ayward Baker Inc. is North America’s leading specialty foundation contractor, providing the complete range of ground improvement and other geotechnical services for planned and existing dams. From grouting for seepage control to Vibro for the seismic remediation of dam sites to the installation of cutoff walls, Hayward Baker has delivered on hundreds of dam projects. We are committed to providing the best solution that satisfies the technical requirements of your project, at a competitive price. Our nationwide network of offices and full-service equipment yards means fast mobilization and reduced start-up costs.

Quality control has always been a key aspect of our work. Computerized data acquisition and remote control for grouting was first used during construction of Ridgeway Dam in Montrose, CO, back in 1980. Hayward Baker performed curtain and blanket consolidation grouting for both the floor and core trench foundation preparation of the dam. To this day we continue to implement the most advanced quality control methods for all of our techniques.

Whether your situation is typical or unique, Hayward Baker has the experience and innovation to assist engineers, contractors, and owners with identifying and implementing the best solution.
Case Histories

W.A.C. Bennett Dam, Williston Lake, BC
Compaction Grouting

W.A.C. Bennett Dam is a zoned, sand/gravel fill dam, 1.25 miles long and 600 feet high. It is one of the largest hydroelectric dams in the world, containing the 74 km³ reservoir of Williston Lake. A sinkhole on the crest and a sinkhole on the upstream slope each developed around a corrugated metal pipe survey benchmark used during construction. Hayward Baker performed compaction grouting to remediate both sinkholes to depths of 400 feet. The treatment restored the damaged core such that the strength, permeability, deformation properties, and in situ stress conditions were similar to that of the adjacent, undisturbed core.

Wickiup Dam, La Pine, OR
Jet Grouting

Wickiup Dam is a zoned, rolled earthfill dam with a main river embankment section height of 100 feet and a crest elevation of 4,347 feet. The left abutment dike contained separate layers of liquefiable diatomaceous silt and volcanic ash. Hayward Baker performed jet grouting to construct 14-foot-diameter columns along a 2,250-foot length of the dam toe. This stabilized the liquefiable soil layers while allowing the reservoir to operate normally during the project, and reduced the inherent risk associated with an excavate-and-replace alternative.

Lopez Dam, Arroyo Grande, CA
Vibro Replacement

Lopez Dam is a zoned earth embankment with a hydraulic height of 166 feet, impounding a 52,500 acre-foot reservoir. Hayward Baker installed 180,000 linear feet of Vibro replacement stone columns to depths of 30 to 95 feet to stabilize alluvium, protecting the dam from liquefaction that could occur in the event of the maximum credible earthquake.

Reuter Hess Dam, Park, CO
Microfine Cement Grouting

Reuter Hess Dam is an earthen dam containing a 16,200-acre-foot reservoir in Park, CO. Prior to construction of the dam, seepage cutoff was required within the sandstone, claystone, and granite underlying the overburden beneath the dam footprint. Hayward Baker performed microfine cement grouting over several thousand linear feet of the centerline, with over 100,000 linear feet of drill holes.
Willow Creek Levee, Henrietta, MO
Injection Systems

Willow Creek Levee, approximately one mile from the Missouri River, was built as a flood control measure for local farmers. The 15-foot-high levee had been constructed with 3:1 side slopes from alluvial river deposits consisting primarily of highly plastic clay and silt. Large shrinkage cracks had become a pathway for rainwater, which subsequently saturated the levee, causing shear strength reduction and numerous slope failures. Hayward Baker performed lime/fly ash injection over 11,200 linear feet of levee, and to a depth of 10 feet through the crown of the levee and into the face of the slope to repair the shrinkage cracks, using a custom-built, track-mounted injection unit.

Hoopes Reservoir Phase 1 Improvements, Wilmington, DE
Anchors

Edgar M. Hoopes Dam is a 135-foot-tall concrete dam built in 1932. Improvements included widening the spillway to increase capacity and meet current flood design standards. Hayward Baker installed and tested 37- and 48-strand anchors for stability of the widened spillway. The anchors were as long as 175 feet, with design capacities up to 1,600 kips. All of the work was performed from the dam’s 14-foot-wide crest.

Lake Auman Dam, Pinehurst, NC
Vibrated Beam Slurry Wall

Lake Auman Dam is an earthen dam in the Pinehurst area of North Carolina that retains a manmade, 5-mile perimeter lake that is up to 90 feet deep. The dam was listed by the North Carolina Department of Environment and Natural Resources as a high hazard dam in need of repair. To repair the leaks in the Seven Lakes Community area, Hayward Baker installed a vibrated beam slurry wall for seepage control along 1,200 linear feet of the dam’s centerline. The slurry wall depth ranged from 20 to 47 feet.

West Bank Levee Repairs – Contract P24, Plaquemines Parish, LA
Dry Soil Mixing

The West Bank Levee repairs, 60 miles southeast of New Orleans, included a new stretch of levee three feet higher than the existing levee. Hayward Baker performed dry soil mixing to increase the bearing capacity of the existing soils along a 40-foot-wide, 1,900-foot-long tract of land. A total of 4,524 dry soil mix columns, each 40 feet long and 2.6 feet in diameter were constructed. The project ran 6 days a week, 24 hours a day to keep pace with the schedule set by the U.S. Army Corps of Engineers.