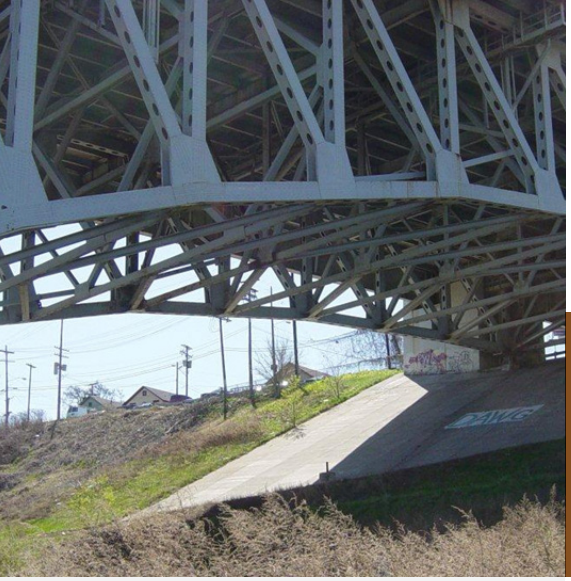

Geocomp
Trusted to help mitigate risk

PROJECT BRIEF

I-90 Bridge
Cuyahoga River

PROJECT PROFILE

CLIENT:
E.L. Robinson

LOCATION:
Ohio

VALUE:

- Geocomp saved the client $60 million from the removal of the prior restricton
- Geocomp results left the design-build team with considerable leeway on the foundation locations for the new bridge, optimizing their design
- Geotechnical review validated slope grading reliability and minimized impact on abutters

SERVICES PROVIDED:

- Geotechnical performance review of slope and previous site investigations
- Preparation of stability and deformation analyses

"Geocomp discovered evidence of high artesian pressures in a zone located about 80 ft below the surface. These pressures significantly degraded the stability of the slope and are a likely contributer to the slope movements."

SLOPE STABILITY AND LABORATORY TESTING

Geocomp reviewed the slope performance history and past site investigations, recommended additional site work, performed laboratory testing to measure shear strength of relic shear zones, prepared stability and deformation analyses, and assisted with the development of a final slope grading, which provided acceptable reliability but minimized the impact on adjacent property holders. During the work, we discovered thin shear zones that had reduced shear strength. These zones dominated the stability of the slope. Geocomp also discovered evidence of high artesian pressures in a zone located about 80 ft below the surface. These pressures significantly degraded the stability of the slope and are a likely contributor to the slope movements. Considering the uncertainty of the magnitude and location of these high heads, Geocomp recommended the use of a passive venting system consisting of relief wells to reduce and control the heads.

BACKGROUND

Opened to traffic in 1955, the twin two-lane Ohio Turnpike bridges over the Cuyahoga River valley span 2,650 ft and reach as high as 175 ft above the valley floor. Each bridge is comprised of four 100 ft long girder spans and nine 250 ft long truss spans supported by 12 reinforced concrete piers. Since the completion of construction, the west abutment experienced slope movements pushing the bridge piers to the east. Slope movement, deterioration from salt entering the structure, and age led to the decision to build a new bridge directly north of the existing bridge. The challenge was determining what work would be required to economically stabilize the slope so that the geotechnical reliability would be comparable to the reliability of the structure.