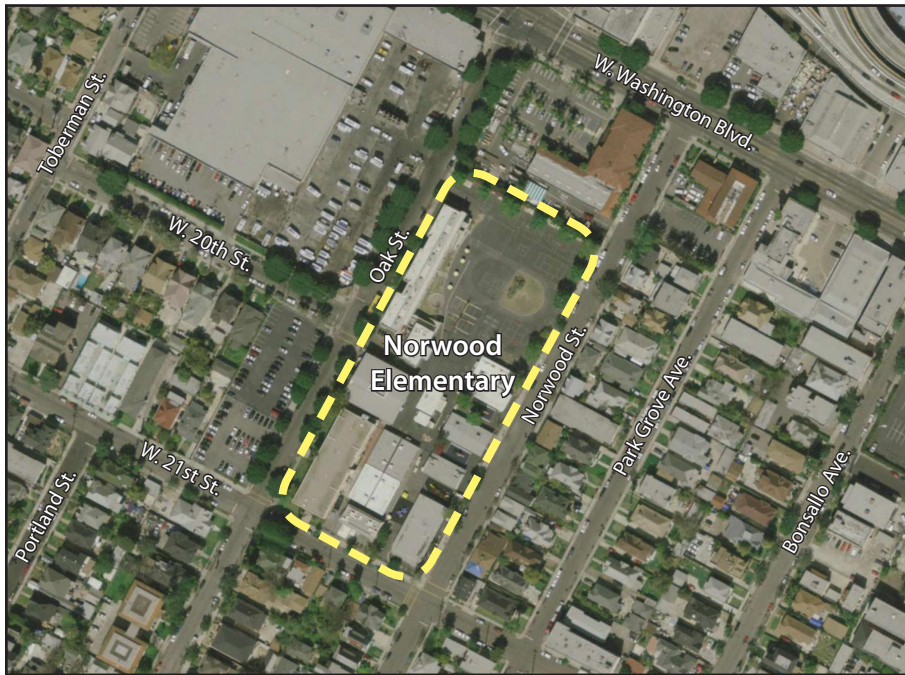
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## RECOMMENDATIONS

The following recommendations focus on improvements along the common routes that Norwood Elementary School students use to walk or bicycle to school. When implemented, these projects should improve the safety for students walking and bicycling to school.

***General Recommendation:*** Add perpendicular curb-ramps with truncated domes to all bulb-outs and curb extensions. Curbs with two perpendicular ramps steer wheelchair users and other pedestrians to the shortest and most direct path across the street.



### ***Immediate Neighborhood***

Norwood Elementary School students that live in the immediate neighborhood don't have to cross any major streets. All the neighborhood streets have two lanes with on-street parking. Most are 34' to 40' wide. Students in this neighborhood have to cross these local streets and the parked cars can reduce visibility, especially with students who are not tall enough to be seen behind parked cars. The recommended crossing treatments below would reduce the crossing distance and would improve visibility.



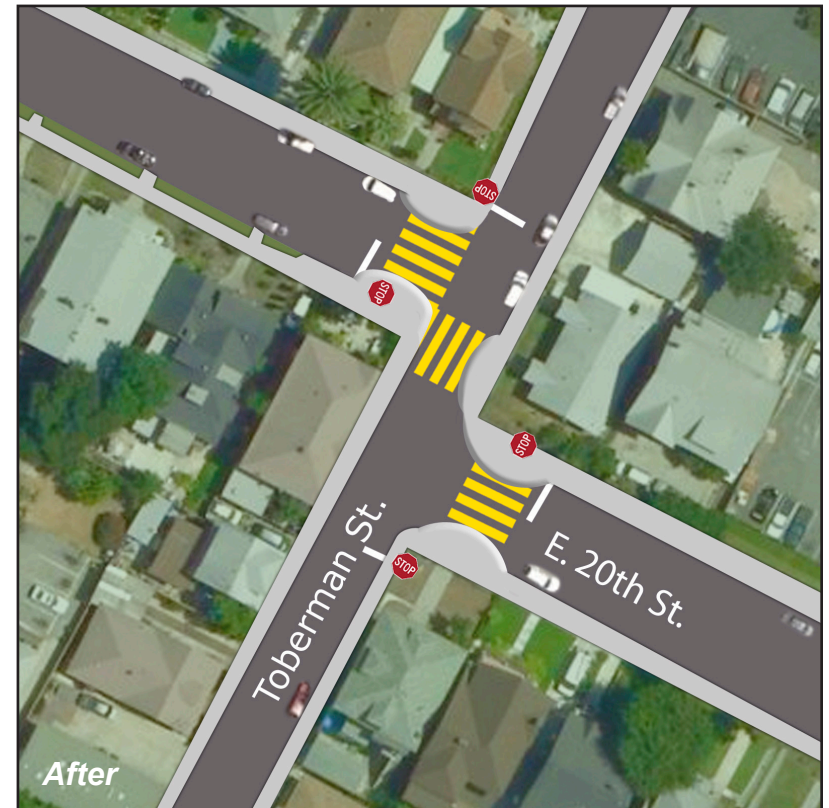
## 1. 20th Street at Toberman Street

### Existing

- Offset intersection — 20th Street intersects Toberman Street as a T-intersection in the west direction north of 20th Street in the east direction
- Both intersections have 3-way stops
- Yellow lateral-stripe crosswalk to cross Toberman Street north of 20th Street

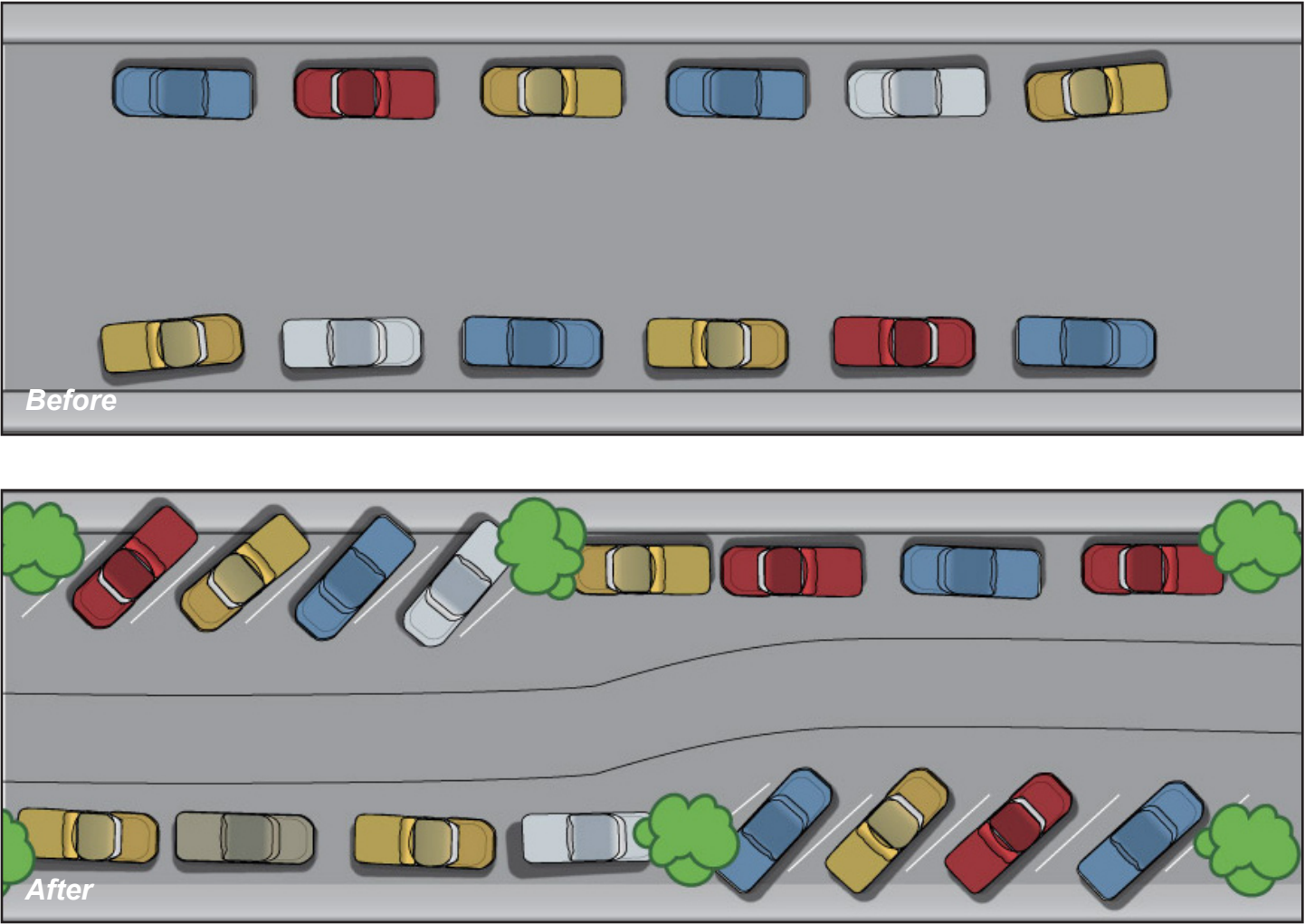
### Recommended Changes

- Add bulb-outs to all 4 crossing faces of 20th Street
- Add new zebra-stripe crosswalk to cross Toberman Street on the north side of the east leg of 20th Street (1)
- Add bulb-out (1) on the east side to this new crossing of Toberman Street
- Add advanced stop bars to all 4 stop signs



## 2. 20th Street between Toberman Street and Oak Street

20th Street is a long, east-west street that lends itself to speeding. This street is adjacent to the school and should be a slow street that children and parents can walk along and cross easily. One way to calm traffic on this section of 20th Street would be to install back-in angled parking on alternating sides of the street. Alternating the parking from one side of the street to the other at midblock would create a chicane effect that would slow vehicles down. This treatment would also provide an increase in the number of on-street parking spaces which could help accommodate teachers and/or parents near the school.



### 3. 20th Street at Oak Street

#### Existing

- T-intersection
- 3-way stop
- Yellow lateral crosswalk on south crossing of Oak Street
- Oak Street is blocked off with a gate on the south side nearest the school to control pick-up and drop-off traffic
- Oak Street is 1-way northbound when gate is opened during morning drop-off and afternoon pickup.

#### Recommended Changes

- Keep gate closed – the treatment works well for pedestrians
- Add bulb-outs to cross Oak Street on the north side (2)
- Add bulb-outs to cross 20th Street on the west side (2)
- Add zebra-stripe crosswalk to cross 20th Street on the west side (1)
- Add zebra-stripe crosswalk to cross Oak Street on the north side (1)
- Add advanced stop bars to 20th Street and to north crossing of Oak Street (2)
- Option: Instead of bulb-outs to cross 20th Street, add center median island with crosswalk gap



## 4. 21st Street at Toberman Street

### Existing

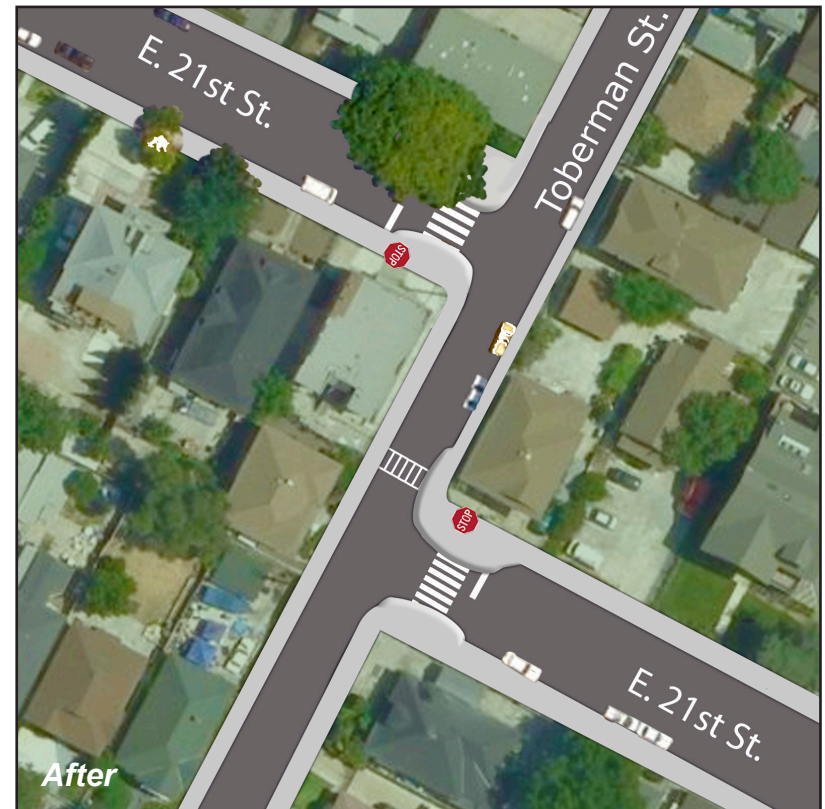
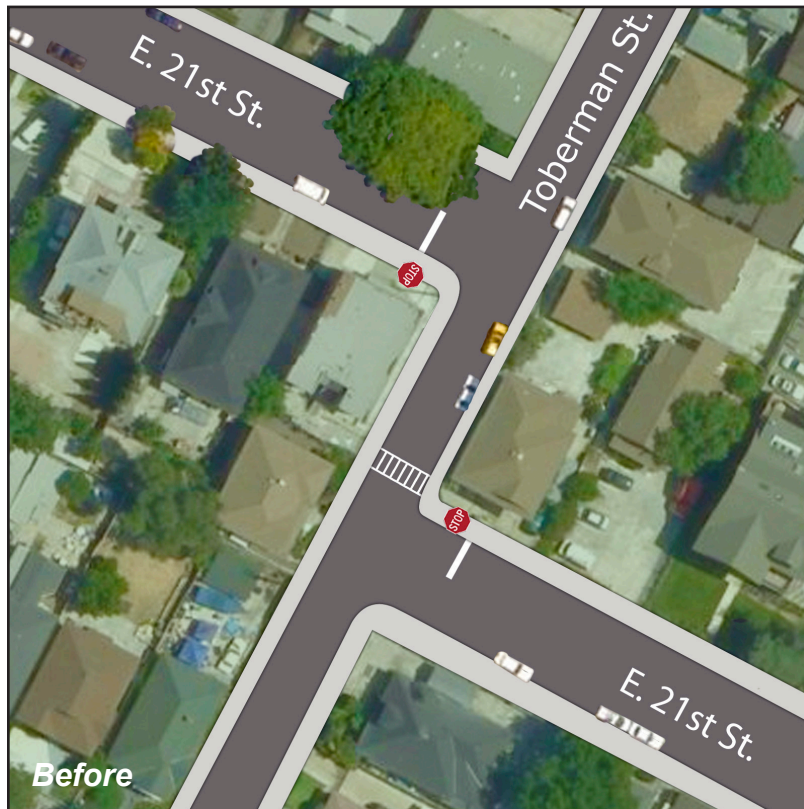
Offset intersection - 21st Street intersects Toberman Street as a T-intersection in the west direction north of 21st Street in the east direction

1-way stops for both sides 21st Street

A ladder crosswalk exists to cross Toberman Street north of the east side of 21st Street

### Recommended Changes

- Add bulb-outs to all 4 crossing faces of 21st Street
- Add curb extension to cross Toberman Street on east side to crossing just north of east leg of 21st Street
- Add new zebra-stripe crosswalks to cross 21st Street (2)
- Add advanced stop bars to both crossings of 21st Street (2)



## 5. Toberman Street Shared Space Option

Toberman Street is only 25' wide and has on-street parking on the east side only. It is a good candidate for shared space where pedestrians and bicyclists would share the road with a low volume of cars, as well as children playing, picnic tables, benches and other neighborhood features. Cars would be required to slow down to 5 mph and give pedestrians higher priority. Shared streets are common in some cities in Europe and more are being built in the U.S. The alley system in Manhattan Beach is an example of a shared street in the Los Angeles region that has worked well for many decades.

If Toberman Street becomes shared space the sidewalks would come out, as well as the crossing treatments of Toberman Street. Parking would be inset with trees or bollards.





## 6. 21st Street at Portland Street

### Existing

- T-intersection
- 1-way stop for Portland Street
- Both streets are 2-way, 2-lane streets with on-street parking

### Recommended Changes

- Add bulb-outs to both crossing faces of Portland Street (2)
- Add zebra-stripe crosswalk to cross Portland Street (1)
- Add advanced stop bar to Portland Street (1)



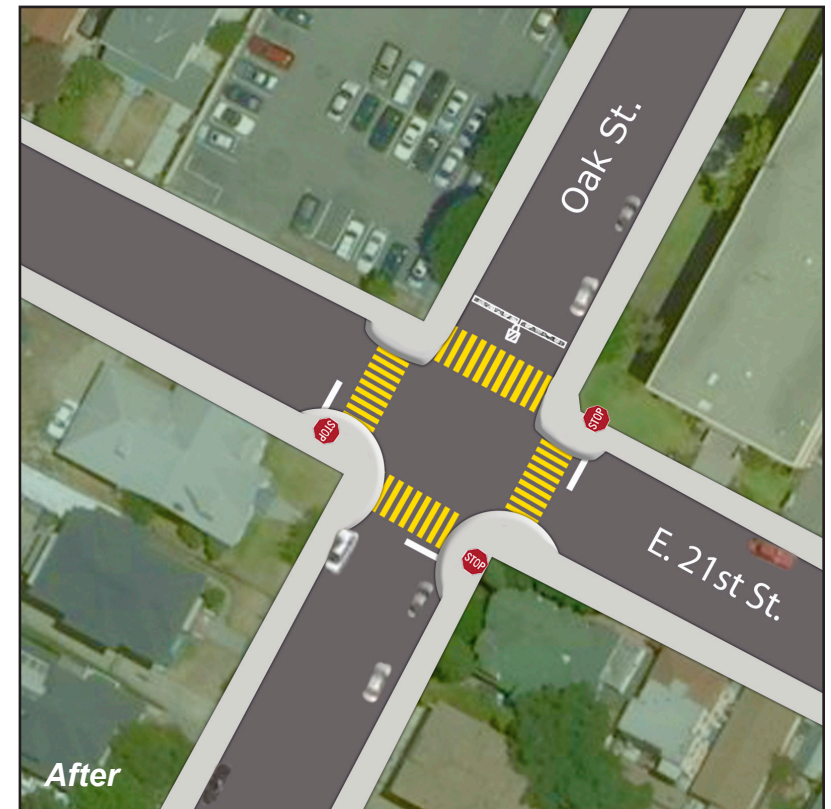
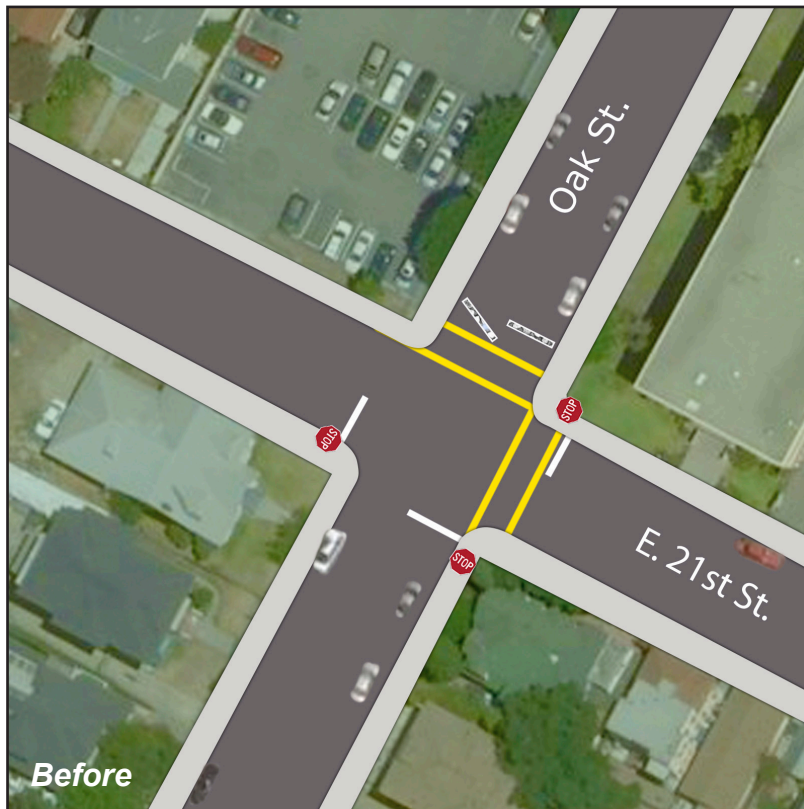
## 7. 21st Street at Oak Street

### Existing

- 3-way stop
- Yellow lateral crosswalks on north and east crossings
- Oak Street is blocked off with a gate on the north side nearest the school to control pick-up and drop-off traffic
- Oak Street is 1-way northbound when the gate is closed

### Recommended Changes

- Keep gate closed – the treatment works well for pedestrians and motorists. Prevents motorists from dropping children across the street from the school.
- Add bulb-outs to cross 21st Street on both sides (4)
- Add bulb-outs to cross Oak Street on the south side (2)
- Add zebra-stripe crosswalks to all 4 crossings
- Add advance stop bars to both crossings of 21st Street and south crossing of Oak Street (3)



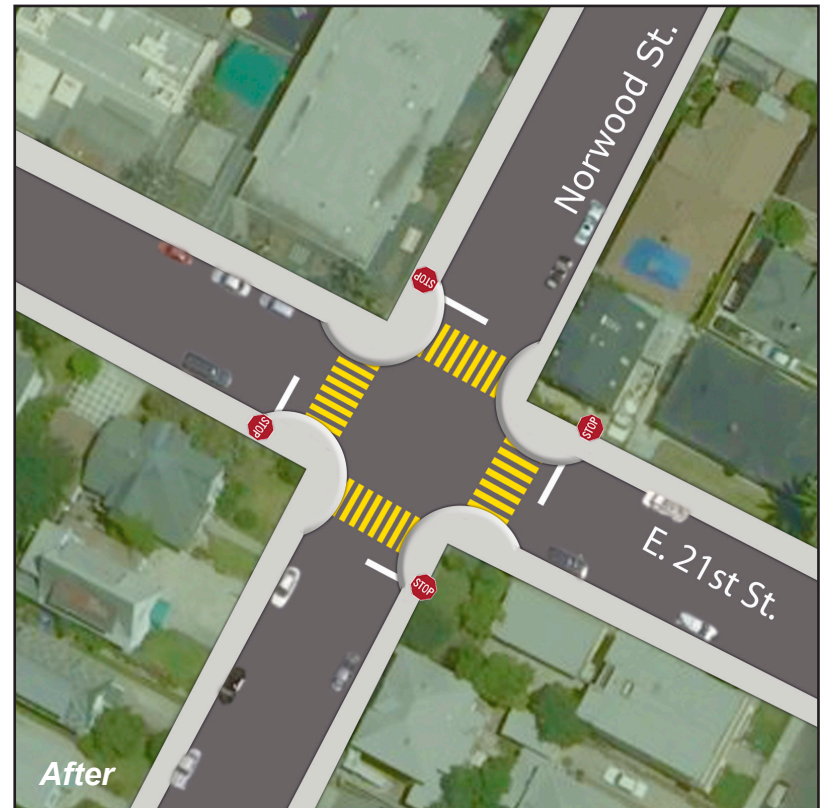
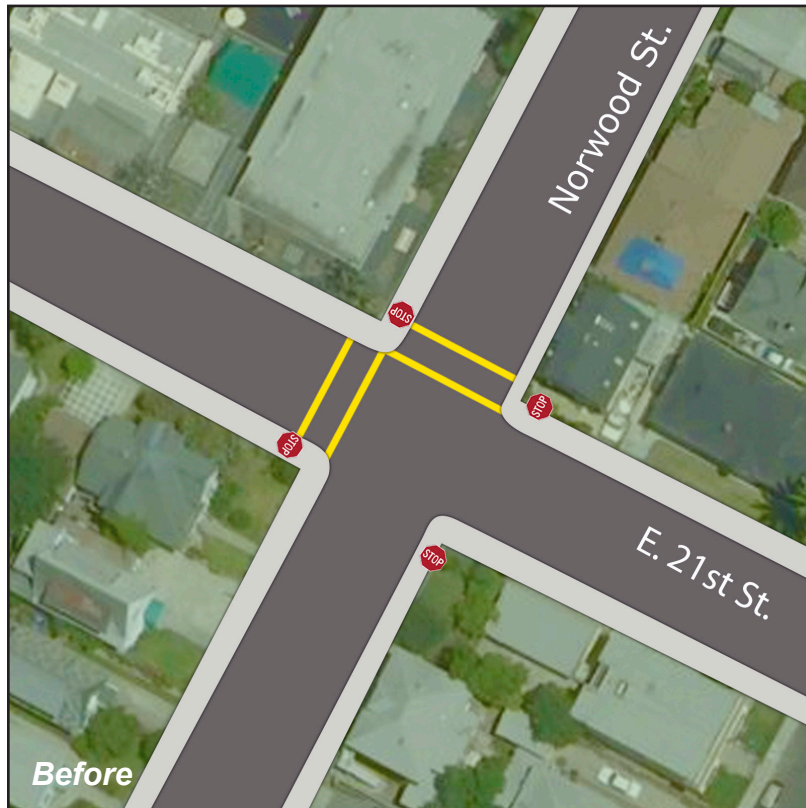
## 8. 21st Street at Norwood Street

### Existing

- 4-way stop
- Both streets are 2-way, 2-lane streets with on-street parking
- Has yellow lateral-stripe crosswalks on north crossing of Norwood Street and west crossing of 21st Street

### Recommended Changes

- Add bulb-outs to all 8 curb faces
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to all 4 crossings
- Option: mini-circle prototype



## 9. 21st Street at Park Grove Avenue

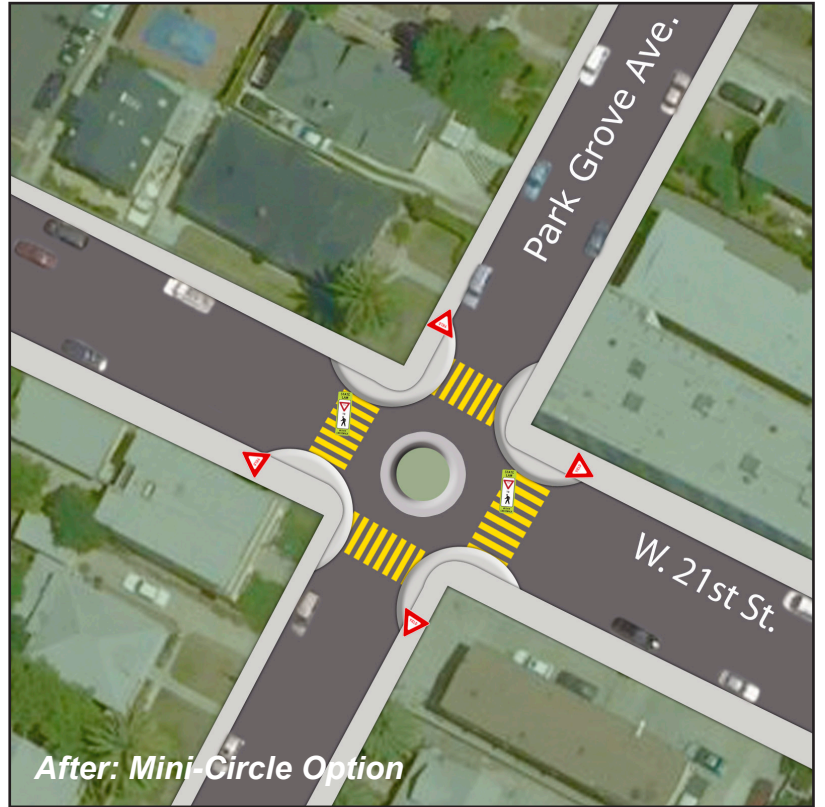
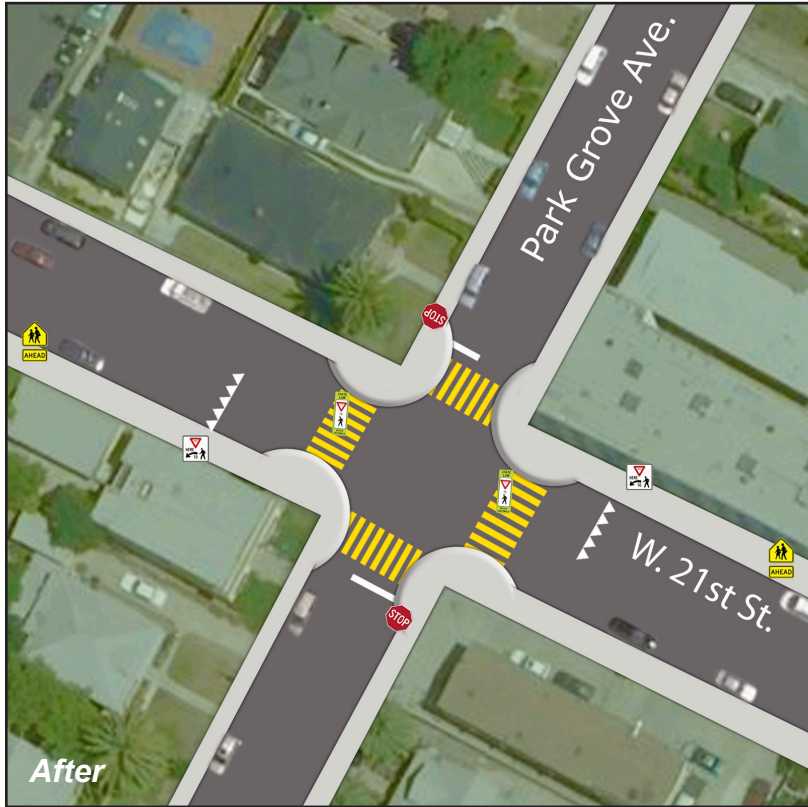
### Existing

- 2-way stop for Park Grove Avenue
- Both streets are 2-way, 2-lane streets with on-street parking
- Has yellow lateral-stripe crosswalks on north crossing of Park Grove Avenue and west crossing of 21st Street

### Recommended Changes

- Add bulb-outs to all 8 curb faces
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to Park Grove Avenue (2)
- Add advanced yield bars to 21st Street (2)
- Add in-street “yield to pedestrians in crosswalk” (R1-6) signs to 21st Street crossings (2)
- Option: mini-circle prototype





## 10. 21st Street at Bonsallo Avenue

### Existing

- 2-way stop for Bonsallo Avenue
- Both streets are 2-way, 2-lane streets with on-street parking
- Has yellow lateral-stripe crosswalks on north crossing of Bonsallo Avenue and west crossing of 21st Street

### Recommended Changes

- Add bulb-outs to all 8 curb faces
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to Bonsallo Avenue (2)
- Add advanced yield bars to 21st Street (2)
- Add in-street “yield to pedestrians in crosswalk” (R1-6) signs to 21st Street crossings (2)
- Option: mini-circle prototype



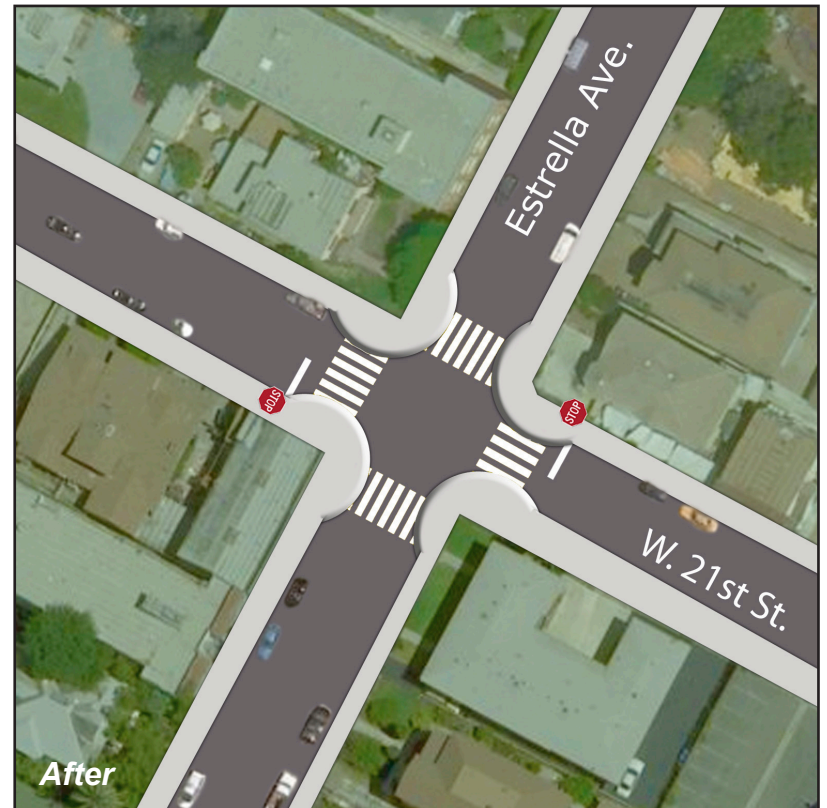
## 11. 21st Street at Estrella Avenue

### Existing

- 2-way stop for 21st Street
- Both streets are 2-way, 2-lane streets with on-street parking

### Recommended Changes

- Add bulb-outs to all 8 curb faces
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to 21st Street (2)
- Option: mini-circle prototype



## 8,9,10,11. Norwood Elementary School Neighborhood Intersections with Mini-Circle Option

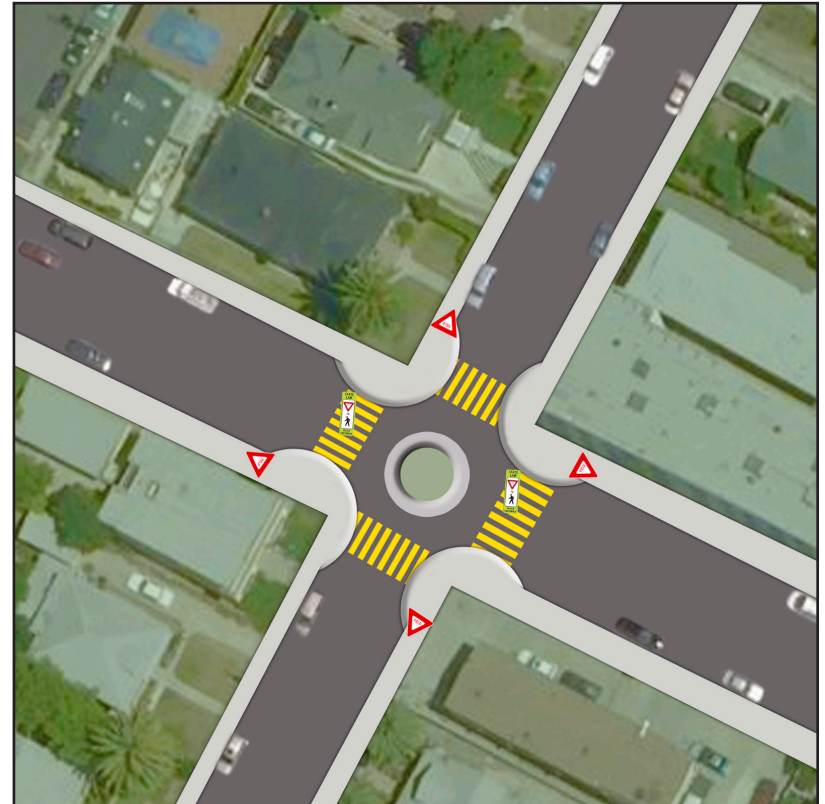
Many of the streets in the immediate neighborhood could be improved for pedestrians with some of the same features. Since these are small streets that intersect at right angles and have stop signs, they could be improved with mini-traffic circles, or mini-circles. These would slow cars down and would eliminate stops for bicyclists. The mini-circles are one way of improving the intersections, but other devices could improve the intersections as well. This option is shown to the right as a typical prototype.

### Existing

- 4-way stop
- Both streets are 2-way, 2-lane streets with on-street parking
- Lateral-stripe crosswalks on all 4 crossings

### Recommended Changes

- Remove stop signs and add mini-circle
- Add in-street “yield to pedestrians in crosswalk” (R1-6) signs to all 4 crossings
- Add bulb-outs to all 8 curb faces
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced yield bars to all 4 crossings



*Example mini-circle that can be applied to other intersections near the school*

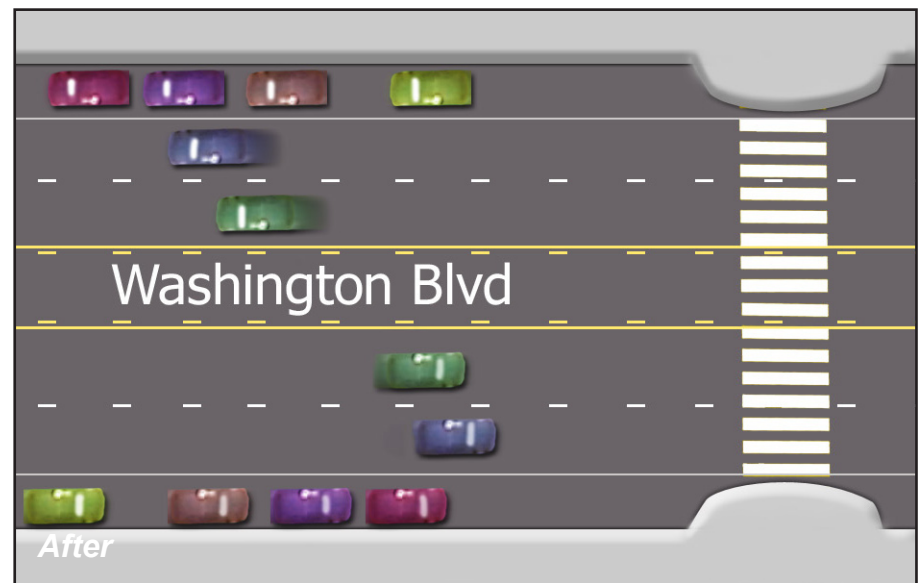
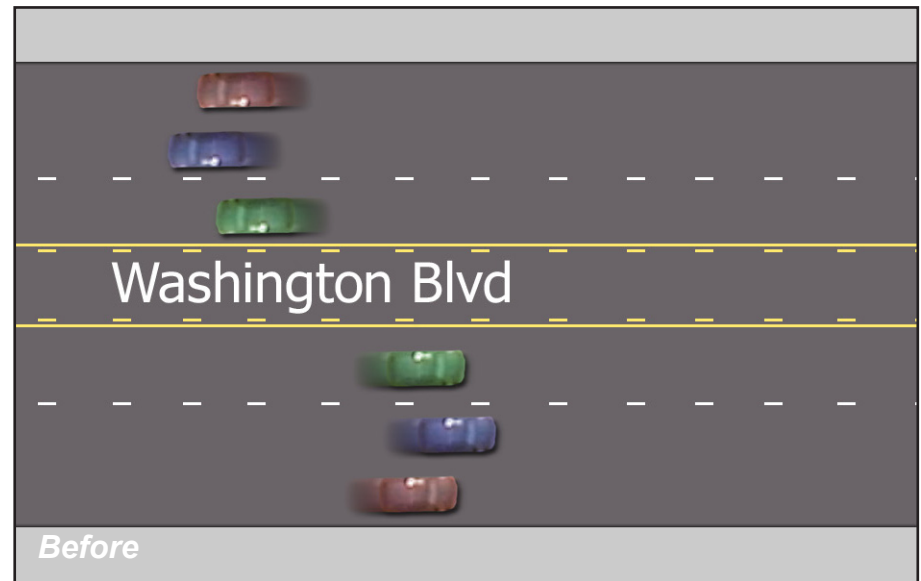


### **Washington Boulevard**

Some Norwood Elementary School students live north of Washington Boulevard. Those living directly north or to the northwest either cross the Santa Monica Freeway (I-10) at Union Avenue or through an underpass that connects to Toberman Street. Those crossing through the underpass have to cross a set of freeway on-ramps that are quite wide and designed to speed motorists onto the freeway. Norwood students that live to the northeast walk along Washington Boulevard after passing under the Harbor Freeway (I-110). All of the students must cross Washington Boulevard, a wide, busy street. Our recommendations include improved crossings at Oak Street, immediately north of the school, and at Union Avenue. Since students will cross at these locations, they will need to walk along Washington Boulevard to get to them and will need improvements crossing the side streets as well. The recommendations below address these issues.

### **12. Washington Boulevard**

Washington Boulevard has four lanes, on-street parking and a center turn lane. It has a peak hour parking restriction that turns Washington Boulevard into a six-lane street. This creates a more difficult situation for pedestrians crossing the street, especially during the morning walk to school. The peak hour restriction also prevents installation of bulb-outs to shorten the crossing and to make pedestrians more visible since they would block the outside travel lanes. This report recommends lifting the peak hour parking restriction in the vicinity of the school so as to reduce the number of lanes to cross, and to allow for installation of bulb-outs to cross Washington Boulevard. This would require removal of approximately 18 signs.



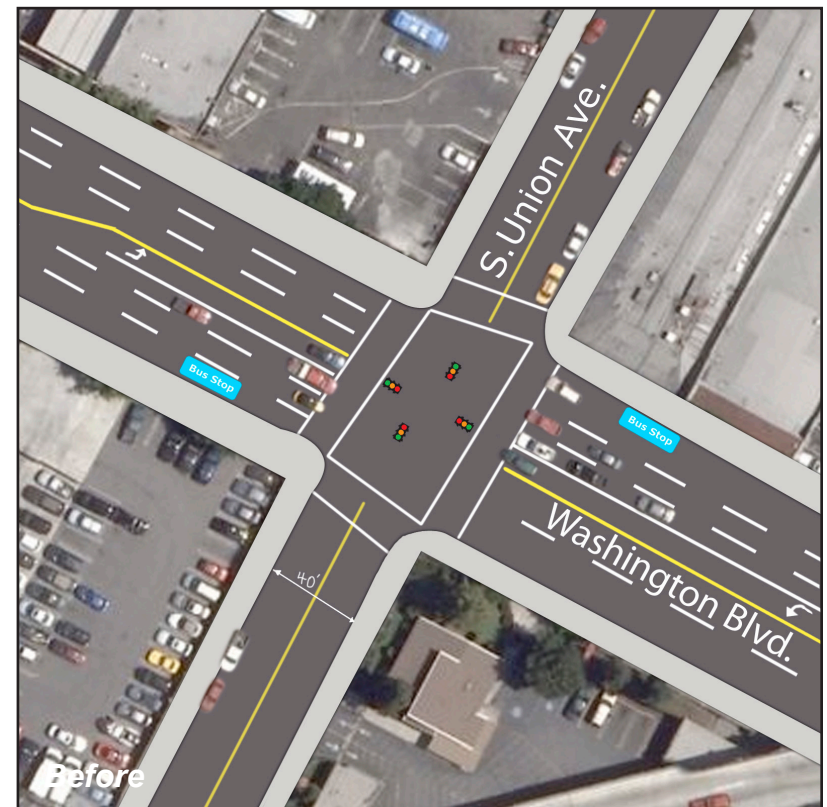
### 13. Washington Boulevard at Union Avenue

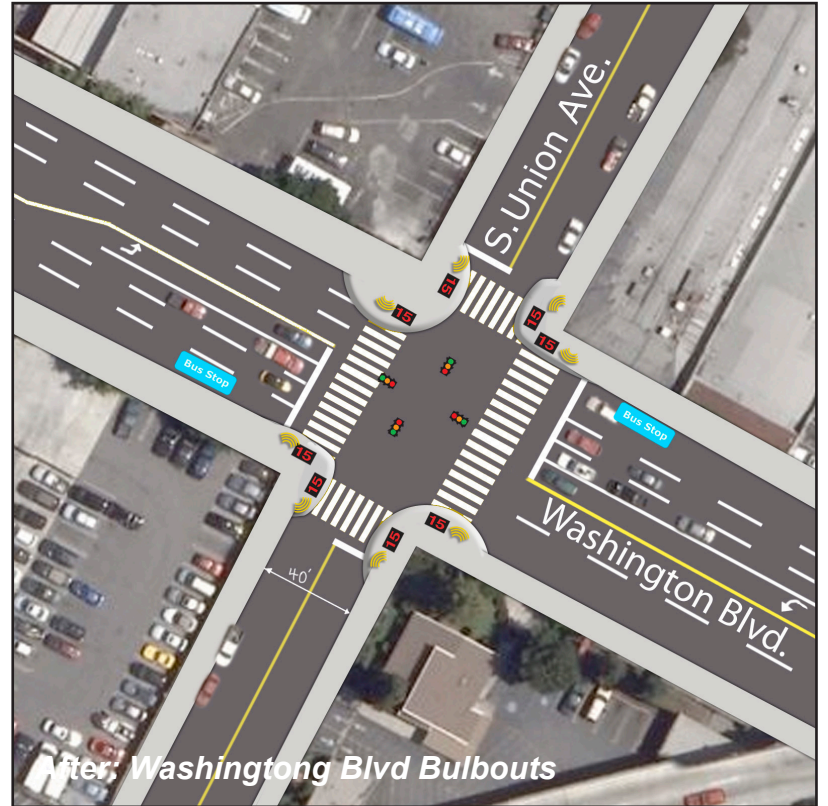
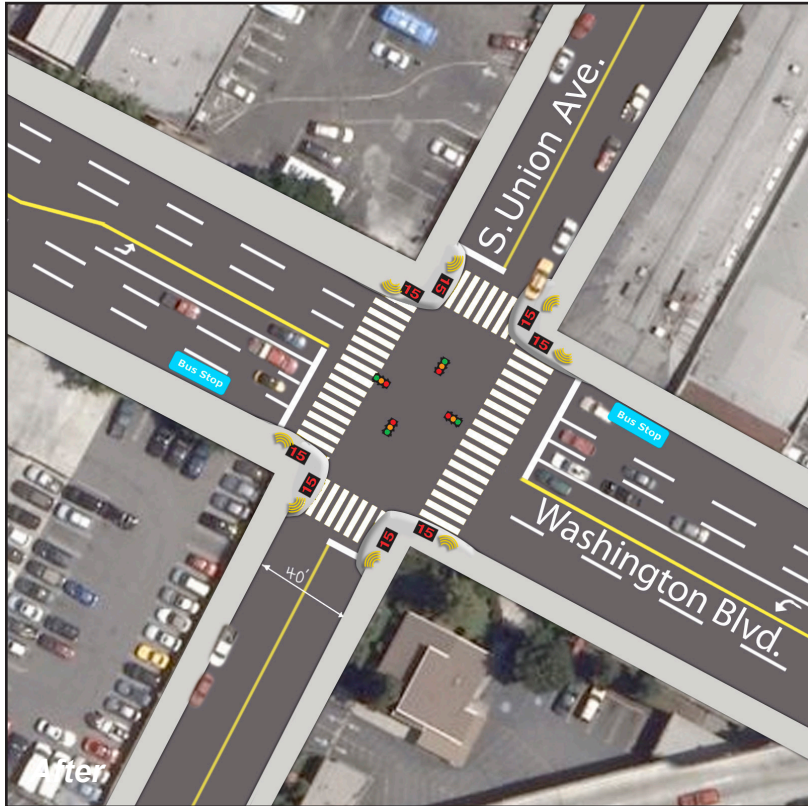
#### Existing

- Signalized intersection
- Washington Boulevard has 4 lanes with on-street parking, left-turn lane; peak hour parking restriction that expands Washington Boulevard to six lanes
- Union Street has 2 lanes with on-street parking, and is 40' wide
- Bus stops on NE and SW corners
- Pedestrian crossing time of Washington Boulevard is insufficient

#### Recommended Changes

- Add bulb-outs to all 4 crossing faces of Union Avenue
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to all 4 crossings
- Add countdown signals to all 8 pedestrian heads
- Add audio signals to all 8 pedestrian heads
- Increase the time that pedestrians have to cross
- If peak hour parking restriction is lifted on Washington Boulevard, add bulb-outs to cross Washington Boulevard on NW and SE corners (2)





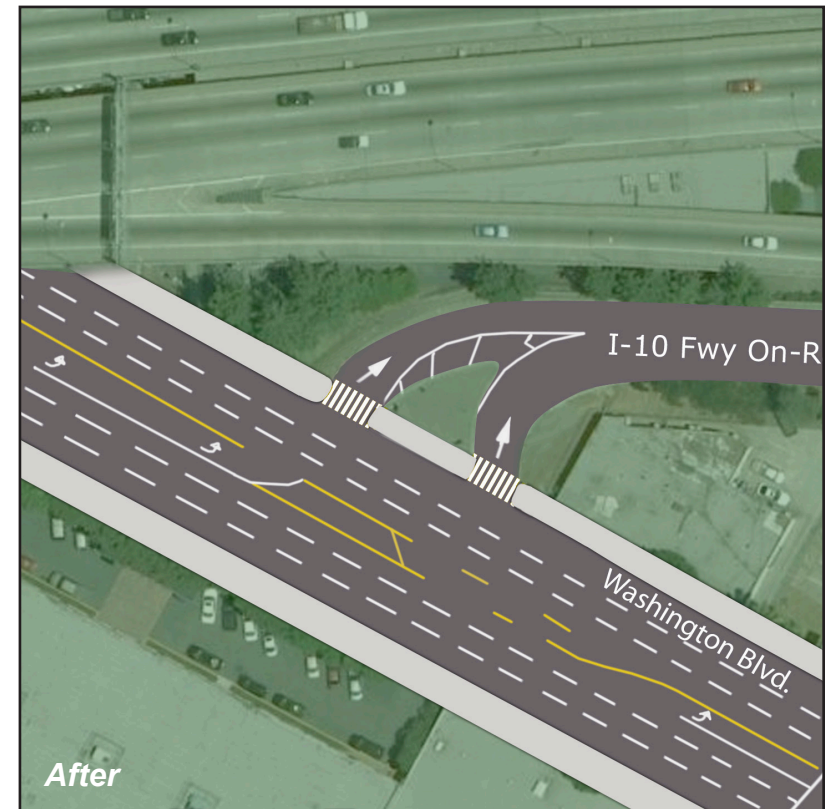
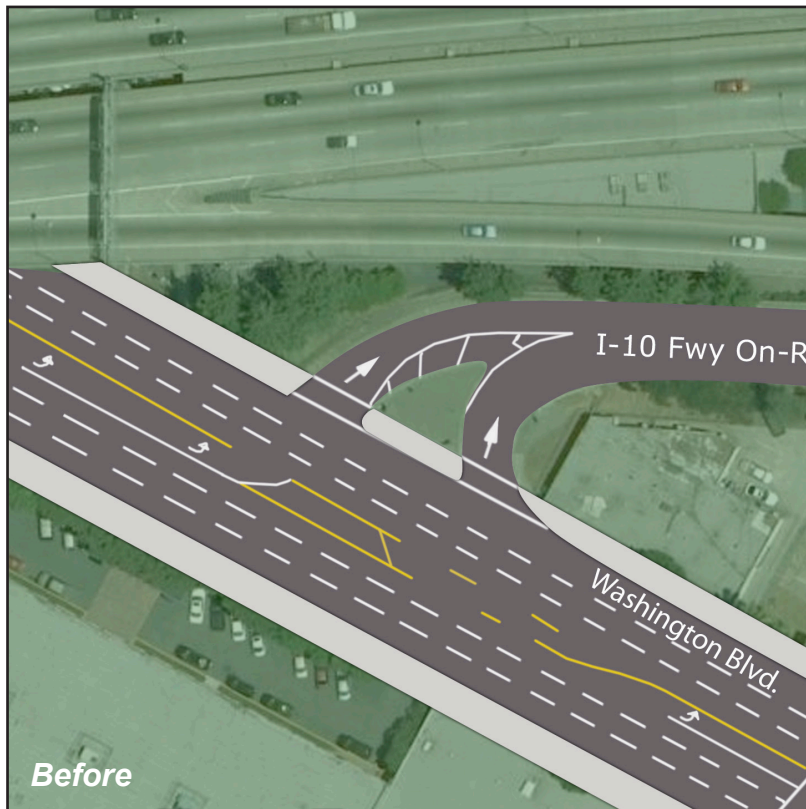
## 14. Washington Boulevard at I-10 Freeway On-Ramps

### Existing

- Two freeway (I-10) on-ramps on the north side of Washington Boulevard
- Very wide crossings
- Lateral-stripe crosswalks

### Recommended Changes

- Extend the curbs on both on-ramps to reduce the crossing distance; create more of a right-angle to east crossing (4)
- Add zebra-stripe crosswalks to each of these crossings (2)



## 15. Washington Boulevard at Oak Street

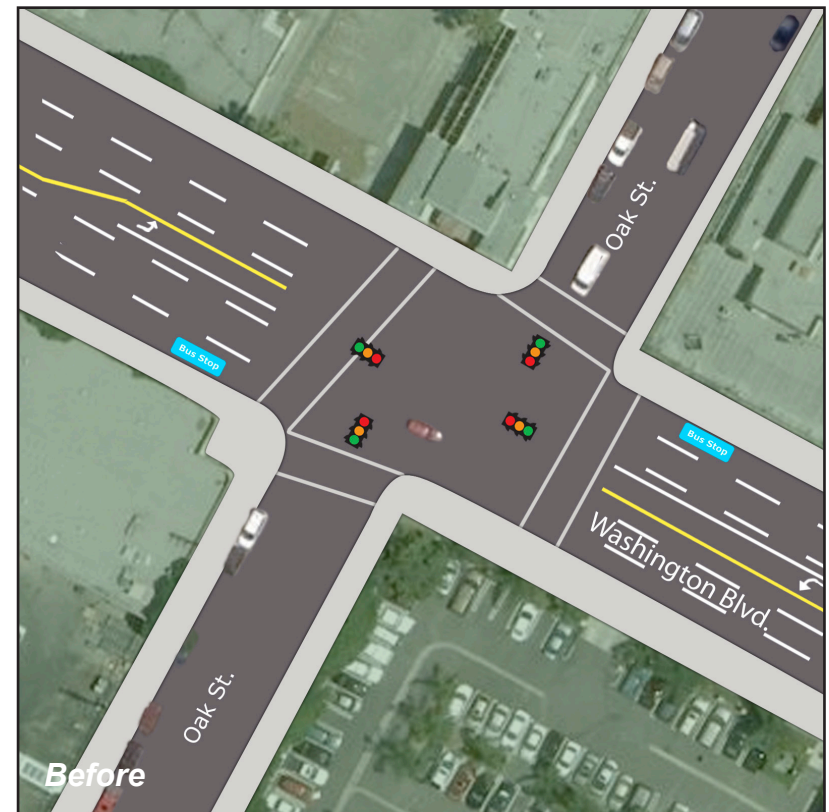
### Existing

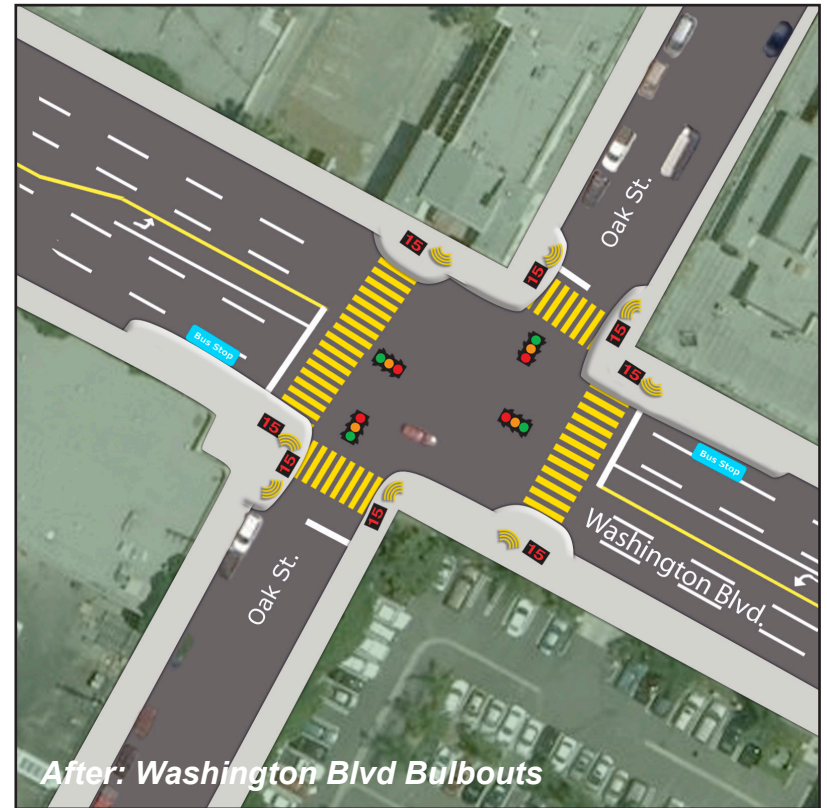
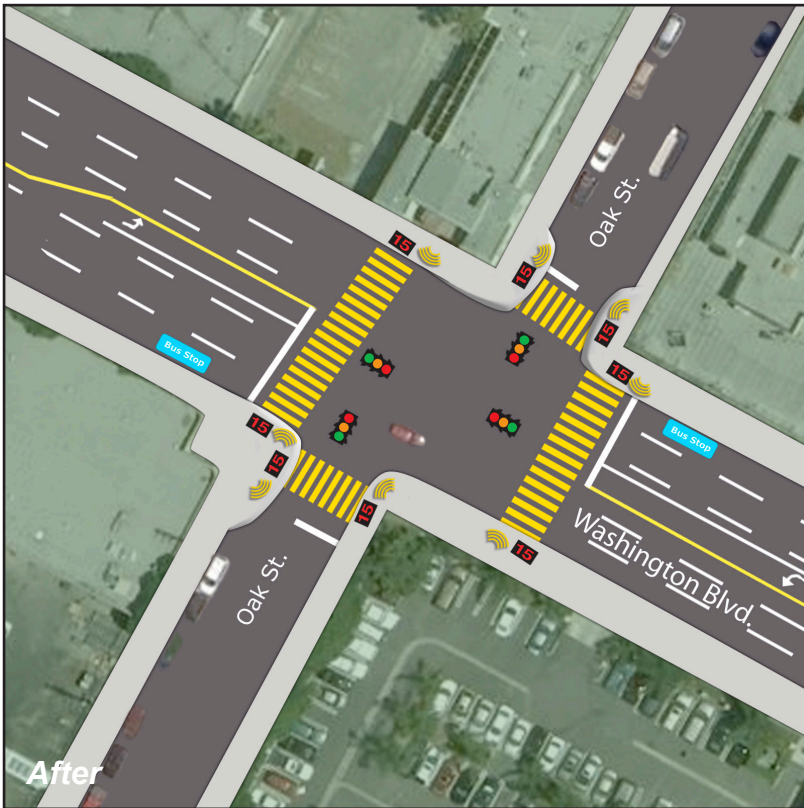
- Offset intersection
- Signalized intersection
- Lateral crosswalks exist on all 4 crossings
- No curb ramp exists on the north side of Washington Boulevard on the west crossing
- No curb ramp exists on the south side of Washington Boulevard on the east crossing
- Washington Boulevard has 4 lanes with on-street parking, left-turn lane; peak hour parking restriction that expands Washington Boulevard to six lanes
- Oak Street has 2 lanes with on-street parking
- Bus stops on NE and SW corners
- Pedestrian push button is on the wrong side of the pole on the north side of Washington Boulevard on the west crossing
- West crossing of Washington Boulevard is at an angle

### Recommended Changes

- Add bulb-outs to both crossing faces of Oak Street on the north side (2)
- Add large curb extension on the SW corner of Oak Street to reduce the angle of the crosswalk over Washington Boulevard
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to all 4 crossings
- Add countdown signals to all 8 pedestrian heads
- Add audio signals to all 8 pedestrian heads

- Move pedestrian push button on NW corner to a convenient location
- If peak hour parking restriction is lifted on Washington Boulevard, add bulb-outs to cross Washington Boulevard on NW and SE corners (2)
- If peak hour parking restriction is lifted on Washington Boulevard, add bus bulbs to cross Washington Boulevard on SW and NE corners (2)





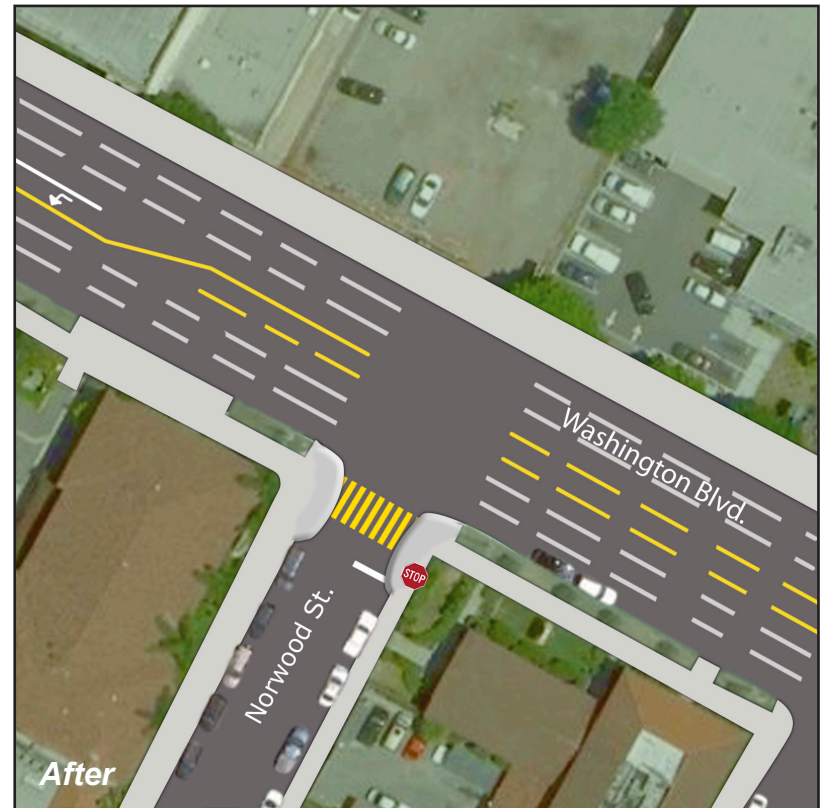
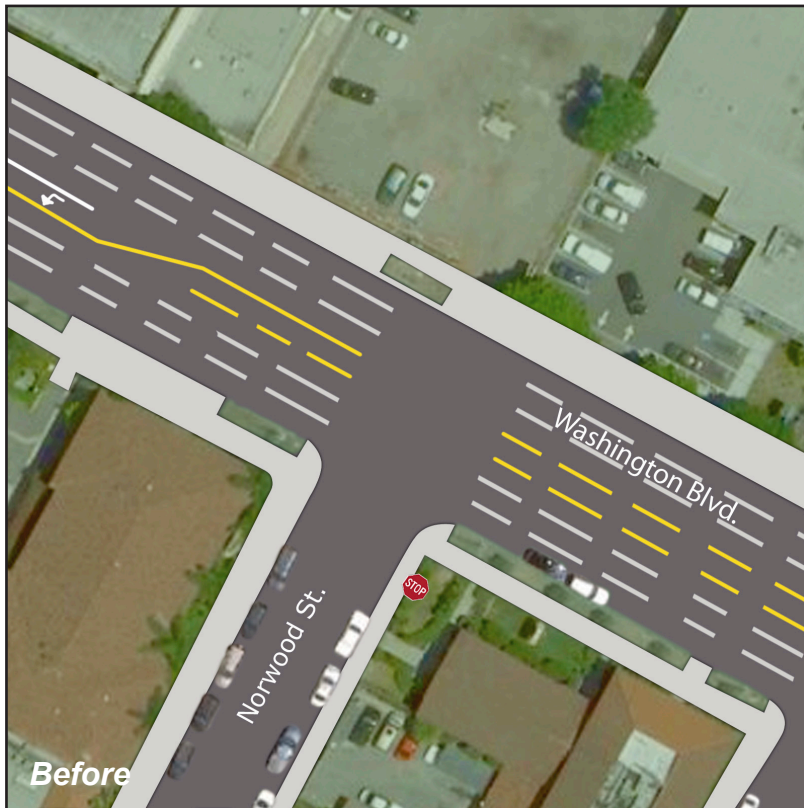
## 16. Washington Boulevard at Norwood Street

### Existing

- T-intersection
- 1-way stop for Norwood Street

### Recommended Changes

- Add bulb-outs to cross Norwood Street (2)
- Add zebra-stripe crosswalk to cross Norwood Street (1)
- Add advanced stop bar to Norwood Street (1)



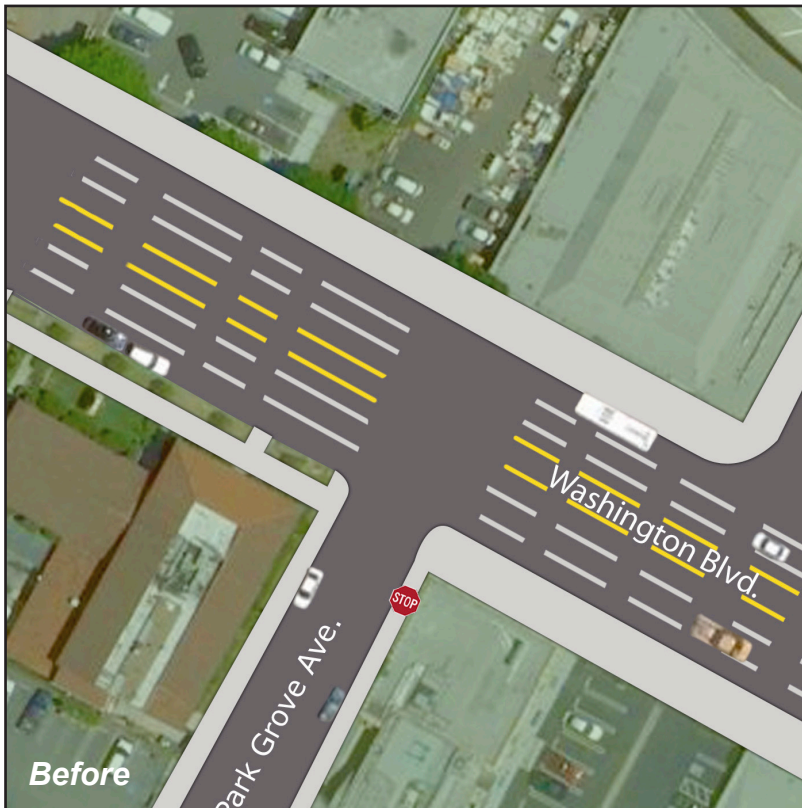
## 17. Washington Boulevard at Park Grove Avenue

### Existing

- T-intersection
- 1-way stop for Park Grove Avenue

### Recommended Changes

- Add bulb-outs to cross Park Grove Avenue (2)
- Add zebra-stripe crosswalk to cross Park Grove Avenue (1)
- Add advanced stop bar to Park Grove Avenue (1)





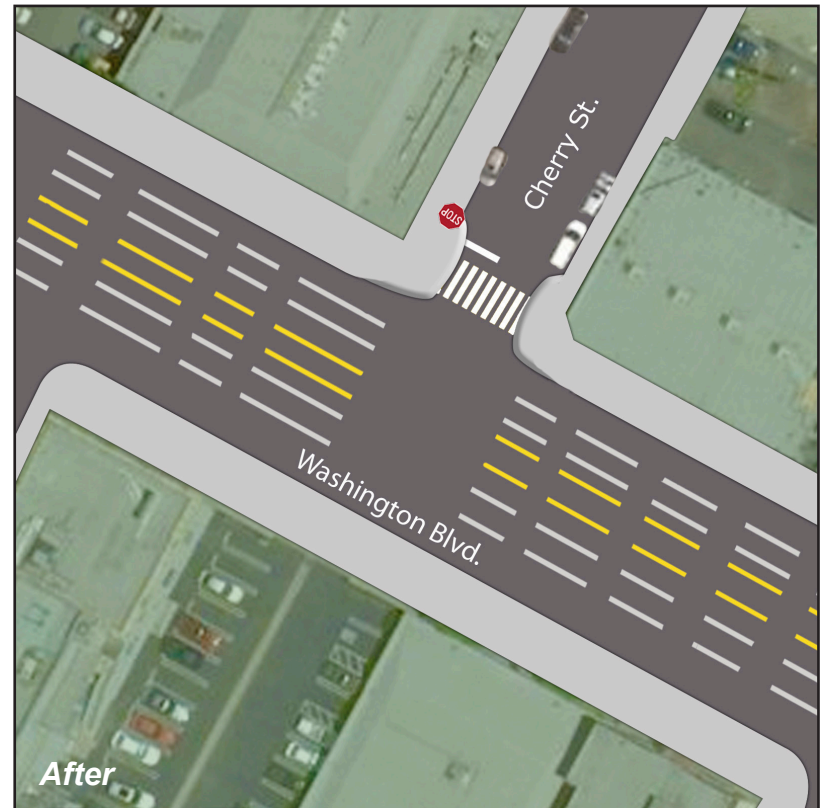
## 18. Washington Boulevard at Cherry Street

### Existing

- T-intersection
- 1-way stop for Cherry Street

### Recommended Changes

- Add bulb-outs to cross Cherry Street (2)
- Add zebra-stripe crosswalk to cross Cherry Street (1)
- Add advanced stop bar to Cherry Street (1)



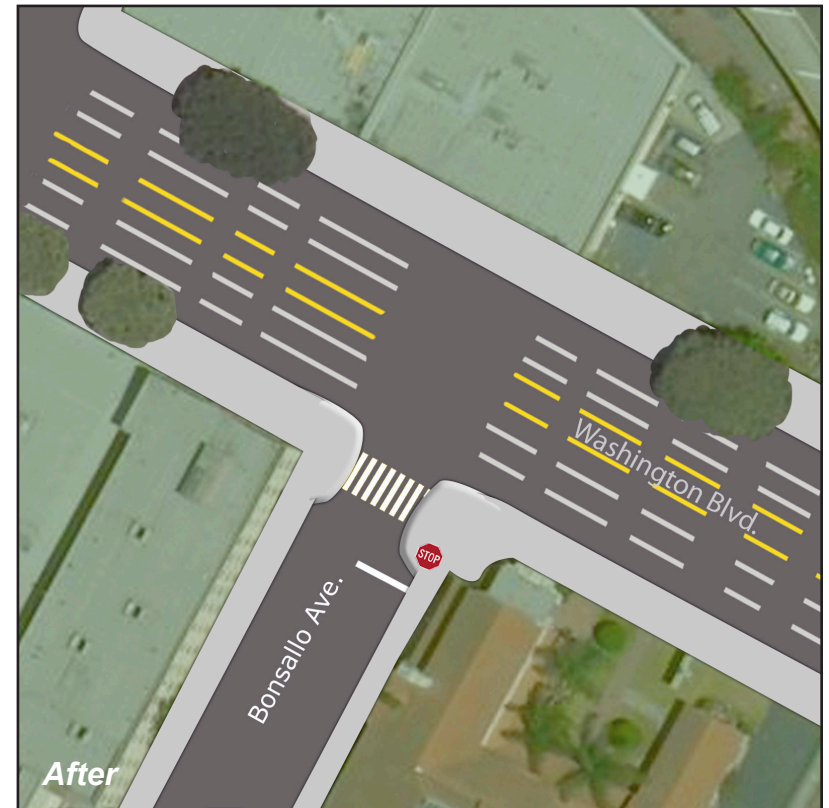
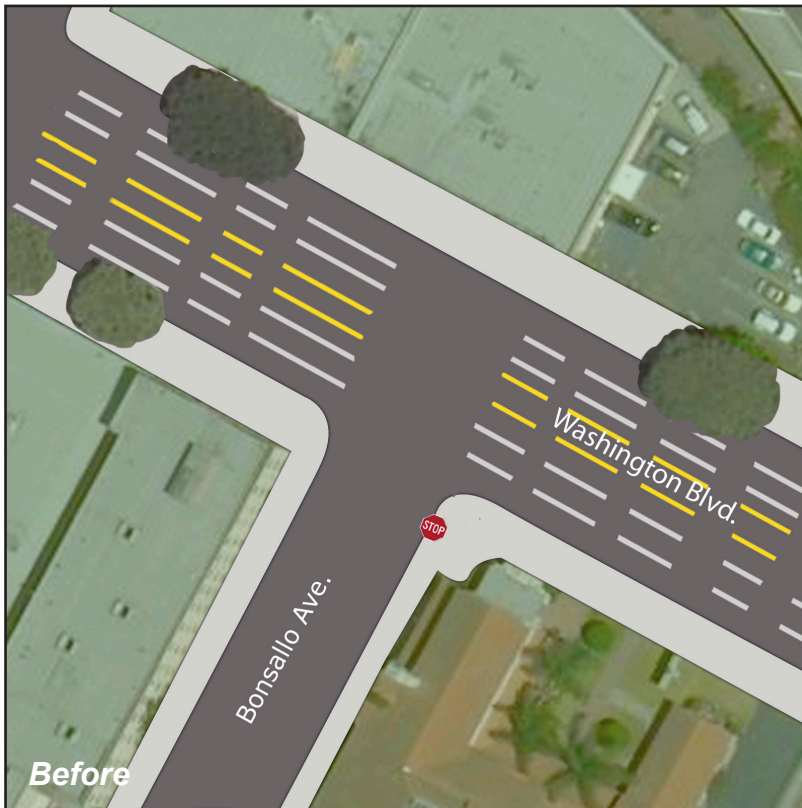
## 19. Washington Boulevard at Bonsallo Avenue

### Existing

- T-intersection
- 1-way stop for Bonsallo Avenue

### Recommended Changes

- Add bulb-outs to cross Bonsallo Avenue (2)
- Add zebra-stripe crosswalk to cross Bonsallo Avenue (1)
- Add advanced stop bar to Bonsallo Avenue (1)



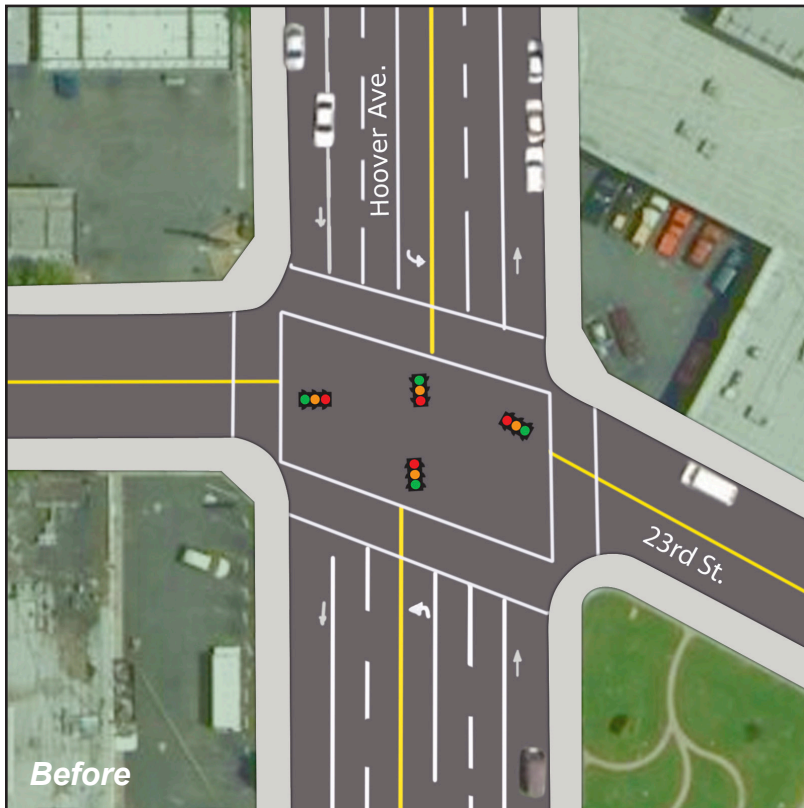
### ***From the West***

Students walking to Norwood Elementary School have to cross both Hoover Street and Union Avenue. Many of them do so on 23rd Street. The following recommendations address crossings of Hoover Street and Union Avenue along 23rd Street.

## **20. 23rd Street at Hoover Street**

### ***Existing***

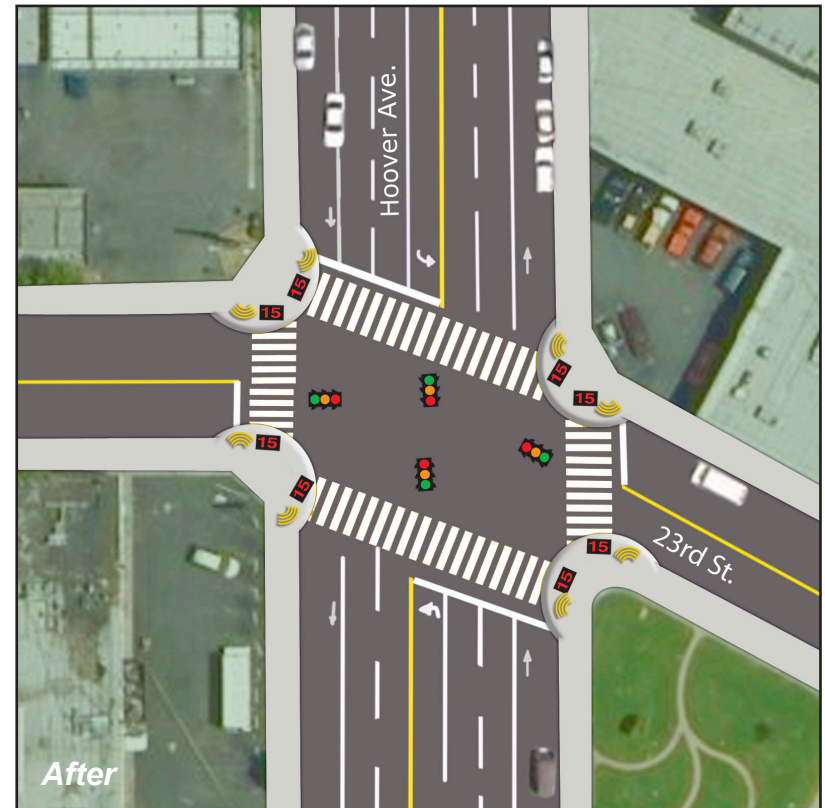
- Signalized intersection
- Hoover Street has 4 lanes, a left-turn lane, bike lanes and on-street parking



- 23rd Street has 2 lanes and on-street parking

### ***Recommended Changes***

- Add bulb-outs to all 8 crossing faces
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to all 4 crossings
- Add countdown signals to all 8 pedestrian heads
- Add audio signals to all 8 pedestrian heads



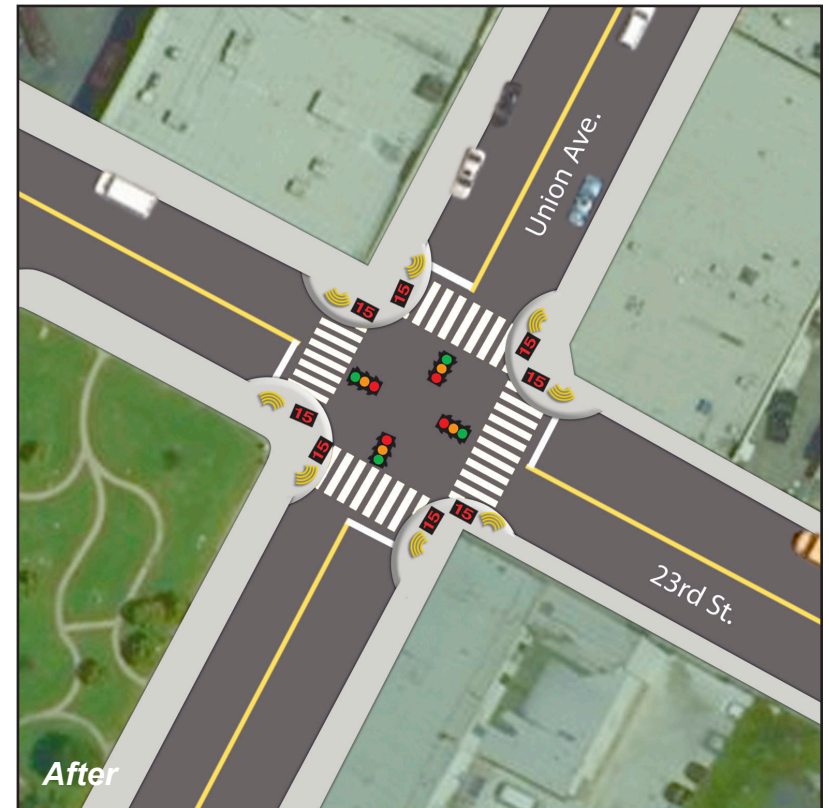
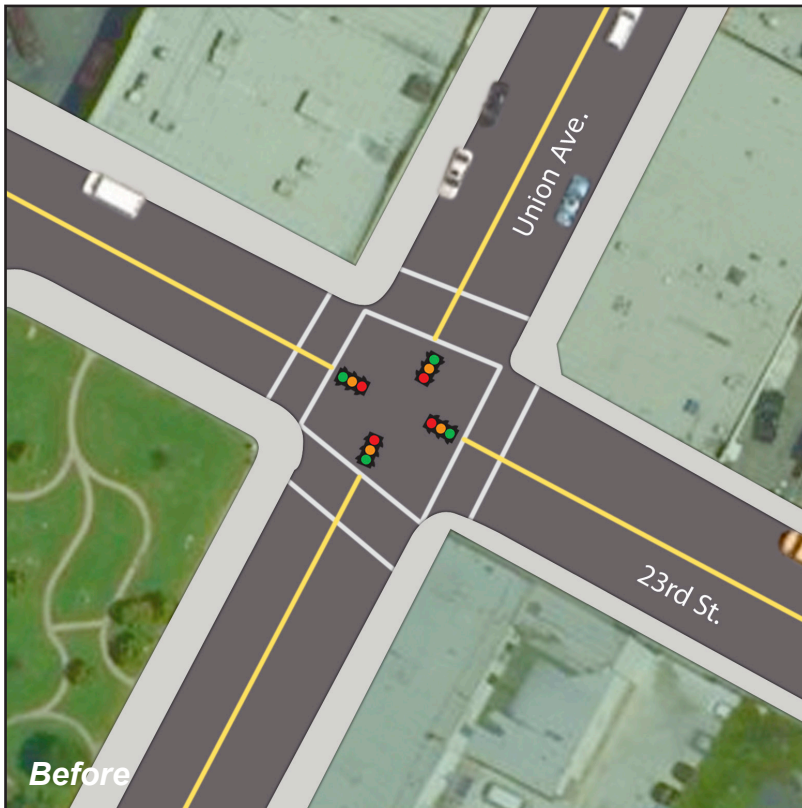
## 21. 23rd Street at Union Street

### Existing

- Signalized intersection
- Both streets have 2 lanes and on-street parking
- No curb ramps existing to cross Union Avenue

### Recommended Changes

- Add bulb-outs to all 8 crossing faces
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to all 4 crossings
- Add countdown signals to all 8 pedestrian heads
- Add audio signals to all 8 pedestrian heads



### ***From the South***

Students walking or bicycling from the south have to cross 23rd Street. Although 23rd Street is not a multi-lane street, the lanes are overly wide and motorists tend to speed. 23rd Street is also an important east-west corridor for bicyclists, including students that travel to and from the neighborhood to USC. A well-marked bicycle lane would help narrow the travel lanes, slow speeds and accommodate bicyclists. For students traveling from the south to Norwood Elementary School there are some crossings that can be improved as shown in the following recommendations.

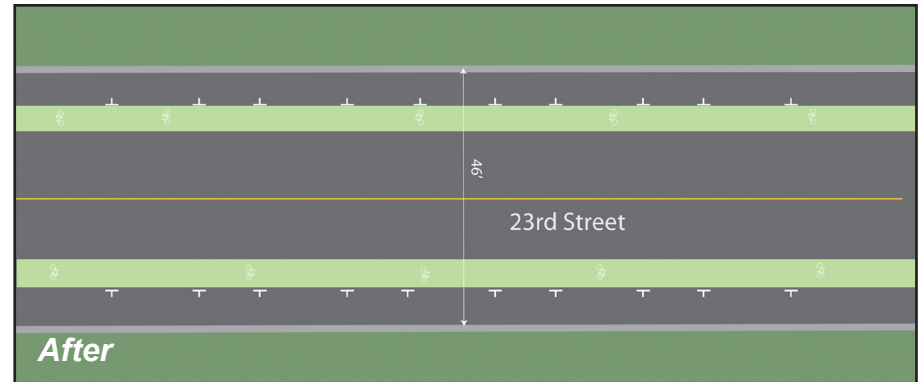
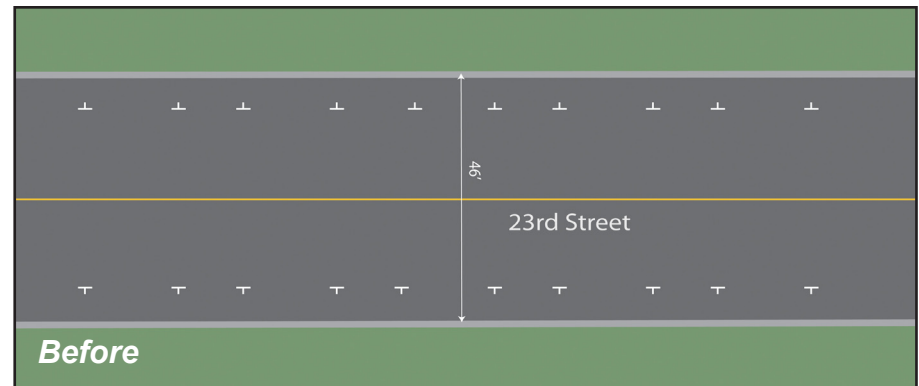
## **22. 23rd Street Bike Lanes**

### ***Existing***

- 23rd Street is 46' wide with 2 lanes and on-street parking

### ***Recommended Change***

- Restripe the street with 10' travel lanes, striped 7' parking lanes and 6'-wide bike lanes



## 23. 23rd Street at Portland Street

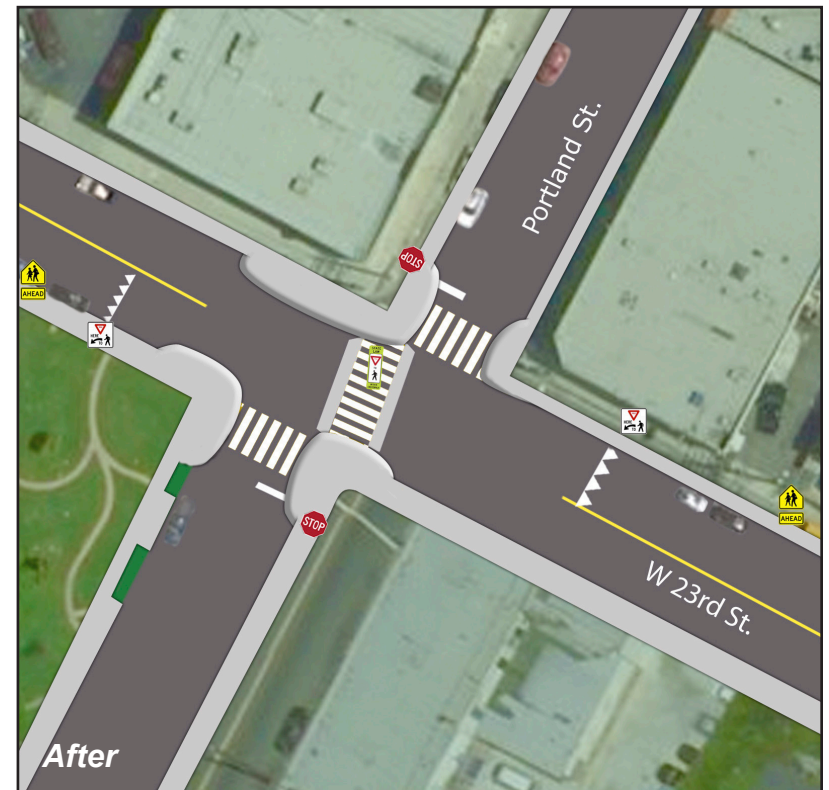
### Existing

- Offset intersection
- 2-way stop for Portland Street
- Ladder crosswalk on east crossing of 23rd Street

### Recommended Changes

- Add large curb extensions to the SE corner and NW corner to create a straight crossing of 23rd Street between the two off-set Portland Streets (2)

- Add bulb-outs to all 4 crossing faces of Portland Street
- Add a raised crosswalk on the new crossing of 23rd Street (1)
- Add zebra-stripe crosswalks of both crossings of Portland Street, and the new crossing of 23rd Street (3)
- Add advanced stop bars to both sides of Portland Street (2)
- Add warning signs to the approach of the crossing of 23rd Street (2)
- Add advanced yield bars to both approaches of 23rd Street crossing (2)
- Add in-street “yield to pedestrians in crosswalk” (R1-6) sign to raised crosswalk (1)



## 24. 23rd Street at Oak Street/Scarff Street

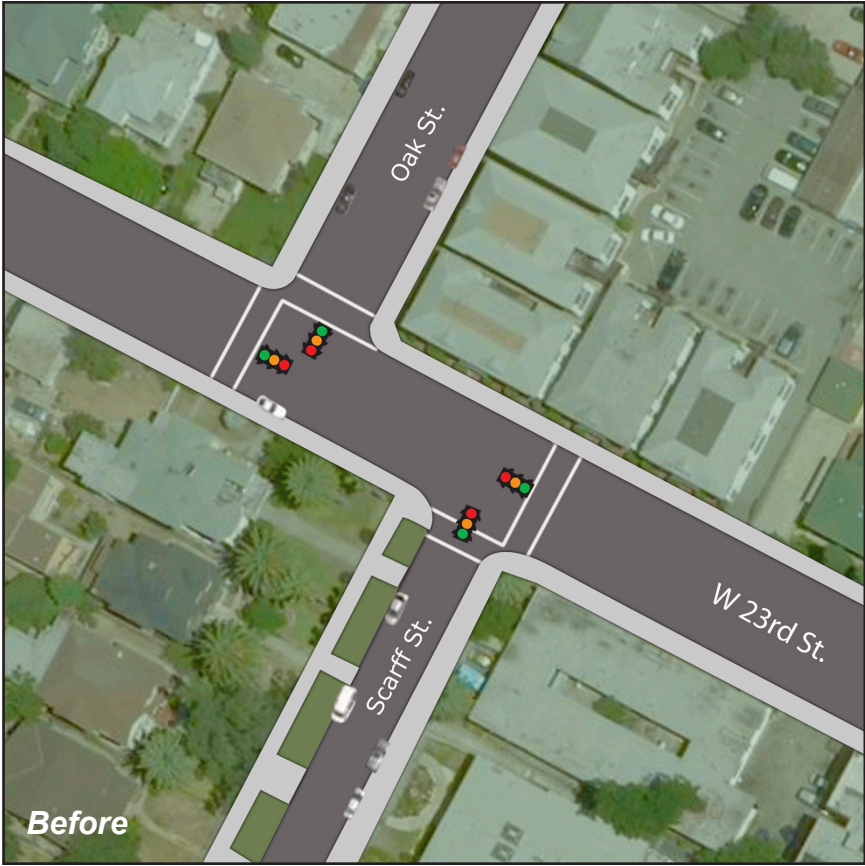
### Existing

- Offset intersection/2 T-intersections
- Signalized intersection
- Lateral-stripe crosswalks on west crossing of 23rd Street and north crossing of Oak Street
- No on-street parking exists between these intersections

### Recommended Changes

- Add large curb extensions to the NE corner and extend a widened sidewalk from Oak Street curb extension to Scarff Street
- Add large curb extensions to the SW corner and extend a widened sidewalk from Oak Street curb extension to Scarff Street
- Add bulb-outs to all 4 crossing faces of Oak Street
- Create a new crossing of 23rd Street linking to the east side of Oak Street
- Add pedestrian heads to new crossing of 23rd Street (2)
- Add a raised crosswalk on the new crossing of 23rd Street (1)
- Add zebra-stripe crosswalks of both crossings of Oak Street, the new crossing of 23rd Street, and the existing crossing of 23rd on the east side of Scarff Street (4)

- Add advanced stop bars to all 4 crossings
- Add countdown signals to all 8 pedestrian heads
- Add audio signals to all 8 pedestrian heads
- Remove pedestrian push buttons and poles
- Add parkway to widened sidewalks on both sides of 23rd Street (approximately 150')
- Move poles, etc. out of existing sidewalks and onto the new parkways







*23rd Street near Oak Street and Scarff Street as it is now.*



*What 23rd Street near Oak Street and Scarff Street could look like after implementing recommendations.*

## 25. 23rd Street at Norwood Street

### Existing

- T-intersection
- 1-way stop for Norwood Street

### Recommended Changes

- Add bulb-outs to cross Norwood Street (2)
- Add zebra-stripe crosswalk to cross Norwood Street (1)
- Add advanced stop bar to Norwood Street (1)



## 26. 23rd Street at Park Grove Avenue/St. James Park

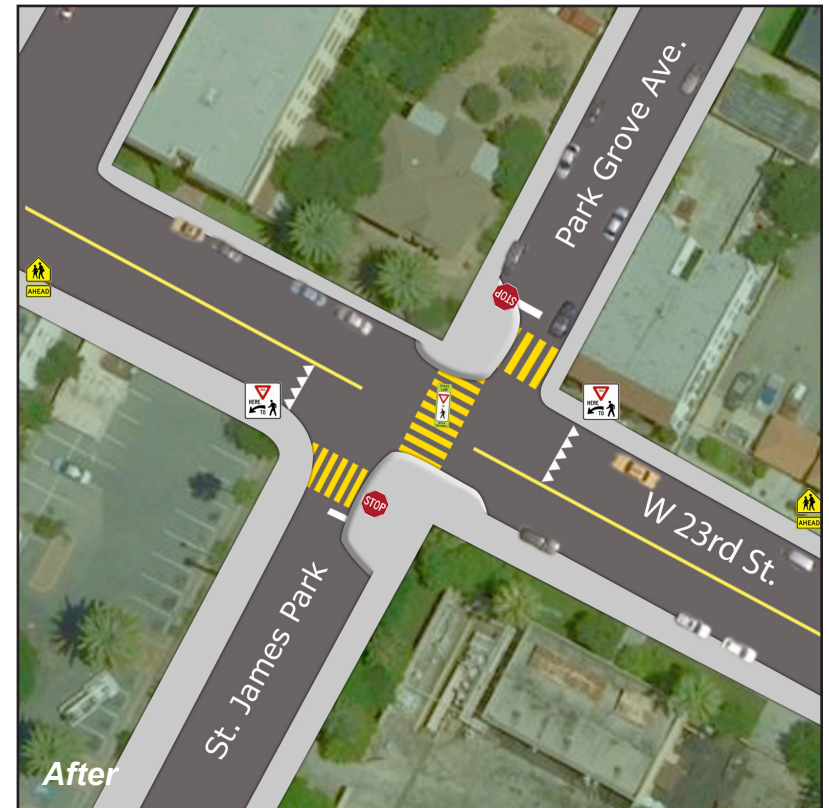
### Existing

- Offset intersection
- 2-way stop for Park Grove Avenue/St. James Park

### Recommended Changes

- Add large curb extensions to NW corner of Park Grove Avenue and SE corner of St. James Park to line up a straight crosswalk across 23rd Street (2)

- Add zebra-stripe crosswalks to the new crossing of 23rd Street, the crossing of Park Grove Avenue and the crossing of St. James Park (3)
- Add warning signs to approaches of new crossing of 23rd Street (2)
- Add in-street “yield to pedestrians in crosswalk” (R1-6) sign to new crossing of 23rd Street (1)
- Add advanced yield bars to approaches of new crossing of 23rd Street (2)
- Add advanced stop bars to Park Grove Avenue and St. James Park (2)



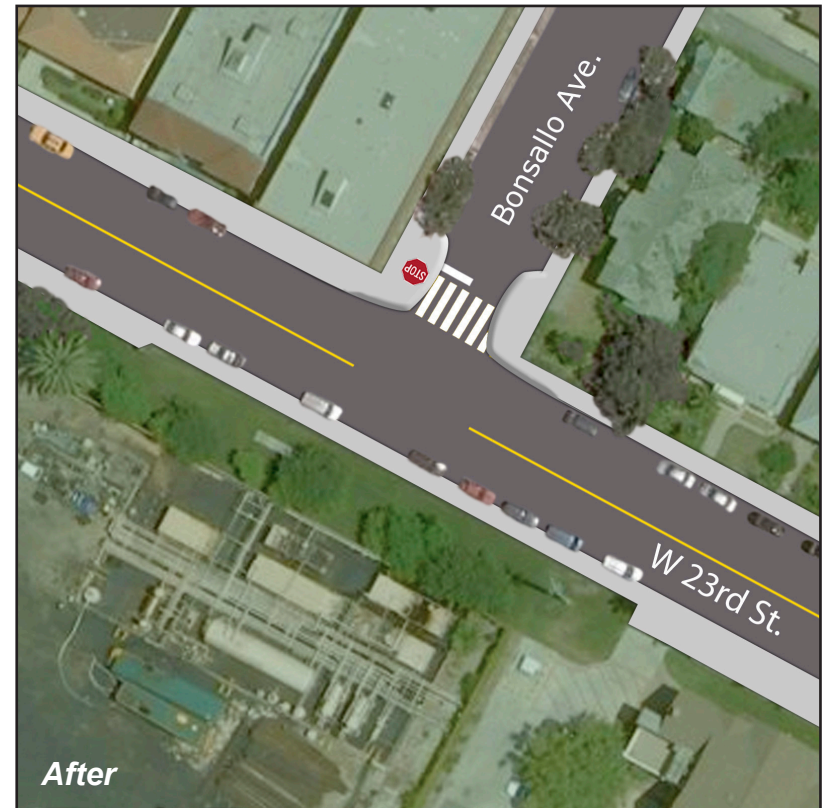
## 27. 23rd Street at Bonsallo Avenue

### Existing

- T-intersection
- 1-way stop for Bonsallo Avenue

### Recommended Changes

- Add bulb-outs to cross Bonsallo Avenue (2)
- Add zebra-stripe crosswalk to cross Bonsallo Avenue (1)
- Add advanced stop bar to Bonsallo Avenue (1)



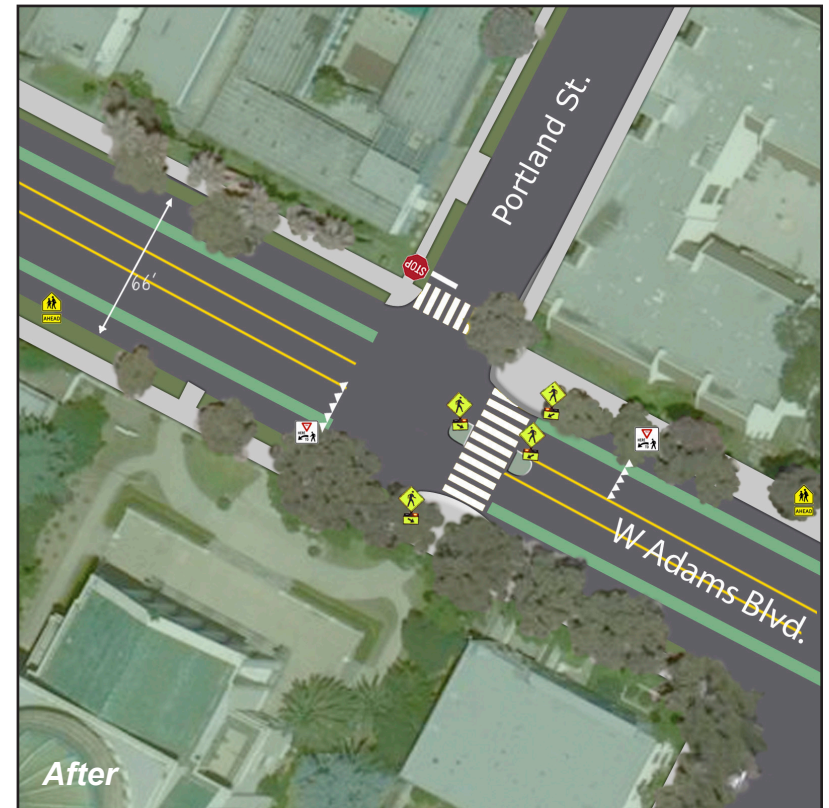
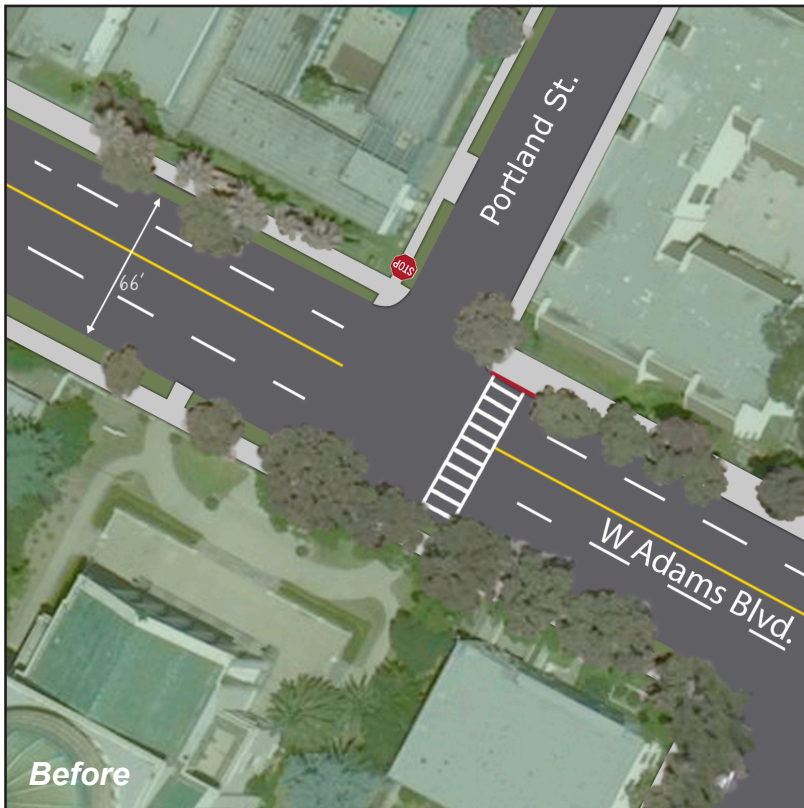
## 28. Adams Boulevard at Portland Street

### Existing

- Adams Boulevard is a 4-lane street with on-street parking and is 66' wide
- Red curb at crosswalk
- Ladder crosswalk
- Push-button flashing beacon

### Recommended Changes

- Add bulb-outs to both sides of the Adams Boulevard crossing (2)
- Add 8'-wide crossing islands (2) and modify striping to accommodate the islands
- Replace flashing beacons with rapid-flash beacons to the curb sides of the crosswalk, and on the islands (1 full set)
- Add advanced yield bars to both approaches to this crosswalk (2)
- Add advanced warning signs to both approaches to this crosswalk (2)



### ***From the Southeast***

Students that live southeast of the Norwood Elementary School neighborhood have to cross Figueroa Street and Figueroa Way. Figueroa Way is a wide freeway (I-110) off-ramp. Others coming from further south cross Adams Boulevard at Grand Avenue and walk up Grand Avenue to 23rd Street. They also cross Figueroa Street and Figueroa Way.

## **29. 23rd Street at Figueroa Way (CA-100 freeway off-ramp)**

### ***Existing***

- Figueroa Way is a southbound freeway (I-110) off-ramp with two lanes and is 56' wide from curb ramp to curb ramp on the north side
- Figueroa Way has 2 lanes southbound south of 23rd Street with on-street parking and is 40' wide
- Large, skewed intersection
- Signalized
- Lateral-stripe crosswalks exist to cross 23rd on the west side, and Figueroa Way both north and south of 23rd Street; no crossing of 23rd Street east of Figueroa Way
- 23rd Street has 4 lanes east of Figueroa Way and 2 lanes with on street parking on the north side east of Figueroa Way

### ***Recommended Changes***

- Add pork chop island on northwest corner to create a right-turn slip lane south and west bound off Figueroa Way (1)
- Add tapered curb extension on SW corner to cross 23rd Street (1)

- Add bulb-out on SW corner to cross Figueroa Way (1)
- Add zebra-stripe crosswalks on all 3 crossings
- Add countdown signals to all 6 pedestrian heads
- Add audio signals to all 6 pedestrian heads
- Add advanced stop bars to cross 23rd Street eastbound, and to cross Figueroa Way as it comes off the freeway (2)
- Realign southern crosswalk of Figueroa Way to correspond with new narrower cross-section of 23rd Street as described in project #30

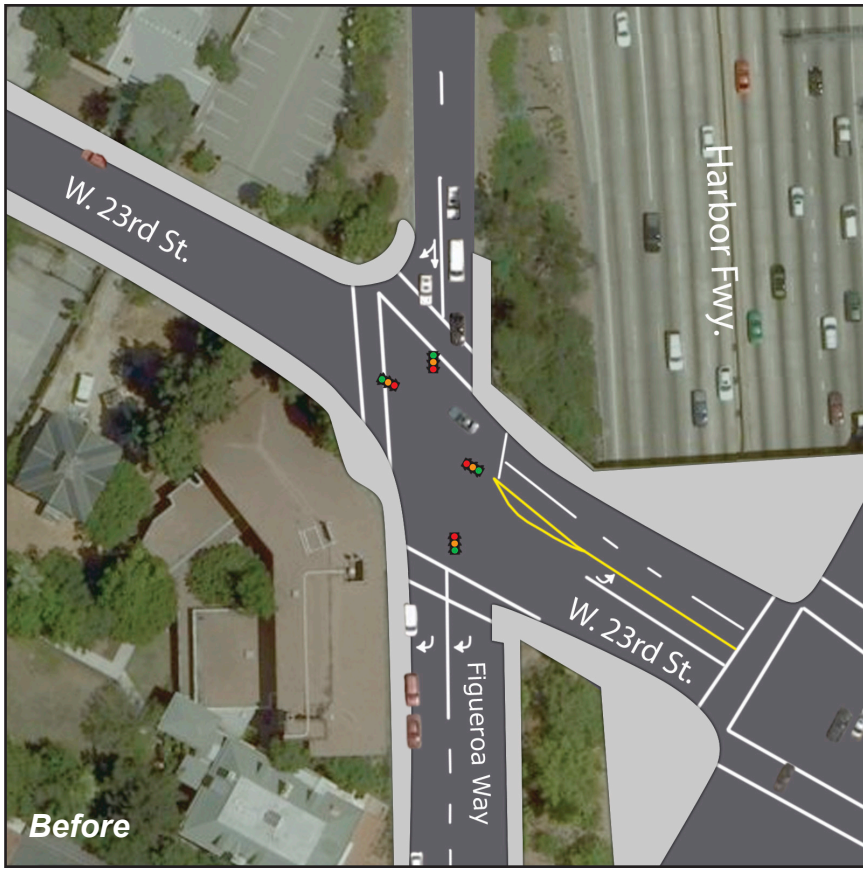
## **30. 23rd Street between Figueroa Way and Figueroa Street**

### ***Existing***

- 4 lanes with no on-street parking
- 60' wide

### ***Recommended Changes***

- Reduce from 4 lanes to 2 lanes (115')
- Add 6'-wide bike lanes; these will link to proposed bike lanes further west
- Narrow to approximately 44' by moving the southern curb north and tapering northern curb from Figueroa Street (115')
- Create more public space on the south side; create green parkway





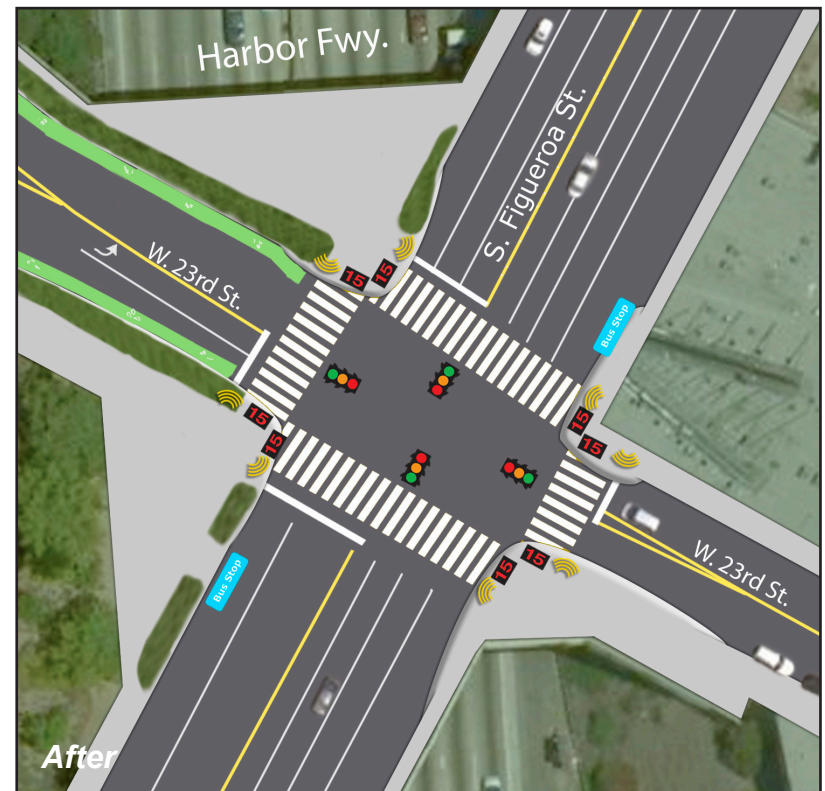
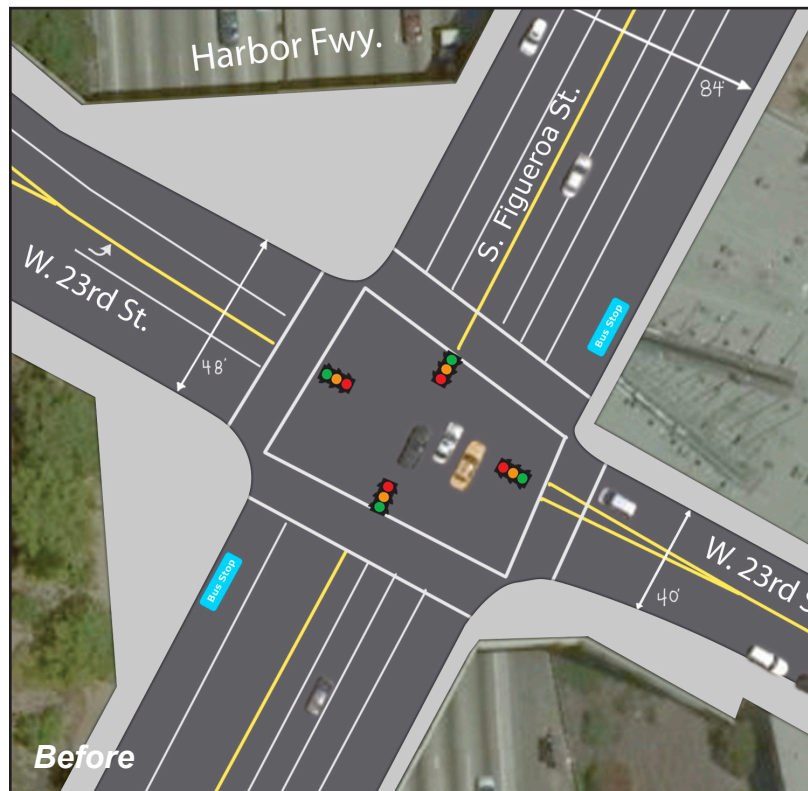
### 31. 23rd Street at Figueroa Street

#### Existing

- Signalized intersection
- Figueroa Street has 4 lanes northbound, 2 lanes southbound and a left-turn lane and is 84' wide
- 23rd Street has 4 lanes and a left-turn lane west of Figueroa Street, and 2 lanes east of Figueroa Street with on-street parking
- On the east side, 23rd Street is 40' wide but flares to 48' at the intersection
- Bus stops exist on Figueroa Street on the NE and SW corners

#### Recommended Changes

- Add tapered curb extensions to all 4 crossings of Figueroa Street
- Add tapered curb extension to the SW corner of 23rd Street (1)
- Add bulb-out to cross 23rd Street on the NW corner (1)
- Add perpendicular curb ramp to cross 23rd on the NW corner (1)
- Realign crossing of 23rd Street to correspond with new cross-section of 23rd Street as described in project #30
- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to all 4 crossings
- Add countdown signals to all 8 pedestrian heads
- Add audio signals to all 8 pedestrian heads



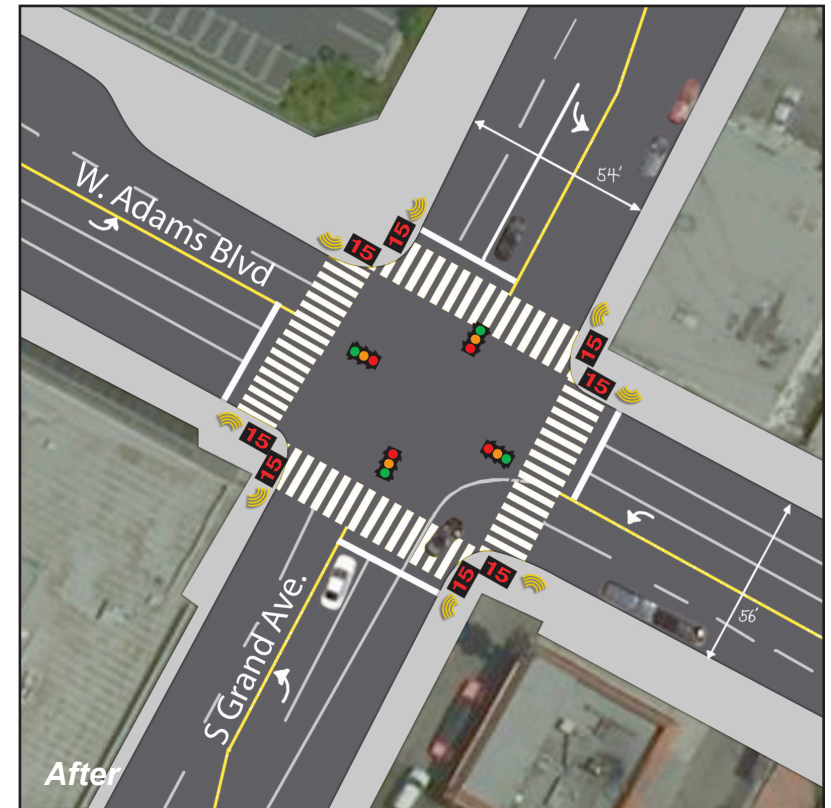
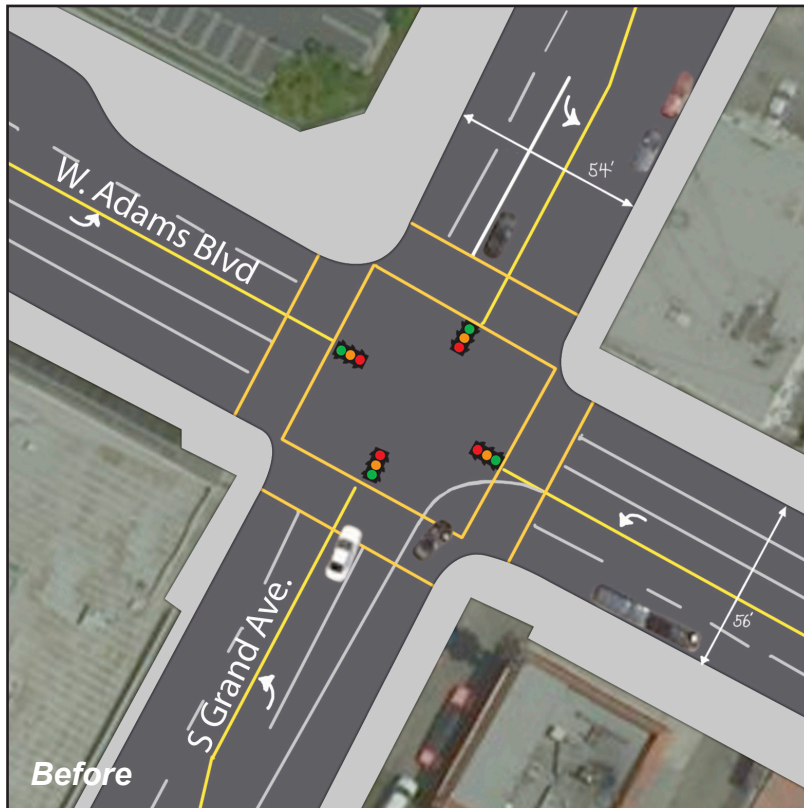
## 32. Grand Avenue at Adams Boulevard

### Existing

- Adams Boulevard has 4 lanes, a left-turn lane and is 56' wide
- Grand Avenue has 2 lanes southbound, 1 lane northbound, a left-turn lane, a right-turn lane northbound and is 54' wide
- Signalized intersection

### Recommended Changes

- Add zebra-stripe crosswalks to all 4 crossings
- Add advanced stop bars to all 4 crossings
- Add countdown signals to all 8 pedestrian heads
- Add audio signals to all 8 pedestrian heads



## FUNDING AND IMPLEMENTATION

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### Funding the Program

A number of funding sources could help implement report recommendations. They offer alternatives for street design, community facilities, and other infrastructure. Sources of funding include:

- State and federal transportation funds
- State and federal Safe Routes to School funds
- State Transportation Improvement Program (STIP)
- Transportation Enhancement Activities (TEA) Funds
- Bicycle Transportation Account (BTA) funds
- Transportation Development Act (TDA) funds
- Community Development Block Grant (CDBG)
- California Infrastructure and Economic Development Bank
- City road maintenance and construction funds
- Community Redevelopment Agency (CRA) funds
- Development fees
- Benefit Assessment Districts
- Volunteer initiatives and private donations

Each of these funding sources is subject to changes in state and federal law, budget levels, and target project priorities. A summary of the situation for each as it existed at the time of this writing is below.

#### State and Federal Transportation Funds

Major state and federal transportation funding resources are outlined below. For more information on these funding programs, visit the Caltrans Division of Local Assistance website:  
[www.dot.ca.gov/hq/LocalPrograms](http://www.dot.ca.gov/hq/LocalPrograms)

### *Safe Routes to School (SRTS)*

Caltrans administers state and federally funded programs to improve walking and bicycling conditions in and around schools. The State program permits up to 10 percent of the funding to be used for non-infrastructure (education and encouragement) programs, and the remaining funds for infrastructure (capital) projects. It requires a 10 percent match. Applications for federal funding must either seek funds for infrastructure or non-infrastructure programs, but not both in the same application. No match is required. The City of Los Angeles has ongoing non-infrastructure programs that will benefit these schools.

A standardized statewide SRTS training program with promotional materials and school resources will be developed to help communities implement programs.

The program seeks to fund projects that incorporate engineering, education, enforcement, encouragement and evaluation components. It should be noted that engineering is listed first, because that effort creates the durable features of a street that support the other efforts. For more information go to:

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

### *State Transportation Improvement Program (STIP)*

This program represents the lion's share of California's state and federal transportation dollars. Three-quarters of the program's funds were earmarked for improvements determined by locally adopted priorities contained in Regional Transportation Improvement Programs (RTIP), submitted by regional transportation planning agencies from around the state.

STIP funds can be used for a wide variety of projects, including road rehabilitation, road capacity, intersections, bicycle and pedestrian facilities, public transit, passenger rail and other projects that enhance the region's transportation infrastructure.

### ***Transportation Enhancement Activities***

Federal Transportation Enhancement funds are for construction projects that are "over and above" normal types of transportation projects. These projects may include street trees and landscaping along roadways, pedestrian and bicycle access improvements and other scenic beautification. These are apportioned throughout the county.

### ***Bicycle Transportation Account (BTA)***

This state fund, administered by the Caltrans Bicycle Facilities Unit, can pay for improvements that benefit bicyclists, including bike lanes and bicycle parking. The money may also be used for projects that benefit pedestrians if it is part of a bicycle project such as bicycle/pedestrian signals and median crossings. Annual BTA funding is in the range of \$5 million a year statewide.

To be eligible for BTA funds, a city or county must prepare and adopt a Bicycle Transportation Plan. Adoption of a plan establishes eligibility for five consecutive funding cycles.

### ***Transportation Development Act (TDA)***

TDA provides for two sources of funding: Local Transportation Funds (LTF) and State Transit Assistance (STA). The TDA funds a wide variety of transportation programs, including planning and program activities, pedestrian and bicycle facilities, community transit services,

public transportation, and bus and rail projects. It is allocated to cities according to population.

### ***Community Development Block Grants (CDBG)***

Under the Community Development Block Grant (CDGB) Program, cities and counties may seek funding for a broad range of activities ranging from establishment and operation of revolving loan funds and construction of infrastructure improvements to construction of new housing and community facilities.

Applicants may also seek funding for planning studies and writing grant applications relating to these activities. Funding programs under the CDBG Economic Development Allocation include the Economic Enterprise Fund for small business loans, Over-the-Counter Grants for public infrastructure associated with private-sector job creation, and Planning and Technical Assistance Grants. Applications under the Economic Development Allocation will require a job creation/retention component.

Potential projects include street and traffic improvements, water system expansion and improvements, and sewer system expansion and improvements.

For more information go to:  
[www.hcd.ca.gov/fa](http://www.hcd.ca.gov/fa)

### ***California Infrastructure and Economic Development Bank (I-Bank)***

The California Infrastructure and Economic Development Bank administers a revolving fund program for local governments to finance infrastructure improvements, including city streets. This is a

loan program for which the City can apply and receive funding from \$250,000 to \$10 million with terms of up to 30 years for a broad range of projects.

For more information go to:  
[www.ibank.ca.gov](http://www.ibank.ca.gov)

## **Local Funding Opportunities**

### ***City road maintenance and construction funds***

Los Angeles can add striping, traffic calming, sidewalks, curbs and similar elements to other projects that already involve digging up or rebuilding street sections. For example, storm drain and sewer improvements, utility undergrounding projects, and routine street resurfacing are all possibilities.

The greater the extent of the reconstruction, the greater the opportunity for adding elements such as bulb-outs and medians at a fraction of the cost of a stand-alone project. Also, communities avoid the disruption, noise and expense of repeatedly digging up a street and detouring traffic.

Such combination projects will require coordination between departments and capital improvement projects whose schedules and budgets are often distinct.

Many cities have incorporated traffic calming into street reconstruction projects. In Venice, FL, for example, officials added \$80,000 to a previously planned Main Street resurfacing project that provided for intersection bulb-outs, mid-block bulb-outs, median crossings, and crosswalks of colorful paver stones.

Seattle has added planted medians to several streets at reduced cost as part of sewer upgrade projects. County transportation sales tax

measures can provide substantial funding for city street maintenance and rehabilitation.

### ***Community Redevelopment Agency***

The Los Angeles Community Redevelopment Agency (CRA) could choose to fund the improvements in this plan with tax increment funds collected in the Council District 9 Redevelopment Corridor along Central Avenue. CRA funds and/or subsidizes a variety of community projects ranging from new commercial development to housing, as well as street improvements.

### ***Development fees***

Some cities require developers to install or help pay for infrastructure improvements (streets, sidewalks, trails, landscaping, etc.) through individual development agreements. On a larger scale, Los Angeles could explore using development fees with a capital improvements program to help fund recommendations. To avoid legal challenge of the City's right to levy these fees, care must be taken to apply this strategy only where there is a clear link establishing that travel generated by the private project will use the facility to be funded with the fees.

### ***Benefit Assessment Districts***

Benefit assessment districts fund neighborhood and community improvements to public streets and land by assessing property taxes in the district. Property owners vote to have the assessment in exchange for the improvement. The pedestrian and bicycle improvements in this plan could be funded by benefit assessments. Landscaping and lighting districts are sometimes established for streetscape improvements and maintenance. Other types of facilities and infrastructure districts are sometimes created for parks, drainage and sewage.

### ***Volunteer initiatives and private donations***

In addition to funding sources, programs can be created for volunteer initiatives such as “Adopt-a” programs where individuals or groups engage in beautification projects such as tree plantings. A program can also fund some projects, such as public art, by enlisting private donors to sponsor downtown enhancement activities. These programs can be administered by the City or by other community organizations.

### **Implementation**

In order to construct the recommended projects and deliver the programs to the three schools studied for this grant project (Norwood Elementary, The Accelerated School, 20<sup>th</sup> Street Elementary), they will need to find funds. The funding sources just discussed can be used for this purpose. Following are a prioritized list of the plan projects, grouping them into phases that can be completed sequentially. Priorities were established considering:

- Comments received at the workshops
- Comments received from school administrators
- Proximity to the school
- Safety problem addressed (traffic volumes, number of lanes, difficulty of crossing, etc.)

The phased project lists are each slightly under \$1 million, the ideal size to fit into a federal or state Safe Routes to School application. The City of Los Angeles could use these lists as their project lists for their applications. The unit costs were developed from costs experienced in a variety of California cities. The costs for optional items are not included.

The first table displays the budget for all projects. The following tables show the budget for each phase. The projects are grouped by school, and listed according to their number for each school.

Improvement	Units	Per Unit Cost	Quantity	Total Cost
Advanced stop bars/yield markings	number	\$100	188	\$18,800
Zebra-stripe crosswalks (2-lane)	number	\$250	143	\$35,750
Zebra-stripe crosswalks (4-lane)	number	\$500	24	\$12,000
Zebra-stripe crosswalks (8-lane)	number	\$1,000	2	\$2,000
Signs	number	\$150	89	\$13,350
Bulb-outs/curb extensions with curb ramps	number	\$7,500	327	\$2,452,500
Large curb extension with curb ramps	number	\$15,000	17	\$255,000
Bus bulbs	number	\$15,000	2	\$30,000
Countdown signals	number	\$1,000	122	\$122,000
Audible pedestrian signals	number	\$500	122	\$61,000
New pedestrian signal head	number	\$500	2	\$1,000
Crossing islands (pair)	number	\$4,000	8	\$32,000
LED rapid flash beacon (4 including in median)	number	\$23,000	3	\$69,000
Painted red curb	number	\$50	6	\$300
Raised crosswalks	number	\$15,000	9	\$135,000
Road diet restriping (including bike lanes)	linear mile	\$100,000	0.52	\$52,000
Move pedestrian push button	number	\$100	1	\$100
Move bus stop	number	\$5,000	1	\$5,000
Mini-circle	number	\$15,000	1	\$15,000
Paint intersection	number	\$1,000	1	\$1,000
Sidewalk extension	linear foot	\$60	5	\$300
Pork chop islands	number	\$3,000	2	\$6,000
Move curb over, move poles and add landscaping	linear foot	\$100	265	\$26,500
Perpendicular curb ramp	number	\$3,500	1	\$3,500
Bike lanes	linear mile	\$50,000	1.6	\$80,000
Bike route	linear mile	\$10,000	0.5	\$5,000
Trees	number	\$400	8	\$3,200
Stripe alternating angled parking	number	\$20	70	\$1,400
Remove peak hour parking restriction signs	number	\$50	24	\$1,200
Narrow driveway	number	\$2,000	1	\$2,000
Infrastructure projects total				\$3,441,900
Engineering (5%)				\$172,095
Subtotal				\$3,613,995
Contingency (10%)				\$361,400
TOTAL				\$3,975,395

Table 1: Budget for all project at all schools

## Phase 1 Projects

### Norwood Elementary School Projects

- 3. 20<sup>th</sup> Street at Oak Street
- 7. 21<sup>st</sup> Street at Oak Street
- 8. 21<sup>st</sup> Street at Norwood Street
- 12. Washington Boulevard
- 13. Washington Boulevard at Union Avenue
- 15. Washington Boulevard at Oak Street
- 24. 23<sup>rd</sup> Street at Oak Street/Scarff Street

### The Accelerated School Projects

- 1. Main Street
- 2. Martin Luther King Jr. Boulevard at Main Street
- 3. Main Street at 40<sup>th</sup> Place
- 4. Martin Luther King Jr. Boulevard at Wall Street
- 5. Martin Luther King Jr. Boulevard at Crawford Street

### 20<sup>th</sup> Street Elementary School Projects

- 3. Naomi Avenue at Walnut Street
- 4. Naomi Avenue at 20<sup>th</sup> Street
- 15. Mid-Block Crossing Improvements  
Walnut Street and 20<sup>th</sup> Street
- 18. Central Avenue at Walnut Street
- 19. Central Avenue at 20<sup>th</sup> Street (west side)

Improvement	Units	Per Unit Cost	Quantity	Total Cost
Advanced stop bars/yield markings	number	\$100	46	\$4,300
Zebra-stripe crosswalks (2-lane)	number	\$250	31	\$7,000
Zebra-stripe crosswalks (4-lane)	number	\$500	10	\$5,000
Signs	number	\$150	20	\$3,000
Bulb-outs/curb extensions with curb ramps	number	\$7,500	66	\$495,000
Large curb extension with curb ramps	number	\$15,000	5	\$75,000
Bus bulbs	number	\$15,000	2	\$30,000
Countdown signals	number	\$1,000	32	\$32,000
Audible pedestrian signals	number	\$500	32	\$16,000
New pedestrian signal head	number	\$500	2	\$1,000
Crossing islands (pair)	number	\$4,000	2	\$8,000
LED rapid flash beacon (4 including in median)	number	\$23,000	2	\$46,000
Painted red curb	number	\$50	4	\$200
Raised crosswalks	number	\$15,000	3	\$45,000
Road diet restriping (including bike lanes)	linear mile	\$100,000	0.5	\$50,000
Move pedestrian push button	number	\$100	1	\$100
Move bus stop	number	\$5,000	1	\$5,000
Mini-circle	number	\$15,000	1	\$15,000
Move curb over, move poles and add landscaping	linear foot	\$100	150	\$15,000
Stripe alternating angled parking	number	\$20	35	\$700
Remove peak hour parking restriction signs	number	\$50	24	\$1,200
Infrastructure projects total				\$855,550
Engineering (5%)				\$42,778
Subtotal				\$898,328
Contingency (10%)				\$89,833
TOTAL				\$988,160

Table 2: Budget for Phase 1 Projects at all schools



## Phase 2 Projects

### ***Norwood Elementary School Projects***

- 14. Washington Boulevard at I-10 Freeway off-ramps
- 16. Washington Boulevard at Norwood Street
- 20. 23<sup>rd</sup> Street at Hoover Street
- 21. 23<sup>rd</sup> Street at Union Street
- 22. 23<sup>rd</sup> Street Bike Lanes
- 23. 23<sup>rd</sup> Street at Portland Street
- 28. Adams Boulevard at Portland Street

### ***The Accelerated School Projects***

- 4. Main Street at 41<sup>st</sup> Place
- 5. Martin Luther King Boulevard at Woodlawn Avenue
- 8. East Entrance to School Off Woodlawn Avenue

### ***20<sup>th</sup> Street Elementary School Projects***

- 2. School Garage Driveway
- 5. Naomi Avenue at 21<sup>st</sup> Street
- 7. Naomi Avenue at 22<sup>nd</sup> Street
- 16. Adams Boulevard at Naomi Avenue
- 19. Central Avenue at 20<sup>th</sup> Street (east side)
- 20. Central Avenue at 21<sup>st</sup> Street (east side)
- 21. Central Avenue at 21<sup>st</sup> Street (west side)
- 22. Central Avenue at 22<sup>nd</sup> Street (east side)

Improvement	Units	Per Unit Cost	Quantity	Total Cost
Advanced stop bars/yield markings	number	\$100	45	\$4,500
Zebra-stripe crosswalks (2-lane)	number	\$250	33	\$8,250
Zebra-stripe crosswalks (4-lane)	number	\$500	8	\$4,000
Signs	number	\$150	14	\$2,100
Bulb-outs/curb extensions with curb ramps	number	\$7,500	83	\$630,000
Large curb extension with curb ramps	number	\$15,000	3	\$45,000
Countdown signals	number	\$1,000	44	\$44,000
Audible pedestrian signals	number	\$500	44	\$22,000
Crossing islands (pair)	number	\$4,000	4	\$16,000
LED rapid flash beacon (4 including in median)	number	\$23,000	1	\$23,000
Painted red curb	number	\$50	2	\$100
Raised crosswalks	number	\$15,000	2	\$30,000
Paint intersection	number	\$1,000	1	\$1,000
Sidewalk extension	linear foot	\$60	5	\$300
Bike lanes	linear mile	\$50,000	0.6	\$30,000
Trees	number	\$400	8	\$3,200
Narrow driveway	number	\$2,000	1	\$2,000
Infrastructure projects total				\$865,350
Engineering (5%)				\$43,268
Subtotal				\$908,618
Contingency (10%)				\$90,862
TOTAL				\$999,479

*Table 3: Budget for Phase 2 Projects at all schools*

## Phase 3 Projects

### Norwood Elementary School Projects

1. 21<sup>st</sup> Street at Toberman Street
2. 20<sup>th</sup> Street between Toberman Street and Oak Street
4. 21<sup>st</sup> Street at Toberman Street
6. 21<sup>st</sup> Street at Portland Street
9. 21<sup>st</sup> Street at Park Grove Avenue
10. 21<sup>st</sup> Street at Bonsallo Avenue
11. 21<sup>st</sup> Street at Estrella Avenue
29. 23<sup>rd</sup> Street at Figueroa Way (CA-110 freeway off-ramp)
30. 23<sup>rd</sup> Street between Figueroa Way and Figueroa Street

### The Accelerated School Projects

6. Martin Luther King Boulevard at Trinity Street
7. Woodlawn at Maple Avenue

### 20<sup>th</sup> Street Elementary School Projects

7. Naomi Avenue at 23<sup>rd</sup> Street
8. Naomi Avenue at 25<sup>th</sup> Street
9. Naomi Avenue Bike Route
10. Hooper Avenue at 20<sup>th</sup> Street
11. Hooper Avenue at 21<sup>st</sup> Street
17. Adams Boulevard Bike Lanes
23. Griffith Avenue at 20<sup>th</sup> Street
24. Griffith Avenue at 21<sup>st</sup> Street
25. Griffith Avenue at 22<sup>nd</sup> Street
28. Griffith Avenue Bike Lanes

Improvement	Units	Per Unit Cost	Quantity	Total Cost
Advanced stop bars/yield markings	number	\$100	47	\$4,700
Zebra-stripe crosswalks (2-lane)	number	\$250	45	\$11,250
Zebra-stripe crosswalks (4-lane)	number	\$500	2	\$1,000
Signs	number	\$150	20	\$3,000
Bulb-outs/curb extensions with curb ramps	number	\$7,500	92	\$690,000
Large curb extension with curb ramps	number	\$15,000	2	\$30,000
Countdown signals	number	\$1,000	22	\$22,000
Audible pedestrian signals	number	\$500	22	\$11,000
Crossing islands (pair)	number	\$4,000	2	\$8,000
Road diet restriping (including bike lanes)	linear mile	\$100,000	0.02	\$2,000
Pork chop islands	number	\$3,000	2	\$6,000
Move curb over, move poles and add landscaping	linear foot	\$100	115	\$11,500
Bike lanes	linear mile	\$50,000	1	\$50,000
Bike route	linear mile	\$10,000	0.5	\$5,000
Stripe alternating angled parking	number	\$20	35	\$700
Infrastructure projects total				\$856,150
Engineering (5%)				\$42,808
Subtotal				\$898,958
Contingency (10%)				\$89,896
TOTAL				\$988,853

Table 4: Budget for Phase 3 Projects at all schools

## Phase 4 Projects

### ***Norwood Elementary School Projects***

- 17. Washington Boulevard at Park Grove Avenue
- 18. Washington Boulevard at Cherry Street
- 19. Washington Boulevard at Bonsallo Avenue
- 25. 23<sup>rd</sup> Street at Norwood Street
- 26. 23<sup>rd</sup> Street at Park Grove Avenue/St. James Park
- 27. 23<sup>rd</sup> Street at Bonsallo Avenue
- 31. 23<sup>rd</sup> Street at Figueroa Street
- 32. Grand Avenue at Adams Boulevard

### ***20<sup>th</sup> Street Elementary School Projects***

- 11. Hooper Avenue at 21<sup>st</sup> Street
- 12. Hooper Avenue at 22<sup>nd</sup> Street
- 13. Hooper Avenue at 23<sup>rd</sup> Street
- 14. Hooper Avenue at 24<sup>th</sup> Street
- 15. Mid-Block Crosswalks on 21<sup>st</sup> Street, 22<sup>nd</sup> Street, 23<sup>rd</sup> Street, 25<sup>th</sup> Street
- Central Avenue at 22<sup>nd</sup> Street (west side)
- 26. Griffith Avenue at 23<sup>rd</sup> Street
- 27. Griffith Avenue at 24<sup>th</sup> Street

Improvement	Units	Per Unit Cost	Quantity	Total Cost
Advanced stop bars/yield markings	number	\$100	50	\$5,000
Zebra-stripe crosswalks (2-lane)	number	\$250	34	\$8,500
Zebra-stripe crosswalks (4-lane)	number	\$500	4	\$2,000
Zebra-stripe crosswalks (8-lane)	number	\$1,000	2	\$2,000
Signs	number	\$150	35	\$5,250
Bulb-outs/curb extensions with curb ramps	number	\$7,500	85	\$637,500
Large curb extension with curb ramps	number	\$15,000	7	\$105,000
Countdown signals	number	\$1,000	24	\$24,000
Audible pedestrian signals	number	\$500	24	\$12,000
Raised crosswalks	number	\$15,000	4	\$60,000
Perpendicular curb ramp	number	\$3,500	1	\$3,500
Infrastructure projects total				\$864,750
Engineering (5%)				\$43,238
Subtotal				\$907,988
Contingency (10%)				\$90,799
<b>TOTAL</b>				<b>\$998,786</b>

*Table 5: Budget for Phase 4 Projects at all schools (No projects for The Accelerated School will occur in Phase 4)*

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# APPENDIX

## Walk Audit and Design Session Table Maps



Table #1



**Table #2**





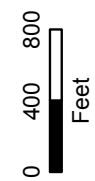
**Table #4**



# PEDESTRIAN ROUTES FOR NORWOOD STREET ELEMENTARY SCHOOL



- Legend**
- Recommended Crossing
  - Stop Sign
  - ⊙ Traffic Signal
  - ⊗ Crossing Guard
  - ⚡ Flashing Warning Light
  - XXXX Start or Walkway
  - ⌒ Pedestrian Bridge
  - ⌒ Pedestrian Tunnel
  - 🌳 Parks



**Parents:**

This map shows the recommended crossings to be used from each block in your school attendance area. Following the arrows, select the best route from your home to the school and mark it with a colored pencil or crayon. This is the route your child should take. Instruct your child to use this route and to cross streets only at locations shown. You and your child should become familiar with the route by walking it together. Obey marked crosswalks, stop signs, traffic signals and other traffic controls. Crossing points have been located at these controls wherever possible, even though a longer walk may be necessary. Instruct your child to always look both ways before crossing the street. If no sidewalk exists, your child should walk facing traffic.

**Estimados Padres:**

Este mapa muestra los cruzados recomendados para los peatones de cada cuadra en el área de su escuela. Siguiendo las flechas en el mapa, seleccione la ruta más segura de su casa a la Escuela y marquelo con un lápiz o tiza de color. Esta es la ruta que su hijo (a) debe de usar. Dígale a su hijo (a) que use esta ruta y que cruce las calles solamente en los lugares indicados. Usted y su hijo (a) deberían de familiarizarse con esta ruta. Obedezcan los rotulos de peatones, de altos, semáforos y todos los señales de tráfico. Puntos para cruzar están localizados en áreas controladas, aunque sea necesario de alargar el tiempo para cruzar. Instruye a su hijo (a) que siempre se fije de los dos lados antes de cruzar la calle. El estudiante debe de siempre caminar en la dirección opuesta del tráfico si no existe una banqueta.

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