

APPENDIX C

SUMMARY OF CALTRANS RESPONSES

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How will large trucks safely negotiate the roundabout?

Trucks are to claim both lanes (straddle the lane line) while entering a multi-lane roundabout. This will prevent other vehicles from attempting to enter with the truck and thus prevent conflicts, such as cut-offs. A large truck will require the use of both lanes while traveling through the roundabout. Furthermore, since all vehicles in the roundabout circulating the lane have the right of way, once the truck is in the roundabout, entering vehicles will be required to yield before entering. Turning simulation software has been used to ensure that roundabouts can accommodate the turning requirements of the largest vehicle expected to use the facility.

How will the roundabout handle the large volume of vehicles?

Roundabouts can handle larger volumes of traffic than traffic signals. The intricate relationship between entering, exiting, and circulating traffic on all legs of a roundabout creates this large capacity. Volumes on each leg need to be somewhat balanced in order to create the ideal situation; the greater the balance, the greater the capacity. Roundabout controlled intersections can efficiently service traffic with decreased delay and greater efficiency than traffic signals. This is particularly true where traffic volumes entering the roundabout are nearly balanced on all legs and where there is a high number of left turning vehicles. The high number of left turning vehicles at Simpson Lane coupled with the balanced traffic volumes in both directions on SR 1 provides a balanced volume relationship. Additional factors that can enhance capacity of roundabouts are the size of the roundabout, lane widths, and other geometric factors. Compared to a signalized intersection, there is much less wasted time at a roundabout. Intersections controlled by traffic signals can cause unnecessary delays because of the need to provide a minimum of green light time to each movement in every cycle, thus creating time intervals in which no vehicles are entering the intersection. In contrast, traffic can be present in the roundabout at all times. This continual use is a key factor in the capacity.

Will Simpson Lane traffic have difficulty entering the roundabout due to the heavy traffic going north on Route 1?

A volume balance is required between the various legs for the roundabout to operate properly for all directions of traffic. In the case of the proposed roundabout, Old Coast Highway requires little consideration since its traffic volumes are extremely small. Therefore, we can look at this roundabout as having 3 legs. The left-turning volume from SR 1 to Simpson Lane is the crucial factor. Without this volume, SR 1 becomes solely a heavy commuter route through this intersection, and a small volume from the minor leg would have difficulty entering during peak commute times; but this is not the case with Simpson Lane. During the evening commute, left-turning traffic from southbound SR 1 will interrupt the northbound SR 1 flow, thus providing gaps for Simpson Lane traffic to enter. Traffic counts indicate that there is also a fair volume of left-turning vehicles during the morning commute and at other times of the day. These vehicles will help to produce gaps at all times of the day. We also must acknowledge the fact that northbound SR 1 vehicles will be required, by the roundabout geometry, to slow as they

approach the entry. This deceleration, paired with driver hesitation as drivers look to their left for southbound left-turning vehicles, will also produce gaps for Simpson Lane traffic.

How will the vehicles know when and how to slow down upon approaching the roundabout?

Adequate signage will be posted at each approach stating that there is a roundabout ahead with an advised speed of 15-20 mph and "yield ahead" signs will notify drivers that they may need to come to a complete stop at the roundabout. Another factor that will enforce speed reduction is the curvature and channelization (with raised islands and sidewalks) at the entries. Furthermore, the central island will be built up like a small hill to provide "target value" to the driver. In other words, the central island will be an "attention getter" for the driver and will indicate that he/she is approaching a roundabout. Lighting will be installed on the approaches and within the roundabout to enhance safety during nighttime hours.

The project would not create a reduction in the speed limit; however, the new roadway geometrics will require traffic to slow to speeds of 15-25 mph based on their path through the roundabout. For this reason, there will be a signed "advisory" speed limit through the intersection, which vehicles will have to maintain in order to safely navigate the facility.

How will vehicles access businesses from the roundabout?

The businesses to the north of the intersection on the west side of SR 1 will most likely have the same access options that they currently have. Access could change if Caltrans determines that safety is being significantly affected by having a shorter than preferred splitter island. Nevertheless, the current plan does not impact access from SR 1 to these businesses. The existing two way left turn lane (center lane) will remain beyond the island providing turning opportunities for northbound drivers who want to enter these businesses. Also, in order to maintain access to The Ark thrift shop, Caltrans will explore measures to maintain access to Old Coast Hwy by relocating the driveway slightly to the west.

Gas Station:

The USA gas station will have less access for safety and operational reasons. Regardless of whether the project is a signal or a roundabout, the northernmost access on SR 1 will be closed due to its close proximity to the intersection. The southern access on SR 1 will remain open, but only to northbound drivers. Southbound vehicles will turn left on Simpson Lane and use the access off of Simpson Lane, which will be relocated further to the east. Likewise, if they wish to continue south from the gas station, they will enter Simpson Lane and make a left turn onto southbound SR 1. The gas station driveway onto SR 1 will allow a right turn only, which will be enforced with a long splitter island that will block the southbound lane.

How will vehicles merge safely into the roundabout?

Modern roundabouts operate on a "yield at entry" rule, which gives traffic within the roundabout the right of way. Vehicles entering the roundabout must wait for an opening or gap in traffic. If no traffic is present, entering vehicles will slow down and proceed into the roundabout. On a well-designed roundabout, the speeds of the entering vehicles and circulating vehicles are very close, making the merge easy and comfortable. For a multi-lane roundabout, pavement markings and signs will provide lane assignments. Lane use for a two-lane entry at a roundabout is exactly the same as at any intersection with a two-lane approach: vehicles turning left use the left lane, vehicles going straight use either lane, and vehicles turning right use the right lane. Pavement markings and signs will show this directional method, which ensures correct position on entry.

Emergency Vehicles

The roundabout will have no effect on emergency vehicle response time. In fact, vehicles are to obey the same rules they always follow when encountering an emergency vehicle. If an emergency vehicle is approaching, pull over and do not enter the roundabout. If a vehicle has no choice but to pull over in the roundabout, the circulatory roadway will be wide enough to allow an emergency vehicle to pass by. The roundabout will accommodate the largest, legal truck on the State Highway System. With less delay, it may actually be quicker for an emergency vehicle to get through and it will certainly be safer.

How will the safety of pedestrians and bicyclists be ensured?

Shared-use paths or sidewalks will be provided around the perimeter of the roundabout for use by pedestrians and bicyclists. These paths will connect crosswalks on each respective quadrant giving pedestrian's total access to all areas of the intersection. The sidewalks will end with smooth transitions to the existing shoulders of the roadway. Pedestrians will cross only one direction of traffic at a time, making the roundabout a one-decision-at-a-time environment. Furthermore, the crossings are set back from the roundabout by a minimum of 25 ft, allowing drivers to deal with pedestrians before entering the circulating lane. Refuge areas are provided for pedestrians in each splitter island, allowing the pedestrian to cross one direction, stop at the refuge area, then cross the other. Buffer strips are provided between the sidewalk and roadway to provide added security by increasing the separation between vehicle and pedestrian.

Bicyclists have two options when traveling through a roundabout. The first option is to claim a lane as a vehicle and travel through the roundabout, which is an easy maneuver because the roundabout entry geometry has slowed the motor vehicles to bicycle speeds. Experienced bicyclists would probably choose this option. The other option is to use the shared paths and crossings as a pedestrian.

How will vehicles negotiate with other vehicles in the roundabout?

Multi-lane roundabouts require adequate signing and striping to reduce the potential for driver confusion. Certain markings and signs are placed to help drivers determine which lane they need to be in, based on their destination, before they enter the roundabout. While in the roundabout, vehicles will be required to maintain position and direction within the lane (no changing lanes) in accordance with traffic markings. The excellent safety records are the result of (motorists, pedestrians, and bicyclists) being required to look at conflicting traffic and decide when it is safe to proceed. The slow speeds allow comfortable driving through the roundabout. The motorist uses the same skills as when exiting a grocery store parking lot: look left and wait for a gap in traffic.

How will tourists and unfamiliar drivers know how to use a roundabout?

Modern roundabouts are emerging as viable intersection alternatives in many areas throughout the country. Chances are that most people know roundabouts, although drivers may not be familiar with the rules of driving a roundabout. However, drivers are familiar with reading signs and interpreting striping and pavement markings, as these are common to any transportation facility, whether it's a roundabout or a stretch of the interstate. With a roundabout, the unfamiliar driver will have a low-speed environment that will be adequately signed and striped. These instructions guide the unfamiliar driver through the roundabout. As in any traffic situation, drivers do need to exercise caution.

How will drivers know how to use the roundabout?

Driver information will be provided by signs and pavement markings. After one trip through a roundabout, a driver should be familiar with the roundabout concept. A Caltrans roundabout in Hopland has been in operation for a year now with no reported collisions. Most people in the Hopland area were unfamiliar with roundabouts. Furthermore, there is a busy casino just to the east, so ample traffic comes through this roundabout at certain times. The fact that no collisions have been reported indicates that the learning curve is fairly short. Drivers seem to grasp the roundabout concept.

Can we get a roundabout at Fern Creek Road and Route 1 in Caspar?

Based on an aerial photo, this 4-legged intersection appears to be in a good location for a roundabout. If the volumes from Fern Creek Road are significant, the project may be justified. However, safety and/or operational issues at this intersection would need to be studied in order to initiate a potential project. Residents may contact the County or State with transportation issues they feel need to be further investigated.

How will the Level of Service (LOS) change with building the current project?

Operational efficiency of the intersection would be improved by either alternative; however, the roundabout alternative provides greater improvement. Level of Service (LOS) is defined by the Highway Capacity Manual 2000 as: “A qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.” There are six Levels of Service, and they are identified by letters ranging from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Each LOS represents a range of operating conditions and the driver’s perception of those conditions.

In general, LOS for an intersection can be determined by the average vehicle delay experienced at an intersection by the driver. The roundabout will provide the overall intersection with a LOS B in the year 2028. LOS B has an average intersection delay experienced by the driver of 10 to 20 seconds; progression of vehicles is good. Signalization would provide the intersection with an LOS D in the year 2028. LOS D has an average intersection delay experienced by the driver of 35 to 55 seconds; progression of vehicles is unfavorable and intersection is showing signs of being congested