

HAYCOCK TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

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C. Robert Wynn, P.E.

Advertised Draft

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TABLE OF CONTENTS

ARTICLE I	- GENERAL PROVISIONS	<u>Page</u>
Section 101	Short Title	1
Section 102	Purpose.....	1
Section 103	Application of Regulations	2
Section 104	Interpretation and Conflict.....	3
Section 105	Repealer.....	4
Section 106	Severability.....	4
Section 107	Effective Date.....	4
 ARTICLE II	 - DEFINITIONS	
Section 201	Construction.....	5
Section 202	Terminology	5
 ARTICLE III	 - SUBMISSION PROCEDURES	
Section 301	General Procedures	18
Section 302	Fee Schedule	19
Section 303	Lot Line Adjustment Procedure	19
Section 304	Minor Subdivision Procedure.....	19
Section 305	Major Subdivision and Land Development Procedure.....	20
Section 306	Review by Park and Recreation Board	25
Section 307	Time Limitation of Plan Approval	25
Section 308	Modifications	25
 ARTICLE IV	 - PLAN REQUIREMENTS	
Section 401	Sketch Plan	26
Section 402	Lot Line Adjustment and Minor Subdivision	26
Section 403	Preliminary Plan	29
Section 404	Final Plan (Record Plan).....	36
Section 405	As-Built Plans	39
Section 406	Traffic Impact Study	39
Section 407	Sewage Facilities	43
Section 408	Water Resources Impact Study.....	45
Section 409	Wetland Delineation	47
 ARTICLE V	 - GENERAL DESIGN STANDARDS	
Section 501	Application.....	49
Section 502	General Standards	49
Section 503	Community Facilities	50
Section 504	Blocks and Lots.....	50
Section 505	Street – General.....	51
Section 506	Street Standards	53
Section 507	Cul-De-Sac Streets	56
Section 508	Street Alignment.....	56

ARTICLE V	- GENERAL DESIGN STANDARDS (continued)	<u>Page</u>
Section 509	Street Grades	57
Section 510	Street Intersections	57
Section 511	Driveways	58
Section 512	Curbs	60
Section 513	Sidewalks	60
Section 514	Reserved	61
Section 515	Landscaping and Street Trees	61
Section 516	Stormwater Management	68
Section 517	Excavating and Grading	75
Section 518	Erosion and Sedimentation Control.....	76
Section 519	Water Supply, Distribution Systems and Fire Protection	78
Section 520	Sanitary Sewer Disposal.....	80
Section 521	Utilities	81
Section 522	Monuments and Markers	81
Section 523	Parking Facilities	83
Section 524	Alleys	87
Section 525	Recreation Facilities.....	88
Section 526	Lighting	93
Section 527	Easements	94
 ARTICLE VI	 - REQUIRED IMPROVEMENTS AND GENERAL STANDARDS	
Section 601	Intent	95
Section 602	Required Improvements	95
Section 603	Construction of Facilities	96
Section 604	General Standards	96
Section 605	Completion of Improvements.....	97
Section 606	Guaranties to Complete Improvements and Financial Security	97
Section 607	Completion of Improvements.....	99
Section 608	Maintenance of Guaranties and Financial Security	101
Section 609	Remedies to Effect Completion of Improvements.....	101
 ARTICLE VII	 - DEDICATION OF RECREATION LAND	
Section 701	Recreation Land/Fee Requirements.....	102
Section 702	Recreation Land Dedication	102
Section 703	Criteria for Determining Location and Suitability of Recreation Areas.....	102
Section 704	Ownership/Dedication to Township of Recreation Land	103
Section 705	Fee in Lieu of Dedication	104
 ARTICLE VIII	 - ORDINANCE AMENDMENTS; PENALTIES	
Section 801	Enactment of Amendments	105
Section 802	Amendment Hearings	105
Section 803	Penalties.....	105

APPENDIX “A”	- CONSTRUCTION DETAILS	<u>Page</u>
	Typical Roadway Half Section	A-1
	Typical Roadway Half Section	A-2
	Typical Roadway Half Section	A-3
	Typical Roadway Half Section	A-4
	Storm Sewer Bedding Detail.....	A-5
	Storm Sewer Bedding Detail.....	A-6
	Belgian Block Curb Detail	A-7
APPENDIX “B”	- SAMPLES OF PLAN NOTIFICATIONS.....	B-1
APPENDIX “C”	- NON-RESIDENTIAL PARKING LOTS.....	C-1
APPENDIX “D”	- REQUIREMENTS FOR AS-BUILT DRAWINGS.....	D-1
APPENDIX “E”	- BASIN BERM CONSTRUCTION REQUIREMENTS.....	E-1
APPENDIX “F”	- BUCKS COUNTY WETLAND PLANT LIST	F-1
APPENDIX “G”	- RUNOFF COEFFICIENTS FOR THE RATIONAL METHOD	G-1
APPENDIX “H”	- MANNING “N” VALUES BY TYPICAL REACH DESCRIPTION.....	H-1
APPENDIX “I”	- TOHICKON CREEK/NORTH DELAWARE STORMWATER MANAGEMENT AREA MAP	I-1

ORDINANCE NO. 86

AN ORDINANCE OF THE TOWNSHIP OF HAYCOCK DEFINING AND REGULATING THE SUBDIVISION OF LAND AND THE DEVELOPMENT THEREOF; ESTABLISHING PROCEDURES FOR THE CONSIDERATION OF MINOR AND MAJOR SUBDIVISIONS AND LAND DEVELOPMENTS; REQUIRING THE PREPARATION OF SKETCH, PRELIMINARY, FINAL AND AS-BUILT PLANS; REQUIRING CERTAIN IMPROVEMENTS TO BE MADE OR GUARANTEED TO BE MADE BY THE SUBDIVIDER OR DEVELOPER AND ESTABLISHING DESIGN STANDARDS FOR IMPROVEMENTS; REGULATING SALE OF LOTS, ERECTION OF BUILDING(S), LAYING OUT, CONSTRUCTION, OPENINGS AND DEDICATION OF STREETS, SANITARY SEWERS AND STORM SEWERS, OTHER FACILITIES AND PUBLIC IMPROVEMENTS; PROVIDING FOR THE ADMINISTRATION OF THIS ORDINANCE; AND PRESCRIBING PENALTIES FOR VIOLATION.

ARTICLE I - GENERAL PROVISIONS

Section 101. - Short Title.

This Ordinance shall be known as the Haycock Township Subdivision and Land Development Ordinance.

Section 102. - Purpose.

1. These regulations are adopted for the following purposes:
 - A. To protect and provide for the public health, safety, and general welfare of Haycock Township.
 - B. To guide the future growth and development of Haycock Township, in accordance with the Comprehensive Plan and Act 537 Sewage Facilities Plan of Haycock Township.
 - C. To provide for adequate light, air, privacy; to secure safety from fire, flood, and other danger; and to prevent overcrowding of the land and undue congestion of population.
 - D. To protect the character and social and economic stability of Haycock Township and to encourage the orderly and beneficial development of Haycock Township.
 - E. To protect and conserve the value of land throughout Haycock Township and the value of building(s) and improvements upon the land and to minimize the conflicts among the uses of land and buildings.
 - F. To guide public and private policy and action in order to provide adequate and efficient transportation, water supply, sewerage, stormwater management, schools, parks, playgrounds, recreation, and other public requirements and facilities.

ARTICLE I - GENERAL PROVISIONS
ARTICLE I - GENERAL PROVISIONS

- G. To provide the most beneficial relationship between the uses of land and buildings and the circulation of traffic within Haycock Township having particular regard to the avoidance of congestion in the streets and highways, and the pedestrian traffic movements appropriate to the various uses of land and buildings, and to provide for the proper location and width of streets and building lines.
- H. To establish reasonable standards of design and procedures for subdivision and re-subdivisions, in order to further the orderly layout and use of land; and to insure proper legal descriptions and monumenting of subdivided land.
- I. To insure that public facilities are available and will have a sufficient capacity to serve the proposed subdivision.
- J. To prevent the pollution of air, streams, lakes, and ponds; to assure the adequacy of drainage facilities; to safeguard the water table; and to encourage the wise use and management of natural resources in order to preserve the community and value of the land.
- K. To control stormwater in a manner consistent with the Bucks County stormwater management plan.
- L. To regulate the subdivision and/or development of land within any designated floodplain district in order to promote the general health, welfare, and safety of the community.
- M. To require that each subdivision lot in flood-prone areas include a safe building site with adequate access; and that public facilities which serve such uses be designed and installed to minimize flood damage.
- N. To protect individuals from buying lands which are unsuitable for use because of flooding by prohibiting the improper subdivision and/or development of lands within the designated floodplain districts; and which are unsuitable for use because of topography, wetlands, steep slopes, and other environmental features.
- O. To preserve the natural beauty and topography of Haycock Township and to ensure appropriate development with regard to these natural features.
- P. To provide for open spaces through efficient design and layout of the land.

Section 103. - Application of Regulations. This Ordinance shall apply to all subdivision and land development plans submitted after the effective date of this Ordinance and to all subdivision and land development plans submitted before the effective date of this Ordinance which no longer have protection from the effect of changes in governing ordinances granted by Section 508(4) of the Pennsylvania Municipalities Planning Code.

1. Subdivision Control.

- A. No subdivision, as herein defined, of any lot, tract or parcel of land shall be effected and no street, alley, sanitary sewer, storm sewer, water main or other facilities in connection therewith, shall be laid out, constructed, opened or dedicated for public use or travel, or for the common use of occupants of

ARTICLE I - GENERAL PROVISIONS

ARTICLE I - GENERAL PROVISIONS

buildings abutting or to abut thereon, except in strict accordance with the provisions of this Ordinance. No lot in any subdivision may be sold, and no permit to erect, alter or repair any building upon land in a subdivision may be issued and no building may be erected in a subdivision, unless and until a subdivision plan has been approved by the Board of Supervisors and recorded in the office of the Recorder of Deeds for Bucks County.

- B. There shall be no subdivision of any lot which has been restricted from further subdivision by a note or restriction on a plan or deed recorded at the office of the Bucks County Recorder of Deeds.

2. Land Development Control.

- A. Land development, as herein defined, must comply with the regulations contained herein. Such compliance shall include, but not be limited to the filing of preliminary and final plats, the dedication and improvements of rights-of-way, streets and roads, and the payment of fees and charges as established by Resolution of the Board of Supervisors.
- B. Land development plans shall indicate the location of each structure and clearly define each unit and shall indicate public easements, common areas, and improvements, all easements appurtenant to each unit, and improvements to public rights-of-way. Developments are subject to the zoning regulations as they apply to use and density requirements, setbacks, parking and other features, and the same shall be indicated on the land development plan.

Section 104. - Interpretation and Conflict.

- 1. Interpretation. In interpreting and applying the provisions of this Ordinance, they shall be held to be the minimum requirements for the promotion of public health, safety, comfort, convenience, and general welfare.
- 2. Conflict with Public and Private Provisions.
 - A. Public Provisions. Where any provision of this Ordinance imposes restrictions different from those imposed by any other provision of this Ordinance or any other ordinance, rule, or regulation, or other provisions of law, whether local, state or Federal, whichever provisions are more restrictive or impose higher standards shall control.
 - B. Private Provisions. This Ordinance is not intended to abrogate any easement, covenant of any other private agreement or restriction, provided that where the provisions of this Ordinance are more restrictive or impose higher standards or regulations than such easement, covenant, or other private agreement or restriction, the requirements of this Ordinance shall govern. Where the provisions of the easement, covenant or private agreement or restriction impose duties and obligations more restrictive, or higher standards than the requirements of these regulations, or the determinations of the Board of Supervisors in approving a subdivision or in enforcing this Ordinance, and such private provision are not inconsistent with this Ordinance or determinations thereunder, then such private provisions shall be operative and supplemental to these regulations and determinations made thereunder.

ARTICLE I - GENERAL PROVISIONS

ARTICLE I - GENERAL PROVISIONS

3. Municipal Liability. The grant of a permit or approval of a plan for any proposed subdivision and/or land development to be located within any identified floodplain area or district shall not constitute a representation, guarantee, or warranty of any kind by Haycock Township or by any official or employee thereof of the practicability or safety of the proposed use, and shall create no liability upon Haycock Township, its officials or employees.

Section 105. - Repealer.

All Ordinances and Resolutions of the Township inconsistent herewith are hereby repealed to the extent of such inconsistencies specifically, Ordinance No. 36 adopted June 20, 1979.

Section 106. - Severability.

If any sentence, clause, section, or part of this Ordinance is for any reason found to be unconstitutional, illegal or invalid, such unconstitutionality, illegality, or invalidity shall not affect or impair any of the remaining provisions, sentences, clauses, sections or parts of this Ordinance. It is hereby declared as the intent of the Board of Supervisors of Haycock Township that this Ordinance would have been adopted had such unconstitutional, illegal or invalid sentence, clause, section or part thereof not been included herein.

Section 107. - Effective Date.

This Ordinance shall become effective on the 12th day of August, A.D., 2000.

ORDAINED AND ENACTED this 7th day of August, A.D., 2000.

Haycock Township
Board of Supervisors

Attest:

Secretary

ARTICLE II - DEFINITIONS

Section 201. - Construction.

Unless otherwise expressly stated, the following words shall, for the purpose of this Ordinance, have the meaning herein indicated. The present tense shall include the future; the singular number shall include the plural; words used in the masculine gender shall include the feminine and the neuter; the word "shall" is always mandatory; the word "may" is always permissive.

Section 202. - Terminology.

Agricultural Soils - Agricultural Soils shall be recognized and classified as follows:

1. **Prime Agricultural Soils** - the following soil types shall be recognized and classified as Prime Agricultural Soils:

<u>Manuscript Symbol</u>	<u>Mapping Unit Name</u>
AdB	Allenwood gravelly silt loam, 3 to 8 percent slopes
AgA	Alton gravelly loam, 0 to 3 percent slopes
AgB	Alton gravelly loam, 3 to 8 percent slopes
BeA	Bedington silt loam, 0 to 3 percent slopes
BeB	Bedington silt loam, 3 to 8 percent slopes
CeA	Chester silt loam, 0 to 3 percent slopes
CeB	Chester silt loam, 3 to 8 percent slopes
CIB	Clarksburg silt loam, 2 to 6 percent slopes
DsB	Duffield silt loam, 2 to 8 percent slopes
DuA	Duncannon silt loam, 0 to 3 percent slopes
DuB	Duncannon silt loam, 3 to 8 percent slopes
HoA	Howell silt loam, 0 to 3 percent slopes
HoB	Howell silt loam, 3 to 8 percent slopes
LaA	Lansdale loam, 0 to 3 percent slopes
LaB	Lansdale loam, 3 to 8 percent slopes
LgA	Lawrenceville silt loam, 0 to 3 percent slopes
MaB	Manor loam, 3 to 8 percent slopes
MIA	Mount Lucas silt loam, 0 to 3 percent slopes
NeB	Neshaminy channery silt loam, 3 to 8 percent slopes
PeA	Penn silt loam, 0 to 3 percent slopes
PeB	Penn silt loam, 3 to 8 percent slopes
PnB	Penn-Lansdale complex, 3 to 8 percent slopes
PoA	Pope loam, terrace, 0 to 3 percent slopes
PpA	Pope loam, terrace, 0 to 3 percent slopes
RdA	Readington silt loam, 0 to 3 percent slopes
Ro	Rowland silt loam
WaB	Washington gravelly silt loam, 3 to 8 percent slopes
Woa	Woodstown silt loam, 0 to 5 percent slopes

ARTICLE II - DEFINITIONS

2. **Agricultural Soils of Statewide Importance** - The following soil types shall be recognized and classified as Agricultural Soils of Statewide Importance:

Manuscript

Symbol

Mapping Unit Name

AbA	Abbottstown silt loam, 0 to 3 percent slopes
AbB	Abbottstown silt loam, 3 to 8 percent slopes
AbC	Abbottstown silt loam, 8 to 15 percent slopes
AdC	Allenwood gravelly silt loam, 8 to 15 percent slopes
AIA	Alton gravelly loam, flooded, 0 to 5 percent slopes
BeC	Bedington silt loam, 8 to 15 percent slopes
CaA	Chalfont silt loam, 0 to 3 percent slopes
CaB	Chalfont silt loam, 3 to 8 percent slopes
CeC	Chester silt loam, 8 to 15 percent slopes
CwB	Culleoka-Weikert shaly silt loams, 3 to 8 percent slopes
DtC	Duffield and Washington soils, 8 to 20 percent slopes
Fa	Fallsington silt loam, gravelly subsoil variant
KIB	Klinesville very shaly silt loam, 3 to 8 percent slopes
LaC	Lansdale loam, 8 to 15 percent slopes
LgB	Lawrenceville silt loam, 3 to 8 percent slopes
LhB	Lehigh channery silt loam, 2 to 8 percent slopes
LhC	Lehigh channery silt loam, 8 to 18 percent slopes
MaC	Manot loam, 8 to 15 percent slopes
MIB	Mount Lucas silt loam, 3 to 8 percent slopes
MIC	Mount Lucas silt loam, 8 to 15 percent slopes
NeC	Neshaminy channery silt loam, 8 to 15 percent slopes
PeC	Penn silt loam, 8 to 15 percent slopes
PhB3	Penn-Klinesville shaly silt loams, 3 to 8 percent slopes, eroded
PnC	Penn-Lansdale complex, 8 to 15 percent slopes
RdB	Readington silt loam, 3 to 8 percent slopes
RdC	Readington shaly silt loam, 0 to 3 percent slopes
ReA	Reaville shaly silt loam, 0 to 3 percent slopes
ReB	Reaville shaly silt loam, 3 to 8 percent slopes
StB	Steinsburg gravelly loam, 3 to 8 percent slopes
StC	Steinsburg gravelly loam, 8 to 15 percent slopes
UrA	Urbana silt loam, 0 to 3 percent slopes
UrB	Urbana silt loam, 3 to 8 percent slopes

Alley - A strip of land over which there is a public or private right-of-way which serves as the secondary means of vehicular access to the side or rear of two (2) or more properties. Frontage on such a right-of-way shall not be construed as satisfying the requirements of Township Ordinances relating to frontage on a street.

Alluvial Soils (Floodplain Soils) - Areas subject to periodic flooding and listed in the Soil Survey of Bucks and Philadelphia Counties, Pennsylvania, U.S. Department of Agricultural Soil Conservation Service, July 1975 as being "on, or in, the flood plain" or subject to flooding. The following soil types are alluvial and/or floodplain soils:

Alluvial land

Alton gravelly loam, flooded

Bowmansville silt loam

Hatboro silt loam

Marsh

Pope loam

Rowland silt loam

ARTICLE II - DEFINITIONS

Applicant - A landowner, or developer, as hereinafter defined, who has filed an application for development including his/her heirs, successors and assigns.

Application for Development - Every application, whether tentative, preliminary, or final required to be filed and approved prior to start of construction or development including but not limited to an application for a building permit, for the approval of a subdivision plat or plan or for the approval of a development plan.

Architect - A Professional Architect licensed as such by the Commonwealth of Pennsylvania.

Berm - An earth mound which physically blocks views without using architectural elements.

Block - A tract of land bounded by streets. Block length shall be measured along the centerline of a street between centerlines of intersecting streets.

Building - Any structure having a roof supported by columns or walls and intended for shelter, housing, or enclosure of persons, animals or chattels, and including covered porches or bay windows and chimneys. Included shall be all manufactured homes and trailers to be used for human habitation.

Cartway or Roadway - The portion of a street right-of-way normally paved or stoned and designed or intended for vehicular use.

Clear Sight Triangle - An area of unobstructed vision at street intersection defined by lines of sight between points at a given distance from the intersection of the street right-of-way lines.

Common Open Space – (Refer Open Space, Common)

Condominium and Cooperative - (An ownership arrangement and not a land use) a method of ownership which, when applied to a multifamily dwelling, provides for separate ownership for each unit, title of which shall consist of ownership of the unit together with an undivided interest in the common element.

Conservation District - Bucks Conservation District.

County - The County of Bucks, Pennsylvania.

County Planning Commission - The Planning Commission of the County of Bucks.

Crosswalk - A right-of-way or easement for pedestrian travel which crosses a cartway.

Cul-de-sac - A street intersecting another street at one end and terminating at the other in a vehicular turnaround.

Culvert - A pipe, conduit, or similar structure including appurtenant works which convey surface water.

Density - The measure of the number of dwelling units per acre as determined by Township Zoning Ordinance regulations.

Design Standards - Regulations adopted pursuant to this Ordinance establishing minimum or maximum standards and a layout by which a subdivision and land development is developed.

ARTICLE II - DEFINITIONS

Design Storm - The magnitude of precipitation from a storm event measured in probability of occurrence (i.e. 50-Year Storm) and duration (i.e. 24-Hour), and used in computing storm water management control system.

Detention Basin - A basin designed to retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate.

Developer - Any landowner, agent of such landowner, or tenant with the permission of such landowner, who makes or causes to be made a subdivision of land or a land development.

Development - Any man-made change to improved or unimproved real estate including, but not limited to, the construction or placement of buildings or other structures, mobile homes, streets and other paving, utilities, mining, dredging, filling, grading, excavation, or drilling operations, and the subdivision of land.

Development Plan - The provisions for development including a planned residential development, a plat of subdivision, all covenants relating to use, location and bulk of buildings and other structures, intensity of use or density of development, streets, ways and parking facilities, common open space and public facilities. The phrase "provisions of development plan" when used in this Ordinance shall mean the written and graphic materials referred to in this definition.

Drainage Facility - Any ditch, gutter, swale, culvert, basin, storm sewer or other structure designed, intended or constructed for the purpose of conveying, diverting or controlling surface water or groundwater.

Drainage Right-of-Way - The lands required for the installation of stormwater sewers or drainage ditches, or required along a natural stream or watercourse for preserving the channel and providing for the flow of water therein to safeguard the public against flood damage and unnatural erosion.

Driveway - A private vehicular passageway providing access between a street and a private parking area or private garage.

Driveway, Shared - A private vehicular passage way providing access between a street and private parking area or garage serving four (4) or less dwellings. Shared driveways may cross through lots provided access easements are established. Lot frontage on such easements shall not be utilized to meet minimum lot width requirements of the Township Zoning Ordinance.

Dwelling - A building designed and occupied exclusively for residential purposes containing one or more dwelling units on a single parcel of land, excluding hotel, rooming house, tourist home, institutional home, guest house, residential club, motel, motor court, and the like.

Dwelling Unit - Any room or group of rooms located within a residential building and forming a single, habitable unit with facilities used or intended to be used for living, sleeping, cooking and eating, by one family.

Easement - A grant for the use of a parcel of land by the public, a corporation, or a person, for a specified purpose.

Encroachment - Any placement or obstruction in a delineated floodway, wetland, right-of-way, easement, required yard, setback, or adjacent land.

Engineer - A Professional Engineer licensed as such in the Commonwealth of Pennsylvania.

ARTICLE II - DEFINITIONS

Erosion - The removal of soil particles by the action of water, wind, ice, or other geological agents.

Excavation - Any act by which earth, sand, gravel, rock, or any other similar material is dug into, cut, quarried, uncovered, removed, displaced, relocated, or bulldozed; and shall include the conditions resulting therefrom.

Fill -

1. Any act by which earth, sand, gravel, rock, or any other material is placed, pushed, dumped, pulled, transported or moved to a new location above the natural surface of the ground, or on top of a stripped surface; and shall include the conditions resulting therefrom;
2. The difference in elevation between a point on the original ground and a designated point of higher elevation on the final ground elevation.
3. The material used to fill.

Financial Security - Any approved security which may be in lieu of a requirement that certain improvements be made before the Board of Supervisors approves a final subdivision or land development plan, including performance bonds, escrow agreements, and other similar collateral or surety agreements.

Flood - A temporary inundation of normally dry land areas.

Floodplain (General Floodplain) - A relatively flat or low land area which is subject to partial or complete inundation from an adjoining or nearby stream, river or watercourse; and/or any area subject to the unusual and rapid accumulation of surface waters from any source.

Floodplain Soils - Areas subject to periodic flooding and listed in the Soil Survey of Bucks and Philadelphia Counties, Pennsylvania, U.S. Department of Agriculture, Soil Conservation Service, July 1975, as being "on the floodplain" or "subject to flooding". The following soil types are floodplain soils: Alluvial land; Alton gravelly loam, flooded; Bowmansville silt loam; Hatboro silt loam; Marsh; Pope loam; and Rowland silt loam.

Flood-proofing - Any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents.

Floodway - The channel of the watercourse and portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodway, it is assumed, absent evidence to the contrary, that the floodway extends from both sides of the stream to 50 feet from the top of each bank of the stream.

Floodway Fringe - Area between the floodway and boundary of the 100 year flood. For purpose of definition, it is the area of the floodplain that could be completely obstructed without increasing the water surface elevation of the 100 year flood more than one (1) foot at any point. Floodway and floodway fringe are typically calculated by equal conveyance reduction from each side of the floodplain.

ARTICLE II - DEFINITIONS

Forest (Woodlands) - Areas comprised of one (1) or more acres of mature or largely mature trees in which the largest trees measure at least six (6) inches dbh (diameter at breast height, or four and one-half feet above the ground). Forest shall be measured from the drip line of the outer trees.

Frontage - Refer lot width.

Governing Body - The Board of Supervisors of Haycock Township, Bucks County, Pennsylvania.

Grade - The slope of a street, other public way, land area, drainage facility or pipe specified in percent.

Grading and Drainage Plan - A plan showing all existing ground features and proposed grading, including existing and proposed surface and subsurface drainage facilities, described by grades, contours, and topography.

Groundwater - Natural underground water supplies.

Hydric Soils - Soils that are categorized as poorly drained that can support hydrophytic plants, but may not do so in many cases. For the purpose of this Ordinance, hydric soils are general wetland indicator soils. (Refer Wetlands) The following soils, classified in the Soil Survey of Bucks and Philadelphia Counties, Pennsylvania, U.S. Department of Agriculture, Soil Conservation Service, July 1975, are hydric soils:

Bowmansville silt loam
Doylestown silt loam
Fallsington silt loam
Hatboro silt loam
Towhee silt loam
Towhee extremely stony silt loam

Identified Floodplain Area - The floodplain area specifically identified in this Ordinance as being inundated by the one hundred (100) year flood. Included would be areas identified as Floodway (FW), Flood-Fringe (FF) and General Floodplain (FA).

Impervious Surface - Impervious surfaces are those surfaces which do not absorb precipitation and surface water. All buildings, parking areas, driveways, roads, sidewalks, swimming pools, and any areas in concrete, asphalt, packed stone, or other equivalent surfaces shall be considered impervious surfaces within this definition. In addition, other areas determined by the Township Engineer to be impervious within the meaning of this definition will be classified as impervious surfaces.

Improvements - Those physical additions, installations, and changes required to render land suitable for the use intended, including but not limited to, grading, paving, curbing, street lights and signs, fire hydrants, water mains, electric service, gas service, sanitary sewers, storm drains, sidewalks, crosswalks, driveways, culverts, and street shade trees.

Improvement Construction Documents - Include but are not limited to Traffic Study, Stormwater Management Study, Floodplain Study, Wetland Studies, Erosion and Sedimentation Pollution Control Narrative, Geological Studies for Water Supply, Sewage Facilities Alternatives Study, etc. Studies requiring engineering calculations shall be prepared, signed, and sealed by a licensed Professional Engineer.

Land Development - Any of the following activities:

ARTICLE II - DEFINITIONS

1. The improvement of one (1) or two (2) or more contiguous lots, tracts or parcels of land for any purpose involving:
 - A. A group of two (2) or more residential or nonresidential buildings, whether purposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or
 - B. The division or allocation of land or space, whether initially or cumulatively, between or among two (2) or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups or other features.
2. A subdivision of land.
3. "Land development" does not include development which involves:
 - A. The conversion of an existing single family detached dwelling or single family semi-detached dwelling into not more than three (3) residential units, unless such units are intended to be a condominium;
 - B. The addition of a residential accessory building, including farm building, not greater than 1000 square feet in area on a lot or lots subordinate to an existing principal building; or
 - C. The addition or conversion of buildings or rides within the confines of an enterprise which would be considered an amusement park. For the purposes of this subsection, an amusement park is defined as a tract or area used principally as a location for permanent amusement structures or rides. This exclusion shall not apply to newly acquired acreage by an amusement park until initial plans for the expanded area have been approved by the proper authorities.

Landowner - The legal or beneficial owner or owners of land including the holder of an option or contract to purchase (whether or not such option or contract is subject to any condition), a lessee, if he/she is authorized under the lease to exercise the rights of the landowner, or other person having a proprietary interest in land.

Lot - A parcel of land, used or set aside and available for use as the site of one or more buildings and any buildings accessory thereto, or for any other purpose, in one ownership and not divided by a street, nor including any land within the ultimate right-of-way of a public or private street upon which said lot abuts, even if the ownership to such right-of-way is the owner of the lot. In the case where an existing deeded parcel of land is divided into two or more tracts by public street; for the purposes of this Ordinance, each tract shall be considered a separate lot.

1. **Lot, Corner** - A lot which has an interior angle of less than one hundred and thirty-five (135) degrees at the intersection of two (2) street lines. A lot abutting upon a curved street or streets shall be considered a corner lot if the tangent to the curve at the points beginning within the lot or at the points of intersection of the side lot lines with the street lines intersects at an angle of less than one hundred and thirty-five (135) degrees.
2. **Lot, Depth** - The mean distance from the ultimate right-of-way line of the lot to its opposite rear line measured in a direction parallel to the side lines of the lot. Lot depth for triangular lots shall be the mean distance from the street line to the point of intersection of the side yards.

ARTICLE II - DEFINITIONS

3. **Lot, Double Frontage** - A lot (except for a corner lot) which fronts two interior proposed streets within a subdivision.
4. **Lot, Flag (Lane)** - A lot which meets the criteria for an exception to the minimum lot width requirements under Section 522 c. of the Zoning Ordinance.
5. **Lot, Interior** - A lot, the side lot lines of which do not abut on a street.
6. **Lot, Minimum Width** - The minimum required lot width measured at the required building setback line.
7. **Lot, Nonconforming** - A lot, the area or dimension of, which was lawful prior to the adoption or amendment of the relevant Zoning Ordinance, but which fails to conform to the requirements of the zoning district under the current Zoning Ordinance.
8. **Lot of Record** - A lot which has been recorded in the Office of the Recorder of Deeds.
9. **Lot, Reverse Frontage** - A lot (excluding corner lots) which abuts both a proposed street and an existing street of higher classification, with vehicular access solely from the street of lower classification.
10. **Lot, Through** - An interior lot having frontage on two (2) parallel or approximately parallel streets.
11. **Lot, Triangular** - A lot having three (3) lot lines, but which does not qualify as a corner lot.
12. **Lot, Width (frontage)** - The distance measured between the side lot lines, at the required minimum building setback line. In a case where there is only one side lot line, lot width shall be measured between such side lot line and the opposite rear lot line or street line.

Lot Line Adjustment - A minor subdivision of land resulting in revised property boundaries between two (2) or more existing lots, and not resulting in the creation of any additional lots.

Maintenance Guarantee - Any security which may be accepted by the Township for the maintenance of any improvements required by this Ordinance.

Major Subdivision - Any subdivision not classified as a minor subdivision or lot line adjustment.

Manufactured/Modular Home - A dwelling unit erected on a foundation and made of one or more sections built in a factory. The completed unit shall meet all applicable building codes in effect.

Minor Subdivision - Any division or re-division of a lot, tract or parcel of land by any means into two (2) lots or less.

Mobile Home - A transportable, single family dwelling intended for permanent occupancy, contained in one unit, or in two (2) or more units designed to be joined into one integral unit capable of again being separated for repeated towing, which arrives at a site complete and ready for occupancy except for minor and incidental unpacking and assembly operations, and constructed so that it may be used without a permanent foundation. For the purposes of this Ordinance, travel trailers are not considered as mobile homes.

ARTICLE II - DEFINITIONS

Mobile Home Lot - A parcel of land in a mobile home park, improved with the necessary utility connections and other appurtenances necessary for the erections thereon of a single mobile home.

Mobile Home Park - A parcel or contiguous parcels of land which has been so designated and improved that it contains two (2) or more mobile home lots for the placement thereon of mobile homes.

Municipal Authority - A body politic and corporate created pursuant to the Act of May 2, 1945 (P.L. 382, No. 164), known as the "Municipalities Authority Act of 1945".

Municipal Engineer - A Professional Engineer licensed as such in the Commonwealth of Pennsylvania and appointed by the Township pursuant to Article V of the Second Class Township Code.

Municipalities Planning Code - Act of Assembly of July 31, 1968, P.L. 805, as amended.

One Hundred Year Flood - A flood that, on the average, is likely to occur once every one hundred (100) years (i.e. that has one percent (1%) chance of occurring each year, although the flood may occur in any year).

Open Space - Any parcel or area of land or water essentially unimproved and set aside, dedicated or reserved for resource protection, public or private use and enjoyment, or for the use and enjoyment of owners and occupants of land adjoining or neighboring such open space. Open space shall not include land occupied by non-recreational structures, roads, street rights-of-way, parking lots, land reserved for future parking, or any portion of required minimum lot areas as required by this Ordinance.

Open Space, Common - Land within or related to a development, not individually owned or dedicated for public use, which is designed and intended for the common use or enjoyment of the residents of the development and may include such complementary structures and improvements as may be required and/or appropriate.

Person - An individual, partnership, public or private association or corporation, firm, trust, estate, municipality, governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

Plan, Final - A complete and exact plan prepared by a licensed engineer or surveyor, prepared for official recording, showing right-of-way lines, easements, lot dimensions with bearings, lot numbers, and any other relevant information pertaining to the street and lot subdivision or land development. The final plan shall include improvement construction documents prepared by a licensed engineer where applicable). Final plan must show typical cross-section of streets and the horizontal and vertical details (plan-profiles of all streets, drainage facilities, sanitary sewers, water mains, fire hydrants, street lights, and all underground and above ground utility conduits and poles). An exact copy of the approved final plan on opaque linen of standard size shall be submitted for necessary signatures and recording with the Bucks County Recorder of Deeds.

Plan, Preliminary - A plan prepared by a licensed engineer and/or surveyor showing the existing features of a tract and its surroundings and proposed street and lot layout within and adjacent to the subdivision or land development, as a basis for consideration prior to preparation of a final plan. Preliminary plan shall include improvement construction documents prepared by a licensed engineer (where applicable). Preliminary Plan must show typical cross section of the streets and the horizontal and vertical details (plan-profiles of all streets, drainage facilities, sanitary sewers, water mains, fire hydrants, street lights, and all underground and above ground utility conduits and poles).

ARTICLE II - DEFINITIONS

Plan, Sketch - An informal plan indicating salient existing features of a tract and its surroundings and a general layout of the proposed subdivision or land development, to be used as the basis of informal discussions between representatives of the Township and the subdivider or land developer.

Plan, Soil Erosion & Sedimentation Control - A plan approved by the Bucks Conservation District for controlling erosion and sediment during construction which shall provide all steps, including scheduling, to assure erosion and sediment control during all phases of construction, including final stabilization.

Planning Commission - The Haycock Township Planning Commission.

Plat - A map or plan of subdivision or land development whether sketch, preliminary or final.

Public Facilities - Any parks, playgrounds, trails, paths or other recreational areas; any water or sewer collection, transportation or treatment facilities; all street, sidewalk, curb or other roadway facilities to be dedicated; and any drainage or utility easement areas to be dedicated to the Township. Any public improvements required by Ordinance or otherwise to be constructed and dedicated to the Township.

Public Hearing - A formal meeting held pursuant to public notice by the Board of Supervisors or Planning Commission of the Township, intended to inform and obtain public comment, prior to taking action in accordance with this Ordinance.

Public Meeting - A forum held pursuant to notice under the Act of July 3, 1986, (P.L. 388, No. 84), known as the "Sunshine Act", 53 P.S. §271 et seq.

Public Notice - Notice published once each week for two (2) successive weeks in a newspaper of general circulation in Haycock Township. Such notice shall state the time and place of the hearing and the particular nature of the matter to be considered at the hearing. The first publication shall not be more than thirty (30) days and the second publication shall not be less than seven (7) days from the date of the hearing.

Recreation Facilities - The following definitions apply to the recreation facilities required by Section 525 of this Ordinance:

1. **Tot Lot** - A confined, developed, neighborhood play area primarily for use by preschool children under the supervision of parents or guardian.
2. **Playfield** - A common area within a subdivision or land development for neighborhood residents to use for informal, active recreation purposes such as ball games and other activities requiring a large lawn area, away from homes or other buildings for their proper conduct.
3. **Basketball Court** - A complete basketball facility including paved, standard-sized court area, with posts, backboards, and baskets at both ends of the court.
4. **Tennis Court** - A complete tennis facility including paved, standard-sized court area, posts, net and fencing around its perimeter.

ARTICLE II - DEFINITIONS

5. **Swimming Pool** - A complete swimming facility including the pool, surrounding paved deck, lawn area, lifeguard and bathroom facilities, and appropriate mechanical equipment.

Reserve Strip - A narrow parcel of ground having inadequate area for building purposes separating a street or a proposed street from other adjacent properties.

Re-subdivision - Any subdivision or transfer of land, laid out on a plan which has been approved by the Board of Supervisors which changes or proposes to change property lines and/or public rights-of-way not in strict accordance with the approved plan.

Retention Basin - A basin designed to retain stormwater runoff so that a permanent pool is established.

Right-of-Way - A strip of land occupied or intended to be occupied by a street, sidewalk, alley, utilities or other similar use.

Runoff - The surface water discharge or rate of discharge of a given watershed after a fall of rain or snow that does not enter the soil but runs off the surface of the land; that part of precipitation which flows over the land.

Sediment - Solid material, both mineral and organic, that is in suspension, has been transported, or has been moved from its site of origin by water.

Sedimentation - The process by which mineral or organic material is accumulated or deposited by the movement of wind and water, or by gravity. Once this matter is deposited, or remains suspended in water, it is usually referred to as "Sediment".

Select Earth Backfill - Earth backfill material free of organics and other objectionable material being a well graded mixture of rock and soil with no particle size greater than 8 inches.

Select Backfill - Crushed stone backfill graded in accordance with PennDOT Form 408.

Setback (Building Setback Line) - The minimum distance that a building must be held back from an adjacent lot line, depending on the applicable zoning district, or the minimum distance from the ultimate right-of-way, depending on the applicable street classification.

Sewer, Community - A system, whether publicly or privately owned, for the collection of sewage or non-hazardous industrial wastes of a liquid nature from two (2) or more lots, and for the treatment or disposal of the sewage or industrial waste on one or more of the lots or at any other site.

Sewer, Individual - A system of piping, tanks or other facilities serving a single lot and collecting and disposing of sewage in whole or in part into the soil or into waters of the Commonwealth or by means of conveyance to another site for final disposal.

Sight Distance - Includes Safe Sight Distance, Safe Stopping Site Distance, Passing Sight Distance, and Decision Site Distance as defined and regulated by Pennsylvania Code Title 67, Chapter 441 and PennDOT Design Manual, Part 2, Publication 13. Sight distance for intersection of streets, alleys, and driveways shall be measured (unobstructed) from a point 10 feet back from edge of pavement at a height of 3.5 feet above the pavement surface to another point 6 inches above the pavement surface.

Site - The site shall be defined as a parcel or parcels of land intended to have one or more buildings or intended to be subdivided into one or more lots.

ARTICLE II - DEFINITIONS

Slope - The face of an embankment of cut section; any ground whose surface makes an angle with the plane of the horizon. Slopes are usually expressed in a percentage based upon vertical difference in feet per one hundred (100) feet of horizontal distance.

Soil, Percolation Test - A field test conducted to determine the absorption capacity of soil to a specified depth in a given location for the purpose of determining suitability of soil for on-site sewage disposal.

Street, Road or Highway - Includes street, avenue, boulevard, road, highway, freeway, parkway, lane, viaduct, alley, or any other ways used or intended to be used by vehicular traffic or pedestrians whether public or private which are identified on the legally adopted Township street or highway plan or the official map together with all necessary appurtenances, including bridges, rights-of-way and traffic control improvements. The term shall not include the interstate highway system.

1. **Expressway** - Highways designed for large volumes of high-speed traffic with access limited to grade separated intersections.
2. **Local Access Streets** are those used primarily to provide access to abutting properties.
3. **Collector Streets** are streets which give minimal emphasis to travel mobility, which is characterized by low travel speeds, full land access, neighborhood penetration, and which serve minor traffic generators such as local elementary schools, small individual industrial plants, offices, commercial facilities and warehouses not served by principal or minor arterials.
4. **Arterial Streets** - are those serving large volumes of comparatively high-speed and long-distance traffic, and include facilities classified as main and secondary highways by the Pennsylvania Department of Transportation.
5. **Marginal Access Streets** are minor streets, parallel and adjacent to arterial streets, providing access to abutting properties and control of intersections with the arterial street.
6. **Cul-de-sac** is a minor street intersecting another street at one end and terminated at the other by a vehicular turnaround.

Structure - Any man-made object having an ascertainable stationary location on or in land or water, whether or not affixed to the land.

Subdivision - The division or re-division of a lot, tract or parcel of land by any means into two (2) or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten (10) acres, not involving any new street or easement, access, or any residential dwelling, shall be exempted.

Substantially Completed - Where in the judgment of the Township Engineer, at least ninety percent (90%) (based on the cost of the required improvements for which financial security was posted pursuant to the requirements of this Ordinance) of those improvements required as a condition for final approval have been completed in accordance with the approved plan, so that the project will be able to be used, occupied or operated for its intended use.

Surveyor - A licensed surveyor registered by the Commonwealth of Pennsylvania.

ARTICLE II - DEFINITIONS

Swale - A low-lying stretch of land characterized as a depression used to carry surface water runoff.

Topsoil - Surface soils and subsurface soils which normally are fertile soils and soil material, ordinarily rich in organic matter or humus debris. Topsoil is usually found in the uppermost soil layer called the A Horizon.

Undeveloped Land - Any lot, tract or parcel of land which has not been graded or in any other manner improved.

Unit - A part of the property, structure or building designed or intended for any type of independent use, which has direct exit to a public street or way, or to an easement or right-of-way leading to a public street or way, and includes a proportionate undivided interest in the common elements, which is assigned to the property, structure or building.

Water Facility - Any water works, water supply works, water distribution system or part thereof, designed, intended or constructed to provide or distribute potable water.

Water Survey - An inventory of the source, quantity, yield and use of groundwater and surface-water resources within Haycock Township.

Watercourse - An intermittent or perennial stream of water, river, brook, creek, swale; a channel or ditch for water, whether natural or man-made.

Wetlands - Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bog and similar areas.

Wetlands Delineation - The process by which wetland limits are determined. Wetlands must be delineated by a qualified specialist according to the 1989 Federal Manuals (as amended) for the Delineation of Jurisdictional Wetlands (whichever is greater) or according to any subsequent Federal or State regulation. Qualified specialist shall include those persons being Certified Professional Soil Scientists as registered with Registry of Certified Professionals in Agronomy Crops and Soils (ARCPACS); or as contained on consultant's list of Pennsylvania Association of Professional Soil Scientists (PAPSS); or as registered with National Society of Consulting Soil Scientists (NSCSS), or as certified by State and/or Federal certification programs; or by a qualified Biologist/Ecologist.

Woodlands – (Refer Forest.)

ARTICLE III - SUBMISSION PROCEDURES

Section 301. - General Procedure.

1. Classification of Subdivision - Whenever any subdivision of land or land development is proposed, before any contract is made for the sale of any part thereof, and before any permit for the erection of a structure in such proposed subdivision or land development shall be granted, the Owner, or his authorized agent, shall apply for and secure approval of such proposed subdivision or land development in accordance with the following procedures for subdivision and land development.
2. Pre-application DEP Consultation. Prior to the preparation of any plans, it is suggested that prospective developers consult with the Pennsylvania Department of Environmental Protection and/or Bucks County Health Department concerning soil suitability when on-site sewage disposal facilities are proposed.
3. Pre-application Conservation District Consultation. Prospective developers should consult with the Bucks Conservation District representative concerning erosion and sediment control and geologic conditions at the proposed development.
4. Pre-application PennDOT Consultation. When the development site has frontage on a State highway and/or proposes access to a State highway, the developer should consult with PennDOT concerning design requirements which may be imposed in addition to the requirements of this Ordinance.
5. Official Filing Date.
 - A. For the purpose of these regulations, the official filing date shall be the date of the regular meeting of the Planning Commission next following the date complete application and plans are received in the Municipal Building; provided, that should said regular meeting occur more than thirty (30) days following the submission of the application, the official filing date shall be the thirtieth (30th) day following the day the complete application has been submitted. An application will not be deemed complete unless all applicable fees have been paid by the applicant and the application and plans conform with the plan requirements set forth in Article IV of this Ordinance.
 - B. Upon receipt of an application for subdivision or land development approval, the Township Secretary shall affix to the application both the date of submittal and the official filing date.
 - C. The application record shall be closed fourteen (14) days before the Planning Commission meeting at which the plan will be considered to allow time to examine and study the plans and all appropriate supporting documentation. The Township will not accept changes or amendments to the application after this date unless the applicant shall apply for a rescheduling of the meeting at which the plan will be considered before the Planning Commission and makes suitable provision for an extension of the review time. This policy shall apply to formal sketch, preliminary, and final plan submissions.
6. Bucks County Planning Commission Review. All plans shall be submitted to and reviewed by the Bucks County Planning Commission in accordance with its then prevailing rules and regulations.

ARTICLE III - SUBMISSION PROCEDURES

Section 302. - Fee Schedule.

1. All filing, inspection and professional (engineering/legal) fees shall be submitted to Haycock Township.
2. Plan Filing Fee. A filing fee shall accompany the preliminary plan. No application shall be accepted or acted upon unless payment is made to Haycock Township. The Haycock Township Board of Supervisors shall establish by resolution a schedule of fees to be paid by the subdivider or land developer to defray the cost of administering and processing of plans. The schedule of fees may be changed from time to time by resolution of the Board of Supervisors of Haycock Township.
3. Review Fees.
 - A. Review fees shall include reasonable and necessary charges by the Township's professional consultants or engineer for review and report to the Township, and shall be set by resolution. Such review fees shall be reasonable and in accordance with the ordinary and customary charges by the Township Engineer or consultant for similar services in the community, but in no event shall fees exceed the rate or cost charged by the engineer or consultant to the Township when fees are not reimbursed or otherwise imposed on applicants.
 - B. In the event the applicant disputes the amount of any such review fees, the applicant shall, within ten (10) days of the billing date, notify the Township that such fees are disputed, in which case the Township shall not delay or disapprove a subdivision or land development application due to the applicant's request over disputed fees.
 - C. In the event that the Township and the applicant cannot agree on the amount of review fees which are reasonable and necessary, then the fees shall be recalculated and re-certified by another professional engineer licensed as such by the Commonwealth of Pennsylvania and chosen mutually by the Township and the applicant or developer.
4. An applicant shall, by filing a plan, be then obligated to pay the fees herein provided. The professional (engineering/legal) fees required to be paid by this Section shall be promptly submitted to the Township by the applicant upon the submission of bills therefore to the applicant from time to time by the Board of Supervisors.

Section 303. - Lot Line Adjustment Procedure.

Lot line adjustment plans shall be initiated and submitted for review in the form of a Final Plan as specified in Section 402 and shall be otherwise reviewed in accordance with the procedures and standards of Section 305.

Section 304. - Minor Subdivision Procedure.

1. Minor subdivision plans shall be initiated and submitted for review in the form of a Final Plan as specified in Section 402 and shall be otherwise reviewed in accordance with the procedures and standards of Section 305.

ARTICLE III - SUBMISSION PROCEDURES

2. Additional Subdivision. Any additional subdivision of a tract from which a minor subdivision has already been approved shall be deemed to be a major subdivision for the purposes of this Ordinance and shall follow the procedure applying thereto, if the additional subdivision is submitted for review within five (5) years of the approval of the minor subdivision.
3. All minor subdivision plans shall contain a notice regarding future subdivision (refer sample in Appendix "B").

Section 305. - Major Subdivision and Land Development Procedure

1. Sketch Plan. Prospective subdividers and developers are strongly urged to discuss possible development sites with the Planning Commission prior to submission of a preliminary plan. A sketch plan may be presented for review not less than fourteen (14) days prior to the regular meeting of the Planning Commission. A copy of the application for sketch plan review by the Bucks County Planning Commission must accompany the submission. Submission of a sketch plan will not constitute a formal filing of a subdivision or land development plan with the Board of Supervisors. Sketch plans should include those items listed in Article IV, Plan Requirements.
2. Preliminary Plan.
 - A. Submission of Preliminary Plans.
 - (1) The preliminary plan and all information and procedures relating thereto shall in all respects be in compliance with the applicable provisions of this Ordinance. It is the responsibility of the subdivider or developer to coordinate plans with the respective private and public service agencies including but not limited to (where applicable) Bucks County Planning Commission, Bucks Conservation District, Bucks County Department of Health, Pennsylvania Department of Environmental Protection, PennDOT, and Fire Marshall.
 - (2) The application form shall be accompanied by the requisite fee as set forth in Section 302 of this Ordinance and by not less than six (6) copies of all required material and not less than eleven (11) prints of the preliminary plan of the subdivision or development; or as amended by Township Resolution from time to time.
 - (3) The Township Secretary shall forward two (2) copies of the preliminary plan prints and required materials to the Township Engineer for review and comment.
 - (4) The Township Secretary shall forward the remaining copies of the preliminary plan prints and required materials to the Planning Commission.
 - (5) When applicable, the submission shall be accompanied by a Planning Module for Land Development, as required by the Pennsylvania Department of Environmental Protection.
 - B. Review of Preliminary Plans.

ARTICLE III - SUBMISSION PROCEDURES

- (1) In cases where the subdivision or land development adjoins an existing or proposed state highway or has proposed streets entering onto state highways, the developer shall submit the plans to the Pennsylvania Department of Transportation for review.
- (2) The Planning Commission will consider the plan to determine if it meets the standards set forth in this Ordinance, Township Zoning Ordinance, and all other applicable Ordinances and Regulations of the Township.
- (3) The Planning Commission shall act on the preliminary plan in time for the Board of Supervisors to render their decision within ninety (90) days from the official filing date. Any requests for modification or waiver of the requirements of this Ordinance shall be in writing in accordance with PA Act 170, as amended; and be reviewed by the Planning Commission for advisory comments.

C. Planning Commission Recommendation.

- (1) The Planning Commission shall recommend whether the preliminary plan shall be approved, approved with modifications, or disapproved, and shall notify the Board of Supervisors in writing.
- (2) In making its recommendation, the Planning Commission shall consider the recommendations of the Township Engineer, Township staff, Bucks County Planning Commission, interested residents, and any agency or agencies from which a review was requested under subsection 305.2.A.(3) of this Ordinance.

D. Township Engineer Review. All plans and associated documents shall be reviewed by the Township Engineer, prior to the transmission of such plans to the Board of Supervisors.

E. Re-submission of Preliminary Plans. A revised plan submitted after disapproval shall be considered, and processed as a new plan submission. A revised plan submitted after approval shall only be considered a new plan submission if, in the opinion of the Township, it has been substantially revised after said approval.

F. All plans shall evidence compliance with requirements of the Township Zoning Ordinance. Failure of the applicant to obtain all necessary variances, special exceptions, and/or conditional use approvals prior to preliminary plan approval shall be a cause for denial of the plan.

G. Approval of Preliminary Plans.

- (1) The Board of Supervisors shall act on the preliminary plan within ninety (90) days of the official filing date. Failure to do so shall be deemed an approval. Before acting on a preliminary plan, the Board of Supervisors may hold a hearing thereon after public notice.
- (2) The Board of Supervisors shall notify the applicant of its decision to approve, approve with conditions, or disapprove the preliminary plan in writing. Such notice shall be given to the applicant in person or mailed to him at his last known address not later than fifteen (15) days following the decision. If the plan is approved with conditions or disapproved, the Board of Supervisors shall specify in their notice the conditions which

ARTICLE III - SUBMISSION PROCEDURES

must be met and/or the defects found in the plan, and the requirements which have not been met, including specific reference to provisions of the Pennsylvania Municipalities Planning Code, 53 P.S. 10101, or any other statute or provision of this ordinance which has not been fulfilled.

- (3) Approval of the preliminary plan shall constitute approval of the subdivision or land development as to the character and intensity of development; and the arrangement and approximate dimensions of streets, lots, and other planned features. The approval binds the subdivider or developer to the general scheme of the subdivision shown, unless a revised preliminary plan is submitted, and permits the subdivider to proceed with final detailed design of improvements, to arrange for guarantee to cover installation of the improvements, and to prepare the final plan. Approval of the preliminary plan does not authorize the sale of lots nor the recording of the preliminary plan.
- (4) Where preliminary plan approval is given subject to conditions, the applicant shall accept or reject any or all of the conditions within fifteen (15) days from the date that he/she receives the written notification from the Board of Supervisors. Failure to accept or reject such conditions in writing within the foregoing time limit shall result in the conditional approval of the plat to become automatically rescinded pursuant to Section 503(9) of the Pennsylvania Municipalities Planning Code and, in the alternate, the plan is denied due to noncompliance with the specified conditions.

3. Final Plan.

A. Submission of Final Plans.

- (1) After the subdivider or developer has received official notification from the Board of Supervisors that the preliminary plan has been approved, he must submit a final plan in accordance with the provisions of Section 508 of the Municipalities Planning Code. Application to the Bucks County Planning Commission with appropriate fee must accompany the final plan submission when deemed necessary by the Township.
- (2) The final plan shall conform in all respects with the approved preliminary plan. If it does not, the plan submitted shall be considered a revised preliminary plan and shall be forwarded by the Township Secretary to the Planning Commission for review and recommendation as a preliminary plan.
- (3) The subdivider or developer must submit with the final plan a guarantee for the installation of improvements which meets the requirements of Article VI.
- (4) The application form shall be accompanied by the requisite inspection and engineering fees as set forth in Section 302.
- (5) Documented approval of the Planning Module for Land Development by the Pennsylvania Department of Environmental Protection shall be part of the requisite materials accompanying the final plan submission.

ARTICLE III - SUBMISSION PROCEDURES

- (6) The subdivider or developer shall submit eleven (11) prints of the final subdivision or land development plans and at least six (6) copies of all other required information.
 - (7) Upon receipt of final plan, the Township Secretary shall forward the original plans and five (5) copies of the plans and one (1) copy of all the other material to the Planning Commission for review and recommendation; two (2) copies of the plan and required materials to the Township Engineer for review and comment; and copies to such other agencies whose recommendations would be pertinent to the processing of the plan.
- B. Review of Final Plans.
 - (1) The Planning Commission shall review the plan and requisite materials for compliance with the approved preliminary plan and for conformance to requirements of this Ordinance.
 - (2) The Planning Commission shall act on the final plan in time for the Board of Supervisors to render their decision within ninety (90) days from the official filing date.
- C. Planning Commission Recommendation.
 - (1) The Planning Commission shall recommend whether the final plan shall be approved, approved with conditions, or disapproved, and shall notify the Board of Supervisors in writing.
 - (2) In making its recommendation, the Planning Commission shall consider the recommendations of the Township Engineer, the Bucks County Planning Commission, the Bucks Conservation District, PennDOT, and the recommendations of any agency or agencies from which a review was requested under subsection 305.3.A.(7).
- D. Township Engineer Review. All plans and associated documents shall be reviewed by the Township Engineer prior to the transmission of such plans to the Board of Supervisors.
- E. Re-submission of Final Plans. A revised plan submitted after denial shall be considered and processed as a new final plan submission.
- F. Approval of Final Plans. The Board of Supervisors shall act upon the application for approval of a final plan and render its decision and communicate it to the applicant not later than ninety (90) days following the date of the regular meeting of the Planning Commission next following the date the application is filed, provided that should the next regular meeting occur more than thirty (30) days following the filing of the application, said ninety (90) day period shall be measured from the thirtieth (30th) day following the day the application has been filed.
 - (1) The decision of the Board of Supervisors shall be in writing and shall be communicated to the applicant personally or mailed to him at his last known address not later than fifteen (15) days following the decision.

ARTICLE III - SUBMISSION PROCEDURES

- (2) When the application is not approved in terms as filed, the decision shall specify the defects found in the application and describe the requirements which have not been met and shall, in each case, cite to the provisions of the Pennsylvania Municipalities Planning Code or any other statute and the provisions of this Ordinance and any other ordinance relied upon.
- (3) Failure of the Board of Supervisors to render a decision and communicate it to the applicant within the time and manner required herein shall be deemed an approval of the application in terms as presented unless the applicant has agreed in writing to an extension of time or change in the prescribed manner of presentation of communication of the decision, in which case, the failure to meet the extended time or change in manner of presentation or communication shall have like effect.
- (4) Where final plan approval is given subject to conditions, the applicant shall accept or reject any or all of the conditions within fifteen (15) days from the date that he receives the written notification from the Board of Supervisors. Failure to accept or reject such conditions in writing within the foregoing time limit shall result in the conditional approval of the plat to become automatically rescinded pursuant to Section 503(9) of the Pennsylvania Municipalities Planning Code and in the alternate, the plan is denied due to noncompliance with the specified conditions.

G. Recording of Final Plans.

- (1) Upon approval of the final plan, the subdivider or developer shall prepare two (2) linen reproductions of the original final record plan, including all plan sheets, and five (5) paper prints, all executed and notarized by the applicant bearing appropriate engineering and surveying seals, which shall be submitted to the Township not later than thirty (30) days after approval. These plans, upon satisfaction of all conditions attached to the approval, will be signed by the Board of Supervisors. A copy of the signed final plan shall be recorded in the office of the Bucks County Recorder of Deeds within ninety (90) days after approval of the final plan or the approval of the Board of Supervisors shall be null and void. The final plan must be recorded before proceeding with the sale of lots or construction of buildings.
- (2) Recording the final plan shall be an irrevocable offer to dedicate all streets and other public ways to public use, and to dedicate or reserve all park reservations and other public areas to public use unless reserved by the subdivider as hereinafter provided. The approval of the final plan shall not impose any duty upon the Board of Supervisors of Haycock Township concerning maintenance of the improvements offered for dedication nor shall such approval be construed as an acceptance of such dedication.
- (3) The subdivider shall place a notation on the final plan if there is no offer of dedication to the public of streets and certain designated public areas, in which event the title to such areas shall remain with the Owner, and the Township shall assume no responsibility for improvement or maintenance thereof; which fact shall be noted on the plan.

ARTICLE III - SUBMISSION PROCEDURES

Section 306. – Reserved.

Section 307. - Time Limitation of Plan Approval.

When an application for approval of a plan, whether preliminary or final, has been approved without conditions or approved by the applicant's acceptance of conditions, no subsequent change or amendment in the zoning, subdivision or other governing ordinance or plan shall be applied to adversely affect the right of the applicant to commence and to complete any aspect of the approved development in accordance with the terms of such approval within five (5) years of such approval. The five-year period shall be counted from the date of the preliminary plan approval. Failure to substantially complete the required improvements within the aforesaid five year period, or within any extension thereof, as may be granted by the Board of Supervisors or as may be permitted by Section 508 (4) (v and vi) of the Pennsylvania Municipalities Planning Code for staged developments, shall make the application subject to any and all changes in zoning, subdivision, and any other governing ordinance enacted by the Township subsequent to the date of the initial preliminary plan approval.

Section 308. - Modifications.

1. General. The Board of Supervisors may grant a modification of the requirements of one or more provisions of this Ordinance if the literal enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question, provided that such modification will not be contrary to the public interest and that the purpose and intent of the Ordinance is observed.
2. Procedure. All requests for modification shall be in writing and shall accompany and be part of the application for development. The request shall state in full the grounds and facts of unreasonableness or hardship on which the request is based, the provision or provisions of the Ordinance involved, and the minimum modification necessary.
3. Requests for modification shall be referred to the Planning Commission for advisory comments.

ARTICLE IV - PLAN REQUIREMENTS

Section 401. - Sketch Plan.

1. Purpose. A sketch plan is an optional submission. It is offered to give the applicant an opportunity to consult early and informally in the plan preparation phase with the municipality and Bucks County Planning Commission. The purpose of this submission is to allow the municipality and applicant an opportunity to discuss lot layout, street layout, location of buildings, arrangement and location of open space, etc., before detailed engineering is done. The municipality may comment on not only whether the sketch plan meets the objectives of Township Ordinances but, also if they feel it is consistent with sound planning and design principles. It is not intended in any way to replace the preliminary plan, but rather to give the applicant guidance in preparing the much more detailed preliminary plan. Recommendations and comments made by the Township in response to Sketch Plan Submission shall in no way be regarded as an official approval, nor shall such action grant any legal rights to the applicant or immunity from full compliance with requirements and procedures set forth for Preliminary and Final Plans.
2. Data furnished in a sketch plan shall be at the discretion of the subdivider but is suggested to include the following:
 - A. Tax map parcel number of property involved.
 - B. Tract boundaries and total acreage.
 - C. Location map.
 - D. North point.
 - E. Streets on and adjacent to the tract.
 - F. Significant topographical, geological, and physical features including but not limited to floodplains, steep slopes, boulders, wetlands, etc., which may impact or limit the proposed use of the property.
 - G. Existing road/utility and other easements and rights-of-way.
 - H. Proposed general street layout.
 - I. Proposed general lot layout, including location of open space and other preservation areas.
3. A subdivision sketch plan should be drawn to scale although precise dimensions are not required.

Section 402. - Lot Line Adjustment and Minor Subdivision.

1. Purpose. The purpose of this section is to provide an expeditious means of subdivision approval for lot line adjustments and minor subdivisions. A lot line adjustment involves relocation of one or more existing boundary line(s) between two adjacent lots, or the shifting of boundary lines to increase the area of an existing lot; provided however, that the lot line adjustment results in the same number or fewer lots than existed prior to the lot line adjustment.

ARTICLE IV - PLAN REQUIREMENTS

2. Plan Preparation.
 - A. The plan shall be drawn at a scale of 1"=50' or 1"=100'.
 - B. Dimensions shall be set forth in feet and decimal parts thereof and bearings in degrees, minutes and seconds.
 - C. Each sheet shall be numbered and shall show its relationship to the total number of sheets.
 - D. When the plan is a revision of a previously approved plan, dotted lines shall be used to show features or locations to be abandoned and solid lines to show the currently proposed features. Notations of revisions shall be numbered and dated.
 - E. Plan shall be so prepared and bear an adequate legend to indicate clearly which features are existing and which are proposed.
 - F. The boundary line of the subdivision shall be shown as a solid heavy line.
 - G. Plan shall be on sheets either 18" x 24" or 24" x 36". All plan sheets shall be of the same size. All lettering shall be so drawn as to be legible if the plan should be reduced to half size.
3. General Information. Plan shall show or be accompanied by the following information:
 - A. Name of subdivision or land development.
 - B. Name and address of owner of record and applicant.
 - C. Name and address of the firm which prepared the plan, and professional seal of the individual certifying the accuracy of the plan and compliance with applicable standards.
 - D. Date of preparation of the plan, a descriptive list of revisions to the plan, and the revision dates.
 - E. Tax parcel numbers, deed book and page numbers of properties involved including any deed restrictions to the property and recorded plan book and page number for previously recorded subdivisions. A copy of the current deed(s) for the tract shall be submitted with the plan.
 - F. Zoning requirements, including but not limited to the following:
 - (1) Applicable district.
 - (2) Lot size and yard requirements.
 - (3) Natural Resource Protection Standards.
 - (4) Copy of order indicating any variances or Special Exceptions granted.
 - G. Location map showing relation of site to adjoining properties, proposed property lines, Zoning District boundaries, and streets within 1000 feet. Scale 1"=800'.

ARTICLE IV - PLAN REQUIREMENTS

- H. North point.
 - I. Written and graphic scales for plan and location map.
 - J. Total acreage of the site (net and gross); proposed lot sizes (net and gross); area of ultimate right-of-way; and in the case of lot line adjustments, area being conveyed, and a summary of pre/post development areas of lots involved.
 - K. Tract boundary (as determined by field survey).
 - L. Both existing and proposed property lines, including bearing and distance information.
 - M. Streets on and adjacent to the site with legal and future rights-of-way.
 - N. All existing buildings/structures (temporary or permanent; and their uses), driveways, wells, sewer systems, utility easements, utility poles (with ownership and pole number I.D. certification), etc.
 - O. Monuments - existing and proposed.
 - P. USGS contours.
4. In addition to requirements of Section 402.2. and 402.3. above, minor subdivision plans shall show or be accompanied by the following information:
- A. Soil types within the site based on maps contained in the "Soil Survey of Bucks and Philadelphia Counties, Pennsylvania", U.S. Department of Agriculture, Soil Conservation Service, 1975. A table shall indicate each soil's limitations for community development.
 - B. Contour lines measured at vertical intervals of two (2) feet. Contour lines shall be determined by on-site survey, not interpretation of USGS maps. At a minimum, contours shall be established at location of proposed driveways, dwellings, septic systems and other areas of development as deemed necessary by the Township.
 - C. Datum to which contour elevations refer. Benchmark shall be identified.
 - D. Existing vegetation including wooded areas, large trees over 6" caliper standing alone, and other significant vegetations limits of trees/vegetation to be removed/preserved.
 - E. Planning Modules for Land Development as required by Chapter 71 of the Pennsylvania Sewage Facilities Act.
 - F. Proposed improvements including buildings (and their uses), driveways, sewer lines, storm drains, culverts, street improvements, grading, and other requirements of this Ordinance.
 - G. Soil erosion and sedimentation control plan prepared in accordance with Section 518 of this Ordinance.
 - H. Existing features as may be required by Section 403.4. when deemed necessary by the Township.

ARTICLE IV - PLAN REQUIREMENTS

Section 403. - Preliminary Plan - Land Developments and Major Subdivisions

1. Purpose - The purpose of the Preliminary Plan is to enable the Township to examine proposals for compliance with Zoning, Subdivision and Land Development, and other Township Ordinances. Preliminary Plans are required for all land developments and major subdivisions.
2. Plan Preparation.
 - A. The preliminary plan shall be at a scale of not more than fifty (50) feet to the inch.
 - B. Plan and Profile views shall be drawn at a scale of 1"=50' and 1"=5' respectively. Horizontal and vertical scales of 1"=20' and 1"=2' shall be permitted when greater detail is required as deemed necessary by the Township Engineer.
 - C. Enlarged details of special features, intersections, drainage facilities, etc., shall be drawn at a scale of 1"=20', or 1"=10'.
 - D. Sheet sizes shall be either 18"x24" or 24"x36".
 - E. All sheets shall be the same size and be numbered relative to the total number of sheets (i.e. 1 of 4, etc.) If a new sheet is added, all sheets shall be appropriately renumbered. Use of letters to denote new sheets (i.e. Sheet 1A of 4) shall not be permitted.
 - F. Where two or more sheets are required to show the entire tract, a reduced scale key plan shall be included to show how the sheets correspond.
 - G. A reduced scale plan of the entire site at a scale greater than 50 feet to the inch may be required in cases where it will facilitate the review process.
 - H. Plan shall be so prepared and bear an adequate legend to clearly indicate which features are existing and which are proposed.
 - I. Site outboundary shall be shown as solid heavy line.
3. General Information. All preliminary plans shall show the following general information.
 - A. Proposed subdivision or land development name or identifying title. Name shall not duplicate an approved plan or plan submitted for review.
 - B. Name(s) and address(es) of the owner(s) of the property, including reference to deed book, volume and page of current legal owner.
 - C. Name and address of applicant.
 - D. Name and address of the firm which prepared the plan, and professional seal of the individual certifying its accuracy and compliance with applicable standards.
 - E. Date of preparation of the plan and a descriptive list of revisions to the plan, and the revision dates.
 - F. North point.

ARTICLE IV - PLAN REQUIREMENTS

- G. Location map showing the relationship of the site to adjoining properties, proposed property lines, Zoning District boundaries, and streets within 1000 feet. Scale of the location map shall be 1"=800'.
- H. Written and graphic scales for plan and location map.
- I. Tract boundary with bearing and distance information.
- J. Tax map parcel number(s) of parcels which comprise the subdivision or land development, deed book and page numbers of the properties involved including deed restrictions to the property, recorded plan book, and page number for the previously recorded subdivision (if any). A copy of the current deed(s) for the tract shall be submitted with the plan.
- K. Zoning requirements including the following where applicable:
 - (1) Zoning district; and district boundaries if within 500 feet of the site boundary.
 - (2) Lot size and yard requirements.
 - (3) Variances or special exceptions granted.
 - (4) Buffer yard requirements.
 - (5) Site capacity calculations.
 - (6) Inventory of all natural resources, natural resource protection rates, allowable disturbance to each resource, and proposed disturbance to each resource.
 - (7) Parking requirements.
 - (8) Proposed use including Zoning Ordinance designation (i.e. Use B1, Single Family Detached).
 - (9) Allowable and proposed density.
 - (10) Impervious surface area ratio, allowable impervious ratio and tabulation of proposed impervious area.
 - (11) Dwelling unit mix.
- L. Tax map parcel number and names of current owners of immediately adjacent lands.
- M. Total acreage of the site (net and gross) and number of proposed lots and/or dwelling units, or gross leasable floor area.
- N. Statement identifying existing and proposed method of sewage disposal and water service. If public, name of agency providing service.

ARTICLE IV - PLAN REQUIREMENTS

- O. Statements regarding maintenance responsibilities of permanent stormwater management control facilities, swales, drainageways, and open space areas.
4. Existing Features Plan. Within the tract proposed for subdivision and/or land development, and within 100 feet of the tract boundaries, the following information shall be shown on the Preliminary Plan:
- A. All existing property lines of site if currently containing several smaller parcels.
 - B. All property and easement boundaries defined by bearing and distance information.
 - C. Total width of streets and alleys; names of streets and alleys; total width of legal rights-of-way and ultimate rights-of-way. Half widths of streets and alleys shall be dimensioned as measured from physical centerline to legal and ultimate rights-of-way.
 - D. Buildings (and their uses), driveways, wells, sewer systems, pipelines, underground and/or above ground storage tanks, pools, fences, silos, water systems, fire hydrants, valves, towers, etc.
 - E. Utility poles with identification information/ numbers and street lights.
 - F. Contour lines measured at vertical intervals of two (2) feet. Contour lines shall be determined by on-site survey, not interpretation of USGS maps. Location of survey benchmark shall be noted. Benchmark shall be based on USGS datum reference points. Assumed benchmark elevations and arbitrary control points will not be acceptable unless approved by the Township Engineer.
 - G. Monumentation and pins within and along site outboundary, rights-of-way, easements, etc.
 - H. Soil types within the site based on maps contained in the "Soil Survey of Bucks and Philadelphia Counties, Pennsylvania", U.S. Department of Agriculture, Soil Conservation Service, 1975. Summary Table shall be included on the plan listing:
 - (1) Soils limitations for community development.
 - (2) Hydric soils - soils shall be defined as hydric if listed within U.S. Department of Agriculture, Soil Conservation Service "Hydric Soils of the State of Pennsylvania 1985" as amended.
 - (3) Floodplain soils.
 - (4) Prime Agriculture Soils.
 - I. Area of vegetation including wooded areas and large trees over 6" caliper standing alone. Areas of scrub growth with an understory height of at least 4 feet shall be delineated independently of wooded areas.
 - J. Watercourses, storm sewers, culverts, bridges, or any other significant drainage features and facilities with associated inverts, pipe/culvert sizes, material, and lengths, and all applicable dimensional information.

ARTICLE IV - PLAN REQUIREMENTS

- K. Floodplain areas or districts including information on (100) year flood elevations. FEMA cross sections and elevations shall be utilized to delineate floodplain boundary where detailed study information is available. Where detailed study information is not available, 100 year flood elevations shall be calculated utilizing HEC I computations to generate flow information and HEC II computations to calculate water surface elevations. Structures culverts, obstructions, bridges or any other significant feature within 500 feet downstream of the site shall be included within the study to account for potential backwater affects. Basins, ponds, flood control facilities or any other significant drainage facility within upstream tributary area shall be included in the study. Use of TR-55 "Urban Hydrology for small watersheds" United States Department of Agriculture, Soil Conservation Service will be an acceptable alternate method for calculating 100 year flow rates. Use of other methods must be approved by the Township Engineer.
 - L. Utility, private and/or public easements, and purposes for which the easements have been established with all applicable restrictions and/or covenants.
 - M. Wetlands, wetland margins, ponds, pond shorelines, lakes, lake shorelines with total area of coverage listed. List of soil consultants qualifications must be submitted with a certification as to accuracy of the delineation. Certification must properly reference plan by title, date and parcel number.
 - N. Steep slopes shall be independently mapped by shading for the following ranges:
 - a. 8-15%
 - b. 16-25%
 - c. Over 25%
 - O. Pre-developed drainage boundaries with associated areas, time of concentration paths, and runoff factors.
5. Site Improvement Plan. A Site Improvement Plan shall be prepared and include the following proposed improvements:
- A. Lot layout, easement and right-of-way boundaries.
 - B. Location of dwellings and structures including exterior dimensions, first floor elevation, and garage floor elevation.
 - C. Sanitary and storm sewer layout, pipe lengths, size, material, slopes, inverts, and grate/manhole elevations.
 - D. Location of water mains and fire hydrants, electric and gas utilities.
 - E. Streets, curb, sidewalk, pedestrian ramps, pedestrian paths, recreational facilities.
 - F. Street and alleys widths.
 - G. Driveway locations.

ARTICLE IV - PLAN REQUIREMENTS

- H. Intersections.
 - I. Cartway widening improvements and appropriate dimensions from existing roadway centerlines.
 - J. Existing and proposed sight distances at existing and/or proposed intersections. Sight distances shall be determined in accordance with '67 PA Code, Chapter 441.
 - K. Clear sight triangles at proposed and existing intersections.
 - L. Parking areas, parking stalls, aisles, and associated dimensions.
 - M. Curb and cul-de-sac radii.
 - N. Culverts, bridges, basins, and any other significant drainage facility.
 - O. Street signage.
6. Grading Plan. Grading Plan shall include the following:
- A. General site layout, property lines, easement boundaries, structures, streets, curb, sidewalk, etc.
 - B. First floor elevation and garage floor elevation of all existing and proposed buildings.
 - C. Existing and proposed contours.
 - D. Bottom and top of curb elevations around curb returns at intersection, and turnaround area on cul-de-sac streets.
 - E. General layout of storm sewer.
 - F. Grate elevations of storm sewer inlets.
 - G. Rim elevations of manholes.
7. Drainage Plan. Drainage Plan shall include the following:
- A. General site layout of streets, buildings, sidewalk and curb, and storm sewer.
 - B. Post development drainage boundaries with associated areas, time of concentration, flow path and runoff factors listed.
 - C. Existing contours.
 - D. Proposed grading.
 - E. Required stage/storage chart for detention basins.
 - F. Discharge location of all roof drains and sump pump lines.

ARTICLE IV - PLAN REQUIREMENTS

8. Erosion and Sedimentation Control Plan. Erosion and Sedimentation Control Plan shall be prepared in accordance with applicable provisions of '25 PA Code, Chapter 102, "Erosion Control", DEP Erosion and Sediment Pollution Control Program Manual, Erosion and Sedimentation Pollution Control Plan Guide for Small Projects, (as published by the Southeast Pennsylvania Association of Conservation Districts), and Special Protection Waters Implementation Handbook, and in accordance with Section 518 of this Ordinance.
9. Recreation, Landscaping and Lighting Plan. Landscaping and Lighting Plan shall include the following existing and proposed features:
 - A. General lot layout and setbacks, easement and right-of-way boundaries.
 - B. Location of driveways, structures, curb and sidewalk.
 - C. Layout of sanitary sewer, associated laterals, storm sewer, water, electric and gas utilities.
 - D. Proposed tree and planting locations coordinated with underground utilities maintaining required horizontal separation distances.
 - E. Location of proposed fencing outside of the dripline of trees intended to be saved in construction areas.
 - F. Location of parking area lighting, driveway lamp posts, and street light fixtures with radial extent of illumination in form of isolux contours in units of horizontal foot candles (HFC). Isolux lines shall be in increments of 0.5 HFC.
 - G. Buffer yards with applicable yard widths dimensioned.
 - H. Proposed layout and design of recreational facilities and buffering for same.
10. Plan and Profiles. Plan and Profiles shall be prepared for all streets and utilities where improvements are proposed or are being extended from existing facilities; and shall include the following:
 - A. Profiles shall include at a minimum the following:
 - (1) Existing and proposed ground elevations and profile.
 - (2) Proposed profile of ground and/or street.
 - (3) All applicable vertical curve data for streets.
 - (4) Sight distance requirements.
 - (5) Sanitary sewer, storm drainage, and water service facilities; vertical separation distances at utility crossings, and encasements; inverts of pipes at crossing locations.
 - (6) All utility and storm pipe sizes, materials, slopes, inverts and lengths.
 - (7) Inlet and manhole inverts, rim and grate elevations; top of wall elevations for endwalls and headwalls.

ARTICLE IV - PLAN REQUIREMENTS

- (8) Centerline stationing along profile.
 - (9) Profiles for streets shall follow roadway centerlines.
 - (10) Stationing of sanitary sewer laterals and inverts for same.
 - (11) Manhole and inlet numbering corresponding to profile view.
 - (12) Profiles along existing streets for areas of cartway widening shall include existing edge of road profile and bottom of curb profile.
- B. Plan views shall include at a minimum the following:
 - (1) Right-of-way and easement boundaries.
 - (2) Dimensioning of street widths.
 - (3) Location of curb, sidewalk, driveway entrances and pedestrian ramps.
 - (4) Centerline stationing along streets.
 - (5) Location of all sanitary sewer mains and laterals, storm sewer, roof drains and sump pump leaders, water mains and gas mains.
 - (6) Manhole and inlet numbering corresponding to profile view.
 - (7) Location of street and regulatory signs.
 - (8) Proposed contours within limits of right-of-way boundaries.
 - (9) Top and bottom of curb elevations at ends of returns; and centrally along returns, at intersections and other critical locations as deemed necessary by Township Engineer.
 - (10) Plan views of improvements along existing streets shall include existing centerline and edge of road spot elevations every 25 linear feet.
- 11. Construction Details Plan. The Construction Details Plan shall include but not be limited to the following general construction details:
 - A. Roadway/widening construction.
 - B. Utilities installation, bedding and backfill.
 - C. Storm sewer installation, bedding and backfill.
 - D. Sanitary sewer installation, bedding and backfill.
 - E. Detention/retention basin, basin berm, and basin outlet structure construction.
 - F. Traffic Control.
 - G. Miscellaneous erosion and sedimentation control details.

ARTICLE IV - PLAN REQUIREMENTS

- H. Sidewalk and curb installation specifications.
 - I. Right-of-way and easement restoration.
 - J. Special structures.
 - K. Miscellaneous drainage swale design information.
 - L. Fencing details.
 - M. Any other details as deemed necessary by the Township and/or Township Engineer.
12. Additional Documentation. The following information shall be submitted with the preliminary plan where applicable:
- A. Traffic Impact Study prepared pursuant to Section 406.
 - B. Sewage Facilities Planning Modules prepared pursuant to Section 407.
 - C. Water Resources Impact Study prepared pursuant to Section 408.
13. Notice of Preliminary Plan. For all subdivisions which propose ten (10) lots or more, notice of filing of preliminary plan shall be given by the applicant to all abutting landowners of record.
- A. Proof of notice shall be given at the time of application and shall be by certified letter to each abutting landowner of record.
 - B. The foregoing letter shall identify the following:
 - (1) Date of Application.
 - (2) Record owner of the tract to be developed.
 - (3) The location of the tract to be developed indicating street address, zoning district and tax map parcel number.
 - (4) Description of the proposed development (i.e. number/size of lots, proposed use).

Section 404. - Final Plan (Record).

- 1. Upon completion of all conditions of preliminary and final plan approval, applicants shall submit two (2) clear and legible black line prints on mylar and five (5) paper prints of the Record Plan of Subdivision and/or land development including all sheets of the plan set.
- 2. Drafting Standards - The standards required for a record plan shall be the standards outlined in Section 402 and 403.
- 3. All plans must be acknowledged with a raised Notary Seal affixed; raised seal of registered engineer and/or surveyor responsible for the plan; and raised seal of architect and/or landscape architect who collaborated in the preparation of the plan; and if the applicant is a corporation, a raised Corporate Seal. All plans must be approved by the Board of Supervisors together with the raised official seal.

ARTICLE IV - PLAN REQUIREMENTS

4. General Information - The general information required for a Record Plan shall be the general information required by Section 402 and 403.
5. Existing Features - The existing features required to be shown on a Record Plan shall be the existing features required by Section 402 and 403.
6. Proposed Improvements - Proposed improvements as required by Section 402 and 403 shall be included on the Record Plan.
7. Notes and Certificates - The Record Plan must include the required notes and certificates:
 - A. On all applications where Improvement Construction Plans are required, the following note shall appear on the Record Plan: "Sheets 2 through ____ inclusive, on record at the Township, shall be considered a part of the approved final plan as if recorded with same." These shall be listed by sheet number and title on the Record Plan.
 - B. The signature of the Registered Engineer and/or Surveyor certifying that the plan represents a survey made by him; that any existing monumentation shown hereon exists as located; and the dimensional and geodetic details are correct.
 - C. An acknowledgment as follows:
 - (1) Where the owner(s) are individuals, all shall join as follows:

Commonwealth of Pennsylvania:

Signature of Owner

SS.

County of Bucks

On the _____ day of _____, 20____, before me the subscriber, a Notary Public of the Commonwealth of Pennsylvania, residing in _____ personally appeared (name(s) of all owners), known to me (or satisfactorily proven) to be the persons whose name(s) (is/are) subscribed to the foregoing plan, and acknowledge that (he/she/they)(is/are) the registered owner(s) of the designated plan, that all necessary approvals of the plan have been obtained and is endorsed thereon, and that (he/she/they) desire that the foregoing plan be recorded according to law.

Witness my hand and notarial seal, the day and year aforesaid.

Notary Public

My Commission Expires _____
(SEAL)

ARTICLE IV - PLAN REQUIREMENTS

(2) Where the owner is a corporation:

Commonwealth of Pennsylvania

SS.

County of Bucks

On the _____ day of _____, 20____, before me the subscriber, a Notary Public of the Commonwealth of Pennsylvania, residing in _____ personally appeared (name of officer of corporation), who acknowledged (himself/herself) to be the (president/secretary) of (name of the corporation), a corporation, and that as such (president or secretary), being authorized to do so, (he/she) executed the foregoing plan by signing that the said corporation is the registered owner of the designated land, that all necessary approvals of the plan have been obtained and is endorsed thereon, and that (he/she/they) desire that the foregoing plan be recorded according to law.

Witness my hand and notarial seal, the day and year aforesaid.

Notary Public

My Commission Expires _____
(SEAL)

D. Approved Notation by the Township shall be as follows:

Approved by the Board of Supervisors of the Township of Haycock this _____ day of _____, 20____.

E. Township Planning Commission Notations:

Recommended for approval by the Haycock Township Planning Commission this _____ day of _____, 20____.

F. Bucks County Planning Commission Notation:

BCPC No. _____

PROCESSED AND REVIEWED. Report prepared by the Bucks County Planning Commission in accordance with the Municipalities Planning Code.

Certified this date _____

Executive Director, Bucks County Planning Commission

ARTICLE IV - PLAN REQUIREMENTS

G. Recording Notation:

"Recorded in the office of the Recorder of Deeds, Bucks County, Pennsylvania in Plan Book _____
Page _____ on the _____ day of _____, 20____.

H. Signatures to appear on Plan - the following signatures shall be placed directly on the plan in black ink:

- (1) The owner or owners of the land. If the owner of the land is a corporation, the signatures of the president and secretary and the corporate seal shall appear.
- (2) The notary public acknowledging the owner's statement of intent.
- (3) The licensed engineer and/or surveyor who prepared the plan. If an architect and/or a landscape architect collaborated in the preparation of the plan, his signature and seal shall also appear.
- (4) The Bucks County Planning Commission.
- (5) The Planning Commission of Haycock Township.
- (6) The Supervisors of Haycock Township.

Section 405. - As-built Plans. Upon completion of public improvements (prior to acceptance of same by the Board of Supervisors in accordance with provisions set forth in Article VI of this Ordinance), the subdivider or developer will furnish the Township with as-built plans for all utilities, roads, and stormwater management facilities. As-built plans for detention/retention basins and/or underground storage facilities utilized to control stormwater discharge must be prepared and submitted to the Township Engineer for review immediately upon completion of rough grading to verify required stage/storage capacity. As-built plans for these facilities must be reviewed for compliance with stormwater management plan design requirements prior to any additional site work. As-built plans shall contain information listed in Appendix "D".

Section 406. - Traffic Impact Study.

1. Purpose - The Traffic Impact Study will enable Haycock Township to assess the impact of the proposed development on the transportation system, both highways and public transportation, in the Township. Purpose of the impact study is to insure that proposed developments do not adversely affect the transportation network and to identify any traffic problems associated with access between the site and the existing transportation network. The study's purpose is also to delineate solutions to potential problems and to present improvements to be incorporated into the proposed development. The study shall assist in the protection of air quality, conservation of energy and encouragement of public transportation use.
2. Traffic Impact Study shall be prepared by a qualified traffic engineer and/or transportation planner with previous traffic study experience. Procedures and standards for the Traffic Impact Study are set forth herein. Applicant may provide funds to the Township which may hire a traffic engineer of its choice to conduct the study, if this procedure is deemed appropriate by the Township.

ARTICLE IV - PLAN REQUIREMENTS

3. Applicability - A Traffic Impact Study shall be submitted for all subdivisions and land developments that meet one or more of the following criteria:
 - A. Residential: 50 or more dwelling units or lots.
 - B. Non-Residential Subdivision: 10 lots or more.
 - C. Commercial: A commercial building or buildings consisting of 25,000 square feet or more of gross floor space (total floor area on all floors within the exterior walls of the building).
 - D. Office: A development consisting of 25,000 square feet or more of gross floor space.
 - E. Industrial: Any industrial development consisting of 10 or more lots, or 50,000 square feet or more of gross floor area, or having more than 75 employees (immediately or future) with access from the site onto a Township street, or with an expected daily traffic flow of more than 150 vehicle trips per day with site access onto a Township street.
 - F. Institutional: Any medical, educational or institutional development consisting of 25,000 square feet or more of gross floor area.

The Haycock Township Board of Supervisors, at its discretion, may require any other subdivision or land development application to be accompanied by a Traffic Impact Study; provided, however, that the Supervisors notify the applicant within sixty (60) days following the Planning Commission's first meeting to consider the proposal. Such a notification shall specify the reason for the requirement, citing the proposal's particular location or existing problems or type of use (i.e., generation of heavy truck traffic).

4. Definitions.
 - A. Public Transportation - Transportation service for the general public provided by a common carrier of passengers generally but not necessarily on a regular route basis, by the Southeastern Pennsylvania Transportation Authority, or a private operator offering service to the public.
 - B. Study Area - This area will extend approximately one-half mile along the adjacent roadways in both directions from all access points or the first major intersection along these roadways whichever is greater. The traffic engineer shall seek guidance from the Township Planning Commission prior to the submission of the Traffic Impact Study.
 - C. Major Intersection - Any intersection where traffic generated by the proposal will have an impact on the operation of the intersection and/or any other intersection involving an arterial road. The transportation engineer shall seek guidance from the Planning Commission prior to the submission of the Traffic Impact Study.
 - D. Volume/Capacity Analysis – Intersection approach capacity is the maximum rate of vehicular flow that can pass through an intersection under existing roadway, traffic, and signal conditions. The analysis compares the actual and projected traffic volume to the intersection capacity and results in a Volume/Capacity (v/c) ratio.

ARTICLE IV - PLAN REQUIREMENTS

- E. Level of Service - Level of service (LOS), as described in the 1985 Highway Capacity Manual, Special Report 209, Transportation Research Board is a qualitative measure of the operational conditions within a traffic stream and their perceptions by motorists. There are six levels of service ranging from "A" through "F". Level of Service "A" represents ideal operating conditions with no congestion. Level of Service "E" represents maximum capacity of the facility. Level "F" represents a breakdown in operating conditions with severe congestion. Level of Service "C" is considered the design level of service, representing a stable traffic flow and a relatively satisfactory travel speed.
 - F. Trip Generation Rates - The total count of vehicular trips to and from a study site per unit of land use as measured by parameters such as square footage, dwelling units, acres, etc. Trip Generation, 6th edition or as amended, by the Institute of Transportation Engineers, shall be referenced to determine trip generation rates.
 - G. Warrants for Traffic Signal Installation - This is a series of warrants which detail the minimum traffic or pedestrian volumes or other criteria necessary for the installation of a traffic signal. These warrants are contained in the Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation, Federal Highway Administration, 1988, as amended, or the most recent version, whichever is later.
 - H. Engineering and traffic studies shall be prepared in accordance with Title 67, Chapter 201, "Engineering and Traffic Studies".
5. General Requirements and Standards - A Traffic Impact Study shall contain the following information:
- A. General Site Description - The site description shall include the size, location, proposed land uses, construction staging and completion date of the proposed subdivision or land development. If the development is residential, types of dwelling units shall also be included. A brief description of other major existing and proposed developments within the study area shall be provided. The general site description shall also include probable socio-economic characteristics of potential site users to the extent that they may affect the transportation needs of the site (i.e., number of senior citizens).
 - B. Transportation Facilities Description - The description shall contain a full documentation of the proposed internal and existing external transportation system. This description shall include proposed internal vehicular, bicycle and pedestrian circulation, all proposed ingress and egress locations, all internal roadway widths and rights-of-way, parking conditions, traffic channelizations and any traffic signals or other intersection control devices at all intersections within the site.

The report shall describe the entire external roadway system within the study area and include discussion of existing design deficiencies and potential safety hazards. Major intersections in the study area shall be identified and sketched. All existing and proposed public transportation services and facilities within a one-mile radius of the site shall also be documented. Report shall include review and discussion of all available accident reports within the study area during the prior three (3) years. All future highway improvements, including proposed construction and traffic signalization, shall be noted. This information shall be obtained from the 12-Year Highway Capital Program for the Delaware Valley

ARTICLE IV - PLAN REQUIREMENTS

Region and from the Pennsylvania Department of Transportation. Any proposed roadway improvements due to proposed surrounding developments shall be recorded.

- C. Existing Traffic Conditions - Existing traffic conditions shall be measured and documented for all roadways and intersections in the study area. Existing traffic volumes for average daily traffic, peak highway hour(s) traffic, and peak development generated hour(s), and documentation shall be included in the report. Traffic count data shall not be more than one (1) year old. Traffic counts shall be taken on a Tuesday, Wednesday, or Thursday of a non-holiday week. Additional counts (Saturdays for a commercial development or residential development in close proximity to a commercial district) may also be required by the Township). A volume/capacity analysis based upon existing volumes shall be performed during the peak highway hour(s) and the peak development generated hour(s) for all roadways and major intersections in the study area. Levels of service shall be determined for each location using the 1985 Highway Capacity Manual methodology.
- D. Transportation Impact of the Development - Estimation of vehicular trips to result from the proposal shall be completed for the average daily peak highway hour(s) and peak development-generated hour(s). Vehicular trip generation rates to be used for this calculation shall be determined through the use of Institute of Transportation Engineers (ITE), Trip Generation, 6th edition or as amended. These development-generated traffic volumes shall be provided for the in-bound and out-bound traffic movements as estimated, and the reference source(s) methodology followed shall be documented. All turning movements shall be calculated. These generated volumes shall be distributed to the study area and assigned to the existing roadways and intersections throughout the study area. Documentation of all assumptions used in the distribution and assignment phase shall be provided. Traffic volumes shall be assigned to individual access points. If school crossings are to be used, pedestrian volumes shall be assigned to each crossing. Any characteristics of the site that will cause particular trip generation problems shall be noted.
- E. Analysis of Transportation Impact - The total future traffic shall be calculated and shall consist of the combination of existing traffic expanded to the completion year (using an annual background traffic growth rate available), the development-generated traffic, and the traffic generated by other proposed developments in the study area. A second/volume capacity analysis shall be conducted using the total future demand and the future roadway capacity. If staging of the proposed development is anticipate, calculations for each stage of completion shall be made. This analysis shall be performed during the peak highway hour(s) and peak development-generated hour(s) for all roadways and major intersections in the study area. Level of Service calculations shall be completed for all major intersections. It is usually at these locations that capacity is most restricted.

All access points and pedestrian crossings shall be examined as to the feasibility of installing traffic signals. This evaluation shall compare the projected traffic and pedestrian volumes to the warrants for traffic signal installation.
- F. Conclusions and Recommended Improvements - Levels of service and volume/capacity ratios shall be listed for all roadways and intersections shall be listed. All roadways and/or intersections showing a level of service below "C" and volume/capacity ratios greater than or equal to 1.0 shall be considered deficient.

ARTICLE IV - PLAN REQUIREMENTS

Specific recommendations for the elimination of these deficiencies shall be listed and shall include but not be limited to the following elements: internal circulation design, site access location and design, external roadway intersection design/safety improvements, traffic signal installation and operation including signal timing, and transit design improvements. All physical roadway improvements shall be illustrated. Signal timing shall be evaluated for any intersection with a level of service below C but a volume/capacity ratio less than 1.0. Warrants for signalization shall be examined for all unsignalized intersections operating at deficient levels of service.

Existing and/or future public transportation service shall also be addressed. A listing of all actions to be undertaken to increase present public transportation usage and improve service, if applicable shall be included.

The study shall outline mitigation measures and demonstrate any changes to the level of service achieved by these measures. Any alternatives or suggested phasing of improvements shall be described. Mitigation measures may include recommendations such as roadway widening, turning lanes, deceleration lanes/tapers, changes to signalization, use of access management techniques, traffic calming measures, or reduction in the proposed intensity of use. The responsibility and timing of all recommended improvements shall be described within the transportation study.

6. Time of Submission - The Traffic Impact Study shall be submitted to the Planning Commission with the preliminary plan submittal. Improvement plans shall not be submitted to PennDOT until after review by the Haycock Township Planning Commission and Board of Supervisors.
7. Implementation - The Supervisors shall review the Traffic Impact Study to analyze its adequacy in solving any traffic problems that will occur due to the land development or subdivision. The Supervisors may decide that certain improvements contained on and/or adjacent to the site and within the study area are necessary for land development or subdivision plan approval and may attach these conditions to the approval. If the municipality concludes that additional improvements are necessary, the developer shall have the opportunity to re-submit alternative improvements designs to obtain plan approval.

Section 407. - Sewage Facilities.

1. General - The applicant shall submit the following information for review to insure that the proposed method of sewage collection, treatment, and disposal is adequate to serve the proposed subdivision or land development. The evaluation must establish that each proposed lot, building or structure will be served by an appropriate sewage system.
2. Development Applications - The applicant shall make application to the Pennsylvania Department of Environmental Protection (DEP) which shall determine whether or not the application will require submission of Planning Modules. Applicant shall provide written verification of the decision of the Pennsylvania DEP.
3. If Pennsylvania DEP determines that Planning Modules are required for the proposed development, then the following steps must be taken.
 - A. In order to be deemed a complete subdivision or land development application, any application for preliminary subdivision or land development approval must be

ARTICLE IV - PLAN REQUIREMENTS

accompanied by a duly completed Department of Environmental Protection sewage facilities planning module. Such planning module shall also meet all the requirements contained in 25 PA. Code Chapter 71.

- B. Such application and planning module shall meet all the procedural and content requirements of 25 PA Code Chapter 71, Subchapters 71.52 and 71.53, including the requirement that they be accompanied by the comments on the planning module of the Bucks County Health Department and the Bucks County Planning Commission. Evidence that the sewage facilities planning module has been before these agencies for 60 days without comment shall be sufficient to satisfy this requirement.
 - C. The Township shall review and act upon the Planning Modules in accordance with the requirements and criteria set forth in 25 PA. Code Chapter 71, and may refuse to adopt a proposed revision to its official sewage facilities plan for new land development for reasons including but not limited to the following:
 - (1) The plan is not technically or administratively able to be implemented.
 - (2) Present and future sewage disposal needs of the area, remaining acreage or delineated lots are not adequately addressed.
 - (3) The plan is not consistent with the Township land use plans and ordinances, this ordinance, or other ordinances or plans controlling land use or development.
 - (4) The plan is not consistent with the comprehensive sewage program of the Township as contained in its official sewage facilities plan.
 - (5) The plan does not meet the consistency requirements set forth in 25 PA. Code Chapter 71, Subsection 71.21(a)(5)(i)-(iii).
 - D. When the Township refuses to adopt a proposed revision to the official sewage facilities plan, it shall state the reasons for the refusal and forward a copy of this statement to the person making the submission and to the Department of Environmental Protection.
 - E. When the Township adopts the proposed revisions to the official sewage facilities plan, the Township shall forward the proposed revisions to the Department with the information required by 25 PA. Code Chapter 71, Subsection 71.52. Adoption of the proposed revisions of the official plan shall be by resolution of the Board of Supervisors.
 - F. Approval of the planning modules by the Pennsylvania Department of Environmental Protection shall be a condition of subdivision or land development plan approval by the Township.
4. Requirements for Final Plan Approval - Where on-lot sewage disposal is proposed, Final Plan Approval shall not be granted for any subdivision or land development until satisfactory evidence has been presented by the applicant to the Township that the Bucks County Health Department and the Pennsylvania Department of Environmental Protection have determined that the lots proposed for subdivision are generally suitable for on-lot septic systems and provided further that a note shall be placed on the final plans as follows:

ARTICLE IV - PLAN REQUIREMENTS

"The planning module for land development has been approved by the Pennsylvania Department of Environmental Protection and the Bucks County Department of Health as to the subdivision plan. However, the septic system permit has not been issued for the lot(s) upon which new building(s) are proposed. Prior to issuance of a building permit, a septic system permit shall be obtained and presented to the Zoning Officer for each new building."

Section 408. - Water Resources Impact Study.

1. All projects withdrawing 10,000 gpd or greater of groundwater or surface water, or a combination of these two sources are required to obtain a permit from the DRBC. Copies of all submissions by the applicant to the DRBC shall be sent to the Township. Additionally, copies of all submissions to the Department of Environmental Protection (DEP) and all correspondence received by the applicant from the DEP shall be forwarded to the Township.
2. Any water withdrawal project not under the jurisdiction of the DRBC will be reviewed by the Township. A Water Resources Impact Study shall be required when the proposed development is not served by public water supplied by a Municipal Authority approved by the Township; and one or more of the following conditions are met:
 - A. The proposed residential subdivision contains fifteen (15) lots or more and the average lot size is less than two (2) acres in area.
 - B. The non-residential subdivision contains 3 lots or more.
 - C. A proposed well is intended for non-residential use (i.e. industrial, commercial, institutional, community, agricultural).
3. The Water Impact Study shall be prepared by a hydrologist or professional engineer qualified to conduct groundwater investigations. The purpose of the study will be to determine if there is an adequate supply of water for the proposed use and to estimate the impact of the additional water withdrawals on existing nearby wells, underlying aquifers and streams. The Township Engineer shall be involved in the study as the Township feels is necessary and appropriate.
4. A water system which does not provide an adequate supply of water for the proposed use, considering both quality and quantity; and/or adversely affects nearby wells and streams shall not be approved by the Township.
5. The adequacy of water supply shall be determined based upon the assumption that there are 3.5 persons per dwelling unit using 75 gallons of water per person per day. The applicant shall submit an analysis which evaluates the consistency between the proposed use and the groundwater preservation guidelines included in the Township's Sewage Facilities Plan/201 Facilities Plan.
6. The Water Impact Study shall be signed by the person(s) preparing the study and shall include the following information:
 - A. Calculations of the projected water needs using the criteria set forth in the following references:

ARTICLE IV - PLAN REQUIREMENTS

- (1) PUBLIC WATER SUPPLY MANUAL, Bureau of Water Quality Management Publication No. 15 by the Pennsylvania Department of Environmental Protection, Harrisburg, Pennsylvania.
 - (2) GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOW by the Insurance Services Office (ISO) as modified.
 - (3) AMERICAN WATER WORKS ASSOCIATION Standards and Manuals for the American Water Works Association, Denver, Colorado.
 - B. A geologic map of the area within a 1.0 mile radius of the site.
 - C. The location of all faults, lineaments and fracture traces within 1/4 mile of the site.
 - D. The locations of all existing and proposed wells within 1/4 mile of the site, and all large withdrawal wells (10,000 gpd+) within 1.0 mile of the site.
 - E. The location of all existing and proposed on-lot septic systems within 1/4 mile of the site.
 - F. The location of all streams, perennial and intermittent, within 1/4 mile of the site.
 - G. A discussion of the aquifers underlying the site and their long-term drought recharge capability based on accepted published data or detailed site specific investigations.
 - H. Based on the drought recharge capacity of the underlying aquifer and the calculated daily groundwater withdrawals of the project, a hydrologic budget shall be calculated for the site property itself, and for the area within 1/4 mile of the site.
 - I. Based on the results of the hydrologic budget, a determination shall be made on whether or not the potential exists for adverse affects on the hydrologic environment caused by the project.
 - J. The study shall include a brief statement of the qualifications of the person(s) preparing the study.
7. The following site specific investigations shall be required:
- A. For each well that is constructed:
 - (1) An accurate geologic log should be constructed during the drilling of the well giving a detailed description of the type and thickness of rocks encountered. Additionally, the log should contain information on the depth and thickness of all water bearing zones encountered and the yield from each zone. Yield from the well must be measured using a quantitative method.
 - (2) Samples shall be collected every 20 feet during drilling, or at each change in rock type. Each sample shall be placed in a non-breakable container. The container, in a sturdy box, shall be made available to the Township.

ARTICLE IV - PLAN REQUIREMENTS

- B. A pumping test of not less than 48 hours duration shall be conducted at a rate of not less than 150% of the intended long-term withdrawal from the well. The 48 hour test shall be conducted at a constant pumping rate that should not deviate greater than +/- 5% during the test.
- C. In order to determine the impact of the project well on existing wells, a representative sample of existing wells, evenly spaced around the pumping well, shall be monitored for changes in water level.

The number and location of monitoring wells shall be subject to approval by the Township Planning Commission. Sufficient well monitoring shall be performed to allow for the construction of hydrographs showing a continuous record of well levels before, during and after the pumping test.

- D. A means of accurately measuring the well discharge shall be provided subject to approval by the Township.
- E. Well discharge shall be directed away from the site by a method suitable to the Township and to a point suitable to the Township.
- F. Records shall be compiled in typewritten form to include the following information:
 - (1) Name of driller and personnel conducting test.
 - (2) Description of test well to include horizontal and vertical dimensions, casing installed and grouting details.
 - (3) List of formation samples.
 - (4) Static water level immediately prior to yield testing.
 - (5) Hydrograph of depth to water surface during test pumping and recovery period at the test well showing corresponding pump and discharge rate in gallons per minute and time readings were taken.
 - (6) Log of depth to water surface at existing and monitoring wells during test pumping period showing time readings were taken.
- G. A report shall accompany the test well data which analyzes and interprets all of the data as to the impacts on the groundwater supply and existing wells. Conclusions shall be drawn from the analysis.
- H. The submission to the Township shall include any and all applications, reports, or supplemental information submitted to the Pennsylvania Department of Environmental Protection and/or the Delaware River Basin Commission.

Section 409. - Wetland Delineation. When the National Wetlands Inventory (NWI) Maps indicate wetlands on a site or when a site contains hydric soils (Refer Section 202) or an area with a predominance of wetlands vegetation (Refer Appendix "F"), an on-site investigation shall be conducted to determine if wetlands are present on the site. A landowner or an applicant shall use one of the following methods to delineate wetlands:

1. Wetland boundaries shall be delineated through an on-site assessment which shall be conducted by a professional soil scientist or others of demonstrated qualifications. Such

ARTICLE IV - PLAN REQUIREMENTS

a person shall certify that the methods used correctly reflect currently accepted technical concepts, including the presence of wetlands vegetation, hydric soils and/or hydrologic indicators. A study shall be submitted with sufficient detail to allow a thorough review by the municipality. The study must be approved by the Governing Body.

2. A wetlands delineation validated by the U.S. Army Corps of Engineers. In the event that a wetlands delineation validated by the U.S. Army Corps of Engineers is shown to vary from a wetlands boundary derived from subsection (a) above, the Corps delineation shall govern.

ARTICLE V - GENERAL DESIGN STANDARDS

Section 501. - Application. The following principles, standards and requirements will be applied by the Township to evaluate plans for proposed subdivision or land developments. The standards and requirements outlined herein shall be considered minimum standards and requirements for the promotion of the public health, safety, morals and general welfare. Where literal compliance with the standards herein specified is clearly impractical, the Board of Supervisors may modify or adjust the standards to permit reasonable utilization of property while securing substantial conformance with the objectives of this Ordinance.

Section 502. - General Standards.

1. All portions of a tract being subdivided or developed shall be taken up in lots, streets, public lands or other proposed uses so that remnants and landlocked areas shall not be created.
2. Reserve strips controlling access to lots, public rights-of-way, public lands or adjacent private lands shall be prohibited unless their control is placed with the Township under conditions of the Board of Supervisors.
3. Lot lines shall follow Township boundary lines rather than cross them.
4. Subdivisions and land developments shall be laid out so as to avoid the necessity for excessive cut or fill.
5. Land subject to flooding or other hazards to life, health, or property shall not be platted for residential occupancy or for such other uses as may increase danger to health, life, or property, or aggravate erosion until all such hazards have been eliminated or unless adequate safeguards against such hazards are provided by the subdivision plans. Such land within the subdivision or land development shall be set aside on the plan for uses which shall not be endangered by periodic or occasional inundation and shall not produce unsatisfactory living conditions.
6. Every possible means shall be provided to preserve trees, groves, waterways, scenic points, historic spots, or other community assets and landmarks that are located within a proposed subdivision or land development.
7. All discarded materials, including but not limited to: waste paper, rags, metal, bottles, cans, building materials, house furnishings, machinery, and vehicles or parts thereof, shall be removed from land proposed to be subdivided or developed, and disposed of properly.
8. Proposed subdivisions or land developments shall be coordinated with adjoining properties so that the community as a whole may develop harmoniously.
9. Where the preliminary plan includes a portion of a tract which could be further subdivided or developed under the standards of the Zoning Ordinance, the applicant shall submit a prospective street/lot layout for the entire tract which shall respect the Environmental Performance Standards included in Article V of the Zoning Ordinance.
10. Name of the Subdivision/Land Development is subject to review and approval by the Township. Names which conflict with, or are similar to, existing developments shall not be approved. During construction, the development name shall be in accordance with the approved plan.

ARTICLE V - GENERAL DESIGN STANDARDS

11. Areas designated as open space shall not be used for storage of construction materials, construction trailers, sales trailers, or parking; or to stockpile fill or topsoil material except as necessary to construct grading or other improvements on the open space area as required by the approved plan.

Section 503. - Community Facilities.

1. In reviewing subdivision plans, the Planning Commission will consider the adequacy of existing or proposed community facilities to serve the additional dwellings proposed by the subdivision.
2. Where deemed essential by the Board of Supervisors upon consideration of the particular type of development proposed and especially in large-scale planned residential developments, the Board of Supervisors may require the dedication or reservation of such areas or sites of an extent and location suitable to the needs created by the development for schools, parks and other purposes.
3. Areas provided or reserved for such community facilities shall be adequate to provide for building sites, landscaping, and off-street parking as appropriate to the use proposed.

Section 504. - Blocks and Lots.

1. The length, width, shape, and design of blocks shall be determined with due regard to the provision of adequate site for buildings of the type proposed, land use and/or zoning requirements of the Township, topography of the land being subdivided, and requirements for safe and convenient vehicular and pedestrian circulation.
2. Unless the topography of the land being subdivided or the existing pattern of development in the immediately adjacent area shall be otherwise than herein required, the following minimum standards for the design and size of blocks and lots shall prevail:
 - A. Blocks shall not exceed sixteen hundred (1600) feet in length, nor be less than five hundred (500) feet in length. Block length shall be measured along the centerline of a street between centerlines of intersecting streets.
 - B. Residential blocks shall generally be of sufficient depth to accommodate two (2) tiers of lots, except where reverse frontage lots bordering an arterial or collector street are used, or where due to the contour of the land, or the necessary layout of the subdivision, there is insufficient depth between streets for such two (2) tier design.
 - C. Blocks for commercial and industrial areas may vary from the elements of design contained in this section if the nature of the use requires other treatment. In such cases, off-street parking for employees and customers shall be provided along with safe and convenient limited access to the street system. Space for off-street loading shall also be provided with limited access to the street system. Extension of streets, and utilities shall be provided as necessary.
 - D. Lot lines intersecting street lines shall be substantially at right angles or radial to street lines from the street line to the rear lot line. "Substantially at right angles" shall mean an intersection angle of not less than 80°.

ARTICLE V - GENERAL DESIGN STANDARDS

- E. Lots shall front on a street which has already been dedicated to the Township, or which the subdivider or developer proposes to dedicate to the Township in connection with approval of the final plan.
- F. The Township shall assign house numbers to each lot within a subdivision.
- G. Minimum lot sizes shall be in accordance with the Township Zoning Ordinance.
- H. Remnants of land, smaller than required for a lot, shall not be permitted within any subdivision. Such remnants shall be incorporated into existing or proposed lots, or dedicated to public use if acceptable to the Board of Supervisors.
- I. Double frontage lots are prohibited except in accordance with Section 504.2.B. above.
- J. Residential lots shall not be created which front upon an arterial or collector street, as defined in Section 506 herein, except as permitted by Section 511 herein.
- K. Residential lot depth shall not be less than one (1) nor more than three (3) times the lot width. Lot depth shall be measured as the average distance from the ultimate right-of-way line to rear property line. Lot width is the distance between side property lines measured at the required minimum building setback line.
- L. Minimum lot width required by the Haycock Township Zoning Ordinance must be continuous along an existing or proposed street upon which the lot abuts. Lot width is measured along the minimum required front yard building setback line between the side lot lines.

Section 505. - Street - General.

- 1. Proposed streets shall be properly related to such street plans or parts thereof as have been officially prepared and adopted by the Township and shall be coordinated with existing or proposed streets in adjoining subdivisions or land developments.
- 2. Any developer subdividing or developing a parcel which fronts a State highway or proposes access thereto shall be required to obtain a PennDOT Highway Occupancy permit for any access, improvement, and encroachment within the roadway right-of-way. No plat which will require access to a highway under the jurisdiction of the Department of Transportation shall be finally approved unless the plat contains a notice regarding permit requirements. (Refer sample in Appendix "B")
- 3. Proposed streets shall further conform to such County and State road and highway plans as have been prepared, adopted or filed as prescribed by law.
- 4. Streets shall be related to topography so as to produce usable lots and acceptable grades.
- 5. Centerlines of proposed streets must coincide with centerline of right-of-way.

ARTICLE V - GENERAL DESIGN STANDARDS

6. Access shall be given to lots and portions of the tract in the subdivisions or land development and to adjacent un-subdivided property unless the topography clearly indicates that such connection is not feasible. Streets giving such access shall be improved to the limits of the subdivision or land development to Township specifications. Reserve strips and landlocked areas shall not be created.
7. Streets shall be laid out to preserve the integrity of their design. Local access streets shall be laid out to discourage their use by through traffic and, where possible, collector streets shall be designed for use by through traffic.
8. Where the proposed subdivision or land development contains or is adjacent to an arterial street, provision shall be made for marginal access streets. The Township may also require rear service areas, reverse frontage, or such other treatment as will provide protection for abutting properties, reduction in number of intersections with arterial streets, and separation of local and through traffic.
9. Screening through the use of appropriate plant materials, fences, or berms subject to site plan review shall be provided along the rear property line of lots with reverse frontage to buffer lots from the higher order street.
10. Half or partial streets will not be permitted in new subdivisions or land developments.
11. Dead-end streets shall be prohibited, except as stubs to permit future street extension into adjoining tracts, or when designed as cul-de-sacs. Temporary stub streets shall be permitted only if the street is less than two hundred (200) feet in length and provides access to two or less dwelling units.
12. Street names shall be coordinated with existing or platted street names, and shall be reviewed by the Postmaster. If a new street is a continuation of, or is aligned with, an existing or platted street, it shall bear the same name as the existing or platted street. All street names shall be of historical, geographic, topographic, or other local significance. Street names shall be subject to approval of the Board of Supervisors. All street regulatory signage shall be in accordance with PA Title 67, PennDOT Publications 236 and 68 (Chapter 211), and shall be installed on standard PennDOT approved breakaway posts.
13. No street shall be laid out or opened which extends to or crosses any boundary between the Township and any other municipality except with the specific approval of the Board of Supervisors and upon such condition as the Township may impose.
14. All streets shall have a uniform width throughout their respective lengths except where otherwise required by the Board of Supervisors pursuant to Section 506.
15. All lots, public lands, open space, remnants of land, or other proposed uses within subdivisions shall be served by, and have frontage on, a paved public street.
16. Where a subdivision or land development abuts an existing street, drainage improvements shall be made to the existing street. Required improvements must be extended as necessary to provide positive drainage to existing storm drainage facilities or drainage channels. Additionally, existing cartways shall be reconstructed where necessary to establish minimum construction standards of Section 506. Where

ARTICLE V - GENERAL DESIGN STANDARDS

reconstruction is not required, leveling with ID-2 binder and wearing course material may be required to improve the cartway surface.

17. No new street will be permitted which will cause an existing principal structure to become nonconforming to front yard requirements of the Township Zoning Ordinance.
18. Except where an alley is permitted pursuant to Section 524 of this Ordinance, one way streets shall be prohibited within new residential developments.
19. All new residential subdivisions or land developments containing twenty-five (25) dwelling units or more, or generating two hundred fifty (250) daily vehicle trips or more shall have a minimum of two access/exits on existing public streets. No residential subdivisions or land developments of twenty-five (25) units or more shall be served only with a cul-de-sac street or loop street but shall include construction of a new through street.

Section 506. Street Standards.

1. Street Classification. Four (4) functional classifications are hereby established for the streets and roads in Haycock Township:

- A. Arterial. This classification includes highways which provide intra-county or inter-municipal traffic of substantial volumes where the average trip lengths are usually five miles or greater. Generally, these highways accommodate operating speeds of 40 to 55 miles per hour.
- B. Collector. This classification is intended to include those highways which connect local access primary highways to arterial highways. They may serve intra-county and intra-municipal traffic. They may serve as traffic corridors connecting residential areas with industrial, shopping, and other service. They may penetrate residential areas. Generally, these highways will accommodate operating speeds of 35 to 45 miles per hour.
- C. Primary. This classification is intended to included those highways that connect secondary streets to collector highway systems. Primary streets typically provide access between and connect residential areas within the Township. Generally, these highways will accommodate operating speeds of 35 to 45 miles per hour.
- D. Local. This classification is intended to include streets and roads that provide direct access to abutting land and connections to higher classes of roadways. Traffic volumes will be low and travel distances generally short. These streets and roads should be designed for operating speeds of 25 to 35 miles per hour or under.

2. Right-of-Way Widths. Minimum widths for each type of public street shall be as follows:

<u>Type of Street</u>	<u>Right-of-Way Width</u>
Arterial	120'
Collector	80'
Primary	60'
Local	50' or greater depending on development type/on-street parking requirements as determined by the Board of Supervisors.

ARTICLE V - GENERAL DESIGN STANDARDS

- A. Where a proposed subdivision abuts or contains an existing public street or road having a right-of-way width less than would be required if said street or road were created under this Ordinance, sufficient additional width for right-of-way shall be provided and dedicated to meet the foregoing standards.
 - B. Additional right-of-way and cartway widths may be required by the Board of Supervisors to promote public safety and convenience when required by special conditions and to provide parking space in areas of intensive use.
3. Street Classification. Streets within Haycock Township are classified as follows:
- A. Arterial: Route 563.
 - B. Collector: Old Bethlehem Road, Thatcher Road
 - C. Primary: Applebachsville Road, Stoney Garden Road, Deerwood Lane, Sawmill Road (between Old Bethlehem Road and Stoney Garden Road).
 - D. Local: All other roads not classified above as arterial, collector, or primary.
4. Cartway Width.
- A. Minimum width of paving on existing streets shall not be less than the following:

<u>Type</u>	<u>Cartway Width (Feet)</u>
Arterial	As required by PennDOT
Collector	24' (28' if curb required)
Primary	24' (28' if curb required)
Local	24' (28' if curb required)

- B. Residential Streets. Proposed residential streets shall be constructed in accordance with the following requirements:

Minimum Requirements*

Minimum Lot Size	ROW (Feet)	Cartway (Feet)
2 Acres or greater	50'	24'
20,000 SF or greater	50'	28'
20,000 SF or less (Parking permitted one side)**	56'	32'
20,000 SF or less (Parking permitted both sides)**	60'	36'

* The Township reserves the right to require additional cartway width.

** On-street parking requirements determined by Board of Supervisors.

ARTICLE V - GENERAL DESIGN STANDARDS

- C. Non-residential Streets. Non-residential streets shall have a minimum right-of-way width of 56 feet. Minimum cartway width shall be 34 feet.
5. Design Standards. Design of streets shall conform with PennDOT Design Manual, Part 2, Highway Design (PDT Pub. 13), and all applicable PennDOT RC standards, unless specifically modified by this Ordinance.

6. Pavement Design.

- A. All components of the pavement structure shall be designed and constructed in accordance with Pennsylvania Department of Transportation Specifications, Form 408 and shall be noted as such on the plan.

- B. Minimum Requirements. The following shall be considered to be minimum standards for local access street construction:

	SECTION	TYPE	MIN. DEPTH*
(1)	Surface ID-2 Wearing Course		1-1/2"
	Base	BCBC	4-1/2"
	Subbase	3A Modified Stone	6"
Or			
(2)	Surface ID-2 Wearing Course		1"
	Base	ID-2 Binder Course	2"
	Subbase	AASHTO #1 Stone w/2" Screenings	8"

*Compacted

Note: AASHTO #1 stone subbase required on new streets constructed without curb.

- C. Pavement design for non-residential streets shall be subject to approval of the Township Engineer dependent upon anticipated traffic type and volume.
- D. Minimum requirements for cartway widening cross-section along existing roadways shall be in accordance with Section 506.6.B.(1).
- E. Minimum requirements for storm sewer and utility trench pavement restoration within existing roadways shall be in accordance with standards as contained in Appendix "A".
7. Roadside Barriers. Roadside barriers and guide rail shall be required in accordance with PennDOT Design Manual, Part 2, Highway Design, Chapter 12. (PDT Pub. 13) Construction and materials shall be in accordance with applicable PennDOT RC standards.
8. Traffic Control. Vehicular traffic control in work zone areas on and along streets open to the public shall be in strict accordance to requirements of PennDOT Publication 203, Work Zone Traffic Control ('67 PA Code, Chapter 203).

ARTICLE V - GENERAL DESIGN STANDARDS

9. Speed limit, stop, no parking, and advisory signs shall be installed along new development streets in accordance with PennDOT Regulations and as required by the Township.

Section 507. - Cul-de-sac Streets.

1. Cul-de-sac streets shall not be permitted unless the applicant can demonstrate to the satisfaction of the Township that construction of a thru street is not feasible.
2. Cul-de-sac streets shall be designed to permit future extension into adjacent undeveloped property. Unless future extension is clearly impractical or undesirable, the turnaround right-of-way shall be placed adjacent to a property line and contained within an easement area. A right-of-way of the same width as the street shall be carried to the property line in such a way as to permit future extension of the street into the adjoining tract. At such time as such a street is extended, the overage created by the turnaround outside the boundaries of the extended street shall revert in ownership to the property owners fronting on the cul-de-sac turnaround.
3. Permanent cul-de-sac streets shall be kept to a minimum and shall not exceed five hundred (500') feet in length or serve as access to more than twelve (12) dwelling units, whichever is more restrictive, unless specifically authorized by the Board of Supervisors. The minimum length of a cul-de-sac shall be two hundred and fifty (250) feet. For the purpose of this Ordinance, cul-de-sac streets shall be measured from the intersection of the right-of-way line with the future right-of-way line of the existing street to the center of the turnaround area.
4. Cul-de-sac streets, whether permanent or temporary, shall be provided with a turnaround at the closed end having a minimum radius to the edge of the finished street or curb line of not less than forty (40) feet. Permanent cul-de-sac streets shall be provided at the terminus with a right-of-way radius of sixty (60) feet.
5. A planted island may be required by the Township in the center of the cul-de-sac turnaround. The planted island shall have a radius of thirty (30) feet with a twenty (20) feet wide cartway around the island. Fifty (50) feet paving radii shall be provided to transition the cartway at the entrance and exit to the turnaround. The turnaround shall be restricted to one-way traffic. Landscaping of the island shall be subject to approval by the Township.
6. Commercial and industrial cul-de-sacs shall be reviewed for adequacy by the Township Engineer. When deemed necessary by the Township, additional cartway and/or right-of-way radius may be required.
7. A snow storage area shall be provided along the right-of-way of the turnaround. The snow storage area shall be contained within an easement not less than fifteen (15) feet measured from the right-of-way line, and of sufficient length as deemed necessary by the Township to provide adequate snow storage area.

Section 508. - Street Alignment.

1. Whenever street lines are deflected in excess of one and one half (1-1/2) degrees, connection shall be made by horizontal curves. Long radial curves shall be used rather than a series of short curves and tangents.

ARTICLE V - GENERAL DESIGN STANDARDS

2. The minimum radius at the centerline for horizontal curves on collector and arterial streets shall be three hundred (300) feet, and for local streets the minimum radius shall be one hundred fifty (150) feet.
3. On local access streets, the minimum tangent between reverse curves shall be at least one hundred (100) feet; on collector and arterial streets, the minimum tangent shall be at least two hundred fifty (250) feet.

Section 509. - Street Grades.

1. The minimum centerline grade on all streets shall be three quarters of one (0.75%) percent on streets with curbs, one (1%) on streets without curbs.
2. The maximum grade on collector or arterial streets shall be seven (7%) percent and on local access streets ten (10%) percent.
3. Vertical curves shall be used in changes of grade exceeding one (1%) percent and shall provide proper sight distance.
4. Minimum vertical sight distance shall be in accordance with PennDOT Chapter 441, as amended.
5. Maximum grade of proposed street within fifty (50) feet of the ultimate right-of-way of an existing or proposed street shall not exceed four (4%) percent.

Section 510. - Street Intersections.

1. Local streets shall not intersect with collector or arterial streets on the same side at intervals of less than eight hundred (800) feet as measured from centerline to centerline.
2. The distance between centerlines of streets opening onto the opposite side of a proposed or existing street shall be not less than one hundred and fifty (150) feet unless the streets are directly opposite each other.
3. Multiple intersections involving the junction of more than two streets shall not be permitted.
4. Proposed street intersections shall be designed at right angles. The intersection of a new street with an existing street shall not be at an angle of less than seventy five (75) degrees, except that all intersections with an arterial or collector street shall be at ninety (90) degrees.
5. Horizontal curves will not be permitted on a proposed street within fifty (50) feet of the ultimate right-of-way of an existing or proposed street.
6. Minimum curb radius at the intersection of two local streets shall be at least twenty (20) feet; and minimum curb radius at an intersection of a local street and a collector or arterial street shall be at least twenty-five (25) feet.
7. A clear sight triangle of seventy-five (75) feet in all directions shall be provided and maintained at all intersections measured along the centerline from the point of

ARTICLE V - GENERAL DESIGN STANDARDS

intersection. Nothing which obstructs the vision of a motorist shall be permitted in this area.

8. Minimum horizontal and vertical sight distances shall be established in accordance with PennDOT Chapter 441, as amended.

Section 511. - Driveways.

1. General.
 - A. Driveways shall be located no less than sixty (60) feet from any street intersection (measured from the intersection of the ultimate right-of-way lines). Sight distance requirements for all residential and non-residential driveways shall be in accordance with PennDOT Chapter 441.
 - B. Driveways to corner lots shall gain access from the street of lower classification when a corner lot is bounded by streets of two different classifications as described herein. A corner lot created by a proposed street and an existing street shall gain access to the proposed street.
 - C. When two (2) adjacent lots front on an arterial or collector road, shared access shall be provided unless it is determined by the Township to be infeasible due to existing conditions such as topography and location of natural resources.
 - D. When three (3) or more adjacent lots front on an arterial road, the applicant shall be required to provide a marginal access street for common ingress and egress. Provisions shall be made for the eventual continuation of the street to adjacent properties.
 - E. All driveways serving single family dwellings, except shared driveways, shall be at least five (5) feet from any side or rear lot line.
 - F. All driveways serving single family dwellings shall be a minimum of eight (8) feet in width with a grade not to exceed fifteen percent (15%). Maximum change in grade at any location on the driveway shall not exceed eight (8) percent.
 - G. A driveway permit from Haycock Township is required prior to the construction of a new driveway or any alteration of an existing driveway which accesses Township roads.
 - H. All single family residential driveways shall be paved from the edge of cartway to the ultimate right-of-way, or for a length of 15 feet, whichever is greater using the following minimum standards:
 - (1) A crushed aggregate base course with a compacted depth of six (6) inches.
 - (2) A bituminous paving course (ID-2) with a compacted depth of 2 inches.
 - (3) In the case where sidewalks are provided, a concrete driveway apron shall be required.

ARTICLE V - GENERAL DESIGN STANDARDS

- I. Where an existing roadside drainage swale is too shallow to permit installation of a driveway pipe, a concrete trench box with grate may be required to be installed. Grates must be recessed below edge of cartway to establish a minimum 2% slope from the cartway to the grate. Trench boxes must extend beyond edge of driveway paving a minimum 5 feet.
 - J. Driveway Pipes.
 - (1) Driveway pipes must include flared end sections.
 - (2) End of pipes must extend a minimum of 5 feet beyond edge of paving.
 - (3) Minimum pipe length is 20 feet.
 - (4) Minimum pipe size shall be 12 inch round or 14 inches x 9 inches arch.
 - (5) Pipe must be reinforced concrete pipe unless an alternative pipe material is permitted by the Township.
 - (6) Minimum 9 inches of cover must be maintained between top of pipe and finished paving elevation.
 - K. Intersection of single family driveways with cartways shall be installed with minimum paving radii of 5 feet at both sides.
 - L. Where curb and sidewalk are required, concrete aprons shall be poured with a minimum thickness of six (6) inches on a minimum four (4) inch thick bedding of PennDOT 2B stone. All concrete shall be PennDOT Class "AA" 3750 psi mix. 1/2 inch expansion shall be placed between apron and curb. 1/4 inch score contraction joints shall be installed at 1/3 intervals.
2. Shared Residential Driveways.
- A. Minimum driveway width shall be eighteen (18) feet within the street ultimate right-of-way.
 - B. Entrance must be paved in accordance with 511.1.H. within the ultimate right-of-way or for a minimum length of 20 feet (whichever is greater).
 - C. Intersection of driveways with cartways shall be installed with minimum paving radii of 10 feet at both sides.
 - D. Driveways must be centered on property lines.
3. Non-residential Driveways.
- A. Design requirements shall be in accordance with PennDOT Chapter 441.
 - B. Driveways shall be paved. Design of paving section shall be in accordance with expected loading and frequency of loading. Minimum paving specification shall be in accordance with Section 511.1.H., except that minimum compacted depth of the coarse aggregate base course must be eight (8) inches.

ARTICLE V - GENERAL DESIGN STANDARDS

Section 512. - Curbs.

1. Curbs shall be installed on all streets and parking areas located within single family cluster, multi-family, and apartment developments. Curbs shall also be required on new residential streets in subdivisions or land developments in which the minimum lot size is less than 2 acres, where on-street parking is required by the Township, and all new non-residential streets. Curbs may also be required on all streets in any subdivision in which the lot areas exceed the above minimum, when the centerline street grade of any street exceeds six (6%) percent; and along all existing streets where deemed necessary by the Township. In such cases curbs or other drainage controls shall be installed to properly control surface drainage and protect the streets from erosion. The requirement of the curbs may be waived at the discretion of the Board of Supervisors.
2. All curbs shall be depressed at intersections to sufficient width to accommodate wheelchairs and shall be in accordance with the latest PennDOT and Americans with Disabilities Act (ADA) standards.
3. Curb shall be plain cement concrete curb, 18 inches in depth placed and finished in accordance with requirements set forth in the latest edition of PennDOT Specifications, Form 408. Material shall consist of cement concrete Class "AA" with a minimum 7 day design compressive strength of 3000 psi and a minimum 28 day design compressive strength of 3750 psi. After completion of the bituminous paving, Class BM-1 asphalt shall be applied to the joint between the curb and bituminous paving for a distance of one (1) foot from the curb toward the center of the road to seal the joint between the curb and bituminous paving.
4. As an alternate to concrete curb, Belgian block curb may be used where authorized by the Township. Belgian block curb must be installed in accordance with the construction detail included in Appendix A.
5. Curb cuts (driveway depression) shall be a maximum of 1-1/2" above roadway surface, a minimum of 1" above the roadway surface, and a minimum of 14 feet in width.
6. Profile of curb design along existing streets shall be shown on the plan. Profiles shall be smooth and designed with vertical curves where there is a change in grade. Breaks in grade shall not be permitted. Existing edge of road and bottom of curb elevations shall be identified every fifty (50) feet and at locations specified by the Township Engineer. Minimum cross-slope for cartway widening sections shall be 3/8 inch per foot to establish positive drainage from the existing edge of road to the curb line.

Section 513. - Sidewalks.

1. Sidewalks are required along both sides of all existing streets unless waived by the Board of Supervisors. Sidewalks are also required on both sides of all new residential streets where curb is required.
2. Sidewalks shall be located within a public right-of-way, public easement, or common open space area. Any such system shall be interconnected and not disjointed.
3. All sidewalks within the street right-of-way shall be located in such a manner as to provide sufficient area for street trees.

ARTICLE V - GENERAL DESIGN STANDARDS

4. Sidewalks shall have a minimum width of four (4) feet.
5. Sidewalks shall be all weather and constructed of 4-inch thick, Class "AA" cement concrete (3750 psi) on a four (4) inch PennDOT 2B stone base. At driveways, sidewalks shall have a minimum depth six (6) inches of concrete and be reinforced with wire mesh.
6. Sidewalks shall not exceed a ten (10) percent grade. All sidewalks shall be finished using methods that will provide a skid-resistant surface.
7. Curb depressions designed to accommodate wheelchairs shall be provided at street and other crossings and shall be in accordance with the latest PennDOT and Americans with Disabilities Act (ADA) standards.
8. Sidewalks shall be laterally pitched at a slope of one-fourth inch per foot to provide for adequate surface drainage.
9. Pedestrian and bike paths within open space and recreational facilities shall be concrete, asphalt, wood chips with stone base, or stone, subject to approval by the Board of Supervisors. Width and design of cross sections shall be subject to approval by the Township Engineer. Maximum centerline grade of pedestrian paths shall be 7%. Design centerline profile of pedestrian paths shall be shown on the plan. Vertical curves must be designed for changes in grade. Breaks in grade are not permitted. Horizontal curves must be designed for changes in direction. Location of the pedestrian path centerline must be defined by detailed bearing and distance information. Where pedestrian paths are designed for combined use with bicycles, centerline grades and curves shall be designed as specified by the Township Engineer.

Section 514. - Reserved.

Section 515. - Landscaping and Street Trees.

1. Street Trees and Landscaping:
 - A. Street trees shall be planted along all existing and proposed streets within any land development or major subdivision where suitable street trees do not exist.
 - B. Street trees shall be planted at intervals of not more than forty (40) feet and must be coordinated to provide adequate separation from overhead and underground utilities.
 - C. Street trees shall not be planted opposite each other, but shall alternate.
 - D. Street trees shall be planted within the street right-of-way unless otherwise approved by the Township.
 - E. At the time of installation, the minimum trunk diameter of canopy trees measured at a height of six (6) inches above finished grade shall be two and one-half (2-1/2) inches.
 - F. Any plant material which does not survive shall be replaced by the developer. Financial security shall be posted with the Township in an amount equal to

ARTICLE V - GENERAL DESIGN STANDARDS

the estimated cost of trees and plantings, to be released eighteen (18) months from Township acceptance of the installation and satisfactory replacement of all dead plantings.

- G. The following plant material is permitted for use as tree plantings when placement is within four (4) feet of curb, sidewalk, or asphalt surface:

Acer campestre - Hedge Maple.
Acer rubrum - Red Maple (all cultivars).
Acer x freemanii 'Armstrong' - Armstrong Freeman Maple.
Carpinus caroliniana Tree Form - American Hornbeam.
Cercidiphyllum japonicom – Kastura Tree.
Fraxinus pennsylvanica – Green Ash.
Prunus sargentii 'Columnaris' Tree Form - Columnar Sargent Cherry.
Gleditsia triacanthos - Honeylocust (thornless cultivars only).
Tilia cordata - Littleleaf Linden.
Zelkova serrata - Japanese Zelkova.

- H. The following plant material is permitted for use as tree plantings when placement is greater than four (4) feet from curb, sidewalk, or asphalt surface.

Acer rubrum - Red Maple (all cultivars).
Acer saccharum - Sugar maple (all cultivars).
Fraxinus americana - White Ash (all cultivars).
Fraxinus nigra – Black Ash.
Fraxinus pennsylvanica - Green Ash.
Ginkgo biloba - Ginkgo (male only).
Platanus x acerifolia - London Planetree.
Quercus acutissima - Sawtooth Oak.
Quercus imbricaria - Shingle Oak.
Ulmus americana – American Elm (American 'Liberty' variety only).

- I. In addition to plant material included in Section 515 1.G. and 515 1.H. above, the following may be utilized where required for buffer yards, detention basins, parking areas, open space planting, etc.

SMALL TREES

Acer buergerianum tree form - Trident Maple
Acer ginnala tree form - Amur Maple
Acer griseum tree form - Paperbark Maple
Acer tataricum tree form - Tatarian Maple
Amelanchier canadensis - Shad-bush
Amelanchier laevis tree form - Serviceberry (all cultivars)
Amelanchier canadensis - Shad-bush
Asimina triloba - Pawpaw
Betula nigra - River Birch
Betula populifolia - Grey Birch
Carpinus betulus - European Hornbeam
Carpinus caroliniana - American Hornbeam
Cercis canadensis - Red Bud
Cercis canadensis tree form - Eastern Redbud

ARTICLE V - GENERAL DESIGN STANDARDS

Cornus kousa tree form - Kousa Dogwood
Crataegus (many species) - Hawthorn (thornless only)
Crataegus mollis - Scarlet Thorn
Ilex montana - Large-leaved Holly
Ilex opaca - American Holly
Magnolia tripetala - Umbrella-tree
Magnolia x loebneri 'Merrill' - Merrill Magnolia
Malus 'Centzam' tree form - Centurion Crabapple
Malus 'Hargozam' tree form - Harvest Gold Crabapple
Malus 'Snowdrift' tree form - Snowdrift Crabapple
Malus 'Spring Snow' tree form - Springsnow Crabapple
Malus x zumi 'Calocarpa' tree form - Redbud Crabapple
Ostrya virginiana - American Hop-Hornbeam
Prunus americana - Wild Plum
Prunus pennsylvanica - Bird-cherry
Prunus serrulata tree form - Kwanzan oriental cherry
Pyrus betulifolia - Birchleaf Pear
Pyrus calleryana - Callery Pear (all cultivars except Bradford)
Sorbus (many species/hybrids) - Mountain Ash
Sorbus americana - American Mountain-Ash
Syringa reticulata 'Ivory Silk' - Ivory Silk Japanese Tree Lilac

LARGE TREES

Acer negundo - Box Elder
Acer nigrum - Black Maple
Aesculus hippocastanum 'Baumannii' - Bauman Horse Chestnut
Aesculus x carnea 'Briotii' - Ruby Red Horse Chestnut
Betula nigra - River Birch
Betula papyrifera - Paper Birch
Carya cordiformis - Bitternut Hickory
Carya glabra - Pignut
Carya ovata - Shagbark Hickory
Carya tomentosa - Mockernut
Catalpa bignonioides - Catalpa
Fagus granifolia - American Beech
Gymnocladus dioica - Kentucky Coffee-tree
Juglans nigra - Black Walnut
Larix laricina - American Larch
Liquidambar styraciflua - Sweet-Gum
Liriodendron tulipifera - Tulip-tree
Magnolia acuminata - Cucumber-tree
Ostrya virginiana tree form - American Hophornbeam
Prunus serotina - Black Cherry
Quercus alba - White Oak
Quercus borealis - Red Oak
Quercus coccinea - Scarlet Oak
Quercus falcata - Spanish Oak
Quercus macrocarpa - Burr Oak
Quercus muehlenbergii - Yellow Chestnut Oak
Quercus palustris - Pin Oak
Quercus phellos - Willow Oak

ARTICLE V - GENERAL DESIGN STANDARDS

Quercus rubra - Northern Red Oak
Quercus stellata - Post Oak
Robinia pseudoacacia - Black Locust
Tilia americana - American Linden
Tilia heterophylla - White Basswood
Tilia tomentosa - Silver Linden

EVERGREENS (4 FEET HIGH MINIMUM)

Abies balsamea - Balsem Fir
Ilex opaca - American Holly
Picea abies - Norway Spruce
Picea omorika - Serbian Spruce
Picea pungens - Colorado Spruce
Picea rubens - Red Spruce
Pinus echinata - Short-leaf Pine
Pinus nigra - Austrian Pine
Pinus strobus - White Pine
Pinus virginiana - Virginia Pine
Pseudotsuga menziesli - Douglas Fir
Tsuga canadensis - Canada Hemlock

HEDGE (4 FEET HIGH MINIMUM)

Crataegus intricata - Thicket Hawthorn
Forsythia intermedia - Border Forsythia
Rhamnus fraxula columnaris - Tallhedge Buckthorn
Syringa chinensis - Chinese Lilac
Syringa vulgaris - Common Lilac
Viburnum alatus - Viburnum

HEDGEROW (4 FEET HIGH MINIMUM)

Crataegus crus-galli - Cockspur Thorn
Crataegus phaenopyrum - Washington Hawthorn
Elaeagnus angustifolia - Russian Olive
Euonymus alatus - Winged Euonymus
Viburnum sieboldii - Siebold Viburnum
Viburnum tomentosum - Doublefile Viburnum

SHRUBS (3 FEET HIGH MINIMUM)

Juniperus virginiana - Upright Juniper
Phracantha lalandi - Laland Firethorn
Taxus capitata - Upright Yew
Taxus hicksi - Hicks Yew
Thuja occidentalis - American Arborvitae

SHRUBS (4 FEET HIGH MINIMUM)

Euonymus alatus - Winged Euonymus
Hamamelis vernalia - Vernal Witch Hazel

ARTICLE V - GENERAL DESIGN STANDARDS

Hamamelis virginiana - Common Witch Hazel
Ilex verticillata - Winterberry
Rhamnus frangula - Glossy Buckthorn
Viburnum dentatum - Arrowwood Viburnum
Viburnum lantana - Wayfaring tree Viburnum

Note: Additional trees and other plant material and cultivars may be utilized when approved by the Township.

J. Plant Material Specifications:

- (1) Name of Plants: shall agree with the nomenclature of "Standard Plant Names" as adopted by American Joint Committee on Horticulture Nomenclature, 1942 edition as amended; size and grading standards shall conform to those specified by the American Association of Nurserymen in the latest edition of the "USDA Standards for Nursery Stock". No substitutions shall be permitted except by written permission of the Township.
- (2) Quality: All plants shall be typical of their species or variety; and shall have normal, well-developed branches and vigorous fibrous root systems. All plants shall be nursery-grown unless otherwise stated; they shall have been growing under the same climate conditions as the municipality for at least two (2) years prior to date of planting. All plants which are found unsuitable in growth or condition or which are not true to name shall be removed and replaced with acceptable plants.
- (3) Preparation of Plants: All precautions customary in good trade practice shall be taken in preparing plants for moving. All balled and burlapped plants shall be dug to meet or exceed the "USDA Standards for Nursery Stock".
- (4) Delivery: Plants shall be packed, transported and handled with utmost care to insure adequate protection against injury.

2. Landscaping of Off-street Parking Areas:

- A. Within the parking facility there shall be planted at least one (1) tree of 2 1/2" caliper minimum for every five (5) parking spaces in single bays and one (1) tree of 2-1/2 inch caliper minimum for every ten (10) parking spaces in double bays. Trees shall be planted in such a manner to afford maximum protection from the sun for parked vehicles.
- B. A minimum of ten percent (10%) of any parking lot facility over two thousand (2,000) square feet in gross area shall be devoted to landscaping, inclusive of required trees.
- C. The perimeter of all parking facilities shall be landscaped with one or any combination of the following buffers in order to visually screen the vehicles:
 - (1) One (1) 18" - 24" tall shrub per each three feet of buffer;

ARTICLE V - GENERAL DESIGN STANDARDS

- (2) One (1) 4 - 4-1/2 feet high berm;
 - (3) One (1) 5 feet high wooden or stockade type fence.
 - D. All plantings shall be able to survive soot, gas fumes and salt. Trees which have low growing branches, gum or moisture which may drop on vehicles; blossoms, thorns, seeds or pods which may clog drainage facilities shall be avoided. The plantings chosen should be of sufficient size to be effective the first year they are planted.
 - E. All landscape planting areas shall be raised in order to prevent road salts from seeping into the planting area.
- 3. Open Space Plantings:
 - A. The applicant shall provide a method of physically delineating open space areas from private lots. Such methods shall include shrubbery, trees, markers, fencing, or other methods acceptable to the Township. Trees, shrubs, markers, or fencing shall be placed on the linked open space at its boundary. Where hedge plant material is provided as screening or a barrier between private lots and open space areas, additional markers or plant material for delineation are not necessary.
 - B. Open space areas not existing as forest or proposed as natural areas (i.e. wetland) shall be established in lawn conditions. Prior to seeding these areas, a soil test must be conducted by a soil testing laboratory and the soils amended to achieve pH and N.P.K. levels as recommended for turf. At time of dedication, all open land areas must have at least 90% cover with appropriate grasses or other species and be free of noxious weeds as defined by the Commonwealth of Pennsylvania.
- 4. Existing Vegetation: In cases where natural features existing on the site duplicate or essentially duplicate the requirements of the street tree, buffering, or landscaping provisions of this Ordinance, these requirements may be waived by the Board of Supervisors.
- 5. Protection of Existing Plant Material:
 - A. All subdivisions and land developments shall be laid out in such a manner so as to preserve healthy trees and shrubs on the site.
 - B. During the construction of any site, trees and shrubs to be preserved shall be protected by snow fencing, safety fencing, or silt fencing, to insure that there is no encroachment within the area of their dripline by changing grade, trenching, stockpiling of building materials or topsoil, or the compaction of the soil and roots by any motor vehicle unless the following regulations are met:
 - (1) The grade of land within the entire area of dripline shall not be raised more than 6" unless tree wells are constructed around each trunk or group of trunks and aeration pipes are extended out to the edge of the dripline.

ARTICLE V - GENERAL DESIGN STANDARDS

- (2) Tree wells are to be constructed of uncemented stone, or any other suitable material. Such walls shall be a minimum of three (3) feet in diameter or one (1) foot in diameter for each inch in caliper measured twelve (12) inches above natural ground level, whichever is greater; and shall be a maximum of 3 feet deep.
 - (3) Retaining walls are to be constructed around each tree or group of trees immediately after any grade is lowered within the area of the dripline. This retaining wall is to be constructed of 8" x 8" pressure treated landscape ties or any other suitable material. Retaining walls must be designed and constructed to withstand overturning and frost heave.
- C. If any plant material is to be moved, it must be done in accordance with specifications set forth by the American Association of Nurserymen.
- D. All diseased or dead trees shall be promptly removed from the site. All trees to be preserved shall be pruned when necessary to remove dead limbs.
- E. Any grading within ten (10) feet of tree trunks must be done by hand. No equipment is to be driven over this area and no building materials are to be stacked against the trees or within the area of this barrier.
- F. No tree is to support any scaffolding, signs, temporary utilities, surveying spikes, or any other device.
- G. If topsoil is to be stockpiled, it shall be located in an area at least ten (10) feet from any tree designated to remain, and shall in no case be removed from the site.
- H. Those trees whose removal will damage other trees which are to remain must be removed by hand. The resulting stumps must be carefully removed to minimize damage to roots and trunks of other trees.
- I. Trees Damaged During Construction.
 - 1. Tree trunks and exposed roots damaged during construction shall be protected from further damage. Damaged branches shall be pruned according to National Arborist Association standards. All cuts shall be made sufficiently close to the trunk or parent limb but without cutting into the branch collar **or** leaving a protruding stub. All necessary pruning cuts must be made to prevent bark from being torn from the tree and to facilitate rapid healing.
 - 2. All trees which have been disturbed or have experienced damage to their roots or branches shall be fertilized in early fall or mid-spring. Fertilizer grade shall have approximately 3 parts nitrogen to 1 part phosphorus and potassium (3-1-1 ratio). Fertilizer shall be broadcast over the soil surface in an area twice the size of the tree protection zone at a rate of one (1) pound of nitrogen per 1000 square feet.

ARTICLE V - GENERAL DESIGN STANDARDS

- J. Stumps, branches and other wood debris shall not be buried on site. Where trees are removed outside of an area to be excavated, it is preferred that stumps be removed by grinding to a point six (6) inches below existing grade.
- K. Cut trees shall not be pushed or pulled into an area where trees are to be retained.

Section 516 – Stormwater Management. All subdivisions and land developments shall comply with the Haycock Township Stormwater Management Ordinance, Ordinance No. _____, adopted on _____, as amended. Requirements of the Stormwater Management Ordinance shall be in addition to, and not in lieu of, requirements set forth within Section 516 of this Ordinance.

1. General Requirements.

- A. Lots shall be laid out and graded with a minimum slope of two (2%) percent to provide positive drainage away from buildings. The Township may require a grading and drainage plan for individual lots indicating a buildable area within each lot, complying with the setback requirements, for which positive drainage is assured.
- B. On-lot drainage swales shall be designed to provide positive conveyance of surface water from the individual lot. Each swale lot shall convey stormwater from the lot to a storm sewer system, street, open space area, or stormwater management easement without crossing or combining with stormwater from more than the adjacent lot.
- C. Drainage swales necessary to control surface drainage between lots shall be centered about the common property line.
- D. No person, corporation, or other entity shall block, impede the flow, alter, construct any structure, or deposit any material or thing, or commit any act which will affect normal or flood flow in any stream or watercourse without having obtained prior approval from the Township and/or Department of Environmental Protection, whichever is applicable.
- E. Whenever a watercourse, perennial stream or intermittent stream is located within a development site, it shall remain open in its natural state and location, and shall not be piped (except for road crossings). It is the responsibility of the developer to stabilize existing eroded stream/channel banks.
- F. Where a subdivision or land development is traversed by a natural watercourse, there shall be provided a drainage easement or right-of-way conforming substantially with the line of such watercourse. The width of the easement shall be adequate to provide for unimpeded flow of stormwater runoff from the 100 year return storm event. Terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations which may adversely affect the flow of stormwater runoff within any portion of the easement. Periodic maintenance of the easement to ensure proper runoff conveyance shall be required by the landowner.
- G. Existing points of concentrated drainage discharge onto adjacent property shall not be altered without written approval of the affected property owner(s).

ARTICLE V - GENERAL DESIGN STANDARDS

- H. Areas of existing diffused drainage discharge onto adjacent property shall be managed such that, at a minimum, the peak diffused flow does not increase in the general direction of discharge, except as otherwise provided in this Section. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the developer must document that there are adequate downstream conveyance facilities to safely transport the concentrated discharge or otherwise prove that no harm will result from the concentrated discharge.
 - I. Any drainage facilities required by this Section that are located on, or discharge to, a State highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation.
 - J. Storm drainage facilities and appurtenances shall be so designed and provided as to minimize erosion in swales, watercourse channels and at all points of discharge.
 - K. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc. are encouraged, where soil conditions permit, to reduce the size or eliminate the need for retention/detention facilities.
 - L. Roof drains and sump pumps shall be discharged to a natural watercourse, drainage swale, or stormwater easement. Roof drains and sump pumps shall not be connected to a storm sewer or street unless designed as part of a stormwater management facility within a proposed development. In no case shall roof drains or sump pumps be connected to a sanitary sewer.
2. Storm Drainage System Requirements.
- A. Any proposed storm drainage plans which affect the drainage basin in any stream or watercourse shall be approved by the Division of Dams and Waterway Management of the Pennsylvania Department of Environmental Protection in accordance with the Title 72, Chapter 105, as amended.
 - B. Easements shall be dedicated to the Township along all natural or manmade streams and watercourses and/or stormwater management facility areas within a subdivision or land development. These easements shall be of sufficient width to convey a 100-year design storm. Easements shall be provided where storm drainage swales, culverts, or other structures traverse, enter or discharge onto private property. On private property, the entire easement area and fencing and landscaping (if any) shall be maintained by the property owner. The Township shall not maintain and/or repair any improvements within that easement unless stormwater runoff from public roads or public land crosses through the easement. If stormwater runoff from public roads or public lands cross through the easement, the Township shall, upon satisfactory installation of improvements as specified in a Developer's Improvement Agreement and Maintenance Agreement, maintain and repair only the structural stormwater management improvements within the easement such as:
 - (1) Piping
 - (2) Inlets
 - (3) Outlet, Headwalls

ARTICLE V - GENERAL DESIGN STANDARDS

- (4) Energy Dissipation Structures or Facilities
- (5) Stormwater Management Facility Control Structures

The landowner shall be responsible for all other maintenance and repairs within this easement. For example, the landowner must:

- (1) Mow the lawn.
- (2) Repair or replace fencing.
- (3) Repair or replace landscaping.
- (4) Control vermin and repair damage from animals.
- (5) Keep the area free of obstructions, structures, vegetation, or accumulated sediment that may block or hinder the function and purpose of the easement.
- (6) Keep the area free of litter or garbage.
- (7) Repair erosion and restore vegetation as necessary to keep the easement in good repair.

- C. Storm sewers, culverts, and related installations shall be provided to permit the flow of natural watercourses, to ensure the drainage of all low points (except in protected "wetlands") on the subdivided lots or developed land areas and along the line of streets, and to intercept stormwater runoff along the streets at intervals related to the extent and grade of the area drained. The system shall also be designed to accommodate or receive and discharge all runoff from adjacent upstream properties. Where adequate existing storm sewers are readily accessible, the developer must connect new stormwater facilities to the existing system.
- D. Flood Protection: No stormwater runoff or natural drainage water shall be so diverted as to overload existing drainage systems, or create flooding or the need for additional drainage structures on other private properties or public lands, without proper and approved provisions being made to address these conditions.
- E. Whenever the location of concentrated runoff from a site is changed due to development, the developer must secure written approval from any adjacent downstream property owners. The developer shall indemnify and/or hold harmless the Township against any claim of damage from any downstream property owners that may result from the proposed development.
- F. Scour and Erosion Prevention: In areas in which the street curbs are not required by either this Ordinance or by the Township, drainage may be accomplished by natural or artificial swales and culverts. Special structures such as check dams, drop-outlets, concrete flow channels, or other energy dissipating structures, rip-rap or non-degradable geotextile linings, may be required to prevent scour or erosion in locations with large runoff quantities or steep slopes. Bituminous paved swales will not be permitted.
- G. All proposed streets shall be designed so as to discharge surface water from their rights-of-way. Storm drainage improvements as deemed necessary by the Township shall be required along all existing streets on which a subdivision or land development abuts.

ARTICLE V - GENERAL DESIGN STANDARDS

- H. Design Criteria: Unless a more conservative design is required by another Regulation, or is required because of conditions particular to an individual development, the following storm criteria shall be used to design storm collection and conveyance systems:

DESIGN STORM RETURN (Years)

Fixed Pipe	10
Total Conveyance	100

- I. Design Preparation: Designs of Storm Drainage Systems shall be prepared by a licensed Professional Engineer. Complete detail calculations shall be submitted to the Township for review. Calculations shall cover the entire drainage basin involved, including consideration of areas outside the proposed subdivision or developed land areas.
- J. Setback to Boundaries: No piped storm sewer system outlet, detention basin, or energy dissipation structure shall discharge closer than twenty (20') feet from the boundary of any drainage easement under the control of the developer or which may be utilized by the developer, so as to allow for adequate space for stormwater dissipation in vegetated land areas controlled by or available to the developer and/or to allow adequate space for equipment access for future maintenance.

3. Collection System Design.

- A. The collection system shall be designed by the Rational Method of Design in accordance with American Society of Civil Engineers Manual No. 37 except where noted, using the formula $Q=CiA$, unless otherwise approved by the Township.
- (1) Capacity: "Q" is the required capacity in cubic feet per second for the collection system at the point of design.
 - (2) Runoff Coefficient: "C" is the runoff coefficient applicable to the entire drainage area. It shall be based on consideration of soil conditions, average slope of the drainage area and the ultimate development of the entire drainage area according to comprehensive plans. For the various types of ultimate development, the runoff coefficient shall be taken from the table in Appendix "C" unless sufficient engineering data has been presented to the Township Engineer by the Developer which information in the judgment of the Township Engineer is sufficient to warrant the use of an alternate runoff coefficient.
 - (3) Rainfall Intensity Formula: "i" is the rainfall intensity in inches per hour and shall be determined from rainfall intensity charts for this area, based on time of concentrations, including Overland Flow Time, Manning's Formulae for channelized flow time and pipe flow time. The design rainfall frequency shall be taken from the PennDOT Intensity-Duration-Frequency Field Manual, Region 4 as presented in Appendix "C".

ARTICLE V - GENERAL DESIGN STANDARDS

- (a) A five (5) minute storm duration shall be used if the duration does not result in a maximum expected discharge that exceeds the capacity of a thirty inch pipe.
 - (b) If a five (5) minute storm duration results in a pipe size exceeding thirty (30) inches, the time of concentration approach shall be used in determining storm duration.
 - (c) If a five (5) minute storm duration results in a pipe size exceeding thirty (30) inches, within any run of pipe, the time of concentration approach may be used for sizing of pipes from that point on by adjusting the time of concentration.
- (4) Drainage Area: "A" is the drainage area, in acres, tributary to the point of design, and shall include areas tributary from outside sources as well as from within the subdivision or developed land area itself.

B. Collection System Standards:

- (1) Curb Inlets: Curb inlets shall be located at curb tangents on the uphill side of street intersection, and at intervals along the curb line to control the maximum amount of encroachment of runoff on the roadway pavement so that same does not exceed one half of the traveled lane width during the design storm event. Design and location of curb inlets shall be approved by the Township.
- (2) State Approvals: Drainage structures that are located on State highway rights-of-way shall be approved by the Pennsylvania Department of Transportation, and a copy of the Highway Occupancy Permit shall be submitted to the Township.
- (3) Pipe Materials: All storm piping shall be Class III reinforced concrete pipe, except when pipe class and strength is required to be increased in accordance with PennDOT Specifications. Piping shall be saw-cut at ends, as needed, and not hammered or broken. All pipe joints and lift holes must be mortared.
- (4) Minimum Pipe Size: Minimum pipe size shall be 18 inches.
- (5) Inlet and Manhole Construction: Inlet and manhole castings and concrete construction shall be equivalent to Pennsylvania Department of Transportation Design Standards.
- (6) Roof Drainage: Stormwater roof drains and pipes shall not discharge water over sidewalks or walkways.
- (7) Open end pipes must be fitted with concrete endwalls or wing walls in accordance with PennDOT Standards.
- (8) Open culvert endwalls or wing walls for pipes larger than eighteen (18) inches in diameter and longer than sixty (60) feet in length shall be fitted

ARTICLE V - GENERAL DESIGN STANDARDS

with durable protective grates. Design of protective grates is subject to approval by the Township.

- (9) Flow Velocity: Storm drains shall be designed to produce a minimum velocity of 3.0 feet per second when flowing full. The maximum permissible velocity shall be 15.0 feet per second. However, in no case shall the pipe slope be less than 0.5%.
- (10) Inlets and manholes shall be spaced at intervals not exceeding 300 feet, and shall be located wherever branches are connected or sizes are changed, and wherever there is a change in alignment or grade. For drainage lines of at least thirty-six (36) inches diameter, inlets and manholes may be spaced at intervals of four hundred (400) feet. Manholes shall be equipped with open grate lids.
- (11) Storm sewer bedding/backfill requirements shall conform to the construction details included in Appendix "A".
- (12) Inlets shall be located to intercept concentrated runoff prior to discharge over public/private rights-of-way, sidewalks, streets, and driveways.
- (13) The capacity of all inlets shall be based on a maximum surface flow to the inlet of 4.0 cfs, calculated based on the design storm event. The maximum flow to inlets located in low points (such as sag vertical curves) shall include the overland flow directed to the inlet as well as all bypass runoff from upstream inlets. The bypass flow from upstream inlets shall be calculated using inlet efficiency curves included in PennDOT Design Manual Part 2, latest edition. If the surface flow to in inlet exceeds 4.0 cfs, additional inlets shall be provided upstream of the inlet to intercept the excessive surface flow.
- (14) A minimum drop of two (2) inches shall be provided between the inlet and outlet pipe invert elevations within all inlets and manholes. When varying pipe sizes enter an inlet or manhole, the elevation of the crown of all pipes shall be matched.
- (15) Storm sewer pipes shall have a minimum of 12 inches of cover over the bell of the pipe, and in no case shall any part of the pipe project into the road subbase or curb. Where cover is restricted, equivalent pipe arches may be specified in lieu of circular pipe.
- (16) The capacity of all storm sewer pipes shall be calculated utilizing the Manning Equation for open channel flow as applied to closed conduit flow. The Manning's roughness coefficient shall be 0.13 for all concrete pipe. In cases where pressure flow may occur, the hydraulic grade line shall be calculated throughout the storm sewer system to verify that at least 1 foot of freeboard will be provided in all inlets and manholes for the design storm event.
- (17) Culverts shall be designed based on procedures contained in Hydraulic Design of Highway Culverts, HDS #5, U.S. Department of Transportation, Federal Highway Administration.

ARTICLE V - GENERAL DESIGN STANDARDS

- (18) Storm sewer structures (i.e. endwalls, inlets, end sections, etc.) may not be located on top of or within ten (10) feet of electric, water, sanitary sewer, and gas services and/or mains, unless approval is received from the Township, and from the Authority or Utility having jurisdiction over same.
 - (19) Storm sewer pipes must be oriented at right angles to electric, water, sanitary sewer, and gas utilities when crossing above or beneath same. Crossing angles of less than 90° will only be permitted at discretion of the Township Engineer. When skewed crossings are permitted, interior angles between alignment of the storm sewer pipe and utility may not be less than 45°. Vertical and horizontal design of storm sewer must be linear.
 - (20) Where a public storm sewer system is not located within a right-of-way, or dedicated public property, a twenty (20) feet wide easement shall be established to encompass the storm sewer system. For multiple pipes or utilities, the width of the easement shall be a minimum of thirty (30) feet.
- C. Open Swales and Gutters: Open swales shall be designed on the basis of Manning's Formula as indicated for collection systems with the following considerations:
- (1) Roughness Coefficient: The roughness coefficient shall be 0.040 for earth swales.
 - (2) Bank Slopes: Slopes for swale banks shall not be steeper than one (1) vertical for three (3) horizontal.
 - (3) Flow Velocity: Design velocity in grass or vegetated swales shall not exceed four (4) feet per second.
 - (4) To minimize sheet flow of stormwater across lots located on the lower side of roads or 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 drainage easements, unless otherwise approved by the Township.
 - (5) Gutters and swales adjacent to road paving shall be permitted to carry a maximum flow of five (5) cubic feet per second prior to discharge away from the street surface, unless it is proven to the satisfaction of the Township by engineering calculations that the road slopes or other factors would allow higher gutter or swale capacity.
 - (6) Flows larger than those permitted in gutters and roadside swales may be carried in swales outside the required road right-of-way in separate drainage easements, or may be carried in pipes or culverts inside or outside the required road right-of-way.
 - (7) Swales shall be stabilized with vegetation or other materials, approved by the Township, to prevent erosion.

ARTICLE V - GENERAL DESIGN STANDARDS

- (8) Swales shall be provided with underdrains as deemed necessary by the Township should overland seepage result in potential maintenance problems for same. Underdrains must discharge into a natural drainage channel or storm sewer system.

- D. Bridges and Culverts: Bridges and culverts shall be designed in accordance with Pennsylvania Department of Transportation Construction Standards. Separate design plans and specifications shall be required for each bridge and culvert which plans and specifications shall be subject to review and approval of the Township.

Section 517. - Excavation and Grading. All construction wherein excavation, placement of fill, and/or grading activities are performed shall conform with the following general requirements:

1. No excavation or fill shall be made with a face steeper than three (3) horizontal to one (1) vertical, except under one or both of the following conditions:
 - A. The material is sufficiently stable to sustain a steeper slope. A written statement to that effect from a Professional Engineer licensed in the Commonwealth of Pennsylvania and experienced in erosion control shall be submitted to the Township. The statement shall affirm that the site has been inspected and the deviation from the slope restriction shall not result in injury to persons or damage to property. A detail of the treatment of the slope (proposed grade, seeding, erosion protection, etc., shall be submitted with the application.
 - B. A concrete, masonry, or other approved retaining wall is designed by a Registered Professional Engineer licensed in the Commonwealth of Pennsylvania constructed to support the face of the excavation or fill.
2. If the vertical drop of an excavation or fill slope is greater than five (5) feet, then the maximum slope shall not exceed four (4) horizontal to one (1) vertical.
3. The top or bottom edges of slopes shall be a minimum of five (5) feet from property lines or right-of-way lines of streets in order to permit the normal rounding of the edge without encroachment on abutting property.
4. Adequate provision shall be made to prevent surface water from damaging the cut face of excavation and the sloping surfaces of fills.
5. No person, corporation, or other such entity shall block, impede the flow of, alter, construct any structure, or deposit any material or thing or perform any work that will affect the normal or flood flow in any stream or watercourse without having obtained prior approval from the Township and/or Department of Environmental Protection, whichever is applicable.
6. All lots, tracts, or parcels shall be graded to provide positive drainage away from buildings and dispose of it without ponding, except where ponding (detention/retention facilities, swales, etc.) is part of the stormwater management plan for the site.
7. Concentration of surface water run-off shall be permitted only in swales, watercourses, or stormwater management facilities.
8. In no case shall grading be done in such a manner as to divert water onto the property of another landowner unless part of a stormwater management plan.

ARTICLE V - GENERAL DESIGN STANDARDS

9. Earth disturbance/staging shall be in strict accordance with the approved grading and erosion/sedimentation control plan.
10. Areas of the site to remain undisturbed shall be protected from encroachment by construction equipment/vehicles to maintain the existing infiltration characteristics of the soil.
11. The minimum depth of topsoil to be replace shall be eight (8) inches, or the existing depth of topsoil encountered on the site, whichever is greater.
12. Topsoil shall not be removed from the development site. Topsoil shall be stripped, stockpiled, and redistributed on the site. Prior to plan approval, the applicant/designee shall provide the Township with calculations to determine the volume of topsoil anticipated to the stripped, stockpiled, and replaced on the site to verify that excess topsoil will not be generated as a result of construction activity.
13. During grading operations, necessary measures for dust control must be exercised.
14. No grading equipment shall be permitted to be loaded and/or unloaded on a paved public street, and no grading equipment shall be permitted to travel on or across a public street unless licensed for operation on public thoroughfares.
15. Grading equipment shall not be permitted to cross streams. Temporary crossings shall only be permitted where application is made to, and approval received from PADEP (where applicable), Bucks Conservation District, and the Township.

Section 518. - Erosion and Sedimentation Control.

1. An erosion and sedimentation control plan shall be submitted with all applications wherein excavation, placement of fill, and/or grading activities are proposed. The plan shall include a construction staging narrative indicating the sequence of earthmoving activities, and proposed erosion and sedimentation control procedures. Measures used to control erosion and reduce sedimentation during construction activities shall strictly conform to the standards and specifications of the Bucks Conservation District and sequence of earthmoving activities. No subdivision or land development wherein earth disturbance is proposed shall be approved unless there has been an erosion and sediment control plan approval by the Bucks Conservation District. At a minimum, the following measures shall be included where applicable:
 - A. Stripping of vegetation, regrading, or other activities shall be done in a way that will minimize erosion and resulting sedimentation.
 - B. Cut and fill operations shall be kept to a minimum. Wherever feasible, natural vegetation shall be retained, protected and supplemented.
 - C. All erosion and sedimentation control measures shall be installed per the approved plan prior to any earthmoving activities. Where a stormwater management basin is involved, the basin shall be constructed, functional, and stabilized prior to any additional site activity. An as-built plan of the facility prepared by a Registered Professional Land Surveyor or Engineer, licensed in the Commonwealth of Pennsylvania, shall be submitted to the Township for review to verify adequate stage/storage capacity prior to commencement of other site activity. Plan must include note stating the same.

ARTICLE V - GENERAL DESIGN STANDARDS

- D. Disturbed earthen areas and duration of exposure shall be kept to a practical minimum, but shall not exceed twenty (20) days. All disturbed soils and topsoil stockpile areas shall be stabilized as quickly as possible and, if necessary, seeded with temporary vegetation and mulched. If stockpile areas are located on sloping ground or near waters of the Commonwealth, same shall be enclosed with silt fencing.
 - E. Permanent vegetation shall be installed as soon as practical on all sites.
 - F. All runoff from project areas shall be collected and diverted to facilities for removal of sediment.
 - G. Runoff from a project area shall not be discharged into the waters of the Commonwealth without means to prevent sedimentation.
 - H. Sedimentation in the runoff water shall be trapped and filtered until the disturbed area is stabilized by the use of debris basins, sediment basins, silt traps, or similar measures.
 - I. Sediment barriers shall be properly installed with silt fencing trenched and haybales staked.
 - J. Tire cleaning areas constructed of AASHTO #1 stone and at least fifty (50) feet in length shall be provided at each point of access to the site and individual lots (once internal streets are constructed).
 - K. During construction activity, necessary measures for dust control must be exercised.
 - L. It shall be the responsibility of each person, corporation or other entity performing grading and/or building activities to install and maintain erosion and sedimentation controls until the site is stabilized. In the event any mud and/or debris is transported from the site onto a public roadway, the debris shall be immediately removed and the roadway swept and/or washed as deemed necessary by the Township at the owner's expense.
- 2. Design of energy dissipation for high volume and/or high velocity discharge from storm sewer pipes and channels shall be in accordance with Hydraulic Engineering Circular No. 14, "Hydraulic Design of Energy Dissipaters for Culverts and Channels" as published by Department of Transportation, FHA, when deemed necessary by the Township Engineer, and as approved by the Bucks Conservation District".
 - 3. Design of Reno mattress and gabions shall be in accordance with any of the following publications:
 - A. "Flexible Linings In Reno Mattress and Gabions for Canals and Canalized Water Courses" (as amended) published by Maccaferri.
 - B. "Flexible Gabion Structures In Earth Retaining Works" (as amended) published by Maccaferri.

ARTICLE V - GENERAL DESIGN STANDARDS

- C. Any other similar technical publication as prepared by a manufacturer or which has been prepared based on engineering study.
- 4. Improvements shall be made to existing drainage channels, roadside swales, and areas of shallow concentrated or sheet flow to eliminate erosion.
- 5. Open space areas designated for agricultural use shall include implementation of an erosion and sedimentation control plan approved by the Bucks Conservation District.

Section 519. - Water Supply, Distribution Systems and Fire Protection.

- 1. Water Supply. All lots and leased units in a subdivision or land development shall be provided with adequate water supply by means of one of the following methods:
 - A. Connection to a centralized or public water supply.
 - B. On-lot water supply.
- 2. Centralized Water Supply and Distribution Systems:
 - A. All residential subdivisions of fifteen (15) lots or more wherein the average lot size is less than two (2) acres; and all non-residential subdivisions shall be required to be provided with centralized water supply and distribution system.
 - B. All centralized water supply and distribution systems shall be designed to Township standards. Systems offered for dedication to the Township shall be accepted at the sole discretion of the Township.
 - C. All private centralized water supply systems shall have an operations and maintenance program approved by the Township. The system shall be operated by a certified operator licensed by the Pennsylvania Department of Environmental Protection.
 - D. Water quality requirements for a proposed centralized water system shall conform to applicable standards of the Pennsylvania Department of Environmental Protection and Bucks County Department of Health.
 - E. Water mains shall be constructed by the developer in such a manner as to make adequate water service available to each lot, building or dwelling unit within the subdivision. A minimum pressure of thirty-five (35) pounds per square inch shall be provided at each house or other building to be connected to the water supply main. The water supply must comply with regulations and standards of the Pennsylvania Department of Environmental Protection, and when applicable, the Delaware River Basin Commission.
 - F. The system shall also be designed with adequate capacity and appropriately spaced fire hydrants for fire fighting purposes as determined by the Township. Hydrant locations shall be reviewed by the Fire Marshall and Fire Company servicing the area, and approved by the Township.

ARTICLE V - GENERAL DESIGN STANDARDS

- G. Water Impact Study. A water impact study pursuant to Section 408 shall be required for all centralized water supply and distribution systems wherein a new water supply source is proposed to be developed.
3. Individual On-lot Wells.
- A. Where individual on-lot wells are proposed within a new subdivision or land development, wells shall be drilled, installed, and tested for adequate water supply to serve the proposed use prior to plan approval in accordance with Section 519 3.B. thru E. Where existing wells are proposed to be abandoned, well closure must be in accordance with PADEP Well Abandonment Procedures.
 - B. Well Certification.
 - (1) The well yield shall be determined by a pumping test of not less than 4 hours duration conducted at a rate of not less than 150% of the intended long-term withdrawal from the well. The 4 hour test shall be conducted at a constant pumping rate that should not deviate greater than +5% during the test.
 - (2) In the event the well does not yield a minimum of 6 gpm, the proposed water system shall be designed to be able to provide sufficient storage via oversize tanks and/or storage in the well bore for the length of time it would take for the expected peak demand to empty a standard pressure tank being supplied by a well pumping 6 gpm.
 - (3) All well drillers shall, upon completion of the well, provide the Township with a copy of the report submitted to the Commonwealth of Pennsylvania and sufficient data and documentation to verify compliance with Section 519.3.A.
 - (4) A minimum of one (1) water sample shall be collected for the following tests a. thru i. (except as noted). Samples must be collected 10 minutes prior to the end of the pump test. All test results must meet established maximum contaminant levels (MCL's) for Pennsylvania. Water samples must be tested by a State certified water laboratory.
 - a. Coliform - A minimum of three (3) water samples shall be collected during the pump test for analysis of coliform bacteria. The first sample shall be collected 15 minutes prior to the end of the test with the remaining two samples collected at 5 minute intervals.
 - b. PH
 - c. Iron
 - d. Nitrates
 - e. Total dissolved solids
 - f. TCE, PCE, and 1-1-1 trichlorethane

ARTICLE V - GENERAL DESIGN STANDARDS

- g. Detergents
 - h. Benzene, toluene, xylene
 - i. Total petroleum hydrocarbons
- C. Well Construction. Each well shall be provided with a water tight casing. The minimum length of the casing to be 40' or 10' into bedrock, whichever is greater. The material of the casing shall be steel with a weight of 18.97 lbs. per linear foot. All joints between sections of casing shall be made by continuous welding. Where a pump section or discharge pipes enter or leave a well through the side of the casing, the circle of contact shall be water tight. All casing shall extend at least eighteen (18) inches above final grade. The annular space between the earth and outside of the casing shall be filled with cement grout or Bentonite to a distance of at least six (6) feet below the ground surface. Unconsolidated or carbonate water bearing formations will require special consideration.
- D. Permit Required. Prior to commencement of well drilling operation, owner shall be required to make application to, and receive approval from, Haycock Township. Issuance of a permit to drill well shall not be made until payment of a permit fee in the amount established by Resolution of the Board of Supervisors.

Section 520. - Sanitary Sewage Disposal.

1. The developer shall install the most effective type of sanitary disposal consistent with the Township's Official Plan for sewage facilities prepared in accordance with the Pennsylvania Sewage Facilities Act (Act 537), the Township Sewage Facilities Plan, and Chapter 71 of the Pennsylvania Department of Environmental Protection Regulations, for the subdivision or development.
2. When centralized/public sewer is proposed, the applicant shall insure that sufficient capacity is available to serve all of the proposed lots or units of occupancy within the site.
3. In subdivision/land developments where connection to centralized/public sewage system is not proposed, on-lot sewage disposal systems shall be installed by the property owner in accordance with the Pennsylvania Sewage Facilities Act, Chapter 73 of DEP Regulations and the requirements of applicable Township regulations.
4. Sanitary sewer systems shall be located and/or designed to prevent flood damage and to eliminate infiltration of flood waters into the system, or discharges from the system into flood waters.
5. On-lot sewage disposal systems shall be located and/or designed to avoid impairment to them, or contamination from them, during flooding.
6. The developer shall be responsible for the completion of the appropriate Planning Module for land development components as required by the Department of Environmental Protection, including Alternatives Analysis and Feasibility Studies. (Refer Section 407 of this Ordinance)

ARTICLE V - GENERAL DESIGN STANDARDS

7. All final plans shall contain a notice regarding sewage disposal systems (refer sample in Appendix "B").
 - A. **ON-LOT SEWAGE DISPOSAL** - All subdivision and land development plans shall contain a plan note specifying that approval of the plan does not guarantee permit issuance for sewage disposal.
 - B. **PUBLIC OR CENTRALIZED SEWERS** - All subdivision and land development plans shall contain a plan note specifying that connection to public sewer is required.
8. Design standards and specifications for public/centralized sanitary sewer systems shall conform to requirements of the Township.

Section 521. - Utilities.

1. Easements for utilities shall have a minimum width of twenty (20) feet.
2. To the fullest extent possible, easements for public utilities shall be centered on or adjacent to rear or side lot lines.
3. Telephone, electric, TV, cable, and such other utilities shall be installed underground and shall be provided within right-of-way easements to be dedicated for such utilities, and in accordance with plans approved by the Board of Supervisors and the applicable utility company. Underground installation of the utility distribution and service lines shall be completed prior to street paving, curb and sidewalk installation.

Section 522. - Monuments and Markers.

1. Any existing monument, iron pipe, pin, or marker determined and identified to be existing found property corners are to remain undisturbed.
2. Permanent stone or concrete monuments shall be accurately placed by a Registered Surveyor at the intersection of all lines forming angles and at changes in directions of lines in the boundary (perimeter) of the property subdivided; and at all corners of lots and open space areas within the subdivision. Monuments shall be pre-manufactured and not field constructed.
 - A. Monuments shall be a minimum twenty four (24) inches in length.
 - B. Monuments less than twenty four (24) inches in length may only be utilized when obstructions are encountered and use is approved by the Township.
3. All streets shall be monumented on the ultimate right-of-way lines, at the following locations:
 - A. At least two (2) monuments at each intersection.
 - B. At changes in direction of street lines, excluding curb arcs at intersection.
 - C. At each end of each curved street line, excluding curb arcs at intersection.

ARTICLE V - GENERAL DESIGN STANDARDS

- D. At intermediate points, wherever topographical or conditions make it impossible to sight between two otherwise required monuments.
- E. At such other places along the lines of streets as may be determined by the Township Engineer to be necessary so that any street may be readily defined in the future.
- 4. Utility and stormwater management easements shall be monumented on one (1) side at the beginning and end of the easement and at all changes in direction.
- 5. All monuments shall be placed so that the scored point shall coincide exactly with the point of intersection of the line being monumented.
- 6. Monuments shall be set with their top level at the finished grade of the surrounding ground, except as follows:
 - A. Monuments which are placed within the lines of existing or proposed sidewalks shall be so located that their tops will not be affected by lateral movement of the sidewalks.
 - B. Where sidewalks are existing, a stone point - a four (4) inch square chisel cut in the sidewalk with a drill hole in the center - may be substituted for a monument. Where bituminous paving is existing, a railroad spike may be substituted for a monument or iron pin where required.
- 7. Permanent reference marker pins of 1/2 inch OD solid iron rod, at least thirty (30) inches long shall be set at the following points:
 - A. At all points where easements intersect property lines.
 - B. At all other changes in direction of easement boundaries not located within future lawns.
- 8. All outboundary (site perimeter) monuments shall be installed and certified as to their accuracy and conformance to plan information by the responsible surveyor prior to plan recordation.
- 9. All property pins and monuments shall be installed and certified as to their accuracy and conformance to plan information by the responsible surveyor prior to issuance of a building permit for the subject lot. In the event it is determined by the Township that installation prior to construction start is not practical due to future grading operations, temporary wood stake corners shall be set by a licensed surveyor to permit stakeout inspection of proposed construction activities relative to required setbacks. Permanent property pins and monuments shall then be required to be installed prior to issuance of a Zoning Permit for the parcel.
- 9. All monuments along right-of-way being dedicated to the Township, and pins delineating easements being granted to the Township, shall be installed and certified as to their accuracy and conformance to plan information by the responsible surveyor. Installation and certification shall be provided prior to execution and acceptance of public improvements.

ARTICLE V - GENERAL DESIGN STANDARDS

10. Any pre-existing or new property markers/monuments of a property under construction, or properties surrounding the subject property under construction, which are disturbed by construction activity are required to be reset and re-certified by a licensed surveyor. Property owner and/or developer of the property under construction resulting in the disturbance shall be held responsible for proper replacement and re-certification of disturbed property markers/monuments.

Section 523. - Parking Facilities.

1. Off-street parking facilities shall be provided in compliance with the parking requirements of the Zoning Ordinance and the regulations contained herein.
2. Angled or perpendicular parking shall not be permitted along public streets.
3. General Parking Lot Standards.
 - A. Parking shall not be permitted along driveways which serve as the entrance(s) or exit(s) to parking areas.
 - B. Parking areas shall be set back from boundary lines and ultimate right-of-way lines in compliance with the requirements of the Township Zoning Ordinance. In any case not regulated by zoning, parking areas shall not be located closer than 15 feet from any tract boundary line or ultimate right-of-way line. These setback areas shall be landscaped in accordance with the requirements of Section 515 of this Ordinance.
 - C. Where the edge of an existing parking area is located close to a street, driveway, or other parking area and the property is proposed for subdivision and/or land development, a minimum separation of ten feet shall be provided between these features where feasible. This spacing shall consist of a raised landscape area, preferably curbed, with planting in conformance with Section 515, herein.
 - D. Dead-ended parking areas shall be discouraged when the required parking capacity can be accommodated in a layout that permits more convenient vehicular movements. However, extraneous through-traffic flow should be avoided.
 - (1) Up to 30 parking spaces may also be located in a dead-ended parking area if there is no more desirable alternative feasible, and sufficient back-up areas are provided for the end stalls.
 - (2) More than 30 parking spaces may be located in a dead-ended parking area only if a turnaround area is provided at the closed end, suitable for passenger car turning.
 - E. Handicapped parking stalls shall be installed in all parking lots as close and convenient to building entrances as is reasonable. The specific number and location of handicapped stalls shall be determined by the Board of Supervisors in accordance with current standards and with the advice of the Township Planning Commission and Engineer.
 - F. All signage for parking facilities shall be as specified within Section 505.12.

ARTICLE V - GENERAL DESIGN STANDARDS

- G. All parking lots shall be provided with adequate lighting to assure safe maneuverability of vehicles, and to promote safety for pedestrians. Lighting shall be so arranged that no glare affects abutting residences or streets.
 - H. All non-residential parking facilities and all multi-family residential parking facilities and access driveways shall be paved. Minimum requirements for residential and institutional parking facilities will be 8 inches of 3A modified stone, 1-1/2 inches of ID-2 binder, and 1 inch of ID-2 wearing course. Commercial and industrial parking facility design requirements shall be subject to approval by the Township Engineer based upon expected traffic loads. Driveway entrances will be paved in accordance with same requirements.
 - I. Outdoor garbage collection facilities must be screened from view by landscaping and/or fencing.
 - J. Parking facilities must be screened in such a manner that vehicle headlights are not intrusive to adjacent residential properties. Grading to recess the parking facility, raised berms, landscaping and fencing are acceptable methods to screen the parking facility.
4. Residential Parking Lots.
- A. Parallel rows of parking spaces, which are not separated by a driveway, shall be separated by a raised and/or curbed planting strip, a minimum of ten feet wide, landscaped in accordance with Section 515 herein.
 - B. A single row of parking spaces located parallel to and between two driveways, shall be separated from one of the driveways by a raised and/or curbed planting strip, a minimum of five feet wide, landscaped in accordance with Section 515, herein.
 - C. Parking lots shall be divided into sections of not more than 20 cars each, with the sections separated by raised and/or curbed planting strips, a minimum of ten feet wide, landscaped in accordance with Section 515, herein.
 - D. The entire parking lot perimeter shall be landscaped in compliance with Section 515, herein.
5. Non-Residential Parking Lots.
- A. Parking lots with a capacity of from 15 to 100 cars shall require a raised and/or curbed planting strip, a minimum of ten feet wide, landscaped in accordance with Section 515, herein, around the entire perimeter except where the buildings, driveways, and walkways are located.
 - B. Parking lots for more than 100 cars shall be divided into sections by raised and/or curbed planting strips, a minimum of ten feet wide, landscaped in accordance with Section 515, herein.
 - (1) These planting strips shall be located parallel to the rows of parking, to serve the following purposes:

ARTICLE V - GENERAL DESIGN STANDARDS

- a. To separate main access (entrance-exit) driveways from rows of parking spaces.
 - b. To separate other major driveways from rows of parking spaces (service drives, general internal circulation).
 - c. To separate large parking areas into smaller units at intervals of not more than four rows of parking stalls with each unit capacity not greater than 100 cars.
 - d. Refer Appendix "C" for an illustration of appropriate locations and use of these planting strips.
- (2) The ends of rows of parking shall be marked as islands by means of painted lines or the use of different paving materials such as paving blocks, bricks, or round stones.
 - a. Each row of spaces shall contain a marked end island equal in size to one parking space.
 - b. Parking shall be prohibited on these islands.
 - c. The first parking space abutting the end of each island shall be reserved and marked for handicapped parking, at the end of the row closest to the building unless more convenient locations are possible and reasonable. Ramps shall be provided at convenient intervals for access between parking surface and sidewalks.
- (3) For parking areas with an ultimate capacity greater than 500 cars, the requirements of 523.5.B.(1) may be modified by the Supervisors to provide separation into units at intervals of six rows of parking stalls, with each unit capacity no greater than 150 cars.
- (4) The applicant may request the Township to permit an alternative design which achieves the purposes of these parking area requirements as well or better than the requirements herein. The final decision to permit an alternative design shall be made by the Board of Supervisors.
- C. The primary plant materials used shall be shade or canopy trees, chosen from the list of plant materials in Section 515. These trees shall be planted in the planting strips at a spacing equal to the minimum spacing recommended for the type of tree.
- D. Additional planting is encouraged and may include a variety of ornamental trees, shrubs, and ground covers, chosen from the list of plant materials in Section 515, provided that:
 - (1) At the ends of planting strips at driveway intersections, drivers' visibility shall be maintained by limiting planting for the end 35 feet.

ARTICLE V - GENERAL DESIGN STANDARDS

- (2) At the ends of planting strips between rows of parking spaces, visibility shall be maintained by limiting planting for the end 20 feet.
 - (3) Limiting planting shall mean:
 - a. Not more than one shade or canopy tree within the area.
 - b. No shrubs or ground cover plants exceeding two feet in height.
 - c. No evergreen trees.
 - E. The specific purposes to be served by these requirements are:
 - (1) To add visual character and improve the appearance of large parking areas by reducing their massiveness into smaller units.
 - (2) To provide shade for parked cars.
 - (3) To reduce random vehicular flow across parking areas.
 - (4) To permit a high level of visibility for these uses (stores, offices) for which visibility is an important factor.
 - (5) To facilitate snow removal and storm drainage, and to conserve energy in construction and resurfacing operations, by permitting relatively large units of paving surface, not obstructed by numerous, small, barrier island areas.
 - F. Non-residential parking facilities must be located or designed in such a manner that they are visibly secluded from eye level to adjacent residential properties.
6. Driveways/Access Aisles. The following requirements apply to all driveways/access aisles within all sites proposed for land development, as well as to other sites proposed for development which will provide parking capacity for 50 or more cars:
- A. A smooth transition shall be provided between the driveway section required for access to a public street and the driveway(s) required for internal site circulation.
 - B. The width of entrance and exit drives shall be:
 - (1) A minimum of twelve (12) feet for one-way use only;
 - (2) A minimum of twenty four (24) feet for two-way use;
 - (3) A maximum of thirty five (35) feet at the street line and fifty four (54) feet at the curb line.
 - C. Storefront driveways in shopping centers shall have a minimum paved width of 35 feet, to allow one lane in each direction and a drop-off/pick-up lane along the sidewalks.

ARTICLE V - GENERAL DESIGN STANDARDS

- D. Driveways along other non-residential buildings shall have a minimum paved width of 24 feet, except where a drop-off/pick-up lane is proposed, the width shall be 35 feet.

Wherever feasible, internal circulation driveways shall extend from access drives in locations which permit and encourage entering traffic to turn and enter the parking aisles without first traveling along a building-front driveway. This feature is intended to reduce the volume of vehicular traffic along building front driveway to make it safer for pedestrian traffic. Refer Appendix "C" for illustration of this concept.

7. Parking Space and Driveway Dimensions

- A. Parking space and parking aisle driveway dimensions shall be in compliance with the following standards, except when reduced in compliance with Section 423.2, herein;

<u>Angle of Parking</u>	<u>Parking Space</u>		<u>Aisle Width</u>	
	<u>Depth</u>	<u>Width</u>	<u>One-Way</u>	<u>Two-Way</u>
90 ⁰	19'	9.5'	20'	24'
60 ⁰	21'	10'	18'	20'
45 ⁰	19'	10'	15'	18'

- B. Where appropriate, parallel parking may be provided utilizing a stall width of 8 feet and a minimum length of 22 feet.
- C. Where vehicles may overhang, a planting strip or other landscaped area provided in compliance with this Ordinance, the depth of the row of parking spaces may be reduced up to three feet, provided the planting strip or other landscaped area is increased an equal amount. Refer to Figure 3 for this concept.
- D. A minimum of twenty (20) feet of open space shall be provided between the outside wall of any multiple family dwelling or non-residential building and any parking space to provide access for fire fighting equipment, unless waived by the Township.
- E. All paved parking stalls must be delineated with 4 inch wide line striping along their entire length. When curb is not installed along perimeter of parking areas and paving is not required, parking stall locations must be delineated with concrete tire stops, bollards, or by other means acceptable to the Township.

Section 524. - Alleys.

1. Alleys may be permitted upon approval of the Board of Supervisors in Use B5, Single-family Detached Cluster, Use B6, Performance Standard Subdivision, and Use B9, Urban Dwelling developments as a means of providing direct off-street parking and access for narrow lots.
2. Alleys are intended to provide access to the rear of residential lots for services and on-lot parking.

ARTICLE V - GENERAL DESIGN STANDARDS

3. Frontage on an alley shall not be construed to satisfy the requirements of the Zoning Ordinance for frontage on a street.
4. No parking shall be provided for, or permitted within, the cartway of the alley.
5. Street systems which contain alleys shall be designed to discourage through traffic on the alleys.
6. Any portion of an alley located between two (2) points of ingress and egress shall provide rear access to no more than fifty (50) dwelling units.
7. Alleys may only intersect local streets.
8. Alley length shall not exceed a distance of six hundred sixty (660) feet as measured between two (2) points of ingress and egress.
9. Alleys shall be centered on a rear or side lot line and shall be designed with a twenty (20) feet wide easement and a paved cartway width of twelve (12) feet. Except where specifically approved by the Board of Supervisors, all alleys shall be designed for one way traffic. Where two way traffic is permitted by the Board of Supervisors, a cartway width of twenty (20) feet shall be provided.
10. Parking shall be limited to a distance not to exceed thirty (30) feet from the alley centerline.
11. Alley construction must be in accordance with street construction standards of Section 506.6.
12. Alleys not accepted for dedication to the Township shall provide permanent easement rights of access to all properties served by the alley and adequate funds or financial guarantees to insure snow plowing, maintenance, and repair by property owners served by the alley.

Section 525. - Recreational Facilities.

1. Haycock Township requires the public dedication of land suitable for the use intended; and upon agreement with the applicant or developer, the construction of recreational facilities, payment of fees in lieu thereof, private reservation of land, or a combination, for park or recreation purposes as a condition precedent to final plan approval; or as the governing body selects and prefers for developments of 15 lots or more.
2. General Requirements.
 - A. For all residential subdivisions of 25 or more dwelling units, recreational facilities shall be provided by the developer.
 - B. Recreation facilities shall be constructed on recreation land within detached clustered subdivisions and performance standard developments.
 - C. Recreation facilities shall be readily accessible to all development residents; or in the case of recreation facilities dedicated to the Township, shall be easily and safely accessible to the general public. At least one (1) side of the recreation

ARTICLE V - GENERAL DESIGN STANDARDS

area shall abut a street for a minimum distance of 50 feet for access of emergency and maintenance vehicles, and parking facilities where deemed necessary by the Township.

- D. The configuration of recreation areas must be able to accommodate recreation activities proposed by the development plans. Required minimum area shall not include narrow or irregular pieces of land which are remnants from plotting and/or street and parking areas.
- E. Recreation areas shall not be traversed by utility easements unless said utilities are placed underground and no part of them or their supportive equipment protrudes above ground level.
- F. No outdoor active recreation area shall be located nearer to any lot line or street line than one hundred (100) feet, except for bikepaths and walking, jogging, or fitness trails, which shall be located no less than twenty-five (25) feet from a lot or street line. Adequate buffering/fencing shall be constructed to separate recreational facilities from private properties.
- G. The developer shall be required to improve the recreation land so that it is usable for the intended activity, including necessary facilities and equipment. Proposed improvements, including facilities and equipment, shall be acceptable to Haycock Township.
- H. A public water fountain shall be located within active recreation areas.
- I. Haycock Township may, but shall not be required to, accept any portion(s) of the recreational land/facilities provided. Recreational facilities not dedicated to, or accepted by Haycock Township, shall be owned and maintained by a Homeowner's Association or other method acceptable to the Township.
- J. Proposed recreation areas and facilities may be reviewed by the Haycock Township Park and Recreation Board pursuant to Section 306 of this Ordinance as deemed necessary by Board of Supervisors.

3. Minimum Recreation Facility Requirements. The following table lists facilities required by this section:

<u>Total No. of Lots/Dwelling Units</u>	<u>No. of Playfields</u>		<u>No. of Tot Lots</u> *		<u>No. of Basketball or Tennis Courts</u>
25 to 49	1	and	1	and	0
50 to 99	2	and	2	and	0
100 to 149	3	and	3	and	1
150 to 199	4	and	4	and	2
200 to 249	5	and	5	and	2
250 to 299	6	and	6	and	3
300 to 349	7	and	7	and	3
350 to 400	8	and	8	and	4

* Where more than one (1) tot lot is required, tot lots may be combined to provide a larger structure with additional play events, when approved by the Township.

ARTICLE V - GENERAL DESIGN STANDARDS

In addition, for over 300 lots/dwelling units, the applicant shall install one swimming pool.

4. Tot Lot Requirements.

- A. Use of tot lots shall be limited to daylight hours only; no lighting shall be installed.
- B. Low maintenance play equipment and structures shall be included and confined by a gated fence, a minimum of three (3') feet high. The gate shall be self-closing and self-latching.
- C. Tot lot shall include a coordinated commercial "play structure" with a minimum of ten (10) play events designed to serve a minimum of twenty (20) children aged 12 and under. All equipment shall be installed over a resilient safety surface and shall conform to safety guidelines established by the International Play Equipment Manufacturers Association (IPEMA).
- D. Sitting areas, including benches, shall be provided for the convenience of persons supervising the children.
- E. Shade trees shall be provided for sitting and play areas; gazebo or picnic-type shelters may be used in addition to shade trees.
- F. Where a tot lot is placed adjacent to a playfield, practical measures, such as fencing and orientation of facilities, shall be used to reduce hazards, especially from balls, frisbees, or other flying objects.
- G. Minimum dimensional standards shall be as follows:
 - (1) Minimum area: 2,500 square feet within the fenced area.
 - (2) Minimum horizontal dimension: 35 feet.
 - (3) Minimum setbacks:
 - a. From lot lines: 10 feet.
 - b. From the ultimate right-of-way of local streets: 25 feet.
 - c. From the ultimate right-of-way of collector/arterial streets: 50 feet.
 - (4) A landscaped buffer shall be provided between the proposed tot lot and any proposed or existing dwelling located within 100 feet of the tot lot.
- H. Locations: At convenient, centralized intervals, requiring not longer than a 1,000 feet walk from any dwelling unit.

5. Playfield Requirements.

- A. Playfields shall be used only during daylight hours; no lighting shall be installed unless specifically approved by the Township.

ARTICLE V - GENERAL DESIGN STANDARDS

- B. Playfields are intended for informal, neighborhood use. Playfields shall not be used for formalized programs such as Little League Baseball, Soccer, or Midget Football unless located, designed, and intended for use by the entire community.
 - C. Playfields shall consist of a lawn area, unobstructed by trees, shrubs, benches, and other playground equipment. Trees and shrubs shall be installed along the perimeter of a playfield to define its limits, enhance its appearance, and filter noise generated by activities.
 - D. Playfields shall be gently sloped, not less than 1 percent or more than 2 percent grade, and shall be well drained so that they are suitable for use in good weather.
 - E. Playfields must be fenced unless waived by the Township.
 - F. Sitting areas must be provided along the perimeter unless waived by the Township.
 - G. Minimum dimensional standards shall be as follows:
 - (1) Minimum area: 25,000 square feet.
 - (2) Minimal horizontal dimension: 150 feet.
 - (3) Minimum setbacks to the edge of a playfield.
 - a. From any dwelling unit: 100 feet.
 - b. From any property line: 50 feet.
 - c. From the ultimate right-of-way of local streets: 50 feet.
 - d. From the ultimate right-of-way of collector/arterial streets: 100 feet.
6. Basketball and Tennis Court Requirements.
- A. Courts shall be constructed in accordance with specifications approved by the Township Engineer, and shall be oriented in a north-south direction.
 - B. Minimum dimensional standards shall be as follows:
 - (1) Court areas shall be of standard size. (Basketball courts shall be at least 50 feet by 84 feet with a minimum of 5 feet clearance on all sides; tennis courts shall be at least 36 feet by 78 feet with 12 feet clearance on both sides and 21 feet clearance on both ends.)
 - (2) Minimum setbacks to the edge of paving:
 - a. From any dwelling unit: 125 feet.
 - b. From any property line: 50 feet.

ARTICLE V - GENERAL DESIGN STANDARDS

- c. From the ultimate right-of-way of local streets: 50 feet.
 - d. From the ultimate right-of-way of collector/arterial streets: 100 feet.
 - C. Tennis courts shall be fenced around the entire perimeter with minimum ten (10') feet high fencing.
 - D. Basketball courts shall be fenced with a minimum six (6') feet high fencing when the edge of pavement is less than 30 feet from an area with a downward slope exceeding 8%.
 - E. Lighting may be provided for nighttime use of courts, so arranged that no glare affects abutting residences or streets, on a demand-activated basis, until no later than 10:00 P.M.
 - F. Locations: At convenient, centralized intervals.
- 7. Swimming Pool Requirements.
 - A. Minimum pool surface area shall be 3,000 square feet (i.e. 40 feet by 75 feet).
 - B. A toddler's pool shall be provided.
 - C. The pool shall be surrounded by a paved, non-slip surface, a minimum of eight (8') feet wide.
 - D. Lawn area of not less than 4,000 square feet shall be provided around the pool, at a slope not exceeding 6% percent.
 - E. A permanent building shall be provided for bathrooms and lifeguard/supervisor room.
 - F. The entire facility shall be surrounded by a minimum six (6') feet high fence with a lockable gate.
 - G. Minimum setback to edge of paving, pool building, and perimeter fencing shall be as follows:
 - (1) From any dwelling unit: 200 feet.
 - (2) From any property line: 100 feet.
 - (3) From any street right-of-way: 100 feet.
 - H. Lighting may be provided for nighttime use, so arranged that no glare affects abutting residences or streets, until no later than 10:00 PM.
- 8. Consolidation of Facilities. Applicants are required to provide the numbers and types of facilities as required in this section, spaced for convenient access by the residents. However, applicants are encouraged to consolidate several facilities in fewer locations to better serve the residents' needs in the following possible ways:

ARTICLE V - GENERAL DESIGN STANDARDS

- A. By locating all required tennis or basketball courts in one area, thereby restricting noise and light to one area, and precluding the need to search the neighborhood for a free court.
- B. By combining two 25,000 square feet playfields into one 50,000 square feet area to permit larger fields for softball, football, soccer, or other fields sports, while maintaining the neighborhood use character.
- C. By creating one or more park-like facilities rather than simply several sets of scattered facilities.
- D. By locating some tot lots in combined areas while retaining others on individual sites to guarantee short walking distances to tot lots.

Section 526. - Lighting.

- 1. Lighting shall be provided along public streets, within parking facilities and recreational facilities as required by the Township Board of Supervisors. Glare shall be controlled in accordance with Zoning Ordinance nuisance standards.
- 2. Lighting plan shall be prepared in accordance with Section 403.9.
- 3. Suggested values for Average Horizontal Footcandles (HFC) of roadway illumination for midblock segments are:
 - A. Commercial Areas (high pedestrian activity) - 2.0 HFC (22 lux).
 - B. Intermediate Areas (moderate pedestrian traffic) - 1.4 HFC (15 lux).
 - C. Residential Areas (low pedestrian activity) - 1.0 HFC (11 lux).
- 4. Typically 5800 lumen lights spaced at 250 feet will establish an average illumination of 1.5 HFC pending mounting height and obstructions such as street trees.
- 5. Illumination within intersection areas (considered all pavement within the inner crosswalk lines) should be equal to the sum of the recommended levels of the two intersecting streets as listed in the following table:

<u>Predominant Land Use</u>	<u>Arterial Route</u>	<u>Collector Street</u>	<u>Local Street</u>
Single Family Area	2.0 HFC	1.6 HFC	1.4 HFC
Multiple Family Area	2.8 HFC	2.3 HFC	2.0 HFC

- 6. Intensity of illumination for parking facilities and recreational facilities shall be determined by Haycock Township on a case by case basis pending actual needs to accommodate the facility.
- 7. Lighting shall be installed at developer's expense. The developer shall also be responsible for all costs involved in lighting public facilities/streets until such time that

ARTICLE V - GENERAL DESIGN STANDARDS

public facilities/streets are accepted or condemned as public facilities/streets by the Township.

8. Within major subdivisions, individual driveway lampposts shall be installed at the ultimate right-of-way line on all single-family dwelling lots.

Section 527. - Easements.

1. Easements for storm sewer, sanitary sewer, utilities and drainage shall be a minimum 20 feet wide.
2. Easements for site access and driveways shall be a minimum 25 feet wide.
3. To the fullest extent possible, easements shall be adjacent to or centered on rear and side lot lines.
4. Nothing shall be permitted to be constructed, placed, planted, set or put within the area of any easement that will interfere with the intended use of the easement, the facilities for which the easement was established, or maintenance of the easement and/or facilities.
5. Driveways shall be centered within access easements unless topographic conditions do not permit same.
6. No easement or right-of-way for any purpose whatsoever shall be recited or described in any deed unless the same has been shown on an approved subdivision or land development plan.

ARTICLE VI
REQUIRED IMPROVEMENTS AND GENERAL STANDARDS

Section 601. - Intent. The required land improvements shall be designed, furnished, and installed by the developer in accordance with the provisions of these regulations, the "Improvements Construction Standards" of the Township as adopted by this Ordinance as Appendix "A", which shall be considered a part hereof, and other codes of the Township. They shall be installed before the Final Plan is approved, or in lieu thereof, financial security shall be posted and agreements to install improvements shall be approved concurrent with the approval of Final Plans.

The developer shall dedicate all land required for rights-of-way and easements within the Subdivision and Land Development, and furnish and install all improvements to provide a complete and coordinated system of streets and utilities for the neighborhood, in accordance with the Township Comprehensive Plan, the Township Official Map, the Township Zoning Ordinance, this Ordinance and neighboring approved developments.

Section 602. - Required Improvements. All improvements shall be dedicated without cost to the Township as required by this ordinance and/or as stipulated in the Improvements Agreement and in a manner approved by the Township consistent with sound construction methods. This includes:

1. Grading:
 - A. Grading of roadways and street rights-of-way and grading of slopes adjacent to roadways and street rights-of-way.
 - B. Grading of all drainage swales on public or private property and grading of individual lots, to establish positive drainage away from buildings and eliminate low spots.
 - C. Implementation and maintenance of soil erosion control and sedimentation control facilities.
 - D. Replacement of topsoil and vegetative restoration in disturbed areas not stabilized with building, paving or other non-vegetative ground cover.
 - E. Removal of temporary soil erosion and sedimentation control facilities when they are no longer required.
2. Street or road subbase, base and paving.
3. Curbs and gutters.
4. Sidewalks, crosswalks, pathways and bike paths.
5. Underground facilities for electric, telephone and television cable lines.
6. Storm sewers and drainage facilities.
7. Public sanitary sewer system.
8. Public or centralized water supply and distribution system including but not limited to wells, pumping equipment, water laterals, submains, storage tanks and equipment systems (if required).

ARTICLE VI –REQUIRED IMPROVEMENTS AND GENERAL STANDARDS

9. Street name signs at all street intersections and official traffic control signs and markings.
10. Permanent monuments and lot pins.
11. Fire hydrants.
12. Street trees and landscaping.
13. Open space improvements and/or recreational facilities, buffer or screen plantings.
14. Street lights.

Section 603. - Construction of Facilities.

1. The developer shall construct and install, at no expense to the Township, the improvements specified in this Ordinance. Construction and installation of such facilities and utilities shall be subject to inspection by appropriate Township, public agency or public utility officials during the progress of the work and shall be in conformance with the Improvements Construction Standards contained in Appendix "A".
2. During the construction and installation of all facilities and utilities required by this Ordinance, the developer shall insure that access to the job site from a public road shall be kept clear and free of all obstructions and otherwise in a passable condition to all areas of the job site for emergency, fire, and police vehicles. In the event of a dispute, passable access for the foregoing purposes shall be determined by the Township Engineer.
3. No utility trench including but not limited to trenches for sanitary sewer, storm sewer, waterlines, electric service, or gas shall be left open at the end of the work day unless the trench is covered with steel plate or enclosed by an eight (8) feet high chain link fence.

Section 604. - General Standards. The following principles of subdivision and land development, general requirements and the minimum standards of design, shall be observed by the developer in all instances.

1. It is the developer's responsibility to comply with all applicable Plans, Ordinances, Statutes, Regulations, etc., of Haycock Township, Bucks County, Commonwealth of Pennsylvania, and United States of America.
2. Proposed subdivisions and land development shall be coordinated with existing nearby development so that the area as a whole may develop harmoniously. Provisions shall be made to assure that the street patterns included in a proposed subdivision shall complement existing or proposed streets shown on the current official Township Street and Road Map, and on nearby approved developments.
3. Standards incorporated in this Ordinance. In those cases where precise design standards are not specified in this Ordinance, or other Ordinance adopted by Haycock Township, design standards of the following organizations shall govern where applicable.
 - A. Roads and Streets - Pennsylvania Department of Transportation, American Association of State Highway and Transportation Officials, Institute of Transportation Engineers, Transportation Research Board, U.S. Department of Transportation, Federal Highway Administration, and Haycock Township.

ARTICLE VI –REQUIRED IMPROVEMENTS AND GENERAL STANDARDS

- B. Sanitary Sewer - Pennsylvania Department of Environmental Protection, Bucks County Department of Health, and servicing Municipal Authority.
- C. Water - Pennsylvania Department of Environmental Protection, Bucks County Department of Health, Delaware River Basin Commission, and servicing Municipal Authority.
- D. Soil and Erosion Control - Bucks County Soil Conservation District and Department of Environmental Protection, U.S. Department of Agriculture Soil Conservation Service, and Haycock Township
- E. General Engineering - American Society of Civil Engineers, Army Corps of Engineers, Federal Emergency Management Association, and Haycock Township Engineer.

Section 605. - Completion of Improvements. No plat shall be finally approved unless the streets shown on such plat have been improved as required by this Ordinance, and any walkways, curbs, gutters, street lights, fire hydrants, trees, water mains, sanitary sewers, storm sewers and other improvements as may be required by this Ordinance have been installed in accordance with this Ordinance.

Section 606. - Guaranties to Complete Improvements and Financial Security.

1. In lieu of the completion of any improvements required as a condition for the final approval of a plat, including improvements or fees required pursuant to Section 509 (i) of the Municipalities Planning Code, this Ordinance shall provide for the deposit with the municipality of financial security in an amount sufficient to cover the costs of such improvements or common amenities including, but not limited to, roads, stormwater detention and/or retention basins and other related drainage facilities, recreational facilities, open space improvements, or buffer or screen plantings which may be required.
2. When requested by the developer, the governing body shall furnish the developer with a signed copy of a resolution or letter of contingent approval indicating approval of the final plat contingent upon the developer obtaining satisfactory financial security, which must be presented to the Township within ninety (90) days. The resolution or letter of contingent approval shall expire and be deemed to be revoked if the Financial Security Agreement is not executed within ninety (90) days unless a written extension is granted by the governing body.
3. Without limitation as to the types of financial security which the Township may approve, which approval shall not be unreasonably withheld, federal or Commonwealth chartered lending institution irrevocable letters of credit and restrictive or escrow accounts in such lending institutions shall be deemed acceptable financial security for the purposes of this section. Such financial security shall be posted with a bonding company or federal or Commonwealth chartered lending institution chosen by the party posting the financial security, provided that said bonding company or lending institution is authorized to conduct such business within the Commonwealth. Such security shall provide for, and secure to the public, the completion of any improvements fixed in the formal action or accompanying agreement for completion of such improvements.
4. Amount of financial security. The amount of financial security shall be equal to one hundred ten percent (110%) of the estimated cost of the required improvements for which financial security is to be posted. The cost of the required improvements shall be estimated as of ninety (90) days following the date scheduled for the completion of said improvements. Annually, the municipality may adjust the amount of the financial security

ARTICLE VI –REQUIRED IMPROVEMENTS AND GENERAL STANDARDS

by comparing the actual cost of the improvements which have been completed and the estimated cost for the completion of the remaining improvements as of the expiration of the ninetieth (90th) day after either the original date scheduled for completion or rescheduled date of completion. Subsequent to such said adjustment, the municipality may require the developer to post additional security in order to assure that the financial security equals one hundred ten percent (110%).

5. Basis for establishing amount of security.
 - A. The amount of financial security required shall be based upon an estimate of the cost of completion of the required improvements, submitted by an applicant or developer and prepared by a professional engineer licensed as such in this Commonwealth and certified by such engineer to be a fair and reasonable estimate of such cost. The municipality, upon the recommendation of the municipal engineer, may refuse to accept such estimate for good cause shown. If the applicant or developer and the municipality are unable to agree upon an estimate, then the estimate shall be recalculated and re-certified by another professional engineer licensed as such in this Commonwealth and chosen mutually by the municipality and the applicant or developer. The estimate certified by the third engineer shall be presumed fair and reasonable and shall be the final estimate. In the event that a third engineer is so chosen, fees for the services of said engineer shall be paid equally by the municipality and the applicant or developer.
 - B. If the party posting the financial security requires more than one (1) year from the date of posting of the financial security to complete the required improvements, the amount of financial security may be increased by an additional ten percent (10%) for each one-year period beyond the first anniversary date from posting of financial security or to an amount not exceeding one hundred ten percent (110%) of the cost of completing the required improvements as reestablished on or about the expiration of the preceding one-year period by using the above bidding procedure or as established by the Township Engineer. In the case where development is projected over a period of years, the Supervisors (or the planning agency) may authorize submission of final plans by section or stages of development, subject to such requirements or guaranties as to improvements in future sections or stages of development as it finds essential for the protection of any finally approved section of the subdivision or land development.
6. Dispute over amount of financial security. Whenever a dispute may arise between an applicant or developer and the Township in that neither party can reach an accord or the amount of financial security to be posted, the procedures set forth in Section 509(g) of the Pennsylvania Municipalities Planning Code shall be employed.
7. Contracts. As a condition of final plan approval for all subdivisions or land developments, the applicant or developer shall enter into a written agreement with the Township in a manner and form approved by the Township Solicitor, where they shall agree to:
 - A. Construct or cause to be constructed, at their own expense, all streets, curbs, sidewalks, fire hydrants, street lights, drainage facilities, street signs, monuments, capped sewers, parks and other improvements shown on said final plan when required to do so by the Board of Supervisors in accordance with the final plans, as finally approved, and in strict accordance with the standards and specifications of the Township.

ARTICLE VI –REQUIRED IMPROVEMENTS AND GENERAL STANDARDS

- B. Maintain, at their own cost, said streets, curbs, sidewalks, drainage facilities, street signs, parks, monuments, fire hydrants, street lighting, capped sewers and other improvements, until the same are accepted or condemned by the Township for public use, and for a period of eighteen (18) months thereafter, to repair and reconstruct the same or any part of one of them when such repair or reconstruction shall be specified by the Board of Supervisors as necessary by reason of faulty construction, workmanship or materials and at or before acceptance of such improvements by the Township.
- C. Install or cause to be installed, at their own expense and without any cost to the Township for any part of such installation, street lighting facilities on all streets within and abutting the subdivision or land development if proposed to be dedicated to the Township, as required by this section.
- D. Obtain the easements and releases required when any street, drainage facility or other improvement wherein a subdivision abuts or traverses lands of persons other than the person holding legal title to the lands of the subdivision, at his own cost, and obtain from the owner of lands so abutted or traversed full releases from all damages which may change in grade, construction or otherwise of the street, drainage facility or other improvement, and such releases shall inure to the benefit not only of the owner of the subdivision, but to the Township as well.
- E. Promptly reimburse to the Township reasonable attorneys' and engineers' fees in accordance with this Ordinance.
- F. Construct or cause to be constructed, at their expense, road improvements along the frontage of the tract in accordance with this Ordinance.
- G. Additional conditions as may be determined to be necessary by the Township Solicitor.

Section 607. - Completion of Improvements.

- 1. A partial completion and release of financial security.
 - A. As the work of installing the required improvements proceeds, the party posting the financial security may request the Township Supervisors to release or authorize the release, from time to time, of such portions of the financial security necessary for payment to the contractor or contractors performing the work.
 - B. Any such request shall be in writing, addressed to the Supervisors, and the Supervisors shall have forty-five (45) days from receipt of such request within which to allow the Township Engineer to certify, in writing, to the Supervisors that such portion of the work upon the improvements has been completed in accordance with the approved plans.
 - C. Upon such certification, the Supervisors shall authorize release by the bonding company or lending institution of an amount as estimated by the Township Engineer fairly representing the value of the improvements completed, or if the Supervisors fail to act within said forty five (45) day period, the governing body shall be deemed to have approved the release of funds as requested.
 - D. The Supervisors shall, prior to final release at the time of completion and certification by its engineer, require retention of ten percent (10%) of the

ARTICLE VI –REQUIRED IMPROVEMENTS AND GENERAL STANDARDS

estimated cost of the aforesaid improvements for purposes of securing the maintenance bond on said improvements.

- E. If the required financial security of one hundred plus ten percent (10%) is secured in separate accounts and the specified ten percent (10%) remains secured for the life of the security agreement and the construction period or until dedication, then the ten percent (10%) specified above shall not be retained from the requested partial release.
2. Completion of improvements and release from financial security.
- A. When the developer has completed all of the necessary and appropriate improvements, the developer shall notify the Township, in writing, by certified or registered mail, of the completion of the aforesaid improvements and shall send a copy thereof to the Township Engineer.
 - B. The Township Supervisors shall, within ten (10) days after receipt of such notice, direct and authorize the Township Engineer to inspect all of the aforesaid improvements. The Township Engineer shall, thereupon, file a report, in writing, with the Supervisors and shall promptly mail a copy of the same to the developer by certified or registered mail. The report shall be made and mailed within thirty (30) days after receipt by the Township Engineer of the aforesaid authorization from the Supervisors. The report shall be detailed and shall indicate approval or rejection of said improvements, either in whole or in part, and if said improvements or any portion thereof shall not be approved or shall be rejected by the Township Engineer, said report shall contain a statement of reasons for such non-approval or rejection.
 - C. The Township Supervisors shall notify the developer, within fifteen (15) days of receipt of the Township Engineer's report, in writing, by certified or registered mail, of the action of said Township Supervisors within relation thereto.
 - D. If the Township Supervisors or Township Engineer fail to comply with the time limitation provisions contained herein, all improvements will be deemed to have been approved and the developer shall be released from all liability, pursuant to the performance guaranty bond or other security agreement.
 - E. If any portion of said improvements shall not be approved, or shall be rejected by the Township Supervisors, the developer shall proceed to complete the same and, upon completion, the same procedure or notification, as outlined herein, shall be followed.
 - F. Upon satisfactory completion of all the necessary and appropriate improvements as approved by the Township Engineer and receipt by the Supervisors of the appropriate letter of certification of completion of said improvements, the Supervisors shall release or authorize to be released the balance of the financial security, minus the ten percent (10%) as specified above. The ten percent (10%) shall be retained until such time as the developer establishes additional financial security to ensure the structural integrity and functioning of the specified improvements as specified in Section 608 herein.

ARTICLE VI –REQUIRED IMPROVEMENTS AND GENERAL STANDARDS

Section 608. - Maintenance Guarantees and Financial Security.

1. Where the Supervisors accept dedication of all or some of the required improvements following completion, the Supervisors shall require the posting of financial security as a maintenance guaranty to secure the structural integrity of said improvements, as well as the functioning of said improvements, in accordance with the design and specifications as depicted on the final plan for a term not to exceed eighteen (18) months from the date of acceptance of dedication. Said financial security shall be of the same type as otherwise required in this section with regard to installation of such improvements, and the amount of the financial security shall not exceed fifteen percent (15%) of the actual cost of installation of said improvements.
2. To secure release from the maintenance guaranty and financial security, the developer shall notify the Township Supervisors by certified or registered mail ninety (90) days or as otherwise specified in the guaranty prior to the expiration date of said maintenance guaranty and request an inspection and written report by the Township Engineer as to the structural integrity and functioning of the specified improvements.
3. Upon receipt of said report and approval of the Engineer of the structural integrity and functioning of said improvements, the Township Supervisors shall release or authorize release of the maintenance guaranty financial security.
4. If the specified improvements are not found acceptable to the Township Engineer, the developer shall correct the same to the satisfaction of the Township Engineer and Supervisors before the maintenance guaranty financial security is released.

Section 609. - Remedies to Effect Completion of Improvements. In the event that any improvements which may be required have not been installed as provided in this section or in accord with the approved final plan, the Supervisors are hereby granted the power to enforce any corporate bond or other security by appropriate legal and equitable remedies. If proceeds of such bond or other security are insufficient to pay the cost of installing or making repairs or corrections to all the improvements covered by said security, the repairs or corrections to all the improvements covered by said security, the Supervisors may, at their option, install part of such improvements in all or part of the subdivision or land development and may institute appropriate legal or equitable action to recover the monies necessary to complete the remainder of improvements. All of the proceeds, whether resulting from the security or from any legal or equitable action brought against the developer, or both, shall be used solely for the installation of the improvements covered by such security and not for any other purpose.

ARTICLE VII - DEDICATION OF RECREATION LAND

Section 701. - Recreation Land/Fee Requirements. Recreation land shall be defined as usable area that can be developed for playgrounds or tot lots, neighborhood parks, or community parks for active outdoor recreation. All residential subdivision or land development plans shall provide for suitable and adequate recreation land and/or fees as set forth in this Ordinance in order to fulfill the following purposes.

1. Insure adequate recreational areas and facilities to serve future residents of the Township.
2. Maintain compliance with recreation standards as recommended by the Haycock Township Park and Recreation Comprehensive Plan as adopted by the Haycock Township Board of Supervisors.
3. Minimize overuse of, and excessive demand for, existing recreational areas and facilities by future residents.
4. Allow for orderly acquisition and development of recreational areas to serve new residents.
5. Ensure that dedicated recreation land is suitable for the intended use.

Section 702. - Recreation Land Dedication.

1. All residential subdivision or land development plan submissions to the Township shall be required to provide for public dedication of land suitable for park and/or recreation use in accordance with the provisions of this Ordinance.
2. A minimum of 0.0303 acres or 1,322 square feet of suitable recreation land shall be provided per dwelling unit within all residential subdivision or land developments, unless the applicant agrees to a fee-in-lieu of as outlined in Section 705. This requirement is based on the following: a goal of providing 10.5 acres of recreation land per 1,000 population in accordance with the standards of the National Park and Recreation Association as reflected by the Township Comprehensive Park and Recreation Plan; and an average household size of 2.89 persons per household as determined by the U.S. Census of 1990.
3. This recreation land requirement shall in no way diminish the requirement for open space where an open space requirement is set by the Township Zoning Ordinance.

Section 703. - Criteria for Determining Location and Suitability of Recreation Areas.

1. Site(s) must be easily and safely accessible, have good ingress and egress and have access to a public road.
2. Site(s) must have suitable topography for the development as a particular type of recreation area.
3. Size and shape of the site(s) must be suitable for the development as a recreation area.
4. Site(s) must meet the minimum size with respect to usable acreage as recommended by the Park and Recreation Comprehensive Plan for Haycock Township.
5. Sites designated for recreation land shall not contain lands with natural resources restrictions, as defined by the Township Zoning Ordinance, stormwater detention facilities, or lands designated for any other purpose.

ARTICLE VII - DEDICATION OF RECREATION LAND

6. The recreational activities and/or facilities for which the area is intended must be specified on the development plans and recorded on the liens.
7. Recreation areas shall not be traversed by utility easements unless said utilities are placed underground and no part of them or their supportive equipment protrudes above ground level.
8. The configuration of the recreation area must be able to accommodate recreation activities proposed by the development plans. The required areas shall not include narrow or irregular pieces which are remnants from lotting and/or street and parking areas.
9. On-site improvements shall be commensurate with the adjacent on-site development improvements, including but not limited to grading, curb, sidewalks, and utilities.
10. Open space which is required to be set aside as part of a cluster development, performance subdivision, or other use which requires open space shall be provided in addition to the recreation land required by this Article. Where both open space and recreational land are required, the requirements for mandatory dedication of recreation land shall be met in addition to the requirements for open space.

Section 704. - Ownership/Dedication to Township of Recreation Land.

1. The Haycock Township Planning Commission and Park and Recreation Board will provide recommendations on any proposed recreation land dedication and any proposed assessment of recreation fees-in-lieu of land dedication.
2. If the Board of Supervisors determines that recreation land dedication would be in the public interest, such recreation land shall be owned and maintained by an entity that the Board of Supervisors determines is acceptable to ensure proper long-term oversight and maintenance of the land. This may be any of, but not limited to, the following, providing such entity agrees to accept such land for permanent recreation purposes:
 - A. Retention by the owner of the development if such dwelling units are to be rented, subject to restrictions acceptable to the Township Solicitor which shall ensure the perpetual dedication of the land for recreational use.
 - B. Dedication to a formal homeowner or condominium association, with such agreement subject to approval of the Board of Supervisors, after review by the Township Solicitor. If any entity responsible for such recreation land should dissolve or become inactive or decide that it no longer wishes to be responsible for such land, it shall offer such land at no cost to the Township or to another entity that the Township so designates for continued use as recreation land.
 - C. Dedication to an established State, county or regional organization acceptable to the Board of Supervisors.
 - D. Dedication to Haycock Township.
3. If the Board of Supervisors deems it to be in the public interest to accept dedication of land for recreational purposes, such acceptance shall be by adoption of a Resolution of the Board of Supervisors and acceptance of a deed of dedication from the developer. Acceptance of dedication of recreational land by the Township shall occur following a formal offer by the developer with title insurance and other information and conditions as required by the Township.

ARTICLE VII - DEDICATION OF RECREATION LAND

4. Recreation land shall include deed restrictions to permanently restrict its use for recreation and to prohibit the construction of buildings on the land, except building for non-commercial recreation or to support maintenance of the land.

Section 705. - Fee in Lieu of Dedication. Where, (upon agreement with the applicant or developer) it is determined that the dedication of all or any portion of land area required for recreational purposes is not feasible under the criteria set forth in the section, the Township shall require the applicant or developer to pay a fee in lieu of dedication of any such land or to construct recreational facilities in lieu of recreation land dedication to the Township as follows:

1. The fee shall be equal to the fair market value of the land otherwise required to be dedicated and improved for recreational use as established by separate Resolution of the Board of Supervisors.
2. Limitations on Use of Fees:
 - A. Any recreation fees collected under this section shall be placed within an interest-bearing "Recreation Fee Account" which shall function as a capital reserve fund and shall be accounted for separately from other Township funds.
 - B. Any such fees collected under this subsection shall only be expended within the same "Recreation Fee District" as may be adopted by the Township as the subdivision and land development that contributed the fee if the fee is used for neighborhood parks. Fees collected from any district may be expended for the township-wide Community Park.
 - C. All fees and interest within the Recreation Fee Account shall only be used for acquisition of recreation land, development of, and capital improvement to, public recreational facilities, landscaping of recreation land, engineering, legal, planning, architecture, landscape architecture and the payment of debt directly resulting from such expenditures. Such fees specifically shall not be used for maintenance, routine repairs, operating expenses or recreational programs.
3. Fees required under this Section shall be paid prior to the recording of the applicable final plan or as building permits are issued with appropriate guarantee given, as determined by the Board of Supervisors.
4. If such fees are paid in installments or prior to the issuance of each building permit, then for the purpose of determining limits for the time within such funds are required to be expended under State law, such time limit shall begin when the total fees related to the final approval are paid in full, and not from the date of payment of any portion of such fees.

Upon request, the Township shall refund such fee, plus interest accumulated thereon from the date of payment, if the Township has failed to utilize the fee paid for the purposes set forth in this section within 3 years.

ARTICLE VIII – ORDINANCE AMENDMENTS; PENALTIES

Section 801. - Enactment of Amendments.

1. Proposals for amendment, supplement, change, modification or repeal may be initiated by the governing body or by the Planning Commission.
2. In case of an amendment other than that prepared by the Planning Commission, the governing body shall submit each such amendment to the Planning Commission for recommendations at least thirty (30) days prior to the date fixed for the public hearing on such proposed amendment. At least thirty (30) days prior to the hearing on the amendment, the municipality shall also submit the proposed amendment to the Bucks County Planning Commission for recommendations.
3. Within thirty (30) days after adoption, the governing body shall forward a certified copy of any amendment to the Subdivision and Land Development Ordinance to the Bucks County Planning Commission.

Section 802. - Amendment Hearings.

1. Before voting on the enactment of an amendment, the governing body shall hold a public hearing. No amendment shall become effective until after such hearing at which parties in interest and citizens shall have an opportunity to be heard.
2. Notice shall be given once each week for two (2) successive weeks, the first notice being not more than thirty (30) days, and the second notice not less than seven (7) days in advance of such hearings and shall be published in a newspaper of general circulation in the municipality. Such notice shall state the time and place of the hearing and shall include either the full text of the proposed amendment, or the title and a brief summary, prepared by the municipal solicitor and setting forth all the provisions in reasonable detail. If the full text is not included:
 - A. A copy shall be supplied to a newspaper of general circulation in the municipality at the time the public notice is published.
 - B. An attested copy of the proposed ordinance shall be filed in the County Law Library or other County office designated by the County Commissioners.

Section 803. - Penalties.

1. Preventative Remedies - In addition to the right of the Township to enforce a Subdivision or Land Development Ordinance violation by means of an action in equity in the Court of Common Pleas of Bucks County, and other rights the Township may have at law, including actions to recover damages and to prevent illegal occupancy of a building, structure, or premises, the Township may:
 - A. Refuse to issue any permit or grant any approval necessary to further improve or develop any real property which has been developed or which has resulted from a subdivision of real property in violation of this Ordinance. This authority to deny such a permit or approval shall apply to any of the following applicants:
 - (1) The owner of record at the time of such violation.

ARTICLE VIII – ORDINANCE AMENDMENTS; PENALTIES

- (2) The vendee or lessee of the owner of record at the time of such violation without regard as to whether such vendee or lessee had actual or constructive knowledge of the violation.
- (3) The current owner of record who acquired the property subsequent to the time of violation without regard as to whether such current owner had actual or constructive knowledge of the violations.
- (4) The vendee or lessee of the current owner of record who acquired the property subsequent to the time of violation without regard as to whether such vendee or lessee had actual or constructive knowledge of the violation.

B. As an additional condition for issuance of a permit or the granting of approval to any such owner, current owner, vendee, or lessee for the development of real property which was subdivided in violation of this Ordinance, the Township may require compliance with the conditions that would have been applicable to the property at the time the applicant acquired an interest in such property.

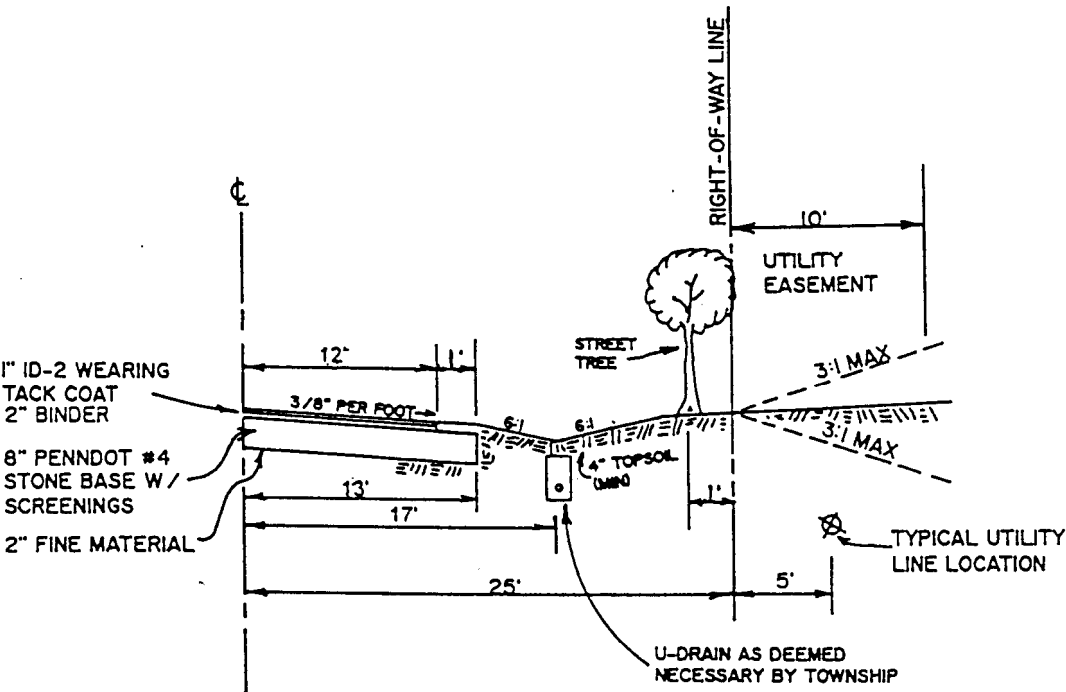
C. Any person, partnership or corporation, or the members of such partnership or the officers of such corporation, who or which, being the owner or agent of the owner of any lot, tract or parcel of land, shall:

1. lay out, construct, open and/or dedicate any street, sanitary sewer, storm sewer, water main or other improvement for public use, travel or other purposes or for the common use of occupants of buildings abutting thereon; or
2. sell, transfer or agree or enter into an agreement to sell or transfer any land in a subdivision or land development, whether by reference to or by use of a plan of such subdivision or land development or otherwise; or
3. erect any building or buildings which constitute a land development thereon; or
4. commence site grading or construction of improvements prior to recording of a Final Plan unless such grading or construction is for the sole purpose of installing improvements as prescribed in Section 602 herein

unless and until a Final Plan has been prepared in full compliance with the provisions of this Ordinance and has been recorded as provided herein, or who or which in any way is in violation of or violates any of the provisions of this Ordinance, shall be subject to the penalties and remedies set forth in Section 703.2 hereof.

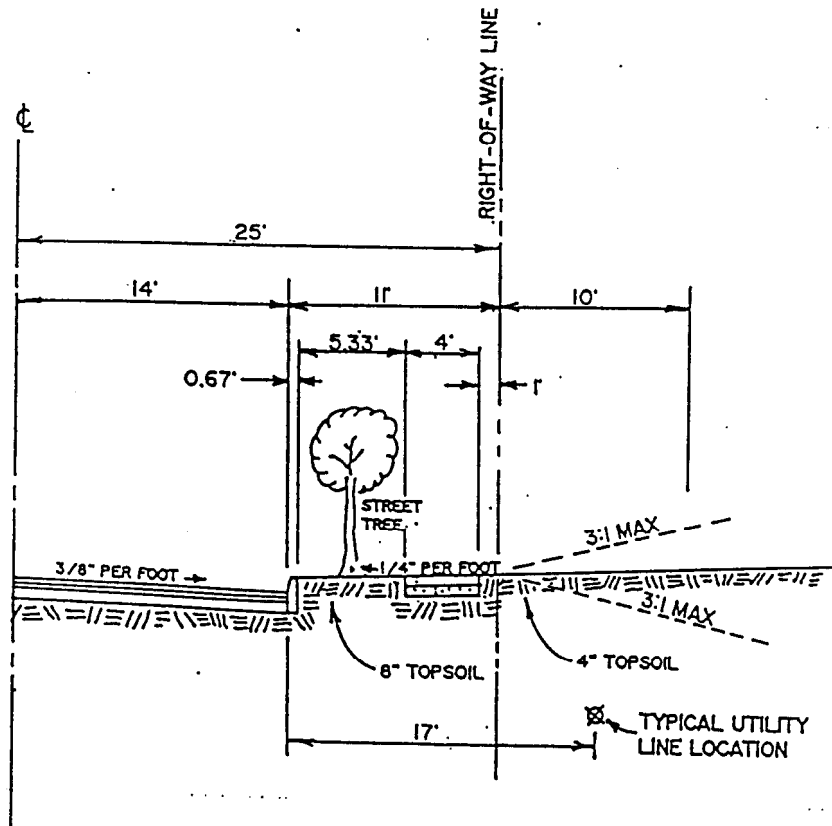
2. Enforcement Remedies - Any person, partnership or corporation who or which has violated the provisions of the Subdivision and Land Development Ordinance, upon being found liable therefore in a civil enforcement proceeding commenced by the municipality in District Justice Court, shall pay a judgment of Five Hundred Dollars (\$500.00) plus all court costs, including reasonable attorney fees incurred by the municipality as a result thereof. Each day that a violation continues shall constitute a separate violation, unless the District Justice determining that there has been a violation further determines that there was a good faith basis for the person, partnership or corporation violating the Ordinance to have believed that there was no such violation, in which event there shall be deemed to have been only one such violation until the fifth (5th) day following the date of the determination of a violation by the District Justice and thereafter each day that a violation continues shall constitute a separate violation.

APPENDIX A
CONSTRUCTION DETAILS



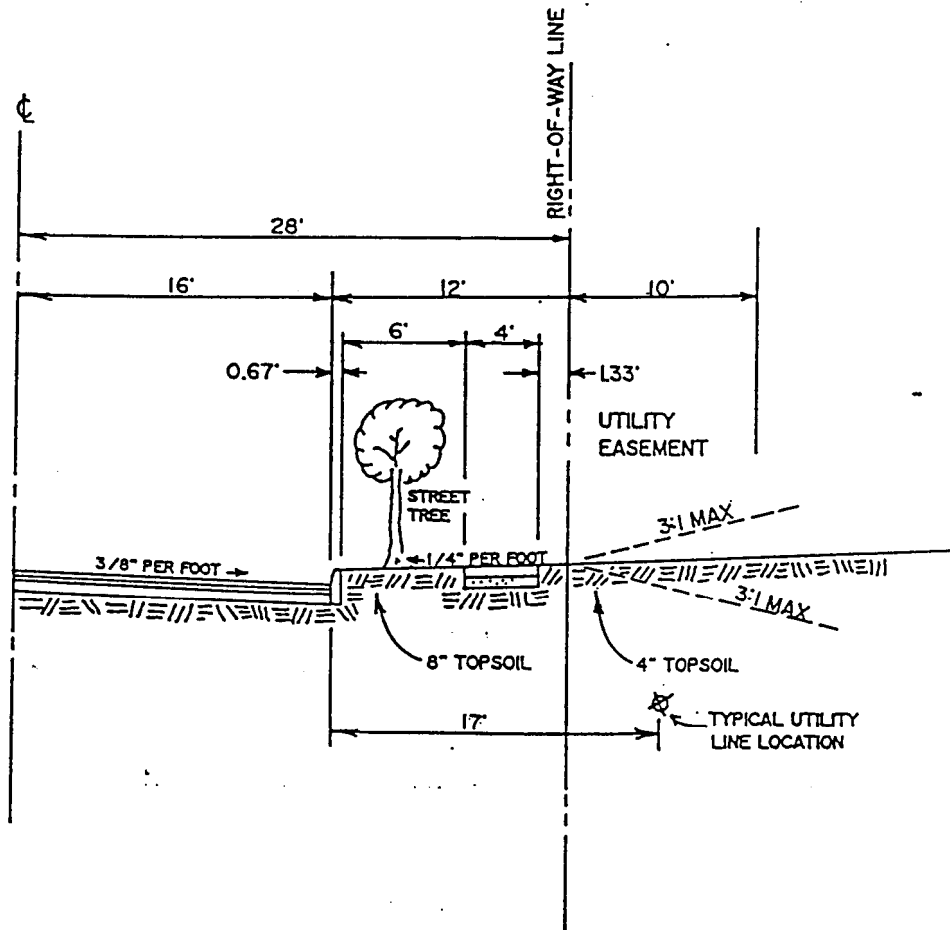
TYPICAL ROADWAY HALF-SECTION

50 FEET RIGHT-OF-WAY WITH 24 FEET WIDE CARTWAY, WITHOUT CURB
NOTE: BALLAST SUBBASE REQUIRED.



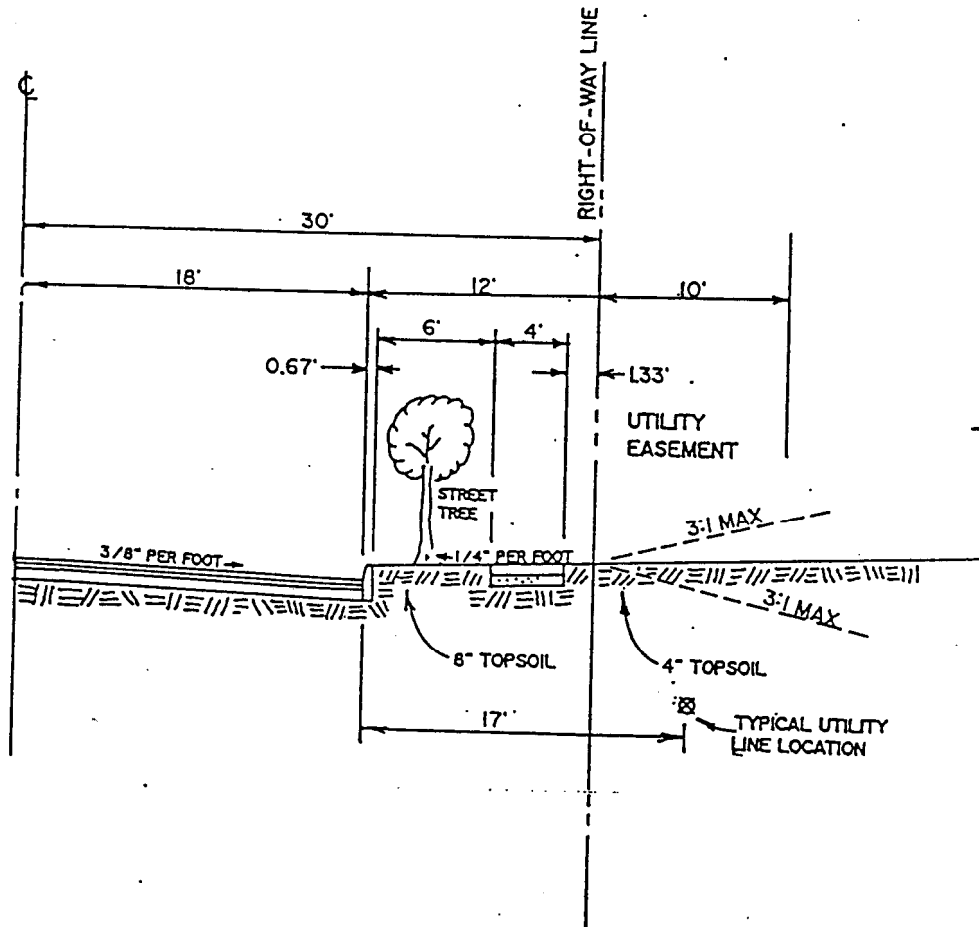
TYPICAL ROADWAY HALF-SECTION.

50 FEET RIGHT-OF-WAY WITH 28 FEET WIDE CARTWAY, WITH CURB AND SIDEWALK



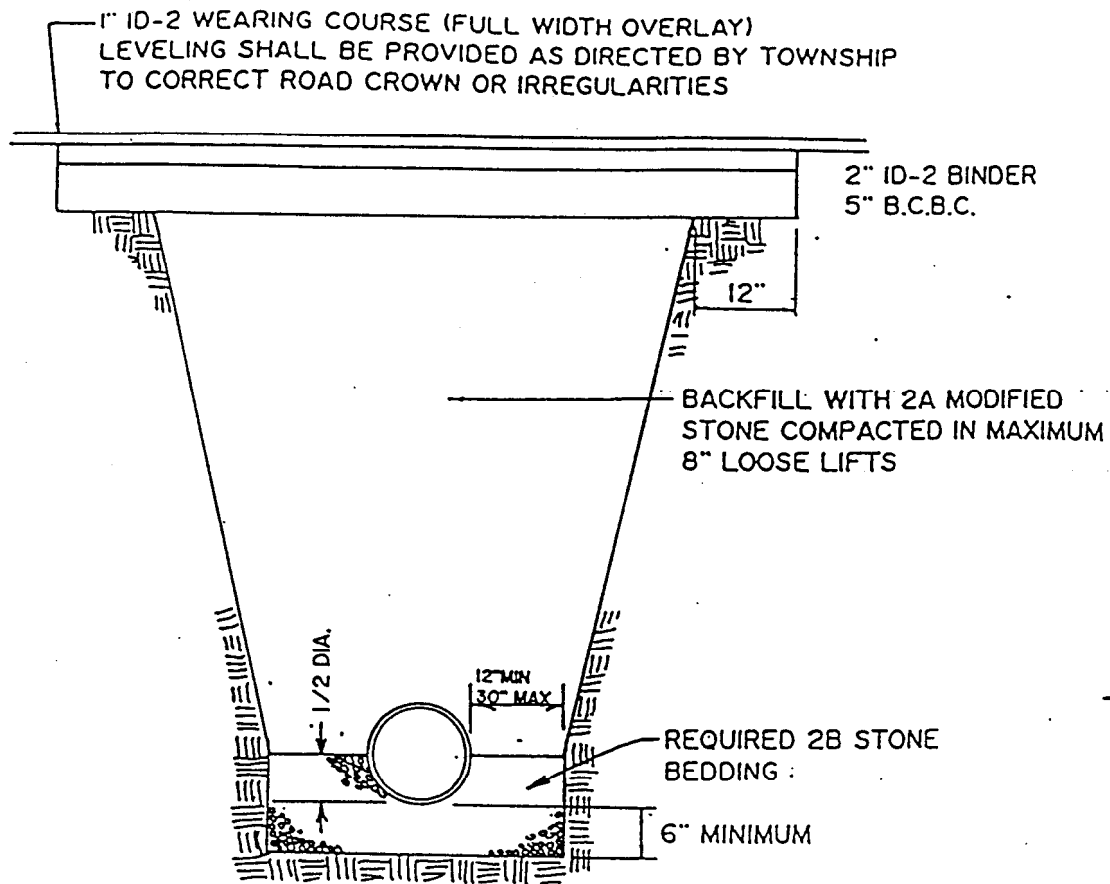
TYPICAL ROADWAY HALF-SECTION

56 FEET RIGHT-OF-WAY WITH 32 FEET WIDE CARTWAY, WITH CURB AND SIDEWALK



TYPICAL ROADWAY HALF-SECTION

60 FEET RIGHT-OF-WAY WITH 36 FEET WIDE CARTWAY, WITH CURB AND SIDEWALK.

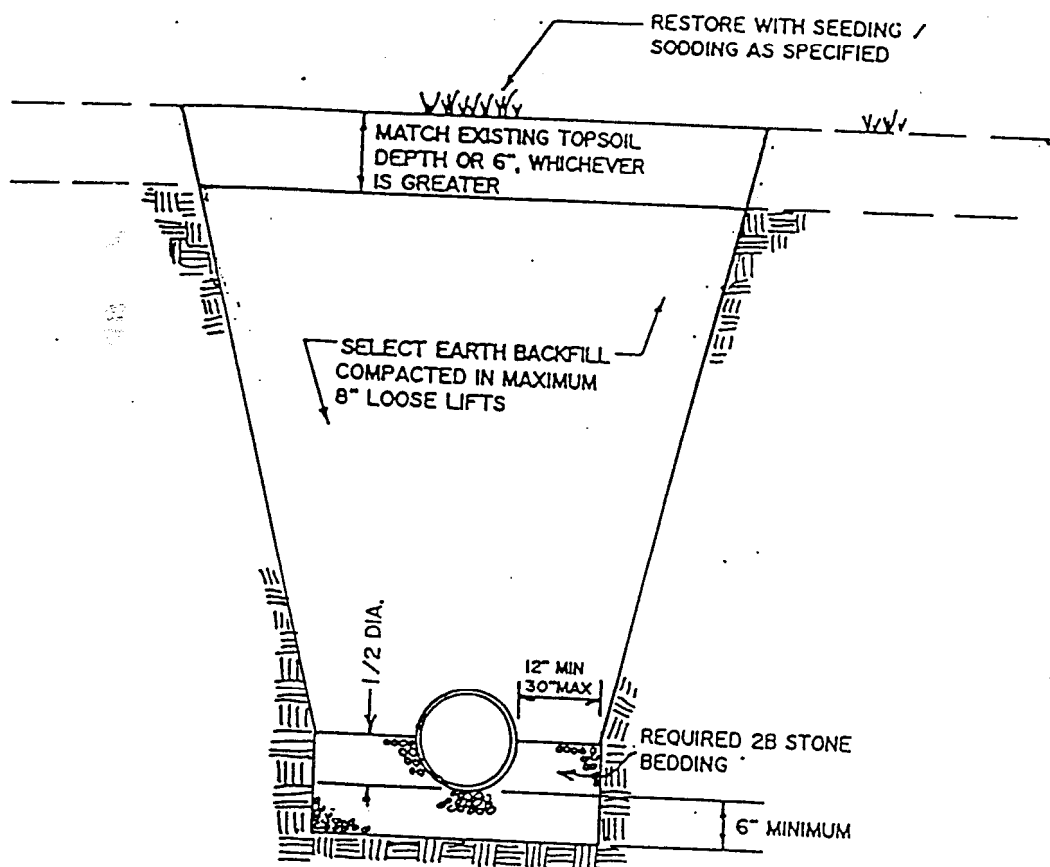


Notes:

1. Developer/Contractor shall be responsible for proper implementation of safety requirements in conformance to all Federal and State Department of Labor and Occupational Safety and Hazard Administration Regulations.
2. Backfill for new road construction may be select earth backfill when suitable material is available as determined by the Township.
3. Full depth 2A stone backfill shall be required for all storm sewer, sanitary sewer and utility trenching when edge of trench is within 15 feet of existing roadway edge of paving; and for all trenching within area of roadway widening.
4. Roadway crown shall be 3/8 inch per foot.
5. 3 inch temporary patch of BCBC shall be provided and maintained for less than 30 days prior to final restoration of existing roadway or driveway. Temporary patch shall be removed with final restoration performed no more than 90 days from date of sewer installation providing testing has been satisfactorily accomplished and no settlement has occurred.

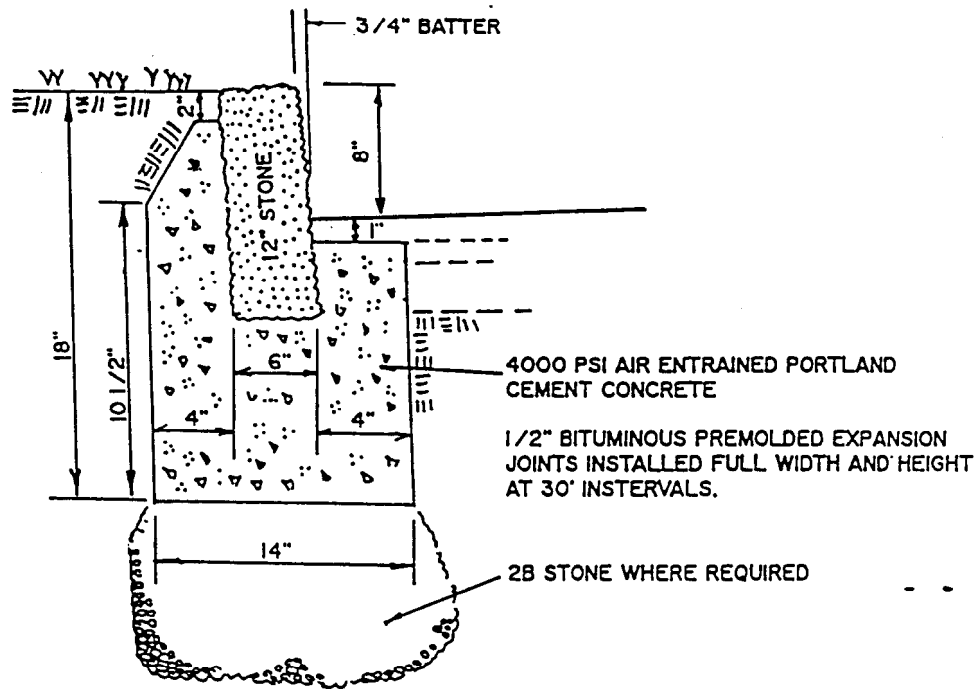
STORM SEWER BEDDING DETAIL

(WITHIN RIGHT-OF-WAY, BENEATH ALL EXISTING
ROADWAYS AND DRIVEWAYS, PUBLIC OR PRIVATE)



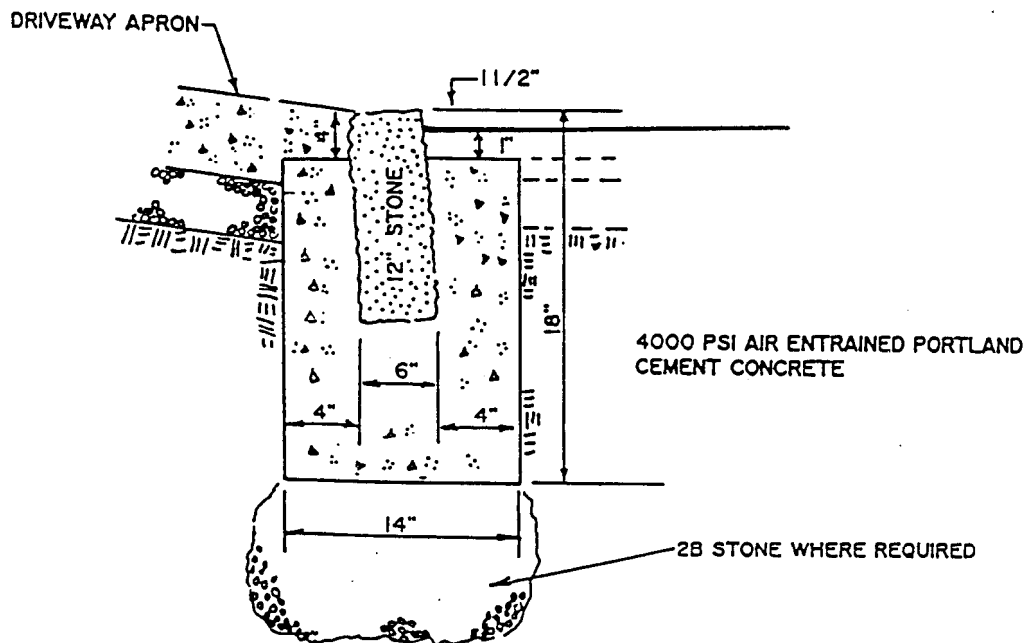
STORM SEWER BEDDING DETAIL

(EARTHEN AREA)



BELGIAN BLOCK CURB DETAIL

NTS



BELGIAN BLOCK DEPRESSED CURB DETAIL

NTS

APPENDIX "B" - PLAN NOTIFICATION.

Where applicable, the following notices shall be included on the subdivision and/or land development plan:

1. NOTICE OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PennDOT) STATE HIGHWAY ACCESS PERMIT REQUIREMENTS.

Driveway access to a State Highway shall be authorized only by Highway Occupancy Permit issued by the Pennsylvania Department of Transportation as required pursuant to Section 420 of the Act of June 1, 1945, (P.P. 1242, No. 428), known as the State Highway Law. Building permits shall not be issued until said highway occupancy permit has been issued.

Approval of this plan does not represent any guarantee or assurance by Haycock Township that a Highway Occupancy Permit will be issued by the Pennsylvania Department of Transportation.

2. NOTICE FOR ON-LOT SEWAGE PERMITS.

The planning module for land development has been approved by the Pennsylvania Department of Environmental Protection and the Bucks County Department of Health as to the subdivision plan. However, the septic system permit has not been issued for the lot(s) upon which new building(s) are proposed. Prior to issuance of a building permit, a septic system permit shall be obtained and presented to the Zoning Officer for each new building.

3. NOTICE FOR ON-LOT WATER SUPPLIES.

The lots or building(s) in this development are planned to be served with water by means of individual wells constructed, owned and operated by the owner of the lot. No well water supply or quality testing has been conducted to verify suitability of individual wells for this purpose. It is possible that any or all of these lots do not have adequate soils or geology to provide an adequate volume or quality of on-site water. The lot well must be drilled and water supplies tested for volume and quality in accordance with Township requirements prior to occupancy of any building.

4. NOTICE FOR FLOODPLAIN IDENTIFICATION.

The grant of a permit or approval of a subdivision and/or land development plan in the identified floodplain area shall not constitute a representation, guarantee, or warranty of any kind by the Township or by any official, consultant, or employee thereof of the practicability or safety of the proposed use, and the owners hereby agree and acknowledge that such permits or approvals shall not create any liability upon the Township, its officials, employees, or consultants.

APPENDIX "B"

5. NOTICE OF USE OF FLOODPLAIN SOILS FOR FLOODPLAIN DELINEATION.

Floodplain delineation is based on floodplain soils and not a detailed engineering study. No construction is permitted within areas mapped as floodplain soils, nor within 50 feet of top of bank unless a detailed study as prepared by a licensed engineer is submitted to the Township for review to verify extent of floodplain boundary.

6. NOTICE OF POTENTIAL WETLANDS BASED ON HYDRIC SOILS.

No disturbance to hydric soils including construction, re-grading, and filling activity is permitted unless a wetland study and delineation is conducted to verify existence or non-existence of wetlands, and not until applicable permits have been received from the Township, Bucks Conservation District, Army Corps of Engineers, and DER.

7. NOTICES FOR DRAINAGE FACILITIES AND EASEMENTS.

A. All drainage easements shown on this plan shall be maintained in a grassed or otherwise improved condition, in accordance with the grades and designs shown on the approved development plans for this project. All these easements shall be kept free of all obstruction, including but not limited to, such obstructions as fill, temporary or permanent structures, and plants, (other than grass). The maintenance of all such easements shall be the responsibility of the lot owner on which the easement exists.

B. Drainage easements shall allow passage of stormwater in underground storm sewer piping and associated structures, and/or allow passage of stormwater over the surface of the ground and shall allow access across the area for purposes of maintenance of the storm conveyance systems.

C. Existing roadside gutters or swales shall not be obstructed by driveways or other fill or structures.

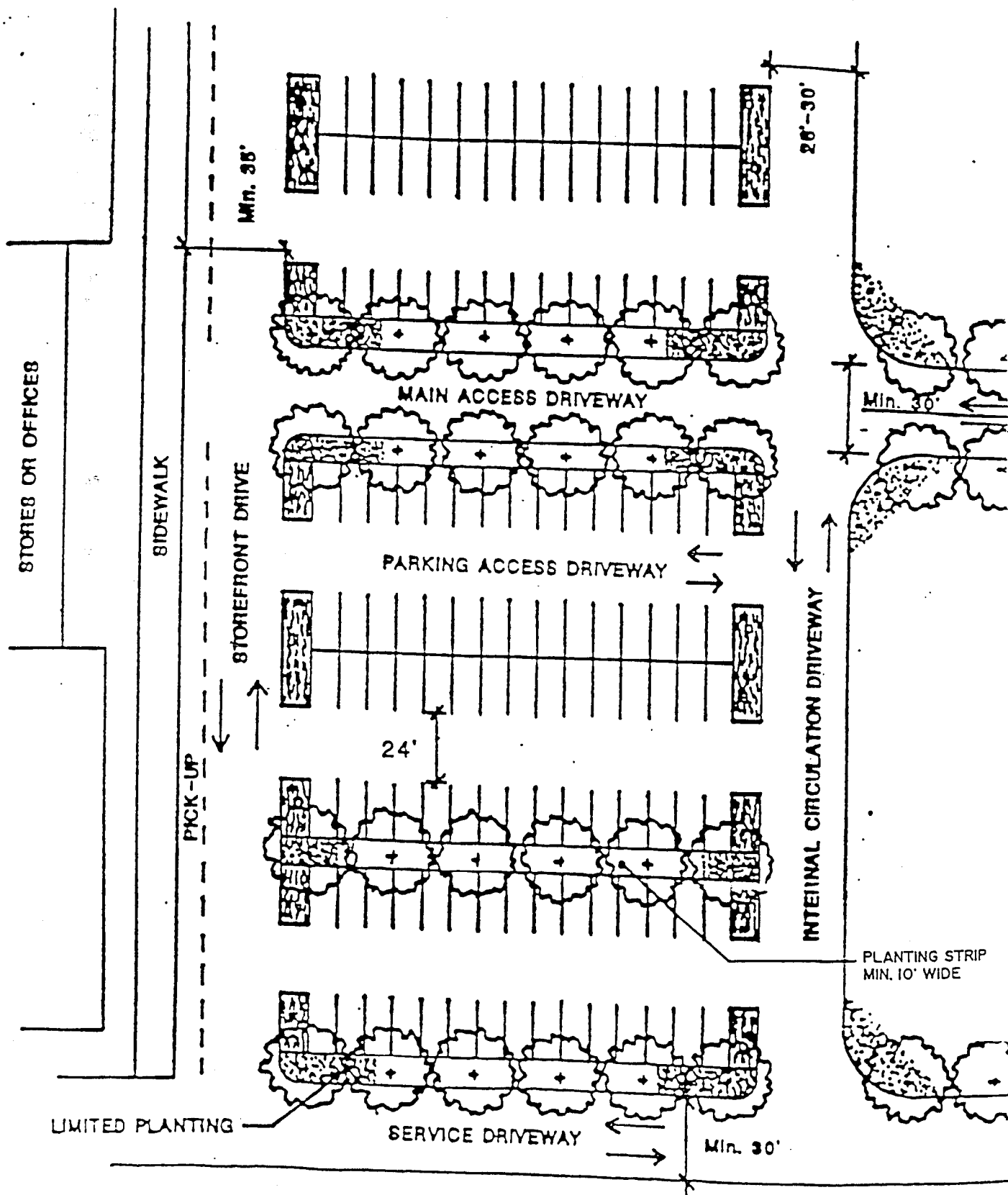
8. NOTICE REGARDING MAINTENANCE OF PUBLIC STREETS DURING CONSTRUCTION ACTIVITY.

Mud sediment and/or debris tracked from the site onto public cartway shall be immediately removed by brooming and/or mechanical means to the satisfaction of the Township. Use of a backhoe bucket to scrape roadway surface is prohibited. Where mud and/or sediment is causing slick and/or hazardous conditions, roadway surface shall be immediately pressure washed to remove condition. All sediment laden water must be filtered in a manner satisfactory to the Bucks County Conservation District before entering storm sewers and/or drainage channels.

9. NOTICE FOR MINOR SUBDIVISION PLANS.

Pursuant to Section 304 of the Haycock Township Subdivision Ordinance, any additional subdivision of this tract submitted within five (5) years of the date of approval of this plan shall be deemed to be a major subdivision for the purposes of the Subdivision Ordinance and shall follow the procedure applying thereto.

APPENDIX C
NON-RESIDENTIAL PARKING LOTS



APPENDIX "D" - AS-BUILT DRAWING REQUIREMENTS

1. GENERAL.

- A. The following requirements listed within 1. thru 6. shall be considered minimum standards. Additional detail and information may be required by the Township depending on amount of detail needed.
- B. All individual sheets of as-built plans shall be signed and sealed by the responsible licensed Professional Land Surveyor.
- C. Storm sewer, sanitary sewer, and utility as-built information shall all be included on same plan and profile views. Independent plan sets for each shall not be permitted unless specifically requested by the Township.
- D. Proof set of plans shall be submitted to the Township for review of completeness prior to preparation of final drawings. "Proof plan" shall be titled as such. Final drawings shall consist of two (2) sets of reproducible mylars and two (2) sets of opaque blue line prints of all plan sheets.
- E. Final as-built plan set shall include a reproducible mylar sheet of the detention basin as-built.
- F. All plan sheets shall include a standard Act 38 notification requirement for location of underground utilities prior to excavation.

2. DETENTION BASINS.

- A. As-built plan for detention basins shall be prepared on standard 24" x 36" plan sheets.
- B. Plan shall be prepared at a scale of 1" = 50 Ft. or at design plan scale (if larger).
- C. As-built plan shall include but not be limited to the following:
 - (1) Contours at 1 foot intervals.
 - (2) Spot elevations on the top of berm along interior and exterior edges at 25 feet intervals.
 - (3) Spot elevations on the top of berm and spillway crest at all four corners of the spillway; and spot elevations centrally on interior and exterior edge of the spillway.
 - (4) Stage/storage calculations must be included on the plan.
 - (5) Size, type, length, inverts and slope of outfall pipe.
 - (6) Top of structure elevation and all associated inverts/sizes of weirs and orifices on same.

APPENDIX "D"

- (7) Inverts of all storm sewer pipes discharging into the basin.
- (8) As-built information on constructed swales which discharge into the basin shall be furnished upon request, as required by the Township.

3. STORM SEWER.

A. Drafting Standards.

- (1) Plan size must be standard 24" x 36" plan sheets.
- (2) Plan shall be prepared utilizing standard plan and profile paper.
- (3) Horizontal scale must be 1" = 50 Ft. and vertical scale must be 1" = 5 Ft., or at design plan scales (if larger).
- (4) Plan view:
 - a. Plan view shall delineate all right-of-way and easement boundaries and all property corners that intersect same. - -
 - b. Centerline stationing shall be included along all streets.
 - c. All roadways, curbing, and sidewalk shall be shown and dimensioned.
 - d. All lot numbers shall be labeled.

B. Storm sewer as-built information shall include but not be limited to the following:

- (1) Grate and manhole rim elevations.
- (2) Pipe sizes, types, lengths, and slopes.
- (3) Inverts of all inlets, manholes, and endwalls.
- (4) Types of endwalls shall be identified (i.e. "FES", "DW", "D", etc.
- (5) Location of all sump pump/roof drain tie-ins.
- (6) Invert of storm sewer at sanitary sewer and utility crossings.

4. SANITARY SEWER.

A. Drafting standards shall be the same as listed for storm sewer above.

B. Sanitary sewer as-built information shall include but not be limited to:

- (1) Manhole rim elevations and inverts (including drop inverts).
- (2) Pipes, sizes, lengths, slopes and types.
- (3) Location and stationing of all laterals.

APPENDIX "D"

- (4) Location and inverts of all lateral connections. (Inverts may be interpolated from as-built manhole invert information. Lateral location shall be determined from video inspection log.)
- (5) Location and as-built inverts of all cleanouts located at the right-of-way boundary.
- (6) Invert of sanitary sewer at storm sewer and utility crossings.

5. WATER SYSTEM.

- A. As-built information shall be prepared in accordance with prevailing standards and requirements of the applicable Authority.
- B. At a minimum, Township as-built drawings shall include the following on plan and profile views: location, size, and type of water mains, fire hydrants, water valve boxes, laterals, tees, bends, etc.

6. STREETS.

- A. Spot elevations shall be shown at each 0+50 station increment and at intersections of street centerlines.
- B. Offset distances from the design centerline to the constructed curbline or edge of road shall be indicated at each 0+50 station for both sides of the street.

7. MISCELLANEOUS.

- A. Location of all conduit crossings for underground utilities through easements and right-of-way must be shown.
- B. Set of design plans for gas service installation shall be submitted to the Township with as-built plans. Design plans shall be used for general reference only and shall not be referred to for purpose of as-built information.

APPENDIX "E" – BASIN BERM CONSTRUCTION REQUIREMENTS

1. Site preparation – Areas under the embankment and any structural works shall be cleared, grubbed, and the topsoil stripped to remove the trees, vegetation, roots or other objectionable material. In order to facilitate clean-out and restoration, the pool area will be cleared of all brush and excess trees.
2. Cut off trench – A cut-off trench will be excavated along the centerline dam on earth fill embankments. The minimum depth shall be two feet. The cut-off trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be eight feet but wide enough to permit operation of compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for the embankment. The trench shall be kept free from standing water during the backfilling operations.
3. Embankment – The fill material shall be taken from selected borrow areas. It shall be free of roots, woody vegetation, oversized stones, rocks or other objectionable material. Areas on which fill is to be placed shall be scarified prior to placement of fill.

The fill material should contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction.

Fill material will be placed in 6 to 8 inch layers and shall be continuous over the entire length of the fill. Fill material must be compacted to a minimum of 95% of Modified Proctor Density as established by ASTM D-1557. Compaction testing by a certified soils engineer/geologist must be completed as directed by the Township Engineer to verify adequate compaction has been achieved.

APPENDIX "F"

Bucks County Wetland Plant List

The following plant list represents common wetland species found in Bucks County. These species are reliable indicators of wetlands when found dominating a site (e.g., comprising more than 50% of the vegetation).

This list was derived from a larger regional list of wetland plants located in the northeastern United States compiled by the U.S. Fish and Wildlife Service. The selections for this Bucks County list were made with the assistance of several regional experts: Dr. Ann Rhoads, Director of Botany, Morris Arboretum; Dr. Ernest Schuyler, Associate Curator, Academy of Natural Sciences; Dr. David Benner, Professor of Botany, Delaware Valley College; and Edward Perry, Assistant Supervisor, U.S. Fish and Wildlife Service at State College.

SCIENTIFIC NAME	COMMON NAME
1. <i>Acer negundo</i> L.	Box Elder
2. <i>Acer saccharinum</i> L.	Silver Maple
3. <i>Acorus calamus</i> L.	Sweetflag
4. <i>Agrostis alba</i> L.	Redtop
5. <i>Afisma subcordatum</i> Raf.	Subcordate Waterplantain
6. <i>Alnus serrulata</i> (Ait.) Willd.	Hazel Alder
7. <i>Amaranthus cannabinus</i> (L.) Sauer	Tidemarch Waterhemp
8. <i>Amorpha fruticosa</i> L.	Dull-Leaf Indigo
9. <i>Andropogon gerardii</i> Vitman	Big Bluestem
10. <i>Andropogon glomeratus</i> (Waft.) B.S.R.	Bushybeard Bluestem
11. <i>Andropogon virginicus</i> L.	Broomsedge Bluestem
12. <i>Arisaema triphyllum</i> (L.) Schott	Indian Jack-in-the-Pulpit
13. <i>Aronia arbutifolia</i> (L.) Ell.	Red Chokecherry
14. <i>Aronia melanocarpa</i> (Michx.) Ell.	Black Chokecherry
15. <i>Asclepias incarnata</i> L.	Swamp Milkweed
16. <i>Aster umbellatus</i> Mill.	Flattop Aster
17. <i>Betula nigra</i> L.	River Birch
18. <i>Bidens</i> (all species)	Beggarticks
19. <i>Boehmeria cylindrica</i> (L.) SW.	Smallspike False-Nettle
20. <i>Calamagrostis canadensis</i> (Michx.) Beauv.	Bluejoint Reedgrass
21. <i>Calamagrostis cinnoides</i> (Muhl.) Barton	Hairyseed Reedgrass
22. <i>Caltha palustris</i> L.	Marsh Marigold
23. <i>Cardamine bulbosa</i> (Schreb.) B.S.P.	Bulb Bittercress
24. <i>Cardamine pennsylvanica</i> Muhl. ex Willd.	Pennsylvania Bittercress
25. <i>Carex</i> (all species)	Sedge
26. <i>Cephalanthus occidentalis</i> L.	Common Buttonbush
27. <i>Chelone glabra</i> L.	White Turtlehead
28. <i>Chrysosplenium americanum</i> Schweinitz	Golden Saxifrage
29. <i>Cicuta bulbifera</i> L.	Poison Waterhemlock
30. <i>Cicuta maculata</i> L.	Common Waterhemlock
31. <i>Cinna arundinacea</i> L.	Stout Woodreed
32. <i>Clethra alnifolia</i> L.	Summersweet Clethra
33. <i>Conium maculatum</i> L.	Poison Hemlock
34. <i>Cornus amomum</i> Mill.	Silky Dogwood
35. <i>Cyperus</i> (all species)	Flatsedge
36. <i>Decodon verticillatus</i> (L.) Ell.	Water Willow
37. <i>Dulichium arundinaceum</i> (L.) Britt.	Three-Way-Sedge
38. <i>Echinochloa walteri</i> (Pursh) A. Helle	Walter Millet

39.	<i>Eleocharis</i> (all species)	Spikerush
40.	<i>Epilobium coloratum</i> Biehler	Purpleleaf Willowweed
41.	<i>Equisetum fluviatile</i> L.	Water Horsetail
42.	<i>Equisetum hyemale</i> L.	Scouringrush Horsetail
43.	<i>Eragrostis hypnoides</i> (Lam.) B.S-P	Teal Lovegrass
44.	<i>Eragrostis pectinacea</i> (Michx.) Nees	Carolina Lovegrass
45.	<i>Eupatoriadelphus dubius</i> (all species)	Joe-Pye Weed
46.	<i>Eupatorium perfoliatum</i> L.	Boneset
47.	<i>Eupatorium pilosum</i> Walter	Hairy Thoroughwort
48.	<i>Euthamia graminifolia</i> (L.) Nutt.	Grass-Leaved Goldenrod
49.	<i>Fraxinus nigra</i> Marshall	Black Ash
50.	<i>Fraxinus pennsylvanica</i> Marshall	Green Ash
51.	<i>Galium obtusum</i> Bigel.	Slutleaf Bedstraw
52.	<i>Galium parisiense</i> L.	Wall Bedstraw
53.	<i>Galium tinctorium</i> L.	Dye Bedstraw
54.	<i>Glyceria</i> (all species)	Mannagrass
55.	<i>Helenium autumnale</i> L.	Common Sneezeweed
56.	<i>Heteranthera reniformis</i> R. & P.	Roundleaf Mudplantain
57.	<i>Hibiscus mosocheutos</i> L.	Rose Mallow
58.	<i>Hydrophyllum virginianum</i> L.	Virginia Waterleaf
59.	<i>Hypericum mutilum</i> L.	Dwarf St. Johnswort
60.	<i>Ilex verticillata</i> (L.) A. Gray	Winterberry
61.	<i>Impatiens capensis</i> Meerb.	Spotted Touch-Me-Not
62.	<i>Impatiens pallida</i> Nutt.	Pale Touch-Me-Not
63.	<i>Iris pseudacorus</i> L.	Yellow Iris
64.	<i>Iris versicolor</i> L.	Blueflag Iris
65.	<i>Juncus</i> (all species)	Rush
66.	<i>Laportea canadensis</i> (L.) Wedd.	Canada Woodnettle
67.	<i>Leersia oryzoides</i> (L.) Swartz	Rice Cutgrass
68.	<i>Leersia virginica</i> Willd.	Whitegrass
69.	<i>Leucothoe racemosa</i> (L.) Gray	Swamp Leucothoe
70.	<i>Lindera benzoin</i> (L.) Blume	Spicebush
71.	<i>Liquidambar styraciflua</i> L.	Sweetgum
72.	<i>Ludwigia</i> (all species)	Seed-Box
73.	<i>Lycopus</i> (all species)	Bugleweed
74.	<i>Lyonia ligustrina</i> (L.) DC.	Male-Berry
75.	<i>Lysimachia</i> (all species)	Loosestrife
76.	<i>Lythrum salicaria</i> L.	Purple Loosestrife
77.	<i>Magnolia virginiana</i> L.	Sweetbay
78.	<i>Mentha X piperita</i> L.	Peppermint
79.	<i>Mertensia virginica</i> (L.) Pers.	Virginia Bluebells
80.	<i>Mimulus ringens</i> L.	Monkey-Flower
81.	<i>Myosotis scorpioides</i> L.	True Forget-Me-Not
82.	<i>Nasturtium officinale</i> R. Br.	Watercress
83.	<i>Nuphar luteum</i> (L.) Sibth. & J.E. Smith	European Cowlily
84.	<i>Onoclea sensibilis</i> L.	Sensitive Fern
85.	<i>Osmunda</i> (all species)	Fern
86.	<i>Panicum longifolium</i> Torr.	Long-Leaved Panic-Grass
87.	<i>Panicum rigidulum</i> Bosc. ex Nees,	Redtop Panicum
88.	<i>Peltandra virginica</i> (L.) Kunth.	Arrow-Arum
89.	<i>Phalaris arundinacea</i> L.	Reed Canarygrass
90.	<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	Giant Cane
91.	<i>Polygonum amphibium</i> , L.	Water Knotweed
92.	<i>Polygonum arifolium</i> L.	Halberdleaf Tearthumb

93.	<i>Polygonum hydropiper</i> L.	Marshpepper Knotweed
94.	<i>Polygonum hydropiperoides</i> Michx.	Swamp Knotweed
95.	<i>Polygonum pensylvanicum</i> L.	Pennsylvania Smartweed
96.	<i>Polygonum punctatum</i> Ell.	Dotted Smartweed
97.	<i>Polygonum sagittatum</i> L.	Arrow-Leaved Tearthumb
98.	<i>Polygonum scandens</i> L.	Hedge Combind
99.	<i>Pontederia cordata</i> L.	Pickernelweed
100.	<i>Quercus bicolor</i> Willd.	Swamp White Oak
101.	<i>Quercus palustris</i> Muench.	Pin Oak
102.	<i>Quercus phellos</i> L.	Willow Oak
103.	<i>Ranunculus sceleratus</i> L.	Celeryleaf Buttercup
104.	<i>Ranunculus septentrionalis</i> Poir.	Swamp Buttercup
105.	<i>Rhododendron viscosum</i> (L.) Torr.	Swamp Azalea
106.	<i>Rhynchospora capitellata</i> (Michx.) VAN	False Bog Rush
107.	<i>Rorippa palustris</i> (L.) Besser	Marsh Yellowgrass
108.	<i>Rorippa sylvestris</i> (L.) Besser	Creeping Yellowgrass
109.	<i>Rosa palustris</i> Marshall	Swamp Rose
110.	<i>Sagittaria</i> (all species)	Arrowhead
111.	<i>Salix</i> (all species)	Willow
112.	<i>Saururus cernuus</i> L.	Lizard's Tail
113.	<i>Scirpus</i> (all species)	Bulrush
114.	<i>Scutellaria integrifolia</i> L.	Rough Skullcap
115.	<i>Scutellaria lateriflora</i> L.	Blue Skullcap
116.	<i>Sium suave</i> Waft.	Common Waterparsnip
117.	<i>Smilax hispida</i> Muhl.	Bristly Greenbriar
118.	<i>Sparganium</i> (all species)	Burreed
119.	<i>Spiraea latifolia</i> (Ait.) Borkh.	Broadleaf Meadowsweet
120.	<i>Spiraea tomentosa</i> L.	Spiraea
121.	<i>Symplocarpus foetidus</i> (L.) Nutt.	Hardhack
122.	<i>Thelypteris thelypteroides</i> (Michx.) J. Holub	Common Skunkcabbage
123.	<i>Triadenum virginicum</i> (L.) Raf.	Marsh Fern.
124.	<i>Typha angustifolia</i> L.	Marsh St. Johnswort
125.	<i>Typha latifolia</i> L.	Narrow-Leaved Cattail
126.	<i>Ulmus americana</i> L.	Common Cattail
127.	<i>Ulmus rubra</i> Muhl.	American Elm
128.	<i>Vaccinium corymbosum</i> L.	Slippery Elm
129.	<i>Vaccinium macrocarpon</i> Ait.	Highbush Blueberry
130.	<i>Verbena hastata</i> L.	Large Cranberry
131.	<i>Viburnum dentatum</i> L.	Blue Verbena
132.	<i>Viburnum recognitum</i> Fernald	Arrow-Wood
133.	<i>Woodwardia areolata</i> (L.) T. Moore	Arrow-Wood
134.	<i>Zizania aquatica</i> L.	Netted Chainfern
		Annual Wildrice

APPENDIX "G"

RUNOFF COEFFICIENTS FOR THE RATIONAL METHOD * HYDROLOGIC SOIL GROUP AND SLOPE RANGE

LAND USE	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 ¹	0.08 a 0.14 b	0.13 0.18	0.16 0.22	0.11 0.16	0.15 0.21	0.21 0.28	0.14 0.20	0.19 0.25	0.26 0.34	0.18 0.24	0.23 0.29	0.31 0.41
PASTURE ²	0.12 0.15	0.20 0.25	0.30 0.37	0.18 0.23	0.28 0.34	0.37 0.45	0.24 0.30	0.34 0.42	0.44 0.52	0.30 0.37	0.40 0.50	0.50 0.62
MEADOW, LAWN ³	0.10 0.14	0.16 0.22	0.25 0.30	0.14 0.20	0.22 0.28	0.30 0.37	0.20 0.26	0.28 0.35	0.36 0.44	0.24 0.30	0.30 0.40	0.40 0.50
FOREST	0.05 0.08	0.08 0.11	0.11 0.14	0.08 1.10	0.11 0.14	0.14 0.18	0.10 0.12	0.13 0.16	0.16 0.20	0.12 0.15	0.16 0.20	0.20 0.25
PARKING, OTHER IMPERVIOUS	0.85 0.95	0.86 0.96	0.87 0.97	0.85 0.95	0.86 0.96	0.87 0.97	0.85 0.95	0.86 0.96	0.87 0.97	0.85 0.95	0.86 0.96	0.87 0.97
RESIDENTIAL, COMMERCIAL, INDUSTRIAL, AND OTHER "DEVELOPED"	Runoff coefficients should be calculated based upon weighted average of impervious area coefficients and pervious area coefficients from above based upon soil type, slope, and the particular development proposal.											

* Source: Rawls, W. J., S.L. Wong, and R.H. McCuen, 1981. Comparison of urban flood frequency procedures. Preliminary draft report prepared for the Soil Conservation Service, Beltsville, Maryland.

a - Runoff coefficients for storm recurrence intervals less than 25 years.

b - Runoff coefficients for storm recurrence intervals of 25 years or more.

¹ Cultivated lands include lands with vigorous crop growth with high interception.

² Pasture lands are lands grazed by cattle with light or intermittent vegetation.

³ Meadow lands are undisturbed grass areas.

APPENDIX "H"

MANNING 'n' VALUES BY TYPICAL REACH DESCRIPTION

<u>REACH DESCRIPTION</u>	<u>MANNING 'n'</u>
1. Natural stream, clean, straight, no rifts or pools	0.030
2. Natural stream, clean, winding, some pool and shoals	0.040
3. Natural stream, winding, pools, shoals, stony with some weeds.	0.050
4. Natural stream, sluggish with deep pools and weeds	0.070
5. Natural stream or swale, very weedy or with timber under brush	0.100
<hr/>	
6. Concrete pipe, culvert or channel	0.012
7. Corrugated metal pipe	0.012-0.027*
<hr/>	

* Depending upon type and diameter.

