



Lenexa, Kansas, Tries Porous Asphalt on for Size

Workers build a porous asphalt parking lot in an environmentally sensitive area in Lenexa, Kan.

Cities and businesses around the country are showing increasing interest in porous asphalt pavements as an innovative means of addressing stormwater problems created by traditional parking lots. Last year, the National Asphalt Pavement Association hosted a series of porous asphalt pavement seminars that drew more than 500 people to learn more about the technology. The seminars, which will be presented again in 2005, brought together consultants, contractors, public works officials, environmental engi-

neers and land developers to learn about the benefits of porous pavements, how to site them, and how to properly design and maintain them.

In Lenexa, Kan., a rapidly growing Kansas City suburb, city public works officials decided to have a porous parking lot built in an environmentally sensitive area. Although the parking area was for only 15 parking slots, it was situated next to a constructed wetland, a 35-acre lake, and a stream restoration project, all part of the city's new 240-acre Black Hoof Park.

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Coarse stone and “choaker” aggregate used for stone recharge bed.

“The parking lot was part of our ‘rain to recreation’ program,” said Mike Beezhold, Lenexa’s watershed manager. “This is the first in the Kansas City metro area, and a number of other cities were watching the project closely before implementing one themselves.”

Tom Jacobs, the city’s stormwater engineer and project manager of the parking lot and park project, coordinated the collaborative effort to design, excavate and construct the innovative pavement. Tom and his team had the site graded to a constant elevation to form a reservoir that contained the entire design storm. The reservoir was lined with a permeable geotextile fabric and filled with a uniformly graded 2 1/2-inch aggregate which formed the base for the pavement structure. Minimum depth of the aggregate layer was 18 inches. A 2-inch thick choker course of AASHTO 57 aggregate was laid on

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top of the 2 1/2-inch aggregate for stability.

An underdrain system consisting of a perforated HDPE pipe was provided at a depth of nine inches below the pavement. This assures that the area immediately below the asphalt remains free of water during the frequent freeze-thaw cycles that are common to the Kansas City area.

The asphalt pavement was placed in one 4-inch lift. It consisted of an open-graded mix with a polymer modified PG 76-22 binder. Placement of porous asphalt varies from that of standard asphalt in the compaction procedure. It is important not to overcompact porous asphalt as it will lose its permeability. The specifications require no more than two passes with a roller. The difficulty comes in making sure the pavement is cool enough that proper compaction can be achieved without leaving roller marks.

O'Donnell & Sons Construction built the asphalt parking lot on top of the drainage system. Like all porous pavements, this one was constructed in such a way that the water would filter through the mat, rather than run off immediately into the surrounding watershed.

The porous pavement concept runs counter to traditional thinking, which dictates keeping water out of the pavement structure. But sites with traditional parking lots also use up valuable land as retention ponds to collect water as it runs off from the impervious parking lots.

"I admit I was a little skeptical of the idea," said Larry O'Donnell, Vice President of O'Donnell & Sons. "But soon after we finished the project there was a heavy downpour. I was impressed to see how the water ran right through the porous pavement just as it was supposed to."

Beezhold plans to include porous

asphalt pavements in city guidelines. "It would be a part of our best management practices. Not only is it part of good stormwater management, but it saves land that might otherwise be used just as a retention pond."

Beezhold does have some concerns with how the pavement will deal with the freeze-thaw cycles common in that part of the country. And he acknowledges that proper maintenance of the parking lot will be important. Since the parking lot will be close to streams and a lake, he plans to put up an interpretive sign explaining the uniqueness of the pavement.

"We have plans for other recreation areas and lakes in the city. I think interpretive signs could provide important information to people showing them how the parking lot functions with wetlands and how integrated our stormwater systems can be." 