

**DSI References**

Owner Harbor East Parcel D, LLC, Baltimore, MD, USA+++
General Contractor Armada Hoffer, Baltimore, MD, USA+++
Tieback Subcontractor Nicholson Construction Company, Bridgeville, PA, USA, ein Unternehmen der Bachy Solentanche-Gruppe +++
Consulting Engineers Mueser Rutledge Consulting Engineers, New York, USA
DSI Unit DSI USA, BU Geotechnics, USA
DSI Scope Supply of 537 temporary DYWIDAG Strand Anchors with 9-26 strands in lengths of approximately 27 to 30m; supply of 65mm Gr 150 DYWIDAG bars and couplers; supply of approximately 272.800m of strands; rental of equipment



Large-scale Project in Baltimore's Inner Harbor: DSI stabilizes Excavation at Inland Port

The city of Baltimore, with a population of approximately 641,000, is the largest city in the state of Maryland and one of the most important seaports in the US. The city is an important industrial and commercial center as well as a significant location for research and development in pharmaceuticals and medicine.

Due to its many historic buildings, Baltimore also attracts numerous tourists. The Inner Harbor, the city's inland port, is especially popular with visitors. The historic inner harbor was a working port from the 17th century up to the mid 20th century. In the 1970's, the harbor area was rediscovered as an economic and cultural center of the city, and new buildings were constructed in the area. Since then, an increasing number of museums, shops, residential buildings, restaurants and hotels have emerged in Baltimore's Inner Harbor. Construction activities continue to be strong – especially so in Harbor East.

DSI is making a significant contribution to one of these projects: the construction of the high rise Four Seasons Hotel. Since the new building is a mere 6m away from the port basin, the bathtub-like excavation for the fourstory parking garage, which is up to 18m deep in places, had to be stabilized by an 8,800m² tieback diaphragm wall. The excavation's bathtub structure is supported laterally by the concrete slabs that form the parking garage floor.

DSI USA supplied a total of 537 temporary DYWIDAG Strand Anchors with 9-26 strands each in lengths of approximately 27 to 30m. In addition, DSI USA also supplied 65mm Gr 150 DYWIDAG bars and couplers for 36 temporary micropiles in lengths of 20,5m. These micropiles were later removed between the floors.

The work was made difficult by extremely differing soil conditions and high hydrostatic pressures. Due to the varying pressures, four different levels of tiebacks were used. In addition, DYWIDAG Strand Anchors were adapted individually to meet expected levels of pressure. In the lowest anchor row, strand anchors with up to 26 strands were successfully installed and post-tensioned. The completion of the new Four Seasons Hotel is planned for summer 2010.

