

The Use of Innovative Geosynthetics to Substantially Reduce Access Road and Well Pad Costs

John D. Herrmann¹, Bruce A. Lacina² and Monte Madsen³

Abstract

The use of innovative high strength geosynthetics provide numerous benefits to oil and gas producers tasked with designing, constructing and maintaining well pads and access roads. This paper will present examples of the positive cost benefit and environmental impact high strength geosynthetics provide Whiting Petroleum Corporation in the Williston Basin of North Dakota and Montana. Subgrade stabilization is often required for well pads and access roads. Leading methods include significant depths of aggregate, chemical stabilization and geosynthetic reinforced sections. General soft soil conditions and significant rain and snow events often require producers, engineering consultants and contractors to recommend additional aggregate to stabilize access roads and well pads. The need for additional aggregate contributes to higher traffic counts, increased CO₂ emissions and increased cost. Whiting Petroleum Corporation began exploring alternate means of stabilizing access roads and well pads in October of 2011. After reviewing various geosynthetic options and accompanying test data, the producer ultimately chose an innovative high strength woven geotextile to stabilize their sites. This has led to the elimination of maintenance and no additional aggregate over the life of the road and well pad. This paper will present both laboratory and full scale test data on the performance of this innovative high strength geosynthetic. In addition, detailed cost savings associated with eliminating additional aggregate requirements will be presented, along with the environmental impact of eliminating aggregate hauling, placement and compaction. Case studies will be included along with photographs of well pad sites constructed both with and without this geosynthetic.

¹Market Development, Oil & Gas, TenCate Geosynthetics Americas

²Roadway Reinforcement, TenCate Geosynthetics Americas

³Completions Engineering, Whiting Petroleum Corporation

John D. Herrmann is the Market Development Manager – Oil & Gas for TenCate Geosynthetics. In this role, John assists oil and gas producers, engineering consultants and contractors in North America with well pad and access road construction methods. John holds a Bachelor of Science degree in Engineering Management from Missouri S&T. In addition, John is a member of the American Society of Civil Engineers, American Public Works Association, Marcellus Shale Coalition, United Shale Advocates and the Engineers Club of St. Louis.