Project Purpose

Discuss design options for enhancing safety for residents, visitors, and commuters on Farm Hill Boulevard
Agenda

• Farm Hill Boulevard today
• Opportunities for Farm Hill Boulevard
• Farm Hill Boulevard “tomorrow”
Project Motivation

- Community requests to increase safety
  - Reduce speeding
  - Roy Cloud walking school buses
  - Difficulty exiting driveways and side streets
  - Parked cars being sideswiped
Reduce Speeding

• Vast majority of cars on Farm Hill are speeding

<table>
<thead>
<tr>
<th>Street segment</th>
<th>Speed limit</th>
<th>Average speed*</th>
<th>% exceeding speed limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eden Bower to Lonesome Pine</td>
<td>35 mph</td>
<td>47 mph</td>
<td>93%</td>
</tr>
<tr>
<td>Emerald Hill to Glennan</td>
<td>35 mph</td>
<td>38 mph</td>
<td>43%</td>
</tr>
<tr>
<td>McGarvey to Jefferson</td>
<td>35 mph</td>
<td>40 mph</td>
<td>72%</td>
</tr>
<tr>
<td>Jefferson to Alameda de las Pulgas</td>
<td>30 mph</td>
<td>35 mph</td>
<td>65%</td>
</tr>
</tbody>
</table>

* Average of 85th percentile speed for both directions of traffic
Reduce Speeding

- Unsafe speed was the most common cause of injury crashes

### Injury Collisions by Primary Collision Factor (n=27)

- 41% Unsafe speed
- 22% Improper turning
- 15% Under the influence
- 7% Auto right-of-way
- 4% Unsafe starting or backing
- 11% Other

Source: TIMS. Crashes within 100' of Farm Hill Boulevard between Woodhill Drive and Alameda de las Pulgas, from January 1, 2006 through December 31, 2010.
Walking School Buses

Odds of Pedestrian Death In Vehicle Collisions

- 5% at 20 mph
- 45% at 30 mph
- 85% at 40 mph

Percent of SMC Residents who are Overweight/Obese

Walking School Buses

- Few crosswalks with traffic signals or stop signs
Walking School Buses

• Adding stop signs
  • Stop signs control the flow of traffic, not the speed

All traffic required to stop whether or not people want to cross
• Average delay in AM is 30s per vehicle at Emerald Hill
• Capacity impact – stop sign vs. 2 to 1 lane

Source: SFMTA.com/calming
Getting on/off Farm Hill

- From driveways and side streets left-turns are tricky – look for gaps in two lanes of high-speed traffic in each direction.
- Turning off – slow or stop, trailing cars wait or merge to pass.

Courtesy of Thomas Welch, Director, Office of Transportation Safety, IDOT and Michael Ronkin, Oregon DOT.
Reduce Sideswipes

- Cars park illegally, blocking sidewalks
- Sideswipe collisions represent 15% (injury) / 22% (all) of collisions

Injury Collisions by Collision Type
(n=27)

Source: TIMS. Crashes within 100' of Farm Hill Boulevard between Woodhill Drive and Alameda de las Pulgas, from January 1, 2006 through December 31, 2010.
Other concerns?
FHB’s Role as a Street

- Commuters use FHB to get to/from I-280, downtown and other destinations
- Area visitors use FHB to get to parks, schools, community centers, churches
- Residents live on FHB
The Basic Road Diet Concept

Effects on Traffic Capacity

- Most studies show little or no change in traffic volumes after road diets
- Change in capacity depends on:
  - Percentage of left turns at mid-block locations
  - Driveway density
  - Lane configuration and signal phasing at intersections
- Roundabouts as part of road diet can increase intersection capacity
FHB – How Does it Compare?

<table>
<thead>
<tr>
<th></th>
<th>Edgewood</th>
<th>Farm Hill</th>
<th>Woodside</th>
</tr>
</thead>
<tbody>
<tr>
<td># of lanes</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Daily traffic volume</td>
<td>~13,000</td>
<td>~12,000</td>
<td>~34,000</td>
</tr>
<tr>
<td>Speed limit</td>
<td>45 mph</td>
<td>35 mph</td>
<td>45 mph</td>
</tr>
<tr>
<td>Pedestrian facilities</td>
<td>Shoulder (no sidewalks)</td>
<td>Sidewalks</td>
<td>Shoulder (no sidewalks)</td>
</tr>
<tr>
<td>Bike facilities</td>
<td>Shoulder</td>
<td>Nothing</td>
<td>Bike lanes</td>
</tr>
<tr>
<td>Surrounding area</td>
<td>Mostly rural + some residential</td>
<td>Mostly residential + some rural</td>
<td>Mostly rural</td>
</tr>
</tbody>
</table>
Road Diet - Operations

- During the vast majority of the day, road is underused
- More consistent, slower speeds
- Capacity set by intersection controls and # of turns
- Left-turning vehicles pull out of through traffic
- Right-turning vehicles have space to pull out of traffic as well
Road Diet - Operations

- Stop controlled intersection (Emerald Hill)
  - AM – very close to capacity
  - Need to maintain two thru lanes in both directions
- Signalized intersections

<table>
<thead>
<tr>
<th>Cross-street</th>
<th>Delay today</th>
<th>Increased intersection delay w/ road diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>McGarvey</td>
<td>14 s</td>
<td>10 s</td>
</tr>
<tr>
<td>Jefferson</td>
<td>14 s</td>
<td>28 s</td>
</tr>
<tr>
<td>Glennan</td>
<td>14 s (est.)</td>
<td>10 s (est.)</td>
</tr>
<tr>
<td>Total increased delay</td>
<td>~ 48 s (20 s per mile)</td>
<td></td>
</tr>
</tbody>
</table>
Before and After - Baxter Street, Athens, GA.

• 20,000 ADT
• 53-60% reduction in crashes

• Reduction in speed
• 4% traffic diversion

Courtesy of Jennifer Rosales and David Clark.
Before and After – Valencia Street, San Francisco

- 22,000 ADT
- 20% reduction in collisions
- Speed limit lowered from 30 mph to 25 mph
- 10% traffic diversion
Redwood City Examples

Winslow/Industrial
• 7,000 ADT

Middlefield Road
• 11,000 ADT
Improved Sight Distance for Left Turns

- Four lane – outside lane hidden by traffic
- Three lane – improved left turn sight lines

Courtesy of Thomas Welch, Director, Office of Transportation Safety, IDOT.
Fewer Mid-Block Conflicts

Two types of crashes can be avoided with the 3-lane configuration

Four-lane undivided  Conflict Point  Three-lane

Courtesy of Michael Ronkin, Oregon DOT.
Safety Improvements - Fewer Intersection Conflicts

Four-lane undivided  Conflict Point  Three-lane

Courtesy of Michael Ronkin, Oregon DOT.
Increase Safety for Walking

- “Multiple threat” crash types
- Reduce exposure
- Reduce speeds
- Buffer from travel lanes

From Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations, FHWA-RD-04-100, 2005.
Questions/concerns with road diets?
Street Segments – Woodleaf to Silver Hill
Street Segments – Woodleaf to Silver Hill

EXISTING

PROPOSED
Street Segments – Woodleaf to Silver Hill
Street Segments
Silver Hill to Jefferson & Devon to Alameda de las Pulgas
Street Segments –
Silver Hill to Jefferson & Devon to Alameda de las Pulgas
Street Segments – Jefferson to Devon
Street Segments – Jefferson to Devon
Small Group Discussion

- What do you like?
- What concerns you?
- Which design on each segment?

- Keeping in mind... residents, visitors, commuters
- Who may be... walking, riding the bus, biking, driving
Next Steps

• Review community input
• Staff recommendation to City Manager
• If road diet is recommended, memo to City Council
• Implement with slurry seal
• 6 month evaluation
• Project updates on our Web site –
  • www.redwoodcity.org