

Montana Department of Transportation
Research Programs
February 2012

GEOSYNTHETIC REINFORCED SOIL (GRS) INTEGRATED BRIDGE SYSTEM (IBS)

Location: Highway 89 (P-3/C000003), Teton County-South Fork Dry Fork Marias River Crossing

Project Name: SE of Dupuyer - SE

Project Number: STPP 3-3(22)65

Experimental Project No. MT-12-04

Type of Project: Geosynthetic Reinforced Soil (GRS) Integrated Bridge System (IBS) Installation

Principal Investigator: Craig Abernathy, Experimental Project Manager (ExPM)

Experimental Design Description

The structure that will be built at the South Fork Dry Fork Marias River crossing has been selected for a new technology that has been tested in other states and has been proven to work. The new bridge will be built with Geosynthetic Reinforced Soil (GRS) Integrated Bridge system (IBS) technology. GRS-IBS technology is a system that uses a series of alternating layers of granular fill material and fabric sheets of geotextile reinforcement that provide support for the bridge slab.

The combination of the compressive strength of the granular soil and the tensile strength of the geotextile results in a very strong internally supported structure that is able to handle a substantial load. Furthermore, this design provides a smooth transition from the roadway to the bridge since the construction is jointless and has no approach slab.

Another potential benefit to choosing this type of bridge design is that construction time of the structure is substantially reduced due to a number of factors. There is no need to pour concrete, which can take up a sizeable amount of project time. Significant cost savings are realized through the combination of reduced labor costs from shorter construction time due simpler construction techniques.

Evaluation Procedures

Research will record the installation for best practice and any constructions concerns germane to the performance of the GRS/IBS structure. Special consideration will entail documenting the placement of the alternating layers of compacted granular fill reinforced with geosynthetic reinforcement (e.g., geotextiles, geogrids) ,face (block) wall, wing wall, and riprap application.

Semi-annual inspections will report on GRS/IBS integrity and any other visually measurable outcomes. Additional site inspections may supplement the semi-annual visits based on need. Monitor and report on long-term performance and condition.

Construction Documentation: Will include information specific to the installation events.

Post Documentation: Will entail semi-annual site inspections for annual report.

Evaluation Schedule

Research will monitor performance for a minimum period of five years annually, with every year up to ten years (informally). This is in accordance with the Department's "Experimental Project Procedures". Delivery of a construction/installation report, interim, annual or semi-annual reports is required as well as a final project report (responsibility of Research). A web page will be dedicated to display all reporting from the project.

2012:	Installation/Construction Report
2013-2016:	Semi-Annual Inspections/ Annual Evaluation Reports
2017:	Final Evaluation/Final Report