

Visibility Technical Memorandum

North Sheridan Interchange

Sheridan County

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Wyoming Department of Transportation

and

Federal Highway Administration

Prepared by:

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North Sheridan Interchange Environmental Assessment

Visibility Technical Memorandum

Section 1: Project Background

Project Overview

The Wyoming Department of Transportation (WYDOT), in coordination with the Federal Highway Administration (FHWA), is studying improvements to the North Main Street/Interstate 90 (I-90) Interchange, also known as the North Sheridan Interchange. The project is located along I-90 in the City of Sheridan in Sheridan County, Wyoming.

The proposed project includes reconstructing and potentially relocating the North Sheridan Interchange, improvements to I-90, and improvements to North Main Street. This is the first interchange serving Sheridan for eastbound vehicles on I-90. The project is needed to improve traffic operations and safety at the interchange and along the corresponding segments of I-90 and North Main Street. The existing interchange has sharp curves, steep ramps, and limited space for traffic to merge with I-90 traffic, all of which result in safety and operational issues on the interchange, along I-90, and along North Main Street. The selected location of the North Sheridan Interchange must be consistent with the FHWA access requirements for another interchange between the proposed North Sheridan Interchange and the port-of-entry interchange.

The project is being proposed to provide safe, direct regional access from I-90 to the north Sheridan area in support of local land use plans, to improve deteriorating segments of I-90 and North Main Street, and to comply with the FHWA's interstate access policy.

Study Area

Three distinct study areas were defined to correspond with the three types of improvements associated with the North Sheridan Interchange project.

The study area for improving or relocating the existing interchange extends from the center of the existing interchange to a point along I-90 approximately 1.5 miles west. The width of this area is one half mile on each side of I-90. This study area includes an area for the potential realignment of Decker Road, which is under consideration. The study area for improvements to the mainline of I-90 extends to approximately 1.5 miles east of the existing interchange and to approximately 2.0 miles west, within existing I-90 right-of-way. The study area for improvements along North Main Street includes the existing interchange south to Fort Road within existing WYDOT right-of-way. The limits were selected to represent the areas that could be directly or indirectly affected by potential improvements.

The City of Sheridan has identified the north Sheridan area as a primary growth area, and a large tract of land west of Decker Road 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 facility that will traverse 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 new roadway capacity independent of the proposed North Sheridan Interchange improvements. Funding for the West Corridor has not been identified.

Proposed Alternatives

WYDOT developed and screened a range of alternatives as part of the *North Sheridan Interchange Environmental Assessment (EA)*. As described in the *Alternatives Technical Memorandum (HDR Engineering 2012)*,¹ after screening WYDOT has two remaining build alternatives—Alternative 2 and Modified Alternative 4—in addition to the No-Build Alternative that will be carried through the EA for further analysis. More information on these alternatives, including location figures, can be found in the *Alternatives Technical Memorandum*.

Alternative 1: No-Build: The No-Build alternative represents the conditions if major improvements are not completed as a result of this study. This alternative would not improve the existing geometric deficiencies, regional connectivity shortcomings, or deteriorating roadway segments within the three study areas.

Alternative 2: Rebuild at the Existing Interchange: This alternative would construct a tight diamond interchange about 750 feet north of the existing interchange and within the same general interchange footprint. The crossroad would connect with Decker Road using a free-flow T-intersection. The existing interchange would be demolished in order to build the new interchange. This alternative would include demolition of residences (including rental properties) and, potentially, relocation of a small business. This alternative would necessitate acquisition of land from the KOA tent site as well.

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 and about 4,560 feet northwest of the existing interchange. The “straight through” alignment of Decker Road would be eliminated and traffic would flow along a realigned North Main Street / Decker Road that would cross I-90 perpendicular. The existing North Sheridan Interchange would continue to carry traffic until construction of the proposed interchange is complete. Right-of-way would be required from currently undeveloped land. There would be no residential or commercial relocations.

¹ Alternatives at Decker Road and farther north of Modified Alternative 4 were considered but were screened out because they did not meet purpose and need.

Section 2: Methodology

To examine the visibility of existing businesses, a visibility analysis was completed using geographic information system (GIS) software to identify high elevation areas where businesses (such as McDonalds) were visible for each alternative.

Additionally, photos were taken at varying distances – 2 miles, 1.2 miles, 1 mile, 0.5 of a mile, and 0.25 of a mile – from the existing interchange to see what is visible from the current interchange; in some cases, such as at 2.0 miles from the existing interchange traveling eastbound, the existing interchange was not visible.

Section 3: Existing Conditions

Overview

Local business and residents expressed concern that the new interchange alternatives would change business visibility. This analysis was completed in response to public comments received.

As shown in the following figure, the visibility of the existing interchange is limited. The 30-foot signs improve the interchange visibility, and the blue interstate signs provide visual clues that the driver is approaching an interchange. The blue signs advising drivers of the businesses located near the North Main Street interchange start at roughly 2 miles before the interchange in the eastbound direction.

- 2 miles before the North Sheridan Interchange: Camping – KOA
- 1.5 miles before the North Sheridan Interchange: Lodging – Super 8, Trails End, Super Saver
- 1.25 miles before the North Sheridan Interchange: Food – Country Kitchen, McDonald's, Pizza Hut
- 0.8 miles before the North Sheridan Interchange: Gas – Exxon, Shell

The photos following the figure provide a visual reference for what is visible at varying distances from the North Sheridan Interchange both traveling eastbound and westbound. As documented in the photos, there is limited visibility of the existing interchange.

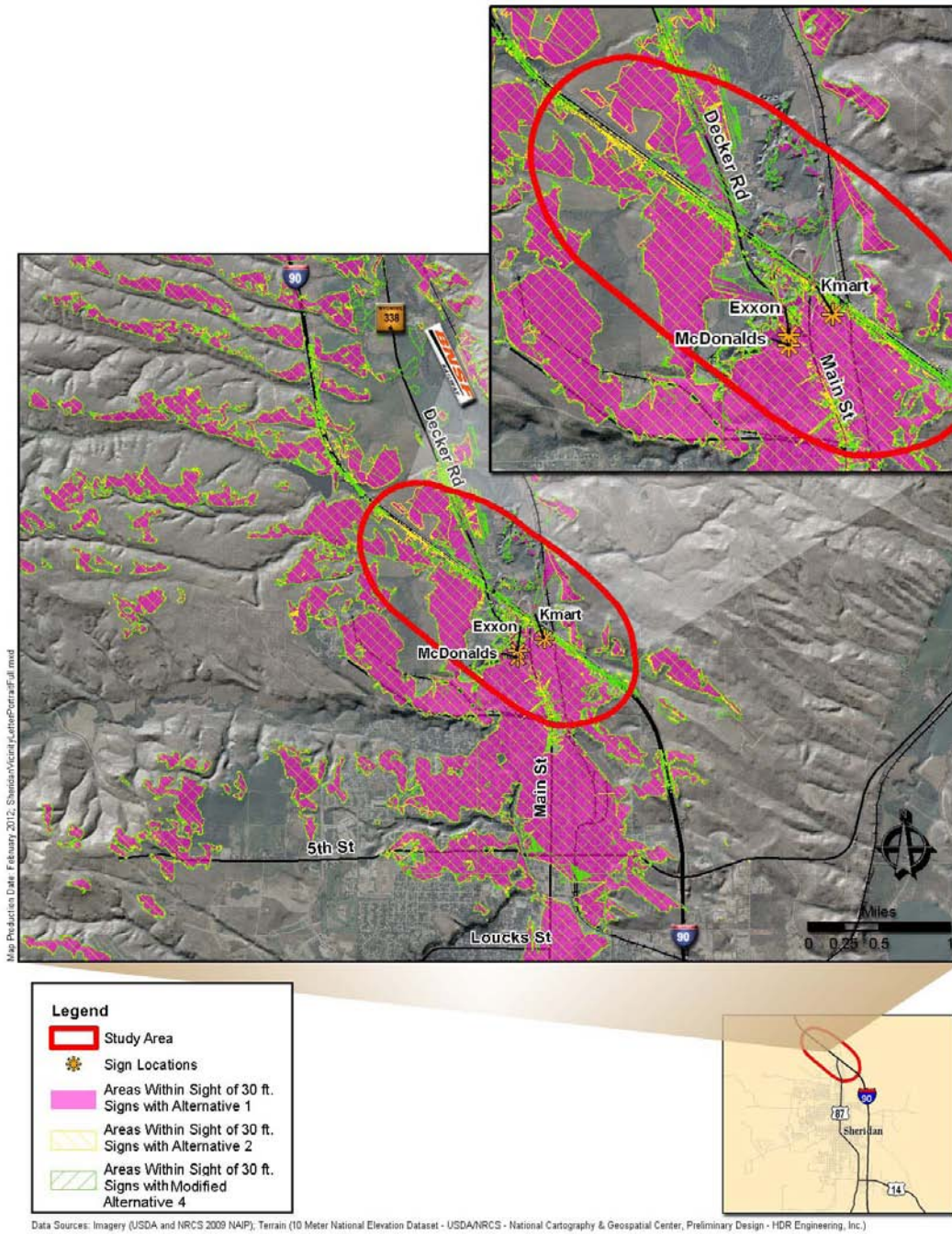


Figure 1. Visibility of Existing Business Signs

Traveling eastbound at 2.0 miles from existing interchange



Traveling westbound at 1.25 miles from existing interchange



Traveling eastbound at 1.0 mile from existing interchange



Traveling westbound at 1.0 mile from existing interchange



Traveling eastbound at 0.5 of a mile from existing interchange



Traveling westbound at 0.5 of a mile from existing interchange



Traveling eastbound at 0.25 of a mile from existing interchange



Traveling westbound at 0.25 of a mile from existing interchange



Section 4: Project-Related Impacts

No-Build Alternative: There would be no change in visibility under the No-Build Alternative.

Alternative 2/Modified Alternative 4: Alternative 2 would be a tight diamond interchange located about 750 feet north of the existing interchange and within the same general footprint of the existing interchange, while Modified Alternative 4 would be a diamond interchange located 4,560 feet northwest of the existing interchange and about 2,300 feet west of Decker Road.

As seen in photos, where visibility is limited, the driver on I-90 traveling either eastbound or westbound must rely on interstate signs and the high-elevation business signs to make a decision whether to stop at the existing interchange, rather than visual clues at the interchange. There is little difference between the Alternative 2 and Modified Alternative 4 in where the 30-foot sign is visible. However, as the Sheridan High-Tech Business Park and Wrench Ranch area development continues, motorists traveling eastbound may have a better sense that they are approaching a community and an exit where there is likely to be services.

Section 5: Summary of Findings

The visibility of the existing interchange is limited for travelers going eastbound and westbound along I-90. Individuals must rely on the existing signs to identify business accommodations at the interchange. Neither Alternative 2 nor Modified Alternative 4 will further limit visibility of the existing businesses.

References

HDR Engineering 2012. *Alternatives Technical Memorandum*.

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