



10 August 2009

**BOWIE CITY HALL + POLICE STATION**  
**Bowie, MD**

**PERVIOUS PAVEMENT**

**City Council Worksession June 22, 2009 @ 8PM**

Reference: Slide presentation to the Bowie City Council by Chaney Enterprises (Audrey Scott and Steve Tripp) about pervious pavement. City Council inquired Grimm + Parker why product was not implemented in the New City Hall.

Grimm + Parker response:

- a. There are two existing stormwater lakes; one regional stormwater lake at the southern edge boundary and a smaller Town Center's stormwater quality pond to the immediate west. Since there are already two nearby existing stormwater management facilities, the new site utilized the larger pond for all quantitative controls. Qualitative controls are still utilized around the site and incorporate LID devices where space is available. The use of pervious pavement would have resulted only in the reduction of qualitative management on-site, as quantitative management is provided in the large lake.



*Fig. 1 Bowie City Hall Site Plan*

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- b. Test borings indicate the site is underlain by silty sand (SM) which would be conducive to the use of pervious pavement. However, the groundwater level indicated a high groundwater table at the time of the investigation that would have caused a premature failure of the pavement.

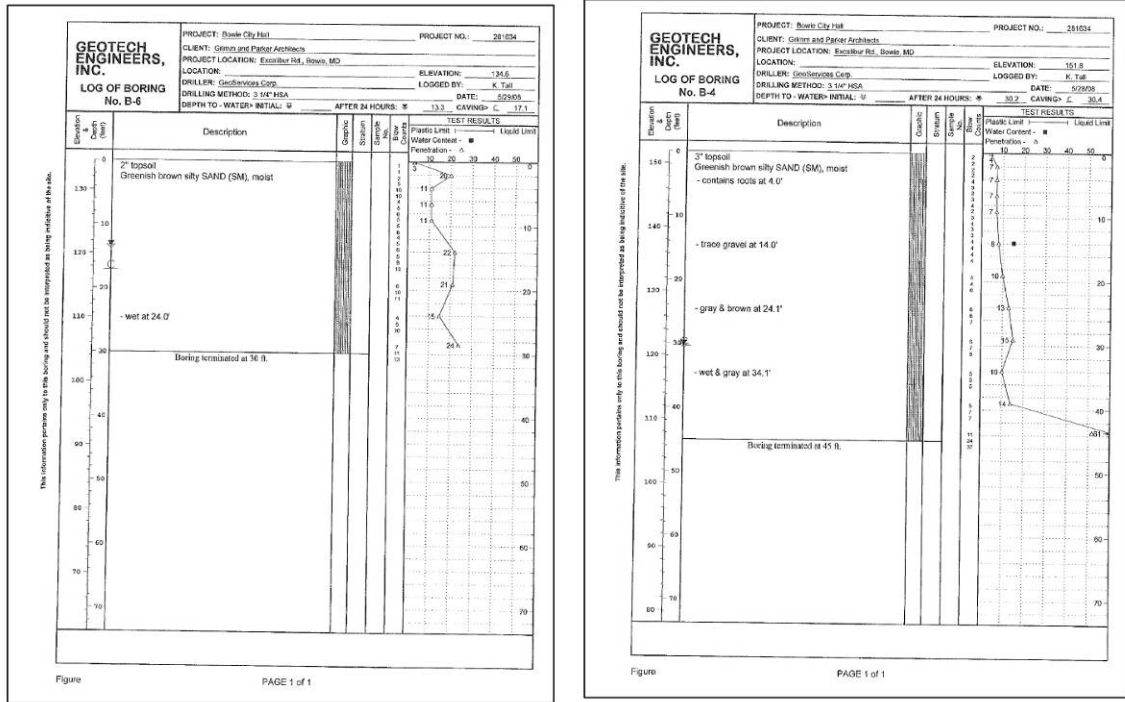
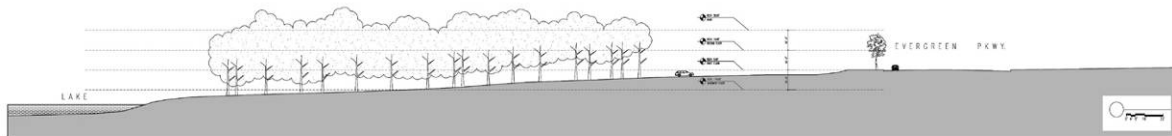


Fig. 2 Bowie City Hall Geotechnical Soil Report

- c. The steep grades of the site drive aisles would limit the locations where we could implement pervious pavement (typically, pervious pavement is not placed on grades steeper than 3-5%)



- d. At the end of the design development phase, the cost estimate indicated that the project was approximately \$2M over budget. Therefore, any inclusion of pervious pavement, which is more expensive than conventional pavement, was not discussed further.

**Questions from the City Council with Follow Up Responses from the Bowie City Hall design team.**

1. What is the building maintenance cost impact if pervious pavement is incorporated? This is based on less heat island effect which in turn less exterior light.

**Response:** *“Concrete surfaces, both pervious and conventional, have a much high albedo than comparable materials. The inherently light color of concrete naturally reflects heat and light. Studies have shown as much as 30% savings in lighting costs over other pavement types due to concrete pavement’s reflectivity.”* [www.PerviousPavement.org](http://www.PerviousPavement.org)



*Fig. 3 (from [www.perviouspavement.org](http://www.perviouspavement.org))*

2. Provide pros and cons lists on using pervious pavement on Bowie City Hall.

<b>Pros</b>	<b>Cons</b>
Reduce amount of on-site stormwater qualitative controls	Time and cost: Will need to re-calculate drainage areas, re-design stormwater management utility plans, and resubmit for permit which is a lengthy process in the city of Bowie / PG County (submitted SDP & SWM on Sept 08, just receiving mylar approval June 09 – about 9 months). We could assume that revisions for permit may be expedited.
Higher albedo than asphalt	Areas that are intended to receive pervious concrete would need to be protected during construction, thus limiting the areas on-site for contractor parking, staging and material storage.
Easier long-term maintenance (i.e. no confined space entry)	High groundwater could have caused an early failure of the pavement
	Pervious pavement requires that it be swept at least twice a year to allow it to operate effectively.
	Not recommended for use everywhere on-site (only in parking areas), thus the site would have looked broken-up.
	Pervious concrete is not conducive to some types of shoes with heels.
	Depth of stone under pavement would have to extend to existing grade

3. Can G+P review limited use of pervious pavement for Bowie City Hall and what is the impact?

**Response:** We have reviewed the limited use of pervious pavement as per the following options to incorporate pavement in limited areas on-site:

Option 1: Provide pervious pavement at sidewalk along Excalibur Road, approximately 1,600 SF.



Fig. 4 Option 1

**Impact:** This sidewalk is in the right-of-way and would need approval from the City. Area would need to be protected during construction to limit sediment runoff across this sidewalk. This will not achieve additional LEED points, but will add cost to the project.

Option 2: Provide pervious pavement at sidewalk near the Police entrance, approximately 2,500 SF. Area is fairly flat.



Fig. 5 Option 2

**Impact:** This is a viable option, but consideration should be given to potential problems with shoes with small heels as this is the main entrance to the police facility. This will not achieve additional LEED points, but will add cost to the project.

4. Include the cost impact for maintenance of the designed Contech storm filters.

**Response:** Maintenance will need to be provided as required. Typically, the cartridges in the filters need to be replaced every year or two, but this depends on the pollutant loading, amount of rainfall etc. Contech has two options: a cartridge exchange (\$150/cartridge) or a cartridge replacement (\$210/cartridge). This site requires 150 cartridges, assuming they need to be replaced every two years, the cost would be \$31,500 per every two years.

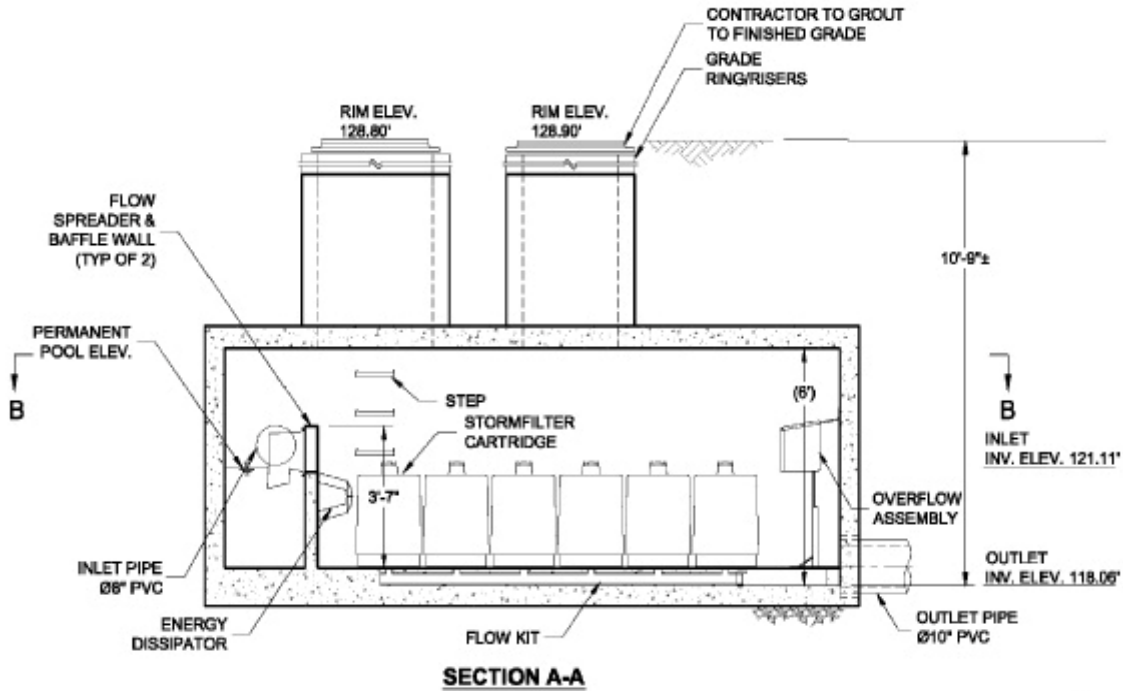


Fig. 6 Detail from Bowie City Hall

## CONCLUSION

Trend in design is leaning toward pervious pavement. However, each site should be analyzed if pervious pavement as well as what type of porous pavement is appropriate. In the new Bowie City Hall site, since there were already two existing stormwater lakes, the use of pervious pavement would have only resulted in a small reduction of qualitative management on-site. High groundwater table present, as well as steep grades were some of the reasons why porous pavement was not integrated into the site design.