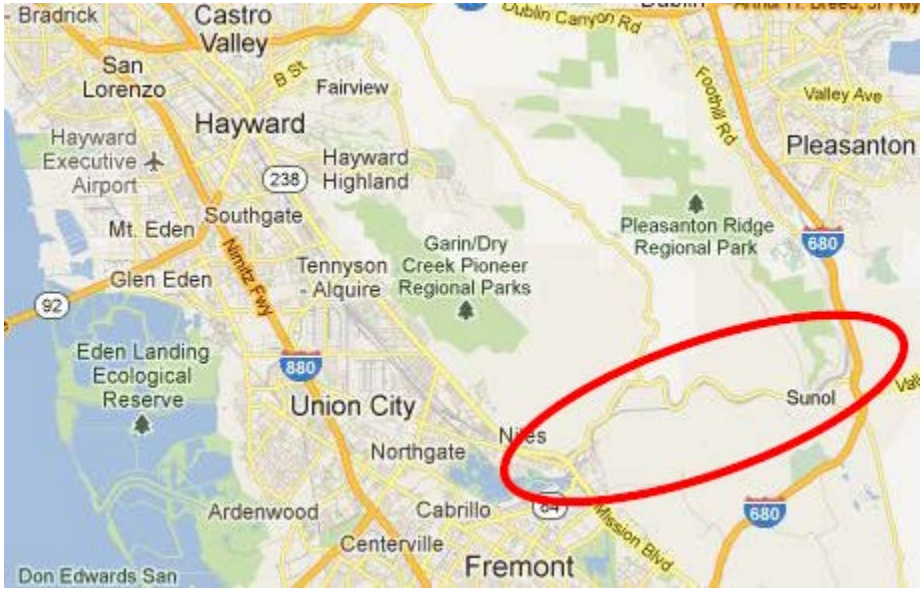
RSA

Making Your Roads Safer

Road Safety Assessment
SR 84 - Niles Canyon Corridor
Mission Boulevard to Interstate 680

July 30, 2012

Federal Highway Administration
RESOURCE CENTER



BACKGROUND/INTRODUCTION

RSA Team Members

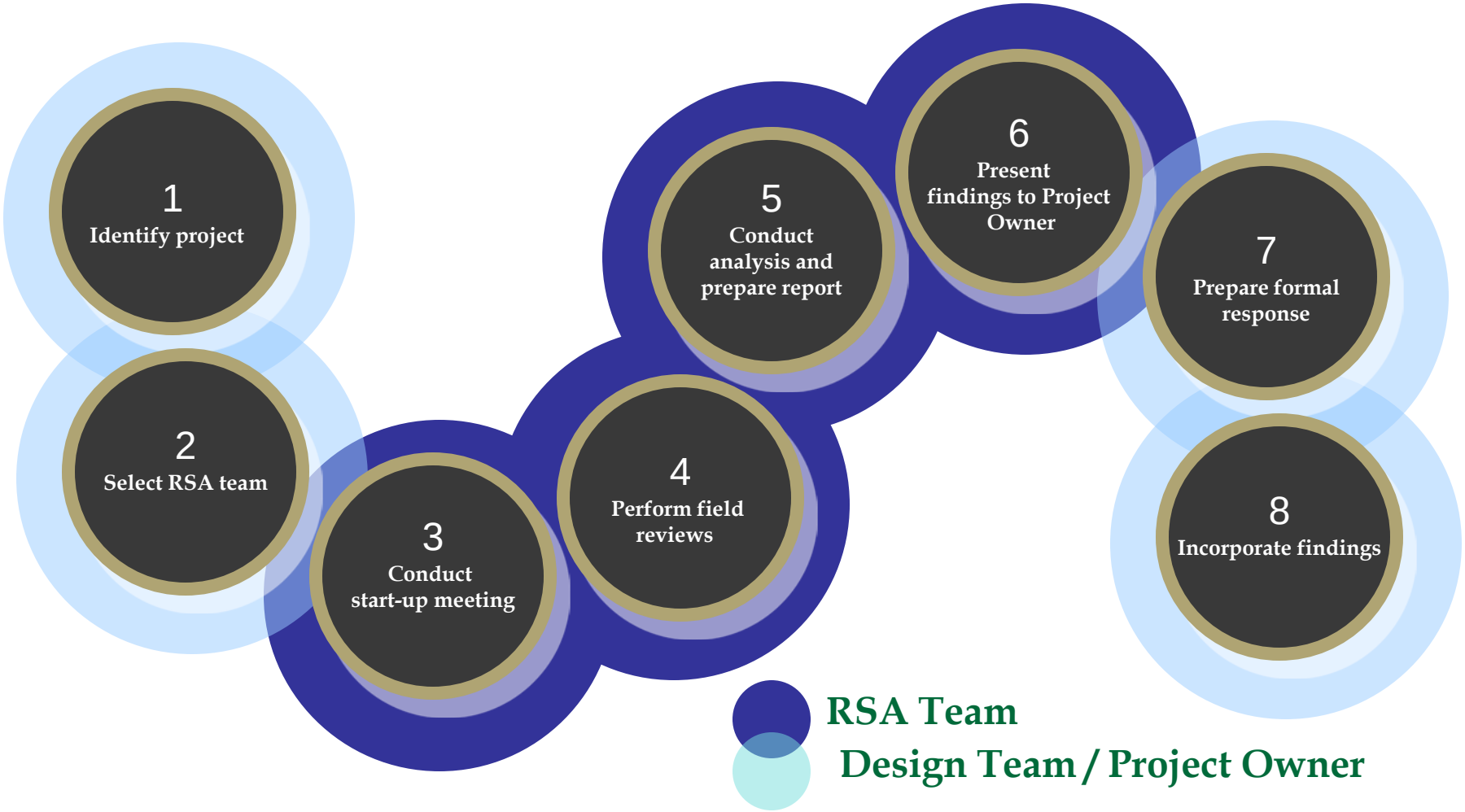
- Craig Allred — FHWA Resource Center
- Keith Harrison — FHWA Resource Center
- David Cohen — FHWA, California Division
- Lt. Jim Libby — California Highway Patrol – Dublin Area

U.S. Department of Transportation
Federal Highway Administration

General Characteristics of an RSA

- Independent, multidisciplinary team
- Focus is primarily SAFETY
- Considers crash *history* and crash *potential*
- Identifies safety concerns
- Offers potential countermeasures

General Characteristics of an RSA



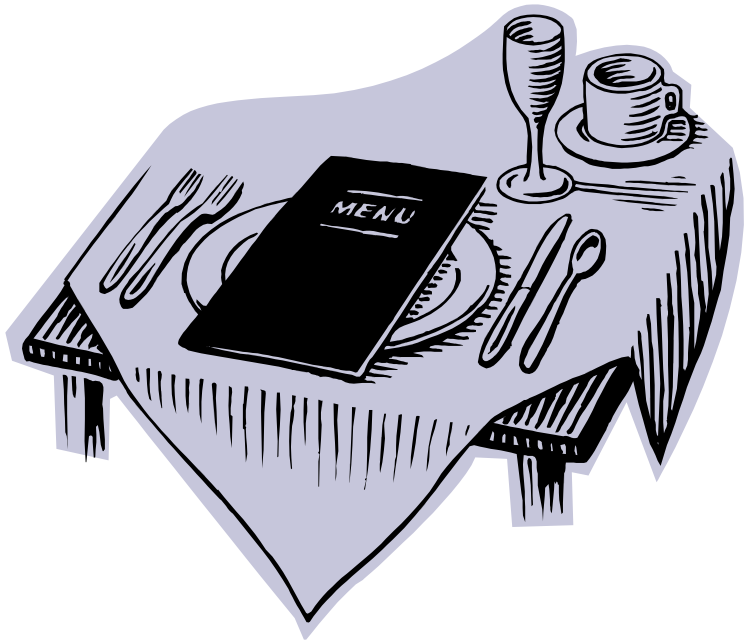
Specific Characteristics of *This* RSA

- RSA initiated in response to a request from Caltrans
- Caltrans instructed Team to start with “clean slate”
- Listening session held to understand stakeholder concerns

Specific Characteristics of *This* RSA

- Safety assessment of Niles Canyon *corridor* – not projects
- Caltrans was NOT on the RSA Team
- Follow-up briefing for stakeholders (tonight)
- Starting point for concurrent Value Analysis (VA) study

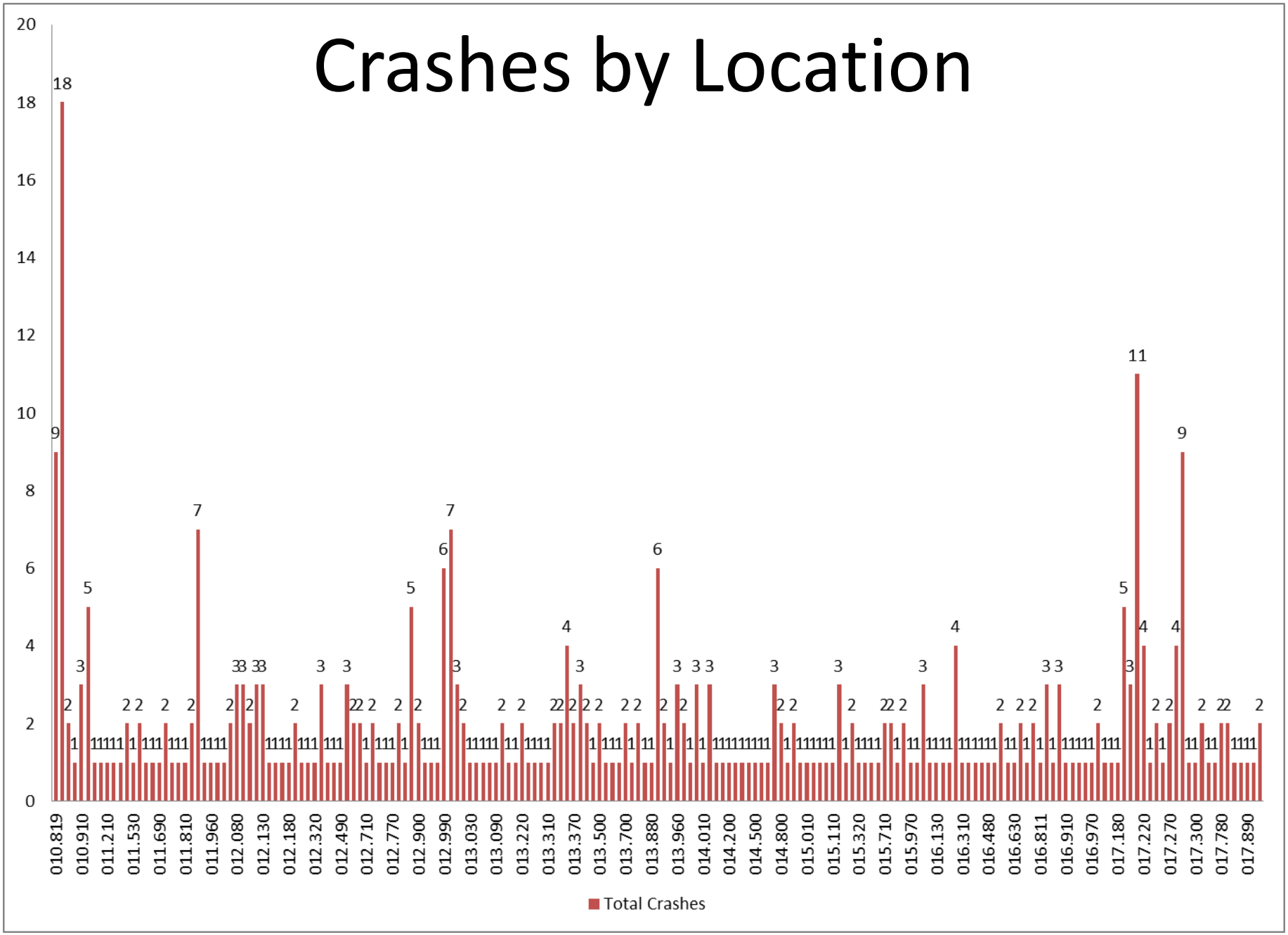
Outcome of the RSA



- RSA Team's role limited to conducting technical study to identify safety concerns and possible countermeasures
- VA Team will further explore feasibility, costs and benefits
- Decision to proceed with any safety improvements is entirely at Caltrans' discretion

CRASH ANALYSIS

Crashes by Location



* Thru September 2010 SOURCE: TASAS

Driver Familiarity

City of At-Fault Driver	Number of Crashes*
Fremont	13
Pleasanton	11
Livermore	7
Union City	7
Tracy	4
Castro Valley	3
Hayward	3
Newark	3
Sunol	3
Stockton	2

* 2 or more crashes

SOURCE: CHP Database, Beat 223, 2007 thru 2011

Crash Trends

- Crash Severity
  - Fatal & Injury (1 out of 2)
- Primary Collision Factor
  - Speed (27%)
  - Improper Turn (24%)
  - Alcohol (14%)
- Type of Crash
  - Hit Object (36%)
  - Rear End (18%)
- Large Trucks
  - 2% to 3% of traffic; 14 out of 353 crashes

GENERAL SAFETY CONCERNS

Safety Concerns

1. Roadside Quality
2. Limited Use Shoulders
3. Speed Management
4. Signs and Markings
5. Bicyclists and Pedestrians
6. Intersections and Curves

1. Roadside Quality

- Over-representation of Run-Off-Road & Hit Object crashes
- Indicative of the relatively unforgiving nature of the roadside
- Even modest improvements to the roadside has the potential to reduce crashes

1. Roadside Quality

- "Clear Zone“
  - Drivers that run off the road require space to safely recover
  - To do that, the roadside needs to be relatively free of fixed objects or steep slopes

- Much of SR 84 has roadsides with design challenges
  - Steep cut slopes or embankments with large rock formations, trees, shrubs, railroad and creek.
  - Man-made fixed objects (guardrail, sign supports, fencing, utility poles).

2. Limited Use Shoulders

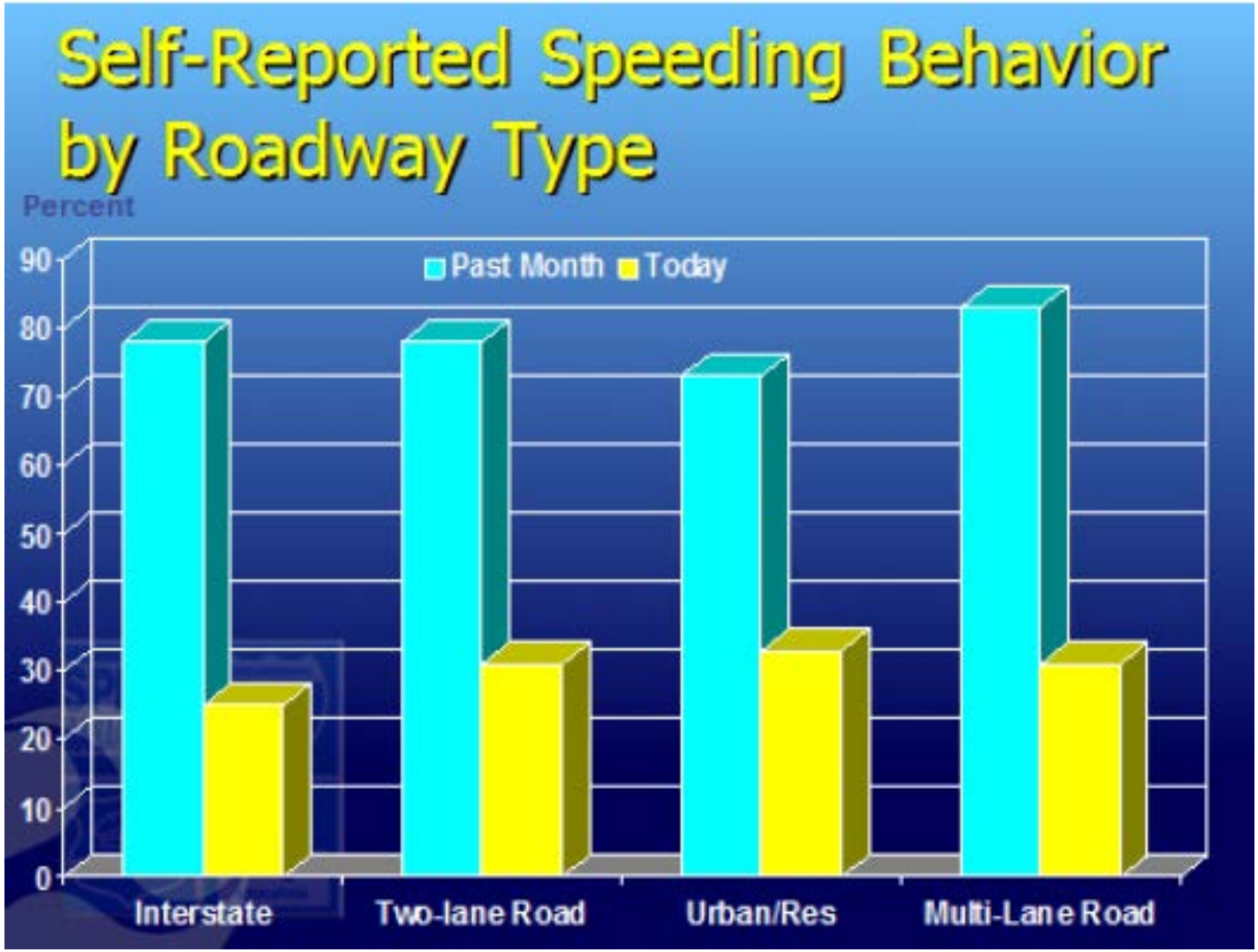
- Narrow or unpaved shoulders and edge drop-off
- Safe refuge for motorist break downs
- A place for pedestrians and bikes outside of the travel lane
- Work space for road maintenance crews
- Emergency response and enforcement hindered
- Unenforced traffic laws diminish compliance

2. Limited Use Shoulders

- Often necessary to shut down SR 84 and detour
- May contribute to secondary crashes
- The natural topography of the canyon makes shoulder widening difficult
- At other locations, gravel shoulders can be stabilized or paved without increasing the existing "footprint" of the facility
- <u>Any</u> shoulder improvement would have a beneficial effect on related crashes

35
MPH

3. Speed Management



3. Speed Management

- Citizen concern that many motorists are driving too fast and roadway improvements may lead to an increase in speed
- Many “speed” related crashes are not simple “speeding”

3. Speed Management

- The existing SR-84 has only a few locations where vehicles are allowed to pass.
- Speed by itself may aggravate the severity of crashes
- Proper speed limits need engineering studies, proper design, enforcement, adjudication and have public support to succeed.

4. Signs and Markings

- Signs, signals and pavement markings are key to providing drivers with positive guidance
- Improving visibility and placement of signs and markings will enhance effectiveness
- Centerline rumble strips are proving to be effective in reducing *targeted* crash types.

5. Bicyclists and Pedestrians

- Designers often focus on the driver; integration of the non-motorist is equally important.
- SR84 corridor has not generated a significant amount of walking or bicycle trips
- Historical data does not show any crash trends
- Nevertheless, crash *potential* must still be an important consideration.

5. Bicyclists and Pedestrians

- Some low-cost enhancements would make SR 84 more of a “Complete Street.”
- Increase the visibility and frequency of “share the road” signage and other improvements for pedestrians and bicycles
- Co-benefits of wider shoulders for both pedestrian and bicycle safety.

6. Intersections and Curves

- Intersections are natural points of conflict
- 15% of crashes occurred “at” intersections
- Several straight sections lead to curves that require drivers to slow as much as 20 mph.
- Crashes at several curves (for example, Rosewarnes UC) suggest drivers are not slowing enough

COUNTERMEASURES

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- ***Improve Visibility of Signs and Markings***
- ***Reassess Sign Placement***
- ***Rumble Strips***
- ***Reevaluate Roadside Barrier***
- ***Improve Shoulders***

COUNTERMEASURES

- ***Reduce Pavement Edge Drop-offs***
- ***Mitigate Roadside Obstacles***
- ***Contain Rock Fall***
- ***Reduce Superelevation Variance***
- ***Address Needs of Other Road Users***
- ***Additional Speed Management Measures***
- ***Enhanced Speed Enforcement***

COUNTERMEASURES

- ***Improve:***
  - ***Old Canyon Rd. Intersection***
  - ***Rosewarnes Undercrossing***
  - ***Farwell Undercrossing***
  - ***Quarry Rd. Intersection***
  - ***Sunol Off Ramp Intersection***
  - ***Main Street and Water Temple Intersections***
- ***Investigate:***
  - ***Mission Blvd. and I-680 Intersections***

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