

UTC Project Information	
Project Title	MPC-573 – Proposing the Super DDI Design to Improve the Performance of Failing Service Interchanges in Mountain-Plains Region
University	University of Wyoming
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Brief Description of Research Project	A majority portion of the current service interchanges (an interchange is called service when freeways meet arterials or collectors) in the U.S were built more than 50 years ago when traffic volume was much lower, and the type of vehicles and driving habits were completely different. Because of the inconsistency between the old designs and today's condition, many of these interchanges are dealing with serious safety and traffic operation problems. Therefore, it has been an essential task for the transportation agencies to improve the performance of interchanges regarding traffic service,

	<p>safety, and pedestrian. This study proposes the new super diverging diamond interchange (super DDI) as the possible alternative design where existing interchanges are failing. A comprehensive series of simulation tests in VISSIM and the Surrogate Safety Assessment Model (SSAM) will model the traffic operation, pedestrian performance, and safety of the most critical interchanges located in Mountain-Plains Region (MPR). Then, the models will be compared with the proposed super DDI design at each location to clarify the benefits of the improvement. A cost estimation and validation procedure will be also conducted to complete the study. This study is the first step in improving the failing interchanges in MPR in a more beneficial way. Therefore, the results will be useful in the planning phase of the interchange improvement projects which are going to consider a DDI as the target design, while the super DDI might be introduced for them as a better alternative which provides more benefits.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>Despite the comprehensive simulation series and the analysis conducted in this paper, more studies are recommended in the future using a driving simulator laboratory to evaluate drivers' behavior in Super DDI. Moreover, future studies could further evaluate the Super DDI's pedestrian and bicycle facilities.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>Findings from this study are expected to help transportation managers and policymakers to take necessary actions and decide on management strategies for implementing appropriate alternative interchanges.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project Website 	<ul style="list-style-type: none"> • MPC Research Report – Proposing the Super DDI Design to Improve the Performance of Failing Service Interchanges in Denver Metro, Colorado • Journal Article – Surrogate Safety Assessment of Super DDI Design: A Case Study in Denver, Colorado • Journal Article – Evaluating the Operational Efficiency of Two Versions of Super Diverging Diamond Interchange Design: A Case Study in Denver, Colorado