

SAN FRANCISCO



ESTUARY  
PARTNERSHIP

# San Pablo Avenue Green Stormwater Spine

## Project Update/Schematic Design Review

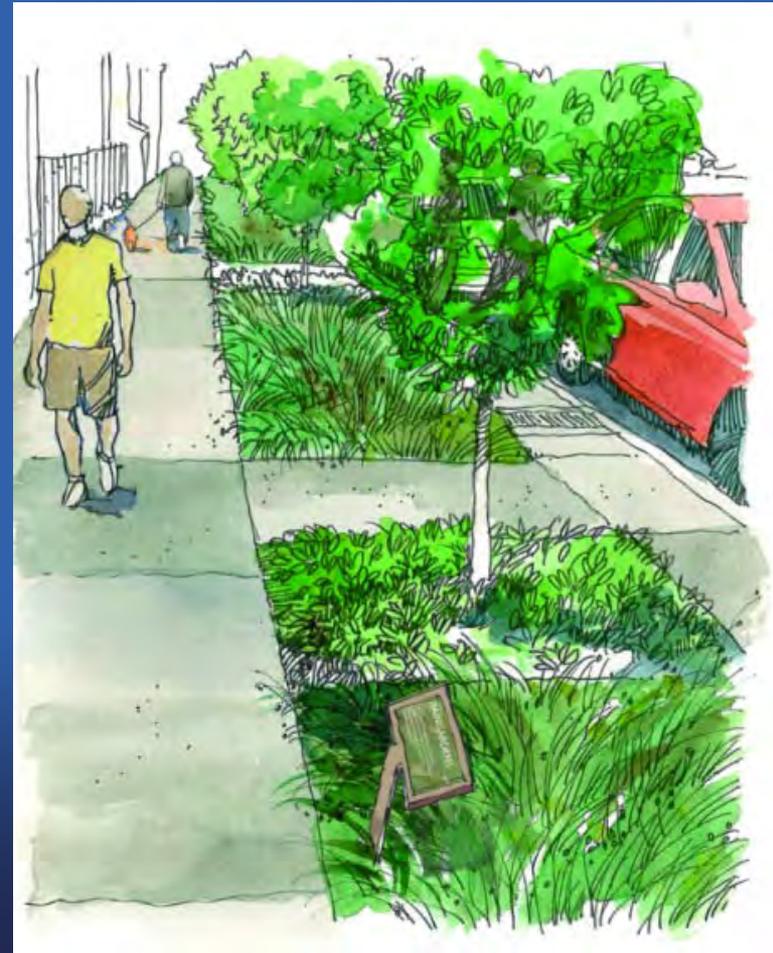
Jan 23, 2013

Joshua Bradt



# San Pablo Avenue Green Stormwater Spine Project Description/Approach

- Implement green infrastructure in 7 cities
- Treat 7 acres of impervious surface (min.)
- Emphasize vegetated approaches





# Four Key Project Goals

- Demonstrate Benefits of LID Retrofits
- Improve Water Quality
- Increase Public Awareness
- Increase Municipal Acceptance





<b>Major Project Tasks</b>	<b>Timeline</b>	<b>Funding Source</b>
<b>Project Management/Admin</b>	On-going-Dec 2015	All funders
<b>Final Design &amp; Engineering</b>	Early Summer 2013	EPA/UG
<b>Environmental Review &amp; Permits</b>	Spring 2013	EPA/UG
<b>Construction &amp; Construction Management</b>	Late Summer-Fall 2013	Caltrans/IRWM/UG
<b>Water Quality &amp; Hydrologic Monitoring</b>	Winter 2015	IRWM
<b>Plant Establishment/Maintenance</b>	Spring 2014-Fall 2015	IRWM/UG
<b>Model Green Infrastructure Ordinance</b>	Spring 2013	EPA
<b>Regional Outreach</b>	On-going-Dec 2015	IRWM



# Status Update - Admin

## Contracts & Agreements

- Caltrans Cooperative Agreement
- Urban Greening Contract
- *SFEI Monitoring Contract*
- *Bay Friendly Coalition Contract*
- *Design Contract Amendment*



## Status Update – Admin (cont.)

- Contracts & Agreements Upcoming
  - Bay Friendly Rater RFP (late January)
  - ReNuwIt Monitoring Contract
  - City Agreements



# Status Update – Green Streets Model Ordinance

- Literature Search
- Compiled Existing & Model Ordinances and Guidance Documents
- Solicited support from select City Partners



## Status Update – Design

- Initial Schematics drafted & revised
- Topographic Surveys underway
- Potholing & Soil Investigations upcoming



# SCHEMATIC DESIGNS



## Oakland Site #1

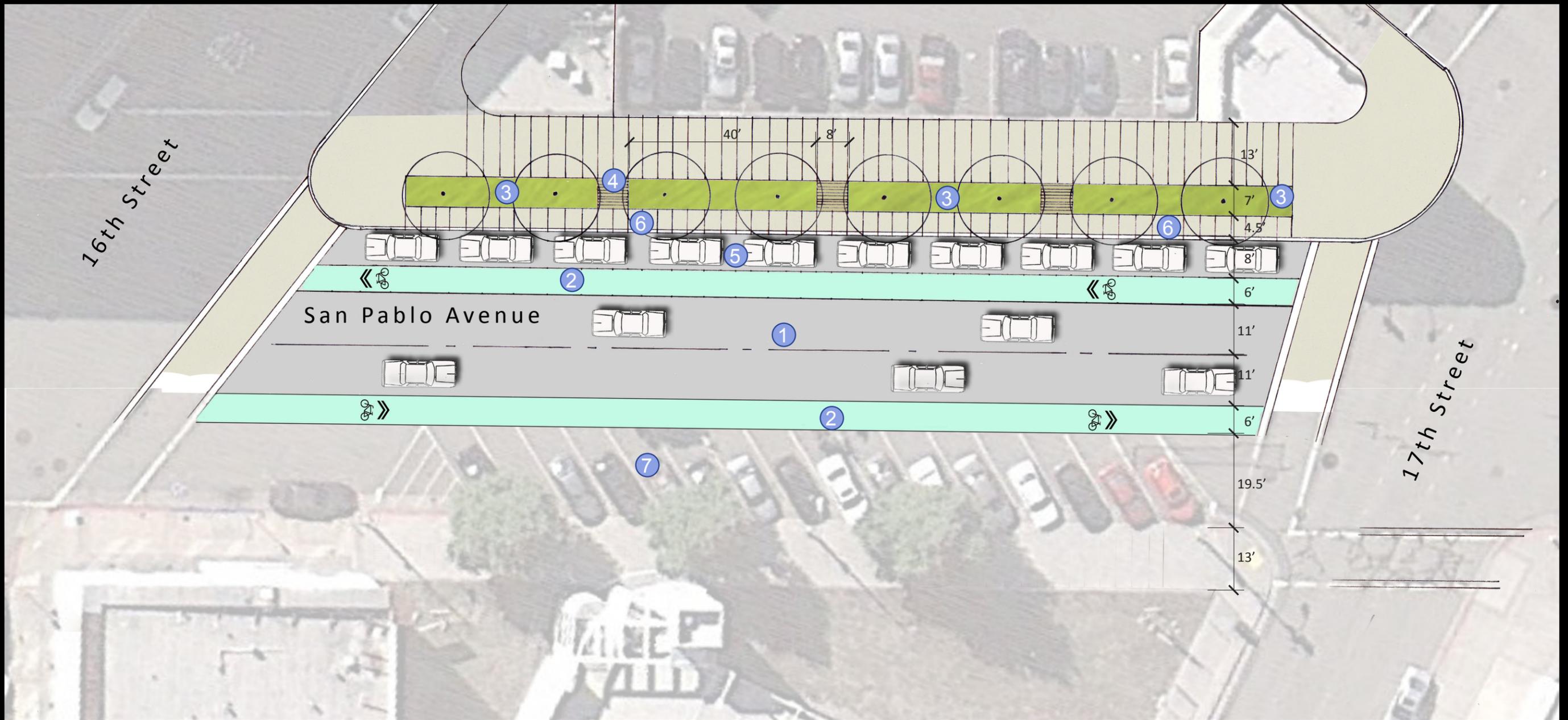
17th Street and San Pablo Avenue

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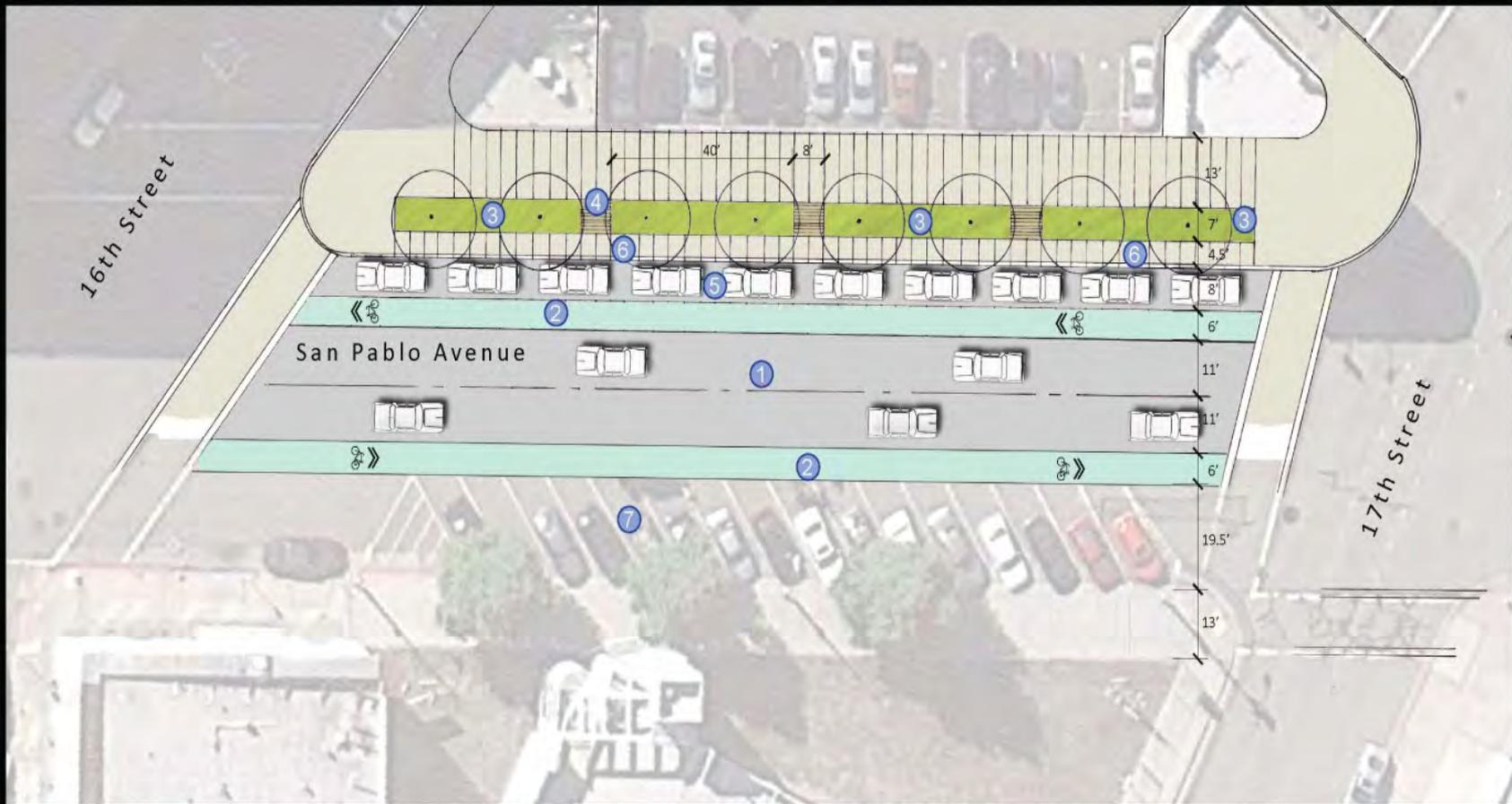


## Stormwater Improvement Concept Plan

Scale: 1"=20'  
January 2013



- ① Existing median is removed and travel lanes remain as asphalt.
- ② New painted bike lanes are proposed on both sides of the street (by others)
- ③ Stormwater planters and street trees accept runoff from both San Pablo Avenue and adjacent private property.
- ④ Boardwalks allow pedestrians to access parking and sidewalks.
- ⑤ Parallel parking configuration allows for greater space efficiency along the street.
- ⑥ A 4.5' egress zone allows pedestrians to safely exit their vehicles and pay parking meters. The existing ADA marked parking stall is retained at this location.
- ⑦ The east side of San Pablo Avenue could be converted to mirror west side improvements in the future.



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**Emeryville Site**  
*Apgar Street and San Pablo Avenue*

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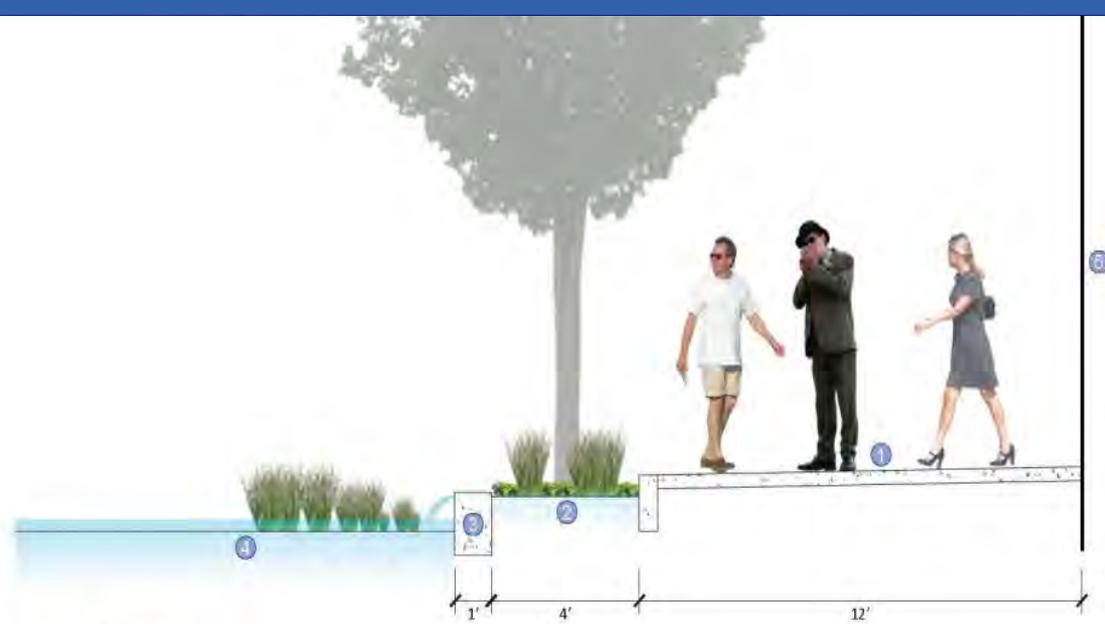


## Stormwater Improvement Concept Plan

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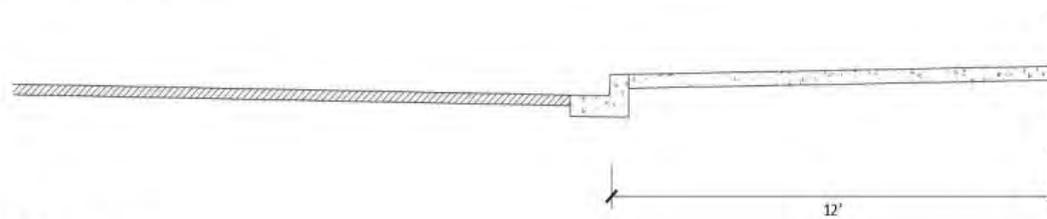


- ① Entry point of stormwater flow from Apgar Street.
- ② Low-flow green gutter. Higher flows spill over a small retaining wall into larger adjacent rain garden.
- ③ Rain garden landscape area.
- ④ Existing sewer manhole location.
- ⑤ Side slope landscape transitions grade from street level to the basin's finished elevations.
- ⑥ On-street asphalt parking zone (Capacity is for five vehicles)
- ⑦ New sidewalk paving to match existing brick paving along San Pablo Avenue (by private development?)
- ⑧ Pedestrian boardwalk crossing over rain garden system.
- ⑨ Expanded sidewalk area overlooks rain garden cells and allow for addition space for cafe/plaza seating.
- ⑩ Overflow from rain garden system.
- ⑪ Existing street trees to remain.
- ⑫ Sidewalk zone to be paved with standard scored concrete.



## Proposed Cross Section

Scale: 1"=3'



## Existing Cross Section

Scale: 1"=3'

- 1 Existing sidewalk location remains the current width and allows stormwater to sheet flow into adjacent green gutter
- 2 Landscaped green gutter captures runoff from Apgar Street (soil grade is slightly below existing gutter flow line)
- 3 A concrete retaining wall is used to separate grade from the green gutter to the rain garden landscape (cuts along the concrete retain wall allows water to spill over into the rain garden)
- 4 Rain garden finish grade is approximately 1' below existing gutter grade at its deepest location
- 5 The existing building overflow runoff could potentially be redirected into the rain garden through the concrete retain wall or by using an overhead conveyance system



1  
LOCATION

*Harrison (west) &  
San Pablo Ave*

### Opportunities:

- Several “no parking zone” areas along curblines can be converted to landscape space
- The existing McDonald’s site frontage could be potentially used as a combined stormwater facility
- Highly visible project area in close proximity of Codornices Creek

### Constraints:

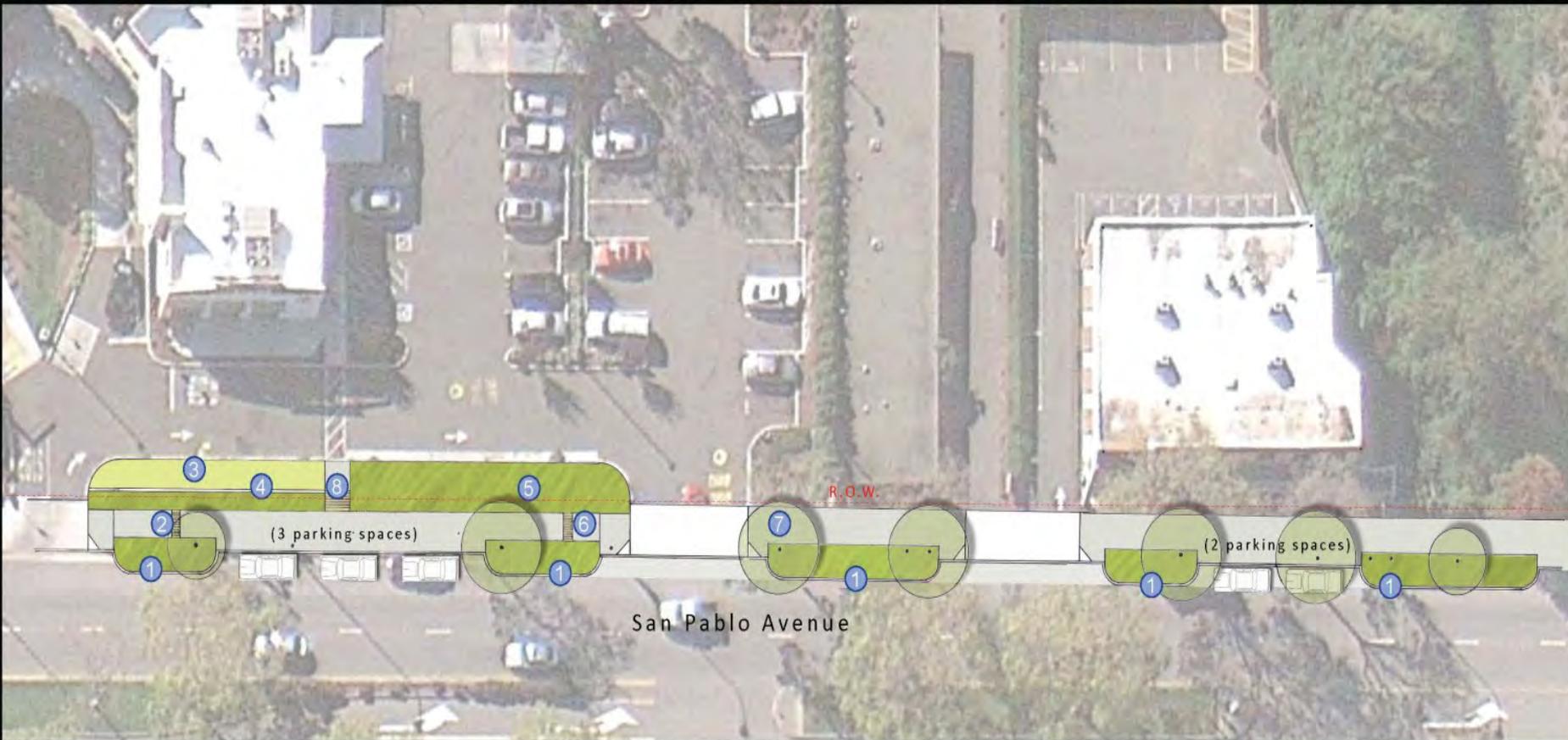
- Existing mature trees limit the number and size of stormwater planters
- Stormwater catchment may be below the 1 acre capture goal

### Recommendation:

- This is the design team’s first choice due to the potential for converting inefficient asphalt space to stormwater curb extensions. Also, the existing McDonald’s site already has on-site stormwater management and could help tell a complete stormwater story

## San Pablo Avenue Green Stormwater Spine Project

*City of Berkeley, California*



## Stormwater Improvement Concept Plan

Scale: 1"=25'  
January 2013



- 1 Stormwater curb extensions capture runoff from San Pablo Avenue.
- 2 Grated trench drains allow stormwater to flow into adjacent sidewalk planter.
- 3 Existing private landscaping/signage/utilities are retained.
- 4 Sidewalk planter accepts stormwater from San Pablo Avenue. A small concrete curb wall helps provide grade separation and protection of existing signs and utilities. This will require acceptance and coordination of improvements with private owner.
- 5 An existing vegetated swale is modified to capture stormwater from both San Pablo Avenue and McDonald's parking lot. This will require acceptance and coordination of improvements with private owner.
- 6 Grated trench drains allow stormwater overflow to flow into a stormwater curb extension in San Pablo Avenue.
- 7 All existing trees are retained with streetscape improvements.
- 8 Boardwalk allows stormwater to follow under pedestrian pathway.



## Albany Site #1

Monroe Street and San Pablo Avenue

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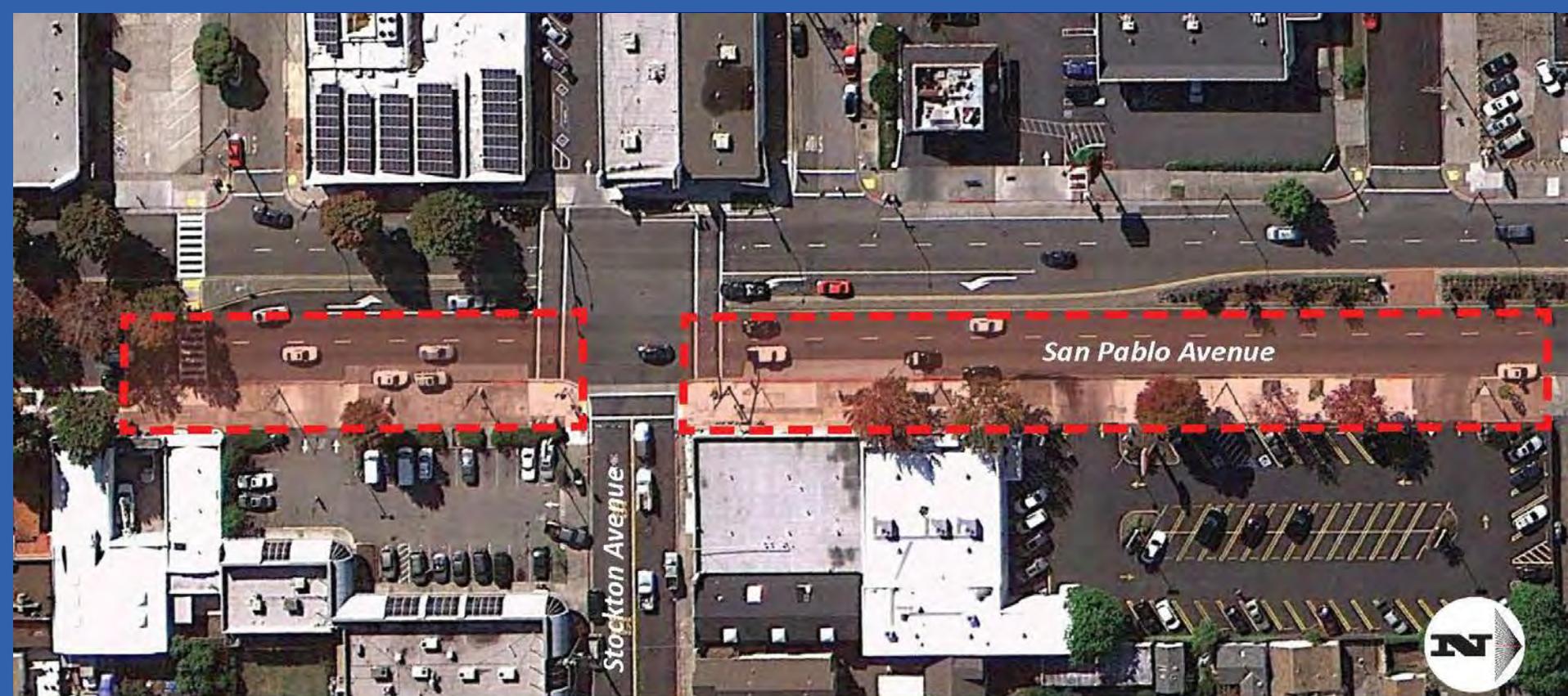


## Stormwater Improvement Concept Plan

Scale: 1"=20'  
January 2013



- ① Stormwater curb extensions capture runoff from San Pablo Avenue.
- ② Sidewalk planters capture stormwater from private parking lot. This will require acceptance and coordination of improvements with private owner.
- ③ A boardwalk allows stormwater to be stored under sidewalk zone using Silva Cell technology.
- ④ Existing bus stop remains in current location.
- ⑤ Stormwater overflow from stormwater curb extensions is captured within a series of grated green gutters within parking zones/driveway zones.
- ⑥ Existing driveway is modified.
- ⑦ Combination speed bump and trench drain system conveys runoff into sidewalk stormwater planter.



2

LOCATION

Stockton Ave &  
San Pablo Ave

### Opportunities:

- Close to existing transit stop which provides a strong link to stormwater management and alternative transportation
- Could potentially manage private stormwater along San Pablo frontage
- Wide sidewalks and relatively low parking demand along San Pablo Avenue

### Constraints:

- Existing mature trees may limit the size and shape of stormwater planters
- There needs to be agreement and coordination with private developer to manage stormwater along frontage
- Considerable amount of impervious area entering the project site

### Recommendation:

- Along with Site #1, this is the design team's first choice due to low parking demand along San Pablo Avenue, the potential to manage private stormwater along the San Pablo Avenue frontage, and the close proximity of a bus transit stop.

## San Pablo Avenue Green Stormwater Spine Project

City of El Cerrito, California



## Stormwater Improvement Concept Plan

Scale: 1"=20'  
January 2013



- 1 Stormwater curb extensions capture runoff from San Pablo Avenue.
- 2 Sidewalk rain garden captures stormwater from private parking lot. This will require acceptance and coordination of improvements with private owner.
- 3 A boardwalk allows stormwater to be connected between the curb extension and rain garden.
- 4 Existing ADA accessible parking spaces to remain at current location.
- 5 Existing large canopy street trees to remain. Stormwater facility is graded to allow existing street trees to remain.
- 6 Sidewalk rain garden captures stormwater from private parking lot. Existing signs and utilities will need to be protected.

PARKING AT REAR  
Super COIN LAUNDRY  
ANDERSON APPLIANCE

SMOG <sup>and GO</sup>  
CHECK  
IN BACK

BIKE ROUTE

I-80 BIKEWAY  
EL CERRITO

Alvarado B  
Pat Boes Barber

TORTA  
JUGOS  
AGUAS  
TAQUERIA  
SPECIALIDADES  
PUPUSAS  
ENCHILADAS  
AMIT

ANDERSON APPLIANCE  
Super COIN-OP Laundry

RECONDITIONED!  
STOVES  
REFRIGERATORS  
FREEZERS  
WASHERS  
& DRYERS

\$1<sup>99</sup> S3 WASHERS

LA LOPEZ  
PARKING

LA LOPEZ  
PARKING

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## Stormwater Improvement Concept Plan

Scale: 1"=25'  
January 2013



- 1 Stormwater curb extensions capture runoff from San Pablo Avenue, Andrade Avenue, and McBryde Avenue.
- 2 A new rain gardens capture stormwater from private parking lot. This will require acceptance and coordination of improvements with private owner.
- 3 Boardwalks allow stormwater to be connected between the curb extensions and rain garden.
- 4 Existing parking spaces are modified to allow for only parallel parking, however, additional parallel parking is allowed on McBryde Avenue
- 5 Existing bus stop is adjusted to this location.
- 6 Trench drains used for stormwater conveyance.
- 7 A new corner plaza for placemaking opportunity (art, pedestrian seating, other amenities by others).
- 8 Boardwalk allows for additional stormwater storage adjacent to stormwater curb extension.
- 9 Existing private signage/utilities are to be protected within rain garden.



**1**  
LOCATION

*Evergreen Terrace  
&  
San Pablo Ave*

**Opportunities:**

- Could potentially manage building and street stormwater along the San Pablo frontage
- Highly visible site with many users
- Can potentially route a portion of San Pablo Street overflow runoff into adjacent private development stormwater facilities

**Constraints:**

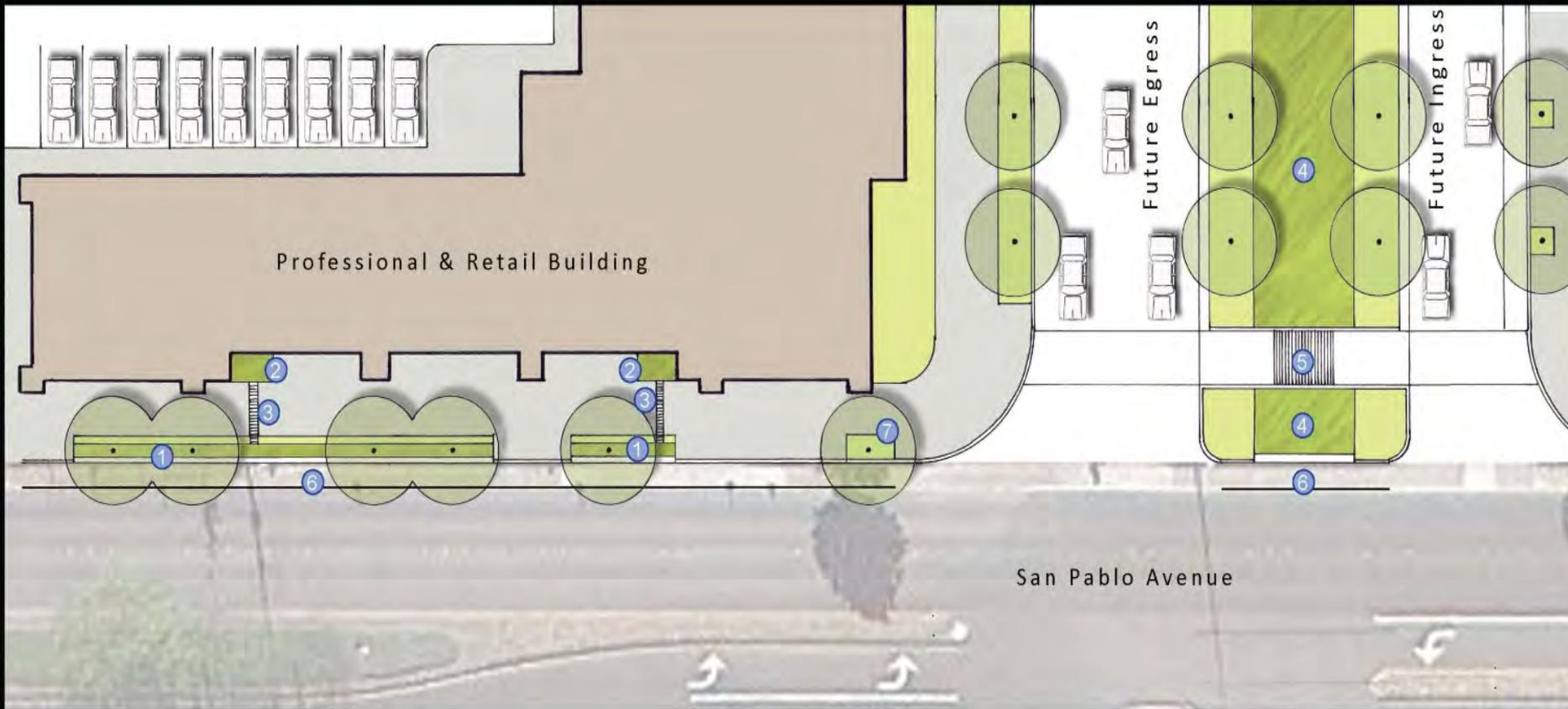
- Minimal opportunity to manage stormwater within the street due to existing bike infrastructure
- Existing mature trees exclude or limit the use of stormwater planters

**Recommendation:**

- The design team recommends this site due to its proximity to a highly used development project and the ability to potentially manage building and street runoff along the San Pablo Avenue frontage

**San Pablo Avenue Green Stormwater Spine Project**

*City of San Pablo, California*

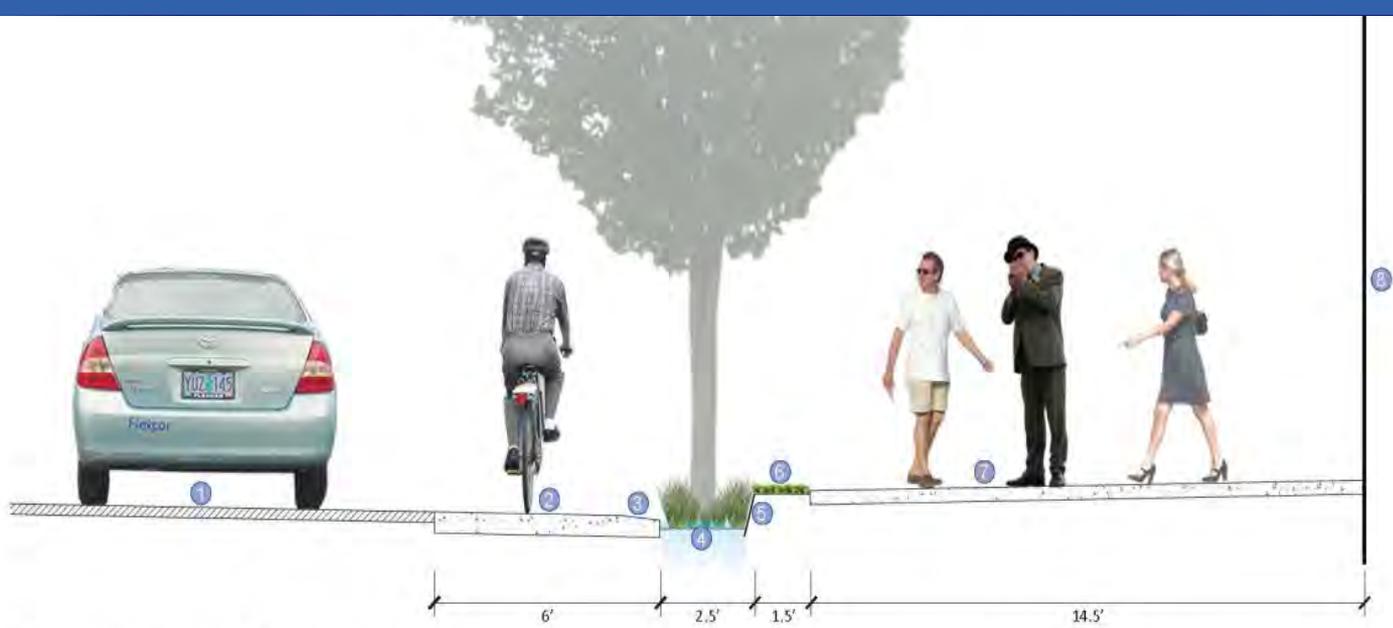


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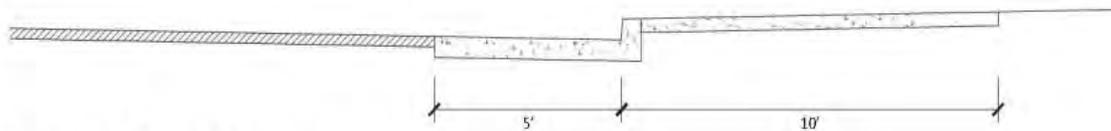


- 1 Stormwater planters capture runoff from San Pablo Avenue. Each planter has a flush curb condition next to bike lane for sheet flow of stormwater.
- 2 Future potential improvements include sidewalk planters that capture stormwater from a portion of private rooftop.
- 3 Future potential improvements include trench drains that convey rooftop stormwater overflow to street stormwater planters.
- 4 A large street median rain garden captures runoff from San Pablo Avenue. The rain garden entry has a flush curb condition next to bike lane for sheet flow of stormwater.
- 5 A boardwalk allows for stormwater conveyance under the pedestrian crossing
- 6 Existing bike lane is retained.
- 7 Existing street tree is retained.



## Proposed Cross Section

Scale: 1"=3'



## Existing Cross Section

Scale: 1"=3'

- ① Existing asphalt travel lane remains the same
- ② Existing concrete bike lane/gutter pan is widened to 6 feet.
- ③ Outside edge of bike lane is graded to incnet stormwater sheet flow into green gutter as lessens grade change between bike surface and landscape surface
- ④ Stormwater is captured in shallow green gutter system
- ⑤ A thin profile metal retaining wall is used to separate grade from the sidewalk zone to the green gutter landscape (The grade change from the sidewalk to the landscape area is only about 9")
- ⑥ An 18" landscape strip captures sidewalk runoff and acts a tactile warning measure along the sidewalk zone.
- ⑦ Sidewalk zone is expanded from the current 10' to approximately 14.5'
- ⑧ Approximate building face location (varies)

# San Pablo Avenue Green Stormwater Spine Project

City of San Pablo, California

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## Preliminary Design Summary Info

- **Total Area Treated: 10+ acres**
- **Total Cost: \$1.9M (no contingency, no irrigation)**
  - Green Features: \$900K; 18,820 sf
  - Impervious Surface: \$875K; 32,760 sf  
\$1.75M; 1.18 acres



# IRRIGATION

- Permanent System?
- Temporary System?
- Truck Watering - 2 years?

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Photograph by Dan Cloak

