

GRS IBS - Cost Analysis and Comparison

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In 2010, the Federal Highway Administration (FHWA) launched the Every Day Counts (EDC) initiative to identify and deploy innovations aimed at reducing the design and construction costs and the time to deliver highway projects, enhancing safety, and protecting the environment. Because the Geosynthetic Reinforced Soil–Integrated Bridge System (GRS-IBS) met these criteria, it was selected and promoted through the first three rounds of EDC. Due to EDC deployment, the number of constructed GRS IBS projects increased from about 30 in two states in 2010 to over 300 in 43 states in 2019. In addition, the bridge type originally considered for local bridges has expanded to use for bridges on the National Highway System.

Despite GRS IBS being proven to be cost effective, there were several projects bid above the engineer’s estimate (EE). To develop a better understanding of the factors causing these higher bid prices, a cost analysis study was conducted. The work consisted of an independent analysis to identify significant relationships between the factors impacting bid prices and understand the deviations between awarded bid and EE.



Figure 1. GRS IBS bridge replacement on Kefer Highway in Ionia County, MI
Source: FHWA

This study included 13 projects across the country let between 2012 and 2014. Although these projects represent a small subset of all GRS-IBS projects, some important insights can still be gleaned. The study considered factors such as wall height, span length, number of bidders, bridge crossing type, and wall face area. While each project examined had respective cost drivers,

the analysis identified important relationships impacting cost. In addition, a comparison was performed between the EE for GRS-IBSs versus traditional foundation system.

After evaluating the costs for the projects, there was a better understanding of the factors which influenced the cost. The results showed that although there were projects with increased costs, 75 percent of the projects analyzed showed the GRS-IBS was a cost-effective solution compared to conventional foundation systems. The presentation will highlight the lessons learned from this effort.