Research Problem Statement
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Research Project Title	27th Street RR Crossing - Billings
Problem Statement	**What issue or situation are trying to solve?** Railroad activity at this urban crossing causes frequent traffic delays which can impact emergency vehicle access and overall traffic safety. Previous input from stakeholders has supported mitigating crossing delays in some fashion. However, stakeholder input also suggests a grade-separated crossing is not desired at this time. The goal of this project is to implement an excessive delay warning system which would provide more robust delay information to drivers during train crossing events. With this information, drivers would be able to make a more informed decision whether to remain in the queue or consider an alternate route.
Research Proposed	**What work will be completed and accomplished to address the problem?** The project would research potential Intelligent Transportation System (ITS) technology to collect data, monitor and analyze traffic patterns, and provide real-time information to road users about at-grade railroad crossing events. The research would analyze how the technology performs, how the public responds, and how the technology could be implemented in the area. The research would include a task to pilot one or more technologies for one year to evaluate whether it can improve the driver experience in the area (i.e. give the road user the information needed to make an informed decision as previously stated).
Background	**What led you to this topic?** The 27th Street at-grade railroad crossing is located on a Principal Arterial in downtown Billings, Montana. The current average annual daily traffic (AADT) at the train tracks is 14,830 vehicles with a projected AADT of 20,590 vehicles in 2040. The crossing consists of two main tracks with approximately 32 trains and six switching trains traveling through the crossing daily. This railroad crossing separates medical facilities, the airport, and the business district on the north from road users on the south including the interstate. Delays have led to longer response times for emergency service vehicles and public input has supported mitigating in some fashion. A feasibility study has been developed and is linked for your reference: https://www.mdt.mt.gov/pubinvolve/billings27thstreet/docs/final-report.pdf.
Expected	**What benefits do you anticipate would this project offer? How**

benefits to MDT:	**would results be used within MDT (District and Divisions)?**
	ITS technology proposed for this research seems feasible for the stated problem. Through review of other similar applications, it seems likely that success is possible on this project. Information will be provided to the road user that will allow for more efficient and safer navigation to their destination. Long term costs and maintenance are unknown and perceived risks to the project.
Research Objectives	**Identify the outcome of the research. Basic listing of deliverables or sets of deliverables.**
	1. Research ITS products and perform comprehensive literature review. 2. Propose an ITS traffic prediction solution. 3. Create a pilot system that uses detection systems on both sides of the RR.
Deliverables and Products:	**What tools and outcomes would help MDT implement the results or findings of the research. How would you expect results to be used by MDT.**
	The consultant will be required to provide comprehensive design services necessary for the project, including but not limited to survey, literature review, analysis and implementation of ITS alternatives, coordination with railroad and public involvement. Consideration must be given to all engineering components including but not limited to hydraulic, geotechnical, materials, traffic, and environmental features and right of way design.
IT Component	**Most research projects produce and/or use data. If you think this idea would use or create data, the project has an IT component.**
	1. Include the purchase of the equipment, analytics, and all components in the proposal. Ensure all analytics, components, and apparatuses meet "Buy America" requirements (23 CFR 635.410). 2. Pilot system and any subscriptions to a 3rd-party vendor service must be compatible with Montana State Information Technology Services Division (SITSD) requirements. 3. Travel time data must be compatible with Montana SITSD requirements.
Cost Estimate	
MDT Champion	Shaun Sampson
Sponsor	Dustin Rouse
Additional Information	**What else would you like to share to elevate the importance of your problem statement?**