

Emlenton Hill | SR 0038, Section A00

Venango County, PA

Entrant Stantec Consulting Services Inc.

Category H Transportation

The geography of Pennsylvania presents challenges for roadway rehabilitation projects. One such challenge was SR 0038, connecting I-80 highway traffic to scenic Emlenton and surrounding Allegheny River communities. A project decades in the making, SR 0038 presented safety concerns because of extreme terrain, poor sightlines, narrow and winding roadway, drainage issues, steep grades, and active landslides.

PennDOT contracted Stantec for environmental evaluation, feasibility study, preliminary engineering and final design for the SR 0038 improvement project. Dawood Engineering supported with field survey, geotechnical investigations, and foundation design.

Because of the terrain and the requirements for constructability, safety, and cost containment, Stantec's creative solutions to meet the project needs included a truck climbing lane, further cuts into the mountainside, or roadway widening supported by retaining walls.

Stantec's structural analysis determined that soldier pile retaining walls with a cast-in-place concrete facing with tiebacks used on three walls of taller height would address the global stability of the mountainside. Once in construction, SAI Engineering, working under Mekis Construction, improved constructability and provided cost savings by minimizing tiebacks and using timber lagging to temporarily support the wall backfill. Through the collaboration of PennDOT District 1-0, Stantec, Dawood, and SAI, the challenging terrain of the Emlenton Hill on SR 0038 was transformed by the creative engineering of a complex wall and betterment-type improvements. The mountainside roadway now provides a safer route for regional communities and all vehicular and bicycling traffic.