

# Draft Memo

Date: Tuesday, February 24, 2015

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Project: I-90 Exit 59 (La Crosse Street) – Interchange Options Study

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To: Steve Gramm, SDDOT

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From: Brian Ray, HDR

Subject: Road Safety Audit

The Road Safety Audit (RSA) Team for the I-90 Exit 59 (La Crosse Street) project met on January 6, 2015 in Rapid City to review the concept for the likely preferred alternative for reconfiguration of the La Crosse Street interchange. The RSA Team consisted of:

- Sharon Johnson, FHWA
- Brad Remmich, SDDOT
- Monica Heller, SDDOT
- Andy Vandell, SDDOT
- John Less, SDDOT
- Steve Gramm, SDDOT
- Kip Harrington, Rapid City MPO
- Jim Ronfeldt, Rapid City Police
- Jim Chastain, Rapid City Police

The meeting was facilitated by Brian Ray, Rick Laughlin and Aaron Fagerness from HDR.

Brian Ray began the review meeting with a short orientation on RSA procedures and the I-90/La Crosse Street Study. He also pointed out that the official preferred alternative will not be certified until later in the Categorical Exclusion process, but that Alternative 3b, a diverging diamond interchange configuration, has received favorable reviews from the public, has been endorsed by SDDOT, and appears to be the likely preferred alternative. If any modifications to the preferred alternative arise as the Categorical Exclusion process is completed, those items will be presented to the RSA team and further comments will be added into the RSA report. Copies of the presentation slides and concept drawings are attached to this memorandum.

The Team reviewed the concept drawings and visited the site to observe operating conditions. They provided the following comments:

- SDDOT has noticed cars going into the median and hitting the light poles on the interstate mainline west of the La Crosse Street Interchange. There is a lot of weaving between Haines Avenue and La Crosse Street interchanges and also a significant

number of vehicles that use the interstate to travel between the two interchanges. The grade of the eastbound on-ramp at Haines Avenue results in slow acceleration and slow vehicles merging into the mainline traffic stream. SDDOT is starting to look at possible mitigation measures. An eastbound auxiliary lane between the Haines Avenue and La Crosse Street interchanges or lengthening the Haines Avenue on-ramp should be considered.

- There was also a discussion regarding the amount of gaps that would be available for the left turn movements at the off ramps. It was discussed that the signal at the crossover movement is a two-phase signal which would provide large gaps.
- The other interchange alternatives that were considered were discussed and that access/right-of-way issues and expected useful life was used in the evaluation of the alternatives.
- There was a discussion regarding the mitigation for wrong way entry at the crossover points. One of the design items discussed was the angle of the cross over movement. The greater angle minimizes the risk of wrong way entry. The desirable angle for the crossover movements is 40 degrees. The current design is has a 50 degree angle at the crossover movements. Another design consideration is the design of eyebrow area (see figure below). The eyebrow should jut out and aid in guiding the drivers.



Proper signage is also needed to provide guidance to the drivers.

- There was a discussion regarding the possibility of routing pedestrians through signalized crossings. It was discussed that the pedestrians would have to cross the single lane ramps without a signal.
- Consider adjusting the angle on the left turn off-ramps under a yield condition for a better sight angle or consider signalizing the approach. Check the design for potential placement of a signal mast arm and signal sight distance.

- Use advisory speed plaques in order to control speed through the cross over movements.
- A public information campaign is needed prior to opening the diverging diamond interchange in order to educate the public.

Overall, Team members expressed satisfaction that the concept is an appropriate solution and basis for design. The following recommendations presented during the RSA should be carried forward and addressed during design and implementation.

**Recommendations:**

- Investigate the mitigation measures for eastbound I-90 between the Haines Avenue and La Crosse Street interchanges to address cars going into the median.
- During design of the crossovers, design the eyebrow to jut out to aid in guiding drivers. Also, place signage to provide guidance to drivers.
- Design the left turn off-ramps to accommodate a traffic signal.
- Use advisory speed plaques in order to control speed through the crossover movements.
- Develop a public information campaign prior to opening the diverging diamond interchange.