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## Greener Streets – Ushering in a New Era of Sustainable Transportation Engineering

By Jerry Blumenthal, PE, and Judith Nitsch, PE, LEED AP, Nitsch Engineering, Inc.

“Green” is definitely the new black, showing its color in all facets of our lives – from reusable grocery store bags to sustainable buildings. And we’re now realizing that transportation infrastructure, a major contributor to greenhouse gases and climate change, should achieve the “triple bottom line” of people, planet, and profit as well. Regardless of whether it’s a manufacturing plant, university, or skyscraper, or a bridge, highway, or road, if we can design and build it soundly and economically, we also can design and build it ecologically.

When the City of Boston Environment Department (the City) received grant funding for a Green Street Pilot Demonstration Project, choices for implementation abounded. Working in partnership with the Charles River Watershed Association (CRWA), and the Boston Public Works (BPWD) and Transportation Departments (BTD), the City selected Dorchester’s historic Peabody Square, a multi-legged, complex, high-accident-rate intersection that was under redesign by Nitsch Engineering (Nitsch). “Peabody Square was an obvious choice for the Green Street project because we already had active community partners and a knowledgeable project team with a deep sustainability mindset,” said Jim Hunt, Chief of Environment and Energy, City of Boston.

### Safe, Sustainable, and Beautiful

Working closely with the St. Mark’s Area Main Street Non-Profit Neighborhood Group, BPWD, BTD, and CRWA, Nitsch developed five intersection redesign alternatives and evaluated several sustainable options suitable for this busy, urban neighborhood crossroads with its subconsultant landscape architect Carol R. Johnson Associates, Inc. The Group selected a design that eliminated the channelizing islands, discontinued one street leg, realigned Talbot Avenue, reduced neighborhood cut-through traffic, decreased traffic queuing (and thus reduced air pollution), and created a socially inviting park and plaza equipped with two sustainable design techniques: rain gardens and porous pavement.

### Why Rain Gardens and Porous Pavement?

To reduce runoff volume and remove pollutants, Nitsch considered several structural and management BMPs – e.g., stormwater planters, porous concrete/asphalt pavements, leaching basins, greening, open-joint paving, and bioretention (rain gardens) – and evaluated their benefits relative to stormwater management goals, site-specific constraints, and capital/maintenance costs. Rain gardens (bioretention), which collect and treat stormwater runoff via layers of mulch, soil, and plant root systems, and porous pavers/pavement, which provide overflow collection and infiltration, were the right choices for Peabody Square. We designed the new green intersection, presented our findings to the public, and received approval from the City and CRWA.

The community and the project partner, CRWA, have been pleased with the results: neighbors have pledged to assist in maintaining the gardens and pavers by inspecting drainage flows following heavy rains, weeding/pruning, and removing snow, thereby reducing maintenance costs; and CRWA has used this pilot project as a vehicle to educate other agencies about urban LID and innovative stormwater BMPs.

### The Future Looks Green (and Functional)

The new Peabody Square – replete with a variety of perennials, grasses, shrubs, and small trees as well as new “retro” paving reminiscent of Argyle Street (now Talbot Avenue), granite benches, and period lighting that restore the area to its original 1800s look and feel – is slated for construction later this year. Construction management has been turned over to the Massachusetts Highway Department, who combined the Peabody Square redesign with other planned improvements along Dorchester Avenue and received stimulus funding through the federal American Reinvestment and Recovery Act.

Nitsch Engineering is excited to see sustainability “hit the streets” – and we’re proud to be providing this Dorchester community with a safer, beautiful, cleaner environment.