

University Towers Stormwater Retrofit Project

Montgomery County Capital Improvements Project to Provide Water Quality Treatment of Stormwater Runoff

September 19, 2013
Updated February 19, 2014



Prepared By: Doug Marshall
Watershed Planner, Montgomery County Department of Environmental Protection
255 Rockville Pike, Suite 120
Rockville MD, 20850
240-777-7767
Douglas.marshall@montgomerycountymd.gov



The Montgomery County Department of Environmental Protection (DEP) is proposing to install ten new stormwater management facilities on University Towers (UT) property. Many of these new facilities are intended to intercept stormwater runoff from the parking lots in small catchments that will resemble garden areas much like the one shown in the photo to the right. Locations of the ten proposed stormwater facilities are shown on pages 7 & 8. Three types of stormwater facilities are proposed at UT, 1) bioretention, 2) tree boxes and 3) permeable pavers (as a possible replacement for proposed bioretention areas that take up parking spaces); more information about these facilities is presented on pages 4 & 5. Based on conversations with members of the HOA at UT, parking loss associated with these facilities is a major concern.



Bioretention Facility at Ridgview Middle School

Water retained in the bioretention and tree box facilities is filtered through the plants and soil before reaching an underdrain that connects to the existing stormdrain system. In the process, two things happen; 1) pollutants washed in from parking lots such as, oil, grease, sediments, metals & bacteria are filtered out of the water and 2) some water is retained in the soil and gravel layers where it is either taken up by the plants or soaks into underlying soils. The net result is a reduction in both the pollution and volume of water flowing into the Breewood Tributary and Sligo Creek during storms. Details of each stormwater facility proposed at UT are presented on pages 10 - 14.

The Breewood Tributary, which originates directly across University Boulevard from UT, is severely degraded due to on-going erosion of the stream channel caused by unmanaged stormwater runoff from the surrounding area including the UT.



Breewood Tributary

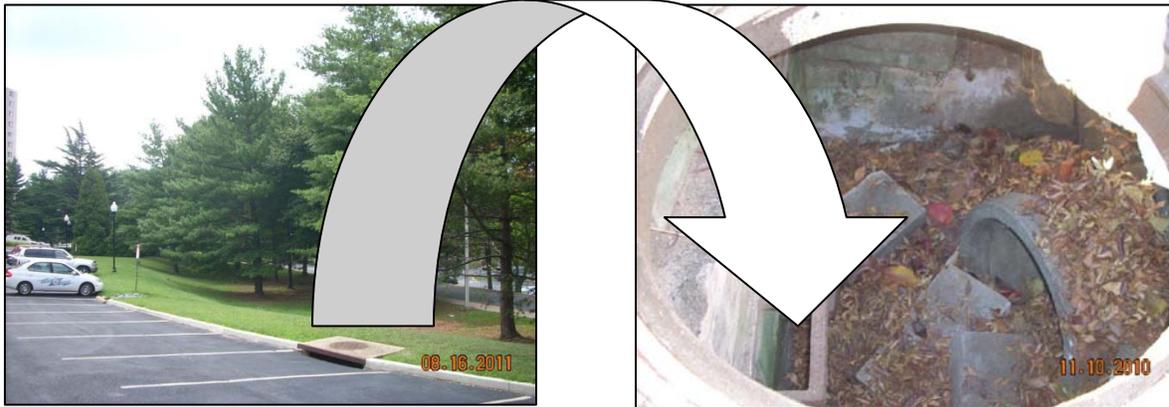
The DEP has targeted Breewood Tributary for a comprehensive restoration effort that; 1) repairs damage to the stream channel caused by decades of erosion and 2) manages stormwater runoff from much of the contributing drainage area, or watershed. The map on page 7 shows all areas within the Breewood watershed where DEP has either already installed new stormwater facilities or is in the process of installing them. New stormwater facilities are being designed for installation along roadways in the Breewood

Neighborhood, on residential properties where owners have given permission and at the Northwood Presbyterian Church. Stormwater facilities are currently in place at Northwood High School, the townhouses on Hemingway Court and along Arcola Avenue. Parking lots at the University Towers are a

large part of the impervious area left without stormwater management in the watershed and, therefore, are crucial to improving conditions in the Breewood Tributary to the maximum extent practicable.

How do the proposed stormwater facilities benefit UT residents?

- Improvements to the parking lot and existing stormdrain system including replacement of the stormdrain inlet in the parking lot directly west of the pool - at proposed facility 2. This inlet is in poor condition as bricks forming the interior wall are falling out - as seen in photos below.



Damaged Stormdrain Inlet Near Proposed Facility 2

Inside Damaged Stormdrain Inlet

- Repair of erosion caused by the 15-inch storm drain outlet at University Boulevard near the bus stop. This storm drain carries all the stormwater flows from the entire UT property. Due to the presence of the WSSC's 72-inch high pressure water main and associated 40 foot wide easement (see page 15), this repair involves a greater level of coordination with the WSSC. DEP has made WSSC aware of the erosion in this area and is working on a concept plan to repair it, which must be reviewed and approved by WSSC. Even though the WSSC has an interest in seeing the erosion problem repaired to protect the underlying water main, there are no guarantees that DEP's efforts will result in a resolution that both DEP and WSSC agree to. The proposed stormwater management retrofit facilities at UT will help reduce further erosion and, to an extent, the area may begin to re-vegetate on its own due to the reduced stormwater flow from the 15-inch storm drain outlet. If no stormwater facilities are permitted on the UT property, DEP will not be present to fund or construct the erosion repair and UT will need to coordinate with the WSSC to resolve this concern.
- Landscaping associated with these facilities will enhance the grounds by providing more garden type settings. Over time trees, shrubs & perennials planted near parking lots will provide shade and offer a more hospitable feel to the property. This landscaping will be maintained by DEP maintenance program, a minimum of four times per year.
- Green infrastructure, like that being proposed at UT, has been shown to increase property values.

- DEP’s designers will take input from the community to try to ensure that the facilities properly **address drainage concerns and runoff related safety issues**. Information from the community about areas that have particularly high flows or where erosion is occurring will be incorporated in the design of these facilities where feasible.

Who pays for the installation and maintenance of proposed stormwater facilities?

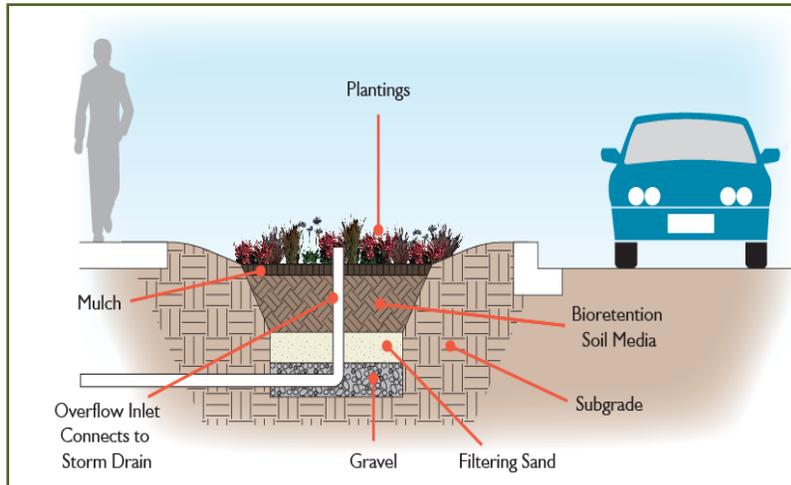
- DEP will cover 100% of the construction cost.
- All maintenance of the new stormwater facilities will be performed and funded by DEP on a quarterly (every 3 months) basis.
- If any infrastructure is damaged or temporarily impacted by construction, DEP’s contractor will be asked to repair or replace in kind. Most impacts can be anticipated and will be called out in the final construction plans ahead of time.

How are these facilities beneficial to surrounding areas and the community at large?

- They play a crucial part in the County’s effort to improve conditions in the Breewood Tributary and in Sligo Creek by:
 - Improving water quality as much of the stormwater runoff, particularly during the beginning of storms (AKA the ‘first flush’ which contains higher concentrations of pollutants) is retained in stormwater facilities and filtered through vegetation and soil.
 - Reducing storm flows which help, 1) maintain a stable stream channel, 2) prevent the loss of trees along the stream banks and 3) improve overall stream ecosystem.
 - Reducing impacts from sediment washed out of the Breewood Tributary and into Sligo Creek and the Anacostia River.
- Provide habitat for birds, butterflies and other pollinators which helps sustain a healthier ecosystem in a dense suburban area.
- The shading provided by these facilities helps mitigate the thermal heat island effect that persists during summer months in our urban and suburban areas.
- The plants in these facilities help improve local air quality.

Three types of stormwater facilities are being proposed at University Towers; 1) bioretention, 2) tree boxes and 3) Permeable pavers.

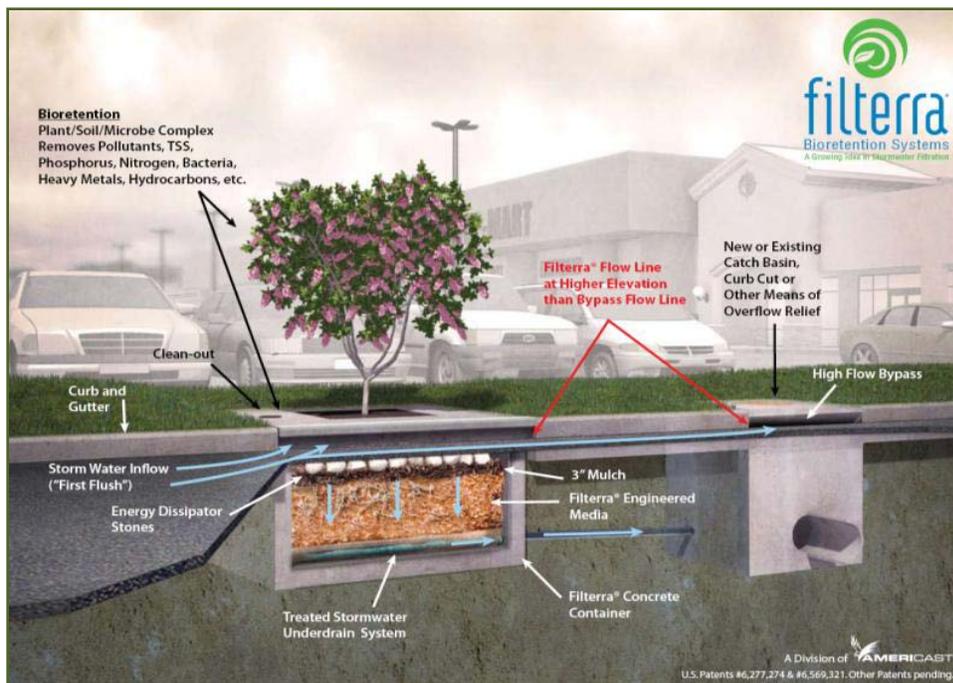
1) **Bioretention facilities** resemble a typical garden area that is slightly depressed into the landscape so water can flow into them. Once in the bioretention facility, water soaks down through the planting media and into the sand and gravel layers. It's during this process that much of the pollutants are removed.



Some pollutants, such as bacteria, oils & greases are broken down by microbes in the soil, while others, such as metals, are retained in the sediments washed into the facility from the parking lot, which are periodically removed during routine maintenance. On the surface bioretention facilities are mulched and planted with native plants.

Typical Detail for Bioretention Facility

2) **Tree boxes** are concrete boxes that are installed next to existing storm drain inlets and are filled with planting soil. They are similar to bioretention facilities in that they intercept stormwater before it reaches the storm drain inlet and provide filtration as stormwater soaks through the planting soil to an underdrain that connects to the adjacent storm drain system.



Typical Detail for a Tree Box



Tree Boxes Along a Residential Street

3) **Permeable pavers** could potentially be used in place of facilities 1, 4N & 5 to **reduce loss of parking spaces**. Permeable pavers allow water to soak through gaps between pavers. Cars can park and drive on permeable pavers. The residents will simply see an attractive surface paving layer consisting of interlocking concrete pavers with joints wide enough to allow water to flow through to underground storage structures. Sometimes a storm drain inlet is located adjacent to these to help collect water during larger events. Underneath is a load-bearing honeycomb of high-density plastic with 90% void space, storing and regulating stormwater runoff. The photo to the right is an example of permeable pavers installed along Park Valley Drive in the Sligo Park Hills neighborhood near Takoma Park.



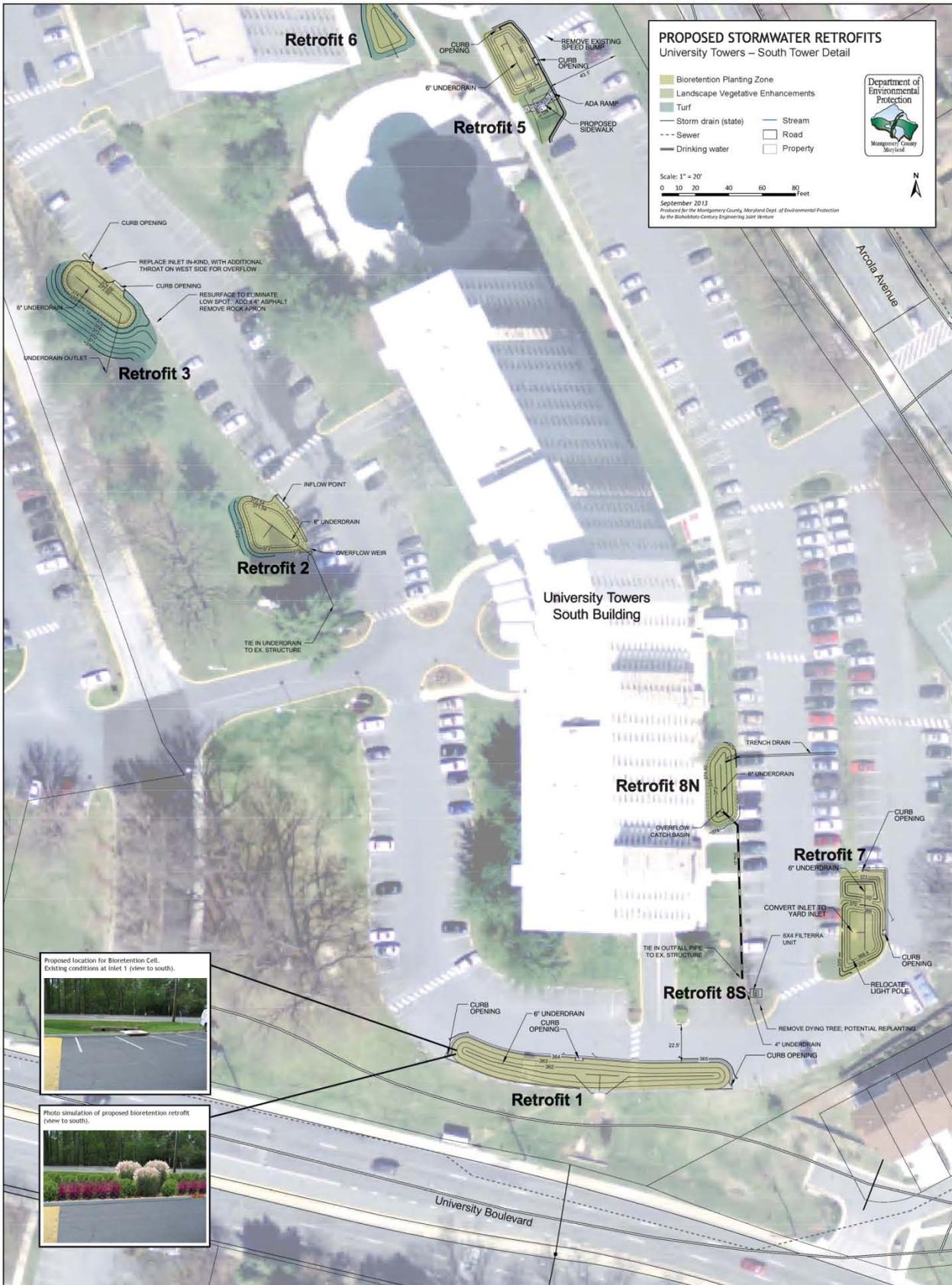
Permeable Pavers Installed in the Sligo Park Hills Neighborhood

Implementation Process at University Towers

1. UT-HOA board makes a decision on whether to allow DEP to design and construct stormwater facilities.
2. DEP moves forward with design plans, working with representatives from UT to modify existing concept plans to address parking concerns and better capture drainage problems noticed on the site by UT residents.
3. UT representatives will have the opportunity at several key stages during the design phase to comment on the plans.
4. When plans reach the “60% completion phase”, UT will be asked to sign easements allowing DEP access to the property to construct and maintain the facilities.
5. A meeting with the UT board and residents will be held when plans are nearly complete to present final plans. Minor comments will be accepted, but no major changes will be allowed after this point unless an engineering concern is raised.
6. Once construction is underway it is expected to take **4 months to complete all 10 facilities**.
7. Once construction is complete, DEP will assume maintenance responsibility of all new stormwater facilities.

Other Questions and Issues in the Process

1. The erosion near the bus stop on University Boulevard is on UT property. The erosion was caused by the collective runoff from the UT property discharging from the 15 inch stormdrain outfall. While the erosion is on a WSSC easement (pg 15), WSSC has no obligation to assist UT with this problem. DEP may be willing to assist UT with the project while addressing stormwater issues on the site, but DEP does not have responsibility, jurisdiction or funding authorization to complete a project on UT property if not completed as part of a stormwater management project.
2. What is an “easement”? How do permanent easements differ from temporary easements? Easements are documents authorizing access to property for the purpose of completing work. Temporary easements are used more extensively; they are used for areas in which no permanent structures are placed, although grading changes or planting may occur in these areas. Permanent easements are required where permanent pipes or structures are placed and allow for future maintenance access.
3. Parking is a major concern for UT representatives. DEP understands this concern; since the inception of this project, DEP has adopted a greater variety of stormwater practices that have helped resolve this issue on other sites. DEP is willing to use these practices on the UT, such as permeable pavers, to reduce parking impacts.



Locations of Proposed Stormwater Facilities at the South Tower



Locations of Proposed Stormwater Facilities at the North Tower



Map of all existing and proposed stormwater facilities in the Breewood Watershed

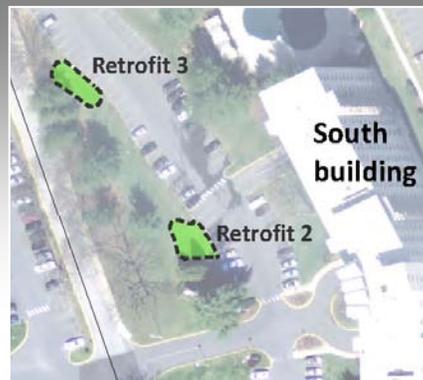
Retrofit 1

- Bioretention or Permeable Paver facility located in south parking lot
- Low point in Towers property
- 1.3 acre drainage area
- Bioretention takes 19 parking spaces / Pervious Pavers take 0 parking spaces
- Provide buffer between Towers and University Blvd.
- New curb will be provided
- Proximity to WSSC water line prevents retrofit placement in grass



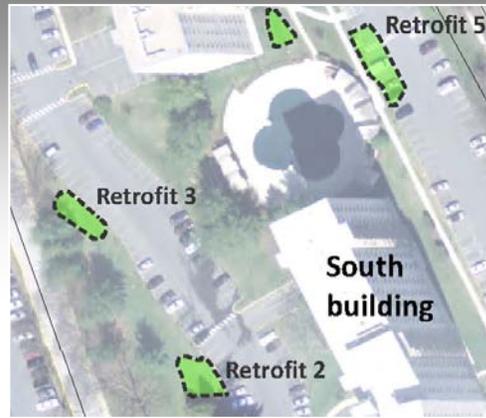
Retrofit 2

- Bioretention facility located west of parking lot
- Open grass area
- 0.6 acre drainage area
- No tree or parking impacts
- Low spot in parking lot to north will also be resurfaced



Retrofit 3

- Bioretention facility located west of parking lot
- Open grass area and slope
- 0.5 acre drainage area
- No tree or parking impacts
- Existing inlet will be replaced
- Slope on west side will be re-graded



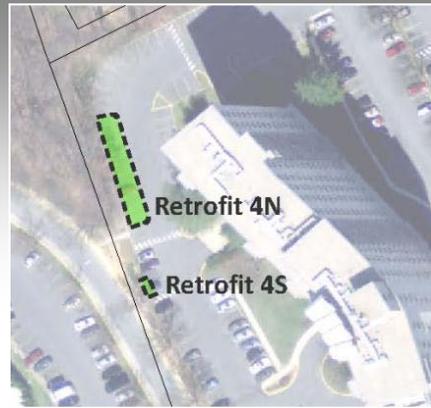
Retrofit 4N

- Bioretention or Permeable Pavers facility located in parking lot, west of north building
- 0.7 acre drainage area
- Bioretention takes up 11 parking spaces / Permeable Pavers take up 0 parking spaces
- Terraced planter design
- Complement existing stand of trees on west side
- No tree impacts
- New curb will be provided



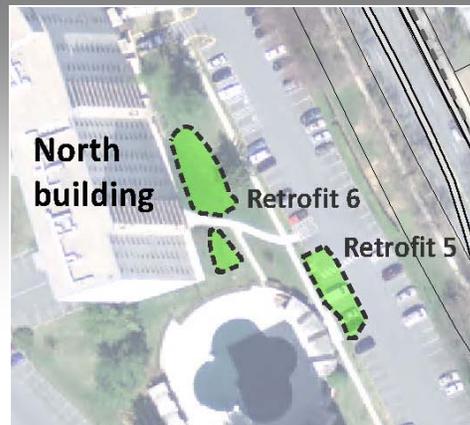
Retrofit 4S

- Filterra tree box located west of parking lot, behind curb
- 0.25 acre drainage area
- No tree or parking impacts
- Precast concrete box, 12' x 4'
- Adjacent to existing inlet



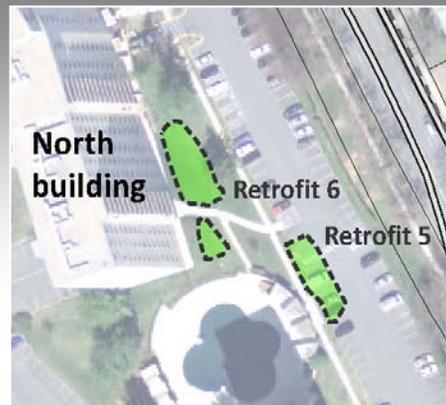
Retrofit 5

- Bioretention or Permeable Paver facility located in parking lot next to pool entrance
- 0.4 acre drainage area
- Bioretention takes up 9 parking spaces / Permeable Pavers take up 0 parking spaces
- Planted area near pool entrance
- New ADA ramp will be provided between parking lot and sidewalk
- New curb will be provided



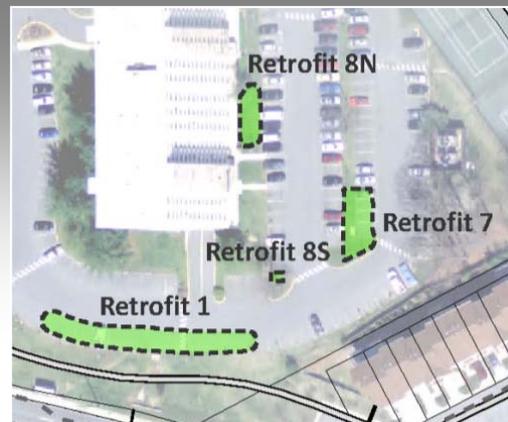
Retrofit 6

- Bioretention facility located in existing grass swale west of parking lot
- 0.8 acre drainage area
- Two cells, one on each side of sidewalk
- No permanent impacts to sidewalk
- Planted area near pool entrance



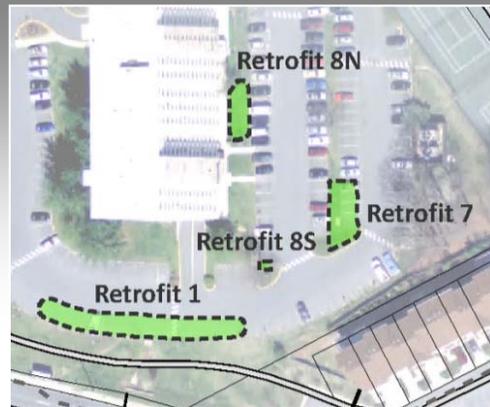
Retrofit 7

- Bioretention or Permeable Pavers facility located in eastern parking lot
- 0.5 acre drainage area
- Bioretention takes up 5 parking spaces / Permeable Pavers take 0 parking spaces
- Light pole will be relocated
- New curb will be provided



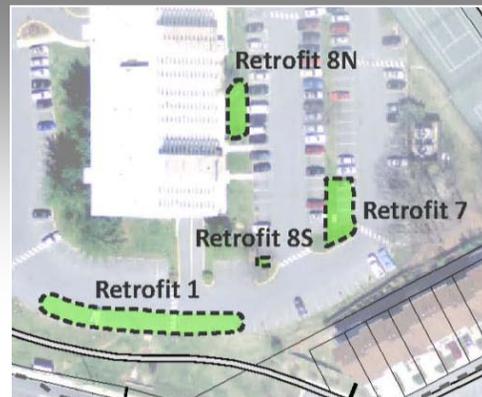
Retrofit 8N

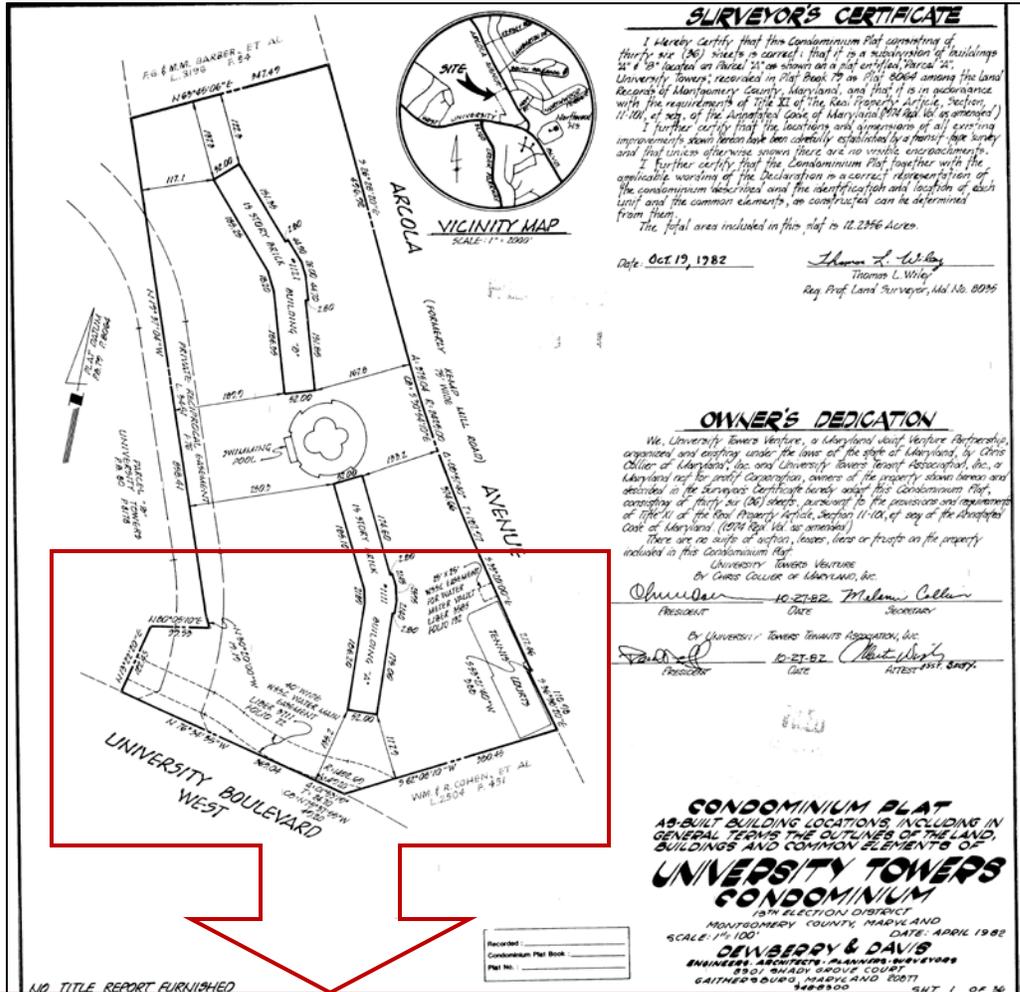
- Bioretention facility located west of parking lot
- Between curb and sidewalk
- 0.5 acre drainage area
- No tree or parking impacts
- Cell can be lined to address proximity to building



Retrofit 8S

- Filterra tree box located southwest of parking lot, behind curb
- 0.1 acre drainage area
- No parking impacts
- Existing tree is dying; can be replaced
- Precast concrete box, 6' x 4'
- Adjacent to existing inlet





SURVEYOR'S CERTIFICATE

I hereby certify that this Condominium Plat representing of thirty six (36) units is correct, that it is a subdivision of a building 22' x 68' located on Parcel 21 as shown on a plat entitled, 'Parcel 21', University Towers, recorded in Plat Book 79 on Page 806d among the Land Records of Montgomery County, Maryland, and that it is in accordance with the requirements of Title 21 of the Real Property Article, Section 17-101, of the Annotated Code of Maryland (M&D Vol. 20, amended) 17-101.

I further certify that the locations and dimensions of all existing improvements shown herein have been carefully established by a permit tape survey and that unless otherwise shown there are no visible encroachments.

I further certify that the Condominium Plat together with the applicable wording of the Declaration in a correct representation of the condominium described and the identification and location of each unit and the common elements, as constructed, can be determined from this Plat.

The total area included in this plat is 12.2356 Acres.

Date: Oct 19, 1982
 Thomas L. Wiley
 Reg. Prof. Land Surveyor, Md. No. 8095

OWNER'S DEDICATION

We, University Towers Venture, a Maryland Joint Venture Partnership, organized and existing under the laws of the State of Maryland, by Chris Cohen, of University Towers Tenant Association, Inc., a Maryland not for profit Corporation, owners of the property shown herein and decedent in the Surveyor's Certificate hereby adopt this Condominium Plat, consisting of thirty six (36) units, pursuant to the provisions and requirements of Title 21 of the Real Property Article, Section 17-101, of the Annotated Code of Maryland (2014 Real Vol. 20, amended).

There are no suits of action, lease, liens or trusts on the property included in this Condominium Plat.

University Towers Venture
 by Chris Cohen, of University Towers Tenant Association, Inc.
 Chris Cohen 10-27-82 Malena Cella
 President Date Secretary
 De University Towers Tenant Association, Inc.
 David D. 10-27-82 Chris Wiley
 President Date Attest, Prof. Surveyor

CONDOMINIUM PLAT
 AS-BUILT BUILDING LOCATIONS INCLUDING IN GENERAL TERMS THE OUTLINE OF THE LAND, BUILDINGS AND COMMON ELEMENTS OF
UNIVERSITY TOWERS CONDOMINIUM
 3RD ELECTION DISTRICT
 MONTGOMERY COUNTY, MARYLAND
 SCALE: 1" = 100' DATE: APRIL 1982
CEWBERY & DAVIS
 ENGINEERS ARCHITECTS PLANNERS SURVEYORS
 8501 SHADY GROVE COURT
 GAITHERSBURG, MARYLAND 20878 - SHT. 1 OF 36

