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A new key element of the Panama Canal is the Pacific Access Channel, a 6.7-km-long waterway at the Pacific entrance to the Canal. The new channel provides navigation access from the new Post-Panamax locks to the existing Gaillard Cut section of the Canal and required construction of four dams, known as Borinquen Dams 1E, 2E, 1W, and 2W. The dams retain Gatun Lake, the main waterway of the Panama Canal, and are therefore critical to the operation of the Canal, to the economy of Panama, and to world maritime trade.

The dams were designed as rockfill embankments with a central impervious core flanked by filter and drain zones. Design and construction of the dams posed multiple challenges, including: 1) variable foundation conditions with occasional unpredictable weak features, 2) use of residual soils derived from rock weathering as core materials, 3) a wet tropical climate with a short dry season, and 4) geologic faults across the dam foundations.

The largest of the dams, Dam 1E, is 2.4 km long and up to 32 m high. The embankment abuts against a small hill at its southern end, and against the original Pedro Miguel Locks at the northern end. Construction of the dam included the following main elements: 1) erection of a 1.3-km-long, 19-m-high, cellular sheetpile cofferdam, 2) installation of a 30-m-long, 18-m-deep, triple-row jet-grout cutoff wall, 3) construction of a 460-m-long, 18-m-deep, cement-bentonite slurry cutoff wall, 4) dewatering and excavation of the dam foundation, 5) treatment and geologic mapping of the foundation, 6) injection of a 2.4-km-long, double-row grout curtain, 7) installation of performance monitoring instrumentation, 8) placement of a 5.3-million-cubic-meter, zoned rockfill embankment, and 9) construction of a 97-m-long, 26-m-deep, secant pile wall to provide closure against the structure of the Pedro Miguel Locks.

This paper provides an overview of the construction of Dam 1E including the sequencing of the works, borrow of the embankment materials from the required channel excavations and other sources, and the key aspects of construction of the above project elements. The paper will also describe the key challenges met and the most important design changes required during construction of the dam.