

# HIGHLAND ROAD AT PECUE LANE

## SAFETY AND EFFICIENCY

LOOK AT ROUNDABOUTS AND SIGNALIZED INTERSECTIONS  
APPLIED TO HIGHLAND ROAD AT PECUE LANE

	ROUNDABOUT	SIGNALIZED INTERSECTION
Safety and Traffic Flow	<p><b>Accidents</b> <b>General:</b> Roundabouts significantly reduce the likelihood of severe accidents. <b>Applied:</b> Rear end crashes are the most common crash type at Highland Road and Pecue Lane. They are anticipated to be made less frequent due to drivers slowing down approaching the intersection</p> <p><b>Conflict Points</b> <b>General:</b> Roundabouts eliminate conflict points typically associated with traditional unsignalized and signalized intersections: left-turning right-angle crashes (“t-bone” crashes), head-on collisions. Leading to fewer and less severe accidents.</p> <p><b>Sight Distance</b> <b>General:</b> Raising a roundabout enhances the visibility for approaching drivers, facilitating their ability to discern the roundabout upon approach. <b>Applied:</b> The proposed roundabout is located approximately 2’ higher than the existing grade at that location, increasing visibility. Additionally, the center of the roundabout is located to provide better sight distance around the west approaching roadway.</p> <p><b>Speed</b> <b>General:</b> Roundabouts are designed to slow down vehicles as they approach and navigate through the intersection. <b>Applied:</b> The surrounding area of the Highland Road at Pecue Lane intersection has the entrance to several driveways and the Valhalla Subdivision. The lower traffic speeds will greatly improve the safety for cars entering and existing the roadway.</p> <p><b>Delays and Handling of Traffic</b> <b>General:</b> Vehicles yield at roundabout entrances rather than stopping at a red light or stop sign, which minimizes delays and keeps traffic moving. Roundabouts can typically handle volumes of two lane traffic more easily than signalized intersections, especially during peak hours. <b>Applied:</b> Based on the traffic analyses performed, the proposed roundabout will operate with a Level of Service (LOS) A, compared to LOS E/F for the existing conditions and LOS B for a signalized intersection.</p>	<p><b>Accidents</b> <b>General:</b> Signalized intersections reduce the likelihood of severe accidents by controlling motion through the intersection. <b>Applied:</b> Rear end crashes are the most common crash type at Highland Road and Pecue Lane. They are anticipated to be made less frequent due to drivers slowing down approaching the intersection.</p> <p><b>Conflict Points</b> <b>General:</b> Compared to unsignalized intersections, signalized intersections reduce right-of-way conflicts by eliminating the need for drivers to judge gaps in traffic when proceeding through the intersection. <b>Applied:</b> Due to the nature of the project location and the curved approaches, there are currently difficulties for drivers to identify approaching traffic.</p> <p><b>Speed</b> <b>General:</b> Signalized intersections typically reduce speed due to driver’s expectations approaching the intersection. <b>Applied:</b> The surrounding area of the Highland Road at Pecue Lane intersection has the entrance to several driveways and the Valhalla Subdivision. The lower traffic speeds will greatly improve the safety for cars entering and existing the roadway.</p> <p><b>Delays and Handling of Traffic</b> <b>General:</b> Signalized intersections can manager higher volumes of traffic effectively, reducing congestion. Additionally, the ability to adjust timing on the signals allows for flexibility regulating traffic flow. <b>Applied:</b> Based on the traffic analyses performed, a signalized intersection will operate with a Level of Service (LOS) B, compared to LOS E/F for the existing conditions. However, The signalized intersection had significantly longer vehicle queue lengths compared to the roundabout.</p>
Maintenance and Environmental Impact	<p><b>Beautification Benefits</b> Roundabouts reduce the “visual clutter” of signalized intersections (poles, mast arms, wiring, and lights). The cleaner design of roundabouts can maintain the open and attractive nature of Highland Road.</p> <p><b>Maintenance</b> Roundabouts do not require the typical maintenance needs of a signalized intersection: bulb replacements, signal timing adjustments, and repairs to vehicle detection systems.</p> <p><b>Durability and Anticipated Downtime</b> Roundabouts are generally more durable and less susceptible to damage from weather or accidents when compared to traffic signals, which can be knocked down or malfunction. Additionally, roundabouts continue to function during power outages, eliminating any need for temporary traffic control measures like police direction or portable signs.</p> <p><b>Environmental Impact</b> By reducing idling and stop-and-go traffic, roundabouts lower vehicle emissions and fuel consumption.</p>	<p><b>Maintenance</b> Traffic signals have a regular and predictable maintenance schedule, which can include routine inspections, bulb replacements, and signal timing adjustments. This predictability helps in planning and budgeting for maintenance activities.</p> <p><b>Technological Upgrades</b> Signalized intersections can be equipped with advanced technologies such as adaptive signal control and vehicle detection systems. These technologies can improve traffic flow and reduce the need for frequent manual adjustments. They can also be monitored and controlled remotely from a traffic management center, allowing for quick responses to malfunctions or changes in traffic conditions.</p>