



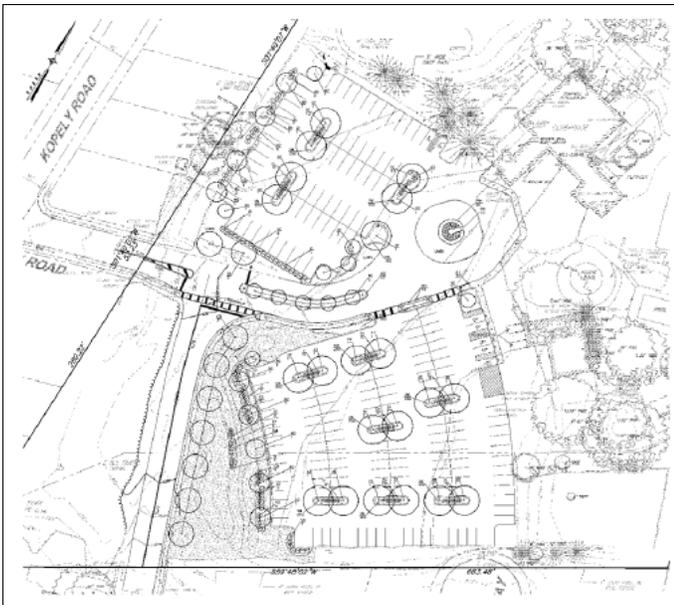
Flourtown Country Club

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Boucher & James, Inc.
Fountainview Professional Building
1456 Ferry Road
Building 500
Doylestown, PA 18901

Springfield Township
1510 Paper Mill Road
Wyndmoor, PA 19038

The Flourtown Country Club was an existing facility owned by Springfield Township (Montgomery County, Pa.). It consisted of a nine hole golf course, a banquet facility, swimming pools and a parking area that essentially was a vast field of asphalt with poor circulation patterns and poor lighting. The Township determined that improvements to the facility were needed and decided to create a new entrance to the club with more defined circulation to enhance the safety of both pedestrian and vehicular traffic.

The Township Engineer Firm, Boucher & James, Inc., saw an opportunity to create a more sustainable site, while still meeting the needs of the Township and addressing the immediate safety concerns.



The Landscape Plan for the redesigned country club

Specifically, Boucher & James, Inc. identified the following opportunities:

- Create green spaces in areas that were formerly paved (minimize and decrease pavement and non-porous surfaces)
- Address stormwater concerns, both quality and quantity, since no storm sewers exist in the area
- Grade new/redesigned pavement areas to maintain the pre-development drainage patterns
- Reintroduce native species into the landscape design of the facility to both promote native species and to reduce maintenance needs and demands

Springfield Township was very receptive to these ideas and plans and designs were prepared to meet their needs. A new entry sequence was designed to complement and enhance the new architectural features proposed and to direct the public to the proper entrance areas for their functions. Design continued for the new parking area and emphasis was placed on circulation and safety for both pedestrian and vehicular traffic. The new parking lot and entry area was designed to include planted islands that serve several functions. They serve to separate and direct the traffic; they provide areas for native plantings; and they provide the opportunity to plant vegetation to provide shade and to mitigate the affects of the sun beating down on the paved areas.



After a series of soil pits were dug and testing was completed to determine the feasibility of utilizing infiltration for stormwater management, it was determined that the potential for infiltration was only marginal, at best, and therefore not a primary option for this site. Stormwater detention facilities were also eliminated as an option, as there was nowhere to outlet such facilities. After a thorough study of available options and alternatives, a design solution for stormwater management was formed.

The design solution consisted of a two-tiered concept of informal stormwater infiltration with significant soils amendment and the planting of a conservation seed mix. Landscaping (with native vegetation) was proposed along parking areas to reduce the rate of run-off and to filter pollutants such as sediment and petroleum hydrocarbons from the run-off. The upper tier was designed to take the first flush of stormwater. It would then reduce the rate of the stormwater and permit sediment and pollutants to settle prior to spilling over into the lower tier. Each tier was designed to permit marginal infiltration (as much as the soils would permit). The cumulative effect of the two tiers and the vegetation was designed to provide dissipation of stormwater run-off and increased quality of run-off beyond what currently exists at the site and beyond what would exist if overland flows were permitted to occur unabated, even with the reduced paving and new parking lot design.



Soil quality did not allow for infiltration beds, so an informal solution was designed, using native plants

During construction, issues arose which required design modifications.

- Standing water was evident in the two tiers during and after storm events. Unfortunately, the soils were not able to absorb/infiltrate as much as the testing indicated would be possible and standing water for extended periods of time was not acceptable to the residents or the community. To address this issue, stone beds were created to remove standing water from the surface and detain it underground while the infiltration process occurred, at a slower rate. The stone beds under the tier gardens were then connected underground to permit overflow from the upper bed to enter the lower bed just as surface grading had previously permitted.
- After the first set of modifications, the tier gardens were able to drain totally in three to four days. Neighbors expressed concern over any standing water, even though it was infiltrating, and seemed to base many of their concerns on fear of the spread of the West Nile Virus. In response to these concerns, the Township installed a drain pipe to permit water in the upper surface of the garden/bed to drain to the curb line.

Although other methods may have been available to address the threat of the spread of West Nile Virus (such as the introduction of bats/bat houses), it was clear that the concerns of the neighbors were not going to be addressed unless and until the standing water was eliminated from the site. The Township chose to address the concerns of their residents by modifying the original design.

Even though the site ended up being not quite as “sustainable” as was originally planned and designed, the end result is that the site is now much improved and more sustainable than it was previously.



Sustainable site design elements include:

- Reduced paving and impervious surfaces
- Use of “tiered gardens” to slow the rate of runoff
- Use of native vegetation to filter sediments and pollutants from the stormwater
- Use of graded landforms (a small berm between the upper and lower tier) to force water to settle and cleanse prior overtopping the berm and continuing down to the lower tier
- Shade trees were planted along the perimeter of the parking and in islands to provide shade and cool the pavement, thereby improving the microclimate of the site
- Use of native vegetation that is suited to the area and will require less maintenance than exotic species

The end result is the Township now has an attractive, functional and more sustainable entrance and parking area for the Flourtown Country Club. The primary needs of improving pedestrian and vehicular safety were met with an attractive design that also was able to include sustainable elements.



The parking lot and entrance to the country club are now more visually appealing and sustainable, in addition to being safer for pedestrians and drivers