

# PERFORMANCE OBSERVATIONS OF GEOSYNTHETIC REINFORCED BRIDGE ABUTMENTS

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## ABSTRACT

Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS) has been in the U.S. for 40 years. GRS-IBS is currently being marketed by Federal Highway Administration due to improved performance and cost savings for single span bridges. The better performance is due to the bridge abutments settling together removing the bump at the end of the bridge. GRS-IBS can be less costly compared to conventional deep foundation bridges. The cost is typically lower due to small crews, small equipment, and readily available materials.

GRS-IBS is constructed out of geosynthetic, backfill, and concrete masonry units (CMU). The bridge abutments are constructed by layering backfill then a layer of geosynthetic to the needed height for the abutment. The CMU blocks do not provide any structural support of the bridge girders, but act as a facade to cover the geosynthetic. The strength of the GRS-IBS abutments comes from the thin lifts, eight inches. GRS-IBS abutments can be constructed using crews of five with just an excavator, walk behind compactors, and hand tools.

Performance evaluation is based on data obtained from Rustic Road Bridge, just east of Columbia, Missouri. The Rustic Road Bridge is of interest because is it supposed to flood every two years. The bridge has been instrumented with piezometers, earth pressure cells, inclinometers, settlement plates, and survey markers. Movements and pressure will be used to evaluate the performance of the bridge during flooding events.