



## SR 99 Bored Tunnel

More than three kilometres of 17.5 m diameter tunnel will be constructed beneath Seattle's downtown to replace the aging Alaskan Way Viaduct. Malcom Drilling was contracted to provide ground improvements, shoring and dewatering services for the construction of a 350 m long excavation that will be used to launch the world's largest tunnel-boring machine. A drilled secant shoring system included over 1,800 installed elements of either 1 or 1.5 m diameter piles placed to depths greater

than 40 m. To assist with initial mining operations, 35,000 m<sup>3</sup> of jet grout ground improvements were provided along the southern tunnel alignment. Seattle Tunnel Partners, a joint venture of Dragados USA, Tutor Perini Corp, and HNTB, will begin tunneling mid-2013 with the tunnel scheduled to be open to traffic sometime late 2015.

*Drilling contractor: Malcom Drilling Company. General Contractor: STP JV. Owner: Washington State Department of Transportation.*

## Delta Shake and Shingle Landfill Closure

Following a large fire in 1999 at the Delta Shake and Shingle Landfill, the site sat dormant until Sid Keay of Ocean Trailer and Delta's Mayor Lois Jackson teamed up to revitalize the property and return it to productive industrial use. Sperling Hansen Associates was retained to develop a closure plan for the site, implemented by JJM Construction and Western Tank and Lining. Over a period of four months, slopes were regraded, a deep sump leachate collection system was installed and then the landfill was capped with a synthetic geomembrane. Side slopes of the landfill were capped with a high quality top soil formulated from Metro Vancouver biosolids. The 3 Ha landfill crest was surfaced with gravel and pavement grindings to create a trailer parking facility to support Ocean Trailer's new trailer maintenance facility.

*Project engineers: Nathalie Maurer, EIT; Dr. Iqbal Bhuiyan, P.Eng.; Dr. Tony Sperling, P.Eng.*



## Gibraltar Development Plan 3

Ausenco provided engineering, procurement and construction management services for the third phase of the development and modernization of the Gibraltar copper-molybdenum mine, located in McLeese Lake, British Columbia, known as the Gibraltar Development Plan 3 (GDP3) Project. Taseko Mines Limited is the owner (75%) and operator of the GDP3 Project, the second largest open pit copper mine in Canada and the largest employer in the Cariboo region. GDP3 included the construction of a new standalone concentrator, which will add an additional 30,000 tons/day to Gibraltar's processing capability. GDP3 will increase milling capacity to 85,000 tons/day with an annual

copper production averaging 165 million pounds. GDP3 was executed with minimal interruption to existing production, on time and on budget, and enhances Gibraltar's operating flexibility and reliability, ensuring the mine will continue to be an economic cornerstone for the region for years to come.

