

Project Summary

Lincoln Park is an integral part of the social fabric of the Town of Tonawanda (Town), providing year-round activities, including swimming, hockey, social gathering, tennis, frisbee golf, baseball and football, as well as a playground. Additionally, the Park provides beautiful green space, a rarity to the primarily developed community. In order to preserve the natural beauty, function and sustainability of the Park, the Town incorporated green infrastructure, including rain gardens and a permeable pavement trail, to aid in natural stormwater infiltration, as well as provide a safe pathway for fitness enthusiasts and spectators.

Completion Date:

May 2018

Project Cost:

\$\$1,013,422

The purpose of this project was two-fold, driven by the desire to minimize and manage the sheet flow storm runoff that occurs at higher rainfall events compounded with super saturation of the soil. The eastern side of the park along Parkhurst Boulevard experienced overburden of surface water and caused flooding of the road and adjacent sidewalk. The soil characteristics and geometry of the park were such that the capacity to minimize runoff act effectively as an impervious surface.

The Town performed calculations of tributary areas, existing water volume estimation and green infrastructure storage and filtration capacities. They proposed the use of a porous multi-use path to replace impervious concrete sidewalk in some locations and function as a drainage element through local surface depressions where stormwater compounds. The rain gardens would function as water volume storage features for runoff overburden and further filtration before the runoff is discharged to adjacent drainage facilities. Net runoff reduction volume will be studied to verify and quantify the overall effectiveness of the rain gardens and path.

Using a combination of a porous pavement multi-use path section and strategically placed rain gardens, the project minimized and managed the sheet flow storm runoff and areas of standing water that occurs at higher rainfall events that are compounded with super saturation of the soil. The path is approximately 7,800 feet in length and replaced approximately 12,500 square feet of impervious concrete sidewalk at various segments of the alignment. The path introduced a new community amenity and complements the Tonawanda Rail-to-Trail which was built along a former railroad corridor just west of the park. The new rain gardens divert and filter stormwater from areas experiencing standing water. An underdrain was installed under the path due to the soil conditions which discharges to the rain gardens. The larger rain gardens along the eastern edge of the park intercept sheet flow from the park, relieving stormwater from the adjacent porous path. Any overburden stormwater is filtered and discharge to nearby existing storm systems.

THE SITE: Lincoln Park is a 48 acre park situated near the central south eastern area of the Town of Tonawanda, NY. The park is comprised of two adjacent parcels at 1200 Parker Boulevard and 299 Decatur Road in a neighborhood community. The land has been town parkland since the early 1950's when it was acquired from the County of Erie. Lincoln Park consists of both passive and active recreational amenities such as a skating arena, outdoor pool and wading pool, baseball and softball fields, soccer and football practice fields, Frisbee™ golf course, picnic shelters, a police satellite station, a maintenance building and the Youth, Parks and Recreation Department offices. Nearly sixty percent of the 299 Decatur Road parcel is densely wooded with mature oak and ash. Substantial tree replanting has occurred to compensate for loss experienced in the federally declared October Storm disaster of 2006. The park is flat in topography and soils are a dense clay with lower absorption properties. The 2009 subsurface soil boring log done in Parkhurst Boulevard adjacent to the park indicated ground water at 14 feet below grade.

PROJECT ACHIEVEMENTS:

- Improved Connectivity
- Incorporated Green Infrastructure
- Provides Educational Opportunities
- Reduces Stormwater Treatment
- Promotes Physical Activity
- Aesthetically Pleasing
- Incorporated Recycled Materials

The multi-use path directly connects to the Tonawanda Rails-to-Trails project, a 3.94 mile regional trail that was constructed in 2015. The Trail connects to the region's existing intermodal transportation system.

Project signs that communicate educational narratives and graphics to educate the public regarding the green infrastructure practices were incorporated into Lincoln Park. The signs also include information regarding the project sponsors, project funding, contact information

and maintenance information.

Schedule, Management and Control Techniques

- Funding Announced: December 2014
- Contracted Design Engineer, KHEOPS: October 2015
- Project Design Completed and Approved: November 2016
- Project Letting: January 2017
- Began Construction: June 2017
- Completed Construction: May 2018
- EFC Certificate of Completion: June 2018

Due to funding the project funding source, NYS Environmental Facilities Corporation, the project design took longer than originally anticipated due to design approvals and requested changes. Additionally, Community Development Block Grant and NYSDEC funds were also used to supplement the project.

Alternative Materials

This project utilized a NYSDEC Beneficial Use Determination 924-9-15 underdrain filter stone made of 100% recycled Corian® manufactured within the Town of Tonawanda. A total of 220 cubic yards of this material were donated through a public/private partnership between DuPont, Triad Recycling and the Town. The Town of Tonawanda is a founding E3 charter member. E3—Economy, Energy, and Environment—is a coordinated federal and local voluntary technical assistance initiative coordinated by the EPA that helps communities work in conjunction with their manufacturing base to adapt and thrive in a new business era focused on sustainability while using green technology.

Safety Performance

The safety performance on this project was impeccable as no man hours were lost due to physical injuries that were project related. All safety requirements of OSHA and the New York State Department of Labor were closely adhered to.

Environmental Considerations

The Town of Tonawanda is an MS4 community and a founding member of the Western New York Stormwater Coalition. Therefore the Town has a stormwater management plan as part of our SPDES permit NYR20A468 and also owns, operates and maintains sanitary sewer collection system and water recovery facility. A majority of our storm and sanitary systems were constructed in the

post WWII era and the Town is working in a NYSDEC Consent Order for long term control water recovery and abate existing sanitary sewer overflows.

A NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity was the only permit required for this project. This permit obligation was delegated to the contractor.

The SEQR Negative Declaration for the project was made by the Town acting as lead agency on June 2, 2014.

The path and rain gardens will provide stormwater volume storage and groundwater recharge augmentation.

Preservation of the trees was important in this project. Due to this air spading was utilized to minimize the stress on the mature trees. In some cases tree removal was necessary. New tree plantings were initiated to compensate for those removed by way of a separate NYSDEC forestry grant.

Additionally, during construction conduit for Electric Vehicle Charging Stations in the adjacent Town parking lot was incorporated.

Community Relations

Six (6) interpretive signs were installed in conjunction with the project, explaining the project to visitors and providing education regarding green infrastructure and sustainability. Project metrics are monitored by the Town of Tonawanda's Stormwater Management Officer in conjunction with students from the Ken-Ton School District's nearby Ben Franklin Middle School. Students are able to learn scientific measurement practices and principles, experiencing first-hand the benefits of green infrastructure, and learning the importance of innovative stormwater management. The Town owns water testing kits and makes these available to the School District for use in conjunction with ongoing testing of the rain gardens.

Adverse Conditions

The project also included the town's 3rd Rectangular Rapid Flashing Beacon (RRFB) at the new mid-block crosswalk on Parker Boulevard. The FHWA had temporarily suspended support of these devices after project bids were received. The FHWA reinstated their support after various legal challenges were overcome.

Additional Considerations

The Town considered an alternative to the green infrastructure. The Youth, Parks, & Recreation and Water & Sewer departments considered extending a storm sewer reach about 400 feet southward on the west side of Parkhurst Boulevard to a new street receiver. Another storm drain would then extend into the park to a new drainage structure located near the highest concentration of stormwater accumulation. Eventual French drain type branches would then traverse the area to drain off areas of standing water. Traditional French drains comprised of 4 inch perforated pipe approximately 1 foot deep have been installed at various locations near the lower areas with very limited success.

Preconstruction Condition Photos



Figure 1 Supersaturated soils prompted placement of new rain garden



Figure 2 Areas of standing surface water guided new trail alignment

Construction Photos



Figure 3 Typical porous path section including geotextile, underdrain and BUD Corian underdrain stone



Figure 4 Contractor placing porous asphalt over choker course

Post-Construction Photos



Figure 5 New trail meander through park oak grove



Figure 6 Newly established rain garden
