

ARTICLE X

DESIGN STANDARDS AND REQUIRED IMPROVEMENTS

1001. MINIMUM REQUIREMENTS.

1001.A. The design standards and improvements required in this Article are the minimum requirements for approval of a subdivision or land development. Additional or higher type improvements may be required in specific cases as a condition of approval where the Planning Commission determines such improvements are clearly necessary to protect the public health and safety.

1001.B. The Planning Commission may require reasonable appropriate deed restrictions on land within a subdivision or land development, with the restrictions stated in each applicable deed and noted on every recorded plan, if needed to ensure compliance with City, State and Federal laws and regulations and to protect the public health and safety.

1002. REQUIRED IMPROVEMENTS. This Article sets forth the design and construction standards for required improvements, regardless of whether the improvement will be dedicated to the City.

1003. OVERALL REQUIREMENTS.

1003.A. Land shall be suitable for the purpose for which it is to be subdivided or developed.

1003.B. Hazardous Conditions. Subdivisions or land developments subject to hazardous conditions (such as open quarries, hazardous or toxic site pollution, unconsolidated fill, floods, excessive erosion or unsafe water supply) shall not be approved until the developer has provided or has legally committed to provide adequate measures to overcome or eliminate the hazards, in the determination of the Planning Commission, to the best of their knowledge. However, the City accepts no responsibility to identify hazards or to guarantee their resolution.

1003.C. Zoning. All aspects of a proposed subdivision or land development shall conform to the City Zoning Ordinance and all other City Ordinances and specifications.

1003.D. Nearby Development. A subdivision or land development and its street pattern shall be coordinated with existing or approved nearby developments or neighborhoods to help develop the area harmoniously and to help prevent conflicts with neighboring uses.

1003.F. Safety. No subdivision or land development shall occur in such a way that would significantly threaten the public health and safety, including hazards of toxic substances, traffic hazards, explosive hazards and fire hazards.

1004. STREETS.

1004.A. Access to Streets. See Section 801.A. of the City Zoning Ordinance.

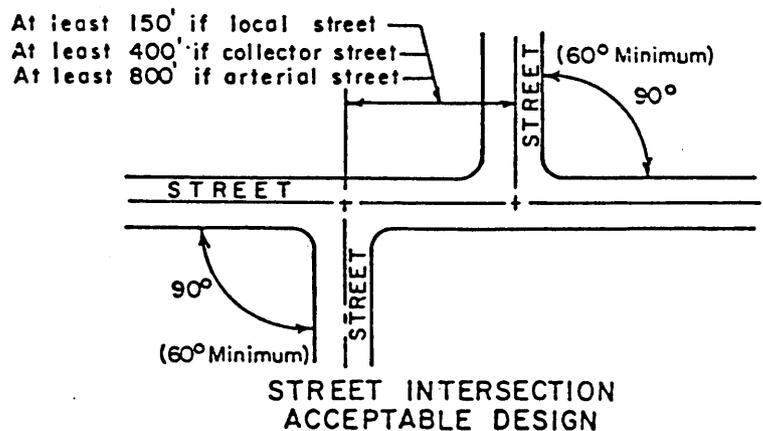
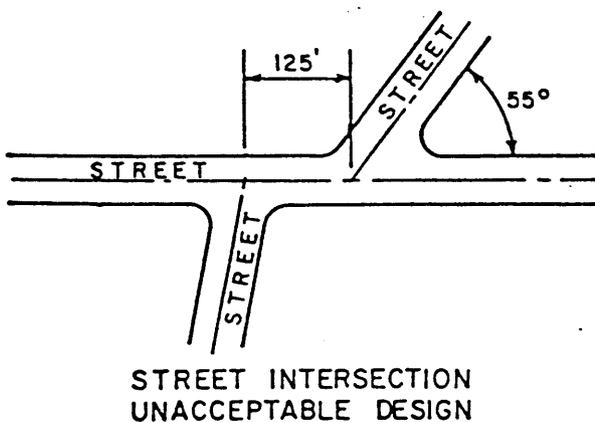
1004.B. Streets and Topography. Proposed streets shall be adjusted to the contour of the land to produce usable lots. See the street slope requirements of Section 1004.F.

1004.C. Street Continuations.

1. **Stub Streets.** Where deemed necessary by the Planning Commission for efficient movement of traffic, a subdivision or land development shall include the extension of a proposed street with right-of-way to the boundary line of the tract to provide for an eventual extension into the adjacent tract for efficient circulation of traffic throughout the area.
2. **Widening.** Where a subdivision or land development abuts or contains an existing street of inadequate cartway or right-of-way width, additional right-of-way and/or cartway width shall be required where determined by the Planning Commission to be necessary, up to the widths stated in Table 10.1, "Design Standards for Streets."

1004.D. Intersections.

1. The centerlines of streets shall intersect at right angles except where the Planning Commission determine that a right angle intersection is not feasible. In such case, the intersection shall be at as nearly a right angle as possible, with an absolute minimum angle of 75 degrees.
2. **Alignment of Street Intersections.**
 - a. No more than two streets shall intersect at one point.
 - b. Where a proposed street or business driveway intersects an existing cross street, such proposed street or business driveway shall be aligned with any street intersecting on the other side of the cross street, unless the Planning Commission or PennDOT determine that such alignment is not reasonable or feasible.
 - c. If a proposed street cannot intersect at the same point as a street intersecting on the other side of the cross street, then the proposed street shall be offset by the following minimum distances from the nearest intersection of streets:
 - 1) 150 feet along a local street,
 - 2) 300 feet along a collector street, and
 - 3) 800 feet along an arterial street.
 - 4) **Measurement.** The minimum distances of this subsection shall be measured between the points where the centerlines of the right-of-ways of the intersecting streets intersect with the centerline of the cross street.

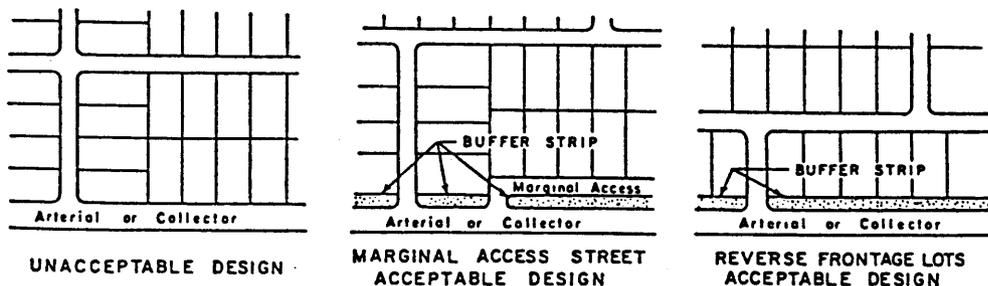


3. At street intersections, lot lines shall be rounded by arcs with the radii listed below. For arterial streets, the Planning Commission may require a larger radius than stated below, if recommended by the City Engineer.

<u>Type of Street</u>	<u>Minimum Radius of Arc at Intersection of Cartway Edge or Curb Line (in feet)</u>	<u>Minimum Radius of Arc at Intersection of Right-of-Way (in feet)</u>
Arterial	40	30
Collector	35	25
Local	25	15

1004.E. Arterial Street Frontage. Where a subdivision or land development abuts or contains an existing or proposed arterial street, the Planning Commission shall require one or more of the following methods of layout and site design if it determines one or more of these methods will be reasonable, feasible and necessary to avoid increased traffic congestion and improve traffic safety. The Commission's decision to use one or more of the following methods shall consider any recommendations of: the City Engineer, PennDOT and any professional traffic studies that have been submitted.

1. the use of a marginal access or "frontage" street or access only onto side or interior streets, to collect traffic from numerous driveways and direct it to a select few number of entrances to the arterial street, and/or
2. the minimization of the number and length of driveway cuts or street intersections onto an arterial street, which may include requiring the use of shared driveways between adjacent uses or lots, and/or driveways providing cross-connections between abutting business lots and/or
3. the restriction of ingress and egress involving left-hand turns onto or off of the arterial street, and/or
4. prohibiting driveways of individual dwellings from directly entering onto an arterial street.
5. Where individual driveways are permitted to access onto an arterial street, each driveway shall have adequate turn-around space for vehicles provided within the lot so that vehicles do not back onto the street.



1004.F. Street Design Standards.

1. Minimum street design standards shall be as shown in Table 10.1., unless PennDOT establishes a more restrictive requirement for a State road.

TABLE 10.1 - DESIGN STANDARDS FOR STREETS
(All Dimensions in Feet Unless Specified)

DESIGN SPECIFICATIONS	TYPE OF STREET:		
	Arterial	Collector	Local
Right-of-Way Width *****	60 to 80	50 to 60	50
Cartway Width	As determined by PennDOT to be necessary	30 to 36 *****	26 to 32 *****
Minimum Sight Distance*	475	300	200
Minimum Tangent between Reverse Curves **	200	100	100
Minimum Centerline Radii for Hori- zontal Curves	400***	300	150
Maximum Grade****	6%	8%	10%

* Horizontal sight distances shall be measured from a point 3.5 feet above the road surface to a point 6 inches above the road surface, and shall be based upon standards of the American Association of State Highway and Transportation Officials (AASHTO).

** All tangents shall be measured along the street centerline.

*** Larger radii may be required as determined to be needed by the City Engineer or PennDOT.

**** Minimum grades for all streets and alleys shall be 0.5 percent.

***** The Planning Commission shall determine the appropriate width within the ranges provided in this table based upon: the width of connecting streets, the need for on-street parking, the amount of traffic expected over the long-run once any street extensions are completed and recommendations of the City Staff. Generally, local streets in most cases are intended to have a minimum cartway width of 30 feet, except:

- a) Cul-de-sac streets that ultimately will serve fewer than 20 dwelling units shall be permitted to have a minimum cartway width of 26 feet.
- b) If single family detached residential lots of 20,000 square feet or more will be located on both sides of a local street, then that street may have a minimum cartway width of 20 feet, provided that 4 feet wide shoulders of approved construction are provided on each side of the street.

2. Horizontal curves shall connect street lines that are deflected in excess of 2 degrees.
3. Vertical curves shall be used at changes of grade exceeding 1 percent. The length of the vertical curve shall be determined by the required site distance specified in Table 10.1.
4. All approaches to an intersection of 2 or more streets shall have a levelling area not greater than 5 percent grade for a distance of 25 feet, measured from the nearest right-of-way line of the intersecting street.
5. The minimum grade of any street gutter shall be 0.75 percent.
6. For a proposed subdivision or land development, an alley having a right-of-way of 20 feet or less shall only be used for secondary vehicle access. However, an alley may be used for primary vehicle access for buildings that existed prior to the adoption of this Ordinance, even is such existing buildings are subdivided onto separate lots. An alley

serving one-way traffic shall have a minimum cartway width of 10 feet and a minimum right-of-way width of 16 feet. An alley serving two-way traffic shall have a minimum cartway width of 16 feet and a minimum right-of-way width of 22 feet.

1004.G. Easements. See Section 1011.

1004.H. Sight Distance. See Section 803 of the City Zoning Ordinance.

1004.I. Cul-de-Sac Streets.

1. Cul-de-sac streets shall be permitted with a maximum length of 1,000 feet. Cul-de-sac streets shall be provided with a turn-around with a minimum paved cartway radius of 40 feet to the face of the outside curb, except:
 - a. The 40 feet minimum paved cartway radius may be reduced to 35 feet if and when the applicant proves that such street would meet PennDOT requirements for liquid fuels reimbursement, considering any changes in PennDOT standards that may occur after the adoption of this Ordinance.
2. The circular right-of-way of the cul-de-sac shall maintain a minimum 10 feet width between the edge of paving and the edge of the legal street right-of-way. The circular paving of the cul-de-sac shall be connected to the approach paving by an arc having a radius of not less than 25 feet.
3. The Planning Commission may permit acceptable alternative turn-around designs, including a turn-arounds of acceptable radii incorporated into a parking court or a landscaped island (with an acceptable system for maintenance) within a cul-de-sac.
4. No street shall dead-end without an approved turn-around at the end of the street. Temporary stub streets shall be required to include a temporary cul-de-sac if the stub would be longer than 150 feet or serve more than 3 dwellings or lots.
5. The maximum cross slope on the circular part of a cul-de-sac shall be 8 percent.
6. A cul-de-sac street, or a combination of cul-de-sac streets connected so as to effectively form a system with only one point of entry, shall serve a total maximum of 20 dwelling units.

1004.J. Maintenance. As a condition for Final Plan approval, the developer must enter into a legally binding agreement which shall state who is to be responsible for the improvement and maintenance of any street not offered for dedication. If an association of lot owners is to be made responsible, such association must be legally organized prior to plan approval by an agreement approved by the City.

1004.K. Street Design and Construction Standards.

1. Streets shall be graded, improved and surfaced to the grades and dimensions shown on plans, profiles and cross-sections submitted by the developer that meet applicable City standards. See width and slope requirements in Section 1004.F.
 - a. All new and extended streets shall be constructed of the following materials, except as provided in subsection "3." below, or unless the City adopts differing standards

by resolution or ordinance:

- 1) 6 inches compacted aggregate base course
- 2) 1.5 inches compacted ID-2 binder course
- 3) 1 inch compacted ID-2 wearing course

- b. In any case, any street intended to be dedicated to the City shall meet the minimum standards of the PA. Department of Transportation that apply for City eligibility to receive State liquid fuels reimbursement for such street.

2. Right-of-Way Grading.

- a. The entire right-of-way shall be graded to the approved cross-section. All trees, stumps and other material deemed unsuitable by the City Engineer shall be removed. The excavation shall be backfilled and suitably compacted to the satisfaction of the City Engineer.
- b. The finished street surface shall be crowned in conformance with the City specifications.

3. Alternative Street Specifications. An applicant may, if recommended by the City Engineer and approved by the Planning Commission, use an alternative road bed design that is specifically recommended for that type of street by a current official publication of PennDOT. The alternate design must provide load capabilities equivalent to or higher than the capabilities of the designs set forth above.

4. Grading Beyond Right-of-Way.

- a. The subdivider or developer may be required to grade beyond the right-of-way line in order to provide continuous slope from the right-of-way line to the proposed elevation of the abutting property.
- b. Such grading beyond the right-of-way shall maintain the original conditions of slope and contours except where storm water runoff designs dictate or warrant improvement or alteration of the original slope and contours.
- c. Approved plans, either preliminary or final, showing proposed grading, shall be a covenant running with the land, unless altered by written permission from the Planning Commission in conjunction with the County Conservation District.
- d. In areas of earth excavation or earth fill, such grading shall be done to a maximum slope of 3 feet horizontal to 1 feet vertical.

5. Drainage of Streets.

- a. Parallel and cross drainage facilities shall be properly located, designed and installed to maintain proper drainage of the completed streets.
- b. Proper design and construction in accordance with those requirements may require the use of curb and gutter or paved drainage swales to prevent erosion. Drainage facilities shall be designed in accordance with requirements of Section 1008.
- c. The minimum diameter of any cross drainage or culvert pipe shall be 15 inches.
- d. Open pipe ends must be fitted with concrete end walls or wing walls or prefabricated end sections and with protective safety gratings.
- e. No open pipes shall be allowed to end within the City street right-of-way, except in cases where new driveways must cross existing deep road side swales adjacent to existing City streets. In the case of these exemptions to the standard, the pipe

shall be located as far off the edge of pavement as possible (at least 20 feet from the street centerline).

- f. Energy dissipators shall be placed at the outlets of all pipes where flow velocities exceed maximum permitted channel velocities.
- g. Bridges and culverts shall be designed to support expected loads in accordance with applicable Federal and/or State standards, to accommodate expected stormwater flows, and to be constructed to adequate width in accordance with PennDOT standards. The applicant shall apply for and obtain a DER permit when required.
- h. Consideration shall be given for sub-grade drainage of those soils subject to frost heave. Design of the road bed in such locations may require parallel drainage facilities and/or underdrains to properly stabilize the subgrade. The Planning Commission may require that such drainage facilities be provided. The design of such subgrade drainage facilities shall be subject to the review and approval of the City Engineer.
- i. Erosion Control. See Section 1020.
- j. Storm Water Drainage. See Section 1008.
- k. A set of approved design plans shall be maintained on file at the site during construction, as record drawings.

1004.L. Private Streets. Any private street or accessway that will eventually serve traffic from 4 or more residential lots or 3 or more industrial, commercial and/or institutional lots shall be designed and constructed to City construction standards, including the provision of a street right-of-way.

1004.M. Required Traffic Improvements.

1. Purpose - In recognition of the authority and limitations provided by Article V-A and Sections 503(2)(ii) and 503(3) of the PA. Municipalities Planning Code, this Section is primarily intended to ensure that streets bordering a subdivision or land development are coordinated and of such widths and grades and in such locations as deemed necessary to accommodate prospective traffic and to facilitate fire protection and to ensure that the access into and out of subdivisions and land developments is sufficiently safe.
2. Process. This sub-section "M." shall be carried out through determinations of the Planning Commission, after considering any recommendations of the City Engineer, the applicant, the applicant's professional representatives, any comments from PennDOT that may be provided regarding a State road and any professional traffic studies that may have been submitted.
3. On-Site/ Abutting Traffic Improvements. If, in the determination of the Planning Commission, there is a reasonable relationship between the need for an "on-site improvement" of a street and the traffic created by a proposed subdivision or land development, the applicant for such subdivision or land development shall be required to complete the needed improvement or fund his/her fair share of the cost of such traffic improvement and to dedicate sufficient street right-of-way for needed improvements.
 - a. Widening of Abutting Roads. Where an existing abutting public street is of inadequate width, an applicant for any land development or major subdivision shall be required to widen the cartway of abutting streets to City standards to result in a minimum paved cartway width of 14 feet on each side of the centerline.

1. The applicant shall only be responsible for improvements from the centerline of the street right-of-way inward towards the project's lot lines, unless the Planning Commission determines that improvements on the other side of the centerline are essential for public safety.
 2. A lesser width may be permitted where the Planning Commission determines that such would be appropriate and/or would save mature trees.
 3. A wider width may be required by the Planning Commission where needed along a collector or arterial street.
- b. Such improvements and right-of-way shall be required unless the Planning Commission determines:
- 1) that there is not a reasonable relationship between the improvements and the traffic created by the the proposed development, or
 - 2) that widening or right-of-way or other improvements are not needed or that a lesser improvement is sufficient or
 - 3) that PennDOT specifically refuses in writing to allow such improvement to a State road in the foreseeable future, in which case the City may still require that abutting right-of-way be dedicated to the City or reserved for future dedication if needed in the future.
- c. Any improvement to a State street shall meet all PennDOT standards.
4. Types of Required Traffic Improvements.
- a. The following shall be the definition of "on-site improvement," (unless this definition is amended by State law): "all street improvements constructed on the applicant's property, or the improvements constructed on the property abutting the applicant's property necessary for the ingress or egress to the applicant's property."
 - b. On-site improvements may include, but are not limited to, a new or upgraded traffic signal, land dedication to improve an abutting intersection, realignment of an abutting curve in a road or the widening of the abutting cartway and right-of-way.
 - c. The City shall not require an applicant to fund or complete a road improvement that is an "off-site improvement", unless the Planning Commission determines that such improvement is clearly essential for the physical safety of the occupants/residents of the proposed development (such as for emergency vehicle access).
5. Funding. In place of completing a required street improvement as a condition of final approval, an applicant may enter into a legally binding development agreement with the City for the applicant to fund the improvement, or his/her fair share of such improvement, as determined by the Planning Commission.
6. Accounting. Any such funds may be placed in escrow until such time as sufficient funds are available for a more comprehensive improvement, with interest being used towards the cost of the improvement. Any such funds received under this sub-section shall be accounted for separately.

7. **Staging.** Any completion or funding of a required road improvement may occur in stages in relationship to the stages of the development, if so stated in a legally binding development agreement and/or as a condition of final plan approval.

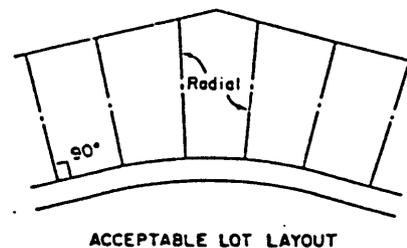
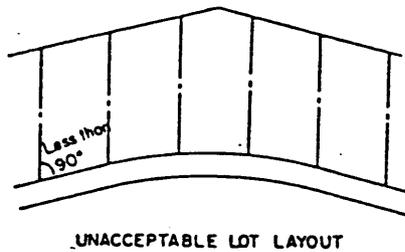
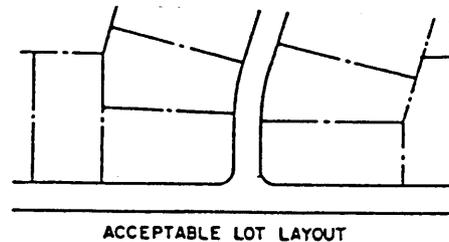
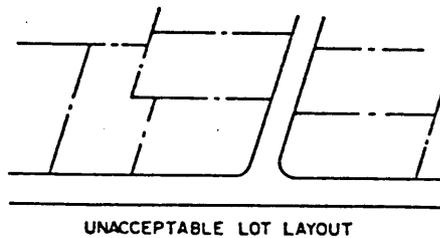
1004.N. **Flood-Prone Areas and Streets.** The finished elevation of proposed streets shall not be more than 1 foot below the 100 Year flood elevation, except for a perpendicular crossing of a street that may be approved by the City Engineer if the applicant proves that such depth of floodwaters would not prevent vehicular access to principal buildings. The 100 Year flood elevation shall be shown on street profiles where such flood may impact such street. Sufficient inlets and other drainage measures shall be provided to control such flooding.

1005. **BLOCKS.** Residential blocks shall not exceed 1,500 feet in length, unless specifically permitted by the Planning Commission.

1006. **LOTS.**

1006.A. The average depth-to-width ratio of a lot shall generally not be greater than 3 to 1, unless otherwise permitted by the Planning Commission.

1006.B. Side lot lines shall abut and be approximately at right angles to straight streets and on radial lines to curved streets, unless otherwise permitted by the Planning Commission. Pointed or very irregularly shaped lots shall be avoided. (See figures below)

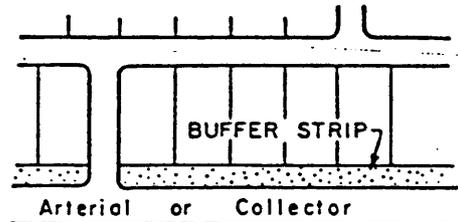


1006.C. Lots shall conform to the applicable minimum lot sizes, lot widths, setback and all other requirements as set forth in the City Zoning Ordinance.

1006.D. **Street Frontage.** All lots shall meet the street frontage requirements of Section 801.A. of the City Zoning Ordinance.

1006.E. **Double Frontage Lots.** If a residential lot has street frontage along both the front lot line and rear lot lines, then each lot shall include a 15 feet deep planting strip along one of the streets, with vehicle access across this strip clearly prohibited by notes on any approved plan (see Figure below).

1. In addition to the street trees required by Section 1018 of this Ordinance, this planting strip shall include evergreen plantings meeting the requirements of Section 803 of the City Zoning Ordinance. Such evergreens are not required to create a complete visual screen, but instead shall be spaced to result in a screening of approximately 50 percent within 4 years. Any fencing in the rear of such lots shall be placed on the inside side of such plantings.
2. This planting strip is intended to be placed along the street that the Planning Commission determines will eventually serve the most through-traffic (for example, if a lot abuts a collector and a local street, the planting strip shall be placed along the collector street and the lot shall only have vehicular access onto the local street).



REVERSE FRONTAGE LOTS

1006.F. If the remnants of land (other than rights-of-way) exist after subdividing, they shall be incorporated in existing or proposed lots. No lot shall be created that would abut a minor arterial street that would not be suitable for a use permitted in that Zoning District.

1007. **MONUMENTS AND LOT PINS.**

1007.A. **Monuments.**

1. Location. Permanent reference monuments shall be located at each intersection of rights-of-ways of street(s) constructed by the Developer, at the beginning and ending of all street curves, and at exterior corners of the subdivision or land development, unless an alternate arrangement is approved by the City Engineer that still permits a surveyor to stake out accurately any building lot shown on the Record Plan.
2. Type. Reference monuments shall be constructed of steel reinforced portland cement concrete or to other materials pre-approved by the City Engineer, and should have a minimum size of 4 by 4 inches at the ground level and shall have the top be flush or slightly above the grade level.

1007.B. **Lot Pins.** All lot corner markers shall be permanently located and shall be at least a 3/4 inch metal pin or pipe with a minimum length of 20 inches, located in the ground to existing grade, or other type of lot pin approved by the City Engineer.

1008. **STORM WATER MANAGEMENT.**

1008.A. **General Provisions.**

1. **Act 167 Ordinances.** See the provisions of the City "Stormwater Management Ordinance" for the Lackawanna River Watershed. This stormwater ordinance, as amended, is included by reference in this Ordinance, and shall be referenced herein by the term "the Act 167 Ordinance." Where necessary for public safety, the Planning Commission may require adjustments to such Act 167 Plan provisions, within

the limitations of the approved Act 167 Plan.

2. **Consistency With Act 167.** The provisions of this Section 1008 shall apply except where a specific provision of a City-adopted Act 167 Ordinance supercedes this Ordinance under a specific provision of the PA. Stormwater Management Act, such as regarding release rates. In case of any differences between an Act 167 Ordinance and this Section where the Act 167 Ordinance does not supercede, then the more restrictive requirement shall apply.
3. **Velocity Control Measures.** The Planning Commission, based upon the recommendations of the City Engineer, may require specific sizes or types of stormwater velocity control measures based upon both the need to control the velocity and upon long-term maintenance concerns.
4. Storm water runoff from any subdivision or land development (including during construction and earthmoving) shall not occur at a peak rate (measured in cubic feet per second) that is greater after development than occurred prior to development.
5. Runoff shall be controlled from a site using appropriate means of detention of water on the site and/or other approved types of storm water management, within the requirements of this Ordinance.
6. Runoff that is detained shall be held and released at a pre-determined controlled rate by appropriately installed devices. The release shall be in the same manner as the natural or predevelopment means of discharge from a site (such as point discharge or sheet flow).
7. Storm water runoff shall not be increased or redirected in such a way that it results in hazards to persons or property or interferes with the normal movement of vehicles.
8. All storm water management methods are subject to approval by the City Engineer, including all outlet locations.
9. All lots shall be laid out and graded to prevent cross lot drainage, to provide positive drainage away from proposed building locations and any primary or alternate septic system locations. Storm water shall also not be redirected towards buildings or on-lot septic systems off of the site.
10. All storm water management plans shall take into account and provide for existing flow from upstream areas within the entire watershed.
11. The existing points of natural drainage discharge onto adjacent property shall not be altered to increase flows nor shall the concentration of water runoff be increased because of development without the written approval of all affected landowners.
12. No storm water runoff or watercourse shall be diverted in a way that overloads existing drainage systems, or creates flooding or the need for additional drainage structures on other private properties or public lands, without City approval of provisions to be made by the developer for properly handling such conditions, including water runoff impoundments, if necessary.

13. An adequate storm sewer system consisting of inlets and underground drainage pipes with approved outlets shall be constructed where the runoff of storm water and the prevention of erosion cannot be accomplished satisfactorily by surface drainage facilities, as determined by the Planning Commission, based upon the recommendation of the City Engineer, based upon the expected velocity and depth of the stormwater flows and the proximity of dwellings.
14. **Sequence of Construction.** No substantial grading shall occur and no building permits shall be issued for any building unless any detention basin, siltation basin or improved major swale approved to handle the resulting runoff is in place. Any detention basin shall be seeded and stabilized and have an installed outlet structure prior to the construction of any streets or buildings within that drainage basin.
15. **Phasing of Stormwater Improvements.**
 - a. The phasing of a development shall ensure that all stormwater facilities needed to manage runoff from a phase are in place and functioning adequately prior to and after the construction of buildings in that phase. This shall, for example, include the extension of the main outfall line. This may require the use of temporary structures, which shall be shown on submitted plans. If the development occurs in phases, the entire system shall be shown as part of the preliminary plan submission.
 - b. When subdivisions or land developments are submitted to the City for approval in sections, a complete general storm sewer design for the proposed subdivision or land development shall be submitted at the preliminary plan level. The proposed design must take into account the entire tract and the watershed.
 - c. A development shall be required to include the construction of stormwater controls in areas of future phases of a development prior to construction of earlier phases if the City Engineer determines that is necessary to make sure that the system will work after the completion of each phase. This shall, for example, include the extension of the main outfall line.
16. **For downstream properties, the applicant shall study areas where the development could have significant impact, considering the size of drainage areas and the amount of runoff from the development.**
17. Drainage structures that are located on State highway rights-of-way shall be found to be acceptable to PennDOT, and PennDOT approval shall be a condition of any final approval of the City.

1008.B. **Calculations of Stormwater Runoff. The methods described in the Act 167 Ordinance(s) shall apply.**

1. The storm water calculations shall include the following:
 - a. Information required for Preliminary and Final Plans within Articles V, VI and VII of this Ordinance,
 - b. Pre- and post-development drainage maps showing existing and proposed grades and including any off-site tributary area,
 - c. Pre- and post-development runoff calculations,

- d. Detention basin design calculations (as applicable),
 - e. Pipe and swale sizing calculations,
 - f. Such information as the City Engineer determines is needed to determine compliance with this Ordinance, including, but not limited to, slopes, proposed elevations, typical cross sections and details.
2. Storm water calculations shall be submitted in a clear and legible manner for any lot or tract that would result in an increase of 10,000 square feet or greater of total impervious cover.
 3. The stormwater calculations shall follow a method preapproved by and acceptable to the City Engineer. The following methods are recommended:
 - a. Rational Method. See description in Appendix D.
 - b. Soil Cover Complex Method. See U.S. Soil Conservation Service Technical Release No. 55 "Urban Hydrology for Small Watersheds."
 4. Where crop farming or disturbed earth exists on the site prior to development, meadow in good condition shall be used as the starting base for the calculation.

1008.C. Design Submission and Design Storms. The following shall apply unless superseded by PennDOT standards within PennDOT's jurisdiction.

1. Within the 100-year floodplain, any storm water management structures and systems shall be designed to handle a 100-year storm. A 24 hour Type II storm shall be used if using the soil complex method.
2. The storm water management plan shall show that a 100-year, 24-hour storm can be safely conveyed without jeopardizing any principal building on or adjacent to of the site.
3. All plans showing the proposed storm drainage construction must be accompanied by a complete design stamped and signed by a Pa. Registered Engineer or Pa. Registered Landscape Architect.
4. At a minimum, the applicant shall prove to the satisfaction of the City Engineer that no increase in peak storm water discharge will leave the tract during earthmoving, construction or after development than occurred prior to any of these activities, under the following conditions and storm frequencies (considered individually), unless any more restrictive requirements of an applicable official Stormwater Management Plan approved by DER and the County pursuant to State Act 167 of 1978, as amended:
 - a. 5-year storm,
 - b. 10-year storm, and
 - c. 25-year storm.
 - d. If using the SCS calculation method, a 24 hour Type II storm shall be used in the calculations required by this subsection.
 - e. In addition, the City Engineer may require that the above requirement also apply to a 2-year storm, if there are critical stormwater conditions in the area.
5. Storm sewer piping, roadside swales and inlet systems shall be designed for a 25-year storm. A 24 hour Type II rainfall shall be used if using the soil complex method. The openings of culverts and under bridges shall be designed for a 50-year, 24 hour type II

rainfall (except within the 100 year floodplain). Bridges shall be designed with 1 foot of freeboard.

1008.D. Methods of Detention and Flow Delay. The following methods of detention or flow-delay devices may be found to be acceptable by the City Engineer:

1. Wet or dry ponds and detention basins
2. Roof storage and increased roof roughness
3. Parking lot detention
4. Infiltration trenches
5. Porous pavements, grassed channels and vegetated strips
6. Cisterns, underground reservoirs or covered ponds
7. Increasing the roughness coefficients on the development's surface area
8. Decreasing the percentage of impervious area
9. Promoting groundwater recharge
10. Routing flow over lawns in swales within stormwater easements
11. Detention storage within the storm sewer
12. Another method that may be approved by the City Engineer.

1008.E. Detention Basins Standards. For the purpose of this Section, a retention basin shall be required to meet the same standards as a detention basin.

1. Perforated risers, staggered orifices, V notch weirs, or other outlet structures as approved by the City Engineer, may be required for outlet control.
2. Emergency Spillways. All detention basins shall be designed with an emergency spillway.
 - a. The emergency spillway shall be able to pass the 100 year post-development peak discharge at a height of 0.75 feet.
 - b. The emergency spillway shall convey the 100-year storm at a maximum depth of 1 foot over spillway. The downstream slope of the spillway shall as a minimum extend to the toe of the berm embankment. The edge of the basin grading shall be within the subject property.
 - c. All detention basin outflow structures shall be designed with trash racks over the outflows.
 - d. Whenever possible, the emergency spillway for detention basins shall be constructed on undisturbed ground. If the emergency spillway cannot be constructed on undisturbed ground, it shall be constructed of suitable material adequately compacted in accordance with specifications preapproved by the City Engineer.
 - e. Emergency spillways shall be constructed of reinforced concrete, mortared in place rip-rap or concrete rubble. All emergency spillways shall be constructed so that the detention basin berm is protected against erosion.
3. The emergency spillway and the outfall of the detention basin shall be lined with mortared rip rap and shall meet requirements of PennDOT Publication 408, or its successor.

4. The minimum top width of a detention basin berm shall be 5 feet, unless the City Engineer determines that a differing width is needed for maintenance and structural purposes.
5. In order to provide proper drainage, a minimum grade of 1.5 percent, directed toward the outlet structure, shall be maintained across the basic floor. A lesser grade may be permissible provided that a concrete low flow channel is provided.
6. Slopes of Basin. The maximum inside and outside slope of earth detention basin embankments shall be 3 horizontal to 1 vertical.
7. Outfall. Where no existing point of concentration exists, the outfall from a detention basin shall not discharge closer than 10 feet from the adjoining property line, unless permission is given, in writing, by said adjacent property owner.
8. Basins not having direct access to a public street shall have a 15 foot wide, usable access easement to a public street for the purpose of maintenance.
9. For the purpose of this Section, a retention basin shall be required to meet the same standards as a detention basin.
10. Landscaped Screening of Detention Basins.
 - a. A detention basin with a basin depth of greater than 30 inches shall be screened from view of existing dwellings, a residential zoning district or a public street, unless the basin would meet all of the following conditions:
 - 1) it would have an average slope of less than 4 to 1 on the inside of the berm of the basin,
 - 2) either: a) both the inside and outside of the basin would be planted in grass and intended to be mowed or planted in other attractive vegetative ground cover or b) would be designed to closely resemble a natural pond, and
 - 3) the basin would not be surrounded by a primarily metal fence.
 - b. The required screening shall primarily include evergreen trees and shrubs of sufficient number to provide an approximately 50 percent year-round visual screen of 5 feet minimum height approximately 4 years after planting. This landscaping shall not be required along an area where natural vegetation will be maintained that will completely fulfill this purpose.
 - c. Thorny and prickly shrubs (that are also attractive) are encouraged to be used around detention basins to discourage entry by children.
11. Areas of stormwater basins that are visible from streets and dwellings shall be attractively maintained.
12. All outflow structures from storage facilities shall be equipped with a regulatory device that will permit modification to regulate the amount of out-flow.
 - a. Entrances to stormwater pipes, including outflow pipes in detention basins, shall have childproof grates or similar devices.

13. **Antiseep Collars.** Antiseep collars shall be installed around the principal pipe barrel within the normal saturation zone of the detention basin berms. Antiseep collars shall not be required on basins designed to have a depth of water of less than 3 feet. The antiseep collars and their connections to the pipe barrel shall be watertight. The antiseep collars shall extend a minimum of 2 feet beyond the outside of the principal pipe barrel. The maximum spacing between collars shall be 10 times the minimum projection of the collar measured perpendicular to the pipe.
14. **Fencing of Basins.**
 - a. The City may require an applicant to surround a detention basin with galvanized vinyl clad chain link metal fencing or an alternative type of fence acceptable to the City if any of the conditions are present:
 - 1) The maximum depth of water in the basin after a 25 year storm is greater than 30 inches, and/or
 - 2) The basin is intended to hold water for periods of longer than 3 hours after the rainfall subsides, and/or
 - 3) The basin is to be dedicated to the City and the Planning Commission request fencing.
 - 4) The earthen inside slopes of the detention basin will be steeper than 4 horizontal to 1 vertical.
 - b. Fencing of a detention basin under the above subsection shall not be required if the nearest residential district, school, day care center, existing residence or recreation facility is at least 1,500 feet away in walking distance from the basin.
15. **Multiple Basins.** The use of multiple detention basins should be investigated over the use of one larger storage facility.
16. An outflow control structure shall be provided at the outlet of all detention basins. This structure shall be constructed of metal or concrete and shall be designed so that the rate of outflow is controlled by the pipe barrel through the basin berm when the depth of water within the basin exceeds the height of the structure. The crest elevation shall be set at a minimum of 12 inches below the emergency spillway.
17. **Retention Basins.** Aeration devices may be required, dependent upon the quality of the influent and detention time.

1008.F. Construction Standards.

1. **Standards.** Construction and materials of storm drainage and control facilities (including pipes) and erosion control facilities shall be in accordance with the approved plans and any accompanying specifications. The construction details and standards of the following publications, or their successor publications, in their most recent revision shall be used:
 - a. PennDOT, Form 408, Specifications.
 - b. PennDOT, RC Series, Roadway Construction Standards.
 - c. In cases where the above documents conflict with City specifications, the City's specifications shall supercede, except in areas of PennDOT jurisdiction.
2. **Pipe Materials.** All pipe materials shall meet PennDOT standards.

3. A set of approved design plans shall be maintained on file at the site during construction, as record drawings.
4. Rooftop Storage. If a roof is to be used for detention, a condition of such use shall be that the applicant submit appropriate calculations and a signed statement from a Registered Architect or Registered Engineer that the structure will be able to support the roof loadings. This statement shall be required prior to issuance of the building permit.
5. Parking Lot Storage. A maximum of 30 percent of paved parking lot maybe found acceptable as a storm water detention but not retention facility. Ponding shall be arranged so that pedestrians may cross the parking lot relatively dryly. There shall be a maximum designed depth of 6 inches, and the pavement shall be designed to withstand the effects of ponded water. The area used for the storage shall be the least used portions of the parking.

1008.G. Drainage Pipe, Culvert and Catch Basin Design.

1. Open pipe ends must be fitted with rip-rap and/or energy disappators if deemed appropriate by the City Engineer.
2. Drainage pipes shall have a minimum slope of 0.5 percent and drainage swales and gutters 2.0 percent. As a minimum, the tops of all pipes should be at the same elevation when changing pipe sizes.
3. Manholes or inlets shall be used at all changes in horizontal alignment, at changes of vertical grade and at all pipe intersections. No run of pipe shall exceed 400 feet in length, without appropriate measures to allow cleanout. Trash racks shall be placed on all stormwater entrance structures.
4. Grating. Appropriate safety grates shall be attached to all catch basins, storm water inlets, pipe openings and other storm water receiving structures, as needed, to ensure that maximum openings do not exceed 25 square inches. Along streets and pedestrian areas, bicycle safe grates shall be used as needed.
5. Storm Sewer Outfall. Storm sewer outfalls shall be designed, with respect to the elevation of the invert or other features, that when the receiving watercourse is within a 25 year storm, the storm sewer will continue to drain the area it is designed to serve.
6. To minimize sheet flow of storm water across lots located on the lower side of streets, and to divert flow away from building areas, the cross-section of the street as constructed shall provide for parallel ditches or swales or curbing on the lower side which shall discharge only at approved locations.
7. Inlet spacing shall be designed such that in a 25 year storm, one traffic lane of at least 10 feet in width shall be free from stormwater.
8. Driveway Crossings of Drainageways. See Section 1012.F.

1008.H. Storm Water Easements.

1. Where Required. Where a subdivision or development is traversed by a watercourse, drainageway, channel or stream that the City Engineer determines is subject to significant

stormwater flows, there shall be provided a drainage easement established along the following:

- a. the 100-year floodway, where that is defined;
 - b. where a 100-year floodway is not defined, the 100-year floodplain;
 - c. where a 100-year floodplain is not defined, a width shall be used that includes a minimum of 5 feet on each side of the center of the waterway.
2. The drainage easements required by the above subsection are intended to preserve the unimpeded flow of natural drainage and to provide for future possible widening, deepening, relocating, improving or protecting of such drainage facilities.
 3. If a major man-made drainage channel would pass within close proximity to homes and possibly threaten the safety of persons, the Planning Commission, based upon the advice of the City Engineer, may require such certain lengths of such channel to be placed within appropriate underground pipes.
 4. Structures that could obstruct stormwater flow shall be prohibited within storm water easements. Also, areas where storm water easements have or will be granted shall not be obstructed during or after construction.
 5. Stormwater easements shall grant the City the right at its option to enter the easement to accomplish maintenance and channel improvement work, although the City assumes no responsibility to accomplish such work.
 6. It shall be the responsibility of the applicant to obtain all storm water easements on, over or through other properties that are needed to carry out the proposed storm management plan.
 7. See also the easement requirements in Section 1011 of this Ordinance.

1008.I. Surface Waters. All natural streams, channels, swales, drainage systems and/or areas of concentration of surface water shall be maintained in their existing condition and alignment, without any blocking, impeding or redirecting of the watercourse, unless such alteration is pre-approved by the City Engineer. The applicant shall be responsible to obtain all necessary DER permits (see Chapter 105 of Title 25 of the State regulations).

1008.J. Ownership and Maintenance of Stormwater Facilities. A system for the ownership and maintenance responsibilities of all temporary and permanent storm water facilities and erosion and sedimentation control facilities that is satisfactory to the Planning Commission shall be established prior to Final Plan approval including:

1. Identification of responsible individual, corporation, association or other entity for ownership and maintenance of both temporary and permanent storm water management and erosion and sedimentation control facilities.
2. Establishment of suitable easements for access to all facilities for maintenance.
3. The City may, at the complete discretion of the City Council, decide not to accept an offer by the applicant for City ownership of storm water facilities.

4. Storm water facilities shall be designed to require minimal maintenance. Low-maintenance vegetation is encouraged.
5. All storm drainage facilities shall be properly maintained by the party designated as responsible on the final subdivision plan, unless the Planning Commission agrees to accept a change in the party responsible or the party owning the facility.
6. Should a facility not be maintained in proper working order, the City Council, may after due notice to the responsible party, arrange for the needed maintenance to be accomplished with all such expenses charged to the responsible party. These expenses shall be collectible as municipal claims are now collected by law.
7. The City Engineer and Code Enforcement Staff shall have the right to enter private property to inspect storm drainage facilities. Reasonable effort should be made to contact the property owner prior to any such inspection.

1008.K. Joint Storm Drainage Facilities.

1. Storm water management facilities may be planned and constructed in coordination by two or more developments, provided that all other parts of this Section are complied with.
2. The City may require a development to contribute its fair share of the costs of a comprehensive regional or subregional storm water system in place of requiring an on-site detention basin.

1008.L. Storm Sewers. The construction of new storm sewers or the connection into acceptable existing storm sewers shall be required or allowed by the Planning Commission if the Planning Commission determines on the basis of the recommendation of the City Engineer that this is the most feasible and reasonable option.

1009. SANITARY SEWAGE DISPOSAL SYSTEMS.

1009.A. In General.

1. All subdivisions and land developments shall be served with an approved and adequate sewage disposal system (either on-lot or public) that will meet State and City regulations.
2. Public Sewage Connections. Any principal building or use within a subdivision or land development that generates wastewater and that in the determination of the Planning Commission, based upon the advice of any applicable authority and the City Engineer, could reasonably connect into a public sewage system shall be required to connect into that system. The applicant shall be responsible to pay such reasonable capital expenses that are necessary for such connection.

1009.B. Central Sewage Service.

1. If a municipality, authority or public utility is to provide the central sewage service, such agency shall have the authority to approve or reject the proposed sewage collection system for just cause.
2. Non-Public Sewage Service. If central sewage service is proposed through a system that is not owned by a municipality or authority, the Planning Commission shall have the

authority to permit or not permit such service to meet the sewage requirements of this Section based upon:

- a. whether public sewage service is expected to be available within 5 years of the date of preliminary plan approval, and could be efficiently and properly connected into the public system at such time,
- b. whether the proposed system would be consistent with the City's official Sewage Facilities Plan and
- c. whether the system would include an appropriate permanent system for professional operation and maintenance.

1009.C. On-Lot Sewage Disposal System. If connection to an approved central sewage system is not required at the time of occupancy, then each lot shall be required to be served by an on-lot sewage disposal system that will meet all applicable State regulations. Each such proposed location shall be tested and approved by City Sewage Enforcement Officer, prior to approval of the Final Plan.

1010. WATER SUPPLY SYSTEMS AND FIRE HYDRANTS.

1010.A. In General.

1. All subdivisions and land developments shall be served with an adequate on-lot or central water supply system that will meet DER and City requirements.
2. Connections to Central Water Systems. The Planning Commission shall require all lots and principal uses within a subdivision or land development to be connected to an existing public or PUC-regulated central water system, unless the applicant proves to the satisfaction of Planning Commission that such connection would not be feasible, cost-effective and reasonable.

1010.B. Central Water Supply System.

1. Water Supplier Approval. Proposed extensions of central water systems shall meet all applicable procedures, reviews and requirements of any appropriate municipal authority or water company. Such extension shall be approved by such agency prior to Final Plan approval, although specific detailed service agreements are not required to be signed until prior to recording.
2. Non-Public Supplier. Service by a new central water system that is not owned by an existing PUC-regulated water company, public authority or municipality shall only be permitted if the system is found to be acceptable in capacity, pressure, design and construction by the Planning Commission, based upon review of the City Engineer. The Planning Commission may deny permission for a subdivision or land development to be served by a new central water system if such system cannot guarantee sufficient water pressure and capacity and would not include a suitable process for long-term operation and maintenance.

1010.C. On-Lot Water System (Wells). When a subdivision or land development is not required to connect to a central water system, acceptable locations for on-lot water systems shall be shown on plans and shall be constructed in accordance with regulations of DER.

1010.D. Fire Hydrants and Fire Flow.

1. All subdivisions and land developments that will be served by central water service shall provide fire hydrants as needed with appropriate water pressure so that all dwelling units and principal buildings are within 600 feet of an active fire hydrant.
2. If requested by the City Engineer or Planning Commission, the applicant shall provide proof of adequate available "fire flow" of water for firefighting. Such information shall be subject to review of the City Engineer, Planning Director and Fire Bureau.

1011. WASTE DUMPSTERS, UTILITIES AND UTILITY EASEMENTS.

1011.A. Utilities. All electric power, telephone and natural gas service lines within a new subdivision or land development shall: 1) be placed underground except where the Planning Commission determines it is not feasible, and 2) be installed in accordance with the current standards of the utility serving the subdivision or land development.

1011.B. Dumpsters. All apartment developments shall include conveniently located refuse collection facilities for the residents. All uses within nonresidential land developments and subdivisions shall include appropriate refuse collection facilities. All bulk refuse collection dumpsters shall be screened on 3 of 4 sides by walls or evergreen landscaping from view of existing dwellings, adjacent undeveloped residentially zoned lots and public streets.

1011.C. Easements. Easements shall be provided as follows:

1. Drainage, sanitary sewage and central water easements shall be provided as determined to be needed by the City and as indicated on the plans.
2. Locations. Where determined to be necessary and reasonable by the City Engineer, all lots shall include a drainage and utility easement around the perimeter of each lot, including adjacent to the street right-of-way. However, such easements shall not be required where buildings (such as townhouses) are to be attached at a lotline.
3. Width. The minimum width of an easement shall be 10 feet, except that the City Engineer may require wider easements where necessary, especially where an easement is unlikely to be provided on the abutting side of the abutting lot.
4. See also drainage easement provisions in Section 1008 of this Ordinance.
5. Additional width of easements shall be provided for additional utilities if required by the water or sanitary sewage supplier or the City Engineer. The easement widths along side lot lines may be reduced if the Zoning Ordinance allows a principal building setback that is more narrow than the width of the easement that would otherwise be required.
6. Separation. Minimum separation distances between utility lines shall be as required by the applicable utility or as deemed by the City Engineer.
7. Pipelines. If any activity is proposed within the right-of-way of an underground fuel or gas pipeline, the applicant shall provide written evidence from the operator of such pipeline that such activity is acceptable under their safety standards and the terms of that right-of-way.

8. Easements shall be placed along lot lines or street rights-of-ways, to the maximum extent possible, as opposed to the center of a lot.

1012. **ACCESS DRIVES AND DRIVEWAYS.**

1012.A. **Construction Standards for Private Streets.** See Section 1004.

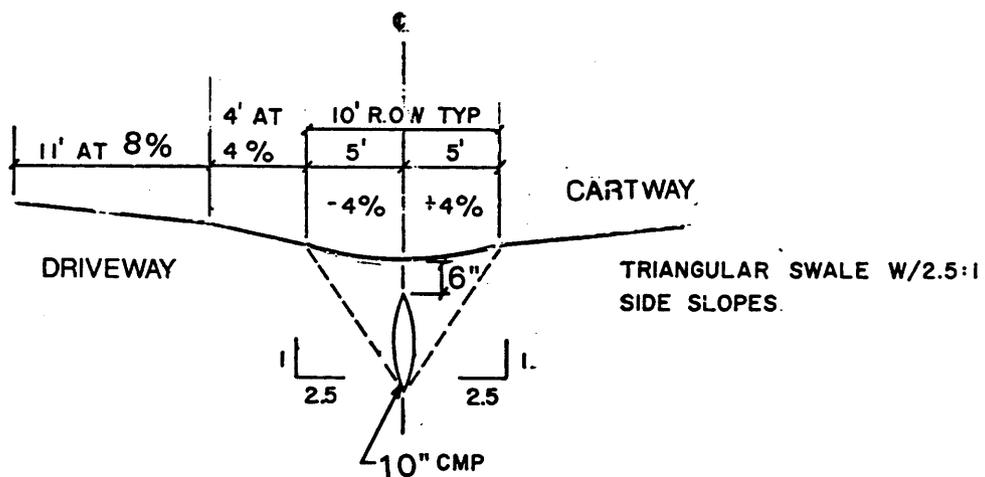
1012.B. **State Roads.** A State Highway Occupancy Permit is required for all access onto or work within the right-of-way of a State road.

1012.C. **Separation Distances.** See Article VIII of the City Zoning Ordinance.

1012.D. **Sight Distance.** See Section 803 of the City Zoning Ordinance.

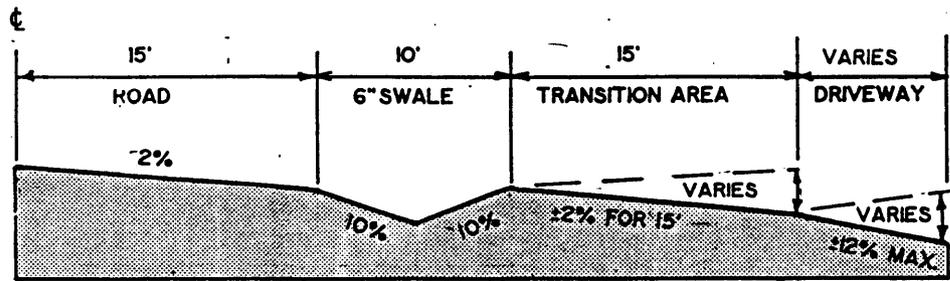
1012.E. **Driveway Slopes.** Grades of access drives or driveways shall not exceed 12% for any horizontal distance longer than 25 feet, except a driveway or access drive shall have a maximum slope of 5 percent for the first 20 feet from and within the legal right-of-way of an intersecting street.

1012.F. **Drainage.** The developer shall make adequate provisions to maintain uninterrupted parallel drainage along a street where intersected by an access drive or driveway. Access drives and aisles within parking lots shall be graded and drained to keep the primary travel lane free of stormwater. The following typical details shall be used as applicable for residential driveway entrances along streets, unless differing standards are pre-approved by the City Engineer or required by PennDOT. The first detail involves a typical condition where the City Engineer requires a drain pipe, and the second detail involves a typical condition where a drain pipe is not required.



DEEPEN SWALE IN LOWER REACHES OF WATERSHED TO ACCOMMODATE 12" DRAIN PIPE UNDER DRIVEWAY.

TYPICAL DRIVEWAY SECTION WITH DRAIN PIPE (No Scale)



NOTE DRIVEWAYS FOR INDIVIDUAL LOTS SHALL CONFORM TO THE SPECIFICATIONS OF THIS TYPICAL DRIVEWAY SECTION
 € OF DRIVEWAYS SHALL BE LOCATED AT LEAST 75' FROM
 € OF ROAD INTERSECTION.

TYPICAL DRIVEWAY SECTION WITHOUT DRAIN PIPE (No Scale)

1012.G. **Emergency Access.** Driveways shall be designed to be accessible to emergency vehicles. Driveways shall have a 10 feet minimum horizontal clearance, a 12 feet minimum vertical clearance and be designed to support the weight of a loaded fire engine pumper truck.

1013. **OFF-STREET PARKING AND LOADING.** See Article VI of the City Zoning Ordinance.

1014. **SIDEWALKS, PATHWAYS AND DRIVEWAY APRONS.**

1014.A. Sidewalks built to City specifications shall be required, unless the applicant proves to the satisfaction of the Planning Commission that they would not be necessary for safe pedestrian movement. See the separate City ordinance regarding sidewalk and curb standards.

1. In any case, sidewalks shall not be required along single family detached dwelling lots of greater than 20,000 square feet in lot area, unless the Planning Commission determines that a situation exists that is exceptionally hazardous to pedestrians and/or within close proximity to a public school.

1014.B. **Pathway or Bikeway.** If deemed necessary for the convenient and safe circulation of bicycles and pedestrians, the Planning Commission may require that a major subdivision or land development include the construction of a pathway or bikeway. Such bikeway or pathway shall have a minimum width of 5 feet and shall be paved to City standards. It may be required to be placed within a street right-of-way in place of a sidewalk, or may be placed elsewhere on a lot within an easement or other right-of-way.

1014.C. **Location and Width of Sidewalks.**

1. Sidewalks, where required or provided, shall be located within the street right-of-way.
2. Any required sidewalks shall have a minimum width of: a) 5 feet along arterial streets and b) 4 feet along collector or local streets.

1014.D. **Handicapped Access.** All sidewalks and curbs at the intersection of 2 or more public streets shall include a sloped curb cut suitable for use by wheelchairs.

1014.E. **Maintenance.** Each property-owner shall ensure that sidewalks that are within the right-of-way immediately adjacent to his/her property are properly maintained, repaired, and reasonably clear of snow and ice.

1015. **STREET LIGHTING.**

1015.A. Street lights shall be placed along streets within and abutting a proposed subdivision or land development where the Planning Commission deems them necessary, after considering any recommendations of the City Engineer, to provide safe traffic or pedestrian circulation. If required, street lights should be provided at street intersections, curves in streets and the more isolated areas of a development. The City may limit the number and intensity of street lights as appropriate if the City would be responsible for paying for the electricity for the lighting.

1015.B. Such lights shall meet lamp and wiring standards established by the applicable electric company. Pole types shall be acceptable to the City.

1016. **STREET NAMES.** Street names are subject to the approval of the Planning Commission, and shall continue the name of any street with the same or similar alignment, and not duplicate or be closely similar to the name of another street within the City or the same ambulance service district. Unless otherwise approved by the Planning Commission, East-west streets shall be named "Streets" and north-south streets shall be named "Avenues," except that streets with a maximum length of 1,000 feet should be named "Place" or "Lane" and curving streets should be named "Circle" or "Drive."

1017. **REGULATORY SIGNS.** The developer shall supply and install needed traffic regulatory signs and street name identification signs on new or extended streets. All traffic regulatory signs shall meet current standards of PennDOT. All signs shall meet requirements of the City.

1018. **STREET TREES, TREE PRESERVATION AND BUFFER YARDS.**

1018.A. **Street Trees.**

1. Street trees are required to be planted within all land developments and major subdivisions, except: a) along a single family detached residential lot with a lot area of greater than 2 acres or b) where the Planning Commission determines that existing healthy trees proposed to be preserved will serve generally the same function.
 - a. The Planning Commission may approve other species of trees than those listed below if the applicant proves to the satisfaction of the Planning Commission that the trees would be sturdy, attractive and resistant to disease and road salt.
 - b. A tree required by this Ordinance shall be of one of the following species. This list shall not regulate types of trees that are not required to be planted by this Ordinance.

Deciduous:

Acer buergerianum - Trident Maple
Acer campestre - Hedge Maple
Acer ginnala - Amur Maple
Acer rubrum - American Red Maple
Acer tartaricum - Tartarian Maple
Amelanchier arborea - Shadblos Serviceberry
Amelanchier X grandiflora (many cultivars) - Serviceberry
Amelanchier lavis - Alleghany Serviceberry
Carpinus betulus - European Hornbeam
Carpinus caroliniana - American Hornbeam

Cornus mas - Conelian Dogwood
Celtis jessoensis - Jesso Hackberry
Celtis laevigata - Hackberry
Celtis occidentalis - Common Hackberry
Corylus colurna - Turkish Filbert
Crataegus curg-galli "Inermis" - Thornless Hawthorn
Eucommia ulmoides - Hardy Rubber Tree
Fraxinus americana - White Ash
Fraxinus pennsylvania (seedless variety) - Green Ash
Ginko biloba - Maiden Hair Tree (male only)
Koelreuteria paniculata - Golden Rain Tree
Liquidambar styraciflua - Sweet Gum
Liriodendron tulipifera- Tulip Poplar
Metasequoia glyptostroboides - Dawn Redwood
Nyssa sylvatica - Black Gum
Macckia amurensis - Amur maackia
Malus floribunda - Japanese Flowering Crabapple
Maus cultivars that are disease resistant - Adams, Baskatong, Bob White, Evelyn, Liset, Madonna, Ormiston Roy, Professor Spengel, Red Jewel, Sentinel, Sugar Tyme, Strawberry Parfait, Donald Wyman, Centurion - Crabapple
Malus sieboldii X Zumi Calocarpa - Zumi Crabapple
Ostrya virginiana - Hophornbeam
Phellodendron amurense - Amur Corktree
Prunus sargentii - Sargent Cherry
Pyrus calleryana (not Bradford) - Callery Pear Selections
Quercus - All varieties of Oak
Prunus Accodlade - Flowering Cherry
Prunus sargentii - Sargent Cherry
Prunus serrulata varieties - Japanese Flowering Cherry
Prunus yedoensis - Yoshino Cherry
Sophora japonica - Japanese Pagoda Tree
Sorbus alnifolia - Mountain Ash
Sorbus amurensis - Amur Mountain Ash
Syringa reticulata - Japanese Lilac Tree
Taxodium distichum - Bald Cypress
Tilia cordata - Little Leaf Linden
Tilia X euchlora (ungrafted only) - Crimean Linden
Tilia petiolaris - Pendant Silver Linden
Tilia tomentosa - Silver Linden
Ulmus parvifolia - Chinese Lacebark Elm
Zelkova serrata - Japanese Zelkova

- c. Evergreens. The City may permit the following types of evergreen trees to be substituted for deciduous street trees if needed to buffer a residential area from a high-traffic road and if such trees are located to avoid sight distance hazards:

Cedrus atlantica - Atlas Cedar
Chamaecyparis obtusa - Hinoki Cedar
Chamaecyparis pisifera - Hinoki False Cypress
Chamaecyparis thyoides - Atlantic White Cedar
Cupressocyparis leylandii - Leyland Cypress
Ilex opaca - American Holly

Picea abies - Norway Spruce
Picea omorika - Serbian Spruce
Picea orientalis - Oriental Spruce
Picea pungens - Colorado Spruce
Pinus bungeana - Lace Bark Pine
Pinus densiflora - Japanese Red Pine
Pinus nigra - Austrian Pine
Pinus strobus - Eastern White Pine
Pseudotsuga menziesii - Douglas Fir
Pseudotsuga taxifolia - Douglas Fir
Sciadopitys verticillat - Japanese Umbrella Pine
Taxus sp. - Yew varieties
Thuja occidentalis cv. *Nigra*, *Emerald* or *Techy* - Dark Green Arborvitae
Tsuga canadensis - Canada Hemlock
Tsuga caroliniana - Carolina Hemlock

- d. **Prohibited Trees.** The following trees shall not be planted within the street right-of-way and shall not be used to meet any City requirement. Such trees may be planted by a property-owner on private property if such tree is in addition to City requirements.

Acer negundo - Box elder
Acer saccharinum - Silver maple
Ailanthus altissima - Tree of heaven
Catalpa speciosa - Catalpa
Elaeagnus spp. - Russian olive
Ginkgo - female only
Maclura pumifera - Osage orange
Morus spp. - Mulberry
Populus spp. - Poplar
Salix spp. - Willow
Ulmus americana - American elm
Ulmus pumila - Siberian elm

- e. **Waiver for Medical Reasons.** The Plans Administrator shall waive requirements to plant street trees and/or permit street trees to be removed if the existing or intended resident of a dwelling provides a signed letter from a medical doctor stating that the trees would be harmful to a resident because of a valid medical condition (such as serious allergies).

2. **Quality of Trees.**

- a. Trees shall be of symmetrical growth, free of insect pests and disease and durable under the maintenance contemplated.
- b. Trees which have died or have become diseased or pest-ridden within 18 months from the time of planting shall be replaced by the developer.

3. **Minimum Size.** The trunk diameter (measured at a height of 6 inches above the finished grade level) shall be a minimum of 2 inches.

4. **Planting and Maintenance.**

- a. Trees shall be planted in conformance with good landscaping practices.

- b. Trees adjacent to or within parking areas shall be properly protected from damage by vehicles through raised curbs, raised earth, similar devices and/or sufficient setback.
 - c. Required trees shall be properly maintained and shall not be removed by the developer without being replaced by another tree that meets the requirements of this section.
5. **Required Number and Spacing of Street Trees.**
- a. Within and abutting all land developments and major subdivisions, along any street or any access drive serving more than one commercial, industrial or institutional principal use, an average of 1 street tree shall be required for every 60 feet of distance along the street right-of-way line on each affected side of the street or such access drive.
 - b. Spacing. The trees required under this Section shall be spaced throughout the development along the street, but are not required to be planted at exact intervals and may be clustered following an approved plan. Trees shall be located so that they do not restrict sight distance at driveway and street intersections.
6. **Location of Street Trees.** The trunks of required street trees shall be planted within a street right-of-way but at a minimum of: a) 2 feet from any established curb line or b) 5 feet from the cartway if there will be no curbing.
7. **Other Requirements.** The street trees required under this Section shall be in addition to any trees required under other City regulations.

1018.B. Protection of Existing Trees During Construction.

- 1. Reasonable efforts shall be taken during any construction to ensure that trees protected by this section are not intentionally or accidentally injured or effectively destroyed, including root compaction by equipment and materials, mechanical damage or change in grade level. The area to be protected should at a minimum include the outer limits of land areas ("the dripline") under the branches of trees.
 - a. Such area around trees to be preserved shall be separated from all construction, storage and vehicle areas by a substantial temporary fence with a minimum 4 feet height. Such fence may include snow fencing or wood planks or strong wires or ropes attached to metal posts, or a similar secure method. Such fence shall be removed only after completion of the work. Trees that are to be removed may also be used as a temporary buffer to protect trees to be preserved.

1018.C. Buffer Yards. See the requirements for buffer yards in the City Zoning Ordinance, as amended.

1019. CURBS.

- 1019.A. Curbs shall be provided along both sides of all public and private streets, unless the applicant proves to the satisfaction of the Planning Commission that curbs would not be necessary, based upon review by the City Engineer. In no case shall curbs be required along single family detached lots of greater than 1 acre unless the Planning Commission determines that curbs are essential for stormwater management, based upon a recommendation of the City Engineer.
- 1019.B. If curbs are not provided, appropriate stabilized drainage channels designed to handle a 25 year storm shall be required along all streets, within the street right-of-way, or drainage easements.

1019.C. All required curbs shall meet specifications stated in the separate City ordinance concerning sidewalks and curbs. New bituminous curbing shall not be permitted as part of a new subdivision.

1. Gutter design shall be subject to the approval of the City Engineer based upon standard engineering practices.

1020. EROSION CONTROL AND GRADING.

1020.A. Ground Cover and Top Soil. After completion of construction on a lot, all exposed ground surfaces that are not paved and that are not covered by approved gravel areas or decorative stones or similar material shall be covered by a minimum of 4 inches of topsoil and an attractive non-poisonous vegetative ground cover that will prevent soil erosion and the raising of dust.

1020.B. Erosion Control.

1. Any earth disturbance should be controlled by proper measures to prevent soil erosion and sedimentation, following DER regulations and standards of the County Conservation District.
 - a. Compliance with a submitted soil erosion control plan shall be an automatic condition of any approval or permit under this Ordinance.
 - b. City permits may be suspended if earth disturbance does not comply with such approved plan.
2. Both the owner of the property at the time of any earth disturbance and the person(s)/company accomplishing the work shall be responsible to ensure that adequate erosion control measures are used.

1021. FLOOD-PRONE AREAS. See Section 516 of the City Zoning Ordinance, as amended. See also Section 1004.N. of this Ordinance.