Parking Lot & Public Access Areas Lighting Standards

Section: _____ Lighting Standards

Intent: To limit the potential negative effect of parking lot illumination and signage on adjoining properties and the public right-of-way; to provide adequate light levels to create a safe , secure environment; to minimize light pollution and energy consumption; and to incorporate lighting fixtures that are consistent in style to the overall development.

1. All onsite public parking areas, aisles and accessways for any non-residential use shall be provided with a minimum of one half {.5} foot candles of light at any point on the ground. Carry over illumination off-site shall not be greater than one {1} foot candle of light measured at a distance of ten {10} feet from any property line.

2. All Land Development applications shall provide an illumination plan reflecting compliance with this standard of this section.

3. Light standards {poles} within a parking area shall not be located more than 200 feet apart and are limited in height to no greater than twenty five {25} feet in height. {I would suggest that you consider light standards that are shorter in height on the smaller lots or lots that adjoin residential properties}. Light standards {pole} can be limited to as short as 12 feet, but the shortest that I have ever worked with is 18 feet in height.

4. All exterior lighting shall be installed in such a manner so as not create direct glare on to adjoining residential use properties.

5. All lighting shall be arranged so as to protect streets or highways from direct glare or create a hazard or interference of any kind within the right-of-way.

6. All light fixtures must have recessed bulbs and/or be equipped with a glare shielding device so that the point of light {bulb} is not visible from any location off the site.

7. Lighting permitted in connection with signage shall be equipped with shielding devices and/or hoods to concentrate the illumination upon the area of the sign and to prevent glare onto a street, highway or adjoining property.

8. All exterior signage is required to be turned off one half {1/2} after the closing of the non-residential use.

9. Commercial Developments greater than two {2} acres in total lot area shall have their parking lot lighting installed in three phase writing so that a minimum of two/thirds {2/3} of the lighting can be turned off within one half {1/2} hour of closing.

10. Commercial Developments less than two {2} acres in total lot area shall have their parking lot lighting installed in two phase writing so that a minimum of one/half {1/2} of the lighting can be turned off within one half {1/2} hour of closing.

11. Exterior lighting on non-residential properties installed for the purpose of security or safety must not have the light source {bulb} that is not visible from any off-site location.

Section 426 Crosswalks.

A. Crosswalks shall be clearly delineated at all intersections and marked to the width of the largest contributing sidewalk or trail. In no case shall crosswalk width be less than the minimum width required by PennDOT

B. Crosswalks and their transition to adjacent sidewalks or trails shall be designed to facilitate access and use by persons that are physically disabled, in compliance with the American with Disabilities Act (ADA).

C. Crosswalk patterns, materials, and colors shall be consistent with applicable Township and PennDOT standards.

D. Pedestrian signalization shall be provided at intersections where traffic signals exist.

E. Where a crosswalk is located at an arterial street or mid-block location, ~~or collector street~~, the Board of Commissioners may require one or more of the following measures as described in the Pennsylvania Traffic Calming Handbook based upon the recommendation of the Township Planning Commission and Engineer.

   1. High-visibility Crosswalks.
      i. High-visibility crosswalks shall comply with PennDOT Publication 111 standards for Type C – Perpendicular crosswalks.
   2. Decorative Crosswalks.
      i. Decorative crosswalks shall comply with PennDOT Publication 111 standards for decorative crosswalks.
      ii. Final details for any decorative crosswalk proposed in any Township right-of-way shall be subject to the approval of the Public Works Department prior to installation.
   3. Curb extensions, bulb-outs, or raised median.
   4. Raised speed table crosswalks.
   5. Other pedestrian safety methods deemed be appropriate by the Board of Commissioners as recommended by the Township Engineer.

Section 427. Trails and Pathways.

A. Trails and pathways shall have adequate access for use by all residents of the development or, preferably, the general public.

B. Trails shall be installed if they are indicated on the parcels proposed for subdivision or land development as shown on the Springfield Township Master Trail Plan, the Montgomery County Primary Trail Network, or the most recently adopted Springfield Township Comprehensive Plan.

C. When a subdivision or land development includes or abuts an existing trail ~~or a proposed trail with public access customarily used by pedestrians, bicyclists, and/or equestrians as delineated in the Township's most recently adopted open space or recreation plans~~, the applicant shall make provision for the continued ~~recreational~~ use of the trail subject to alterations of the course of the trail within the boundaries of the development under the following conditions:

1. Existing rights-of-way may be relocated reasonably if a connection with a right-of-way on an adjoining property is maintained. ~~The points at which the trail enters and exits the tract shall remain unchanged.~~
2. The proposed alteration will not diminish the trail design and function.
3. Where an existing trail runs coincidentally with the paved road intended for use by motorized vehicles, landscaping and other physical structures shall be used to increase the separation between the trail and the road.

D. Trail widths shall be as follows:
   1. Multi-use trails shall be a minimum of ten (10') ~~twelve (12')~~ feet wide with a cleared area of five (5') feet in width on either side.
   2. A pathway for walking or bicycling shall be a minimum of six (6') feet wide with a cleared area of two (2') feet on either side.

~~E. The Township may require, as a condition of Final Plan approval, the guarantee of public access and improvement of trails when the site is traversed by or abuts an existing trail or a trail proposed in an adopted open space or trail plan of the county, municipality, or adjacent municipality.~~

F. The Board of Commissioners may request, as a condition of Final Plan Approval, public easements or rights-of-way for the use of pedestrians, bicyclists and/or equestrians in the following situations:
   1. When a subdivision or land development lies adjacent to a park, school, commercial/business district, other subdivision, or other pedestrian destination.
   2. When a trail is shown in the township's adopted open space, recreation, or trails plans.
   3. Where the right-of-way continues an existing trail or bridle path.
   4. Where the right-of-way will connect with an existing right-of-way on an adjoining property.
   5. Where the right-of-way will extend to another street or alley, or to the boundary line of a property capable of further subdivision and there is no convenient alternate access route.

~~G. When existing developed parcels adjacent to a proposed subdivision or land development allow for dedicated public access through a defined area for the purpose of connecting to a county or municipal trail, this connection should be continued through a dedicated public access way to serve the proposed development.~~

~~H. When a subdivision or land development lies adjacent to a park, school, or other pedestrian destination, pedestrian connections should be made to that destination.~~

I. All trails and pathways shall be constructed before occupancy of residences and other buildings adjoining the trail.

J. When trails are intended for public use, they shall be protected by a permanent access easement on the properties on which they are located. The width of the protected area

in which the trail is located shall be a minimum of twenty (20') feet. The language of the easement shall be to the satisfaction of the ~~Board of Commissioners upon recommendation of the~~ Township Solicitor.

~~K. Any of the methods cited under [Section 406 concerning open space ownership] may be used either individually or in combination, to own and perpetually preserve trail easements provided in fulfillment of this Article.~~

~~L. Trails and pathways shall have adequate access for use by all residents of the development or, preferably, the general public.~~

~~M. Trails shall be landscaped in accordance with the specifications described in Section 433. Landscaping shall help delineate the route of the trail and screen surrounding properties from trail users.~~

~~N. The land area permanently designated for trails for public use may be credited toward any open space requirement as described in the Zoning Ordinance.~~

O. No trail shall be designed with the intent to accommodate motorized vehicles except for emergency or maintenance access.

Section 428. Bicycle Amenities

A. Bicycle amenities, including bicycle lanes, sharrows, and multipurpose pathways shall be located as consistent with the township comprehensive plan. Amenities proposed within the public right-of-way shall be subject to the approval of the Director of Public Works and the Traffic Safety Unit. ~~Bicycle lanes shall be located on a new or upgraded streets classified as an Arterial or a Major Collector.~~

B. Bicycle lanes and sharrows shall be designed and dimensioned to comply with applicable PennDOT and FHWSA Manual on Uniform Traffic Control Devices standards.

C. Multipurpose pathways shall be designed and dimensioned to comply with the standards for trails and pathways

~~D. Bicycle lanes shall be marked with appropriate striping, reflectors, and signage in accordance with Federal Highway Administration guidelines.~~

~~E. Bicycle lanes shall be a minimum five (5') feet in width.~~

~~F. Proposed bicycle lanes shall meet PennDOT requirements.~~

G. Where the roadway narrows, signage and pavement markings shall be added to warn drivers and bicyclists to help them avoid bicycle-automobile conflicts.

H. Drainage improvements shall be made where necessary to eliminate puddles and sediment deposit on the section of the road used by bicyclists.

Section 427. Water Supply.

A. An adequate public water supply shall be provided by the developer for the proposed use and for fire control.

B. The design for public water supply facilities shall be in accordance with PADEP Water Supply Manual and the specifications of the utility providing water service.

C. Fire hydrants shall be provided by the developer and installed subject to the Township's approval of locations.
    1. In the event that a fire hydrant or hydrants are installed to service public or private streets in a subdivision or land development, the developer shall deposit funds or securities in escrow sufficient to cover the cost of the annual fire hydrant rental charge imposed by the water utility provider for a prospective period of 10 years of hydrant rental.
    2. The developer shall be responsible for the continued payment imposed by the water utility provider.

~~D. Applicants shall provide a safe, reliable, and adequate water supply from public water service to support the intended uses approved as part of a development plan. When water is to be provided by means other than private wells owned and maintained by the individual owners of lots within a subdivision or land development, applicants shall present evidence to the Board of Commissioners that the subdivision or land development is to be supplied by Aqua PA or other suitable water supplier. A copy of a Certificate of Public Convenience from the Pennsylvania Public Utility Commission or an application for such certificate, a cooperative agreement, or a commitment or agreement to serve the area in question, whichever is appropriate, shall be acceptable evidence.~~

~~E. When individual private water supply wells are proposed, the applicant shall provide evidence that adequate potable water supplies are reasonably available for each lot. This can be performed in the following ways:~~
    ~~1. Performance of a groundwater study in accordance with Section 803;~~
    ~~2. Drilling and testing water supply wells for each lot; or~~
    ~~3. Providing suitable documentation based upon local geology and adjoining wells demonstrating availability of potable water in the vicinity of the proposed lots.~~

~~F. Fire hydrants shall be located at accessible points throughout the subdivision and land development and shall be located according to the Township Engineer in consultation with the Township Fire Marshall. As a general rule, hydrants should be located at each street intersection and at intermediate points as recommended by the Township Fire Marshall. Generally hydrant spacing may range from 350' to 600' feet depending upon the area being serviced. The type and methods of construction to be employed in the installation of fire hydrants shall be in accordance with current State and local regulations.~~

~~G. Public Water Supply Facilities Design. The design for public water supply facilities shall be in accordance with PADEP Water Supply Manual, the specifications of the utility providing water service, or Article Six–Construction and Engineering Standards.~~

Section 428. Wastewater Disposal.

A. All lots created through subdivision and all proposed land developments must have a suitable method for the management of wastewater which shall comply with the rules and regulations established by the PADEP, as amended and revised.

B. Sanitary Sewers.

1. Wherever practicable, the owner shall install sanitary sewers and sewer laterals in conformity with the specifications found in Chapter 81, Sewers, of the Springfield Township Code.
2. If outfall sewers are not available but are planned and have been shown in the most current ten-year growth area as set forth in the 537 Sewage Facilities Plan of the Township, a system of sewers, together with all necessary laterals extending from the main sewer to the street right-of-way line, shall be installed and capped as determined by the Township Engineer.
3. If sanitary sewers are to be installed at a later time, easements shall be provided on the preliminary, final, minor, and land development waiver plans.
    a. The plans shall show the dedication of appropriate easements across private property for later construction and maintenance of sewers.
    b. A deed of easement shall be recorded for each such easement.

C. On-Lot Sewage Disposal Systems.

1. Existing on-lot sewage disposal systems that will remain in use shall be inspected and certified as to their satisfactory functioning, in accordance with Sewer Authority, ~~the Municipal Sewage Facilities Plan~~, Montgomery County Health Department, and PADEP standards. Malfunctioning systems shall be repaired or replaced with systems designed and constructed to current standards.
2. Wherever it is impracticable to connect with Township sewers, new on-lot sewage systems may be permitted upon application and approval by Montgomery County and the PADEP and in accordance with the rules, regulations, procedures, and fees approved by the Sewer Authority. Copies of the Sewer Authority's applicable rules, regulations, procedures and fees shall be available for inspection in the office of the Authority during regular business hours.

D. Sewage Facilities Design. The design and installation of domestic sewage facilities shall be done in accordance with the Pennsylvania Domestic Wastewater Facilities Manual prepared by PADEP, Article Six of this ordinance, and Chapter 81 of the Springfield Township Code.

~~E. All lots created through subdivision or all proposed land developments must have a suitable method for the management of wastewater which shall comply with the rules and regulations established by the PADEP, as amended and revised.~~

~~1. The applicant shall demonstrate suitable management of wastewater for each lot of a subdivision or land development through one of the following ways:~~

a. If the site falls within the sewage facilities growth area established in the Act 537 Sewage Facilities Plan, the following options should be pursued in the order listed:

1) Where suitable collection system infrastructure and treatment facilities are reasonably available with adequate capacity, the applicant shall connect the proposed lots or land development to the collection system and treatment plant after complying fully with any permit or fee requirements established by the owner of the collection and treatment facility.

2) Where suitable collection system infrastructure and treatment facilities are not reasonably available with adequate capacity to allow the applicant to connect the proposed lots or land development, the applicant may petition the owner of the collection system and treatment facility to extend the system or rectify the inadequacies of the treatment facility to enable future connection.

3) Where connections cannot be made to the system by the applicant or through an expansion of the system by its owner, the applicant may install capped sewers in accordance with the specifications for public sewers in this ordinance which shall extend from each lot or building into a system that will terminate at the property boundary in a manner in which future connection to public sewers can be made at some point in the future. Each lot of the land development would have to be serviced with suitable on-lot disposal systems or a community system approved by the Montgomery County Health Department or DEP until such time as the capped sewers are connected. In limited situations, holding tanks may be used in accordance with township and Pennsylvania laws.

b. If the site does not fall within the sewage facilities growth area established in the Springfield Township Act 537 Sewage Facilities Plan, the following options should be pursued :

1) The applicant may request a revision to the Springfield Township Sewage Facilities Plan to add the site to the sewer growth area. If the revision is not made, the applicant should pursue the on-lot disposal options.

2) The applicant shall evaluate the feasibility of on-lot disposal options in the following order:

i) Community spray irrigation.

ii) Individual lot spray irrigation.

iii) On-lot subsurface disposal.

iv) Community subsurface disposal.

v) Alternative or experimental community or on-lot disposal.

vi) Community system stream discharge disposal.

vii) Individual lot stream discharge disposal. 2.

2. Sewage Facilities Plan Revision. Planning approval shall be obtained for the selected option from the DEP or Montgomery County Health Department.

3. Sewage Facilities Plan Revision Exceptions include:

a. Minor subdivisions where no additional lots are created. This includes lot line adjustments, simple conveyances, and mortgage subdivisions. The impact of existing wastewater facilities shall be considered in the placement of new lot lines in these types of subdivisions.

b. Non-building lots, provided a properly executed Request for Planning Waiver and Non-building declaration has been submitted to and approved by DEP. Where the waiver is approved by DEP, the Final Plan and the deed for the lot shall contain the following notation:

As of the date of this deed/ plot plan recording, the property/ subdivision described herein is and shall be dedicated to the express purposes of _____ use. No portion (or lot number(s)_____) of this property are approved by _____ Springfield Township or the Department of Environmental Protection (DEP) for the installation, construction, connection, to or use of any sewage treatment facility. No permit will be issued for the installation, construction, connection to, or use of any sewage collection, conveyance, treatment, or disposal system (except for repairs of existing systems) unless the municipality and DEP have both approved sewage facilities planning for the property/ subdivision described herein in accordance with the Pennsylvania Sewage Facilities Act (35 P.S. Sections 750.1 et seq.) and regulations promulgated thereunder. Prior to signing, executing, implementing, or recording any sales contract or subdivision plan, any purchaser or subdivider or any portion of this property should contact the appropriate officials of Springfield Township who are charged with administering the Sewage Facilities Act to determine the form of sewage facilities planning required and the procedure and requirements for obtaining appropriate permits or approvals.

F. Sewage Facilities Design. The design and installation of domestic sewage facilities shall be done in accordance with the Pennsylvania Domestic Wastewater Facilities Manual prepared by PADEP and Article Six Construction and Engineering Standards.

G. Existing on-lot sewage disposal systems that will remain in use shall be inspected and certified as to their satisfactory functioning, in accord with the Municipal Sewage Facilities Plan, Montgomery County Health Department, and DEP standards. Malfunctioning systems shall be repaired or replaced with systems designed and constructed to current standards

Section 429. Solid Waste Management.

A. All lots and land developments must contain proper facilities for the management of solid waste, including recycling. Residential developments with single family homes may manage solid waste through a curbside collection service.
B. Developments without regular curbside collection shall have solid waste collection containers within enclosures. Enclosures should be made of durable material. Solid Waste Storage Facilities shall be located in the following manner:
    1. Convenient to portions of the development where solid waste is generated.
    2. Setback from adjoining property and adjoining structures in accordance with the Zoning Ordinance.
    3. Accessible for trash collection trucks.
    4. Such that servicing of the storage containers shall not impede on-site or roadway circulation for pedestrians or vehicles.
    5. ~~Solid Waste storage may be placed near building service entrances or loading docks, but may not be placed in any area used for parking or loading requirements.~~
    6. ~~In apartment or condominium complexes with centralized waste storage, containers should be located in an area which is convenient to each grouping of ten (10) to fifteen (15) units or be located in a large enclosed facility at the entrance to the development.~~
    7. ~~During the servicing of these containers (up to 5 minutes) it is important that internal circulation at the site is not impeded.~~
C. ~~Operations. Trash storage containers should be serviced at least once a week. Recycling containers may be serviced at a less frequent interval. If a dumpster contains food it should be serviced every three days. A storage container should have tight fitting lids, secured at all times, and be leak free. It should also be cleaned out at least two (2) times a year.~~

Section 429. Stormwater Management and Drainage.

A. All subdivision and land development proposals shall comply with all applicable stormwater management ordinances of Springfield Township, including the Stormwater Management and Erosion and Sediment Control Ordinances, unless specifically excluded from the stormwater management plan requirement by Sec 28-7 of the Erosion and Sediment Control Ordinance.
B. All stormwater management systems should be designed in accordance with the Pennsylvania Stormwater Best Management Practices Manual published by PADEP. ~~the Springfield Township stormwater management ordinance and the Pennsylvania Stormwater Best Management Practices Manual.~~
C. Existing natural stormwater drainage systems should be preserved and incorporated into the overall site stormwater management system.

D. New stormwater conveyance and control devices should be designed to be compatible with natural site conditions.

E. Appropriate stormwater controls, best management practices, and conveyance facilities should be dispersed throughout the site and generally located close to the sources of stormwater release such as downspouts, culverts, and parking lots.

F. Unless the Township Engineer recommends an alternative approach, water should be drained to the streets rather than across lots within the subdivision or land development.

G. It shall be the responsibility of the applicant to obtain any stormwater easements required by the Board of Commissioners on, over or through other properties.

~~H. Phasing.~~

~~1. When subdivisions or land developments are submitted to the Township Engineer for approval in sections, a complete storm sewer design for the entire proposed subdivision and land development shall be submitted.~~

~~2. If only a section of a subdivision or land development is contemplated for construction, the submitted plans shall show how storm water from each section will be managed to protect adjacent properties. If temporary construction is required, the submitted plans shall include such structures.~~

~~I. Special Drainage Problems.~~

~~1. Discharge of Roof Runoff. Stormwater runoff from roofs shall not be discharged into the street right-of-way without approval by the Township upon review by the Township Engineer, nor concentrated onto adjacent properties. It shall be returned to sheet flow or discharged into a structure adequately designed and approved by the Township.~~

~~2. Drainage from Non-Natural Sources. Water originating from onsite machinery or filtration systems, such as air conditioning units, sump pumps, or other dry weather flow, wherever practicable, shall be discharged into natural watercourses on the property. The discharge of water from these sources into the street is prohibited.~~

~~3. Storm Drainage Directed Into an Adjacent Municipality. When storm drainage will be directed into an adjacent municipality, all provisions for accommodating such storm drainage shall be submitted to the governing body of that municipality for review.~~

~~J. Minimum grades inside stormwater basins and conveyance structures shall be two (2%) percent and maximum side slopes of any stormwater device should be 33 % percent (3:1 slope).~~

~~K. Appropriate stormwater controls, best management practices, and conveyance facilities should be dispersed throughout the site and generally located close to the sources of stormwater release such as downspouts, culverts, and parking lots.~~

~~L. Prior to the granting of final approval of any subdivision or land development plan, the Township must be satisfied through contractual arrangements that all stormwater facilities will be properly maintained. If all, or a portion, of the facilities will be on~~

property which will be conveyed to an individual homeowners association or any other eventual owner, the guarantees must be in such a form that they will carry through to the new owners.

M. If the land of the proposed subdivision or development will be conveyed to two or more separate owners, the applicant shall provide written assurance and deed restrictions to the Township that the stormwater management structures will be properly maintained by the owners or if acceptable to the Township, be dedicated to the Township, which shall then be responsible for maintaining the stormwater management structures.

N. Easements and Dedication. Where storm water or surface water will be gathered within the subdivision or land development and discharged or drained in volume over lands within or beyond the boundaries of the subdivision or land development, the applicant shall reserve or obtain easements over all lands affected. The easements shall be adequate for such discharge or drainage and for carrying off of such water and for the maintenance, repair, and reconstruction of the same, including the right of passage over, including vehicles, machinery, and other equipment for such purposes, and which shall be of sufficient width for such passage and work. The applicant shall offer the dedication, at no cost to the Township, drainage easements to the Township at the completion and stabilization of all improvements. If drainage easements are not accepted for dedication by the Township they shall be maintained by the owner of the property that uses them.

O. Properties shall be graded to secure proper drainage away from buildings and to allow the collection of stormwater in catch basins. Minimum two (2%) percent slopes away from structures shall be required.

P. Storm Sewers

1. Existing Storm Sewer Accessibility. Where existing storm sewers are reasonably accessible and of adequate capacity, subdivisions and land developments shall connect to the existing storm sewers.
2. All storm sewer pipes shall have a minimum diameter of fifteen (15") inches.
3. Drainage Easements. Drainage easements shall be provided to accommodate all storm drainage requirements and shall be a minimum of thirty (30') feet in width. Storm sewers, as required, shall be placed in the road right-of-way, parallel to the roadway and shall be designed as a combination storm sewer and underdrain if necessary. When located in undedicated land, they shall be placed within an easement not less than twenty (20') feet wide, as approved by the Township Engineer.

Q. Drainage Facilities Design Requirements. All drainage facilities shall be designed to adequately handle surface runoff and carry it to suitable outlets and shall be designed in accordance with the following minimum design standards.

1. All storm drains and drainage facilities such as gutters, catch basins, bridges, inlets, and culverts shall be installed and the land graded for adequate drainage as shown on the grading plan submitted and approved with the Final Plan.

Construction of these facilities shall generally conform with PennDOT Specifications Publication 408, latest version. Storm drains and appurtenances shall be required to be constructed by the applicant to take surface water from the bottom of vertical grades to lead water away from springs, and to avoid use of cross gutters at street intersections and elsewhere.

2. The existing points of natural drainage discharge onto adjacent property shall not be altered without the written approval of the affected landowners.
3. No storm water run-off or natural drainage shall be so diverted as to overload existing drainage systems, or create flooding or the need for additional drainage structures on the other private properties or public lands. In cases where additional stormwater flows will overload adjacent structures, the applicant shall be responsible for enlarging the facilities.
4. Manholes. Manholes shall be constructed at all changes in horizontal or vertical alignment and otherwise required in Section 609.
5. Location within Township Rights-of-Way. Storm sewer lines within street rights-of-way shall be placed at locations acceptable to the Township. They shall be protected by a cover of at least eighteen (18") inches.
6. Location within State Rights-of-Way. Drainage structures that are to be located within state rights-of-way shall be approved by PennDOT, and a letter from the Department indicating such approval shall be submitted to the Township.

Section 424, Crosswalks

Existing	None identified.
Model	Shall be clearly delineated at all intersections and marked to the width of the largest contributing sidewalk or trail. In no case shall the crosswalk width be less than 5'. Crosswalks and transition to the sidewalk shall be designed in compliance with the ADA. For crosswalks at arterial or collector streets, traffic calming measures may be required at the recommendation of PC and Engineer. • Textured Crosswalks • Pedestrian signalization at intersections with traffic signals • Curb extensions, bulb-outs, raised medians, raised crosswalks, raised speed table crosswalks or other pedestrian safety methods shall be considered.
Cheltenham	In no case shall the crosswalk width be less than the minimum width required by PennDOT.
Whitemarsh	Interior crosswalks may be required wherever necessary to facilitate pedestrian circulation and to give access to community facilities in blocks of over 1,000 feet in length. Such crosswalks shall have an easement width of not less than 20 feet and a paved walk of not less than four feet. They shall be clearly marked by bollards, paving material, signing, lights or similar provisions to ensure their visibility to motorists. *In the Village Commercial Districts* Crosswalks shall be provided at driveways and street intersections. • Shall be designed with curb bump outs to facilitate non-vehicular movement • Shall be differentiated to stand out from the cartwy by a variety of materials including stamped concrete, brick, Belgian block, colored asphalt, or similar. Materials and design shall be approved by the BoS. • Walkways shall connect all buildings in the district to each other in convenient routes, even across parking areas. • Sidewalks built within the road ROW and public access easements shall provide direct pedestrian access from the adjoining residential neighborhoods and commercial sites. • If required by the BoS, access between commercial areas and residential neighborhoods may be created by providing a gate in the fence and an improved pathway through the buffer planting • Stairs are allowed along walkways but alternate routes must be available for handicapped access.
L Merion	Crosswalk patterns, materials, and colors shall be consistent with applicable Township and PennDOT standards. Pedestrian signalization at intersections with traffic signals For crosswalks at arterial or collector streets or at a mid-block location, BoC may require the following traffic calming measures, giving consideration to the recommendation of the Engineer, Public Works Director, and Traffic Safety Unit • High-visibility or decorative crosswalks

	○ High-viz crosswalks shall comply with PennDOT Pub 111 standards for Type C – Perpendicular crosswalks ○ Decorative crosswalks shall comply with PennDOT Pub 111 standards and the following ▪ Shall consist of stamped asphalt with 8" cross-section, 7" of 25 mm Superpave base course and 1.5 inches of 9mm wearing course ▪ Final details shall be subject to Public Works Dept approval for any decorative crosswalk proposed in Twp ROW • Curb extensions, bulb-outs, or raised medians • Raise speed table crosswalks • Other methods deemed appropriate by the BoC as recommended by the Engineer

Section 425, Trails and Pathways

Existing	95-11E(1)(g) Sidewalks and /or a trail must be provided to the land being offered for dedication to allow all residents of the subdivision to have access to the proposed park and recreation facilities. 95-11I(4) Parking area landscaping shall be designed so as not to obstruct or interfere with pedestrian circulation. For example, landscaped islands should not be placed between parking spaces and building entrances unless pedestrian walkways across these islands are provided.
Model	When a development includes an existing or proposed trail with public access as delineated in the township's open space or recreation plans, the applicant shall make provision for the continued recreational use of the trail subject to alteration of the path within the development under the following conditions: • Entry and exit points shall remain unchanged. • Proposed alteration will not diminish design or function of the trail. • Where an existing trail runs coincidentally with the paved road intended for motor vehicles, landscaping and other physical structures shall be used to increase the separation of the trail and the road. Trail widths shall be • 12' for multiuse trails with minimum 5' clear on either side • 6' for walking or bicycling with minimum 2' clear on either side BoC may require guarantee of public access and improvement of trails as a condition of final plan approval when the site is traversed by or abuts an existing trail or a trail proposed in the open space or trail plan of the county, municipality, or adjacent municipality. When existing developed parcels adjacent to a proposed subdivision or land development allow for dedicated public access through a defined area for the purpose of connecting to a county or municipal trail, this connection should be continued through a dedicated public access way to serve the proposed development. When a subdivision or land development lies adjacent to a park, school, or other pedestrian destination, pedestrian connections should be made to that destination. All trails and pathways shall be constructed before occupancy of residences and other buildings adjoining the trail. When trails are intended for public use, they shall be protected by a permanent access easement on the properties on which they are located. The width of the protected area in which the trail is located shall be a minimum of twenty (20') feet. The language of the easement shall be to the satisfaction of the board of Commissioners upon recommendation of the Township Solicitor. Any of the methods cited under Section 406 concerning open space ownership maybe used either individually or in combination, to own and perpetually preserve trail easements provided in fulfillment of this Article.

	Trails and pathways shall have adequate access for use by all residents of the development or, preferably, the general public. Trails shall be landscaped in accordance with the specifications described in Section 434. Landscaping shall help delineate the route of the trail and screen surrounding properties from trail users. The land area permanently designated for trails for public use may be credited toward any open space requirement as described in the Zoning Ordinance. No trail shall be designed with the intent to accommodate motorized vehicles except for emergency or maintenance access.
Cheltenham	A. When a subdivision or land development includes an existing or a proposed trail with public access customarily used by pedestrians, bicyclists **as delineated in the Township's adopted Comprehensive, Open Space, or other plans**, the applicant shall make provision for the continued or proposed use of the trail subject to alterations of the course of the trail within the boundaries of the development under the following conditions: B2. Multi-use trails shall be 10 feet wide with a cleared area of five feet in width on either side.
Whitemarsh	None identified beyond sidewalks.
L Merion	Trails and pathways shall have adequate access for use by all residents/occupants of the development or, preferably, the general public. The Board of Commissioners may request, as a condition of final plan approval, public easements or rights-of-way for the use of pedestrians, bicyclists and/or equestrians in the following situations: • When a subdivision or land development lies adjacent to a park, school, commercial/business district, other subdivision, or other pedestrian destination; • When a trail is shown in the Township's adopted open space or recreation plans; • Where the right-of-way continues an existing trail or bridle path; • Where the right-of-way will connect with an existing right-of-way on an adjoining property; or • Where the right-of-way will extend to another street or alley, or to the boundary line of a property capable of further subdivision and there is no convenient alternate access route. When a subdivision or land development includes or abuts an existing or a proposed trail, the applicant shall make provision for the continued use of the trail subject to alterations of the course of the trail within the boundaries of the development under the following conditions: • Such rights-of-way may, at the option of the developer, be located adjacent to existing or proposed lot lines or in such a manner as to minimize any obstruction to the development. • Existing rights-of-way may be relocated reasonably if a connection with a right-of-way on an adjoining property is maintained. • The proposed alteration will not diminish the trail design and function.

	• Where an existing trail runs coincidentally with the paved road intended for use by motorized vehicles, landscaping and other physical structures shall be used to increase the separation between the trail and the road. For phased developments, a development timeline shall be provided as part of the final plan submission, subject to the approval of the Director of Building and Planning, describing when the trail or pathway will be provided relative to other site improvements and occupancy of the site. L. No trail shall be designed with the intent to accommodate motorized vehicles except for **micromobility devices**, emergency or maintenance access.

Section 426, Bicycle Routes and Bicycle Lanes

Existing	None identified.
Model	Bicycle lanes shall be located on new or upgraded streets classified as an Arterial or a Major Collector. Bicycle lanes shall • Be marked with appropriate striping, reflectors, and signage in accordance with FHWA guidelines. • By a minimum of 5' in width • Meet the PennDOT requirements Where the roadway narrows, signage and markings shall warn drivers and bicyclists to help avoid conflicts. Drainage improvements shall be made where necessary to eliminate puddles and sediment on the section of road used by bicyclists.
Cheltenham	When a subdivision or land development includes improvements to streets which have been specified on Bike Montco: The Bicycle Plan for Montgomery, or Township-adopted plans or maps to receive future bicycle infrastructure improvements, bicycle routes or lanes shall be created according to the road, the speed, and the applicant's frontage as indicated in the aforementioned plans.
Whitemarsh	Sidewalks and pedestrian paths shall be of a hard surface composition if heavy pedestrian or bicycle traffic will be served and shall be constructed according to Township specifications. An occasionally utilized footpath may utilize gravel, pine-bark chips, or other material approved by the Board of Supervisors.
L Merion	Bicycle amenities, including bicycle lanes, sharrows, and multipurpose pathways shall be located as consistent with the Township Comprehensive Plan and any official map adopted by the Board of Commissioners. Amenities proposed within the public right-of-way shall be subject to the approval of the Director of Public Works and the Traffic Safety Unit. General standards. All bicycle amenities shall comply with the following general standards: • Bicycle lanes and sharrows shall be designed and dimensioned to comply with all applicable PennDOT and FHWA Manual on Uniform Traffic Control Devices standards. Multipurpose pathways shall be designed and dimensioned to comply with the design standards contained in Chapter 155, Zoning. • Bicycle amenities shall be marked with appropriate pavement markings, reflectors, and signage in accordance with all applicable FHWA Manual on Uniform Traffic Control Devices and PennDOT standards. • Where the roadway narrows, signage and pavement markings shall be added to warn drivers and bicyclists to help them avoid bicycle-automobile conflicts.

Section 427, Water Supply

According to the most recent Board of Assessment data, 20 properties have private wells, 17 have no water supply, and 5 may have no water supply.

Existing	95-11B. All gas, water, electric and other mains, pipes and conduits, together with all service connection or laterals, shall be laid before the streets and roads shown on the plans are constructed and shall be located to minimize or eliminate flood damage and infiltration of floodwaters into the systems and discharges from the systems into the floodwaters.
Model	Applicants shall provide a safe, reliable, and adequate water supply from public water service to support the intended uses approved as part of a development plan. When water is to be provided by means other than private wells owned and maintained by the individual owners of lots within a subdivision or land development, applicants shall present evidence to the Board of Commissioners that the subdivision or land development is to be supplied by the Township Authority or other suitable water supplier. A copy of a Certificate of Public Convenience from the Pennsylvania Public Utility Commission or an application for such certificate, a cooperative agreement, or a commitment or agreement to serve the area in question, whichever is appropriate, shall be acceptable evidence. When individual private water supply wells are proposed, the applicant shall provide evidence that adequate potable water supplies are reasonably available for each lot. This can be performed in the following ways: • Performance of a groundwater study in accordance with Section 803; • Drilling and testing water supply wells for each lot; or • Providing suitable documentation based upon local geology and adjoining wells demonstrating availability of potable water in the vicinity of the proposed lots. Fire hydrants shall be located at accessible points throughout the subdivision and land development and shall be located according to the Township Engineer in consultation with the Township Fire Marshall. As a general rule, hydrants should be located at each street intersection and at intermediate points as recommended by the Township fire marshall. Generally hydrant spacing may range from 350' to 600' feet depending upon the area being serviced. The type and methods of construction to be employed in the installation of fire hydrants shall be in accordance with current State and local regulations. Public Water Supply Facilities Design. The design for public water supply facilities shall be in accordance with PADEP Water Supply Manual, the specifications of the utility providing water service, or Article Six–Construction and Engineering Standards.
Cheltenham	Removed standards for private wells.
Whitemarsh	Minimum pressure of 20 psi shall be provided at each house or other building to be connected to the water supply main. Where no public water is accessible, water shall be furnished by the developer on an individual lot basis. If wells are installed on each lot and the lot also contains its own sewage disposal facilities, the well shall be of the drilled type, cased and grout-sealed into the bedrock. The well will be required to have a production of not less than six gallons per minute as established by bailor tests and certified by the well driller. Before being placed in consumer

	use, it shall be disinfected by the use of sodium hypochlorite or other acceptable solutions and a sample bacteriological examination collected by a licensed water analyst.
L Merion	An adequate public water supply shall be provided by the developer for the proposed use and for fire control. The design for public water supply facilities shall be in accordance with PADEP Water Supply Manual and the specifications of the utility providing water service. Fire hydrants shall be provided by the developer and installed subject to approval of locations by the Township. • Furthermore, in the event that a fire hydrant or hydrants are installed to service public or private streets in a subdivision or land development, the developer shall deposit funds or securities in escrow sufficient to cover the cost of the annual fire hydrant rental charge imposed by the water utility provider for a prospective period of 10 years of hydrant rental. • The developer shall be responsible for the continued payment imposed by the water utility provider. No standards for private wells in SALDO.

Section 428, Wastewater Disposal

According to the most recent Board of Assessment data, 118 properties in Springfield have septic systems, 17 have no utilities, and 7 may have no wastewater disposal.

Existing	Sewers. Where connection with the Township sanitary sewer systems is practicable, the owner shall install sanitary sewers and sewer laterals in conformity with Township specifications for sanitary sewer construction before streets and roads shown on the plans are constructed. All gas, water, electric and other mains, pipes and conduits, together with all service connection or laterals, shall be laid before the streets and roads shown on the plans are constructed and shall be located to minimize or eliminate flood damage and infiltration of floodwaters into the systems and discharges from the systems into the floodwaters. Standalone Sewer Ordinance (Adopted 2016) • Sewer connections o Any building within 200 feet of abutting sewers shall secure a permit and make a connection at their own expense. o Buildings more than 200 feet from abutting sewers may be required as deemed necessary by Sewer Authority o Private residences not abutting the sewers may connect with a legally constructed private pipe. o Institutional or industrial properties not abutting on the sewer may be permitted to connect on terms and conditions prescribed by the Authority • On-Lot Disposal o Sewer Authority's Engineer may make rules, regulations, procedures and fees regarding on-lot sewage system. • Extension Connections shall be made only after application of a permit following terms and conditions approved by the Sewer Authority, and in the manner and type approved by the authority. Sewage facilities planning. All construction projects that propose either new, expanded plumbing/sewage facilities or a change in use require DEP review under the Pennsylvania Sewage Facilities Act (Act 537). No building permit, certificate of occupancy, final subdivision or land development approval, or other proposed construction approval may be issued until sewage planning has been approved by DEP through the issuance of a planning module approval or an exemption from planning, or until DEP has issued a letter stating that sewage planning is not required.
Model	All lots created through subdivision or all proposed land developments must have a suitable method for the management of wastewater which shall comply with the rules and regulations established by the PADEP, as amended and revised. The applicant shall demonstrate suitable management of wastewater for each lot of a subdivision or land development through one of the following ways: • If the site falls within the sewage facilities growth area established in the Act 537 Sewage Facilities Plan, the following options should be pursued in the order listed: • Where suitable collection system infrastructure and treatment facilities are reasonably available with adequate capacity, the applicant shall connect the proposed lots or land development to the collection system and treatment

plant after complying fully with any permit or fee requirements established by the owner of the collection and treatment facility.

- Where suitable collection system infrastructure and treatment facilities are not reasonably available with adequate capacity to allow the applicant to connect the proposed lots or land development, the applicant may petition the owner of the collection system and treatment facility to extend the system or rectify the inadequacies of the treatment facility to enable future connection.
- Where connections cannot be made to the system by the applicant or through an expansion of the system by its owner, the applicant may install capped sewers in accordance with the specifications for public sewers in this ordinance which shall extend from each lot or building into a system that will terminate at the property boundary in a manner in which future connection to public sewers can be made at some point in the future. Each lot of the land development would have to be serviced with suitable on-lot disposal systems or a community system approved by the Montgomery County Health Department or DEP until such time as the capped sewers are connected. In limited situations, holding tanks may be used in accordance with township and Pennsylvania laws.

- If the site does not fall within the sewage facilities growth area established in the Springfield Township Act 537 Sewage Facilities Plan, the following options should be pursued :
  - The applicant may request a revision to the Springfield Township Sewage Facilities Plan to add the site to the sewer growth area. If the revision is not made, the applicant should pursue the on-lot disposal options.
  - The applicant shall evaluate the feasibility of on-lot disposal options in the following order:
    - Community spray irrigation.
    - Individual lot spray irrigation.
    - On-lot subsurface disposal.
    - Community subsurface disposal.
    - Alternative or experimental community or on-lot disposal.
    - Community system stream discharge disposal.
    - Individual lot stream discharge disposal. 2.
  - Sewage Facilities Plan Revision. Planning approval shall be obtained for the selected option from the DEP or Montgomery County Health Department.

Sewage Facilities Plan Revision Exceptions include:

- Minor subdivisions where no additional lots are created. This includes lot line adjustments, simple conveyances, and mortgage subdivisions. The impact of existing wastewater facilities shall be considered in the placement of new lot lines in these types of subdivisions.
- Non-building lots, provided a properly executed Request for Planning Waiver and Non-building declaration has been submitted to and approved by DEP. Where the waiver is approved by DEP, the Final Plan and the deed for the lot shall contain a notation explicitly disclaiming its lack of connection to the sewage system.

	Sewage Facilities Design. The design and installation of domestic sewage facilities shall be done in accordance with the Pennsylvania Domestic Wastewater Facilities Manual prepared by PADEP and Article Six-Construction and Engineering Standards. Existing on-lot sewage disposal systems that will remain in use shall be inspected and certified as to their satisfactory functioning, in accord with the Municipal Sewage Facilities Plan, Montgomery County Health Department, and DEP standards. Malfunctioning systems shall be repaired or replaced with systems designed and constructed to current standards.
Cheltenham	Where suitable collection system infrastructure and treatment facilities are reasonably available with adequate capacity, the applicant shall connect the proposed lots or land development to the collection system and treatment plant after complying fully with any permit or fee requirements established by the owner of the collection and treatment facility; **provided however, the Township maintains the right to allocate EDUs within the Township for any new development.** No allowance for capped connection in the future, nor for options in the event that the site does not fall within sewage facilities growth area. Sewage facilities plan revision exceptions include minor subdivisions... **and where there is no new or increase in sewer usage.** Any improvements to the sewer system (e.g, through the addition of sewer equalization tanks, etc.) and the construction or alteration of any structures, in- or aboveground structures that are a result of the sewer facilities planning process or revision thereof related to changes in the sewer facilities plan, shall be required to be reviewed as a land development as per this chapter for reasons of health safety and public welfare.
Whitemarsh	Wherever practical, sanitary sewers shall be installed and connected to an appropriate public sewer system. Where a sanitary sewer is not yet accessible, but is planned for extension to the subdivision within 10 years, the developer shall install sewer lines, including lateral connections, as may be necessary to provide adequate service to each lot when connection with the public sewer system is made. The sewer lines shall be suitably capped at the limits of the subdivision and the laterals shall be capped at the right-of-way line. The sewer installation shall include construction within rights-of-way or easements to bring the sewer to the future connection with the public sewer system. • A sewer shall be considered to be planned for extension to a given area any time after preliminary engineering and related studies have been completed by the Township and the construction of facilities adequate to serve the area containing the subdivision or land development have been programmed for completion within a reasonable time. • When capped sewers are provided, approved on-site disposal facilities shall also be provided. All public sanitary sewers shall be designed and constructed in accordance with Township specifications. Such sewers shall be located or constructed so as to eliminate the possibility of flood damage.

	No public sewer system or treatment plant shall be constructed until plans and specifications have been submitted to the Department of Environmental Resources and the Township and approved in accordance with existing laws.
L Merion	All **sanitary sewers and privately owned sewage and industrial waste treatment works** shall comply with the rules and regulations established by PADEP as amended and revised. Where practicable, connect to the Township sanitary sewer. If outfalls are not available but are planned and shown in the most recent Act 537 Sewage Facilities Plan, then a system of sewers and all necessary laterals shall be installed and capped as determined by Engineer. • BoC may waive for lots larger than one acre or in open-space preservation if o Requirements for on-site facilities are met o Funding and administrative provisions assuring long-term operation are provided o Sewage disposal is accomplished through land treatment tech capable of recharging groundwater If sewers are to be installed at a later time, easements shall be provided on the plans and shall show the dedication of easements for later construction and maintenance of sewers. Sanitary sewer pipe shall be sized for full flow from the tract. Larger pipe size may be required by the Engineer to accommodate future expansions. Minimum grades shall be 0.8% except at terminal runs, which shall be 1%. Manholes shall be placed at every point where the sewer line changes direction or grade. Where drops are proposed, an outside drop is required, and the proper channeling is required by Twp standards. In no case shall manhole spacing exceed 300 feet. Frames, covers, buckets, and steps may be purchased from the Twp. Twp standard lid and frame are required. Lateral connections to each lot shown on the preliminary plan shall be installed to the right-of-way line of the street prior to road paving. Each building shall have a separate connection to the Twp sewer on the lot or in the abutting street, except that garages accessory to dwellings may be connected to the dwelling line. Laterals must be designed in accordance with Twp standards. Whenever it is impracticable to connect with Twp sewers, on-site sewage disposal facilities may be permitted upon application and approval by MontCo and PADEP. Such facilities shall be so located as to permit easy and economical connection to the sewer system of the Township when sewers are installed, except where waived.

Section 429, Solid Waste Management

Existing	None identified.
Model	All lots and land developments must contain proper facilities for the management of solid waste including recycling in accordance with the following: Residential developments with single family homes may manage solid waste through a curbside collection service. Developments without regular curbside collection shall have solid waste collection containers within enclosures. Enclosures should be made of durable material in accordance with Article Six– Construction and Engineering Standards. Solid Waste Storage Facilities shall be located in the following manner: • Convenient to portions of the development where solid waste is generated. • Setback from adjoining property and adjoining structures in accordance with the Zoning Ordinance. • Accessible for trash collection trucks. • Solid Waste storage may be placed near building service entrances or loading docks, but may not be placed in any area used for parking or loading requirements. • In apartment or condominium complexes with centralized waste storage, containers should be located in an area which is convenient to each grouping of ten (10) to fifteen (15) units or be located in a large enclosed facility at the entrance to the development. • During the servicing of these containers (up to 5 minutes) it is important that internal circulation at the site is not impeded. Operations. Trash storage containers should be serviced at least once a week. Recycling containers may be serviced at a less frequent interval. If a dumpster contains food it should be serviced every three days. A storage container should have tight fitting lids, secured at all times, and be leak free. It should also be cleaned out at least two (2) times a year.
Cheltenham	All solid waste disposal and storage areas shall be fully enclosed within an opaque structure. If the area is not enclosed within the principal building, a trash enclosure shall be composed of brick, stone, cement, concrete with the exception of the entry gates, provided the gates are opaque as well. Screening shall be required as per § 260-49A(2) and as per Chapter 295, Zoning, of the Township Code.
Whitemarsh	None identified in SALDO.
L Merion	None identified in SALDO.

Section 430, Stormwater Management and Drainage
This section should be okay to remain with what exists, provided that the Township Engineer is comfortable with the existing language. Springfield Township's standalone ordinance for Stormwater Management is based on DEP standards and is part of the MS4 permit of the township.

Existing	95-11B. All gas, water, electric and other mains, pipes and conduits, together with all service connection or laterals, shall be laid before the streets and roads shown on the plans are constructed and shall be located to minimize or eliminate flood damage and infiltration of floodwaters into the systems and discharges from the systems into the floodwaters. 95-11G. A right-of-way not less than 40 feet wide shall be provided along natural watercourses, where required by the Board, in order to enable the Township to construct and maintain sanitary and storm sewers. 95-11J. Stormwater management. All land-disturbance activities shall be consistent with the following: • All subdivision and land development proposals shall comply with Chapter 28, Erosion and Sedimentation Control, of this Code unless specifically excluded, by § 28-7 of Chapter 28, from the stormwater management plan requirement. • Unless the Township Engineer recommends an alternative approach, water should be drained to the streets rather than across lots within the subdivision or land development. • It shall be the responsibility of the applicant to obtain any stormwater easements required by the Board of Commissioners on, over or through other properties. 95-11K. All subdivision and land development proposals shall be reviewed to ensure that such proposals are consistent with the need to minimize flood damage and that adequate drainage is provided to reduce exposure to flood hazards. 95-11L. Where a watercourse is to be altered or relocated as a result of any development activity, the developer shall submit to the Township evidence that the Pennsylvania Department of Community Affairs and all neighboring communities have received prior notification of this fact. Furthermore, the developer shall assure the Township that the carrying capacity of the watercourse will be maintained. Standalone Stormwater Management Ordinance and Erosion and Sedimentation Control Ordinance. Relevant in cases where proposal meets any of the following: • More than 20% of the tract will be disturbed • More than 7,500 square feet will be disturbed • More than 5,000 square feet if more than 40% of tract is impervious • Increase of 25% impervious surface on developed properties • More than 400 square feet if more than 70% of tract is impervious • Previously approved stormwater management facilities • More than 10% slope
Model	The stormwater management system should be designed in accordance with the Springfield Township stormwater management ordinance and the Pennsylvania Stormwater Best Management Practices Manual.

Existing natural stormwater drainage systems should be preserved and incorporated into the overall site stormwater management system.

New stormwater conveyance and control devices should be designed to be compatible with natural site conditions.

When subdivisions or land developments are submitted to the Township Engineer for approval in sections, a complete storm sewer design for the entire proposed subdivision and land development shall be submitted.

If only a section of a subdivision or land development is contemplated for construction, the applicant's engineer shall show how storm water from each section will be managed to protect adjacent properties. If temporary construction is required, the engineer shall include such structures in the plan submitted.

Minimum grades inside stormwater basins and conveyance structures shall be two (2%) percent and maximum side slopes of any stomwater device should be 33 % percent (3:1 slope).

Appropriate stormwater controls, best management practices, and conveyance facilities should be dispersed throughout the site and generally located close to the sources of stormwater release such as downspouts, culverts, and parking lots.

Prior to the granting of final approval of any subdivision or land development plan, the Township must be satisfied through contractual arrangements that all stormwater facilities will be properly maintained. If all, or a portion, of the facilities will be on property which will be conveyed to an individual homeowners association or any other eventual owner, the guarantees must be in such a form that they will carry through to the new owners.

If the land of the proposed subdivision or development will be conveyed to two or more separate owners, the applicant shall provide written assurance and deed restrictions to the Township that the stormwater management structures will be properly maintained by the owners or if acceptable to the Township, be dedicated to the Township, which shall then be responsible for maintaining the stormwater management structures.

Easements and Dedication. Where storm water or surface water will be gathered within the subdivision or land development and discharged or drained in volume over lands within or beyond the boundaries of the subdivision or land development, the applicant shall reserve or obtain easements over all lands affected. The easements shall be adequate for such discharge or drainage and for carrying off of such water and for the maintenance, repair, and reconstruction of the same, including the right of passage over, including vehicles, machinery, and other equipment for such purposes, and which shall be of sufficient width for such passage and work. The applicant shall offer the dedication, at no cost to the Township, drainage easements to the Township at the completion and stabilization of all improvements. If drainage easements are not accepted for dedication by the Township they shall be maintained by the owner of the property that uses them.

Storm Drainage Directed Into an Adjacent Municipality. When storm drainage will be directed into an adjacent municipality, all provisions for accommodating such storm drainage shall be submitted to the governing body of that municipality for review.

Discharge of Roof Runoff. Stormwater runoff from roofs shall not be discharged into the street right-of-way without approval by the Township upon review by the Township Engineer, nor concentrated onto adjacent properties. It shall be returned to sheet flow or discharged into a structure adequately designed and approved by the Township.

Properties shall be graded to secure proper drainage away from buildings and to allow the collection of stormwater in catch basins. Minimum two (2%) percent slopes away from structures shall be required.

Drainage from Non-Natural Sources. Water originating from on site machinery or filtration systems, such as air conditioning units, sump pumps, or other dry weather flow, wherever practicable, shall be discharged into natural watercourses on the property. The discharge of water from these sources into the street is prohibited.

Storm Sewers

- Existing Storm Sewer Accessibility. Where existing storm sewers are reasonably accessible and of adequate capacity, subdivisions and land developments shall connect to the existing storm sewers.
- All storm sewer pipes shall have a minimum diameter of fifteen (15") inches.
- Drainage Easements. Drainage easements shall be provided to accommodate all storm drainage requirements and shall be a minimum of thirty (30') feet in width. Storm sewers, as required, shall be placed in the road right-of-way, parallel to the roadway and shall be designed as a combination storm sewer and underdrain if necessary. When located in undedicated land, they shall be placed within an easement not less than twenty (20') feet wide, as approved by the Township Engineer.
- Drainage Facilities Design Requirements. All drainage facilities shall be designed to adequately handle surface runoff and carry it to suitable outlets and shall be designed in accordance with the following minimum design standards.
    - All storm drains and drainage facilities such as gutters, catch basins, bridges, inlets, and culverts shall be installed and the land graded for adequate drainage as shown on the grading plan submitted and approved with the Final Plan. Construction of these facilities shall generally conform with PennDOT Specifications Publication 408, latest version. Storm drains and appurtenances shall be required to be constructed by the applicant to take surface water from the bottom of vertical grades to lead water away from springs, and to avoid use of cross gutters at street intersections and elsewhere.
    - The existing points of natural drainage discharge onto adjacent property shall not be altered without the written approval of the affected landowners.
    - No storm water run-off or natural drainage shall be so diverted as to overload existing drainage systems, or create flooding or the need for additional drainage structures on the other private properties or public lands. In cases where additional stormwater flows will overload adjacent structures, the applicant shall be responsible for enlarging the facilities.

	○ Manholes. Manholes shall be constructed at all changes in horizontal or vertical alignment and otherwise required in Section 609. ○ Location within Township Rights-of-Way. Storm sewer lines within street rights-of-way shall be placed at locations acceptable to the Township. They shall be protected by a cover of at least eighteen (18") inches. Location within State Rights-of-Way. Drainage structures that are to be located within state rights-of-way shall be approved by PennDOT, and a letter from the Department indicating such approval shall be submitted to the Township.
Cheltenham	D-E. Approval or construction in sections. • Management in phases. If a subdivision or land development is proposed to be constructed in phases, and the construction schedule will result in the commencement of a future phases 180 days or more following the completion of the previous phase, then the stormwater management design must be completed in a manner such that the rate, quantity and quality requirements of all applicable Township and state ordinances and/or regulations are met for each phase of construction. F. Minimum grades within retention, infiltration and/or wetland style basins may be less than 2%, but all such designs are subject to the consent and approval of the Township Engineer. H. The approved post-construction stormwater management plan shall be recorded with the Montgomery County Recorder of Deeds, along with all maintenance requirements for the same. J. Easements and Dedication • The responsibility for maintenance of stormwater management facilities and surface conveyance systems shall lie with the property owner, unless otherwise stipulated by the design plans and/or per agreements of record on file with the Township or the Montgomery County Recorder of Deeds. • The Township shall have the right to enter and inspect any such easements and repair any issues that affect the function of the stormwater management facilities, at the expense of the property owner, should the property owner refuse to make such necessary repairs, and/or if the property owner could not be contacted following reasonable efforts to do so. Removed N. Drainage from Non-Natural Sources. O(3). Drainage easements. Storm sewers located within road rights-of-way shall be designed to be parallel with the roadway to the greatest extent possible. When located in undedicated land, they shall be placed within an easement not less than 20 feet wide, as approved by the Township Engineer. O(4)(b). The existing points of natural drainage discharging onto adjacent property may only be altered in accordance with Chapters 290 and 291 of the Township Code.

	O(4)(c) In cases where increased stormwater flows attributable to an applicant's development will overload existing connected facilities, the applicant shall be responsible for enlarging those facilities to adequately convey, at a minimum, the 100-year storm. O(5)Collection system design. • Storm sewer pipes and/or culverts shall be designed to pass the ten-year design storm without surcharging. However, at the recommendation of the Township Engineer, the storm sewer system shall be designed to convey the twenty-five-year storm where the receiving (downstream) stormwater system has adequate capacity to carry the flow. In addition, storm sewers and/or surface channels of conveyance shall be designed to adequately convey the 100-year design storm volume to a stormwater management BMP, or existing channel or watercourse, without negatively impacting existing or proposed structures. • The collection system shall be designed by the rational method of design in accordance with American Society of Civil Engineers Manual No. 37 except where noted, using the formula Q = CiA, unless otherwise approved by the Township Engineer. • Curb inlets. Curb inlets shall be located at curb tangents on the uphill side of street intersections, and at intervals along the curbline to control the maximum amount of encroachment of runoff on the pavement. For all storm sewer systems within public roadways, the engineer shall provide bypass calculations to demonstrate that the surface flow width shall not exceed 1/2 the width of any travel lane, based upon the ten-year design storm. • The capacity of all inlets shall be based upon a maximum flow to the inlet of 4.0 cfs, calculated based on the design storm event. The maximum flow to inlets located in low points (such as sag vertical curves) shall include the overland flow directed to the inlet as well as bypass runoff from upstream inlets. • All storm sewer pipes shall be a minimum of 18 inches in diameter, unless otherwise permitted by the Township Engineer. Roof leaders and underdrains may be less than 18 inches in diameter in accordance with approved designs. All pipes shall be Class III reinforced concrete or HDPE pipe. • Open end pipes must be fitted with appropriate endwalls or wing walls. Open culvert endwalls or wing walls for pipes larger than 18 inches in diameter and longer than 60 feet in length shall be fitted with durable protective grates, subject to approval by the Township Engineer. • Roof drainage. Stormwater roof drains and pipes shall not discharge water over sidewalks or walkways. • All storm structures shall be designed with a minimum two-inch drop in invert between pipe inverts entering and exiting the structures. In addition, where the pipe diameter is the same for pipes entering and exiting structures, a concrete low-flow channel shall be constructed within the bottom of the structure (if not sumped by design) providing a small flow of water through the structure. • Manholes. Manholes shall be constructed at all changes in horizontal or vertical alignment and as otherwise required in § 260-79, Utility locations, easements, and rights-of-way.

All storm sewer pipes shall be videoed to confirm their structural integrity before dedication to the Township.

Stormwater management BMPs.

- Authorization. All land development projects must conform to the stormwater management requirements of Chapters 290 and 291, as applicable.
- Stormwater management facilities. Stormwater management facilities shall be provided to address the rate, volume, and quality requirements of Chapters 290 and 291, as applicable. All such facilities shall conform to the design standards per the PA Stormwater Best Management Practices Manual (latest version). Other stormwater management facilities shall be considered only when accompanied by detailed design plans, details, and calculations, and only upon approval of the Township Engineer.
    - Any stormwater management facility designed to store runoff and requiring a berm or earthen embankment required or regulated by this chapter shall be designed to provide an emergency spillway to handle flow up to and including the 100-year post-development conditions. The height of the embankment must be set as to provide a minimum 1.0 foot of freeboard above the maximum pool elevation computed when the facility functions for the 100-year post-development inflow rate and volume.
    - Basin berm construction requirements.
        - Site preparation. Areas under the embankment and any structural works shall be cleared, grubbed, and the topsoil stripped to remove trees, vegetation, roots or other objectionable material. In order to facilitate cleanout and restoration, the pool area will be cleared of all brush and excess trees.
        - The minimum top width of detention, retention, wet pond, or any other basin berm that stores stormwater volumes of 10,000 CF or greater at the 100-year water surface elevation shall be 10 feet. For basins with a storage volume less than 10,000 CF, the minimum berm width shall be five feet.
        - Cut of trench. A cutoff trench will be excavated along the center-line dam on earthfill embankments. The minimum depth shall be two feet. The cutoff trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be eight feet wide but wide enough to permit operation of compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for the embankment. The trench shall be kept free from standing water during the backfilling operations.
        - Embankment. The fill material shall be taken from the selected borrow areas. It shall be free of roots, wood vegetation, oversized stones, rocks or other objectionable material. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material should contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Fill material will be placed in six-inch to eight-inch layers and shall be continuous over the entire length of the fill. Fill material must be compacted to a minimum of 95% of modified proctor density as established by ASTM D-1557.

Compaction testing by a certified soils engineer/geologist must be completed as directed by the Township Engineer to verify adequate compaction has been achieved.

- Emergency spillways discharging over embankment fill shall be constructed of reinforced concrete checker blocks to protect the berm against erosion. Alternate lining materials may be utilized upon approval of the Township Engineer. The lining shall extend to the toe of the fill slope on the outside of the berm and shall extend to an elevation three feet below the spillway crest on the inside of the berm.
- Stormwater management facility outlet piping shall be Class III reinforced O-ring concrete pipe. Energy dissipating devices shall be placed at all basin inflow points and outfalls. A minimum of one concrete anti-seep collar shall be required. Pre-cast collars shall have a minimum thickness of eight inches; field-poured collars shall have a minimum thickness of 12 inches. Collars may not be installed within two feet of pipe joints. Collars must be designed to project a minimum of two feet around the perimeter of the pipe. Maximum collar spacing is 14 times the design projection around the perimeter.
- All outlet structures shall be located within the embankment for purposes of maintenance, access, safety and aesthetics. Below-grade structures (standard inlet boxes, manholes, etc.) shall not project above the ground surface. The minimum diameter of any free-flowing orifice shall be three inches. Innovative low-flow or anti-clog devices with free-flowing orifices less than three inches are permitted upon review and approval by the Township Engineer. All inflow headwalls and outlet structures shall be provided with slanted trash racks with a maximum grid opening of four inches by four inches, constructed of aluminum. The trash rack shall be slanted at 45°, to be able to withstand loading of 500 pounds and be hinged at the top for cleaning. Other trash racks may be utilized upon approval of the Township Engineer.

- Infiltration rates. Infiltration BMPs may only be installed within areas in which the tested infiltration rate falls between 0.1 and 10 inches per hour. Any infiltration system shall be designed to fully drain all water within 72 hours following the peak storage volume of the design storm event. Testing of infiltration rates shall be completed in accordance with Appendix C of the Pennsylvania Stormwater Best Management Practices Manual.
- Methodology. The Soil Complex Method shall be use for all projects in which the total earth-disturbance area exceeds 1.0 acres. Use of the Rational Formula for analysis of drainage areas shall be permitted only upon approval of the Township Engineer.
- Retaining walls shall not be specified for use within the 100-year floodplain of any detention/retention facility or any embankment slope or cut slope that is appurtenant to the construction of a detention/retention facility.
- Whenever a stormwater management facility will be located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations. The design of all facilities over limestone formations shall include measures to prevent ground water contamination and, where necessary, sinkhole formations. Soils used for the construction of basins shall have low-erodibility factors ("K" factors). Installation of an impermeable liner shall be required in detention/retention basins.

	• Water quality. In an effort to prevent water quality from negatively affecting stormwater management facilities, stormwater runoff conveyed to all BMPs shall be treated prior to discharge into said BMP, through storm structure inserts, the construction of forebays, or similar devices. The Township Engineer shall approval the use of any and all treatment devices. • As-built survey. As-built surveys of the final constructed condition of all stormwater management BMPs designed to address the rate and/or volume of stormwater runoff, shall be provided to the Township by the land developer. For closed or underground BMPs where such surveys are not possible, the land developer shall provide internal video of the constructed conditions to verify compliance with the approved design plans. For any closed BMP system where the final in situ condition will prevent video, the land developer shall ensure that a representative of the Township is present on site during construction to verify compliance with the approved design plans. Bridge and culvert design. Any proposed bridge or culvert within or spanning a perennial or intermittent stream shall be designed in accordance with the following principals: • All bridges, culverts, and drainage channels shall be designed to convey a flow rate equal to a 100-year, twenty-four-hour storm as defined by the U.S. Department of Agriculture, Natural Resource Conservation Service (previously SCS), Technical Release No. 55. All bridges and culverts shall be designed to convey the 100-year design storm without increasing the extent and depth of the 100-year floodplain. • Bridges and culverts shall be designed with an open bottom to maintain natural sediment transport and bed roughness, avoiding acceleration of water velocity above the natural (preexisting) condition. Rock (riprap) lining (native material if possible) shall be installed within a culvert as needed to prevent erosion within the structure. Approximate top of rock lining must be at the level of the existing stream bottom so as to maintain normal water level and unimpeded movement of native animal species. • All bridges and/or culverts designed to carry a public or private roadway over an existing watercourse shall be designed with a minimum of 24 inches of freeboard between the 100-year floodplain elevation and the roadway surface (center-line elevation). Where existing bridges and/or culverts are being replaced, every effort shall be made to achieve this design goal with the new construction. In no instance shall the new construction lessen the existing freeboard. Green infrastructure and low-impact development practices shall be the first best management practices considered when developing the stormwater management plan for any site. A description shall be provided by the applicant at the time of plan submittal, indicating why said practices were not or could not be implemented, if said practices were not incorporated into the site.
Whitemarsh	No subdivision or land development shall be approved unless: • There has been a stormwater management plan approved by the Township Engineer that provides for the control of stormwater runoff from and through the development consistent with the requirements of Chapter 58 of the Whitemarsh Township Code, entitled "Grading, Erosion Control, Stormwater Management and Best Management Practices." • There has been a determination by the Board of Supervisors that a plan for controlling stormwater runoff is not necessary.

L Merion	Stormwater management. Whenever an increase in volume and/or rate of runoff will occur as the result of subdivision or land development, the developer will be required to provide adequate stormwater management facilities in accordance with Chapter 121 of this Code and provide financial security for the completion of those facilities as set forth in this Chapter. The design of all stormwater management facilities shall be in accordance with Chapter 121 of this Code and submitted to the Township Engineer for review and, when required, to the Pennsylvania Department of Environmental Protection or the United States Department of Agriculture, Soil Conservation Service. Where retention basins and/or other facilities are required, the responsibility for the continued maintenance and operation of the retention basins and/or other facilities shall be the obligation of the property owner or the homeowners' association, as applicable. Any deed given for the transfer of a lot where stormwater piping and/or a retention facility is provided on a recorded lot shall refer to such structures and facilities and state that the maintenance and operation shall be the continued responsibility of the property owner or the homeowners' association, as applicable. A fence four feet in height with a self-closing gate surrounding the retention basin may be required as directed by the Township Engineer. Special drainage problems. • Unnatural drainage. Whenever construction stops or concentrates the natural flow of storm drainage in such a way as to affect adjoining properties, approval of the adjoining property owners must be obtained in writing. Approval of plans by the Township does not authorize drainage onto adjoining properties. • Water originating from other than natural sources, such as air-conditioning units, sump pumps or other dry-weather flow, wherever practicable, shall be discharged into natural watercourses on the property or connected to the storm drainage system of the Township. Connections to the storm drainage system may require easements from the Township or adjacent neighbors and will require the approval of the Director of Public Works and the approval of a right-of-way permit. These facilities may not be used for toxic drainage. Runoff computations. Computation of the rate of flow at any given location shall be based on the rational formula Q = CIA Where: Q = Volume in cubic feet per second. C = Runoff coefficient. I = Intensity of rainfall in inches per hour. A = Watershed area in acres. In setting the value of the runoff coefficient "C," consideration will be given to the physical features of the drainage basin and the best available data on the future density of development of the drainage basin. In no case shall it be less than 0.40 in a developed area. The intensity of the storm shall be based on the following:

- As a minimum, a twenty-five-year storm shall be used at low points with a relief drainage channel.
- As a minimum, all inlet and culvert designs shall be based on a twenty-five-year storm.
- As a minimum, a 100-year storm will be used in connection with Chapter 121 of this Code. The NOAA Atlas 14 Point Precipitation Frequency Estimates for the region, a copy of which is available for public inspection at the office of the Township Engineer, shall be used.

Standard headwalls shall be installed on all pipes and, additionally, trash bars shall be installed on all pipes equal to or greater than 24 inches diameter.

Pipeline design. Storm sewer pipelines shall be designed by either of the two methods described below. Both shall be based on the Manning equation and shall utilize the friction factors:
n = 0.012 smooth-lined corrugated plastic pipe.
n = 0.015 concrete pipe.
n = 0.021 corrugated metal pipe.
The minimum allowable pipe size is 15 inches.

- Pipeline submerged.
  - This method is based on the assumption that when the storm sewer system is under maximum load, the hydraulic gradient will be at or above the crown of the pipe and that flow in the lines will be controlled by head differentials between structures or other locations where the system is open to the ground surface, such as inlets or outlets, manholes and stream inlets and outlets. The head of water above the crown of any pipe can range from zero feet to a point which will not cause surface flooding.
  - The slope of the hydraulic gradient in any section of storm sewer between opening to the surface shall be calculated on the assumption that the pipe is flowing full at a constant velocity and at the required capacity.
  - The elevation of the hydraulic gradient at any point in the pipe shall be no lower than the crown of the pipe and no higher than the surface of the ground.
  - The elevation of the hydraulic gradient at any point where the system opens to the surface, such as an inlet or manhole, shall be no higher than one foot below the surface of the ground.
  - Head losses at inlet structures, manholes, cleanouts, etc. shall be based on formulas provided by the Federal Highway Administration's HEC-22 - Urban Drainage Design Manual; Energy Losses. Where the inlet and outlet pipe sizes are not the same, the elevation of the hydraulic gradient shall be dropped an amount based on the following formula:
    H = 0.2 inches + 0.8 (D2-D1)
    Where:
    D1 = The diameter of inlet pipe.
    D2 = The diameter of outlet pipe.
    If D1 is larger than D2, head loss = 0.2 feet
  - The minimum slope of any pipe shall be such that a minimum velocity of 2.5 feet per second shall be maintained when the pipe is flowing 1/4 full.

- Pipeline flowing full.
    - This method is based on the assumption that the hydraulic gradient will match the inside top of the pipe when the system is under maximum hydraulic load.
    - For this method, head losses through manholes, inlets, etc., shall be ignored.
    - The minimum slope of any pipe shall be such that a minimum velocity of 2.5 feet per second shall be maintained when the pipe is flowing 1/4 full. When the pipe sizes change, the inside tops of the pipes shall be matched.

Continuous profiles for each reach of pipe shall be plotted along with the location of the hydraulic gradient and the hydraulic information pertinent to each reach within the system. This information shall include the pipe size and type, the "n" factor, the slope of the hydraulic gradient, slope of the pipe, the design capacity and the velocity at the design capacity.

Inlets.

- Single or PennDOT Type C (single/double) No. 1 open-mouth inlets shall be used on streets with grades of 4% or less. Double No. 1 open mouth inlets shall be used on streets of more than 4%.
- Sufficient inlets shall be located and constructed so as to collect all of the stormwater flow in the drainage area tributary to the inlet for the twenty-five-year frequency storm.
- The gutter of all inlets shall be set not less than two inches nor more than four inches below the gutter grade. The surface of the paving adjacent to the inlets shall be constructed to blend into the lowered gutter grade at the inlet in such a manner that a sudden dropoff or dip at the inlet will not be created. The spread of runoff in the gutter is to be no more than half the width of one through traffic lane, when calculated for the twenty-five-year frequency storm.
- Where surface water is collected from two directions at one street corner, inlets shall be placed at, or near, the tangent points of both ends of the radius. The use of an inlet in the radius shall not be allowed.
- Bicycle safe grates shall be utilized, where applicable.

Manholes shall be located at intervals of approximately 300 feet where pipe sizes of 24 inches or less are used and 400 feet apart for larger sizes. Inlets should be substituted for manholes where they will serve a useful purpose. Manhole and inlet castings may be purchased from the Lower Merion Department of Public Works. The Township standard frame and lid shall be used when in the public right-of-way.

Open channel design: as referenced in PA DEP's Erosion and Sediment Pollution Control Program Manual, as amended.

- Open channel design should be based on the following hydraulic considerations:
    - Manning's equation.

n = 0.015 for best concrete lined ditch.
n = 0.025 for best unlined ditch.
n = 0.03 to 0.15 for fair to poor natural streams and watercourses.

    - Velocity.

Excavation Material	Velocity (feet per second)
Fine sand and firm loam	2.50 to 3.5
Stiff clay and hardpan	3.75 to 6.0
Concrete-lined ditch	15

- Ample freeboard should be provided on all channels.
- The channel should be designed to conform, wherever possible, to the adjacent ground conditions. This means that it should not be projecting excessively above the surrounding ground or placed excessively below the surrounding ground.
- Continuous profiles for each reach of open channel shall be plotted along with the adjacent average ground and the hydraulic information pertinent to each reach within the system. This information shall include the type of channel lining, the "n" factor, the width of the channel bottom, the side slopes, the water depth, the design capacity and the velocity at the design capacity.
- Open channels shall have a maximum side slope of three to one and shall have adequate slope protection as required by Chapter 121, Stormwater Management and Erosion Control.

Bridges and culverts. Single-opening culverts are desirable. The design of culverts shall be such as to minimize the probability of debris accumulation. Bridges and culverts shall be designed to meet current Pennsylvania Department of Transportation standards to support expected loads and to carry expected flows. They shall be constructed for the full width of the right-of-way.

The Pennsylvania Department of Environmental Protection, Bureau of Water Quality Management, Division of Dams and Encroachments, requires a permit for construction or changes in a watercourse which drains an area of more than 1/2 square mile. No open watercourses shall be permitted within the right-of-way of any street.

Location. Wherever practicable, storm drains shall be located behind the curb and within the right-of-way of the street. They shall be protected by a cover of at least 18 inches. The plan shall note that the continued maintenance of storm drains outside the street right-of-way shall be the responsibility of the property owner. Storm drains located within a private right-of-way are the responsibility of the property owner.

Stormwater roof drains shall connect to stormwater infiltration BMPs, where practicable. Stormwater roof drains immediately adjacent to a sidewalk shall not discharge water over a sidewalk but shall extend under the sidewalk to the gutter. Where accessible, the roof drains shall be connected with the storm drainage system of the Township, upon the approval of the Director of Public Works.

All sump pump discharges must either discharge on-site or make an underground connection to the Township storm collection system. No discharges are allowed at the curbline.