SR 14 Marble Rd Vic to Belle Center – Safety

WSDOT

No Practicable Alternatives Analysis - CRGNSA Consistency Review

March 11, 2011

To: Barb Aberle

Environmental Services Manager – SWR

From: Chris Tams

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The purpose of this analysis is to document and demonstrate that there is "no practicable alternative" to the proposed realignment of a portion of SR 14 for the SR 14 Marble Rd Vic to Belle Center Vic – Safety Project.

According to the Skamania County ordinances, a practicable alternative does not exist if a project applicant satisfactorily demonstrates all of the following:

A. The basic purpose of the use cannot be reasonably accomplished using one or more other sites in the vicinity that would avoid or result in less adverse effects on wetlands, ponds, lakes, riparian areas, wildlife or plant areas and/or sites;

B. The basic purpose of the use cannot be reasonably accomplished by reducing its proposed size, scope, configuration, or density, or by changing the design of the use in a way that would avoid or result in less adverse effects on wetlands, ponds, lakes, riparian areas, wildlife or plant areas and/or sites; and

C. Reasonable attempts were made to remove or accommodate constraints that caused a project applicant to reject alternatives to the proposed use. Such constraints include inadequate infrastructure, parcel size, and land use designations. If a land use designation or recreation intensity class is a constraint, an applicant must request a Management Plan amendment to demonstrate that practicable alternatives do not exist.

Project purpose

The purpose of this project is to improve safety on SR 14 in the vicinity of Marble Rd. where there is a high incidence of vehicular accidents.

History

Over the last 10 years, there have been 64 accidents in this area (MP22.6 to MP 22.9), including 2 fatalities, and 45 injuries. The majority of the accidents, including the fatalities and most injury accidents, appear to be related to the geometric layout of the highway. One geometric concern in this curve is that the existing horizontal compound curves are too short and that alters the drivers' ability to see hazards in the roadway and make a decision so as to avoid a collision. Another concern is that the length between sections of superelevation or road "banking" are too short, not allowing a smooth transition for drivers. The radii of the curves are also quite small compared to others on the corridor, creating a "sharp" curve that drivers must navigate. Together, these geometric concerns affect a driver's ability to anticipate the appropriate speed at which to drive the curves.

WSDOT attempted low-cost mitigation to prevent accidents with additional signing in 1999, and again in 2001. The establishment of a Traffic Safety Corridor in 2005, which included improved pavement markings and increased police enforcement, was a temporary solution ending in 2008 that did temporarily decrease accidents in the project area. These types of measures are very good short-term solutions; however, since they do not "solve" the underlying problem, they have limited long-term effectiveness.

Constraints

In other locations throughout the state with similar accident history and vehicle counts, WSDOT would design and construct the curves according to full design standards with a design speed of 55 to 60 mph. The existing curves on SR 14 can be traveled anywhere from 30 to 45 mph and many have warning signs alerting motorists of the recommended speed. As a compromise between optimum design standards and minimizing scenic and natural resource impacts, WSDOT and the USFS have moved forward with this design assuming a 40 mph design speed. This will provide a consistent driving speed for motorists, which will in turn reduce the most severe of accidents.

This meets WSDOT modified design level standards, with smaller curve radii(487 ft for a 6% super), shorter transition sections (125 ft for a 6% super), and lower superelevation (6%) rates than WSDOT full design standards. Please see Figures 1 and 2 below. As outlined in the SR 14 Corridor Management Plan, any safety improvements will use the current WSDOT Design Manual Modified Design Level. At locations where there are documented safety deficiencies identified by WSDOT; consideration will be given for geometric changes. Any improvements will also maintain the rural and scenic character by minimizing or preserving vegetation, following the natural terrain where practical, retaining cultural and historic resources, and minimizing visual impacts.

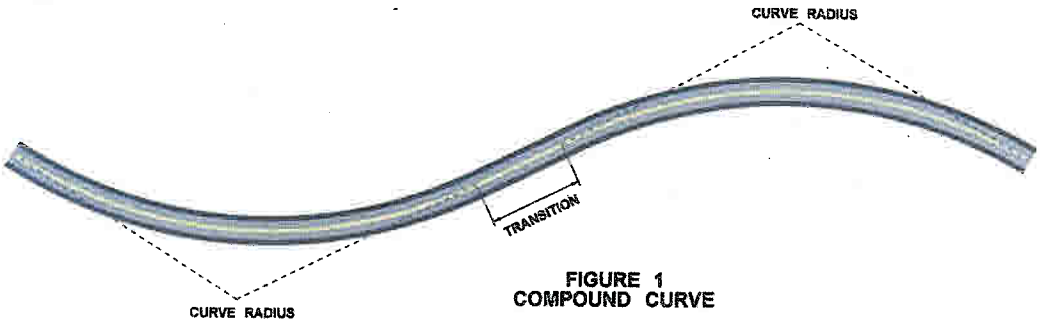


FIGURE 1
COMPOUND CURVE

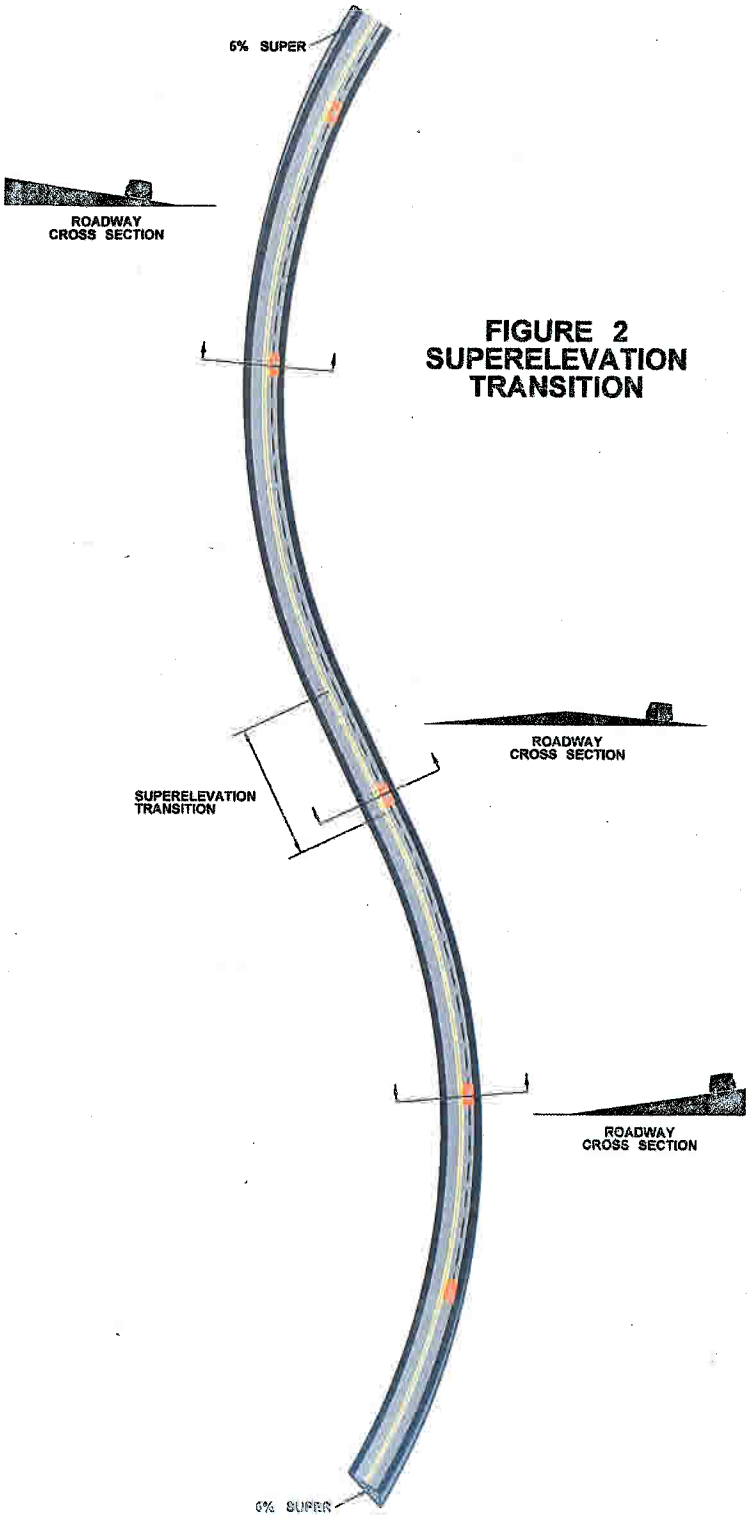


FIGURE 2
SUPERELEVATION TRANSITION

Alternatives Considered

Keeping in mind the cultural, historic, scenic, habitat, safety, and geometric concerns, WSDOT developed 7 alternatives for realigning SR 14 from MP 23.6 to 23.9, and evaluated their impacts.

Alternative 1: This alternative includes a curve that meets a 40 mph design speed. This alignment maintains the characteristic feel of SR 14. The compound curve would not be eliminated, nor would the transition lengths be adequate for safety. The 1.69 acres of oak habitat that would be impacted are 21 oaks that are 24" in diameter or over. There would be approximately 59,000 cubic yards of excavation. The anticipated cost is $3.5 million.

A) SR 14 is a continuous route and we will need to maintain that continuity. There are impacts to the Oak habitat.
B) The basic purpose of the project is safety improvements, this alternative does not adequately address the safety elements because the compound curve is not eliminated and the transition length between superelevation sections (the distance a driver has to shift their steering wheel from turning one way to the other) does not meet the standard of 125 ft. Please refer to Figure 2 Superelevation Transitions.
C) This alternative minimizes impacts to private residential and historic resources; however the private properties already have overlying conservation easements.

Alternative 2: This alternative would shift SR 14 south of the existing roadway. This alignment would meet 40 mph design speed standards, but would not maintain the corridor characteristics outlined in CRG SR 14 Management Plan. The superelevation transition lengths would meet WSDOT standards, but the compound curve and horizontal curves would not meet WSDOT standards. This option requires a 975' long wall up to 110' high, which would have significant visual impact. According to WSDOT geotechnical analysis, these walls are technically feasible. However, the difficulty of constructing a wall this high, steep, and long would extend the construction timeframe up to an additional season, require additional safety measures, and would necessitate closing down SR 14 to all traffic throughout wall construction. There would be 1.59 acres of Oak habitat impacted. There would be approximately 96,000 cubic yards of embankment. The projected cost is $12.5 million, of which $4 million is wall construction.

A) This alternative would have impacts to scenic resources, and with the height of the walls, may impact adjacent species. The impacts to the Oak habitat are similar to the other options.
B) The safety purposes of this project would not be entirely met by this alternative.
C) This alternative would minimize impacts to private residential and historic resources; however there is an impact to the USFS parcel to the south.

Alternative 3: This alternative would also shift SR 14 south of the existing roadway, maintain the 40 mph design speed and bring all the geometric elements up to 40 mph design standards. The corridor characteristics would not be maintained, and there would be impacts to natural and visual resources. Two walls would be required with heights up to 55 feet. These walls are technically feasible; however due to the steep slopes of the walls, the construction would be difficult, may extend the timeline by an additional season, and for the safety of the traveling public, SR 14 would have to be shut down while the walls were constructed. The oak habitat impacted would be 1.49 acres. The projected fill amount would be approximately 45,000 cubic yards of embankment. The projected construction cost is $10 million, of which $3 million is wall construction.

A) This alternative would have impacts to scenic resources, and with the height of the walls, may impact adjacent species. The impacts to the Oak habitat would be similar to the other options.
B) The walls on this alignment will be difficult to construct, have additional structural modifications, may close SR 14 for their construction, and are costly.
C) There would be minimal impacts to the private residential and historic resources; however there are impacts to the USFS parcel to the south.

Alternative 4: This alternative would shift SR 14 significantly north of the current roadway. This alternative would meet the 40 mph design speed radius, and all geometric elements would be brought up to 40 mph standards. This alignment would go onto the historic cemetery parcel and be close to the school and historic grange. There would be approximately 208,000 cubic yards of excavation associated with major cut slopes. The oak habitat impacted would be 2.69 acres; including 17 oaks with a 24" or greater diameter. The projected construction cost is $7.5 million.

A) The amount of impact to oak woodland and scenic resources would be higher than other alternatives and does not meet the guidelines in the Gorge Management Plan.
B) This alignment would eliminate the safety concerns for the project.
C) The impact to the private residences is small. The alignment would likely have an adverse impact to cultural and historic resources.

Alternative 5: This alignment would shift SR 14 north of the current roadway to avoid the most oak habitat. This alternative would change the driving experience from winding through the Gorge into driving along the rim of a canyon. Due to the cuts required to attain this curve, the roadway prism would extend 330 feet wide and the cut slopes would be up to 100 feet high. Earthwork activities for this option would likely occur very close the cemetery property line. The earthwork material would be placed within 5 to 10 feet of the cemetery property line. All

design standards would be met for the 40 mph speed. The oak habitat impacted would be 3.02 acres, including 6 oaks with a diameter of 24" or greater. There would be approximately 669,000 cubic yards of excavation. The projected construction cost is $16.5 million.

A) The consistency expected of driving through the gorge would be eliminated in this option. Scenic resources would be impacted. There would be a significant amount of earthwork resulting in impact to adjacent species. The impact to the Oak habitat is a lot greater than other alternatives.
B) The safety benefits would be achieved by this alternative, but not without cost, scenic, and natural impacts.
C) This alternative would affect the most private land ownership, with likely full acquisitions and relocations. This alignment may have an impact to cultural and historic resources.

Alternative 6: This alignment would meet full WSDOT design standards for 55 mph, which is the design speed for the majority of SR 14 throughout the Columbia River Gorge. There would be no compound curves or issues with substandard transition lengths between areas of superelevation. This alternative would not maintain the corridor characteristics of SR 14. There would be impacts to private landowners and natural resources. The anticipated impact to oak habitat would be 4.76 acres, including at least 31 trees with a diameter of 24" or greater. This alternative would have approximately 321,000 cubic yards of excavation. The projected construction cost is $13 million.

A) This alternative would alter the corridor driving experience. There would be impacts to natural resources. The impact to oak habitat would be larger than other alternatives.
B) This alignment would meet full design WSDOT standards.
C) There would be minimal historic impacts. There would be impacts to private property.

Alternative 7: This alignment is the proposed (Current) alignment. The design standards for 40 mph would be met, the compound curve would be eliminated, and the lengths between areas of superelevation would now meet standards. The corridor characteristics of driving through SR 14 would be maintained. There would be no impact to the historic grange or the historic cemetery. There would be impacts to 2.25 acres of oak habitat, including 18 oaks with a diameter of 24" or greater. There would be approximately 104,000 cubic yards of excavation. The projected cost is $5 million dollars.

A) This alternative minimizes the impacts to natural resources. Wetland and riparian impacts are less than with other options. The feel and driving experience of SR 14 will not be altered. WSDOT has worked on identifying areas where the cut slopes could be shortened to reduce the impact to Oak habitat.
B) All safety concerns are addressed to modified design standards in this alternative, including the minor realignment of SR 14 and Marble Rd that will enable school buses to more safely turn on and off of Marble Rd.
C) This alignment minimizes the impact of private residences, (please see Appendix B) and avoids the USFS property to the south. Like most private properties in the area, there is a conservation easement on these properties. Historic resources have minimal impacts with this option.

Alternative 7a: This alternative uses the same roadway width and centerline from alternative 7 and incorporates a 300 foot long, 8 foot high wall on either side of SR 14. The design standards for 40 mph would be met, the compound curve would be eliminated, and the lengths between areas of superelevation would be brought up to standards. There would be no impact to the historic grange or the historic cemetery. There would be impacts to 2.25 acres of oak habitat, including 18 oaks with a diameter of 24" or greater. There would be approximately 104,000 cubic yards of excavation. The projected cost is $8 million dollars.

A) The scenic and visual impacts of a 300 foot wall would require mitigation, and would change the driving experience through this section of SR 14. There are minimal, if any, benefits to the resources beyond Alternative 7, and additional cost and impacts to the scenic resources with this alternative.
B) All safety concerns are addressed to modified design standards in this alternative, including the minor realignment of SR 14 and Marble Rd that will enable school buses to more safely turn on and off of Marble Rd. Locations and treatments of the wall would pose additional concerns.
C) This alignment minimizes the impact of private residences, (please see Appendix B) and avoids the USFS property to the south. Like most private properties in the area, there is a conservation easement on these properties. Historic resources have minimal impacts with this option

Alternatives 7b and 7c that incorporate walls on both the north side (away from the Columbia River) and south side (toward the Columbia River) of SR 14 were considered with the same centerline as alternative 7. To construct a wall that is not a roadside hazard, the wall must be placed outside the clear zone (approximately 25 feet from the edge of the roadway) or have a relatively smooth finish that will not snag vehicles.

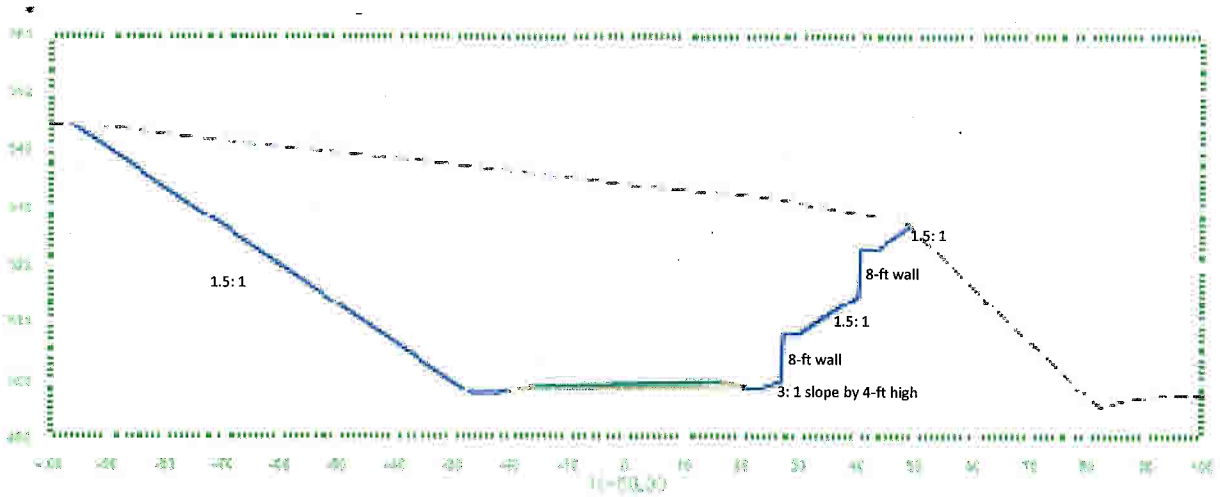


Figure 3: Cross section of Stepped wall Alternative 7c. Cross section is looking East.

The cross-section examined for both sides of SR 14 were a 3 feet horizontal to 1 foot vertical backslope (3H:1V) for a height of 4 feet, followed by an eight foot high wall with either a soldier pile or soil nail design, and on top of the wall a 1.5H:1V vegetated slope. Figure 3 shows the computer model of this design. WSDOT geotechnical engineers provided concurrence that walls of that size and length were possible to construct.

Alternative 7b, construction of a wall of any height on the north side of SR 14, would impact 2.20 acres at minimum of oak habitat and 18 trees greater than 24" in diameter. The design standards for 40 mph would be met, the compound curve would be eliminated, and the lengths between areas of superelevation would be brought up to standards. There would be no impact to the historic grange or the historic cemetery. There would be approximately 104,000 cubic yards of excavation. The projected cost is $8 million dollars

A) This alternative minimized the impacts to natural resources. Wetland and riparian impacts are the same as the current proposed alternative (alternative 7). The feel and driving experience will be altered due to a wall within the view cone with a fascia or shotcrete face, instead of natural habitat.
B) This alternative would address safety concerns to modified standards.
C) This alignment may encroach on the USFS property to the south of SR 14. The impact to private properties is minimized. There are conservation easements on the impacted private properties. Minimal impacts to historical resources exist with this alternative.

Alternative 7c, construction of a two-tiered, 300 foot long wall on the south side of SR 14, as shown in Figure 1, would impact approximately 2.15 acres of oak habitat and 13 to 15 trees of greater than 24" diameter on the southerly side. Possible visual mitigation of the wall surface

might include hand-carved shotcrete face or a relatively smooth stone fascia. Ragged natural stone would create a snagging hazard. The feel of the driving experience would change with a wall through this section compared to the natural habitat surrounding the area. The projected cost of this option would be $11 million dollars. (Please see Appendix A: Alternative Alignments for visual representation of this option)

A) This alternative minimized the impacts to natural resources. Wetland and riparian impacts are the same as the current proposed alternative (alternative 7). The feel and driving experience will be altered due to a wall within the view cone with a fascia or shotcrete face, instead of natural habitat.
B) This alternative would address safety concerns to modified standards.
C) This alignment may encroach on the USFS property to the south of SR 14. The impact to private properties is minimized. There are conservation easements on the impacted private properties. Minimal impacts to historical resources exist with this alternative.

Alternative 8 is a continuation of the Traffic Safety Corridor. It does not meet the project purpose. From the Traffic Safety Corridor Website (http://corridorsafetyprogram.org/):

> ***"Goal of Program***
> *The goal of the Corridor Safety Program is to reduce fatal and disabling collisions on roadways using low-cost, near-term solutions through partnerships with community groups, business, engineering, enforcement, education, and emergency services organizations. The programs are locally led and coordinated in each community."*

Please see Appendix C: Folio_Corridor Safety Program

Looking at the accident data for the section of SR 14 prior to the intersection with Marble Rd (MP 22.60 to MP 22.97) for three distinct time periods (two years before the Traffic Safety Corridor 2002-2003, during the safety corridor 2004-2006, and two years after the Safety Corridor 2007-2008), the following trends were noticed:

Time Span	Total Collisions	Property Only	Possible Injury	Evident Injury	Fatal
2002-2003	12	6 (50%)	2 (17%)	4(33%)	0
2004-2006	11	8 (73%)	0	2 (18%)	1 (9%)
2007-2008	5	2 (40%)	0	2 (40%)	1 (20%)

Figure 4: Collision Data (Please see Appendix D: SR 14 Accident Data for full collision data)

Although the number of collisions decreased both during the Safety Corridor and the two years after the corridor, the severity of accidents increased along this section of SR 14 during these time frames. Societal costs are also assigned based on the severity of the accidents. During 2002-2003, the societal cost of these collisions was $422,000. During 2004-2006 (the Traffic Safety Corridor), the societal cost was $1,406,000. During 2007-2008, the calculated societal cost of the collisions was $1,364,000.

The education/awareness campaign, low-cost safety improvements, and enforcement are the primary components of the Traffic Safety Corridor. Even with the Traffic Safety Corridor's resources going towards increased education and enforcement, in addition to the installation of low-cost safety solutions, the severity of collisions increased in this location on SR 14. Allocating any additional funds towards the solution as a long-term would contradict the purpose of a Traffic Safety Corridor, and not bring about the safety benefits that are the primary purpose of this project.

Further Efforts to Minimize Impacts of the Selected Alternative – Alternative 7

The design team looked at the possibility of larger and higher walls than discussed in Alternatives 7a, 7b, and 7c, to reduce the project footprint of Alternative 7 in the vicinity of the Oak Habitat. The feasible recommendations from WSDOT geotechnical engineers are Mechanically Stabilized Earth Walls and Soldier Pile Tie Back Walls. Both of these types of walls will require the following: a box culvert to address the drainage; larger barrier than the guardrail that is currently located along SR 14 (such as concrete barrier); it would be necessary to deeply imbed the toe of the wall; and it is likely that a shoring wall would need to be constructed to maintain the stability of the wall, roadbed, and slope. All of these additional items would possibly double the cost of the proposed alternative to a total of approximately $10 million dollars. The aesthetic treatment necessary to make the walls visually subordinate would add cost as well.

In locations where walls are not required, or are difficult to construct, the preferred geotechnical recommendation for the cut slopes is a 2 foot horizontal to a 1 foot vertical (2H:1V). In further consideration to reducing the project footprint, WSDOT geotechnical stated that it is feasible to use a 1.5H:1V slope, however there are concerns regarding how well that slope could be revegetated. Due to the sensitivity of the area and in attempt to minimize the footprint wherever possible, the project team's current proposal has the cut slopes at 1.5H:1V.

WSDOT was requested to examine the possibility of reducing the cut slope and increase the banking of the roadway. WSDOT geotechnical engineers have stated in the project geotechnical report, that 1.5H:1V slopes are the maximum for constructability, slope stability, and vegetation. Steeper slopes are not feasible.

"Banking" or the superelevation rate is defined as:

> "rotation of the roadway cross section in such a manner as to overcome part of the centrifugal force that acts on a vehicle traversing a curve." (WSDOT Design Manual Section 1250.03, June 2009).

Selecting the appropriate superelevation rate takes into account existing superelevation of curves throughout the corridor, as well as the terrain and weather conditions.

> "In locations that experience regular accumulations of snow and ice, limit superelevation from the selected [superelevation rate] chart to 6% or less. In these areas, provide justification for superelevation rates greater than 6%. Vehicles moving at slow speeds or stopped on curves with supers greater than 6% tend to slide inward on the radius (downslope)." (WSDOT Design Manual Section 1250.04, paragraph 4, June 2009).

Given the high percentage of truck traffic, constant ice and snow throughout the winter, and an already documented safety concern, WSDOT has designed the current proposed alignment with a 6% superelevation rate. A greater superelevation rate would likely increase safety concerns, particularly during winter, and would not meet the intent of this project purpose. A greater superelevation rate would also create a negligible savings of oak habitat area, far less than one-tenth of an acre.

The Selected Alternative – Alternative 7

The project team has investigated the impacts of the preceding 8 alternatives and we are planning to proceed with Alternative 7 with 1.5:1 slopes. The Current Proposed Alternative is the only option that would provide for the safety improvements while minimizing the impacts to scenic, natural, historic, and private land resources. The proposed alignment will also preserve the consistency of driving through SR 14 in the Gorge, as outlined in the SR 14 Corridor Management Plan and the Route Development Plan.

As part of the realignment of SR 14, the previous roadbed and roadway structure will be removed and that previous section of SR 14 will be filled with soil and topsoil to create an area that blends into the adjoining slope and vegetation. This area is labeled as the "reversion area" on the attached appendices. The slope, soil type, and vegetation plan may all be found in the mitigation plan for SR 14. This ownership of this "reversion area" is planned to be turned over to the US Forest Service once the project is complete and permit conditions are satisfied.

Enclosures:

Appendix A: Alternative Alignments

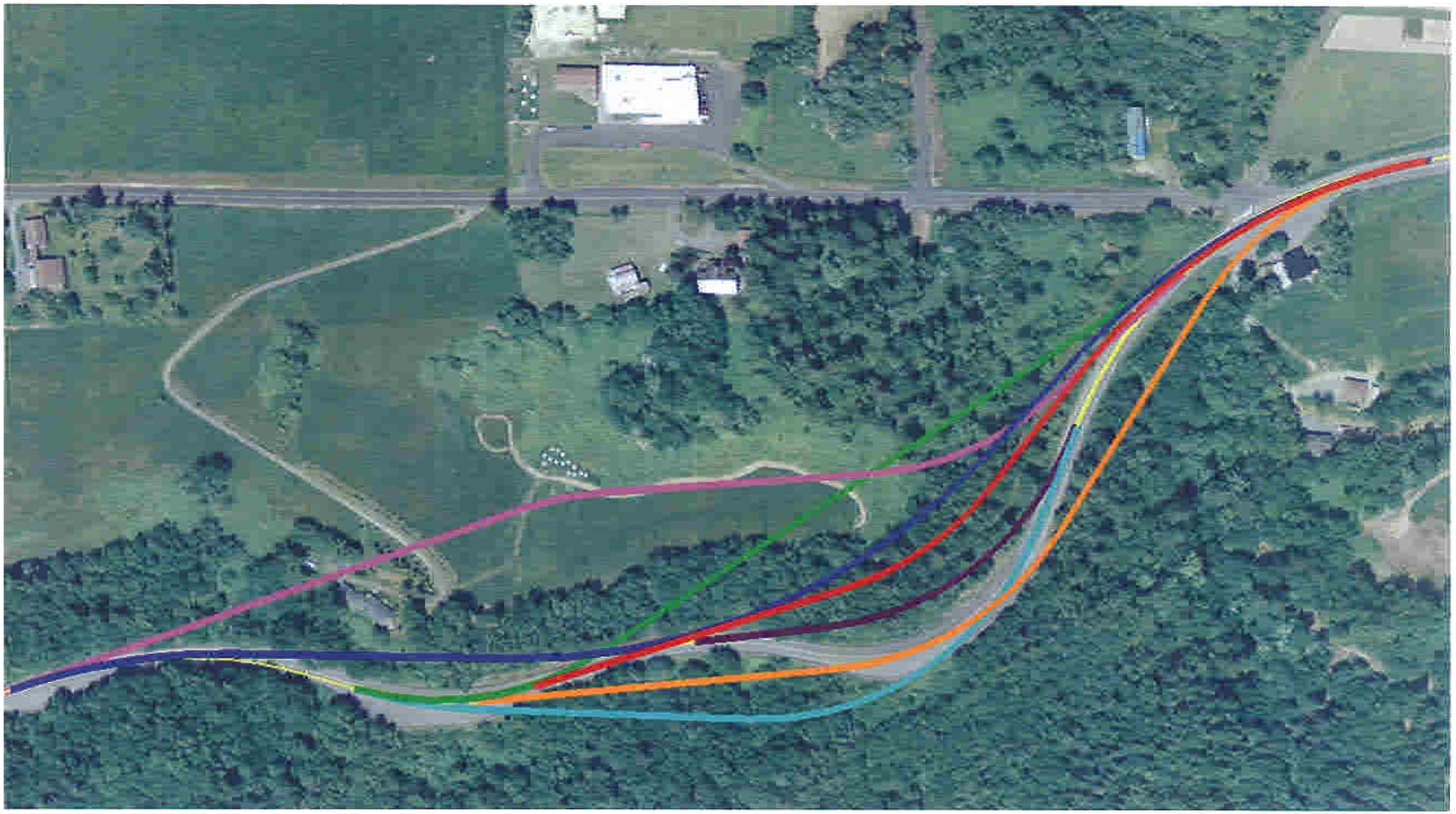
Appendix B: Alternative Comparison

Appendix C: Folio_Corridor Safety Program

Appendix D: SR 14 Accident Data

Appendix A: Alternative Alignments

Alternative Analysis



Current Alt 1 Alt 2 Alt 3 Alt 4 Alt 5 Alt 6

Appendix B: Alternative Comparison

No Practicable Alternatives Analysis
SR 14 Marble Road Vicinity Safety
Appendix B: Alternative Comparison

	Meets Scenic Requirements/maintains corridor consistency	Meets Modified Design Safety Standards	Cut/Fill Amount (Cubic yards)	Property Impact of curve realignment**	Oak Habitat (Acres)	# Trees 24" or greater diameter impacted	Historic resources Impacted	Projected Cost (millions)
Alternative 1	Yes	No	59,000	minimal - 1 partial acquisition	1.69	21	minimal - projected route comes within visual range	$3.5
Alternative 2	No - 55 foot walls (the height of a 5 story building) have visual impact	No	96,000	minimal - 1 partial acquisitions; 1 USFS easement	1.59	about 20	minimal - projected route comes within visual range	$12.5
Alternative 3	No - 110 foot wall (the height of a 10 story building) have visual impact	Yes	45,000	moderate - 2 partial acquistions; 1 USFS easement	1.49	about 20	minimal - projected route comes within visual range	$10
Alternative 4	No - species, visual, historic and scenic impacts	Yes	208,000	minimal - 1 partial acquisition	2.69	17	significant - earthwork impacts cemetery	$7.5
Alternative 5	No - instead of driving through a winding gorge, the public would be driving on a canyon rim, changes corridor	Yes	669,000	significant - 2 total acquisitons	3.02	6	moderate - proposed earthwork may abut cemetery property line	$16.5
Alternative 6	No - changes corridor, roadway curves are more like a freeway, not winding along a scenic route	Yes (meets full standards)	321,000	significant - 1 total acquisition; 1 USFS easement	4.76	31	minimal - projected route comes within visual range	$13
Alternative 7 (Current Proposed)	Yes	Yes	104,000	minimal - 1 partial acquisition	2.25	18	minimal - projected route comes within visual range	$5
Alternative 7a	No - 8 foot walls along 300 feet of roadway have visual impact	Yes	104,000	minimal - 1 partial acquisition	2.25	18	minimal - projected route comes within visual range	$8
Alternative 7b	No - stepped walls along 300 feet of roadway have visual impact	Yes	104,000	minimal - 1 partial acquisition	2.2	18	minimal - projected route comes within visual range	$8
Alternative 7c	No - stepped walls along 300 feet of roadway have visual impact	Yes	104,000	minimal - 1 partial acquisition	2.15	15	minimal - projected route comes within visual range	$11
Alternative 8	Yes	No - does not address project purpose or change liklihood of collisions	0	n/a	n/a	0	n/a	n/a

** These are only the properties directly affected by the curve realignment. Other property impacts, including stormwater treatment, intersection safety, etc. are not represented in this column

Alternative C: Folio_Corridor Safety Program

For More Information

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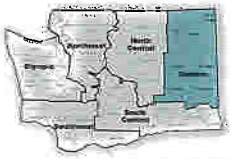

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Washington State
Department of Transportation

Corridor Safety Program

July 2008

The goal of the Corridor Safety Program is to reduce fatalities and serious injuries in Washington State. The program is a joint effort between the Washington State Department of Transportation and the Washington Traffic Safety Commission. Many partner agencies are also involved, including the Washington State Patrol, county public works and sheriff's offices, and city public works and police departments. The Corridor Safety Program works to reduce collisions on roadways using low-cost, near-term solutions through the use of partnerships with engineering, enforcement, education, and emergency services. The program is locally coordinated in each community. This local coordination includes providing local leadership to chair meetings of the steering committee. It also requires local involvement including local agency governments, interested citizens, businesses, schools, and any other agencies that have a vested interest in the safety of their roadways.

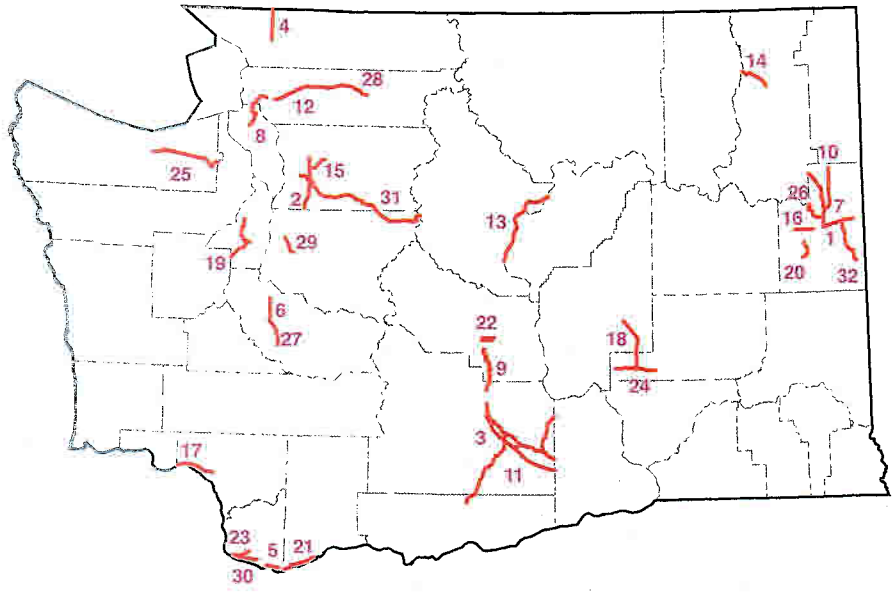
Colville, 1998

Lake Stevens, 2000

Vancouver, 2005

Moses Lake, 2002

Corridor Safety Program Project Locations 1991-2008



1. East Trent
2. Snohomish County
3. US 97
4. Guide Meridian
5. SR 14
6. Mountain Highway
7. D-Zone
8. Island/Skagit Counties
9. Yakima River Canyon
10. Y-Zone
11. Lower Yakima Valley
12. Burlington/Sedro Woolley
13. 97A
14. Columbia Gateway
15. Lake Stevens
16. Airway Heights
17. SR 4
18. Moses Lake
19. Cross-Kitsap
20. Memorial Highway
21. Cape Horn
22. Kittitas/Vantage Highways
23. Fourth Plain
24. Othello
25. Driving 101
26. Francis to 9 Mile
27. Mountain Highway 2
28. Upper Skagit Valley
29. Rainier Ave S
30. Mill Plain
31. US 2
32. Spokane Valley

The Corridor Safety Program began in 1991 on state routes in Washington. In 2003 the program expanded to include projects on city streets and county roads.

Above is a map showing project locations around the state since the program began, from the earliest (# 1) to the most recent (# 32).

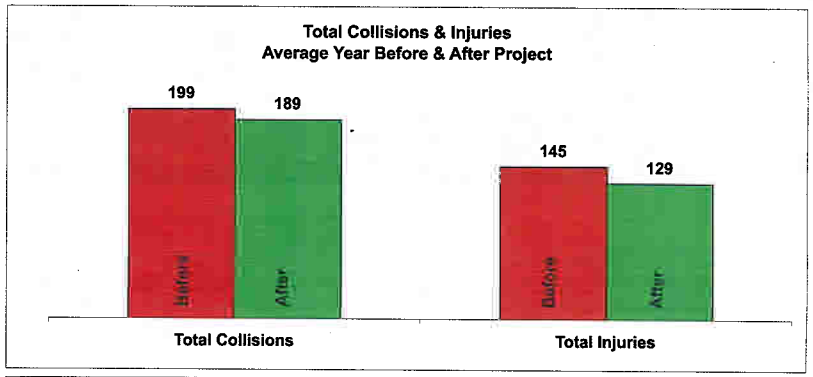
Corridor Timeline

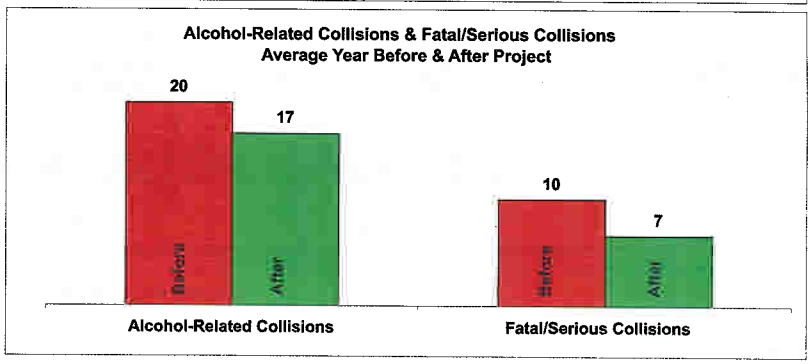
- Roadway with significant crash history is identified and community leadership and support for a project is found
- Collect/prepare collision data and organize/advertise initial meeting (1-3 months)
- Initial meeting to review Corridor process and examine collision history, followed by decision from community on whether to move forward with a project
- Action Plan development – first involves problem identification then is followed by development of solutions (6-12 months)
- Public kickoff
- Active work on project: engineering, enforcement, education, emergency services (18-24 months)
- Project completion (measure results)

Results

The Corridor Safety Program has been successful at increasing road safety in addition to building community relationships. In 28 completed corridors around the state (measuring the average of 3 years before a project versus 2 years after a project) the collision reductions below have been measured. In comparison, statewide crash information for 2001 to 2007 is shown in parentheses. Note that this time period for a statewide comparison (2001 compared to 2007) was chosen due to the fact that these are the earliest and latest years available with complete statewide crash information for all public roads.

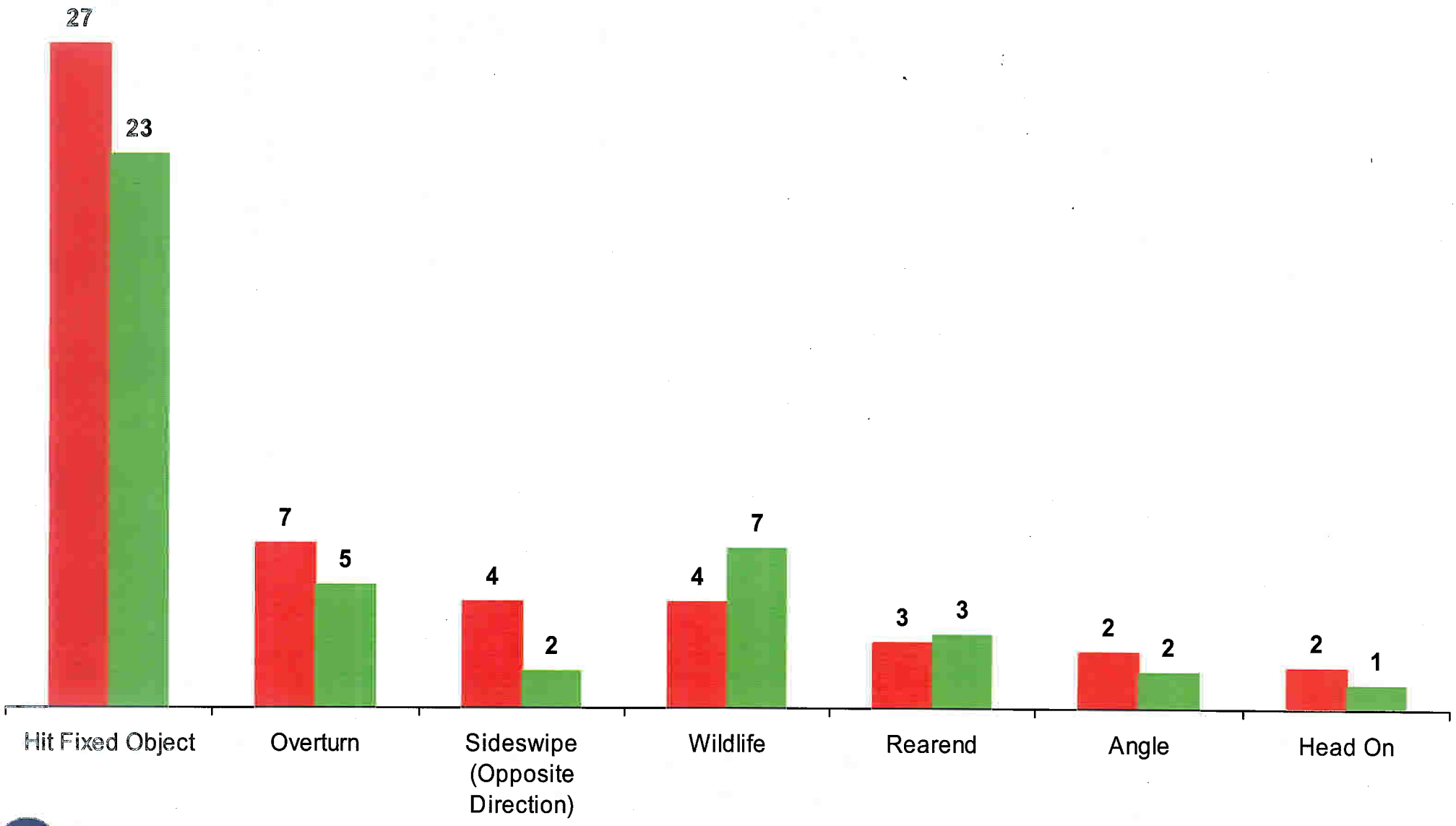
- Total collisions are down 5% (statewide up 1%).
- Total injuries are down 11% (statewide down 12%).
- Alcohol-related collisions are down 15% (statewide up 6%).
- Fatal and serious injury collisions are down 34% (statewide down 17%).
- Costs to society (based on collisions) have dropped from $16.0 million per year to $11.8 million per year, a savings of over $4 million per year per project.





Collision Type Before & After Comparison (Avg. Year)

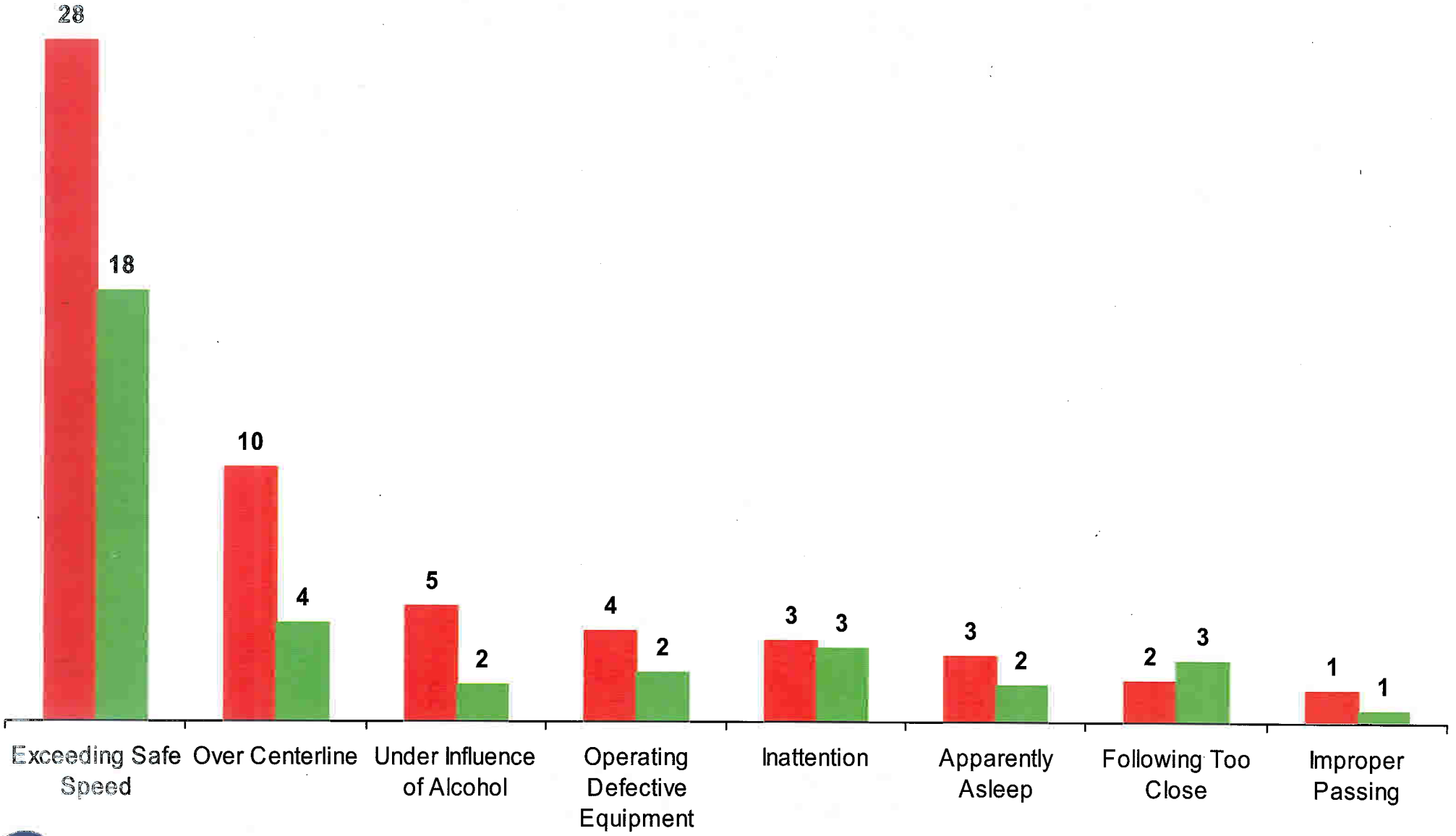
SR 14 Milepost 21.77 to 37.04
5/13/00-5/12/03 vs 5/13/04-5/12/06



Washington State Department of Transportation

Contributing Causes Before & After Comparison (Avg. Year)

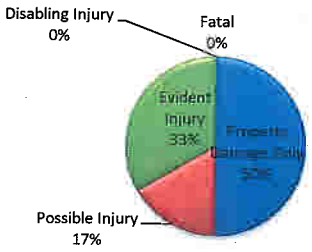
SR 14 Milepost 21.77 to 37.04
5/13/00-5/12/03 vs 5/13/04-5/12/06



Washington State Department of Transportation

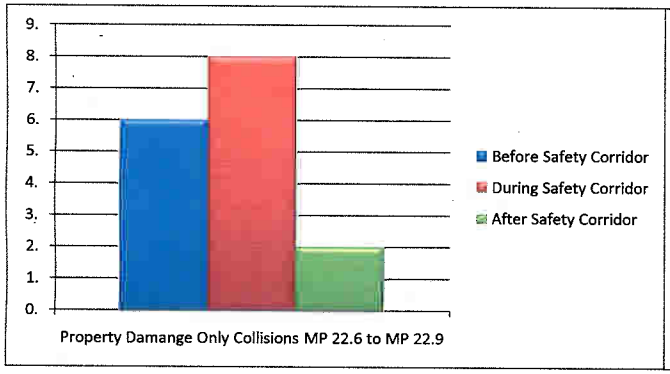
Alternative D: SR 14 Accident Data

2002-2003 Collisions MP 22.6 to 22.9 (Before Safety Corridor)

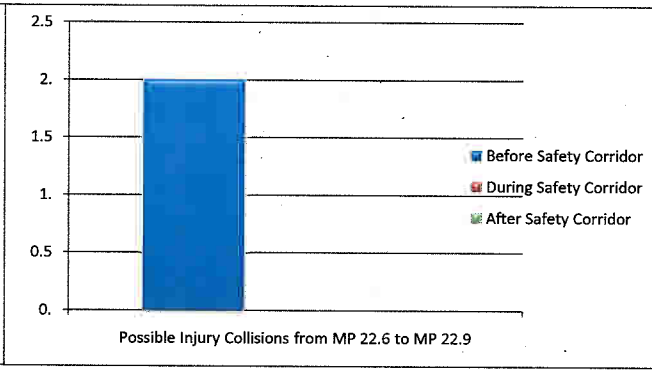


2004-2006 Collisions MP 22.6 to 22.9 (During Safety Corridor)

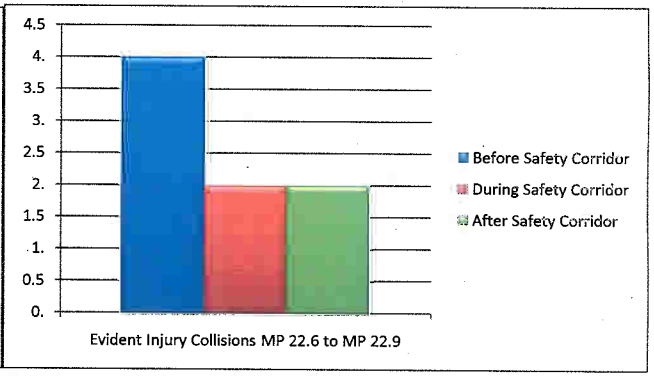
2007-2008 Collisions MP 22.6 to 22.9 (After Safety Corridor)



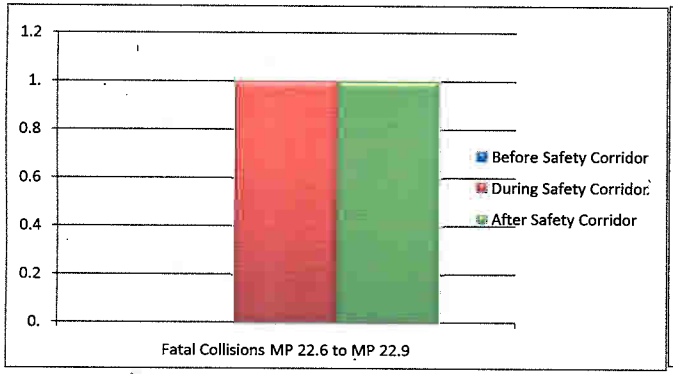
Property Damange Only Collisions MP 22.6 to MP 22.9



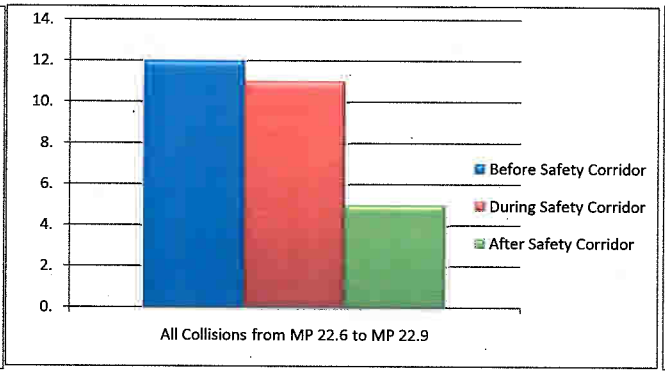
Possible Injury Collisions from MP 22.6 to MP 22.9



Evident Injury Collisions MP 22.6 to MP 22.9



Fatal Collisions MP 22.6 to MP 22.9



All Collisions from MP 22.6 to MP 22.9

Societal Cost of Collisions