Permitting for the Greening of Paved Areas

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I. INTRODUCTION

This proposal will discuss the options available to the City of Harrisburg in dealing with current stormwater issues and impervious surfaces. Specifically, this proposal will focus on the current city ordinances regulating off-street parking and landscaping. These sections may be amended to improve the frequency at which developers construct green infrastructure on their properties while also providing for a more administrable code to regulate by. Amendments will give developers a clear direction of Harrisburg's policies, as well as incentives to adopt these policies.

This paper will first discuss the current state of the Harrisburg city code and the interplay between stormwater management and parking areas, including the landscaping in and around these areas. Second, it will discuss the application of these ordinances as they stand, and how the proposed amendments can help resolve emerging stormwater issues while also providing environmental and aesthetic benefits to the local community. The third section of this paper will examine how other jurisdictions have addressed the interplay between stormwater and parking areas. Lastly, this paper discusses the key policy issues that present themselves when determining the value of the proposed amendments.

II. OPPORTUNITIES ASSOCIATED WITH GREENING PAVED AREAS – A LOOK AT HOW BEST MANAGEMENT PRACTICES WILL HELP FIX HARRISBURG'S CURRENT PROBLEMS

There are numerous opportunities associated with the greening of the City's paved parking areas. Most notably, greener development will benefit Harrisburg by addressing existing stormwater issues. The implementation of greener technologies will help relieve the stress currently being placed on the City's stormwater management infrastructure.

The City of Harrisburg's stormwater management system is termed a Combined Sanitary Waste and Stormwater System.[1] The problems that currently exist are attributable to rapid stormwater runoff entering the City's stormwater management system. When large volumes of stormwater infiltrate the City's stormwater system in a relatively short period of time, the system becomes overloaded and is unable to manage all of the waters entering it. The system's design allows for excess stormwater to enter the Susquehanna River and nearby waterways without treatment. This discharge into nearby waterways is done to prevent the backup of stormwater and sewage into housing and buildings.

The effects of this discharge can be seen in the water chemistry of these local waterways. The result is an increase in levels of total dissolved solids, nitrogen, and other chemicals that are hazardous to the City's residents and the environment.[2] Methods that reduce the rate and volume of stormwater entering the stormwater management system will help to reduce or eliminate these overflow events and the pollution that occurs.

Among these methods that can be implemented are infiltration structures such as bioswales, rain gardens, and permeable paving. The Harrisburg code has defined these structures as "Best Management Practices," or "BMPs."[3] The construction of these applications is not new to many developers, making them readily available as an effective means for reducing the stress on stormwater management systems. The effectiveness of BMPs stems from their ability to reduce the rate at which stormwater infiltrates the stormwater management system. BMPs capture stormwater directly landing on their surface, as well as stormwater from surrounding impermeable surfaces. These BMPs then divert large volumes of stormwater away from

[1] CAPITAL REGION WATER, *available at* http://capitalregionwater.com/green-infrastructure-plan/
[2] NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, *available at* http://www.dec.ny.gov/chemical/8468.html
[3] HARRISBURG, PA., CODE § 9-901.9 (2013).

traditional drainage openings and release captured stormwaters at a much slower and controlled rate. This slowed release allows the stormwater management system more time to handle the influx of stormwaters, thereby reducing the possibility of an overflow event.

The amount of stormwater captured depends on the surface area it is collected from. One inch of rainfall per ten square feet of surface area yields approximately six gallons of water.[4] Harrisburg's rainfall for the year 2013 totaled 42.63 inches.[5] The amount of stormwater generated annually that year from a ten square foot area in Harrisburg would then total almost 256 gallons of water.[6] From this example, we can see how effective BMPs can be at reducing stormwater runoff.

City structures such as parking areas, as well as the landscaped portions of these areas, are ideal locations for constructing BMPs. BMPs such as bioswales and rain gardens can replace current landscaped areas while still preserving aesthetic values. These structures are landscaped depressions that collect stormwater runoff from the surrounding impervious surfaces. Each bioswale or raingarden is commonly made up of a layered design, often consisting of an underdrain, a permeable sand/soil mix layer, and a top layer of rock and/or vegetation.[7] This layering system helps to filter debris particles and other pollutants, while simultaneously reducing the rate and volume of water entering the stormwater system.

As stated above, these reduced rates allow the stormwater management system more time to absorb and handle stormwater runoff, thereby reducing the likelihood of an overflow event. However, even in the event that an overflow does occur, the water entering our waterways will

[4] 10,000 RAIN GARDENS PROJECT, *available at* http://raingardens.spawnusa.org/calculating-stormwater-runoff.html
[5] NATIONAL WEATHER SERVICE FORECAST OFFICE, 2013 Harrisburg, Pa Annual Climate Report, *available at* http://www.nws.noaa.gov/climate/index.php?wfo=ctp –
[6] (Annual Harrisburg rainfall of 42.63 inches) x (6 gallons per inch) = 255.78 total gallons of stormwater
[7] DAUPHIN COUNTY CONSERVATION DISTRICT, Best Management Practices Fact Sheet, *available at* http://www.dauphincd.org/swm/BMPfactsheets/Bioretention%20Area%20fact%20sheet.pdf

be cleaner due to the filtering properties of the bioswales and rain gardens. Many of the sediments and pollutants that would otherwise enter the waterways will have already been removed.

In addition to bioswales and rain gardens, permeable paving offers similar benefits. Permeable paving is just as it sounds, a type of pavement with porous properties that will allow for the infiltration of water. Permeable paving offers the same filtration benefits as bioswales and rain gardens,[8] while also having the ability to collect stormwater from a greater surface area. This allows for even greater reductions in stormwater runoff rates. The stormwater can also enter a much larger subsurface holding area that will further reduce the rate at which stormwater enters the stormwater management system.[9]

Overall, bioswales, rain gardens, and permeable paving can help the City reach its goal of reducing the stresses placed on its stormwater management system. These BMPs reduce the rate and volume entering the stormwater system, reducing the likelihood of overflow events. They also remove pollutants and sediments from the stormwater before reaching the treatment facility, or in the event of an overflow, the waterways. The total effect of these benefits will result in both cleaner waterways and reduced water treatment costs.

III. WHY A REVISED ORDINANCE IS NEEDED

The City of Harrisburg has taken many steps towards achieving a greener infrastructure throughout its city. It has done so through the passing of ordinances intending to reduce stormwater runoff and the strains stormwater can place on the city's public facilities. However, gaps in the current city code continue to exist.

[8] INTERLOCKING CONCRETE PAVING INSTITUTE, Sustainability and Interlocking Concrete Pavements, *available at* http://www.icpi.org/sustainable
[9] Id.

A. Current City Stormwater Management Regulation

The current Harrisburg city code recognizes the need to reduce stormwater runoff.[10] Specifically, Chapter 9 of the code identifies that increased stormwater runoff associated with development causes an increase in the public cost associated with managing stormwater.[11] To help reduce these costs as well as the issues stormwater presents, Harrisburg adopted an overall framework in Chapter 9 for addressing stormwater challenges in the city.

A brief historical explanation is necessary to fully understand Chapter 9 in its entirety. The Pennsylvania Department of Environmental Protection, identifying stormwater management as a state concern, implemented the Stormwater Management Act of 1978, also known as Act 167.[12] This Act provides for the regulation of land and water uses for stormwater management purposes.[13] This Act encourages the local planning and management of stormwater in order to protect the public health, safety and welfare.[14] It further states that the purpose of this act is to encourage the management of stormwater consistent with the Commonwealth's duty as trustee to preserve the values of the environment for the people, as proscribed by Article 1 Section 27 of the Pennsylvania Constitution.[15] As a result of Act 167, county and local governments of Pennsylvania are required to participate in the establishment of stormwater management plans.[16]

The City of Harrisburg appropriately adopted Chapter 9 in response to the requirements set forth in Act 167, and as such, has already made considerable strides towards adopting better stormwater management policies. Chapter 9 applies to all areas of the City code, as well as all

[10] HARRISBURG, PA., CODE § 9-901.2
[11] Id.
[12] Pa. DEP, 32 P.S. § 680.2.
[13] Id. at § 680.5
[14] Id, at § 680.2
[15] Id. at § 680.3; Pa. Const. art. I, § 27.
[16] Pa. DEP, 32 P.S. § 680.6.

regulated activities taking place within the City.[17] Notably, Chapter 9 subjects all regulated activities[18] to certain stormwater management requirements.[19] Every regulated activity must submit, to the City of Harrisburg, a stormwater management plan for the development site.[20] This plan must show that measures will be in place to meet the volume and rate control requirements, as further described by Chapter 9, Sections 903.3 and 903.4.[21] The regulated activity may not commence until the City issues written approval of the proposed stormwater management plan.[22] Review fees must be paid to the City to help fund and staff the review of these stormwater management plans submitted by developers.[23] The amounts of these fees are determined by the City of Harrisburg.[24]

Chapter 9 also states that "stormwater management BMPs[25] shall be designed, installed, implemented, operated, and maintained to meet the purposes and requirements of" Harrisburg's Chapter 9, including the reduction of stormwater rate and volume.[26] Developers are also required to minimize the creation of impervious surfaces in order to promote groundwater discharge.[27]

In addition to adopting policies and imposing requirements on developers to implement effective stormwater management practices, Chapter 9 provides technical guidance for doing

[17] HARRISBURG, PA., CODE § 9-901.5
[18] Regulated activities are defined in Chapter 9 as "any earth disturbance activity or any activity that involves the alteration or development of land in a manner that may affect stormwater runoff." HARRISBURG, PA., CODE § 9-901.9
[19] HARRISBURG, PA., CODE § 9-903.1.
[20] Id. at § 9-903.1(A)(1).
[21] Id. at § 9-903.1(A)(3).
[22] Id. at § 9-903.1(A)(2).
[23] Id. at § 9-915.2.
[24] Id. at § 9-915.1.
[25] "BMPs," also stated as "Best Management practices" are defined by the Harrisburg City Code as activities, facilities, and designs that are used to manage stormwater. They are grouped into two general categories, being structural and nonstructural. Structural BMPs refer to bioretention areas, permeable paving, or other structures which allow for the infiltration of stormwater. Id. at § 9-901.9. The author of this proposal focuses on structural BMPs as a means for addressing Harrisburg's stormwater needs.
[26] Id. at § 9-903.1(C).
[27] Id. at § 9-903.1(E)(2)(d).

so.[28] Appendices B and C provide some narrative on practices that should be used to reduce the volume and rate of stormwater runoff. Lastly, Chapter 9, Section 917.2 provides an outline for what developers seeking to install BMPs must do for the purposes of operation and management of these structures.[29]

With the overarching policies and regulations found in Chapter 9, it is obvious that Harrisburg has an interest in addressing existing stormwater issues. Chapter 9 expressly states it applies to all sections of the code; however, some sections may be subject to ambiguity or suffer from an absence of language necessary to successfully incorporate Chapter 9. These sections include those regulating landscaping of parking lots[30] and drainage standards of off-street parking.[31]

1. Landscaping Requirements of Parking Lots

The current landscaping requirements of parking lots are found in Chapter 7, Section 307.12.[32] This ordinance states that any development or expansion of five or more parking spaces shall require the planting of shade trees along the edge of the paved areas.[33] It further sets requirements for the installation of plant screens, fencing, and the planting of deciduous trees.[34] The City code also requires that curb cuts must be at all points of ingress and egress, subject to approval by the City Engineer.[35]

[28] Id. at § 9, Appendices B and C.
[29] Id. at § 9-917.2.
[30] Id. at § 7-307.12.
[31] Id. at § 7-327.11
[32] The City of Harrisburg should also note that the language found in Section 7-307.11 is very similar to that in 7-307.12. Section 7-307.11 pertains to the landscaping requirements of new developments in general. The author believes the City would be best served by considering substantially the same proposed amendments for this section as well.
[33] Id. at § 7-307.12(a)
[34] Id. at § 7-307.12(b) and (c).
[35] Id. at § 7-327.11(b).

Reading these design standards in their entirety, it is clear that a developer must at the minimum provide shade trees, in addition to installing a plant screen and curbing. While landscaping around these parking areas provides aesthetic benefits and furthers some green initiatives, the ordinance fails to capitalize on the role these landscaped areas can play in reducing stormwater runoff. It is unclear whether the ordinance allows for the installation of BMPs in landscaped areas. It is also unclear whether curb cuts allowing for stormwater runoff to enter the landscaped areas may be located at points other than egress and ingress.

Even though Chapter 9 expressly states it is to apply to all sections of the Harrisburg City Code, it may be argued that the lack of express language in Chapter 7, Section 307.12 lessens the rigidity of Chapter 9 requirements, or even makes them unenforceable when developing off street parking lots. The vagueness of the relation between these chapters may result in disputes between local officials and developers.

Rather than allow the interaction of Chapter 7, Section 307.12 and Chapter 9 to be argued, it is advised that an amendment be made to Chapter 7 that would prevent potential disputes and provide for a more administrable city code. This can be accomplished through the express incorporation of Chapter 9 into Chapter 7, Section 307.12. The opportunity to incentivize development of BMPs also takes shape with this amendment. As express language incorporating Chapter 9 is included, the requirement to submit review fees is also expressly required of the developer. The City has the opportunity to offer reduced review fees in the event a developer proposes a project that exemplifies the policies set forth in Chapter 9. This incentivizes the developer to implement BMPs at their development site. In addition to these incentives, the City may also give priority to applications proposing the use of BMPs. This would further encourage

the adoption of greener development practices because developers would have access to expedited permitting process.

If amended, the effect of expressly incorporating Chapter 9 policies and requirements into Chapter 7, Section 307.12 makes it clear that all developers are subject to the text of Chapter 9. Developers will need to fully consider the effects of their project on stormwater rate and volume. It will also expressly grant developers greater latitude when evaluating how best to manage stormwater at their property. Once the stormwater management plan is completed by the developer and submitted to the City Engineer, the City is granted the ability to enforce the policies it has set in place. The City Engineer will have the express ability to accept or deny a stormwater management plan as inadequate. The City will also be able to enforce the operation and maintenance of BMPs because the developer will have entered into an operation and maintenance agreement, as required by Chapter 9, Section 917. Lastly, offering discounted review fees for a project not only incentivizes the adoption of these practices but promotes the City's goals and policies as well.

Overall, an amendment expressly incorporating Chapter 9 into Chapter 7, Section 307.12 forecloses the possibility of vagueness. Offering discounted review fees for projects exemplifying Chapter 9 policies will promote development in a way that accelerates the resolution of current stormwater issues. The City Engineer will also be able to direct development in a way that is in accord with the City's stormwater management needs.

2. Permeable Paving

The Drainage Standards for Off-Street Parking are located at Chapter 7, Section 327.11. These drainage standards apply only to parking lots, loading facilities, driveways, and vehicle

sales display areas.[36] This ordinance requires that each of these areas be surfaced with asphalt, concrete, or decorative paving blocks. Furthermore, this ordinance requires the construction of parking lot curbs at all points of ingress and egress, subject to approval by the City Engineer.[37] The City Engineer also has the ability to approve stone parking areas if the area is to be used for industrial purposes and is located at the rear of the building, or if the area is used for recreational parking purposes.[38]

Arguably, these accepted forms of surface materials may include permeable pavement or concrete. This interpretation is further supported by the fact that Chapter 9 states its applicability includes all regulated activities. However, the City can prevent potential argument over the applicability of Chapter 9 by expressly incorporating it into Chapter 7, Section 327.11. Doing so creates a more administrable city code while at the same time increasing the enforceability of Chapter 9.

Additionally, the city can further incentivize the installation of permeable paving through discounted review fees. Conditions for developers to meet such as designating a majority of the development site's footprint to the installation of permeable paving help further the City's goals while reducing the stresses currently placed on its stormwater management system. As mentioned above, this reduction in review fees encourages developers to explore environmentally conscious alternatives. In addition to these incentives, the City may also give priority to applications proposing the use of permeable paving.

[36] Id. at § 7-327.11(a) (as amended 2014).
[37] Id. § 7-327.11(b).
[38] Id. § 7-327.11(d).

Overall, these amendments address emerging issues within the city. There may be other means of reducing the footprint of parking lots within the City of Harrisburg,[39] however these changes to the existing code allow for measureable benefits to the City as well as incentives for the developers.

B. Legal Authority

The City of Harrisburg is governed by the 3rd Class City Code. Within the 3rd class city code, the city is permitted to, by ordinance, "plan and provide for projects, infrastructure and improvements as a means of managing and controlling stormwater, which may include, but need not be limited to, the transport, storage and the infiltration of stormwater and other innovative techniques."[40] Therefore, the City is granted the ability to amend these ordinances as proposed due to this authority granted.

C. Social, Environmental, and Economic Benefits of Best Management Practices

The proposed amendments will provide a number of benefits to the City's residents and businesses. The most measureable benefit will be that of an improved and cleaner environment for downtown Harrisburg, which will also create social and economic benefits.

By increasing the ability to reduce stormwater rate and volume through the use of BMPs, the number of overflow events that pollute the City's waterways will be reduced. Furthermore, even if an overflow event were to occur, the stormwaters entering the City's waterways will be cleaner as a result of the BMPs providing some filtration prior to the waters entering the stormwater management system. This filtration process that occurs as stormwater passes through BMPs will also reduce the strains placed on local treatment facilities, thereby reducing treatment

[39] Many municipalities allow for shared parking between commercial and residential buildings. However, Harrisburg has recently leased its public parking facilities to PK Harris. Part of this lease agreement forbids the City of Harrisburg from taking any action which may reduce the demand for these parking facilities. Therefore, Harrisburg cannot consider any shared parking ordinances at this time.

[40] PA 3rd Class City Code - 53 P.S. § 38401.

costs. Overall, the increased use of BMPs will result in cleaner waterways. It will promote the environmental integrity of these waters while also increasing their aesthetic value.

The increased aesthetic value of the waterways is likely to create social value as well. An increase in the quality of the environment will encourage residents to become more active outdoors. Residents will commute to parks and areas adjacent to these waterways as they discover newfound enjoyment for the cleaner environment. The increase in foot traffic around these areas, as well as along the routes to and from these areas, will also have economic benefits.

Business surrounding these outdoor areas will enjoy increased patronage from individuals now enjoying the outdoors. The increase in customer base will boost the economics of local businesses. As revenues increase, the quality of local businesses will also increase as business owners reinvest their profits in either existing or new business. Overall, these amendments will create a ripple of benefits far greater than the direct benefit of reduced stormwater issues.

IV. HOW THIS PROBLEM HAS BEEN ADDRESSED IN OTHER JURISDICTIONS

Similar to Harrisburg, the City of Lancaster has adopted language within their city code recognizing the need to address stormwater management issues.[41] The identified means of addressing these issues includes the increased use of permeable surfaces.[42] However, unlike Harrisburg, Lancaster has expressly allowed developers to use permeable paving or concrete for parking surfaces. The relevant language of this jurisdiction's ordinance states:

> As an option, porous concrete or asphalt may be used with appropriate subbase materials when stormwater infiltration is proposed. For additional information on the use of porous paving materials, refer to the City of Lancaster Specifications and Guidelines Manual and Stormwater Management Ordinance.[1]
> [1]:Editor's Note: See Ch. 260, Stormwater Management.

Lancaster, Pa. Code § 202-2 and Footnote 1.

[41] LANCASTER, PA., CODE § 260 *et seq*.
[42] Id. at § 260-303.

The reader should also note that the above ordinance expressly implicates Stormwater Management Ordinance Chapter 260 of Lancaster's City Code. While there is no requirement to use these alternative methods, it expressly grants the developer the option to use alternatives while simultaneously directing the developer to the stormwater management section of the code.

The City of Lancaster has also developed a tiered fee arrangement to incentivize the use of permeable surfaces. This ordinance imposes a stormwater management fee based on the total square footage of impermeable surface at the property.[43] As the amount of impermeable surface increases, the fee which the property owner must pay also increases.[44] This incentivizes the developer to reduce the amount of impermeable surface at their site.

Some developers may even enjoy "Stormwater water credits," as allowed by Lancaster's ordinance Section 261-9.[45] This ordinance provides credits to landowners whose property adopts practices that improve stormwater management.[46] These credits can then be used to offset stormwater management fees that may be imposed against the developer.[47] Plainly stated, a property owner may enjoy further discounts in municipal fees if they adopt BMPs that help the City address common stormwater issues.

The Township of Cranberry has taken an even more aggressive stance in the regulation of nonresidential use properties. This municipality requires that impervious surfaces not exceed more than 70% of a lot area or site.[48] It further identifies that this includes asphalt or concrete

[43] Id. at § 261-4, 261-5.
[44] Id. at § 261-5, 261-7.
[45] Id. at § 261-9.
[46] Id. at § 261-9.
[47] Id. at § 261-9
[48] TOWNSHIP OF CRANBERRY, PA., CODE § 27-309.

paved areas.[49] Addressing parking lots, Cranberry requires that a minimum of 10% of the parking lot area be pervious.[50]

The above are two different approaches a municipality can elect to use based on the policy choice they feel is best. On one side of the spectrum we have the imposition of additional fees with the ability to reduce the amount of those fees if certain BMPs are adopted and constructed on the property. On the opposite end, we have strict requirements that must be met before a project can commence. The best policy choice for a city will likely depend on current ongoing development in the city and the ease at which officials want to allow development.

V. KEY POLICY ISSUES

A. Incentivizing the Adoption of Best Management Practices

As with any new development, incentives will help drive the adoption of these new techniques. Developers will be more likely to implement these practices if they are afforded reduced permitting fees or an expedited permitting process. Alternatively, setting strict guidelines will force developers to meet these requirements before development can begin. In the case of Harrisburg, allowing development to continue while offering incentives for the use of BMPs is most likely the better policy choice. This avoids setting strict guidelines that may otherwise drive developers out of the city and into less regulated areas.

One way Harrisburg can incentivize the construction of BMPs is to allow reduced review fees for projects. As stated earlier, Chapter 9 allows the city to establish review fees in order to cover the costs associated with reviewing a developer's stormwater management plan.[51] By allowing review fee discounts for projects implementing the City's Chapter 9 policies, the City

[49] Id. at § 27-309.
[50] Id. at § 22-612.
[51] HARRISBURG, PA., CODE § 9-915.

incentivizes developers to implement these policies and practices so they may take advantage of the discount.

The City can also incentivize adoption of these practices by giving preferential treatment to such projects. Allowing expedited review of stormwater management and development plans is beneficial to a developer because they will potentially incur fewer costs they would not otherwise be able to recoup from the finished development project (including taxes, mortgage and interest payments). It allows the developer to begin site development sooner and avoid these costs. Overall, fee reductions and expedited reviews both save the developer time and money, which will act as an incentive for both the adoption of greener practices and further development.

The difference between the ordinances in cities that use incentives and those that increase site development requirements is most likely due to differences in developmental characteristics. Cranberry Township is one of the fastest developing areas in the United States.[52] It is home to corporate giants like Westinghouse Electric Company. Imposing strict site development guidelines is acceptable because of the massive pull this area has on developers. The City of Lancaster on the other hand does not have the same rate of development. While Lancaster has begun to enjoy new development and attention for its sustainable practices, it is most likely not in a position to turn away developers at this point. Therefore a better alternative is to provide incentives for constructing BMPs in the form of Stormwater water credits rather than deny developers the ability to develop all together.

For the foregoing reasons, it is encouraged that Harrisburg adopt a similar incentive scheme rather than stricter guidelines. Harrisburg currently needs to encourage development in the city rather than place further regulatory roadblocks. Reducing review fees and providing

[52] PITTSBURGH POST-GAZETTE, Cranberry Building Boom Goes On and On, *available at* http://old.post-gazette.com/pg/05363/629025.stm

preferential treatment for projects that implement the greater use of BMPs continues to promote development while also encouraging these developers to consider their environmental impacts.

B. Maintenance of Best Management Practices

Policy considerations involving individual property rights will also be a factor. Disputes often arise over the means in which a local government can control a landowner's ability to exercise their property rights. This issue becomes even more evident when a landowner proposes the construction of a feature that will affect municipal facilities. A city has an interest in protecting the facilities and functions of the city for the greater good of all area residents. Expressly incorporating language that requires landowners to enter into an operation and maintenance agreement can resolve these potential issues.

Landowners entering into these agreements are also likely to take greater pride in their property. By electing to construct BMPs and therefore subject their property to the operation and maintenance requirements, the landowner has already chosen to take a greater interest in their property. They have already shown a willingness to move towards sustainable technologies.

The proposed amendments expressly incorporating Chapter 9 provide the framework for these operation and maintenance agreements.[53] It removes any doubt that these landowners are subject to maintaining their property while also providing the City of Harrisburg with further assurances that newly constructed BMPs will not place further strains on the current infrastructure.

Additionally, general maintenance issues associated with permeable paving include cleaning of permeable surfaces in order to preserve their porous properties, as well as snow removal given the winter climate of Harrisburg. Annual or semi-annual vacuuming is suggested as the appropriate method for cleaning permeable paving. High pressure water cannot be used on

[53] Harrisburg, Pa., Code § 9-917.2

the surfaces as it may force particulates into the porous cavities and reduce permeability.[54] The reduced need for water should be seen as a benefit, as it reduces the cost of cleaning while also reducing the strain on existing water supplies.

Salt applications when dealing with removal of snow should also be limited. The permeability of the paving may allow for salt to enter groundwater at an increased rate. This has potential to create further issues of pollution if the water from these permeable surfaces is not managed appropriately by a stormwater management system. Additionally, sand that would otherwise be applied to aid with vehicle traction should be avoided, as the finer particles of sand may enter the pores of the pavement, reducing its permeability. While these factors may cause some difficulty when removing snow, it is important to note that the paved surfaces are limited in size. Any permeable paving applications will be limited to parking lots where vehicle speed and accident rates are reduced.

C. Integrated Decision-Making

Aligning the policies of the city and delineating maintenance requirements also increases the level of communication between city developers and officials. This communication promotes a more collaborative process when determining the best use of the property and will likely lead to some form of fact finding and analysis by all parties involved. Furthermore, this communication will increase awareness and access to educational materials.

Overall, integrated decision-making between all parties will help officials and developers establish a view for the city. Doing so is important as the City of Harrisburg works towards overhauling its current city code in hopes of developing a more sustainable and livable city.

[54] LOW COUNTRY PAVER, Maintenance & Cleaning of Permeable Pavers, *available at* http://lcpaver.com/maintenance-cleaning-of-permeable-pavers/.

VI. CONCLUSION

Harrisburg has already made great strides towards achieving sustainability. The current city code contemplates a progressive city with effective stormwater management practices. It is no surprise that Harrisburg continues to search for ways in which it can reduce its footprint on the environment. Amending the proposed sections of the Harrisburg city code will continue to push the City towards this goal.

Incentives will communicate to the regions developers that Harrisburg continues to be at the forefront of progress. It will encourage these developers to be innovative with their projects and to be a part of a reinvigorated community. Local residents will also see the City's progress as they begin to enjoy the cleaner waters. Friendships will be forged as increasing numbers of people enjoy the social aspect of our parks. Business owners will become more engaged as patrons begin to enter local stores on their walk or bike ride to these parks.

Technology can always be developed, but without people to use it, the true value of it may be lost. Even more so, the opportunity may be lost. Providing incentives for developers to adopt these technologies will help us realize the value of the technology, and the magnitude of the opportunity.

APPENDIX

BILL NO. _____ of 2014

Moved by: _____

An Ordinance amending Title 7 Section 7-327.11 and 7-307.12 of the Codified Ordinances of the City of Harrisburg, by expressly incorporating Chapter 9 policies and allowing for monetary incentives to developers proposing projects that implement the policies of Chapter 9.

WHEREAS, the Council of the City of Harrisburg hereby finds and declares that implementation of greener technologies is necessary for the continued growth and vitality of the City; and

WHEREAS, the City has a need to reduce the volume and rate at which stormwaters enter the City's stormwater system, and

WHEREAS, the implementation of green technologies will help the City achieve its goal of reducing stormwater runoff, and

WHEREAS, a permit process that allows and encourages the installation of these green technologies will further this goal.

WHEREAS, it is necessary to provide developers the express option to elect such alternative forms of technology in order to encourage and implement sustainable practices within the City.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF HARRISBURG, AND IT IS HEREBY ENACTED BY AUTHORITY OF THE SAME, as follows:

Additions indicated by <u>underscoring,</u> deletions indicated by [bracketing].

SECTION 1. Section 7-327.11 and 7-307.12 of the Codified Ordinances are hereby amended as follows:

7-327.11 DRAINAGE STANDARDS

* * *

(b) All drainage shall be subject to approval by the City Engineer. All parking lots shall have curb cuts approved by the City Engineer at all point of ingress or egress, or as otherwise may be necessary to allow for stormwater runoff to enter BMPs in accord with Chapter 9 of this Harrisburg City Code.

(c) Except for landscaped areas, all portions of required parking, loading facilities and driveways shall be surfaced with asphalt, concrete or decorative paving block or such other material as may be approved by the City Engineer.

(d) The policies and practices set forth in Chapter 9 of this code are expressly incorporated herein. Developers are encouraged to adopt the practices set forth in Chapter 9 of this code as an alternative, or in addition to, traditional surface applications.[55]

(e) The City of Harrisburg may discount the review fees required by Chapter 9, Section 915.1, in the event a proposed project exemplifies the policies and procedures set forth in Chapter 9. The City Engineer shall establish guidelines for determining when a project may be deemed exemplary. The City Engineer may consider the total impervious surface area of the project site when establishing these guidelines.

(f) The City Engineer may grant expedited review to projects that propose the use and implementation of Chapter 9 policies and practices.

[55] Lancaster Ordinance – Chapter 202 Parking lots § 202-2 Minimum standards and applicability

7-307.12 LANDSCAPING REQUIREMENTS FOR PARKING LOTS

(a) Any development or expansion of five (5) or more new parking spaces shall be required to provide shade trees within or immediately around the edges of paved areas. This requirement shall not apply to development of underground parking or multi-level parking. The City may permit some or all of these required trees to be planted within the public right-of-way.

(b) One deciduous tree shall be required for every three thousand (3,000) square feet of paved area.

(c) All parking lots shall be required to install a plant screen with a minimum height of three (3) feet along the length of the lot line. Any fencing shall be placed on the inside of the landscaped or plant screen area.

(d) The policies and practices set forth in Chapter 9 of this code are expressly incorporated herein. Developers are encouraged to adopt the practices set forth in Chapter 9 of this code as an alternative, or in addition to, the requirements of 7-307.12(a)-(c).

(e) The City of Harrisburg may discount the review fees required by Chapter 9, Section 915.1, in the event a proposed project exemplifies the policies and procedures set forth in Chapter 9. The City Engineer shall establish guidelines for determining when a project may be deemed exemplary. The City Engineer may consider the total impervious surface area of the project site when establishing these guidelines.

(f) The City Engineer may grant expedited review to projects that propose the use and implementation of Chapter 9 policies and practices.

SECTION 2. DELEGATION

Appropriate City officials are authorized to take such actions as are necessary to effectuate these ordinances.

SECTION 3. SEVERABILITY

If any provision, sentence, clause, section or part of this ordinance or the application thereof to any person or circumstance is for any reason found to be unconstitutional, illegal or invalid by a court of competent jurisdiction, such unconstitutionality, illegality or invalidity shall not affect or impair any of the remaining provision, sentences, clauses, section or parts of these ordinances. It is hereby declared as the intent of the Council of the City of Harrisburg that these ordinances would have been adopted had such unconstitutional, illegal or invalid provision, sentence, clause, section or part not been included herein.

SECTION 4. REPEALER

All ordinances or parts of ordinances in conflict herewith be and the same are hereby repealed.

SECTION 5. EFFECTIVE DATE.

This ordinance shall take effect in accordance with the law.

Seconded by: _____