Public Works Agency
Alameda County

CROW CANYON ROAD SAFETY STUDY

PUBLIC MEETING #3

6:00pm Open House

6:30pm Presentation

7:00pm Q&A

June 2, 2016

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CROW CANYON ROAD SAFETY STUDY

Welcome

Introductions

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BRIEF SUMMARY OF PUBLIC MEETING #1

- **Established that a Safety Study to identify *future* safety improvements was warranted:**
  - 93 accidents reported –2 fatal (2009-2012)
  - 30% of accidents were the result of unsafe speed
  - Over 50% of accidents involved multiple vehicles
  - Need to address safety issues to prevent future accidents

- **Discussed existing corridor characteristics**
  - Multi-use rural arterial
  - Varying alignment / constrained roadside conditions

- **Reviewed existing traffic conditions**
  - Study corridor divided into 5 segments
  - Identified traffic volumes and accident locations

- **Goals of the Safety Study / Identified improvement criteria**

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BRIEF SUMMARY OF PUBLIC MEETING #2

- Summarized community input received to date
- Identified potential safety improvement locations
- Presented potential safety improvements

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BRIEF SUMMARY OF PUBLIC MEETING #2

Community Input Received to Date

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SUMMARY OF COMMUNITY CONCERNS

- **Speeding**
- **Safety**
- **Driveway Access**
- **Maintain Rural Character of Corridor**
- **Roadway Maintenance**

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SUMMARY OF COMMUNITY CONCERNS

- **Most Common Community Concerns**
  - **Slow Down Traffic**
  - **Provide Safer Access to Adjacent Properties**
  - **Reduce Amount of Motor-Vehicle Traffic**

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BRIEF SUMMARY OF PUBLIC MEETING #2

Identified Locations for Potential Safety Improvements

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LOCATIONS FOR POTENTIAL SAFETY IMPROVEMENTS

- **Analyzed locations identified from community input/ concerns**
  - Safety
  - Driveway access
  - Speeding
- **Reviewed 10 years of accident statistics**
  - Years 2003 to 2012
  - 342 total accidents
  - Plotted accident frequency by location and type of collision
- **Identified locations of accident "clusters"**
  - Evaluated "Type/Cause" of accidents within clusters
  - Studied roadway characteristics at cluster locations
  - Identified crash patterns/possible contributing factors

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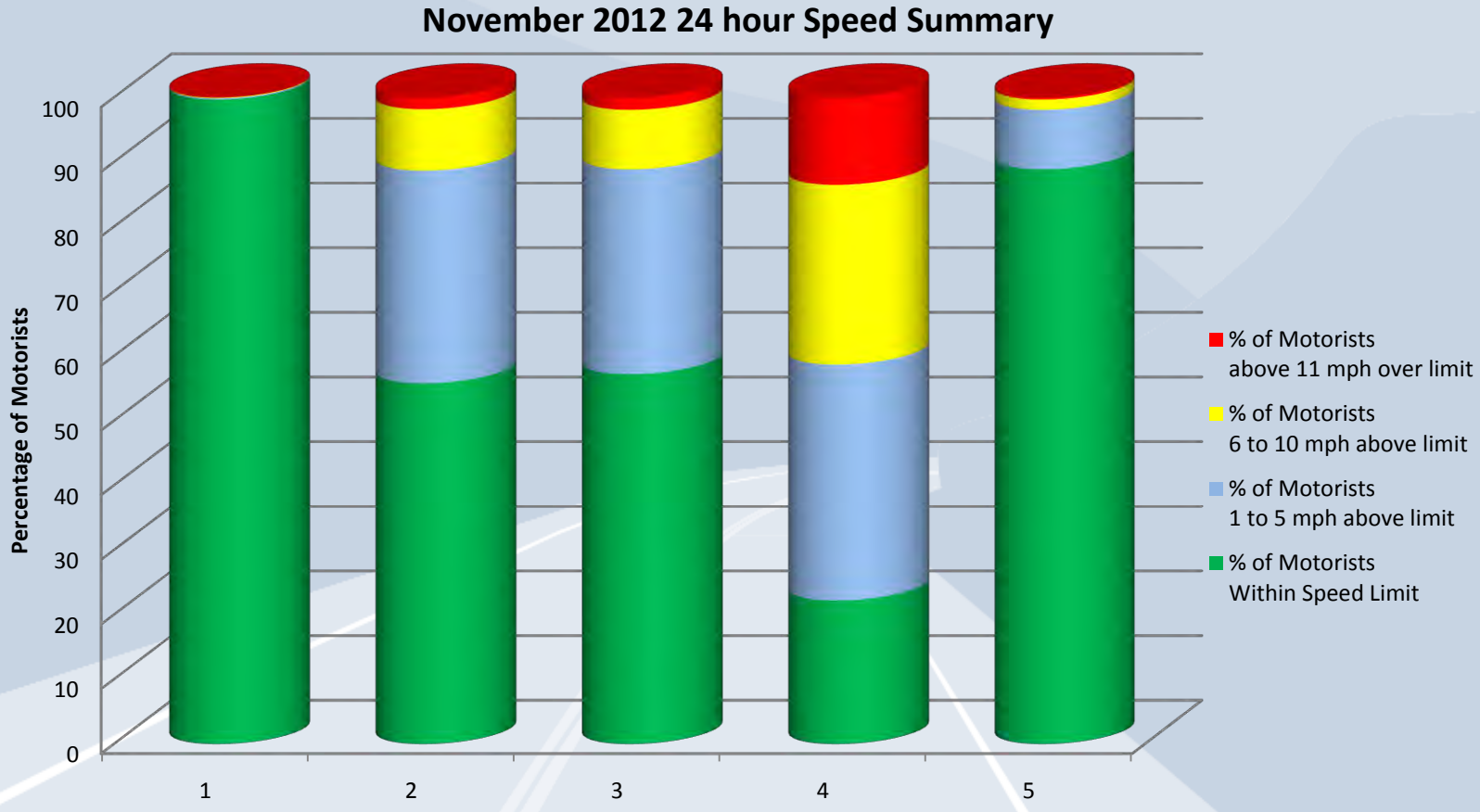
CROW CANYON ROAD VEHICLE SPOT SPEEDS



	1 South of Cold Water	2 800 ft South of Norris Canyon	3 100 ft South of Norris Canyon	4 100 ft North of Norris Canyon	5 100 ft South of County Line
85th % tile speed	33 mph	49 mph	48 mph	59 mph	49 mph
Posted Speed Limit (Current)	40 mph (NB & SB)	40 mph (NB & SB)	40 mph (NB) 45 mph (SB)	50 mph (NB) 45 mph (SB)	45 mph (NB & SB)

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- **Within the 6 mile study corridor –**

  "Unsafe Speed" or "Driving too fast for roadway conditions" **(weather, unforeseen obstacles, etc.) was the primary collision factor for over 35% of accidents occurring over the last 10 years.**

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BRIEF SUMMARY OF PUBLIC MEETING #2

Selection of Potential Safety Improvements

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SELECTION OF POTENTIAL SAFETY IMPROVEMENTS

- Criteria for safety improvements or "Countermeasures"
- Countermeasure goals
- Established guidelines for safety improvements
- Potential to receive project funding

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PROPOSED SAFETY IMPROVEMENTS CRITERIA

- Consideration of multi-use corridor
- Accommodation of multi-modal traffic
- Address historical areas of concern
  - Accident locations
  - Maintenance issues
- Minimize environmental impact
- Incorporate “Context Sensitive” solutions
- Community Support

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SELECTION OF POTENTIAL SAFETY IMPROVEMENTS

- Countermeasure Goals
  - Address "unsafe speed"
  - Improve safe ingress/egress
  - Improve multi-modal safety
  - Decrease accident frequency and severity

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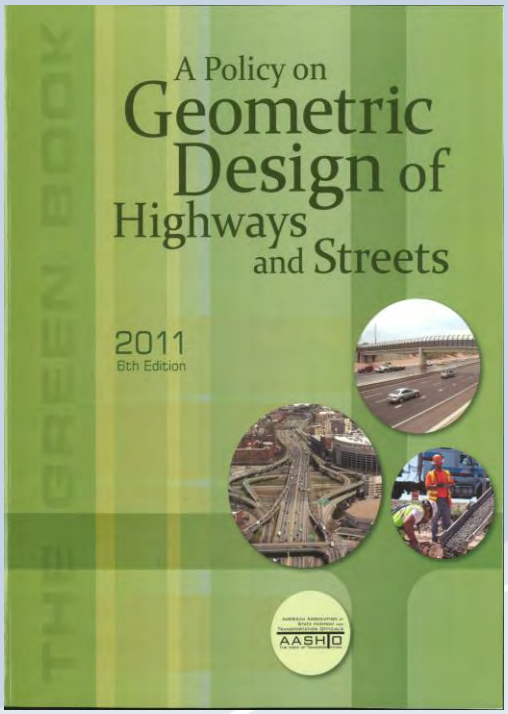
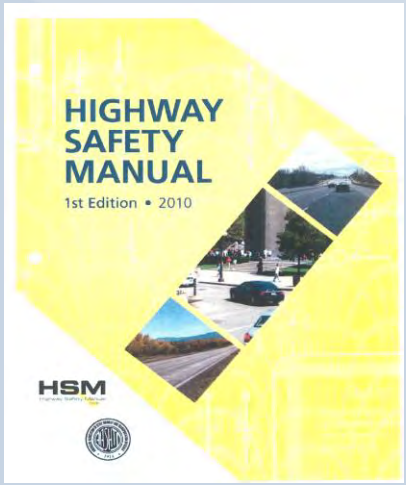
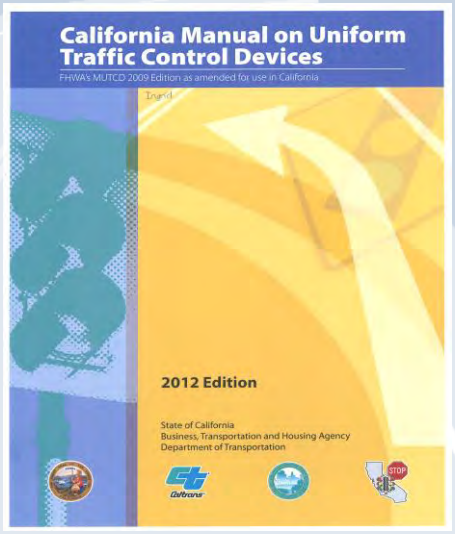
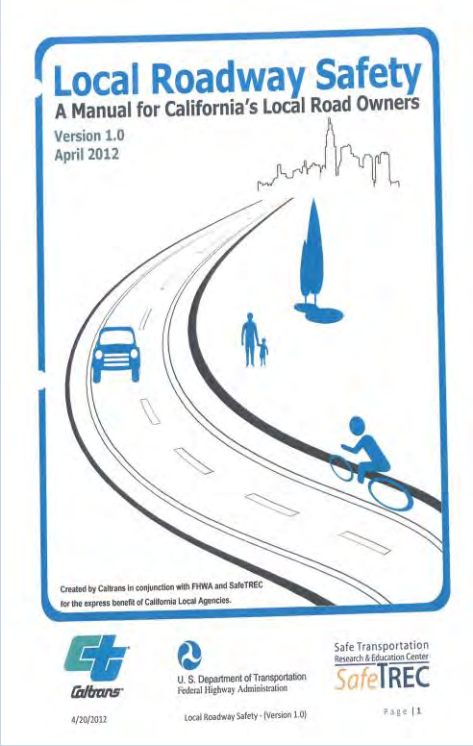
ROADWAY SAFETY GUIDELINES









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POTENTIAL PROJECT FUNDING SOURCES

Federal / State Programs:

- Highway Safety Improvement Program (HSIP)
- High Risk Rural Roads (HR3)

Projects selected based upon:

Accident rates for fatalities/serious injuries exceeds statewide average

Benefit/Cost (B/C) >1

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POTENTIAL PROJECT FUNDING SOURCES

Local Programs:

Alameda County Transportation Commission (ACTC)

Projects selected based upon: **"Complete Streets" elements in project design**

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SELECTION OF POTENTIAL SAFETY IMPROVEMENTS

Timeline to implement potential improvements

- Near-Term: Constructed within a 2-year timeframe
- Medium-Term: Constructed within a 5-year timeframe
- Long-Term: Anticipated Construction – 2025 and beyond

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BRIEF SUMMARY OF PUBLIC MEETING #2

Proposed Potential Countermeasures

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PROPOSED POTENTIAL COUNTERMEASURES

- Speed Feedback Signs
- Police Enforcement Areas
- Two-Way Left Turn Lane
- Left Turn Lane (Left-in/Left-out) (Spot Locations)
- Shoulder Widening – 8’ at Driveways
- Additional Lighting/Signing (where needed)
- Increase Shoulder Maintenance
- Reduce from 4-lane to 2-lane (with turn-outs) (Option 1 and Option 2)
- Reduce from 4-lane to 2-lane NB/I-Lane SB
- Guardrails (where needed)
- Shoulder Widening (4’ Shoulder/2’ Painted Buffer) with Median Rumble Strip
- Roundabouts
- Tunnel at MP 2.15 – NB
- Tunnel at MP 2.15 – Both Directions
- Pavement Rehab and Restriping for Wider Shoulders
- Left Turn Lane (Left-in/Left-out) with Accel/Decel Areas

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PROPOSED COUNTERMEASURES NOT FEASIBLE/BEYOND SAFETY STUDY SCOPE

- Convert to a toll road
- Convert to a "Parkway" with limited access
- Designate as a "Scenic Route"
- Develop "Major Boulevard" in future around increased development
- Limit truck traffic
- Improve I-680 and I-580 (by State)

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PROPOSED COUNTERMEASURES NOT FEASIBLE/BEYOND SAFETY STUDY SCOPE

- Common "Access Road" for several parcels
- Barrier-separated bike lanes
- Traffic signals to control speeds
- Speed bumps
- 35 mph speed limit throughout corridor

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BRIEF SUMMARY OF PUBLIC MEETING #2

Potential Safety Improvements

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SPEED FEEDBACK SIGN

(Example Only)

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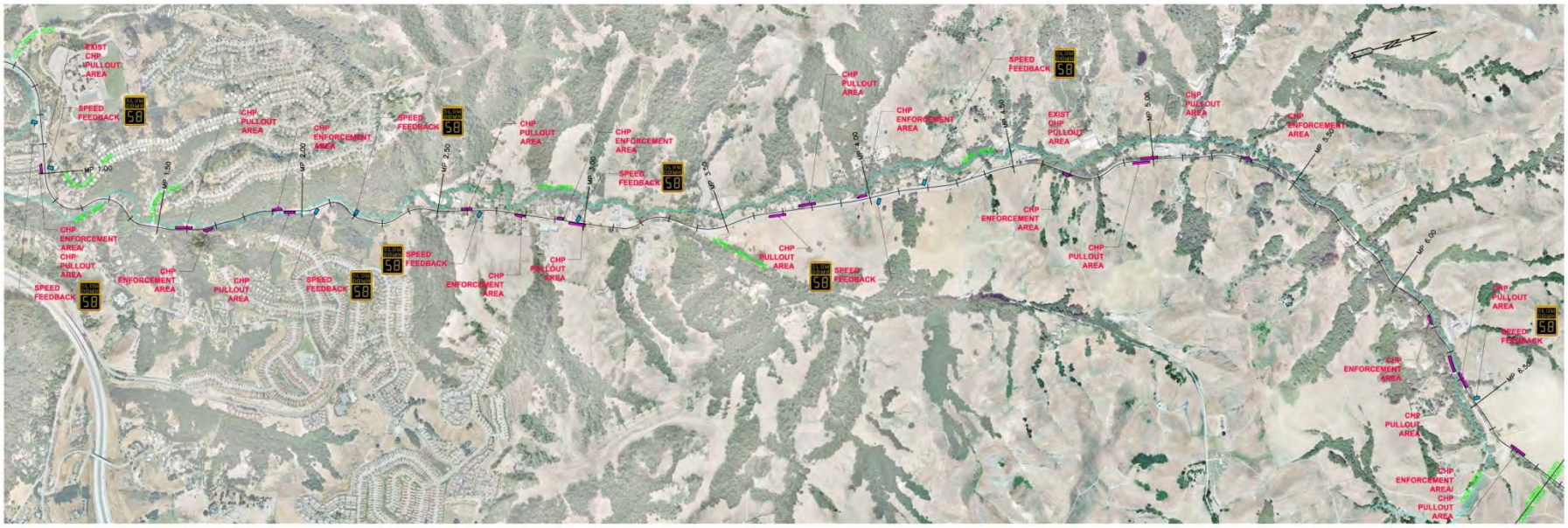
CROW CANYON ROAD SAFETY STUDY



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CROW CANYON ROAD SAFETY STUDY

POTENTIAL CORRIDOR SPEED REDUCTION COUNTERMEASURES
SHORT TERM - ENCHANCED SPEED ENFORCEMENT

SCALE: 1"=400'

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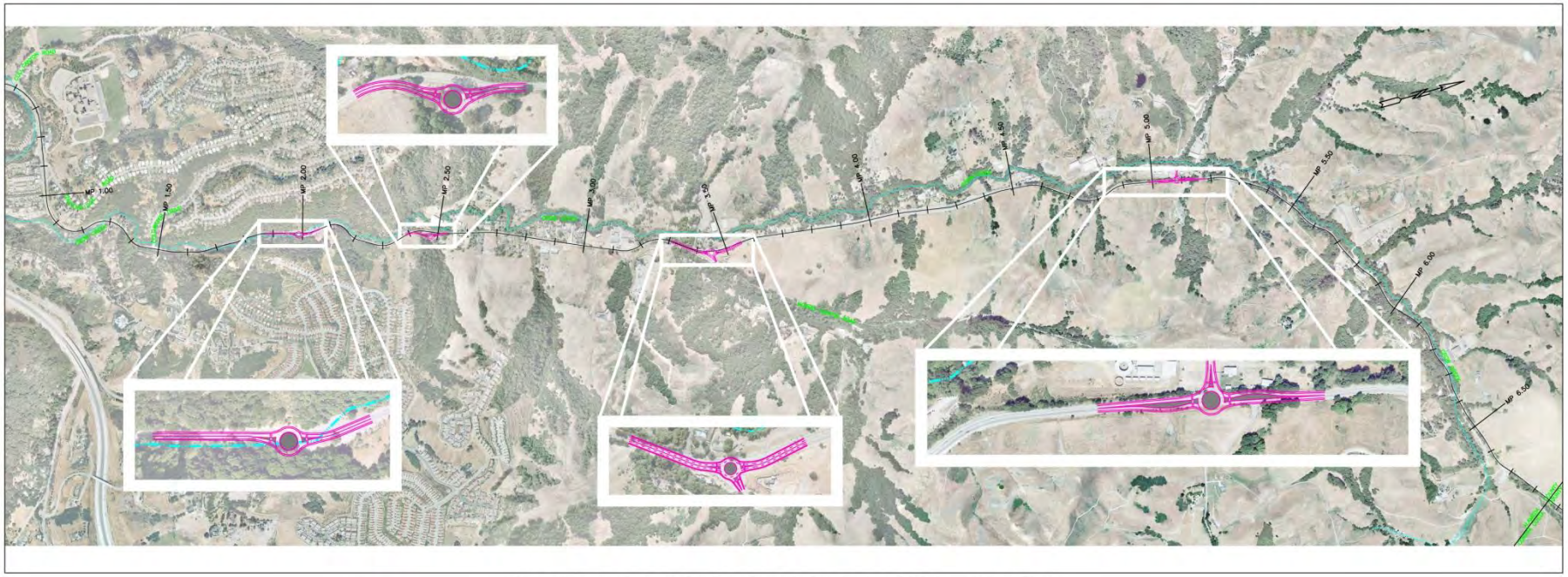
CROW CANYON ROAD SAFETY STUDY



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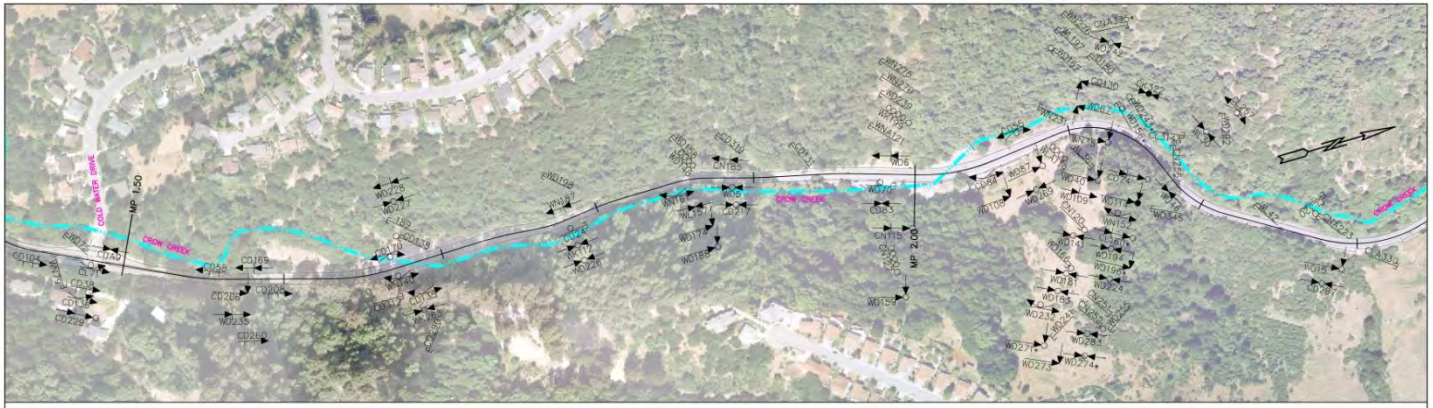
CROW CANYON ROAD SAFETY STUDY

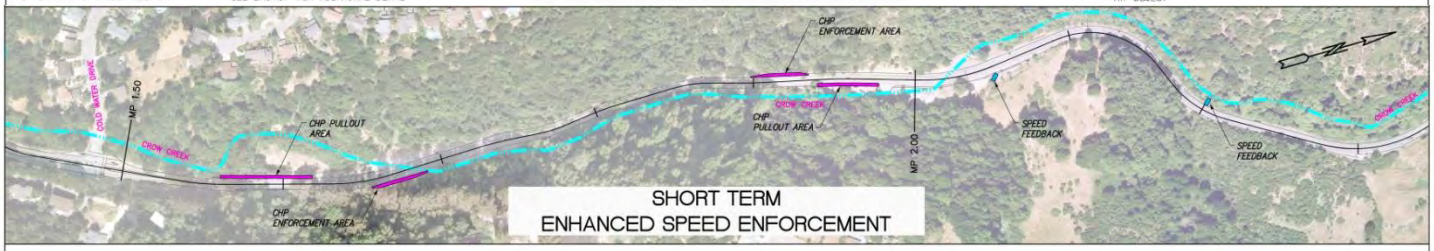
POTENTIAL CORRIDOR SPEED REDUCTION COUNTERMEASURES

LONG TERM - ROUNDABOUTS

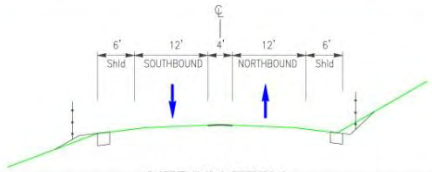
SCALE: 1"=400'



2003 - 2012 ACCIDENT LOCATIONS

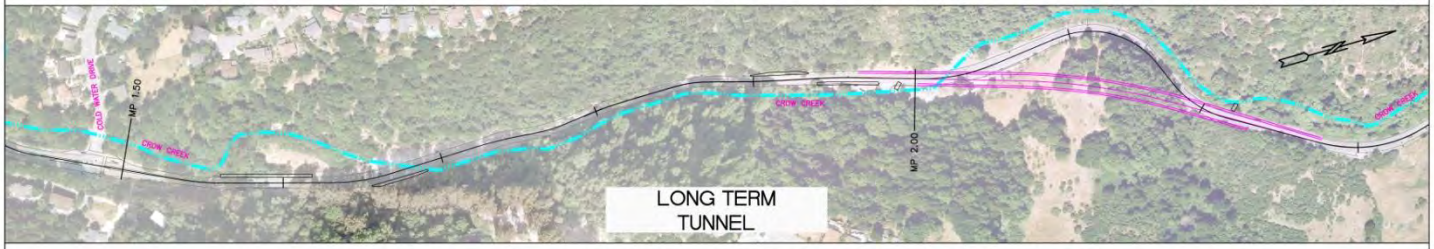


SHORT TERM
ENHANCED SPEED ENFORCEMENT



MEDIAN RUMBLE STRIP EXAMPLE

MEDIUM TERM
MEDIAN RUMBLE STRIP WITH 6 FOOT SHOULDERS



LONG TERM
TUNNEL

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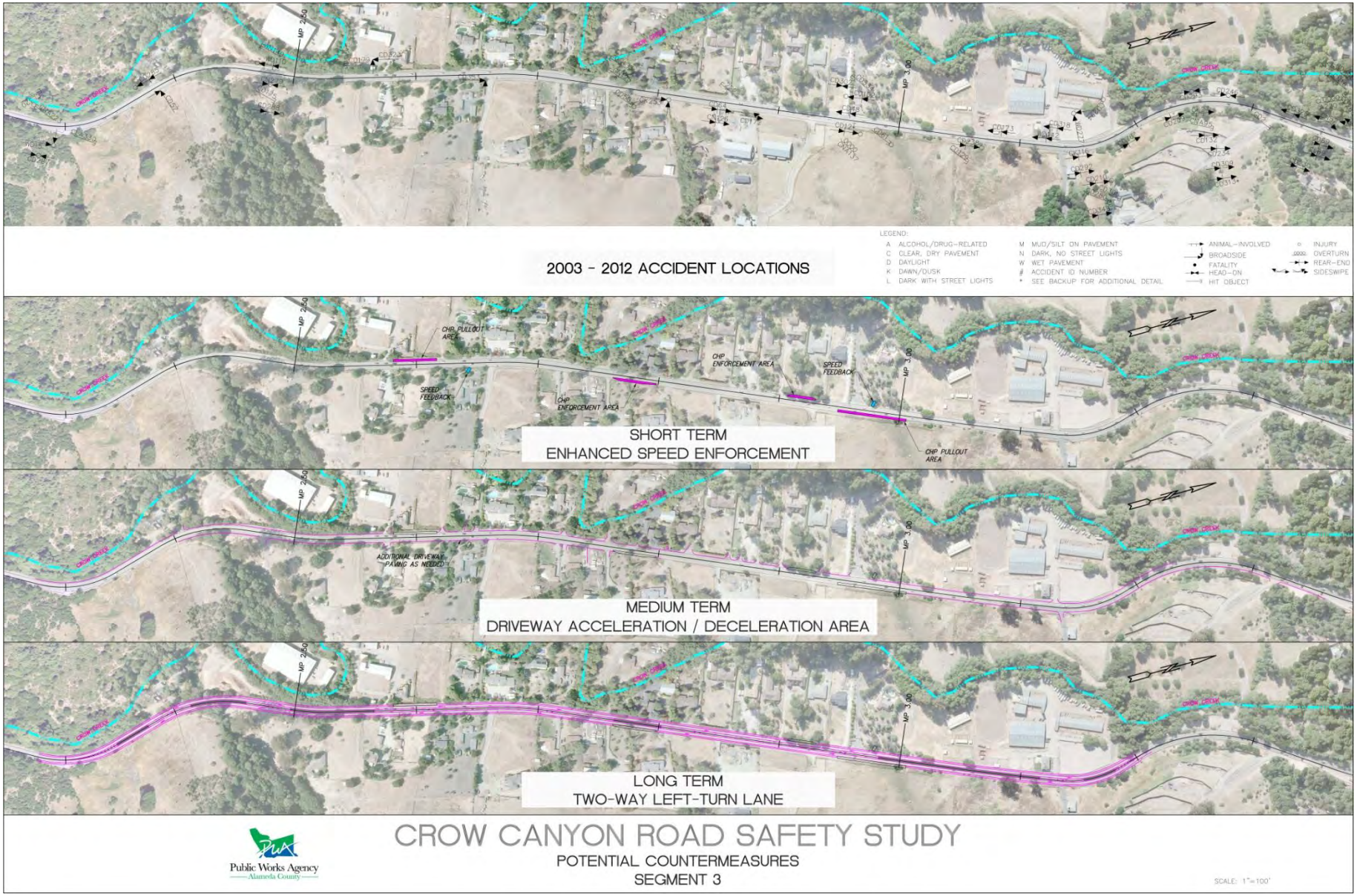
POTENTIAL COUNTERMEASURES
SEGMENT 2

SCALE: 1"=100'



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POTENTIAL COUNTERMEASURES
SEGMENT 3

SCALE: 1"=100'


2003 - 2012 ACCIDENT LOCATIONS
LEGEND:
A ALCOHOL/DRUG-RELATED
C CLEAR, DRY PAVEMENT
D DAYLIGHT
K DAWN/DUSK
L DARK WITH STREET LIGHTS
M MUD/SILT ON PAVEMENT
N DARK, NO STREET LIGHTS
W WET PAVEMENT
ACCIDENT ID NUMBER
* SEE BACKUP FOR ADDITIONAL DETAIL
ANIMAL-INVOLVED
BROADSIDE
FATALITY
HEAD-ON
HIT OBJECT
INJURY
OVERTURN
REAR-END
SIDESWIPE
CHP PULLOUT AREA
CHP ENFORCEMENT AREA
SPEED FEEDBACK
EXIST CHP PULLOUT
SHORT TERM
ENHANCED SPEED ENFORCEMENT
MEDIUM TERM
4-LANE LT TURN IN AND OUT
LONG TERM
2-LANE LT TURN IN AND OUT - OPTION 1
REMOVE PAVEMENT AS NECESSARY
LONG TERM
2-LANE LT TURN IN AND OUT - OPTION 2
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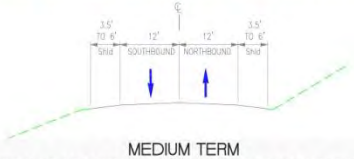
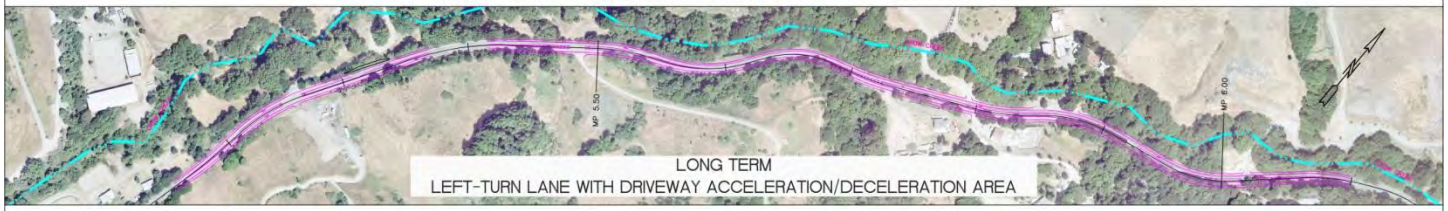
CROW CANYON ROAD SAFETY STUDY
POTENTIAL COUNTERMEASURES
SEGMENT 4
SCALE: 1"=100'

2003 - 2013 ACCIDENT LOCATIONS

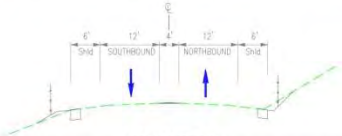
SHORT TERM
ENHANCED SPEED ENFORCEMENT



MEDIUM TERM
PAVEMENT REHABILITATION AND RESTRIPING FOR WIDER SHOULDERS



LONG TERM
LEFT-TURN LANE WITH DRIVEWAY ACCELERATION/DECELERATION AREA



MEDIAN RUMBLE STRIP EXAMPLE

LONG TERM
MEDIAN RUMBLE STRIP WITH 6 FOOT SHOULDERS

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POTENTIAL COUNTERMEASURES
SEGMENT 5

SCALE: 1"=100'

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SAFETY STUDY GOALS

- ☑ Identify safety needs
- ☑ Identify/Recommend potential safety improvements
- ☑ **Prioritize preferred improvements with community input**
- ☑ **Document potential improvements in a Project Study Report**

Countermeasure Evaluation

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PROPOSED COUNTERMEASURE EFFECTIVENESS

CM	POTENTIAL COUNTERMEASURES	REDUCTION IN EXPECTED AVERAGE ACCIDENT FREQUENCY*	
		Range	CT Value
	Corridor-Wide Countermeasures		
1	Vehicle Speed Feedback Signs	0-41%	30%
2	Police Enforcement Area	17%	N/A
3	Roundabouts (4 Total)	N/A	N/A
4	Increase Annual Shoulder Maintenance (Construct Safety-Edge)	25%	N/A
5	Additional Lighting/Signage (Where Needed)	18-69% / 20-30%	35% / 25%
6	Guardrails (Where Needed)	11-78%	25%
	Segment 2 Countermeasures		
7	Median Rumble Strip with 6-ft Shoulders	N/A	20%
8	Tunnel at MP 2.15 – NB	24-90%	50%
9	Tunnel at MP 2.15 – Both Directions	24-90%	50%

* Local Roadway Safety: A Manual for California's Local Road Owners Version 1.0, April 2012

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PROPOSED COUNTERMEASURE EFFECTIVENESS

CM	POTENTIAL COUNTERMEASURES	REDUCTION IN EXPECTED AVERAGE ACCIDENT FREQUENCY*	
		Range	CT Value
	Segment 3 Countermeasures		
10	Shoulder Widening – 8-ft Wide at Driveways	10-78%	25%
11	Two-Way Left Turn Lane	8-50%	30%
	Segment 4 Countermeasures		
12	Left Turn Lane (Left-in/Left-out) (Spot Locations)	9-55%	35-50%
13	Reduce 4-Lane to 2-Lane NB and 1-Lane SB	N/A	N/A
14	Reduce 4-Lane to 2-Lane (with turn-outs) Option 1 (Widen Medians)	N/A	N/A
15	Reduce 4-Lane to 2-Lane (with turn-outs) Option 2 (Remove Outside Pavement)	N/A	N/A
	Segment 5 Countermeasures		
16	Pavement Rehab and Restriping for Wider Shoulders with Median Rumble Strip	20%	N/A
17	Left Turn Lane (Left-in/Left-out) with Accel/Decel Areas	25%	N/A
18	Median Rumble Strip with 6-ft Shoulders	15-75%	25%

* Local Roadway Safety: A Manual for California's Local Road Owners Version 1.0, April 2012

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COUNTERMEASURE EVALUATION CRITERIA

ENGINEERING ASPECTS/IMPACTS

- Improves Safety
  - Addresses problem locations
  - Improves corridor safety
  - Provides enhanced enforcement
  - Potential for reducing speeds
  - Increases off-road recovery space
  - Addresses MP 2.15
- Traffic Circulation
  - Improves regional mobility
  - Improves local traffic access

Identified Community Concerns

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COUNTERMEASURE EVALUATION CRITERIA

- Traffic Operations
  - Improves corridor operations
- Construction Impacts
  - Constructability
  - Utility impacts
  - Maintenance of traffic
- Fiscal Impacts
  - Range of total cost
  - Cost effectiveness (B/C)
  - Fundable (meets HSIP/HR3/ACTC criteria)

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COUNTERMEASURE EVALUATION CRITERIA

COMMUNITY ASPECTS/IMPACTS

- Right of Way Impacts
  - Loss of frontage property
  - Potential driveway impacts
- Improves Non-Motorized Mobility
  - Encourages bicycle use
- Emergency Services
  - Impacts to response time

Identified Community Concerns

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COUNTERMEASURE EVALUATION CRITERIA

ENVIRONMENTAL ASPECTS/IMPACTS

- Minimizes Environmental Impact
  - Crow Creek
  - Wetlands
  - Threatened/endangered species
  - Historical property/archaeological sites
  - Noise
  - Stormwater impacts
  - Permitting requirements
  - Preserves rural character

Identified Community Concerns

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COUNTERMEASURE COST EFFECTIVENESS

CM	POTENTIAL COUNTERMEASURES	Cost	B/C Ratio
	Proposed Corridor-Wide Countermeasures		
1	Vehicle Speed Feedback Signs (Entire Study Corridor)	$246,000	44
2	Police Enforcement Area (Entire Study Corridor)	$2,460,000	6
3	Roundabouts (4 Total)	$9,213,000	6
4	Increase Annual Shoulder Maintenance	$447,000	15
5	Additional Lighting/Signage (Where Needed)	$295,000	3
6	Guardrails (Where Needed)	$2,860,000	3
	Proposed Segment 2 Countermeasures		
7	Median Rumble Strip with 6-ft Shoulders	$1,140,000	11
8	Tunnel at MP 2.15 – NB	$24,526,000	1
9	Tunnel at MP 2.15 – Both Directions	$30,504,000	1

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COUNTERMEASURE COST EFFECTIVENESS

CM	POTENTIAL COUNTERMEASURES	Cost	B/C Ratio
	Proposed Segment 3 Countermeasures		
10	Shoulder Widening – 8-ft Wide at Driveways	$3,090,000	7
11	Two-Way Left Turn Lane	$2,243,000	6
	Proposed Segment 4 Countermeasures		
12	Left Turn Lane (Left-in/Left-Out) (Spot Locations)	$731,000	9
13	Reduce 4-Lane to 2-Lane NB and 1-Lane SB	$392,000	9
14	Reduce 4-Lane to 2-Lane (with turn-outs) Option 1 (Widen Median)	$1,578,000	7
15	Reduce 4-Lane to 2-Lane (with turn-outs) Option 2 (Remove Outside Pavement)	$848,000	12
	Proposed Segment 5 Countermeasures		
16	Pavement Rehab and Restriping for Wider Shoulders with Median Rumble Strip	$566,000	5
17	Left Turn (Left-in/Left-Out) with Accel/Decel Areas	$3,227,000	2
18	Median Rumble Strip with 6-ft. Shoulders	$1,730,000	3

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RECOMMENDED COUNTERMEASURE PRIORITIZATION

CM	POTENTIAL COUNTERMEASURES	LOCATION
	Near-Term Implementation	
1	Vehicle Speed Feedback Signs	Corridor-Wide
2	Police Enforcement Area	Corridor-Wide
4	Increase Annual Shoulder Maintenance	Corridor-Wide
16	Pavement Rehab and Restriping for Wider Shoulders with Median Rumble Strip	Segment 5
	Medium-Term Implementation	
5	Additional Lighting/Signage (Where Needed)	Segment 5
6	Guardrails (Where Needed)	Corridor-Wide
10	Shoulder Widening – 8-ft Wide at Driveways	Segment 3
12	Left Turn Lane (Left-in/Left-out)	Segment 4

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RECOMMENDED COUNTERMEASURE PRIORITIZATION

CM	POTENTIAL COUNTERMEASURES	LOCATION
	Long-Term Implementation	
3	Roundabouts (4 Total)	Corridor-Wide
7	Median Rumble Strip with 6-ft Shoulders	Segment 2
8	Tunnel at MP 2.15 – NB	Segment 2
9	Tunnel at MP 2.15 – Both Directions	Segment 2
11	Two-Way Left Turn Lane	Segment 3
13	Reduce 4-Lane to 2-Lane NB and 1-Lane SB	Segment 4
14	Reduce 4-Lane to 2-Lane (with turn-outs) Option 1 (Widen Median)	Segment 4
15	Reduce 4-Lane to 2-Lane (with turn-outs) Option 2 (Remove Outside Pavement)	Segment 4
17	Left Turn Lane (Left-in/Left-out) with Accel/Decel Areas	Segment 5
18	Median Rumble Strip with 6-ft Shoulders	Segment 5

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CROW CANYON ROAD SAFETY STUDY

- ☑ Established Need for a Safety Study
- ☑ Evaluated Existing Traffic Conditions
- ☑ Evaluated Existing Roadway Corridor Characteristics
- ☑ Solicited Community Concerns Regarding Safety
- ☑ Identified Appropriate Countermeasures
- ☑ Received Community Input Regarding Countermeasures
- ☑ Prioritized Countermeasures
- ☑ Prepared a Safety Study
  - ➢ Summarized/Addressed All Comments
  - ➢ Documented Prioritized Countermeasures
  - ➢ Position ACPWA to Compete for Funding

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NEXT STEPS

- Publish Safety Study in Final Form
- Begin Implementation of *Near-Term* Projects
  - Preliminary Engineering Design
  - Environmental Studies/Documentation
  - Secure Project Funding and Final Design
  - Construct Countermeasure
- Monitor Effectiveness of *Near-Term* Countermeasures
- Address Need to Implement *Medium-Term* and *Long-Term* Countermeasures

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CROW CANYON ROAD SAFETY STUDY

Thank You For Your Participation!!

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CROW CANYON ROAD SAFETY STUDY

Community Q&A Session