



# HOLLISTER AVENUE CLASS I BIKE PATH / MULTI-USE PATH PROJECT UPDATE



Teresa Lopes,  
Sr. Project Engineer

June 7, 2016

# Project Schedule

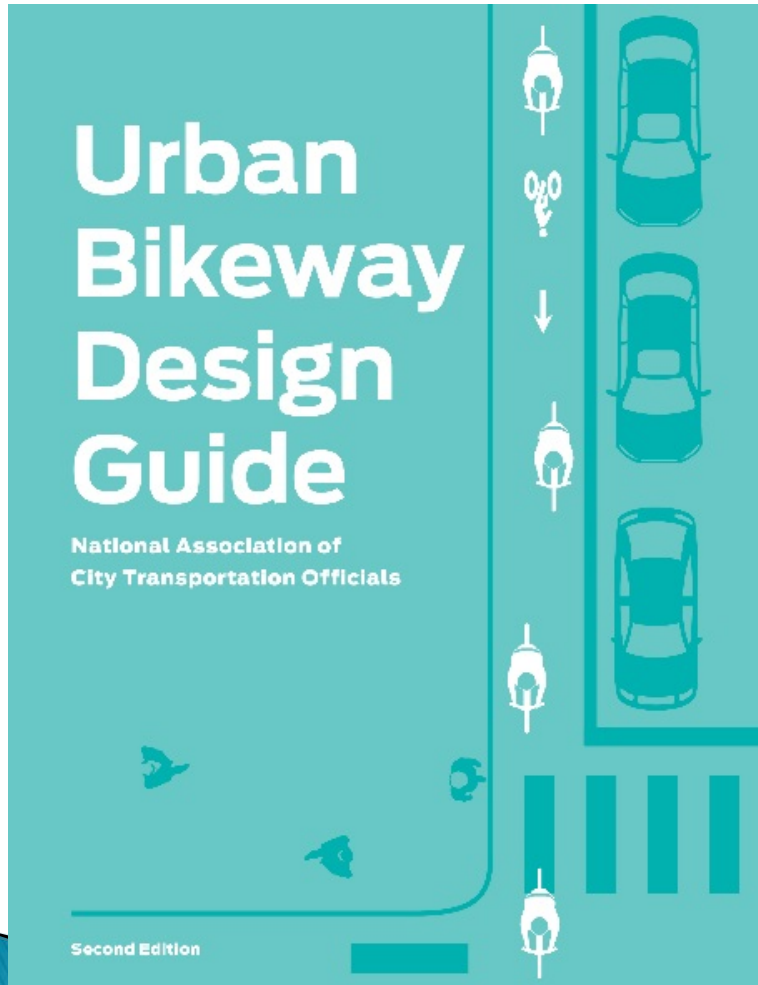
- Project Design Complete – June/July 2016
- Advertise for Bids – July 2016 – Coming to Council June 21 for authorization to bid
- Construction Contract Award – September 6, 2016
- Begin Construction – October 2016
- Construction Complete – Early 2017 (Construction estimated to last 4-5 Months)

# Project Scope of Work

- Construct a Separated Class I Bike Path/Multi-Use Path along the south side of Hollister Avenue
- Add a landscaped buffer between the Class I Bike Path and Hollister Ave
- Shift traffic lanes to the north reducing width of existing traffic lanes
- Reconstruct existing raised medians
- Modify existing signals at Pacific Oaks, Entrance Rd, and Ellwood School to accommodate shifted lanes
- Pavement Rehabilitation on Hollister Ave from Pacific Oaks to Via Jero

# Innovative Design

## ➤ Use of Newly Developed Design Guidelines (2014 – 2016)

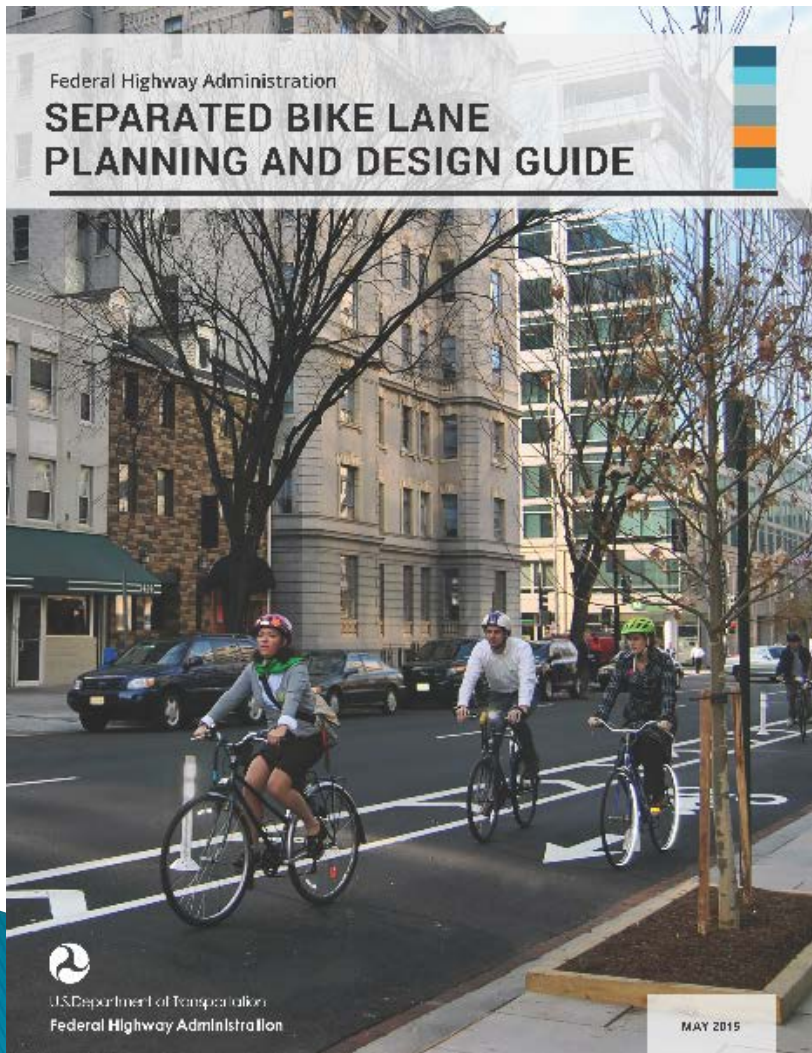


- April 2014 – Caltrans Endorses NACTO Innovative Street Design Guides to Promote Biking and Walking



# Innovative Design

## ➤ FHWA – Separated Bike Lane Planning and Design Guide – May 2015

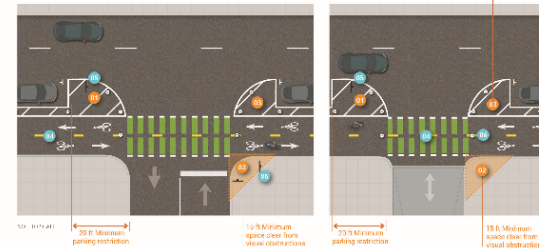


### DRIVEWAYS

#### Two-Way Separated Bike Lanes

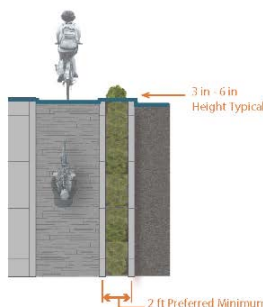
- 11. Parking should be prohibited at least 20 ft from the edge of a driveway, dependent on vehicle speeds and volumes. Paint alone may not be enough to keep vehicles from parking in prohibited spaces without frequent enforcement efforts. Additional elements such as delineator posts, parking stops, or concrete curb extensions can be included to ensure that this area remains clear.
- 12. To avoid a separated bike lane encroachment of vehicles exiting driveways into the street, landscaping and other street-side elements that obscure sight distance should not be included within 25 ft of a driveway edge.
- 13. Floating parking design downstream of driveways on one-way streets do not require parking restrictions for visibility since no conflicting traffic is approaching.
- 14. A variety of pavement marking treatments can be used to improve the visibility of the separated bike lane and reinforce expected bicyclist behaviors toward motorists. For further guidance on paint and striping in conflict areas, see page 114.
- 15. Signs on side streets or driveways can alert drivers to expect two-way bicycle traffic, especially on one-way streets.
- 16. Given the additional width of a two-way separated bike lane, additional measures may be used to reduce the likelihood of accidental entrance by motor vehicles:
  - A "Do Not Enter" with a supplementary "Except Bicycles" plaque may be used.
  - Or, a BIKE LANE sign (MUTCD R3-17) may be used.
  - A delineator post may be placed on the centerline between the two directions of bicycle travel.

Figure 15



### FORMS OF SEPARATION

#### Raised Lane



Cambridge, MA. (Source: City of Cambridge)

# Innovative Design

- Caltrans Bikeway Guidance (Separated Bikeways/Cycle Tracks) – December 30, 2016

## DESIGN INFORMATION BULLETIN NUMBER 89

Department of Transportation  
Division of Design  
Office of Standards and Procedures

### CLASS IV BIKEWAY GUIDANCE (Separated Bikeways / Cycle Tracks)

APPROVED BY:

  
TIMOTHY L. GRIGGS  
DIVISION CHIEF  
DIVISION OF DESIGN

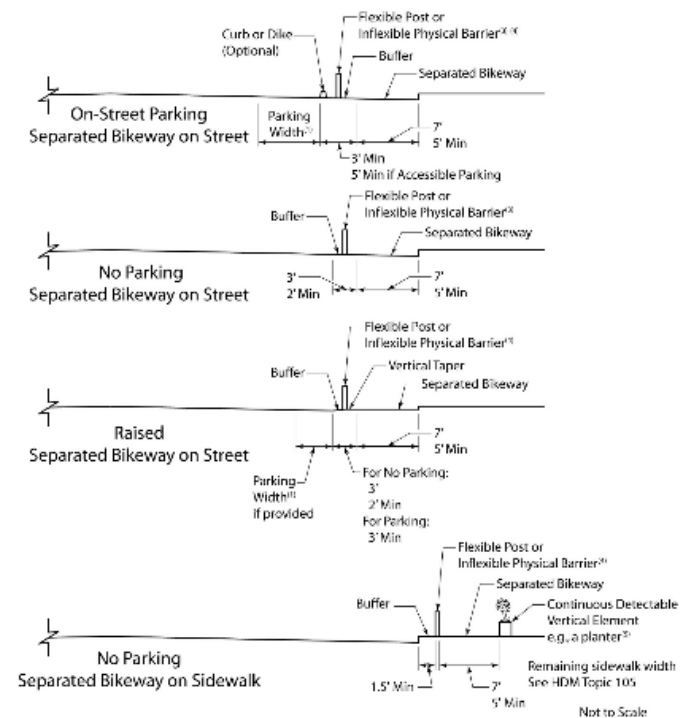
  
THOMAS P. HALLENBECK  
DIVISION CHIEF  
DIVISION OF TRAFFIC OPERATIONS

December 30, 2015

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December 30, 2015

**Figure 3.0**  
**Typical Class IV Bikeway (Separated Bikeway) Cross Sections**



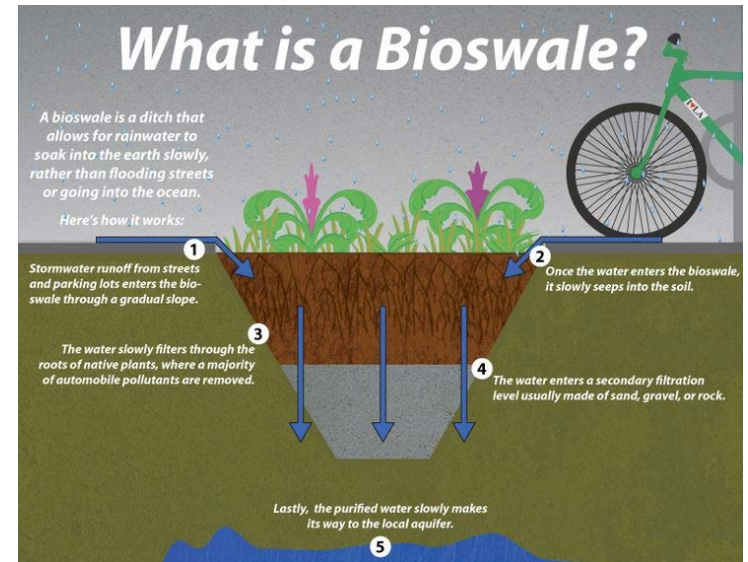
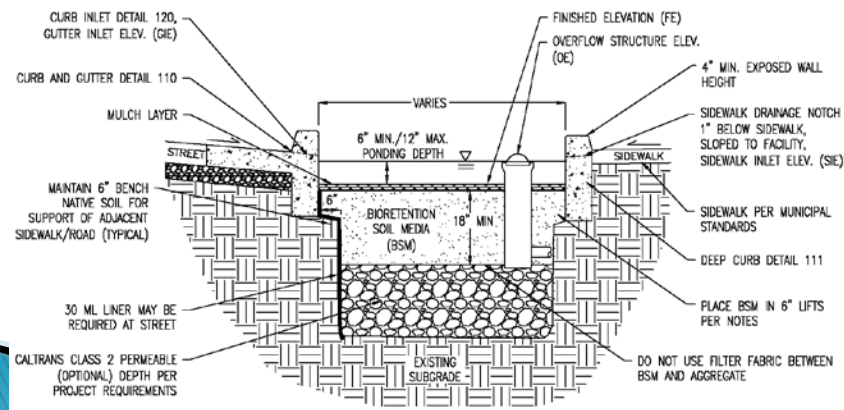
#### NOTES:

- (1) See C.A. MUTCD Section 3B.19.
- (2) For separated bikeway marking guidance, use the bicycle lane symbol marking per C.A. MUTCD Figure 9C-3 Option A.
- (3) May be a raised island in lieu of flexible posts or inflexible physical barriers.
- (4) Flexible posts or inflexible physical barriers may be omitted.
- (5) Periodic openings should be provided for bicyclists to access buildings.

# Innovative Design

## ➤ Use of Low Impact Development (LID) Components -

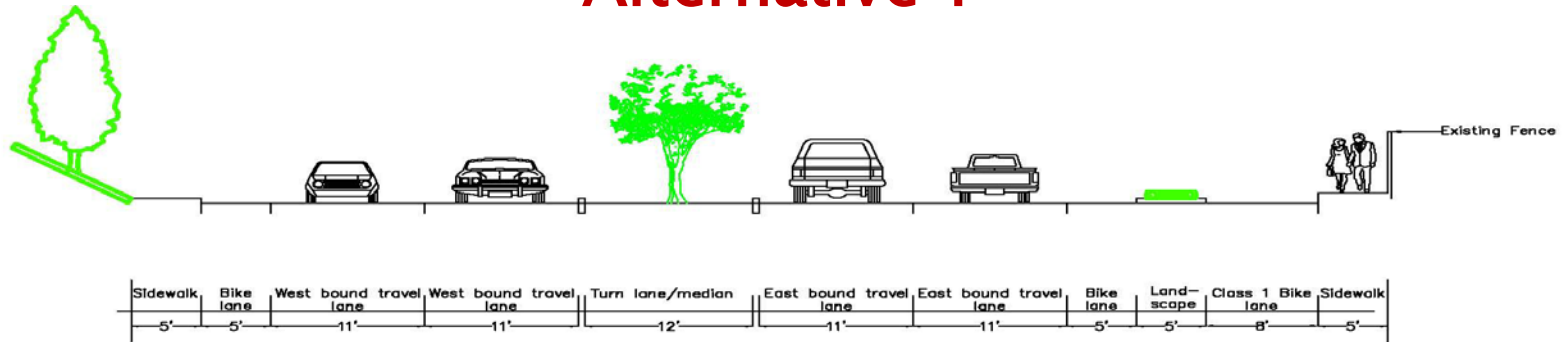
curbside rain garden



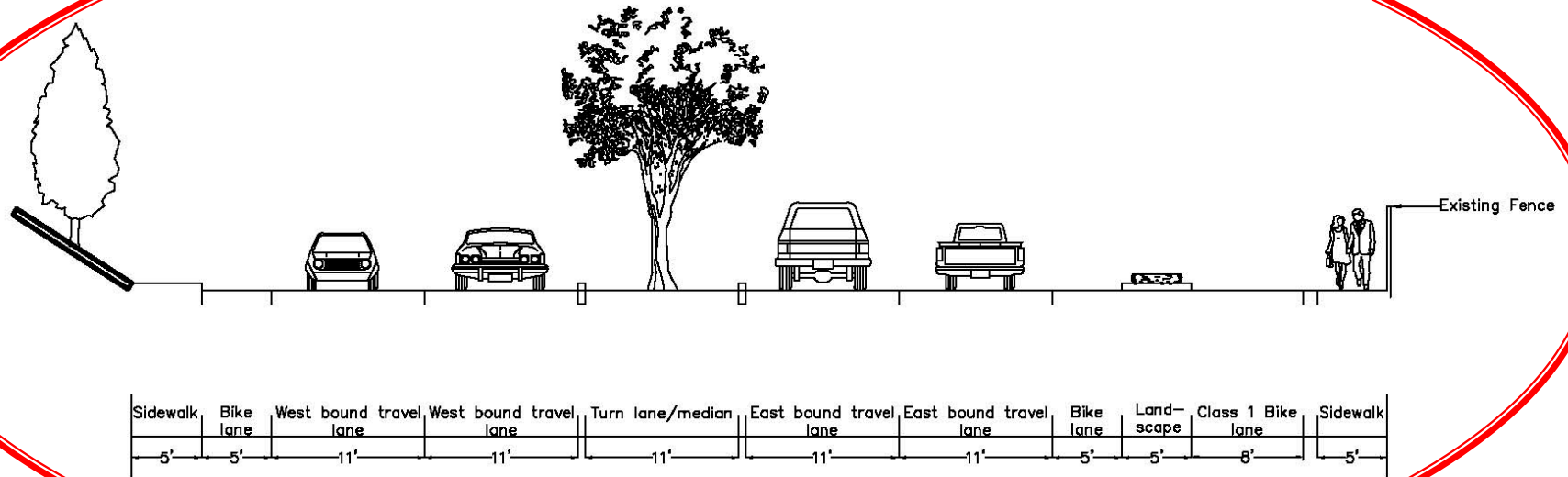


# Preferred Alternative – Typical Section

## Alternative 1

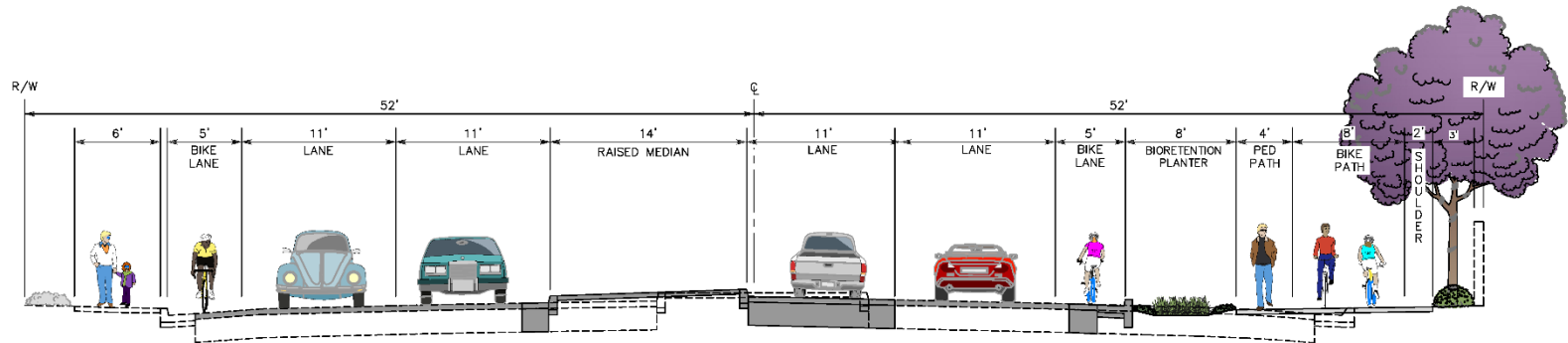


## Alternative 2

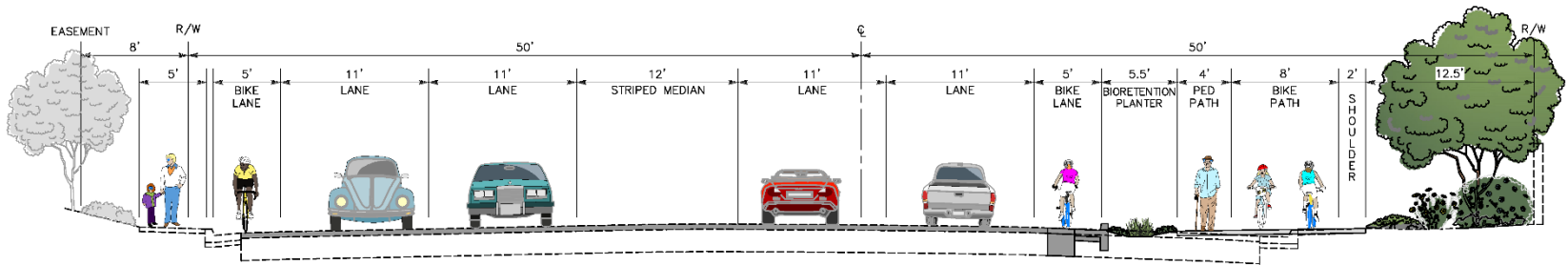




# Final Design – Typical Section

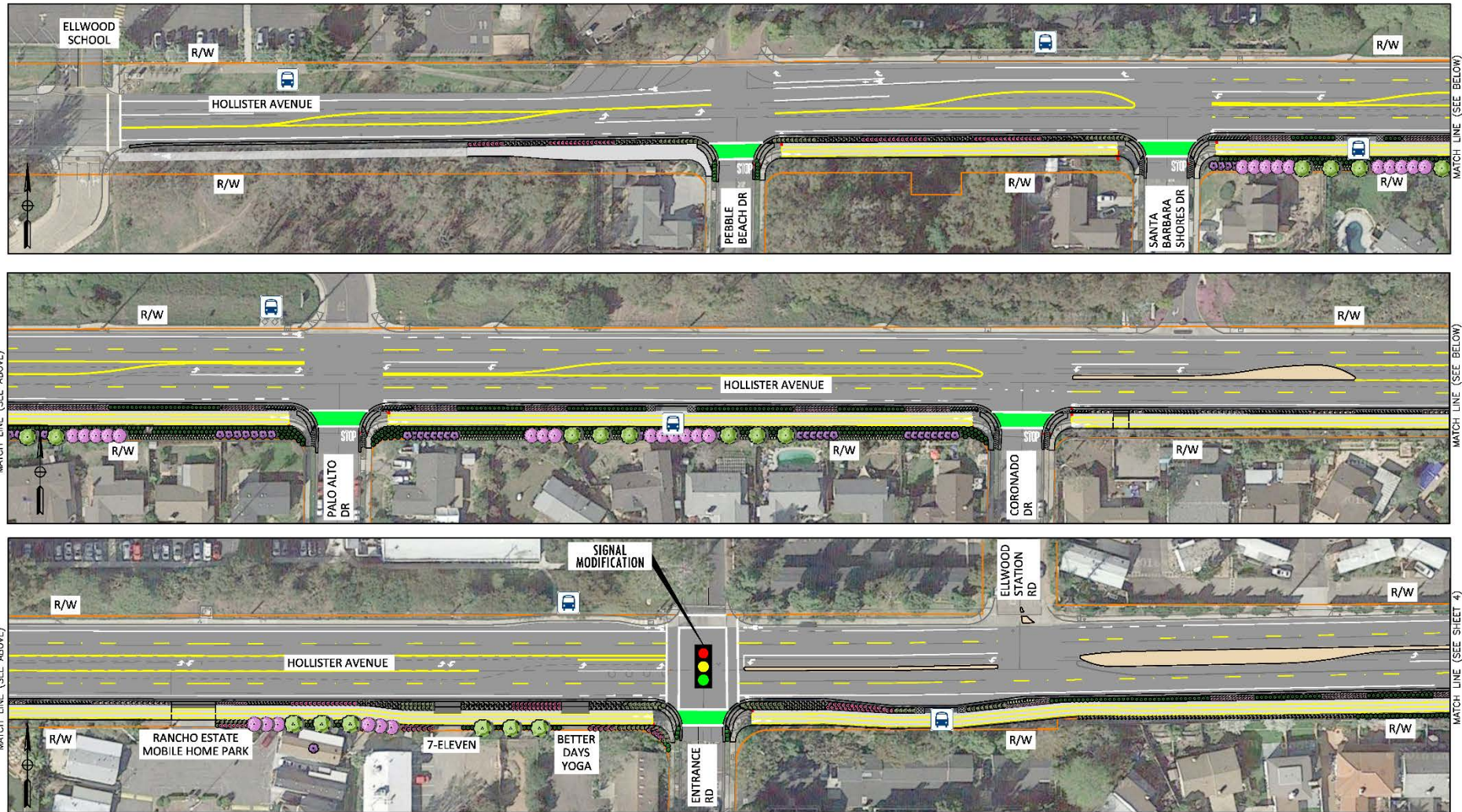


**HOLLISTER AVE - TYPICAL SECTION**  
FROM ENTRANCE ROAD TO END OF PROJECT  
NO SCALE



**HOLLISTER AVE - TYPICAL SECTION**  
FROM BEGINNING OF PROJECT TO ENTRANCE ROAD  
NO SCALE

# Final Design – Layout



- LEGEND**
- OVERLAY LIMITS
  - PAINTED CROSSWALK
  - RAISED MEDIAN
  - DRIVEWAY
  - PEDESTRIAN PATH/CLASS 1 BIKE PATH
  - BUS

 BUS STOP
  - STOP

 STOP SIGN

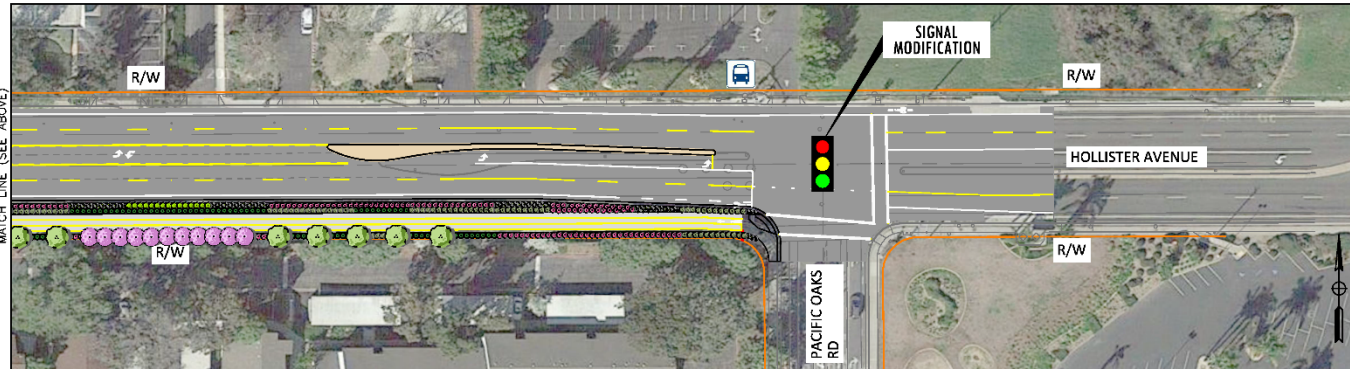
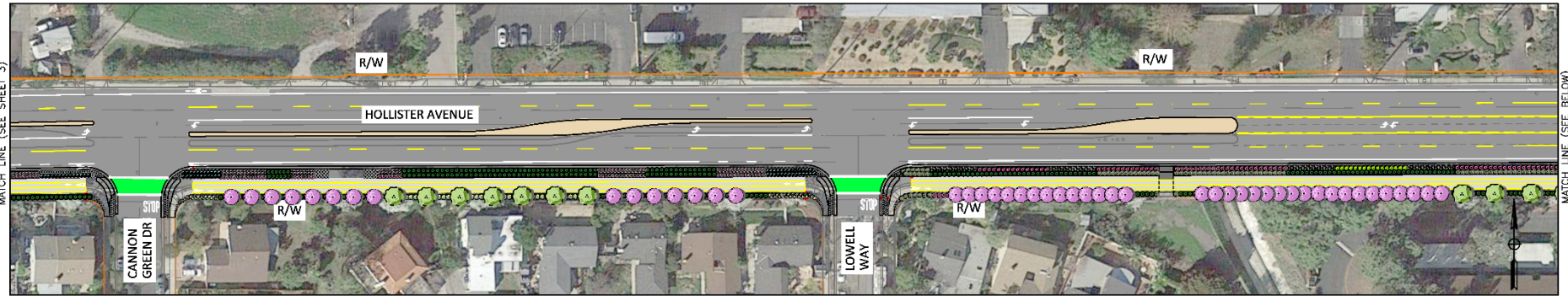
## HOLLISTER AVE CLASS I BIKE/PEDESTRIAN IMPROVEMENTS

0 1 2  
SCALE: 1"=40'  
APRIL 2016  
SHEET 3 OF 4





# Final Design – Layout



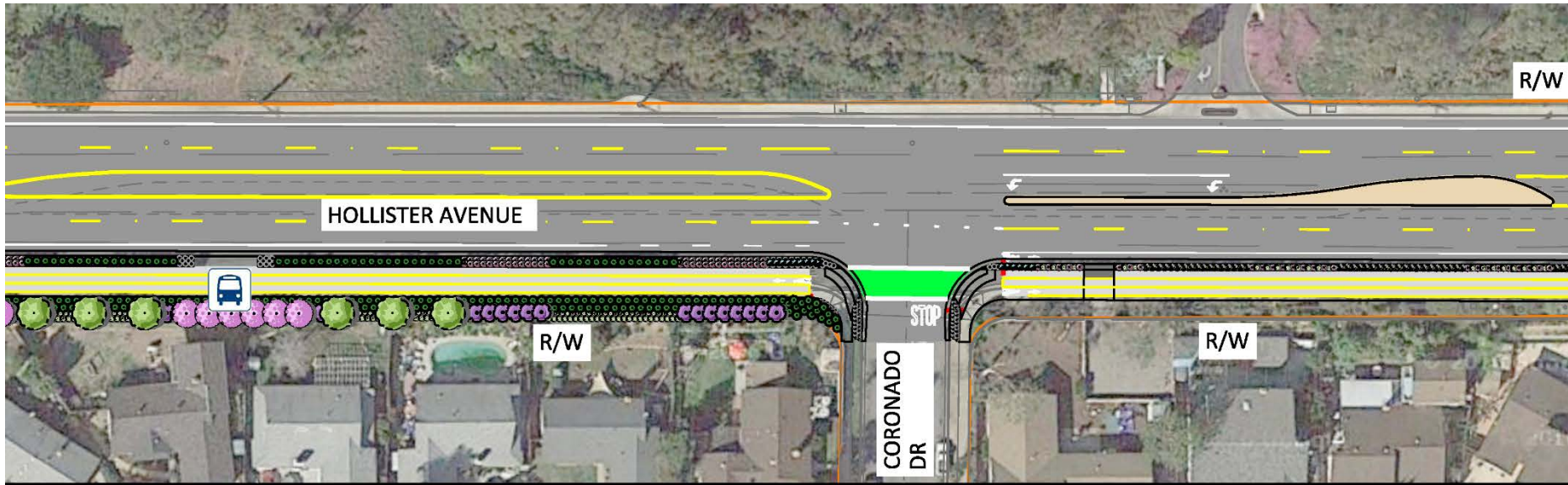
LEGEND	
	OVERLAY LIMITS
	PAINTED CROSSWALK
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	DRIVEWAY
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	BUS STOP
	STOP SIGN

## HOLLISTER AVE CLASS I BIKE/PEDESTRIAN IMPROVEMENTS

0 1 2  
SCALE: 1"=40'

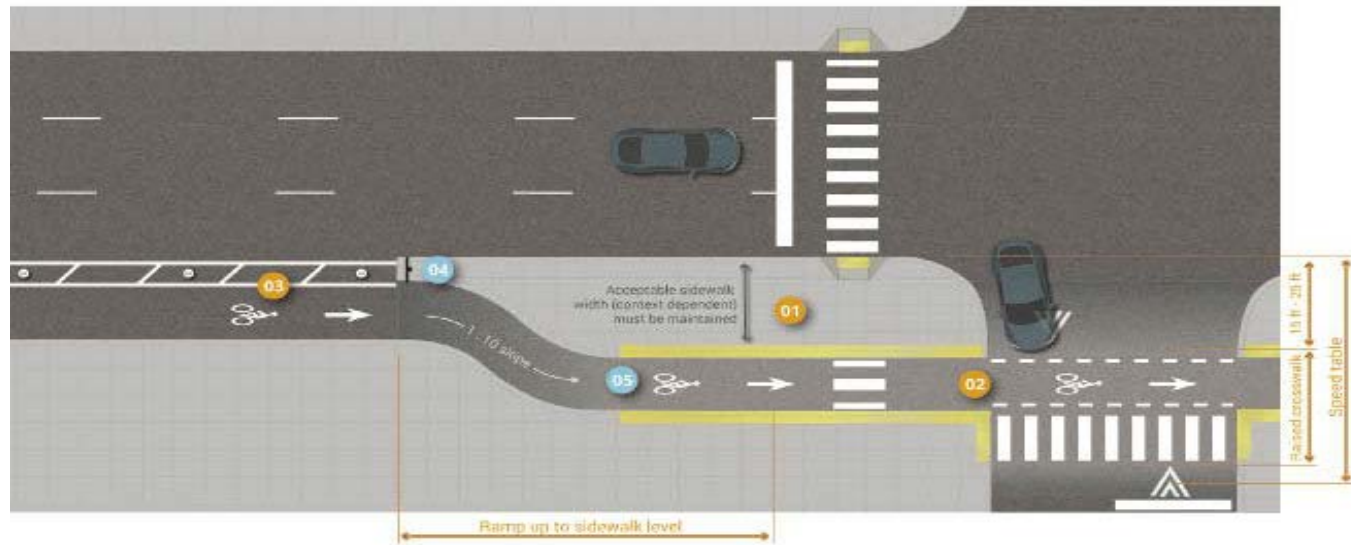
APRIL 2016  
SHEET 4 OF 4







# INTERSECTION CROSSING –BEND OUT DESIGN



TYPICAL BEND OUT DESIGN – FHWA Separated Bike Lane Planning Design Guide

## WHY USE A BEND OUT DESIGN?

- Positions bicyclists and pedestrians downstream on the side street away from the intersection, **allowing vehicles to complete turning movements before interacting with bicyclists/peds.**
- Used for lower-volume streets or driveways
- Provides space for a vehicle to yield to crossing bicycles/pedestrians **without blocking through traffic**
- Use depends on buffer type, width, **available right of way, sight distance, side-street characteristics**, and other contextual factor

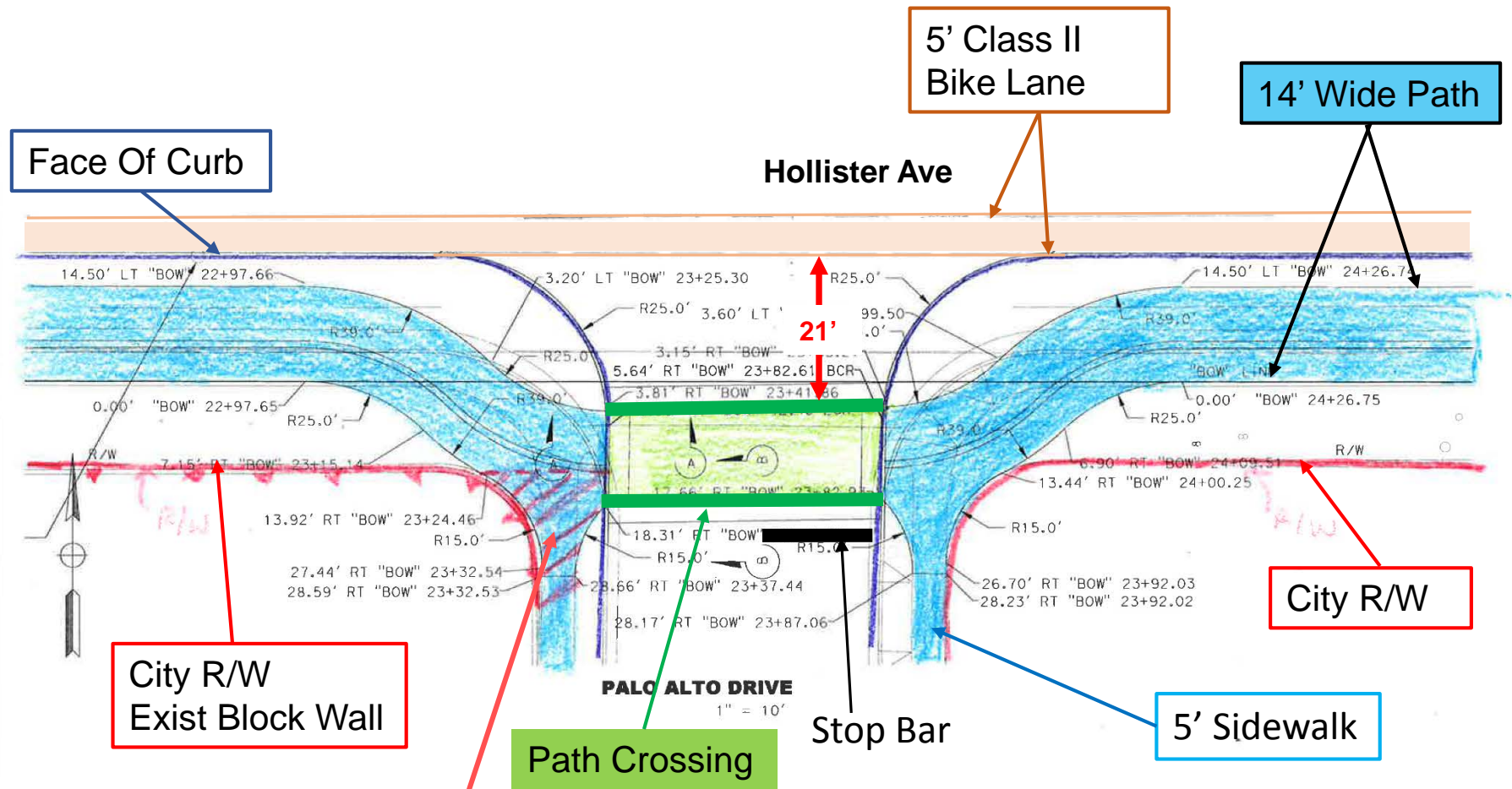
# INTERSECTION CROSSING –BEND OUT DESIGN



Example of a Ideal Bend Out Design  
El Colegio Road at Embarcadero del Mar

# INTERSECTION CROSSING –BEND OUT DESIGN

Analyzed for Palo Alto and Coronado



Bicycles/Peds in this area cannot be seen by right turning vehicle on Hollister until mid-turn

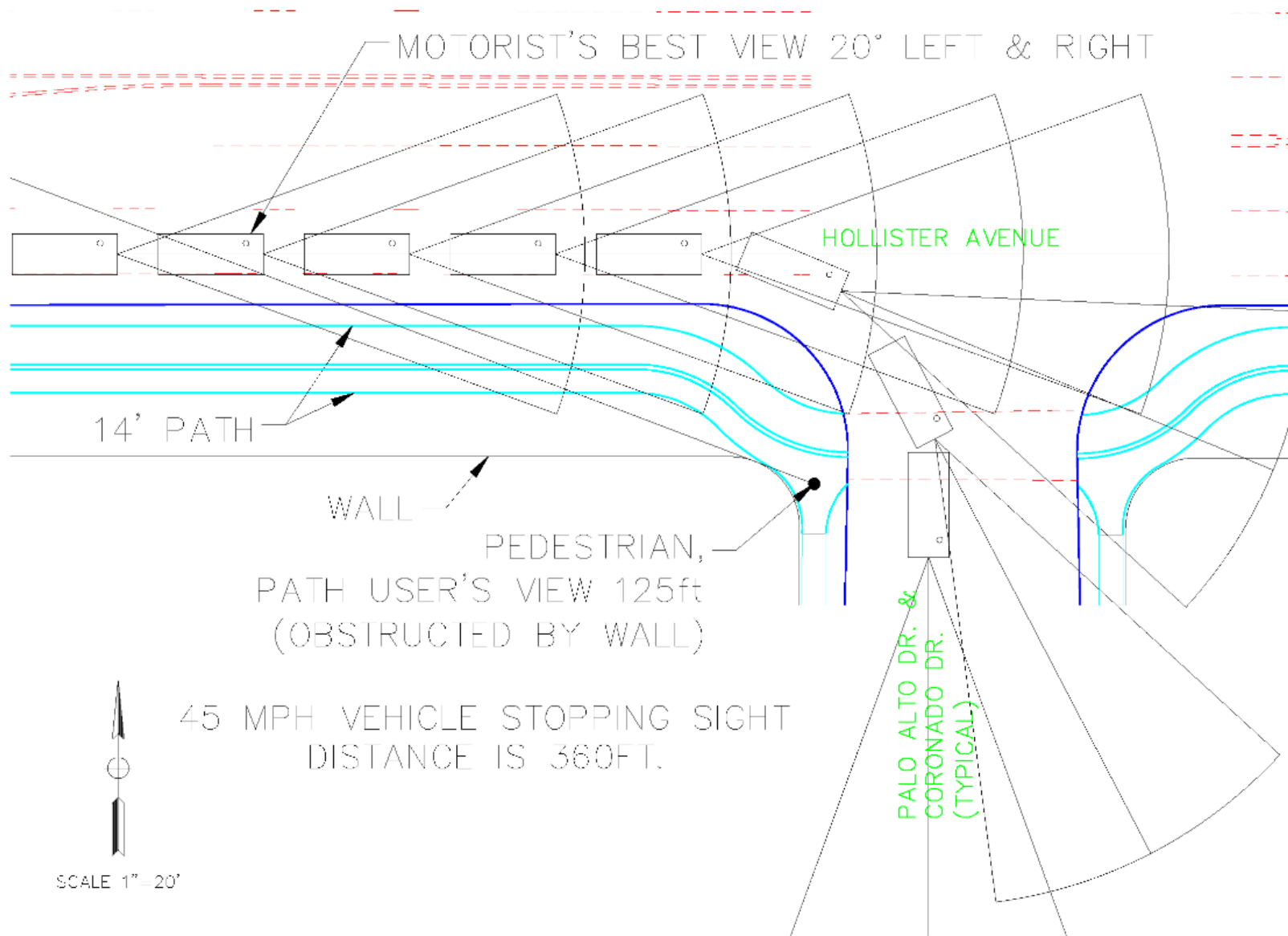


Length of Average Car 16'-17'



# INTERSECTION CROSSINGS – Sight Distance

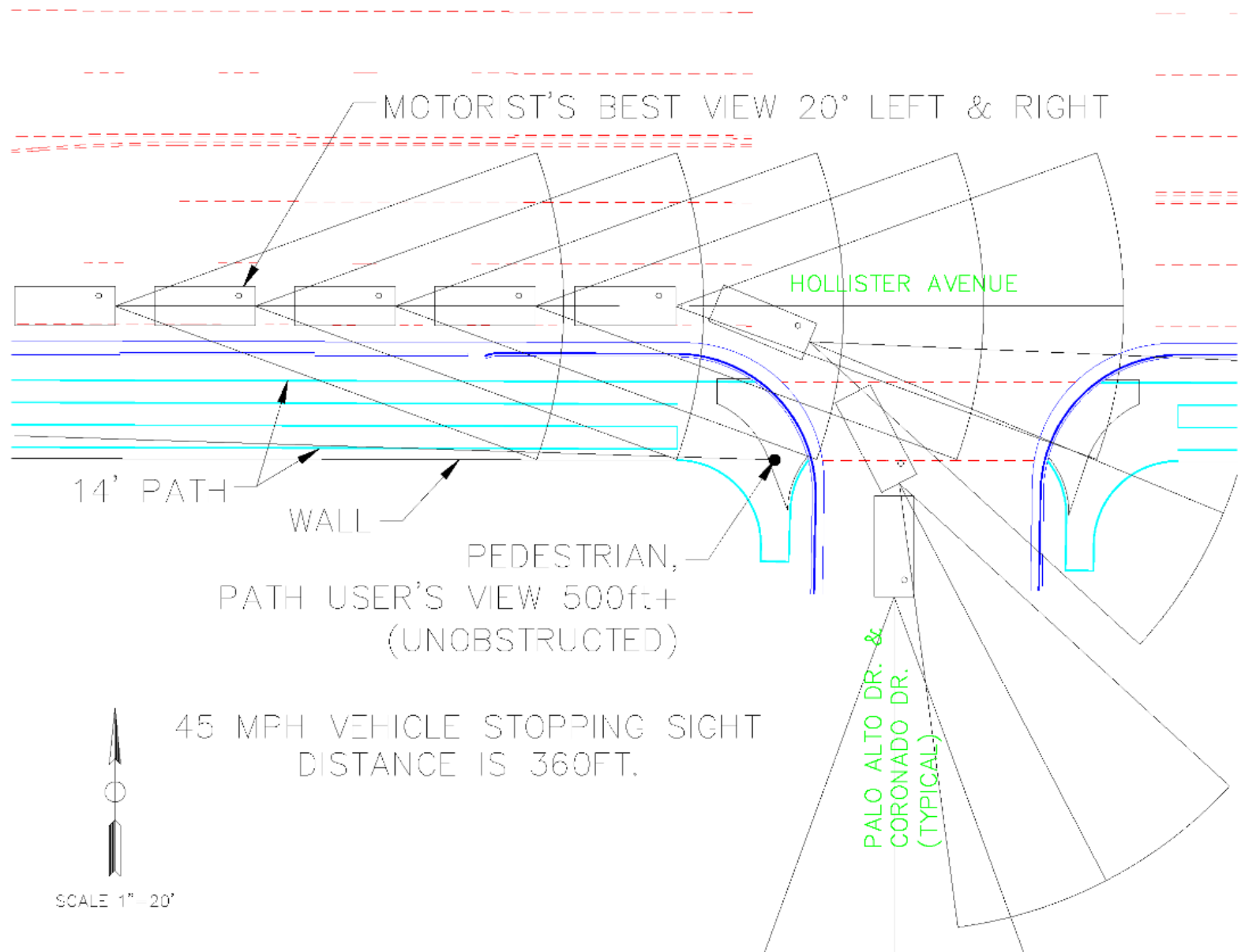
## Bend Out Design Concept



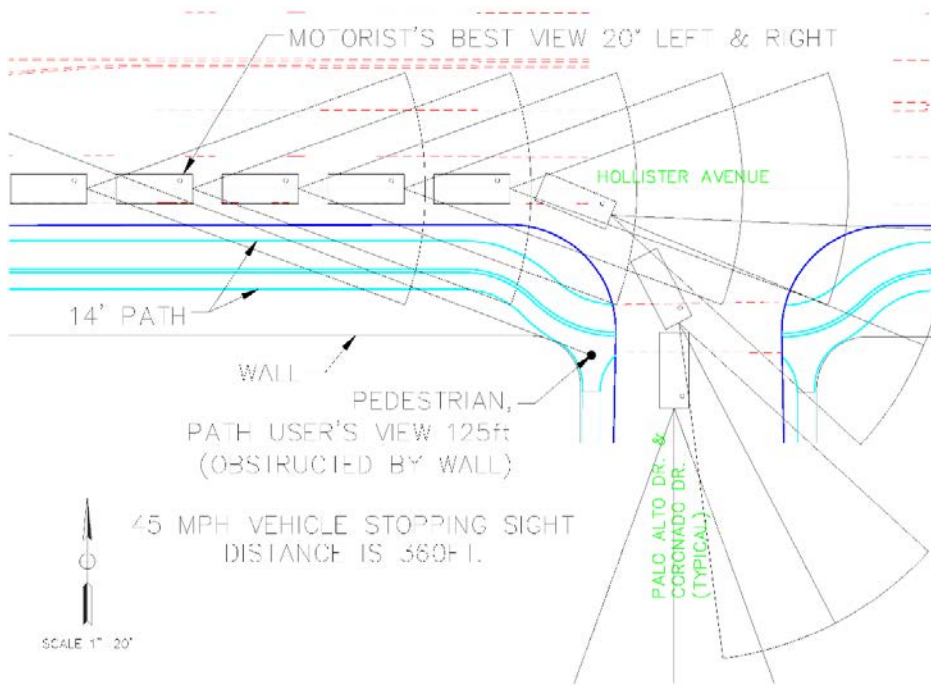


# INTERSECTION CROSSINGS – Sight Distance

## Current Design Concept



# INTERSECTION CROSSINGS – Visibility Comparison

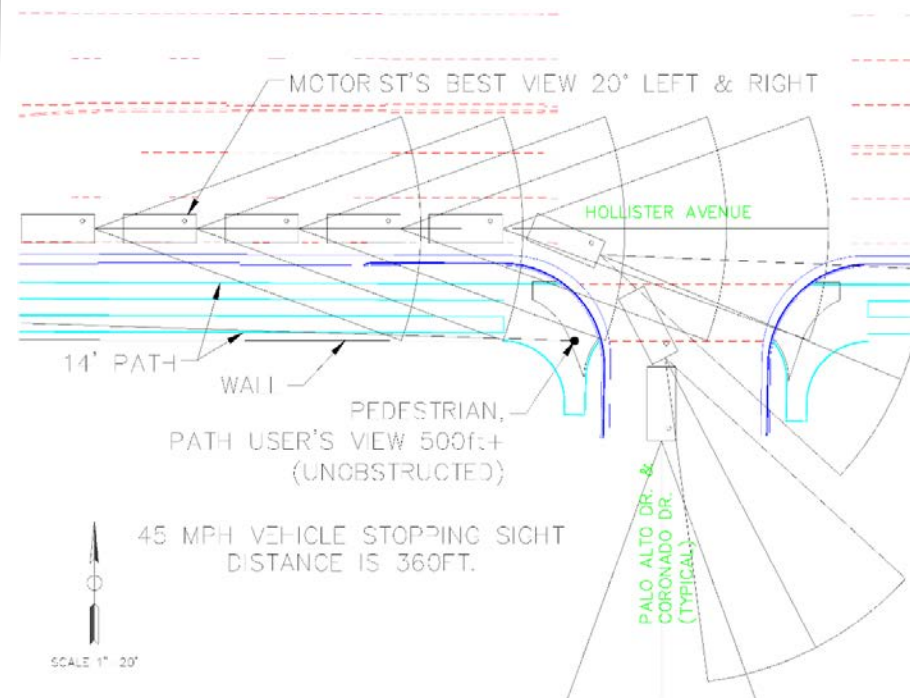


## Bend Out Design

- Stopping Sight Distance for 45 mph speeds: 360 ft
- Available: 125 ft

## Current Design

- Stopping Sight Distance for 45 mph speeds: 360 ft
- Available: Greater than 500 ft





# INTERSECTION CROSSING –Sight Distance

Street View- Approach to Palo Alto

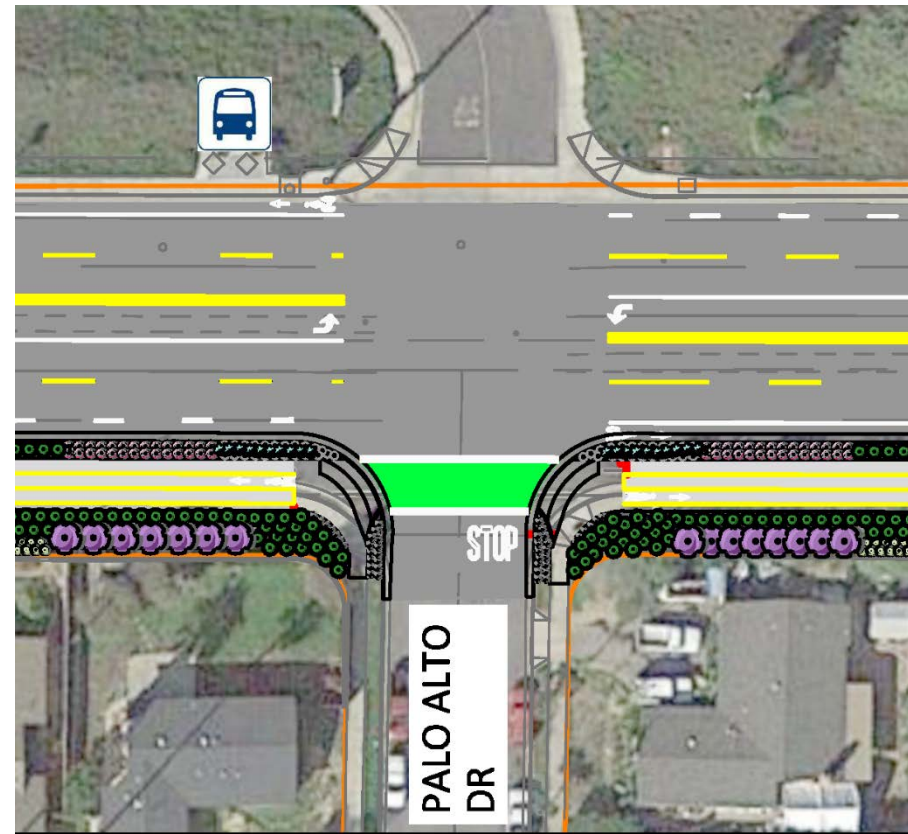


Street View- Approach to Coronado





## Final Design Proposed For Palo Alto and Coronado





# Speed Table

- Speed Table was proposed at locations of Bend Outs
- Speed Table goes hand and hand with Bend Out
- Setback clearance from traveled way proposed with Bend Out necessary to provide distance to ramp down from speed table
- Would not accommodate exist roadway drainage patterns

# Pavement Rehabilitation on Hollister Ave.

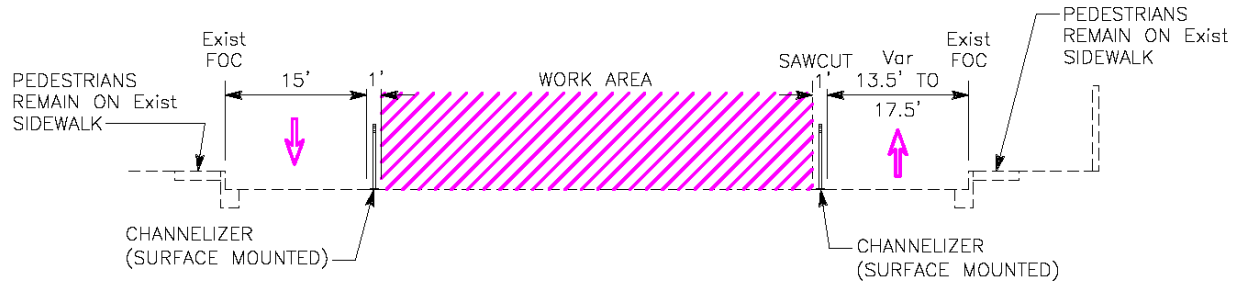
- Pavement Engineering Inc. (PEI) – conducted pavement condition analysis
- Conducted onsite truck/buses counts to determine actual TI
- 4 inch digouts of localized base failures through out
- Pacific Oaks Road to Entrance Road and Pebble Beach to Via Jero – mill off 3 inches of exist AC and place 3 inches of new AC
- Entrance Road to Pebble Beach – Type II Slurry Seal

# Traffic Handling During Construction

- Clear Path will be maintained for pedestrians and bicyclists for access to Ellwood school
- Use of K-railing (similar to traffic control used in front of Westar project) – to separate pedestrians and bicyclists from the work areas
- One lane in each direction will remain open on Hollister Avenue with access to cross streets and driveways
- Construction will be completed in 4-5 months

# Proposed Traffic Handling During Construction

## STAGE 1



## SECTION A-A

NO SCALE

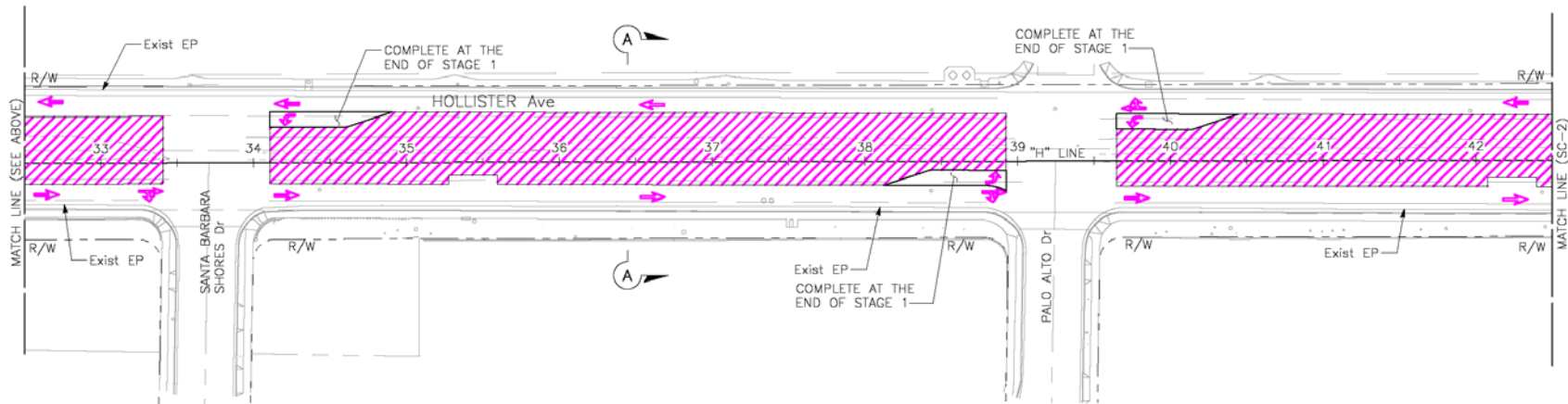
LEGEND:



– WORK TO BE DONE THIS STAGE



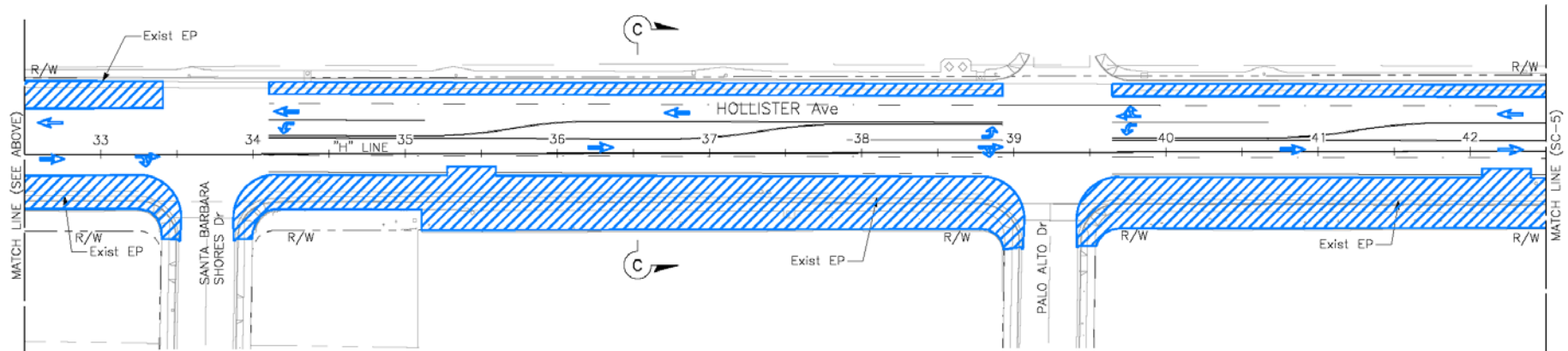
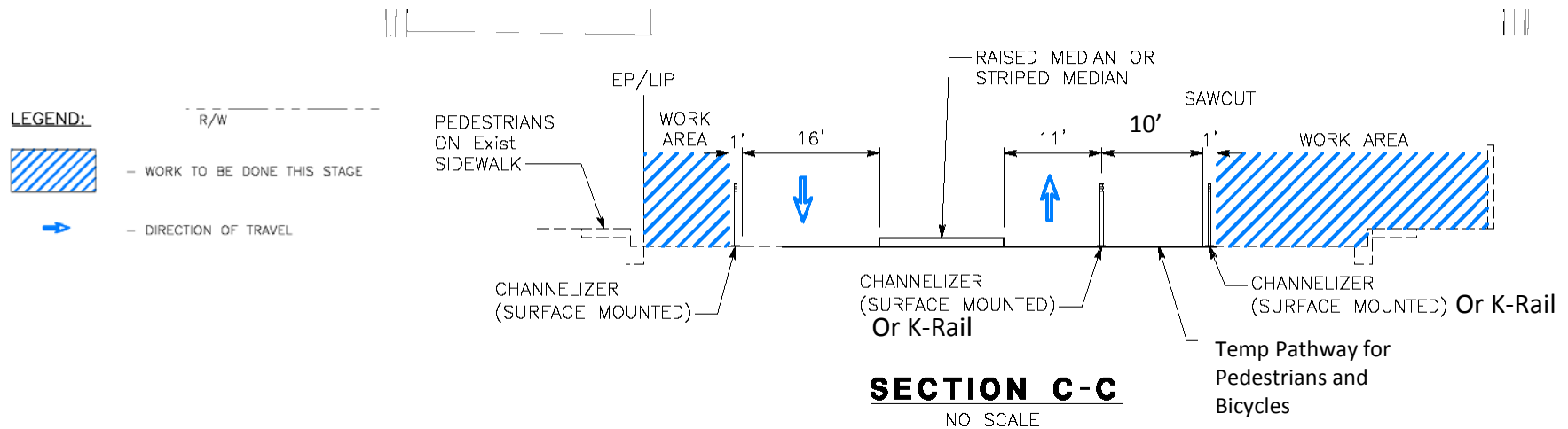
- DIRECTION OF TRAVEL





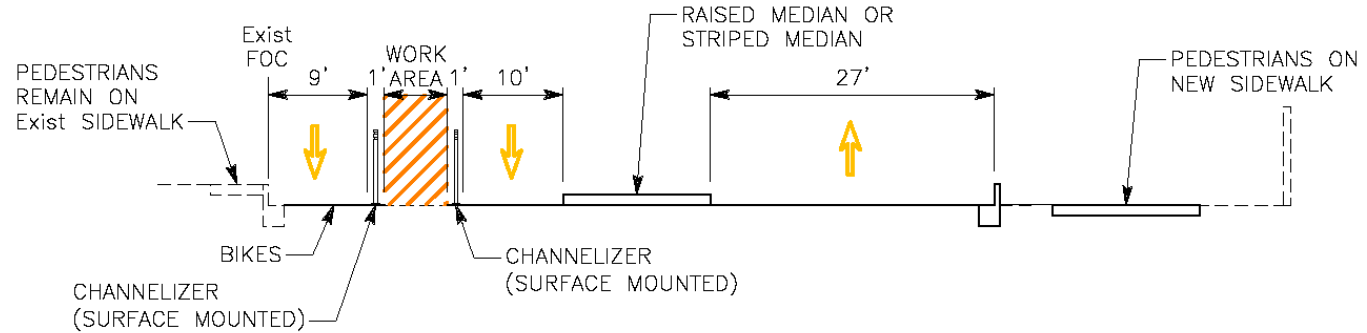
# Proposed Traffic Handling During Construction

## STAGE 2



# Proposed Traffic Handling During Construction

## STAGE 3



### SECTION E-E

NO SCALE

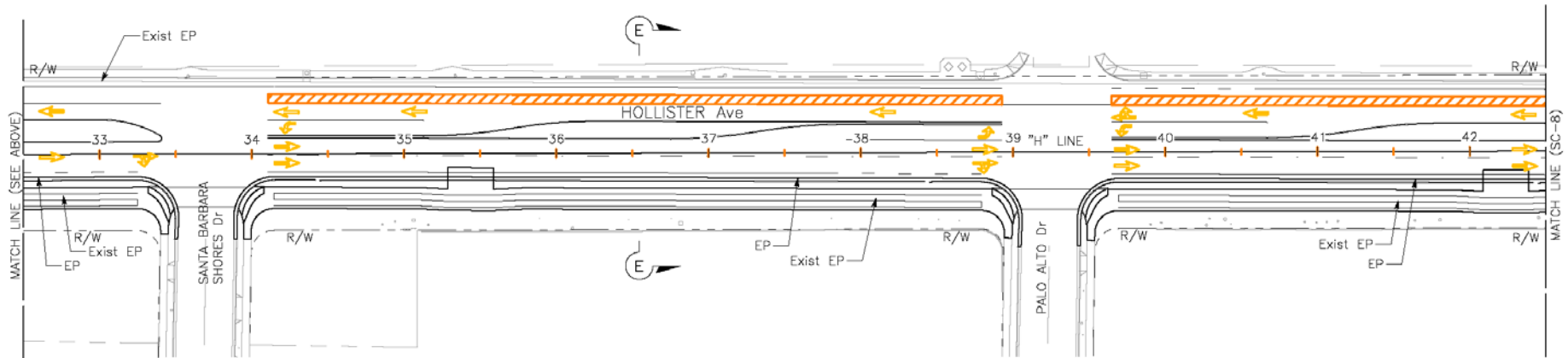
#### LEGEND:



— WORK TO BE DONE THIS STAGE



— DIRECTION OF TRAVEL



# Construction Costs

- Current Construction Cost Estimate – **\$2.8 million**
  - ATP Grant Funding – \$1.644 million
  - Local Funds – \$1.2 million
- 
- Pavement Rehabilitation (funded from the City's Annual Pavement Rehabilitation Program) – **\$1.4 million**



# Construction Costs

## Additional Costs :

- Installation of Path Lighting – \$500,000
  - Alternate - Install underground conduit and Pull Boxes Only to Accommodate Future Installation of Lighting Fixtures and Bases - \$230,000
- Construction of Raised Landscaped Medians – \$215,000
  - Construct 3 new Raised Median Islands between Pebble Beach and Coronado
  - Add Landscaping and Irrigation to new and existing Raised Median Islands
    - Alternate: Add landscape and irrigation to existing medians only - \$32,000
- Colored/Stamped Concrete for 4 ft wide pedestrian path (approximate cost \$14/sqft) - \$190,000

# QUESTIONS