

PRACTICAL DESIGN AT WORK — DESIGN



Washington State
Department of Transportation

SR 150 No-See-Um Road Intersection Improvements

Background

Increasing traffic and a history of collisions, coupled with limited sight distance and steep slopes are driving the need for improvements at the intersection of State Route 150 and No-See-Um Road in the city of Chelan. In 2006, the city of Chelan and WSDOT hired an engineering consulting firm to analyze the intersection and develop potential solutions. In 2012, the Legislature included funding for planning and design of a new, realigned intersection.

Original plan

Safety and mobility improvements at intersections have historically been accomplished by adding turn lanes. The original plan was a realigned four-legged intersection, with left- and right-turn lanes, northwest of the existing SR 150/No-See-Um Road intersection. A new fourth leg would be built that ties into Spader Bay Road, and the existing Spader Bay Road access would be closed. No-See-Um and Golf Course roads would be realigned to tie into the new intersection location. SR 150 alignment would be pushed to the south to improve the intersection approach with No-See-Um and Golf Course Roads. WSDOT determined that the intersection would need to be signalized in the future to address an expected increase in traffic and growth from development.



Original design



Roundabout design

Practical design solution

WSDOT designed a roundabout northwest of the existing intersection. No-See-Um and Golf Course roads will be realigned and tied into SR 150 at the roundabout. A fourth leg will be added at the roundabout and a new roadway constructed that will tie into Spader Bay Road. The existing Spader Bay access to SR 150 will be eliminated. WSDOT's design of the roundabout minimized the project's footprint and will fit within the existing topography of the area. The roundabout design provides for one access point onto SR 150, improved intersection mobility, improved safety benefits, minimal annual maintenance cost, environmental benefits, and less impact to private property.

Results

Safety: The roundabout design reduces crash severity, allows for safer merges into traffic, and allows more time for users to detect and correct their mistakes due to lower vehicle speeds.

Community coordination: WSDOT and the city of Chelan held an open house in November 2012 to allow the public to provide comments on the design alternatives that were being proposed to improve the SR150/No-See-Um Road Intersection. The public was more receptive to a roundabout in this area than left-turn lanes. Continued coordination occurred between WSDOT, local agencies, developers, and adjacent landowners to make sure the design would meet current and future needs.

Economic vitality: Steps were taken to assure that truck traffic using the route would not be hindered by the design. It was important to assure that freight transportation carrying agricultural goods could navigate the roundabout without delays. When operating within their capacity, roundabouts typically operate

with lower vehicle delays than other intersection types. The design is capable of accommodating the traffic needs for the future full development of the area.

Cost: The practical design solution not only resulted in a lower project cost but also includes lower annual maintenance costs and an estimated 30 percent reduction in vehicle fuel consumption over traditional intersections. The roundabout design also provides substantial cost savings to society due to the reduction in crashes over their service life. Efficiencies in design were realized by minimizing the project footprint and better fitting the existing terrain. A signalized intersection requires long or multiple turn lanes to provide sufficient vehicle storage, a roundabout requires less space on the approaches because no vehicle storage is needed. The smaller footprint created by the roundabout reduced the amount of right of way acquisition that would be required and also helped reduce the overall cost of the project from about \$8M to \$6M.