EXECUTIVE SUMMARY

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U.S. Department of Transportation
Federal Highway Administration

TAHOE REGIONAL PLANNING AGENCY
TRANSPORTATION

Caltrans

U.S. Highway 50 runs directly through the City of South Lake Tahoe, where it functions as both a state highway serving traffic from Nevada and California as well as the city's main street. This important roadway serves residents, visitors, and commuters by connecting State Route 89 from the West Shore to the California and Nevada state line.

In the 1990s, Caltrans scoped its first water quality improvement project for the U.S. Highway 50 corridor in South Lake Tahoe. The goal was to reduce the amount of fine sediment reaching Lake Tahoe. As the project moved through approval processes, its scope and goals grew from simply improving water quality to incorporating other important community and transportation benefits such as sidewalks, intersection reconfigurations, and bike lanes. During the many years of project scoping and implementation, community values, best practices, and agency missions have evolved to embrace the concept of Complete Streets[1]. The Highway 50 reconstruction project from Trout Creek to Ski Run, completed in 2013, illustrates how the project evolved to incorporate not only water quality improvements, but also bike lanes, sidewalks, and pedestrian lighting that resulted from multi-agency agreements and funding mechanisms.

Numerous complexities in this Highway 50 corridor have created new challenges and needs for the South Lake Tahoe community, which has about 23,000 full-time local residents. These complexities include fluctuating seasonal traffic volumes that can swell to as high as approximately 30,000 AADT in some areas during times of peak visitation, varied land uses and highway access points, and increasing pedestrian and bicycle demand with missing connectivity in some areas. An estimated 10 million vehicles enter the Lake Tahoe Region each year.

These needs, challenges, and solutions are identified in the 2016 Linking Tahoe: Active Transportation Plan, the 2017 Linking Tahoe: Regional Transportation Plan, and the city's local area plans and general plan. The final multi-million-dollar Highway 50 reconstruction project from Trout Creek to the South Tahoe "Y" in the city starting in 2017 prompted conversations between the Tahoe Regional Planning Agency, Caltrans, and the City of South Lake Tahoe. Ultimately, these agencies requested a pedestrian and bicycle road safety audit (RSA) and the audit was completed with help from the Federal Highway Administration (FHWA). Caltrans expressed a willingness to consider incorporating reasonable modifications to its U.S. Highway 50 Trout Creek to "Y" project based on recommendations and best practices, with the understanding that some constraints exist with the project already underway. Additionally, there was an urgency to mitigate known risks that are not being addressed in the current construction project and to respond to community desires.

Road Safety Audit Overview:

According to the Federal Highway Administration's (FHWA) Road Safety Audit Guidelines[2], a road safety audit (RSA) is a formal safety examination of a future roadway plan or project or an in-service

[1] Caltrans Complete Street Policy: http://www.dot.ca.gov/transplanning/ocp/complete-streets.html
A complete street is a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the function and context of the facility. Every complete street looks different, according to its context, community preferences, the types of road users, and their needs.
TRPA also has a complete street policy, please see 2016 Active Transportation Plan.
[2] FHWA, https://safety.fhwa.dot.gov/rsa/guidelines/

facility and is conducted by an independent, experienced, and multidisciplinary RSA team.[3] The primary focus of an RSA is safety while working within the context of mobility, access, surrounding land use, user demand, and aesthetics. RSAs identify potential safety issues affecting all road users under all conditions and suggest solutions for consideration by the project design team and responsible agencies. In addition to using an RSA as a tool to assess and improve safety performance of facilities, public agencies may wish to conduct RSAs oriented to assess or address safety issues related to specific user groups such as pedestrians and bicyclists. RSA's can be performed as both a proactive and reactive approach to assessing and improving roadway safety.

The RSA team included representatives from the U.S. Department of Transportation's Federal Highway Administration, California Highway Patrol (CHP), Caltrans, City of South Lake Tahoe (public works, police), Tahoe Regional Planning Agency (TRPA), and Tahoe Transportation District (TTD). The team also met with advocacy groups, including the Lake Tahoe Bicycle Coalition, South Shore Transportation Management Association, and the Community Mobility Group. The team conducted the RSA July 25 to July 27 2017 and it included field observations both during the day and night.

Goals and Observations

The goals for the RSA were to reflect the following during discussions, field reviews, and as recommendations and solutions:

- ✓ Balance need for pedestrian and bicyclist safety and access with need for vehicular movements
- ✓ Assess value and need for speed management strategies
- ✓ Coordinate and leverage current and planned projects on U.S. Highway 50
- ✓ Enhance pedestrian and bicyclist crossings through implementation of proven strategies and countermeasures
- ✓ Enhance bicycle safety along highway
- ✓ Balance recommendations with maintenance needs

The RSA team found that there was evidence of multi-agency coordination and support for projects as well as a desire to improve roadway infrastructure with current projects. The opportunities for improvement were evident even with missing and inconsistent crash and safety data, and the varying accessibility and sharing of safety data. Even without robust safety data, it was clear to the RSA team that with three pedestrian fatalities between the "Y" and Trout Creek between 2011 and 2016, and numerous reported pedestrian and bicycle injury crashes, that this corridor is a high-risk roadway for vulnerable roadway users. The safety data, the vehicular volume, lack of lighting, multi-modal use, and number of access point, such as driveways, are all safety risk factors for an urban corridor. It is also evident that there is a struggle with U.S. Highway 50 serving as both a state

[3] Federal law affords evidentiary and discovery protections that assist State and local highway agencies in keeping data and reports compiled or collected pursuant to various Federal safety improvement programs from being used in tort liability actions. The Highway Safety Act of 1973 was enacted to improve the safety of our Nation's highways by encouraging closer Federal and State cooperation with respect to road safety improvement projects. In 2003, the U.S. Supreme Court upheld the Constitutionality of 23 U.S.C. § 409 ("Section 409"), indicating that it "protects all reports, surveys, schedules, lists, or data actually compiled or collected for § 152 purposes of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway.

highway and a main street in South Lake Tahoe. High speed vehicles are incompatible with high pedestrian and bicycle volumes along the corridor.

RSA Recommendations and Solutions

The RSA team identified numerous safety emphasis areas to address in its discussions and field reviews. The table below summarizes those emphasis areas, the recommendations for each and potential solutions to the issues. The full report is divided into sections by emphasis area and provides detailed and in-depth assessments of the recommendations and specific solutions. Some recommendations are short term and could be made through change orders to the existing project. Some recommendations are longer term and require additional analysis and funding. Additionally, some of the recommendations may reflect previous considerations made by Caltrans, but ultimately not included in the project due to funding constraints and preceding regional policies, such as the requirement to mitigate coverage for active transportation infrastructure. This requirement was waived as part of the 2012 Regional Plan Update, which now provides an exemption for coverage mitigation for active transportation infrastructure.

Emphasis Areas	Recommendation	Solutions
1. Safety Data	Improve quality and timeliness of safety data particularity for pedestrian and bicyclists.	• Support "Lake Tahoe Safety Plan" • Collect surrogate safety data for pedestrians/bicyclists • Conduct pedestrian and bicyclists counts to assess spot improvement needs
2. Enhanced Intersection Design	Provide high visibility pedestrian crossings for all movements at all signalized intersections.	• Install high visibility crosswalk markings for all movements • Install pedestrian lighting at all crossings • Coordinated traffic signals for the desired target speed (35 mph) between signalized intersections
3. Infrastructure Improvements for Bicyclists Safety	Provide the maximum width possible for bicycle lanes where possible and enhance bicycle pavement markings for longevity and increased visibility.	• Widen Class II bike lanes in areas where the roadway width allows taking advantage of bridge areas and TWLTL[4] in areas without access points • Install helmeted bicycle symbol instead of words and increase number of locations to account for numerous access points • Improve bike lane marking near intersections • Improve bicycle route connectivity along and across U.S. Highway 50
4. Pavement Marking Durability	Install more durable pavement markings to account for the harsh winter and maintenance schedule	• Install recessed pavement markings for bicycle facilities • Improve the frequency and timing of the pavement marking to coincide with peak bicycle use
5. Mid-Block Crossings *Grocery Outlet/ Motel 6 & Town and Country Shopping Area (Whiskey Dick's/Sunray Tahoe Hotel)*	Study the feasibility of enhanced mid-block crossings in at least 2 locations with high pedestrian crossings and identified safety risks.	• Install pedestrian refuge islands, enhanced pavement markings and Pedestrian Hybrid Beacons near Grocery Outlet and Whiskey Dicks/Sunray Tahoe Hotel

[4] Two Way Left Turn Lane

Emphasis Areas	Recommendation	Solutions
6. Pedestrian and Roadway Lighting	Install and enhance roadway, intersection and pedestrian lighting	• Adjust or enhance signalized intersection lighting to provide pedestrian lighting for crosswalks • Install roadway lighting along the corridor • Assess the possibility of oversized conduit costs and type of the traffic controller cabinets in the project to offset funding to install additional lighting
7. Transit Stop Locations Relative to Pedestrian Crossings	Adjust bus stop locations based on user needs and desire lines between origins and destinations	• Consolidate bus stops near Grocery Outlet to reduce from 4 to 2 stops – one in each direction
8. Transit Stop Design	Improve bus stop pull-out configurations and pavement markings in areas where bus stops conflict with bike lanes	• Remove bus pull-outs where there is not adequate width for vehicles to pass in the curbside lane and remain as in-lane operation • Include bike lane symbols before and after lane pull-out tapers
9. Speed Management	Engage in a speed management plan that incorporates a "target speed" as its basis. This includes consistent operating, design and posted speeds.	• Conduct a speed study along the corridor using noteworthy practices that consider roadway users and context • Prepare a speed management plan for CSLT
10. Winter Maintenance and Snow Removal Plan	Review the Caltrans snow removal plan to consider operations based on increase in pedestrian and bicycle users along U.S. Highway 50	• Develop maintenance agreement between CSLT and Caltrans • Consider a pre-treatment plan for sidewalks before storms • Encourage property owners to keep new sidewalk clear of snow in the winter through targeted outreach
11. Pedestrians and Bicyclists Accommodation in Work Zones	Update guidance and construction plans with best practices for pedestrian and bicycle use and accessibility	• Improve pedestrian accommodation and accessibility in the work zone • Improve bicycle accommodation in the work zone
12. Education and Enforcement	Enhance current education efforts and consider targeted enforcement campaigns	• Increase bike helmet use in CSLT • Improve bicycle wayfinding • Develop enforcement campaigns & advertised sting operations

Immediate Next Steps to Implement Recommendations

To take advantage of the opportunity to advance some of the RSA recommendations into the active U.S. Highway 50 construction projects from the "Y" to Trout Creek, some immediate next steps are suggested:

1. Caltrans, City of South Lake Tahoe, CHP, TRPA, and TTD decision makers should convene a meeting to discuss the RSA recommendations most relevant for consideration of a contract change order, including but not limited to bike lane markings, crosswalk markings, intersection

lighting for pedestrians, bus stop pull out design, and accessibility for pedestrians and bicyclists during construction.

2. Initiate engineering studies for mid-block crossings (Grocery Outlet and Whiskey Dicks) where safety issues have been documented.

3. Develop a speed management plan in advance of the speed study that will take place after project completion. The plan should use the best practice of designing for "target speeds" and use inputs that are representative of the users and context of the roadway.

4. The city should develop an agreement with Caltrans about developing a memorandum of understanding for maintenance procedures and operations of pavement marking, snow plowing, sweeping, etc. that are mutually agreeable for both agencies and in the best interest of the traveling public.

5. City staff and police should work with TRPA, the Lake Tahoe Bicycle Coalition, and CHP to launch an education and enforcement campaign in spring 2018. The campaign should include bicycle safety advertisements and enforcement around helmet use, riding with traffic, and nighttime visibility and should aim to reach businesses and the South Lake Tahoe community including Spanish speaking residents and visitors.

6. Participate in the active "Lake Tahoe Safety Plan" to implement recommendations to improve safety data for the Region.

Possible Funding Sources:

A variety of funding sources are available to implement many of these recommendations. Specific funding sources by type of improvement are noted in each section. Below is a list of funding sources and links to more information.

- FHWA Highway Safety Improvement Program funds distributed through Caltrans: http://www.dot.ca.gov/hq/LocalPrograms/hsip.html
- California Active Transportation Program funds distributed through Caltrans and the California Transportation Commission as well as through TRPA: http://www.dot.ca.gov/hq/LocalPrograms/atp/
- State Highway Safety Programs (Section 402): https://safety.fhwa.dot.gov/legislationandpolicy/policy/section402/
- FHWA Accelerated Innovation Deployment (AID) Demonstration: https://www.fhwa.dot.gov/innovation/grants/
- California Senate Bill 1 Funding: http://rebuildingca.ca.gov/funding.html

Conclusion

The RSA team's recommendations should be considered by Caltrans as it completes Highway 50 projects between Winnemucca and Lodi and Lodi and Trout Creek in 2018 and 2019. Caltrans and the City of South Lake Tahoe should continue to look for opportunities to enhance safety along U.S. Highway 50 for all users taking advantage of policies and funding that support safe facilities to enhance and encourage an active community that is a walking and biking destination for resident and visitors.