

September 6, 2011

## **Custom rig helps to create beefy base for new viaduct**

By **JOURNAL STAFF**



Photo courtesy of Malcolm Drilling [\[enlarge\]](#)

This summer crews installed deep foundation systems to ensure the elevated highway that replaces the southern mile of the Alaskan Way Viaduct won't suffer the same sinking problem as the old one.

The soil-cement panel foundations were designed by Shannon & Wilson and built by Malcolm Drilling Co.

Malcolm installed confinement cells — box-like structures — that reach as much as 106 feet below grade in places. To make the cells, crews custom built a 5-foot-wide BCM 10 cutter soil mixing tool and mounted it on a Bauer BG40 drill rig. The setup allowed them to make each cell's wall section in a single pass.

The original plans called for constructing the cell walls with two staggered rows of overlapping 3.25-foot-diameter soil-mixed columns.

Malcolm project manager Rick Hanke said the modified tool improved the consistency and quality of the walls and reduced construction time.

The confinement cells surround 14 drilled shaft column supports for the southbound lanes. They are designed to limit movement of the drilled shafts during an earthquake.

Crews will use the rig this winter to make more confinement cells for 12 drilled shafts to support the northbound lanes. Malcolm will tie the southbound and northbound foundation systems

together using Mega-jet grouting technology, which injects grout under high pressure to mix with soil.

Demolition of the old viaduct between South Holgate and King streets is scheduled to start Oct. 21 to prepare for construction later on the northbound elevated structure.

Malcolm expects to finish deep foundation work in the first quarter of next year, allowing crews from Skanska USA Civil to move forward with above-grade construction.

The new viaduct will connect to the south portal of the future state Route 99 deep-bore tunnel. The side-by-side roadway is expected to be finished in early to mid-2013. The tunnel should open in late 2015.