ARTICLE VI

PUBLIC IMPROVEMENTS AND DESIGN STANDARDS

§ 14-601. General

The public improvements required by this Chapter shall be installed to the standards as identified in the following sections. Prior to the start of installation of any, and all, improvements, the developer, or his contractor, shall notify the Township at least forty-eight (48) hours in advance, in order to schedule the inspection of such installation. The Township Engineer shall inspect all work before backfilling, before spreading subbase or applying base course to any street, or before covering any other structures that are part of the improvements, and may order corrections be made to bring it to compliance with the final approved plans. The Township shall reinspect the work to assure that corrections have been made before ordering the contractor to proceed.

When the installation of all required improvements have been completed, the developer shall follow the procedure as identified in Article IV of this Chapter.

A. General Standards: The standards outlined in this Chapter and depicted in exhibits referenced herein, shall be applied by the Township staff, the Planning Commission and the Board of Supervisors in evaluating plans for proposed subdivisions and land developments. The standards outlined herein shall be considered minimum standards, and the Planning Commission or Board of Supervisors may request more restrictive standards where the health, safety, and welfare of Township residents is a concern.

B. Natural and Historic Features: Every measure shall be taken to insure, insofar as possible, the preservation of natural amenities and historic, natural, and man-made features, areas, and structures, deemed worthy of such preservation by the Planning Commission and Board of Supervisors, and public access to such features where appropriate.

C. Coordination of Development: The design of proposed subdivisions and land developments shall be comparable in scale and building materials with existing nearby development and physiography so that the proposed subdivision and land development may blend in with the existing development and/or physiography.

D. Conformance: The design of proposed subdivisions and land developments shall conform to the standards outlined in this Chapter and with the standard engineering details labeled Standard Details, Exhibits #2 through 22, included as exhibits to this Chapter. In addition, all proposed subdivisions and land developments shall conform to the community goals and objectives of the Center Township Comprehensive Development Plan, to all applicable land use regulations in effect at the time of final approval, to the official map and to the regulations of any

Federal or State agency with jurisdiction over any aspect of the proposal being reviewed.

§ 14-602. Lots

A. Cul-de-sac Streets: No more than twenty-five (25) residential lots shall be permitted on a cul-de-sac street, and such cul-de-sac street shall not exceed one thousand feet (1,000') in length.

B. Lot Size: All lots shall conform to the Township Zoning regulations (Chapter 20) in area, minimum width at building line and configuration as outlined therein.

C. Access: Every lot shall abut a public or private street with the minimum frontage as required by the zoning district in which the lot is located. Flag lots may abut a public or private street with a minimum frontage of fifty feet (50').(*Ord. 2007-02-03, 2/14/07, §1*)

D. Through Lots: Double frontage lots shall not be permitted, except that where frontage occurs along limited access or arterial highways, lots may face on an interior street and back on such thoroughfares to which direct access shall not be permitted.

E. Lot Lines: Lot lines shall be approximately at right angles or radial to the street lines.

F. Corner Lots: Corner lots shall be proportionately larger than other lots in order to meet required building setbacks from both streets.

G. Building Setback Lines: The building setback lines must conform to the applicable zoning provisions for the district in which the subdivision is proposed.

H. Solar Consideration: To help provide access to solar concerns, developers shall be sensitive to solar planning which shall be considered a purpose of this Chapter. Portions of this Chapter (lot access, sidewalks, screening, street trees) may be recommended for modification by the Planning Commission and approved by the Board of Supervisors in consideration of the following definitions, where appropriate:

   1. Solar Energy: Radiant energy received either directly or indirectly from the sun at wavelengths suitable for conversion into thermal, chemical or electric energy.

2. Solar Skyspace: The space between a solar collector (passive or active) and the sun which must remain unobstructed in order to permit efficient utilization of the solar energy system.

3. Solar Skyspace Easement: A right expressed as an easement covenant, condition or other property interest, in any deed or other instrument executed by, or on behalf of, any landlord which protects the solar skyspace of an actual, proposed or designated solar collector at a described location by prohibiting or limiting activities or land uses that interfere with access to solar energy.

4. Underground Structure: Any completed building that was designed to be built partially, or wholly, underground; a completed structure which was not intended to serve as a substructure or foundation for a building. Four (4) types of underground structures are recognized:

   a. Elevational: Wall exposed.

   b. Atrium or courtyard.

   c. Penetrational: Wall openings.

   d. Chamber.

§ 14-603. Streets, Curbs and Sidewalks

A. General Street Design Requirements:

1. Proposed streets shall be planned with regard to topographic conditions (diagonally across contours where slopes are in excess of fifteen percent [15%]); public safety and convenience in terms of vehicular and pedestrian movements; maintenance and fire protection; probable traffic volumes; and existing and proposed uses of land on abutting properties.

2. The proposed street system shall be extensions of existing or recorded streets at the same width, but in no case at less than the required minimum width.

3. Where, in the opinion of the Township Planning Commission or Township Supervisors, it is desirable to provide for street access to adjoining property, streets shall be extended by right-of-way dedication to the boundary of such property. Where the extended cartway is wider than the existing cartway, a tapered transition area shall be provided.

4. New minor streets shall be so designed as to discourage through traffic, but the developer shall give adequate consideration to provisions for the extension and continuation of major and collector streets into and from adjoining properties.

5. Where an existing Township street of inadequate width traverses or abuts the subdivision or land development, the entire right-of-way, measured from the centerline of the existing cartway shall be provided in accordance with the standards of this Chapter.

6. Where the subdivision or land development abuts or is traversed by an existing State street of inadequate width or alignment, any additional right-of-way necessary to correct such in accordance with the standards of this Chapter or known highway plans shall be reserved, but need not be offered for dedication.

7. Private streets, either proposed or existing, shall not be approved for public dedication, construction or maintenance until the location, design and construction of any such street is in compliance with all applicable requirements of this Chapter. Private streets may be authorized to permit limited subdivision of lots subject to the following requirements:

    a. A maximum of four (4) lots, plus a residual parcel containing one (1) existing residential structure, may be approved for access on a private street;

    b. The private street right-of-way shall be a minimum of fifty feet (50'), except as otherwise indicated;

    c. The street shall be installed to provide the required minimum width with a mud-free cartway in accordance with the design standards in Table A, which is adequate to enable all weather passage of vehicles;

    d. Sales agreements for all lots abutting the private road shall include notification to purchasers of the nonliability of the Township for road maintenance. In addition, a certificate of the nonliability of the Township shall be inscribed on the plan when submitted for municipal approvals.

    e. All costs associated with the design, construction, maintenance or any other expense involving said street improvements shall be assumed by private sources with no

cost to the Township prior to final acceptance for dedication by the Township Supervisors.

f. A temporary turnaround for maintenance and emergency vehicles shall be provided where future street or roadway extensions are designed to occur, said turnaround shall have a minimum eighty foot (80') diameter curb to curb and exhibit a mud-free condition.

g. A private maintenance agreement form provided by the Township shall be signed and recorded prior to consideration of roadway acceptance.

8. Whenever the proposed subdivision or land development contains or is adjacent to an arterial highway, the Board of Supervisors may require that provision be made for a marginal access street. The Board may also require rear service alleys, reverse frontage lots or such other configurations which will provide increased protection for abutting properties, reduce the number of intersections with major streets, and separate local and through traffic.

9. Where the lots in a subdivision are large enough for resubdivision, or where a portion of the tract is not subdivided, the minimum required right-of-way to these areas shall be provided.

10. Proposed streets which are aligned with existing streets shall bear the name of the existing street.

11. Dead-end streets shall be prohibited.

12. Intersections involving the crossing of more than two (2) streets shall be prohibited. Right angle intersections shall be used whenever practical, but in no case shall the angle of intersection be less than seventy-five degrees (75^0). Street offsets of less than one hundred seventy-five feet (175') shall not be permitted.

13. The shoulders of all existing or proposed public streets and roads within, adjacent to, or abutting any proposed subdivision of five (5) or more lots on a single plot or plan submission shall be graded to the full width of the right-of-way and provisions shall be made for protection of slopes beyond the right-of-way.

14. Minimum and maximum grades shall be provided on all streets in accordance with the Design Standards specified in Table A,

unless a modification is granted. Grades shall be measured along the center of the street. Vertical curves shall be used in changes of grade exceeding one percent (1%) and should be designed in accordance with the Design Standards specified in Table A. The grade of actual intersections shall not exceed three percent (3%) on approaches which will be "stop" controlled.

15. Minimum widths of rights-of-way and minimum widths of paving shall be provided in accordance with the Design Standards specified in Table A. All streets or roads dedicated for public use shall be paved in accordance with Township Construction Standard Details.

16. Additional right-of-way widths and paved cartway widths shall be requested by the Township where necessary for public safety and convenience, for parking in commercial and residential areas and where additional width is necessary on existing roads which do not comply with current standards; however, the approval of the plan shall not be conditioned upon dedication of the additional right-of-way.

17. No fence, hedges, shrubbery, walls, plantings (other than grass) or similar obstructions shall be located within the right-of-way of any street or road dedicated for public use, and no such obstruction shall obscure visibility at any intersection. A clear sight triangle, as defined by this Chapter, shall be maintained free of any obstructions at intersections. The sides of the clear sight triangle shall be measured along the centerline of the intersecting streets and shall meet the minimum standards specified in Table B.

18. In any subdivision or land development plan proposed to be constructed in more than one (1) phase, a temporary cul-de-sac shall be required for all streets or roadways which may be extended in subsequent phases. Temporary cul-de-sacs shall be constructed with a completely paved turnaround, with a minimum diameter of eighty feet (80') to the outside edge of the pavement. In addition, the paving for the temporary cul-de-sac shall consist of both a subbase and a base (as set forth in Exhibit # 3A).

B. Street Design Standards:

1. Street Design Standards Table A.

TABLE A					
Street Type	Collector Streets[1]	Minor Streets	Cul-de-Sacs[2]	Marginal Access	Private Streets
Minimum Right-of-way Width	60'	50'	50'	50'	50'
Minimum Pavement	26'	26'	26'	26'	---
Minimum Cartway Width	---	---	---	---	10' Single Family 18' Multi Family 24' Commercial
Maximum Grade	10%[3]	12%	12%[4]	12%	12%
Minimum Grade	1.5%	1.5%	1.5%	1.5%	1.0%
Minimum Radius of Curve at Center Line[1]	300'	125'	125	125	---
Vertical Curve Length (Factor times algebraic difference)	28 crest 35 sag	10 crest 20 sag	10 crest 20 sag	10 crest 20 sag	10 crest 20 sag
Minimum Tangent Length Between Curves	150'	50'	50'	---	---
Minimum Stopping Sight Distance	275'	200'	200'	---	---
Sidewalk width where required	5'	5'	5'	5'	5'

[1] Where street lines deflect from each other more than ten degrees (100).

[2] Cul-de-sac streets or roadways shall be provided with a completely paved turn-around with a minimum diameter of eighty feet (80') to the outside edge of pavement.

[3] May be increased by one percent (1%) for grades not more than three hundred feet (300') long.

[4] 6% maximum slope on turn-around.

2. Intersection Design Standards (Table B)

TABLE B				
Type Intersection	**Arterial with Collector**	**Collector with Collector**	**Collector with Minor**	**Minor with Minor**
Maximum number of intersecting streets at each junction	2	2	2	2
Minimum distance between center lines of intersections	800'	500'	500' B/L 250' B/W	500' B/L 250' B/W
Minimum center line offset of adjacent intersections	400'	250'	175'	175'
Angle of intersection of street center lines	90^0	90^0	75^0-105^0	75^0-105^0
Length and maximum grade of approaches to intersection where general grade is over 7%	50'/3%	50'/3%	50'/3%	50'/3%
(Measured from the intersection cartway lines.)				
Minimum radius of pavement	30' (c) 45' (nc)	30' (c) 49' (nc)	25' (c) 35' (nc)	25' (c) 30' (nc)
Minimum intersection sight distance along center line	220'	130'	130'	130'
Intersection clear sight triangle (each center line length)	150'	75'	75'	75'

B/L - Along Block Length B/W - Along Block Width
(c) Minimum width where curbs are to be installed, including width of curb.
(nc) Minimum width where curbs are not to be installed. (See Exhibits #3 and #3A for minimum shoulder and side slope area requirements as well as minimum pavement variations.)

**Table B Note: The intersection design standards for all subdivision and major development entrance streets shall be according to street classification but not less than as required for the intersection of a minor street with a collector street.*

3. Description: All streets or roads proposed to be dedicated for public use shall be designed and constructed according to the requirements presented herein. Design shall be in accordance with the AASHTO Manual "A Policy on Geometric Design of Highways and Streets" (latest revision). Paving will consist of two inches (2") of a compacted surface course of ID-2 bituminous

wearing course installed on a Bituminous Cement Base Course (BCBC) and 2A aggregate subbase, materials and construction to be as fully described in PennDOT Form 408 (latest revision), and the shape, width, depth and geometry to conform to the Center Township Standard Street Paving Detail - Exhibit #3 and #3A of the Center Township Standard Construction Details and to a horizontal and vertical alignment as approved by the Township Engineer.

4. Cartway and Right-of-Way: All streets or roads shall have a minimum fifty foot (50') wide right-of-way. All cartways, shall be paved in accordance with the standards set forth in Table A as shown and the standard details attached. The right-of-way for cul-de-sacs shall be a minimum of one hundred feet (100') in diameter, and shall have a minimum eighty feet (80') paved diameter.

5. Construction:

   a. Excavation and Grading:

      (1) The excavation and grading required to construct the road shall be constructed to the horizontal and vertical alignment, as approved by the Township Engineer. For approval, roadway design shall be presented on Plan and Profile drawings prepared at minimum scale of one inch equals fifty feet (1" = 50') horizontal to one inch equals ten feet (1" = 10') vertical with cross-section at fifty foot (50') centers at appropriate scale. Cross-section shall be a minimum one hundred foot (100') wide or show the entire extent of cut/fill proposed.

      (2) All excavation and grading operations shall be performed under the direct supervision of a Registered Professional Engineer. At completion of the work, the Engineer shall provide a written sealed certification that all cuts/fills as constructed are stable and suited to their design intent.

      (3) When filling operations are required, all topsoil shall be removed and the surface scarified in order to assure a good bond between the filled ground and virgin ground. Where the lateral slope upon which a fill is to be made is deemed too steep for scarifying to make bond (slopes 3 horizontal to 1 vertical or steeper), the virgin ground shall be benched as shown on Exhibit #4 of the Center Township Standard Construction Details and the fill placed upon the benches. Drainage for any springs, wet areas, existing streams or wet weather gullies encountered while preparing

for filling operations can be commenced. Toe drains or underdrains shall be constructed as required by the Township Engineer.

(4) Fills shall be built up in six inch (6") lifts of suitable materials, each lift being well-compacted with an approved sheep's foot ten (10) ton roller and well-crowned and drained in order to prevent soaking and spongy areas.

(5) All fills or cuts shall carry a minimum side slope of two foot (2') horizontal to one foot (1') vertical.

(6) Built up, well-rolled berms shall be constructed along each edge of the paving using suitable and approved material. The berm shall be constructed before the curb or base is constructed and simultaneously with the fine grading of the subgrade.

(7) The subgrade must be well-rolled with approved three (3) wheel, minimum ten (10) ton roller, crowned in conformance with finished surface crown and shall be perfectly smooth, free of spongy areas and well-drained with approved subgrade drains and/or bleeders, the bleeders draining into approval dry wells (constructed at a minimum distance of three feet [3'] from the edge of paving), lateral drains, storm sewers, or drop inlets. The flow lines of all dry wells, lateral drains, storm sewers and drop inlets shall be a minimum eighteen inches (18") below the lowest part of the subgrade. All drainage must be constructed and in operation before any fine grading, berm construction or filling is commenced.

b. Subbase and Base: The subbase and base shall consist of eleven (11) to thirteen (13) inches of combined aggregate subbase and BCBC base course as required of the Design Annual Average Daily Traffic (AADT) count for the site(s) to be served and as presented on Exhibit #3 and Exhibit #3A of the Center Township Standard Construction Details. For single family residential subdivisions a minimum of ten (10) AADT counts per lot per day shall be used to compute the AADT for the site to be developed. In addition, an allowance shall be made for all undeveloped land that can gain access through the proposed roadway. All roads proposed to serve all nonresidential uses, and which are to be publicly dedicated, shall be designed to serve an AADT as defined by a traffic study prepared by a consultant acceptable to the Township. Said traffic study shall be approved by the Township Engineer.

c. Curbing:

(1) A compacted twenty-four inch (24") wide ID-2 bituminous wedge type curb shall be installed where required by the Township Engineer on each side of the cartway. The base course portion (first stage) of the wedge type curb shall be installed with the first layer of wearing course.

(2) The bituminous wedge curbing, shall be machine spread and machine rolled. The dimensions, size and shape to be in accordance with Exhibit #3A of the Center Township Standard Construction Details. After placement, the wedge curb shall be properly barricaded and protected from any traffic or vehicles of any kind until it has thoroughly set up and all voids on the grass plot side have been completely backfilled, and the backfill being placed with proper and approved tamping equipment in maximum four inch (4") layers. No traffic or vehicles of any kind will be permitted to pass over this curb except through driveway approaches.

d. Bituminous Wearing Course:

(1) The surface wearing course shall consist of a two inch (2") compacted thickness constructed in strict accordance with PennDOT Form 408 (latest revision) requirements.

(2) This surface course is to consist of two (2) compacted one inch (1") layers of ID-2 bituminous wearing surface course over the entire base courses and over the curb area. The entire width of road shall be finished with two inches (2") of ID-2 wearing surface.

(3) The first one inch (1") wearing surface shall be applied immediately upon installation of the base course. The second one inch (1") wearing surface shall be applied after the site has been at least fifty percent (50%) occupied with buildings, and no heavy equipment will be traveling over the streets, and never later than two (2) years after the approval of said base construction by the Township Engineer or at the discretion of the Board of Supervisors of the Township of Center.

(4) Mill of the surface around storm culverts and sanitary manholes is prohibited. Steel risers for storm culverts and sanitary manholes are required when final wear pavement is applied in accordance with Exhibit # 13A.

e. Materials/Plant: All bituminous material must be prepared in a plant that has been approved by the Pennsylvania Department of Transportation for the manufacture of the material specified. Certification of compliance of all materials used to pave the streets shall be provided to the Township by the plant.

f. Testing Finished Surface: For the purpose of testing the finished surface, a sixteen foot (16') straight edge shall be used, except that a ten foot (10') straight edge may be used on vertical curves. The straight-edge shall be held in successive position parallel to the road centerline in contact with surface, and the whole area checked from one side to the other as necessary. Advance along the pavement shall be in successive stages of not more than one half (1/2) the length of the straight edge. Any irregularities which may vary more than one fourth inch (1/4") shall be corrected. Irregularities which may develop before the completion of rolling shall be remedied by loosening the surface mixture and removing or adding material as may be required. Should any irregularities or defects remain after the final compression, the surface course shall promptly be removed and sufficient new material laid to form a true and even surface. All minor surface projections, joints and minor honeycombed surfaces shall be ironed smooth to grade, as may be directed.

g. Calendar Construction Limitations: Road construction such as filling, berming, subgrade, fine-grade construction, base construction, or surface construction shall not be commenced before May 15 and must be completed before November 15 of the same year, unless permission is granted by the Board of Supervisors. It is assumed that the weather conditions between these dates will be ideal for road construction; however, if adverse weather conditions occur between these dates the contractor or builder must abide by the judgment of the Township Supervisors, their agents, or assigns, in regard to permissible construction weather conditions.

h. Special Requirements:

(1) The developer shall be required to provide to the Township an eighteen (18) month Maintenance Bond commencing on the date of acceptance of the road by the Township in an amount equal to fifteen percent (15%) of the actual cost of installation of the roadway.

(2) If it is necessary that the contractor must exceed a weight limit of eight (8) tons (which will be in effect simultaneously with the date of acceptance), he will be required to give the Township an additional eighteen (18) month Maintenance Bond in an amount specified by the Township Engineer commencing on the date that the violation of the weight limit ceases. In no event shall the contractor violate the weight limit without the expressed approval of the

Township, and if approved, not before the aforementioned Maintenance Bond has been obtained and is in effect.

(3) In order to assure the Township that the road is being paved in the center of the right-of-way and in accordance with all grades that have been approved, the contractor, developer and/or road builder must present an affidavit signed by a Registered Professional Engineer or a Registered Surveyor, each registered to practice his profession in the Commonwealth of Pennsylvania, that he (surveyor/engineer) has established the recorded and/or legal right-of-way on the ground by a survey on the ground and has set construction stakes to the desired construction offset distance at points along the road not exceeding fifty foot (50') intervals and has established reference elevation on said stakes to effect the construction of the road in accordance with all plans that have been previously approved.

(4) After all road construction has been completed and all right-of-way grading has been completed, the developer and/or contractor shall install concrete monuments with a minimum size of four inches (4") in diameter, four inches (4") square and three foot (3') long, extending out of the ground at least three inches (3") but not more than six inches (6"), the center being marked with a one half inch (1/2) minimum brass wire or bar plug (as per Exhibit #5 of the Center Township Standard Construction Details), at all intersections and points of curvature in order to amply mark the right-of-way before the construction of the road can be considered as complete and fully prepared for the Township to accept the maintenance responsibilities.

(5) An Escrow Bond of one hundred and fifty dollars ($150.00) per concrete monument must be delivered to the Township. When monuments are placed, approved by developer's engineer and inspected by the Township Engineer, then the Escrow Bond will be released to the developer.

i. Concrete Streets and Concrete Curb Construction Roads:

(1) Where concrete construction is desired because of heavy or industrial use of the street or road, the design and construction materials must be approved by the Board of Supervisors and the Township Engineer.

(2) The specifications and construction shall comply to Portland Cement Association recommended standards, latest edition titled "Design of Concrete Pavement for City Streets." The standard Township width of streets shall be a

minimum of twenty-five feet (25'). A special street width for divided highways in an enlarged overall street right-of-way width shall be permitted but each of said parallel cartways shall have a minimum width of fifteen feet (15') including eighteen inch (18") wedge type curbs.

C. Gutters: In areas where curbing is not required, as determined by the Township Engineer, paved or stabilized gutters must be provided to control water runoff and avoid erosion, in accordance with Section 14-604 C 2d and approved by the Township Engineer.

D. Sidewalks: Sidewalks and curbs shall be installed along all proposed and existing public streets in subdivisions of twenty-one lots or more (single or multiple phases), common driveways and common parking areas. Sidewalks at least five feet (5') in width, constructed of four thousand pound (4,000 lb.) Portland Cement concrete at least four inches (4") thick and underlain by four inches (4") crushed stone shall be installed in all subdivisions or developments as follows:

1. Where the continuation of existing sidewalks would be desirable.

2. To provide access to community facilities and elsewhere as recommended by the Planning Commission and approved by the Board of Supervisors.

3. Sidewalks shall be located within the street right-of-way, preferably one foot (1') from the property line, and in all cases shall be separated from a cartway by a planting strip.

4. Sidewalks shall be constructed so as to be accessible to the handicapped.

5. Maintenance shall be the responsibility of the adjacent property owner. Appropriate language shall be placed on the plan for recording, indicating this maintenance responsibility.

6. Regardless of the size of the development or subdivision proposal, sidewalks shall be required whenever they fill a gap in an existing network.

7. The Board of Supervisors may require additional sidewalk width where higher volumes of pedestrian traffic are anticipated.

8. Sidewalks shall not extend beyond the right-of-way line of public streets or the equivalent right-of-way line of private streets unless located in legal easements guaranteeing adequate pedestrian access.

9. Sidewalks shall be provided in appropriate locations to provide safe and efficient pedestrian access between parking areas and nonresidential buildings.

10. Additional sidewalks shall be required where deemed necessary by the Board of Supervisors to provide access to schools, churches, parks, community facilities and commercial centers and to provide necessary pedestrian circulation within land development and/or subdivisions where otherwise required sidewalks would not be sufficient for public safety and convenience.

11. Driveway crossings shall be designed according to ordinances.

12. At corners and pedestrian street crossing points, sidewalks shall be extended to the curb line with an adequate apron area for anticipated pedestrian traffic.

13. Sidewalks shall not exceed a grade of twelve percent (12%). Steps or a combination of steps and ramps shall be utilized to maintain the maximum grades, where necessary. A non slip surface texture shall be used.

14. The grades and paving of sidewalks shall be continuous across driveways in nonresidential and multifacility residential developments and in certain other cases where heavy traffic volume dictates special treatment.

15. The thickness and type of construction of all sidewalks and curbs shall be in accordance with the recommendation as follows:

    a. In general, where Commonwealth and County specifications govern, these standards shall be used.

    b. Sidewalks shall be constructed in accordance with the detailed specifications in this Chapter, Exhibit # 19 (as amended) and 20.

16. If, for any reason, an interim waiver of these requirements is made, a sufficient guarantee shall be posted for the eventual installation of these items, subject to approval by the Board of Supervisors, upon the recommendations of the Township Engineer and Solicitor.

17. Sidewalks may be required by the Board of Supervisors in subdivisions of less than twenty-one (21) lots at their discretion.

E. Street Signs and Lighting: Street name signs as approved by the Township Supervisors, shall be placed, by the developer, at all intersections and a street lighting system shall be installed in developments involving multi-family dwellings and elsewhere as required by the Municipality. Street lights may be required at street intersections where a hazard exists as determined by the Township Supervisors. The design and location of signs and light fixtures shall be as approved by the Township Supervisors.

§ 14-604. Utilities

A. Water Supply:

1. The subdivision or land development shall be provided with a complete public water distribution and supply system which shall be connected to a Township water supply, or with a private water distribution and supply system approved by the engineer of the water utility company with jurisdiction, if applicable, and the Pennsylvania Department of Environmental Protection, with satisfactory provision for the maintenance thereof, except that when such Township or private water supply system is not available, the land development of each lot in the subdivision shall be provided with an individual water distribution and supply system in accordance with minimum standards of the Pennsylvania Department of Environmental Protection.

2. The installation of all water distribution lines and facilities shall be in compliance with Pennsylvania American Water Company specifications.

3. Fire hydrants shall be installed as an integral part of any common water distribution and supply system, placed not greater than eight hundred (800) linear feet apart or more than eight hundred (800) linear feet (measured along roadway or cartway) from any structure erected pursuant to this land development ordinance. A fire hydrant must be installed at the entrance(s) or access to any subdivision. In addition, no item, whether manmade or a plant, bush, shrub or tree, shall be permitted within three feet (3') of a fire hydrant, nor shall any fire hydrant be enclosed or obstructed by a fence, gate, shrubbery or other construction.

4. The plans for the installation of the mains of a water distribution and supply system shall be prepared with the cooperation of the applicable public water authority, and approved by its engineer. A statement of approval from the engineer of the public water authority shall be submitted to the Board of Supervisors. Upon

the completion of the public water distribution and supply system, one (1) copy each of the plans for such system shall be filed with the Board of Supervisors. The plan shall be reviewed and approved by the Department of Environmental Protection and ISO (Insurance Service Organization).

5. Individual on-lot water supply facilities shall not be deemed part of the "required improvements" of this Chapter.

B. Sanitary Sewerage:

1. The method of waste disposal shall be as approved by the Board of Supervisors giving consideration to the following order of preference:

a. Connection to a public sanitary sewer system, to be in accordance with the requirements of the Department of Environmental Protection.

b. Provision by the developer of a complete private sanitary sewer collection system using a treatment plant, to be licensed by the Department of Environmental Protection.

c. Sewage disposal on individual lots where conditions are satisfactory to meet the on-lot sewage requirements of Act 537, known as the Pennsylvania Sewage Facilities Act.

2. The judgment of the Board of Supervisors as to the method of waste disposal to be used will be made after study and review of a sewerage feasibility report submitted by the developer. The submission of the sewerage feasibility report is required. It must be completed by a registered professional engineer.

3. When the subdivision or land development is to be provided with a complete public sanitary sewer collection system to be connected to a public sanitary sewer system, a statement of approval from the engineer of the sewerage system authority to which it will be connected shall be submitted to the Board of Supervisors.

4. When a complete private sanitary sewer collection system using a treatment plant is to be provided, a copy of all required permits and licenses shall be submitted to the Board of Supervisors following the Pennsylvania Department of Environmental Protection approval of the proposed facilities. Adequate provision for the maintenance and yearly inspection of such plant shall be

furnished to the municipality in which the subdivision or land development is located.

5. In subdivisions or land developments where neither connection to a public sewerage system nor a complete sanitary sewer system is required, sewage disposal shall be provided consisting of septic tanks and tile absorption fields, or any "package disposal system or treatment plant" permitted and licensed by the Department of Environmental Protection, in accordance with the Pennsylvania Sewage Facilities Act 537.

6. When on-lot sewage disposal is to be provided, the developer shall furnish a certificate as to the adequacy of the soils for such on the basis of percolation tests conducted in accordance with the Department of Environmental Protection.

C. Stormwater Drainage:

1. Storm Sewers:

a. Description: Each land subdivision and/or land development whether residential, commercial, or industrial in nature or use shall provide and implement a water drainage plan and stormwater management plan so as to prevent any damage or injury to health, safety, or property from stormwater runoff or groundwater. The water drainage plan shall include every lot, shall be in accordance with this Chapter and shall be approved by the Township. The stormwater management plan shall comply with the applicable Township regulations or with the design proposed by the Township Engineer.

(1) All drainage management measures shall include such actions as are required to manage the quantity, velocity, and direction of resulting ground and/or stormwater runoff in a manner which protects health and property from injury.

(2) Natural runoff flow characteristics shall be maintained either by augmenting natural infiltration processes or by physically controlling the release of development related stormwater flow increases through structural means.

(3) Positive drainage is required in all areas of development. The stormwater system shall be planned and designed to direct stormwater runoff away from all public roads, structures, buildings, and development areas. The stormwater drainage system shall provide drainage facilities at all points along public streets, sidewalks, including other access and circulation systems.

(4) Underdrainage shall be provided in all areas where springs, wet weather springs, or where poor soil drainage conditions exist or result from the development. During construction of any improvement, if springs or any other poor drainage conditions are encountered, or when construction of any improvement has or will alter the natural groundwater flow, the Township shall be notified. Underdrainage shall be provided by the owner/developer, as directed by the Township, to correct said poor drainage condition.

(5) The stormwater system, including downspouting and other forms of rain-gear which are utilized upon any structure within the land subdivision and/or land development, and the underdrainage system, shall be designed to convey, contain, store, absorb, and/or use the surface or underground waters without damage to life or property and to minimize disruption of land usage.

(6) All on-lot storm drains (downspouts, area drains, foundation drains, etc.) shall include all pipe required to convey runoff water directly to the on-lot stormwater management facility in accordance with Standard Detail Exhibit #22 of the Center Township Standard Construction Details. No runoff water shall be allowed to discharge into the street/road.

(7) To the maximum extent possible, the stormwater drainage system and underground drainage system shall be designed to 1) convey stormwater runoff through a conveyance system directly to a natural watercourse, and 2) prevent the discharge of stormwater or underground water onto adjacent facilities or properties.

(8) Natural drainage routing shall be preserved where feasible. No discharge of on-site stormwater or underground water runoff into a natural drainage routing shall be permitted when such discharge will damage adjacent or downstream property.

(9) No stormwater drainage system or underground drainage system shall be permitted to discharge into any sanitary sewer system.

(10) The storm sewer system shall be designed to intercept and convey the peak rate of runoff from the fifty (50) year return storm.

(11) Stormwater runoff and design calculations meeting this requirement shall be submitted to the Township for approval prior to preliminary plan approval. Hydraulic computation presenting invert elevations, pipe size, "n"

capacity, velocity, hydraulic and energy grade lines shall be submitted.

(12) Upon Township request, stormwater runoff calculations shall be made available for: the outlet and inlet sides of all stormwater drainage and storage facilities and structures; at points in a public street with a change of grade; or where water from a proposed structure, facility, or vehicular way is to enter an existing public street, existing storm sewer, existing drainage ditch, or existing stormwater storage facility.

(13) Additional analysis, calculations, and design criteria may be required for both the on-site and off-site stormwater systems where it has been determined by the Township that further study is necessary.

(14) The stormwater drainage system for the subdivision and/or land development and, where required, the underdrainage system for a subdivision and/or land development shall be designed for compatibility with the watershed stormwater management system and any Center Township or adjacent municipality's planned change to the system.

(1) The design shall anticipate and provide for effects of all tributary area and upstream development.

(2) The design shall anticipate and provide for impact(s) on downstream flow conditions and water quality.

(3) Off-site stormwater drainage and underdrainage facilities and improvement shall be provided by the applicant/owner of the proposed land subdivision and/or land development where needed and where requested by the Township.

(4) Where required, the Pennsylvania Department of Environmental Protections' approval including permits as required, shall be obtained by the applicant/owner of the land subdivision and/or land development and evidence of same provided to the Township.

(15) The installation, ownership, and maintenance responsibilities after completion of the development for all stormwater drainage and storage facilities and all underdrainage facilities shall be identified on the preliminary plans and exhibits and final plans

(16) All stormwater drainage or storage facilities or underdrainage facilities to be publicly dedicated shall be located in a right-of-way, a drainage easement, or in a location as required by the Township.

(17) The design for all stormwater drainage and storage facilities shall be in accordance with the requirements of the Pennsylvania Department of Transportation Design Manual, Part 2, latest edition, and of this Chapter.

(18) Plan and profile drawings to suitable scale shall be provided prior to preliminary plan approval. Plan and cross-section drawings, catalog cuts and specifications shall be provided showing complete construction details for all stormwater drainage storage facilities and appurtenances prior to final plan approval.

(19) The access control for any storage facility shall be approved by the Township prior to plan approval.

(20) The design of all detention facilities shall be subject to the review and approval of the Township Engineer, and where applicable, by the Pennsylvania Department of Environmental Protection.

(21) Where open stormwater drainage and/or storage facilities are to be constructed; the access control measures, erosion control measures, capacity protection measures, flood protection measures, stagnant water control measures, and appearance control measures shall be presented for Township approval with the preliminary plans and exhibits.

(22) Stormwater detention facilities shall have sufficient capacity to result in no increased runoff from a fifty (50) year return storm at a minimum except where a 100-year storm is determined to be appropriate at the sole discretion of the Township Engineer or where required by watershed studies. A minimum of two foot (2') of freeboard shall be provided. The primary outlet structure shall be designed to control the 2, 5, 10, 25 and 50 year return storms. An emergency spillway shall be designed to convey the fifty year post-developed return storm or larger, as appropriate. All dike embankments shall be a minimum eight foot (8') wide at the crest.

(23) The design of stormwater drainage and storage facilities shall be closely correlated with the design of public streets.

(24) The depth of flow in gutters and allowable spread across the pavement shall be approved by the Township Engineer.

(25) Free flow of stormwater runoff shall not be permitted onto the cartway of any public street from a private driveway, access drive or any other vehicular right-of-way.

(26) Stormwater inlets shall be spaced a maximum of three hundred feet (300') apart where pipe sizes of twenty-four inches (24") or less are used, and not over four hundred fifty feet (450') where larger pipe sizes are installed. Sufficient inlets shall be provided to intercept all surface runoff.

(27) Grate inlets shall be depressed below the plane of the gutter.

(28) Curb inlets/openings shall have a maximum permitted height of six inches (6") unless otherwise provided with a protective barrier.

(29) Design of inlets shall be as required by runoff calculations.

(30) Manholes shall be spaced a maximum of three hundred feet (300') apart where pipe sizes of twenty-four inches (24") or less are used, and not over four hundred and fifty feet (450') where larger pipe sizes are installed. Design of manholes shall be as per Exhibit #6 and Exhibit #7 of the Center Township Standard Construction Details. If approved by the Township, inlets may be substituted for manholes.

(31) Enclosed stormwater drainage courses shall be required at intersecting streets and elsewhere, as may be deemed necessary by the Township. Stormwater shall be collected in stormwater culverts or similar enclosed components.

(32) Stormwater culverts, bridges, and similar structures serving public streets, access drives, or any other vehicular right-of-way as may be designated by the Township, shall be designed to support HS-20 and military loadings and any other imposed loadings necessary without structurally damaging the drainage system. The stormwater culverts, bridges, and similar structures shall be constructed to the full width of the right-of-way plus additional length as deemed necessary by the Township Engineer to satisfy a local drainage pattern.

(33) Stormwater culverts in areas other than those noted above shall be designed to support the necessary loading (existing and potential) and any other imposed loadings without structurally damaging the pipe or affecting its capacity for drainage. Said design shall be approved by the Township Engineer.

(34) Conduit size of culverts or other enclosed components of a stormwater drainage system shall be based on computed hydrologic and hydraulic data and computations shall be approved by the Township Engineer. Minimum size of any

enclosed structure to be maintained by the Township shall be fifteen inches (15") in diameter.

(35) Minimum size of any enclosed structure to be privately maintained shall be fifteen inches (15") in diameter unless design calculations are provided that can justify a lesser size. Design calculations shall be approved by the Township Engineer.

(36) The design of the enclosed drainage course shall provide a minimum cleaning velocity of three feet (3') per second. When the design provides for a maximum velocity greater than ten feet (10') per second, the enclosed components shall be lined or protected to prevent scour.

(37) The headwall and endwall structures for enclosed stormwater facilities shall be as per the requirements of Exhibit #9 of the Center Township Standard Construction Details and approved by the Township Engineer.

(38) Pipe materials used shall be reinforced concrete pipe (RCCP), Class III minimum, or smooth flow polyethylene pipe as per Exhibit #8 and Exhibit #17 of the Center Township Standard Construction Details.

(39) Storm sewers thirty six inches (36") in diameter or less shall be constructed to line and grade.

(40) The pipe zone of storm sewers shall be installed in natural, virgin ground unless otherwise approved. The pipe zone shall be defined as the area outside the pipe diameter six inches (6") below, six inches (6") on either side and twelve inches (12") above the pipe.

(41) Energy dissipaters shall be required at the outlet side of all enclosed culverts or similar components and shall be designed to reduce the velocity flow sufficient to prevent damage to downstream areas.

(42) No stormwater facility shall be enclosed or covered over until the Township has inspected and approved said facility.

2. Open Drainage Ways:

a. When open drainage ways are proposed for the collection and/or discharge of stormwater, the Planning Commission and Board of Supervisors shall review the design of such in relation to capacity, safety, erosion and stagnation in consultation with the Butler County Conservation District.

b. Drainage easements shall be provided for all existing and proposed drainageways, substantially conforming to the

alignment thereof, and shall be of sufficient width to include all of the watercourse plus at least ten feet (10') from the center of the stream channel in either direction, but in no case shall be less than twenty feet (20') in width.

c. Stormwater shall be detained and discharged at predevelopment rates, on site as approved by the Township Engineer.

d. Open stormwater drainage courses shall be designed for a maximum velocity not to exceed ten feet (10') per second and a minimum velocity of five feet (5') per second. A minimum velocity of three feet (3') per second may be permitted where a greater slope cannot be achieved to permit the standard required minimum velocity. An open stormwater drainage course shall include a lining (riprap, concrete, bituminous) to prevent erosion. Any required approval of the Butler County Conservation District shall be obtained by the applicant.

D. Utility Line Installation: Where possible, as determined by the Board of Supervisors upon the recommendation of the Township Engineer, electric, telephone, cable television and television transmission lines shall be placed underground. Where such lines are not placed underground, said lines shall be placed along rear lot lines to the fullest extent possible.

E. Utility Easements:

1. Width; Location: When easements are required for any utility serving a subdivision or land development, they must be a minimum of twenty feet (20') wide and must, to the fullest extent possible, be adjacent to, or centered on, rear or side lot lines.

2. Natural Gas Lines: All natural gas lines shall be installed in compliance with the ASA Code B31, 80 1958, as amended. The minimum distance from a pressurized natural gas line to a dwelling unit or other structure shall be established by the applicable transmission or distribution company.

3. Petroleum Lines: Between a proposed dwelling unit or other structure and the center line of a petroleum or petroleum products transmission line, which may traverse the subdivision or land development, there must be a minimum distance of one hundred feet (100') measured in the shortest distance.

§ 14-605. Monuments and Markers

A. Material and Size: Monuments and markers shall be constructed as follows:

	Construction	Minimum Size
Monument	Concrete	4" x 4" x 36"
Marker	Iron pipes or iron or steel bars	24" x 3/4" dia.

B. Markings Placement: Monuments and markers must be placed by a registered professional engineer or professional land surveyor so that the scored or marked point coincides exactly with the point of intersection of the lines being monumented. They must be set so that the top of the monument or marker is level with the surface of the surrounding ground. Monuments must be marked on top with a copper or brass dowel.

C. Monuments Location: Monuments must be set:

1. At the intersection of lines forming angles in the perimeter boundaries of the tract.

2. At the intersection of street rights-of-way when such are perpendicular or angular; or at the beginning and ending of street intersection right-of-way curves or chord diagonals where they are formed.

3. At such other points as determined necessary by the Township Engineer.

D. Markers Location: Markers must be set:

1. At the beginning and ending of curves along street property lines if not monumented.

2. At points where lot lines intersect curves either front or rear.

3. At angles in property lines of lots.

4. At all other lot corners.

E. Removal: Any monuments or markers that are removed must be replaced by a registered professional engineer or professional land surveyor at the expense of the person removing them.

§ 14-606. Fire Service Features

The purpose of this Article is to require building features that enhance response time and/or reduce risk to emergency responders. *(Ord 2008-06-03, 06/11/08, §3)*

A. Key Box

1. A key box shall be supplied by the owner of buildings considered non-residential as defined by the Pennyslvania Uniform Construction Code. (see Chapter 2) *(Ord 2008-06-03, 06/11/08, §3)*

Exception:

Buiildings not occupied by persons and/or animals that, as determined by the Township Zoning/Code Enforcement Officer, are not to be considered a source of combustion by the nature of their construction and contents, and are not combustible nor contain a means of ignition. *(Ord 2008-06-03, 06/11/08, §3)*

2. The key box shall be installed at a location approved by the Township. *(Ord 2008-06-03, 06/11/08, §3)*

3. The key box shall be of a type approved by the Township and shall contain keys to gain necessary building access for life saving or fire fighting purposes as required by the Township Zoning/Code Enforcement Officer. *(Ord 2008-06-03, 06/11/08, §3)*

B. Maintenance

The owner of the building shall immediately notify the Township Zoning/Code Enforcement Officer and provide the new key anytime a lock is changed or rekekyed. The key to such lock shall be secured in the existing approved box. *(Ord 2008-06-03, 06/11/08, §3)*