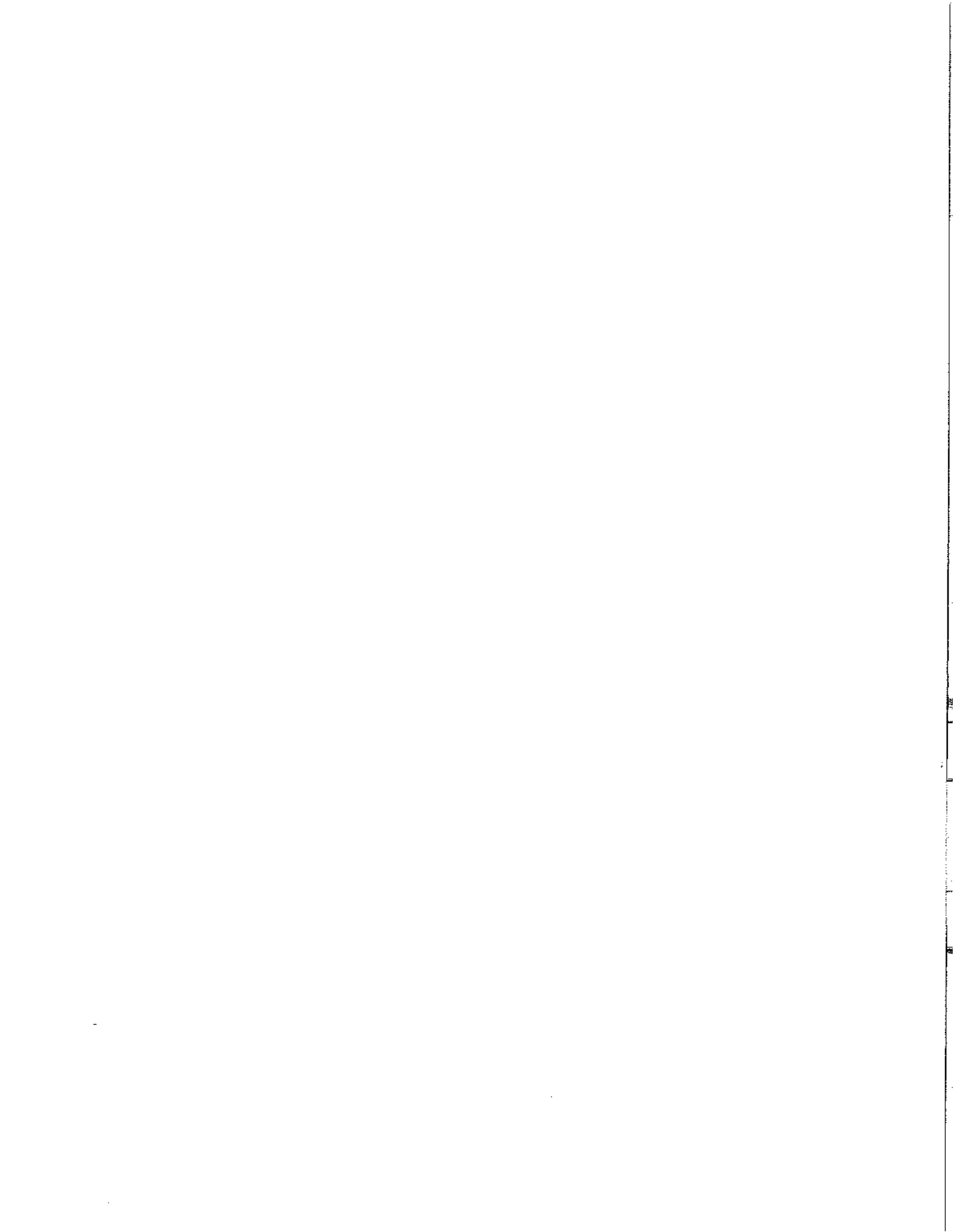


**SUBDIVISION AND LAND DEVELOPMENT  
ORDINANCE  
LOWER NAZARETH TOWNSHIP  
NORTHAMPTON COUNTY, PENNSYLVANIA**

**April 27, 2005**



**TOWNSHIP OF LOWER NAZARETH  
NORTHAMPTON COUNTY, PENNSYLVANIA**

**ORDINANCE NO. 180**

**AN ORDINANCE**

**AMENDING THE LOWER NAZARETH TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE OF 2003 PROVIDING FOR THE REGULATION AND CONTROL OF THE SUBDIVISION OF LOTS AND THE DEVELOPMENT OF LAND, GENERAL PROVISIONS, PRELIMINARY PLAN SUBMISSION PROCEDURES AND REQUIREMENTS, FINAL PLAN SUBMISSION PROCEDURES AND REQUIREMENTS, MINOR SUBDIVISION AND BOUNDARY LINE ADJUSTMENT SUBMISSION PROCEDURES AND REQUIREMENTS, DESIGN STANDARDS, IMPROVEMENTS SPECIFICATIONS, AND STANDARDS FOR IMPROVEMENTS CONSTRUCTION.**

BE IT ENACTED AND ORDAINED by the Board of Supervisors of the Township of Lower Nazareth, Northampton County, Pennsylvania, and it is hereby enacted and ordained by authority of the same, pursuant to the provisions of Act 247 of 1968, P.L. 805, Article V, Section 501, et seq., as amended (53 P.S. 10501, et seq.), as follows:

**SECTION 1.** The Lower Nazareth Subdivision and Land Development Ordinance is hereby amended to incorporate the following revisions, attached hereto and made a part hereof:

- ARTICLE 1 GENERAL PROVISIONS
- ARTICLE 4 PRELIMINARY PLAN SUBMISSION PROCEDURES AND REQUIREMENTS
- ARTICLE 5 FINAL PLAN SUBMISSION PROCEDURES AND REQUIREMENTS
- ARTICLE 6 MINOR SUBDIVISION AND BOUNDARY LINE ADJUSTMENT SUBMISSION PROCEDURES AND REQUIREMENTS
- ARTICLE 7 DESIGN STANDARDS
- ARTICLE 9 IMPROVEMENTS SPECIFICATIONS
- APPENDIX F STANDARDS FOR IMPROVEMENTS CONSTRUCTION

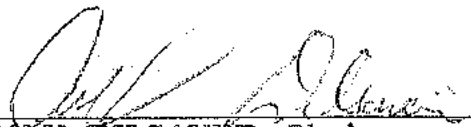
**SECTION 2.** All Ordinances inconsistent with this Ordinance, and specifically those provisions of the Lower Nazareth Township Subdivision and Land Development Ordinance of 2003 inconsistent herewith, are hereby specifically repealed.

**SECTION 3.** If any section, subsection, paragraph, sentence, clause or portion of this Ordinance shall be declared to be invalid or unconstitutional by any Court of Record or of competent jurisdiction, then, in that event, the remaining portions of this Ordinance shall remain unaffected and in full force and effect.

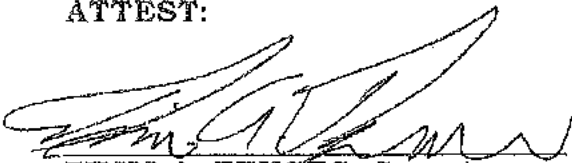
ORDAINED AND ENACTED this 27 day of April, 2005.

TOWNSHIP OF LOWER NAZARETH

BY:

  
ALAN V. DILSAVER, Chairman

ATTEST:

  
TIMM A. TENGES, Secretary

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## ARTICLE 1

### GENERAL PROVISIONS

#### 100 TITLE

An Ordinance providing for the regulation and control of the subdivision of lots and the development of land; the approval of plans, plots or replots of land laid out in building lots; standards for the design of streets, lots, easements, blocks and other improvements; minimum improvements and construction standards on all streets and required dedications; the administration of this Ordinance and penalties for the violation of this Ordinance.

#### 110 SHORT TITLE

This Ordinance shall be known and may be cited as The Lower Nazareth Township Subdivision and Land Development Ordinance of 2005 and may be referred to as SALDO.

#### 120 APPLICATION

121 No subdivision or land development of any lot, tract or parcel of land shall be made, and no street, sanitary sewer, water main, gas, or electric transmission line, or other improvements in connection therewith shall be laid out, constructed, opened or dedicated for public use or travel or for the common use of occupants of buildings abutting thereon, except in accordance with this Ordinance.

122 No lot in a proposed subdivision or land development may be sold, and no final permit to erect any building upon land in a subdivision or land development may be issued unless and until a final plan has been approved and recorded, and either the Township has been assured by means of an Improvements Agreement acceptable to the Board of Supervisors that the improvements will subsequently be installed or the required improvements in connection therewith have been constructed.

123 This Ordinance shall apply to all subdivisions and land developments excepting subdivisions which have received preliminary plan approval from the Board of Supervisors between the effective date of this Ordinance and a date five years prior to the effective date of this Ordinance. Notwithstanding the provisions of Sections 121 and 122, the excepted subdivisions shall comply with the requirements of the Subdivision and Land Development Ordinance in effect at the date of the preliminary plan approval for a five year period commencing at the date of the preliminary plan approval. After the expiration of the five-year period, the provisions of this Ordinance shall be applicable to said subdivision or land development.

**130 EFFECTIVE DATE OF ORDINANCE**

This Ordinance shall become effective five (5) days after the date of its adoption.

**140 REPEALER**

The Lower Nazareth Township Subdivision and Land Development Ordinance No. 162 adopted August 27, 2003, and all amendments thereto are hereby repealed. This Ordinance does not repeal provisions of other laws or ordinances except those specifically repealed by this Ordinance.

Duly ordained and adopted this - 27<sup>th</sup> day of - April, 2005.

Township of Lower Nazareth

By



Dr. Alan Dilsaver  
Chairman, Board of Supervisors

Attest:



-Timm A. Tenges-Township Secretary

## ARTICLE 2

### DEFINITIONS

- 200 Unless otherwise expressly stated, the following terms shall, for the purpose of these regulations, have the meanings indicated:
- 201 Words in the singular include the plural and those in the plural include the singular.
- 202 Words in the present tense include the future tense.
- 203 The words "person", "developer", "subdivide", and "owner" include a corporation, unincorporated association, a partnership, or other legal entity, as well as an individual.
- 204 The word "building" includes structure and shall be construed as if followed by the phrase "or part thereof".
- 205 The words "should" and "may" are permissive; the words "shall" and "will" are mandatory and directive.
- 206 The word "Township" means Lower Nazareth Township, Northampton County, Pennsylvania.
- 207 The term "Board of Supervisors" means the Board of Supervisors of Lower Nazareth Township.
- 208 The term "Planning Commission" means the Planning Commission of Lower Nazareth Township.
- 209 The term "Board" means the Zoning Hearing Board of Lower Nazareth Township.
- 210 If a word is not defined in this Ordinance, but is defined in the Township Zoning Ordinance, as amended, the definition in that Ordinance shall apply. If a word is defined in both this Ordinance and another Township Ordinance, each definition shall apply to the provisions of each applicable Ordinance.
- 211 Any word or term not defined in this Ordinance or in the Township Zoning Ordinance, as amended, shall have its plain and ordinary meaning within the context of the Section. A standard reference dictionary should be consulted.
- 212 The words "such as", "includes", "including" and "specifically" shall provide examples. These examples shall not, by themselves, limit a provision to the examples specifically mentioned if other examples would otherwise comply with the provision.
- 213 All undefined terms used in this ordinance which are defined in the Pennsylvania Storm Water Management Act of 1978, or the Stormwater Management Ordinance of Lower Nazareth Township as adopted in 1988, shall have the meaning defined in said Act or Plan. In the event that terms are defined both in this ordinance, and in the Act or Stormwater Ordinance, the definitions contained in this Ordinance shall prevail over the definitions contained in the Act and the Stormwater Ordinance. Other terms or words used herein shall be interpreted or defined as follows:

**ACCESSORY BUILDING.** A building which is subordinate and accessory to a principal building on the same lot and which is used for purposes that are clearly customarily incidental to the uses of the principal building. Any portion of a principal building used for an accessory use shall not be considered to be an accessory building.

**ACCESSORY STRUCTURE.** A structure, such as a private garage or private swimming pool, serving a purpose customarily incidental to the use of the principal building and located on the same lot as the principal building.

**ACCESSORY USE.** A use separated from, subordinate to and customarily incidental to the use of the principal building and situate on the same lot.

**ALLEY.** A public or private thoroughfare, which affords only a secondary, means of access to abutting property and not intended for general traffic circulation.

**APPLICANT.** A landowner or developer, as hereinafter defined, who has filed an application for development including his heirs, successors and assigns.

**BLOCK.** Property bounded on one side by a street, and other three sides, by a street, railroad right-of-way, waterway, unsubdivided area, or other definite barrier.

**BUILDING.** Any structure having a permanent roof and intended for the shelter, work area, housing or enclosure of persons, animals, equipment or materials and that a total area under roof of greater than 16 square feet. "Building" is interpreted as including "or part thereof." See the separate definition of "structure". Any structure involving a permanent roof (such as a covered porch or a carport) that is attached to a principal building shall be considered to be part of that principal building.

**BUILDING SETBACK LINE.** A line, which designates the minimum distance between any building and the adjacent street right-of-way or property line, whichever is closer. This line shall be measured from a point or points formed by the intersection of a vertical building wall with the ground (or in the case of a cantilevered building, at the vertical plane which coincides with the most projected surface), to the street right-of-way or property line, whichever is closer.

**Front Yard Building Setback Line.** The line parallel to the public or private street right-of-way line at a distance equal to the minimum depth of the front yard designated for each district in the Lower Nazareth Township zoning Ordinance. All yards adjacent to a public or private street right-of-way shall be considered front yards, except in double frontage lots.

**Side Yard Building Setback Line.** The line parallel to the side lot line and equal to the minimum depth of the side yard designated for each district in the Lower Nazareth Township Zoning Ordinance.

**Rear Yard Building Setback Line.** The line parallel to the rear lot line and equal to the minimum depth of the rear yard designated for each district in the Lower Nazareth Township Zoning ordinance.

**CARTWAY.** The paved portion of a street designed for vehicular traffic and on-street parking, but not including the shoulder of the street.

**CLEAR SIGHT TRIANGLE.** An area of unobstructed vision at street intersections defined by the center lines of the streets and by a line of sight between points on their center lines at a predetermined distance from the intersection of the center lines, measured at two (2) feet in height.

**CLOSED DEPRESSION.** A part of the land surface of a lot, parcel or tract which drains internally, and which generally has sunk to a variable depth and is generally characterized by a downward movement of soil into bedrock voids without breaking the ground surface.

**COMPREHENSIVE PLAN.** The document entitled the "Lower Nazareth Comprehensive Plan," or any part thereof, adopted by the Board of Supervisors, as amended.

**CUT.** An excavation. The difference between a point on the original ground a designated point of lower elevation on the final grade. Also, the material removed in excavation.

**DESIGN STORM.** The magnitude of precipitation from a storm event measured in probability of occurrence (e.g. 50-year storm) and duration (e.g. 24 hour), and used in computing storm water management control systems.

**DETENTION BASIN.** A basin designed, intended or used to retard storm water 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.

**DWELLING UNIT.** A room or group of rooms located within a residential building and forming a single habitable unit with facilities, which are used or intended to be used for living, sleeping, cooking and eating by one family.

**EASEMENTS.** A liberty, privilege or advantage which one has in the lands of another for a precise and definite purpose, subordinate to, but not inconsistent with, the owner's general property rights.

**ENGINEER.** A Professional Engineer licensed by the Commonwealth of Pennsylvania.

**EROSION.** The removal of surface materials by the action of natural elements.

**FILL.** 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 the stripped surface and shall include the conditions resulting therefrom. The difference in elevation between a point on the original ground and a designated point of higher elevation on the final grade. The material used to make a fill.

**FLOOD PLAIN.** A relatively flat or low lying area adjoining a river, stream or watercourse which is subject to partial or complete inundation during a 100-year design frequency storm or an area subject to the accumulation or runoff of surface waters from any source, as more fully defined by the current edition of the Lower Nazareth Township Flood Insurance Rate Map and associated Flood Plain Study.

**GRADING.** Changing existing topography through cutting or filling by two (2) feet or more in elevation over an area exceeding 1,000 square feet.

**HYDRIC SOILS.** Poorly drained soils that can support hydrophytic plants, but may not necessarily do so.

**IMPROVEMENTS.** Those physical additions and changes to the land that may be necessary to produce usable and desirable lots.

**KARST.** A type of topography that is formed over limestone, dolomite, or gypsum by bedrock solution, and that is characterized by closed depressions or sinkholes, caves and underground drainage.

**LAND DEVELOPMENT.** Any of the following activities:

- (a) The improvement of one lot or two or more contiguous lots, tracts or parcels of land for any purpose involving:
  - (i) a group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or
  - (ii) the division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups or other features.
- (b) A subdivision of land.
- (c) Development in accordance with Section 503.1.1 of the Municipalities Planning Code, as amended.

**LANDOWNER.** The owner of a legal or equitable interest in land, including the holder of a written, signed and active option or contract to purchase or a leasee (if authorized under the lease to exercise the right of the landowner), or authorized officers of a partnership or corporation that is a "landowner" or other person having a proprietary interest in land. A person who has clearly received formal notarized powers of attorney relating to a landowner may act in the capacity of the landowner, if legally authorized.

**LEHIGH VALLEY PLANNING COMMISSION.** The Planning Commission of Lehigh and Northampton Counties.

**LOT.** A separate parcel of land that is recorded or that will be recorded after Township approval in the office of the County Recorder of Deeds. A parcel under common ownership that is completely separated into two parts by a public street shall be considered to be one tract but two lots.

**LOT AREA.** The horizontal land area contained within the lot lines of a lot (measured in acres or square feet). Lot area shall not include the following:

- A. Areas within future or existing street rights-of-way.
- B. Areas that are currently or will be dedicated as common open space or,
- C. For residential lots only, areas within rights-of-way intended for overhead electrical lines of 35 kilovolts or higher capacity.

**MAINTENANCE GUARANTEE.** Any security which may be accepted by the Board of supervisors to insure the structural integrity of accepted improvements as well as the functioning of said improvements in accordance with the design and specifications as depicted on the final plan, for a period of twelve (12) months.

**MARKER.** A metal pipe or pin of at least three-quarters (3/4) inches outside diameter and at least thirty (30) inches in length.

**MOBILE/MANUFACTURED HOME PARK.** A parcel of land under single ownership which has been planned and improved for the placement of 2 or more mobile/manufactured homes for nontransient residential use. The individual manufactured homes may be individually owned. A development of mobile/manufactured homes that is subdivided into individual lots shall be regulated in the same manner as a subdivision of site-built homes, and shall not be considered to be a "mobile home park."

**MONUMENT.** A stone or concrete monument with a flat top at least four (4) inches in diameter or square. The bottom sides or radius shall be at least two (2) inches greater than the top to minimize movements caused by frost. The monument shall contain a steel dowel and be at least thirty (30) inches in length.

**OPEN SPACE.** That part of a lot, parcel or tract which is unoccupied and unobstructed by any structure or impervious cover, except recreational and utility structures, which are permitted. The term "open space" shall not include any area designed, maintained or used for streets, roads, highways, driveways or parking areas.

**OPEN SPACE, COMMON.** A parcel or parcels of land, within a tract which meets all of the following standards:

- (a) is designed, intended and suitable for active or passive recreation by residents of a development or the general public,
- (b) is covered by a system that ensures perpetual maintenance, if not intended to be publicly owned,
- (c) will be deeded to the Township and/or deed restricted to permanently prevent uses of land other than "common open space" and non-commercial recreation, and
- (d) does not use any of the following areas to meet minimum open space requirements:
  - 1) existing or established future street rights-of-way,
  - 2) vehicle streets or driveways providing access to other lots,
  - 3) land beneath building(s) or land within 20 feet of a building (other than accessory buildings and pools clearly intended for noncommercial recreation and other than agricultural buildings and a farmstead which are permitted within land approved by the Township for agricultural preservation),
  - 4) off-street parking (other than that clearly intended for noncommercial recreation),
  - 5) area(s) needed to meet a requirement for an individual lot,
  - 6) area(s) deeded over to an individual property owner for his/her own exclusive use, except for land approved by the Township for agricultural preservation,
  - 7) land beneath or within 50 feet of each side of each of the following: a) overhead electrical transmission lines of 35 kilovolts or greater capacity, b) the towers/poles supporting such lines,

- 8) for land intended to be open to the public, that does not have provisions for entry with a 20 feet minimum width by pedestrians from a street open to the public or from an adjacent common open space area that has access to such a street,
- 9) land that includes a stormwater detention basin, except for a basin or portions of a basin that the applicant proves to the satisfaction of the Board of Supervisors would be reasonably safe and useful for active or passive recreation during the vast majority of weather conditions,
- 10) portions of land that have a width of less than 20 feet,
- 11) land that includes commercial recreation uses, except as may specifically be permitted to be counted towards a common open space requirement by a specific provision of this Ordinance, and
- 12) land that includes a central sewage treatment plant or a stormwater facility, except as provided for above.

**PA DEP.** The Pennsylvania Department of Environmental Protection, or its successors, and its subparts.

**PENNDOT.** The Pennsylvania Department of Transportation, or its successor, and its subparts.

**PERFORMANCE GUARANTEE.** Any security which may be accepted by the Board of Supervisors to guarantee that the proper construction of improvements be made by the developer as a condition for the approval of the Plan.

**PLAN, FINAL.** A complete and exact plan, with professional engineer's seal and/or professional land surveyor's seal affixed and prepared for official recording as required by this Ordinance to define property rights, streets and other proposed improvements.

**PLAN, PRELIMINARY.** A tentative plan, in lesser detail than a Final Plan, showing proposed streets and lot layout and such other information as required by this Ordinance.

**PLAN, RECORD.** The copy of the Final Plan which contains the original endorsements of the Lehigh Valley Planning Commission and the Township Planning Commission and which is intended to be recorded with the County Recorder of Deeds.

**PLAN, SKETCH.** An informal plan, indicating salient existing features of a tract and its surroundings and the general layout of the proposed subdivision. A sketch plan is not mandatory and is not a preliminary plan.

**PUBLIC NOTICE.** Notice as required by the Municipalities Planning Code.

**RECREATION LAND.** Land dedicated to the Township or other entity approved by the Township for the use of the Township's residents, which is suitable for active uses such as playing fields. Recreation lands shall not include areas within the 100 year flood plain, power line or pipeline rights-of-way, quarries, road rights-of-way, buffer zones, or stormwater management facilities. Recreation lands shall not include areas characterized by wetlands, hydric soils, slopes in excess of five (5%) percent, or woodlands.



**REVERSE FRONTAGE LOT.** A parcel designed such that individual residential uses abut a street on both the front and the rear, with vehicular access from only one street. A lot will only be deemed a reverse frontage lot if access is from a local street.

**RIGHT-OF-WAY.** Land reserved for the public or others for use as a street or other purpose. Unless otherwise stated, "right-of-way" shall mean the future street right-of-way line.

**RUNOFF.** That part of precipitation which flows over the land.

**SALDO.** The Lower Nazareth Township Subdivision and Land Development Ordinance of 2001.

**SANITARY SEWAGE DISPOSAL, ON-LOT.** An "on-lot" septic tank disposal system generally providing for disposal of effluent for only one building or a group of buildings on a single lot, and provided in compliance with Pennsylvania Department of Environmental Resources' regulations or regulations of the Township, whichever may be more stringent.

**SANITARY SEWAGE DISPOSAL SYSTEM, PUBLIC.** A public or private utility system designed to collect, centrally treat and dispose of sewage from more than one customer, in compliance with Pennsylvania Department of Environmental Resources' regulations or regulations of the Township, whichever may be more stringent.

**SEDIMENTATION.** The process by which mineral or organic matter is accumulated or deposited by moving wind, water or gravity. Once this matter is deposited (or remains suspended in water), it is usually referred to as "sediment".

**SIGHT DISTANCE.** The required length of roadway visible to the driver of a motor vehicle at any given point on the roadway when the view is unobstructed by traffic. Sight distance measurements shall be made between a point 3.5 feet above the centerline of the road surface and a point 3.5 feet above the centerline of the road surface.

**SINKHOLE.** A localized sinking of land surface to a variable depth generally characterized by a roughly circular outline and a downward movement of soil into bedrock voids.

**SLOPE.** The vertical change of an area of land divided by the horizontal change, measured in percent.

**SOIL STABILIZATION.** Chemical or structural treatment of a mass of soil to increase or maintain its stability or otherwise improve its engineering properties.

**STORM SEWER.** A system of pipes or other conduits which carries intercepted surface runoff, street water and other wash waters, or drainage, but excludes domestic sewage and industrial wastes.

**STORM WATER MANAGEMENT PLAN.** The plan for managing storm water runoff adopted by Northampton County for the Monocacy Creek Watershed and the Bushkill Creek Watershed as required by the Act of October 4, 1978, P.L. 864, (Act 167), and known as the "Storm Water Management Act".

**STREET.** A strip of land intended for use as a means of vehicular or pedestrian traffic, whether public or private.

**ARTERIAL STREET.** A major regional highway designed to carry heavy vehicular traffic onto, out of, or through the regional area; subject to necessary control of entrances, exits and curb use.

**COLLECTOR STREET.** A street designed to carry a moderate volume of traffic to intercept local streets, to provide routes to arterial roads and to community facilities and to provide a limited amount of access to the abutting properties.

**CUL-DE-SAC.** A local street intersecting another street at one end, and terminating in a vehicular turn-around at the other.

**DEAD END STREET.** A street with a single connection with the surrounding road network, which fails to meet the definition of "stub street."

**EXPRESSWAY.** A major highway designed for large volumes and high speed traffic with access limited to grade separated intersections.

**LOCAL STREET.** A street whose function is to provide for local traffic movement with relatively low volumes and direct access to abutting properties.

**LOOP STREET.** A street which intersects only with itself, except for a single connection with the surrounding road network.

**MARGINAL ACCESS STREET.** A local street which is parallel to and adjacent to an expressway, or an arterial road, and which provides access to abutting properties and protection from through traffic.

**PUBLIC STREET.** A street which has been accepted for dedication by Lower Nazareth Township for public use.

**STUB STREET.** A street or road within a subdivision terminating at the subdivision boundary with no permanent vehicular turnaround. Stub streets are provided to permit adjacent undeveloped parcels of land to be developed later with an adequate connecting street system.

**STREET RIGHT-OF-WAY LINE.** The dividing line between the street and the lot. The street line shall be the same as the legal right-of-way line provided that: (1) the street right-of-way line shall be not less than 16-1/2 feet from the centerline of any existing road or street, and (2) where a future right-of-way width for a road or street has been officially established, then the street right-of-way shall be the side line of the future right-of-way so established.

**STRUCTURE.** Any man-made object having an ascertainable stationary location on, below or in land or water, whether or not affixed to the land, subject to the following specific standards:

- A. The following specifically shall be considered to be structures: buildings; signs; stadiums; platforms; communications towers; walkways, porches or decks that are structurally raised above the underlying ground level or that are covered by a permanent structure; swimming pools (whether above or below ground); storage sheds; carports; and garages; post or pier mounted lights; brick or masonry piers; walls; non-portable basketball backboards; fences and gates.

- B. Any structure shall be subject to the principal or accessory setbacks of the Lower Nazareth Township Zoning ordinance, as applicable, unless specifically exempted or unless a specific setback is established for that particular type of structure by the Lower Nazareth Township Zoning ordinance.

**SUBDIVISION.** The division or redivision of a lot, tract, or parcel of land by any means into two 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 that the division of land for agricultural purposes into parcels of more than ten (10) acres, not involving any new street or easement of access, shall be exempted.

**SUBDIVISION, MINOR.** A subdivision which does not by itself or in combination with previous subdivision plans, involve more than a total of three (3) lots, and does not involve the provision of any new street or easement for access (i.e. one in which all proposed lots will have frontage on an existing public street), or a boundary line adjustment between property owners where no new lots are created.

**SURVEYOR.** A licensed surveyor registered by the Commonwealth of Pennsylvania.

**SWALE.** A low lying stretch of land which gathers or carries surface water runoff.

**TOPSOIL.** Surface soils and subsurface soils which presumably 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.

**TOWNSHIP ENGINEER.** A professional engineer licensed as such in the Commonwealth of Pennsylvania, duly appointed as the Township Engineer.

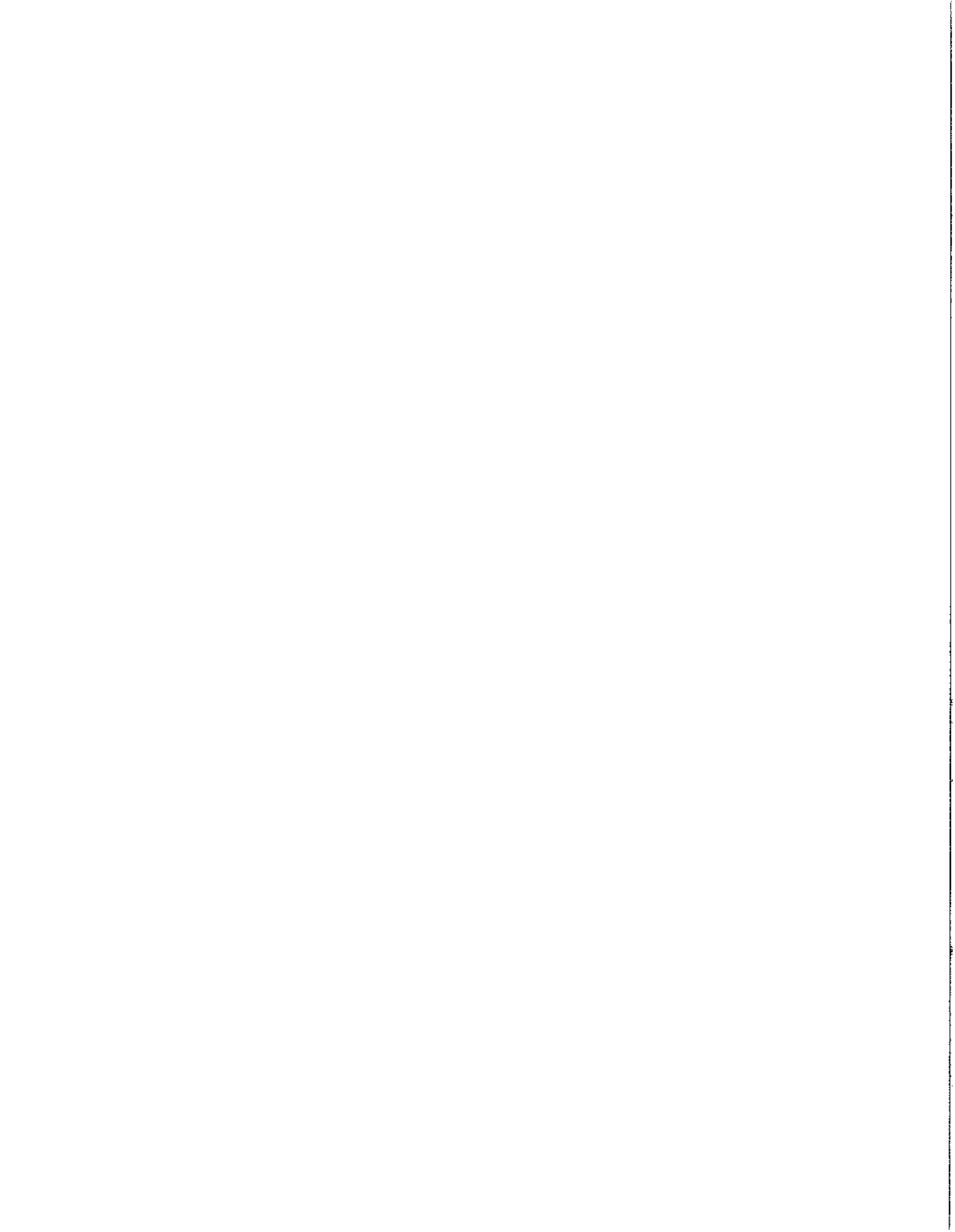
**WATERCOURSE.** Any channel of conveyance of surface water having defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

**WATER SUPPLY AND DISTRIBUTION SYSTEM, ON-LOT.** An "on-lot" water supply system generally providing for an adequate supply of water for one building or a group of buildings on a single lot, and in compliance with the Pennsylvania Department of Environmental Resources, regulations or Township regulations, whichever may be more stringent.

**WATER SUPPLY AND DISTRIBUTION SYSTEM, PUBLIC.** A public or private utility system designed to transmit water from a common source to customers in compliance with the Pennsylvania Department of Environmental Resources' Regulations or the Township Regulations, whichever may be more stringent.

**WETLANDS.** Areas that are inundated or saturated by surface or groundwater 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, or as specifically described under the official Federal definition of wetland.

**WOODLAND.** Areas composed of a grove of trees forming one canopy where ten (10) or more trees measure at least six (6) inches in diameter, measured at four and one-half (4-1/2) feet from the ground.



## ARTICLE 3

### SKETCH PLAN SUBMISSION PROCEDURES AND REQUIREMENTS

#### 300 SKETCH PLAN SUBMISSIONS

- 301 Applicants may submit a sketch plan for the review of the Township Planning Commission. The sketch plan may be used to familiarize the Township Planning Commission with the concept of the development. The Township Planning Commission may make informal recommendations with regard to the plans. These recommendations shall not be considered to be binding upon the Township.

While a Sketch Plan is not required, it is strongly recommended as an initial submission for all subdivisions and land developments. It allows the Applicant to consult early and informally with the Planning Commission and Supervisors before preparing a Preliminary Plan and formal application for approval. The Sketch Plan can also be used to classify the submission as a Minor or Major Subdivision, Lot Line Adjustment or Land Development.

- 302 Applicants submitting sketch plans shall provide thirteen (13) copies of all maps and other material, plus the appropriate Application Fees as established by the Township, to the Township.
- 303 The Township shall provide five (5) sets of plans and material to the Township Planning Commission, one (1) set of plans and material to the Township Engineer, one (1) set of plans and material to Manager, and five (5) sets of plans and material to the Township Supervisors. The Township shall retain one (1) set of the plans and one (1) set of the supplemental material. The Township will determine if additional sets are required for the following: (1) set of plans and material to the Township Park and Recreation Commission, one (1) set of plans and material to the Environmental Advisory Board.
- 304 The Applicant shall also submit two (2) reduced copies (8-1/2" x 14" size) of the Sketch Plan to the Township. The Township shall provide one (1) copy of the reduced plan to the Township Solicitor and retain one (1) copy for the Township records.
- 305 Applicants submitting Sketch Plan shall submit one (1) set of plans, material and fees to the following agencies:

305.1 The Lehigh Valley Planning Commission

305.2 PennDOT (where applicable)

305.3 Easton Suburban Water Authority (where applicable)

**310 SKETCH PLAN REVIEW**

- 311 The Township Planning Commission will consider a sketch plan submission at its next regular meeting, or at another meeting held within sixty (60) days of the next scheduled meeting, provided that the submission is received by the Planning Commission at least twenty-one (21) days prior to said meeting.
- 312 The Township Planning Commission shall review the sketch plan data to determine the development potential of the site, as indicated by the natural features analyses presented. The general development concepts of the sketch plan will be reviewed to determine their compatibility with the development potential of the site and the Lower Nazareth Township Comprehensive Plan. Also, the sketch plan stage is designed to offer the developer an opportunity to informally discuss his plans for the proposed subdivision or land development with the Township Planning Commission.
- 313 In its review of the Sketch Plan, the Township Planning Commission shall consider the reports of the Lehigh Valley Planning Commission, Township Engineer and Township Solicitor, where required.
- 314 The review comments shall be presented at the meeting to the applicant and/or his representatives. In the event that an applicant and/or his representatives are not in attendance at the meeting, the sketch plan review shall be conducted at the next scheduled Township Planning Commission meeting.
- 315 Upon review by the Planning Commission, the Sketch Plan may be presented to the Township Board of Supervisors, if requested by the Applicant or recommended by the Planning Commission.
- 316 No official action shall be taken on a Sketch Plan. Neither the Township nor the applicant shall be bound by comments made or not made as part of a Sketch Plan review.

**320 SKETCH PLAN REQUIREMENTS**

The sketch plan submission should include the following data and be drawn to the following standards.

- 321 Application Review Fee of a sketch plan submission
- 322 Property boundaries (may be obtained from County Tax Map or similar sources).
- 323 General topographic contours from available data (may be obtained from United States Geological Surveys).
- 324 A letter of intent and a deed plot of the proposed subdivision or land development tract, including proposed recreation areas, proposed open space areas, and proposed detention basin sites, explaining and illustrating the developer's general development concepts for the tract. Sketch plans shall be at a minimum scale of 1"=100'.

- 325 Site data including:
- 325.1 Acres of entire tract.
  - 325.2 Number of lots.
  - 325.3 Zoning District of area.
  - 325.4 Name of subdivision (name can be the same as the recorded owner).
  - 325.5 Approximate acreage of proposed recreation areas and open space areas.
  - 325.6 Proposed water source and method of sanitary sewer disposal.
- 326 Magnetic north point.
- 327 Appropriate scale.
- 328 A location map, with a minimum scale of 1"=1000', showing the general location of the subdivision in relation to adjacent properties, roads and streams.
- 329 A map illustrating an analysis of natural drainage patterns and water resources within the proposed subdivision tract, including delineation of all streams, natural drainage swales, ponds and lakes, wetlands, flood plains subject to a one hundred (100) year flood frequency, and permanent and seasonal high water table areas. The map may use USGS quad sheets, County Soil Survey Maps, Wetland Inventory Maps, the flood boundary and floodway map from the municipal Flood Insurance Study, the Township Comprehensive Plan, other sources known to the applicant, as well as field inspection as the basis of the information.
- 330 A map illustrating an analysis of types of soils present within the proposed subdivision tract. The map should include delineation of prime agricultural soil areas, soils with shallow depth to bedrock, soils most susceptible to erosion, hydric soils, soils most suitable for urban development, and soils generally suitable for on-lot sewage disposal. The map may be based on the County Soil Survey among other sources. Sinkholes and closed depressions should be identified on the map.





## ARTICLE 4

### PRELIMINARY PLAN SUBMISSION PROCEDURES AND REQUIREMENTS

#### 400 PRELIMINARY PLAN SUBMISSION

- 401 Preliminary Plans, and all required supplementary data, for all proposed subdivisions and land developments shall be submitted to the Township.
- 402 Official submission of a Preliminary Plan to the Township Planning Commission shall comprise the following:
- 402.1 Submission of one (1) copy of a completed Preliminary Subdivision or Land Development Application.
  - 402.2 Submission of seventeen (17) sets of paper prints of the Preliminary Plan, which shall fully comply with provisions of this ordinance as set forth in Section 420.
  - 402.3 Submission of five (5) copies of all required supplemental information as set forth in Section 425.
  - 402.4 The Applicant shall also submit two (2) reduced copies 8 1/2" x 14" size) of the Preliminary Layout Plan to the Township. The Township shall provide one (1) copy of the reduced plan to the Township Solicitor and retain one (1) copy for the Township records.
  - 402.5 The Applicant, upon filing his plan shall prepare a list of all property owners located within two hundred (200) feet of the subdivision/land development. Applicant shall mail the notification contained in Appendix "E" of this SALDO to all property owners within 200 feet of any new lots created by the subdivision or within 200 feet of any improvements proposed on the land development plan. Property owners within 200 feet of a residual tract shown on the subdivision plan, larger than two acres in size, need not be notified.

Notifications to such property owners must be mailed by certified mail, return receipt no later than twenty-one (21) days before the date of the Planning Commission meeting at which the subdivision/land development is to be considered for the first time.

Applicant must furnish the Township with a copy of the list of all property owners to whom notifications should be mailed prior or simultaneously with submission. Proof of mailing should be provided by supplying copies of the postmarked Certified Mail Receipts.

The Applicant shall provide the Township with the proofs of notification a minimum of three (3) days prior to the Planning Commission meeting at which the subdivision/land development is to be considered.

- 402.6 All plans submitted to the Township must be folded, where possible, unless the plan is of such size that makes folding impractical, i.e. extra large sheets or sets over 10 pages.

- 402.7 Two (2) compact discs containing the copies of the Preliminary Subdivision and Land Development drawings, in a format suitable to Lower Nazareth Township.
- 403 The Township shall distribute the plans and other material as follows:
- 403.1 Five (5) sets of the plans and one (1) set of supplemental information to the Township Planning Commission, five (5) sets of the plans to the Board of Supervisors, one (1) set of plans and one (1) set of supplemental information to the Township Manager, two (2) sets of the plans and two (2) sets of supplemental information to the Township Engineer, one (1) set of plans to the Township Parks and Recreation Commission, one (1) set of plans to the Environmental Advisory Board, and one (1) set of plans to Hecktown Volunteer Fire Department.
- 403.2 The Township shall retain one (1) set of the plans and one (1) set of the supplemental material.
- 403.3 Additional prints of the preliminary plan shall be submitted by the developer to the Township for distribution to the respective agencies in each of the following circumstances:
- 403.31 Whenever a proposed subdivision or land development is located adjacent to another municipality, one (1) print of the Preliminary Plan shall be submitted for each additional or adjacent municipality to the respective municipalities.
- 404 The applicant shall submit one (1) set of plans, all supplemental material relevant to said agency, and required fees to the following agencies:
- Lehigh Valley Planning Commission. If a review of conformity to an Act 167 stormwater management plan is required, the number of plans and calculations should be increased to two (2).
- Easton Suburban Water Authority (where applicable)
- The governing Sanitary Sewer Authority (where public sanitary sewer service is proposed)
- Northampton County Soil Conservation District
- PennDOT (whenever the property being subdivided abuts a state road).
- U.S. Army Corps of Engineers (whenever the site analysis maps required by Section 425.1 indicate the presence of hydric soils or wetlands on the property).
- Pennsylvania Department of Environmental Protection (whenever the site analysis maps required by Section 425.1 indicate the presence of hydric soils or wetlands on the property).
- 405 Official submission of a Preliminary Plan to the Township Board of Supervisors shall comprise the following:
- 405.1 Submission of a cover letter stating request and date the applicant wishes to be heard;

- 405.2 Submission of ten (10) sets of paper prints of the Preliminary Plan, which shall fully comply with provisions of this ordinance as set forth in Section 420.
- 405.3 Submission of five (5) copies of all required supplemental information as set forth in Section 425.
- 405.4 The Applicant shall also submit two (2) reduced copies 8 1/2" x 14" size) of the Preliminary Layout Plan to the Township. The Township shall provide one (1) copy of the reduced plan to the Township Solicitor and retain one (1) copy for the Township records.
- 405.5 All plans submitted to the Township must be folded, where possible, unless the plan is of such size that makes folding impractical, i.e. extra large sheets or sets over 10 pages.
- 406 The Township shall distribute the plans and other material as follows:
  - 406.1 Five (5) sets of the plans to the Board of Supervisors, one (1) set of plans and one (1) set of supplemental information to the Township Manager; one (1) set of plans and one (1) set of supplemental information to the Township Solicitor; two (2) sets of the plans and two (2) sets of supplemental information to the Township Engineer.
  - 406.2 The Township shall retain one (1) set of the plans and one (1) set of the supplemental material.

**410 REVIEW OF PRELIMINARY PLAN**

**411 By the Township Planning Commission.**

- 411.1 When a Preliminary Plan has been submitted to the Township, such plan shall be placed on the agenda of the Planning Commission for review at a meeting to be held within sixty (60) days of the submission, provided that such submission has occurred no less than twenty-one (21) days (not counting the meeting day) prior to such meeting (if the 21<sup>st</sup> day falls on a holiday, it would be the next business day). The Planning Commission may hold a Public Hearing on the Preliminary Plan at this time. All submissions must be made by 11:00 a.m. of the cutoff date, no exceptions, complete with all supplemental information and required fees. Submissions without the required information will be considered incomplete and not eligible for placement on the agenda until the information is submitted. Submission does not guarantee a spot on the agenda.
- 411.2 The Planning Commission shall review the Preliminary Plan to determine its conformance with the standards contained in this ordinance and other applicable municipal ordinances, and shall recommend such changes and modifications as it deems necessary.
- 411.3 No action shall be taken by the Township Planning Commission with respect to a Preliminary Plan until it has received and considered the written report of the Lehigh Valley Planning Commission provided, however, that if the Lehigh Valley Planning Commission shall fail to report thereon within thirty (30) days after receipt of a Preliminary Plan, then the Township Planning Commission may officially act without having received and considered such report.

- 411.4 Within sixty (60) days after the first meeting following the submission of the Preliminary Plan, providing that such submission has occurred no less than twenty-one (21) days prior to such meeting, the Planning Commission shall recommend to the Board of Supervisors, in writing, that the Preliminary Plan be approved or disapproved together with the documented findings upon which the recommendations are based.
- 412 By the Board of Supervisors.
- 412.1 Within ninety (90) days following the date of the regular meeting of the Planning Commission, at the next meeting following the date of the application (unless the next meeting does not fall in a thirty (30) day period following the date of the application in which case the ninety (90) day period commences on the thirtieth (30th) day following the date of the application), and a complete Preliminary Plan package has been submitted to the Township, the Board of Supervisors shall, in accordance with the provisions of relevant ordinances and considering the recommendations of the Planning Commission, take action by approving or disapproving the Preliminary Plan. This time period may be extended by action of the Board of Supervisors or the Planning Commission upon the receipt of a written request for an extension of time from the applicant. The Board of Supervisors shall document the findings upon which that action is based, and communicate them to the applicant within fifteen (15) days from the date that the decision has been made. This communication shall occur within the period provided for a decision in the first sentence of this section. The decision and findings shall be communicated to:
- 412.2a the applicant;
  - 412.2b the Township Planning Commission;
  - 412.2c the Township Solicitor;
  - 412.2d the Township Engineer.
- 412.2 All submissions must be made by 11:00 a.m. of the cutoff date, no exceptions, no less than fifteen (15) days (not counting the meeting day) prior to the meeting, complete with all supplemental information. Submissions without the required information will be considered incomplete and not eligible for placement on the agenda until the information is submitted. Submission does not guarantee a spot on the agenda.

## 420 PRELIMINARY PLAN REQUIREMENTS

- 421 The Preliminary Plan of a proposed subdivision shall be clearly and legibly drawn to a minimum scale of one (1) inch equals fifty (50) feet.
- 422 The original drawing and all submitted prints shall be made on sheets having one of the following sets of dimensions:
- 422.1 Twenty-four (24) inches by thirty-six (36) inches;
  - 422.2 Thirty (30) inches by forty-two (42) inches.

- 423 If the subdivision layout requires more than one (1) sheet or if the subdivision involves more than one (1) section or phase, a title sheet shall be provided. The title sheet shall include the road and lot layout plan at a minimum scale of one-inch equals two hundred (200) feet. The plan shall illustrate the boundaries of the areas covered on the different sheets, sections and phases. If the subdivision is for a section or phase of a subdivision, the relevant section or phase shall be differentiated in pattern from the remaining sections. The plan shall also indicate roads within two hundred (200) feet of the site and shall include an index of the plans.
- 424 The Preliminary Plan shall illustrate the following data:
- 424.1 Name and address of record owner; name of developer if different from owner; names of all adjoining subdivisions, if any, and the names of owners of all adjacent unplatted land, with the deed book reference, tax map, block and lot numbers where recorded.
  - 424.2 Name of the proposed subdivision; name of the municipality or municipalities within which subdivision is proposed; total tract boundaries of the property being subdivided, showing bearings and distances, a statement of total acreage of the property, and certified by a registered Professional Land Surveyor.
  - 424.3 Name, address, license number, and seal of registered engineer or land surveyor responsible for the subdivision plan; magnetic north point, graphic scale, and date including the month, day and year that the original drawing was completed, and the month, day and year that the original drawing was revised, for each revision.
  - 424.4 A key map, for the purpose of locating the property being subdivided, drawn at a scale not smaller than one (1) inch equals one thousand (1,000) feet and showing the relation of the property, differentiated by tone or pattern, to adjoining property and to all streets, streams, municipal boundaries, and recorded subdivision plans existing within two thousand (2,000) feet of any part of the property.
  - 424.5 Tax map, block, and lot numbers within the proposed subdivision tract; all existing streets, including streets of record (recorded, but not constructed), on or adjoining the tract, including names, right-of-way widths, cartway (pavement) widths, and approximate grades.
  - 424.6 All existing buildings or other structures within the proposed subdivision tract; all existing streets, and streets proposed in the Comprehensive Plan, including streets of record (recorded, but not constructed), on or adjoining the tract, including names; existing and future right-of-way widths, cartway (pavement) widths, and approximate grades.
  - 424.7 All existing sewer lines, water lines, fire hydrants, utility transmission lines, culverts, stormwater facilities, on-lot septic systems, wells, bridges, railroads, sidewalks, or other man-made features within the proposed subdivision tract and within two hundred (200) feet of the boundaries of the proposed subdivision tract; location, width, and purpose of existing easements and utility rights-of-way within two hundred (200) feet of the proposed subdivision tract.

424.8 Contour lines at vertical intervals of not more than two (2) feet. Location and elevation of the data to which contour elevations refer shall be the closest United States Coast and Geodetic Survey established benchmark, where available; spot elevations for all low and high points, plus elevation for all closed contour lines.

424.9 The full plan of proposed development, including the following:

- a. Location and width of all streets and rights-of way, with a statement of any conditions governing their use; suggested street names and utility easement locations; all applicable design criteria under Article 7.
- b. Front, side, and rear building setback lines for each lot.
- c. Lot lines, with computed dimensions and lot sizes (in both acres and square feet).
- d. A statement of the intended use of all nonresidential lots and parcels.
- e. Lot numbers and a statement of the total number of lots, parcels, dwelling units and density.
- f. Water, sanitary sewer and storm sewer plan and profile drawings (and other drainage facilities) with the size and material of each indicated and any proposed connections with existing facilities.
- g. Parks, playgrounds and other areas dedicated or reserved for public or common use, with any conditions governing such use and any proposed improvements.
- h. Signed certificate of ownership or equitable ownership, plus a copy of the current deed of record for the property being subdivided or developed.
- i. Copies of the proposed deed restrictions, protective and restrictive covenants, referenced to the preliminary plan map.

425 The preliminary plan shall be accompanied by the following supplementary data:

425.1 Site Analysis Maps.

(Where feasible and legible, the analysis involved in Sections 425.1a through 425.1d may be illustrated on one or a combination of composite maps. The combined impact of the natural characteristics of the tract upon the development potential of the tract shall be clearly illustrated on the map or maps).

- a. A map illustrating an analysis of natural drainage patterns and water resources within the proposed subdivision tract, including delineation of streams, natural drainage swales, ponds and lakes, flood plains, permanent and seasonal high water table areas, and closed depressions, plus a metes and bounds delineation of any on-site wetlands.

- b. A map illustrating an analysis of types of soils present within the proposed subdivision tract, based on the Northampton County Soil Survey, the Lower Nazareth Township Comprehensive Plan and other sources. The map should include delineation of prime agricultural soil areas, hydric soils, aquifer recharge areas, unstable soils, soils most susceptible to erosion, soils most suitable for urban development, and soils suitable for on-lot sewage disposal.
  - c. A map illustrating the characteristics of rock formations underlying the tract, including a delineation of aquifers (specifically those locally subject to pollution) and shallow bedrock areas.
  - d. A map delineating additional significant physical features within the proposed subdivision tract, such as woodland areas, large trees, rock outcroppings, sinkholes, historical sites and features and scenic views.
- 425.2 A contour grading plan and a plan for minimizing erosion and sedimentation, in accordance with erosion and sediment control standards as set forth in Section 791; a landscape plan, according to standards as set forth in Section 792.2. A letter shall be provided from the Northampton County Conservation District which indicates that the soil erosion and sedimentation control plan conforms to the Pennsylvania Department of Environmental Protection rules and regulations.
- 425.3 Typical cross-sections for proposed streets, sanitary sewer, storm drainage and water system improvements. Preliminary street and utility plan and profile drawings and street lighting plans where required.
- 425.4 A storm drainage plan for the proposed subdivision or land development, which conforms to design requirements for storm drainage as set forth in Section 770. If the site of the subdivision or land development is within a watershed with an approved Stormwater Management Plan enacted pursuant to Act 167, the criteria in the applicable plan shall be used.
- 425.5 In the case of subdivision or land development plans to be developed in stages or sections over a period of time, a map delineating each stage or section of the proposed subdivision or land development consecutively numbered so as to illustrate phasing of development, and a schedule indicating the approximate time for which applications for final approval of each stage or section is intended to be filed.
- 425.6 Preliminary designs of any bridges or culverts which may be required. Such designs shall meet all applicable requirements of the Pennsylvania Department of Environmental Protection, the Pennsylvania Department of Transportation and the Act 167 Stormwater Management Plan, if implemented.
- 425.7 Copies of the Subdivision Sewage Disposal Report, when required according to standards as set forth in Section 750.
- 425.8 Certification of water supply systems.

- 425.81 When water service to the proposed subdivision is to be provided by an existing public system, the developer shall submit two (2) copies of a letter from the agency, authority, or utility which agrees to extend water service, subject to the execution of a service agreement.
- 425.82 When water service to the proposed subdivision is to be provided by an on-lot well, the developer shall submit two (2) copies of a letter from the applicable Water Authority that service to the site is not feasible.

425.9 Certification of sewage disposal systems.

- 425.91 When sewage disposal service is to be provided by an existing public system or extension thereof, the developer shall submit a formal request for allocation to the Township Board of Supervisors. Upon receipt of a commitment for allocation from the Township, the developer shall contact the controlling Sewer Authority regarding connections into their sewer system.

All negotiations, designs, reviews, approvals and construction will be handled by the controlling Sewer Authority in accordance with their current regulations.

- 425.92 When sewage disposal service for the proposed subdivision or land development is to be by individual sewage disposal systems, the following requirements must be followed:

- (a) Prior to submission of a Preliminary Subdivision or Land Development Plan, the applicant or developer shall submit to the Pennsylvania Department of Environmental Protection (Department), Form ER-BWQ-359, "Application for Planning Module for Land Development," commonly known as the "postcard" submission, whereby the Department will indicate to the developer which module components to complete and make other guiding recommendations, as well as establishing a Department of Environmental Protections' code number for the project.
- (b) The developer shall then meet with a representative from the Department and the Township Sewage Enforcement Officer (SEO) to discuss the subdivision or land development with relationship to the Sewage Facilities Act "Official Plan".
- (c) The developer shall provide all information as required by the Planning Module for Land Development (PMLD). The developer shall submit the completed PMLD to the Township as part of the supporting data of the Preliminary Plan submission.
- (d) The Township shall review the PMLD and take municipal action within thirty (30) days of receipt of the completed module.



- (e) Preliminary Plan shall not be approved by the municipality until written approval of the PMLD is received from the Department of Environmental Protection. Modules will be reviewed for completeness and conformance to the requirements of the Sewage Facilities Act and Regulations promulgated thereunder, Chapters 71, 72, and 73 of PA Code Title 25. Incomplete module submissions will be returned to the applicant and will not be considered for review until complete.
- (f) The number and spacing of soil profile studies and percolation tests required for module preparation shall be sufficient to justify adequate sewage facility planning for the proposed subdivision or land development and shall contain general site suitability and soil mapping designations.
- (g) All soil testing information shall be indicated and clearly represented on plans and supporting documents, for evaluation.
- (h) The developer shall retain a soil scientist, hydrogeologist, or other competent professional to perform soil evaluations, percolation tests, and additional studies if required by the Department or Township SEO. The Township SEO will function only to observe the soil tests and review submitted material in accordance with this Ordinance.
- (i) Prior to plan approval, the developer shall test and locate, on each lot, a suitable primary and secondary absorption area. These areas shall be staked in the field and protected until such time as the system(s) are constructed and final grading completed on the lot. No Permit will be issued until the site is adequately marked. Any disturbance to the site by grading, equipment traffic, or material storage may be cause for Permit denial.

- 425.10 Whenever a proposed public improvement or on-lot septic system or detention pond encroaches upon a utility line or easement, the applicant shall provide a letter from the utility verifying that the development will comply with all reasonable design criteria set by the utility.
- 425.11 Whenever a modification is requested pursuant to the provisions of Section 1050, the applicant shall provide a written request conforming to the requirements of Section 1052.
- 425.12 The applicant shall provide a copy of the opinion of title as issued by a title insurance company or an attorney, which shall set forth the names of all owners of property included in the plat and shall include a list of mortgages, judgments, liens, easements, contracts and agreements of record in the Recorder of Deeds office in Northampton County, Pennsylvania, which shall affect the property covered by such plats.

- 425.13 If the subdivision/land development involves a proposed drainage structure located on State highway rights-of-way, the applicant shall submit plans and calculations to the Pennsylvania Department of Transportation for their review and approval.
- 425.14 Traffic Impact Analysis and Report as required by the Lower Nazareth Township Traffic Impact Fee ordinance.

## ARTICLE 5

### FINAL PLAN SUBMISSION PROCEDURES AND REQUIREMENTS

#### 500 FINAL PLAN SUBMISSION

- 501 Unless the final plan submission is made within five (5) years of the date of the preliminary plan approval or unless the Board of Supervisors grant an extension, in response to a written request which is submitted within five (5) years of the date of the preliminary plan approval, the preliminary plan approval shall be considered void. A new preliminary plan submission will be required if the previous approval is void. The new plans shall conform to current regulations.
- 502 The Final Plan shall conform in all significant respects to the Preliminary Plan as previously approved, but shall incorporate all modifications required by the Board of Supervisors. The Township Planning Commission may, however, accept a Final Plan modified so as to reflect any substantial changes, which have occurred on the site of the proposed subdivision, or in its surroundings, since the time of the Preliminary Plan approval.
- 503 Official submission of the Final Plan to the Township Planning Commission shall comprise the following:
- 503.1 Submission of one (1) copy of a completed Final Subdivision and Land Development Application.
  - 503.2 Submission of eleven (11) sets of paper prints of the Final Plan, which shall fully comply with provisions of this ordinance as set forth in Section 420.
  - 503.3 Submission of four (4) copies of all required supplemental information as set forth in Section 425.
  - 503.4 All plans submitted to the Township must be folded, where possible, unless the plan is of such a size that makes folding impractical, i.e. extra large sheets or sets over 10 pages.
  - 503.5 Two (2) compact discs containing the copies of the Final Subdivision and Land Development drawings, in a format suitable to Lower Nazareth Township.
- 504 The Township shall distribute the plans and other material as follows:
- 504.1 Five (5) sets of the plans and one (1) set of the supplemental information to the Township Planning Commission. Two (2) sets of plans and two (2) sets of supplemental information to the Township Engineer, one (1) set of plans to the Township Solicitor, and one (1) set of plans to the Easton Suburban Water Authority.
  - 504.2 The Township shall retain one (1) set of the plans and one (1) set of the Supplemental information.
- 505 Additional prints of the Final Plan shall be provided by the developer to the Township for distribution to the respective agencies in each of the following circumstances:

- 505.1 Whenever a proposed subdivision or land development is located adjacent to another municipality, one (1) print of the Final Plan shall be submitted for each additional or adjacent municipality to the respective municipalities.
- 506 The applicant shall submit one (1) set of plans, all supplemental material relevant to said agency, and required fees to the agencies set forth in section 404 if revisions were required by said agencies.
- 507 Official submission of the Final Plan to the Township Board of Supervisors shall comprise the following:
  - 507.1 Submission of a cover letter stating request and date the applicant wishes to be heard;
  - 507.2 Submission of ten (10) sets of paper prints of the Final Plan, which shall fully comply with provisions of this ordinance as set forth in Section 420.
  - 507.3 Submission of four (4) copies of all required supplemental information as set forth in Section 425.
  - 507.4 All plans submitted to the Township must be folded, where possible, unless the plan is of such a size that makes folding impractical, i.e. extra large sheets or sets over 10 pages.
- 508 The Township shall distribute the plans and other material as follows:
  - 508.1 Five (5) sets of the plans and one (1) set of the supplemental information to the Township Board of Supervisors. Two (2) sets of plans and two (2) sets of supplemental information to the Township Engineer, one (1) set of plans to the Township Solicitor, and , one (1) set of plans to the Township Manager.
  - 504.2 The Township shall retain one (1) set of the plans and one (1) set of the Supplemental information.

**510 REVIEW OF FINAL PLAN**

- 511 By the Township Planning Commission.
  - 511.1 When a Final Plan has been submitted to the Township, such plan shall be placed on the agenda of the Planning Commission for review at a meeting to be held within sixty (60) days of the submission, provided that such submission has occurred no less than twenty one (21) days prior to such meeting (if the 21<sup>st</sup> day falls on a holiday, the next business day). The Planning Commission may hold a Public Hearing on the Final Plan at this time. All submissions must be made by 11:00 a.m. of the cutoff date, no exceptions, complete with all supplemental information and required fees. Submissions without the required information will be considered incomplete and not eligible for placement on the agenda until the information is submitted. Submission does not guarantee a spot on the agenda.

- 511.2 The Planning Commission shall review the Final Plan to determine its conformance with the standards contained in this Ordinance and other applicable municipal ordinances, and shall recommend such changes and modifications as it deems necessary.
- 511.3 No action shall be taken by the Township Planning Commission with respect to a Final Plan until it has received and considered the written report of the Lehigh Valley Planning Commission, provided, however, that if the Lehigh Valley Planning Commission shall fail to report thereon within thirty (30) days after receipt of a Final Plan by the Lehigh Valley Planning Commission may officially act without having received and considered such report.
- 511.4 Within sixty (60) days after the first meeting following the submission of the Final Plan, providing that such submission has occurred no less than twenty one (21) days prior to such meeting, the Planning Commission shall recommend to the Board of Supervisors, in writing, that the Final Plan be approved or disapproved together with the documented findings upon which the recommendations are based.

512 By the Township Board of Supervisors.

512.1 Within ninety (90) days following the date of the regular meeting of the Planning Commission next following the date of the application (unless the next meeting does not fall in a thirty (30) day period following the date of the application in which case the ninety (90) day period commences on the thirtieth (30th) day following the date of the application), and a complete Final Plan package has been submitted to the Township, the Board of Supervisors, shall in accordance with the provisions of relevant ordinances and considering the recommendations of the Planning Commission, take action by approving or disapproving the Final Plan. All submissions must be made by 11:00 a.m. of the cutoff date, no exceptions, no less than fifteen (15) days (not counting the meeting day) prior to the meeting, complete with all supplemental information. Submissions without the required information will be considered incomplete and not eligible for placement on the agenda until the information is submitted. Submission does not guarantee a spot on the agenda. The review time period may be extended by action of the Board of Supervisors or the Planning Commission upon the receipt of a written request for an extension of time from the applicant. The Board of Supervisors shall document the findings upon which that action is based, and communicate them to the applicant within fifteen (15) days from the date that the decision has been made. This communication shall occur within the period provided for a decision in the first sentence of this section. The decision and findings shall be communicated to:

- a. the Applicant;
- b. the Township Planning Commission;
- c. the Township Engineer;

Action by the Board of Supervisors to approve the Final Plan shall be made in the form of a resolution, which is duly passed by the Board. The resolution shall include stipulations as to the terms of approval including the improvements agreement if one

is called for. No subdivision plan shall be approved unless the review fees, recreation fees, and other fees required under the terms of this Subdivision and Land Development Ordinance have been paid in full, and unless the improvements agreement, if one is called for, has been executed.

The applicant shall sign the resolution agreeing to the stipulations as to the terms of approval not less than five (5) days before the end of the statutory review period. Failure to sign the resolution by the applicant shall void the resolution forthwith. The Board of Supervisors shall then act to disapprove the application.

- 512.2 Action by the Board of Supervisors to approve or disapprove the Final Plan shall be made in the form of a motion, which is duly passed by the Board.
- 512.3 If approved, the motion passed by the Board shall include stipulations as to the terms of approval, including the improvements agreement if one is called for. The conditions for approval shall be made in writing and conveyed to the applicant.
- 512.4 If disapproved, the motion passed by the Board shall include the reason(s) for disapproval and shall be conveyed, in writing, to the Applicant.
- 512.5 No Final Subdivision Plan shall be signed and processed for recording unless the review fees, and other fees required under the terms of this ordinance have been paid in full, and unless the improvements agreement, if one is called for, has been executed.

## **520 FINAL PLAN RECORDING**

- 521 Within thirty (30) days of the execution of the resolution approving the subdivision, the applicant shall supply to the Township two (2) mylar reproducible prints and five (5) paper prints of each plan in the set of final plans.
- 522 The Township shall distribute the plans for signature by the Board of Supervisors, the Township Planning Commission, and the Lehigh Valley Planning Commission.
- 523 Upon the placement of the signatures on the plan as required by Section 522 and within ninety (90) days of the approval of the subdivision or land development, the Township shall file the plan at the Northampton County Recorder of Deeds office in the form prescribed by the Recorder of Deeds. Proof of recording shall be furnished to the Township.
- 524 The Township shall retain the mylar set of plans and shall distribute one (1) set of the approved plans each to the Township Planning Commission, the Board of Supervisors, and the Township Engineer.
- 525 A completed and executed copy of the Subdivision and/or Land Development Improvements Agreement shall be supplied prior to plan recording.

**530 FINAL PLAN REQUIREMENTS**

- 531 The Final Plans shall conform to standards and data requirements as set forth for Preliminary Plans in Section 420 of this Ordinance.
- 532 It shall not be necessary to resubmit supporting maps and data submitted with the Preliminary Plan, provided there has been no change.
- 533 The following additional data shall be illustrated on the Final Plan.
- 533.1 The latest source of title to the land, as shown by the deed, page number, and book of the Northampton County Recorder of Deeds.
- 533.2 The total tract boundary lines of the area being subdivided, with accurate distances to hundredth of a foot and bearings to the nearest second. These boundaries shall be determined by accurate survey in the field, to an error of closure not to exceed one (1) foot in ten thousand (10,000) feet. The tract boundary shall be subsequently closed and balanced. However, the boundary or boundaries adjoining additional unplotted land of the subdivider (for example, between separately-submitted Final Plan sections) are not required to be based upon field survey and may be calculated. The location of all boundary line (perimeter) monuments shall be indicated, along with a statement of the total area of the property being subdivided. In addition, the surveyor shall certify to the accuracy of the survey, the drawn plan, and the placement of the perimeter monuments.
- 533.3 The following data for all proposed and existing streets:
- a. the name, proposed name, or number of the street;
  - b. the cartway width of the street;
  - c. the right-of-way width and right-of-way lines of the street;
  - d. locations of all required street and traffic signs.
- 533.4 Block and lot numbers, and a statement of the total number of lots; all lot lines shall be completely dimensioned in feet if straight, and if curved by designating length of arc and radius (in feet) and chord bearing and distance. All internal angles within the lots shall be designated to within the nearest second. The proposed front, side and rear building setback lines, and the proposed placement of each building and driveway shall be shown. The area of each lot shall be noted in both square feet and acres.
- 533.5 Officially established house/building numbers for street addresses as assigned by the Township Engineer.
- 533.6 All easements or rights-of-way and any limitations on such easements or rights-of-way. Rights-of-way shall be shown and accurately identified on the plan, and easements shall either be shown or specifically described on the Plan, including geometric location on the Plan. Easements should be located in cooperation with the appropriate public utilities; the exact location of all utility line installations also shall be shown. The terms of all easements or rights-of-way shall be stated in notes on the Plan.

- 533.7 Such covenants, conditions and deed restrictions as may be imposed upon the grantees, their heirs, executors and assigns, together with a statement of any restrictions previously imposed which may affect the title to the land being subdivided or developed. All such covenants and restrictions shall be summarized in notes on the record plan and shall include, as a minimum, the following:
- a. After their construction, grantees shall repair and be responsible for maintaining all swales and detention ponds. Once established and approved, the extent and grades of all swales and detention ponds shall be maintained in perpetuity. Maintenance shall include, but not be limited to, regular lawn mowing, removal of trash/debris, plus repair of all sinkholes.
  - b. All drainage swales within street rights-of-way and drainage/utility easements shall be maintained in a grassed or otherwise improved condition in accordance with the grades and designs shown on the approved plans. All these easements and roadside drainage swales shall be kept free of all obstructions including but not limited to such obstructions such as fill, temporary or permanent structures, and landscaping materials (other than grass).
  - c. All electric, telephone, and cable TV utility distribution lines shall be installed underground.
- 533.8 A statement of the intended use of all non-residential lots or parcels, with reference to restrictions of any type which exist or will exist as covenants in the deed for the lots or parcels contained in the subdivision, and if covenants are recorded, including the book and page number of the Northampton County Recorder of Deeds.
- 533.9 If the subdivision fronts on a State Route, a note reading as follows shall be placed on the plan. "A highway occupancy permit is required pursuant to Section 420 of the act of June 1, 1945 (P.L. 1242, No 428), known as the "State Highway Law," before driveway or roadway access to a State highway is permitted.
- 533.10 The location of all existing and proposed street monuments, as required by Section 915; a certification of ownership, acknowledgment of plan, and offer of dedication and an acceptance clause for the Board of Supervisors shall be lettered on the plan, duly acknowledged and signed by the owner of the property, and notarized; a certificate for approval of the Plan by the Township Board of Supervisors shall be provided; a certificate for the recommendation for approval by the Township Planning Commission shall be provided; a certificate indicating review of the Plan by the Lehigh Valley Planning Commission shall be provided; space shall be left along the lower edge of the sheet, in order that the Northampton County Recorder of Deeds may acknowledge receipt and recording of the Plan when it is presented; if the Final Plan requires more than one sheet, a key diagram showing the relative location of the several sections shall be drawn on each sheet.



533.11 The final subdivision or land development plan shall contain the following legend:

Prior to the issuance of a building permit or commencement of construction for any individual lot or parcel shown hereon, the applicant shall submit to the Township Engineer for review and approval, three copies of a final grading plan drawn at a scale of 1"=20'. The grading plan shall be sealed by the Professional Engineer or Land Surveyor responsible for the preparation of the plan. The plan shall contain the following information:

- a. Lot lines with bearings and distances, lot area, locations of all existing and proposed lot corner monumentation, and tax parcel identification number for the subject property.
- b. Existing and proposed contour elevations at intervals of 2 feet, including the subject lot, adjoining street(s) and fifty (50) feet beyond the subject property, as approved on the final grading plan. If the average slope of the property is less than 3%, contour elevations at intervals of 1 foot shall be provided.
- c. Spot elevations for the first floor level of any structure, primary on-lot sewage disposal systems (where applicable), finished road elevations at point of entry, and any other area as deemed necessary by the Township Engineer.
- d. North reference, building restriction lines, easements and rights-of-way within or adjacent to the subject property.
- e. Location, size and elevations of all existing or proposed storm drainage structures within or adjacent to the subject property.
- f. All property adjoiners and names of adjoining street(s).
- g. Locations of all percolation test holes and soil probes and the locations and dimensions of primary and secondary on-lot sewage disposal systems, where applicable.
- h. The exact location and dimensions of any proposed structure, appurtenant structure, road or driveway, with tie-in dimensions to property line.
- i. Individual lot soil erosion and sedimentation controls in accordance with the approved subdivision plan or current conservation district standards.
- j. All covenants and conditions from the plan of record, if the subject property is part of an approved and recorded subdivision plan. The easement maintenance covenant from Section 784 shall be incorporated into the grading plan submission.

534 The Final Plan shall be accompanied by the following:

534.1 A Plan showing the following information:

- a. Location, size and invert elevation of storm drainage systems, and the location of all manholes, inlets and culverts, and where applicable, all sanitary sewer and water distribution systems.
- b. Final plan and profile drawings, typical sections and specifications for proposed streets, storm drainage systems, and where applicable, sanitary sewers and water distribution systems each shown on one or more separate sheets. The submission shall include a design of the pavement system according to current PennDOT Superpave standards and Township specifications.
- c. A contour grading plan and a plan for minimizing erosion and sedimentation, in accordance with erosion and sediment control standards as set forth in Section 791; a landscape plan, according to standards as set forth in Section 792.2.

534.2 A completed and executed copy of the Subdivision and/or Land Development Improvements Agreement shall be in place before recording of the plan.

534.3 Financial security to cover the costs set forth in the improvements agreement. The financial security shall conform in all respects to the requirements of Section 930.

534.4 A copy of the highway occupancy permit for any road or driveway requiring access to a State Route, which is appropriate for the type of access required.

534.5 The original deed for any areas proposed for dedication in relation to the subdivision or land development.

534.6 An analysis establishing traffic signing and speed limits for any roads created by the subdivision. All traffic and street signing shall be shown on the final plan.

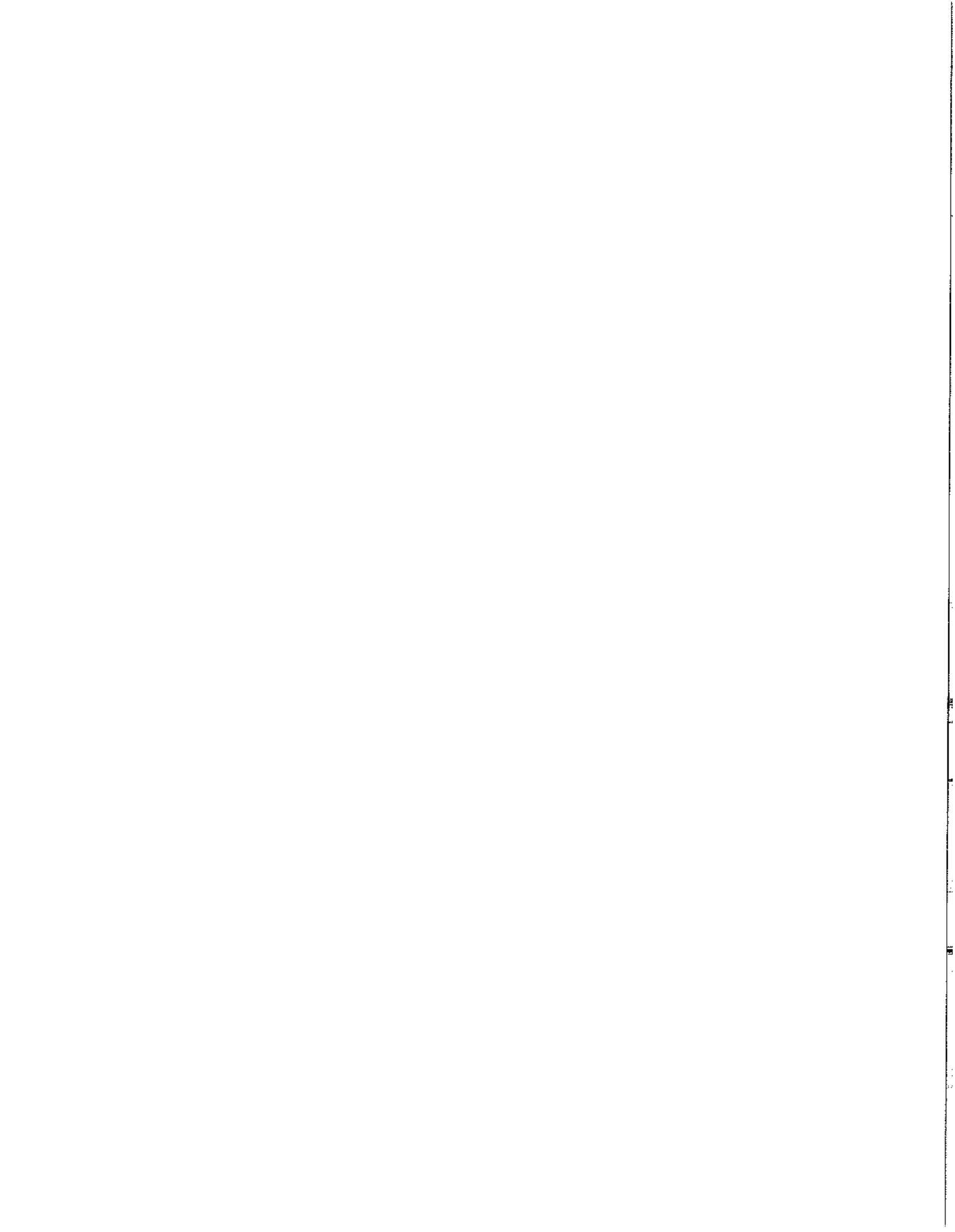
535 In the case of a subdivision or land development proposed to be built in stages or sections over a period of years, Final Plan requirements as listed in Sections 534.1 through 534.4 shall apply only to the stage or section for which final approval is being sought. However, the Final Plan presented for the stage or section must be considered as it relates to information presented for the entire subdivision or land development in the application for preliminary approval.

536 Prior to the commencement of construction, there shall be a pre-construction conference with all necessary agencies, including but not limited to, Lower Nazareth Township, Northampton County Soil Conservation District, Utilities, Easton Suburban Water Authority, Contractors, Subcontractors, PADOT, PADEP, and Engineers to discuss the construction process/schedule. The Township reserves the right to add or delete attendees and to waive this requirement.

## ARTICLE 6

### MINOR SUBDIVISION AND BOUNDARY LINE ADJUSTMENT SUBMISSION PROCEDURES AND REQUIREMENTS

- 600 In the case of any proposed residential subdivision which does not, by itself, or in combination with previous subdivision plans, involve more than a total of three (3) lots, and does not involve the provision of any new street or easement for access (i.e. one in which all proposed lots will have frontage on an existing public street), or in the case of boundary line adjustments between property owners where no new lots are created, the following procedures will apply.
- 601 The plan submission procedures of Section 500 will apply.
- 602 The plan review procedures of Section 510 shall apply.
- 603 The plan recording procedures of Section 520 shall apply.
- 604 The submission shall comply with the drawing requirements and the applicable submission requirements of Sections 420 and 530 and Article 7, except as is noted in Section 604.1.
- 604.1 The boundaries of any residual tract which is greater than ten (10) acres may be determined by deed. The boundaries of any residual tract which is ten (10) acres or less shall be determined by accurate field survey.



## ARTICLE 7

### DESIGN STANDARDS

#### 700 APPLICATION

- 701 The design standards and requirements outlined in this section will be utilized in determining the adequacy of all plans for proposed subdivisions and land developments.
- 702 Development shall be planned, reviewed and carried out in conformance with all Township, County, State, Federal and other applicable laws and regulations.
- 703 Whenever other ordinances and regulations impose more restrictive standards and requirements than those contained herein, the more restrictive standards and regulations shall apply. Whenever the standards and requirements contained herein are more restrictive than those imposed in other ordinances and regulations, the more restrictive standards and regulations herein shall apply.

#### 710 GENERAL STANDARDS

- 711 Land shall be suited for the purpose for which it is to be subdivided. Land with unsafe, environmentally sensitive, or hazardous conditions such as may have been identified in the Lower Nazareth Township Comprehensive Plan, though not limited to those features or mapping therein shall not be subdivided unless adequate mitigation measures eliminate or protect against these conditions.
- 712 Consideration shall be given to applicable provisions of the Township and County Comprehensive Plans, emphasizing future school sites, recreation sites, water supply and sewage treatment systems, highway alignments, and other public facilities. However, consideration must be given to the need for the facilities and utilities mentioned above whether or not they are proposed as part of a comprehensive plan.

#### 720 BLOCK DESIGN STANDARDS

##### 721 Block Layout

- 721.1 The length, width and shape of blocks shall be determined with due regard to:
- 721.11 Provision of adequate sites for buildings of the type proposed.
  - 721.12 Township zoning requirements.
  - 721.13 Topography.
  - 721.14 Requirements for safe and convenient vehicular and pedestrian circulation, including the reduction of intersections with arterial streets.

722 Block Length

722.1 Residential blocks shall be no less than five hundred (500) feet in length or no more than sixteen hundred (1,600) feet in length.

722.2 Where practical, blocks along arterial and collector streets shall not be less than one thousand (1,000) feet long.

723 Block Depth

723.1 Residential blocks shall be of sufficient depth to accommodate two tiers of lots, except;

723.11 Where reverse frontage lots are required; or

723.12 Where prevented by the size, topographical conditions or other inherent conditions of the property.

724 Commercial, Industrial and Planned Industrial Commercial Development Blocks

724.1 Blocks in commercial, industrial and planned industrial commercial developments may vary from the elements of design detailed above if required by the nature of the use. In all cases, however, adequate provision shall be made for traffic circulation, off-street parking and loading area.

**730 LOT DESIGN STANDARDS**

731 General Standards

731.1 Within the requirements of the Zoning ordinance, the size, shape and orientation of lots shall be appropriate for the type of development and use contemplated.

731.2 Side lot lines shall be at right angles to street lines or radial to curved street lines.

731.3 Lot lines shall follow municipal boundaries rather than cross them, in order to avoid jurisdictional problems.

731.4 The depth of residential lots shall be not less than one (1) nor more than three (3) times their width, except as otherwise required by the current Zoning ordinance.

731.5 Depth and width of parcels intended for non-residential uses shall be adequate for the use proposed and sufficient to provide satisfactory space for on-site parking, loading and unloading, setbacks, landscaping, etc.

731.6 If, after subdividing, there exists remnants of land, they shall be either:

731.61 Incorporated in existing or proposed lots, or

731.62 Legally dedicated to public use, if acceptable to the Township.

732 Lot Frontage

732.1 All lots shall have direct access to a public street or to a private street which is built to the street standards of this Ordinance.

732.2 Double or reverse frontage lots may be required to provide separation of residential development from collector or arterial streets or to overcome specific disadvantages of topography or other natural features of the proposed subdivision tract.

732.3 All residential reverse frontage lots (and all corner lots with a lot line along a street where reverse frontage is required) shall have a rear yard with a minimum depth of seventy-five (75) feet, measured along the shortest distance from the proposed dwelling unit to the ultimate right-of-way and shall, with such rear yard and immediately adjacent to the right-of-way, have a planting screen easement of at least ten (10) feet in width, across which there shall be no right of access. A landscape plan, showing a double row of mixed evergreen plantings within this easement, shall be prepared and submitted for all reverse frontage lots. The landscape plantings shall be in accordance with the buffer requirements of the Township Zoning Ordinance.

733 Lot Access (Other than PennDOT Roadways)

733.1 Where direct access to an arterial or collector street cannot be avoided, adequate turnaround space shall be provided behind the right-of-way line.

733.2 Driveways or access roads shall intersect streets at right angles, where practicable, and in no case less than seventy-five (75) degrees.

733.3 Widths of private access roads or driveways as measured within the public right-of-way shall be in accordance with the following standards:

733.31 All private access roads or driveways intended for one-way use shall have a minimum width of twelve (12) feet and a maximum width of fifteen (15) feet.

733.32 Single family residential driveways intended for two-way use shall have a maximum width of twenty (20) feet.

733.33 Two-way access roads and driveways for multi-family residential and all non-residential uses shall have a minimum width of twenty-four (24) feet and a maximum width of thirty (30) feet.

- 733.4 To provide safe and convenient ingress and egress, access road and driveway entrances shall be constructed as follows:
- 733.41 Access road entrances for multi-family residential developments, mobile home parks, and all non-residential subdivisions shall be rounded at a minimum radius of ten (10) feet.
  - 733.42 Single family residential driveway entrances shall be rounded at a minimum radius of five (5) feet.
- 733.5 Access road grades and driveway grades shall not exceed twelve (12) percent between the future street right-of-way line and any other point within the confines of the lot area being served.
- 733.6 The centerline of an access road or driveway, at the point of access to a street, shall not be located closer to the centerline of a street intersection than the following distances, unless the lot is entirely within the prescribed distances (in which case the driveway shall be separated from the intersection by the greatest distance possible).
- 733.61 For single family dwellings:
    - 733.611 One hundred fifty (150) feet if either intersection street is an arterial street.
    - 733.612 One hundred (100) feet if either street is a collector street.
    - 733.613 Seventy-five (75) feet if both streets are local streets.
  - 733.62 For all other development:
    - 733.621 Three hundred (300) feet if either street is an arterial street.
    - 733.622 Two hundred (200) feet if either street is a collector street.
    - 733.623 One hundred fifty (150) feet if both streets are local streets.
- 733.7 On corner lots that have frontage on streets of different classifications, the access to such lots shall be from the street of lower classification.

734 Access on PennDOT Roadways

- 734.1 All lot driveways accessing onto State roadways shall be designed in accordance with Pennsylvania Department of Transportation standards.
- 734.2 PennDOT Highway Occupancy Permits will be required for all lot driveways accessing onto State roadways.



740 **STREET DESIGN STANDARDS**

741 General Requirements

- 741.1 Proposed streets shall be properly related to the road and highway plans of PennDOT and the Township Comprehensive Plan. Streets shall be designed to provide adequate vehicular access to all lots or parcels and with regard for topographic conditions, projected volumes of traffic, and further subdivision possibilities in the area.
- 741.2 The street system of a proposed subdivision or land development shall be designed to create a hierarchy of street functions which includes collector and local streets.
- 741.3 The street system of a proposed subdivision or land development shall be designed so as to minimize street intersections and pedestrian-vehicular conflict points.
- 741.4 Proposed local streets shall be designed so as to discourage through traffic and excessive speeds. However, the developer shall give adequate consideration to provision for the extension and continuation of arterial and collector streets into and from adjoining properties.
- 741.5 Where it is desirable to provide for street access to adjoining property, streets shall be extended by dedication to the boundary of such property. The streets shall meet the requirements of Section 747.2.
- 741.6 Where a subdivision or land development abuts an existing road with a right-of-way and/or cartway width not meeting the requirements of Section 742.1, sufficient right-of-way should be dedicated so that the distance between the edge of the right-of-way and the road centerline equals one-half of the required width, and/or the cartway will be widened as per the specifications of this Ordinance so that the distance between the edge of the cartway and road centerline equals one-half of the required width. Where a subdivision or land development abuts an existing road not meeting the requirements of Section 743 or 746, sufficient right-of-way to correct the alignment deficiency should be dedicated. A deed covering the land to be dedicated shall be provided along with an opinion of title from a title insurance company or an attorney, which indicates that clear title exists for the land being dedicated.
- 741.7 Where a subdivision or land development abuts or contains an arterial road, the use of marginal access streets, reverse frontage lots, or other such treatment as will provide protection for abutting properties, reduction in number of intersections with the arterial street, and separation of local and through traffic shall be required.
- 741.8 Private streets (streets not to be offered for dedication) shall meet the street design and improvement standards set forth in this Ordinance. In addition, when a private street is proposed, the developer shall indicate on the plan of record the proposed deed covenants obliging the owners of all lots to be served by the street to provide, at their expense, perpetual street maintenance including timely snow removal.

741.9 If the lots in the development are large enough for resubdivision, or if a portion of the tract is not subdivided, suitable access and street openings for such an eventuality shall be provided. The openings shall be at intervals consistent with the Block Length Standards of Section 722.

741.10 Where a Subdivision or Land Development abuts an existing collector, arterial or expressway classified street, the applicant will be required to install curbing along the street side abutting the Subdivision or Land Development, unless otherwise waived by the Township Board of Supervisors.

742 Street Right-of-Way and Cartway Width

742.1 Street right-of-way as per the Township Zoning Ordinance and cartway width in proposed subdivisions shall conform to the standards in the following table:

<u>Type of Road</u>	<u>Local</u>		<u>Collector</u>	<u>Arterials and Expressways</u>
<u>Land Use</u>	<u>Single Family Detached Dwellings</u>	<u>All Other Uses</u>	<u>All Uses</u>	<u>All Uses</u>
Cartway Width	32 Feet	32 Feet	36 Feet	American Association of State Highway Transportation officials (AASHTO) and PennDOT design standards may be required.

743 Horizontal Curves

743.1 Street centerlines shall not be deflected without the use of horizontal curves.

743.2 Horizontal curves shall have the following minimum centerline radii:

743.21 Local streets - two hundred (200) feet.

743.22 Collector streets - three hundred (300) feet.

743.23 Arterial streets and expressways - as per current American Association of State Highway and Transportation officials (AASHTO) standards.

743.3 A minimum tangent of one hundred (100) feet shall be required between reverse curves on all streets. A minimum tangent of seventy-five (75) feet shall separate horizontal curves from intersections, as measured from the point of intersecting centerlines.

744 Street Grades

- 744.1 There shall be a minimum centerline grade on all streets of one (1.00) percent.
- 744.2 Centerline grades shall not exceed the following:
  - 744.21 Local streets - twelve (12) percent.
  - 744.22 Collector streets seven (7) percent.
  - 744.23 Arterial streets as per current AASHTO standards.
- 744.3 Intersections shall be approached on all sides by leveling areas. Such leveling areas shall have a minimum length of seventy-five (75) feet (measured from the intersection of the center lines), within which no grade shall exceed a maximum of four (4) percent.
- 744.4 Cross-slopes for roadways and parking lanes shall be two (2) percent and cross-slopes for paved shoulders shall be six (6) percent.

745 Vertical Curves

- 745.1 Vertical curves shall be used in changes of grade exceeding one (1) percent.
- 745.2 Vertical curves shall be designed to produce the following minimum sight distances:
  - 745.21 Local streets - two hundred (200) feet.
  - 745.22 Collector streets - four hundred (400) feet.
  - 745.23 Arterial streets and expressways - as per current AASHTO standards.

746 Street Intersections

- 746.1 Streets shall intersect at right angles whenever practicable. However, in no instances shall the angle of intersection at the street centerlines be less than seventy-five (75) degrees.
- 746.2 Intersections involving the junction of more than two streets shall be prohibited.
- 746.3 Two streets intersecting a third street from opposite sides shall either intersect with a common centerline or their centerlines shall be offset according to the following standards.
  - 746.31 The two streets shall be separated by a distance of one hundred fifty (150) feet between centerlines measured along the centerline of the street being intersected when all three streets involved are local streets.

- 746.32 The two streets shall be separated by a distance of four hundred (400) feet between centerlines measured along the centerline of the street being intersected when one or more of the streets involved is a collector street.
- 746.33 The two streets shall be separated by a distance of one thousand (1000) feet between centerlines measured along the centerline of the street being intersected when one or more of the streets is an arterial street.
- 746.4 Street intersection pavement shall be rounded by a tangential arc with a minimum radius of:
  - 746.41 Thirty-four (34) feet for intersections involving only local streets.
  - 746.42 Thirty-seven (37) feet for all intersections involving a collector street.
  - 746.43 Forty (40) feet for all intersections involving an arterial street.
- 746.5 Street right-of-way lines, whenever possible, shall be parallel to (concentric with) pavement radii at intersections.
  - 746.51 Street right-of-way lines at intersections shall be rounded by a tangential arc with a minimum radius of twenty-five (25) feet.
- 746.6 Sight distances at intersections (clear sight triangles) shall be established in accordance with the regulations within the Township zoning ordinance.
- 746.7 Wherever a portion of the line of the clear sight triangles occurs within the proposed building setback line, such portion shall be shown on the Final Plan of the subdivision, and shall be considered a building setback line. Signs and landscaping which would obscure vision shall not be placed within the clear sight triangle area.
- 746.8 The record plan shall contain a note stating that nothing shall be erected, placed or planted within a clear sight triangle that will impede vision between a height of two (2) feet to ten (10) feet above the centerline grades of the intersecting streets.

747 Cul-De-Sacs, Dead End Streets and Stub Streets

- 747.1 Dead-end streets are prohibited except those meeting the standards of Section 747.2.
- 747.2 Stub streets may be constructed for future access to an adjoining property or a subsequent section of the development. Stub streets shall be built to the standards of Section 742.1. The length of stub streets shall not exceed the depth of one lot. No more than one lot shall front on each side of the stub street. These lots shall also have full frontage along another public street.

- 747.3 Cul-de-sacs (temporary and permanent), loop roads, and other street networks which have a single point of access to the surrounding road network shall not serve more than twenty-five (25) dwelling units and shall not exceed a total length of more than one thousand (1,000) feet as measured from the centerline of the intersection at the single point of access to the farthest point served.
- 747.4 All cul-de-sac streets, whether permanently or temporarily designed as such, shall be provided at the closed end with a fully paved turnaround. The turnaround may be concentric or offset to the left, but turnarounds offset to the right shall be prohibited.
- 747.41 The minimum radius to the pavement edge or curb line shall be fifty (50) feet, and the minimum radius of the right-of-way line shall be sixty (60) feet.
- 747.42 The radius of the right-of-way line return between the bulb and stem of cul-de-sacs shall be a minimum of one hundred fifty (150) feet. The curb line or pavement edge radius shall be a minimum of one hundred sixty (160) feet.
- 747.5 Islands, whether containing plantings or not, shall be prohibited within the bulb of the cul-de-sac.
- 747.6 The grade of the cul-de-sac bulb shall not exceed five (5) percent as measured from the center of the cul-de-sac bulb to any perimeter point of the bulb. The minimum cross-slope shall be two (2) percent.
- 747.7 There shall be a minimum centerline grade on all cul-de-sac streets of one (1) percent.
- 747.8 All cul-de-sac streets intended for dedication to the Township shall be provided with an easement at the end of the bulb and designated for snow plowing use. The easement beginning at the edge of cartway, shall have a minimum width of thirty (30) feet, (measured fifteen (15) feet on either side of the street centerline extended). The easement shall extend radially from the edge of pavement to a depth of thirty (30) feet. The record plan shall contain a note stating that no driveways, landscaping, mailboxes or other structures shall be placed within the limits of this easement.
- 747.9 Temporary cul-de-sacs may be permitted to allow connection to an adjoining property or a subsequent section. Temporary cul-de-sacs shall meet the following standards.
- 747.91 The lots along the bulb of the cul-de-sac shall meet the lot width and lot size requirements of the zoning ordinance, after the bulb has been removed and the road has been extended.
- 747.92 The temporary cul-de-sac shall extend to the edge of the adjoining property to which future access is to be provided.

748 Street Names

- 748.1 Proposed streets, which are in alignment with others already existing and named, shall bear the names of existing streets.
- 748.2 In no case shall the name of a proposed street duplicate an existing street name in the municipality and in the postal district, irrespective of the use of a suffix such as street, road, avenue, boulevard, driveway, place, court, lane, etc.
- 748.3 All street names shall be subject to the approval of the Township Supervisors and local Post Office. The developer shall be responsible for the submission of proposed street names to the local Post Office for their approval. A copy of the local Post Office's approval of the proposed names shall be provided to the Township prior to recording of the plan.

749 Sidewalks and Curbs

- 749.1 In subdivisions or land developments where curbing and sidewalks are required, they shall be provided on both sides of all streets. Sidewalks and curb shall be required adjacent to parking areas in multi-family developments.
- 749.2 Sidewalks shall be located within the street right-of-way, no closer than one (1) foot from the right-of-way line, and shall be a minimum of four and one half (4 ½) feet wide, except along collector and arterial streets, and adjacent to shopping centers, schools, recreation areas, and other community facilities, where they shall be a minimum of five (5) feet wide.
- 749.3 Generally, a grass planting strip a minimum of four (4) feet in width should be provided between the curb and sidewalk.

**750 SANITARY SEWER DISPOSAL STANDARDS**

Each proposed building lot or proposed land development shall be provided with sanitary sewage disposal in accordance with the following requirements.

751 Public Sanitary Sewage Systems

751.1 Existing Public Sanitary Sewage Systems

- 751.11 Each subdivision, not a minor subdivision, any portion of which is within one thousand (1,000) feet of an existing public sanitary sewage system, shall be connected by the developer to such system, unless such connection is not technically feasible, or the subdivision is located in an area not designated for public sanitary sewer service in the Township's Sewage Facility Plan.
- 751.12 Any such connection shall be in accordance with the provisions of the controlling Sewer Authority, and the sanitary sewer disposal regulations of the Pennsylvania Department of Environmental Protection.

751.13 In the event a public sewer connection is not required under Section 751.11, each proposed building lot shall instead be provided with an on-lot sewage disposal system in accordance with Section 752 of this Ordinance.

751.2 Proposed Public Sanitary Sewage Systems

751.21 Each proposed subdivision, not a minor subdivision, or proposed land development any portion of which is within one thousand (1,000) feet of:

751.211 Any proposed public sanitary sewage system for which the Controlling Sewer Authority has indicated in writing to the developer its intention to extend any portion thereof to within one thousand (1,000) feet of any lot or portion thereof within five (5) years.

751.212 Any portion of any proposed public sanitary sewage system in the Lower Nazareth Township Sewage Facility Plan, or

751.213 Any portion of any other public sanitary sewage system proposed by the Lower Nazareth Township Board of Supervisors to be constructed within five (5) years;

751.22 Shall, unless ultimate connection to the proposed public sanitary sewage system would be technically unfeasible, be connected to a "dry" sanitary sewage system, including lateral connectors as will be necessary to provide service to each lot, suitably capped until connection to the public sanitary sewage system can be made.

751.23 Any such connection shall be in accordance with the standards of:

- a. The Subdivision Improvements Agreement (see Article 9 of this Ordinance).
- b. Section 425.8 of this Ordinance.
- c. The sanitary sewage disposal regulations of the Pennsylvania Department of Environmental Protection.

751.24 In the event a "dry" sewer connection is required under Section 751.22, each proposed building lot shall, until ultimate public sewer connection, be provided with an on-lot sewage disposal system in accordance with Section 752 of this Ordinance.

752 On-Lot Sewage Disposal Systems

- 752.1 An on-lot sewage disposal system shall be provided for each lot that:
- 752.11 Is not required to be connected to an existing public sanitary sewage system under Section 751.11 or to a proposed sanitary sewage system under Section 751.22.
  - 752.12 Will be connected to a "dry capped" sanitary sewage system under Section 751.22, but only until connection to the public sanitary sewage system can be made.
- 752.2 Any such on-site sewage disposal system shall be in accordance with the standards of:
- 752.21 The Subdivision Improvements Agreement (see Article 9 of this Ordinance).
  - 752.22 Section 425.9 of this Ordinance.
  - 752.23 The sanitary sewage disposal regulations of the Pennsylvania Department of Environmental Protection.
- 752.3 Certification of a percolation test for each proposed building lot, satisfying the requirements of the Pennsylvania Department of Environmental Protection for the on-lot sewage disposal system, shall be submitted as part of the Preliminary Plan. (See also Section 425.9).
- 752.4 Each Preliminary and Final Plan shall include an annotation expressly imposing a covenant running with the land, respecting each proposed building lot for which an on-lot sewage disposal system is proposed, stating that:
- 752.41 Lower Nazareth Township makes no warranty or representation that on-lot sewage disposal will be available for such lots.
  - 752.42 No construction upon the property or occupancy of the property will be permitted until sewage disposal facilities complying with Sections 751 or 752 of this Ordinance are provided to such lots.

**760 WATER SUPPLY SYSTEMS**

Each proposed building lot or proposed land development shall be provided with water supply in accordance with the following requirements:

761 Public Water Supply Systems

- 761.1 Each subdivision, not a minor subdivision, any portion of which is within one thousand (1,000) feet of an existing public water supply system, shall be connected by the developer to such system. In any situation where the public water supply is extended to a project, the water main shall be extended to the furthest point of the



subdivision away from the point where the main enters said subdivision. The final termination point of the main extension shall be to the satisfaction of the Township and the water system owner.

761.2 Any such connection shall be in accordance with the provisions of:

761.21 Applicable conditions of The Easton Suburban Water Authority or other governing authority;

761.22 Section 425.8 of this Ordinance;

761.23 The water quality regulations of the Pennsylvania Department of Environmental Protection.

761.3 In the event a public water supply connection is not required under Section 761.2, each proposed building lot shall instead be provided with an on-lot water supply system in accordance with Section 762 of this ordinance.

761.4 Fire hydrants with water supply for fire protection, within three hundred (300) feet of all structures and on the same side of the road if a collector or arterial road, shall be provided in all subdivisions and land developments connected to a public water supply system. The connecting threads used on the hydrants shall be compatible with the equipment of the Hecktown Volunteer Fire Department.

761.5 All proposed building lots for all multifamily residential, commercial and industrial uses shall be provided, by the developer, with an adequate public water supply.

## 762 On-Lot Water Supply Systems (Wells)

762.1 An on-lot water supply system (well) shall be provided only for each lot that cannot feasibly be connected to an existing public water supply system under Section 761.1.

762.2 Any such on-site water supply system shall be in accordance with the standards of:

762.21 The Subdivision Improvements Agreement (see Article 9 of this ordinance).

762.22 Section 425.8 of this Ordinance; and

762.23 Any water quality regulations of the Pennsylvania Department of Environmental Protection.

762.3 Each Preliminary and Final Plan shall include an annotation expressly imposing a covenant running with the land, respecting each proposed building lot for which an on-lot water supply system is proposed, stating that:

762.31 Lower Nazareth Township makes no warranty or representation that on-lot water supply will be available for such lots; and

762.32 Occupancy of the property will not be permitted until water supply facilities complying with Section 762 of this ordinance are provided to such lots.

## 770 STORM DRAINAGE SYSTEMS

### 771 Storm drainage systems shall be provided in order to:

- 771.1 Permit unimpeded flow of natural watercourses, except as may be modified by storm water detention pond requirements in Section 774 or open channels pursuant to Section 772.7.
- 771.2 Ensure adequate drainage of all low points along the line of streets.
- 771.3 Intercept storm water runoff along streets at intervals related to the extent and grade of the area drained.
- 771.4 Provide positive drainage away from on-site sewage disposal systems.
- 771.5 Take surface water from the bottom of vertical grades, to lead water from springs and to avoid excessive use of crossgutters at street intersections and elsewhere.
- 771.6 Prevent overloading of downstream drainage systems, closed depressions, and watercourses as a result of increased rate of runoff caused by the proposed development.
- 771.7 Ensure that the extent of ponded water is not increased within downstream closed depressions as a result of additional runoff volume.

### 772 General Requirements

- 772.1 A site drainage plan for the proposed subdivision or land development tract shall be prepared which illustrates the following information:
  - 772.11 Mapping of the watershed area or areas in which the proposed subdivision or land development is located.
  - 772.12 Calculations of runoff for all points of runoff concentration.
  - 772.13 Complete drainage systems for the subdivision. All existing drainage features which are to be incorporated in the design shall be so identified. If the subdivision or land development is to be developed in stages, a general drainage plan for the entire subdivision shall be presented with the first stage and appropriate development stages for the drainage system shall be indicated.
  - 772.14 Sufficient mapping of existing offsite drainage features located downstream from the proposed subdivision or land development points of runoff

discharge. Mapping features shall include closed depressions, streams, watercourses and storm sewer systems on the downstream properties.

772.2 The existing points of natural drainage discharge and the mode of drainage conduct onto adjacent property shall not be altered, unless:

772.21 Written consent of affected landowner is obtained by the applicant; or

772.22 The applicant demonstrates that no damage to any adjacent landowner or infringement of the public safety for conditions up to and including a 100 year storm event will result.

772.3 No storm water runoff or natural drainage 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 safe and adequate provisions being made by the developer for properly handling such conditions, and the applicant obtaining the written consent of the downstream landowners.

772.4 Where a subdivision is traversed by watercourses other than permanent streams, there shall be provided on the subdivision plan, a drainage easement conforming substantially with the line of such watercourse which shall be offered to the Township for dedication. The width of the easement shall be adequate to provide for unimpeded flow of storm runoff based on calculations made in conformance with Section 773 and to provide a freeboard allowance of one-half (0.5) foot above the design water surface level.

772.5 Drainage structures that are located on State highway rights-of-way shall be approved by the Pennsylvania Department of Transportation and a letter from that office indicating such approval shall be obtained prior to final plan approval.

772.6 All streets shall be so designed as to provide for the discharge of surface water from their rights-of-way.

772.7 When natural drainage swales on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainage swales. Capacities shall be calculated using the Manning equation as explained in Appendix A.

772.8 Storm drainage facilities and appurtenances shall be so designed and provided as to minimize erosion in watercourse channels and at all points of discharge as per the requirements of the Pennsylvania Department of Environmental Protection and the Northampton County Conservation District.

### 773 Calculation of Storm Runoff and Design Storm Frequency

773.1 Storm drainage systems required by this Ordinance shall be designed to provide protection from a two (2) to one hundred (100) year storm as determined by the Township. If the site of the subdivision or land development is within a watershed

with an approved Storm Water Management Plan enacted pursuant to Act 167, the criteria in the applicable plan shall be used.

- 773.11 A twenty-five (25) year design storm is appropriate where a storm in excess of the design storm will cause major inconvenience to people and traffic in high use areas such as business districts and along local collector or arterial roads.
- 773.12 A one hundred (100) year design storm is appropriate where a storm in excess of the design storm will cause damage to existing or future structures or their contents.
- 773.13 The design or analysis of all major natural or man-made overland drainage systems shall have adequate capacity for the twenty-five (25) to one hundred (100) year return storm, and shall further consider the two (2) year storm event for velocity. Permissible velocities are as indicated in SCS criteria.
- 773.2 Storm water runoff from watersheds of two hundred (200) or less acres shall be calculated by the Rational Method as described in Manual Number 37 of the American Society of Civil Engineers, except as the watershed size criteria may be modified by an approved Act 167 Storm Water Management Plan. The rational method of runoff calculation is explained in Appendix A.
- 773.3 Storm water runoff from watersheds of more than two hundred (200) acres shall be calculated using the soil cover complex method developed by the Soil Conservation Service or other appropriate method acceptable to the Township Engineer.
- 773.4 The design of any detention facility shall be verified by routing the proposed post-development hydrograph through the basin using a storage-indication technique.
- 773.5 The Manning equation explained in Appendix A shall be used in calculating capacities of watercourses and storm sewers, except culverts which shall be designed using methods acceptable to the Township Engineer.
- 773.6 Complete detailed drainage calculations and applicable charts and nomographs certified by the design engineer shall be submitted to the Township Engineer.

#### 774 Storm Water Detention

- 774.1 Stormwater shall be governed by the following provisions:
  - 774.21 Post-development rates of runoff for the two (2) through one hundred (100) year storm events shall not exceed pre-development rates.
  - 774.22 Within watersheds for which there is an approved Act 167 Storm Water Management Plan, the detention facilities shall at minimum be designed to discharge post-development peak runoff rates consistent with the Plan criteria.

774.23 Within watersheds for which there is not an approved Act 167 Storm Water Management Plan, the detention facilities shall be designed to provide that the peak rate of runoff at all points of discharge from the site, when developed, will not exceed the peak rate of runoff at each of those points prior to development.

774.3 Where detention facilities are included as part of the storm drainage system, the following provisions will apply:

774.31 Detention ponds shall be designed so that they return to normal conditions within approximately twenty-four (24) hours after the termination of the storm, unless the Township Engineer finds that downstream conditions may warrant other design criteria for storm water release;

774.32 The developer shall demonstrate that such ponds are designed, protected and located to assure that public safety is maximized and health problems are prevented. The following minimum criteria shall apply:

- a. Top berm width shall be a minimum of six (6) feet;
- b. On all ponds having a maximum total depth of four (4) feet, the side slopes shall be four (4) horizontal to one (1) vertical or flatter. On all ponds having a maximum total depth greater than four (4) feet, the side slopes shall be five (5) horizontal to one (1) vertical or flatter.
- c. All ponds shall incorporate an impervious clay liner having a minimum depth of one (1) foot or an impermeable geosynthetic liner. The design analysis of the required pond liner shall be incorporated into the required geologic/karst features report.
- d. Ponds shall be designed with a minimum freeboard of one (1) foot above the maximum water elevation.
- e. All ponds shall be designed with a minimum bottom slope of one (1) percent.
- f. In all detention ponds having surface discharge, the outfall end section and outside toe of berm shall be located a minimum of twenty (20) feet from the adjoining, downstream property line.
- g. The maximum depth of water, based on the one hundred (100) year storm event, shall not exceed eight (8) feet.

774.33 The developer shall verify that the operation of the detention facilities will not aggravate potential downstream peaking conditions;

- 774.34 Emergency overflow facilities shall be provided for detention facilities to handle runoff in excess of design flows;
- 774.35 A drainage easement, described by bearings and distances, shall be provided around all detention basins. The easement shall encompass the limits of the pond berm and the 100 year water surface elevation plus the basin outflow to the point of offsite discharge.
- 774.36 Since the detention pond will remain in common ownership, the developer shall provide an annotation on the Record Plan imposing a covenant running with the land requiring perpetual maintenance and repair of the detention pond and all appurtenances, by the respective lot owner(s). The covenant shall also state that no structures, fences, trees or other landscaping materials (other than grass) shall be placed or planted within the detention pond.

775 Stormwater Collection and Conveyance Systems

- 775.1 Inlets. The placement of inlets shall be governed by the following design criteria:
- 775.11 Inlets shall be placed at points of abrupt changes in the horizontal or vertical directions of storm sewer pipes and drainage swales and on both sides of a street at all designed low points.
- 775.12 On streets with centerline grades of two (2) percent or less, inlets shall be spaced at a maximum distance of four hundred (400) feet apart. On streets with centerline grades greater than two (2) percent, inlet spacing shall not exceed six hundred (600) feet.
- 775.13 Inlets shall be depressed two (2) inches below the grade of the gutter or ground surface, and shall be provided with bicycle-safe grates.
- 775.14 Capacity calculations shall be provided for all inlets. The calculations shall account for all by-pass surface runoff from upstream inlets, where applicable.
- 775.15 Storm sewer manholes may be substituted for inlets at locations where inlets are not required to handle surface runoff.
- 775.16 (Moved to Section 775.39) Inlets shall be placed at street intersections to limit the cross-gutter flow from upstream areas.
- 775.2 Roadside Drainage Swales. The construction of roadside drainage swales shall be in accordance with the following requirements:
- 775.21 On all non-curbed streets, drainage swales will be required along both sides of the street.

- 775.22 On all local collector and arterial streets, the roadside swales shall be designed to convey the runoff from a twenty-five (25) year storm event.
- 775.23 As a minimum, the depth of all roadside swales shall be six (6) inches. The swales shall be designed to convey the runoff from the required storm event within the street right-of-way.
- 775.3 Storm Sewer Pipe. The design of storm sewer pipe systems shall be in accordance with the following requirements:
- 775.31 All storm sewer lines shall be designed with a minimum 0.005 ft/ft (0.50%) slope.
- 775.32 Storm sewer lines within street rights-of-way shall be parallel to the centerline as far as practical. A sufficient number of structures (inlets or manholes) shall be provided to eliminate unnecessary crossings of other utility lines and passage beneath curbs.
- 775.33 Storm sewer shall be designed on the basis of inlet or outlet control, as applicable, unless a more detailed backwater analysis is deemed necessary by the Township Engineer.
- 775.34 No storm sewer headwalls or endwalls shall be constructed within any street right-of-way.
- 775.35 Safety grating shall be installed across the openings of all storm sewer pipe inlet headwalls.
- 775.36 All storm sewer lines shall be televised after installation. Televising event shall be recorded on a medium acceptable to the Township. Recording shall be labeled and presented to the Township along with documentation clearly identifying location of said lines. All work shall be per township specifications.
- 775.37 All stormwater within street cartway areas shall be reinforced concrete pipe, Class III or better, with "O"-ring gasket joints. Stormsewer located outside street cartway areas shall be either reinforced concrete pipe, Class III or better, with "O"-ring gasket joints or high density polyethylene pipe, smooth interior, with water-tight couplings.
- 775.38 When there is a change in pipe size within a stormsewer structure, the elevation for the top of pipes shall be the same, or the top elevation of the inflow pipe(s) can be set higher as necessary.
- 775.39 Underdrain pipe systems shall be required.
- 775.4 Curbed Street Drainage. On streets constructed with curbing, the surface runoff collection system shall be in accordance with the following requirements:

775.41 On local streets, the inlet spacing and gutter capacities shall be designed to convey the runoff from a twenty-five (25) year storm event.

775.42 On collector and arterial streets, the inlet spacing and gutter capacities shall be designed to convey the runoff from a fifty (50) year storm event.

775.43 The maximum encroachment of water on the roadway pavement shall not exceed one-half of a traffic lane during the design year storm event.

## 780 UNDERGROUND UTILITIES AND EASEMENTS

### 781 Electric/Utility Easement Lines

In accordance with a Pennsylvania Public Utility Commission order of July 8, 1970, all electric utility distribution lines shall be installed underground in subdivisions or land developments of five (5) or more dwelling units. In addition, the following design standards shall be observed:

- 781.1 Whenever practicable, telephone and cable TV utilities shall also be installed underground. When telephone and cable TV utilities are placed underground, all cable TV providers authorized to operate in Lower Nazareth Township shall have access to the open trench. Each cable provider shall be afforded the opportunity to provide service in any subdivision.
- 781.2 Whenever practicable, underground electric and communication utility lines shall be installed within the same utility trench.
- 781.3 All utility lines servicing commercial and industrial developments shall be installed underground.

### 782 Utility Easements

- 782.1 Utility easements shall be provided for wire, conduits, sanitary and storm sewers, gas and water mains and/or other utility lines intended to service the abutting lots. No structures shall be placed within such easements, except structures associated with the utilities.
- 782.2 Utility easements shall be located at all of the following:
  - 782.21 Abutting the street right-of-way. In this case, a minimum easement width of ten (10) feet shall be required.
  - 782.22 Along rear or side lot lines. In this case, a minimum easement width of twenty (20) feet, ten (10) feet on each side of the lot line, shall be provided. Where the lot line coincides with the subdivision or land development boundary, a minimum easement width of ten (10) feet is required.



783 Petroleum Transmission Lines

783.1 No company intending to install any petroleum, petroleum products or natural gas transmission lines shall be allowed to construct the line on less than a fifty (50) foot right-of-way, such line to be installed in the center of the right-of-way, and shall comply with the applicable standards imposed by State and Federal laws and regulations.

783.2 There shall be a minimum distance of twenty-five (25) feet between any proposed dwelling unit and any petroleum, petroleum products or natural gas transmission right-of-way line which traverses the subdivision, but in no event less than fifty (50) feet from any petroleum or natural gas transmission line.

784 Easement Maintenance

All surface and subsurface easements required by this ordinance or shown on the record plan shall be kept clear of any and all structures and obstructions including, but not limited to, buildings, trees, shrubs, driveways and berms. On surface drainage swale easements, fences shall not be constructed within the limits of the 100 year storm water surface elevation. Grades, once established on the approved plan, shall not be altered without approval by the Board of Supervisors. A covenant shall be added to the Record Plan which contains the above maintenance note. Please refer to section 533.11(J) for additional requirements for individual lot grading plans.

790 **ENVIRONMENTAL PROTECTION**

791 Erosion and Sediment Control

791.1 General Standards

791.11 No changes shall be made in the contour of the land; no grading, excavating, removal or destruction of the topsoil, trees or other vegetative cover of the land shall be commenced within a proposed subdivision or land development tract until such time that a plan for sedimentation control and minimizing erosion has been reviewed and found satisfactory by the Northampton County Soil and Water Conservation District and reviewed and approved by the Township, or there has been a determination by the Township, upon recommendation by the Northampton County Soil and Water Conservation District, that such plans are not necessary.

791.12 Measures used to control erosion and reduce sedimentation shall meet the standards and specifications of the Pennsylvania Department of Environmental Protection Erosion and Sediment Pollution Control Program Manual, as amended. The Township Engineer, or other officials as designated, shall ensure compliance with the appropriate specifications, copies of which are available from the Northampton County Conservation District.

- 791.2 Performance Principles: The following measures are effective in minimizing erosion and sedimentation and shall be included where applicable in the control plan:
- 791.21 Stripping of vegetation and grading shall be kept to a minimum.
  - 791.22 Development plans shall preserve significant natural features, keep cut and fill operations to a minimum, and ensure conformity with topography so as to create the least erosion potential and adequately handle the volume and velocity of surface water runoff.
  - 791.23 Whenever feasible, natural vegetation shall be retained, protected and supplemented.
  - 791.24 The disturbed area and the duration of exposure shall be in accordance with the Pennsylvania Department of Environmental Protection Erosion and Sediment Pollution Control Program Manual.
  - 791.25 Disturbed soils shall be stabilized by permanent vegetation and/or by mechanical erosion control and drainage measures as soon as practicable in the development process.
  - 791.26 Temporary vegetation and/or mulching shall be used to protect exposed critical areas during development.
  - 791.27 Provisions shall be made to effectively accommodate the increased runoff caused by soil and surface conditions during and after development. Where necessary, the rate of surface water runoff will be mechanically retarded.
  - 791.28 Sediment in the runoff water shall be trapped until the disturbed area is stabilized by the use of debris basins, sediment basins, silt traps, or similar measures.
- 791.3 Grading for Drainage: In order to provide more suitable sites for building and other uses, improve surface drainage and control erosion, the following requirements shall be met:
- 791.31 All lots, tracts or parcels within a proposed subdivision or land development shall provide proper drainage away from buildings and dispose of surface water without ponding, except where an alternative drainage system is approved. Natural drainage patterns shall be preserved wherever possible.
  - 791.32 Cut and fill slopes shall not be steeper than 3:1 unless stabilized by a retaining wall or cribbing.
  - 791.33 Adequate provisions shall be made to prevent surface water from damaging the cut face of excavations of the sloping surfaces of fills.
  - 791.34 Cut and fills shall not endanger adjoining property.

- 791.35 Fill shall be placed and compacted so as to minimize sliding or erosion of the soil.
- 791.36 All cuts and fills within 100 year floodplain areas must be in accordance with the Township's Floodplain ordinance. Fills placed adjacent to constructed channels shall have suitable protection against erosion during periods of flooding.
- 791.37 Grading will not be done in such a way as to divert water onto the property of other landowners without the written consent of the landowners.
- 791.38 During grading operations, necessary measures for dust control will be exercised.
- 791.39 No equipment shall alter or damage the bed and banks of any stream, unless approved by the Pennsylvania Department of Environmental Protection. Equipment shall cross streams only at approved crossings utilizing culverts or bridges.

792 Natural Feature Preservation

The design and development of subdivisions and land developments shall be in harmony with the natural features of the site and shall respect the development limitations of the natural features. Subdivision and land development design shall be integrated with the natural terrain of the site, wooded areas, large trees, natural watercourses, rock outcroppings and scenic views.

792.1 Areas with Development Limitations

- 792.11 The filling or development of wetlands and areas of hydric soils shall conform to the regulations of the Zoning Ordinance, and shall not proceed until relevant U.S. Army Corps of Engineers and PA Department of Environmental Protection permits have been granted.

792.2 Tree Preservation and Planting

- 792.21 Trees six (6) inches or more in diameter (measured at a height of four (4) feet above grade) shall not be removed unless they are located within the proposed cartway, driveway, or sidewalk portion of a street right-of-way, or within twenty-five (25) feet of the foundation area of a new building. Areas in which trees are retained shall remain at original grade level and undisturbed wherever possible.
- 792.22 All existing trees six (6) inches or more in diameter (measured at a height of four (4) feet above grade) shall be located and identified on the plan. The Township may waive this requirement in densely wooded areas and tree rows.

- 792.23 In all subdivisions and land developments containing property line tree rows, a minimum ten (10) foot wide easement shall be established along the lot lines having existing tree rows. A protective covenant shall be added to the plan stating that no trees shall be removed nor grades altered within these easements without approval by the Board of Supervisors.
- 792.24 In subdivisions or land developments where street trees are proposed, they shall be planted outside of street right-of-way lines, with underground utilities being located a minimum of 10 feet from the trees.
- 792.25 In particular, but not in limitation, approved trees for street planting include the following:
- 792.25a *Acer rubrum* - Red Maple
  - 792.25b *Acer saccharum* - Sugar Maple
  - 792.25c *Fraxinus americana* - White Ash
  - 792.25d *Fraxinus pennsylvanica lanceolata* - Green Ash
  - 792.25e *Gleditsia tricanthos inermis* - Moraine Locust
  - 792.25f *Ginkgo biloba* - Ginkgo (male)
  - 792.25g *Liquidambar styraciflua* - Sweet Gum
  - 792.25h *Liriodendron tulipifera* - Tulip Tree
  - 792.25i *Phellodendron amurense* - Amur Cork Tree
  - 792.25j *Quercus alba* - White Oak
  - 792.25k *Quercus borealis* - Red Oak
  - 792.25l *Quercus coccinea* - Scarlet Oak
  - 792.25m *Quercus phellos* - Willow Oak
  - 792.25n *Tilia*-Linden - All species hardy to the area
  - 792.25o *Zelkova Serrata* - Japanese Zelkova
- 792.26 For all land developments and for all subdivisions not a minor subdivision, a Landscape Plan shall be developed. The plan shall show the plant cover which exists, and on the same or separate sheet, that which will exist when the landscaping is completed.

792.3 Topsoil Protection

792.31 Topsoil shall be removed from the areas of construction and stored separately.

792.32 The topsoil shall be stabilized to minimize erosion during storage. upon completion of the construction, the topsoil must be uniformly redistributed on the site.

792.4 Stream Frontage Maintenance

792.41 An easement for maintenance purposes, a minimum of twenty (20) feet in width, shall be provided along all stream banks.

792.42 Any grading, excavation or other work within these easements shall be in accordance with the Township Floodplain Ordinance or Zoning Ordinance, as applicable.

793 Open Space and Recreation Areas

The establishment, maintenance and protection of open space and recreation areas shall be in accordance with the guidelines contained within "The Comprehensive Plan of Lower Nazareth Township."

793.1 Recreation Areas

793.11 Areas meeting the criteria for recreation lands as set forth in the definitions shall be offered for dedication to the Township, subject to the approval of the Board of Supervisors. The Board of Supervisors shall consider the offer relative to the following factors:

793.11a The suitability of the size, shape and landform of the tract for appropriate recreational facilities. No recreation area shall measure less than two (2) acres in size.

793.11b Accessibility.

793.11c Conformity with the parks and recreation element of the Comprehensive Plan.

793.11d Ability of nearby recreation facilities to serve the subdivision.

793.12 Access to recreation areas dedicated to the Township pursuant to Section 793.11 shall be as follows:

793.12a At least one (1) side of the recreation area shall front on a public street. Frontage on two (2) or more public streets is preferred. The above requirements are not necessary if the area proposed

for dedication adjoins lands currently utilized by the Township for recreation purposes.

793.12b Additional access may be provided by rights-of-way connecting the recreation area with public streets.

793.12c Rights-of-way providing access to a recreation area shall have a minimum width of fifty (50) feet. Each right of-way shall be part of the dedicated recreation area and contain at least one (1), eight (8) foot wide macadam path, constructed to Township standards, connecting the recreation area to the public street.

793.13 Cash in lieu of recreation land dedication may be offered, subject to the approval of the Board of Supervisors.

## 794 Karst Hazards

### 794.1 Purpose

The purpose of this section is to recognize the potential for damage to public and private improvements, human injury or death, and the disruption of vital public services which may arise by the potential for sinkholes and/or subsidence within areas of carbonate geology. A further purpose of this section is to minimize the potential for such sinkhole and/or subsidence occurrence and to protect the ground water resource. Should the regulations of this and other applicable regulations conflict, the most stringent regulations shall apply.

### 794.2 Disclaimer of Liability

Whereas the exact occurrence of sinkholes and/or subsidence is not predictable, the administration of these regulations shall create no liability on behalf of the Township, the Township Engineer, Township employees, or Township agencies as to damages which may be associated with the formation of sinkholes or subsidence. That is, compliance with these regulations represents no warranty, finding, guarantee, or assurance that a sinkhole and/or subsidence will not occur on an approved property. The municipality, its agencies, consultants and employees assume no liability for any financial or other damages which may result from sinkhole activity.

### 794.3 Procedures

794.31 As part of the Preliminary Plan requirements for all subdivisions and land developments, the applicant shall engage a qualified professional to review the existing aerial photos, soils geological and related data available to him as it may pertain to the subject inspection of the property.

794.32 A site inspection by the applicant's professional, using all available data and with such assistance as is needed, shall determine the presence or absence of Karst surface features of the site, and locate the same if present on a site plan

at a scale no smaller than 1" = 100'. In particular, the following features shall be located, if present, on the site:

794.32a Closed depressions;

794.32b Open sinkholes;

794.32c Seasonal high water table indicators;

794.32d Unplowed areas in plowed field;

794.32e Surface drainage into ground;

794.32f Quarries or borrow pits;

794.32g Rock outcrops and other Karst features

794.33 The applicant must provide the Township with a map at a scale of 1" = 100' that show the Karst features listed in Section 794.32.

794.34 Based upon the site inspection, the applicant's professional shall determine what further testing should be done by the applicant to ensure compliance with the performance standards set forth in Section 794.4. Testing methodology shall be reasonable under the circumstances, including (1) the scale of the proposed development; and (2) the hazard revealed by examination of available data and site inspection.

794.35 The applicant shall cause the additional testing, if any, to be effected and shall submit test results to the Township Engineer.

794.36 The Township Engineer shall report to the Planning Commission, with a copy to the applicant, his opinion concerning the adequacy of the report submitted based upon the scale of the development and the hazards revealed by the report, and shall make recommendations to the Planning Commission based upon the report submitted concerning site development, including storm water management, the layout of utility lines, and building location. The Township Engineer may require the applicant to perform such additional testing as may be appropriate.

#### 794.4 Performance Standards

794.41 All applicants for subdivisions or land developments shall comply with the requirements of this ordinance regarding Karst hazards.

794.42 No storm water detention facility shall be placed within one hundred (100) feet of the features listed in Section 794.32, unless a detailed geotechnical solution to the subsidence, pollution and safety problems of the Karst feature has been presented by a competent professional in carbonate geology.

- 794.43 No storm water swale with design flows in excess of ten (10) cubic feet per second for the ten (10) year flood may be constructed within one hundred (100) feet of the features listed in Section 794.32, unless a detailed geotechnical solution to the subsidence, pollution and safety problems of the Karst feature has been presented by a competent professional in carbonate geology.
- 794.44 No storm sewer pipe shall be constructed within one hundred (100) feet of the features listed in Section 794.32 unless it is concrete pipe utilizing O-ring joints.
- 794.45 No principal or accessory building, no structure, and no impervious surface shall be located closer than one hundred (100) feet from the edge of the features listed in Section 794.32, unless a detailed geotechnical solution of the subsidence, pollution and safety problems of the Karst feature has been presented by a competent professional in carbonate geology.
- 794.46 No septic system or tile field, no swimming pool, no solid waste disposal area, transfer area or facility, no oil, gasoline, salt or chemical storage area, and no blasting for quarrying or well enhancement activities shall occur within one hundred (100) feet of the features listed in Section 794.32 unless a detailed geotechnical solution to the subsidence, pollution and safety problems of the Karst feature has been presented by a competent professional in carbonate geology.
- 794.47 Soil Erosion and Sedimentation Control plans filed with the Northampton County Conservation District shall detail safeguards to protect identified Karst features.
- 794.48 All storm sewer lines located in a Karst area shall be so constructed as to not permit the flow of water along the utility line trench, and shall be imperviously diked at thirty (30) foot intervals.
- 794.49 When a proposed public water or sanitary sewer line is located in an identified Karst area, the applicant shall demonstrate to the Township that the appropriate utility authority has been notified of this fact and that the applicant will comply with the authority's recommendations concerning provisions to prevent the flow of water along the utility line trench.



## ARTICLE 8

### MOBILE HOME PARK REQUIREMENTS

#### 800 PERMITS

- 801 It shall be unlawful for any person to operate, maintain, construct, alter or extend any mobile home park within the Township unless the person holds a mobile home park permit issued by the Township.
- 802 Permits for new mobile home parks, or any alterations to or expansion of mobile home parks, shall be issued after the land development plans have been approved subject to the requirements of this Ordinance. The land development plans shall comply with the submission and procedural requirements of this Ordinance, the design criteria of Article 7, and the improvements requirements of this Ordinance.

#### 810 DESIGN STANDARDS

- 811 The mobile home park site shall meet the criteria of Section 792.1 relating to the development of areas with environmental limitations.
- 812 Storm drainage management shall be provided consistent with the requirements of Section 770.
- 813 Site grading shall occur in conformance with the requirements of Section 791.3.
- 814 No part of the mobile home park shall be used for non-residential purposes excepting such uses necessary for the management and maintenance of the park, recreation facilities, and utility appurtenances.
- 815 A landscaping plan consistent with the requirements of Section 792.2 shall be developed.
- 816 The private street system shall be designed and built to the Township standards.
- 816.1 The roads shall meet the design standards of Section 740 for local roads.
- 816.2 The roads shall be built to the standards contained in the Township local road construction specifications.
- 817 Off-street parking shall be provided as required by the Township Zoning ordinance.
- 818 Pedestrian walkways meeting the following standards shall be provided.
- 818.1 All parks shall provide safe, convenient, all-season pedestrian access between individual mobile homes, the park streets, and all community facilities provided for park residents. Sudden changes in alignment and gradient shall be avoided.

- 818.2 Where a common walk system is provided and maintained between locations, and where pedestrian traffic is concentrated, such common walks shall have a minimum width of three and one-half (3-1/2) feet.
- 818.3 All mobile home stands shall be connected to common walks, streets, driveways or parking spaces connecting to a paved street. Such individual walks shall have a minimum width of two (2) feet.
- 819 Mobile homes shall be sited on mobile home stands in conformance with the following provisions:
- 819.1 The area of the mobile home stand shall be improved to provide an adequate foundation for the placement of the mobile home.
- 819.2 The stand shall be constructed from either concrete, or other material sufficient to adequately support the mobile home and to prevent abnormal settling or heaving under the weight of the home. The corners of the mobile home shall be anchored to prevent wind overturn and rocking with tie downs such as concrete "dead men", screw augers, arrowhead anchors, or other devices suitable to withstand a tension of at least two thousand eight hundred (2,800) pounds. The anchorage shall be adequate to withstand wind forces and uplift in accordance to applicable requirements in the BOCA Building Code, as amended.
- 819.3 After a mobile home has been anchored to the mobile home stand, the hitch which is employed for the transportation of the unit shall be removed, and there shall be a decorative skirt installed around the base of the unit.

## **820 WATER SUPPLY**

- 821 Water service to all mobile home parks shall be supplied by connection to the public water supply system. The adequacy of the distribution system and the availability of service (as per Section 425.8) shall be demonstrated.
- 822 Fire hydrants in accord with the requirements of Section 761 shall be provided.

**830 SEWAGE DISPOSAL**

831 All mobile home parks shall be connected to the public sanitary sewer system upon construction or expansion. The availability of service and the adequacy of the distribution system shall be certified as required by Section 425.9.

831.1 All materials used for sewer connections shall be semi rigid, corrosion resistant, non-absorbent and durable. The inner surface shall be smooth.

831.2 Provisions shall be made for plugging the sewer riser pipe when a mobile home does not occupy the lot. Surface drainage shall be diverted away from the riser. The rim of the riser pipe shall extend at least one-half (1/2) inch above ground elevation.

**840 ADDITIONAL REQUIREMENTS**

841 Electrical Distribution System

841.1 General Requirements

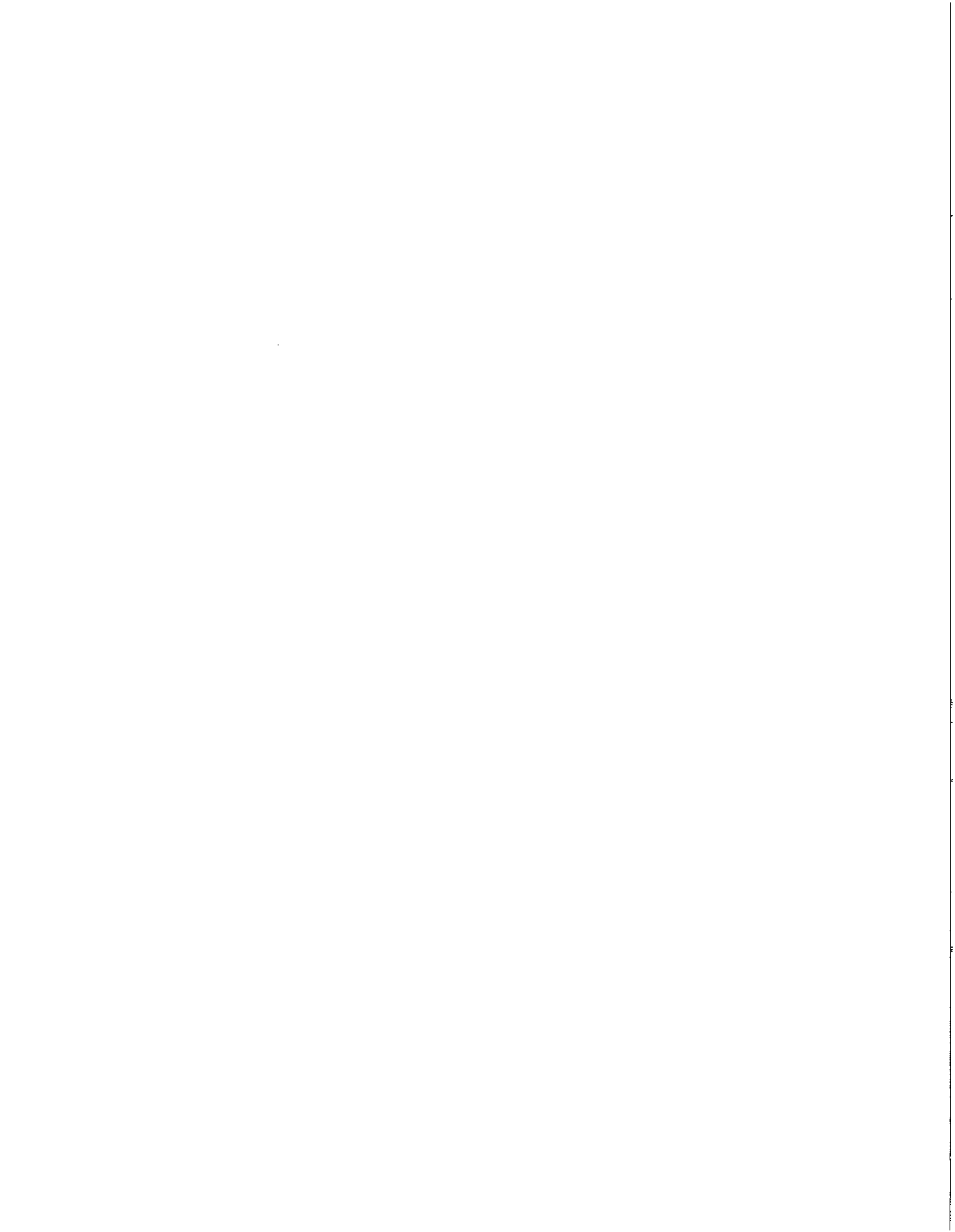
Every mobile home park shall contain an electrical wiring system, consisting of wiring, fixtures, equipment and appurtenances which shall be installed in accordance with Pennsylvania Power and Light Company or Metropolitan Edison Company specifications regulating such systems and the National Electric Code.

841.2 Power Distribution Lines

All power lines shall be located underground.

842 Refuse Handling

Refuse disposal containers shall be provided in paved areas. The containers shall be suitably screened.



## ARTICLE 9

### IMPROVEMENTS SPECIFICATIONS

#### 900 GENERAL REQUIREMENTS

- 901 All rights-of-way of existing or new streets within the boundaries of a subdivision or land development should be conveyed to the Township free and clear of all liens and encumbrances, with good and marketable title which is insurable by a reputable title company doing business in Pennsylvania. All Township rights-of-way shall be conveyed in "Fee Simple" and all PennDOT rights-of-way in permanent easements.
- 902 Physical improvements to the proposed subdivision or land development tract shall be provided, constructed and installed as shown on the Final Plan and in accordance with the requirements of this ordinance.
- 903 As a condition for the approval of the Final Plan, the developer shall execute an agreement with the Board of Supervisors as to the installation of all improvements shown on the plan and required by this Ordinance. Before the final plan may be endorsed by the Board of Supervisors, the Subdivision Improvements Agreement shall be executed by the developer and the Board of Supervisors.
- 904 All improvements installed by the developer shall be constructed in accordance with the design specifications as may be referenced in Article 9 of this Ordinance or as may be otherwise approved by the Board of Supervisors, subject to the recommendations of the Township Engineer.
- 905 The supervision of the installation of the improvements as required by this ordinance shall be the responsibility of the Township Engineer, except that the installation of those improvements, which are to be dedicated to governmental entities other than the Township, shall be supervised by engineers representing those entities.

#### 910 SPECIFICATION REFERENCES

The following improvements shall be provided, constructed and installed by the developer as shown on the final plan and in accordance with the "Lower Nazareth Township Standards For Improvements Construction," hereinafter to be known as the "Township Standards," adopted and amended from time to time by Resolution of the Board of Supervisors.

- 911 Streets, curbs and sidewalks shall be constructed in accordance with the Township and, where applicable, PennDOT Standards.
- 912 Sanitary sewers and all related appurtenances shall be constructed in accord with the specifications as may be adopted from time to time by the appropriate Authority, which are made part of the Township Standards by reference.

- 913 Water supply and distribution related improvements including fire hydrants, shall be constructed in accord with the specifications as may be adopted from time to time by the Easton Suburban Water Authority or successors, which are made part of the Township Standards by reference.
- 914 Storm water management plan related improvements shall be constructed in accord with the Township Standards.
- 915 Monuments and markers shall be placed in accord with the Township Standards.
- 916 Street lights, where required, shall be installed in accord with the Township Standards.
- 917 Street and traffic signs shall meet all Township and, where applicable, PennDOT standards. Where required, a detailed traffic control plan shall be submitted indicating the location of all necessary traffic control devices. Suitable studies shall be performed to applicable PennDOT Standards and supporting documentation shall be provided to Township for any proposed traffic control device.
- 918 Tree planting and landscaping shall be accomplished in accord with the Township Standards.

**920 CONTRACTS**

Before the Board of Supervisors shall endorse its approval on the final plan of any subdivision or land development involving improvements as may be required by this ordinance, the developer shall enter into a written agreement with the Board of Supervisors in the manner and form set by the Township Solicitor, where the developer agrees as follows:

- 921 To construct or cause to be constructed at his or her own expense, all streets, curbs, sidewalks, sanitary sewers, water supply and distribution systems, fire hydrants, storm water management facilities, monuments and markers, street lights, street signs, tree planting and landscaping, recreation facilities, and any other improvements shown on the final plan as otherwise approved, and in accordance with the requirements of this ordinance.
- 922 To maintain at his or her own cost, the said streets, curbs, sidewalks, sanitary sewers, water supply and distribution systems, fire hydrants, storm water management facilities, monuments and markers, street signs, tree planting and landscaping, recreation facilities, and any other improvements shown on the final plan until the same are accepted by Resolution of the Township Board of Supervisors and/or public authorities and for a period of eighteen (18) months thereafter and to repair the same as directed by the Board of Supervisors and/or public authority for reason of lack of structural integrity or failure to properly function.
- 923 To pay the Township's inspection, other engineering and legal fees as related to the creation and enforcement of said agreement.
- 924 To obtain any easements or releases from all damages, which may be necessary for the construction of any improvement which traverses lands of persons other than the developer. Said releases shall insure to the benefit of the Township and/or public authority as well as to the developer.

925 Whenever a traffic signal is required for traffic control to a single nonresidential lot or development, the owner of said lot or development will be required to install, operate and maintain the signal(s) in perpetuity, at no cost to the Township. The perpetual operation and maintenance shall include the signal lights, support structures, controllers, pavement markings, payment of electricity costs and other items essential to the traffic signal. All signalization controls shall meet the requirements of all applicable PennDOT Publications and Township Standards within Appendix "F" of this ordinance.

Owner shall provide the Township with an agreement ,which states that the owner, his heirs, or assigns will be responsible for the operation and maintenance of the traffic signal(s). Additionally, the owner shall provide an agreement indicating that the traffic signal and appurtenances will be maintained by a company qualified and bonded in the maintenance of traffic signals. All agreements required for private ownership and maintenance of traffic signals shall be recorded in the office for the Recorder of Deeds in and for Northampton County.

### 930 IMPROVEMENTS GUARANTEE PROCEDURE

931 Before the Board of Supervisors approves any Final Plan and as a prerequisite for approval, the developer shall deliver to the Board of Supervisors, public utility, and/or municipal authority, a performance guarantee in the amount of one hundred ten (110) percent of the cost of all improvements required by this ordinance, plus five (5) percent of the cost of all improvements for Engineering/Layout plus five (5) percent of the cost for Inspection, as determined in accordance with the procedures set forth in the Pennsylvania Municipalities Planning Code (53PS10509 and following) as amended, and as is in effect at the time of the filing, in a form and with a surety as determined in accordance with the procedures as set forth in the Pennsylvania Municipalities Planning Code as amended, guaranteeing the construction and installation of all such improvements on or before the date fixed in the formal action of approval or accompanying agreement for completion of the improvements. The terms of the agreement may be extended as provided for in the Pennsylvania Municipalities Planning Code as amended. 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 as provided for in the Pennsylvania Municipalities Planning Code as amended. In the event of default under a performance guarantee, the proceeds of the performance guarantee received by the Townships, public utility, or municipal authority shall be used to construct and install the improvements.

932 Before the Board of Supervisors approves any Final Plan, and as a prerequisite for approval, the developer shall deliver to the Board of Supervisors, public utility, and/or municipal authority a maintenance guarantee in an amount of not less than fifteen (15) percent of the actual cost of the installation of all improvements required by this ordinance, guaranteeing acceptance of all such improvements by the Board of Supervisors, public utility, and/or municipal authority.

**940 APPROVAL OF IMPROVEMENTS AND RELEASE OF PERFORMANCE GUARANTEE BY THE TOWNSHIP BOARD OF SUPERVISORS**

- 941 The procedure for inspecting and approving the improvements and for the release of the performance guarantee by the Board of Supervisors shall be in accord with the Pennsylvania Municipalities Planning Code as amended.
- 942 In the event that any improvements, which may be required have not been installed as provided in this ordinance, or in accord with the approved Final Plan, the Board of Supervisors is 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 Board of Supervisors may, at its 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 the 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 Township purpose.



## ARTICLE 10

### ADMINISTRATION

#### 1000 AMENDMENTS

Amendments to the Subdivision and Land Development Ordinance shall become effective only after a public hearing held pursuant to public notice in the manner prescribed for enactment of a subdivision and land development ordinance by the Pennsylvania Municipalities Planning Code. In addition, in case of an amendment other than that prepared by the Planning Agency of the Township, the Board of Supervisors shall submit each such amendment to the Township planning agencies for recommendations at least thirty (30) days prior to the date fixed for the public hearing on such proposed amendment.

#### 1010 APPEALS

The decisions of the Board of Supervisors with respect to the approval or disapproval of Subdivision or Land Development Plans may be appealed directly to the Court of Common Pleas as is provided for in the Pennsylvania Municipalities Planning Code.

#### 1020 REMEDIES

The preventative remedies and enforcement remedies as stipulated in the Pennsylvania Municipalities Planning Code shall apply.

#### 1030 SEVERABILITY AND CONFLICTS

1031 Should any action or provision of this ordinance be declared by the courts to be invalid, such decision shall not affect the validity of the Ordinance as a whole, nor the validity of any other section or provision of the ordinance than the one so declared.

1032 Whenever there is a conflict between minimum standards or requirements set forth in this ordinance and those contained in other Township ordinances and regulations, or other applicable laws and regulations, the most stringent standard or requirement shall apply.

#### 1040 FEES

1041 The Township Board of Supervisors shall establish, by resolution, a collection procedure and schedule of fees to be paid by the developer at the time of filing of the Sketch, Preliminary and Final Plans. No plan shall be accepted for filing unless the required number of plans have been submitted with the supplemental material required in Sections 420 and 530 as relevant, accompanied by the required review fee.

1042 Charges for field inspection as required by Township Supervisors for public improvements shall be based on actual costs incurred for such inspections.

1043 No final plan shall be approved unless all accrued fees and charges are paid in full.

1044 No plan shall be filed at the Recorder of Deeds Office unless all fees and charges are paid in full.

**1050 MODIFICATIONS**

1051 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 modifications will not be contrary to the public interest and that the purpose and intent of this ordinance is observed.

1052 All requests for a modification shall be in writing and shall accompany and be a part of the preliminary plan 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 modifications necessary.

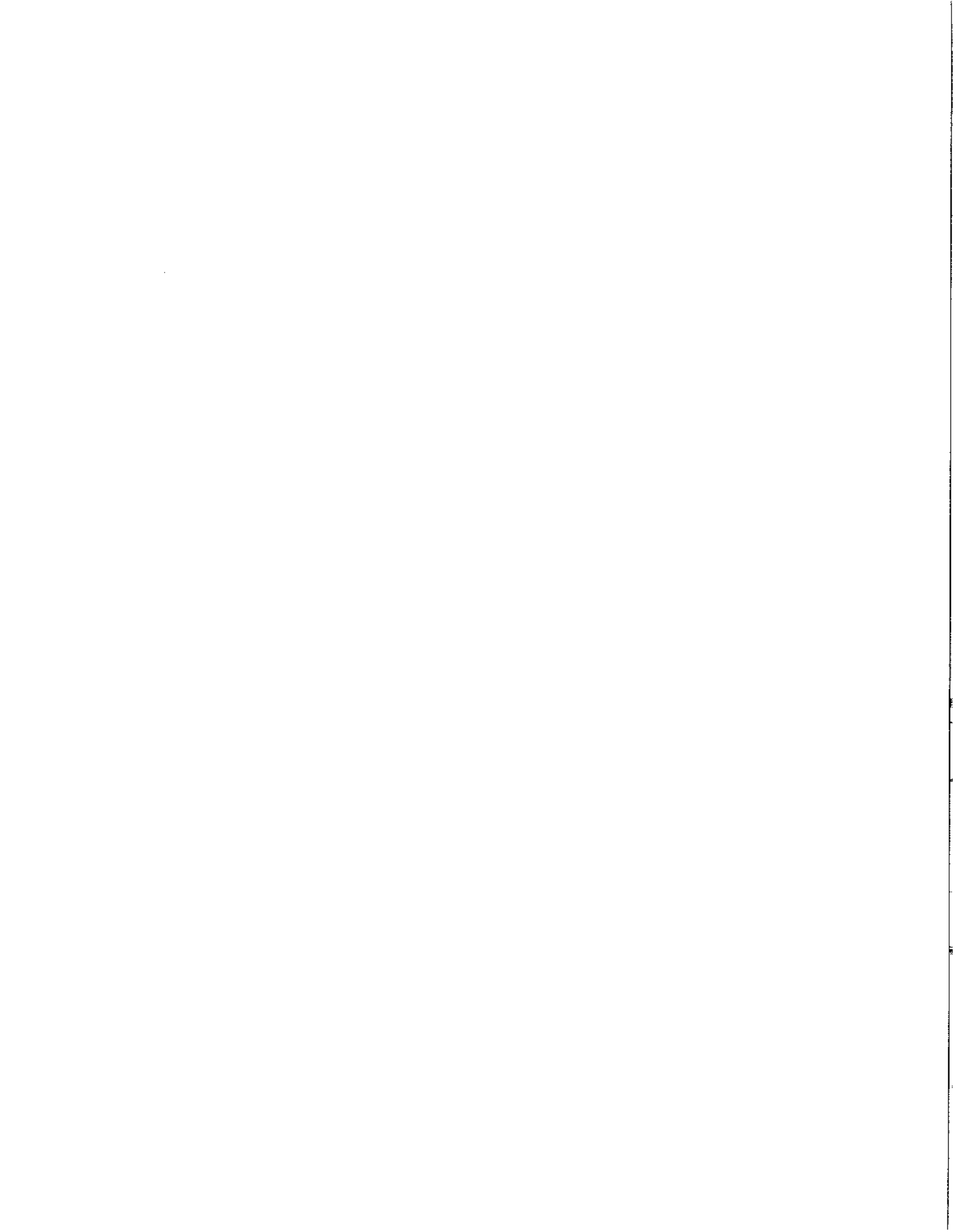
1053 The Board of Supervisors, in considering requests for modification, shall consider the recommendations of the Planning Commission in regard thereto.

1054 The Board of Supervisors shall keep a written record of all action on all requests for modifications.

1055 If the Board of Supervisors grants any waivers from the requirements of this ordinance, the plan of record shall list all the sections of this ordinance that were waived, plus the date(s) the modifications were approved by the Board of Supervisors.

**APPENDIX A**

**STORM DRAINAGE RUNOFF CALCULATION**



## APPENDIX A

### STORM DRAINAGE RUNOFF CALCULATION

The following guidelines shall be used for subdivisions and land developments within watersheds that do not have an approved Act 167 Storm Water Management Plan. In subdivision and land developments that are within an approved Act 167 area, the requirements of that plan shall be followed.

#### A. Rational Formula

The rational formula used in calculating runoff is  $Q=CiA$ . In this equation, Q is the peak runoff in cubic feet per second, C is a runoff coefficient which depends on the nature of the land cover, i is the intensity of rainfall in inches per hour for a duration equal to the time of concentration for the drainage area involved, and A is the watershed area in acres. The time of concentration is the time required for runoff from the upper reaches of the watershed to reach the point for which runoff rates are being calculated.

##### 1. Values of Coefficient "C"

Runoff coefficients used in the Rational Formula shall be consistent with Table A-1.

##### 2. Values of Rainfall Intensity "i"

Rainfall intensities to be used in the Regional Formula shall be consistent with the Intensity-Duration-Frequency (I-D-F) Curves as shown in Figure A-1. Time of concentration values to be used with the I-D-F curves shall be based upon a segmental velocity/travel time calculation along the most remote path. The flow path should be broken down into flow type (overland, shallow concentrated, open channel) based upon site evaluation and velocities and travel times calculated with methods acceptable to the Township Engineer. The time of concentration would be the sums of the segmental travel times.

#### B. Manning's Equation

1. Manning's equation to determine the velocity of flow in open channels and closed drains not under pressure is listed below. The second equation is used to determine the capacity after the velocity has been determined.

$$V = \frac{1.486}{n} r^{2/3} S^{1/2}$$

$$q = va$$

v = velocity in feet per second

n = coefficient of roughness

a = cross-sectional area of flow in square feet

p = wetted perimeter, the length of the line of contact between the water and the bottom and sides of the channel or pipe around the cross-section in feet

r = hydraulic radius =  $a/p$

s = slope of the channel or pipe in feet per foot

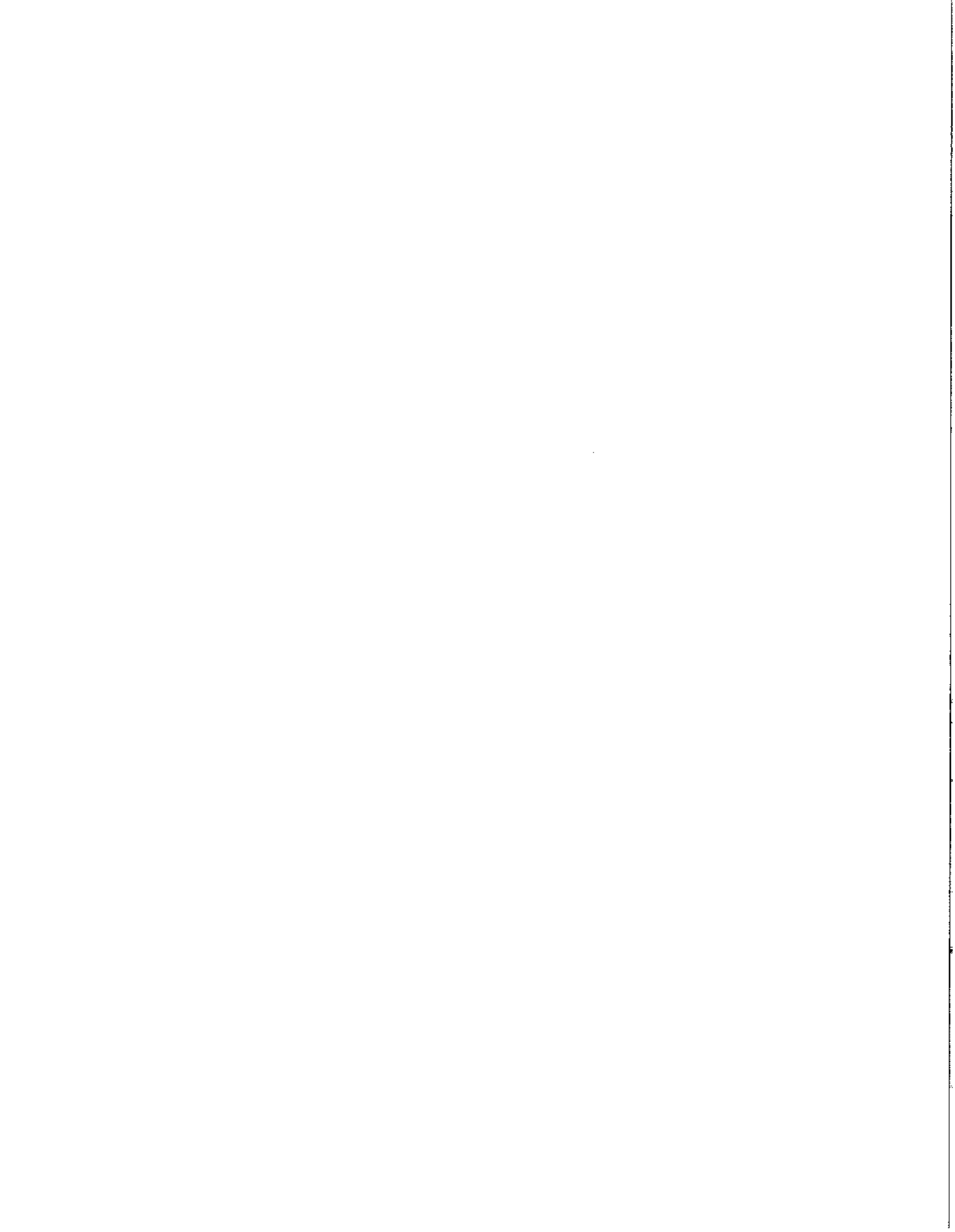
q = capacity of the channel or pipe in cubic feet per second

2. The coefficient of roughness used shall be in accordance with the United States Department of Transportation Hydraulic Design Series #3.

C. Maximum Stream Velocities in Open Channels

Maximum permissible velocities in channels shall be based upon the DEP Erosion and Sediment Pollution Control Program Manual, as amended.

**APPENDIX B**  
**STANDARD PLAN NOTATIONS**





APPENDIX B

STANDARD PLAN NOTATIONS

A. REVIEW/APPROVAL/RECORDING SIGNATURE BLOCKS

- (1) REVIEWED BY THE LEHIGH VALLEY PLANNING COMMISSION OF LEHIGH AND NORTHAMPTON COUNTIES

\_\_\_\_\_  
LVPC Staff Person Responsible for Review

\_\_\_\_\_  
Date

- (2) RECOMMENDED FOR APPROVAL BY THE LOWER NAZARETH TOWNSHIP PLANNING COMMISSION

\_\_\_\_\_  
Chairperson

\_\_\_\_\_  
Date

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
Date

- (3) APPROVED BY THE LOWER NAZARETH TOWNSHIP BOARD OF SUPERVISORS

\_\_\_\_\_  
Chairperson

\_\_\_\_\_  
Date

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
Date

- (4) RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS OF NORTHAMPTON COUNTY, PENNSYLVANIA ON \_\_\_\_\_, 20\_\_\_\_, IN MAP BOOK VOLUME \_\_\_\_\_, PAGE \_\_\_\_\_.

\_\_\_\_\_  
Northampton County Recorder of Deeds

B. OWNER'S STATEMENT

I/We, the owner(s) of this plat of land being duly sworn according to law, depose and state that I am/we are the sole owner(s) of this property in peaceful possession of it and that there are no suits pending affecting the title of same. I/we do further depose and state that I/we do have complied with all the requirements and provisions of the Lower Nazareth Township Subdivision and Land Development Regulations and shall save the Township harmless and indemnify the Township of Lower Nazareth against any liability or loss resulting from the subdivision of this plat for whatever reason present or future.

\_\_\_\_\_  
Owner's Signature

\_\_\_\_\_  
Owner's Signature

SWORN TO AND SUBSCRIBED BEFORE ME  
THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_.

SEAL

\_\_\_\_\_  
Notary Public

\*\*\*\*\*

C. OWNER'S CONSENT FOR ON-SITE INSPECTION

Owner(s) hereby give(s) consent to and authorizes the Township Board of Supervisors, the Township Planning Commission, the Township Engineer, the Township Solicitors and other Township personnel, agents, representatives, officials and officers to conduct or perform an on-site inspection of the real property which is the subject matter of the within Site Plan, Subdivision or Land Development during the pendency of the Site Plan, Subdivision or Land Development Plan before the Township.

\_\_\_\_\_  
Owner's Signature

\_\_\_\_\_  
Owner's Signature

D. OFFER OF DEDICATION – Model Form.

The undersigned Owner(s) offer to dedicate to the Township of Lower Nazareth for public use the following: the street rights-of-way for the following street(s): \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_; shown on the approved plans; and all public improvements to be constructed within their limits and within any proposed public open spaces and all other improvements stated as proposed to be public on the plans or accompanying documents or required to be dedicated under Township requirements.

\_\_\_\_\_  
Owner's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Owner's Signature

\_\_\_\_\_  
Date

\* \* \* \* \*

E. PROFESSIONAL ENGINEER'S STATEMENT

I, \_\_\_\_\_, do hereby certify that I am a professional Engineer licensed and registered to practice engineering in the Commonwealth of Pennsylvania, pursuant to the Pennsylvania Professional Engineers Registration Law, Act of May 23, 1945, P.L. 913, as amended, as found at 63 P.S. Section 148 et seq., and that the engineering aspects of the Plan are true and correct to the best of my knowledge, information and belief, and I do further certify that the Plan complies with the requirements of the Subdivision and Land Development Ordinance of Lower Nazareth Township.

\_\_\_\_\_  
Professional Engineer's Signature

\_\_\_\_\_  
License Number

\_\_\_\_\_  
Address

SEAL

F. PROFESSIONAL LAND SURVEYOR'S STATEMENT

I, \_\_\_\_\_, do hereby certify that I am a professional Land Surveyor licensed and registered to perform land surveys in the Commonwealth of Pennsylvania, pursuant to the Pennsylvania Professional Engineers Registration Law, Act of May 23, 1945, P.L. 913, as amended, as found at 63 P.S. Section 148 et seq., and do hereby certify that the Plan, prepared from field survey, correctly represents the proposed lot(s) as surveyed by me for the owners and that the Plan complies with the requirements of the Subdivision and Land Development Ordinance of Lower Nazareth Township.

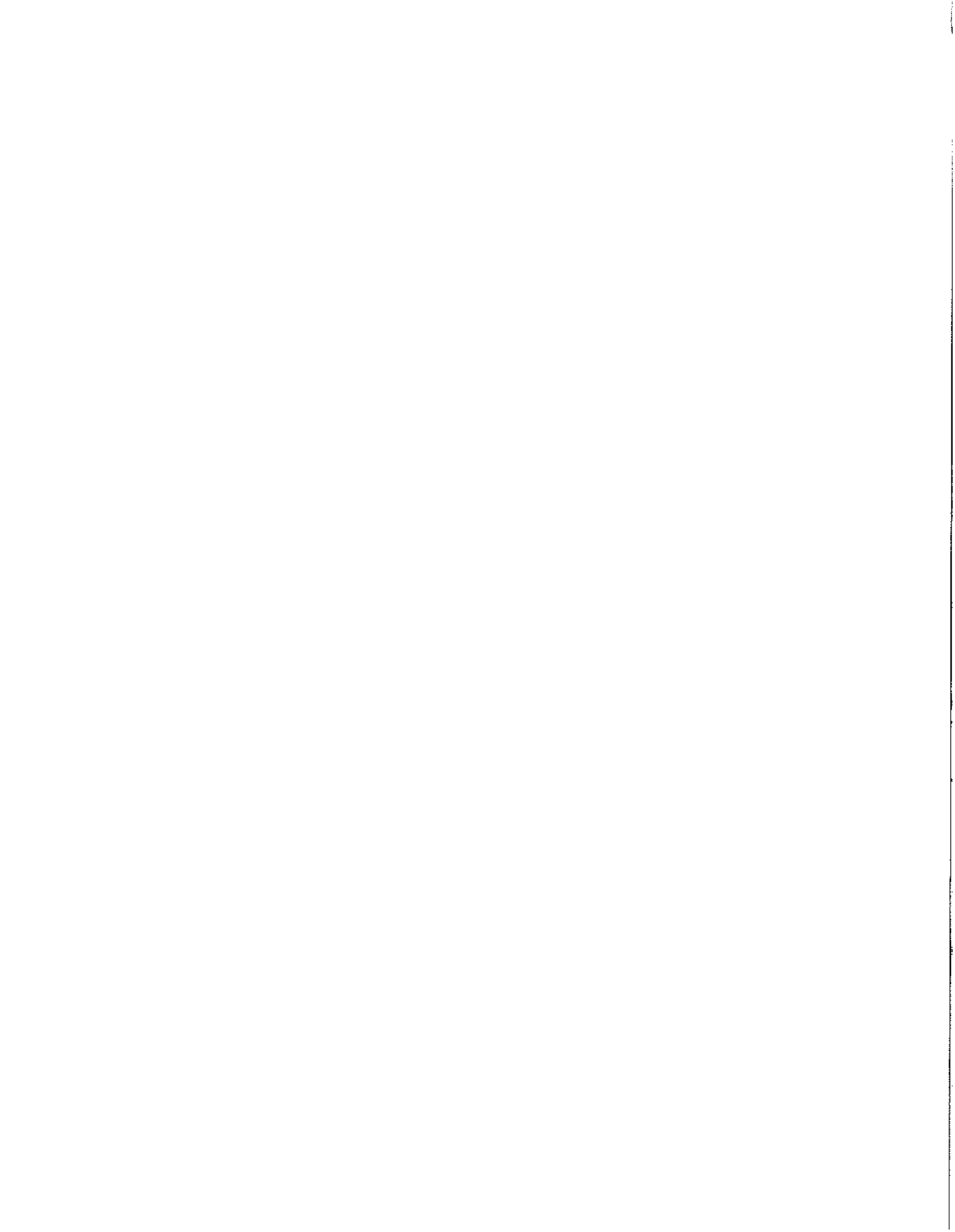
\_\_\_\_\_  
Professional Land Surveyor's Signature

\_\_\_\_\_  
License Number

\_\_\_\_\_  
Address

SEAL

**APPENDIX C**  
**PRELIMINARY PLAN CHECKLIST**



**APPENDIX C**

**PRELIMINARY PLAN CHECKLIST**

PRELIMINARY PLAN REQUIREMENTS: All of the following information and materials listed in this section are required parts of preliminary plans for any land development and any subdivision.

The Applicant shall submit completed copies of this section as part of the application.

Applicant's Name: \_\_\_\_\_

Applicant's Address: \_\_\_\_\_

Applicant's Daytime Phone Number: \_\_\_\_\_ Fax: \_\_\_\_\_

Applicant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Preparer of Application: \_\_\_\_\_

- Place checkmarks in the appropriate columns below, except: 1) insert "NA" in the "Not Submitted" column if not applicable and 2) insert "W" in the "Not Submitted" column if a waiver is requested from the requirement.

**A. GENERAL SUBMISSION ITEMS:** (Note – the Township may require the submission of additional numbers of copies)

SUBMITTED	NOT SUBMITTED	
_____	_____	1. Township Application Fee
_____	_____	2. Township Escrow Fee
_____	_____	3. 1 copy of the completed Application
_____	_____	4. 4 copies of the Preliminary Plan Checklist (using the copies of the pages in this Section)
_____	_____	5. 17 print copies of the complete Preliminary Plans
_____	_____	6. 5 sets of Supporting Documents if applicable
_____	_____	7. Copy of the Lehigh Valley Planning Commission (LVPC) Application Form showing that the Applicant provided a copy of the plan to the LVPC

SUBMITTED

NOT  
SUBMITTED

8. Two (2) reduced scale copies of the proposed layout plan at a size of 8½" x 14"

B. DRAFTING REQUIREMENTS: All information shall be legibly and accurately presented.

1. Plans prepared on a standard size sheet (18" x 24", 24" x 36", 30" x 42"). All copies of plans should be folded in such a manner that the title of the sheet faces out, except exceptionally large and thick sets of plans may be rolled.

2. Plans drawn to scale of 1 inch = 50 feet or other scale pre-approved by the Township Engineer or designated municipal official.

3. All dimensions set in feet and hundredths thereof, and bearings in degrees, minutes and seconds.

4. Differentiation between existing and proposed features with a corresponding plan legend.

5. Boundary line of the tract, shown as a heavy boundary line with metes and bounds shown.

6. If layout plans involve 2 or more sheets, a map of the layout of the entire project at an appropriate scale on one sheet, and a key map showing how the streets connect.

7. If the tract(s) crosses a municipal boundary, a map showing both the portions in Lower Nazareth Township and the other municipality, in sufficient detail for the Township to determine how the parts will interrelate, including the boundary line or lines between such municipalities.

8. Required profiles shown at a scale of 1" = 50' horizontal and 1" = 5' vertical, or other scale preapproved by the Township Engineer.

9. All sheets numbered and listed on one page.



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- |  |  |  |
|--|--|--|
|  |  | 10. Words "Preliminary Plan" and sheet title (such as "Layout Plan") on each sheet.                  |
|  |  | 11. Indicate type of plan (i.e. "Minor Subdivision", "Major Subdivision", "Land Development", etc.). |
|  |  | 12. All required signature blocks (see Appendix B).  |

C. GENERAL INFORMATION:

- |  |  |  |
|--|--|--|
|  |  | 1. Name of project on each sheet.  |
|  |  | 2. Name of landowner and/or developer (with address and telephone number).   |
|  |  | 3. Names and Deed Book references and tax parcel information of abutting property owners, with abutting lot lines.   |
|  |  | 4. Lot lines of adjacent lots, and approximate locations of any buildings, common open spaces, detention basins or drainage facilities existing or approved within 200 feet of the boundaries of the proposed project.   |
|  |  | 5. Existing and proposed wells, existing primary and alternate septic systems on adjacent and proposed lots.   |
|  |  | 6. Notarized Owners Statement (see Appendix B).  |
|  |  | 7. Professional Surveyor's statement: (see Appendix B).  |
|  |  | 8. Professional Engineer's statement, if applicable (see Appendix B).  |
|  |  | 9. Location map showing relation of site to adjoining properties, subdivisions and streets within 1,000 feet, including designated names, Township or State route numbers for all streets, villages and subdivisions within such area of the site. The scale shall be 1" = 1,000'. |

SUBMITTED	NOT SUBMITTED	
_____	_____	10. A north arrow shall be located on all plan sheets. The location map shall have its own north arrow, with the orientation of the north arrow for the location map and each sheet submitted for review the same.
_____	_____	11. Written and graphic scales (including scale of location map).
_____	_____	12. Site boundaries with names of landowners of all contiguous properties and/or developments with Deed Book reference or Plan Book volume reference of recorded subdivision. For the purpose of this item, "contiguous" shall also include properties separated from the site boundary by a street, road or other right-of-way.
_____	_____	13. Total acreage of the site.
_____	_____	14. Name, address, seal and license number of the engineer or land surveyor responsible for the plan.
_____	_____	15. Date of plan and revision block.
_____	_____	16. Deed Book volume and page number from County records.
_____	_____	17. Tax map, block and lot numbers for the tract being subdivided.
_____	_____	18. A statement on the plan of proposed principal uses that are intended for each lot (if non-residential).
_____	_____	19. A development scheme for residual land, if any.
_____	_____	20. Drainage Covenants.

D. NATURAL FEATURES:

- |       |       |  |
|-------|-------|--|
| _____ | _____ | 1. Existing contour lines shown at the same scale as the layout plan, as follows:      |
|       |       | a. shall be based on a field survey or photogrammetric procedure that was completed at |

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a scale of 1" = 100' or larger. Contours shall be based upon U.S.G.S. datum, with an established bench mark.

b. the contour interval shall be sufficient to determine compliance with Township ordinances. An interval of 2 feet for slopes of 3% or greater and 1 foot for slopes less than 3%.

- |       |       |    |  |
|-------|-------|----|--|
| _____ | _____ | 2. | Identification of any slopes of 15 to 25%, and greater than 25% by shading respective areas on the plan.   |
| _____ | _____ | 3. | Watercourses (with name if known), natural springs, lakes, wetlands and ponds.<br><br>a. Detailed delineation by a professional qualified in wetlands delineation is required with a metes and bounds description and shall be dimensioned from lot lines. All wetland mitigation areas shall be shown.                    |
| _____ | _____ | 4. | Rock Outcrops, soil piles, closed depressions, and observed sinkholes.   |
| _____ | _____ | 5. | Location of any areas within the 100 year floodplain (with differentiation between floodway and floodfringe if available from official Federal floodplain maps).   |
| _____ | _____ | 6. | Approximate locations and abbreviated names of soil types, according to the Northampton County Soil Survey (or more detailed professional study) with identification of those that are a alluvial or hydric and have a depth to bedrock of less than 3 feet. If such soils do not exist, that shall be stated on the Plan. |
| _____ | _____ | 7. | Wooded areas and notable trees.  |

NOTE: Show natural and man made features in D and E that are present within 200 feet of the site boundaries.

E. MAN-MADE FEATURES: (with existing features graphically differentiated from proposed features)

SUBMITTED	NOT SUBMITTED	
_____	_____	1. Existing and proposed lot lines <ul style="list-style-type: none"> <li>a. The boundaries of lots (other than a residual lot of greater than 10 acres) shall be determined by accurate field survey, closed with an error not to exceed 1 in 10,000 and balanced.</li> <li>b. The boundaries of any residual tract which is 10 acres or more may be determined by deed.</li> </ul>
_____	_____	2. Location of existing and proposed property monuments and markers.
_____	_____	3. Sufficient measurements of all lots, streets, rights-of-way, easements and community or public areas to accurately and completely reproduce each and every course on the ground.
_____	_____	4. Buildings estimated to be 50 years or older that could be impacted by the project, with name and description.
_____	_____	5. Existing and proposed utilities or utility easements and restrictive covenants and easements which might affect development (stating which easements and/or rights-of-way are proposed for dedication to the municipality).
_____	_____	6. Existing and proposed building locations.
_____	_____	7. Streetlights, sidewalks, and curbing.
_____	_____	8. Existing and proposed drainage structures, pipes, culverts and bridges.

F. ZONING REQUIREMENTS: (Refer to the most recent Zoning Ordinance for additional requirements)

_____	_____	1. Applicable zoning district and required minimum lot area.
_____	_____	2. Minimum setback requirements shown for each lot.

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|-------|-------|--|
| <hr/> | <hr/> | 3. Area and location of any proposed common open space.  |
| <hr/> | <hr/> | 4. If any common open space proposed: method of ownership and entity proposed to be responsible for maintenance.   |
| <hr/> | <hr/> | 5. If any common open space proposed: description of intended purpose, proposed improvements (such as rough grading) and any proposed recreation facilities. |
| <hr/> | <hr/> | 6. Statement of type of water and sewer service proposed (such as "public water and public sewer").  |
| <hr/> | <hr/> | 7. Required and proposed building coverage and impervious coverage.  |
| <hr/> | <hr/> | 8. Compliance with the site plan requirements of the Zoning Ordinance.   |

G. PROPOSED LAYOUT:

- |       |       |  |
|-------|-------|--|
| <hr/> | <hr/> | 1. Total acreage of site and total proposed number of lots and dwelling units.   |
| <hr/> | <hr/> | 2. Lot numbers for each parcel (and for each building if more than 1 building per lot).  |
| <hr/> | <hr/> | 3. Proposed density (in units per acre) for residential developments.  |
| <hr/> | <hr/> | 4. Dimensions of each lot in feet and hundredths.  |
| <hr/> | <hr/> | 5. Proposed and existing rights-of-way and cartway widths and locations of existing and proposed streets, including streets within 200 feet of tract boundaries. |
| <hr/> | <hr/> | 6. Street centerline information bearings and distances.   |
| <hr/> | <hr/> | 7. Horizontal curve data including radius, tangent distance, arc length, delta angle, chord bearing and distance. Such information may be listed in a table,     |

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using reference numbers on a plan, provided that sufficient information is provided along each course (such as radius and arc length) such that each course can be reproduced in the field.

- |       |       |     |   |
|-------|-------|-----|---|
| _____ | _____ | 8.  | Typical street cross sections. Typical cross section of widening of existing roads or streets.  |
| _____ | _____ | 9.  | Right-of-way and curb lines with horizontal curve radii at intersections.   |
| _____ | _____ | 10. | Beginning and end of proposed street construction.  |
| _____ | _____ | 11. | Street improvements proposed by the Applicant, including any acceleration/deceleration lanes, traffic signal(s) , street realignment or widening of abutting streets. |
| _____ | _____ | 12. | Any proposed curbing.   |
| _____ | _____ | 13. | Any proposed sidewalks with proposed handicapped ramps at intersections.  |
| _____ | _____ | 14. | Any proposed bicycle paths.   |
| _____ | _____ | 15. | Names of existing streets and proposed names of new streets.  |
| _____ | _____ | 16. | Designation which streets are proposed to dedicated to the Township or to remain private.   |
| _____ | _____ | 17. | Evidence that a PennDOT Highway Occupancy Permit has been applied for or approved for any upgrade or new street or driveway entrance on to a State road.              |
| _____ | _____ | 18. | Sight distance triangles meeting applicable requirements.   |
| _____ | _____ | 19. | Any off-site Improvements.  |

H. UTILITY PLAN:

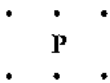
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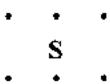
1. Symbols. As applicable, the following existing and proposed items for each lot, using the following symbols (or other symbols preapproved by the Township staff).



Well (if not connected to central water system) with required separation distance shown from septic drain fields, and with dimensions from lot lines.



Primary drain field (with dimensions from lot lines, and with depth of limiting zone and average percolation rate stated on plan).



Secondary drain field - shall be perc tested, and dimensioned from lot lines.



Suitable soil probe location, with depth to limiting zone.



Unsuitable soil probe location, with depth to limiting zone.



Suitable percolation test locations (2 sites required meeting DEP requirements), with average percolation rate.

Unsuitable percolation test location(s)-if any.

Type of approved septic systems.

SS	ESM	OS
STANDARD	SAND	OTHER
SYSTEM	MOUND	SYSTEM

\_\_\_\_\_

a. existing and proposed contour lines on same sheet as utility layout.

\_\_\_\_\_

b. location of existing and proposed wells within 100 feet of boundaries of the project.

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- c. proposed or typical location of dwelling/building and driveway or earth moving activities.
- d. soils mapping (see County Soil Survey).
- e. exact slope across primary and secondary sewage system sites.
- f. type of approved septic system (in-ground, sand mound, etc.).

3. If public or central sewage service is proposed:

- a. name of provider permitted under Sewage Facilities Plan and adopted by Township.
- b. existing and proposed contour lines on same sheet as utility layout.
- c. location, size, type and grade of mains and laterals, with locations corresponding to stationing on the profile.
- d. locations of manholes, with invert elevation of flow line and grade at top of each manhole.
- e. detailed construction plan drawings of proposed facilities and appurtenances.
- f. proposed lot lines and any proposed easements or rights-of-way needed for the utilities.
- g. location of all other existing facilities and public utilities in the vicinity of sanitary sewer lines.

4. If public or central water service is proposed:

- a. location and size of existing and proposed waterlines.
- b. existing and proposed fire hydrant locations.



- c. detailed construction plan drawings of proposed facilities and appurtenances.

SUBMITTED	NOT SUBMITTED	
_____	_____	d. distance that water lines will have to be extended.
_____	_____	e. any other appurtenances.
_____	_____	5. Any existing and proposed underground natural gas, electrical, telephone, cable TV or other utility lines, with any easements shown that will affect development.

I. GRADING AND STORMWATER MANAGEMENT PLAN:

_____	_____	1. Existing and proposed storm drainage facilities or structures, including but not limited to detention basins, swales, pipes, culverts, inlets, etc.
_____	_____	2. Capacity, depth, dimensions and locations of detention basins.
_____	_____	3. Detailed construction plan drawings of proposed facilities and appurtenances.
_____	_____	4. Pre-development and post-development watershed areas shown on the Plan.
_____	_____	5. Locations of any proposed or existing stormwater easements.
_____	_____	6. Intended design year standards for culverts, bridge structures and/or other stormwater facilities.
_____	_____	7. Schematic location of all underground utilities.
_____	_____	8. Entity responsible to maintain/own any detention basins or other appurtenances.
_____	_____	9. Stormwater Management Report
_____	_____	10. Contour Grading Plan
_____	_____	11. All stormwater management covenants.

J. FOR USES OTHER THAN RESIDENTIAL SINGLE FAMILY DETACHED OR TWIN DWELLINGS:

SUBMITTED	NOT SUBMITTED	
_____	_____	1. For multi-family dwellings, evidence that the project meets the density requirements of the Zoning Ordinance.
_____	_____	2. Evidence that the project will meet the offstreet parking requirements of the Zoning Ordinance.
_____	_____	3. Arrangement of off-street parking spaces, parking aisles, off-street loading areas and extent of areas to be covered by gravel or asphalt.
_____	_____	4. For townhouses, any proposed methods to ensure privacy between outdoor semi-private area (such as fences or walls or plantings between rear yards).
_____	_____	5. Illustrative sketches of exteriors or proposed buildings (encouraged but not required).
_____	_____	6. Number, area, height, illumination (if any) and location of proposed signs.
_____	_____	7. Major types, heights and locations of outdoor lighting.
_____	_____	8. Location of any proposed outdoor storage areas.
_____	_____	9. Note stating total square feet of paved area, including gravel areas.

K. LANDSCAPE PLAN:

_____	_____	1. Locations of treelines and existing forested areas.
_____	_____	2. Locations of individual trees of greater than 6 inches caliper, other than trees within forested areas and treelines (not required for areas that will not be affected by the proposed plan, if so noted on the plan).
_____	_____	3. Any proposed evergreen screening, buffer yards or earthen berming (if required by Zoning Ordinance).

SUBMITTED

NOT  
SUBMITTED

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|-------|-------|----|--|
| _____ | _____ | 4. | Areas of existing mature woods that are proposed to be protected and preserved or removed. (See Zoning Ordinance for tree preservation). |
| _____ | _____ | 5. | General types, sizes and locations of any required street trees, parking lot landscaping and any other major proposed landscaping.       |
| _____ | _____ | 6. | Any proposed fencing (including height and type) and/or landscaping around stormwater basins.  |

L. EROSION AND SEDIMENTATION PLAN:

- |       |       |    |   |
|-------|-------|----|---|
| _____ | _____ | 1. | Drawing showing location and types or proposed erosion and sedimentation control measures, complying with the regulations and standards of the County Conservation District and DEP. (Also applies to off-site earthmoving operations). |
| _____ | _____ | 2. | Narrative describing proposed soil erosion and sedimentation control methods.   |
| _____ | _____ | 3. | Proposed construction sequence.   |
| _____ | _____ | 4. | Erosion and Sedimentation Control Plan must match grading and stormwater plans for proposed earthwork.  |

M. ROAD PLAN-PROFILES:

- |       |       |    |  |
|-------|-------|----|--|
| _____ | _____ | 1. | Profile of existing and proposed ground surface along centerline of street. Plan view of street with stationing and horizontal curve data shall be included on profile drawings. |
| _____ | _____ | 2. | Proposed centerline grade on tangents and elevations at 50 foot intervals.   |
| _____ | _____ | 3. | All vertical curve data including length, elevations and minimum sight distance.   |
| _____ | _____ | 4. | Street cross-section(s) if required by the Township Engineer/Consultant.   |
| _____ | _____ | 5. | Curb grade information (if applicable).  |

N. SANITARY SEWER AND STORM DRAIN PLAN-PROFILES: (with profile drawings on same sheet as plan drawings)

SUBMITTED	NOT SUBMITTED	
_____	_____	1. Profile of proposed ground surface and with elevations at top of manholes or inlets.
_____	_____	2. Profiles of storm sewer and sanitary sewer lines, with corresponding stationing.
_____	_____	3. All line crossings of other utilities.
_____	_____	4. Slope, size, type and length of pipes.
_____	_____	5. Invert elevation and top of grate or manhole elevation. (Plan view)
_____	_____	6. Number or letter designation for inlets, manholes and junction boxes.
_____	_____	7. Headwalls, endwalls, energy dissipators and/or any other appurtenances.

O. CONSTRUCTION DETAILS:

_____	_____	1. Detailed construction plan and cross-sectional drawings of proposed facilities and appurtenances.
-------	-------	--

P. LIGHTING PLAN: See Zoning Ordinance requirements (Section 511, latest edition).

Q. SUPPORTING DOCUMENTS AND ADDITIONAL INFORMATION:

_____	_____	1. Residual Lands Sketch. If the submitted plans do not include all undeveloped or partially developed adjacent or abutting lands owned by the same landowner or under control of the same developer (or closely related entities), then a sketch shall be submitted showing a potential development scheme for such land holdings consistent with applicable township ordinances. Such sketch shall demonstrate that the proposed subdivision provides for the orderly development of any residual lands and/or does not adversely affect the potential development of residual lands.
-------	-------	---

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- \_\_\_\_\_
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- \_\_\_\_\_
- \_\_\_\_\_
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- \_\_\_\_\_
2. Sewage Module. If applicable, 5 copies of the DEP Sewage Planning Module application and supporting information as completed by the Applicant, together with the evidence that the application has been forwarded to the proper review agencies.
  3. Public or Central Water. If public or central water service is proposed by an existing water company or authority, the Applicant shall provide a letter from such water company or authority which states that the company or authority expects to be able to adequately serve the development, that the proposed water system is generally acceptable and that references standard conditions or specifications required by the company or authority for the provision of services.
  4. On-Lot Wells. When water service to the proposed subdivision is to be provided by an on-lot well, the developer shall submit two (2) copies of a letter from the applicable Water Authority that service to the site is not feasible.
  5. Public Sewage. If service is proposed by a sewage authority, the developer shall submit a copy of a letter from the authority which states that the authority can adequately serve the subdivision, that the proposed sanitary sewage system conditions or specifications required by the authority for connection to the system.
  6. Non-public Sewage. If service is proposed by a central sewage system that is not publicly-owned, the developer shall provide sufficient information to show that the proposed system would be feasible, within DEP regulations and maintained and operated by an acceptable entity.
  7. Traffic Impact Analysis and Report (if applicable).
  8. State Highway Occupancy Permits. Access to State Highway shall be authorized by a Highway occupancy Permit required pursuant to State Highway Law (36 P.S. 670-420, as amended) before driveway access to a State Highway is permitted.

SUBMITTED

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SUBMITTED

- |       |       |     |   |
|-------|-------|-----|---|
| _____ | _____ | 9.  | Floodplain. If the project would include any area within the 100 year floodplain or any watercourse, a statement from the Zoning Officer indicating that the proposed subdivision or land development would be in compliance with the Floodplain regulations of the Township.   |
| _____ | _____ | 10. | A statement describing the nature of the landowner's and the developer's involvement in the proposed development, and the name of the primary partners or chief officers of any corporate developer.  |
| _____ | _____ | 11. | Date and reference of any decisions of the Zoning Hearing Board or Supervisors that are relevant to the proposal.   |
| _____ | _____ | 12. | For industrial operations or industrial storage: A written description of the proposed use in sufficient detail to indicate a) any noise, glare, smoke and fumes nuisances, b) to allow a general determination of possible fire, explosive, toxic, genetic, public health or other hazards and c) to estimate the amount, direction and times of any shipment/delivery traffic that is expected. |
| _____ | _____ | 13. | If to be served by on-lot septic service, a copy of septic percolation test and soil probe results.   |
| _____ | _____ | 14. | Deed Book Volume and Page reference of the existing deed of the property(ies).  |

**APPENDIX D**  
**FINAL PLAN REQUIREMENTS**





**APPENDIX D**

**FINAL PLAN CHECKLIST**

**FINAL PLAN REQUIREMENTS:** In addition to the Preliminary Plan submission items required in Appendix C, the following information and materials listed in this section are required on final plans for any land development and any subdivision.

The Applicant shall submit completed copies of this section as part of the application.

Applicant's Name: \_\_\_\_\_

Applicant's Address: \_\_\_\_\_

Applicant's Daytime Phone Number: \_\_\_\_\_ Fax: \_\_\_\_\_

Applicant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Preparer of Application: \_\_\_\_\_

- Place checkmarks in the appropriate columns below, except: 1) insert "NA" in the "Not Submitted" column if not applicable and 2) insert "W" in the "Not Submitted" column if a waiver is requested from the requirement.

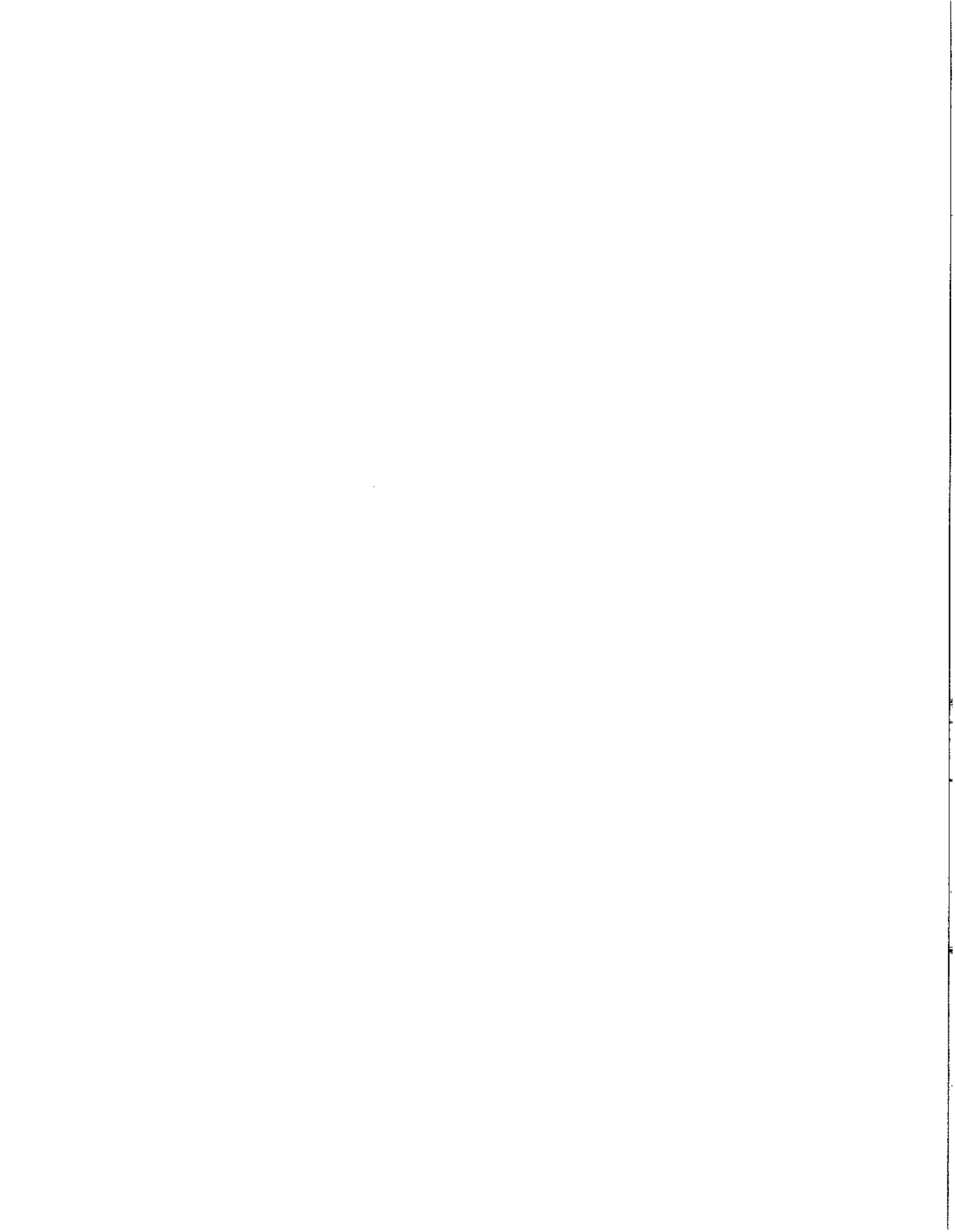
**A. GENERAL SUBMISSION ITEMS:** (Note – the Township may require the submission of additional numbers of copies)

SUBMITTED	NOT SUBMITTED	
_____	_____	1. 1 copy of the completed Final Plan application
_____	_____	2. 4 copies of the Final Plan checklist (using the copies of the pages in this section)
_____	_____	3. 2 copies of the reduced (8½" x 14") Final Plan
_____	_____	4. 11 print copies of the complete Final Plans
_____	_____	5. 4 sets of Supporting Documents if applicable.
_____	_____	6. Words "Final Plan" and sheet title on each drawing.
_____	_____	7. Repair and maintenance covenants for all drainage swales, storm sewers and detention pond.

SUBMITTED	NOT SUBMITTED	
_____	_____	8. Covenant requiring the underground installation of all electric, telephone and cable TV utility distribution lines.
_____	_____	9. Signed and notarized Offer of Dedication.
_____	_____	10. The location and type of all existing and proposed street and property corner monumentation.
_____	_____	11. House or building numbers for street/property addresses.
_____	_____	12. All street, traffic (stop and speed limit), or other required signage.
_____	_____	13. Legend or covenant containing the individual lot grading plan requirements from SALDO section 533.11.
_____	_____	14. Traffic signal maintenance agreement.
_____	_____	15. Legal description for all street rights-of-way proposed for dedication to Lower Nazareth Township.

**APPENDIX E**

**NOTICE TO LANDOWNERS WITHIN 200 FEET OF A PROPOSED  
SUBDIVISION OR LAND DEVELOPMENT**



**APPENDIX E**

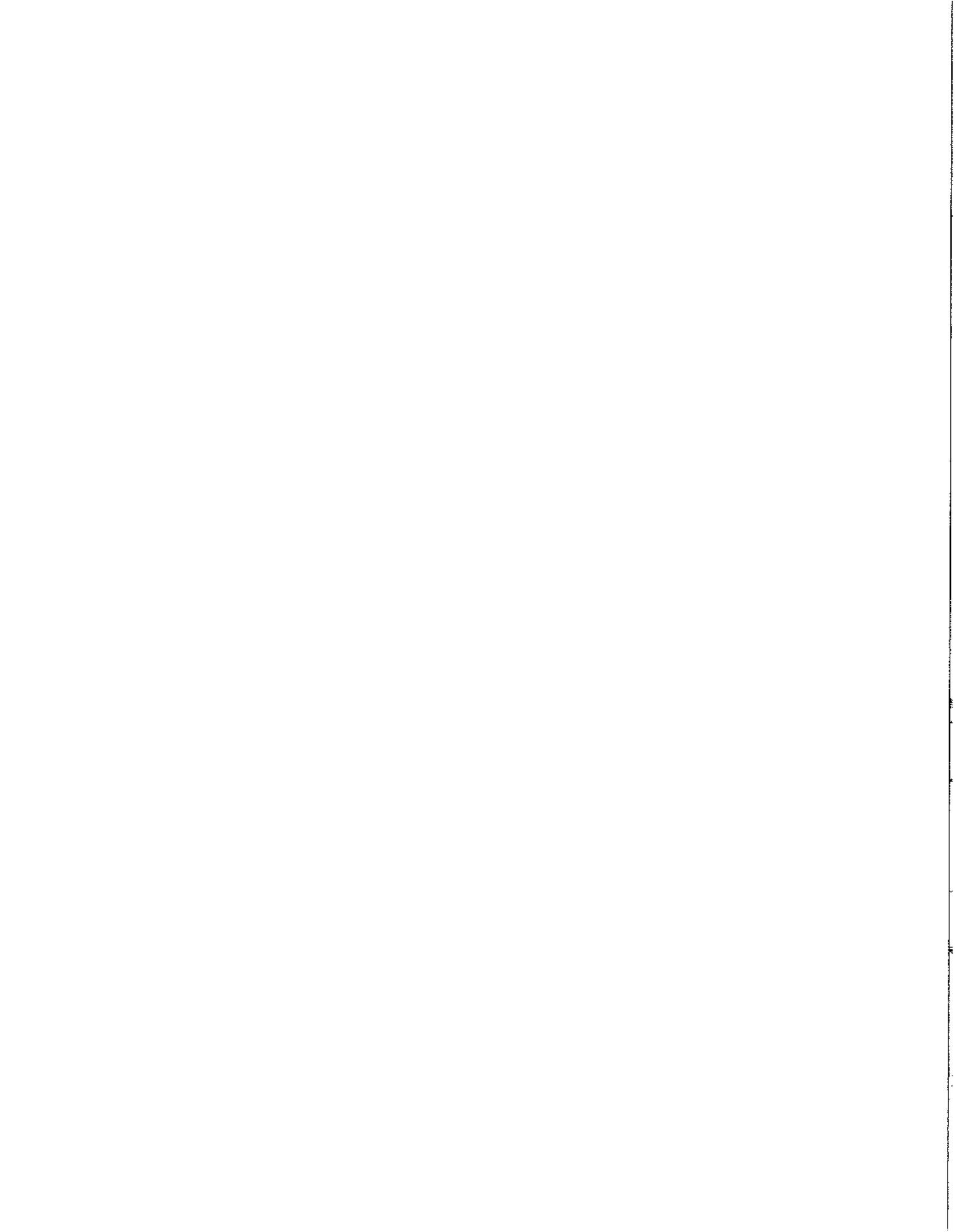
**NOTICE TO LANDOWNERS WITHIN 200 FEET  
OF A PROPOSED SUBDIVISION OR LAND DEVELOPMENT**

This notice, per section 402.5 of the Lower Nazareth Township Subdivision and Land Development Ordinance, is to notify you that an application for a subdivision or land development has been submitted for land that is located within 200 feet of your property.

The project consists of approximately \_\_\_\_\_ acres of land owned by \_\_\_\_\_ . The land will be subdivided-developed by \_\_\_\_\_ of \_\_\_\_\_ , \_\_\_\_\_ .

The subdivision will create \_\_\_\_\_ new building lots. The development calls for the building of \_\_\_\_\_ .

The above application has been placed on the Planning Commission's agenda for their next regularly scheduled meeting on \_\_\_\_\_ , \_\_\_\_\_ , 20\_\_\_\_\_ .



**APPENDIX F**  
**STANDARDS FOR IMPROVEMENTS CONSTRUCTION**





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500	SANITARY SEWERS ..... F-5
600	WATER SUPPLY AND DISTRIBUTION ..... F-45
700	STORM DRAINAGE SYSTEM ..... F-47
800	EROSION AND SEDIMENTATION CONTROL ..... F-48
900	TREE PLANTING AND LANDSCAPING ..... F-49
1000	TRAFFIC SIGNALIZATION AND CONTROLS ..... F-50
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1200	DETAILS ..... F-55
1300	RAILROAD GRADE CROSSINGS ..... F-58



## APPENDIX F

### STANDARDS FOR IMPROVEMENTS CONSTRUCTION

#### 100 GENERAL STANDARDS

##### 101 SCOPE

All improvements required to be built, placed, erected or planted within existing or proposed Township roads or rights-of-way or on private property eligible for use by the public, shall conform to these standards for improvements construction.

##### 102 REFERENCES

Throughout these standards, references will be made to various standard specifications. When such standards are referenced, they shall be considered as being the most current publication, and fully incorporated into these standards.

##### 103 CONTROL OF WORK

The Township and/or its agents, employees or consultants, have no direct or indirect supervisory control over improvements construction. Construction methods, procedures and safety provisions are the responsibility of the developer.

##### 104 SAFETY

In particular, compliance with all local, state and Federal regulations regarding safety of all operations, of all workers and of the general public, is the responsibility of the developer.

##### 105 INSPECTION

Township inspection of improvements construction will be made to check general compliance with the material and workmanship criteria of these standards. Such inspection shall not relieve the developer from full responsibility for the quality of his work product or the layout of improvements to the lines and grades on the approved plans.

##### 106 NOTIFICATION

It shall be the responsibility of the developer to notify the appropriate inspection consultant for the Township or designated authority at least twenty-four (24) hours prior to commencing any construction activity.

##### 107 CONFLICTS

Where a conflict exists between the requirements of these standards and the requirements of another jurisdiction, it shall be the responsibility of the developer to resolve the conflict prior to proceeding with construction. The developer shall inform the Township, in writing, of any conflicts, and his methods of resolving same.

## 200 STREETS

### 201 GRADING

Streets shall be graded to the full width of the right-of-way, surfaced and improved to the grades and dimensions shown on the plans, profiles and cross-sections submitted by the developer and approved by the Township.

### 202 SUB-BASE AND PAVEMENT SPECIFICATIONS

Streets shall be constructed to the following specifications. Sections 202.1, 202.2 and 202.3 are minimum requirements. A traffic analysis shall be performed and evaluated for all proposed streets, to determine the construction requirements for those streets. If the analysis reveals a heavy concentration (25 or more trips per day, on average) of commercial vehicles (26,000 pound gross weight or higher) then the proposed street design shall be based on the requirements of PennDOT Publications Nos. 13M, 70M, 72M, 242 and 408, and their most recent revisions. Final design of these streets shall be approved by the Township. This requirement shall apply regardless of the proposed street classification.

#### Sub-base and Underdrain

An eight (8) inch compacted subbase consisting of Type "C" or better PennDOT No. 2A stone shall be constructed on a properly prepared subgrade for all roads. Subbase shall be constructed in accordance with the requirements of Section 350 PennDOT Form 408, current edition. A geotextile membrane shall be installed above the sub-grade, below the sub-base material. The geotextile membrane shall be suitable for this application and installed to the manufacturers specifications. Cut sheets shall be provided to the Township for approval prior to installation. The use of pavement base drain shall be required along both edges of cartway. The pavement base drain shall be constructed in accordance with Section 610 of PennDOT Form 408, current edition Specifications, and Publication 70-Guidelines for Design of Local Roads and Streets.

#### Base Course

For all classifications of streets, base course shall be constructed of four (4) inches compacted depth bituminous base course (25 millimeter size) constructed in accordance with PennDOT Superpave Standards .

#### 202.4 Surface Course

Tack Coat - Tack Coat conforming to Section 460 of PennDOT Form 408, current edition shall be required on all bituminous pavement surfaces prior to placement of surface course(s) paving, if in the opinion of the Township Engineer, the base course has become non-adherent.

Primary Wearing Course – Within three (3) months after placement of the Bituminous Base Course, a one (1) inch compacted depth primary top course (9.5 millimeter size) shall be applied. This course shall be in accordance with PennDOT Superpave Standards.

Finish Wearing Course – The final wearing course shall consist of one and one-half (1 ½) inches compacted depth bituminous wearing course (12.5 millimeter size) conforming to PennDOT Superpave Standards. This finish course shall not be applied until the subdivision or land development has achieved eighty (80) percent build-out, unless otherwise approved by the Township.

### 202.5 Requirements for Paving

It shall be the responsibility of the developer or their agent to establish reasonable current and future use assessments of the proposed streets. This is necessary for the preparation of a bituminous material job mix formula. No less than five days prior to the placement of any bituminous material, a job mix formula shall be submitted by the developer to the Township for approval. The Township may require developer to have random core samples extracted and tested (at an approved testing facility) subsequent to paving material application. Developer shall supply to Township, daily bituminous certifications on either form TR-4665 or CS-4171 within 24 hours of placement of bituminous materials for each day's placement.

### 203 PAVEMENT MARKINGS

All pavement markings (stop bars, arrows, hatching, etc.) shall be thermoplastic, either cold in-laid or hot applied, conforming to current PennDOT Standards. Long lines, such as street centerline striping or edge of shoulder markings, shall be thermoplastic, either cold in-laid or hot applied, conforming to current PennDOT Standards.

## 300 CURBING

### 301 TYPE

Curbing where required (except for PennDOT roadways) shall be plain cement concrete, upright design, having a height of twenty-two (22) inches and tapering from a top width of six (6) inches to a base width of eight (8) inches. - At street intersections where curbing and sidewalks are required, the curb shall be depressed for the full sidewalk width for handicapped access. The curb reveal at these intersections shall not exceed one-half (1/2) inch.

### 302 SUBGRADE

The subgrade shall be substantially dry, unfrozen, firmly compacted soil. Thorough compaction shall be attained by using an approved pneumatic compactor or self-contained compactor, capable of delivering 800 to 1,000 pounds at the shoe.

### 303 FORMS

Forms shall be made of approved substantial material, preferably of steel, and shall be smooth, free of warp and sufficiently rigid and supported to resist springing out of shape. These forms shall be of a depth equal to that of the proposed curb. Prior to pouring the concrete, all forms and templates shall be thoroughly cleaned and treated with an approved material to prevent the concrete from adhering thereto. Material which will adhere to or discolor the concrete shall not be used.

### 304 CONCRETE

Concrete shall meet the requirements of PennDOT Form 408, current edition, Section 704 for Class A Cement concrete. No concrete shall be mixed or placed when the air temperature is below 40 F or above 90 F.

### 305 POURING

Curbs shall be carefully poured monolithically without segregation of constituents, tamped and screeded true to grade and section, eliminating all voids and bring sufficient mortar to the surface for finishing in a smooth, neat, even manner using approved tools.

306 JOINTS

Each curb section shall be constructed in lengths of ten (10) feet where practicable; in no case shall a section be less than five (5) feet long. Each section shall be separated when pouring by a one-eighth (1/8) inch steel template equal to the full depth of the curb.

Expansion joints of approved one-half (1/2) inch pre-molded bituminous material shall be placed for the full curb depth at all points adjoining sidewalk and existing curb, at point of tangency of street returns and intersecting curbs, and in no case more than thirty (30) feet apart.

307 FINISHING

Forms may be removed no earlier than twelve (12) hours after placement of the concrete. All construction joints shall then be filled with approved dry, sharp sand. Minor defects and honeycombing shall be corrected by patching with mortar; no plastering will be permitted. All exposed concrete shall be rubbed to a smooth surface and edges at joints finished with a suitable tool.

400 SIDEWALKS

401 SUBGRADE

The subgrade shall substantially be dry, unfrozen, firmly compacted soil. Thorough compaction shall be attained by using an approved pneumatic compactor or self-contained compactor capable of delivering 800 to 1,000 pounds at the shoe.

402 BASE

A stone bed shall be placed and thoroughly compacted to a depth of four (4) inches using the above-mentioned compactors. The stone shall be PennDOT No. 2A.

403 FORMS

Forms shall be made of approved substantial material, preferably of steel, and shall be smooth, free of warp and sufficiently rigid and supported to resist springing out of shape. These forms shall be of a depth equal to that of the proposed sidewalk. Prior to pouring the concrete, all forms and templates shall be thoroughly cleaned and treated with an approved material to prevent the concrete from adhering thereto. Material which will adhere to or discolor the concrete shall not be used.

404 CONCRETE

Concrete shall meet the requirements of PennDOT Form 408, current edition, Section 704 for Class A cement concrete. No concrete shall be mixed or placed when the air temperature is below 40 F or above 90 F.

405 POURING

Sidewalks shall be carefully poured monolithically without segregation of constituents to a depth of five (5) inches and cross-over six (6) inches - see details, and screeded true to grade and sections, eliminating all voids and bringing sufficient mortar to the surface for finishing in a smooth, neat, even manner using approved wood floats.

406 CONSTRUCTION

Sidewalk shall slope toward the street at the rate of one-fourth (1/4) inches, per foot. It shall be constructed in separate slabs of thirty (30) feet in length, except for closures. These slabs shall be separated for their full depth by expansion joints of approved one-half (1/2) inch premoulded

bituminous material. This premoulded material shall also be placed longitudinally at the joint where sidewalk slabs abut concrete curb and existing sidewalk. Between the transverse expansion joints, the slabs shall be divided into blocks five (5) feet in length by using 1/8 inch steel templates equal in depth to that of the slab. Where existing light standards, poles, fire hydrants, etc., are within the sidewalk area, concrete around such structures shall be scored to a depth of one-fourth (1/4) the slab thickness, in a block eight (8) inches wider than the maximum dimension of the structure at a sidewalk elevation. Prior to placing the concrete, one-fourth (1/4) inch premoulded expansion joints shall be placed completely around the structures for the full depth of the sidewalk. All joints shall be edged with an edger having a one-fourth (1/4) inch radius.

407 HANDICAPPED RAMP

At all intersections, sidewalks shall be extended through the planting strip to abut depressed concrete curbing on the curve return, to facilitate a handicapped ramp to the cartway.

500 **SANITARY SEWERS**

501 INTRODUCTION

All work shall be done in accordance with the requirements of the Lower Nazareth Township Board of Supervisors Sewer Extension Rules and Regulations, and these Specifications.

The work shall be executed in the best and most workmanlike manner by qualified, conscientious, and experienced workmen.

502 DEFINITIONS

The following definitions shall be applicable in these Specifications:

502.1 Township shall mean the Lower Nazareth Township Board of Supervisors.

502.2 Contractor shall mean any individual, partnership, or corporation performing sewer construction work for the Developer.

502.3 Developer shall mean any landowner, agent of such landowner, or tenant with the permission of such landowner, who makes or causes to make a subdivision of land or a land development, or who constructs, or causes to be constructed a sanitary sewer extension, or who files a Sewer Extension Agreement Application with the Township.

502.4 Engineer shall mean the Consulting Engineer that represents the Township. The term may also include a construction inspector employed by the Township or the Engineer.

502.5 Equal shall mean equal as approved by the Engineer.

502.6 Subdivision shall mean the division or redivision of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels, or other divisions of land. For the purpose of these specifications, this shall also include any non-residential development of a parcel of land, which involves a sewer extension.

502.7 Work shall mean labor, services, materials, and equipment as required for the successful completion of the project for the extension of sanitary sewer lines pursuant to the Lower Nazareth Township Board of Supervisors Rules and Regulations.

503 RESPONSIBILITY OF THE DEVELOPER

503.1 It shall be the responsibility of the Developer to accomplish and bear all costs for the connections of his work to the existing Township facilities. The Developer shall place

service lines to existing properties or homes when the new facilities are extended enroute to the Development.

- 503.2 The Developer shall make himself familiar with the laws and regulations of the State of Pennsylvania, and the ordinances of Northampton County and Lower Nazareth Township, including those concerning the employment of labor and the performance of Work; and also he should be familiar with the Lower Nazareth Township Board of Supervisors Sewer Extension Regulations. The Developer should obtain a copy of the Standard Specifications for Developers, Sanitary Sewerage System Improvements and Additions, latest edition, and the Sewer Extension Rules and Regulations, latest edition, of the Lower Nazareth Township Board of Supervisors, and he shall follow and pursue the same with no deviations or changes there from without prior written approval by the Township or the Engineer.
- 503.3 The Developer will be responsible for the payment of all Excise or Use Taxes and all other taxes required by law on all materials, tools, apparatus, equipment, fixtures, and incidentals that he purchases or uses for the purpose of fulfilling the Work.
- 503.4 The Developer shall procure all necessary permits and licenses. He shall pay all charges and fees therefor, and shall give all notices necessary and incidental to the proper and lawful prosecution of the Work.
- 503.5 Any contractor installing facilities for the Developer shall obtain a copy of these Specifications and shall construct all work in accordance with these Specifications. Use of the word "Developer" in these Specifications shall mean "Contractor", where applicable. However, the Developer shall be ultimately responsible for the satisfactory completion of the project and for the Work done by his contractor.
- 503.6 All pipelines should be constructed in public streets, unless Township agrees otherwise. Where Township agrees in writing to permit pipeline construction in non-public streets, or in streets not yet accepted by the Township, Developer shall provide Township permanent rights-of-way thirty (30) feet wide, which rights-of-way shall be shown on Developer's plans. The same shall be clearly marked and identified as Sewer Line Right-of-Way to be granted to Lower Nazareth Township Board of Supervisors. Developer shall show the course and distance around the perimeter of said rights of way. Developer shall also provide a separate written perimeter legal description of each separate right-of-way, starting with a point of beginning oriented with a fixed point of record. Developer shall also provide a right-of-way drawing plat. Both the plat and the legal description shall be in conformance with the Township Rules and regulations. In addition to the rights-of-way being depicted upon Developer's plan, he shall execute a Right-of-Way Agreement for the same unto Township for purposes of being recorded, with rights-of-way plat and description attached, all in form satisfactory to Township.
- 503.6 Procedure to be followed upon completion of the lines, and for maintenance of lines thereafter is set forth in Lower Nazareth Township Board of Supervisors Regulations.

#### 504 SUBMISSION AND REVIEW PROCEDURES

- 504.1 The Developer shall obtain a copy of the "Standard Specifications for Developers", latest edition, from the Lower Nazareth Township Board of Supervisors and the Lower Nazareth Township Board of Supervisors Sewer Extension Rules and Regulations, latest edition, and comply with the same. If any conflict appears between the above, the more



restrictive requirements shall control. The Township shall have the final determination concerning any interpretation of these specifications. The Township reserves the right to require any additional information and or amend these standards as it deems necessary in addition to what is outlined and required in the Rules and Regulations, and these Specifications.

- 504.2 The requirements for commencing a sanitary sewer extension starting with items on application, and for filing preliminary and final sewer extension plans is set forth in Lower Nazareth Township Board of Supervisors Sewer Extension Rules and Regulations. These Rules and Regulations include plans required, insurance and written agreements required, filing fees, initial, construction escrow deposit, and fees to cover expenses of the Township for administration expenses, legal expenses, and engineering expenses, as outlined in the Pennsylvania Municipalities Planning Code, Act of 1968, P.L. 805, No. 247 as reenacted and amended, and will include, but are not limited to:
- 504.2a All Engineering costs involved with the review and approval of design plans, specifications, and shop drawings
  - 504.2b Assistance in preparation and review of sewer permit applications as necessitated by State Law.
  - 504.2c Construction inspection of all work covered by the plans and specifications.
  - 504.2d Township's legal and administrative costs.
  - 504.2e Preparation of Record Drawings.
- 504.3 The number of preliminary plans and final plans to be filed is set forth in the Lower Nazareth Township Board of Supervisors Sewer Extension Regulations. They must be numbered, dated including revisions and sealed and signed by the Design Engineer, and shall be clear and legible and be prepared in accordance with acceptable drafting standards.

- 504.4 Where the sewer extension involves a subdivision, Developer must file with the Township a copy of the signed and approved Subdivision Plan showing the location of the proposed sewer extension if the extension is applied for after subdivision approval is granted.
- 504.5 After agreement has been signed, the Developer must submit detailed drawings (two copies) to the Township for review. All drawings shall be signed and sealed by the Design Engineer and shall be clear and legible.
- 504.6 The Township has adopted the following scales for submission of all drawings: Horizontal Scale 1" = 50' and Vertical Scale 1" = 5'. In the event the drawings are not submitted as per aforementioned scale, the Developer will have to bear the cost of transcribing said drawings to the said scale when record drawings are prepared. All plans shall be prepared on the same size sheet. As a minimum, the following requirements shall be met:
- 504.6a Utility plan size, 24" x 36" (including plan and profile drawings).
  - 504.6b All utility profiles shall be placed on sheets with corresponding plan views. All utility plans, and plan and profile drawings shall have match lines and clearly reference corresponding plan numbers.
  - 504.6c All utility plans illustrating proposed lot locations shall illustrate lot numbers.
  - 504.6d All utility plans shall illustrate north arrow.
  - 504.6e All utility plan and profile drawings shall illustrate sanitary sewer locations, including all manholes and laterals (graphical location and tabular listing), as well as all proposed gas mains, water mains, storm sewers, electric conduits, and any other underground pipelines. All utilities shall be shown together on the same drawings.
  - 504.6f All utility plans and profiles shall illustrate manhole rim and invert elevations.
  - 504.6g All utility plans and profiles shall numerically illustrate slopes, pipe sizes, manhole rim and invert elevations, distances and piping material proposed illustrated along the utility line. Proposed sanitary sewers shall be stationed starting from the downstream manhole and proceeding upstream from each manhole, and the minimum design gradient of all sanitary sewers shall be one-half (½) percent slope (0.005 ft/ft).
  - 504.6h All utility plan views shall illustrate flow arrows in the direction of flow.
  - 504.6i All utility plans shall illustrate manhole numbers. All manholes shall be numbered alpha-numerically as approved by the Engineer.
  - 504.6j All utility plans shall indicate basement elevations of dwellings to be served.
  - 504.6k All plans shall include the following statement:
- NOTE: Sanitary sewer system extension is to be designed and constructed in accordance with the Lower Nazareth Township Sanitary Board of Supervisors's Standard Specifications for Developers, Additions and Improvements to the Sanitary Sewerage System, Lower Nazareth Township Board of Supervisors, Northampton County, Pennsylvania, latest revision, and the Lower Nazareth Township Board of Supervisors Sewer Extension Rules and Regulations.

- 504.6l All plans are to be signed and sealed by a Professional Engineer, Registered in the Commonwealth of Pennsylvania, and dated, including all revision dates.
- 504.6m All utility plans are to illustrate easements and rights-of-way.
- 504.6n All utility plans are to illustrate lands to be dedicated to the Township and/or the Township.
- 504.6o All plans presented shall also include an overall utility plan illustrating the following:
- Key map and relative location in the Township
  - Lot numbers
  - North arrow
  - Sanitary sewer system extension
  - Manhole numbers
  - Flow arrows
  - Pipe sizes
  - Storm sewer and all storm sewer structures
  - Water mains
  - Gas mains
  - Electric mains
  - Corresponding Utility Plan and Profile Drawing Numbers
  - Development and Construction Phasing
- 504.6p The overall utility plan will not be subject to the previously stated horizontal scale, but be prepared at a scale approved by the Engineer which will allow all required information to be shown on a single plan.
- 504.6q The overall utility plan must remain independent of the grading plan(s) and the soil erosion and sedimentation control plan(s).
- 504.6r All utilities shall be shown on the grading plans for the Development.
- 504.6r1 After review of all information provided above, the Township or Engineer will submit written comments to the Township and provide a courtesy copy to the Developer.
- 504.6r2 Developer shall resubmit final drawings (three copies) to the Township office showing any changes reflected by the Township's review. At this time, the Developer shall also submit all permit applications and required attachments, exhibits and drawings as required by the Pennsylvania Department of Environmental Resources. Two copies of these applications shall be provided above and beyond those required for submittal to DEP.
- 504.6r3 Sewer construction shall not begin until all requirements of the Lower Nazareth Township Board of Supervisors Sewer Extension Regulations have been met and are complied with by letter from the Township solicitor.

504.6r4 After construction is completed but prior to final acceptance of the new facilities by the Township, the Developer shall submit record construction drawings to the Township for the review and approval of the Engineer. Record drawings shall be legible and neat and shall show actual elevations and horizontal and vertical locations of the new facilities in form and content as approved by the Engineer. Final drawings shall be reproducible and will become the property of the Township. The Developer will submit two (2) sets of Mylar drawings signed and sealed by the Design Engineer, and one (1) set of drawings on electronic media in an AutoCAD<sup>®</sup> compatible format acceptable to the Engineer.

505 INSURANCE BY THE DEVELOPER

- 505.1 Developer shall provide a Certificate of Insurance for a current policy in force for a term not to expire until the Township Maintenance Bond is released, and shall name the Township and its Engineers as additional insured, the Township as the Certificate Holder, and for the coverages and amounts as provided in the Lower Nazareth Township Board of Supervisors Sewer Extension Regulations and as set fourth hereafter, whichever is greater.
- 505.2 The Developer shall take out and maintain in amounts required by law, Workmen's Compensation Insurance for all his employees employed at the site of the project, and in case any Work is sublet, the Developer shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all the latter's employees. The Developer shall, at all times, indemnify and save harmless the Township and the Township, including their employees, of and from all claims for Workmen's Compensation which may be made by any of the employees of the Contractor or by the employees of any subcontractor.
- 505.3 The Developer shall take out and maintain such Public Liability and Property Damage Insurance as shall protect him, the Township, and Engineer from claims for damages for personal injury, including accidental death, as well as from claims for property damages, which may arise from operations by the Developer whether such operations are by himself or by any subcontractor or by anyone directly or indirectly employed by either of them. Hazards insured against for property damage liability shall include explosion, collapse, underground object, and blasting, to the extent that any such exposure exists.

505.4 The Developer shall carry or cause to be carried the following forms of insurance applying to all operations undertaken by him, his agent, employees, and subcontractors in the minimum amounts indicated hereunder.

<u>Form</u>	<u>Minimum Limits</u>
1. Workmen's Compensation	Statutory
2. Contractor's Public Liability (including specific contractual Liability) and Contractor's Property Damage Liability (including explosion, collapse Hazard, underground damage hazard, Blasting, products and completed Operations. (XCU Coverages)	\$1 Million /per occurrence with a \$2 Million aggregate  \$1 Million per occurrence \$2 Million aggregate combined
3. Automobile Bodily Injury Automobile Property Damage	\$1 Million/combined single limit
4. Business Catastrophe Liability* (* This policy must be carried with the same insurance carrier which underwrites the underlying policies.	\$1 million
5. If subcontractors are employed Contractor's Protective (Contingent) Liability Protection – Bodily Injury Property Damage	\$1,000,000/\$2,000,000 \$1,000,000/\$2,000,000

505.4a The Developer shall file with the Township properly executed certificates of insurance or copies of the insurance policies prior to the time construction has begun. All such insurance shall be in sound insurance companies, satisfactory to the Township, and authorized to do business in the Commonwealth of Pennsylvania.

505.4b All insurance companies must be a licensed Pennsylvania insurance carrier having an "A" or better rating, as determined by A.M. Best Co.

506 CONDUCT OF WORK AND SAFETY

506.1 The Developer shall make use of all reasonable means to maintain the normal flow of traffic on Township and State Highways during all phases of construction. Should it become necessary to close any street or highway, the Developer shall obtain permission to do so from the applicable governing agency. The Developer shall notify the Township a minimum of three working days prior for a request for any street closing. The Developer shall erect warning lights and signs at each end of street closures, and shall also erect directional signs to advise motorists of detour routes as required by law or agencies having jurisdiction. All traffic control devices shall meet the requirement of PennDOT Publication 203.

- 506.2 Caution shall be exercised at all times for the protection of persons and property in accordance with applicable laws and codes. Compliance with the safety provisions of applicable laws and building and construction codes are completely the Developer's responsibility.
- 506.3 The Developer and his subcontractor shall take all precautions and furnish and maintain all guards, barricades, handrails, lights, and other appurtenances, etc., for the protection of the traveling public and property at or near the project.
- 506.4 The Developer shall be responsible for and shall see that all equipment, tools, and supplies are operated or handled in such a manner that at no time will they be permitted to contact power, telephone, or other utility lines.
- 506.5 The Developer alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operation.
- 506.6 The Developer shall take care to repair all works in the Township affected by construction. These works shall have an appearance or condition equal to or better than that condition that existed prior to the construction..

507 EQUIPMENT AND MATERIALS

- 507.1 Whenever any item of equipment or material is designated by reference to a particular brand, manufacturer, or trade name in these Specifications or Plans, it is understood that an approved equal product may be substituted, if acceptable to the Engineer.
- 507.2 Each major item of equipment shall be inspected by a manufacturer's representative during installation and upon completion of the Work. The Developer shall supply the Township with a certificate of such inspection.
- 507.3 The use of any equipment and materials other than as specified or beyond the scope of these specifications (for example, metering stations or sewage pumping stations) must be approved, in writing, by the Engineer.

508 DELIVERY, STORAGE, AND HANDLING OF EQUIPMENT AND MATERIALS

The Developer and/or his contractors shall:

- 508.1 Transport and handle products in accordance with manufacturer's instructions.
- 508.2 Promptly inspect shipments to assure that products comply with requirements and products are undamaged.
- 508.3 Provide equipment and personnel to handle and store products by methods to prevent soiling, disfigurement, or damage.
- 508.4 Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weathertight, climate-controlled enclosures.
- 508.5 Protect products from vandalism by man and animal, contamination by dirt, dust or water, damage from heat or cold, and damage from direct sunlight.

509 LOCATION AND PROTECTION OF EXISTING UTILITIES

The Developer will be responsible for locating all existing utilities including, but not limited to water, steam, oil, gas mains, sanitary and storm sewers, telephone and electric conduits which may be encountered during the construction operation. This will include complying with Pennsylvania Act 287 of 1974 as amended by Act 187 of 1996, 73 P.S. § 176 et. seq., also known as PA One-Call. He shall also be responsible for locating all underground structures. He shall, at his own expense, arrange with the owners of such utilities for locating them. The Developer shall be responsible for providing adequate protection against damage to utilities encountered during the course of construction and shall be responsible for repair of any utilities damaged during the course of his construction.

510 EMERGENCY MAINTENANCE DURING CONSTRUCTION

510.1 The Developer shall have available at all times, including nights and holidays, and emergency maintenance crew and a person of Township and responsibility to act in cases of emergency such as flooding, cave-ins, or other disorders, resulting from the construction of this development. Such person(s) shall be made known to the Township. The Developer will be responsible for the cost of any such emergency work.

510.2 The Developer is responsible for all costs incurred for any emergency work performed by the Township or others on the Developer's behalf.

511 INSPECTION

511.1 The Developer shall afford every facility for inspection of materials and workmanship and shall prosecute the Work in a systematic manner. The absence of the Engineer or an inspector will not in any way lessen the obligation of the Contractor for construction in accordance with the Specifications.

511.2 The Engineer is to make final inspection within thirty (30) days after written notification by the Developer that the Work is completed and final inspection is requested. Defective Work or Work not conforming to the Specifications is to be repaired or replaced to the satisfaction of the Engineer. The Engineer shall be the ultimate judge of defective Work or Work not conforming to the specifications.

511.3 The cost of any inspection performed by the Engineer, including final inspection, shall be borne by the Developer.

512 POSSESSION AFTER TESTING

After new facilities have been tested and approved, as stipulated in the following sections herein, the Township may use the completed facilities. Possession prior to completion, however, will not imply final acceptance. The Developer shall be responsible for the maintenance of all completed facilities, whether used by the Township or not, until the final inspection is made and following acceptance by the Township.

513 MAINTENANCE AND COMPLETION

513.1 The Developer shall, after final inspection but prior to acceptance by the Township, execute and deliver unto Township a bill of sale for lines, but subject to Developer's obligation to maintain and repair the line and trench, including permanent paving for a period of eighteen (18) months, as outlined in the Township Rules and Regulations, following date of acceptance certificate, and rebuild or replace the same in whole or in part if defective. Upon written notice from the Engineer or Township, the Developer shall immediately make any repairs that may be necessary, or in case the same are not effected promptly, such repairs will be made by Township, at expense of Developer.

513.2 Developer must ascertain from Township whether or not a moratorium is in existence regarding connecting new sewer extensions to live sewer lines in use. If a moratorium is in existence, the sewer line extension must be a capped system. At such time as the Township is notified officially that the moratorium is lifted, the subject lines must be uncapped under engineer's direction and the line reinspected and if acceptable to engineer, the lines may be connected at both ends to live in-use lines.

514 FINAL ACCEPTANCE OF WORK

Following issuance of an Acceptance Certificate by Township and acceptance of the Bill of Sale for said facilities from Developer, the Township shall then become the owner of said facilities, subject to the duty of Developer to maintain, repair, rebuild, or replace referred to above under Paragraph M and the requirements set forth in the Lower Nazareth Township Board of Supervisors Sewer Extension Rules and Regulations.

MATERIALS

515 MINERAL

515.1 Unless otherwise specified, all materials used in the work shall as a minimum conform to the requirements of the current Specifications of the American Society for Testing Materials (ASTM), American Water Works Association (AWWA), and/or American National Standards Institute (ANSI). All materials shall as a minimum be tested in accordance with the requirements of these Specifications. It is understood and agreed that wherever the word "current" is used relative to the Specifications and methods of testing, it refers to the Standard or Tentative Standard bearing the latest date.

515.2 No material shall be used until it has been inspected and approved on the site of the work. When required by the Engineer, any or all materials entering into the construction of any work shall be tested by a reputable testing laboratory. Such inspection shall not relieve the Developer of any of his obligations in this respect, and any defective material or workmanship shall be at all times liable to rejection when discovered, until the final completion of the Work.

515.3 Where a manufacturer's name is used in these Specifications, it is used to designate a standard of quality. The use of said manufacturer's name does not eliminate other manufacturer's equipment and materials equally as good and efficient.

515.4 Prior to the start of construction, a minimum of five (5) working days, the Developer shall submit to the Engineer at least three (3) copies of shop drawings, catalog cuts, etc., for all materials to be used on the project.



515.5 The Developer shall submit to the Engineer prior to the start of construction a notarized certificate certifying that the pipe was manufactured and tested in accordance with the Specifications.

516 CEMENT

516.1 Cement used for general construction shall conform to the requirements of ASTM Designation C 150, Type I for Portland cement. Where air-entrainment, moderate or high resistance to sulphates, high early strength or low heat of hydration types are required, they shall conform to the following requirements.

<u>Standard</u>	<u>ASTM Designation</u>
1. Air-entraining Portland cement	C 175, Type IIA
Vinsol resin additive to entrain air Between 3 to 6 percent by volume	C 226
2. High early strength Portland cement	C 150, Type III

516.2 High early strength Portland cement shall not be substituted for normal strength Portland cement without the approval of the Engineer. The Engineer may, as he deems necessary, require the use of hydraulic cement of such a type as US Mix Quick Hydraulic Cement.

516.3 Cement shall not be used which has been retrieved or reclaimed from used bags, or partly hydrated. Cement that has been stored at the Work site for more than three (3) months shall not be used. The temperature of all cement at time of delivery to the mixer shall not exceed 125°F. Cement used in any individual structure shall not be obtained from not more than one (1) source of supply for each type of cement required.

516.4 Cement shall not be stored in excess of eight (8) bags in height and shall be covered with tarpaulins. When permission is given by the Engineer to store temporarily in the open, a platform and ample waterproof covering shall be provided by the Developer and used as directed by the Engineer.

516.5 The Engineer reserves the option to take check samples for the purpose of testing the quality of the product, and such check test shall be the basis of acceptance or rejection regardless of previous decisions.

516.6 Cement shall be rejected if it fails to meet any of the requirements of the Specifications referred to herein. Samples of each lot shall be required to show practically uniform results of tests. Marked deviations from such results may be considered cause for rejection even though the test requirements may be otherwise fulfilled.

516.7 When directed by the Engineer, a non-shrink Portland cement grout shall be used. The non-shrink grout shall meet or exceed the material and placement requirements of ASTM C-1107, ASTM C-939, and Corps of Engineers Specification CRD-C 621

517 CONCRETE AGGREGATES

All concrete mixtures shall use fine and coarse aggregate to conform to the requirements of ASTM Designation C33.

518 WATER FOR CONCRETE

The water for use in cement concrete mixtures shall be clean, and free from injurious amounts of vegetable matter, oil, acid, and alkali. The tensile strength of a mortar molded in a standard briquette mold, composed of one part of cement and three parts of standard Ottawa sand, proportioned by volume, using the water sample under test shall be at least equal to that developed with distilled water when mixed in the same proportion with the same cement and sand.

519 CONCRETE

519.1 Class A concrete shall have a minimum compressive strength of 3500 pounds per square inch at 28 days.

519.2 Class B concrete shall have a minimum compressive strength of 2500 psi at 28 days.

519.3 The mixed concrete shall be of uniform consistency. The allowable slump as determined by the Engineer shall be kept as low as possible consistent with practical workability of the concrete and shall be between one (1) and three (3) inches per vibrated concrete and between two (2) inches and three and one-half (3 ½) inches per non-vibrated concrete. The method of determining this slump shall be in accordance with ASTM Designation C143.

519.4 Under emergency conditions requiring a hand-mixed batch of ½ cu yd or less, the water contained per 94-lb. sack of cement shall not exceed the following quantities:

<u>Strength – psi</u>	<u>Non-Air-Entrained</u>	<u>Air-Entrained</u>
Class A – 3500 lbs.	6 ½ gal	5 ¼ gal
Class B – 2500 lbs.	7 ¼ gal	6 ¼ gal

519.5 Concrete not air entrained and to be exposed to the action of freezing weather shall have a water content not exceeding six (6) gallons per 94 lb. sack of cement.

520 READY-MIXED CONCRETE

520.1 Ready-mixed concrete may be used for all Work involving concrete providing it conforms to the requirements of ASTM Designation C94, with the following conditions specified:

1. Basis of Purchase                      Net weight of the concrete in the batch as delivered.
2. Materials                                As listed in Paragraphs B and C.
3. Quality                                    Developer responsible for concrete meeting requirement for compressive strength as listed on the Drawings.
4. Mixing                                     Central, or transit-mixed.

520.2 No mixed or agitated concrete shall be used which has remained in the drum, truck agitator, or truck mixer more than ten minutes without mechanical agitation.

- 520.3 The interval between loads shall be controlled in order that concrete in place shall not become partially hardened prior to placing succeeding batches and in no case shall exceed 20 minutes.
- 520.4 The method and time of delivery shall be controlled by plant slips issued to the driver. This slip shall contain the name and location of the plant, the size and proportions of the batch, the time the vehicle left the plant, and the recording of the revolution counter on the drum of the transit truck mixers. Upon arrival at the Work site, the driver shall deliver the slip to the Engineer or his representative.

521 REINFORCEMENT

- 521.1 Bars – material for reinforcing bars shall conform to the requirements of the “Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement”, ASTM A615, Grade 60.
- 521.2 Steel Wire Fabric – material for welded wire fabric or cold drawn wire for concrete reinforcement shall conform to the requirements of the “Specifications for Steel Wire, Plain, for Concrete Reinforcement”, ASTM A82, or the “Specifications for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement”, ASTM A185.
- 521.3 Metal reinforcement, at the time concrete is placed, shall be free from rust, scale, oil, paint, or other coatings that will destroy or reduce the bond.

522 MORTAR

- 522.1 Mortar for laying masonry shall conform to the requirements of the Specification for the Mortar of Unit Masonry, ASTM C270 and shall be composed of the following:

<u>Material</u>	<u>ASTM Designation</u>
1. Portland Cement	C 150, Type IIA
2. Masonry Cement (if specified)	C 91, Type II
3. Aggregates	C 144
4. Water	Paragraph D
5. Hydrated Lime	C 207, Type S
6. Quicklime (lime putty if specified)	C 5 Appendix

- 522.2 No lime chemicals, or other mixtures of any type, shall be used unless so specified or permitted by the Engineer. In mortar where no destructive chemical action is anticipated, hydrated lime may be used.
- 522.3 When required, color tinting shall be made from inert, pure mineral pigments determined by the Engineer.

- 522.4 The ingredients must be in proportions that can be controlled and accurately maintained by measurement and not by estimation. All cementitious materials and aggregates shall be mixed for a minimum period of three (3) minutes, with the amount of water required to produce the desired workability, in a drum-type batch mixer. Hand mixing of the mortar may be permitted on small jobs with the approval of the Engineer. Hand mixing procedure shall be outlined in the request for approval. No greater quantity of mortar shall be prepared than is required for immediate use, and any mortar that has not set shall not be retempered or used in any way. Mortar which has been mixed more than one (1) hour shall not be used.
- 522.5 Mortar conforming to the proportion specifications shall be proportioned by volume within the limits of the types specified:
- 522.5a Sewer Manholes – one part Portland cement, two parts fine aggregate and water.
- 522.5b Grouting – one part Portland cement, two parts fine aggregate and water or Embecco pre-mixed grout as manufactured by American-Marietta Company or equal to prevent shrinkage.
- 522.6 When hydrated lime is permitted, the mortar shall be composed of one (1) part of a combination of Portland cement and one-quarter ( $\frac{1}{4}$ ) part hydrated lime, with two (2) parts of fine aggregate and water. The combination shall be composed of ninety (90) percent by volume of cement and ten (10) percent by volume of hydrated lime.

### 523 SEWER AND MANHOLE BRICK

- 523.1 Brick intended for use in drainage structures for the conveyance of sewage, industrial wastes, and related structures such as manholes, catch basins, invert, and sewers shall conform to the requirements of ASTM Designation C32. The proper grade of brick shall be used for the intended purpose as specified in ASTM C32. The Engineer shall approve all uses of brick.
- 523.2 Brick shall conform to one set of the following dimensions based on their availability in the area of the project in the normal size specified:
- 523.2a 4" x 8 ½" x 2 ½" (3" or 3 ½")
- 523.2b 3 ¾" x 8" x 2 ¼"
- 523.3 Lugged paving brick, cored brick, or brick having recesses or openings extending through the body of the brick shall not be used.

### 524 POLYVINYL CHLORIDE (PVC) PIPE FOR GRAVITY SEWERS

- 524.1 Polyvinyl Chloride (PVC) Pipe for gravity sewers shall be of the bell and spigot type and shall be manufactured in accordance with ASTM D3034. Pipe and fittings shall meet the extra strength minimum requirements for SDR 35.
- 524.2 The joint shall be a rubber gasket meeting the requirements of ASTM D1869, C361, and C443, and shall provide an adequate compressive force against the bell and spigot to effect a positive seal and to provide for expansion and contraction while preventing displacement. The rubber ring gasket shall be the only element depended upon to make the joint flexible and watertight. Solvent cement joints are not acceptable.

524.3 The pipe and fittings shall be made of PVC plastic having a cell classification of 12454-B or 12454-C as defined in ASTM D1784.

524.4 All pipe shall be marked clearly at intervals of five feet or less with the manufacturer's name, cell classification, SDR 35, and ASTM Designation D3034.

525 POLYVINYL CHLORIDE (PVC) FOR FORCE MAIN SEWERS

525.1 Polyvinyl Chloride (PVC) Pipe for force mains shall be of the bell and spigot type and shall meet the requirements for Class 150 pipe in accordance with ASTM D2241 and AWWA C900. Pipe and fittings shall meet the minimum requirements of SDR 18.

525.2 All pipe shall be suitable for use as a pressure conduit. Provision must be made for expansion and contraction at each joint by means of a rubber ring gasket in accordance with ASTM D1869, C361, and C443. Joints shall be flexible and watertight.

525.3 The pipe shall be marked in accordance with Paragraph J.

525.4 The Engineer must approve the use of PVC Pipe for pressure applications.

526 DUCTILE IRON PIPE

526.1 Ductile iron pipe may be used for gravity sewers, force main sewers, or water mains.

526.2 All ductile iron pipe shall be push-on joint type except as otherwise specified by the Township. Pipe shall be manufactured in accordance with ANSI A21.51 (AWWA C151) for Ductile Iron Pipe Centrifugally Cast in Metal Molds or Sand Line Molds.

526.3 Fittings shall be compact mechanical joint fittings except where detailed otherwise on the plans conforming to ANSI A21.10 and ANSI A21.11 with a pressure rating of two hundred and fifty (250) pounds per square inch (psi).

526.4 Push-on joints for ductile iron pipe shall be of a type that employs a single rubber gasket to affect the joint seal.

526.5 The Class for all ductile iron pipe shall be for one hundred and fifty (150) pounds per square inch (psi) normal working pressure, thickness Class 52. The diameter shall be shown on the Drawings.

526.6 All ductile iron pipe and fittings shall be double cement lined and coated outside with a bituminous seal coat in accordance with ANSI A21.4 (AWWA C104), and coated inside with a coal tar epoxy coating or approved equal sulfide resistant coating. The thickness of the linings shall not be less than one-eighth inch (1/8").

526.7 All ductile iron pipe shall be furnished in lengths of sixteen (16), eighteen (18), or twenty (20) feet with the year of manufacture and class designation stamped on it.

527 MANHOLES

- 527.1 All manholes shall be constructed of Precast Reinforced Concrete manhole sections having an inside diameter of 48". All manholes shall be delivered free from chipped, cracked or broken edges and surfaces, and all surfaces, particularly channels, shall be smooth and continuous. Two (2) beads of an approved, minimum one (1) inch wide, butyl joint material shall be placed between all precast manhole sections, as shown on Drawing TBSA-SD-01 of these specifications. The pipe shall conform to the requirements of ASTM Designation C478. The pipe shall have tongue and groove joints that utilize either rubber ring gaskets or preformed plastic sealing compound, to produce watertight joints.
- 527.2 The bottom section shall fit into the concrete base and the top section shall be an eccentric tapered section, tapering from forty-eight inches inside diameter (48" I.D.) to thirty inches inside diameter (30" I.D.).
- 527.3 The entire exterior surfaces of all manholes shall be coated with one (1) coat, producing a dry film thickness of 0.016 inches (16 mils) of Bitumastic Super Service Black, as manufactured by Koppers Company, Inc., or approved equal.
- 527.4 Polyetheleyne manhole steps shall be set in the barrel of the manhole at the point of manufacture.
- 527.5 All manhole bases shall be poured in place or precast. Concrete used for manhole bases shall be Class A as defined in Paragraph E of these Specifications. Concrete in manhole bases shall be placed on undisturbed earth with the required aggregate beneath and shall meet the dimensional requirements and approval of the Engineer.
- 527.6 The invert channel(s) of the manhole shall be shaped to allow a smooth transition from inlet to outlet pipes, and side channels shall have the largest possible sweep radius where transitioning to the main channel.
- 527.7 Pre-cast bases with a rubber compression seal cast integrally into the manhole wall to effect a watertight seal between pipe and manhole may be used in lieu of a poured-in-place base. The seal shall be such as ECONOSEAL, or approved equal, and should meet the requirements of ASTM 443 and ASTM C425. The dimensions must generally meet the minimum requirements shown on the detailed drawings for manholes. A channel shall be formed from Class A concrete after the base has been set and shall be shaped to allow a smooth transition from inlet to outlet pipe.
- 527.8 Castings for manhole frames and covers shall conform in design to East Jordan Foundry Company Catalog Numbers 1320Z and 140AGS as shown on Drawing TBSA-SD-06 in Section VIII of these specifications, or approved equal. Castings for frames and covers shall conform to the requirements of ASTM Designation A48, Class 20. Manhole covers shall be "self-sealing" by means of a continuous round gasket designed to fit within a precisely machined groove on the underside of the lid.
- 527.9 Where located in streets or subject to traffic loads, castings shall be capable of safely supporting an "H-S" loading with due allowance for impact included in the design. The American Association of State Highway and Transportation Officials (AASHTO) Specifications designate "H-S" loadings as designed for a tractor-truck and trailer for loaded lengths up to forty (40) feet or more (H 20 – S 16 and H 15 – S 12).

- 527.10 Castings shall be true to pattern in form and thickness; free from cracks, gas holes, flaws, excessive shrinkage, sound, cleaned by means of sandblast and neatly finished. Runners, fins, risers, and other cast-on pieces shall be removed. All castings shall be tough and of even grain. All parts of castings shall be thoroughly coated at the factory with one coat of black asphaltum paint or other impervious preparation approved by the Engineer.
- 527.11 Castings shall be commercially machinable with the metal bearing areas machine ground finished to insure satisfactory seating so that it will be impossible to rock the cover after it has been sealed in the proper position in the frame.
- 527.12 Watertight manhole frames and covers or manhole inserts will be used on all manholes which are located in areas prone to flooding, including manholes which are located in low-lying, flood-prone areas as well as manholes which are located in and along curbed roadways. The Township may require the Developer to install watertight manhole frames and covers or manhole inserts wherever the Township deems such installations to be required.
- 527.13 All manhole covers shall have the word "SANITARY SEWER" cast in raised letters. Letters shall have a height and width of not less than two inches (2").
- 527.14 Manhole steps shall be constructed of a number 4 (1½ inch diameter) grade 60 steel reinforcement covered with a copolymer polypropylene plastic, manufactured by M. A. Industries or approved equal, as shown on Standard Detail TBSA-SD-07.
- 527.15 For non-residential uses which generate excessive amounts of grease, a pre-cast concrete tank type grease trap shall be placed between the facility to be served and the sanitary sewer, in addition to any grease traps as may be required inside the facility. An inspection manhole shall be placed immediately downstream of the external grease trap. The need for a grease trap and inspection manhole shall be solely determined by the Township.

528 BASE COURSES AND BITUMINOUS PAYMENTS

All paving materials used shall conform to the requirements of the Pennsylvania Department of Highways Specifications, Publication 408, subject to approval by the Engineer.

529 BACKFILL AND PIPE BEDDING

- 529.1 Backfill Material: Excavated material free of cinders, ashes, refuse, vegetable, or organic material, boulders, rocks, stone, or other material which, in the opinion of the Engineer, is unsuitable. Backfill material shall conform to the requirements established under "Classification of Backfill Materials", specified below.
- 529.2 Aggregate Backfill and Bedding: Fine aggregates and coarse aggregates conforming to PennDOT Sections 703.1 and 703.2. Aggregate Backfill requirements established under "Classification of Backfill Materials", specified below.

### 529.3 Classification of Backfill and Bedding Materials

Pipe Bedding – AASHTO No. 57 or PennDOT No. 2A Coarse Aggregate, Type A.

#### Initial Backfill

PVC Pipe (all types) – AASHTO No. 57 or PennDOT No. 2A Coarse Aggregate, Type A.

Ductile Iron Pipe – Excavated material conforming to the requirements for backfill material, but containing no stones larger than two (2) inches in maximum dimension.

Aggregate Backfill (to Restoration Depth) - PennDOT No. 2A Coarse Aggregate, Type A, within State Highway and existing Township road rights-of-way or as otherwise directed by Engineer.

Backfill Material (to Restoration Depth) - Excavated material approved by the Engineer and containing no stones larger than eight (8) inches in maximum dimension. A maximum of twenty percent (20%) of the backfill volume may be stones so long as the stones are evenly distributed within the material. Use outside existing paved areas only. Spoil from blasting or other bedrock removal operations shall not be considered suitable backfill material.

## TESTING

### 530 LABORATORY TESTS

Where otherwise required by these Specifications or as directed by the Engineer, all materials specified may require advance and periodic laboratory tests. Materials shall be sampled and tested in accordance with the methods of the ASTM, AWWA, or ANSI Standard, designated or as directed by the Engineer. When required by the Township, laboratory test results shall be submitted at least two (2) weeks prior to starting delivery of such materials to the site of the project. The testing laboratory shall furnish both the Engineer and the Developer with two (2) copies of the reports showing the results of such tests, and the reports shall be considered as sufficient evidence of the acceptance or rejection of the quality of the materials tested. The specifications for and the method of testing will be found under the detailed Specifications for the particular material involved.

### 531 SHOP TESTS

531.1 The materials listed below shall be tested at the shop or plant of, and by, the producer. Each manufacturer of such materials shall be fully equipped to carry out the test herein designated. Upon demand of the Engineer, the manufacturer shall perform such additional number of tests as the Engineer may deem necessary to establish the quality of the material offered for use.



531.2 The Engineer shall be furnished with certified records or reports of the results of all tests, such records or reports to contain a sworn statement that the tests have been made as specified. The Engineer may require additional tests by an independent testing laboratory.

<u>Material</u>	<u>Test Method</u>	<u>Number of Tests</u>
Polyvinyl Chloride (PVC)	ASTM D-3034	As specified in ASTM D-3034
Ductile Iron Pipe	ANSI 21.51	As specified in ANSI 21.51

532 FIELD TESTS

The installation of all sewers shall be tested in the field, in the presence of the Engineer or his authorized assistant together with a representative of the Contractor in the manner prescribed herein.

532.1 Leakage Tests for Sewers

All sewers constructed under these Specifications shall be tested for leakage by either the low-pressure air test method or the exfiltration test method. The method of test shall be solely the decision of the Township.

532.1a Exfiltration Testing

As soon as a section of sewer, together with all laterals connected thereto, has been constructed between manholes and the manholes have been completed, a suitable plug manufactured for that purpose shall be inserted at the lower manhole, and the section filled with water to the top of the manhole rim elevation in the upper manhole. The drop in water level in the upper manhole shall be measured and timed in order to calculate the actual rate of exfiltration.

When the difference in sewer elevations between the upper and lower manholes exceeds ten (10) feet, the Developer will be allowed additional exfiltration at the rate of 10% for each additional two (2) feet of head over ten (10) feet, as computed by the Engineer.

The test shall be run for a period of one (1) hour. Any section of sewer showing leakage in excess of the amounts above specified shall be repaired or replaced at the expense of the Developer.

The test will be passed if the exfiltration is less than fifty (50) gallons per inch of pipe diameter per mile of pipe per day for PVC pipe and one hundred (100) gallons per inch of pipe diameter per mile of pipe per day for all other types of pipe.

If a section of sewer line to be tested contains vertical risers for house connections, the Township may direct that the entire line be tested by air.

In making the above tests, all equipment and labor shall be furnished by the Developer and at the Developer's expense.

532.1b Low Pressure Air Test

The Contractor shall test each section of pipeline between manholes using low-pressure air. The pipe shall be considered acceptable if the air loss rate does not exceed 0.0030 Cu-ft per minute per square foot of internal pipe surface when tested at an average pressure of 4.0 psig greater than the average back pressure exerted by the ground water of the backfilled pipe line. The time for the air pressure to decrease 0.5 psig from 4.0 psig to 3.5 psig greater than the average groundwater backpressure shall not be less than the time indicated in the following list. If these rates of leakage are exceeded, the Developer shall, at his own expense, determine the source of leakage and make all necessary corrections and retest.

8 in. pipe diameter	3:57 minutes:seconds
10	4:43
12	5:40
15	7:05
18	8:30
21	9:50
24	11:20
27	12:45
30	14:10
36	17:00
42	19:50
48	22:40

A minimum period of one minute shall be provided to allow equilibrium of the air temperature with pipe wall before test readings shall commence. In areas of high groundwater conditions, the Developer shall determine the height of the groundwater above the pipe by piezometric tube or other approved methods.

Any section of sewer showing leakage in excess of the amounts above specified shall be repaired or replaced at the expense of the Developer.

532.2 Leakage Test for Water Mains

Whenever sewer work is paralleling a water main and the water line has never been exposed in the course of construction, tests of the main shall be made at the Contractor's expense, upon completion of the sewer work along each section of water main between line valves, to determine if any leakage has been caused by the Contractor's operations. In case leakage is shown by the test, the Contractor shall have same repaired at his own expense.

532.3 Pressure Test for Force Main

532.3a After the pipe has been laid and partially backfilled between joints, each section of pipe between valves shall receive the following hydrostatic test:

- 532.3b The pipe shall be slowly filled with water and tested to fifty (50) percent above the normal operating pressure based on the elevation of the lowest point of the line or section under test. The pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. A meter to measure make-up water shall also be installed. The pump, pipe connections, taps into the pipe, and all necessary apparatus except gages shall be furnished by the Contractor.
- 532.3c Before applying the specified test pressure, all air shall be expelled from the pipe. The Contractor shall furnish and install corporation cocks as may be required so that air can be expelled as the line is filled with water.
- 532.3d All exposed pipes, fittings, valves, and joints shall be carefully examined during the open-trench test. Any cracked or defective pipes, fittings, or valves discovered in consequence of this pressure test shall be removed and replaced by the Contractor with sound material and the test shall be repeated until satisfactory to the Engineer. Should the Contractor elect to backfill the entire trench or any portion thereof, prior to testing, it shall be his responsibility to locate and repair any leaks that occur during this test.
- 532.3e While the test pressure is being maintained, all exposed pipes, fittings, valves, and joints shall be inspected for leaks, which shall not exceed ten (10) gallons per inch of pipe diameter per mile of per day. The test pressure shall be maintained for a period of not less than one (1) hour if joints are exposed and four (4) hours when joints are covered.
- 532.3f The test section of pipe shall not exceed one thousand (1,000) feet where practical.

532.4 Leakage Test for Manholes

- 532.4a All newly constructed manholes will be subjected either to a vacuum test or hydrostatic test. The hydrostatic test shall be conducted in accordance with the procedures specified in Section C.1 above, and shall meet all standards contained therein.
- 532.4b The vacuum test shall be conducted in accordance with the following:
- 532.4c The Contractor shall provide tools, materials (including water), equipment, and instruments necessary to conduct vacuum manhole testing as specified herein. Vacuum testing equipment shall include:

Vacuum apparatus equipped with necessary piping, control valves, and gauges to control air removal rate from manhole and to monitor vacuum.

An extra vacuum gauge of known accuracy to frequently check test equipment and apparatus.

Vacuum testing equipment and associated testing apparatus subject to Engineer's approval.

Seal plate with vacuum piping connections for inserting in manhole frame.

- 532.4d Prior to testing manholes, the Contractor shall thoroughly clean and seal openings. Openings shall be sealed using properly sized plugs.
- 532.4e The test shall be performed with frames installed. The joint between the manhole and the manhole frame shall be included in the test. If the seal between the frame and cone section is broken after a manhole has been tested, it shall be retested
- 532.4f The Contractor may elect to make a test prior to backfilling for his own purposes. However, the tests of the manholes for acceptance shall be conducted after the backfilling has been completed.
- 532.4g The Contractor shall follow the vacuum test procedure as follows:
- 532.4g1 Perform vacuum testing in accordance with the testing equipment manufacturer's written instructions.
  - 532.4g2 Draw a vacuum of ten inches of mercury and close the valves.
  - 532.4g3 Consider manhole acceptance when vacuum does not drop below nine inches of mercury for the following manhole sizes and times:
    - Four-foot diameter – 4:20 minutes:seconds
    - Five-foot diameter – 5:25
    - Six-foot diameter – 6:30
  - 532.4g3a Should a manhole not satisfactorily pass the test, the Contractor shall discontinue manhole construction and determine the source or sources of leaks. The Contractor shall then repair by a method approved by the Engineer or replace defective materials and workmanship, as is the case, and conduct such additional manhole acceptance tests and such subsequent repairs and retesting as required until manholes meet test requirements.
  - 532.4g3b If any part of the manhole is dislodged or in any way disturbed or damaged after successful testing, the manhole will be reset or repaired and retested at the Developers expense.
  - 532.4g3c The materials and methods used to make manhole repairs must meet with Engineer's approval prior to use.

#### 532.5 Deflection Test

Deflection tests shall be required on all flexible pipe. Tests shall be run not less than 30 days after backfill has been placed. No pipe shall exceed 5% deflection. Test shall be run using a go/no go mandrel having a diameter equal to 95% of the inside diameter of the pipe. Tests shall be performed without the use of mechanical pulling devices. The mandrel size shall be verified by the use of a proving ring supplied by the Engineer. If the mandrel passes through the proving ring, it is not acceptable, and shall be replaced. If in the Engineer's opinion it is warranted, any section of pipe shall be re-mandrel tested at any time prior to acceptance by the Township.

532.6 Television Inspection

Prior to acceptance of the sewer system by and at the sole discretion of the Township, the Township may require closed-circuit internal video inspection of portions or all of the sewer installed by the Developer. Such television inspection will be in addition to the tests specified in this Section. Additionally, immediately prior to the end of the required eighteen (18) maintenance period after acceptance by the Township, all portions of the system shall be televised by the Developer. All closed circuit video will be performed in color. Prior to any televising, all portions of the system will be pressure flushed, minimum eight hundred pounds per square inch (800 psi), and cleaned of all debris. The Developer shall bear the entire cost of television inspection process.

533 COMPACTION TESTS

When required by the Township or the Engineer, the Developer shall have soils compaction testing performed in accordance with these specifications. Testing shall be performed by laboratory approved by the Engineer. Two copies of all results shall be furnished to the Engineer.

534 FLUSHING AND CLEANING

The Developer shall clean and flush the newly installed system employing the means of pressure, minimum eight hundred pounds per square inch (800 psi), flushing and vacuuming equipment, as approved by the Engineer. This shall be done prior to the expectance of the system by the Township, prior to televising the system at the end of the eighteen (18) month maintenance period, and at any other time the Township may deem necessary.

**TRENCH EXCAVATION AND BACKFILL**

535 GENERAL

535.1 The Developer shall excavate, protect, and backfill all trenches that may be necessary for completing the Work. All excavation shall be in open trenches, except where and to such extent as the Engineer may authorize or direct that same be done in tunnel, or where such is specified in the Special Requirements or Contract Plans. The use of excavation machinery will be permitted except in places where operation of same will cause damage to trees, buildings, or existing structures above or below ground; in which case hand methods shall be employed. No tunneling, boring, or forcing will be allowed without special permit form the Engineer. The excavated material must be so piled as not to encroach onto private property, endanger the work, obstruct sidewalks, nor interfere with proper drainage. Trenches may be, in general, excavated and backfilled by either by machinery, or by hand as the Developer may elect, provided however, that the Engineer shall be empowered, wherever he shall decide that such necessity exists, to direct that hand excavation shall be done to the extent hereinafter specified. All trenches shall be backfilled at the end of the working day. No trenches shall remain open overnight for any reason.

535.2 The term "sub-grade" as used herein shall mean the bed of the trench, prepared as specified to receive aggregate bedding and the sewer pipe.

536 REMOVAL OF EXISTING PAVEMENT AND STORAGE OF MATERIALS

- 536.1 The Developer shall remove all pavements, road surfaces, curbing, driveways, and sidewalks within the lines of excavation. Portland cement concrete pavements shall be opened by sawing and asphalt pavements by cutting to neat, straight lines with channeling machine, hand-operated pneumatic tools, or by such other methods as will furnish a clean cut in the pavement and base without undue shattering, as approved by the Engineer. All such Work as above designated shall be done at the Developer's expense and in accordance with the rules and regulations of the municipality in which the work is done. The use of "pear" or weight dropped on pavement for breaking will not be allowed except by written permission of the Engineer.
- 536.2 The Developer shall grub and clear the surface and remove all surface materials, of whatever nature, over the line of the trench; and he shall properly separate and classify the materials removed, store, guard, and preserve such of said materials as may be required for use in backfilling, resurfacing, repaving, or for other purposes. All the rock, earth, sand, curbing, gutter, and flagstones, and all sectional paving units which may be removed, together with all materials taken from the trenches, shall be stored, in such parts of the street or roadway, or such suitable place, and in such manner, as shall be approved. The Developer shall be responsible for any loss of or any damage to paving materials through his own or his employees' careless removal or neglectful or wasteful storage, disposal, or use of same.
- 536.3 In the business districts or in streets that are important thoroughfares, or in narrow streets or other places so designated by the Engineer, the material excavated from the first one hundred (100) feet of any opening, or from such additional length as may be required, shall, upon Order of the Engineer, be removed from the street as soon as excavated. The material subsequently excavated shall be used to refill the trench.
- 536.4 All surplus excavated material shall be removed and deposited upon lands abutting the improvement if such fill is requested by the property owners. If no filling on abutting property is desired, the Developer shall dispose of such surplus wherever he can arrange for rights to fill.
- 536.5 In case more material is excavated from any trench than can be backfilled over the completed pipelines or can be stored on the street or within the limits of the right of way, leaving space for the traffic and drainage as herein provided, the excess material shall be removed to some convenient place, provided by the Developer. The Developer shall, at his own cost and expense, bring back so much of the material so removed, as may be required to properly backfill the trench, if of the proper kind; or, if so directed by the Engineer, the Developer shall, at his own cost and expense, furnish such other material as may be necessary. When it is necessary to haul soft or wet material over the streets, the Developer shall provide suitable tight vehicles.

537 TRENCH DIMENSIONS

- 537.1 Banks of trenches shall be kept as nearly vertical as possible, and the trenches shall be eight (8) inches wider on each side than the outside diameter, at the barrel, of the pipe to be laid therein. The trenches shall be excavated true to line so that a clear space eight (8) inches in width is provided on each side of the barrel of the pipe to a height not less than the top of the pipe. If sheeting is required at the level of the pipe, the dimensions in the foregoing sentence shall be applicable to the inside faces of the sheeting.
- 537.2 The width of unsheeted trench shall be sixteen (16) inches wider than the outside diameter of pipe at the spring line.
- 537.3 Wherever necessary to prevent caving, excavation in sand, gravel, sandy soil, or other unstable material shall be adequately sheeted and braced. Where sheeting and bracing is used, the trench width shall be increased accordingly. Trench sheeting shall remain in place until the pipe has been laid and the earth around it compacted to a depth of two (2) feet over the top of pipe.
- 537.4 In rock, shale, or any unyielding material, or where called for on the plans, or when ordered by the Engineer, requiring the bottom of the trench to be excavated in excess of eight (8) inches below the outer bottom of the pipe; the space below the outer bottom of the pipe shall be filled with crushed stone or concrete.
- 537.5 The draining of the trench shall be so effected that no water can run through newly laid pipe, nor accumulate in the trench until after the concrete has thoroughly set. All concrete work shall be set up hard before any backfilling work is started.
- 537.6 In no case shall more than forty (40) feet of trench be opened at any one place in advance of the completed sewer. Trench excavation shall be fully completed, except for the shaping of the bottom of the trench, at least twenty (20) feet in advance of the pipe placement, and shall be kept free from constrictions, except that at the close of the Work at night, or at the discontinuance of Work, the pipe laying may be completed to within five (5) feet of the end of the opened trench. The amount of pipe laid in advance of backfilling shall not exceed twenty (20) feet.
- 537.7 The Engineer shall be empowered, at any time, to require the refilling of open trenches over complete pipelines, if, in his judgement, such action is necessary.

538 ACCOMMODATION OF TRAFFIC

- 538.1 The Work on all streets and highways shall be governed by Publication 203 of the Pennsylvania Department of Transportation (PennDOT), and the Developer shall familiarize himself with this publication.
- 538.2 The Developer shall comply with all State, Township, or local regulations concerning opening of trenches in streets or highways.
- 538.3 Streets shall not be unnecessarily obstructed, and unless the Engineer, in writing, shall authorize the complete closing of the street, the Developer shall take such measures at his own expense, as may be necessary, to keep the street or road open and safe for traffic.

- 538.4 The Developer shall construct and maintain such adequate and proper bridges over excavations, as may be necessary, for the safe accommodation of pedestrians or vehicles. The Developer shall furnish and erect, without cost to the Township, substantial barricades at crossings of trenches, or along the trench, to protect the traveling public.
- 538.5 Driveways shall be bridged across open trenches where so shown on the plans or as so directed.
- 538.6 The Developer shall not obstruct fire hydrants.
- 538.7 The roadway on one side of the line of Work shall be kept open at all times.
- 538.8 A straight and continuous passageway on sidewalks and over crosswalks, at least three (3) feet in width, shall be preserved from all obstruction, where the Work to be performed does not lie under the sidewalk.
- 538.9 Where deemed necessary, such additional passageway as may be directed shall be maintained free of obstruction.
- 538.10 In the narrow or congested streets or alleys, when so directed, the Developer shall complete his Work up to a point designated by the Engineer before opening the Work ahead, in order to give access to garages and other places.
- 538.11 The Developer shall in all cases so arrange his Work as to cause the least inconvenience to property owners consistent with the proper prosecution of the Work as determined by the Engineer.

539 ACCOMMODATION OF DRAINAGE

- 539.1 The pipe trench must in all cases be kept substantially free from storm, surface, and subsoil water or sewage, so that all masonry joints may have ample time to set and harden. No joints shall be made under water.
- 539.2 Gutters, sewers, drains, and ditches shall be kept open at all times for surface drainage. No draining or ponding of water in gutters or other waterways will be permitted, except where stream crossings are necessary and then only to an extent that the Engineer shall consider necessary. The Developer shall not direct any flow of water across or over pavements except through approved pipes or properly constructed troughs, and he shall, when so required, and at his own cost and expense provide pipes or troughs, of such sizes and lengths as may be required, and place the same as directed. The grading in the vicinity of trenches shall be controlled so that the ground surface is properly pitched to prevent water running into the trenches.
- 539.3 In open water courses, ditches, or pipes, encountered during the progress of the Work, the Developer shall, at his own expense, provide for the protection and securing of a continuous flow in such courses or pipes and shall repair any damage that may be done by reason of them.



540 PUMPING

The Developer shall keep all excavation free from water, at his own expense, while structural Work is in progress, and to such extent as may be necessary while excavation Work alone is being carried on. The Developer shall build all dams and other devices necessary for this purpose, including lowering the water table below trench bottom by well points and pumping, and provide and operate pumps of sufficient capacity for dewatering the excavations. He shall provide for the disposal of the water removed from excavations in such manner as shall not cause injury to the public health, to public or private property, to the Work of other contractors, to any portion of the Work completed or in progress, or produce any impediment to the use of highways, roads, lanes, and streets by any public.

541 EXPLOSIVES AND BLASTING

- 541.1 Only small amounts of explosives shall be kept at any place, and they shall be kept under lock, the key to be only in the hands of a licensed blaster. Great care shall be taken in handling dynamite and similar explosives during the freezing weather. Caps and exploders shall not be kept in the same place as explosives. Blasts shall be properly matted and securely covered.
- 541.2 The Developer shall be responsible for any damage resulting from blasting. A pre-blast survey shall be performed prior to and seismic recordings made throughout the blasting procedure by qualified testing professionals. The Developer's method for procedure relative to blasting shall conform to State Laws and to local municipal ordinances. All existing sewer lines within a one hundred (100) foot radius of any blasting activity shall be televised prior to and after any blasting.
- 541.3 The Developer shall be solely responsible for injury to persons or property that may result from his use of explosives, and the exercise of, or failure to exercise control on the part of the Engineer shall in no way relieve him of responsibility for injury or damage resulting from their use.
- 541.4 All blasting shall be done under the supervision of a competent blasting expert, and subject to the state, county, or local regulations for blasting. Whenever any pipe main or conduit is encountered in the trench, the right is reserved to direct that all rock within an approved distance from the same be removed by some method other than blasting.

542 TUNNELING/BORING

- 542.1 No tunneling or boring will be permitted except with the permission of and in accordance with methods approved by the Engineer. Permission will be given only in cases where a line is laid behind a curb, across a paved street, or under railroad tracks, or because of the proximity of adjacent walls or structures due to excessive depths. Tunnels shall be backfilled tightly by mechanical tamping from each end provided, however, that regulations of the governing Township, or railroad, do not provide for other means of backfilling.
- 542.2 If tunneling or boring is permitted for the installation of lines beneath paved roads, the tunneling or boring shall be done according to the Specifications of the Pennsylvania Department of Transportation.

543 EMBANKMENT

- 543.1 Where embankment is necessary to support the foundations of pipelines, it shall be made to the height, width, and slopes shown on the drawings or as directed. The entire embankment shall be made prior to the construction of the pipeline or the foundation thereof.
- 543.2 After carefully grubbing and clearing the ground, removing all loose rock and stone, and all muck and improper material, the embankment shall be built up of material conforming to the requirements for backfill as set forth in the materials section of this specification.
- 543.3 In case material that is unsatisfactory for the foundation of an embankment is encountered, said material shall be removed to such depth, and for such length and width, as may be required to achieve an adequate capacity of the subsoils as determined by the Engineer.

544 PIPE BEDDING

- 544.1 Bedding: The trench shall be excavated to a depth of six (6) inches below the outside diameter of the pipe barrel, or deeper if so specified. The resultant subgrade shall be undisturbed, or compacted as approved by the Engineer if disturbed. The bedding shall then be prepared by placing a thoroughly compacted aggregate pipe bedding material, as specified hereinafter. Bedding shall provide uniform and continuous bearing and support for the pipe at every point between bell holes. All bedding shall be compacted as approved by the Engineer.
  - 544.1a Aggregate Bedding: Refer to Type A bedding shown on Standard Detail TBSA-SD-14.
  - 544.1b Concrete Bedding: Refer to Type B bedding shown on Standard Detail TBSA-SD-14.
- 544.2 Unstable Subgrade: Where the bottom of the trench at subgrade is found to be unstable or to include ashes, cinders, any type of refuse, vegetable, or other organic material, or large pieces or fragments of inorganic material, which, in the opinion of the Engineer, should be removed, the Developer shall excavate and remove such unsuitable material to the width and depth recommended by the Engineer.
  - 544.2a Before pipe is laid, the subgrade shall be made by backfilling with aggregate material, as directed by the Engineer, in layers not to exceed twelve (12) inches (uncompacted thickness) thoroughly tamped and the bedding prepared as hereinbefore specified.
  - 544.2b When the bottom of the trench is wet, the Developer has the option, upon the approval of the Engineer, of using No. 57 coarse aggregate in lieu of 2A coarse aggregate for pipe bedding material.
  - 544.2c Special foundations: Where the bottom of the trench at the subgrade is found to consist of material which is unstable to such a degree that, in the opinion of the Engineer, it cannot be removed and replaced with an approved material thoroughly compacted in place to support the pipe properly, the Developer shall construct a foundation for the pipe, consisting of piling, timbers, or other materials, in accordance with the construction drawings.

544.2d Excavation in Fill: When the pipe is laid in fill, the compacted embankment shall be brought to a height of at least nine inches above the proposed top of the pipe before the trench is excavated.

## 545 BACKFILLING

- 545.1 General: Backfilling shall not be done in freezing weather except by permission of the Engineer, and it shall not be done with frozen or wet material. Do not backfill when the material already in the trench is frozen or wet.
- 545.1a Where aggregate backfill is not indicated on the Drawings or specified herein, and in the opinion of the Engineer or the Township should be used in any part of the Work, the Developer shall furnish and backfill with aggregate as directed by the Engineer.
- 545.1b In State Highways all backfill shall be in accordance with the requirements of PennDOT Chapter 459 and Publication 408.
- 545.2 Initial Backfill on Sides and Over Pipe: From the pipe bedding to a depth of one (1) foot above the top of the pipe, the trench shall be backfilled by approved mechanical methods. The Developer shall use special care in placing this portion of the backfill so as to avoid injuring or moving the pipe. The backfill shall be placed in layers not exceeding twelve (12) inches (uncompacted thickness) and compacted by mechanical tamping. The Engineer shall approve all methods of mechanical compaction.
- 545.3 Aggregate Backfill to Restoration Depth (Existing Paved Areas including Driveways): From one (1) foot above the top of the pipe to restoration depth, the trench shall be backfilled by approved mechanical methods. Backfill in this section of the trench shall be coarse aggregate material subject to limitations specified and compacting by tamping in six (6) inch layers or other approved mechanical methods unless otherwise specified. Any compaction method utilizing water such as jetting or puddling shall not be permitted. Compaction shall proceed from the center of the trench to the sides to prevent arching.
- 545.4 Backfill Material to Restoration Depth (Outside Existing Paved Areas): From one (1) foot above the top of the pipe to restoration depth, the trench shall be backfilled by approved mechanical methods. Backfill in this section of the trench shall be excavated material subject to limitations specified and compacted by tamping in twelve (12) inch layers or other approved mechanical methods unless otherwise specified. Any compaction method utilizing water, such as jetting or puddling shall not be permitted. Compaction shall proceed from the center of the trench to the sides to prevent arching.
- 545.5 Underground Warning Tape: For the purposes of early warning and identification of buried pipes during future trenching or other excavation, provide continuous identification tapes in trenches. Install in accordance with printed recommendations of the tape manufacturer, and as modified herein. Bury tape at a depth of twelve inches below grade; in pavements, measure twelve inches from subgrade of pavement.
- 545.6 Compacting: During the course of backfilling and compacting work, the Engineer may, at any location or depth of trench, make tests to determine whether the Developer's compaction operations are sufficient to meet specified requirements. Compact trench backfill as follows:

545.6a All trench excavation and backfill within State Highway right-of-way will be performed in accordance with the requirements of and subject to inspection by representatives of, the Commonwealth of Pennsylvania, Department of Transportation.

545.6b Use mechanical tampers to compact backfill materials in trench refill operations to produce a density of backfill at the bottom of each layer of not less than 95 percent as determined by AASHTO T 99. Perform field determinations of density, when requested by the Engineer, in accordance with AASHTO T 191.

546 TEMPORARY REPAVING AND MAINTENANCE OF TRENCH SURFACES

546.1 The Developer shall maintain the surfaces of temporary repaving of all backfilled trenches until permanent repaving is placed hereon. The Developer shall provide such maintenance until the date of Approved Completion, and thereafter until the maintenance period expires.

546.2 The Developer shall be responsible for any injury or damage resulting from lack of required trench maintenance during the prescribed maintenance period.

546.3 Pennsylvania Department of Transportation requirements referred to in these Specifications shall be those contained in the current issue of the Commonwealth of Pennsylvania Department of Transportation Specifications Publication 408, and Regulating Occupancy of State Highway Right-of-Way Form 945-B. The references pertain only to the materials, equipment, methods, and labor.

546.4 Those trenches falling Under the jurisdiction of the Department of Transportation shall be backfilled and temporarily repaved in accordance with State Highway regulations as covered in Pennsylvania Code, Title 67, Chapter 459 (Occupancy of Highways by Utilities), latest edition.

546.5 Those trenches that are not under the jurisdiction of the State Highway Department shall be backfilled and temporarily repaved as depicted on Standard Detail TBSA-SD-16 of these Specifications or in accordance with local government requirements.

546.6 The Developer shall maintain the surfaces of temporary repaving of all backfilled trenches until permanent repavement is placed thereon. The Developer shall provide such maintenance until the date of the Certificate of Completion and acceptance of the Work, and thereafter until the maintenance period expires.

546.7 The Developer shall be responsible for any injury or damage resulting from lack of required trench maintenance during the prescribed maintenance period.

547 RESPONSIBILITY FOR CONDITION OF EXCAVATION

547.1 The Developer shall be responsible for the condition of all excavations made by him, at whatever time and under whatever circumstances that may occur.

547.2 The neglect, failure, or refusal to order the use of bracing or sheeting, or a better quality, grade, or section, or larger sizes of steel or timber, or to order sheeting, bracing, struts, or shoring to be left in place, or the giving or failure to give orders or directions as to the manner or methods of placing or driving sheeting, bracing, jacks, wales, rangers, etc., shall not in any way or to any extent relieve the Developer of any responsibility concerning the condition of excavation or of any of his obligations, nor shall any delay, whether caused by any action of the Township, or his agents, or employees, resulting in the keeping of an excavation open longer than would otherwise have been necessary, relieve the Developer from the necessity of properly and adequately protecting the excavation from caving or slipping, nor from any of his obligations relating to injury of persons or property, nor entitle him to any claim for extra compensation.

548 PROTECTION OF PROPERTY AND STRUCTURES

548.1 The Developer shall, at his own expense, sustain in their places, and protect from direct or indirect injury, all trees, shrubs, lawns, landscaping, pipes, tracks, walls, buildings, and other structures or property in the vicinity of his Work, whether above or below the ground, or that may appear in the trench. He shall at all times have a sufficient quantity of timber and plank, chains, roper, etc., on the ground and shall use them as necessary for sheeting his excavation and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened, or weakened.

548.2 The Developer shall take all risks attending the presence or proximity of pipes, poles, tracks, walls, buildings, and other structures and property, of every kind and description, in or over his trenches, or in the vicinity of his Work, whether above or below the surface of the ground; and he shall be responsible for all damages and assume all expenses for direct or indirect injury, caused by his Work, to any of them, or to any person or property by reason of injury to them, whether such structures are or are not shown on the Design Drawings.

548.3 Where necessary, in order to keep one side of the street or roadway free from any obstruction or to keep the material piles alongside of the trench from falling on private property outside the right of way, a safe and suitable fence shall be placed alongside the trench.

548.4 The Township reserves the right to stop the excavation or any other part of the Work, and to require the Developer to complete the work and the backfilling up to such a point as the Engineer may direct before proceeding further with the excavation.

549 REMOVAL OF OBSTRUCTIONS

The Developer shall not interfere with any persons, firms, or corporations, or with the Township in protecting, removing, changing, or replacing their pipes, conduits, poles, or other structures; but he shall suffer said persons, firms, or corporation, or the Township, to take all such measures as they deem necessary or advisable for the purpose aforesaid, and the Developer shall thereby be in no way relieved of any of his responsibilities.

550 CLEARING STREET, CLEANING UP, AND REPAIRS

550.1 The Developer shall remove surplus excavated material or construction material as the Work progresses, and shall keep the street in a safe and convenient condition for travel.

- 550.2 The Developer shall be responsible for maintaining roads and highways in a clean and dust-free condition insofar as the dust and dirt related to his work.
- 550.3 Before final acceptance of the Work, and also immediately prior to the expiration of the eighteen (18) month maintenance period, the Developer shall, by means of high pressure flushing, clear the sewers of any mortar, bituminous compound, dirt, or other refuse or debris that may have been left or accumulated in the sewers. All manholes, inlets, and other structures shall be cleared of all forms, scaffolding, centering, surplus, mortar, rubbish, or dirt, and left in a clean and proper condition. During flushing, any and all debris or other refuse will be captured to prevent introduction into and damage of the Township's system.
- 550.4 All surplus material, tools, equipment, and temporary buildings shall be removed from the site of the work, and all street surfaces, gutters, walls, lawns, rights of way, or other property shall be restored to as good a condition as originally found. The Developer, at his own expense, shall repair, any and all damage he has caused to the street, sidewalk, or adjoining property.

551 SHEETING, BRACING, AND SHORING

All timber plank used for sheeting and sheet piling and all timber used for braces, shores, and stringers or waling-strips shall be sound, straight, free from cracks, shakes, and large or loose knots, and of the required dimensions throughout. Plank shall be tongued and grooved and splined, if so required.

**SANITARY SEWER INSTALLATION**

552 GENERAL

Included in this Section are the Specifications for the installation of all sanitary sewers to be constructed; including interceptor sewers, collection sewers, force mains, and service connections of whatever size, material, or type required as designated on the approved Construction Drawings.

553 MATERIALS

- 553.1 Gravity sanitary sewers shall consist of approved sections of PVC, ductile iron, or in special cases other materials, of the diameters and with jointing materials shown on the approved drawings or specified, and conforming to the requirements of the Materials Section of these Specifications.
- 553.2 Sanitary force main shall consist of approved sections of PVC, ductile iron, or in special cases other materials of the diameters and with jointing materials shown on the drawings shown on the approved drawings or specified, and conforming to the requirements of the Materials Section of these Specifications.

554.1 Laying Pipe

Following the trench excavation and preparation of the crushed stone bedding, pipe laying shall proceed upgrade with pipe laid carefully, bells upward, spigot ends fully entered into adjacent bells, and true to lines and grades shown on the drawings. Each length or section of pipe shall be carefully inspected before installation and those containing cracks or other defects shall be removed from the site or destroyed. Extreme care must be exercised to prevent breakage when the pipe is handled. Bells and spigots shall be carefully cleaned before pipes are lowered into trenches. The pipes shall be lowered so as to avoid unnecessary handling in the trench. Each section of pipe shall rest upon the pipe bed for the full length of its barrel, with recesses prepared where required to accommodate bells and joints. Each pipe shall be firmly held in position so that the invert forms a continuous grade with the invert of the pipe previously placed. The interior of all pipe and the inside of the bell and outside of the spigot shall be thoroughly cleaned of all foreign matter before being lowered into the trench, and shall be kept clean during laying operations by means of plugs or other approved devices.

- 554.2 Under no conditions shall pipe be laid in water or on subgrade containing frost, and no pipe shall be laid when trench conditions are unsuitable for such work. In all cases, water shall be kept out of the trench until concrete cradles or supports, where used, and materials in the joints have hardened. The Township shall make the final determination if trench conditions are suitable for this work.
- 554.3 Walking or working on the completed pipeline except as may be necessary in tamping or backfilling will not be permitted until the trench has been backfilled to a height of at least two (2) feet over the top of the pipes.
- 554.4 Any pipe that has its grade or joint disturbed after laying shall be taken up and relaid. Any section of pipe already laid and found to be defective shall be taken up and replaced with new pipe.
- 554.5 Prior to the excavation of any trench for sewer construction, the Contractor shall stake out the proposed sewer line. Cutsheets showing the required excavation (cuts and fills) for the proposed sewer line shall be prepared and submitted to the Township for approval a minimum of five (5) working days prior to the start of construction. This shall apply to all phases and sections of sanitary sewer construction. No work shall be performed without approved cutsheets.
- 554.6 If the Contractor elects to use grade bars, he shall set a minimum of three grade bars at twenty-five foot centers. Each pipe shall be laid to line and grade indicated by a line drawn tightly between the grade bars, by using a rod or pole of fixed length as a gauge between working line and the pipe in trench. A plumb bob shall be used to check the line of pipe. If the grades are flat and the Engineer so orders, the Contractor shall place intermediate bars between those set to avoid sag in the working line. All methods of establishing line and grade shall be approved by the Engineer.
- 554.7 Prior to proceeding further with construction and regardless of the method of establishing pipeline grades, the Contractor shall verify elevations at all manhole structures using an engineer's level and level rod with the Engineer present.

- 554.8 Satisfactory means shall be used to hold the pipe in line while the pipes are being joined, and due precaution shall be taken to insure that the spigot end of the pipe being laid is pushed home into the groove of the preceding pipe. Pipe can be placed in the trench by hand, but must be joined mechanically, such as with the use of a pushing bar or other aid, to ensure the spigot end is completely pushed home into the bell end, creating a flush joint.
- 554.9 No pipe shall be laid within ten feet of the machine excavating the trench nor within seventy-five (75) feet of any place where blasting is being done. In all cases, the mouth of the pipe shall be provided with a stopper, or other means of sealing the end of the pipe as approved by the Engineer, carefully fitted to the pipe to prevent all earth or other substances from washing into the pipe. In rock excavation, the mouth of the pipe shall be carefully protected from all blasts.
- 554.10 Concrete thrust blocks shall be provided on all force mains at curves deflecting eleven and one-quarter (11¼) degrees or more. Blocks shall be poured against undisturbed earth and shall be in accordance with the Standard Detail Drawings of these specifications. Additional points for thrust blocking may be determined in the field and as directed by the Engineer.
- 554.11 Stream crossings shall consist of concrete-encased pipe as shown on Standard Detail Drawing TBSA-SD-14, Type B, at various locations shown on the Drawings.
- 554.12 Concrete slope anchors shall be installed on slopes greater than 0.1500 to the dimensions and requirements as shown on Drawing TBSA-SD-13.
- 554.13 In placing concrete cradles, slope anchors or thrust blocks the methods used shall be such as to prevent mud, earth, clay, or other foreign materials from becoming mixed with the concrete.
- 554.14 In no case shall "dry-mix" concrete be placed in the trench without permission of the Engineer.
- 554.15 All parts of the sanitary sewer system will be installed starting from the extreme downstream portion of the sewer system and proceeding upstream. Under no circumstances will any portion of the sewer system be started upstream from any uninstalled or unconnected portion of the system, nor with any gaps between same.
- 554.16 The extreme lower portion of the newly installed sewer system shall be continuously plugged at the connection to the Township's existing system. The plug will only be removed after the entire system has been flushed and cleaned using high velocity equipment as outlined previously.

554.17 Joints

All joints shall be watertight and any leaks or defects discovered shall be immediately repaired. After joints are made, any superfluous material inside the pipe shall be removed by means of an approved follower or scraper. Prior to construction, the contractor shall obtain the Engineer's approval of the type of joint to be used. Under no circumstances will the use of a flexible type repair coupling be used to join sections of new pipe.



#### 554.18 Branches

Wye branches shall be installed at the locations indicated by the Engineer. In general, connection to mains shall be made with commercially manufactured branches and one-eighth (1/8) bends. Cutting of pipes shall be set at such vertical angle as required to bring the service connection to the proper depth. Wye lateral fittings shall be located no closer to each other than four (4) feet on center to provide for a minimum of two (2) feet of pipe between each fitting.

#### 554.19 Stubs

Where directed by the Engineer, or when indicated on the Drawings, a stub or single length of pipe shall be built into manholes for connections to future extensions. The outer end of such connections shall be closed with a stopper.

#### 554.20 Service or House Connections

554.20a The Contractor shall build complete to the curb line or other designated points, all service connections to existing or proposed houses. Unless otherwise approved, these connections shall be built of pipe of the same materials and quality as the main sewers, and shall be a minimum of six (6) inches in diameter. The ends of all service connections shall be closed with a stoppered test tee. Service connections shall be laid and joined with the same care and in the same manner as main sewer pipes.

554.20b Sewer service connections shall be constructed as shown on the Standard Drawings; and shall be laid in accordance with the specifications for pipe sewers from the main sewer to the curb line or as ordered by the Engineer. All curb connections shall be closed at the outer end with stoppered test tees. Unless otherwise directed, service connections shall be brought to the curb or property line at a minimum slope of one quarter inch (1/4") per foot (2%)(0.02 ft/ft).

554.20c Excavation for service connections shall be opened for the entire length of each connection before any pipe is laid therein. If rock is encountered within ten (10) feet of any building, it must be removed by drilling and wedging or some other approved method other than blasting.

554.20d Where there are no existing buildings, connections will be stopped at the curblines at such depths and at such locations as the Engineer may direct.

554.20e Where service connections are specified to be made to an existing sewer at such locations where there are no wye branches or laterals provided in the sewer lines, a wye saddle must be installed. This installation is made by cutting a neat regular hole in existing pipe and hone to accommodate wye saddle. Centerline of hole shall be a minimum of 18" from any joint in either direction. The hole shall be placed at the springline of the main pipe and not extend below horizontal centerline of existing pipe. A provided rubber gasket shall be placed around the connection between the wye saddle and existing sewer line to produce a watertight connection. Saddle shall be held in place with bands or clamps. Earth shall be removed from joint area to allow concrete encasement of the entire joint for a distance extending twelve inches from the center of the joint laterally and provide a minimum thickness of six inches of concrete above, under, and around the outside of the pipe. A watertight joint is required. The

saddle connection shall be connected so that lateral flow is in same direction of main pipe flow. Type of saddle to be used shall be SEALTYTE Type "PVC/U" Tee Sewer Saddle or approved equal. A forty-five degree (45°) fitting shall be placed immediately upstream of the saddle for connecting the SDR-35 lateral pipe.

554.20f In the case of a non-residential service connection to serve an establishment involved in the preparation of food or some other use, which generates significant amounts of grease, a grease trap, as approved by the Engineer, shall be placed upstream of the connection to the sewer system. Additionally, a monitoring manhole shall be placed between the main connection and grease trap. Both the monitoring manhole and grease trap shall be placed on private property and the maintenance of both shall be the sole responsibility of the property owner.

#### 554.21 Standpipes or Risers

554.21a Where directed and approved by the Engineer, house connections will enter the sewer through risers. Risers shall be of the same material to which they are being fitted, unless otherwise directed, and shall enter the sewer through wye branches. The upper ends of standpipes shall be either wye branches or bends, as may be directed. The maximum return angle on all branches or fittings shall be forty-five degrees (45°).

554.21b The riser pipes shall be recessed into the bank of the sewer trench and encased with Class A concrete for their full height as directed by the Engineer.

#### 554.22 Concrete Cradles

Where required by these Specifications or the Engineer, pipes shall be placed in a concrete cradle for bedding and encasement. Concrete cradles shall consist of Class A concrete placed in trenches to support pipes. All cradling or encasement shall be done in accordance with the details shown on Drawing TBSA-SD-14.

#### 554.23 Clay Caps or Dams

In wet areas where crushed stone backfill is required, the Township may require the Developer to construct such caps or dams at strategic locations within the backfill. A clay material meeting standard impervious criteria as approved by the Engineer shall be used for such construction. The method by which the Contractor achieves the required dam imperviousness shall be approved by the Engineer.

#### 554.24 Concrete Curb Markers

At the time vertical concrete curb placement, the Contractor will be provided with permanent concrete curb markers to mark the location of sanitary laterals. The markers shall be placed in the center of the horizontal curb face where the lateral serves that property. The marker shall be placed slightly recessed in the fresh concrete to prevent damage. If the markers are not installed during curb placement, the Contractor shall drill the curbing and set the markers using a non-shrink or epoxy grout as approved by the Engineer. The Developer shall be solely responsible for the expense of the curb markers and their placement.

555 MANHOLE CONSTRUCTION

555.1 Manholes shall be built at such points on the lines of the sewers as are shown on the Drawings or as directed by the Engineer. Manhole bases will be installed level with the manhole frame and lid adjusted to meet the slope of the proposed roadway, if applicable.

555.2 Drop manholes will be located on sewers only at such points and with such drops as are shown on the Drawings.

555.2a Materials

Manholes shall be precast reinforced concrete only. Polyethylene steps shall be built into each manhole at the point of manufacture. Steps shall be spaced a maximum of 12" apart with the first (topmost) step placed no greater than 24" from the manhole frame rim elevation, and a maximum of twelve (12) inches from the bottom step to the manhole bench. The internal step location shall be on the vertical, non-tapered, side of the manhole and be approved by the Engineer.

555.2b Manholes shall be built on a Class A concrete base or precast base, as approved, with cast iron frames and covers, constructed in accordance with the design shown on the Drawings, and conforming to the requirements of these Specifications.

555.2c Excavation for manholes shall be made to a vertical plane one (1) foot outside of the manhole walls to provide space for proper application of Bitumastic coating, with the exception that existing pavement shall be cut to a rectangular shape with dimensions two (2) feet greater than the diameter of the manhole base.

555.2d Foundations of bases shall be at least twelve (12) inches thick and the diameter as shown on the Detailed Drawings. When necessary to build wide or deeper foundations than specified or shown, such foundations shall be built as directed by the Engineer. Pipe sewers and connections shall be built-in and trimmed as shown on the Drawings. A metal ring furnished by the manhole manufacturer shall be used to form the joint between the base and first section of the manhole.

555.2e Invert channels shall be formed directly in the manhole base, by the installation of concrete, Ready-Mix Concrete, and mortar, all in accordance with Section II of these Specifications. Changes in size and grade shall be made gradually and evenly. Changes in direction of the sewer and entering branches shall have a smooth curve of as large a radius as the size of the manhole will permit. Steep slopes outside the invert channel shall be avoided. Where there are more than one (1) pipe entering a manhole, the side channels shall make a smooth vertical and horizontal elevation transition to the main channel invert. Side channel intersection(s) of ninety degrees (90°) or less shall be prohibited to prevent main channel flow discontinuity. Side channels shall be no greater than fifteen (15) inches above the main channel invert elevation.

- 555.2f **Connections to placed concrete manhole bases (not precast)** – All sewer line connections to cast in-place manhole bases shall be encased with Class A concrete for a minimum distance of five (5) feet or until the specified width of trench is reached.
- 555.2g **The top of the walls of precast manholes shall be properly contoured to the street surface so as to form a flat surface upon which the cast iron manhole ring is to rest.** If precast sections do not conform to the required grade, precast concrete grade rings shall be used. Grade rings shall be laid to line in header courses, in full and close joints of mortar which at the inside face shall not exceed one-quarter (¼) of an inch in width. Grade rings shall be neatly plastered and troweled smoothly inside and outside with cement mortar as specified in these Specifications. The maximum allowable adjustment with grade rings shall be twelve (12) inches.
- 555.2h **Coating** – After manhole is set, the entire outer surface of all manholes shall be coated with Bitumastic coating. This coating shall be Koppers Bitumastic Super Service Black or approved equal.
- 555.2i **Backfilling around manholes** – Spaces outside the manholes shall be backfilled with material conforming to the requirements for backfill in uniform layers not exceeding six (6) inches in depth. Each layer shall be thoroughly compacted mechanically to the density specified.
- 555.2j **Frames and covers** – Cast iron frames and covers shall be furnished and set by the Contractor. The Contractor shall furnish and set in mortar upon the top of each manhole, a cast iron manhole frame and cover. The frame and cover shall conform to Section II, Paragraph M, and the Standard Detail Drawings. When the manhole is located in a street cartway, the fame and lid shall be adjusted to match the roadway gradient.
- 555.2k. **Drop manholes** – Where shown on the Drawings, drop manholes of precast concrete and of the design shown shall be constructed. Drops shall be encased in concrete to the full dimensions shown. The minimum vertical dimension of any drop shall be twenty-four (24) inches. Drop manholes shall be coated outside with Koppers Bitumastic Super Service Black or approved equal.
- 555.2l **Watertight Manholes** – Where directed by the Engineer, the Contractor shall supply and install a two-band external manhole sealing kit for the outside of the precast concrete cone section and the casting. The sealing kit shall consist of butyl rubber material with mastic designed to adhere to both the precast cone section and the casting. The kit shall be as manufactured by Infi-Shield, Inc., Model #MHAB27, or equal. Also to be furnished is a primer, as recommended by the manufacturer, to be applied to the precast section and casting prior to placement of the sealing kit. Installation shall conform to the manufacturer's recommendations and specifications, and be placed to cover the joint between the casting and the precast cone section. Manhole frame and cover shall be installed as shown on the Standard Details.

- 555.2m Aggregate roadway base course placement and paving around newly installed manholes shall not be performed prior to the inspection and successful testing of the manhole. Any aggregate placement or paving performed prior to the Engineer's approval to do so shall be removed at the Contractor's expense.
- 555.2n No stone or bituminous base materials for new roadways shall be placed prior to the complete inspection and testing of the manholes, and acceptance of same, by the Township. Additionally, no select backfill materials shall be placed within one (1) foot of the top of the manhole cone section prior to the inspection and testing.

## RESTORATION OF PAVEMENTS

### 556 GENERAL

- 556.1 All pavements, road surfaces, sidewalks, driveways, or curbs, which the Developer is required to replace, shall be replaced in accordance with these Specifications or as specified by the Engineer. The Developer shall satisfy himself as to any requirements other than those herein set forth which may affect the type, quality, and manner of carrying on the restoration of surfaces.
- 556.2 The Engineer shall make an examination of all surfaces where work has been constructed, and shall note any depressions due to breakage, settlements, washouts, or other causes that may be attributed to the construction. The Developer shall repair same where directed by the Engineer.
- 556.3 The Developer shall repair breaks, refill depressions, remove any surplus that has previously been left upon the trenches, or make other repairs or replacements which are necessary as determined by the Engineer or the Township.
- 556.4 When excavating within existing roadways, the entire existing roadway surface in the immediate area of the excavation, and where directed by the Engineer, shall be cleaned with a wet broom type sweeper at the end of each working day until the roadway is cleaned of all mud and debris.

### 557 MATERIALS

Materials used in replacing pavements, driveways, shoulders, walks, curbs, gutters, etc. shall comply with the requirements set forth in the Materials Section of the specifications. Before use, samples of all materials shall be submitted for test, and no material shall be used until approved. All trenches within existing roadways shall be backfilled completely with aggregate materials. No materials removed from within the roadway during excavation shall be used as backfill unless approved by the Engineer.

### 558 PERMANENT REPAVING

- 558.1 All pavements, road surfaces, sidewalks, driveways, or curbs which the Developer is required to replace shall, at the expiration of the period of temporary paving maintenance, be replaced in the same manner as the original installation or as specified by the Engineer. The Developer shall satisfy himself as to any requirements other than those herein set forth which may affect the type, quality, and manner of carrying on the restoration of surfaces.

- 558.2 The temporary paving shall be removed, in the case of cold mix asphalt, or compacted, in the case of hot mix asphalt, to the limits as specified herein and on the Standard Detail Drawings. The existing pavement shall then be sawcut back a distance of twelve inches on both sides of the trench the entire length of the trench or excavation in a neat and straight line. The entire area of the trench cutback shall be compacted with heavy-duty rollers or tampers. Permanent repaving shall be performed as specified herein.
- 558.3 In connection with the placing of ID-2 Bituminous Surface Course of permanent paving, the Developer is advised that the Township reserves the right to require the Developer to place only the binder course, and to place the wearing course thereof at such other time designated by the Engineer. In the event the Township elects to defer the placing of the wearing course, the Developer, prior to placing the wearing course, will be required to satisfactorily clean the previously constructed binder course or total paved section if applicable of any foreign material, and treat the surface thereof with a tack coat consisting of a thin application of bituminous material. Under certain conditions, this may be required by the Pennsylvania Department of Transportation.
- 558.4 Construction methods used for repaving the roadway or restoring the shoulders of all streets, roads, or highways which may be under the control or jurisdiction of the Pennsylvania Department of Transportation shall conform to the current specifications and special requirements of that Department. On all other streets, roads, highways, or thoroughfares where repaving or restoration is required, the construction methods used shall be in accordance with the local government requirements, or as specified herein.
- 558.5 On Township Roads all repaving or resurfacing shall be done in accordance with the standard requirements of the Township Road Specifications for all road and street areas affected, over which the Township exercises control, or in accordance with other methods as may be prescribed by the Township Supervisors.
- 558.6 At expiration of the eighteen (18) month maintenance period, the Engineer shall make an examination of all surfaces where pipelines have been constructed, and shall note any depressions due to breakage, settlements, washouts, or other causes that may be attributed to the construction of pipelines. Upon written order from the Engineer, the Developer shall again go over the work and repair breaks, refill depressions, remove any surplus material that has previously been left upon the trenches, or make other repairs or replacements which are necessary to place all the work in first class condition.
- 558.7 In addition to the work outlined above, the Developer shall replace road shoulders and guard fence so that they will be at least equal both in quality of material and quality of workmanship, to the original structures before they were disturbed.
- 558.8 This Specification shall also apply to materials going into the restoration of road shoulders and guard fencing.
- 558.9 Those trenches falling under the jurisdiction of the State Department of Transportation shall be permanently repaved as specified herein and as depicted on Standard Detail Drawing TBSA-SD-16 of these Specifications, or in accordance with local government requirements.

559 REPLACEMENT OF SPECIAL SURFACES AND MISCELLANEOUS ITEMS

- 559.1 Sidewalks, curbs, driveways, and other special surfaces shall be replaced in accordance to the prevailing local government rules and regulations. In lieu thereof, the Engineer shall detail special items on the Drawings prior to the start of Work, and in the absence thereof, the surfaces destroyed shall be replaced by the Developer to a condition better than, or equal to, that which existed prior to the start of the Work.
- 559.2 Following the usual period of settlement, lawns and shrubbery damaged during construction shall be brought to grade with topsoil; all weeds and debris shall be removed, transplanted shrubbery replaced, and the entire area re-seeded or sodded as required to remove traces of damage to the lawns or other areas damaged.
- 559.3 In unpaved highways, lanes, driveways, or sidewalk areas, the backfill shall be brought up to the previous surface, and, where pedestrians will normally walk, cinders, stone, or crushed stone screenings shall be spread across the surface to provide a temporary traffic surface.
- 559.4 In general, except in the case of cultivated fields, wherever the surface of the ground has been disturbed, the final graded surface shall be stabilized, by seeding, sodding, planting, or other methods approved by the Engineer to prevent erosion.
- 559.5 Mailboxes, street lighting poles and fixtures, ornamental works, guard rails, fencing, culverts, drains (both natural and manmade), catchbasins, manholes, and walls shall also be restored when disturbed.

600 **WATER SUPPLY AND DISTRIBUTION**

601 SPECIFICATIONS

Materials, workmanship and acceptance criteria shall be in accordance with the latest revision of Water System Specifications of the Controlling Authority.

602 LOWER NAZARETH TOWNSHIP PRE-EMPTION - BACKFILL REQUIREMENTS

After proper installation of the pipe and special envelope, backfilling with select material may be performed. All backfill shall be compacted through the use of approved mechanical tampers and water jetting as directed. In existing roads and the first six (6) feet of shoulder areas or sixteen and one-half (16 ½) feet from centerline, whichever is greater, the entire width and depth shall be backfilled with PennDOT No. 2-A Modified crushed stone and shall be mechanically tamped in layers not to exceed twelve (12) inches. In new developments where new roads are being constructed, the trench may be backfilled with earth backfill material which shall not contain rock pieces in excess of six (6) inches in any dimension and shall be mechanically tamped in six (6) inch layers. The trench, backfilled with earth, shall be temporarily surfaced and maintained with bituminous cold patch material, and allowed to settle for at least 180 days, after which the bituminous coated base course may be applied. If this 180 day lag time is not acceptable, the full stone backfill requirement shall apply.

## 603 PAVEMENT RESTORATION PROCEDURES

The following restoration procedures shall be followed within the paved areas of all Township streets.

### 603.1 Mechanical Cutting of Existing Pavement

Prior to performing any trench excavation, the Contractor shall determine the location and width of all proposed water mains. The outline shall be marked on the existing pavement and cut by mechanical means, such as a saw, or jackhammer. All cuts shall be full pavement depth, straight and true.

If during the actual trench excavation the pavement edge is damaged or lost, the area shall be recut to provide a straight edge.

### 603.2 Subgrade Preparation

After the trench has completely settled, the area shall be excavated to the required depth, shaped and thoroughly compacted in accordance with the requirement of Section 210 of PennDOT Publication 408 (latest edition). If the materials of subgrade are wet or unsuitable, they shall be removed and replaced with suitable material, placed and compacted in accordance with Section 350 of PennDOT Publication 408 (latest edition).

### 603.3 Base Course

On the prepared subgrade, the contract shall place an eight (8) inch crush aggregate base course in accordance with Section 310 of PennDOT Publication 408 (latest edition).

### 603.4 Bituminous Surface Course

Immediately after the crushed aggregate base course is placed, and before traffic is allowed over the area, the contractor must place bituminous paving material in accordance with Section 202.2 and Section 202.3 of this Ordinance. The binder course shall comply with applicable sections of PennDOT Publication 408 (latest edition). The bituminous wearing course shall have a SRL value of M or better.

If the bituminous wearing course is not placed on the binder course within 48 hours, the area shall be tack coated as specified in Section 460 of PennDOT Publication 408, (latest edition).

### 603.5 Joint Sealing

Where the bituminous wearing course is placed adjacent to existing drives and pavements, these joints should be sealed with hot PennDOT Class AC-2000 asphalt cement. The seal shall be applied to the surface by means of squeegees immediately after final rolling to completely fill the surface voids and provide a watertight joint. Excess asphalt shall be removed from the surface in an approved manner.



## 700 STORM DRAINAGE SYSTEM

Storm drainage systems shall be installed in accordance with the design standards and requirements set forth in Section 770 of the Subdivision and Land Development Ordinance.

### 701 STORM PIPING

Storm sewers shall have a minimum diameter of fifteen (15) inches. Storm sewers within all roads and road rights-of-way shall be made of reinforced concrete, Class III or better. All other storm sewers shall either be made of - or reinforced concrete, Class III or better. Sewers shall be installed on sufficient slopes to provide a minimum velocity of three (3) feet per second when flowing full.

Reinforced cement concrete and - shall comply with PennDOT Form 408, Section 600, current edition .

### 702 INLETS AND MANHOLES

Inlets shall be placed at points of abrupt changes in the horizontal or vertical directions of storm sewers, at points where the flow in swales exceeds three (3) inches, and at a maximum distance of six hundred (600) feet apart. Inlets shall normally be located beyond the curb radius points. For inlet location at corners, the depth shall be considered for each gutter. The Manning Equation shall be used to calculate the capacities of gutters. Pennsylvania Department of Transportation 2' x 4' and 2'x 6' special inlets or equivalents should be and can be considered to have capacities of 3.0 c.f.s. and 5.0 c.f.s., respectively. Inlets shall be depressed two (2) inches below the grade of the gutter or ground surface. Manhole may be substituted for inlets at locations where inlets are not required to handle surface runoff.

Inlets and manholes shall be of precast concrete construction in accordance with Section 605 of PennDOT, Form 408, Specifications, current edition, except that masonry inlets or manholes are specifically prohibited.

### 703 HEADWALLS/WINGWALLS

Headwalls shall be used where storm runoff enters the storm sewer horizontally from a natural or manmade channel. The capacity of such storm sewers shall be calculated for both steady flow and culvert design.

The lower values of the two (2) shall be used to determine the capacity of the storm sewer.

Headwalls and wingwalls shall be of precast or poured in place concrete construction in accordance with Section 605 of PennDOT, Form 408, current edition. The headwall length shall be long enough to facilitate a transverse return from the culvert invert to the top of embankment behind the wall at a slope not exceeding three (3) horizontal to one (1) vertical.

### 704 OPEN CHANNELS

Open channels shall be designed to handle, without overflowing, the calculated runoff from a storm of ten (10) year to one hundred (100) year frequency, as specified in Section 773. The capacities of any modifications to natural channels shall be computed using the Manning Equation. If the open channels to be constructed are within a watershed with an approved Storm Water Management Plan enacted pursuant to Act 167, the criteria in the applicable plan shall be used.

705 INSTALLATION

All pipe laying shall carefully progress uphill with hubs upgrade and ends fully and closely jointed. Trench widths shall not exceed the outside diameter of the pipe plus sixteen (16) inches, and depths shall be as required. Trench walls shall be vertical and bottoms shall be horizontal.

706 BEDDING

Prior to laying the pipe in the trench, a bedding of PennDOT No. 2A crushed stone shall be placed on the trench bottom. This material shall be a minimum of four (4) inches in depth and thoroughly compacted with approved mechanical tampers. The bedding shall be graded to provide a uniform and continuous bearing support for the pipe throughout its entire length. Bell holes shall be provided at the ends of pipe length to prevent bearing on the joints.

707 BACKFILLING

After proper installation of the pipe and special envelope, backfilling with select material may be performed. All backfill shall be compacted through the use of approved mechanical tampers as directed. In existing roads and the first six (6) feet of shoulder areas or sixteen and one-half (16 ½) feet from centerline, whichever is greater, the entire width and depth shall be backfilled with PennDOT No. 2-A crushed stone and shall be mechanically tamped in layers not to exceed twelve (12) inches. In new developments where new roads are being constructed, the trench may be backfilled with earth backfill material, which shall not contain rock pieces in excess of six (6) inches in any dimension and shall be mechanically tamped in six (6) inch layers. The trench, backfilled with earth, shall be temporarily surfaced and maintained with bituminous cold patch material, and allowed to settle for at least 180 days after which the bituminous coated base course may be applied. If this 180-day lag time is not acceptable, the full stone backfill requirement shall apply.

**800 EROSION AND SEDIMENTATION CONTROL**

Improvements installed to control soil erosion and sedimentation shall be in accordance with design standards set forth in Section 791 of the Subdivision and Land Development Ordinance.

801 RESPONSIBILITIES

The responsibility for soil erosion and sedimentation control during the installation of improvements and the development of subdivision or land development shall be in accordance with the following requirements:

801.1 Sedimentation Control

Whenever sedimentation is caused by stripping vegetation, regrading or other development, it shall be the responsibility of the person, corporation or other entity causing such sedimentation to remove it from all adjoining surfaces, drainage systems and water courses and to repair any damage at his expense as quickly as possible.

801.2 Facilities Maintenance

Maintenance of all drainage facilities and water courses within any subdivision or land development is the responsibility of the developer until they are accepted by the Township Board of Supervisors or some other official agency, after which they become the responsibility of the accepting agency.

### 801.3 Restoration

It is the responsibility of any person, corporation or other entity doing any act on or across a communal stream, water course or swale, or upon the flood plain or right-of-way thereof, to maintain as nearly as possible in its present state the stream, water course, swale, flood plan or right-of-way during the pendency of the activity and to return it to its original or equal condition after such activity is completed.

### 801.4 Maintenance on Private Property

Maintenance of drainage facilities or water courses originating and completely on private property, are the responsibilities of the owner to their point of open discharge at the property line or at a communal water course within the property.

### 801.5 Encroachment Prohibited Without Permit

No person, corporation or other entity shall block, impede the inflow or 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 water course without having obtained prior approval from the Township Board of Supervisors or the Pennsylvania Department of Environmental Resources, whichever is applicable.

## 900 **TREE PLANTING AND LANDSCAPING**

### 901 LANDSCAPE PLAN

A landscape plan shall be required for any subdivision or land development which proposes the planting of trees and shrubbery. The plan shall locate and provide specifications for all landscaping proposed by the developer.

### 902 PLANT MATERIALS

Street trees, conifers and shrubs shall be of nursery stock quality, grown under the same climatic conditions as at the development site. All materials shall be of the size indicated on the plans and required by the Subdivision and Land Development Ordinance. They shall be of hearty and symmetrical growth, free of insect pests and disease.

### 903 PLANTING

All planting shall be at the location and spacing indicated on the plans and required by the Township Zoning and/or Subdivision and Land Development Ordinances and shall be done in conformance with good nursery and landscape practice.

### 904 GROUND COVER AND SEEDING

#### 904.1 Detention Basins

Detention basin subgrade shall be sealed with a top course of impermeable clay over the entire pond bottom and returning a minimum of one (1) foot up the pond banks. A minimum of six (6) inches of topsoil shall then be placed and fine graded to the design grades. Seed on the pond bottom shall be PennDOT Formula "D" placed at 21 pounds per 1,000 square yards with PennDOT Formula "C" at 9 pounds per 1,000 square yards on the side slopes and berm. Fertilization and mulching shall be in accordance with Section 804 of PennDOT Form 408, current edition.

#### 904.2 Planting Strips and Recreation Areas

A minimum of four (4) inches of topsoil shall be placed and fine graded to the design grades. PennDOT Formula "B" seed mix at 21 pounds per 1,000 square yards shall be placed. Fertilization and mulching shall be in accordance with Section 804 of PennDOT Form 408 Specifications, current edition.

### 1000 **TRAFFIC SIGNALIZATION AND CONTROLS**

#### 1001 CONTROLLER ASSEMBLY AND CABINET

Controller Assembly shall meet the following minimum standards:

Be compatible with Peek Traffic Systems Model 3000 or newer capable of accommodating Emergency Vehicle Preemption and closed loop operation.

Nema TS2 controller in a TS2 Type 1 base mounted cabinet.

Cabinet shall be Hennessy Products M36 or equal base mount, with MMU 16 malfunction management unit, 3- BIU Interface units, 12 position rear panel, 24 volt cabinet power supply, detector rack, and TS2 -- 2 channel loop amplifiers. TS2 type 2 controller shall include optional D module to provide for downward compatibility with TS1 cabinets.

The cabinet shall be installed meeting the requirements of PennDOT PUB 148 base mounting "Type I" base mounting arrangement.

Provide surge protection package, SHP 300, as manufactured by EDCO Incorporated of Florida, or an approved equal. Install per manufacturer's specifications.

Cabinet shall be supplied with communication module and panel for future closed loop system operation.

Cabinet shall be wired for 3M Opticom, Emergency vehicle preemption, the most current version.

Cabinet shall contain receptacle, 30 amp, 120 volts, Hubble model #2615, or approved equal, for attachment of alternative power source (emergency generator). The neutral wire of the alternative power source circuit should be connected with the neutral buss of the controller unit. All switches necessary to facilitate change over from public to generated power supply shall be provided.

Appropriate overload and short circuit protection shall be provided within the controller assembly. A 30-amp circuit breaker should be utilized.

Cabinet vent fan shall be weather and vermin proof and thermostatically controlled.

The controller shall be capable of providing the signal timing and sequences as shown on the permit.

At the time of traffic signal start up, the developer shall have a traffic signal technician from the installer be present to ensure proper signal function. All functions of the traffic signal system shall be fully operational at this time and shall be to the satisfaction of PennDOT and Lower Nazareth Township.

Police panel shall be equipped with a hand control switch.

1002 SIGNALS

Vehicular and pedestrian signal heads and mounting assembly / hardware shall be in accordance with the condition diagram and PennDOT Pub 408.

Signal head housings shall be of polycarbonate material with aluminum reflectors.

All illumination devices shall be LED type.

1003 DETECTORS

Detectors shall be solid-state type, self-contained.

Loop detector sensor wire shall be 14 AWG minimum in accordance with IMSA Spec. 51-5.

Epoxy embedding material must be approved per PennDOT Bulletin 15.

The loop detectors shall be capable of detecting various types of vehicles ranging from motorcycles to tractor-trailers.

1004 JUNCTION BOXES

Junction Boxes shall be in accordance with PennDOT Standards and shall be Type JB-27 with the following exception:

1004.1 If junction box is located in cartway or stone or paved shoulder, the unit shall be installed with top surface finishing at or just below finish grade and shall meet H-20 traffic loading standards.

1005 WIRING

Signal cable conductors shall be 14 AWG stranded color coded with thermo-plastic jacket in conformance with IMSA specification number nineteen (19).

The number of conductors shall be the specific quantity as required on the condition diagram plus one spare conductor.

1006 ELECTRICAL SERVICE / METER

All service equipment shall meet the requirements of the utility company.

Service disconnect enclosure shall be aluminum or stainless steel.

Power service equipment shall be capable of supporting the traffic signal operation with proper over-current protection.

Meter socket as specified by utility company.

1007 EMERGENCY VEHICLE PREEMPTION

All traffic signal installations shall provide a fully functional "Emergency Vehicle Preemption" system meeting the following requirements:

Shall be the latest 3M Opticom Priority Control System Series.

Installation and location of optical detectors shall be to the satisfaction of PennDOT and the Township

Optical detectors shall be aimed and adjusted at the time of signal start up for optimum performance

Shall have data encoding capability.

Shall be warranted for five (5) years.

At each detector location, shall be equipped with flashing white fail-safe indication light facing street or approach where emergency vehicle is approaching.

1008 WARRANTY

All equipment furnished under these specifications shall be new.

Equipment shall be warranted for a period not less than one (1) year from the date of acceptance, except where otherwise noted.

All inspections, as required by the provider of electric service, shall be performed by a certified electrical inspection agency.

1009 DOCUMENTATION

Furnish three copies of warranties, guarantees, instruction manuals, wiring diagrams, and parts lists with each different type material.

Provide in the controller assembly cabinet one instruction manual for each controller unit, time clock, and co-ordination unit.

1010 LUMINARIES

Each intersection constructed within the scope of a project shall be illuminated. If highway lighting exists adjacent to the installation, the Township may waive the need for luminaries. Illumination shall be achieved in the following manner:

Installation of a 400-watt sodium vapor fixture on signal mast arm support or strain pole in accordance with the requirements of PennDOT and the Township.

Lighting device installation shall be coordinated and in accordance with the electric utility providing service in that area. A separate electric service shall be provided for luminaries from the traffic signals.

It is the intention of the Township that this lighting device becomes incorporated into the highway lighting program between the Township and the respective utility.

1011 KEYS

Provide three sets of keys for each controller cabinet and Police door included in the project.

1012 MISCELLANEOUS

Installation shall meet or exceed PennDOT Publication 148 (TC-7800) Standards

Cut-sheets for ALL equipment, including traffic signal supports, shall be submitted to township for pre-approval.

## 1100 MISCELLANEOUS IMPROVEMENTS

### 1101 MONUMENTS

Permanent concrete monuments shall be accurately placed, at the intersection of all lines forming angles and at changes in directions of lines in the boundary of the property subdivided, and along all interior streets at changes in direction, at beginning and end of curves and at intermediate points where topographical considerations make it impossible to sight between two (2) adjacent monuments.

Monuments shall be of reinforced concrete construction, a minimum of four (4) inches in diameter and a minimum of twenty-four (24) inches long.

Monuments shall be set flush with adjacent grade.

All monuments shall be set by a Professional Land Surveyor in the Commonwealth of Pennsylvania.

### 1102 MARKERS

Markers consisting of a minimum three-quarter ( $\frac{3}{4}$ ) inch diameter pipe, bar or reinforcing rod at least thirty (30) inches long shall be set at all lot corners not occupied by a concrete or stone monument.

Markers shall be set flush with adjacent grade.

### 1103 STREET AND TRAFFIC CONTROL SIGNS

Street name signs shall be installed at all street intersections. Street names shall be pre-approved by the Township. The nomenclature shall be such that it can fit on a plate size not exceeding 30 inches in length. Street name sign plates shall be 9 inch extruded aluminum with a green background with white letters. Traffic control signs shall be set at all locations shown on the approved plans. The size, type and placement of all signs shall be subject to PennDOT standards or, in the event no standard applies, signs shall set at the locations requested by the Township. All signs, sign supports and mounting devices shall be approved by the Township prior to placement and shall be installed meeting the requirements of PennDOT Publications 68, 236M and 108. All sign supports and hardware shall be PennDOT approved 2" x 2" square posts galvanized "Qwik-Punch" style.

### 1104 STREET LIGHTS

In accordance with the conditions to be agreed upon by the developer and the Township Board of Supervisors, street lights installed in subdivisions and land developments shall be in accordance with specification of the applicable electric supplier.

### 1105 HANDICAPPED PARKING

The latest Federal standards for handicapped parking developed by the American National Standards Institute are referenced.

Any lot including at least 6 off-street parking spaces shall include a minimum of one handicapped space. A minimum of 3 percent of all off-street parking spaces required for a use shall be handicapped spaces.

Handicapped parking spaces shall be located where they would result in the shortest possible accessible distance to an accessible building entrance.

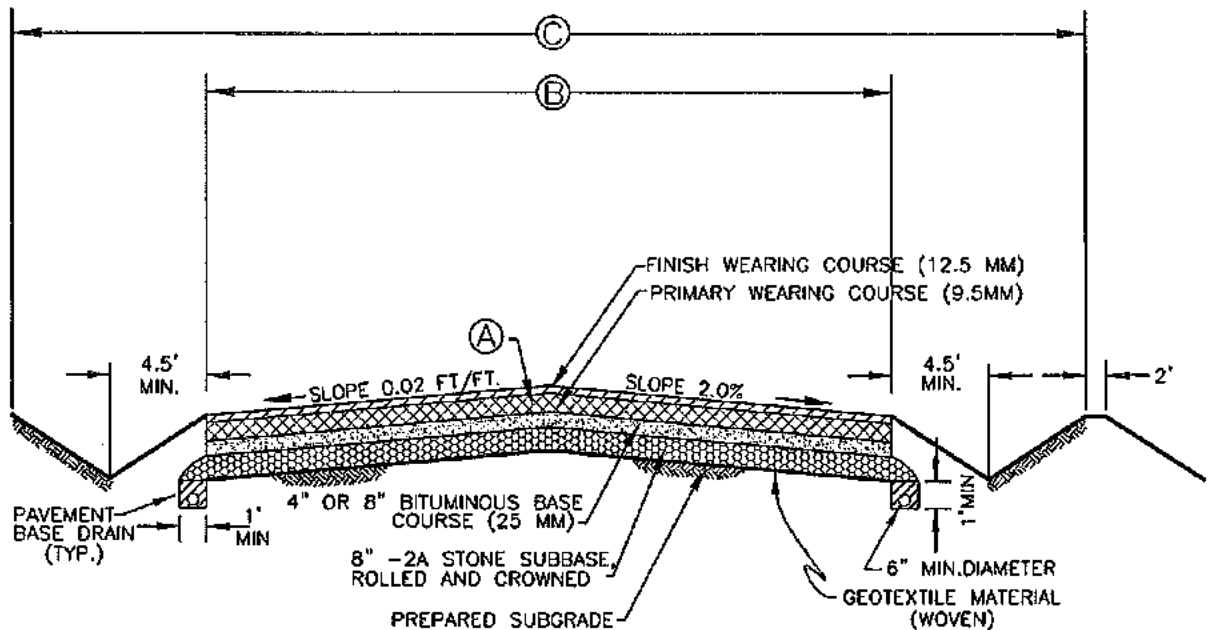
Size. 13 by 18 feet for each space.

Slope. Handicapped parking spaces shall be located in areas of less than 5 percent slope in any direction.

Markings and Signage. Each handicapped parking space and required walkways shall have pavement markings in a contrasting color (preferably blue) than the standard spaces. Also, each handicapped parking space shall be marked with a separate post-mounted sign, to Township standards with the fine for violations posted.



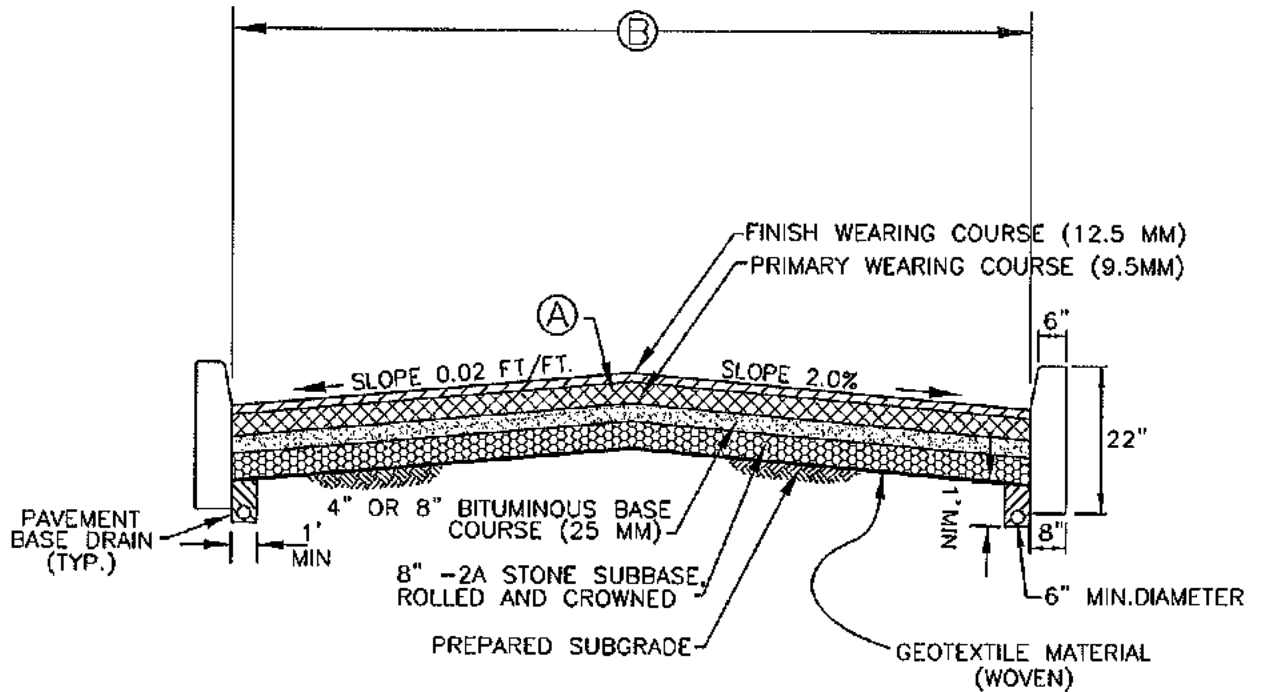
## TYPICAL STREET SECTION WITH ROADSIDE SWALE



### NOTES:

- 1 THE APPLICANT / DEVELOPER SHALL PROVIDE THE TOWNSHIP WITH A DESIGN ANALYSIS TO DETERMINE THE CONSTRUCTION REQUIREMENTS FOR THE PROPOSED STREETS.
  - 2 ALL BITUMINOUS SURFACES SHALL CONFORM TO PENN DOT SUPERPAVE STANDARDS AND THE TOWNSHIP'S STANDARDS FOR IMPROVEMENTS CONSTRUCTION (APPENDIX F).
  - 3 STREETS REQUIRING AN 8" BITUMINOUS BASE COURSE SHALL BE CONSTRUCTED OF TWO (2) LIFTS OF FOUR (4) INCHES COMPACTED DEPTH.
  - 4 GEOTEXTILE MATERIAL SHALL BE PROVIDED AROUND THE PAVEMENT BASE DRAIN STONE ENVELOPE.
- A PAVEMENT SPECIFICATIONS**  
 MINIMUM REQUIREMENTS ACCORDING TO PUB70, PUB13, RCO-100 ALONG WITH GUIDE RAIL STANDARDS.
- 4" OR 8" BITUMINOUS BASE COURSE (25MM SIZE) (PER DESIGN ANALYSIS)
  - 1" PRIMARY WEARING COURSE (9.5 MM SIZE)
  - 1 ½" FINISH WEARING COURSE (12.5 MM SIZE)
- B CARTWAY WIDTHS**
- LOCAL STREET - 32 FEET
  - COLLECTOR STREET - 36 FEET
  - ARTERIAL STREET - AS PER AASHTO AND PENNDOT STANDARDS
- C RIGHT-OF WAY WIDTHS**
- LOCAL STREET - 50 FEET
  - COLLECTOR STREET - 60 FEET
  - ARTERIAL STREET - 80 FEET

# TYPICAL STREET SECTION WITH CURBING



## NOTES:

- 1 THE APPLICANT / DEVELOPER SHALL PROVIDE THE TOWNSHIP WITH A DESIGN ANALYSIS TO DETERMINE THE CONSTRUCTION REQUIREMENTS FOR THE PROPOSED STREETS.
- 2 ALL BITUMINOUS SURFACES SHALL CONFORM TO PENN DOT SUPERPAVE STANDARDS AND THE TOWNSHIP'S STANDARDS FOR IMPROVEMENTS CONSTRUCTION (APPENDIX F).
- 3 STREETS REQUIRING AN 8" BITUMINOUS BASE COURSE SHALL BE CONSTRUCTED OF TWO (2) LIFTS OF FOUR (4) INCHES COMPACTED DEPTH.
- 4 GEOTEXTILE MATERIAL SHALL BE PROVIDED AROUND THE PAVEMENT BASE DRAIN STONE ENVELOPE.

## A PAVEMENT SPECIFICATIONS

MINIMUM REQUIREMENTS ACCORDING TO PUB70, PUB13, RC0-100 ALONG WITH GUIDE RAIL STANDARDS.

4" OR 8" BITUMINOUS BASE COURSE (25MM SIZE) (PER DESIGN ANALYSIS)

1" PRIMARY WEARING COURSE (9.5 MM SIZE)

1 1/2" FINISH WEARING COURSE (12.5 MM SIZE)

## B CARTWAY WIDTHS

LOCAL STREET - 32 FEET

COLLECTOR STREET - 36 FEET

ARTERIAL STREET - AS PER AASHTO AND PENNDOT STANDARDS

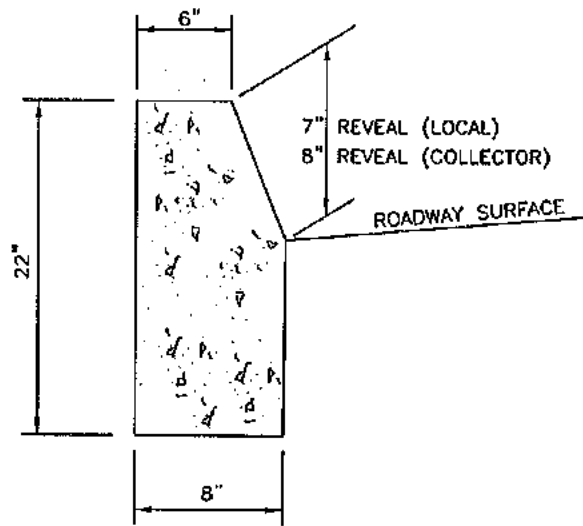
## C RIGHT-OF WAY WIDTHS

LOCAL STREET - 50 FEET

COLLECTOR STREET - 60 FEET

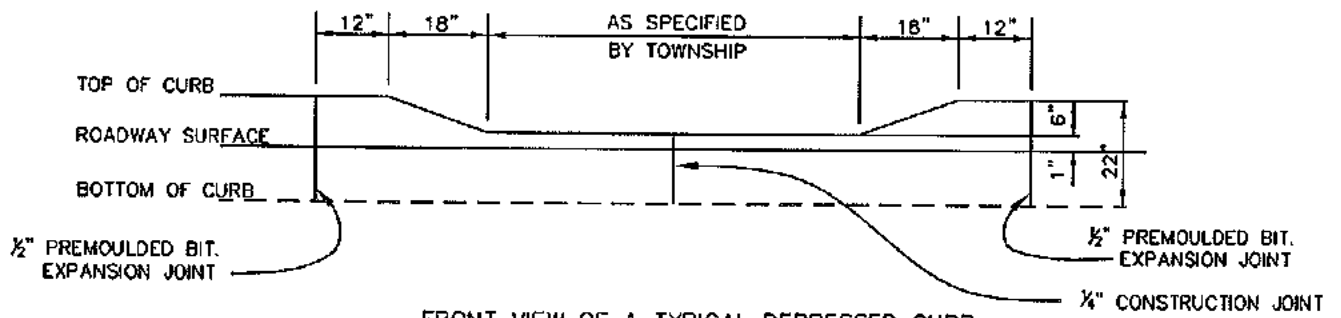
ARTERIAL STREET - 80 FEET

STANDARD DETAIL  
FOR  
VERTICAL CURB



TYPICAL SECTION

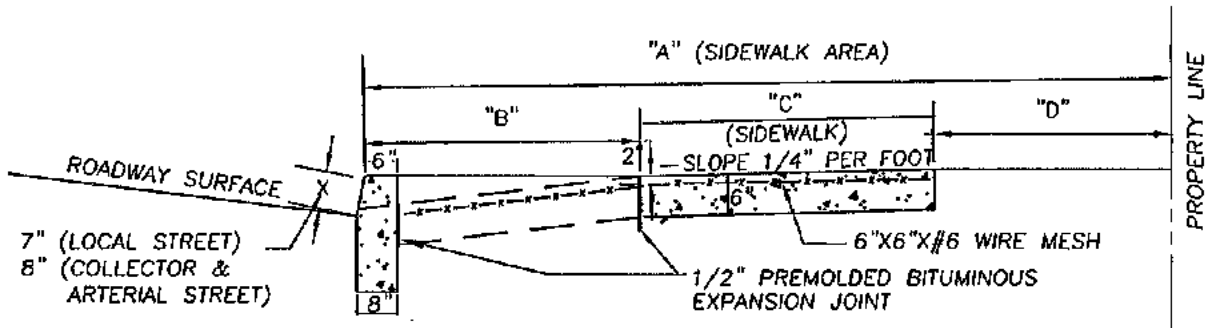
NO SCALE



FRONT VIEW OF A TYPICAL DEPRESSED CURB  
AT CROSSOVER

NO SCALE

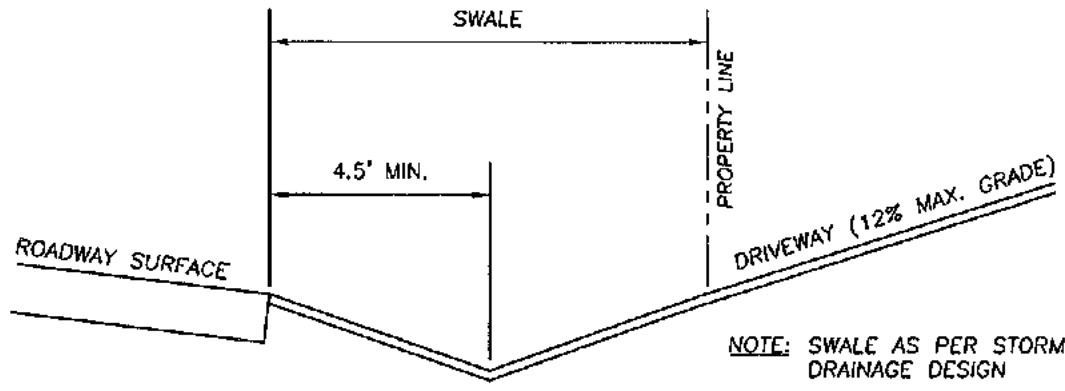
**DRIVEWAY CROSSOVER DETAILS**



NOTE: ALL LETTERED DIMENSIONS SHALL BE SPECIFIED BY THE TOWNSHIP

**STREETS WITH CURB AND SIDEWALK**

N.T.S.



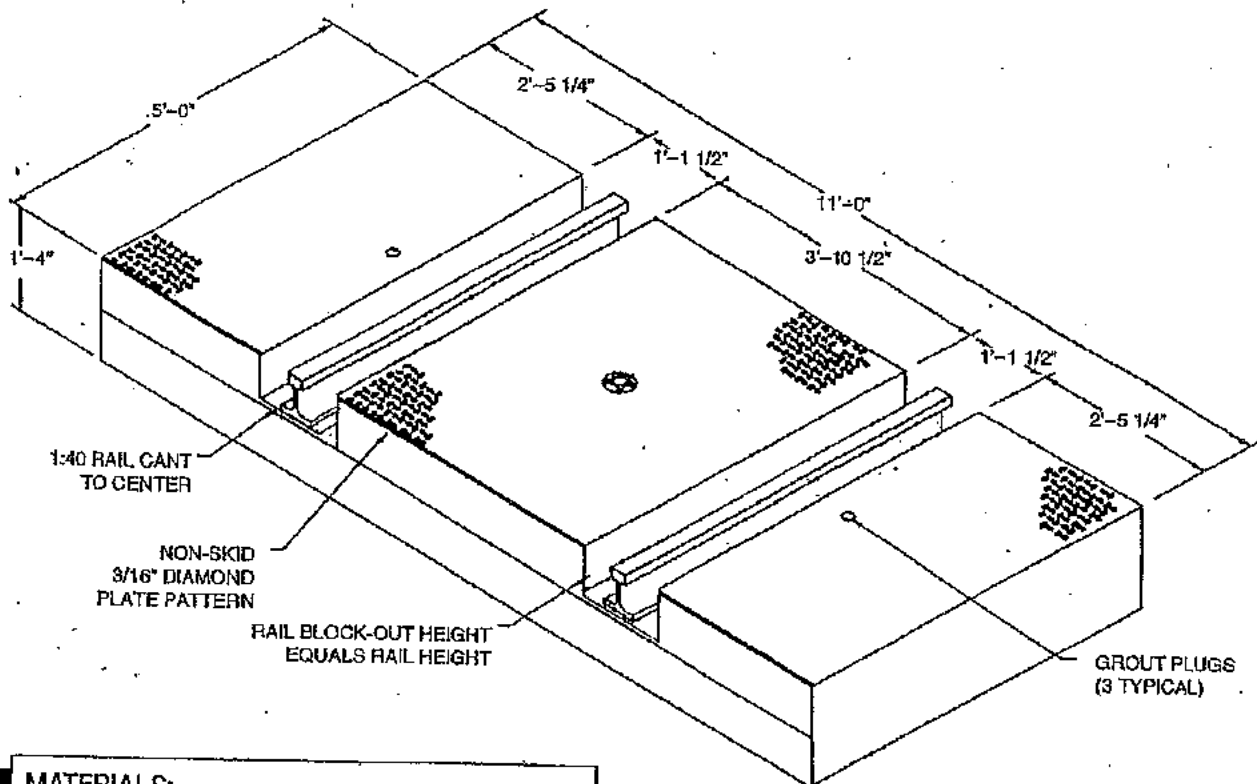
NOTE: SWALE AS PER STORM DRAINAGE DESIGN

**STREETS WITH ROADSIDE SWALES**

N.T.S.

## 1300 RAILROAD GRADE CROSSINGS

- 1301 All at-grade rail crossings shall meet the requirements of the Pennsylvania Public Utilities Commission (PUC) and Lower Nazareth Township.
- 1302 All newly constructed grade crossings shall be signalized. A determination on the type of signalization shall be made by the Township and the PUC.
- 1303 All at-grade crossings shall be constructed to the following specifications and be Star Track II HD or equal.



### MATERIALS:

CONCRETE: THE MINIMUM 28 DAY STRENGTH SHALL BE 6000 PSI.

*Optional: Special design mix utilizing Micro-Silica.*

*Optional: W. R. Grace's "D.C.I." additive in lieu of epoxy reinforcing*

REBAR: ASTM A615 GRADE 60.

*Optional: Epoxy-coated*

SHOULDERS: "PANDROL" #5274 CAST SHOULDER DUCTILE - IRON GRADE #65-45-12

RUNNING STRIPS: 3/16" UHMW POLYETHYLENE

CLIPS: "PANDROL" #E2055 CLIPS - SPRING STEEL

INSULATORS: "PANDROL" #4263 THERMOPLASTIC / NYLON

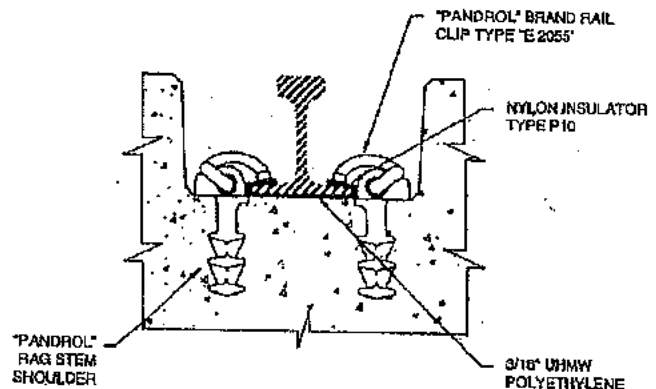
EXPOSED SURFACE: FORM CAST CONCRETE.

*Optional: Hydrozo "Enviroseal" #40 Surface Treatment*

### DESIGN LOADING:

COOPER E-80 WITH 60% IMPACT

4/96



RAIL DETAIL

