Robson Center uses Permeable Pavements

Ebony and ivory: permeable interlocking concrete pavement captures, filters and treats runoff from the asphalt parking bays with this 8,200 sf (760 m²) of pavers at this office building in Gainesville, Georgia.

The decision to use permeable interlocking concrete pavements often depends on the infiltration rate of the underlying soil. Conventional thinking says sandy soils with their high infiltration rates are favorable while clay soils with low rates are not. Robson Center, an office building in Gainesville, Georgia, breaks that preconception by using permeable interlocking concrete pavements over the clay soil common to this city of 25,000 people on the shores of Lake Lanier in northeast Georgia. The decision created a pavement and detention/infiltration facility that manages runoff from typical rainstorms.

Formerly known as the Southern Heritage Building, the Robson Center's 8,200 sf (760 m²) parking lot represents one of the first pavements of its type in the region. "The Robson Center pavement was installed (in 2003) in order to meet a new municipal limitation on impervious cover, while getting full economic development from the site's acreage," according to Bruce Ferguson, FASLA, Professor and Director, School of Environmental Design, University of Georgia and the project designer. The pavement surface located in the development's entry lanes used red pigments in the paving units to match the building.

Paving units are placed on screeded No. 89 bedding layer over a No. 57 open-graded, crushed stone base. The joints between the units are filled with No. 89 material as well.

"The base course or 'base reservoir' is made with open-graded No. 57 crushed granite rock, which has void space of +30% and very high permeability," said Ferguson. "The bedding layer and joint fill is similar but smaller No. 89 aggregate, which also has high porosity and permeability. The combination gives the pavement high permeability and water storage capacity." The picture below shows placement of the units with spacing to allow for infiltration of runoff into the bedding layer of No. 89 aggregate.

Since the soil was largely clay fill that had to be compacted, very little infiltration into the soil is expected, explained Ferguson. "Instead, a perforated pipe at the bottom of the base reservoir drains to the city's storm sewer system. A previously installed stormwater detention basin had been designed for impervious surfaces throughout the development. This pavement's permeability and in-pavement storage are expected to make the project's stormwater performance exceed

the design expectations. In the unlikely event the pavement should generate surface runoff due to an extremely intense storm or if clogging occurs somewhere in the system, the runoff will drain to grate inlets at the side of the pavement, then into the conventional storm sewer system."

The project's general Contractor was U.S. General Construction of Alpharetta, Georgia who subcontracted the paving to an ICPI contractor member. The paving units were also supplied by an ICPI member. The pavement cross-section consists of permeable pavers, 3 in. (75 mm) ASTM No. 89 bedding layer, 8 in. (200 mm) ASTM No. 57 crushed stone base, and geotextile over the clay soil. The units were manually installed.

Runoff from the impervious asphalt surfaces is infiltrated into the permeable interlocking concrete pavement. The runoff is detained, filtered and infiltrated into to the soil subgrade. Excess water is drained to storm sewers through perforated drain pipes in the base. The filtration from the open-graded base should reduce water pollution. Additional capture of metals in the clay soil is expected. This sustainable approach to paving will assist in cleaner water for Gainesville and Lake Lanier. ❖

The permeable interlocking concrete pavement was constructed to conform to local regulations limiting the amount of runoff from sites.

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