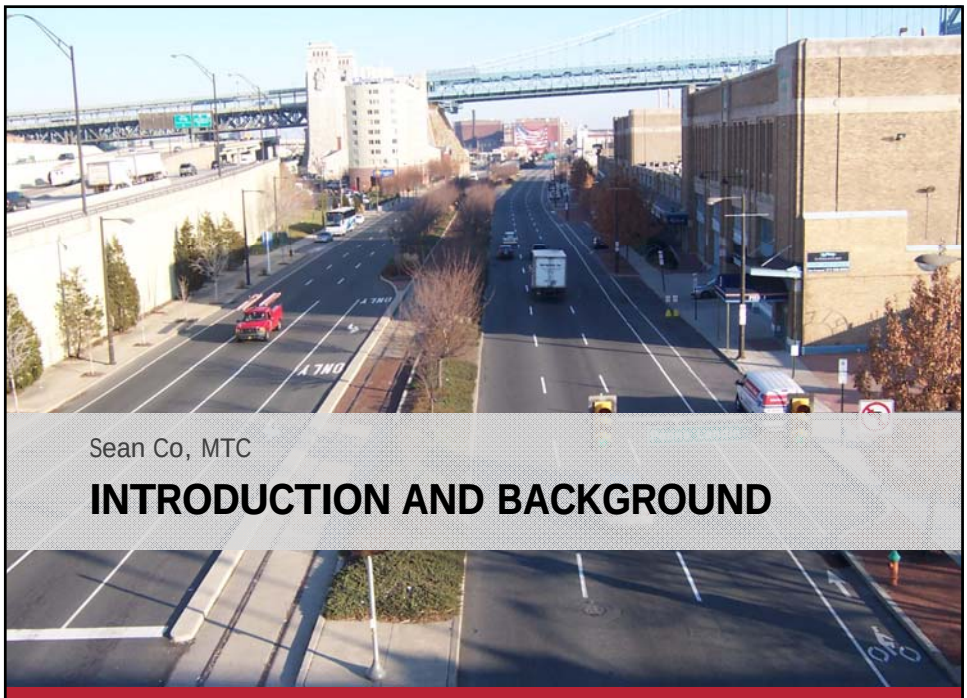
MTC One Bay Area Grant

Complete Streets Implementation Workshop

Presentation to
VTA & C/CAG
June 7, 2013



Sean Co, MTC

INTRODUCTION AND BACKGROUND

Welcome

- Second round of Complete Streets Workshops
- Policy workshops on OBAG requirement (Fall 2012)
- Focus on implementation

Agenda

10:00 to 11:00 a.m.
- Introduction and background
- Techniques and elements of Complete Streets

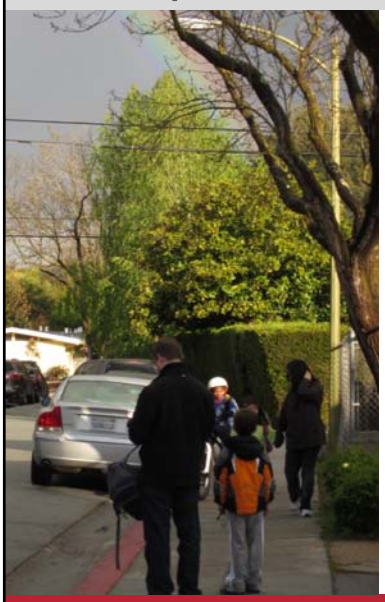
Break (10 minutes)

11:10 a.m. – 12:30 p.m.
- Local success story
- Facilitated discussion on implementation challenges
- Report back by groups
- Evaluating success
- Questions and wrap-up

OBAG Complete Streets Requirements

Requirement	Deadline	Funding
Complete Streets resolution, or General Plan update	January 31, 2013	FY 2013-14 through 2015-16
General Plan update complies with 2008 Complete Streets Act	TBD	OBAG Cycle following 2015-2016

Today's Goals



Arroyo Avenue, San Carlos

- Techniques to implement Complete Streets
- Learn from peers – case study
- We want to hear from you
  - What are barriers to implementing projects?
  - What can MTC do to help?

What are Complete Streets?

Complete Streets are safe, comfortable, and convenient for travel for everyone, regardless of age or ability – motorists, pedestrians, bicyclists, and public transportation riders.

How do we do this?

7

Brett Hondorp, Alta Planning & Design

TECHNIQUES AND ELEMENTS OF COMPLETE STREETS

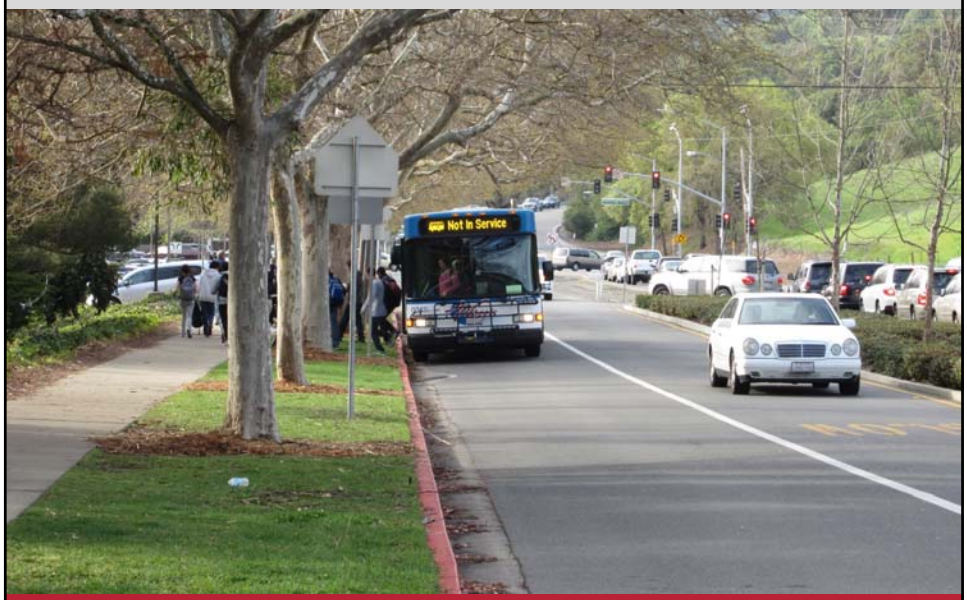
STREET CONTEXT

Street Transect, Duany Plater-Zyberk and Company

Urban Complete Streets

Valencia Street, San Francisco

Suburban Complete Streets



Foothill Road, Pleasanton

Rural Complete Streets

El Camino Real, Atherton

Commercial Complete Streets

E 3rd Street and Ellsworth Avenue, San Mateo

Residential Complete Street

Milvia Street, Berkeley

Park Victoria Drive, Milpitas

Results of Designing for Peak Hour*

**Peak hour occurs ~2hrs/day, 5 days/week, or 6% of the time*

Cesar Chavez Street, San Francisco *Source: Mike Sallaberry, SFMTA*

Designing for Peak Motor Vehicle Flow

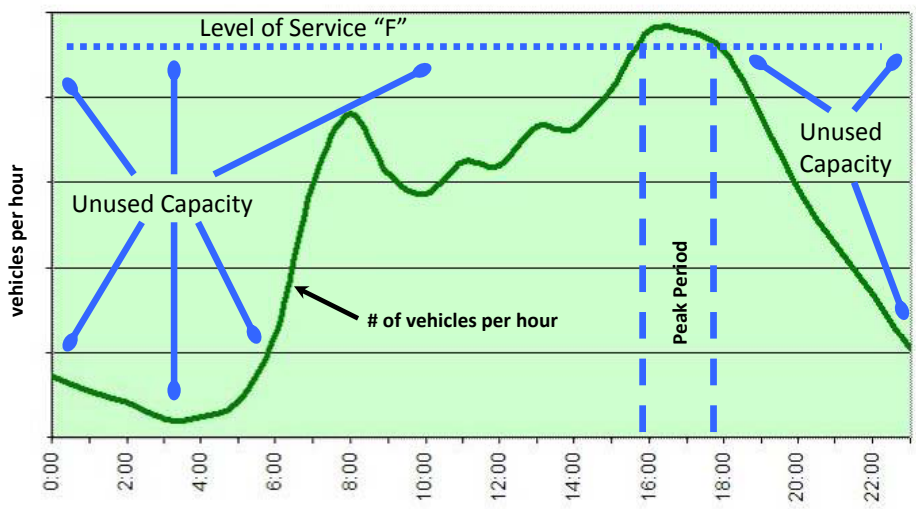


Diagram by Mike Sallaberry, SFMTA

Cesar Chavez Road Diet

Richmond District, San Francisco *Source: Mike Sallaberry, SFMTA*

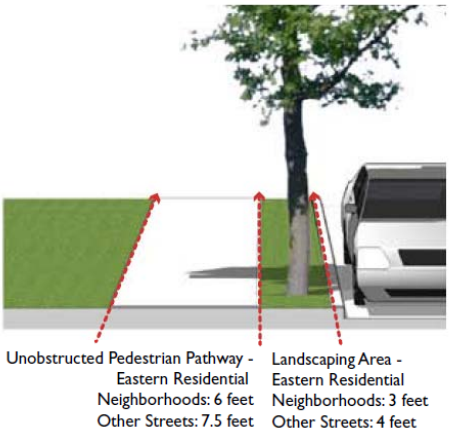
Cesar Chavez Road Diet

Duboce Triangle, San Francisco *Source: Mike Sallaberry, SFMTA*

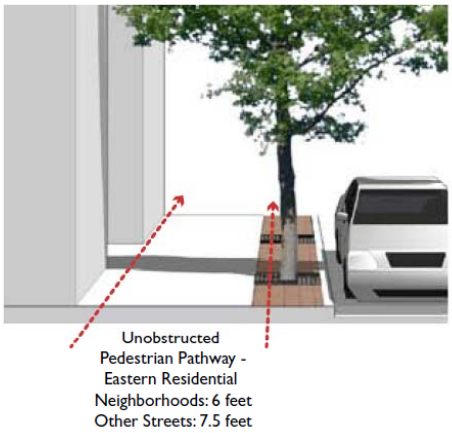
PEDESTRIAN FACILITIES

Crescent Plaza, Pleasant Hill

Sidewalk Widths



Maintain an unobstructed pedestrian pathway and landscaping area.



If vegetative strips are infeasible, tree grates may be constructed as a last resort to accommodate up to six inches of the pedestrian pathway minimum.

Emeryville Design Guidelines (2010)

Curb-Tight Sidewalk

Wrentham Drive, Vacaville

Sidewalk with Buffer

Sunnyside Street, Oakland

Sidewalk in Commercial District

Castro Street, Mountain View

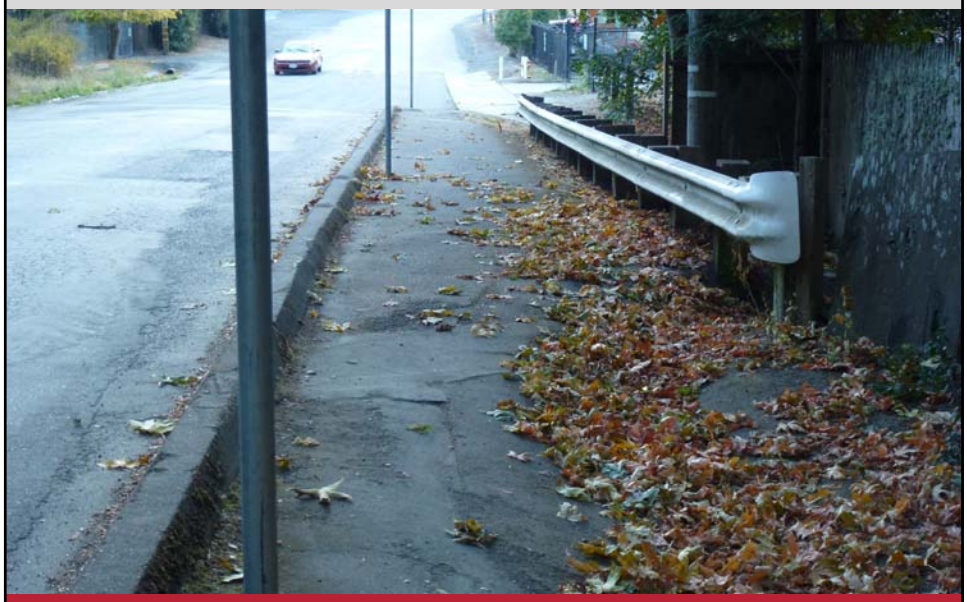
Curb Ramps

Parallel curb ramps with yellow detection & diagonal curb ramp with red detection

Shoulders

Indian Valley Road at Hill Road, Novato

Shoulders

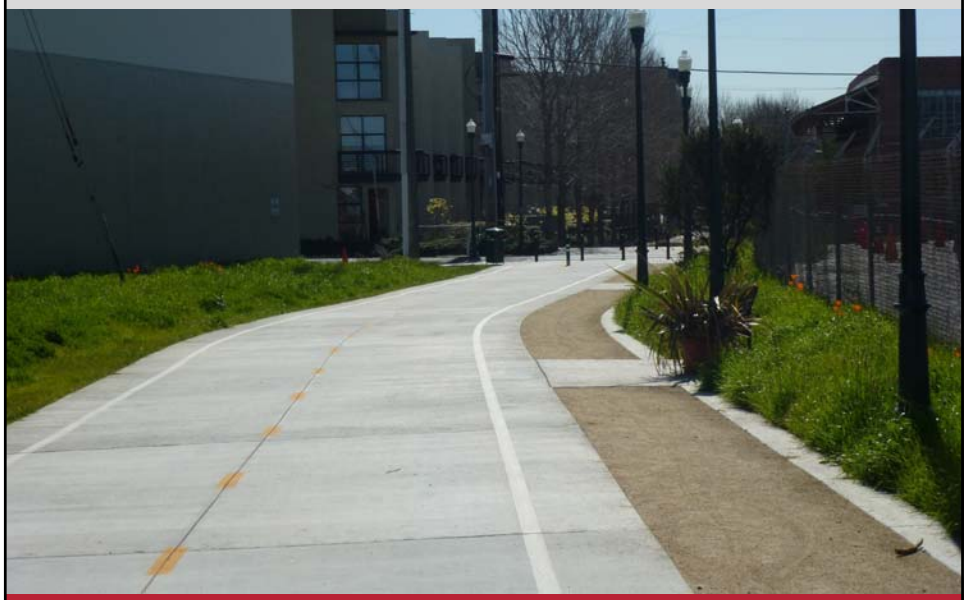


Entrada Way, La Honda

Rural Trails

McCarty Ranch Trail, San Jose

Urban Trails



9th Street Trail, Emeryville

Bridges and Tunnels

I-80 Bike/Ped Bridge, Berkeley (left) and Cal Park Tunnel, Marin (right)

BICYCLE FACILITIES

Class III Bike Routes
Parking
Door Zone
7.5'
10'
11'
Market Street, San Francisco

Green-Backed "Sharrows"

Greenfield Avenue, San Anselmo

Bicycle Boulevards

Berkeley

Class II Bike Lanes

Emeryville

Buffered Bike Lanes

Sir Francis Drake Boulevard, Fairfax

Buffered Bike Lanes

San Jose *Source: Silicon Valley Bicycle Coalition*

Buffered Bike Lanes

Veteran's Boulevard, Redwood City *Source: Silicon Valley Bicycle Coalition*

Cycle Tracks (Parking Protected)

JFK Drive, San Francisco

Bike Lane Left of Right Turn Lane

Arastradero Road, Palo Alto

Intersection Markings

9th Street at Berkeley Bowl, Berkeley

Bike Boxes

14th Street and Folsom Street, San Francisco

Bike Boxes

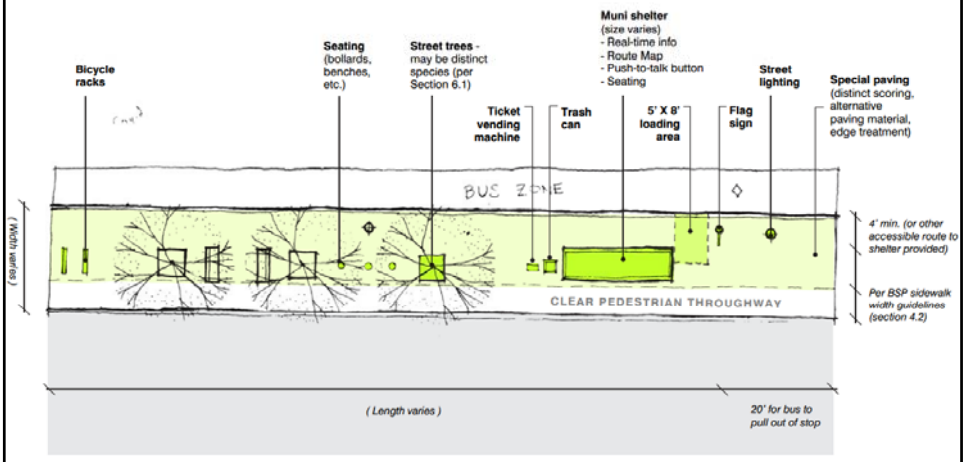
NACTO Urban Bikeway Design Guide

Bicycle Parking

Bicycle Parking Corrals
Ramona Street, Palo Alto

BUS
TRANSIT TREATMENTS

Generalized Transit Stop Layout

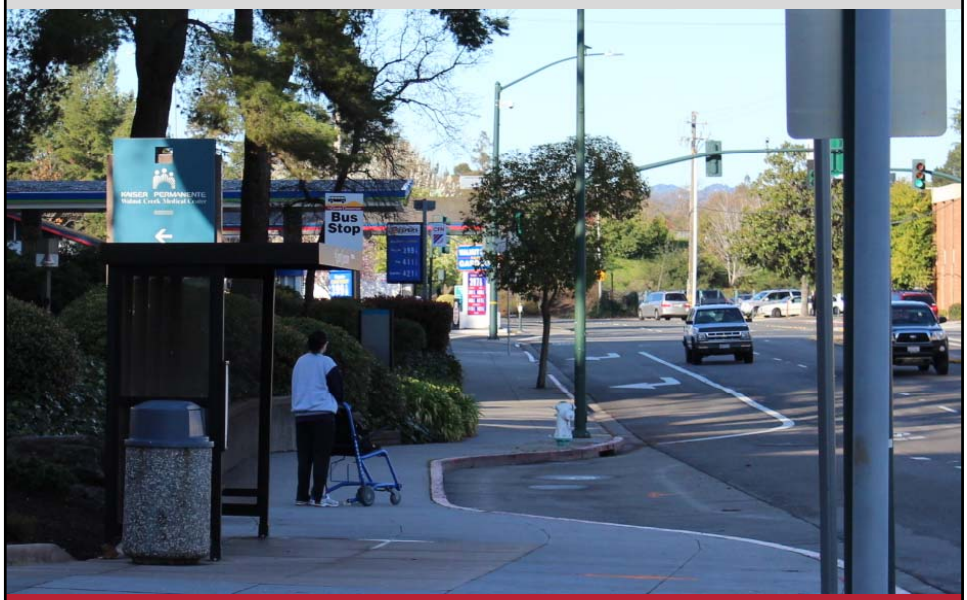


San Francisco Better Streets Guide

Bus Shelters

MUNI bus shelters and real-time information signs, San Francisco

Bus Bays



Olympic Boulevard, Contra Costa

Bus Bulbs

Chicago, IL

Bus Bulbs

El Camino Avenue at California Avenue *Source: El Camino Real Grand Boulevard Initiative*

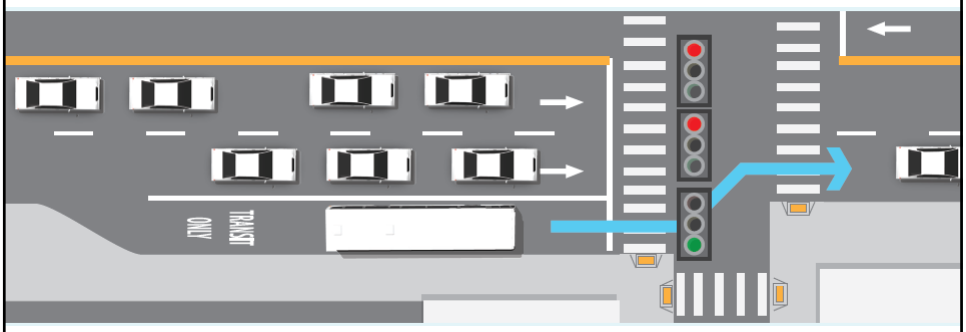
Bus Rapid Transit

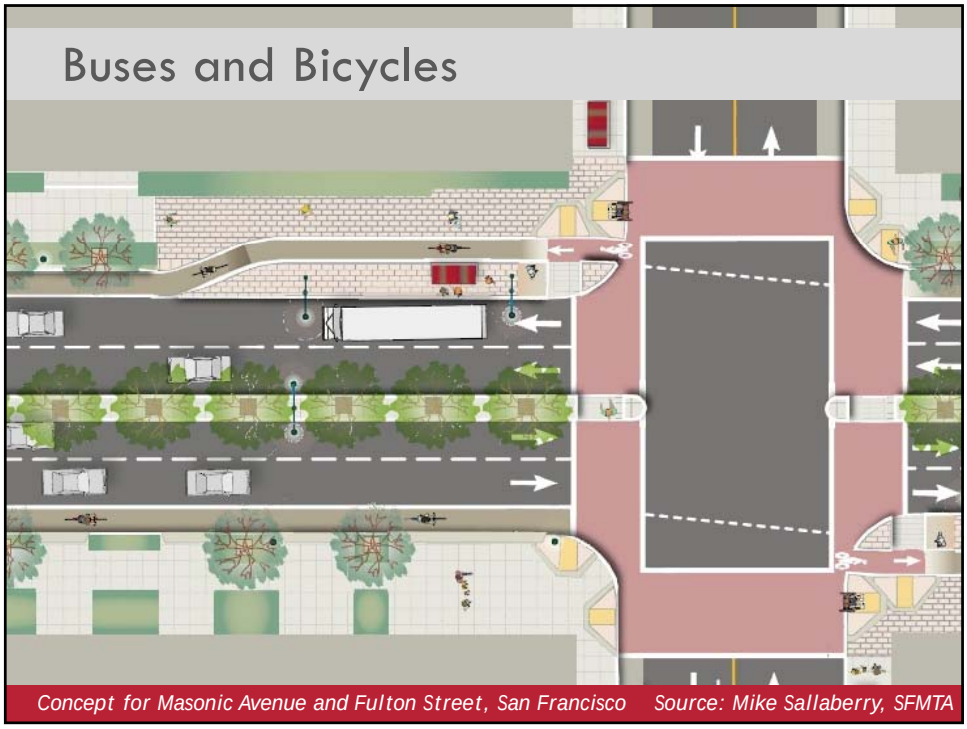
Grand Boulevard Multimodal Transportation Corridor Plan, El Camino Real

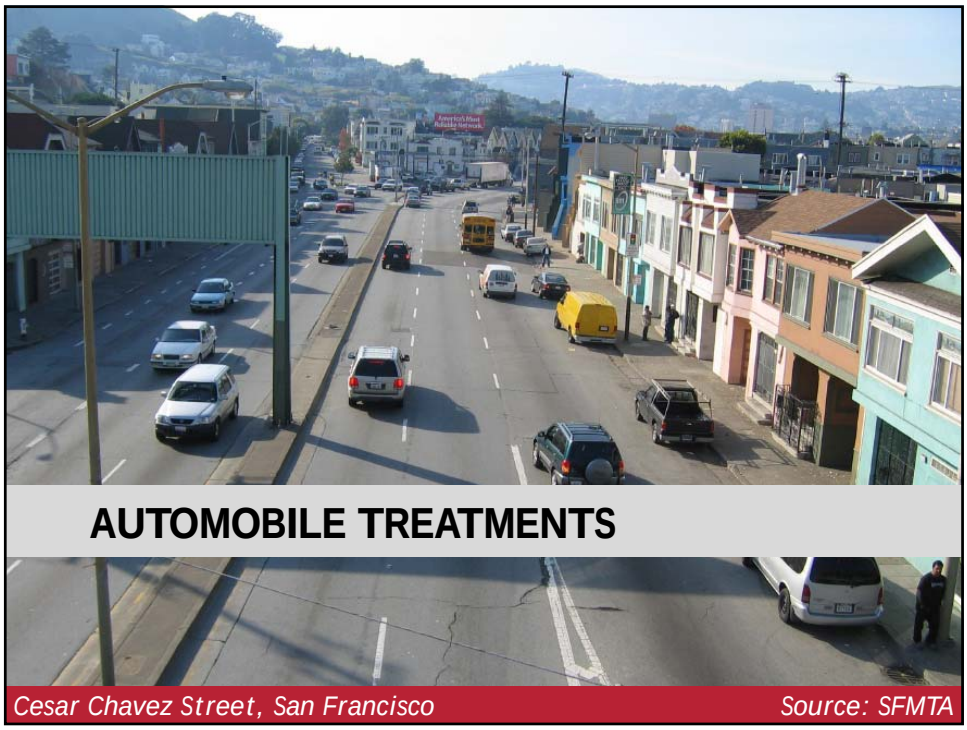
Transit Signal Priority

MUNI, San Francisco

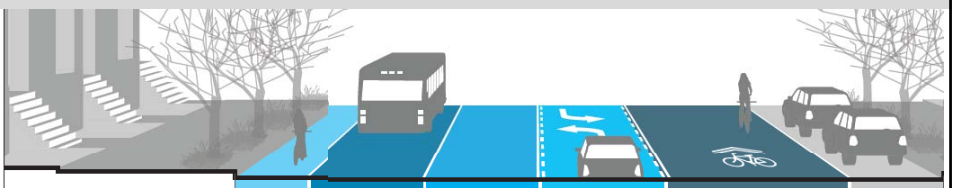
Transit Signal Priority – Queue Jump




Buses and Bicycles
Concept for Masonic Avenue and Fulton Street, San Francisco
Source: Mike Sallaberry, SFMTA


AUTOMOBILE TREATMENTS
Cesar Chavez Street, San Francisco
Source: SFMTA

Lane Width

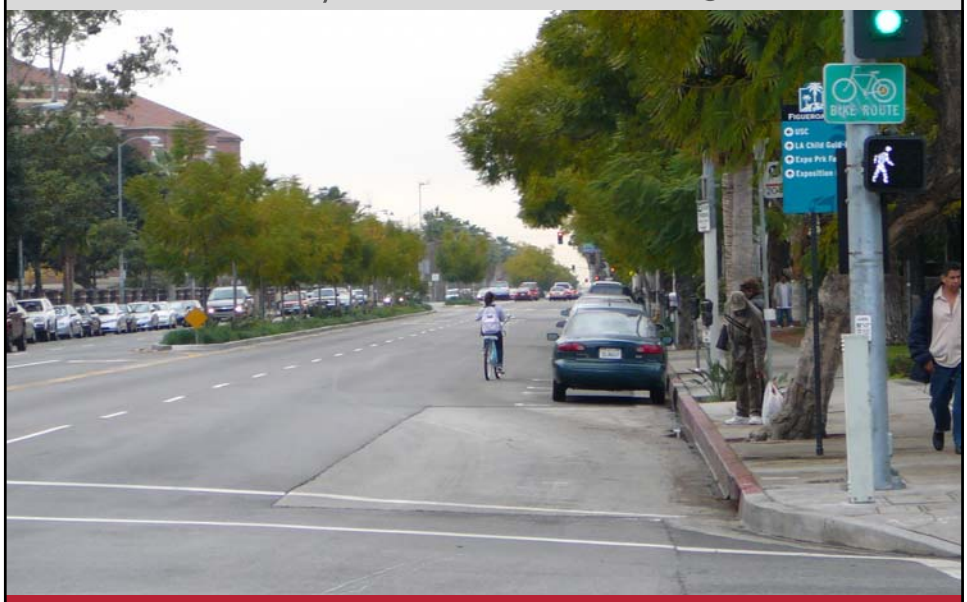


Street Type → FHA Classification → Lane Width by FHA Classification

Street Type	FHA Classification	Bike lane	Transit lane	Vehicle lane	Left Turn lane	Special lanes	Parking lane
Downtown Commercial Downtown Mixed Use Neighborhood Main	Arterial	4' 5' ● if adjacent to parking 5' if adjacent to curb	11'	10' ★ 12' if adjacent to parking 12' if adjacent to curb	10' ★	12' ⊙ bike + bus lane 12' peak hour restricted parking lane	7' ★
Neighborhood Connector Neighborhood Residential Industrial Street	Collector	4' 5' ● if adjacent to parking 4' if adjacent to curb	N/A	10' 10' if adjacent to parking 10' if adjacent to curb	10' ★	N/A 12' peak hour restricted parking lane	7' ★
Shared Street Parkway Boulevard	Local	4' 5' ● if adjacent to parking 4' if adjacent to curb	N/A	10' 10' if adjacent to parking 10' if adjacent to curb	N/A	N/A N/A	7' ★

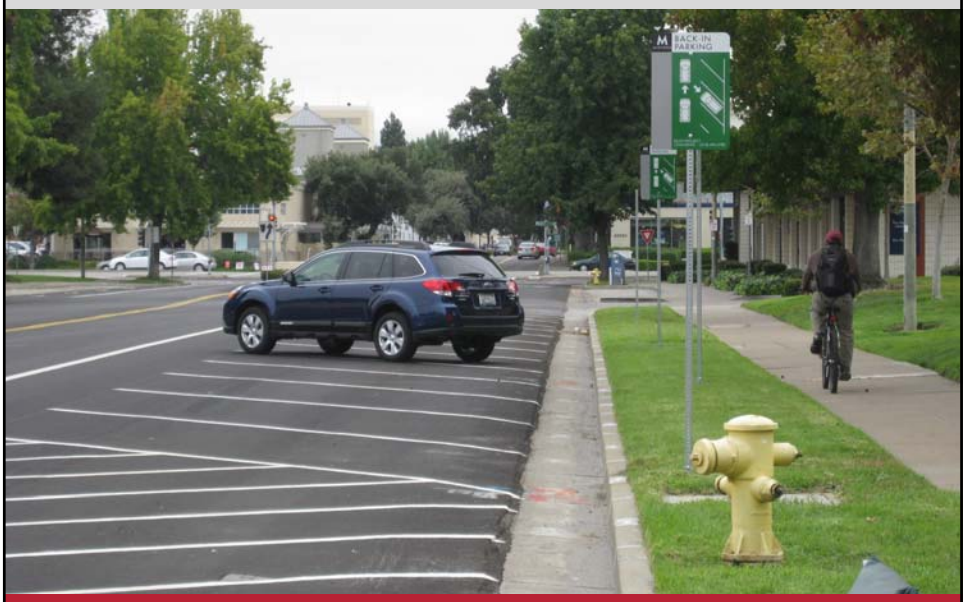
Source: Boston Complete Streets Guidelines

Wide Lanes/Sharrows in Freight Zones



Vermont Avenue, Los Angeles

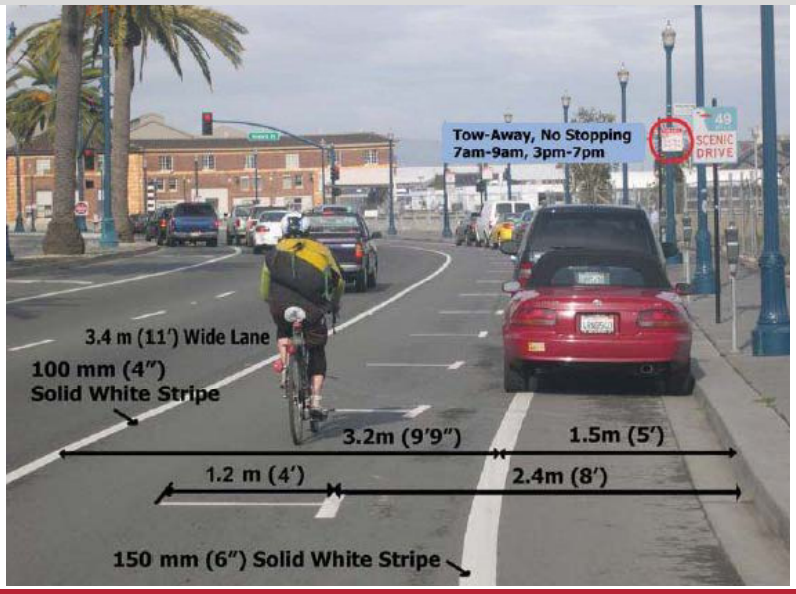
Back-In Angled Parking



Loading Zones

Fairmount Ave, El Cerrito

Peak Time Restricted Parking Lanes



Embarcadero, San Francisco *Source: SFMTA*

INTERSECTIONS

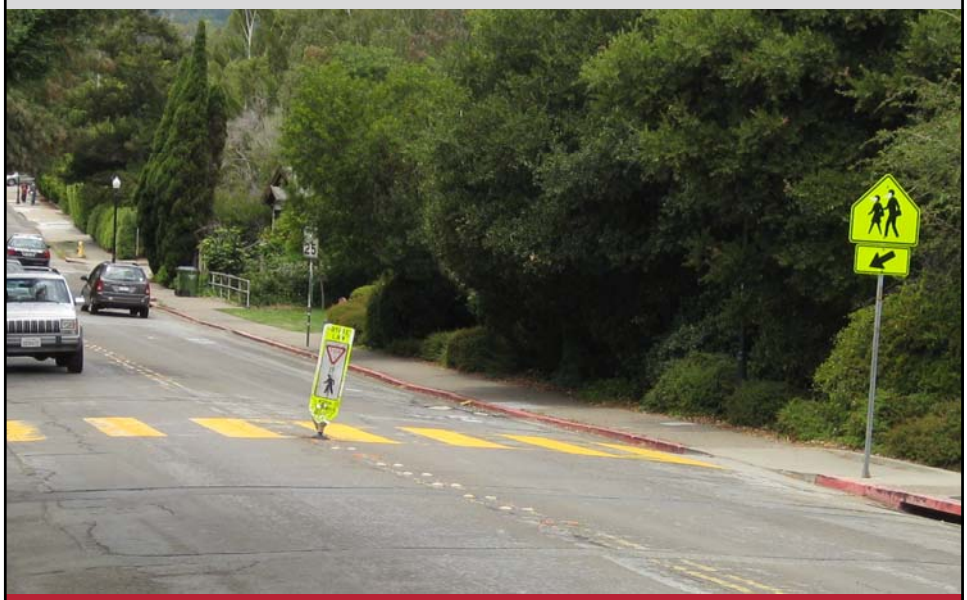
Marked Crosswalks

40th Street and Harlan Street, Emeryville

High-Visibility Crosswalks

Shellmound Street and Bay Street, Emeryville

School Crossings



E Blithedale Avenue, Mill Valley

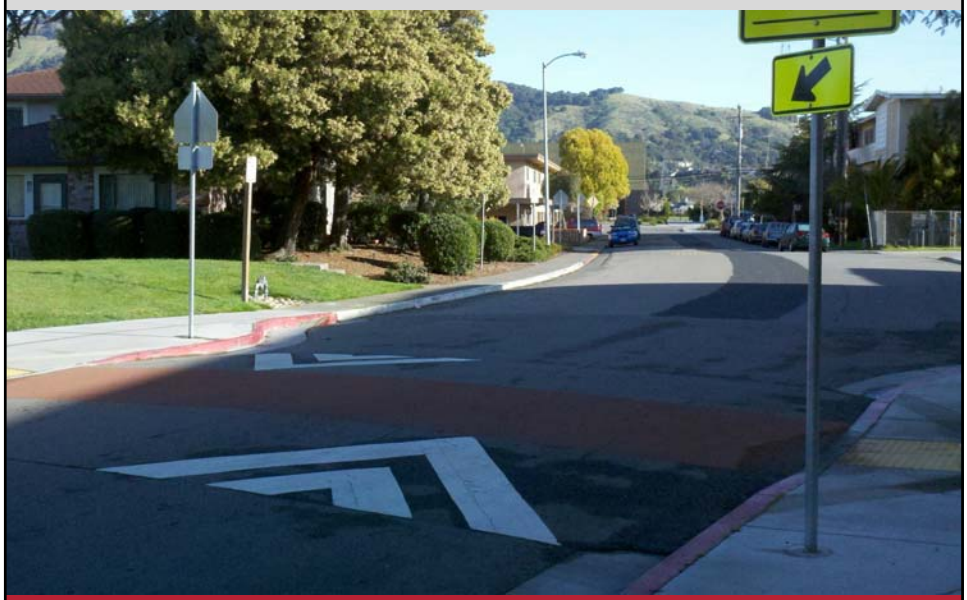
In-Street Yield Signs

El Carmelo Road and Bryant Street, Palo Alto

Textured Crosswalks

Shellmound Street, Emeryville

Raised Crosswalks



Bahia Way, San Rafael

Midblock Crossings

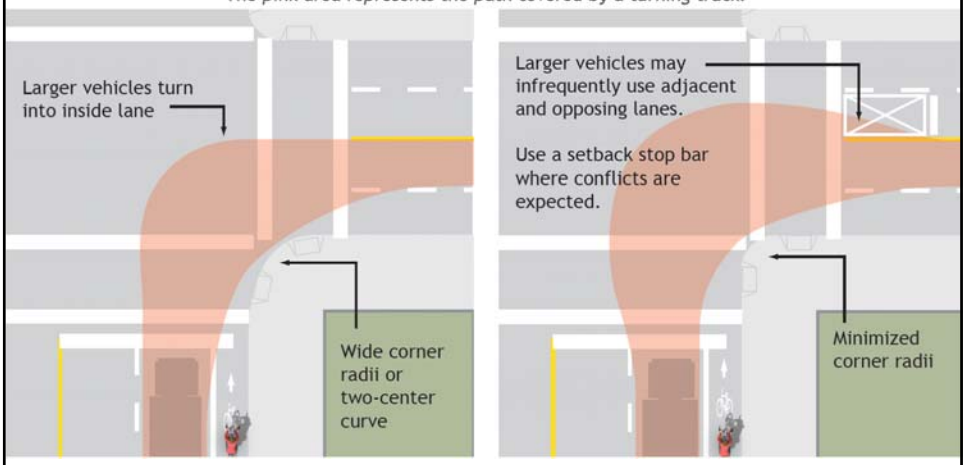
Doyle Street Greenway, Emeryville

Reducing Turning Speeds

Vernon Street and Lee Street, Oakland

Accommodating Trucks

The pink area represents the path covered by a turning truck.



Beacons and RRFBs

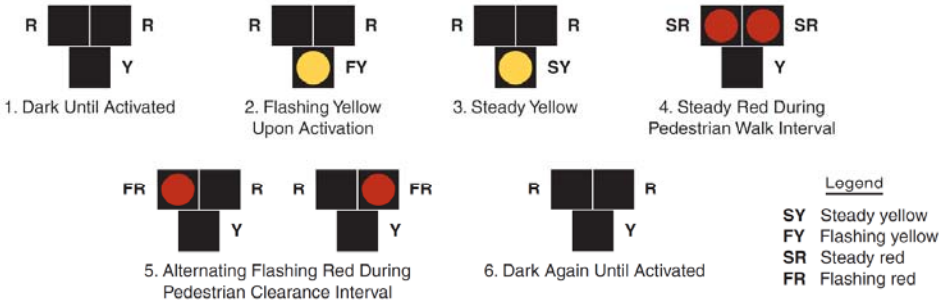
Adeline Street, Berkeley

Pedestrian Hybrid Beacon

Sacramento

Pedestrian Hybrid Beacon

Figure 4F-3. Sequence for a Pedestrian Hybrid Beacon



California MUTCD 2012 Edition

Medians

Cesar Chavez Street, San Francisco - Median Design Option

Countdown Signal

Signal Detection

Leading Pedestrian Interval

E Blithedale Ave & Lomita Dr, Mill Valley

All-Pedestrian Phase
9th Street & Webster Street, Oakland

TRAFFIC CALMING

Driver Speed Feedback Signs

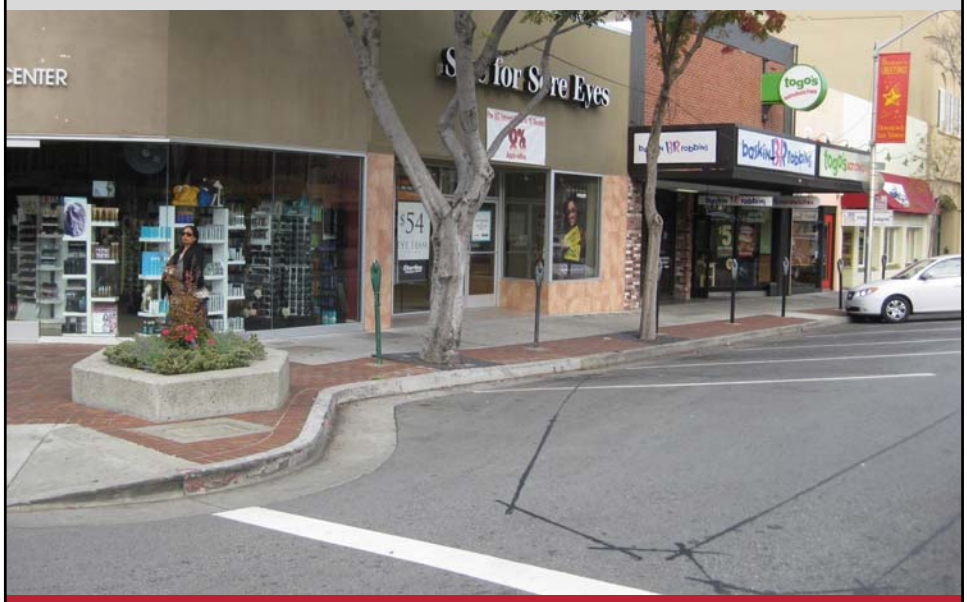
Mill Valley

Speed Humps

Speed Cushions

San Francisco

Bulb-outs



3rd Avenue and San Mateo Drive, San Mateo

Neckdowns

Doyle Street, Emeryville

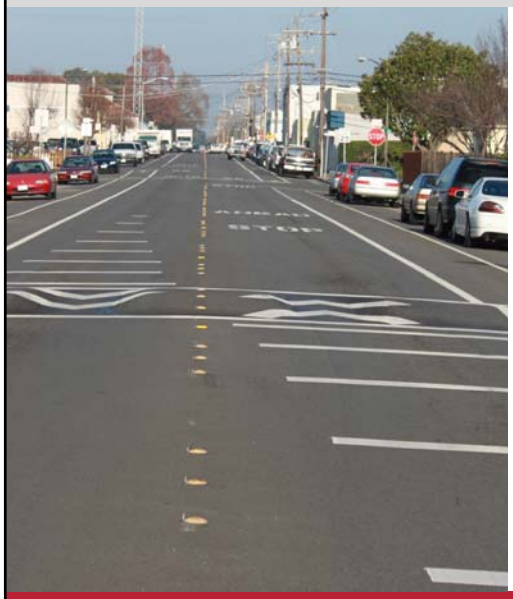
Traffic Circles

9th Street Bicycle Boulevard, Berkeley

Modern Roundabout

Tiburon Boulevard, Tiburon

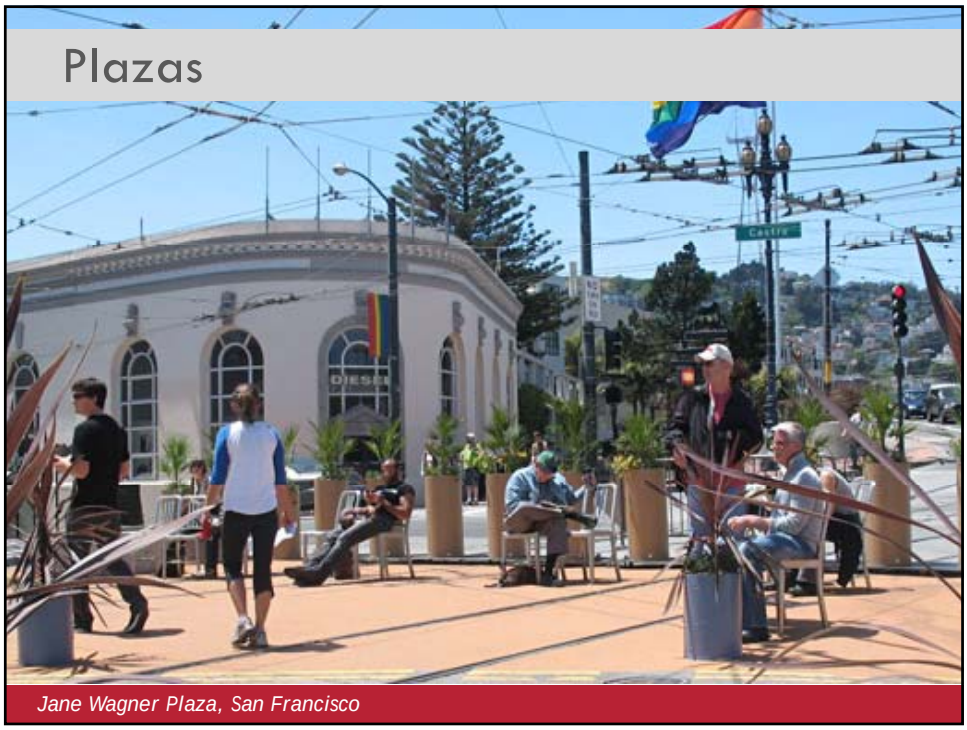
Traffic Calming Treatment Selection



- Work with emergency services providers to determining minimum lane widths & radii
- Monitor adjacent streets for increased use
- Determine appropriate treatment for street type & anticipated users

Claremont Street, San Mateo

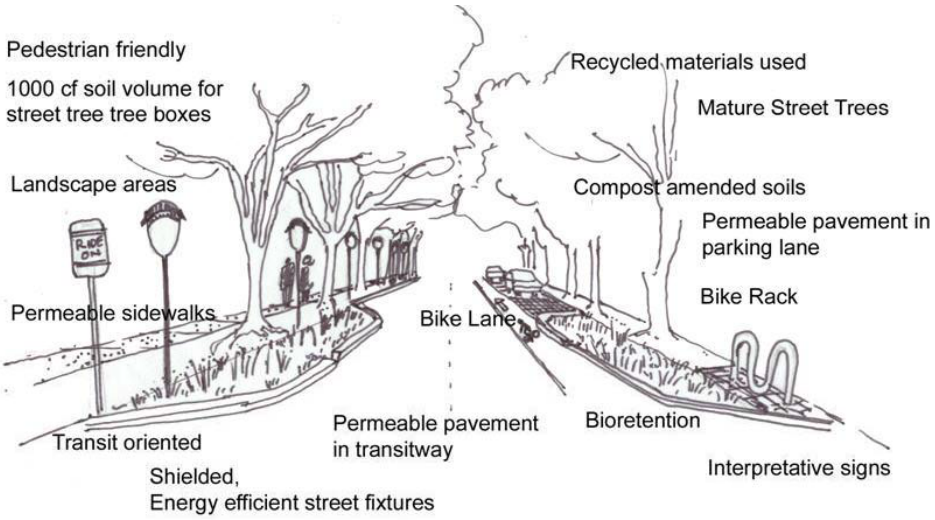
PLACEMAKING
Valencia Street, San Francisco


Plazas
Jane Wagner Plaza, San Francisco

Open Streets

Emerson Street Photosimulation, Palo Alto Bicycle + Pedestrian Transportation Plan

Green Streets



Bioswale Sidewalk Buffer

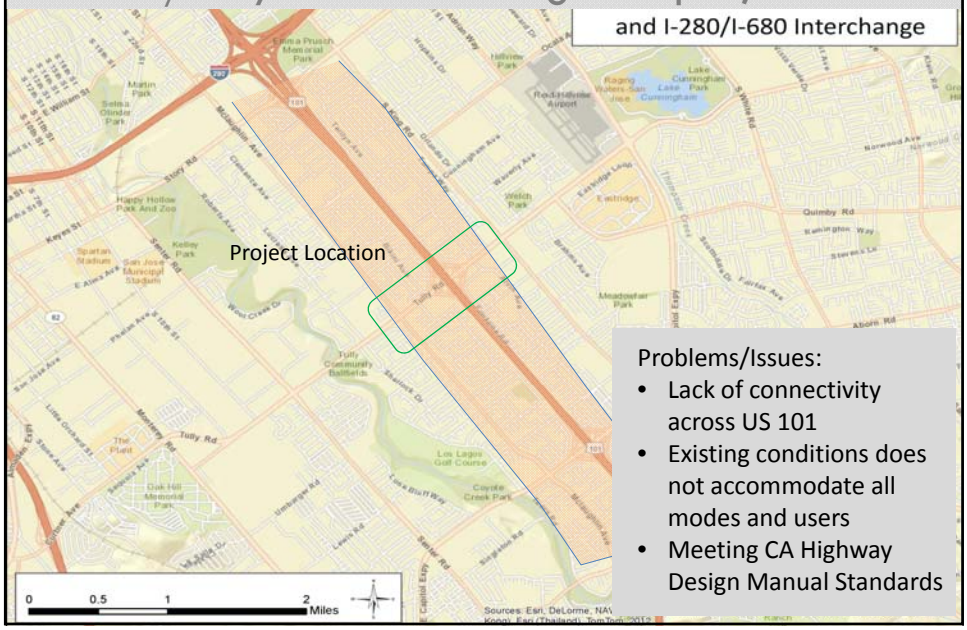
BREAK – 10 MINUTES

Local Case Study

US 101/TULLY RD. INTERCHANGE PROJECT

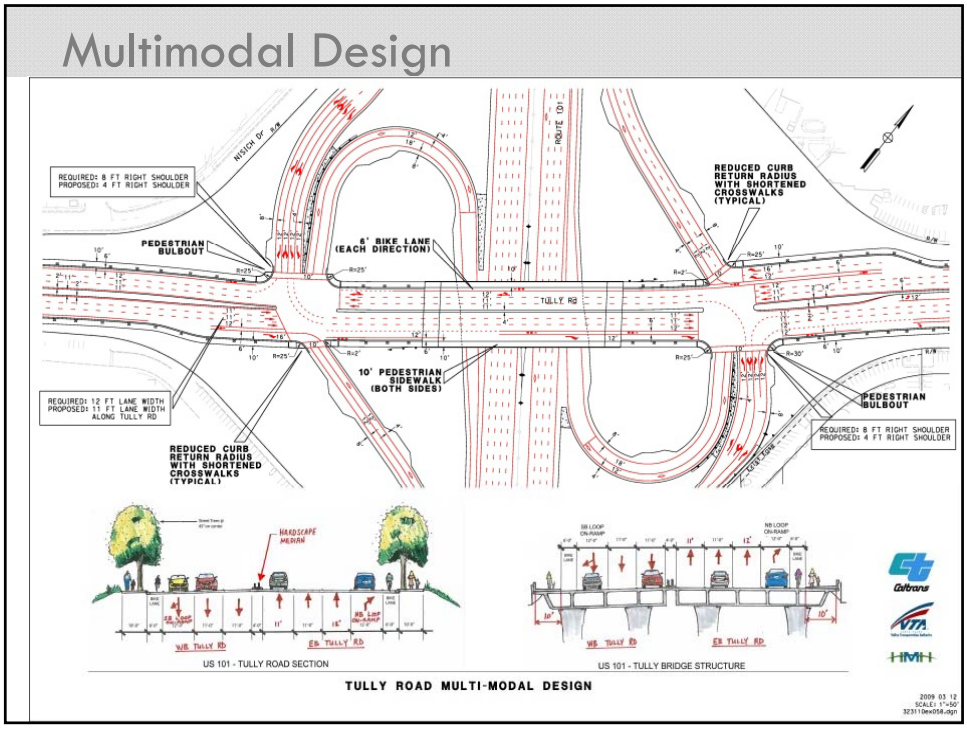
US 101/Tully Rd. Interchange Project, San Jose

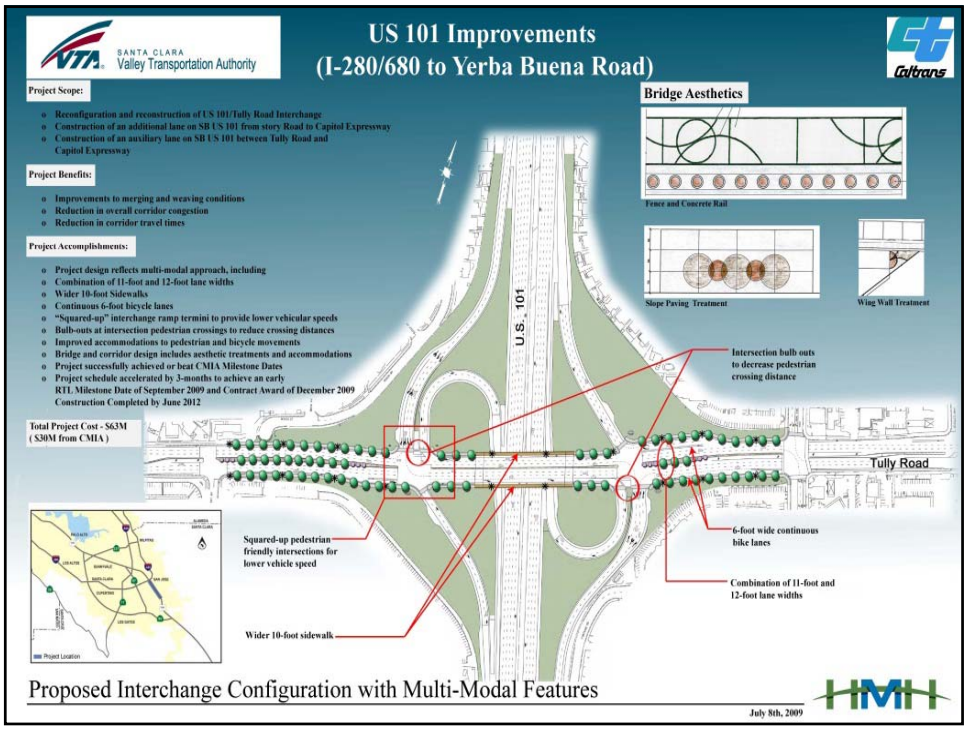
and I-280/I-680 Interchange



Problems/Issues:

- Lack of connectivity across US 101
- Existing conditions does not accommodate all modes and users
- Meeting CA Highway Design Manual Standards


Multimodal Design
REQUIRED: 8 FT RIGHT SHOULDER
PROPOSED: 4 FT RIGHT SHOULDER
PEDESTRIAN BULBOUT
6' BIKE LANE (EACH DIRECTION)
REDUCED CURB RETURN RADIUS WITH SHORTENED CROSSWALKS (TYPICAL)
TULLY RD
10' PEDESTRIAN SIDEWALK (BOTH SIDES)
REQUIRED: 12 FT LANE WIDTH
PROPOSED: 11 FT LANE WIDTH ALONG TULLY RD
REDUCED CURB RETURN RADIUS WITH SHORTENED CROSSWALKS (TYPICAL)
PEDESTRIAN BULBOUT
REQUIRED: 8 FT RIGHT SHOULDER
PROPOSED: 4 FT RIGHT SHOULDER
HARDSCAPE MEDIAN
WB TULLY RD
EB TULLY RD
US 101 - TULLY ROAD SECTION
US 101 - TULLY BRIDGE STRUCTURE
TULLY ROAD MULTI-MODAL DESIGN


SANTA CLARA Valley Transportation Authority
US 101 Improvements
(I-280/680 to Yerba Buena Road)
Caltrans
Project Scope:
Reconfiguration and reconstruction of US 101/Tully Road Interchange
Construction of an additional lane on SB US 101 from story Road to Capitol Expressway
Construction of an auxiliary lane on SB US 101 between Tully Road and Capitol Expressway
Project Benefits:
Improvements to merging and weaving conditions
Reduction in overall corridor congestion
Reduction in corridor travel times
Project Accomplishments:
Project design reflects multi-modal approach, including
Combination of 11-foot and 12-foot lane widths
Wider 10-foot Sidewalks
Continuous 6-foot bicycle lanes
"Squared-up" interchange ramp termini to provide lower vehicular speeds
Bulb-outs at intersection pedestrian crossings to reduce crossing distances
Improved accommodations to pedestrian and bicycle movements
Bridge and corridor design includes aesthetic treatments and accommodations
Project successfully achieved or beat CMIA Milestone Dates
Project schedule accelerated by 3-months to achieve an early RTL Milestone Date of September 2009 and Contract Award of December 2009
Construction Completed by June 2012
Total Project Cost - $63M ($30M from CMIA)
Bridge Aesthetics
Fence and Concrete Rail
Slope Paving Treatment
Wing Wall Treatment
U.S. 101
Tully Road
Intersection bulb outs to decrease pedestrian crossing distance
6-foot wide continuous bike lanes
Combination of 11-foot and 12-foot lane widths
Squared-up pedestrian friendly intersections for lower vehicle speed
Wider 10-foot sidewalk
Project Location
Proposed Interchange Configuration with Multi-Modal Features
July 8th, 2009
HMH

US 101/Tully Rd

Before Improvements – 2010

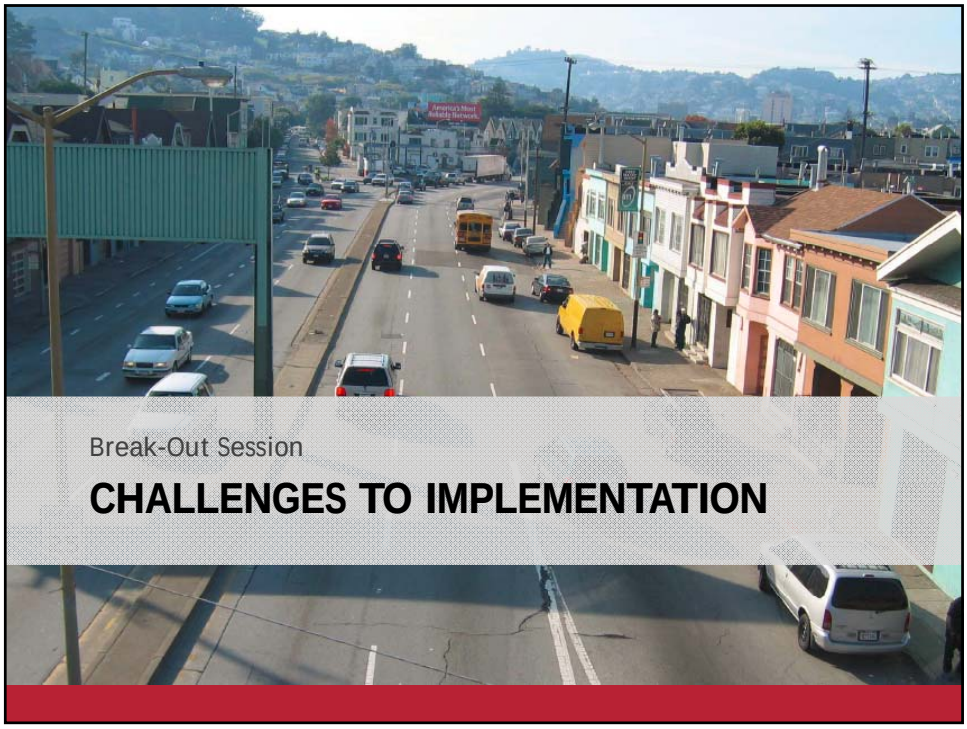
Image: Skycomp Inc., VTA 2010 Monitoring & Conformance Report

After Improvements - 2012

Image: Sharpshots 10/2012

Outcome

- Multimodal design
- Additional 1 year design exception process (Standard 12’ lanes + 8’ shoulders vs. 11’ lanes + 0’ shoulders with wide sidewalks)
- Maintenance/ Indemnity agreement between City of San Jose and Caltrans

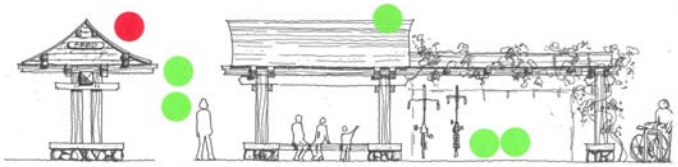

Break-Out Session
CHALLENGES TO IMPLEMENTATION

David Parisi
OUTREACH, EVALUATING SUCCESS, & LOS

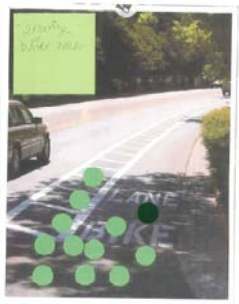
Public Outreach

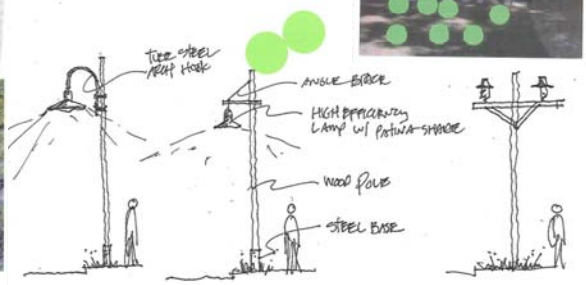
- Problem locations
- Opportunities
- Land use and transportation interactions
- Tradeoff preferences

Design Preferences



TRANSIT SHELTER + COVERED BIKE PARKING CONCEPT



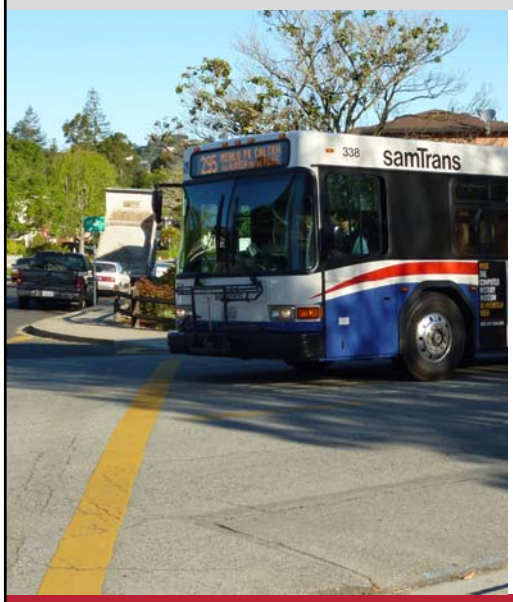


Outreach to Emergency Services

- Lane widths
- Medians
- Traffic calming
- Turning radius

Russell Street, Berkeley

Outreach to Transit Operators



- Bus stop design & access
- Transit routing
- Turning radius

Arroyo Avenue, San Carlos

Economic Benefits – Valencia Street, San Francisco

Sources:
Drennan, Emily. (2003). *Economic Effects of Traffic Calming on Urban Small Businesses*. Department of Public Administration, San Francisco State University. Available: www.sfbike.org/download/bikeplan/bikelanes.pdf
National Complete Streets Coalition and Local Government Comission. (2012). *It's a Safe Decision: Complete Streets in California*. Available: www.smartgrowthamerica.org/documents/cs/resources/cs-in-california.pdf
San Francisco Municipal Transportation Agency. (2000). *Valencia Street Bike Lanes: A One Year Evaluation*. Available: www.sfmta.com/cms/sfbikes/3172.html

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Economic Benefits – Arastradero Road, Palo Alto

Sources:
City of Palo Alto. (2004). *Charleston/Arastradero Road Corridor Plan*. Available: www.cityofpaloalto.org/gov/topics/projects/transit/charleston.asp
City of Palo Alto. (2008). *Charleston-Arastradero Corridor Trial Improvements Evaluation*. Available: www.cityofpaloalto.org/gov/topics/projects/transit/charleston.asp
City of Palo Alto. 2012 Parked Bicycle Counts at Gunn High, Terman Middle, and Briones Elementary schools

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Speeding decreased by 16%, while median speeds increased by 14%
Injury crashes fell by 26%
49% fewer commercial vacancies (compared to 5% more borough-wide)
74% of users prefer the new configuration
Protected bicycle path
Pedestrian plaza
Union Square, New York City
Measuring the Street: New Metrics for 21st Century Streets

20% increase in bus speeds
10% increase in bus ridership
71% increase in retail sales (at locally-based businesses, compared to 23% borough-wide)
Transit signal priority
Delivery windows (curb dedicated to trucks at key times)
Curbside red bus lanes
Fordham Road, New York City
Measuring the Street: New Metrics for 21st Century Streets

Level of Service

LEVELS OF SERVICE
for Multi-Lane Highways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		60	Highest level of service. Traffic flows freely with little or no restrictions on maneuverability. **No delays**
B		60	Traffic flows freely, but drivers have slightly less freedom to maneuver. **No delays**
C		60	Density becomes noticeable with ability to maneuver limited by other vehicles. **Minimal delays**
D		57	Speed and ability to maneuver is severely restricted by increasing density of vehicles. **Minimal delays**
E		55	Unstable traffic flow. Speeds vary greatly and are unpredictable. **Minimal delays**
F		<55	Traffic flow is unstable, with brief periods of movement followed by forced stops. **Significant delays**

Source: 2000 HCM, Exhibit 21-3, Speed-Flow Curves with LOS Criteria for Multi-Lane Highways

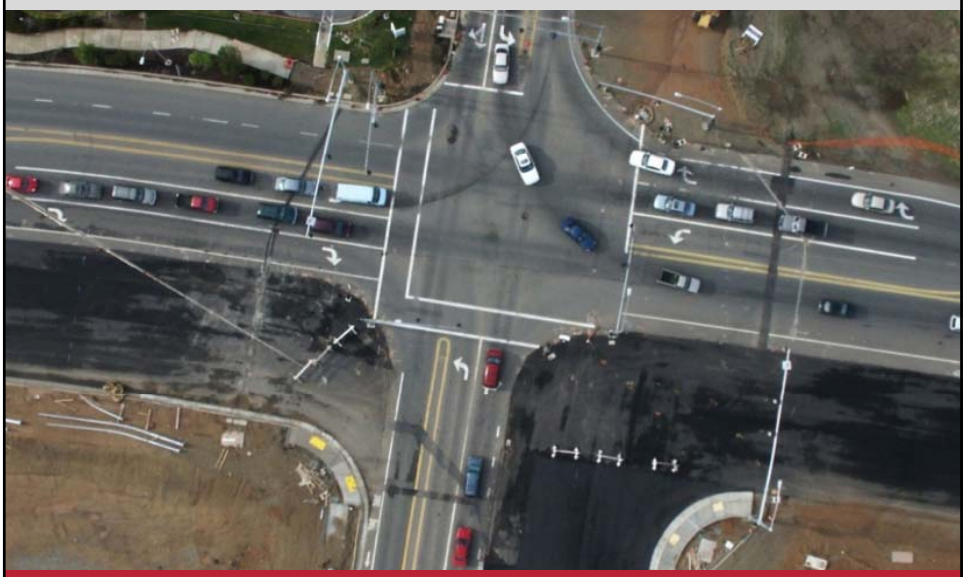
LEVELS OF SERVICE
Unsignalized Intersections
Four-Way Stop

Level of Service	Flow Conditions	Delay per Vehicle (seconds)	Technical Descriptions
A		<10	**Very short delays**
B		10-15	**Short delays**
C		16-25	**Minimal delays**
D		26-35	**Minimal delays**
E		36-50	**Significant delays**
F		>50	**Considerable delays**

Source: 2000 HCM, Exhibit 17-22, Level of Service Criteria for AWSC Intersections

LOS conventionally used to evaluate motor vehicle travel speed and delay

Multimodal Level of Service



Travelers may accept higher auto delays for increased convenience, comfort and improvements for other modes

MMLOS Guidelines

- Numerous guidelines recently developed or under development
- Methods vary from highly technical and data intensive to simpler with limited data needs

- CEQA grants local jurisdictions the authority to define impact measures and thresholds consistent with local policy…

  … constrained by State CEQA Guidelines and past practice

Previous San Jose Transportation Policy

- LOS "D" Standard
- Mitigation can impact pedestrian and bicycle facilities
- Not supportive of infill or transit-oriented development
- No Council "exemptions"

Source: John Brazil, San Jose

New San Jose Transportation Policy

- LOS "D" is Citywide goal with exceptions
- Mitigation required for significant LOS impacts (>1% change to LOS "E" and "F" intersections)
- Impacts to ped, bike, transit facilities considered "unacceptable" mitigation measures

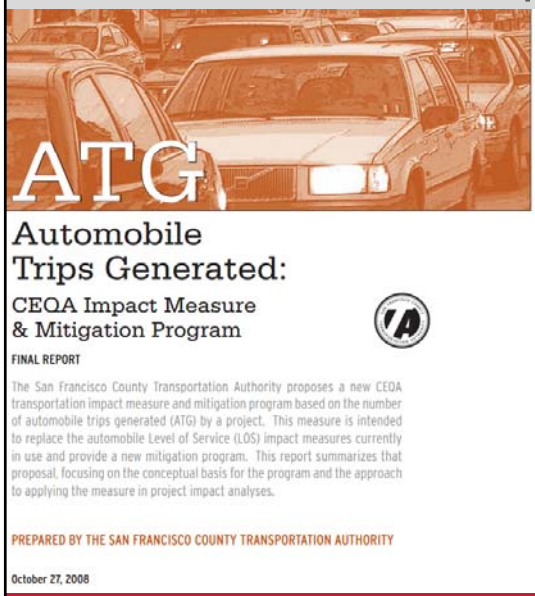
Source: John Brazil, San Jose

New San Jose Transportation Policy

- Supports higher density, mixed use and ped-friendly development for special planning areas designated in General Plan
- Preserve LOS D for existing suburban neighborhoods
- Links land development with transportation improvements

Source: John Brazil, San Jose

San Francisco Auto Trips Generated



- Replace LOS with ATG to:
  - Capture environmental impacts
  - Reflect City's policies
  - Improve efficiency of CEQA review process
  - Allow higher density to accommodate future growth

Source: www.sfcta.org/sites/default/files/content/ATG_Report_final_lowres.pdf

LOS does not reflect City Policies

Providing a pedestrian crossing here would increase delays for right-turning drivers, potentially triggering significant LOS impacts...

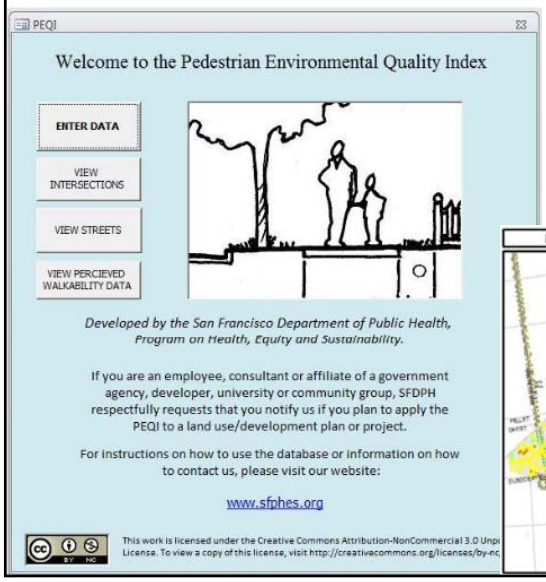
Minimizing automobile delays takes precedence over minimizing pedestrian delays.

SFMTA

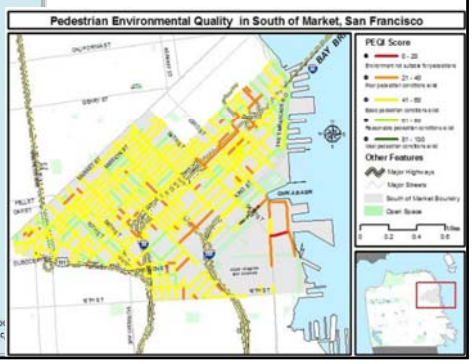
San Francisco ATG Recommendation

- Per-Auto Trip Generated (ATG) Impact Measure
  - Each car trip added by project contributes to impact
  - Projects that do not generate net new automobile trips have no impact
- Transportation Impact Mitigation Fee Program (TIMF)
  - Project sponsors pay per-trip impact mitigation fee
  - Fee revenues fund actions that help reduce new automobile trip making

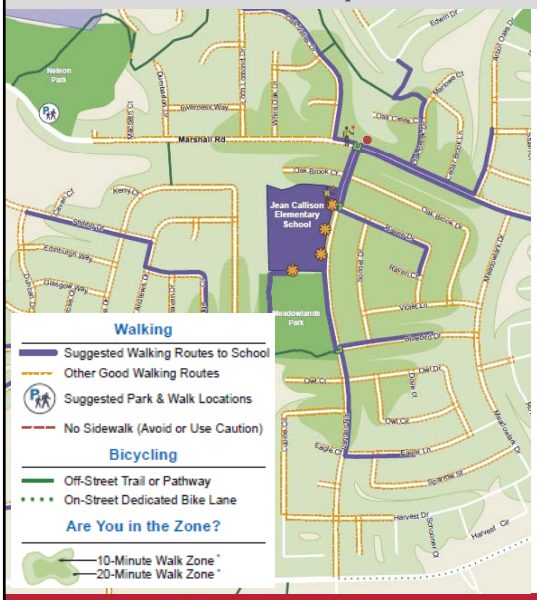
PEQI and BEQI



- SF Dept. of Public Health
- Street elements assigned value based on lit review and survey of planners
- Provides segment and intersection scores



Solano County Safe Routes to Schools

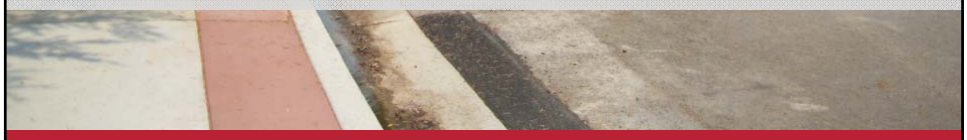


- Sidewalk criteria:
  - Type
  - Buffer
  - # Travel lanes
  - Condition
  - Obstructions
- Crosswalk criteria:
  - Type
  - Traffic control
  - Curb ramps
  - Crossing guards
  - Median

Source: Solano County Safe Routes to School

Thank You!

QUESTIONS & WRAP UP



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  415.388.8978

MTC Complete Streets Implementation Workshop

One Bay Area Grant Resources

- OBAG Website: www.mtc.ca.funding/onebayarea/
- Priority Development Areas: www.bayareavision.org/initiatives/prioritydevelopmentareas.html

Design Guidelines & Standards

General Information

- Caltrans *Draft II Highway Design Manual – Complete Streets*: www.dot.ca.gov/hq/oppd/drafthdm/index.htm
- Caltrans *Main Streets: Flexibility in Design & Operations*: www.dot.ca.gov/hq/oppd/context/main-streets-flexibility-in-design.pdf
- AARP Public Policy Institute *Planning Complete Streets for an Aging America*: assets.aarp.org/rgcenter/ppi/liv-com/2009-12-streets.pdf
- IMCA *Putting Smart Growth to Work in Rural Communities*: http://icma.org/en/icma/knowledge_network/documents/kn/Document/301483/Putting_Smart_Growth_to_Work_in_Rural_Communities

Model Guidelines

- Los Angeles County *Model Design Manual for Living Streets*: www.modelstreetdesignmanual.com/
- MTC Regional Pedestrian Committee *Pedestrian Safety Resource Guide* (2004).www.mtc.ca.gov/planning/bicyclespedestrians/PEDSAFETYRESOURCEGUIDE.doc
- VTA *Bicycle Technical Guidelines* (2012) www.vta.org/bike_information/library/btg/btg_dec_2012_update2012.pdf
- San Diego *Complete Streets Resource Toolkit*: www.sacog.org/complete-streets/toolkit/START.html
- San Francisco *Better Streets Plan*: www.sf-planning.org/ftp/BetterStreets/index.htm

METROPOLITAN TRANSPORTATION COMMISSION alta Parisi TRANSPORTATION CONSULTING