

FRANCONIA TOWNSHIP

ORDINANCE # 409-19

THE BOARD OF SUPERVISORS OF FRANCONIA TOWNSHIP DOES HEREBY ENACT AND ORDAIN AS FOLLOWS:

SECTION 1. Chapter 145 [Zoning], Article II [Definitions], Section 145-5.B. [Definitions and word usage] is hereby amended to add the following definitions:

**ARTICLE II
DEFINITIONS**

Section 145-5. Definitions and word usage.

B.

GROSS SITE AREA – The area within the property lines bounding a lot or tract proposed for subdivision or development as determined by an onsite, field survey.

SETBACK – The distance between a building, structure, and/or parking area and any lot line, right-of-way, or building.

SETBACK LINE – That line that is the required minimum distance from any lot line or ultimate right-of-way line and that establishes the area within which the principal structure must be erected or placed.

STORMWATER FACILITY, ABOVEGROUND – Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff quality, rate or quantity with the stormwater runoff being exposed to the air. Typical stormwater and watershed management facilities include, but are not limited to, detention and retention basins, rain gardens and bioretention facilities.

STORMWATER FEATURE/FACILITY – Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff quality, rate or quantity. Typical stormwater and

watershed management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, infiltration structures, etc.

TRACT AREA, GROSS - An area of a piece of land, property or properties that is the subject of a development application. It shall be defined as the area contained within the property lines of the tract as determined by an onsite, field survey.

SECTION 2. Chapter 145 [Zoning], Article II [Definitions], Section 145-5 [Definitions and word usage] is hereby amended to replace the current definitions with the following:

DEVELOPABLE ACREAGE - All that land within the lot lines of a tract excluding the following:

- (1) Lands located within any public or private right-of-way or the ultimate right-of-way of an existing street as required by the Subdivision and Land Development Ordinance.
- (2) Lands subject to existing easements or rights-of-way.
- (3) Lands subject to open space requirements and/or natural resources to be protected, whichever is greater. The natural resources may be counted towards required open space up to a maximum of 50% of the open space area.

FLEX SPACE - A use whereby multiple tenants may occupy a single building.

LOT - A designated parcel, tract, or area of land established by a plat or subdivision plan approved by Franconia Township and recorded in the Montgomery County Recorder of Deeds Office.

LOT AREA – The area contained within the property lines of the individual lot(s), excluding any area within any public or private right-of-way and required, ultimate right-of-way of an existing street.

TRACT AREA - An area of a piece of land, property or properties that is the subject of a development application. It shall be defined as the area contained within the property lines of the tract, excluding any area within any public or private right-of-way and ultimate right-of-way of an existing street as required by the Subdivision and Land Development Ordinance.

SECTION 3. Chapter 145 [Zoning], Article IV [General Provisions], Section 145-28.3. [Detention basin regulations] is hereby repealed and removed from the Zoning Ordinance.

SECTION 4. Chapter 145 [Zoning], Article IV [General Provisions], Section 145-28.5 [Reserved] is hereby amended to read as follows:

145-28.5. Lighting Regulations

A. Lighting shall be required in accordance with Chapter 122, for all uses within the Township where public health, safety and welfare are potential concerns including:

- (1) Streets and Intersections
- (2) Non-Residential Parking Areas
- (3) Automotive Fuel-Dispensing Facilities
- (4) Automotive Sales Areas
- (5) Loading Docks
- (6) Public Pedestrian and Bicycle Paths and Sidewalks
- (7) Non-Residential Building Entrances
- (8) Residential Subdivisions and Land Developments, excluding single-family detached uses
- (9) Recreational Facilities
- (10) Other public facilities
- (11) Any other locations deemed necessary by the Board.

B. A lighting design shall be prepared and submitted in accordance with Chapter 122 Subdivision and Land Development Ordinance.

SECTION 5. Chapter 145 [Zoning], Article IX [Mobile Home Developments], Section 145-51.I [Site design for mobile home lots] is hereby amended to read as follows:

145-51.I. Lot coverage. The maximum impervious surface coverage of any individual mobile home lot shall be no greater than 35%.

SECTION 6. Chapter 145 [Zoning], Article XI [Mixed Residential Development District], Section 145-62.A(6) [Development requirements.] is hereby amended to read as follows:

145-62.A.(6) General development requirements. All lots shall have a house address of the unit(s) illuminated for emergency services.

SECTION 7. Chapter 145 [Zoning], Article XII [Commercial District], Section 145-66.E. [Additional regulations for by-right uses.] is hereby amended to read as follows:

§145-66.E. – Off street parking and loading regulations. The requirements of Article XIX shall apply and, all parking areas including parking and loading spaces, areas and driveways serving the spaces, shall be to the side or rear of the building, but shall not project into the minimum, required front yard setback except for a driveway used for ingress and/or egress. All parking shall be set back from the property line a minimum of five feet unless common parking facilities

are approved at the sole discretion of the Board of Supervisors. Parking areas adjacent to a residentially zoned property must be setback a minimum of 20 feet.

SECTION 8. Chapter 145 [Zoning], Article XIV [LI Limited Industrial District], Section 145-78. [Dimensional regulations for by-right uses.] is hereby amended to add a new Section 145-78.k. which shall read as follows:

§145-78.K. –Flex Space. Each lot shall contain a minimum of 5,000 square feet of flex space, with all spaces having independent entrances and loading facilities.

SECTION 9. Chapter 145 [Zoning], Article XIX [Off-Street Parking and Loading], Sections 145-122.G, 145-122.H, 145-123.A., 145-124.D, and 145-125.A are hereby amended to read as follows:

145-122.G – Nonresidential parking spaces and driveways shall be a minimum of 20 feet from any building or structure except as required for loading and drive-through facilities, and except as permitted otherwise elsewhere in this chapter.

145-122.H - All parking spaces, driveway and access aisles provided under this article shall be all-weather and shall be paved per Township specifications with the exception of the RR Residential Districts and Agricultural uses where only the all-weather requirement shall apply. Six inches of crushed, modified stone on a firm, well-drained base or its equivalent shall satisfy the all-weather requirement, subject to the Township Engineer's approval. A minimum of 50 feet of any driveway shall be paved from the existing street into the lot.

§145-123.A. – Section 145-123.A. is amended and restated in its entirety as shown on the attached Appendix B.

§145-124.D – The property owner shall agree to construct the spaces placed in reserve at any time in the future should the Board of Supervisors determine, in its sole discretion, that the spaces are needed. This agreement shall be in a form satisfactory to the Township Solicitor with the following conditions:

- (1) The area shall be maintained as temporary open space or unobstructed so that the reserve parking may be installed at any time at the discretion of the Board of Supervisors.
- (2) This agreement shall be recorded as a covenant running with the land.
- (3) The Zoning Officer shall bring the parking reduction agreement to the Board of Supervisors for reconsideration if the Zoning Officer determines, in his sole

discretion, that the reduced parking is not meeting actual property needs, based upon field investigations.

- (4) The Applicant shall provide financial security to the Township to cover the cost of installing the parking area for a specified time period as noted in the parking reduction agreement, but shall be no less than 5 years.

§145-125.A – Landscaping Requirements. Ten percent of the area of all paving for parking and access driveways shall be devoted to landscaping within the outer boundaries of the paved area with the intent to mitigate the heat island affect by providing shade over the impervious surfaces. In addition, planting trees creates more attractive parking environments making communities greener and healthier, so effort shall be taken to provide shade realizing that the trees would need to reach mature growth to maximize the benefits. For all parking lots with 10 or more stalls, planting islands shall be provided in accordance with the Subdivision and Land Development Ordinance and shall be large enough to accommodate the proposed landscaping.

SECTION 10. Chapter 145 [Zoning], Article XIX [Off-Street Parking and Loading], Section 145-122 is amended to add Sections 145-122.I and 145-122.J as follows:

§145-122.I – Non-residential parking may be permitted within the minimum required side and/or rear yard setbacks when the side and/or rear yard abuts a district zoned industrial and/or commercial. However, no parking shall be permitted within 5 feet of a side or rear property line unless common parking facilities are approved at the sole discretion of the Board of Supervisors.

§145-122.J - In commercial and industrial districts, provision of common parking facilities is hereby encouraged in recognition of their increased flexibility and efficiency. Subject to a Shared Parking Easement and Agreement between the proposed users of the common parking facilities, and if satisfactory to the township, the Board of Supervisors may reduce the aggregate amount of required parking space upon determination from a Traffic Engineer that the proposed number of parking spaces is adequate for the proposed use and that greater efficiency is effected by joint use of the common parking area. This determination shall be subject to a review by the Township Engineer. When common parking facilities are approved, side and/or rear yard setback requirements shall not apply at the property line(s) being crossed in order to establish unified and continuous parking areas. In such cases, access drives and sidewalks shall be so aligned as to maximize parking efficiency and minimize traffic congestion. Entrances and exits must have adequate sight distance in accordance with PA Code 441.8 Driveway design requirements.

SECTION 11. Chapter 145 [Zoning], Article XX [Signs] is amended to add or amend the following subsections:

§145-128.1.G. – The National Highway Traffic Safety Administration, in 2006, found that taking one's eyes off the road for more than two seconds for any reason not directly related to driving "significantly increased individual near crash/crash risk." Signs must be regulated so as not to be so attention-getting (such as signs that are so brightly lit that their changing messages can be seen from hundreds of feet away) that they result in drivers being distracted and removing their eyes from the road for more than two seconds.

§145-129.A. – The maximum height of any sign in any district shall be 6 feet.

§145-130.D. – Signs identifying residential developments shall be permitted subject to review and approval of the Board of Supervisors as part of the land development/subdivision process.

Add §145-130.E. – A development sign located at the entrance to a residential development shall be constructed of masonry or natural materials and shall be externally illuminated.

§145-132. – The following and no other signs are permitted permanent signs on premises for commercial use in the C and VC Districts: [Subsections 145-132.A-C shall remain unchanged].

§145-132.C.(1) – Only one awning sign or parallel wall sign or permanent window sign may be placed on the side of a building which faces a street. The sign shall not exceed 40 square feet in area.

Add §145.132.C.(3) – The base of all freestanding or monument signs associated with a commercial use shall be constructed of brick, stone, or concrete which is formed to have a masonry unit or brick appearance. If the primary building features brick, stone, or concrete which is formed to have a masonry unit or brick appearance, the material used on the base of the sign shall match or be complimentary to the building material used on the primary structure.

Add §145-138.1.C – The supports of every freestanding or monument sign shall be designed so as to obscure the bare pole or other support by the use of architectural features such as masonry or other covering of such bare pole or other sign supports.

§145-138.2.(G) – A multi-vision sign, which has rotating cross-section members that change the sign's display in part or in its entirety, and flashing, moving or illuminated signs, shall be prohibited.

§145-138.2.(Q) – Illumination of all outdoor advertising signs shall be by external illumination only. In no event shall any sign have flashing or intermittent lights, nor shall the signs or lights be permitted to rotate or oscillate. No direct ray of light shall extend beyond the face of the sign. An outdoor advertising sign or its structure shall only be illuminated from dusk until 11:00 p.m.

§145-138.2.(U) – All outdoor advertising signs shall be maintained in good and safe structural condition. The painted frame of outdoor advertising signs shall be kept in good condition.

§145-138.3.B.(3) – Flashing, blinking, interactive, intermittently lighted, moving or reflective signs or electronically changing message signs including pulsating, moving, and scrolling messages and those that indicate time and temperature. . This restriction specifically includes window signs and signs that give the appearance of any of the above. This shall not prohibit standard holiday lighting or displays.

§145-138.3.B.(6) – Revolving, changing or rotating signs that change copy more often than once every three minutes or do not change instantaneously. Barber poles shall be exempt.

§145-138.3.B.(11) – Signs that transmit excessive emissions, such as light, sound, odors, smoke, vapors or particles.

§145-138.3.B.(13) – Searchlights, floodlights, and lasers.

Add §145-138.3.B.(17) – Banners, spinners, flags, streamers, pennants or any moving object used for commercial advertising purpose whether containing a message or not, except for a Special Event regulated herein.

Add §145-138.3.B.(18) – Message center signs (electronically programed signs using alpha-numeric symbols, such as gas sign display) and digital displays (internally illuminated signs with electronic images which can change and can include text; such as LCD, LED screens, plasma screens).

§145-138.3.F. – Every sign permitted in this chapter shall be constructed of durable materials and shall be maintained in good condition and repair at all times.

§145-138.4.A.(1)(a) The professional sign of a physician, dentist, justice and such other persons whose services in an emergency are customarily considered essential to the public health, safety and welfare, provided that the illumination is

white light only, properly shaded, and provided further that the total illumination for any such sign shall not exceed the LED equivalent of a 40 Watt bulb.

§145-138.4.A.(1)(b) – The sign of a school, church, hospital, sanitarium, club or other institution of similar nature, laboratory or municipal building, provided that the illumination is white light only, and provided further that the total illumination for any such sign shall not exceed the LED equivalent of that given by a 40 Watt bulb.

§145-138.4.B.(1) – No signs shall be illuminated with or contain flashing, , rotating, moving or intermittent lighting devices, whether created by lighting effect or by rotation of the sign itself.

Add §145-138.4.B(3) – Sign lighting with adaptive controls like dimmers, timers and motion centers are strongly encouraged. “Warm-white” or filtered LEDs shall be used to minimize blue emission and Correlated Color Temperature CCT shall be equal to or less than 3000 Kelvin. Any permitted message signs or digital displays shall employ a light sensing device that can automatically adjust the brightness of the display within 5,000 candela per square meter during daylight hours and 125 candela per square meter during nighttime hours. The brightness of a sign is limited to 0.3 footcandles above the ambient light levels as measured from the sign. The owner of any illuminated sign shall provide a certification from an independent contractor showing compliance with brightness standards as a condition of a sign permit and the Township reserves the right to review the brightness once installed and confirm the brightness level complies with this section.

§145-138.6.B.(1) Franconia Township receives an application for a sign permit in cases where the nonconforming sign is to be significantly altered. Changes to the sign copy or the replacement of a sign panel of an existing establishment's nonconforming sign shall not be considered a significant alteration. If more than 50% of a sign is damaged, the sign is removed, relocated, or the type of illumination proposed to change, it shall be brought into conformance with this article.

§145-138.7.A. – Any type of sign regulated in this section that is abandoned and not advertising, announcing or identifying an active or permitted use, business, available product, etc. for a period of more than three (3) months shall be deemed not in compliance with this ordinance and requires adherence with all parts of this ordinance for any future sign permit. This may include the replacement of existing signs with new signs, replacement or modification of lighting, etc. to the satisfaction of the township.

Add §145-138.7.C. – Where the person responsible for the removal of an abandoned sign fails to remove such sign in 30 days the Township may remove such sign. Any expense directly incurred in the removal of such sign shall be charged to the owner of the property. If the owner fails to pay, the Township may file a lien upon the property for the purpose of recovering all reasonable costs associated with the removal of the sign.

Add §145-138.8 Unsafe, Unlawful, or Nuisance Signs.

Add §145-138.8.A. – Upon written notice by the Township, the owner, person, or entity maintaining a sign shall remove a sign when it becomes unsafe, is in danger of falling, becomes so deteriorated that it no longer serves a useful purpose of communication, or is determined by Township to be a nuisance, unsafe, or having been unlawfully erected in violation of any of the provisions of this Article. Removal of an abandoned sign shall include the removal of the entire sign including the sign face, supporting structure, and structural trim.

Add §145-138.8.B. – The Township may remove or cause to be removed the sign at the expense of the property owner upon failure to comply with the terms of the notice within thirty (30) days of the date of the notice. In the event of immediate danger, the Township may remove the sign immediately upon the issuance of notice to the owner, person, or entity maintaining the sign.

SECTION 12. Chapter 145 [Zoning], Article XXVI [Natural Resource Protection Standards], Sections 145-176.A.(2) and 176.A.(5) are hereby amended to read as follows:

§145-176. Site Capacity Calculations.

A.(2) – Calculate the Lot Area.

Gross Site Area = _____ acres

Right-of-Way Area = _____ acres

Lot Area = _____ acres

A.(5) Calculate the developable acreage.

Lot Area _____ acres

Subtract Open Space/Natural Resource Area _____ acres

Developable Acreage _____ acres

SECTION 13. Chapter 145 [Zoning], Article XXVIII [VC Village Commercial District], Sections 145-199.A. [Development regulations] is hereby amended to read as follows:

§145-199.A. Off street parking and loading regulations. The requirements of Article XIX shall apply. In addition, all parking areas including parking and loading spaces, areas and driveways serving the spaces, shall be to the side or rear of the building, but shall not project into the minimum, required front yard setback except for a driveway used for ingress and/or egress. All parking areas shall be set back from the property line a minimum of five feet unless common parking facilities are approved at the sole discretion of the Board of Supervisors. Parking areas adjacent to a residentially zoned property must be setback a minimum of 20 feet.

SECTION 14. Chapter 145 [Zoning], Article XXIX [RR Rural Resource Residential District], Sections 145-200.B, 145-204.A, & 145-207.A, are hereby amended to read as follows:

§145-200.B – The intent of this district is to provide the opportunity for low-density single-family development while at the same time preserving as open space an amount of land approximately equal to the amount of land being developed. The density is one single-family residence per two developable acres and the lot size is 35,000 square feet to 40,000 square feet; the difference between the two, approximately one acre per new single-family residence goes into open space. The intent is to have a minimum Open Space ratio of 40%, excluding any lots for existing uses based on the tract area.

145-204.A - Lot area. A lot area of not less than 35,000 square feet, nor more than 40,000 square feet, shall be provided for every principal building erected or used, unless the intent for the lot is to meet the minimum lot area requirement of a flag lot per §145-28.6 of this Chapter.

§145-207.A – Additional standards for conditional uses. In granting or denying a conditional use or establishing conditions with respect to such grants, the following standards shall be applied unless deemed unnecessary by the Board of Supervisors. The burden of establishing compliance with all of the hereinafter enumerated standards shall be upon the applicant.

[Section 145-207.A(1)-(7) to remain unchanged.]

SECTION 15. Chapter 145 [Zoning], Article XXIX [RR Rural Resource Residential District], Sections 145-200 is amended to add a new 145-200.E and 145-200.F, as follows:

§145-200.E – The open space may be considered a separate public or private permanent open space parcel deed restricted from further subdivision or from being separately sold, or it may be accomplished via a conservation easement over a parcel in a form approved by the Township Solicitor.

§145-200.F – The intent of the open space requirement is to provide contiguous, usable open space and to avoid noncontiguous, unusable open space areas. Narrow strips of open space should be avoided where possible and efforts shall be taken to provide open space areas adjacent to other open space areas. For areas where open space can be provided, but logistically the areas do not provide a public or community benefit, the open space areas may be preserved via a conservation easement.

SECTION 16. Chapter 122 [Subdivision and Land Development], Article I [General Provisions], Sections 122-5.B., the following definitions are hereby amended to read as follows:

DEVELOPABLE ACREAGE- All that land within the lot lines of a tract excluding the following:

- (1) Lands located within any public or private right-of-way or the ultimate right-of-way of an existing street as required by this Ordinance.
- (2) Lands subject to existing easements or rights-of-way.
- (3) Lands subject to open space requirements and/or natural resources to be protected, whichever is greater. The natural resources may be counted towards required open space up to a maximum of 50% of the open space area.
- (5) Existing Permanent Drainage Easements containing an open channel.

LOT – A designated parcel, tract, or area of land established by a plat or subdivision plan approved by Franconia Township and recorded in the Montgomery County Recorder of Deeds Office.

LOT AREA – The area contained within the property lines of the individual lot(s), excluding any area within any public or private right-of-way and required, ultimate right-of-way of an existing or proposed street.

SETBACK – The distance between a building, structure, and/or parking area and any lot line or building.

TRACT AREA – An area of a piece of land, property or properties that is the subject of a development application. It shall be defined as the area contained

within the property lines of the tract, excluding any area within any public or private right-of-way and required, ultimate right-of-way of an existing street and as defined by an onsite, field survey.

SECTION 17. Chapter 122 [Subdivision and Land Development], Article I [General Provisions], Sections 122-5.B., is hereby amended to add the following definitions:

SETBACK LINE – That line that is the required minimum distance from any lot line or building and that establishes the area within which the principal structure must be erected or placed.

TRACT AREA, GROSS - An area of a piece of land, property or properties that is the subject of a development application. It shall be defined as the area contained within the property lines of the tract as determined by an onsite, field survey.

SECTION 18. Chapter 122 [Subdivision and Land Development], Article III [Design Standards] Section 144-17 is amended to add the following Sections 122-17.H Ownership and Maintenance of Streets and 122-17.I- Street Sign Specifications:

H. Ownership and Maintenance of Streets. New roads designed to Township specifications shall be offered to the Township for dedication for ownership and maintenance via a note on the Record Plan and through deeds of dedication. Private roads to be owned and maintained by a homeowners' association shall be designed to meet the minimum Township specifications. An easement shall be provided over private roads and associated sidewalk to benefit the Township and memorialized by an Easement Agreement.

I. Street signs.

- (1) All streets, both public and private, shall be properly marked with street signs in a manner and form acceptable to the township. Existing street signs are grandfathered until such time as they need to be replaced. New street signs shall comply with the following specifications:
- (2) The sign and pole on which the sign is mounted shall meet the approved current Township and/or Pennsylvania Department of Transportation standards and specifications for street signs as set forth within the current

edition of the Manual on Uniform Traffic Control Devices, as amended (MUTCD).

- (3) The text shall be in reflective white letters and/or numbers in accordance with the minimum retro-reflectivity requirements of the MUTCD.
- (4) The sign shall be located on a pole at least seven feet tall.

SECTION 19. Chapter 122 [Subdivision and Land Development], Article III [Design Standards] Section 122-26 [Design requirements] is hereby revised to add a new section 122-26.A.(12) and to amend Section 122-26.B(2) as follows:

122-26.A.(12) Stormwater Facility Setbacks. Separation distances between stormwater facilities and buildings shall be in accordance with the guidelines of the PA BMP Manual, latest revision, and site layout shall consider the effect of infiltration facilities on nearby basements. The site layout and construction of new aboveground stormwater facilities shall be controlled by the following regulations:

- (a) Single-family residential uses. For all single-family residential uses, no part of any aboveground stormwater facility shall occupy more than 25% of the required yard area, measured as to linear dimension or surface area. Aboveground stormwater facilities shall be located on the perimeter of the lot, shall be entirely within the lot lines, and shall be located as far from the dwelling as possible in order to provide a reasonable amount of usable yard space. No aboveground stormwater facilities shall be located closer than a distance equal to the minimum required rear yard setback for the zoning district in which they are located from a building, whether on the same lot or any adjacent lot as measured from the 100-year high water surface elevation on the inside of the emergency spillway.
- (b) Multifamily residential uses. For all multifamily residential uses where the lot is used for residential purposes, no part of any aboveground stormwater facility shall be located in the required yard area of any individual dwelling unit. No part of any aboveground stormwater facility shall occupy more than 35% of the required yard area, measured as to linear dimension or surface area, of any required yard. No aboveground stormwater facilities shall be located closer than a distance equal to the minimum required rear yard setback for the zoning district in which they are located from a building, whether on the same lot or any adjacent lot as measured from the 100-year high water surface elevation on the inside of the emergency spillway.
- (c) Nonresidential uses. For all nonresidential uses, no part of any aboveground stormwater facility shall occupy more than 15% of the

required yard area, measured as to linear dimension or surface area. No aboveground stormwater facilities shall be located closer than a distance equal to the minimum required rear yard setback for the zoning district in which they are located from a building, whether on the same lot or any adjacent lot as measured from the 100-year high water surface elevation on the inside of the emergency spillway.

122-26.B(2) - All calculations consistent with the Franconia Code using the soil cover complex method shall use the appropriate design rainfall depths for the various return period storms according to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 2, Version 3.0, rain data corresponding to the Perkasio, Pennsylvania rain gage, as presented in Table A-1 of Appendix A of this chapter. The design storm rainfall amount chosen for design can be obtained from the National Oceanic and Atmospheric Administration Atlas 14 interactive website: <http://hdsc.nws.noaa.gov/>

SECTION 20. Chapter 122 [Subdivision and Land Development], Article X [Stormwater and Watershed Management], Section 122-79.A(4), is hereby amended as follows:

122-79.A(4) - Development, or redevelopment, that has less than 5,000 square feet of new, additional or replaced impervious surface cover or earth disturbance (or 1,000 square feet within the Neshaminy Creek Watershed) provided any area where existing impervious surface is removed be restored with a minimum of 12 inches of topsoil and permanent vegetation with the intent to restore compacted areas to pervious surfaces.

SECTION 21. Chapter 122 [Subdivision and Land Development], Article X [Stormwater and Watershed Management], Section 122-87.I. is hereby amended as follows:

122-87.I - Any stormwater management facility designed to store runoff and requiring a berm or earthen embankment required or regulated by this article shall be designed to provide an emergency spillway to handle flow up to and including the one-hundred-year proposed conditions. The height of embankment must be set as to provide a minimum 1.0 foot of freeboard above the maximum water surface elevation computed within the spillway to the top of berm elevation for the one-hundred-year proposed conditions peak inflow. Should any stormwater management facility require a dam safety permit under Title 25, Environmental Protection, Chapter 105, Dam Safety and Waterway Management, the facility

shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety which may be required to pass storms larger than a one-hundred-year event.

SECTION 22. Chapter 122 [Subdivision and Land Development] is amended to add a new Article XII [Lighting Regulations] as follows.

122-115 **Definitions and word usage.** Unless otherwise expressly stated, the following words and phrases shall be construed throughout this chapter to have the meanings indicated:

BUG

A luminaire classification system that classifies backlight (B), uplight (U) and glare (G). Classification as defined by IES TM-15-11 or most current edition.

CANOPY

A covered, unconditioned structure with at least one side open for pedestrian and/or vehicular access. (An unconditioned structure is one that may be open to the elements and has no heat or air conditioning.)

FOOTCANDLE

The unit of measure expressing the quantity of light received on a surface. One footcandle is the illuminance produced by a candle on a surface one-foot square from a distance of one foot.

IESNA

An acronym for the Illuminating Engineering Society of North America, a professional guidance body for lighting engineers.

LED Light Emitting Diode.

LIGHT SPILL

Light emitted by a lighting installation that falls outside the boundaries of the property on which the installation is sited.

MOUNTING HEIGHT

The height of the photometric center of a luminaire above grade level.

NEW LIGHTING

Lighting for areas not previously illuminated; newly installed lighting of any type except for replacement lighting or lighting repairs.

SEASONAL LIGHTING

Temporary lighting installed and operated in connection with holidays or traditions.

TEMPORARY LIGHTING

Lighting installed and operated for periods not to exceed 60 days, completely removed and not operated again for at least 30 days.

122-116 Legislative Intent.

- A. This article is enacted to require and set minimum standards to:
- (1) Provide for and control lighting in outdoor public places where public health, safety and welfare are potential concerns.
 - (2) Protect drivers and pedestrians from the glare of non-vehicular light sources.
 - (3) Protect neighbors, the environment, and the night sky from nuisance glare and light trespass.
 - (4) Promote energy efficient lighting design and operation.

122-117 Applicability.

- A. Required for all uses within the Township where public health, safety and welfare are potential concerns, including:
- (1) Streets and Intersections
 - (2) Non-Residential Parking Areas
 - (3) Automotive Fuel-Dispensing Facilities
 - (4) Automotive Sales Areas
 - (5) Loading Docks
 - (6) Public Pedestrian and Bicycle Paths and Sidewalks
 - (7) Non-Residential Building Entrances
 - (8) Multi-Family Subdivisions

- (9) Recreational Facilities
- (10) Other public facilities
- (11) Any other locations deemed necessary by the Board.

122-118 Exemptions.

- A. The following uses are exempt from the requirements of this section:
 - (1) Temporary, seasonal and emergency lighting are exempt from all but the glare-control requirements of this chapter.
 - (2) Emergency lighting, as may be required by any public agency while engaged in the performance of their duties, is exempt from the requirements of this chapter.
 - (3) Street Lighting that is owned or maintained by the Township or State is exempt from the requirements of this chapter.

122-119 Criteria.

- A. Illumination levels.
 - (1) Lighting, where required by this chapter, or otherwise required or allowed by the Township, shall have illuminances, uniformities and glare control in accordance with the most current recommended practices of the Illuminating Engineering Society of North America (IESNA) as contained in the applicable publications:
 - (a) The IESNA Lighting Handbook
 - (b) IES RP-20 – Lighting for Parking Facilities
 - (c) IES RP-33 – Lighting for Exterior Environments
 - (d) IES G-1 – Guide for Security Lighting for People, Property and Critical Infrastructure
- B. Lighting fixture design.
 - (1) Fixtures shall be of a type and design appropriate to the lighting application.
 - (2) For the lighting of predominantly horizontal surfaces such as, but not limited to, parking areas, roadways, vehicular and pedestrian passage areas, automotive fuel-dispensing facilities, automotive sales areas, loading docks, building entrances,

sidewalks, bicycle and pedestrian paths, and site entrances, fixtures shall be aimed straight down and have an Uplight (U) value of zero (0).

- (3) For the lighting of predominantly nonhorizontal surfaces such as, but not limited to, facades, landscaping, signs, billboards, fountains, displays and statuary, fixtures shall be fully shielded and shall be installed and aimed so as to not project their output onto adjacent properties, into the windows of neighboring residences, adjacent uses, past the object being illuminated, skyward or onto a public roadway or pedestrian way.

122-120 Control of glare.

- A. All lighting shall be aimed, located, designed, fitted and maintained so as not to present a hazard to drivers or pedestrians by impairing their ability to safely traverse and so as not to create a nuisance by projecting or reflecting light onto a neighboring use or property.
- B. Directional fixtures such as floodlights and spotlights shall be so shielded, installed and aimed that they do not project their output into the windows of neighboring residences, adjacent uses, past the object being illuminated, skyward or onto a public roadway or pedestrian way.
- C. Parking facility and vehicular and pedestrianway lighting (except for safety and security applications and all-night business operations), for commercial, industrial and institutional uses shall be automatically extinguished no later than 1/2 hour after the close of business or facility operation. When safety or security lighting is proposed for after-hours illumination, it shall not be in excess of 25% of the number of fixtures or illumination level required or permitted for illumination during regular business hours.
- D. Vegetation screens shall not be employed to serve as the primary means for controlling glare. Rather, glare control shall be achieved primarily through the use of such means as cutoff fixtures, shields and baffles, and appropriate application of fixture mounting height, wattage, aiming angle and fixture placement.
- E. The illumination projected from any use onto a residential property shall at no time exceed 0.1 footcandle, as measured on the receiving residential property line.
- F. The illumination projected from any property onto a non-residential property shall at no time exceed 1.0 footcandle, measured on the receiving property line.
- G. Except as might be permitted by the Township for certain recreational lighting or otherwise allowed by specific use, fixtures shall not be mounted in excess of fourteen (14) feet above finished grade.

- H. Only the United States flag and the state flag shall be permitted to be illuminated from dusk till dawn. All other flags shall not be illuminated past 11:00 p.m. Flag lighting sources shall not exceed 7,000 lamp lumens per flagpole. The light source shall have a beam spread no greater than necessary to illuminate the flag and shall be adequately shielded.
- I. Under-canopy lighting for such applications as gas/service stations, hotel/theater marquees, fast-food/bank/drugstore drive-ups, shall be accomplished using flat-lens fixtures with and Uplight (U) value of zero (0), aimed straight down and shielded in such a manner that the lowest opaque edge of the fixture shall be below the light source at all lateral angles.

122-121 Installation.

- A. New electrical feeds for lighting standards shall be run underground, not overhead.
- B. Poles supporting lighting fixtures for the illumination of parking areas and located directly behind parking spaces, or where they could be hit by snowplows, shall be placed a minimum of five feet outside paved area or tire stops, or placed on concrete pedestals at least 30 inches high above the pavement, or suitably protected by other means as approved by the Township Engineer.
- C. Pole-mounted fixtures for lighting horizontal tasks shall be aimed straight down and poles shall be plumb.

122-122 Maintenance.

Lighting fixtures and ancillary equipment shall be maintained so as to always meet the requirements of this Chapter.

122-123 Signs. See Article XX.

122-124 Recreational lighting.

- A. Permission to illuminate recreational facilities shall be granted only when the Franconia Township Board of Supervisors is satisfied that the health, safety and welfare rights of nearby property owners and the Township as a whole have been properly protected. When recreational uses are specifically permitted by the Township for operation during hours of darkness, the following requirements shall apply:
 - (1) Sporting events shall be timed to end at such time that all lighting in the sports facility, other than lighting for safe exit of patrons, shall be extinguished by 11:00 p.m., regardless of such occurrences as extra innings or overtimes.

- (2) Fixture-mounting heights shall not exceed those necessary to achieve light trespass criteria elsewhere in this chapter.

122-125 Plan submission.

- A. Where site lighting is required, is otherwise required by Franconia Township or is proposed by applicant, lighting plans shall be submitted for Township review and approval. The submitted information shall contain the following:
 - (1) A plan or plans of the site, complete with all structures, parking spaces, building entrances, traffic areas (both vehicular and pedestrian), vegetation that might interfere with lighting, and adjacent uses that might be adversely impacted by the lighting. The lighting plan shall contain a layout of all proposed fixtures by location, orientation, aiming direction, mounting height and type. The submission shall include, in addition to existing and proposed area lighting, all other exterior lighting, e.g., architectural, building-entrance, landscape, flag, sign, etc.
 - (2) A ten-foot-by-ten-foot illuminance grid (point-by-point) plot of maintained horizontal footcandles overlaid on the site plan, plotted out to 0.0 footcandles, which demonstrates compliance with the light trespass, illuminance and uniformity requirements as set forth in this chapter or as otherwise required by the Township.
 - (3) The maintenance (light-loss) factors, IES candela file nomenclature, lamp-lumen ratings and specific lamp manufacturer's lamp ordering nomenclature, used in calculating the presented illuminance levels
 - (4) Description of the proposed equipment, including fixture catalog cuts, photometries, glare-reduction devices, lamps, on/off control devices, mounting heights, pole foundation details and mounting methods.
 - (5) When landscaping plans and/or utility plans are involved, they shall contain the lighting fixture locations and shall demonstrate that the utilities, site lighting and landscaping have been coordinated to minimize conflicts. The design shall consider potential conflicts between vegetation and intended light distribution, both initially and at vegetation maturity.
 - (6) Plan notes. The following notes shall appear on the lighting plan:
 - (a) Post-approval alterations to lighting plans or intended substitutions for approved lighting equipment shall be submitted to Franconia Township for review and approval.

- (b) Franconia Township reserves the right to conduct post-installation inspections to verify compliance with the ordinance requirements and approved lighting plan commitments, and if deemed appropriate by the Township, to require remedial action at no expense to the Township.
- (c) The applicant shall submit three copies of an as-built lighting plan to the Township to verify existing light intensities and uniformity are in accordance with the approved final plans.
- (d) “All streetlights shall be installed and energized prior to the issuance of the first occupancy permit for any subdivision or land development or first phase or section thereof and the lighting maintenance costs shall be the responsibility of the property owner.”

122-126 Nonconforming lighting.

- A. Any lighting fixture or lighting installation existing on the effective date of this chapter that does not conform with the requirements of this chapter shall be required to achieve conformance when:
 - (1) It is deemed by Franconia Township to create a safety hazard or nuisance.
 - (2) It is replaced by another fixture or fixtures or abandoned or relocated.
 - (3) There is a change in use.
 - (4) Minor corrective action, such as re-aiming or shielding, can achieve conformity with the applicable requirements of this chapter.
- B. When fixtures are added to a site and the number of fixtures added amounts to 50% or more of the existing fixtures, all existing exterior lighting on the site shall be made to conform to this chapter.

SECTION 23. Chapter 83 [Grading, Excavation and Fill], Section 83-9.C is hereby amended to read as follows:

§83-9.C - Plans for earth disturbance of one acre or greater shall be reviewed by the Montgomery County Conservation District. After payment of the appropriate fee to the township, the plans will be submitted to the Conservation District. Plans which require this review will not be given final approval until comments and/or recommendations are received, subject to a time limitation of 30 calendar days from the date of submission by the township to the Conservation District. Final approval shall be conditioned on the Applicant obtaining approval from the Department of Environmental Protection or Conservation District where required.

SECTION 24. Repeal and Ratification.

All ordinances or parts of ordinances inconsistent herewith or in conflict with any of the specific terms enacted hereby, to the extent of said inconsistencies or conflicts, are hereby specifically repealed. Any other terms and provisions of the ordinances of the Township that are unaffected by this Ordinance are hereby reaffirmed and ratified.

SECTION 25. Severability.

Should any section, paragraph, sentence, clause, or phrase in this Ordinance be declared unconstitutional or invalid for any reason, the remainder of the Ordinance shall not be affected thereby and shall remain in full force and effect, and for this reason the provisions of this Ordinance shall be severable.

SECTION 26. Effective Date.

This Ordinance shall become effective five (5) days after enactment.

DULY ENACTED AND ORDAINED this 20th day of January, 2020, by the Board of Supervisors of Franconia Township, Montgomery County, Pennsylvania, in lawful session duly assembled.



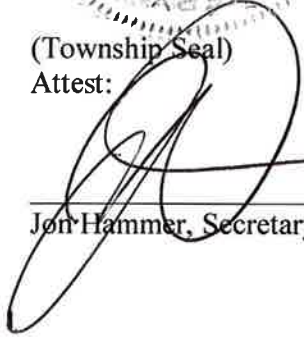
FRANCONIA TOWNSHIP
BOARD OF SUPERVISORS



Grey R. Godshall, Chairman

(Township Seal)

Attest:



Jon Hammer, Secretary

**Subdivision and Land Development
Appendix A: Stormwater References**

Township of Franconia

Stormwater Management Design Criteria

A-1

Design Storm Rainfall Amount (Inches)

Perkasie Gage (36-6840)

Source: NOAA Atlas 14 website

A-2

Atlas 14 Type II S-Curves for All Frequency Storms (Inches)

Perkasie Gage (36-6840)

Source: NOAA Atlas 14 website

A-3

Runoff Curve Numbers

Source: NRCS (SCS) TR-55

A-4

Design Storm Rainfall Amount (Inches Per Hour)

Perkasie Gage (36-6840)

Source: NOAA Atlas 14 website

A-5

Atlas 14 Type II S-Curves for All Frequency Storms
(Inches Per Hour)

Perkasie Gage (36-6840)

A-6

Rational Runoff Coefficients

Source: Rawls et al, 1981

A-7

Manning Roughness Coefficients

A-1
Design Storm Rainfall Amount (Inches)
Point Precipitation Frequency Estimates (inches)
Perkasie Gage (36-6840)

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.333 (0.304-0.364)	0.396 (0.362-0.434)	0.466 (0.425-0.509)	0.516 (0.470-0.564)	0.576 (0.522-0.628)	0.618 (0.557-0.675)	0.659 (0.592-0.720)	0.696 (0.621-0.761)	0.740 (0.655-0.812)	0.773 (0.680-0.850)
10-min	0.532 (0.486-0.582)	0.634 (0.579-0.694)	0.746 (0.681-0.815)	0.825 (0.751-0.901)	0.918 (0.832-1.00)	0.985 (0.887-1.08)	1.05 (0.940-1.14)	1.10 (0.984-1.21)	1.17 (1.04-1.28)	1.22 (1.07-1.34)
15-min	0.665 (0.608-0.727)	0.797 (0.728-0.872)	0.944 (0.861-1.03)	1.04 (0.950-1.14)	1.16 (1.05-1.27)	1.25 (1.12-1.36)	1.32 (1.19-1.45)	1.39 (1.24-1.52)	1.47 (1.30-1.62)	1.53 (1.34-1.68)
30-min	0.912 (0.833-0.997)	1.10 (1.01-1.20)	1.34 (1.22-1.47)	1.51 (1.38-1.65)	1.72 (1.56-1.88)	1.88 (1.69-2.05)	2.03 (1.82-2.21)	2.17 (1.93-2.37)	2.34 (2.08-2.57)	2.47 (2.18-2.72)
60-min	1.14 (1.04-1.24)	1.38 (1.26-1.51)	1.72 (1.57-1.88)	1.97 (1.79-2.15)	2.30 (2.08-2.50)	2.54 (2.29-2.78)	2.79 (2.51-3.05)	3.04 (2.71-3.32)	3.36 (2.98-3.69)	3.61 (3.18-3.97)
2-hr	1.35 (1.23-1.48)	1.64 (1.49-1.80)	2.05 (1.86-2.25)	2.37 (2.14-2.60)	2.80 (2.52-3.06)	3.14 (2.81-3.44)	3.49 (3.10-3.82)	3.85 (3.40-4.22)	4.34 (3.79-4.76)	4.72 (4.08-5.19)
3-hr	1.48 (1.34-1.64)	1.80 (1.63-1.99)	2.25 (2.03-2.48)	2.60 (2.34-2.87)	3.07 (2.75-3.39)	3.45 (3.07-3.79)	3.84 (3.40-4.22)	4.23 (3.71-4.66)	4.77 (4.14-5.27)	5.19 (4.47-5.75)
6-hr	1.86 (1.69-2.06)	2.24 (2.04-2.49)	2.80 (2.54-3.10)	3.25 (2.94-3.59)	3.88 (3.48-4.28)	4.40 (3.92-4.84)	4.96 (4.39-5.45)	5.54 (4.84-6.09)	6.37 (5.48-7.01)	7.04 (5.97-7.76)
12-hr	2.27 (2.07-2.53)	2.74 (2.50-3.05)	3.44 (3.12-3.82)	4.02 (3.63-4.46)	4.87 (4.36-5.37)	5.59 (4.96-6.16)	6.37 (5.59-7.01)	7.22 (6.26-7.94)	8.46 (7.19-9.33)	9.49 (7.95-10.5)
24-hr	2.68 (2.45-2.94)	3.23 (2.96-3.54)	4.06 (3.71-4.45)	4.75 (4.33-5.19)	5.76 (5.21-6.27)	6.61 (5.95-7.18)	7.52 (6.73-8.17)	8.52 (7.57-9.25)	9.98 (8.74-10.8)	11.2 (9.70-12.1)
2-day	3.11 (2.81-3.47)	3.76 (3.39-4.20)	4.73 (4.26-5.29)	5.52 (4.96-6.16)	6.65 (5.94-7.40)	7.59 (6.74-8.42)	8.59 (7.57-9.52)	9.66 (8.44-10.7)	11.2 (9.68-12.4)	12.4 (10.7-13.8)
3-day	3.29 (2.98-3.65)	3.96 (3.59-4.41)	4.97 (4.50-5.52)	5.78 (5.22-6.42)	6.94 (6.24-7.69)	7.90 (7.06-8.73)	8.91 (7.92-9.84)	9.99 (8.82-11.0)	11.5 (10.1-12.7)	12.8 (11.1-14.2)
4-day	3.46 (3.15-3.82)	4.17 (3.80-4.61)	5.20 (4.73-5.75)	6.04 (5.49-6.67)	7.23 (6.53-7.97)	8.20 (7.39-9.04)	9.23 (8.27-10.2)	10.3 (9.20-11.4)	11.9 (10.5-13.1)	13.1 (11.5-14.5)
7-day	4.05 (3.72-4.45)	4.86 (4.46-5.34)	5.99 (5.50-6.58)	6.93 (6.34-7.61)	8.26 (7.53-9.05)	9.36 (8.51-10.3)	10.5 (9.52-11.5)	11.8 (10.6-12.9)	13.5 (12.1-14.8)	14.9 (13.2-16.4)
10-day	4.61 (4.27-5.01)	5.51 (5.09-5.99)	6.71 (6.20-7.29)	7.68 (7.07-8.33)	9.02 (8.29-9.78)	10.1 (9.25-10.9)	11.2 (10.2-12.1)	12.4 (11.2-13.4)	14.0 (12.6-15.2)	15.2 (13.7-16.5)
20-day	6.23 (5.77-6.74)	7.40 (6.85-7.99)	8.81 (8.16-9.53)	9.93 (9.18-10.7)	11.4 (10.6-12.4)	12.6 (11.6-13.6)	13.8 (12.7-14.9)	15.0 (13.7-16.2)	16.6 (15.1-18.0)	17.8 (16.1-19.3)
30-day	7.77 (7.29-8.27)	9.15 (8.59-9.75)	10.7 (10.00-11.4)	11.8 (11.1-12.6)	13.4 (12.5-14.2)	14.5 (13.5-15.5)	15.6 (14.6-16.7)	16.8 (15.6-17.9)	18.2 (16.8-19.5)	19.3 (17.8-20.7)
45-day	9.86 (9.30-10.5)	11.6 (10.9-12.3)	13.3 (12.5-14.1)	14.6 (13.7-15.5)	16.3 (15.3-17.2)	17.5 (16.4-18.5)	18.6 (17.4-19.7)	19.7 (18.4-20.9)	21.0 (19.6-22.3)	21.9 (20.4-23.3)
60-day	11.8 (11.2-12.5)	13.8 (13.1-14.7)	15.8 (14.9-16.8)	17.2 (16.3-18.3)	19.1 (18.0-20.2)	20.4 (19.2-21.6)	21.6 (20.4-22.9)	22.7 (21.4-24.1)	24.1 (22.6-25.6)	25.1 (23.5-26.6)

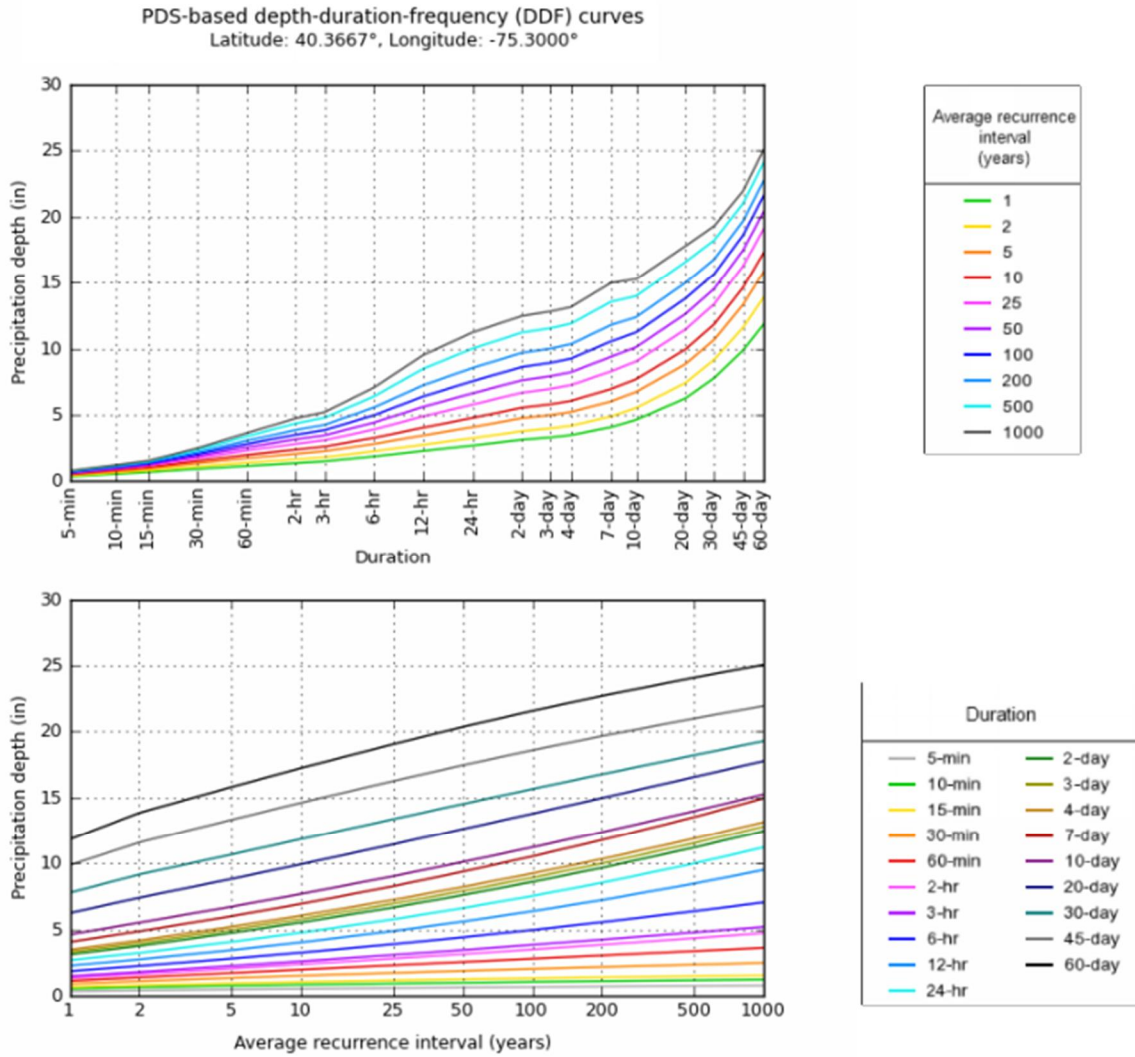
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

A-2

Atlas 14 Type II S-Curves for All Frequency Storms (Inches)

Perkasie Gage (36-6840)

Source: NOAA Atlas 14 website



A-3

Runoff Curve Numbers Source: NRCS (SCS) TR-55

Land Use Description	Hydrologic Condition	Hydrologic Soil Group			
		A	B	C	D
Open Space					
Grass cover <50%	Poor	68	79	86	89
Grass cover 50% to 75%	Fair	49	69	79	84
Grass cover > 75%	Good	39	61	74	80
Meadow		30	58	71	78
Agricultural					
Pasture, grassland, or range — Continuous forage for grazing	Poor	68	79	86	89
Pasture, grassland, or range — Continuous forage for grazing	Fair	49	69	79	84
Pasture, grassland, or range — Continuous forage for grazing	Good	39	61	74	80
Brush-weed-grass mixture with brush the major element	Poor	48	67	77	83
Brush-weed-grass mixture with brush the major element	Fair	35	56	70	77
Brush-weed-grass mixture with brush the major element	Good	30	48	65	73
Fallow bare soil	—	77	86	91	94
Crop residue cover (CR)	Poor	76	85	90	93
	Good	74	83	88	90
Woods - grass combination (orchard or tree farm)	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30	55	70	77
Commercial (85% Impervious)		89	92	94	95
Industrial (72% Impervious)		81	88	91	93
Institutional (50% Impervious)		71	82	88	90
Residential districts by average lot size:					
% Impervious					
1/8 acre or less* (town houses) 65		77	85	90	92
1/4 acre 38		61	75	83	87
1/3 acre 30		57	72	81	86
1/2 acre 25		54	70	80	85
1 acre 20		51	68	79	84
2 acres 12		46	65	77	82
Farmstead		59	74	82	86
Smooth surfaces (concrete, asphalt, gravel or bare compacted soil)		98	98	98	98
Water		98	98	98	98
Mining/newly graded areas (pervious areas only)		77	86	91	94

* Includes Multi-Family Housing unless justified lower density can be provided.

Note: Existing site conditions of bare earth or fallow ground shall be considered as meadow when choosing a CN value.

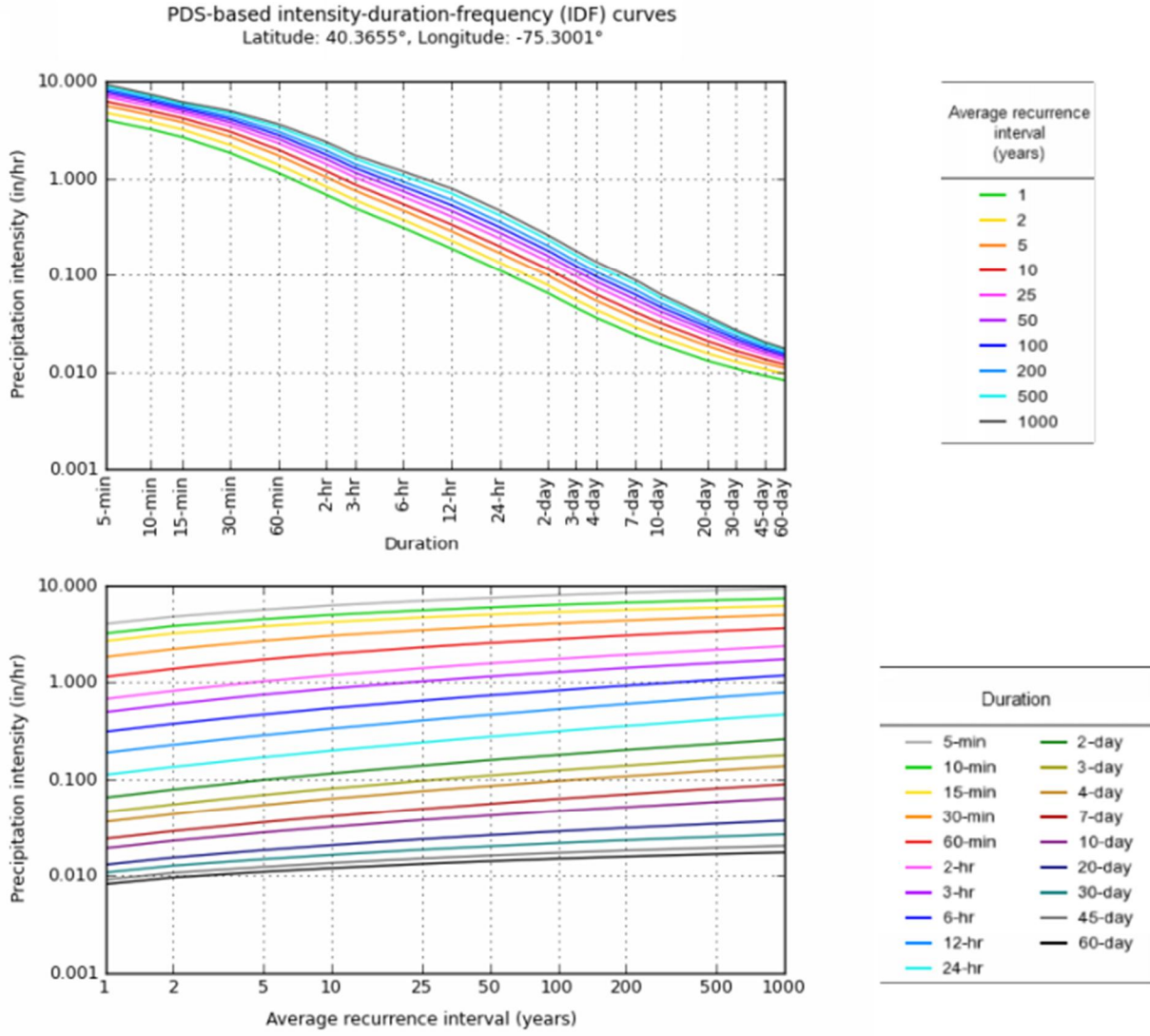
A-4

Design Storm Rainfall Amount (Inches Per Hour)
Perkasie Gage (36-6840)

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.00 (3.65-4.37)	4.75 (4.34-5.21)	5.59 (5.10-6.11)	6.19 (5.64-6.77)	6.91 (6.26-7.54)	7.42 (6.68-8.10)	7.91 (7.10-8.64)	8.35 (7.45-9.13)	8.88 (7.86-9.74)	9.28 (8.16-10.2)
10-min	3.19 (2.92-3.49)	3.80 (3.47-4.16)	4.48 (4.09-4.89)	4.95 (4.51-5.41)	5.51 (4.99-6.01)	5.91 (5.32-6.45)	6.28 (5.64-6.86)	6.62 (5.90-7.24)	7.02 (6.22-7.70)	7.30 (6.43-8.03)
15-min	2.66 (2.43-2.91)	3.19 (2.91-3.49)	3.78 (3.44-4.12)	4.18 (3.80-4.56)	4.66 (4.22-5.08)	4.99 (4.49-5.44)	5.29 (4.75-5.78)	5.56 (4.97-6.09)	5.89 (5.22-6.46)	6.11 (5.38-6.72)
30-min	1.82 (1.67-1.99)	2.20 (2.01-2.41)	2.68 (2.45-2.93)	3.02 (2.75-3.30)	3.45 (3.12-3.76)	3.75 (3.38-4.10)	4.05 (3.64-4.43)	4.33 (3.87-4.74)	4.69 (4.15-5.14)	4.95 (4.35-5.44)
60-min	1.14 (1.04-1.24)	1.38 (1.26-1.51)	1.72 (1.57-1.88)	1.97 (1.79-2.15)	2.30 (2.08-2.50)	2.54 (2.29-2.78)	2.79 (2.51-3.05)	3.04 (2.71-3.32)	3.36 (2.98-3.69)	3.61 (3.18-3.97)
2-hr	0.674 (0.614-0.741)	0.818 (0.746-0.900)	1.02 (0.930-1.13)	1.18 (1.07-1.30)	1.40 (1.26-1.53)	1.57 (1.41-1.72)	1.74 (1.55-1.91)	1.92 (1.70-2.11)	2.17 (1.89-2.38)	2.36 (2.04-2.60)
3-hr	0.494 (0.447-0.546)	0.598 (0.542-0.661)	0.749 (0.677-0.827)	0.865 (0.780-0.955)	1.02 (0.916-1.13)	1.15 (1.02-1.26)	1.28 (1.13-1.41)	1.41 (1.24-1.55)	1.59 (1.38-1.75)	1.73 (1.49-1.91)
6-hr	0.310 (0.282-0.343)	0.374 (0.341-0.415)	0.467 (0.423-0.517)	0.543 (0.491-0.599)	0.649 (0.582-0.715)	0.735 (0.655-0.809)	0.827 (0.731-0.910)	0.926 (0.808-1.02)	1.06 (0.914-1.17)	1.18 (0.997-1.30)
12-hr	0.188 (0.171-0.210)	0.227 (0.207-0.253)	0.285 (0.259-0.317)	0.334 (0.302-0.370)	0.404 (0.362-0.446)	0.464 (0.412-0.511)	0.529 (0.464-0.582)	0.599 (0.519-0.659)	0.702 (0.597-0.775)	0.788 (0.660-0.870)
24-hr	0.112 (0.102-0.122)	0.135 (0.123-0.148)	0.169 (0.155-0.185)	0.198 (0.180-0.216)	0.240 (0.217-0.261)	0.275 (0.248-0.299)	0.314 (0.281-0.341)	0.355 (0.315-0.385)	0.416 (0.364-0.451)	0.467 (0.404-0.506)
2-day	0.065 (0.058-0.072)	0.078 (0.071-0.087)	0.099 (0.089-0.110)	0.115 (0.103-0.128)	0.139 (0.124-0.154)	0.158 (0.140-0.175)	0.179 (0.158-0.198)	0.201 (0.176-0.223)	0.233 (0.202-0.258)	0.259 (0.222-0.287)
3-day	0.046 (0.041-0.051)	0.055 (0.050-0.061)	0.069 (0.062-0.077)	0.080 (0.073-0.089)	0.096 (0.087-0.107)	0.110 (0.098-0.121)	0.124 (0.110-0.137)	0.139 (0.123-0.153)	0.160 (0.140-0.177)	0.178 (0.154-0.197)
4-day	0.036 (0.033-0.040)	0.043 (0.040-0.048)	0.054 (0.049-0.060)	0.063 (0.057-0.070)	0.075 (0.068-0.083)	0.085 (0.077-0.094)	0.096 (0.086-0.106)	0.108 (0.096-0.118)	0.124 (0.109-0.136)	0.137 (0.120-0.151)
7-day	0.024 (0.022-0.026)	0.029 (0.027-0.032)	0.036 (0.033-0.039)	0.041 (0.038-0.045)	0.049 (0.045-0.054)	0.056 (0.051-0.061)	0.063 (0.057-0.069)	0.070 (0.063-0.077)	0.080 (0.072-0.088)	0.089 (0.079-0.098)
10-day	0.019 (0.018-0.021)	0.023 (0.021-0.025)	0.028 (0.026-0.030)	0.032 (0.029-0.035)	0.038 (0.035-0.041)	0.042 (0.039-0.046)	0.047 (0.043-0.051)	0.052 (0.047-0.056)	0.058 (0.053-0.063)	0.064 (0.057-0.069)
20-day	0.013 (0.012-0.014)	0.015 (0.014-0.017)	0.018 (0.017-0.020)	0.021 (0.019-0.022)	0.024 (0.022-0.026)	0.026 (0.024-0.028)	0.029 (0.026-0.031)	0.031 (0.029-0.034)	0.034 (0.031-0.037)	0.037 (0.034-0.040)
30-day	0.011 (0.010-0.011)	0.013 (0.012-0.014)	0.015 (0.014-0.016)	0.016 (0.015-0.017)	0.019 (0.017-0.020)	0.020 (0.019-0.021)	0.022 (0.020-0.023)	0.023 (0.022-0.025)	0.025 (0.023-0.027)	0.027 (0.025-0.029)
45-day	0.009 (0.009-0.010)	0.011 (0.010-0.011)	0.012 (0.012-0.013)	0.014 (0.013-0.014)	0.015 (0.014-0.016)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.018 (0.017-0.019)	0.019 (0.018-0.021)	0.020 (0.019-0.022)
60-day	0.008 (0.008-0.009)	0.010 (0.009-0.010)	0.011 (0.010-0.012)	0.012 (0.011-0.013)	0.013 (0.013-0.014)	0.014 (0.013-0.015)	0.015 (0.014-0.016)	0.016 (0.015-0.017)	0.017 (0.016-0.018)	0.017 (0.016-0.018)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

A-5
Design Storm Rainfall Amount (Inches/Hour)
Perkasie Gage (36-6840)



A-6
Rational Runoff Coefficients
By Hydrologic Soils Group and Overland Slope (%)
 Source: Rawls, et al, 1981

Hydrologic Soil Group	A			B			C			D		
	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Cultivated Land	*0.08	0.13	0.16	0.11	0.15	0.21	0.14	0.19	0.26	0.18	0.23	0.31
	**0.14	0.18	0.22	0.16	0.21	0.28	0.20	0.25	0.34	0.24	0.29	0.41
Pasture	0.12	0.20	0.30	0.18	0.28	0.37	0.24	0.34	0.44	0.30	0.40	0.50
	0.15	0.25	0.37	0.23	0.34	0.45	0.30	0.42	0.52	0.37	0.50	0.62
Meadow	0.10	0.16	0.25	0.14	0.22	0.30	0.20	0.28	0.36	0.24	0.30	0.40
	0.14	0.22	0.30	0.20	0.28	0.37	0.26	0.35	0.44	0.30	0.40	0.50
Forest	0.05	0.08	0.11	0.08	0.11	0.14	0.10	0.13	0.16	0.12	0.16	0.20
	0.08	0.11	0.14	0.10	0.14	0.18	0.12	0.16	0.20	0.15	0.20	0.25
Resident 1/8 acre lots	0.25	0.28	0.31	0.27	0.30	0.35	0.30	0.33	0.38	0.33	0.36	0.42
	0.33	0.37	0.40	0.35	0.39	0.44	0.38	0.42	0.49	0.41	0.45	0.54
1/4 acre lots	0.22	0.26	0.39	0.24	0.29	0.33	0.27	0.31	0.36	0.30	0.34	0.40
	0.30	0.34	0.37	0.33	0.37	0.42	0.36	0.40	0.47	0.38	0.42	0.52
1/3 acre lots	0.19	0.23	0.26	0.22	0.26	0.30	0.25	0.29	0.34	0.28	0.32	0.39
	0.28	0.32	0.35	0.30	0.35	0.39	0.33	0.38	0.45	0.36	0.40	0.50
1/2 acre lots	0.16	0.20	0.24	0.19	0.23	0.28	0.22	0.27	0.32	0.26	0.30	0.37
	0.25	0.29	0.32	0.28	0.32	0.36	0.31	0.35	0.42	0.34	0.38	0.48
1 acre lots	0.14	0.19	0.22	0.17	0.21	0.26	0.20	0.25	0.31	0.24	0.29	0.35
	0.22	0.26	0.29	0.24	0.28	0.34	0.28	0.32	0.40	0.31	0.35	0.46
Industrial	0.67	0.68	0.68	0.68	0.68	0.69	0.68	0.69	0.69	0.69	0.69	0.69
	0.85	0.85	0.86	0.85	0.86	0.86	0.86	0.86	0.87	0.86	0.86	0.88
Commercial	0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.88	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.90	0.89	0.89	0.90
Streets	0.70	0.71	0.72	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78
	0.76	0.77	0.79	0.80	0.82	0.84	0.84	0.85	0.89	0.89	0.91	0.95
Open space	0.05	0.10	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.28
	0.11	0.16	0.20	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Parking	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87
	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97

NOTES:

- * Runoff coefficients for storm recurrence intervals of less than 25 years.
- ** Runoff coefficients for storm recurrence intervals of 25 years or more.

A-7

Manning's Roughness Coefficients
Publication 584 2010 Edition, Chapter 7 - Hydrology

Description	Manning's n-value
Polyvinyl Chloride (PVC) with smooth Inner Walls	0.010
Corrugated High-Density Polyethylene (HDPE) with Smooth Inner Walls	0.012
Corrugated High-Density Polyethylene (HDPE) with Corrugated Inner Walls	0.015
Concrete Pipe	0.012
Smooth-lined Corrugated Metal Pipe	0.012
Corrugated Plastic Pipe	0.024
Annular Corrugated Steel And Aluminum Alloy Pipe (Plain or polymer coated)	
68 mm × 13 mm (2 2/3 in × 1/2 in) Corrugations	0.024
75 mm × 25 mm (3 in × 1 in) Corrugations	0.027
125 mm × 25 mm (5 in × 1 in) Corrugations	0.025
150 mm × 50 mm (6 in × 2 in) Corrugations	0.033
Helically Corrugated Steel And Aluminum Alloy Pipe (Plain or polymer coated)	
75 mm × 25 mm (3 in × 1 in), 125 mm × 25 mm (5 in × 1 in), or 150 mm × 50 mm (6 in × 2 in) Corrugations	0.024
Helically Corrugated Steel And Aluminum Alloy Pipe (Plain or polymer coated)	
68 mm × 13 mm (2 2/3 in × 1/2 in) Corrugations	
a. Lower Coefficients*	
450 mm (18 in) Diameter	0.014
600 mm (24 in) Diameter	0.016
900 mm (36 in) Diameter	0.019
1200 mm (48 in) Diameter	0.020
1500 mm (60 in) Diameter or larger	0.021
b. Higher Coefficients**	0.024
Annular or Helically Corrugated Steel or Aluminum Alloy Pipe Arches or Other Non-Circular Metal Conduit (Plain or Polymer coated)	0.024
Vitrified Clay Pipe	0.012
Ductile Iron Pipe	0.013
Asphalt Pavement	0.015
Concrete Pavement	0.014
Grass Medians	0.050
Grass – Residential	0.030
Earth	0.020
Gravel	0.030
Rock	0.035
Cultivated Areas	0.030 - 0.050
Dense Brush	0.070 - 0.140
Heavy Timber (Little undergrowth)	0.100 - 0.150
Heavy Timber (with underbrush)	0.40
Streams:	
a. Some Grass And Weeds (Little or no brush)	0.030 - 0.035
b. Dense Growth of Weeds	0.035 - 0.050
c. Some Weeds (Heavy brush on banks)	0.050 - 0.070

Notes:

- * Use the lower coefficient if any one of the following conditions apply:
 - a. A storm pipe longer than 20 diameters, which directly or indirectly connects to an inlet or manhole, located in swales adjacent to shoulders in cut areas, shoulders in cut areas or depressed medians.
 - b. A storm pipe which is specially designed to perform under pressure.

- ** Use the higher coefficient if any one of the following conditions apply:
 - a. A storm pipe which directly or indirectly connects to an inlet or manhole located in highway pavement sections or adjacent to curb or concrete median barrier.
 - b. A storm pipe which is shorter than 20 diameters long.
 - c. A storm pipe which is partly lined helically corrugated metal pipe.

Appendix B

145-123.A. The following uses and occupancies shall provide off-street parking in the amounts as indicated below. Parking spaces shall be designed such that each motor vehicle may proceed to and from the parking space provided for it without the possibility of requiring the moving of any other vehicle.

Use/Occupancy	Parking Space Requirement
Airport	One space per 100 square feet of gross floor area plus one space per employee
Animal hospital	One space per 8 animals of capacity
Athletic club, indoor	One space per 100 square feet of total floor area
Bank or financial institution	One space per 200 square feet of floor area: institutions with drive-through facilities shall provide a minimum of five stacking spaces per service window
Bowling alley	Five spaces per alley plus one per employee
Broadcast studio	One space per employee plus requirements of auditorium or theater
Business, professional, trade and/or technical schools	One space for each full-time employee and student
Campground	One space per campsite or sleeping unit
Car wash	One space per employee plus 20 waiting spaces per washing lane and 1,000 square feet of finishing area per lane
Cemetery	One space per 5 persons of chapel capacity or 8 lineal feet of pews, whichever is greater
Church, place of worship	One off-street parking space for each four seats provided for patron use, or at least one off-street parking space for each 40 square feet of gross floor area intended to be used for service of patrons, guest or members, whichever requires the greatest number of off-street parking spaces, plus one additional space for each full-time employee

Appendix B

Use/Occupancy

Parking Space Requirement

Clubs and clubhouses	One space per 150 square feet of gross floor, building and ground area devoted to this use
Child, adult and senior citizen day centers, nursery school	Three spaces per 1,000 square feet
Commercial pool	One space per 50 sf of pool area plus one space per full-time employee
Community center, senior citizen community center or other similar facility	Three off-street parking spaces for each 1,000 square feet of gross floor area
Contractor, craftsman's or general service shop	One space per employee, both shop and field, and one per 500 square feet devoted to patron use
Convenience store	One space per 100 gross square feet of floor area plus one per employee
Convention center	One space per room and one per employee for lodging facilities and one per five fixed seats plus one space per 35 square feet of gross assembly area without seating
Dancing schools	One space per student, calculated on maximum building capacity, as determined by the Fire Marshal
Dining and lodging facilities	One space per unit plus an additional two per seat or one per 50 square feet of floor space and one per employee, whichever is greater
Dispensary	One space per 200 square feet of gross floor area
Drive-In	One space per car of capacity
Duplex dwellings	Two spaces per dwelling unit
Electric and communication substation	One off-street space of sufficient size to accommodate the largest anticipated service vehicle
Emergency service center	One space per 50 square feet of meeting area plus two spaces per emergency vehicle
Flex space	One space per 275 square feet of gross floor area

Appendix B

Use/Occupancy

Parking Space Requirement

Funeral home

One space per 50 square feet of space for patron use or 4 seats for patron use, whichever is greater

Garden apartments

Two and one half spaces per dwelling unit

Golf course

Ten spaces per hole

Greenhouse, nursery, garden center

Five spaces per 1,000 square feet of indoor and/or outdoor space devoted to patron use and display of stock

Group home, inpatient rehabilitation center

One space per bed

Guest house

One space per guest room and one space for each employee on the largest shift

Gymnasiums, stadiums, auditoriums serving educational facilities

One space per five seats

Home occupation

One space per 400 square feet of space used for occupation

Hotel or motel

One space per each guest room plus any required additional spaces for permitted uses within the hotel or motel plus one per employee on the largest shift

Industrial uses, manufacturing

One space per employee per largest shift who works either within the facility or who serves as a driver or other outside activity, or one space per 750 square feet of gross floor area, whichever is greater

Indoor entertainment, amusement

One space per 100 square feet of patron use or 3 seats, whichever is greater

Kennel, commercial

One space per 12 animals of capacity

Kindergarten, elementary, middle or junior high school

Three spaces for every 10 students

Appendix B

Use/Occupancy

Parking Space Requirement

Laboratories

One space per 200 square feet of gross floor area

Laundry

One space per two washing machines

Libraries or museums

Three off-street parking spaces for each 1,000 square feet of gross floor area

Lodging facilities

One space per unit plus one per employee

Motor vehicle: service station, repair shop, public garage

One space per employee plus five per service bay

Motor vehicle: sales agency (also includes such items as boats and trailers)

One space per 100 square feet of floor area devoted to office, sales or showroom use plus one per employee

Municipal buildings

Requirements shall be computed based on the combined uses within the buildings

Newspaper publishing

One space per employee per largest shift who works either within the facility or who serves as a driver or other outside activity

Music schools, professional schools

One off-street parking space per student or per faculty member plus one per student calculated on maximum building capacity, as determined by the Fire Marshal

Office: business services and professional, including veterinarian

Three spaces per 1,000 square feet of gross floor area

Office: professional – medical, pharmaceutical

Four spaces per 1,000 square feet of gross floor area

Outdoor entertainment

One space per 3 persons of capacity plus one per employee on one shift

Park and outdoor/rural recreation

Parking shall be based upon the number and type of playing fields, and any other physical improvements; a percentage of the spaces may be all-weather, as approved by the Township Engineer; the total number of spaces shall be supported by a parking study that shall be reviewed and approved by the Township Engineer

Appendix B

Use/Occupancy

Parking Space Requirement

Personal service or custom shops	One space per 100 gross square feet of floor area devoted to patron use and performance of the service
Pet resort	One space per 8 animals of capacity plus 1 space per every 2 employees
Rental rooms	Two spaces for resident family plus one for each guest room
Research	One space per 250 square feet of total floor space plus one space per vehicle normally stored on the premises
Residential	Two spaces
Restaurant, including eating place, social club and drive-through	One space per 80 square feet of gross floor area and a minimum stacking lane of five spaces per drive-through window
Retail stores including strip shopping center	Five spaces per 1,000 square feet of gross floor area
Retirement home, assisted living	Two spaces per dwelling unit
Riding academy/stable	One space per 8 animals of capacity
Roadside agricultural stand	Sufficient spaces to accommodate seasonal sale; surface may be crushed stone in lieu of paving and curbing, at the discretion of the Township
Rural inn	Two spaces for resident family plus one for each guest room
Sanitariums, convalescent homes, hospitals	One space for every two beds plus one per maximum number of employees on a shift
Senior high school, junior college	One off-street parking space per faculty member and employee plus one space per three students calculated on maximum building capacity, as determined by the Fire Marshal
Shopping Center, standard/major	One space per employee per largest shift who works either within the facility or who serves as a driver or other outside activity, or one space per 750 square feet of gross floor area, whichever is greater
Special citizens housing	One space per two beds plus one per maximum number of employees on a shift

Appendix B

Use/Occupancy

Parking Space Requirement

Stock, piggery or slaughterhouse

One space per employee

Tennis courts

Two spaces per court

Terminal

One space per 100 square feet

Theater, auditorium, or other place of public assemblage, excluding churches

One space for every three seats

Townhouses

Two and one-half spaces per dwelling unit

Used car lot

One space per employee plus one space per 1,000 square feet of lot area; such areas shall be marked and reserved for patron use

Utilities

One space per employee

Waste or recycling center

One space per employee

Wholesale business, wholesale storage, warehousing

One space per 500 square feet of gross floor area plus 1 space for each business vehicle normally stored on the premises

Wholesale office and showroom including outside yard for distributing and building materials and/or similar materials

One per employee plus five per 1,000 square feet of space devoted to patron use display stock

Wildlife sanctuary

One space per employee plus 1 or 0.25 spaces per acre, whichever is greater