PROJECT OF THE YEAR COMPETITION 2025-2026

We want to hear about the work **YOU** do! The 7th annual DVGI Project of the Year Competition welcomes submissions from active DVGI members of recently completed projects. Submissions will be featured in the DVGI Newsletter in the order received and will be accepted through May 1, 2026. The DVGI Project of the Year for the 2025-2026 season will be announced at the May 2026 Meeting.

Submitting Company: STV Inc., Michael Baker International Inc.

Submitting Person(s): Matt Lunemann (STV), Michael Yang (MBI)

Project Name: I-95 Section BS2 Retaining Walls

Client/Owner(s): PennDOT District 6-0

Contractor(s): J. J. Anderson Construction

Engineer(s): STV Inc. (designer), Michael Baker International Inc. (design review consultant)

Project Description: Describe the role of your company and provide a general account of the overall project. Max. 300 words.

The Interstate 95 (I-95) Section BSR project (construction section BS2) involves the reconstruction and widening of I-95 between Margaret and Carver Streets in Philadelphia, PA. As part of this project, Retaining Walls 2SB and 3SB required redesign during construction as a result of updated T-wall height restrictions. The redesigned walls were cast-in-place retaining walls founded on H-piles (Wall 2SB) and micropiles (Wall 3SB), with micropiles selected at Wall 3SB to mitigate potential adverse effects on nearby structures and residences from pile driving-induced vibrations. Along Wall 3SB, a total of 730 micropiles supported the 1,200-foot-long wall, which had a maximum height of 33.25 feet, with more than half of the micropiles battered to resist lateral loading. The project schedule required that excavation to bottom of pile cap, micropile installation, and micropile testing be completed in 5 months to allow completion of the wall, backfill, roadway pavement, barrier, and sound wall installation within a single construction season.

To support the aggressive schedule and promote quantity certainty for the rebar and steel casing procurement, the micropile bonded zone was wholly within the saprolite layer above bedrock. Due to variability in saprolite conditions, the grout-to-ground bond strength was confirmed via load testing on five sacrificial test piles at representative sections along the wall and proof testing on 14 production test piles. Testing confirmed mobilized bond stresses greater than the design value.

STV served as the design lead for J. J. Anderson Construction (general contractor) for the retaining wall redesign with micropiles installed by 3C Drilling.

MBI served as the design review consultant for PennDOT District 6-0, both of which provided technical and quality control reviews and oversight of the project design and construction.

Geotechnical Challenges: Tell us about any geotechnical challenges encountered, new technologies employed or lessons learned during this project. Max. 200 words.

The project was located within the Wissahickon Formation, with variable saprolite thickness atop schist bedrock. Saprolite is chemically weathered rock which is completely weathered but retains the fabric and structure of the parent bedrock. Saprolite can exhibit rock-like behavior during sampling with significant SPT blow count refusals but can exhibit soil-like behavior such as heaving and sidewall sloughing if left exposed in unsupported excavations for an extended duration.

Top of rock elevation varied significantly due to degree of weathering; however, the top of the saprolite was relatively consistent along Wall 3SB. To provide quantity certainty and allow steel casing and rebar to be ordered expeditiously, the micropile bonded zone was developed fully within the saprolite layer. To mitigate the swell risk, micropiles were drilled below the casing and concreted in a continuous process.

As the saprolite exhibits variable quality, weathering, and strength, the grout-to-ground bond strength for micropile design initially considered soft rock material properties, which were confirmed via sacrificial verification tension load tests followed by production proof tests on the micropiles. The test piles' center rebar was upsized to facilitate greater testing loads. Mobilized bond stresses in load tests exceeded the design value by 10% to 40%.

Photos, Figures, Tables: Submit a minimum of 2, maximum of 5, to be included in your newsletter feature. Be sure to include figure and table captions as text in this document.

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Photo 1) Micropiles installed at Wall 3SB to mitigate impacts on nearby private residences

Photo 2) Installing battered micropiles at Wall 3SB.

Photo 3) Performing tension load test on sacrificial verification test micropile using No. 28 center bar.

Photo 4) Completed Wall 3SB with architectural finish.

Table 1 - Comparison Between Design Bond Stress and Measured Bond Stress

Pile Designation	Pile Bond Zone Length (ft)	Design Bond Stress (psi)	Unfactored Axial Design Resistance (kips)	Max. Testing Loads (kips)	Max. Measured Ave. Bond Stress (psi)	Ratio of Measured/Design Bond Stress
VTP-1	30.0		385	428 (2.75 DL)	44	1.1
VTP-2	25.0		320	410 (4.0 DL)	51	1.3
VTP-3	24.1	40	309	410 (4.0 DL)	53	1.3
VTP-4	20.5		263	360 (5.0 DL)	55	1.4
VTP-5	21.0		269	360 (5.0 DL)	53	1.3

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Submission: Use this document as a template for your project submission. Email any questions and submissions to Jeremy Brown, jbrown@schnabel-eng.com.

Thank you for your participation. The DVGI Board looks forward to receiving your submission!