

PEIYANG CAMPUS: A SPONGE CITY CASE STUDY

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1 ABSTRACT

“Sponge City” is a term that is currently used in China to refer to the urban design of an area based on stormwater management and restoration of ecological processes. Tianjin University’s Peiyang Park Campus was opened in 2015 as a demonstration of the “Sponge City” concept. The campus is one of the first built examples of this concept. This presentation elucidates the “Sponge City” concept by detailing the design of the campus as a case study. The campus is located in the Jinnan District, Haihe Education Park, Tianjin, China. The site is approximately 2.5 km² in area with a complex of waterways, wetlands, and uplands. It was designed to serve 35,000 students and 5,000 faculty and staff. The design goals include: protecting the site’s original ecosystem, using ecological restoration and mitigation to repair damages caused by construction, and using low impact development (LID) practices in design and construction. Essentially, the concept resembles “Resilient Design” with a particular focus on stormwater management. The triangular site of the campus is challenging, with three sides defined by historic canals and a highway system as well as shallow groundwater and saline soil because there is little or no natural storage capacity for water on the site. Agricultural fields have been transformed into 1.55 km² of buildings, 0.15 km² of water and 0.8 km² of restored and designed landscape. The landscape is subdivided into three sub-drainage systems to handle stormwater. The sub-basin that forms an outer ring infiltrates stormwater to groundwater, with excess going to the adjacent canals. Within the inner ring of the campus, there is an integration of green infrastructure within the overall landscape elements through use of concave green spaces, pervious pavers, bioswales, and green roofs. This drops the runoff coefficient for the built up area from 0.9 to 0.5. In this area, there are also water features, such as ponds and wetlands, that collect overflow, and thereby reinforcing the sponge-like function of the area and reducing flow from the campus to surrounding waterways.

1.1 Keywords

Sponge city, Ecological Design, LID, China, Tianjin University