The purpose of this Technical Memorandum is to present recommended sequencing of improvements shown on the October 21, 2014, Geometric Approval Drawings (GADs) developed by Dokken Engineering. Based on the results of the Final Traffic Operations Report dated November 2014 which includes Existing, Near Term (2024) and Long Term (2044) analysis of the SR 88 corridor, we have developed the following list of projects:

- **Install Hybrid Beacon (Signal) at the Pine Grove Town Hall** - Based on existing observations, extensive field work and stakeholder feedback, the replacement of the existing flashing yellow beacon with a more effective pedestrian hybrid beacon (also known as a hawk signal) would significantly improve pedestrian safety and require vehicle to stop for pedestrians crossing SR 88.

This improvement would address an existing safety concern by replacing the older Caltrans’ technology of a flashing pedestrian crossing with Caltrans’ new pedestrian crossing device called the Pedestrian Hybrid Beacon (PHB). PHB’s use flashing and solid lights (Yellow and Red) to signal vehicles to stop for pedestrians. And it has been shown that using a PHB is simple for both drivers and pedestrians. The figure to the right shows how a PHB works.

According to Caltrans HQ Division of Traffic Operations, a PHB significantly improved safety, reduces number and potential severity of accidents. And with an average cost of $250,000, a PHB can be implemented to replace an existing pedestrian crossing device. This improvement should be implemented by 2015 or as soon as the project is ready for construction.
• **Construct an Eastbound Right-Turn Pocket at the SR 88 / Tabeaud Road Intersection** - As cars and truck accelerate to climb the eastbound SR 88 grade, the right-turn lane would reduce the potential for certain types of accidents. (i.e. rear-end and overturn) for vehicles decelerating to make the right-turn movement from eastbound SR 88 onto southbound Tabeaud Road. This improvement would address an existing safety concern, and should be implemented by 2015 or as soon as the project is ready for construction.

• **Construct Improvements at SR 88 / Ridge Road** - Development on the north-west corner of the signalized intersection and increasing traffic volumes on both Ridge Road and SR 88 would result in increased delays and long vehicle queues at this existing signalized intersection. This improvement would address the projected increase in vehicle and pedestrian traffic by eliminating the free right-turn movements and significantly improving the pedestrian crossing of SR 88. A combination of regional traffic growth and development on the north-west corner require the addition of second southbound left-turn lane and elimination of the westbound and southbound free right-turn movements. Completion of the improvements should be completed by Year 2020, and would reduce vehicle queues / delays, and enhance pedestrian access between Ridge Road and SR 88.
• **Construct Improvements at SR 88 / Volcano Road** - The combination of regional traffic growth, activity at the Pine Grove Elementary School, and development on the south side of SR 88 would require the improvements be completed by Year 2024. Major reconstruction of SR 88 and Volcano Road will provide a signalized intersection with pedestrian crosswalks on all four quadrants of the intersection to improve walkability and the complete street design of SR 88. Major changes to the access/egress at the Pine Grove Elementary school will eliminate back-ups on SR 88 during both weekday morning and afternoon time periods, thereby significantly improving traffic flow on SR 88. In addition, vertical, horizontal and super-elevation design issues will be corrected on both SR 88 and Volcano Road. The overall result will be significantly reduced delays (from over 2 minutes to less than 35 seconds), reduced queue lengths, and improved walkability in the center of the Pine Grove community.

![Image of SR 88 and Volcano Road improvements]

• **Construct Improvements at SR 88 / Irishtown Road** - Improvements at the SR 88 and Irishtown Road will provide a signalized intersection with pedestrian crosswalks when traffic volumes meet signal warrants by Year 2030. In addition, a 27 space parking lot would be constructed on the south-west corner to provide additional off-street parking for visitors and customers to Pine Grove. The signalized intersection would operate will delays less than 30 seconds for vehicles entering and exiting Irishtown Road and less than 45 seconds for pedestrians crossing SR 88.

![Image of SR 88 and Irishtown Road improvements]
• **Construct Improvements at SR 88 / Tabeaud Road** - As development occurs on Tabeaud Road and regional traffic volumes increase, this intersection would meet signal warrants by Year 2035. Improvements at the SR 88 and Tabeaud Road will provide a signalized intersection, northbound right-turn lane and a westbound acceleration lane. The signalized intersection would operate will delays less than 30 seconds for vehicles entering and exiting Tabeaud Road.

• **SR 88 / Climax Road Intersection Realignment** - Increasing traffic volumes on both Climax Road and SR 88 require realignment \ reconstruction of the SR 88 / Climax Road intersection. Climax Road serves as the designated truck route from SR 88 to SR 49 and the improved unsignalized intersection would eliminate the high speed curves and improve sight distance. By realigning the unsignalized intersection and providing both an eastbound SR 88 acceleration lane and an eastbound left-turn pocket, safety would be improved as vehicle enter and exit Climax Road; thereby reducing the potential for both rear-end and side-swipe accidents. This realignment project could be done as soon as funding becomes available, but should be completed by Year 2040.