

29 Road Grade Separation Crossing Evaluation Safety Benefits of Grade Separation

Prepared for the City of Grand Junction by Jacobs Engineering Group, Inc
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To aid in the justification of the 29 Road grade-separated crossing over the Union Pacific Railroad (UPRR) in Grand Junction, CO, an evaluation of the potential at-grade crossing collision reduction was conducted. The project is anticipated to affect traffic at several UPRR crossings (both at-grade and grade-separated) in the Grand Valley. The U.S. DOT Collision Prediction model was applied at nearby at-grade crossings, while the grade-separated crossings in the project area already separate the auto and train movements and are therefore will not experience crossing collisions. The analysis considered existing conditions, the future no-build scenario (without the project), and the future build scenario (with the 29 Road overpass).

Five crossings in the project area were considered. They are 5th Street (US 50, grade separated), 7th Street (at-grade, crossing # 253778A), 9th Street (at grade, crossing # 253776L), 29 Road (build scenario only, grade separated), and 30 Road (grade separated). Annual Average Daily Traffic (AADT) was compared at crossings in the project area for the existing condition, future no-build scenario, and future build scenario. Refer to the table below, which shows AADT data from the travel demand model forecasts prepared for the project. The table clearly shows the anticipated traffic shift due to the construction of the 29 Road structure, including a decrease in traffic at the two at-grade crossings.

Annual Average Daily Traffic (AADT) & Final Accident Prediction Values

		2000 Existing	2030 No-Build	2030 Build
5th Street				
	AADT	27,275	28,715	23,515
	Final Accident Prediction	N/A	N/A	N/A
7th Street				
	AADT	7,915	8,870	6,575
	Final Accident Prediction	0.0489	0.0499	0.0473
9th Street				
	AADT	13,910	16,425	15,230
	Final Accident Prediction	0.0538	0.0553	0.0547
29 Road				
	AADT	N/A	N/A	29,790
	Final Accident Prediction	N/A	N/A	N/A
30 Road				
	AADT	16,620	35,165	23,815
	Final Accident Prediction	N/A	N/A	N/A

For the two at-grade crossings, collision predictions were calculated per the Federal Highway Administration (FHWA) Railroad-Highway Grade Crossing Handbook – Revised 2nd Edition, August 2007. The resulting accident prediction values indicate the probability of a collision at each crossing based on collision history, anticipated train volumes, future traffic volumes, and crossing protection devices. Physical conditions at each crossing were downloaded from the Federal Railroad Administration's at-grade crossing database and reviewed to ensure consistency with data collected for the project.

As shown in the table above, the accident predictions decrease at both 7th Street and 9th Street with the construction of the 29 Road grade separated crossing. The reductions at 7th Street are somewhat more significant (greater than 5%) due to higher volume shifts away from this crossing. There is a smaller change in volume at 9th Street, and the related change in collision prediction is therefore smaller (approximately 1%).

There is also a trespass incident history between 5th Street and 30 Road along the UPRR. Two trespass collisions (one in 2003 and another in 2007) have been identified in the last ten years in the project area. Although the FHWA grade crossing handbook does not provide a methodology for evaluating trespass incidents, the provision of pedestrian amenities on the 29 Road structure will provide a grade separated route across the railroad (and also across I-70B) which may help reduce trespass incidents in this area.

Given the reduction in predicted accidents at 7th Street and 9th Street and the potential for a reduction in trespass incidents, safety in the project area is anticipated to be improved by the proposed 29 Road grade separation.