

Good Specification – The Right Choice

RCP Selected for Stormwater Detention

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A 10-year, \$110 million Capital Improvement Plan at the Akron-Canton Airport (Akron, Ohio) includes parking lots to accommodate passenger traffic that doubled between 2000 and 2006. Reinforced concrete pipe (RCP) was supplied by [Rinker Materials Concrete Pipe Division – CEMEX](#)¹ from its Diamond, Ohio facility, for the construction of an underground storm detention system under one of the lots. Concrete pipe was selected by the contractor because there was a choice of materials in a well-considered specification. The project was originally designed and bid as 60-inch diameter high density polyethylene (HDPE) conduit with HDPE pipe fittings or 72-inch diameter RCP with fittings as an alternate.

The contractor, Wenger Excavation (Dalton, Ohio) chose [RCP](#)² to reduce the structure's footprint, footage of pipe to be installed, and the amount of work required to complete the load requirements of the installation. In addition, a RCP structure provided security and strength below the 10 to 15 feet of fill and live load of the parking area. The original design had a layout of five different runs, connected by a series of bends and tees (13 fabricated fittings plus multiple short joints).

Through value engineering, Rinker re-designed the detention system to accommodate 4 equal runs of pipe, 8 fabricated fittings, and no short joints. The re-design reduced the spacing of the pipes from 5 feet to 32 inches, resulting in a significant saving in structural backfill material. Designed by the [Floyd Browne Group \(Akron, Ohio\)](#)³ the [underground detention system](#)⁴ required approximately 230,000 gallons to be stored and control-released to a sand filter system. The structure is comprised of approximately 1,100 feet of 72-inch diameter Class III RCP, O-ring gasket joint, with an 8-inch wall. Rinker supplied 101 – 10-foot long pipe units with standard joints, three 72-inch x 72-inch x 72-inch bell tees, two 72-inch x 72-inch x 72-inch spigot tees, and three 72-inch x 72-inch 90-degree bends. The 10-foot long pipe units were produced to accommodate the tee fabrication and to reduce the number of joints to be installed.

The contractor excavated the entire footprint and installed up to 20 units per day on all four lines to ensure that the system would close as designed. The project began in the fall of 2011 and was commissioned in 2012.

RCP has [many advantages](#)⁵ over HDPE conduit when it comes to the construction of stormwater detention systems under parking lots. While HDPE conduit manufacturers claim a service life of over 50 years, experience shows otherwise. The Corps of Engineers assigns a service life of up to 100 years for concrete pipe. Experienced contractors know that manufacturers of RCP supply quality-certified products. Designers of concrete pipe stormwater management systems can choose from five different pipe classes and special designs, and four installation types. HDPE conduit offers limited choice and an installation method that does not meet the needs of all projects, such as deep fills or live loads with shallow cover. Concrete pipe structures make sense at airports because they are durable and non-flammable.

LINKS

1. www.rinkerpipe.com
2. www.concrete-pipe.org/pages/why.html
3. www.floydbrowne.com
4. www.concrete-pipe.org/brochures/underground_storm_water.pdf
5. www.concrete-pipe.org/pdf/InstallationComparisonInspectorsContractors.pdf

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- **Concrete Pipe Design Manual**
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- **Concrete Pipe News**
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72-inch diameter bends and tees.

Detention system to accommodate 4 equal runs of pipe, 8 fabricated fittings, and no short joints.



Tees and bends to form manifold of structure.

