

Chapter 3: Updates to median barrier on I-5 in Marysville

Changes to the median barrier system on I-5 in Marysville following last year's recommendations

The June 2007 Cable Median Barrier report noted a higher-than-average number of crossover collisions on I-5 in Marysville, for reasons not completely understood by safety specialists and engineers. As a result, independent expert Dr. Malcolm Ray recommended installing concrete barrier and widening the shoulder along northbound I-5 in Marysville to provide the highest level of protection against crossover collisions in which southbound drivers cross the median and enter northbound lanes.

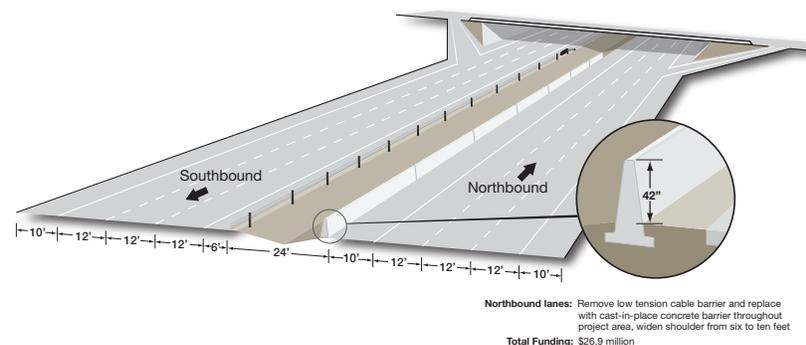
In the summer of 2007, WSDOT engineers analyzed several options to address the report recommendations. We provided the results of that analysis, together with the preliminary cost estimates for each option, to Gov. Chris Gregoire.

In December 2007, the Governor released her 2008 Supplemental Budget Proposal, which included \$27 million to install concrete barrier along 10 miles of northbound I-5 in Marysville. The funding was approved by the Legislature in March 2008. With funding secured, WSDOT engineers are moving forward in designing the project.

How will we modify the median barrier system on I-5 in Marysville?

We will remove the existing low-tension cable barrier along northbound I-5 in Marysville and install 10 miles of concrete barrier along the northbound lanes of I-5 from SR 528 to SR 530.

I-5 Marysville Median Barrier



The existing cable barrier system along the southbound lanes will remain in place to provide redundant protection. Southbound drivers who run off the freeway will hit cable median barrier on that side of I-5, which will absorb much of the force of impact, reduce the risk of a rollover, and reduce the risk of rebound collisions that involve other vehicles. If the cable median barrier does not restrain the vehicle within the median, it will likely stop upon impact with the concrete median barrier along the northbound lanes. We will also widen the shoulders to 10 feet along northbound I-5 to create space for emergency vehicles and disabled vehicles to pull over without obstructing traffic. Wider shoulders will also give drivers who lose control of their vehicles additional room to slow down, regain control, and re-enter traffic, while increasing their chances of avoiding a collision with the median barrier.

We will advertise the project for competitive bidding in spring 2009, with construction to begin that summer. We expect to complete the project by late 2010. For more information, please visit the project Web page: www.wsdot.wa.gov/Projects/I5/MarysvilleMedianBarrier

How will the new median barrier system in Marysville address potential hazards posed by taller vehicles?

The fatal collision that occurred on I-5 in Marysville on Feb. 13, 2007, raised questions about cable barrier's effectiveness at restraining tall vehicles such as sport utility vehicles (SUV). In that incident, the height, trajectory, and angle of approach of the SUV prevented the cable median barrier from engaging the front steel bumper or wrapping around the wheel well to restrain the vehicle. Instead, the SUV's tall front bumper hit and bent the top post of the barrier, which dragged the cables down and under the vehicle. The SUV then plowed through the low-tension cable barrier adjacent to the northbound lanes and collided with a charter bus traveling northbound.

The new median barrier system in Marysville will lower the risk posed by tall vehicles such as SUVs by replacing the low-tension cable median barrier adjacent to the northbound lanes of I-5 with concrete median barrier. In the event that a vehicle traveling southbound runs off the road and is not restrained in the median by the high-tension cable barrier along the southbound lanes, the vehicle should have a greater chance of stopping upon impact with the concrete barrier adjacent to the northbound lanes.

Potential risks of concrete median barrier on I-5 in Marysville

As noted in the June 2007 report, concrete barrier has the potential to reduce the risk that southbound drivers who run off the road will cross into the northbound lanes. However, installing concrete barrier along the northbound lanes will create the risk that northbound drivers who run off the road will rebound off the concrete barrier into other vehicles. Drivers who hit the concrete barrier will also experience a significantly higher force of impact than those who hit cable median barrier at similar speeds and impact angles. The widened shoulder will provide more room for northbound drivers who run off the road to regain control of their vehicle prior to hitting the barrier.

What are the costs associated with the new median barrier system in Marysville?

Installing concrete barrier, widening and paving the roadway shoulder, and constructing drainage and stormwater treatment facilities all contribute to the high cost of the new barrier system.

For this project, we will install 10 miles of 42-inch-tall cast-in-place barrier that averages approximately \$150 per linear foot. This is more expensive than traditional precast concrete barrier, but will serve to reduce cross-median collisions for a broader range of vehicle types. In addition, this project will help enhance drainage along this section of I-5 to offset the environmental impact of adding paved shoulder area. The total cost of concrete barrier is approximately \$8 million, although current inflation of construction materials could drive this price much higher, particularly if delays in permitting occur.

What has happened on I-5 in Marysville since the last report?

Between June 2007 and June 2008, a total of 25 collisions involving cable median barrier have occurred in Marysville. None of these collisions resulted in fatalities. In fact, out of all the collisions that have occurred in 2008, only one resulted in an injury.