Example Application from HSIP-Cycle 5 and HR3-Cycle 3

06-Tulare County-1

Countermeasures Used:

R35: Install edgeline rumble strips/stripes
R34: Install centerline rumble strips/stripes
R4: Install Guardrail

Primary reasons this application was selected to show as an Example:

- Great example of a low-cost holistic approach to improving safety on a rural corridor.
- Proposed project identified through traffic safety analysis of roadway segments throughout the agency.
- Multiple countermeasures used
    - Application shows how more than three safety countermeasures can be included in an application even though the B/C ratio will only be based on the major ones (each with a minimum of 20% of the total project cost)

Changes needed for similar applications in future HSIP calls for projects:

- 2 to 3 photos for each countermeasure in an application would help demonstrate the need for the improvement and confirm that the countermeasure is being applied correctly

APPLICATION FOR HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) PROGRAM CYCLE 5 AND HIGH RISK RURAL ROADS (HR3) PROGRAM CYCLE 3

APPLICATION SUMMARY

After the application is finalized, please save this PDF form using the exact "Application ID" (shown below) as the file name.

This summary page is filled out automatically once the application is completed.

Application ID: 06-Tulare County-1

Submitted By (Agency):
Tulare County

Caltrans District	Application Number	Out of
06	1	2

Project Location

Indian Reservation Road (M137) between Avenue 138 and Tule River Indian Reservation

Project Description

Install advanced warning signs, traffic markings and guardrail

Countermeasure 1: R35: Install edgeline rumble strips/stripes

Countermeasure 2: R34: Install centerline rumble strips/stripes

Countermeasure 3: R4: Install Guardrail

Total Expected Benefit 15752190 **Total Project Cost** $791,000.00

B/C Ratio: 19.91

I. Basic Project Information

Date: Jun 29, 2012 Caltrans District: 06 MPO: TCAG

Agency: Tulare County County: Tulare County

Total number of applications being submitted by your agency: 2

Application Number (each application must have a unique number): 1

Contact Person Information

Name (*Last, First*): Schenke, Reed

Position/Title of Contact Person: Engineer III

Email: Rschenke@co.tulare.ca.us Telephone: (559) 624-7142 Extension:

Address: 5961 S. Mooney Blvd

City: Visalia Zip Code: CA 93277 (Enter only a 5-digit number.)

Project Information

Project Location
-Be Brief (limited to 250 characters)
-See Instructions: Indian Reservation Road (M137) between Avenue 138 and Tule River Indian Reservation

Project Description
-Be Brief (limited to 250 characters)
-See Instructions: Install advanced warning signs, traffic markings and guardrail

Functional Classification: Minor Collector (For Functional Classification and CRS Maps, Visit http://www.dot.ca.gov/hq/tsip/hseb/crs_maps/)

CRS Map ID (e.g. 08E14): 12q

Urban/Rural Area: Rural (Visit http://earth.dot.ca.gov/)

Eligible for HR3 Funding *(See Instructions)*: Yes

Work on the State Highway System *(See Instructions)*

Does the project include improvements on the State Highway System? No

If no, move on to the next page; If yes, go to the below question.

Is this a joint-funded project with Caltrans?

☐ If yes, check this box to confirm a formal Letter of Support from Caltrans - District Traffic is attached to the application. The letter should include estimates of cost sharing.

☐ If no, check this box to confirm a written correspondence from Caltrans District Traffic is attached to the application. The correspondence should indicate that Caltrans does not see issues that would prevent the proposed project from receiving an encroachment permit

Additional Information

1. Is the project focused primarily on "spot location" or "systemic" improvements? Systemic

   The primary type of the "systemic" improvements: Install/Improve Pavement Marking and/or Delineation

2. Which of the California's Strategic Highway Safety Plan (SHSP) Challenge Areas does the project address primarily? (For more information on the SHSP and its Challenge Areas, see: http://www.dot.ca.gov/SHSP/)

   2: Reduce the Occurance and Consequences of Leaving the Roadway in Head-On Collisions

3. How were the safety needs and potential countermeasures for this project **first** identified?

   Jurisdiction-wide safety analysis

4. What is the primarily mode of travel intended to be benefited by this project?

   Motorized users

5. Approximate percentage of project cost going to improvements related to **motorized** travel 100 %

6. Approximate percentage of project cost going to improvements related to **non-motorized** travel 0 %

7. Is the project focused primarily on "Intersection" or "Roadway" improvement?

   Roadway

   Miles of Roadway 8

8. Posted Speed Limit (mph) 45

9. Average Daily Traffic *(See Instructions)*

ADT (Major Road)	ADT (Minor Road)	Year Collected
3,750	3,400	2012

II. Narrative Questions (See Instructions)

These narrative questions are intended to provide additional project details for the application reviewers and project files. Application reviewers will use the information in their "fatal flaw" assessment of the applications, including:

1) The project scope is eligible for HSIP and/or HR3 funding;
2) The countermeasures used in the B/C ratio calculation are appropriately applied based on the scope of the project;
3) The crash data used in the B/C ratio calculation is appropriately applied based on the scope of the project and countermeasures used;
4) The costs included in the application represent the likely total project cost necessary to fully construct the proposed scope. If the proposed project is a piece of a larger construction project, the entire scope of the larger project must be identified.
5) The application data and attachments are reasonable and meet generally accepted traffic engineering and transportation safety principles.

If significant inconsistencies or errors are found in the application information, the Caltrans reviewers may conclude that the application includes one or more "fatal flaws" and the application will be dropped from further funding considerations. The applicant will be notified of Caltrans findings until after the selection process is complete.

1. Overall Identification of Need

Describe how the agency identified the project as one of its top safety priorities. Was a data-driven, safety evaluation of their entire roadway network completed? (limited to 5,000 characters)

Tulare County Resource Management Agency (RMA) conducts ongoing traffic safety analysis of roadway segments throughout unincorporated portions of Tulare County. Through the use of traffic accident reports from the Statewide Integrated Traffic Records System (SWITRS) and communication with the California Highway Patrol (CHP), RMA staff compiles a database of accident histories sorted by location and accident description. Using this database, areas of high collision concentrations are identified and further reviewed for causes and possible countermeasures to reduce the potential for accidents. The RMA strives to update this compilation of traffic accident history on a continuous basis. Past traffic history is reviewed on a 1 year, 3 year, and long term basis. This allows staff to identify short term and long term patterns of accident history. The data is updated when changes, such as the installation of a new traffic signal or roadway widening, are made to the current roadway conditions.

During the reviews of locations of high traffic accident history, Reservation Road (M137) between Avenue 138 and the Tulare River Indian Reservation has appeared at the top of the list of roadway segments with high traffic collision concentrations. This segment of roadway has shown to have a higher concentration of run off the road traffic collisions when viewed over the past 3 years than any other road of similar general description (lane configuration, topography, traffic counts, etc.) Thus, this roadway segment has been flagged as one of the County's high priority roadways for safety improvements.

In addition to the RMA's traffic accident history analysis, Reservation Road (M137) has frequently been identified by multiple organizations, agencies and citizens of Tulare County, as a dangerous traffic corridor. This two lane roadway serves as the only access to the Tule River Indian Reservation and the Eagle Mountain Casino. The average daily traffic (ADT) for this roadway is therefore higher than other similar mountain roads within Tulare County. Due to the casino visitation, a significant portion of the vehicular traffic is unfamiliar with the winding and narrow roadway, and is thus more susceptible to potential incidents on the roadway. In conversations discussing general hazardous traffic situations throughout the County with the CHP and members of the public, RMA staff has been requested to improve the traffic conditions along this segment of roadway. Additionally, the Indian River Tribal Counsel and the RMA staff have had multiple discussions concerning methods to improve the safety for Tribal members and the general public visiting the Reservation and Casino.

2. Potential for Proposed Improvements to Correct the Problem

Describe the primary causes of the collisions that have occurred within the project limits. Are there patterns in the crash types? Clearly demonstrate the connection between the problem and the proposed countermeasures utilized in the Benefit/Cost Ratio calculations. (limited to 5,000 characters)

Note: Safety improvements that do not have countermeasures and crash reduction factors identified in the TIMS B/C Calculator can be included in the project scope; they just won't be added to the project's B/C ratio shown in the application.

Reservation Road (M137) between Avenue 138 and the Tule River Indian Reservation is a winding two lane road in the foothills of eastern Tulare County. The road serves as the only access to the Tule River Indian Reservation and the Eagle Mountain Casino. Traffic accident history records show that the majority of accidents located on this roadway are caused by excessive speeds resulting in collisions where vehicles either run-off the road or cross the center line. Tulare County Resource Management Agency (RMA) staff believe that this excessive speed can be attributed to vehicle operators not being familiar with the road conditions. It is believed that a secondary causation for the majority of these accidents is that traffic conditions change significantly from the flat, straight, and fast roadways of the valley floor to the slower, narrower, roadways with many turns that are associated with the mountain roads of the foothills. It is believed that a third cause of the higher than average traffic accident history is related to driver inattention either from exhaustion or intoxication. While the casino does not serve alcohol, many of the accidents have occurred in the evening or at night when vehicle operators have a higher likelihood of being tired or intoxicated.

To counteract the potentially hazardous driving behavior of the vehicle operators on the roadway, RMA staff proposes as part of this project to install warning signs notifying vehicles of the winding roadway conditions. Additionally, countermeasures to notify drivers of locations where reduced speed is required will be implemented. For example, vehicle speed feedback board(s) will be installed at a location where numerous accidents have occurred due to excessive speed. The RMA proposes to install advanced warning signs (chevron arrows or reduced speed ahead signs) notifying drivers of sharp turns that require additional attention. Also as part of this project, edge and centerline thermoplastic striping with a raised profile creating a rumble strip effect is proposed at locations throughout the roadway. Many segments of the roadway do not have adequate shoulder space for a full width rumble strip grooved into the pavement, however it is understood that these striped rumble strips are effective at preventing vehicles from driving off the road. As a final countermeasure to reduce the significance of run-off the road incidents, RMA proposes to clear or move potential obstacles such as boulders from the roadside, and install sections of gaurdrail where adequate right of way exists to protect vehicles that do exit the roadway.

3. Crash Data Evaluation

Describe how the limits of the crash data were established to ensure only appropriate crashes were included in the Collision Summary Report(s), Collision Diagram(s) and B/C calculations. Explain how the influence areas for each separate countermeasure were established. (limited to 5,000 characters)

The segment of Reservation Road (M137) that is being proposed for traffic safety improvements as part of this project has a consistent topography, roadway width, and traffic volume throughout the entire road segment. The highest concentrations of accidents along the road segment as seen in the collision summary map are located at places where the radius of the road curves are decreased, and the posted speed limit is lowered. The individual crash data shows that the majority of these accidents are related to excessive speed where vehicles exit the roadway or cross the center line. The crash history for the previous 5 years was reviewed for the roadway segment, and it was determined that a systemic approach to implementing the countermeasures applicable to run-off the road and excessive speed crash causes would most effectively reduce the accidents along the entire road segment.

Because exact locations for this type of accident are impossible to predict, designers of the countermeasures will implement system wide improvements. For example, vehicle speed feedback signs will be installed at locations where significant changes to the posted speed limit will warn vehicle operators of the changed conditions. This countermeasure and the intended locations corresponds closely with the highest concentration of crashes along the roadway. However, the secondary effect of making vehicle operator aware of their speed throughout the roadway corridor will carry over to other segments of the road. Improvements to the entire road corridor such as raised profile striping (rumble stripe), advanced curve marking, and object clearing will have an influence over the entire road segment, and thus is considered a system wide countermeasure that is effective for all "run-off the road" or "cross the centerline" collision types.

Collisions that had independent causes, such as animals on the road, or vehicle malfunction, would not be influenced by the proposed countermeasures, and were thus not included in the collision summary and associated B/C calculation.

4. Prior attempts to address the Safety Issue

If appropriate, list all other projects/countermeasures that have been (or are being) deployed at this location. Applicants must identify all prior federal HSIP, HR3 or Safe Routes To School (SRTS) funds approved within or directly adjacent to the propose projects limits within the last 5 years. (limited to 5,000 characters)

Because this road segment has a historically high frequency of collisions, the County has made previous attempts to address the safety issues. Portions of the road have been resurfaced and shoulders in areas with adequate right of way have been widened. Turnouts at various locations have been paved to allow for vehicles to pass slower moving vehicles. The County has worked with the California Highway Patrol and the Tule River Indian Reservation Tribal Council to increase patrols and to provide a law enforcement presence in hopes that the excessive speed issue would be reduced. The Eagle Mountain Casino has established a bus system and parking lot near the junction of Reservation Road (M137) and Avenue 138. This bus system eases the potential congestion on the road corridor, however traffic volume has been rising as the casino has expanded and attracted larger amounts of visitors. Despite the previous attempts to decrease the safety concerns along this corridor, the rate of accidents has not significantly changed. This is due in part to the increased traffic along the roadway.

5. Total project costs

Describe the process used to establish the total cost for the project. Confirm contingencies for reasonably expected costs, including drainage, environmental, traffic, etc, are included. (limited to 5,000 characters)

Note: For applications with more than one countermeasure used in the B/C calculations, applicants need to describe the logic used to distribute the total project cost to each countermeasure.

The total project cost for the proposed improvements, as well as any related project costs not associated with the actual safety countermeasures, but required for adequate completion of the project have been included in an engineers preliminary estimate for the project. A 20% contingency was included in the cost estimate to account for unforeseen issues that may arise during the implementation of the project.

The estimate of the project cost has been prepared in adequate detail to establish separate costs for each of the proposed countermeasures. The specific Items related to each countermeasure are broken down in the cost estimate. Items that fall entirely into one countermeasure category are put at 100% in that category. Items such as traffic control that are applicable to more than one countermeasure category are distributed by percentage to each applicable category.

III. Project Cost Estimate *(See Instructions)*

All project costs must be accounted for on this form, even if substantial elements of the overall project are to be funded by other sources.

Round all costs up to the nearest hundred dollars. Once all costs are entered, click "Check Cost Estimate" to perform validation. If errors are detected, they will appear below the button. Click it to check again each time when the costs have been revised.

Phase		Federal Funds	Local/Other Funds[7]	Total Cost	Federal/Total[5]
Preliminary Engineering	Environmental	$9,000	$1,000	$10,000	
	PS&E	$18,000	$2,000	$20,000	
	PE Subtotal[2]	**$27,000**	**$3,000**	**$30,000**	**90%**
	☐ Agency does NOT request **federal** funds for PE Phase (automatically checked if PE - federal funds is $0).				
Right of Way	Right of Way Engineering	$0	$0	$0	
	Appraisals, Acquisitions & Utilities	$0	$0	$0	
	ROW Subtotal[3]	**$0**	**$0**	**$0**	**0%**
Construction Engineering & Construction	Construction Engineering[4]	$18,000	$2,000	$20,000	**90%**
	Construction[1]	$666,000	$75,000	$741,000	**90%**
	CON Subtotal	**$684,000**	**$77,000**	**$761,000**	
	Total Cost[5][6][7]	**$711,000**	**$80,000**	**$791,000**	

(1) The "Total Construction Cost" (including contingencies) must match the detailed Engineer's Estimate (attached to the application).
(2) "Federal Funds" for Preliminary Engineering may not exceed 25% of the Federal Construction Cost.
(3) "Federal Funds" for Right of Way may not exceed 25% of the Federal Construction Cost.
(4) "Federal Funds" for Construction Engineering may not exceed 15% of the Federal Construction Cost.
(5) "Federal Funds" may not exceed 90% of "Total Cost." This applies to each phase.
(6) "Federal Funds" may not exceed $900,000.
(7) To maintain efficiencies in the overall Program and Project Management, the total "Federal Funds" must be no less than $100,000 (see Application Form Instructions for exceptions). If needed, agencies should consider extending the project limits and/or adding other safety improvements in order to increase both the Benefits and Costs.

Check Cost Estimate [Per (2) through (7) above]

Congratulations! No errors have been found in the cost estimate.

IV. Implementation Schedule *(See Instructions)*

The local agency is expected to deliver the project per Caltrans Local Assistance safety program delivery requirements.
In order for the milestones to be calculated correctly, all fields needs to be filled in. For steps that are not applicable, enter "0".

Target Date for the Project's Amendment into the FTIP:	**01/01/2013**		
Time for agency to internally staff project and request PE authorization	2	Month(s)	
Typical Time for Caltrans and FHWA to process and approve PE authorization	2	Month(s)	
Proposed PE Authorization Date:	**05/02/2013**		**(PE Authorization Delivery Milestone)**
Will external consultants be required to complete the PE phase of this project?	No		
Additional time needed to the Delivery Process for hiring PE consultant(s)	0	Month(s) (0 - 6)	
Time to prepare environmental studies request	1	Month(s)	
Time to complete CEQA/NEPA studies/approvals	4	Month(s)	
See PES Form in the LAPM for Typical studies and permits			
Time to complete the Right of Way Acquisition (federal process)	0	Month(s)	
Plan on 18 months minimum for federal process including a condemnation			
Time to complete final PS&E documentation	6	Month(s)	
Other	2	Month(s)	
Expected Completion Date for the PE Phase:	**06/01/2014**		
Time for agency to request CON authorization	1	Month(s)	
Typical Time for Caltrans and FHWA to process and approve CON Auth	3	Month(s)	
Proposed CON Authorization Date:	**09/30/2014**		**(CON Authorization Delivery Milestone)**
Time included for the agency's workload-leveling or construction-window needs	3	Month(s)	
Time to award contract with CON contractor (following the federal process, including Board/Council approval, advertise, award, execute and mobilize)	3	Month(s)	
Time to complete construction	4	Month(s)	
Time included for closing the CON contract	2	Month(s)	
Other	0	Month(s)	
Expected Completion Date for the CON Phase:	**09/30/2015**		
Time to complete the project close-out process	3	Month(s)	
Typical Time for Caltrans and FHWA to process and approve project close-out	3	Month(s)	
Expected Completion Date for the project Close-Out:	**03/30/2016**		**(Close-Out Delivery Milestone)**

V. Countermeasures, Crash Data and Benefit/Cost Ratio *(See Instructions)*

In the process of completing this application, the Local Agency is required to utilize the Benefit/Cost Ratio Calculation Tool that is included in the Safe Transportation research and Education Center (SafeTREC) Transportation Injury Mapping System (TIMS) web site. This **web site** can be assessed at http://tims.berkeley.edu/

The final output summary page from TIMS must be included as part of the official application (both electronically and hard copy). The hard copy page must be included in the application following this page.

In order to facilitate the electronic collection and tracking of this data, Caltrans is requiring agencies to manually enter some of the key "input data" and "output data" used in their final TIMS B/C Ratio. *NOTE: If any of the values inputted on this sheet do not match the values from the TIMS B/C Ratio Output Summary sheet, THE APPLICATION WILL BE REJECTED.* ***Be Careful and confirm the numbers!***

TIMS Application ID: 06-Tulare County-1 (This ID is generated by this form. TIMS Application ID must match this ID.)

Version (from TIMS) : 1

Total Project Cost: $791,000 (This must match the total project cost in Section III.)

Countermeasure Information

Number of countermeasures utilized: 3

	Countermeasure	% of Total Project Cost
#1:	R35: Install edgeline rumble strips/stripes	40 (%)
#2:	R34: Install centerline rumble strips/stripes	35 (%)
#3:	R4: Install Guardrail	25 (%)

B/C Ratio Calculation

	Expected Benefit (Life)	Expected Cost	Resulting B/C
Countermeasure #1	$4,800,210	$316,400	15.17
Countermeasure #2	$6,400,280	$276,850	23.12
Countermeasure #3	$4,551,700	$197,750	23.02
Project's Total (Overall)	**$15,752,190**	**$791,000**	**19.91**

VI. Application Data Verification and Signature *(See Instructions)*

All HSIP/HR3 applications (hard-copies only) must be signed by a registered engineer or the Agency's Transportation Manager in responsible charge of their Traffic Engineering section. By signing and submitting this application, the engineer/manager is attesting to:

1. All data in the application is accurate and represents the total scope of the planned project.
2. All likely project costs are included in the Total Project Cost (additional federal funds for cost increases will not be approved.)
3. Each countermeasure included represents a minimum of 20% of the Total Project Cost.
4. All crash data is: 1) accurately shown in collision diagram(s) attached to this application; and 2) applied to countermeasures using generally accepted traffic engineering principles.
5. The agency understands the Project Delivery Requirements for the HSIP and HR3 programs and is prepared to deliver the project with these requirements;
6. The agency understands if Caltrans staff determine that any of the above requirements are not met, inaccurate, or fail to meet the program guidelines and application instructions, the application will be rejected and will not be eligible to receive federal safety funding. Due to time constraints in the evaluation process, applicants will not be notified until after the selection process is complete. Refer to Application Form Instructions for more information on "fatal flaws."

Name *(Last, First)*: Schenke, Reed

Title: Engineer III

Engineer License Number C73642

Signature*: 

Date: Oct 1, 2012

* Note: This signature is only expected on the two hard copies of the application. The electronic copy of this PDF form must be saved in the original format (NOT a scanned copy) so the application data can be extracted.

Application Attachments *(See Instructions)*

Check all attachments included in this application.

- [x] Vicinity map /Location map (Required)
- [x] Project map showing existing and proposed conditions (Required)
- [x] Collision diagram(s) (Required)
- [x] Collision summary report / list (Required)
- [x] TIMS output summary sheet (Required)
- [x] Detailed Engineer's Estimate (Required)
- [ ] Warrant studies (Required when applicable to proposed improvements)
- [ ] Letter of Support from Caltrans (Required when applicable)
- [ ] Additional narration, documentation, photographs, letters of support, etc.

Application Submittal Process

For applications to be included in the final Caltrans review, ranking and selection process, they must follow the exact submittal process identified in the application instructions. Some of the key requirements are as follows:

1). Submit two (2) original copies of the SIGNED application form and attachments;

2). On a CD or flash drive, submit electronic copies of

- The original PDF form with application data. The file name must match the "Application ID" shown on the cover page. This file will be used to extract the application data. It can not be a scanned or printed copy.
- Separate electronic PDF files for a scanned copy of signed application form and application attachments.

3) The above must be submitted to Caltrans Local Assistance District Local Assistance Engineer (DLAE), by Friday, July 20, 2012.

SEE MAP 12P

SEE MAP11Q

SEE MAP 13Q

SEE MAP 12R

MILO

SPRINGVILLE

CAMP NELSON

CEDAR SLOPE

GLOBE

WORTH

TULARE

JOHNSONDALE

ULTRA

MAGNOLIA

PINE FLAT

Porterville

12Q14

12Q21

12Q22

12Q24

12Q25

12Q31

12Q45

12Q54

Yokohl ValleyDr

M-296

Balch Park Rd

County Hwy 220

Balch ParkRd

County Hwy 220

Ave 196

Rd 276

State Hwy 190

Highway 190

Ave 176

County Hwy J28

Avenue 176

State Hwy 190

Highway 190

Hwy 190

Indian ReservationRd

County Hwy J42

M-90

Rd 264

Avenue 104

Ave 96

M-109

SM-50

M-504

23S03

Ave 56

Hot Springs Rd

Hot SpringsRd

M-56

Old Stage Rd

Date: 8/5/11

APPROVED
FEDERAL HIGHWAY ADMINISTRATION
FOR: VINCENT P. MAMMANO
DIVISION ADMINISTRATOR

0 0.5 1 2 3 4 5 Miles

0 5,000 10,000 15,000 20,000 25,000 Feet

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
In Cooperation With The
FEDERAL HIGHWAY ADMINISTRATION
AND LOCAL AGENCIES

N

Caltrans

COUNTY BOUNDARY
CITY BOUNDARY
RAILROAD

SIGN ROUTES

INTERSTATE
U.S.
STATE
COUNTY

FUNCTIONAL CLASSIFICATION SYSTEM

INTERSTATE	1
OTHER FWY OR EXPWY	2
OTHER PRINCIPAL ARTERIAL	3
MINOR ARTERIAL	4
MAJOR COLLECTOR	5
MINOR COLLECTOR	6
LOCAL	7

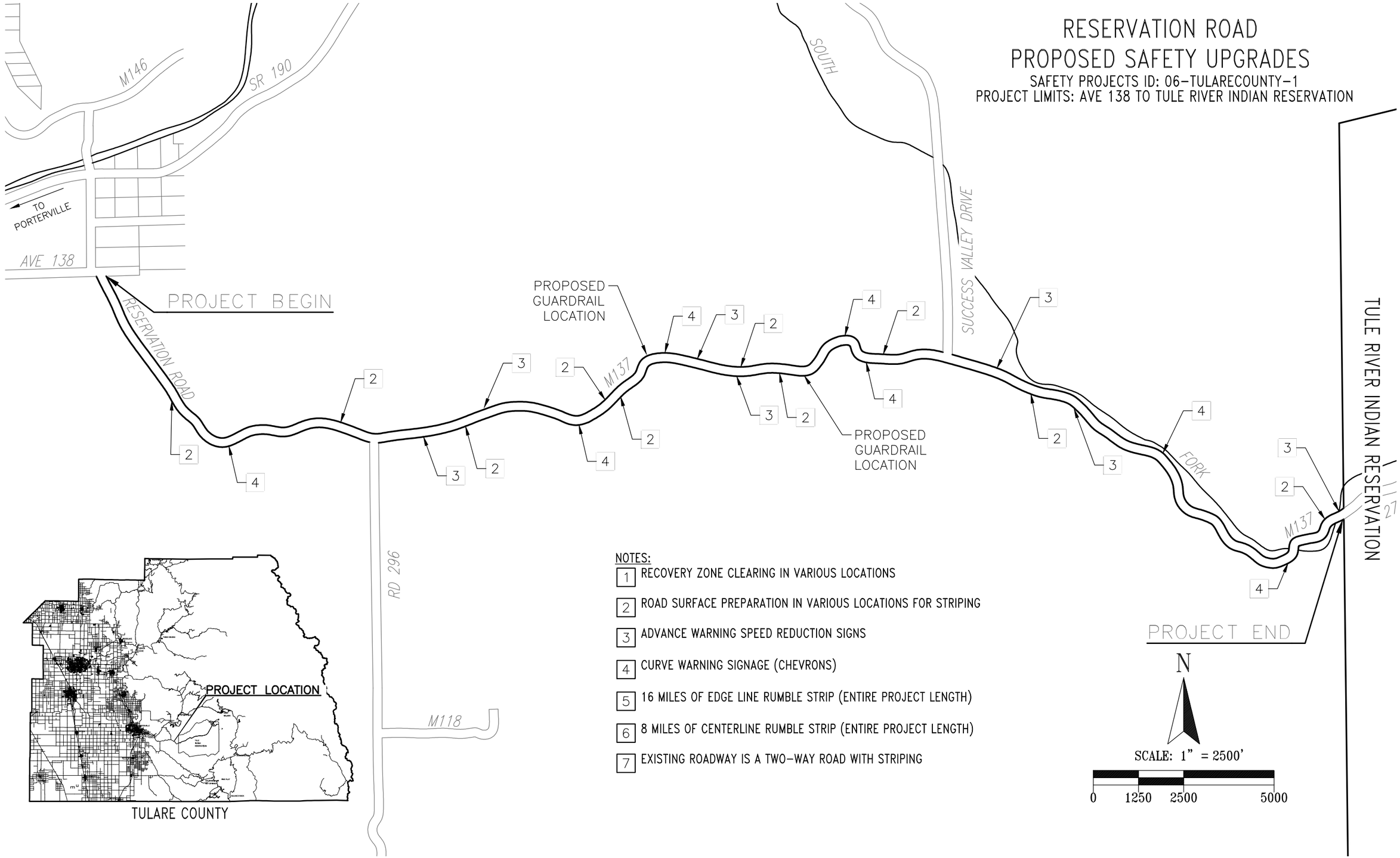
Fresno
Inyo
Tulare
Kern

MAP 12Q

Tulare County CALIFORNIA ROAD SYSTEM

RESERVATION ROAD
PROPOSED SAFETY UPGRADES

SAFETY PROJECTS ID: 06-TULARECOUNTY-1
PROJECT LIMITS: AVE 138 TO TULE RIVER INDIAN RESERVATION



NOTES:

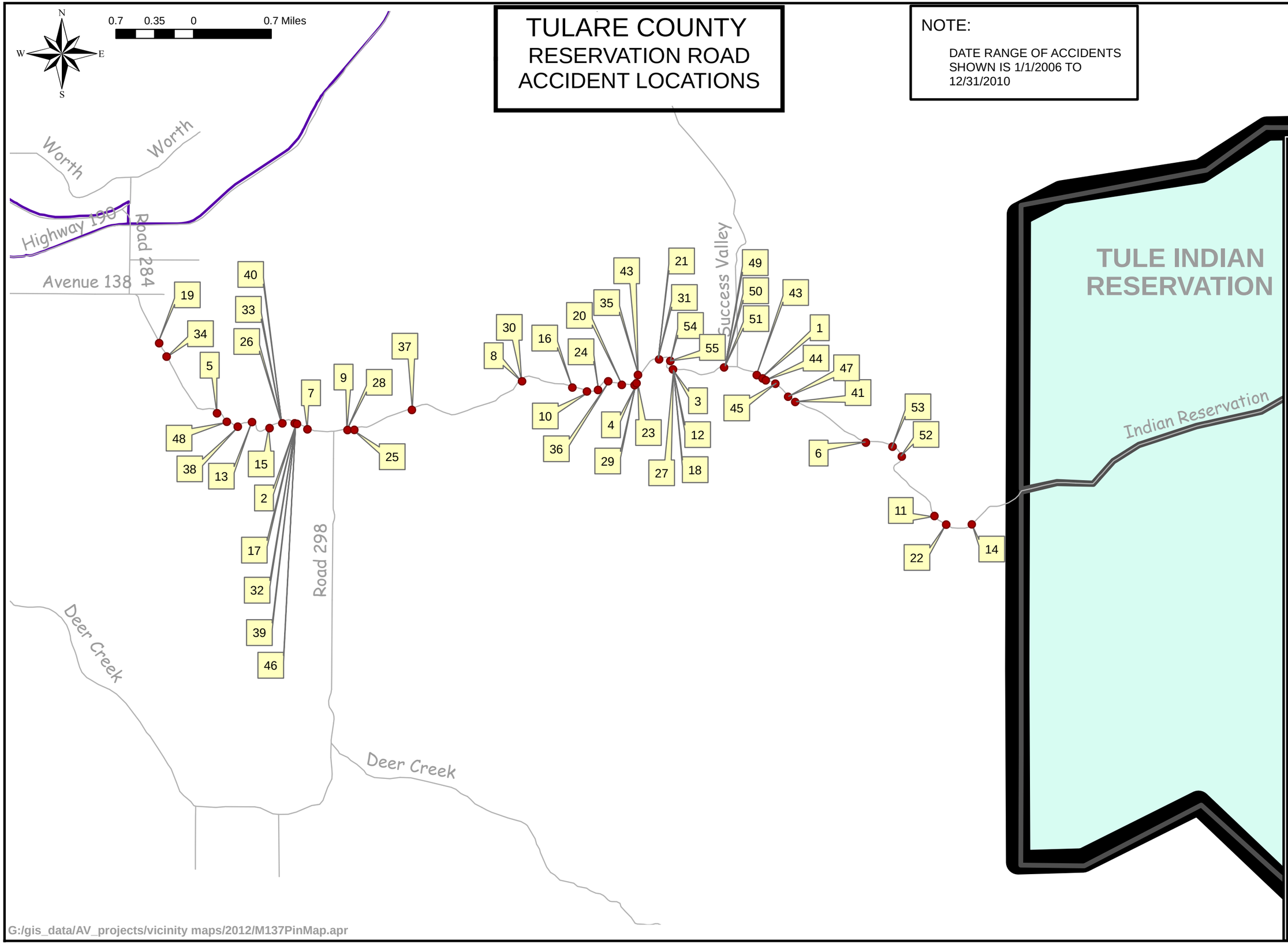
1. RECOVERY ZONE CLEARING IN VARIOUS LOCATIONS
2. ROAD SURFACE PREPARATION IN VARIOUS LOCATIONS FOR STRIPING
3. ADVANCE WARNING SPEED REDUCTION SIGNS
4. CURVE WARNING SIGNAGE (CHEVRONS)
5. 16 MILES OF EDGE LINE RUMBLE STRIP (ENTIRE PROJECT LENGTH)
6. 8 MILES OF CENTERLINE RUMBLE STRIP (ENTIRE PROJECT LENGTH)
7. EXISTING ROADWAY IS A TWO-WAY ROAD WITH STRIPING

G:\Staff\Yanez\ReservationRoad_exhibit.dwg

TULARE COUNTY
RESERVATION ROAD ACCIDENT LOCATIONS

NOTE:

DATE RANGE OF ACCIDENTS SHOWN IS 1/1/2006 TO 12/31/2010



Reference #	Report No.	Date
1	2483015	2/5/06
2	2539447	3/14/06
3	2558260	3/18/06
4	2565967	4/3/06
5	2617978	5/3/06
6	2677777	6/2/06
7	2677931	6/10/06
8	2690518	6/13/06
9	2755223	7/27/06
10	9014095	8/23/06
11	2815827	9/19/06
12	2834584	9/30/06
13	2901773	11/12/06
14	2919450	11/23/06
15	2932192	11/27/06
16	2997718	12/5/06
17	2953966	12/11/06
18	2953938	12/16/06
19	2953934	12/18/06
20	3056598	1/21/07
21	3105268	3/13/07
22	3182093	5/1/07
23	3201609	5/8/07
24	3201621	5/17/07
25	3201613	5/20/07
26	3369887	7/20/07
27	3299333	7/26/07
28	3302330	7/29/07
29	3446546	11/11/07
30	3504305	12/3/07
31	3537575	12/18/07
32	3544266	12/26/07
33	3565209	1/1/08
34	3570378	1/20/08
35	3627707	2/8/08
36	3692860	3/30/08
37	3865684	7/7/08
38	3882136	9/21/08
39	3986980	11/6/08
40	4024509	12/22/08
41	4023628	1/11/09
42	4093725	1/18/09
43	4111195	1/22/09
44	4114263	1/30/09
45	4099312	2/9/09
46	4214439	4/11/09
47	4432035	10/5/09
48	4439961	10/7/09
49	4532456	12/21/09
50	4533976	12/29/09
51	4619644	2/5/10
52	4622604	2/18/10
53	4624002	3/7/10
54	4672142	3/22/10
55	4711265	4/24/10

G:/gis_data/AV_projects/vicinity maps/2012/M137PinMap.apr

Agency: Tulare County RMA
Project Description: Reservation Road Safety Upgrades
Application ID: 06- Tulare County - 1

Reservation Road Collision Report

Reference #	Case ID	Date	Time	Dist	Dir	Primary Road	Type of Collision	Motor Veh. Involved with	DOT1	MPC 1	MPC 2	Primary Cause	Killed	Severe Injuries	Other Injuries	Complaint of Pain
1	2483015	2/5/06	21:23	1056	East of	Indian Reservation Dr/Success Valley Dr	Hit Object	Other Object	West	Ran Off Road		Other Hazardous Movement	0	0	0	1
2	2539447	3/14/06	15:55	1584	West of	Indian Reservation Dr/Road 298	Overturned	Non-Collision	West	Ran Off Road		Other Hazardous Movement	0	0	1	0
3	2558260	3/18/06	15:20	2640	West of	Indian Reservation Dr/Success Valley Dr	Sideswipe	Other Motor Vehicle	East	Proceeding Straight	Proceeding Straight	Other Hazardous Movement	0	0	1	1
4	2565967	4/3/06	7:40	5280	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	West	Proceeding Straight	Crossed Into Opposing Lane - Unplanned	Wrong Side of Road	0	0	1	0
5	2617978	5/3/06	16:30	5808	East of	Indian Reservation Dr/Avenue 138	Sideswipe	Other Motor Vehicle	West	Proceeding Straight	Proceeding Straight	Other Hazardous Movement	0	0	0	1
6	2677777	6/2/06	2:50	5808	East of	Indian Reservation Dr/Success Valley Dr	Head-On	Other Motor Vehicle	East	Crossed Into Opposing Lane Unplanned	Proceeding Straight	Driving Under Influence	0	0	5	1
7	2677931	6/10/06	3:45	1056	West of	Indian Reservation Dr/Road 298	Overturned	Non-Collision	East	Ran Off Road		Other Hazardous Movement	0	0	1	0
8	2690518	6/13/06	20:53	7920	East of	Indian Reservation Dr/Road 298	Overturned	Non-Collision	West	Ran Off Road		Other Hazardous Movement	0	0	0	1
9	2755223	7/27/06	9:15	528	East of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	West	Ran Off Road		Improper Turning	0	0	2	0
10	9014095	8/23/06	16:15	10560	East of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	East	Proceeding Straight		Driving Under Influence	0	0	0	1
11	2815827	9/19/06	8:20	10560	East of	Indian Reservation Dr/Success Valley Dr	Overturned	Non-Collision	East	Proceeding Straight		Other Hazardous Movement	0	0	0	1
12	2834584	9/30/06	23:05	2640	West of	Indian Reservation Dr/Success Valley Dr	Head-On	Other Motor Vehicle	East	Crossed Into Opposing Lane Unplanned	Proceeding Straight	Other Hazardous Movement	0	0	0	2
13	2901773	11/12/06	14:00	7392	East of	Indian Reservation Dr/Avenue 138	Overturned	Non-Collision	East	Proceeding Straight		Other Hazardous Movement	0	0	0	1
14	2919450	11/23/06	18:10	12144	East of	Indian Reservation Dr/Success Valley Dr	Head-On	Other Motor Vehicle	West	Crossed Into Opposing Lane Unplanned	Proceeding Straight	Other Hazardous Movement	0	1	2	1
15	2932192	11/27/06	1:20	2640	West of	Indian Reservation Dr/Road 298	Overturned	Non-Collision	West	Ran Off Road		Other Hazardous Movement	0	0	1	1
16	2997718	12/5/06	15:54	7920	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Driving Under Influence	2	0	1	0
17	2953966	12/11/06	7:35	1584	West of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	West	Ran Off Road		Other Hazardous Movement	0	0	0	1
18	2953938	12/16/06	1:35	2640	West of	Indian Reservation Dr/Success Valley Dr	Head-On	Other Motor Vehicle	West	Proceeding Straight	Proceeding Straight	Unsafe Speed	0	0	1	2
19	2953934	12/18/06	11:50	2040	East of	Indian Reservation Dr/Avenue 138	Hit Object	Fixed Object	West	Proceeding Straight		Driving Under Influence	0	0	1	1
20	3056598	1/21/07	20:20	5808	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Other Hazardous Movement	0	0	1	1
21	3105268	3/13/07	20:15	3696	West of	Indian Reservation Dr/Success Valley Dr	Sideswipe	Other Motor Vehicle	East	Other Unsafe Turning	Proceeding Straight	Other Hazardous Movement	0	0	0	1
22	3182093	5/1/07	12:30	11088	East of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Other Hazardous Movement	0	0	0	1
23	3201609	5/8/07	23:00	23760	East of	Indian Reservation Dr/Avenue 138	Head-On	Other Motor Vehicle	West	Crossed Into Opposing Lane Unplanned	Proceeding Straight	Other Hazardous Movement	0	0	2	3
24	3201621	5/17/07	20:15	6864	West of	Indian Reservation Dr/Success Valley Dr	Overturned	Non-Collision	East	Crossed Into Opposing Lane Unplanned		Improper Turning	0	0	2	3
25	3201613	5/20/07	2:55	792	East of	Indian Reservation Dr/Road 298	Overturned	Non-Collision	West	Ran Off Road		Driving Under Influence	0	0	1	0
26	3369887	7/20/07	10:45	2112	West of	Indian Reservation Dr/Road 298	Overturned	Non-Collision	West	Ran Off Road		Other Hazardous Movement	0	0	1	0
27	3299333	7/26/07	15:18	2603	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Other Hazardous Movement	0	0	0	2
28	3302330	7/29/07	22:00	528	East of	Indian Reservation Dr/Road 298	Overturned	Non-Collision	West	Proceeding Straight		Other Hazardous Movement	0	1	0	0
29	3446546	11/11/07	17:15	5280	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Other Hazardous Movement	0	0	0	1

Note: Accident History for Reservation Road (M137).
Dates 1/1/2006 through 1/1/11.
Only Accidents with severe injuries or fatalities shown.

Agency: Tulare County RMA
Project Description: Reservation Road Safety Upgrades
Application ID: 06- Tulare County - 1

Reservation Road Collision Report

Reference #	Case ID	Date	Time	Dist	Dir	Primary Road	Type of Collision	Motor Veh. Involved with	DOT1	MPC 1	MPC 2	Primary Cause	Killed	Severe Injuries	Other Injuries	Complaint of Pain
30	3504305	12/3/07	21:00	7920	East of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	West	Ran Off Road		Other Hazardous Movement	0	0	1	0
31	3537575	12/18/07	16:00	3696	West of	Indian Reservation Dr/Success Valley Dr	Broadside	Other Motor Vehicle	West	Proceeding Straight	Proceeding Straight	Unsafe Speed	0	0	0	1
32	3544266	12/26/07	1:18	1584	West of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	West	Crossed Into Opposing Lane Unplanned		Other Hazardous Movement	0	0	0	1
33	3565209	1/1/08	3:50	2112	West of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	West	Ran Off Road		Driving Under Influence	0	2	0	0
34	3570378	1/20/08	16:37	2640	East of	Indian Reservation Dr/Avenue 138	Head-On	Other Motor Vehicle	West	Crossed Into Opposing Lane Unplanned	Proceeding Straight	Driving Under Influence	1	3	1	0
35	3627707	2/8/08	21:05	4752	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Other Hazardous Movement	1	1	0	2
36	3692860	3/30/08	7:20	6336	West of	Indian Reservation Dr/Success Valley Dr	Head-On	Other Motor Vehicle	East	Proceeding Straight	Proceeding Straight	Unsafe Speed	0	0	1	0
37	3865684	7/7/08	15:20	3168	East of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	West	Ran Off Road		Other Hazardous Movement	0	0	1	0
38	3882136	9/21/08	17:05	4224	West of	Indian Reservation Dr/Road 298	Overturned	Non-Collision	East	Ran Off Road		Driving Under Influence	0	0	1	0
39	3986980	11/6/08	7:24	1584	West of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	West	Ran Off Road		Improper Turning	0	0	0	1
40	4024509	12/22/08	11:40	2112	West of	Indian Reservation Dr/Road 298	Hit Object	Fixed Object	West	Proceeding Straight		Unsafe Speed	0	0	1	0
41	4023628	1/11/09	18:00	2640	East of	Indian Reservation Dr/Success Valley Dr	Sideswipe	Other Motor Vehicle	East	Crossed Into Opposing Lane Unplanned	Proceeding Straight	Other Hazardous Movement	0	0	0	1
42	4093725	1/18/09	13:30	792	East of	Indian Reservation Dr/Success Valley Dr	Overturned	Fixed Object	West	Ran Off Road		Other Hazardous Movement	0	0	0	1
43	4111195	1/22/09	21:25	4752	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Unsafe Speed	0	1	0	0
44	4114263	1/30/09	6:00	1200	East of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Improper Turning	0	0	1	0
45	4099312	2/9/09	23:35	1584	East of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	West	Ran Off Road		Other Hazardous Movement	0	0	0	1
46	4214439	4/11/09	0:30	9504	East of	Indian Reservation Dr/Avenue 138	Overturned	Non-Collision	East	Ran Off Road		Improper Turning	0	0	1	0
47	4432035	10/5/09	16:45	2296	East of	Indian Reservation Dr/Success Valley Dr	Head-On	Other Motor Vehicle	West	Ran Off Road	Proceeding Straight	Improper Turning	0	0	1	1
48	4439961	10/7/09	23:10	6336	East of	Indian Reservation Dr/Avenue 138	Overturned	Fixed Object	East	Ran Off Road		Unsafe Speed	0	0	2	0
49	4532456	12/21/09	17:25	528	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	West	Ran Off Road		Improper Turning	0	0	0	1
50	4533976	12/29/09	21:45	540	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	Not Stated	Ran Off Road		Improper Turning	0	0	1	0
51	4619644	2/5/10	22:45	528	West of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	East	Ran Off Road		Improper Turning	0	0	0	1
52	4622604	2/18/10	15:00	845	East of	Indian Reservation Dr/Success Valley Dr	Hit Object	Fixed Object	West	Ran Off Road		Improper Turning	0	0	2	0
53	4624002	3/7/10	12:10	7392	East of	Indian Reservation Dr/Success Valley Dr	Overturned	Fixed Object	West	Ran Off Road		Improper Turning	0	0	1	0
54	4672142	3/22/10	20:10	3168	West of	Indian Reservation Dr/Success Valley Dr	Sideswipe	Other Motor Vehicle	East	Crossed Into Opposing Lane Unplanned	Proceeding Straight	Unsafe Speed	0	0	2	3
55	4711265	4/24/10	18:13	3168	West of	Indian Reservation Dr/Success Valley Dr	Overturned	Non-Collision	West	Proceeding Straight		Improper Turning	0	0	1	0
												Total	**4**	**9**	**42**	**42**

Total "Fatality" Accidents	**3**			
Total "Severe Injury" Accidents		**4**		
Total "Other Injuries" Accidents			**28**	
Total "Complaint of Pain" Accidents				**20**

Note: Accident History for Reservation Road (M137).
Dates 1/1/2006 through 1/1/11.
Only Accidents with severe injuries or fatalities shown.

Benefit / Cost Calculation Result

1. Project Information

Application ID	06-Tulare County-1	Version	1

2. Countermeasures and Crash Data

• Install edgeline rumble strips / stripes

CM Number	Project Type	Crash Type	CRF	Life
R35	Operation / Warning	All	15	10

Crash Type	Fatality (Death)	Severe Injury	Injury - Other Visible	Injury - Complaint of Pain	Property Damage Only	Total
All	3	4	28	20	0	55

Annual Benefit	$480,021
Life Benefit	$4,800,210
Cost	$ 316,400
B/C Ratio	**15.17**

• Install centerline rumble strips / stripes

CM Number	Project Type	Crash Type	CRF	Life
R34	Operation / Warning	All	20	10

Crash Type	Fatality (Death)	Severe Injury	Injury - Other Visible	Injury - Complaint of Pain	Property Damage Only	Total
All	3	4	28	20	0	55

Annual Benefit	$640,028
Life Benefit	$6,400,280
Cost	$ 276,850
B/C Ratio	**23.12**

• Install guardrail

CM Number	Project Type	Crash Type	CRF	Life
R4	Remove / Shield Obstacles	All	25	20

Crash Type	Fatality (Death)	Severe Injury	Injury - Other Visible	Injury - Complaint of Pain	Property Damage Only	Total
All	1	1	3	2	0	7

Annual Benefit	$227,585
Life Benefit	$4,551,700
Cost	$ 197,750
B/C Ratio	**23.02**

3. Benefit Cost Result

Total Benefit	$15,752,190
Total Cost	$791,000
B/C Ratio	**19.91**

Safety Practitioner / Engineer: reed schenke

Signature:

By signing this B/C Calculation Result, you are attesting to your authority / responsibility at your local agency for this work and you are attesting to the accuracy of the values on this page and that they have been entered into the HSIP Application Form correctly, DO NOT SIGN if any of this is not the case.

Preliminary Engineers Estimate

6/26/2012

HSIP Grant Application Reservation Road (M137) Safety Upgrades

Agency: Tulare County Resource Management Agency

Project Description: Reservation Road Safety Upgrades

Project Location: Reservation Road (M137) Between Ave 138 and Tule River Indian Reservation

Application ID: 06-Tulare County - 1

Item	# of Units	Unit	Unit Cost $	Total Cost for Item	Portion CM 1 (R35)		Portion CM 2 (R34)		Portion CM 3 (R4)	
					%	$	%	$	%	$
Install edge line rumble stripes	84480	LF	$ 0.90	$ 76,032	100%	$ 76,032				
Install centerline rumble stripes	42240	LF	$ 1.60	$ 67,584			100%	$ 67,584		
Install Speed Warning Signs	1	LS	$ 15,000.00	$ 15,000	33%	$ 4,950	33%	$ 4,950	33%	$ 4,950
Install Curve Warning Signs	30	EA	$ 500.00	$ 15,000	33%	$ 4,950	33%	$ 4,950	33%	$ 4,950
Recovery Zone Clearing	1	LS	$ 3,000.00	$ 3,000	33%	$ 990	33%	$ 990	33%	$ 990
Install Gaurdrail	1100	LF	$ 135.00	$ 148,500					100%	$ 148,500
Road Surface Preparation for Striping	80000	SFT	$ 3.50	$ 280,000	50%	$ 140,000	50%	$ 140,000		
Traffic Control	1	LS	$ 12,000.00	$ 12,000	33%	$ 3,960	33%	$ 3,960	33%	$ 3,960
		Subtotal Construction Items		**$ 617,116**		**$ 230,882**		**$ 222,434**		**$ 163,350**
		Construction Item Contingency (20%)		$ 123,423		$ 46,176		$ 44,487		$ 32,670
		Total Construction Cost (rounded)		**$ 741,000**		**$ 277,058**		**$ 266,921**		**$ 196,020**
					37%	**CM2**	**36%**	**CM 3**	**26%**	**Other**

Note 1: Preliminary Engineering, Right of way, and Construction Engineering not included