

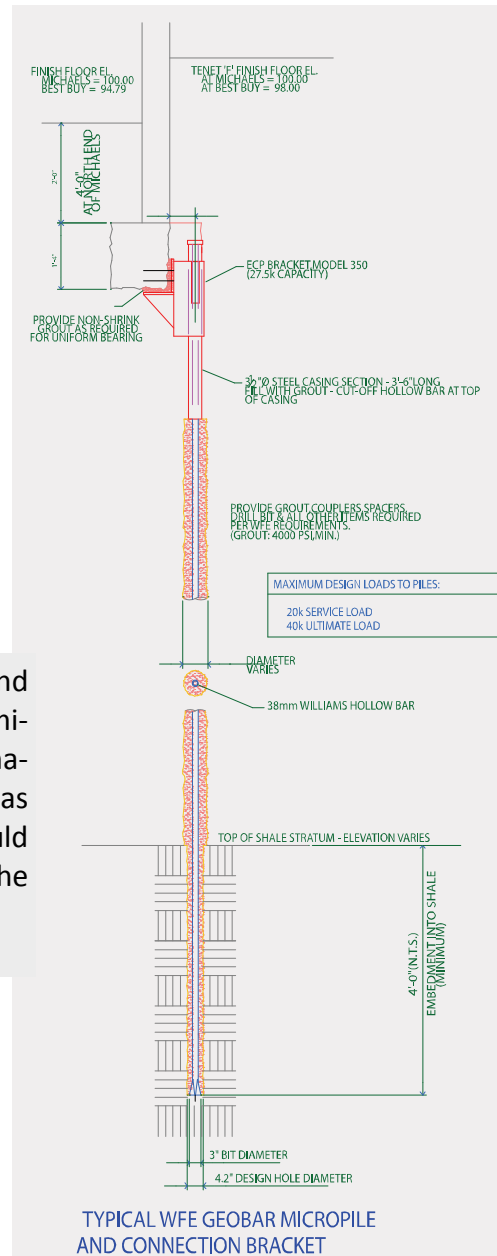
# Case Study: Micropile pier bracket underpinning with micropiles



Foundation Specialties, Inc. was retained to perform emergency remedial underpinning at the Fort Smith Pavilion. Several precast tilt-up panels with integral columns placed on a spread footing with column pads had been damaged when the footings settled during construction.



The solution proposed by Foundation Specialties and James L Burke, P.E. was the use of hollow bar micropiles drilled and grouted through the boulder fill material and into bedrock to support the footing. ECP was contacted to provide under-footing brackets that would connect the micropiles to the footing and transfer the loads to the micropiles..



Project Summary
Project: Fort Smith Pavilion Underpinning
Project Engineer: James L Burke, P.E.
Installing Contractor: Foundation Specialties Inc., FSI GEO-CON
Products Installed: Ischebeck 40/20 Titan hollow bar micropiles with ECP M-350-EP4 Under-footing Bracket
Number of Placements: 42 micropiles with brackets
Average Depth to Load Capacity 20 feet
Pile Ultimate Capacity: 40 kips
Pile Design Load: 20 kips



The material under the footing consists of up to 20 feet of boulder back fill material with highly variable blow counts over hard shale. The underpinning of the two walls required a total of 42 40/20 Titan bar micropiles installed with a TEI MP250H drill. The drill was mounted on the ECP underfooting brackets after the footing had been taken back inline with the wall panels. The footing was taken back to minimize eccentricity of the bracket. After installation, the micropiles were cased with a 4' - 4" diameter inertia sleeve from ECP to lock into the bracket.

After the micropile grout achieved the design compressive strength of 4000psi, the micropiles were loaded to 17 kips and locked off in the brackets. This transferred 90% of the wall load to the micropiles. The gap between the wall panels and the footing was filled with grout to completely transfer the load to the micropiles

