

Geotechnical Inspection Services of Roller Compacted Concrete Dam

Cincinnati/Northern Kentucky International Airport, Boone Co., KY

Client:
Kenton County Airport
Board c/o URS Corporation

Client Contact:
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Fee:
\$1,500,000

Highlights:
Geotechnical Studies
QA/QC Construction
Testing



A roller compacted concrete dam was recently constructed at CVG, the Cincinnati / Northern KY International Airport, as part of the airport's stormwater management program. The dam is part of the new Runway 18R-36 project that also includes several miles of new taxiways and service roads. Therefore, surface runoff conditions will change significantly due to these improvements.

HCN conducted the geotechnical study for URS Corporation (Tampa, FL), as well as assisted in preparation of technical specifications. HCN also performed construction QA/QC services. Our team of engineers and technicians performed constant visual inspection, compaction testing, fabricated test cylinders, monitored periodic coring of the dam, tested the cores and cylinders in the laboratory, as well as conducted other miscellaneous tests in the field and lab.

Roller compacted concrete (RCC) resembles roadway aggregate base, but contains cement. When the batched RCC is trucked, spread, and compacted with a drum roller, it sets up, yielding compressive strengths similar to conventional concrete. Special care has to be taken to make sure the batched material is uniform and well-mixed, compacts properly throughout each entire lift thickness, and bonds well to the other adjacent lifts (to avoid creating potential seepage planes).

The L-shaped dam is about 25-ft. high and 700-ft. long. It contains a cut off trench socketed five feet into competent bedrock which is topped by the RCC Core that is built with 1H:1V side slopes. The dam contains a 48-inch RCP underdrain pipe, a stair-stepped concrete primary spillway, and a secondary spillway covered with channel lining rock. The dam is covered with soil sloped at 4H:1V for ease of maintenance.

The Contractor was Elmo Greer & Sons (London, KY). The RCC was produced at an on site batch plant operated by The Harper Company (Hebron, KY), who also trucked the material to the point of placement. Harper also produced bedding mortar and structural concrete needed for the project. To minimize creation of cold joints in the RCC, Elmo Greer & Sons elected to construct the RCC core continuously, 24-hours per day. Over 21,000 cubic yards of RCC was placed with as much as about 1600 cubic yards placed during a single shift.

