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I-86B / Pocatello Avenue Intersection Redesign

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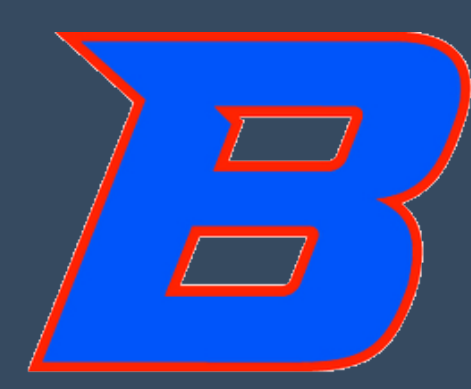
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I-86B / Pocatello Avenue Intersection Redesign

Abstract

The American Falls Intersection located off of I-86 and Pocatello Avenue is in need of an upgrade. Currently, the intersection consists of two-way free-flowing traffic with a connecting street that is controlled by a stop sign. The freight traffic comes from an industrial area near American Falls and heavily uses the connecting street. The Idaho Transportation Department (ITD) would like the intersection to be free-flowing for freight traffic. We have been tasked to design an upgraded intersection with considerations for current and future freight traffic, safety, efficiency, cost effectiveness, and overall sustainability. We will collect current and future traffic volume data for both passenger and heavy vehicles. Research on the future development in American Falls, both commercial and residential, will help prepare alternative conceptual designs. A design alternative will be chosen and the following aspects will be included in the final design; (a) geometric design, (b) pavement design, (c) traffic operations design, (d) stormwater design, (e) traffic flow impact on nearby roads, (f) project construction scheduling, and (g) work zone traffic control.



I-86B/ Pocatello Avenue Intersection Redesign

CE 483 Civil Engineering Senior Design Project



The Meddling Engineers: A. Thomas, H. Reynolds, M. Sandberg, M. Villaneuva, N. Greene
Faculty Sponsor: M. Khanal, S. Miller, D. Mishra, M. Sadegh

Project Overview

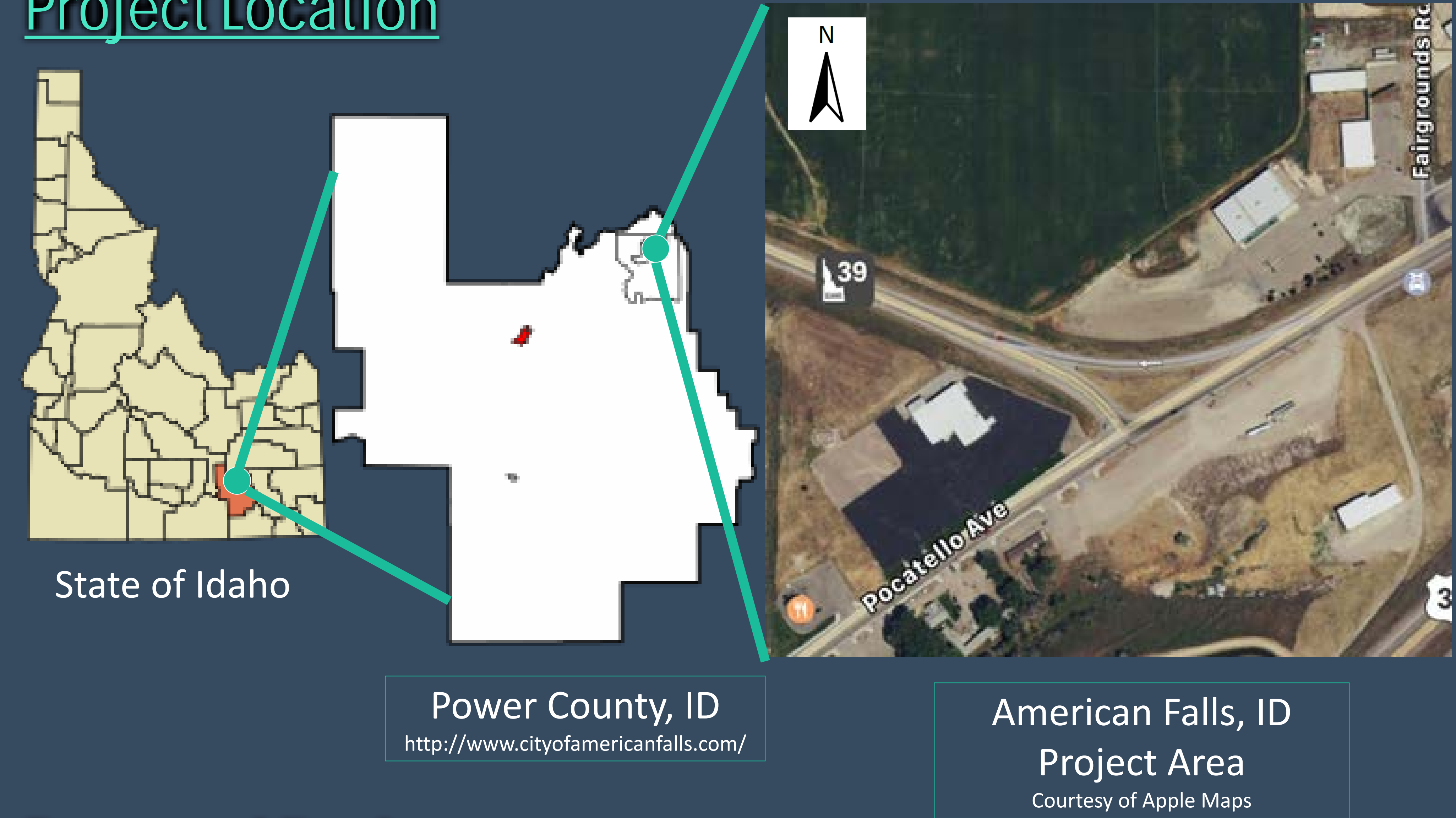
The I-86B/ Pocatello Avenue intersection located in American Falls, ID has been redesigned according to a request by the Idaho Transportation Department (ITD). The intersection redesign must eliminate the congestion that occurs from the freight traffic coming southbound to the intersection that has to stop at the existing stop sign. The design must be sustainable and aesthetic as an entrance into the City of American Falls. The final design includes geometric design, traffic flow, stormwater, and pavement design elements. All of the elements accounted for cost, safety, sustainability, and the presence of free flowing traffic for the traffic headed southbound towards the intersection.

Pavement Elements

AASHTO 93 Flexible Pavement Section	
	0.46' 1/2" PG 70-28 Class SP-3 Superpave HMA (2 lifts)
	0.50' 3/4" Aggregate for Untreated Base, Type A
	1.54' Granular Subbase

The goal while designing a pavement cross section is to produce a product that will last the 20 year design-life without using excess materials, while accommodating the estimated traffic loads of 2042. This design is based on the American Association of State Highway Transportation Officials Guide for Design of Pavement Structures, 1993. This 30 inch cross section will cost approximately \$393,000

Project Location

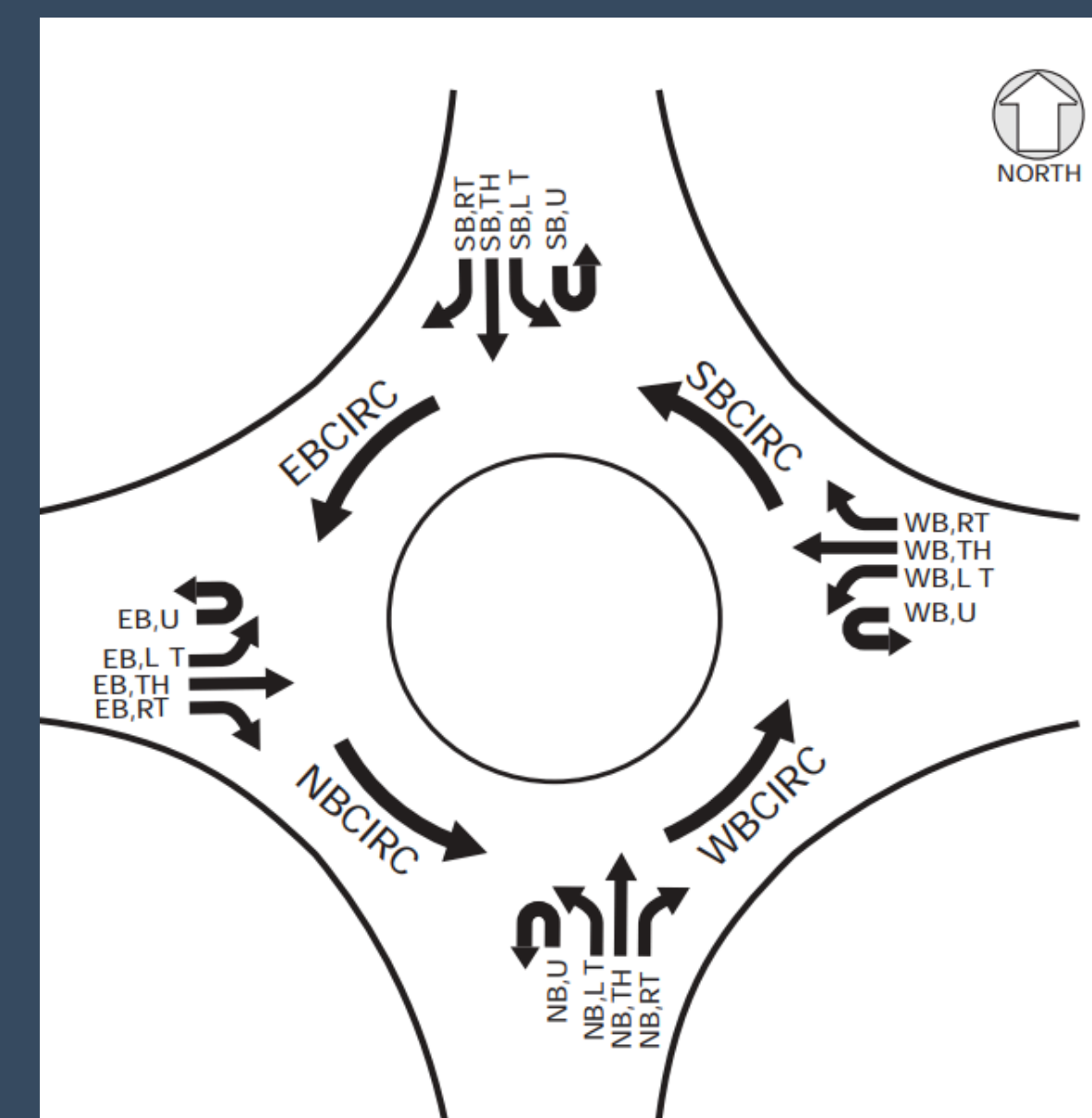


Geometric Design Elements

To accommodate the large freight traffic, the design needed to be able to allow the large turn radius to safely maneuver the roundabout. Some design features that were considered are:

- o Lane Widths
- o Design Speed
- o Splitter Island Widths and Lengths
- o Roundabout Diameter

Traffic Flow Elements



<https://safety.fhwa.dot.gov>

Circulating traffic flow representation of a four approach roundabout. Our design will have the same movement but with three approaches rather than four.

The stormwater design created included grass swales and vegetation in the intersection to provide short term storage for American Falls weather conditions.

Proposed Design

