

Alternatives Technical Memorandum

North Sheridan Interchange

Sheridan County

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Wyoming Department of Transportation

and

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Prepared by:

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North Sheridan Interchange Environmental Assessment

Alternatives Technical Memorandum

Section 1: Introduction and Background

This technical memorandum documents the alternatives development and screening process that was used to develop and identify which alternatives for the North Sheridan Interchange would be carried forward for detailed evaluation in the environmental assessment. This technical memorandum describes the development of the range of alternatives considered by the Wyoming Department of Transportation (WYDOT); the screening process for those alternatives, including a brief description of each screening criteria; and the results of the screening process. It concludes with a description of the alternatives carried forward for detailed analysis in the environmental assessment.

In the late 1990s, WYDOT studied improvements for the North Sheridan Interchange and the port-of-entry in concurrently developed projects: the North Sheridan Interchange Improvement Study and the Camino Real Corridor Study. The North Sheridan Interchange study was put on hold, and the Camino Real or port-of-entry study moved forward into construction. The port-of-entry was relocated from its location near the North Sheridan Interchange to a new interchange several miles north of Sheridan. The study team that worked on the North Sheridan Interchange study in the 1990s developed seven conceptual-level alternatives for consideration, including:

- the No-Build Alternative,
- an upgrade to the existing interchange,
- reconstruction of the existing interchange with a compressed diamond,
- two variations of a diamond interchange between the existing interchange and Wyoming 338/Decker Road (referred to hereafter as Decker Road),
- a diamond interchange at Decker Road,
- a split diamond between the existing location and Decker Road, and
- a new diamond interchange north of Decker Road.

After completing an alternatives analysis as part of the study, the team recommended three alternatives for further consideration: upgrade of the existing interchange, construction of a new interchange at Decker Road, and construction of a new interchange north of Decker Road. Alternatives that raised the level of the Interstate 90 (I-90) mainline, that introduced safety concerns such as steeper grades, or had negative environmental impacts to Goose Creek were not carried forward.

Section 2: Alternatives Development

The alternatives development process was an iterative process that began with the development of preliminary alternatives followed by solicitation of public input and subsequent refinement by the project team based upon the public input received. The refined alternatives were screened to determine which alternatives should be carried forward for further analysis in the environmental assessment. All of

the alternatives, except the No-Build Alternative, address the sidewalk and drainage issues described in the purpose and need technical memorandum.

Five preliminary alternatives and the No-Build Alternative were developed based on the recommendations from the North Sheridan Interchange Improvement Study. The five preliminary build alternatives were developed by considering the options recommended as part of the previous North Sheridan Interchange study. These preliminary alternatives were based on existing conditions, but some changes have occurred since the original study was completed, including relocation of the port-of-entry, new planning efforts underway in the north Sheridan area, and a recent annexation of land into the City.

The upgrade at existing interchange alternative was not carried forward. During the previous study, it was determined to be a marginal improvement to the existing conditions. It would not provide acceptable horizontal curves or acceptable up/down grades, nor would it provide full direct access to Main Street and Decker Road. Because this alternative does not meet the current purpose of, need for, or goals of the project, it was not refined into a preliminary alternative for consideration in the environmental assessment.

As part of the preliminary alternatives development, the project team studied changes in existing traffic patterns, traffic projections, and crash data since relocation of the port-of-entry to determine if the previous alternatives were still valid and what additional considerations needed to be included in the preliminary alternatives. The project team used current design guidelines from the American Association of State Highway Transportation Officials (AASHTO) and WYDOT to make sure the alternatives being developed would meet applicable design standards and ensure safety. The preliminary alternatives were presented to the public during a public meeting and public scoping period in August 2009. The community commented on the ability of the alternatives to meet purpose of and need for the project and expressed opinions about which alternatives to carry forward for further analysis and refinement.

Preliminary Alternatives

The preliminary alternatives were developed as an expansion of the build alternatives that were recommended from the earlier North Sheridan Interchange study. Expansion of the build alternatives included five potential interchange locations (including reconstruction at the existing location). The following is a list of the preliminary alternatives that were evaluated.

- Alternative 1: No-Build Alternative
- Alternative 2: Reconstruct Interchange at Existing Location
- Alternative 3: Interchange at Decker Road
- Alternative 4: Interchange Close to Decker Road
- Alternative 5: Interchange North of Decker Road
- Alternative 6: Interchange Farther North of Decker Road

Alternative 1: The No-Build Alternative represents the conditions if major improvements are not recommended as a result of this study. This alternative would not improve the existing geometric

deficiencies, regional connectivity shortcomings, or deteriorating roadway segments within the study area. The No-Build Alternative does not meet the purpose of and need for the project but is assessed in the environmental assessment as a baseline for comparison with the build alternatives.



Figure 1. Preliminary Alternative 1

Alternative 2: This alternative would reconstruct the existing trumpet interchange configuration to a diamond interchange configuration. This alternative would replace the existing loop ramps on the north side of I-90 with diamond interchange ramps and upgrade the geometry of the ramps on the south side of I-90.

This alternative would be constructed within existing WYDOT right-of-way, except for north of I-90 where some right-of-way, including one building, would be required. A new bridge over the Burlington Northern Santa Fe (BNSF) railroad for the westbound exit ramp would be necessary to improve safety, but steep grades of nearly eight percent would still be required. The eastbound entrance ramp would continue to have a tight horizontal curve due to its proximity of the Kmart property. Without relocating Kmart, little can be done to straighten the curve.



Figure 2. Preliminary Alternative 2

Alternative 3: This alternative would construct a diamond interchange at existing Decker Road, which is approximately 2,100 feet northwest of the existing North Sheridan Interchange. This alternative would provide direct access from Decker Road to I-90. Decker Road would continue to cross under I-90 in its current alignment, which would result in the interchange ramps connecting to Decker Road at a skewed angle. The existing interchange would be removed, but access to businesses, such as Kmart, would be maintained. Main Street would be aligned with Decker Road and would provide continuous flow from Main Street, Decker Road, and I-90.

The westbound exit ramp would require widening of the existing I-90 bridge over Goose Creek and an additional structure over the creek. These structures would encroach upon and require acquisition of right-of-way from the Sheridan/Big Horn Mountains KOA, located just northwest of I-90 along the creek. A new bridge over the creek would also be required for the eastbound entrance ramp. As a result, right-of-way would be needed on the north and south sides of I-90 to accommodate the new interchange.



Figure 3. Preliminary Alternative 3

Alternative 4: This alternative would construct a diamond interchange about 500 feet west of existing Decker Road, which would put the new interchange approximately 2,600 feet northwest of the existing interchange. As with Alternative 3, this alternative would realign Main Street with Decker Road, but Decker Road would also be realigned to the new interchange location. As a result, portions of existing Decker Road and the existing I-90 bridges over Decker Road would be demolished. The resultant geometry would have Decker Road aligned perpendicular to the interchange ramps. Short access roads would be constructed to connect the KOA to the realigned Decker Road and would provide access for homes located along the creek.

This alternative would require new bridges on I-90 over Decker Road and widening of existing bridges over Goose Creek to accommodate the westbound exit ramp and eastbound entrance ramp. Some right-of-way may need to be acquired from the KOA to accommodate the bridge widening and the westbound exit ramp. Also, right-of-way would be needed on the north and south sides of I-90 to accommodate the new interchange.



Figure 4. Preliminary Alternative 4

Alternative 5: This alternative would construct a new diamond interchange approximately 1,300 feet west of Decker Road, or 3,400 feet northwest of the existing North Sheridan Interchange. As with Alternative 4, Decker Road would be realigned perpendicularly with I-90 at the new interchange and Main Street would be realigned with Decker Road. The existing Decker Road that goes under I-90 would also be closed, but much of the alignment of Decker Road would remain in place, providing access to the KOA and the existing homes along Decker Road. At the interchange, Decker Road would cross over I-90 rather than under to accommodate the higher grades on the south side of the interstate.

This alternative would not require the construction of new structures or widening of existing structures over Goose Creek. This alternative would also not require right-of-way from the KOA, but it would require right-of-way on both sides of I-90 to accommodate the new interchange.



Figure 5. Preliminary Alternative 5

Alternative 6: This alternative would construct a new interchange approximately 3,900 feet west of Decker Road, or 6,000 feet northwest of the existing interchange. Again, Decker Road would be realigned to the new interchange location perpendicular to I-90, generally following the proposed Wrench Ranch access road, and Main Street also would be realigned with Decker Road. However, this alternative could leave existing Decker Road and the I-90 bridge in place if the City of Sheridan were to take over jurisdiction of the road. This alternative would not require structures over Goose Creek, but two new structures would be needed for the new Decker Road to cross under I-90.

This alternative would not require the construction of new structures or widening of existing structures over Goose Creek, but it would require right-of-way on both sides of I-90 to accommodate the new interchange.



Figure 6. Preliminary Alternative 6

Public/Agency Involvement and Input of Preliminary Alternatives

A public scoping meeting was held on August 12, 2009. The majority of the comments received related to identifying a Preferred Alternative or project direction. The conceptual alternatives preferred by the members of the public in attendance are provided in Table 1.

Nearly three-quarters of the respondents commented that if the interchange were going to be rebuilt, it should be rebuilt at the existing location (Alternative 2). Several respondents indicated that they preferred the No-Build Alternative (Alternative 1), but that if the interchange must be rebuilt, Alternative 2 was the only alternative that should be considered. Little support was raised for Alternatives 4, 5, and 6.

Several individuals also mentioned other alternatives that should be considered, including an intermediate alternative that involves more than the No-Build Alternative but does not require reconstructing the existing interchange in its entirety. The respondents felt that with minor safety improvements, the safety issues at the existing interchange could be addressed without building a new interchange. Some respondents noted that other variations of a reconstruction alternative could be considered at the existing location, including a split interchange or different ramp configuration. One respondent indicated that if the railroad could be relocated, additional alternatives at the existing location could be considered.

Table 1: Public Comments in Support of Each Preliminary Alternative Received at the First Public Meeting

Alternative	Number of supporting comments
Alternative #1 – No-Build Alternative	15
Alternative #2 – Reconstruct at existing location	47
Alternative #3 – Interchange at Decker Road	17
Alternative #4 – Interchange close to Decker Road	5
Alternative #5 – Interchange north of Decker Road	2
Alternative #6 – Interchange farther north of Decker Road	4
New alternative	9
Total comments	67

As noted earlier, minor safety improvements do not address the purpose of and need for the project and were not considered during the refinement of alternatives. Because of the favorable response to Alternative 2, refinements were considered that would improve Alternative 2's ability to meet current design standards. As presented at the public meeting, Alternative 2 would not meet the purpose of and need for the project. Refinements were also made to Alternative 4.

Table 2: Disposition of Alternative following Public and Agency Scoping

Alternative	Disposition Following Public and Agency Scoping
Alternative 1 – No-Build Alternative	Carried Forward for Two-Step Screening Evaluation
Alternative 2 – Reconstruct Interchange at existing location	Refined Alternative Carried Forward for Two-Step Screening Evaluation
Alternative 3 – Interchange at Decker Road	Carried Forward for Two-Step Screening Evaluation
Alternative 4 – Interchange close to Decker Road	Refined Alternative Carried Forward for Two-Step Screening Evaluation
Alternative 5 – Interchange north of Decker	Eliminated – Similar to Alternative 4A refined (see below).
Alternative 6 – Interchange farther north of Decker Road	Renamed (Alternative 5) Carried Forward for Two-Step Screening Evaluation

Refined Alternatives

Subsequent to the public scoping meeting, the following refinements to the preliminary alternatives were considered.

Alternative 2A-2: This alternative would construct a tight diamond interchange just north of the existing interchange but within the same general interchange footprint. It would have a T-intersection with Decker Road. The traffic would not be free flow nor would it have direct access from I-90 to Decker Road or Main Street. It would require a new structure over Goose Creek for the connecting road, and it is likely that the structures on Decker Road and I-90 would need to be improved. The interstate would need to be raised, but it is unlikely that it would affect the railroad structures. This configuration with the T-intersection is not ideal, but the spacing is considered adequate and meets the applicable design standards. It was not carried forward.

Alternative 2A-3: This alternative would construct a tight diamond interchange 750 feet north of the existing interchange but within the same general interchange footprint. Traffic would have free flow from I-90 to Main Street. There would be a new structure over Goose Creek for the connecting road, and it is likely that the structures on Decker Road and I-90 would need to be improved. The interchange and acceleration ramp from the railroad can likely be built without widening any structures. Widening would be needed to accommodate a deceleration ramp over the railroad.

Alternative 2A-3 would provide free traffic flow and the most improved access to Decker Road and Main Street; it was identified as the refinement option to carry forward. Further refinement of the connecting intersection may occur under final design to best address traffic flow if this alternative is selected.

Alternative 2A-4: This alternative is the same as 2A-2 except that the connecting road features a roundabout rather than a T-intersection. This alternative would provide free flow to Decker Road and Main Street, but the intersection would affect several landowners, at least one private access road to a

large development site, and the location of the potential West Belt Loop connection. For these reasons, it was not carried forward.

Alternative 4 (refined): This alternative would construct a diamond interchange about 1,300 feet west of existing Decker Road, which would put the new interchange approximately 3,150 feet northwest of the existing interchange. It would be located farther west than the preliminary Alternative 4 but not as far west as the preliminary Alternative 5. The alternative was refined to better meet geometric standards and improve constructability. This alternative would realign Main Street with Decker Road, but Decker Road would also be realigned to the new interchange location. As a result, portions of existing Decker Road and the existing I-90 bridges over Decker Road would be demolished. The resultant geometry would have Decker Road aligned perpendicularly to the interchange ramps. Short access roads would be constructed to connect the KOA into the realigned Decker Road and to provide access for homes located along the creek.

This alternative would require new bridges to be constructed on I-90 over Decker Road and widening of existing bridges over Goose Creek to accommodate the westbound exit ramp and eastbound entrance ramp. Some right-of-way may need to be acquired from the KOA to accommodate the bridge widening and the westbound exit ramp. Also, right-of-way would be needed on the north side and south side of I-90 to accommodate the new interchange.

Alternatives 2A-3 and 4 (refined) were carried forward for evaluation. These are now called simply Alternative 2 and Alternative 4. Because Alternative 5 is very similar to Alternative 4, but did not have as much support as Alternative 4 nor any of the advantages of the refinements, it was dropped. Alternative 6 is now called Alternative 5.

Section 3: Evaluation Process

A two-step screening process was developed to evaluate the refined alternatives to determine which alternatives should be carried forward for further analysis in the environmental assessment. The screening process included two steps. The first screening step was used to determine which alternatives satisfy the purpose of and need for the project. The second screening step looked at other factors such as access, right-of-way impacts, Section 4(f) impacts, wetland impacts, cost, and consistency with local community planning goals and objectives. All of the alternatives, except the No-Build Alternative, would address the sidewalk and drainage issues identified in the purpose and need technical memorandum.

Step 1 Screening Criteria

Three screening criteria were established to narrow the range of initial alternatives by determining which alternatives could satisfy the purpose of and need for the project: safety (geometric evaluation), access (connectivity evaluation), and roadway deterioration (deteriorating roadway segment evaluation). These criteria and their measure, which indicate how the alternative meets purpose and need, are listed in Table 2 and described in text below the table.

Table 3: Step One Screening Criteria

Criterion	Measure
Geometric Evaluation (Safety)	Provide sufficient horizontal curves
	Provide acceptable up/down grades
	Provide adequate length acceleration lanes
	Provide adequate length deceleration lanes
	Provide acceptable sight distance
Connectivity Evaluation (Regional Access)	Provide regional and system connectivity though full direct access to Main Street and Decker Road to support local long-range planning and growth in North Sheridan area
	Consistent with FHWA Interstate Access Policy and long-range transportation planning by not precluding West Corridor tie-in.
Deteriorating Roadway Segment Evaluation (Deteriorating Roads)	Improve pavement and structure condition
	Provide drainage
	Provide continuous pedestrian facilities

Geometric Evaluation: This criterion focuses on the geometric standards that are outlined in “A Policy on Geometric Design of Highways and Streets,” published by AASHTO. This criterion is meant to ensure that the alternatives developed are designed to the highest safety standards based on driving and physical conditions in the area.

Connectivity Evaluation: Direct connection to Decker Road, a major regional connector, would ensure long-term regional access for the north Sheridan area in support of local long-range planning, and are proximal to Main Street, which provides full access both north and south of I-90. In addition, the location of the North Sheridan Interchange must be consistent with the 2009 FHWA access requirements of another interchange between the proposed North Sheridan Interchange and the port-of-entry interchange. FHWA requires a comprehensive interstate network study for new or relocated interchanges and in areas where the potential exists for future multiple interchange additions, these additions must be within the context of a long-term plan. Sheridan identified an interchange as part of its study of the West Corridor transportation facility and it must be considered when determining a location for the North Sheridan Interchange. Minimum spacing between adjacent interchanges whether existing or planned also must be considered.

Deteriorating Roadway Segment Evaluation: This criterion focuses on providing a roadway segment that adequately functions for all users. Specifically, this criterion seeks to accomplish three things: 1) improve the pavement and structure condition of I-90, North Main Street, and Decker Road; 2) rehabilitate existing drainage, and install drainage systems where none currently exist along I-90; and 3) improve pedestrian accommodations along North Main Street and Decker Road.

Step 2 Screening Criteria

The step 2 screening criteria were used to further refine the list of alternatives to be carried forward to the environmental assessment by considering a variety of constructability, cost, and environmental factors. Public and agency input are an important component of determining the viability of an

alternative. These criteria and measures are provided in Table 3 and are described in text below the table.

Table 4: Step Two Screening Criteria

Criterion	Measure
Local Access Evaluation	Maintain acceptable travel times
	Maintain acceptable business visibility
Constructability	Constructible in accordance with reasonable engineering and cost measures
Regulatory Evaluation	Minimize impacts to waters of the United States
	Minimize use of Section 4(f) properties
Right-of-way Evaluation	Additional right-of-way needed
	Business or residential impacts
Community Planning Evaluation	Sustain natural resources and environmental quality
	Expand open space
	Preserve viewsheds
	Compatible with local transportation system designations
Cost Evaluation	Maintain interchange as close as possible to existing interchange
	Cost needed to develop and construct an alternative

Local Access Evaluation: This evaluation considers the accessibility that each alternative provides between the interstate and local commerce. Specifically, this criterion ensures that all considered alternatives provide adequate access to local businesses. Further, “access” includes maintenance or improvement of visibility of existing businesses by travelers from I-90. Alternatives farther from the existing interchange location should have acceptable travel times and not require customers of north Sheridan area businesses to travel a significantly longer time to reach these businesses when compared to existing conditions.

Constructability: This criterion identifies issues associated with an alternative that may limit the build-out of the alternative or that might have issues that would increase the possibility of delays or cost overruns. It is important to determine as early as possible that a candidate alternative would be buildable, while also being cost-effective, biddable, and maintainable.

Regulatory Evaluation: The evaluation of regulatory conditions includes the assessment of impacts to Section 4(f) properties and waters of the United States. Section 4(f) properties include publicly owned and open-to-the-public parks and recreational properties, properties listed in the National Register of Historic Places and wildlife refuges. These properties must be avoided unless there is no feasible and prudent alternative to using them.

Under Section 404(b)(1) of the Clean Water Act, WYDOT must develop a range of alternatives and select an alternative that is the least environmentally damaging practicable alternative (LEPDA) to waters of the U.S., including wetlands. The U.S. Army Corps of Engineers (USACE) relies on the purpose and need statement for screening. Alternatives that fail to meet the purpose of and need for the project will not be considered practicable alternatives. Only those alternatives that are found to meet the purpose of

and need for the project can then be screened to determine which one is the LEPDA. The USACE will permit fill of waters of the U.S. only if the selected alternative is the LEPDA.

Right-Of-Way Evaluation: This criterion focuses on the right-of-way impacts of each alternative. This includes the total area of right-of-way that each alternative would need and the number of businesses or residences that would require relocation.

Community Planning Evaluation: This criterion is multifaceted to ensure that analyzed alternatives are consistent with local community planning goals. Key elements of local interest as defined in the *Sheridan Joint Planning Area Land Use Plan*, the *North Area Master Plan*, and the *Sheridan Transportation Policy Plan*, include protecting environmental quality and sustaining natural resources (e.g. Goose Creek), expanding preserved open space, preserving viewsheds of the Big Horn Mountains, compatibility with local transportation system goals, and ensuring that interstate access is kept as close to the existing interchange as possible.

Cost Evaluation: This criterion considers the financial investment associated with an alternative, including construction costs, right-of-way acquisition, utility relocation, financing, insurance, other investments needed to implement the alternative, and ultimately maintenance costs over the life of the project.

Public/Agency Involvement and Input of the Refined Alternatives

A second public meeting was held on June 24, 2010. The intent of the meeting was to present the refined alternatives to the public. The majority of the comments were in favor of Alternative 4 (Table 4). This is in contrast to the Preferred Alternative from the first public meeting. Several of the respondents stated support for improvements other than the three alternatives carried forward or provided feedback on elements that were particularly important in selecting a Preferred Alternative such as a connection between the North Sheridan Interchange and businesses along North Main Street.

**Table 5: Public Comments in Support of Each Refined Alternative
Received at the Second Public Meeting**

Alternatives	Number of Supporting Comments
Alternative #1 – No-Build Alternative	6
Alternative #2 – Diamond Interchange close to existing location	8
Alternative #4 – Diamond Interchange Close to Decker	12
Other Improvements	17
General Comments	12
Total comments	55

Alternatives Evaluation

The refined alternatives were evaluated using the two-step screening process outlined above. The conclusions of the evaluation are discussed in Table 5 and in the following text.

Table 6: Results of Step One Screening

Project Purpose	Screening Criteria Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Safety	Provides sufficient horizontal curves		X	X	X	X
Safety	Provides acceptable up/down grades		X	X	X	X
Safety	Provides adequate length acceleration lanes		X	X	X	X
Safety	Provides adequate length deceleration lanes		X	X	X	X
Safety	Provides acceptable sight distance		X		X	X
Access	Provides full direct access to Main Street and Decker Road		X	X	X	
Access	Supports local land use plans	X	X	X	X	X
Access	Allows for FHWA minimum interchange access requirements for existing and planned interchanges	X	X	X	X	
Deteriorating Roads	Improves pavement conditions		X	X	X	X
Deteriorating Roads	Provides drainage		X	X	X	X
Deteriorating Roads	Provides continuous pedestrian facilities		X	X	X	X

Alternative 1: No-Build: The No-Build Alternative represents the conditions if major improvements are not recommended as a result of this study. This alternative does not satisfy the step 1 evaluation criteria. The No-Build Alternative is the least costly of any alternative, and it would have the least environmental and right-of-way impacts because no construction would take place. It does not, however, satisfy the geometric, safety, or regional connectivity criteria described in the purpose of and need for the project. The ramp lengths are too short; the curves along the ramps do not meet driver expectancy, which compromises driver safety; and the awkward geometry of the Main Street/Decker Road/Canfield Street intersection cannot be mitigated. However, this alternative is being carried forward as a baseline for comparison with the other build alternatives.

The City has identified the north Sheridan area as a primary growth area, and a large tract of land west of Decker was annexed into the City. The City has developed plans for the Sheridan High-Tech Business Park, and a subdivision plat for Phase I of the Wrench Ranch development area has been approved. These developments are likely to generate different future traffic patterns as the developments are built out. Additionally, the West Corridor is a planned north-south transportation corridor through the western part of Sheridan. The West Corridor was proposed in a citywide traffic study conducted by the City in 2001. It is intended to provide city traffic roadway capacity independent of the proposed North Sheridan Interchange improvements. Funding has not been identified for construction.

It is being carried forward as a baseline comparison for Alternatives 2 and 4.

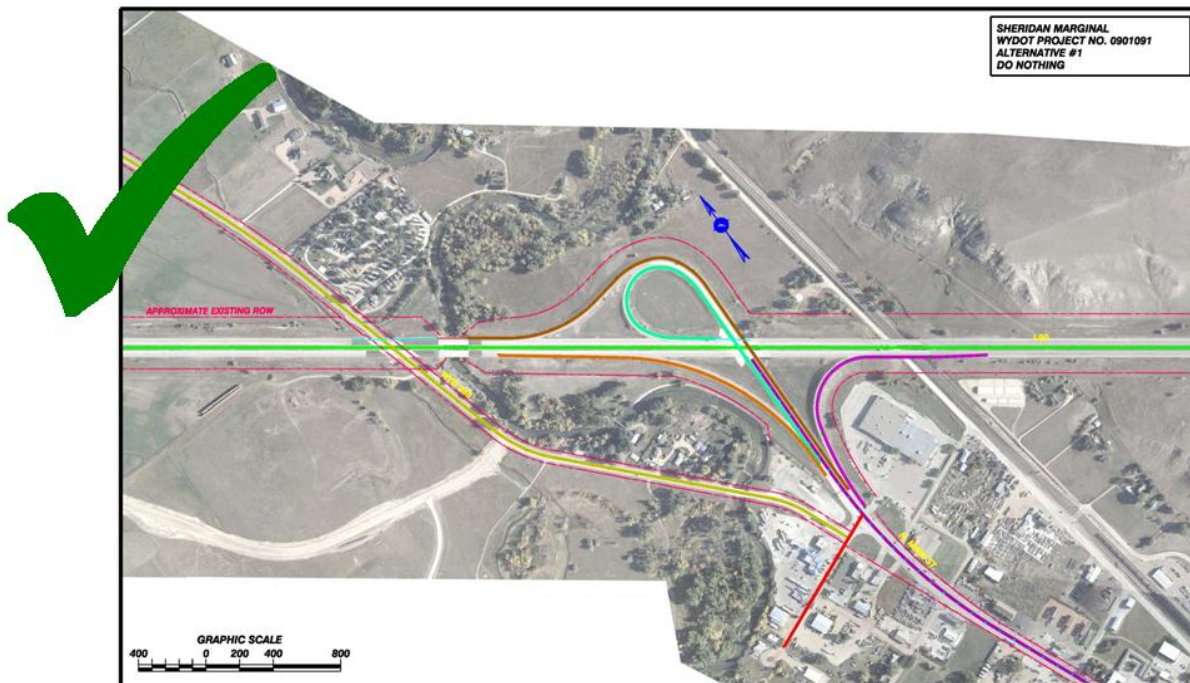


Figure 7. No-Build Alternative

Conclusion: Carry it forward for a baseline comparison

Alternative 2: Reconstruct at Existing Location (refined): This alternative would construct a tight diamond interchange about 750 feet north of the existing interchange but within the same general interchange footprint. The crossroad would connect with Decker Road using a T-intersection. The alternative would require up to five new bridges and widening of three existing structures or roadway sections.

- New bridge over the railroad for the westbound off-ramp
- Two new mainline bridges (and demolition of the existing mainline bridges)
- New bridge over Goose Creek for North Main Street to travel under the interstate
- New bridge over Goose Creek for the westbound on-ramp
- Widening the eastbound off-ramp over Goose Creek
- Widening and/or building a new bridge over Decker Road for the westbound on-ramp
- Widening North Main Street over Goose Creek may be required

This alternative satisfies the purpose of and need for the project. This alternative would allow for construction of an interchange that provides adequate acceleration and deceleration lanes, acceptable vertical grades, sufficient horizontal curves, and acceptable sight distance and improves safety associated with traffic conditions at the North Sheridan Interchange. This alternative provides an improved connection from I-90 to northbound Decker Road; cars have free flow onto Decker Road/Main Street but must travel under I-90 to go north adding more travel time. It does not preclude another interchange between North Sheridan Interchange and the port-of-entry interchange. This alternative would create a normal four-way intersection with Canfield Street.

Reconstructing the interchange at its current location would minimize the total right-of-way required and would maintain the current business visibility from I-90. This alternative would have potential residential and commercial property (structures) impacts or relocations. There are no publicly owned, open-to-the-public parks and recreational properties, wildlife refuges, properties eligible for the National Register of Historic Places, or properties protected under Section 4(f) that would be impacted by this alternative. Two new bridge crossings of Goose Creek would be needed in addition to widening the existing bridge over Goose Creek; Goose Creek is considered a water of the U.S. This alternative would potentially impact 3 acres of wetlands¹. The existing interchange would need to be demolished in order to build the new interchange, which has the potential to create numerous traffic control problems during construction.

¹ Wetland impacts were calculated based on proposed right-of-way. Actual wetlands may be less once actual construction limits are determined.

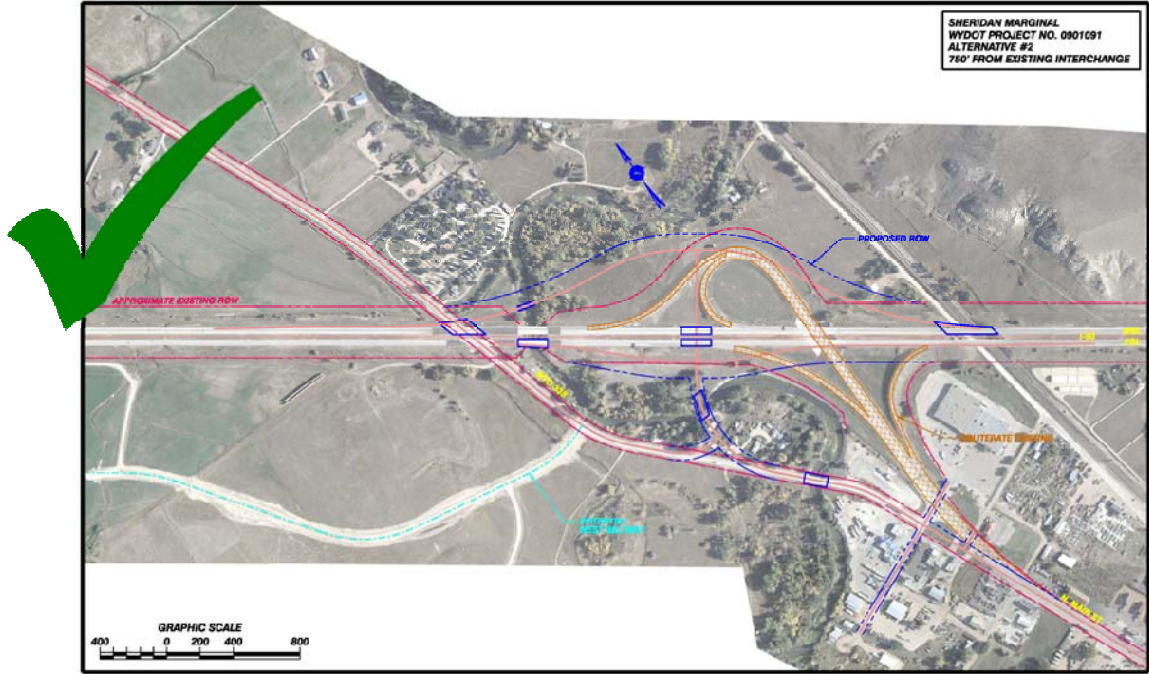


Figure 8. Alternative 2

Conclusion: Carry it forward

Alternative 3: Diamond Interchange at Decker Road: Constructing a diamond interchange at Decker Road would not satisfy all of the safety criteria identified in the purpose and need. Constructing this interchange would not provide acceptable sight distance resulting from the interchange skew with I-90. This skew reduces sight distance for motorists entering and exiting I-90.

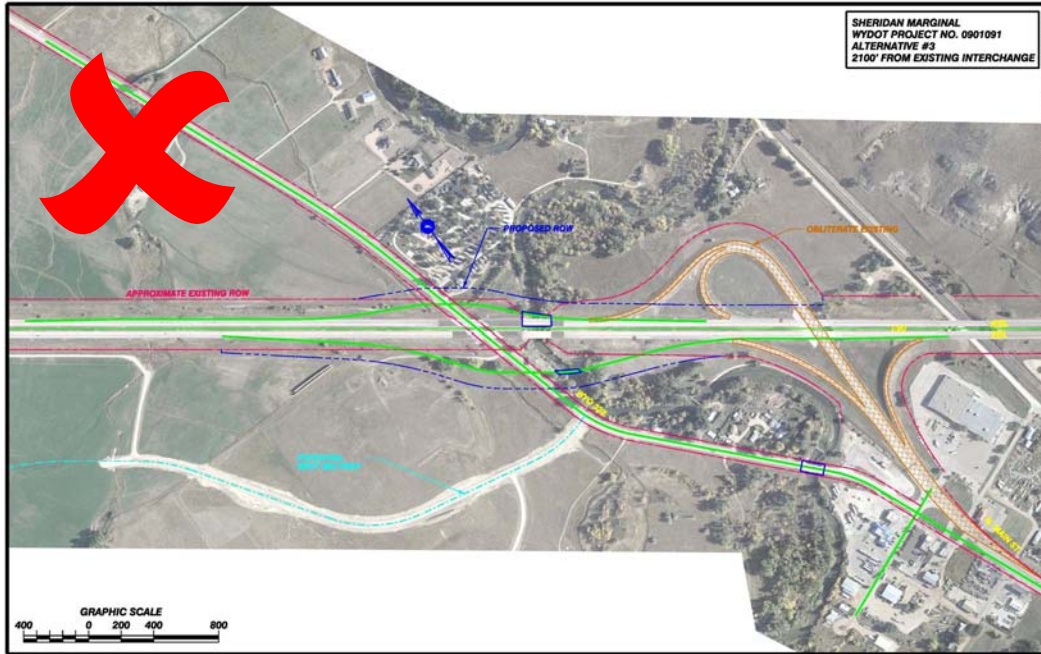


Figure 9. Alternative 3

Conclusion: Do not carry it forward

Alternative 4: Diamond Interchange Close to Decker Road (refined): This alternative would construct a diamond interchange 3,150 feet northwest of the existing interchange and about 1,300 feet west of existing Decker Road. The “straight through” alignment of Decker Road would be eliminated and traffic would flow along the realigned Decker Road, perpendicular to I-90. This alternative would require widening the eastbound on-ramp, widening the North Main Street bridge, and constructing a new bridge over the interstate mainline. The proposed interchange could be constructed while leaving the existing North Sheridan Interchange in place, resulting in few traffic control issues during construction.

This alternative satisfies the purpose of and need for the project. Relocation of the interchange would allow for construction of an interchange that provides adequate acceleration and deceleration lanes, sufficient horizontal curves, acceptable vertical grades, and acceptable sight distance and improves safety associated with traffic conditions at the North Sheridan Interchange. This alternative would create a normal four-way intersection with Canfield Street. This alternative provides direct connections between I-90 and Decker Road for all movements; traffic traveling westbound on I-90 can proceed north on Decker Road without going under I-90. This alternative does not preclude another interchange between North Sheridan Interchange and the port-of-entry interchange. This alternative is close enough to Decker Road and Main Street to maintain current business visibility with proper signage. It would eliminate the “straight through” alignment of Decker Road, and traffic would flow along a small segment of realigned Decker Road. Travel times along realigned Decker Road are not onerous.

The alternative would require a substantial amount of right-of-way, but no residential or commercial relocations would be needed. A small amount of right-of-way would be needed from the KOA tent area. A large amount of earthwork would be needed on the south side of the interstate to construct the new segment of Decker Road. This alternative would require widening the eastbound on-ramp over Goose Creek and widening the North Main Street bridge over Goose Creek; Goose Creek is considered a water of the U.S. This alternative would potentially impact 1.5 acres of wetlands². There are no publicly owned, open-to-the-public parks, recreation properties, or wildlife refuges that would be impacted by this alternative. The nearby Wrench Ranch buildings are eligible for the National Register of Historic Places (NRHP) but would not be directly or indirectly impacted by the alternative.

² Wetland impacts were calculated based on proposed right-of-way. Actual wetlands may be less once actual construction limits are determined.

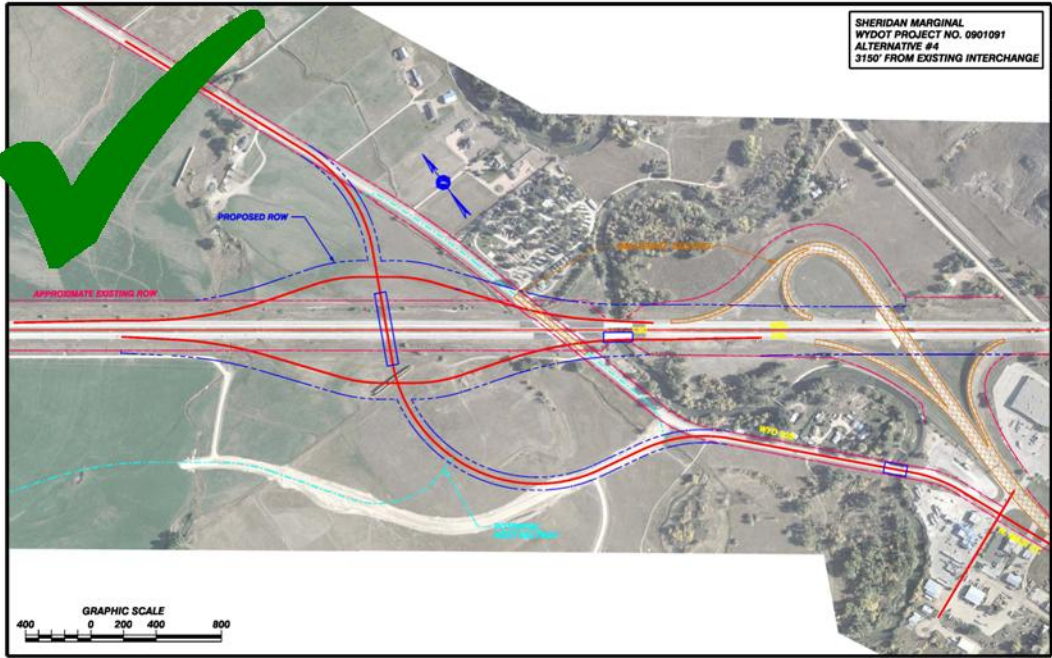


Figure 20. Alternative 4

Conclusion: Carry it forward

Alternative 5: Diamond Interchange Farther North of Decker Road: While this alternative could be built to current design standards, this alternative does not satisfy the purpose of and need for the project. It does not provide direct access to Decker Road. Based on the tie-in locations identified in the West Corridor feasibility study, Alternative 5 would not meet the FHWA location and access requirement for minimum spacing between this alternative and the tie-in locations identified in the West Corridor study (WWC and HDR 2006). It is possible that another interchange be constructed between the proposed North Sheridan Interchange and the existing port-of-entry interchange farther north of Alternative 5; however a farther north interchange location may or may not meet the needs of the future West Corridor and growth occurring as part of the Wrench Ranch development area and Sheridan High-Tech Business Park area.

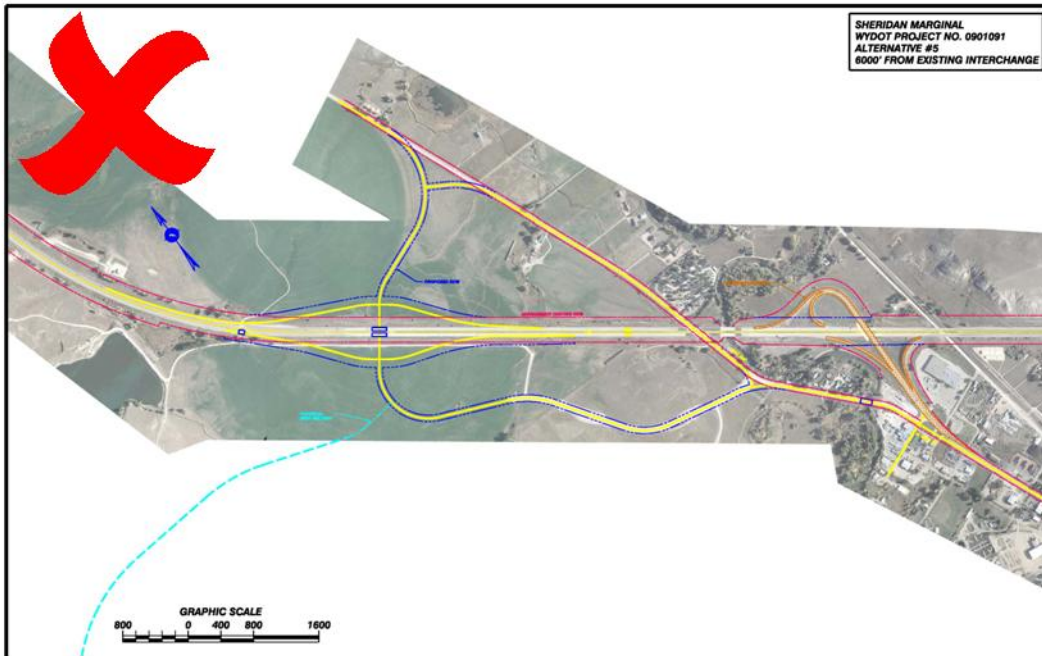


Figure 31. Alternative 5

Conclusion: Do not carry it forward

Section 4: Alternatives Carried Forward for Detailed Consideration in the Environmental Assessment

The result of the alternative evaluation was to determine which alternatives should be carried forward for further environmental analysis in the environmental assessment. Alternative 1 and refined Alternatives 2 (Rebuild at the Existing Interchange) and 4 (Diamond Interchange Close to Decker Road) were carried forward for detailed analysis in the in the environmental assessment being developed. Alternatives 3 and 5 were not carried forward for further analysis in the environmental assessment.

Section 5: Modified Alternative 4

Subsequent to the analysis completed for Alternative 2 and Alternative 4, land use changes were approved in the vicinity of Alternative 4 that necessitated changes to Alternative 4. The City of Sheridan approved a minor subdivision plat for the Sheridan Baseball Academy Doubleday Park (Doubleday Park). Under Alternative 4, the Doubleday Park would be impacted and the function of the baseball complex impaired. The public express their concerns regarding potential impacts to this facility to WYDOT. To avoid impacts to this recently platted, but undeveloped, parcel WYDOT studied options to reconfigure Alternative 4 that would avoid impacts to Doubleday Park and still avoid impacts to the Wrench Ranch homestead buildings that are eligible for the NRHP. The resulting configuration is Modified Alternative 4.

Modified Alternative 4: Diamond Interchange Close to Decker Road: This alternative would construct a diamond interchange about 2,300 feet west of existing Decker Road. It would be located about 4,560 feet northwest of the existing interchange. It was developed to avoid the newly proposed Doubleday Park, the Wrench Ranch farmstead (eligible for the National Register of Historic Places), the Sheridan High-Tech Business Park, and tie into West Corridor and the planned/partially constructed road for the Wrench Ranch development area. This alternative would require widening the North Main Street bridge and constructing a new bridge over the interstate mainline.

As with Alternative 4, this alternative would realign North Main Street with Decker Road to I-90. Decker Road would also be realigned to the new interchange location on the north side of I-90. The resultant geometry would have Decker Road aligned perpendicular to the interchange ramps. The existing alignment of Decker Road would be eliminated. Existing Decker Road will be terminated at I-90 just past the KOA to prevent cut through traffic. The existing I-90 bridges over Decker Road will be removed and backfilled. Traffic traveling north from North Main Street would cross over I-90 at the interchange and to a small segment of realigned Decker Road, which ties back into existing Decker Road just north of the Wrench Ranch buildings.

This alternative satisfies the purpose of and need for the project. Relocation of the interchange would allow for construction of an interchange that provides adequate acceleration and deceleration lanes, sufficient horizontal curves, acceptable vertical grades, and acceptable sight distance, which improves safety associated with traffic conditions at the North Sheridan Interchange. This alternative would create a normal four-way intersection with Canfield Street. This alternative provides direct connections

between I-90 and Decker Road for all movements; traffic traveling westbound on I-90 can proceed north on Decker Road without going under I-90. This alternative does not preclude another interchange between the North Sheridan Interchange and the port-of-entry interchange; however, because it is now located farther north than Alternative 4, the location of the West Corridor I-90 tie-in proposed in the West Corridor Feasibility Study may need to be shifted farther north to meet the minimum spacing requirements of the FHWA location and access policy. With Modified Alternative 4 being farther south, it would better meet access requirements and would allow for an interchange that is closer to the planned Wrench Ranch development area and Sheridan High-Tech Business Park than Alternative 5. Overall the Modified Alternative 4 best meets the needs for the future West Corridor tie-in. The proposed interchange could be constructed while leaving the existing North Sheridan Interchange in place, resulting in few traffic control issues during construction.

This alternative is close enough to Decker Road and Main Street to maintain current business visibility with proper signage. It would eliminate the “straight through” alignment of Decker Road thereby removing traffic and noise for the existing residences and the KOA. Travel times along realigned North Main Street and Decker Road are not onerous traveling to and from the North Main Area; travel times are reduced for traffic accessing the Wrench Ranch development area.

The alternative would require a substantial amount of right-of-way, but no residential or commercial relocations would be needed. A small amount of right-of-way would be needed from the stormwater facility lot in Sheridan High-Tech Business Park. It requires a small portion of U.S. Forest Service land that is currently used as a work area and storage location. The realigned portion of North Main Street would follow a planned and partially built out road serving the Wrench Ranch development area, minimizing cost for constructing the road and disruptions to future land use.

The realignment of North Main Street crosses through area that the City of Sheridan has designated as North Park. This natural space area was given to the City as part of the Wrench Ranch development area. According to City maps, the natural space area is located on both sides of the existing road; however, based on preliminary design there would be no impacts or transportation use of the area. The Doubleday Park would not be impacted. Thus, there are no publicly owned, open-to-the-public parks, recreation properties, or wildlife refuges that would be impacted by this alternative. The nearby Wrench Ranch buildings are eligible for the NRHP but would not be directly or indirectly impacted by the alternative. No other properties or buildings listed on or eligible for NRHP would be impacted. This alternative would require widening the North Main Street bridge over Goose Creek; Goose Creek is considered a water of the U.S. This alternative would potentially impact 1.5 acres of wetlands³.

³ Wetland impacts were calculated based on proposed right-of-way. Actual wetlands may be less once actual construction limits are determined.

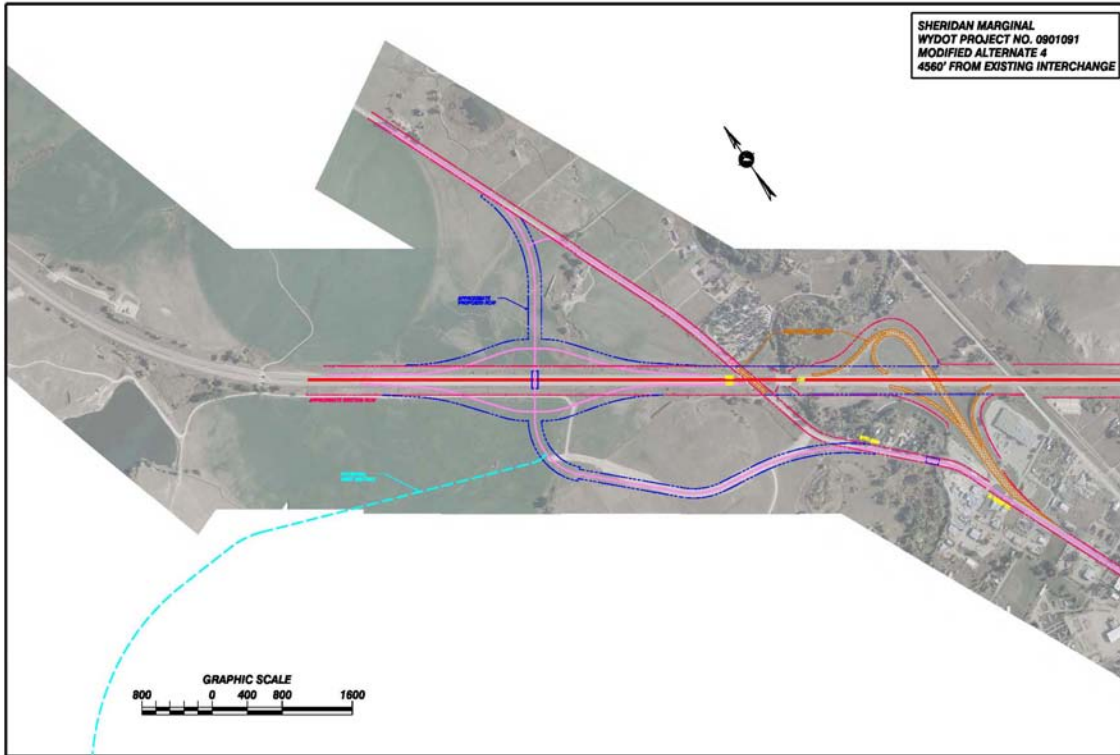


Figure 42. Modified Alternative 4

Section 6: Summary

WYDOT has developed and screened a range of alternatives as part of the North Sheridan Interstate Environmental Assessment. The initial range of preliminary alternatives resulted from previous North Sheridan Interchange studies. From these alternatives, WYDOT developed two additional preliminary build alternatives, for a total of five preliminary alternatives. Following public and agency scoping input, WYDOT refined the alternatives to develop four build alternatives. Through a two-step screening process and the solicitation of additional public input, WYDOT screened the alternatives down to two build alternatives – Alternative 2 and Alternative 4 – in addition to the No-Build Alternative that would be carried through the environmental assessment for further analysis. Subsequent land use changes in the vicinity of Alternative 4 necessitated changes in Alternative 4, known as Modified Alternative 4. Alternative 2, Modified Alternative 4, and the No-Build Alternative will be carried forward for detailed analysis in the environmental assessment. Following the environmental analysis for the environmental assessment, WYDOT will identify a Preferred Alternative. The environmental assessment will be published identifying the Preferred Alternative for public and agency review.

References

AASHTO 2004. *A Policy on Geometric Design of Highways and Streets*, aka the “Green Book.”

WWC Engineering and HDR Engineering. 2006. *Sheridan West Corridor Feasibility Study Phase 2 Report*.