

ARTICLE V – IMPROVEMENTS AND CONSTRUCTION REQUIREMENTS

Construction of improvements shall conform to the Standards and Specifications of Liberty Township, the Pennsylvania Department of Transportation, Pennsylvania Department of Environmental Protection, or other recognized specifications identified by the Township Engineer.

Section 500. Monuments and Markers.

Monuments and markers must be placed so that the scored or marked point coincides exactly with the point of intersection of the lines to be monumented. They must be set so that the top of the monument or marker is level with the finished grade of the surrounding ground. Monuments must be marked on the top with a copper or brass plate or steel dowel set in concrete.

A. Monuments:

1. Monuments shall be set:
 - a. at the intersection of all right-of-way lines.
 - b. at the intersection of lines forming angles in the boundaries of the development.
 - c. at such intermediate points as may be required by the Township Engineer.
2. Monuments shall be six (6) inches square or four (4) inches in diameter, thirty (30) inches long and constructed of concrete, stone or by setting a four (4) inch diameter cast iron or steel pipe filled with concrete; or a marker, as specified in this Ordinance, placed in a four (4) inch plastic pipe filled with concrete..

B. Markers:

1. Markers shall be set:
 - a. at all lot corners except those monumented.
 - b. at angles in property lines of lots
 - c. at beginning and ending of curves along street property lines.
2. Markers shall be three quarters (3/4) of an inch square, or three quarters (3/4) of an inch in diameter, thirty (30) inches long. Markers shall be made of iron pipes or iron steel bars.

Section 501. Streets.

All streets shall be graded at full right-of-way width and paved to the grades and dimensions drawn on the plans, profiles, and cross-sections approved by the Township. Before establishing finished subgrade and paving the street surface, the Developer must install all required underground utilities. Specifications for the construction of streets shall be in accordance with the following:

A. Street Construction:

All construction materials and methods for improvements as required under this Section shall be in accordance with the Pennsylvania Department of Transportation Specifications Publication 408 and Roadway Construction (RC) Drawings, as may be amended.

In addition, all streets shall be constructed in accordance with any additional standards required by the Township Engineer, when in the opinion of the Engineer conditions such as traffic volume, or expected weight of proposed traffic justify alternate specifications.

1. The Township shall inspect roadway construction to determine compliance with standards of Ordinance and conformance to approved plans. At a minimum each course shall be inspected prior to placement of each successive course.
2. The Township shall reserve the right to require additional depth of materials or to deviate from type of material specified where, in the opinion of the Township Engineer; it is necessary to withstand projected traffic loads or adverse environmental conditions.
3. The Township may, when deemed necessary by the Township Engineer, require the installation of subsurface drainage systems, which may consist of subgrade and/or drains or geo textile placement. Construction standards shall be in accordance with PennDOT Publication 408 and Roadway Construction Standards. This requirement may occur as a result of field inspections or compaction testing during construction.

B. Street Lights:

The need for adequate lighting shall be considered for all proposed developments. In any proposed subdivision or land development involving ten (10) or more lots or dwelling units with an average lot size or area per dwelling unit of fifteen thousand (15,000) square feet or less, a street light system meeting Township Requirements shall be installed at intersections and at intermediate locations throughout the development. In addition the Township may require the developer to install individual property lights in the ratio of one (1) to each lot. In evaluation of these criteria, the total number of lots projected at build out must be considered.

The Township may require a design plan be provided by an experienced lighting Designer. Complete detail drawings including pole mounting, dimension and type, fixture type and wattage shall be provided for review and approval of the Township. The Township may also require a photometric print of the proposed lighting.

Unless otherwise agreed and approved the lighting system shall be made part of the development association or property owners responsibly for ownership, operation and maintenance. All systems shall be of a design and construction that where available, agreements for maintenance may be entered into with the local electric utility authority.

Each light shall be controlled by an electric photocell to operate continuously from dusk to dawn. They shall be shielded or erected as to not illuminate the interior of adjacent structures.

In addition to the requirements of this section, all lighting including lighting for non-residential

uses must also meet the provisions of the Liberty Township Zoning Ordinance.

C. Street and Other Signage:

Where deemed necessary by the Township, street and other signage shall be required for developments. Signs shall be placed at intersections and other locations as required by the Township. The design of such signs shall be subject to Township approval and shall meet the requirements of the Pennsylvania Department of Transportation.

A tabular and graphic representation of signage shall be provided on the plans including reference to required specifications. All traffic studies which are required for the justification of signage shall be prepared and submitted with the subdivision or development plan.

Speed limit signs should be placed at intervals determined to be enforceable by the Liberty Township Police Department.

D. Private Streets:

Private streets as the sole means of access to and from a subdivision and land development to and from the public right-of-way are encouraged. Any application involving such a private street shall be approved only at the discretion of the Township under the pretense that the Township will not accept dedication of the private street and the applicant, or an approved Homeowner's Association, will be liable for all maintenance and upkeep of the private street.

1. All subdivision plans approved by the Township under the provisions of this Section shall include the following note and shall be subject to the provisions specified therein:

"Restrictions and/or conditions relating to private streets serving residential lots: Each deed for the transfer or conveyance of any lot shown on the accompanying plat shall contain the following restrictions and/or conditions, which conditions and/or restrictions shall be deemed to be covenants running with the land: (a) the private street shown in the plat depicting the subject lot shall remain a private street, and Liberty Township shall have no duty or obligation, under any circumstances, to accept the dedication of the same as a public road of the Township; (b) the purchasers or owners of the subject lot, and their heirs, personal representatives, successors and assigns, shall be responsible for the construction, maintenance, repair, and snow removal of said private street; (c) so long as the subject private street remains a private street, Liberty Township shall have no duty, responsibility or liability; relative to the construction, maintenance, repair, and snow removal of said private street; (d) no further subdivision of any of the subject lots, or the tract from which the lots have been subdivided, shall be permitted unless and until said private street has been constructed or improved so as to comport in all respects with prevailing Township standards and specifications, has been offered for dedication unto the Township by at least sixty (60%) percent of the owners or purchasers of the lots abutting the subject private street, and has been accepted by the Township as a public road of the Township."

2. There must be full compliance with all other applicable subdivision requirements of the Liberty Township Subdivision and Land Development Ordinance.

3. Notification must be provide to subsequent lot owners that no Township services shall be provided on private streets.

Section 502. Curbs and Gutters.

- A. Where required by the Township following review of the development design standards, curbs shall be installed on both sides of proposed streets. Curbs may also be required on existing streets where they are deemed necessary to control the flow of surface water and regulate traffic.
- B. Curbs may also be required within multi-family and non residential developments.
- C. The construction of vertical curbs shall conform to Township specifications and the requirements of Plain Cement Concrete Curb, as specified in Publication 408 and RC standards of the Pennsylvania Department of Transportation, or as amended. Mountable concrete curb may be used subject to approval by the Township following Consultation with the Engineer and Road Superintendent.
- D. Where a driveway enters a street and as directed by the Township an approved depressed curb section shall be installed. When curbing is to be removed to construct a driveway, the length of the curbing to be removed shall be carried to the nearest expansion joint. If such a joint is more than five (5) feet from the end of the curb removal, the section shall be neatly sawcut.
- E. Curb cut ramps shall be provided at street intersections and at locations as required by the Americans with Disabilities Act of 1990, as most recently amended. Whenever possible, the ramp design shall not direct pedestrians to the center of intersections.
- F. In the event that the requirements for curbing are waived the following may be required:
 1. Drainage swales of dimensions approved by the Township shall be provided.
 2. Shoulders may be required to separate the cartway and the drainage swale.
 3. Additional right of way may be required to accommodate the shoulder and drainage swale.
 4. The Township may require that a maintenance agreement be provided and made part of the approved plan whereby the developer agrees that the individual property owners will be responsible for perpetual maintenance of drainage swales.

Section 503. Sidewalks.

- A. In any proposed subdivision or land development involving ten (10) or more lots or dwelling units with an average lot size or area per dwelling unit of twenty thousand (20,000) square feet or less, or where any subdivision is immediately adjacent to or within one thousand (1,000) feet of any existing or recorded subdivision having sidewalks, sidewalks shall be installed on each side of proposed and existing streets in accordance with Township Specifications.
- B. Sidewalks shall be placed within the right-of-way of the street and shall extend in width from

the right-of-way line toward the curb line.

- C. Sidewalks must be at least four (4) feet wide. In the vicinity of shopping centers, schools, recreation areas and other such facilities, sidewalks must be at least five (5) feet wide and be located within the street right-of-way.
- D. All materials and construction requirements shall be governed by and subject to Liberty Township Specifications and the Pennsylvania Department of Transportation's Specifications Publication 408 as may be amended.
- E. The Township may require the installation of sidewalks, at its sole discretion, where in the opinion of the Township pedestrian safety and/or mobility would be better served by the installation of sidewalks. In certain circumstances it may be desirable that an alternative method of pedestrian circulation be substituted for standard sidewalk construction. These alternative methods can include the installation of walking paths, greenways, bike paths, trails, or similar modes of non-vehicular circulation. In these instances the Developer may submit a site plan depicting the location, layout, dimensions and any other criteria deemed necessary by the Township to evaluate the request for an alternative method. The Township shall review the submitted material and determine if the proposed alternative is acceptable.
- F. If proposed sidewalk is to replace existing sidewalk, the existing sidewalk shall be removed completely. All debris resulting from this process shall become the property of the contractor and shall be disposed of properly.
- G. The plans shall clearly note that perpetual maintenance and repair/replacement shall be the responsibility of the property owner.

Section 504. Sewage Disposal And Water Supply Systems.

- A. Sewage Disposal System:
Design, review and approval of sewage disposal systems shall be as outlined in Article IV
 - 1. The type of sewage disposal shall be consistent with the Township's Official Plan for Sewage Facilities (ACT 537 Plan).
 - 2. Design and construction standards shall be in accordance with the applicable Municipal Authority and shall be subject to their review and approval in accordance with the provisions of this Ordinance.
 - 3. Where private community systems are to be used, it shall be agreed that they shall serve as an interim method of disposal until such time that a public system is available.
 - 4. Construction materials and methods of private community system shall be in accordance with the applicable Municipal Authority, and the Pennsylvania Department of Environmental Protection.
 - 5. All sanitary sewer and water supply systems located in any designed floodplain district shall be flood proofed up to the regulatory flood elevation.
 - 6. All on-site sewage disposal systems shall be installed in accordance with the

Pennsylvania Department of Environmental Protection.

7. In the case of privately owned community systems, prior to approval of a preliminary plan, the developer shall provide an agreement to the Township, which provides for the following:
 - a. Installation of the system in accordance with approved plans.
 - b. Provision of financial surety to cover one hundred ten (110%) percent of installation costs.
 - c. Municipal inspection of construction.
 - d. Completion and submittal of an as-built drawing.
 - e. Assurance that upon availability of a public system that the development will be connected to the public system.
 - f. Provision for guarantee for long term operation and maintenance in accordance with the requirements of the Township per Chapter 71 of the Pennsylvania Department of Environmental Protection's Rules and Regulations.
 8. In the case of community systems that are to be dedicated to the public, construction shall be in accordance with the rules and regulations of the applicable agency or authority.
 9. In the case of community systems that are to be owned by a HOA or similar entity, all documents concerning maintenance, operation and financial obligations shall be submitted to, and approved by, the Township Solicitor.
- B. Water Supply and Distribution Systems:
Design, review, and approval of water supply and distribution systems shall be in accordance with this Ordinance.
1. Design and construction standards shall be in accordance with the applicable Municipal Authority and shall be subject to their review and approval in accordance with the provisions of this Ordinance.
 2. Where private community systems are to be used, it shall be agreed that they shall serve as an interim method of disposal until such time that a public system is available.
 3. Construction materials and methods of private community system shall be in accordance with the Rules and Regulations of the Township or applicable Municipal Authority, and the Pennsylvania Department of Environmental Protection.
 4. In the case of privately owned community systems, prior to approval of a preliminary plan, the developer shall provide an agreement to the Township, which provides for the following:
 - a. Installation of the system in accordance with approved plans.

- b. Provision of financial surety to cover one hundred ten (110%) percent of installation costs.
 - c. Municipal inspection of construction.
 - d. Completion and submittal of an as-built drawing.
 - e. Assurance that upon availability of a public system that the development will be connected to the public system.
 - f. Concurrence that the system meets applicable Pennsylvania Department of Environmental Protection requirements and any applicable requirements of the Townships well ordinance.
5. In the case of community systems that are to be dedicated to the public, construction shall be in accordance with the rules and regulations of the applicable agency or authority.
 6. Provision for guarantee for long term operation and maintenance in accordance with the requirements of the Township.

C. Association for the Operation and Maintenance of Private Systems:

1. When private sewage treatment systems and/or water supply systems are installed by the developer, an association or other organization must be established by the developer to operate and maintain the systems.
2. Any and all legal documents involved in establishing this association or any other organization must be submitted as preliminary plan stage and approved by Liberty Township prior to approval of the Final Plan.
3. Financial surety shall be provided to the Township in the amount to be determined by the Township Engineer in accordance with Chapter 71 of the Pennsylvania Department of Environmental Protection's Rules and Regulations, to ensure operation and maintenance of privately owned wastewater treatment facilities. This must be provided prior to final plan approval.
4. In addition to the requirements of this Section all other applicable requirements of this Ordinance shall be met.

Section 505. Fire Protection.

Fire hydrants or other means of fire protection as approved by the Township shall be provided as an integral part of any public or private community water supply system or as a part of any water system to serve an industrial use. The water system shall be of adequate supply and shall be designed to provide pressure adequate for the use of Fire Hydrants or other approved Fire Protection Systems.

Water supply shall be adequate for the use of Fire Hydrants or other approved Fire Protection Systems. Water supply shall be adequate for fire flow demands. The following represents minimum recommended fire flow requirements. Modification of these requirements shall be

allowed upon review and recommendation of the providing water authority, emergency medical services/fire service agency and Township Engineer:

District Classification	Minimum Fire Flow	Minimum Duration (Hours)	Maximum Hydrant Spacing
Residential Includes: 1 and 2 family dwellings	500 GPM 1893 L/min	1	600' 202 m
Commercial Includes: all commercial uses, hotels, apartments, multiple residence buildings, schools, and colleges	1,000 GPM 3785 L/min	2	330' 101 m
Industrial	1,500 GPM 5678 L/min	4	330' 101 m

The developer shall be required to prepare and submit all necessary engineering studies to ensure that adequate water pressure and volume will be available. A minimum residual pressure of twenty (20) psi shall be maintained at all times.

- A. Fire hydrants shall be installed in accordance with the requirements of the local fire authority. The applicant shall submit proof that the couplings on said hydrants are of a design which is compatible with local fire equipment. Fire hydrants shall conform to the standards of the Local Municipal and Fire Authority and the National Fire Protection Association.
- B. Fire hydrants shall be placed at maximum intervals of not more than six hundred (600) feet and in locations acceptable to the Township and local Fire Authority.
- C. Where deemed necessary, the Township may require submittal of design information for fire protection systems for review and approval. Standards for Fire Protection Systems shall be as specified by the Township.
- D. The developer shall obtain written concurrence of the fire protection system from the local fire authority having jurisdiction over the area.

Section 506. Storm Drainage Systems And Stormwater Management.

Design and construction of storm drainage and stormwater management facilities shall be in accordance with the Township’s Stormwater Management Ordinance which was adopted pursuant to the Monacacy River Watershed Act 167 Plan, Liberty Township Specifications, and PennDOT Publication 408 and Roadway Construction Standards and shall be subject to the review and inspection of Liberty Township and the Township Engineer.

In addition stormwater management plans and reports shall meet the following requirements:

- A. General Requirements:

1. The plan shall show all drainage within the area affecting the subject property, all existing and proposed drainage facilities, all grading proposed for the subject property, as well as the additional plan information required in this Section.
2. All land areas shall be graded to secure proper drainage away from buildings, on-lot sewage disposal facilities, and the like, and to prevent the collection of stormwater in pools. Drainage provisions shall be of such design as to carry surface waters to the nearest practical natural drainage channel, storm sewer system detention basin or other drainage facilities. The landowner or developer shall construct and/or install such drainage structures and/or pipes as are determined necessary by the Township to prevent soil erosion, damage, siltation and to satisfactorily carry off surface water. In the design of storm drainage facilities, special consideration must be given to preventing excess runoff onto adjacent developed or undeveloped properties. In no case may any slope exceeding the normal angle of slippage of the material involved. All slopes must be protected against erosion. In no case may a change be made in the existing topography which would:
 - a. Result in a slope of more than ten (10%) percent within twenty (20) feet of a property line.
 - b. Alter the existing drainage or topography in a way so as to adversely affect adjoining properties.
3. Storm sewers, culverts, bridges, and related drainage installations shall be provided:
 - a. To permit unimpeded flow of natural watercourses.
 - b. To insure adequate drainage of all low points as may be related to streets.
 - c. To intercept stormwater runoff along streets at intervals reasonably related to the extent and grade of the area drained to prevent flow of stormwater across intersections, and to prevent the flooding of intersections during the design storm.
 - d. To insure adequate and impeded flow of stormwater under driveways in, near, or across natural watercourses or drainage swales. Properly sized pipes or other conduits shall be provided as necessary.
 - e. To prevent excessive flow on or across streets, sidewalks, drives, parking areas, and any other paved surface or access way.
 - f. To lead stormwater away from springs.
 - g. Provide adequate drainage away from on-site sewage disposal systems.
4. The stormwater management plan for each subdivision and/or land development shall take into account and provide for upstream areas within the entire watershed in computing discharge quantities, sizing of pipes, inlets and other structures. The runoff from any proposed development shall be subject to evaluation which includes the anticipated runoff from other existing or proposed developments within the same watershed. Stormwater management facilities designed to serve more than one property

or development, in the same watershed are encouraged, in which case consultation with the Township is required prior to design.

5. All natural streams, channels, swales, drainage systems and/or areas of concentration of surfaces water shall be maintained in their existing condition unless alteration is approved by the Township. In any event, all encroachment activities shall comply with Chapter 105 of the Commonwealth of Pennsylvania Department of Environmental Protection, Dam Safety and Waterway Management Rules and Regulations.
6. Man-made structures shall be kept to a minimum and bridges, culverts; or rip-rap shall be constructed to maintain the natural characteristics of the stream and shall meet the approval of the Township.
7. For the purpose of this subsection, streams and intermittent streams are defined as those watercourses on the Liberty Township Zoning Map, the USGS Quadrangle maps of the area, and/or determined as such pursuant to an onsite survey by the Township.
8. Retention/detention basins shall be designed to utilize the natural contours of the land. When such design is impracticable, the construction of the basin shall utilize slopes as shallow as possible to blend the structures into the existing terrain.
9. Any subdivision and/or land development within a Flood Hazard area shall comply with all of the provisions of the Liberty Township Zoning Ordinance and the rules and regulations of the Pennsylvania Department of Environmental Protection.
10. Any water originating, from non-natural sources such as swimming pools, air conditioning units, sump pumps, roof drain or other similar flow shall not be discharged directly onto any street or other public right-of-way used for pedestrian or vehicular access. The Township may require a plan that provides for these discharges.
11. All lots, tracts, or parcels shall be graded to provide proper drainage away from buildings and dispose of the runoff without ponding, and all land within a development shall be graded to drain and dispose of surface water without ponding, except where other arrangements are approved by the Township. Grading shall not be done in such a way so as to divert water onto the property of another landowner without the expressed consent of the Township and the affected landowner.

B. Stormwater Management Plan Requirements:

In addition to the Drainage Plan Requirements in the Adopted Liberty Township Stormwater Management Ordinance, the following requirements apply:

1. A plan showing all pre-development and post-development stormwater flow to and from basins. A plan showing all post-development flows to all inlets, headwalls, swales, channels, and the like. The drainage areas and the design flow to each inlet or structure shall be delineated on a copy of the stormwater management plan where applicable.
2. A map depicting the total watershed. A USGS Quadrangle Map is suitable as the source for such a map. However, the watershed area must be highlighted or otherwise distinguished from other areas outside the watershed.

3. Maps and drawings showing all existing and proposed drainage facilities affecting the subject property.
4. The following stormwater related items shall be included as part of the plan submission:
 - a. Definition of existing on or off-site drainage problems.
 - b. Appropriate stormwater management criteria such as release rate percentage, direct discharge and downstream impact elevation.
 - c. Configuration of the storm sewer and sanitary sewer system layouts.
 - d. Location and layout of the stormwater management system with a detailed description of its proposed design and operation.
 - e. Profiles of all proposed sewers, including elevation, sizes, slopes and materials, at a scale of no less than one (1) inch equal fifty (50) feet horizontal and one (1) inch equal five (5) feet vertical. In addition, a plan (at a smaller scale where necessary) shall be provided which shows the overlay development drainage and grading.
 - f. Locations, dimensions and design details required for the construction of all facilities. All existing and proposed detention/retention basins shall, at a minimum, be shown in plan view and shall include but not be limited to the following information:
 - (1) Emergency spillway crest elevations and widths
 - (2) Embankment crest elevations and widths
 - (3) Outfall structure types, sizes, lengths and elevations
 - (4) Outfall orifice elevations and dimensions
 - (5) Bottom of basin elevation
 - g. Soil percolation test results. Soil testing shall be completed and reported in accordance with the criteria established by the Township Engineer. Specific alternate criteria may be submitted for review and consideration.
 - h. Final provisions for ownership and maintenance of all stormwater related facilities.

C. Standards and Criteria:

1. Stormwater Collection System.

The design of stormwater collection and conveyance facilities shall be governed by the following criteria:

- a. Peak discharge shall be computed using the Rational Formula:

$$Q = C I A$$

Where:

- Q = Peak discharge in cubic feet per second
- C = Runoff coefficient expressed as the ratio of peak runoff rate to the average amount of rainfall over a period of time equal to the time of concentration
- I = Average rainfall intensity in inches per hour for a time equal to the time of concentration
- A = Drainage area in acres

In general, the procedure from the Pennsylvania Department of Transportation, Design Manual, Part 2 shall be followed.

- b. Runoff coefficients shall be computed as a weighted average of conditions which represent maximum development potential on the property. Soil types, ground slope, and storm frequency shall all be considered in the selection of Runoff Coefficients. Reference for the coefficients applied should be provided in the report.
- c. Storm intensity (I) shall be computed as a function of the time of concentration (Tc). A Tc of five (5) minutes shall be used in determining intensity unless the drainage area parameters justify the use of a greater value. Use of a Tc greater than 5 min. shall be as approved by the Township Engineer.
- d. The minimum full flow velocity of any storm sewer or culvert shall be 2.5 feet per second (fps).

e. Storm Frequency.

The following storm frequencies are to be used for design:

- (1) Local Streets - 10 year
- (2) Major Intersections of Local Streets - 25 year
- (3) Collector Streets and Arterial Streets - 50 year

Alternate criteria may be required following recommendation of the Township Engineer. In addition, functional classification of streets, for the purpose of determining storm frequencies, shall be as interpreted by the Township Engineer.

- f. For storm sewers that will be dedicated to the Township, all pipe material shall either be reinforced concrete or smooth lined corrugated polyethylene pipe to be as determined by the Township. Standards as referenced from ASTM or other source acceptable to the Township Engineer shall be specified.
- g. Minimum pipe size for storm sewers shall be fifteen (15) inches in diameter unless otherwise approved by the Township Engineer.
- h. Installation:

- (1) Storm sewers shall be installed a sufficient time in advance of final street paving in order to allow for settlement of the trench.
- (2) Installation shall be in accordance with manufacturers recommendations, PennDOT Publication 408 and RC standards or as specified by the Township Engineer.
- (3) Storm sewers to be dedicated to the Township shall be placed on a minimum of six (6) inches of stone bedding. Stone backfill shall be required to a point of twelve (12) inches minimum over the top of the pipe for pipes which will not be located under streets or parking lots and to the top of finished subgrade for pipes which will be beneath streets or parking lots. Backfill shall be compacted in lifts and shall be subject to inspection by the Township Engineer.
- (4) Minimum cover from the top of the pipe to the top of subgrade shall be twelve (12) inches.
 - i. Safety features shall be incorporated into the storm sewer system as necessary.
 - j. Minimum thickness of any corrugated steel or metal pipe shall be sixteen (16) gage or as otherwise required by the Township for anticipated load conditions.
 - k. Roof and basement drains must not be connected to streets, sanitary or storm sewers or roadside ditches in order to promote overland flow and infiltration/percolation of stormwater.

D. Inlets / Manholes / Junctions:

1. In general, inlets, manholes, grates, covers, frames and the like shall conform to the Pennsylvania Department of Transportation Standard Specifications, Publication 408 and RC Standards. Design shall be performed in accordance with the Pennsylvania Department of Transportation or Federal Highway Administration Standards. Additional alternate criteria may be required following review of the Township Engineer.
 - a. Inlets shall be spaced such that they are not subject to flows higher than five (5) cubic feet per second or at a distance greater than four hundred feet (400) along curbed streets and at low points on sag vertical curves with an inlet on each side of the street. Additional inlets shall be placed at the upper side of street intersections, to prevent stormwater from crossing the intersection. Inlets are not allowed on the intersection radii. In no case shall inlets be placed at a location where they function at less than sixty-five (65%) percent efficiency based on criteria in the PennDOT Design Manual. Design shall be such that the maximum allowable spread of water on streets shall not exceed one-half (1/2) of the travel lane.
 - b. Inlets shall have weep holes placed at the appropriate elevations to drain the bottom of the inlet box and the subgrade prior to placing the base and surface courses.
 - c. Where structures are subject to traffic loads, the structure shall be traffic rated.
 - d. Inlet tops in residential developments shall be bicycle safe unless otherwise approved.

- e. Manholes shall not be placed more than five hundred (500) feet apart. Additionally, manholes shall be placed at points of change in horizontal and/or vertical direction of storm sewers. Inlets may be substituted for manholes where they will serve as a means of intercepting runoff.
- f. If less than a forty-eight (48) inch diameter, curves in pipes or box culverts, without junction are prohibited. Tee joints, elbows, and wyes are always prohibited.
- g. In all cases inlet and catch basin tops shall be designed and installed level with the road surface.

E. Channels and Culverts:

1. Culvert Design.

In cases where drainage is collected by means of a headwall, and inlet or outlet conditions control, the pipe shall be designed as a culvert.

- a. The minimum diameter of the culvert shall be eighteen (18) inches. Design shall be in accordance with the U.S. Federal Highway Administration design procedure.
- b. The maximum HW/D ratio for inlet control shall be 1.25 or such that water surface elevation is one half (1/2) foot below the edge of street grade during a twenty-five (25) year storm event, whichever is more stringent.
- c. Headwalls and endwalls shall be provided for all culverts unless otherwise approved by the Township Engineer. Material shall be reinforced concrete unless otherwise approved.
- d. Culvert pipe and material shall be the same as that required for storm sewers
- e. All applicable nomographs and supporting documentation shall be submitted.

2. Channel Design

- a. Manning's equation shall be used for the design of all open channels. Complete calculations shall be submitted which detail flow, depth, and velocity. For channels and swales, design for Erosion Control must be provided.
- b. All channels shall be designed to prevent erosion of the channel bottom and sides. The flow velocity in all vegetated drainage channels shall not exceed the maximum permissible velocity to prevent soil erosion. Stabilization techniques such as rip-rap, sodding, geo-fabrics and/or premanufactured products shall be utilized where necessary to minimize erosion potential.
- c. The design of swales and channels shall, as a minimum, conform to the design procedures as outlined by (a) The Federal Highway Administration, and (b) The Pennsylvania Department of Environmental Protection, Bureau of Soil and Water Conservation, Erosion and Sediment Pollution Control Manual.

- d. Where swales are installed, and vegetative stabilization has not or will not occur between November 1 and March 1, other means of temporary stabilization shall be provided.
- e. Design criteria for swales and channels shall be the same as that required for storm sewers.

F. Stormwater Management Facilities.

1. General Design Criteria:

- a. Peak discharge and runoff shall be computed using the soil-cover complex method contained in the "Urban Hydrology for Small Water Sheds", Technical Release No. 55, published by the Engineering Division, Soil Conservation Service, United States Department of Agriculture. Alternate methodology may be used subject to approval by the Township Engineer.
- b. For the purposes of predevelopment flow rate determination, undeveloped land shall be considered as "meadow" good condition, unless the natural ground cover generates a lower runoff curve number (RCN) or Rational "C" value (e.g., forest).
- c. Pre-existing, pervious or impervious areas, where stormwater management controls have been previously provided, may be included as existing conditions in pre-development runoff calculations. However, if stormwater management controls have not been previously provided, ground cover shall be considered as meadow.
- d. Stormwater shall not be re-routed or concentrated in a manner which is inconsistent with downstream conditions or where downstream properties are likely to be affected. In addition the proposed stormwater discharge at the perimeter of the site shall not exceed the capacity of any existing facility nor shall it alter the pre-development flow characteristics.

All new concentrated discharges of stormwater onto adjacent properties shall be within existing storm sewers or channels. The Township may require written acknowledgment or easement from adjacent property owners in the event that these conditions are not met.

- e. Liberty Township has the authority to require that computed existing runoff rates be reconciled with field observations and conditions. If the designer can substantiate through actual physical calibration that more appropriate runoff and time-of-concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendations of the Liberty Township Engineer. Calibration shall require detailed gauge and rainfall data for the particular site in question.
- f. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. Liberty Township reserves the right to disapprove any design that would result in the occupancy or continuation of an adverse hydrologic or hydraulic condition within the watershed.

G. Detention Basins.

1. Basin Design Criteria

- a. Basins shall provide control of post development peak runoff rates as specified in the Township Stormwater Management Ordinance.
- b. In locations where known drainage or flooding problems exist and where stormwater management has not been previously provided and it is determined that the proposed development may contribute to the problem it may be recommended by the Township Engineer that the discharge of basins or other stormwater management peak flow rate controls be such that the post-development release rate from storms up to the ten (10) year frequency be limited to the pre-development flow rate from a two (2) year frequency storm.
- c. The Modified PULS Routing technique or other method approved by the Township Engineer shall be used for routing computations.

2. Basin Construction Standards

- a. Basins shall not be located over any existing or proposed utility lines.
- b. The maximum slope of earthen embankments shall be four (4) to one (1), with three (3) to one (1) allowed following review and recommendation from the Township Engineer. The top or toe of any slope shall be located a minimum of fifteen (15) feet from adjacent property lines, except for a downstream property line where there shall be sufficient additional distance for energy dissipation and for access of maintenance equipment but in no case shall be less than forty (40) feet unless approved otherwise by the Township. Greater slopes may be allowed with the provision of a design basis which considers fill material and stabilization where approved by the Township Engineer. In areas which are not easily accessible for maintenance, side slopes shall not exceed five (5) to one (1).
- c. Where possible the side slopes and basin shape shall blend with the natural topography.
- d. The minimum top width of detention basin berms shall be six (6) feet.
- e. All basins shall have provisions for de-watering so as not to create unmaintainable conditions. The minimum grade of the basin floor shall be two (2%) percent to insure proper drainage towards the outlet structure. One (1%) percent may be allowed following review and recommendation of the Township Engineer or if a paved or stabilized low flow channel is provided.
- f. All submitted basin plans shall indicate the construction specifications and compaction requirements to be used during construction. All earth fill dams shall be designed and certified by a registered professional engineer. Construction specifications shall be reviewed and approved by the Township Engineer.
- g. A cutoff trench shall be excavated along the centerline of any dam on an earth fill embankment. The minimum depth shall be three (3) feet. The minimum bottom

- width shall be ten (10) feet or wide enough to permit operation of compaction equipment.
- h. A minimum of six (6) inches of topsoil shall be placed on all areas affected by the basin construction (i.e. basin floor, side slopes, top of berm, and the like) to allow for the establishment of vegetation.
 - i. All basins shall be stabilized using methods acceptable to the USDA Soil Conservation Service.
 - j. The maximum water depth of a finished detention basin (measured from the lowest point in the basin floor to the crest of the emergency spillway) shall not exceed eight (8) feet unless otherwise approved by the Township Engineer.
 - k. Fencing: Any stormwater management facility that is designed so that it detains water on a temporary or permanent basis may be subject to the following fencing regulations:
 - (1) Facilities with water depths exceeding four (4) feet or greater may require fencing, if a public safety hazard is deemed possible by the Township Supervisors. In determining the need for fencing, the Township Supervisors shall consider at a minimum, the following:
 - (a) Depth of pool
 - (b) Detention or dewatering time of the facility
 - (c) Accessibility of the facility
 - (d) Proximity of the facility to existing or potential residential development or other development that would expose public to safety risks.
 - (2) All gates opening through a fence enclosure shall be equipped with a self-closing and self locking device for keeping the gate securely closed at all times.
 - (3) The Liberty Township Supervisors may require the installation of a shrub barrier in lieu of a fence. The Township reserves the right to review and approve the proposed shrubbery for this application.
 - (4) The fencing type, height and style shall be reviewed and approved at the discretion of the Township.
 - l. A minimum of one (1) foot freeboard shall be provided above the basin water surface elevation during a one hundred (100) year frequency storm.
 - m. Minimum floor elevations for all structures shall be two (2) feet (minimum) above the basin water surface elevation during a one hundred (100) year frequency storm. If basements will be provided, detailed calculations and water proofing design shall be provided which addresses the effects of stormwater on the structure.

- n. The Township may, upon recommendation of the Township Engineer, impose additional requirements on earth fill dams for the safety and welfare of the Township.
 - o. For sites of geologic concern, a geotechnical analysis and design of the site as it relates to the proposed basin shall be provided.
3. Emergency Spillway Standards:
- a. Minimum freeboard, or the distance between the design flow elevation and the top of the settled basin embankment, shall be one (1) foot for a one hundred (100) year frequency storm.
 - b. Emergency spillway design should be based on a one hundred (100) year design storm when neglecting the capacity of the outlet structure and outfall culvert.
 - c. Emergency spillways shall be constructed on undisturbed earth, where possible. Emergency spillways shall be constructed of vegetated earth, reinforced concrete or concrete mound slabs. Emergency spillways shall NOT discharge stormwater over earthen fill or other easily erodible material without adequate protection against soil erosion. Detailed calculations and design shall be submitted. Downstream channels shall be of adequate design to convey flows from the emergency spillway to an existing stream, storm sewer or other approved discharge point.
4. Outlet Pipes and Structures.
- The following measures shall be incorporated into the design and construction of all outlet structures and pipes. Supporting calculations and drawings shall be submitted.
- a. Antiseep collars shall be installed around all outlet pipes through embankments. The antiseep collars and their connections to the pipe barrel shall be watertight. Design calculations in accordance with the USDA Soil Conservation Service shall be submitted.
 - b. Temporary sedimentation controls shall be provided during construction to prevent the flow of sediment-laden runoff through the basin outlet pipe. Such measures may include temporary riser pipes, rock-filled gabions, plywood stand boxes, silt fences, skimmers and the like. Design of such measures shall comply with the requirements of the Adams County Conservation District.
 - c. Energy dissipation shall be provided at the outlet of detention basins, along outfall channels, and at the discharge end of all conveyance pipes.
 - d. Outlet control structures shall be constructed to prevent flotation.
 - e. Outlet control structures shall be equipped with a childproof, non-clogging, removable, trash rack for all openings larger than twelve (12) inches in diameter.
 - f. All pipes through earthen embankments shall be of a type, which watertight joint systems are available. Outfall pipes and culverts shall be reinforced concrete unless otherwise approved by the Township Engineer.

5. Where required by the Township an analysis shall be conducted of the conditions downstream of the discharge from the property proposed for development. Such analysis shall consider existing and proposed flow rates, velocities, potential for erosion, and expected water surface elevations in relation to existing structures or properties. Such downstream analysis shall be submitted to the Township Engineer and where deemed necessary, to the Adams County Conservation District.

H. Subsurface Disposal / Retention Basin Systems.

1. Installation Requirements

- a. The following procedures and materials shall be required for all subsurface facilities:
 - (1) Excavation for infiltration facility shall be performed with equipment which will not compact the bottom of the seepage bed, infiltration trench or like facility.
 - (2) The bottom of the bed or trench shall be roughened prior to placement of aggregate.
 - (3) Only clean, open graded aggregate, free of fines, shall be used in subsurface systems.
 - (4) The top, sides, and bottom of all seepage beds, infiltration trenches, or like facilities shall be covered with a drainage filtration fabric which meets the requirements of the Pennsylvania Department of Transportation, Publication 408 for Class I Geofabrics.
 - (5) All pipes leading into subsurface drainage systems shall be equipped with screening devices to prevent debris from entering the system.
 - (6) The bottom of all subsurface disposal or retention basin systems shall be a minimum of twelve (12) inches above the limiting zone as established by the site specific soil profile. Depths of less than twelve (12) inches above the limiting zone will only be allowed where the developer provides a written report certified by a registered professional engineer, geologist, or hydrogeologist, which certifies that the condition will not create an environmental hazard.
 - (7) Inspection points, cleanouts and overflow facilities shall be provided for subsurface disposal systems.
 - (8) All subsurface stormwater disposal systems or retention basins shall be located a minimum of one hundred (100) feet from any potable water wells.

I. Basins with Permanent Pools (Wet Basins):

1. Basins designed to have a permanent pool of water stored in the reservoir shall conform to the design standards of detention or retention basins. Where deemed to be necessary, after consulting with the Township Engineer, the Township may impose additional criteria for design and construction of wet basins. Earthen embankment designs shall be sealed by a registered professional engineer experienced in such design.

2. Embankments shall have a slope not exceeding four (4) horizontal to one (1) vertical.
3. Adequate stabilization shall be provided to control anticipated erosion due to wave or water level fluctuation.
4. Where necessary wet pond embankments shall be protected from rodent intrusion.

Section 507. Erosion and Sedimentation Control.

All development applications that involve grading or excavation shall conform to the requirements of the Adams County Conservation District or the Pennsylvania Department of Environmental Protection pertaining to erosion and sedimentation control. It shall be the responsibility of the applicant to secure approval of the Adams County Conservation District or the Department of Environmental Protection as is appropriate. Approval of plans by the Township shall not be construed as approval under such regulations.

In addition, the construction of erosion and sediment control facilities and land grading shall conform to the standards of this Ordinance.

Section 508. Easements.

Easements shall be provided where stormwater or surface water drainage facilities are existing or proposed, whether located within or beyond the boundaries of the property. Easement for maintenance of pipes and culverts shall run from outlet to inlet. Swales which receive runoff from more than one lot must be provided with an easement.

The plan shall comply with the requirements of the Township Subdivision and Land Development Ordinance and shall be adequately designed to provide area for (a) the collection and discharge of water, (b) the maintenance, repair, and reconstruction of the drainage facilities and, (c) the passage of machinery for such work.

Easements shall include a description of an ownership and maintenance program, in a recordable form, that clearly sets forth responsibility for all temporary and permanent stormwater management facilities. In the case of Lot Boundaries in Subdivisions, it shall be the property owner's responsibility to maintain adequate drainage from the property to the point of access to the public right-of-way or to privately owned storm sewer drainage facilities.

Easements shall also conform to the requirements of this ordinance.

Section 509. Floodplains.

- A. All stormwater management plans shall conform with the Floodplain Standards specified in other applicable Township Ordinances, Regulations, or codes.
- B. The downstream toe of any embankments shall be located outside of any designated floodway. In the absence of a designated floodway the toe of the embankment shall be located a minimum of sixty (60) feet from the top of any stream bank.

- C. Where the embankment of any stormwater management facility is shown to be located within a designated floodplain as indicated on the Township Flood Insurance Rate Map, the following additional information shall be provided.
1. Calculations shall be submitted to verify that the emergency spillway will be capable of passing the one hundred (100) year flood flows associated with the floodplain as referenced from the Flood Insurance Rate Map as prepared by the Federal Emergency Management Agency or in the absence of detailed flow data in the Federal Emergency Management Agency Study, the applicant shall submit calculations, as prepared by a registered Professional Engineer, to substantiate such design. The calculations shall be reviewed by the Township Engineer. If determined to be necessary by the Township to protect downstream property, such calculations shall include a dam breach analysis prepared in accordance with criteria established by the Pennsylvania Department of Environmental Protection, Bureau of Waterways Engineering. In addition, the Township may refer such design to the Pennsylvania Department of Environmental Protection where determined to be necessary.
 2. Design drawings sealed by a registered Professional Engineer which indicate protection from flood flows associated with the one hundred (100) year flood plain.
 3. All requirements of the Township Subdivision and Land Development Ordinance relating to structures within flood plains shall be met.
 4. Calculations to indicate that the embankment will not cause an increase in one hundred (100) year flood water surface elevation.
 5. Slope protection shall be incorporated into all embankments, for earthen embankments this may include keyed rip-rap, geogrid, or other approved method. Design of such stabilization shall be certified by a registered geo-technical engineer.

Section 510. Underground Utility Lines.

Electric, telephone, and all other utility facilities shall be installed underground, and shall be flood proofed up to the regulatory flood elevation. The developer shall be required to obtain a letter from the appropriate utility company confirming that the developer has entered into an agreement to provide for an underground electric and telephone system in accordance with the Pennsylvania Public Utility Commission Investigation Docket #99, as amended, or has obtained a waiver from said Pennsylvania Public Utility Commission to allow overhead electric and telephone facilities.

Section 511. Petroleum Lines.

When any petroleum or petroleum products transmission line traverses a Land Development, the developer shall confer with the applicable transmission or distributing company to determine the minimum distance which shall be required between each dwelling unit and the centerline of such petroleum or petroleum products transmission line.

Section 512. Natural Gas Lines.

The minimum distance from a natural gas line to a dwelling unit shall be as required by the applicable transmission or distributing company, or as shall be required by the applicable regulations issued by the Department of Transportation under the Natural Gas Pipe Line Safety Act of 1968, as amended, which ever is greater

Section 513. Provision for Requirement of Lands for Recreation and Other Public Sites.

- A. In the approval of subdivision and land development plans, the Township shall consider the need for appropriately sized recreational facilities and open space.
- B. Recreational facilities shall be provided in accordance with the requirements of this Ordinance.

Section 514. Water Areas.

In a development abutting a lake, river, or other significant water body, the Board of Supervisors, upon consultation with the Planning Commission, may request the dedication or reservation of:

- A. Any title to the water body the developer may possess beyond the wharf or dock line for public use.

Section 515. Reservations.

On sites for eventual public acquisition, no building development is permitted during the period of reservation. Said period of time shall not extend more than eighteen (18) months without the consent of the developer. Such reservations shall be noted on the Final Plan.

Section 516. Completion of Improvements or Guarantee Thereof; Prerequisite to Final Plan Approval.

- A. Completion of Improvements.
 - 1. No subdivision and/or land development application shall be finally approved unless the streets shown on such plan have been improved to a mud-free or otherwise permanently passable condition, or improved as required by this Ordinance and any walkways, curbs, gutters, street lights, fire hydrants, shade trees, water mains, sanitary sewers, storm sewers and other improvements as required by this Ordinance have been installed in accordance with this Ordinance. In lieu of the completion of any improvements required as a condition for Final Plan approval, including improvements or fees required, the developer shall deposit financial security with the Township in an amount sufficient to cover the costs of such improvements or common amenities including, but not limited to, roads, storm water detention and/or retention basins and other related drainage facilities, recreational facilities, open space improvements, or buffer or screen plantings which are or may be required.
 - 2. When requested by the developer, in order to facilitate financing, the Board of Supervisors shall furnish the developer with a signed copy of a resolution indicating approval of the Final Plan contingent upon the developer obtaining a satisfactory financial security. The Final Plan (record plan) shall not be signed nor recorded until the financial improvements agreement is executed (where required). The resolution or letter

of contingent approval shall expire and be deemed to be revoked if the financial security agreement is not executed within ninety (90) days unless a written extension is granted by the Board of Supervisors. Such extension shall not be unreasonably withheld and shall be placed in writing at the request of the landowner or developer.

B. Completion Guarantee.

1. To satisfy the completion of improvements required as a condition for the final approval of the Subdivision and/or Land Development Plan as set forth in this Ordinance, the landowner or developer shall deposit financial security acceptable to the Board of Supervisors in an amount sufficient to cover the costs of such improvements, estimated, calculated and determined as set forth below.
2. Without limitation as to other types of financial security which the Township may approve, which approval shall not be unreasonably withheld, Federal or Commonwealth chartered lending institution irrevocable letters of credit and restrictive or escrow accounts in such lending institutions shall be deemed acceptable financial security.
3. Such financial security shall be posted with a bonding company or Federal or Commonwealth chartered lending institution chosen by the party posting the financial security, provided said bonding company or lending institution is authorized to conduct such business with the Commonwealth.
4. Such bond or other security shall provide for, and secure to the public, the completion of any improvements, which may be required on or before the date fixed in the formal action of approval or accompanying agreement for completion of the improvements.
5. The amount of financial security to be posted the completion of the required improvements shall be equal to one hundred ten (110%) percent of the cost of completion estimated as of ninety (90) days following the date scheduled for completion by the landowner or developer. The Township may adjust the amount of the financial security annually, by comparing the actual cost of the improvements which have been completed and the estimated cost for the completion of the remaining improvements as of the expiration of the 90thday after either the original date scheduled for completion or a rescheduled date of completion. Subsequent to said adjustment; the Township may require the landowner or developer to post additional security in order to assure that the financial security equals said one hundred ten (110%) percent. Any additional security shall be posted by the landowner or developer in accordance with this subsection.
6. The amount of financial security required shall be based upon an estimate of the cost of completion of the required improvements, submitted by a landowner or developer and prepared by a professional engineer licensed as such in this Commonwealth and certified by such engineer to be a fair and reasonable estimate of such cost. The Township, upon the recommendation of the Township Engineer, may refuse to accept such estimate for good cause shown. If the landowner or developer and the Township are unable to agree upon an estimate, then the estimate shall be recalculated and re-certified by another engineer licensed as such in this Commonwealth and chosen mutually by the Township and the landowner or developer.

The estimate certified by the third engineer shall be presumed fair and reasonable, and shall be the final estimate. In the event that a third engineer is so chosen, fees for the

services of said engineer shall be paid equally by the Township and the landowner or developer.

7. If the party posting the financial security requires more than one (1) year from the date of posting of the financial security to complete the required improvements, the amount of financial security may be increased by an additional ten (10%) percent for each one (1) year period beyond the first anniversary date from posting of financial security or to an amount not exceeding one hundred ten (110%) percent of the cost of completing the required improvements as reestablished on or about the expiration of the preceding one (1) year period by using the above procedure.
8. In the case where development is projected over a period of years, the Board of Supervisors may authorize submission of final plans by section or stages of development as it finds essential for the protection of any finally approved section of the development. Each phase must consist of a minimum twenty five-percent (25%) of the entire development area.
9. As the work of installing the required improvements proceeds, the party posting the financial security may request the Board of Supervisors to release or authorize the release, from time to time, such portions of the financial security necessary for payment to the contractor or contractors performing the work. Any such requests shall be in writing addressed to the Board of Supervisors who shall have forty-five (45) days from receipt of such request within which to allow the Township Engineer to certify, in writing, to the Board of Supervisors that such portion of the work upon the improvements has been completed in accordance with the approved plan.

Upon such certification, the Board of Supervisors shall authorize release by the bonding company or lending institution of an amount as estimated by the Township Engineer fairly representing the value of the improvements completed or, if the Board of Supervisors shall be deemed to have approved the release of funds as requested. The Board of Supervisors may, prior to final release at the time of completion and certification by its engineer, require retention of ten (10%) percent of the estimated cost of the aforesaid improvements.

10. Where the Board of Supervisors accepts dedication of all or some of the required improvements following completion, the Board may require the posting of financial security in the form of a maintenance bond to secure structural integrity improvements of said as well as the functioning of said improvements in accordance with the design and specifications as depicted on the Final Plan for a term not to exceed eighteen (18) months from the date of acceptance of dedication.

Said financial security shall be of the same type as otherwise required in this section with regard to installation of such improvements, and the amount of the financial security shall not exceed fifteen (15%) percent of the actual cost of installation of said improvements.

11. If water mains or sanitary sewer lines, or both, along with apparatus or facilities related thereto, are to be installed under the jurisdiction and pursuant to the rules and regulations of a public utility or municipal authority separate and distinct from the Township, financial security to proper completion and maintenance thereof shall be posted in accordance with the regulations of the controlling public utility or municipal

authority and shall not be included within the financial security as otherwise required by this section.

12. If financial security has been provided in lieu of the completion of improvements required as a condition for the Final Plan approval, the Township shall not condition the issuance of building, grading or other permits relating to the erection or placement of improvements, including buildings, upon the lots or land as depicted upon the Final Plan upon actual completion of the improvements depicted upon the approved Final Plan. Moreover, if said financial security has been provided, occupancy permits for any building of buildings to be erected shall not be withheld following the improvement of the streets providing access to and from existing public roads to such building or buildings to a mud-free or otherwise permanently passable condition, as well as the completion of all other improvements as depicted upon the approved Final Plan, either upon the lot or lots or beyond the lot or lots in question if such improvements are necessary for the reasonable use of or occupancy of the building or buildings.
13. Failure to complete any construction or development of the proposed subdivision or land development within five (5) years following the approval of a final plan by the Township shall automatically render the approval of the plat null and void, unless an extension of time has been requested in writing by the applicant and a written approval granted by the Liberty Township Board of Supervisors.

Further, failure of the applicant to comply with the requirements of Section 508(4) of the "Pennsylvania Municipalities Planning Code, as amended {53 P.S. 10508(4)}, the contents of which are also hereby incorporated herein by reference, shall subject the subdivision or land development to any and all changes in zoning, subdivision and other governing ordinances enacted by the Township subsequent to the date of the initial preliminary plan submission.

C. Release from Improvement Bond.

1. When the landowner or developer has completed all of the necessary and appropriate improvements, the landowner or developer shall notify the Board of Supervisors, in writing, by certified or registered mail, of the completion of the aforesaid improvements and shall send a copy thereof to the Township Engineer. The Board of Supervisors shall, within ten (10) days after receipt of such notice, direct and authorize the Township Engineer to inspect all of the aforesaid improvements. The Township Engineer shall, thereupon, file a report, in writing, with the Board of Supervisors, and shall promptly mail a copy of the same to the landowner or developer by certified or registered mail. The report shall be made and mailed within thirty (30) days after receipt by the Township Engineer of the aforesaid authorization from the Board of Supervisors. Said report shall be detailed and shall indicate approval or rejection of said improvements, either in whole or in part, and if said improvements, any portion thereof, shall not be approved or shall be rejected by the Township Engineer, said report shall contain a statement of reasons for such non-approval or rejection.
2. The Board of Supervisors shall notify the landowner or developer, within fifteen (15) days of receipt of the Township Engineer's report, in writing by certified or registered mail of the action of the Board of Supervisors with relation thereto.
3. If the Board of Supervisors or the Township Engineer fails to comply with the time

limitation provisions contained herein, all improvements will be deemed to have been approved and the landowner or developer shall be released from all liability, pursuant to its performance guaranty bond or other security agreement.

4. If any portion of the said improvements shall not be approved or shall be rejected by the Board of Supervisors, the landowner or developer shall proceed to complete the same and, upon completion, the same procedure of notification, as outlined herein, shall be followed.
5. Nothing herein, however, shall be construed in limitation of the landowner's or developer's right to contest or question by legal proceedings or otherwise, any determination of the Board of Supervisors or the Township Engineer.
6. Where herein reference is made to the municipal engineer, he shall be a duly registered professional engineer employed by the municipality or engaged as a consultant thereto.
7. The municipality may prescribe that the applicant shall reimburse the municipality for the reasonable and necessary expense incurred in connection with the inspection of improvements. The applicant shall not be required to reimburse the governing body for any inspection which is duplicative of inspections conducted by other governmental agencies or public utilities.

The burden of proving that any inspection is duplicative shall be upon the objecting applicant. Such reimbursement shall be based upon a schedule established by ordinance or resolution. Such expense shall be reasonable and in accordance with the ordinary and customary fees charged by the municipality's professional consultant for work performed for similar services in the community, but in no event shall the fees exceed the rate or cost charged by the professional consultant to the municipality for comparable services when fees are not reimbursed or otherwise imposed on applicants.

- a. The governing body shall submit to the applicant an itemized bill showing the work performed in connection with the inspection of improvements performed, identifying the person performing the services and the time and date spent for each task. In the event the applicant disputes the amount of any such expense in connection with the inspection of improvements, the applicant shall, no later than thirty (30) days after the date of transmittal of a bill for inspection services, notify the municipality and the municipality's professional consultant, that such inspection expenses are disputed as unreasonable or unnecessary and shall explain the basis of their objections to the fees charged, in which case the municipality shall not delay or disapprove a request for release of financial security, a subdivision or land development application or any approval or permit related to development due to the applicant's dispute of inspection expenses. Failure of the applicant to dispute a bill within thirty (30) days shall be a waiver of the applicant's right to arbitration of that bill under this section.

- (1) Subsequent to the final release of financial security for completion of improvements for a subdivision or land development, or any phase thereof, the professional consultant shall submit to the governing body a bill for inspection services, specifically designated as a final bill. The final bill shall include inspection fees incurred through the release of financial security.

- b. If the professional consultant and the applicant cannot agree on the amount of

expenses which are reasonable and necessary, then the applicant shall have the right, within forty-five (45) days of the transmittal of the final bill or supplement to the final bill to the applicant, to request the appointment of another professional consultant to serve as an arbitrator. The applicant and professional consultant whose fees are being challenged shall by mutual agreement, appoint another professional consultant to review any bills the applicant has disputed and which remain unresolved and make a determination as to the amount thereof which is reasonable and necessary. The arbitrator shall be of the same profession as the professional consultant whose fees are being challenged.

- c. The arbitrator so appointed shall hear such evidence and review such documentation as the arbitrator in his or her sole opinion deems necessary and shall render a decision no later than fifty (50) days after the date of appointment. Based on the decision of the arbitrator, the applicant or the professional consultant whose fees were challenged shall be required to pay any amounts necessary to implement the decision within sixty (60) days. In the event the municipality has paid the professional consultant an amount in excess of the amount determined to be reasonable and necessary, the professional consultant shall within sixty (60) days reimburse the excess payment.
- d. In the event that the municipality's professional consultant and applicant cannot agree upon the arbitrator to be appointed within twenty (20) days of the request for appointment of an arbitrator, then, upon application of either party, the President Judge of the Court of Common Pleas of the judicial district in which the municipality is located (or if at the time there be no President Judge, then the senior active judge then sitting) shall appoint such arbitrator, who, in that case, shall be neither the municipality's professional consultant nor any professional consultant who has been retained by, or performed services for, the municipality or the applicant within the preceding five years.
- e. The fee of the arbitrator shall be paid by the applicant if the review fee charged is sustained by the arbitrator, otherwise it shall be divided equally between the parties. If the disputed fees are found to be excessive by more than five thousand dollars (\$5,000), the arbitrator shall have the discretion to assess the arbitration fee in whole or in part against either the applicant or the professional consultant. The governing body and the consultant whose fees are the subject of the dispute shall be parties to the proceeding.

D. Inspection of Improvements.

1. Construction of all improvements shall be subject to inspection for conformity with this Ordinance and the approved plans.
 - a. Construction of all improvements covered by this Ordinance are subject to inspection by the Township or its authorized representative.
 - b. Where inspection of improvements is required to determine compliance with approved plans, the cost and fees for said inspection shall be paid by the developer in accordance with the fee schedule as adopted by the Township.
 - c. No person shall interfere with or obstruct the ingress or egress to or from any such

site or premises by an authorized representative or agent of the Township of Liberty engaged in the inspection of work for compliance with the approved plans.

E. As Built Plan.

1. Upon completion of improvements and approval of same by the Township, the landowner or developer shall submit to the Board of Supervisors, a set of As Built Plans and profiles in accordance with the requirements of this Ordinance. In the event the As Built Plan is not submitted in complete and accurate form, all funds being withheld by means of a completion guarantee shall not be released, until such plan has been satisfactorily completed.
2. The As Built Plan shall be reproducible and drawn to the same scale as the Final Plan, and shall be certified by the developer's Engineer or Surveyor and approved by the Township Engineer.
3. Said Plan shall indicate the actual location, dimensions and/or elevations of all completed improvements, including but not limited to those set forth in this Ordinance.

Section 517. Remedies To Effect Completion of Improvements.

In the event that any improvements which may be required have not been installed as provided in the subdivision and land development ordinance, or in accord with the approved final plat, the governing body of the municipality 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 governing body of the municipality 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 moneys 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 improvements covered by such security, and not for any other municipal purpose.

Section 518. Dedication and Acceptance of Improvements.

Upon completion of the construction of improvements in accordance with the approved subdivision and/or land development plan, the following conditions shall apply to any offer of dedication of the same and the acceptance thereof:

- A. The Board of Supervisors shall have no obligation to take over and make public any street, or other improvement in or abutting a subdivision and/or land development. If the Board of Supervisors elect to accept an offer of dedication, such acceptance shall not occur unless and until:
 1. The required improvements, monuments and markers as shown on the approved Subdivision and/or Land Development Plan shall have been certified by the Township Engineer as having been constructed and installed in accordance with the provisions of this Ordinance, and other ordinances, codes, regulations, plans and maps of the Township; and accurately delineated in an As Built Plan.

2. A maintenance guarantee is provided through the posting of financial security, such as that deemed to be acceptable to the Township. Such guarantee shall assure the structural integrity of required improvements as well as the functioning of said improvements, in accordance with the design and specifications as depicted on the approved Final Plans for a term not to exceed eighteen (18) months from the date of acceptance of dedication. Said financial security shall be in an amount equivalent to fifteen (15) percent of the actual cost of installation of the required improvements.
 3. A deed or deeds of dedication for all improvements and a complete boundary description, prepared and executed by the landowner or developer in accordance with be presented to the Board of Supervisors, together with a certificate from the contractor or contractors evidencing the payment of all labor and material costs, and a policy of title insurance insuring the fee title to the said improvements as free and clear of all liens and encumbrances and other objections to the title.
 4. Any offer of a deed of dedication must be accompanied by a maintenance bond and the As Built Plan(s) and shall be submitted at least ninety (90) days prior to the anticipated date for the acceptance of the deed of dedication.
- B. The Board of Supervisors shall have no responsibility with respect to any improvements, not with standing any public use there of, unless and until such improvements are accepted for dedication by duly enacting or adopting an Ordinance or Resolution therefore.

Section 519. Maintenance Guarantee.

Where the Board of Supervisors accepts dedication of all or some of the required improvements following completion, the Board of Supervisors shall require the posting of financial security to secure structural integrity of said improvements as well as the functioning of said improvements in accordance with the design and specifications as depicted on the Final Plan for a term not to exceed eighteen (18) months from the date of acceptance of dedication. Said financial security shall be of the same type as otherwise required in this section with regard to installation of such improvements, and the amount of the financial security shall not exceed fifteen (15%) percent of the actual cost of installation of said improvements.

Defective improvements include any defect in material or workmanship that was latent in character and not discernible at the time of final inspection or acceptance by the Township and/or any damage to improvements by reason of the settling of ground, base or foundation thereof.