

ARTICLE VI

DESIGN STANDARDS

600 General Requirements

- A. In designing a subdivision, the subdivider shall comply with the principles and requirements of this article.
- B. The Planning Commission in considering an application for the subdivision of land shall be guided by the considerations and standards contained herein.
- C. Land to be subdivided shall be of such a character that it can be used safely for building purposes without danger to health or peril from fire, flood or other menace.
- D. Subdivisions shall conform to the Comprehensive Plan and to the Zoning Ordinance.

610 Land Requirements

Land shall be suited for the purposes for which it is to be subdivided. In general, the Planning Commission shall take the following factors into consideration prior to the approval of any subdivisions.

- A. Subdivisions laid out on land subject to periodic flooding shall not be approved unless adequate safeguards against such hazards are provided, and,
- B. Areas characterized by steep slopes greater than 18%, shall not be subdivided unless adequate safeguards against potential hazards are provided. A geotechnical engineer and a structural engineer shall evaluate the area and specify engineering conditions whereby the area could be buildable.
- C. Sinkholes shall require geotechnical inspection to determine below surface cavernous size and conditions to insure construction limitations are safe from such hazards.

620 Streets

The subdivider shall provide for the complete construction of streets, curbs, and gutters, constructed to standards approved by the Planning Commission and the City or County Engineer. Where streets are proposed to be dedicated to the County or City, that government is not required to accept said street until it has been inspected by a qualified engineer and has been determined that said construction was in accordance with the approved construction plans.

A. General Requirements

The arrangement, character, extent, width, and location of all streets shall conform to the Comprehensive Plan and Official Map (if adopted) and shall be considered in relationship to existing and planned streets, to topographical conditions, to public convenience and safety, and to their appropriate relationship to the proposed uses of the land to be served by such streets.

In designing a street system, the subdivider shall be guided by the following principles:

1. Adequate vehicular and pedestrian access shall be provided to all parcels.
2. Street systems shall be designed to provide for a smooth flow of traffic and a high level of connectivity within and between neighborhoods, workplaces, and downtown, with adequate and safe provisions for on and off-street parking, loading and unloading of goods and equipment.

3. Local street systems shall be logical and comprehensible and designed in a grid pattern.
4. The arrangement of local streets shall permit economical and practical patterns, shapes, and sizes of development parcels.

B. Street Layout and Design

1. Streets shall be classified with pavement widths and the number of lanes and right-of-way widths as noted below; unless approved otherwise by the Planning Commission. Street Cross Sections are found in Exhibit 6-2, number of lanes and right-of-way widths shall not be less than as follows:

Exhibit 6-1 - Street Design		
<u>Street Type</u>	<u>Pavement Width*</u>	<u>Right of Way Width**</u>
Expressways***		
Arterial Streets***		
Collector Streets	36'	60'
Local Streets	32'	50'
Cul de sac Streets	28'	50'
Alleys	12'	24'
County Roads outside the Urban Services Area	21'	50'
Marginal Access Streets	To be determined based on use.	
Rural Residential Roads (Private)	18'	30'

The standards listed above may be increased or decreased where necessary as approved by the Planning Commission.

* Dimension of pavement is back of curb to back of curb or edge of pavement where there are no curbs.

** See typical cross sections in Exhibit 6-2.

***Design standards and right-of-way requirements shall be designed by Kentucky Transportation Cabinet.

When any proposed subdivision fronts on or has access to a State road, the Planning Commission shall consult with the Kentucky Transportation Cabinet concerning the effect of the subdivision on the State road.

3. Whenever a proposed subdivision contains any part of a street designated in the, Comprehensive Plan or noted on the official map (if adopted) such part of said street shall be platted by the subdivider in the general location and at the width indicated in the Comprehensive Plan.
4. New streets shall generally be continuous in alignment with existing streets with which they are to connect (Where appropriate to the design).
5. Proposed streets shall be extended to the boundary lines of the proposed subdivision with temporary turnarounds unless such extensions are not feasible because of topography or other physical conditions, or unless, in the opinion of the Planning Commission, such extension is not necessary for the coordination with existing streets for adjacent tracts.

C. Pavement Specifications

The minimum specifications for streets are as follows:

Pavement base shall consist of not less than two (2) courses of dense graded aggregate laid and rolled separately to at least ninety (90%) percent maximum density, totaling eight (8) inches for the full widths of pavement and including any proposed shoulder. Sub-grade shall have been graded and rolled to ninety (90%) percent of maximum density prior to the placement of the first course of aggregate. A bituminous binder course shall be applied with the thickness at the thinnest point of three (3) inches. A surface or wearing course of Asphalt Concrete, Class I, Type "A" or an equivalent shall be applied, with a thickness at the thinnest point of one (1) inch.

In the case of concrete streets, concrete pavement shall be a minimum of six (6) inch thick and reinforced with 6 x 6, 6/6 mesh or No. 3 bars at a minimum twelve (12) inches center to center each way with concrete having a minimum compressive strength of three thousand (3,000) psi at twenty eight (28) days. Special approval shall be required for concrete pavement.

These standards shall be increased in cases of industrial, warehousing, and heavy commercial developments where the streets must bear unusual stress and traffic. Industrial streets shall be constructed to specifications equal to or better than interstate standards for surface and subsurface materials.

Street construction plans must be approved by the County and/or City Engineer, or as designated by the Planning Commission.

D. Street Geometrics

The street system layout shall be designed so as to preserve natural features such as trees, groves, creeks, hilltops, scenic views, and historical landmarks; and to preserve, the natural lay of the land and disposition of the topsoil.

1. Grades of streets shall conform as closely as possible to the original topography and shall be designed to produce usable and reasonable grades.
2. Grades of streets shall be arranged to obtain as many building sites as possible at or above the grade of the street (s) abutting the building.
3. Street grades, wherever feasible, shall not exceed the following, with due allowance for reasonable vertical curves:

Exhibit 6-4 - Street Grades

<u>Street Type</u>	<u>Maximum Percent Grade</u>
Arterial	5%
Collector	8%
Local & cul de sacs	12%
Alley	12%
County Roads in	
Agricultural Districts	15%
Marginal Access Streets	15%
Rural Residential	15%

The Planning Commission may permit steeper grades in special circumstances.

4. No street grade shall be more than 0.80 percent.
5. Street alignments shall be designed as provided in this section. A combination of steep grades and

sharp curves shall be avoided.

6. Grades at street intersections for stopping streets only shall be held to a maximum of two (2) percent for a distance of fifty (50) feet measured from back of curb.
7. Dead-end streets shall be prohibited except as stubs to permit future extension to adjoining tracts or where necessitated by topography, or where, in the opinion of the Planning Commission, they are appropriate for the type of development contemplated and are designed as cul-de-sacs.
8. Streets should be laid out to intersect as nearly as possible at right angles, and no street shall intersect with any other street at less than sixty (60) degrees. Any change in street alignment to meet this requirement shall occur at least eighty (80) feet from the intersection.
9. Intersections with State administered arterial streets shall be located not less than six hundred fifty (650) feet apart, measured from center line to center line or as determined appropriate by the Kentucky Transportation Cabinet. Intersections with County administered thoroughfares shall be as determined appropriate by the Woodford County Engineer.

EXHIBIT 6-5 - STREET GEOMETRICS

LOCAL STREETS

	<u>COLLECTOR STREET</u>	<u>CONTINUING</u>	<u>LOOP/CUL DE SAC (*3)</u>	<u>SERVICE ROAD</u>	<u>NON- RES.</u>
<u>STREET DIMENSIONS</u>					
Right of Way Width	60-70	50	50	40-50	60
Roadway Width (face to face)	36-40	30	27-30	30	36
Curbs and Gutters	Yes	Yes	Yes	Yes	Yes
Sidewalk (width and sides)	4' - both	4' - both	4' - both	4' - (*1)	4' - both
Driveway Access	*1	Yes	Yes	Yes	Yes
Backup Lots	*1	No	No	No	No
Street Grade, Maximum	6% (*4)	8%	8%	6%	6%
Street Grade, Minimum	0.8%	0.8%	0.8%	0.8%	0.8%

STREET ALIGNMENT

Horizontal Curve Radius at CL	500'	200'	100'	150'	300'
Stopping Sight Distance	250'	200'	200'	200'	200'
Crest Vertical Curve Formula	L=45A	L=22A	L=22A	L=22A	L=22A
Crest Vertical Curve, Minimum	100'	100'	100'	100'	100'
Sag Vertical Curve Formula	L=60A	L=35A	L=35A	L=35A	L=35A
Sag Vertical Curve, Minimum	100'	100'	100'	100'	100'

STREET INTERSECTIONS

Maximum Street Legs	4	4	4	4	4
Intersection Angle (Pref.&Min.)	90-80 deg.	90-80 deg.	90-80 deg.	90-80 deg.	90-80 deg.
Intersection Spacing	(*2)	(*2)	(*2)	(*2)	(*2)
Curb Radius Along Street	(*1)	20'	20'	20'	20-40'
Max. Grade within 50' of intersecting gutter	3%	3%	3%	3%	3%
Max. Tangent Offset within 100' of intersection at gutter line	8.3'	11.3'	11.3'	11.3'	11.3'

(*1) As approved by the Planning Commission.

(*2) Intersection spacing shall apply as described in Section 630 (D) (10).

(*3) Alternate dimensions of twenty two (22) feet' (face to face) roadway width may be utilized as described in Exhibit 6-2.

(*4) On collector streets, grades from six (6) to eight (8) percent may be approved for short distances provided that no crest sight distance problem is created.

Note: Typical Cross section applications are described in Exhibit 6-2.

10. Multiple intersections involving junctions of more than two (2) streets shall be avoided. All of the streets shall have a minimum offset of one hundred fifty (150) feet between street center lines, except in the case of round-abouts.

11. Clear sight triangles of fifty (50) feet measured along street right-of-way lines from their points of junction shall be provided at all intersections, and no building, structure, grade or planting higher than three (3) feet above the centerline of the street shall be permitted within such sight triangles.
12. Minimum back of curb radii or edge of pavement radii at street intersections shall be twenty (20) feet.
13. Where a proposed subdivision abuts or contains an existing or proposed arterial street, the number of intersections with the arterial street shall be kept to a minimum. Frontage roads will be incorporated into the subdivision or site design as a means of access control to the arterial when one or more of the following conditions occur:
 1. The frontage road would serve to extend an existing frontage road, improving access control for several properties abutting the same arterial.
 2. Where outlots of a commercial subdivision or development site would abut the arterial.
14. Cul-de-sac streets, permanently designed as such, shall not exceed two hundred fifty (250) feet in length. Cul-de-sac streets will only be permitted by the Planning Commission when the applicant can clearly demonstrate that one or more of the following conditions exist requiring the use of this technique.
 - a. The width and/or length of the tract would prohibit the use of a street and alley system because the use of such system would result in lots that are non-conforming with existing building placement standards. The physical dimensions of the tract must not be the result of property conveyance or platting actions taken by the property owner or applicant within two (2) years of a development application requesting approval for use of a cul-de-sac.
 - b. There are environmental or wildlife resources that the applicant proposes to preserve or protect and the use of a cul-de-sac is integral with the preservation objective.
 - c. The cul-de-sac would be utilized to continue an existing stub street from an adjoining subdivision and there would be no existing means of connecting the stub street to another existing or proposed street.
 - d. The cul-de-sac is integral to a rural residential development.
15. Cul-de-sac streets shall be provided at the closed end with a paved turnaround having a minimum diameter of eighty (80) feet to the outer pavement edge or back of curb and a diameter of one hundred (100) feet to the right-of-way line.
16. A suitable turnaround shall be required by the Planning Commission when a street temporarily dead-ends over one hundred fifty (150) feet from its nearest intersection.
17. When stub streets are approved and constructed the developer shall post a sign at the end of the stub street stating: "NOTICE: This road will be extended if there is future development. For more information contact the Versailles-Midway-Woodford County Planning office at 873-8611." The sign(s) will be metal with reflective 4" tall lettering. The sign (s) will be posted prior to recording of final plat.

E. Adjacent Existing Streets

1. Subdivisions that adjoin or include existing streets that do not conform to standards herein or streets included in the Comprehensive Plan or Official Map (if adopted) to dedicate additional right-of-way width, construct additional pavement width or perform other measures that may be required for the

facilities to be fully compliant with standards contained herein. The Planning Commission may also require that funds be put in escrow for the purpose of acquiring right-of-way and making improvements to correct substandard conditions for the street or streets providing primary access.

2. Where a subdivision abuts or contains an existing or proposed arterial street, there shall be no direct access to the arterial street from individual lots. Such restriction shall be noted on the plat.
3. Where a subdivision abuts or contains an existing or proposed thoroughfare, the front of abutting lots and houses shall face the thoroughfare. Driveway access to thoroughfares will not be permitted except for designated scenic/historic thoroughfares. Where houses face the thoroughfare but driveway access is not permitted, access rights to the thoroughfare shall be dedicated to the public as part of the record plat.

F. Street Names

Proposed streets which are clearly aligned with existing streets shall bear the name of the existing street. Proposed streets shall not duplicate or closely approximate the names of existing streets in Woodford County. In the naming of developments, streets, etc., developers are encouraged to make use of local names and historical associations. All street names and addresses shall be approved by the Emergency 911 Coordinator prior to submission of the Final Plat.

G. Street Signs

Subdivider's are responsible for placement of street signs of a type in use throughout the cities and county. The subdivider shall place at least two (2) street name signs at each four-way street intersection and one at each "T" intersection. Where street lighting is provided, signs shall be installed under light standards, free of visual obstruction, and easily legible. All street signs must be designed and installed in accordance with the requirements of the manual on Uniform Traffic Control Devices (UTCD). All street signs shall be metal with reflective lettering.

H. Street Lighting and Easements

All streets, sidewalks, and walkways shall be properly lighted within the Urban Service Boundary as required by the Planning Commission. Such lighting shall be installed by the subdivider. Easements necessary for provision of such lighting shall be provided and shall be labeled as "street light easement" on the Final Subdivision Plat. The street lights shall be installed on both sides of the streets at no more than seventy five (75) foot intervals measured parallel to the street. Street lights should be between ten (10) and fourteen (14) feet in height. Lighting should be designed to meet the minimum standards of the Illumination Engineering Society.

I. Sidewalks and Curbs and Guttering

Sidewalks and curbs and gutters shall be provided on both sides of all streets within the Urban Service Boundary of Versailles and Midway. Sidewalks shall be at least four (4) feet wide and at least four (4) inches thick unless otherwise approved by the Planning Commission. They shall be 6" thick at all driveway crossings. Curbs and gutters shall be Ogee Curb, Box Curb. Sidewalks are subject to performance guarantee at final platting but must be installed on each lot prior to the Certificate of Occupancy permit being issued for the structure on said lot. In any case, all sidewalks must be complete within two (2) years of the final plat being recorded or when 80% of the lots in said unit are occupied, whichever occurs first.

J. Alleys

1. Alleys may be provided in residential, commercial and industrial districts. Alleys shall not be provided in other locations unless required by special conditions.
2. Alley intersections and sharp changes in alignment shall be avoided, but where necessary, corners shall be designed to permit safe vehicular movement.

3. Dead end alleys shall be avoided but, where necessary, shall be provided with adequate turnaround facilities at the dead end, as determined by the City or County Engineer.

K. Dedication of Right-of-Way for Existing Streets

Subdivisions platted along existing streets shall dedicate additional right-of-way, if necessary, to meet the minimum street width requirements set forth in Section 630 (E) (1) of this Article.

1. The entire minimum right-of-way shall be dedicated where the subdivision is on both sides of an existing street. When the subdivision is located on only one side of an existing street, one-half (1/2) of the required right-of-way width measured from the center of the existing roadway shall be dedicated.
2. Dedication of one-half (1/2) of the right-of-way for proposed streets along the boundaries of land proposed for subdivision shall be prohibited.

L. Dedication of Right-of-way for Proposed Streets

The preferred method for dedication of Right-of-Way for proposed streets, with the exception of the alley, is fee simple title for public use by the Record Plat or other legal instrument. The preferred method for the alley's is to dedicate a cross access easement by the Record Plat or other legal instrument. A fee simple dedication of lands for this street type may be accepted if the Planning Commission finds that a suitable agreement for an adequately funded program for long-term maintenance of the facility will be implemented.

M. Erosion Protection

1. All areas disturbed by grading shall have temporary vegetative cover provided. Such cover shall consist of annual grasses or small grains. Slopes exceeding 4:1 shall have additional protection of mulching to prevent erosion.
2. To protect ditches and other areas from erosion, the following protective measures shall be required:

<u>Grade of Ditch</u>	<u>Required Protection</u>
Less than 1%	Seed and fertilize entire ditch and slopes.
1% to 5%	Seed, mulch, fertilize and peg invert and sides to top of 2:1 slope.
5% to 7%	Paved invert, and paved slope to six (6) inches above maximum flow depth, with four (4) inch thick reinforced concrete. Seed all other areas not paved in the right-of-way.
All over 10%	Seeded and pave as above, but with alternate side diagonal baffles at about three (3) to four (4) foot center to retard flow.

All seeding and fertilization shall be done in conformance with the guidelines for Urban Sediment Control prepared by the Woodford County Conservation District (see Section 770).

3. During grading, excavation, or construction no erosion, siltation or water impoundment shall occur on

any adjoining property as the result of such grading, excavating, or construction activity. If erosion, siltation or water impoundment should occur, it shall be corrected by the contractor immediately, to the satisfaction of the City or County Engineer.

N. Storm Water Management Facilities

Design Criteria

A. Post-Development versus Pre-Development Design Criteria

1. Peak Discharge Considerations

The basic standard for design of drainage systems will be to keep runoff characteristics after development at the same level as existed prior to development and prevent aggravation of the existing downstream drainage system. To achieve this objective, storm water detention/retention facilities will be required, in most cases, so that the peak discharge (measured in cubic feet per second - CFS) and flood elevations from the developed area shall not be greater than the peak discharge and flood elevations evaluated for four (4) separate storm events: the 2 Year/1 Hour storm; the 10 Year/1 Hour storm; the 25 Year/24 Hour storm; and the 100 Year/1 Hour storm based on a method approved by the County and/or City Engineers. Included would be peak discharges from all areas that pass through the subject development. The peak discharge for the pre-developed site shall be measured in an instantaneous flow rate at the discharge point of each watershed affected. The peak discharge for the post developed site shall be the instantaneous flow rate taking into consideration both the detained storm water and the unmanaged storm water (if applicable). Downstream interceptor storm facilities shall be studied to determine that peak discharge from the subject development would not compound the existing downstream situation. The emergency spillway shall be designed to route the 100 year/24Hour storm, but does not have to meet the pre-development flow rate.

2. Downstream Flood Levels

The developer will be required to provide storm drainage improvements that will prevent the flood level for the area immediately downstream from the subject development from being raised in a 2 year/1 hour, a 10 year/1 hour storm, a 25 year/24 hour storm and a 100 year/1 hour storm considering both the instantaneous flow rate and flood elevations caused by the increased quantity of water from the development. Where conditions and engineering calculations indicate benefit from storm water detention/retention facilities would not occur, then they may be deleted from the development requirements in favor of channel improvements and/or off-site improvements to improve flow, or other alternative as approved by the applicable City or County Engineer.

3. Watershed Overcompensation

Each watershed must be evaluated separately, and each watershed must meet the requirements as stipulated within these specifications. Overcompensating within one watershed to allow for under compensated storm water detention in any other watershed may be considered on a case by case basis.

4. Discharge Points

The discharge point (s) of any storm water management facility shall be into either a natural, well defined drainage path, or into a man-made drainage way. For areas proposed to drain onto adjoining properties essentially undetained, then the drainage must be sheet flow. Point discharges onto adjoining property are prohibited unless the discharge point is into a natural, well defined drainage path or into a man-made drainage way or into an agreed upon off-site easement.

B. Storm Water Collection System Design Criteria

1. General System Design

A preliminary storm water drainage layout plan shall be submitted with the preliminary arrangement of the development. This plan must indicate the overall drainage scheme in enough detail to insure the proposed plan is acceptable. Retention/detention areas or easements must be exclusive of all lots. The Planning Commission Staff and the City or County Engineer will review this preliminary storm water drainage layout plan.

An overlot drainage plan shall be prepared and furnished as a portion of the Construction Plans which indicate the pre-developed and post-developed contours and other information as may be necessary to establish that positive drainage from all of the lots throughout the subdivision shall be satisfactorily accomplished. Drainage swales between lots may be necessary. The developer shall insure that the lots in the field reflect the over lot drainage plan proper to the submission of the final record plat. The developer's engineer shall sign an affidavit attesting that all proposed public and private improvements for the subdivision have been constructed and tested in accordance with the approved plans and specifications prior to the submission of the Final Record Plat. The builder shall be responsible to insure that lots shall be graded so that water drains away from each building as specified in the applicable building code.

Storm water detention and retention basins shall not be included in any lot proposed as a building site. Such basins shall be constructed within parcels, tracts or lots that are specifically identified in the preliminary and record plat as non-building sites. Furthermore, for general maintenance purposes, storm water basins and facilities shall be constructed in such a fashion that no portion of the basin, including the dam/spillway and toe of slope of dam, is located within 12 feet of the basin's own lot, parcel, or tract perimeter.

Easements for the storm water management system shall be shown on the Final Record Plat (as applicable) in the locations and widths as approved by the Planning Commission. Special notes pertaining to the maintenance of detention/retention facilities may be required on plats (as applicable). Release from or modification to existing drainage easements shall require the written approval of the Planning Commission.

The City and County will not accept or maintain any detention/retention facility, except in accord with the following:

"The retention and drainage easement shall be maintained by the _____ Association (the "Association"). The retention and drainage easement shall be maintained by the Association in such a fashion as to insure that the vegetative growth will not exceed eight inches in height. All foreign objects, debris and silt will be removed from the retention site. No potential or actual health or safety hazard will be created. The Association shall perform periodic maintenance on all areas, other than storm drainage pipes and head walls to insure the hydraulic function of the project. Structural and landscaping intrusions onto the retention area shall not be allowed without written approval of the City or County Engineer. The Association shall permit necessary access to the City or County Engineer for periodic inspection. Failure to comply with the above requirements shall allow the City or County Engineer to take the necessary action to correct the non-compliance and the cost thereof shall be borne by the Association. Woodford Fiscal Court, the City of Versailles, or the City of Midway, shall have the right to assert a lien on the property to assure payment. This note shall be designated on the Final Record Plat.

The applicable City or County jurisdiction will be responsible for maintaining all head walls, storm drainage pipes and inlets, regardless of the ownership of the facilities.

The County or City Engineer shall review the drainage plan to determine the adherence to the criteria as outlined in these Regulations, and to determine compliance with other Planning Commission

Regulations. The storm water management system final plans and calculations shall be submitted to the Planning Commission Staff in triplicate. They shall include the number, seal and original signature of a professional engineer registered in Kentucky and the engineer's calculations for pre-development/post-development peak discharge runoff volumes, catch basin spacing, pipe sizing, and storage volumes in the detention facilities for each of the four (4) separate storm events outlined earlier in this regulation. Capacities of all downstream interceptor facilities receiving discharges from development shall be checked for pre-development/post-development adequacy. Outlet sizing shall be staged for each of four (4) storm events to insure the post-development discharge will not exceed the pre-development discharge rates.

The Planning Commission and/or Staff reserve the right to reject any plan that would adversely effect adjoining properties.

2. Piping System

Design of storm water piping system shall be designed on the basis of the 25 Year/24 Hour Storm event peak discharge. The unit shall then be checked for backwater and surcharge conditions for the one hundred (100) year storm event peak discharge. No flooding shall be induced by the system at the one hundred (100) year return frequency.

The Manning's roughness co-efficient to be used in culvert design shall be 0.024 for Corrugated Metal Pipe (CMP); and 0.012 for Reinforced Concrete Pipe (RCP), smooth interior High Density Polyethylene Pipe (HDPE), Ductile Iron Pipe (DIP), and PolyVinyl Chloride (PVC) pipe.

HDPE and PVC pipe shall only be used for private systems. Both pipes are very susceptible to permanent damage from rodding operations. A plan and profile of the proposed storm water system (including pipes, drainage swales, channels, stream relocations, etc.) shall be drawn with pipe sizes, types, grades and inverts indicated. All drainage pipes must be extended to a natural, well defined drainage path connected to a manmade drainage way, or storm water sewer systems.

Under no circumstances shall storm water drainage systems be designed, constructed or connected so that the flow is diverted into any public or private sanitary sewer system.

3. Head walls

Head walls are required for any pipe within the proposed storm water management plan. Head walls are also required for any existing pipe within the proposed subdivision. Energy dissipater head walls shall be provided at the outlet of all pipes over eighteen (18) inches in diameter and of a configuration to prevent erosion and to reduce the discharge velocity. For pipes less than eighteen (18) inches in diameter, the applicable City or County Engineer may require energy dissipater head walls at the outlet as deemed necessary. Four (4) foot fencing shall be required along the perimeter of the head wall if the distance from the pipe invert to the top of the head wall exceeds three and one-half (3.5) feet.

4. Storm Manholes

The storm water drainage system shall be designed and constructed with sufficient junction boxes, manholes, and other appurtenances to provide ready access into any section for clean out and maintenance operations. Storm sewer manholes with improved inverts shall be required for pipes at any change in direction (horizontal or vertical) or junction point and at a minimum every four hundred (400) feet. Manhole lids must be clearly marked as "storm sewers" so as not to be confused with sanitary sewer manholes.

5. Box Culverts

Any drainage plan requiring the use of box culverts shall include reinforced concrete designs from a professional engineer to withstand the anticipated loading. (HS 20 loading or greater). Design of culverts shall be designed on the basis of the 25 Year storm event peak discharge.

6. Drainage Channels

When open channel flow in man-made drainage channels is proposed as a method of storm water transport (in lieu of underground pipes), the developer shall provide drainage channels sufficient in size to contain the design discharge from the 10 Year/24 Hour storm event plus one (1) foot freeboard. The channel shall then be checked using the 100 Year storm event. No flooding shall be induced by the channel at the 100 Year return frequency. The side slopes for sodded channels shall not be steeper than three to one (3H:1V). The lowest floor elevation (residence and garage) for any lot adjacent to any channel shall be a minimum of one (1) foot above the elevation of the top of the bank for any channel. The side slopes for a concrete lined channel shall not be steeper than two to one (2H:1V). Channels with slopes less than two (2%) percent shall have a low flow concrete channel with a minimum of two (2) foot flat bottom, six (6) inches deep. For design velocities exceeding six (6) feet per second, riprap or other approved erosion control shall be used to the elevation of the 10 Year/24 Hour storm event. The Manning's roughness co-efficient to be used for flows contained within concrete lined open channels shall be 0.015, grass lined channels shall be 0.030, rip-rap lined channels shall be 0.045.

7. Existing Structures - On Site

The storm water management plan must take into account adjoining subdivisions and drainage areas to insure that the effects of existing structures and/or drainage ways have been considered. If existing on-site structures are to be utilized within the storm water management plan, then each existing structure must meet the design materials and construction requirements as set forth in these Regulations.

8. Sinkholes

Sinkholes (either active or inactive) shall not be used in calculations for the storage or transfer of storm water. Sinkholes should not be considered as a viable part of the storm water management system since the capacity for flow and volume for storage cannot be determined. Existing sinkhole systems shall not be covered or otherwise tampered with since they already function with existing hydrological conditions. A geotechnical engineer shall evaluate the area and specify engineering conditions whereby the area could be buildable.

9. Springs

Springs (either constantly flowing or wet weather flowing) must be considered within the storm water management system. Spring boxes and piping shall be required to divert the ground water from the spring to the storm water drainage system. This shall include existing springs and any spring discovered during construction. Under no circumstances shall spring discharge be designed, constructed, or connected so that the flow is diverted into any public or private sanitary sewer system. A geotechnical engineer shall evaluate the area and specify engineering conditions whereby they could be buildable.

10. Private Systems

A private storm water management system shall be defined as a system installed by an individual (i.e. person or company) to fulfill detention/retention requirements not associated with subdivisions. A private storm water management system shall follow the same design criteria as outlined in these Regulations, except that the use of HDPE and PVC are allowed when the system will not be dedicated

for public maintenance.

C. Detention/Retention Basin Design Criteria

1. General Basin Design

A detention basin shall be defined as a normally dry, storm water storage area with a principle spillway and/or an emergency spillway. Detention basins shall be designed so that standing water will not remain during dry weather. Grass bottoms in detention basins shall be designed with minimum slopes of two (2%) percent and shall include low flow concrete channels designed with minimum slopes of one-half (1/2) percent. In certain instances, other techniques (underground vault storage, etc.) may be considered for systems on a case-by-case basis.

A retention basin shall be defined as a storm water storage area that permanently stores a predetermined pool of water. Retention basins shall be designed within a drainage area of sufficient size or be aerated to insure that the standing water will not stagnate or present health hazards. For the design of retention basins, the static ground water level must be taken into consideration for any and all utilities including the existence or possibilities of basements. The minimum depth for a basin with a permanent pool shall be two (2) feet as measured from the bottom of the basin to the invert of the primary spillway. Permanent pools of depth greater than two (2) feet shall be fenced along all sides of the permanent pool with a minimum of a 4 (four) foot fence.

Farm ponds that are utilized for storm water storage and are off-site to the subdivision or development/building site will be exempt from the fencing requirement.

The storm water piping system used to feed the retention basin must have the inflow inverts above the normal lake level as dictated by the invert elevation of the principle spillway. Trash racks and rock silt check dams or other acceptable method as approved on a case by case basis by the City or County Engineer, shall be designed at each inflow source to the retention basin to prevent silt and/or trash from entering into the permanent pool.

2. Construction in Flood Plain

Detention/retention basins shall not be constructed within the 100 Year Flood Plain as defined by the Flood Insurance Maps for the cities of Midway and Versailles and Woodford County unless a permit for such construction is obtained from the Kentucky Division of Water in Frankfort, Kentucky.

3. Principle and Emergency Spillway

Each detention/retention basin is required to have a principle and an emergency spillway of a size dictated by the overall storm water detention/retention plan. The minimum size for a principle spillway shall be eight (8) inches in diameter for either pipe or orifice, or as determined by the Engineer and approved by the City or County Engineer. More than one principle spillway for each detention/retention basin may be required to insure compliance with the method as outlined in these regulations. The spillway (s) may be staged as necessary to insure proper discharge rates for each of the four (4) storm events: 2 Year/1 Hour storm; the 10 Year/ 1 Hour storm; the 25 Year/24 Hour storm; and the 100 Year/1 Hour storm. One spillway outlet rarely detains/retains different storm events. The principle spillway is intended to serve the 25 Year/24 Hour Storm event and the emergency spillway is intended to serve the outfall needs of a 100 Year storm event. Each detention/retention basin must have an emergency spillway of sufficient size to prevent the overtopping of the basin during the greatest of any of the four (4) storm events. Open channel emergency spillways shall be concrete.

4. Embankment Requirements

If an earthen berm is used to construct a detention/retention basin, the minimum top width shall be four (4) feet, and the maximum slope of the embankment shall be three (3) feet horizontal for each one (1) foot of vertical rise (3H:1V) or as approved by the City or County Engineer. The embankment shall be initially constructed to a minimum of one (1) foot above the crest of the 100 Year/1 Hour storm event discharge through the emergency spillway.

5. See "Storm Water Collection System Design Criteria" regarding the location and design of storm water detention and retention basins.

Construction Criteria

A. Materials

1. Pipe - Once the Construction Plans have been approved for construction by the Planning Commission Staff and the City or County Engineer, the pipe type shall not be altered without further review and approval.
 - a. Corrugated Metal Pipe (CMP) shall conform to the latest edition of the Kentucky Standard Specifications for Road and Bridge Construction - Pipe Culverts, Storm Drains and Sewers.
 - b. Reinforced Concrete Pipe (RCP) shall conform to the latest edition of the Kentucky Standard Specifications for Road and Bridge Construction - Pipe Culverts, Storm Drains and Sewers.
 - c. High Density Polyethylene (HDPE) Pipe shall only be used in private storm sewer systems and be ADS N-12 manufactured by Advanced Drainage Systems, Inc., or approved equal and conform to the requirements of ASTM F405 and ASTM F667.
 - d. Ductile Iron Pipe (DIP) shall conform to the latest edition of the Kentucky Standard Specifications for Road and Bridge Construction - Pipe Culverts, Storm Drains, and Sewers.
 - e. PolyVinyl Chloride (PVC) Pipe shall only be used in private storm sewer systems and shall conform to the requirements of ASTM D2241, SDR35 and ASTM D1784, Schedule 40.
2. Concrete Structures - Once the Construction Plans have been approved for construction, the size or type of concrete structures shall not be altered unless approved by the Planning Commission Staff and the City or County Engineer. The materials used to construct any concrete structure (pre-cast or cast-in-place) shall conform to Kentucky Standard Specifications for Road and Bridge Construction including any and all accessories which might be required of the structure (i.e., chain link fencing, grates, riprap, castings, etc.). Concrete for the structures shall conform to the requirements for Class 'A' concrete as described in the Kentucky Standard Specifications for Road and Bridge Construction (Latest Edition).

B. Construction

The installation of storm water facilities shall not begin until the Construction Plans have been approved by Planning Commission Staff and the City or County Engineer.

Construction of head walls shall conform to the Kentucky Bureau of Highways, Head Wall Supplement, RDH Series, except as modified for energy dissipaters. Head walls may be pre-cast or cast-in-place, but the use of brick is prohibited as a structural material.

Construction of other concrete structures shall conform to the Kentucky Bureau of Highways Standard Drawings Manual. The structures may be pre-cast, cast-in-place or slip formed, but the use of brick is prohibited.

C. Pipe trenching and backfill shall consist of the following:

- a. The trench width shall be a minimum of eighteen (18) inches plus the outside diameter of the pipe. The pipe shall be bedded on four (4) inches of #9 or #68 crushed stone. The pipe shall then be cushioned by at least one and a half (1 ½) feet of select soil backfill above the pipe. Backfill above this soil cushion shall not contain large pieces of rock (greater than one (1) foot).
- b. When the trench excavation is within the street then the entire trench must be bedded-with #9 or #68 stone and backfilled with D.G.A.

D. Inspection of Storm Water Management Facilities

Prior to final approval of the Construction Plans, the Developer shall designate by letter to the Planning Commission Staff, a Project Engineer to be responsible for the inspections and project certifications. The Project Engineer may propose changes to the approved construction plans. Notification of the changes shall be given to the Planning Commission Staff. Such changes shall meet the requirements of the Versailles, Midway, Woodford County Subdivision Regulations and not violate any local or state regulation. All such changes shall be reviewed and approved by the Planning Commission Staff and the City or County Engineer prior to the work being done.

Changes requiring variances from the requirements of the Subdivision Regulations must be submitted in writing to and approved by the Planning Commission prior to the work being done.

All storm sewer construction shall be inspected by the Project Engineer to insure that the construction progresses in compliance with the approved plans and specifications of the project. If the storm sewer being constructed is covered prior to inspection, it will have to be uncovered before it will be approved. However, small area spot coverings of the storm sewer prior to inspection are acceptable to prevent flotation.

The Developer shall provide ready access to the construction site for inspection by Planning Commission Staff and the City or County Engineer throughout the construction period. If the Planning Commission Staff determines that the construction is not in compliance with the approved plans or specifications, they shall notify the Contractor, the Project Engineer and the owner. The owner shall take the necessary steps to see that the problem is corrected. In the event an unresolved difference

arises between the owner, Developer, Project Engineer and the Planning Commission Staff, the parties shall present their arguments in support of their positions to the Technical Review Committee, the Planning Commission and an independent engineer, in sequence. The independent engineer's time shall be paid by the Developer, if the Developer is found to be performing construction not in compliance with Planning Commission specifications and acceptable construction techniques. Otherwise, the Planning Commission will absorb costs associated with having the independent engineer examine the work. If the difference is resolved at any stage, no further presentation of differences shall be required. If differences are not resolved by this method, either party may appeal to the Circuit Court pursuant to the provisions of KRS 147.710.

Upon completion of the construction, the Developer shall make a written request to the Planning Commission Staff for a detailed inspection by the Planning Commission Staff and the City or County Engineer for acceptance of dedicated public facilities.

E. Penalties

Failure to construct the storm water improvements in accordance with the approved plans and specifications, and the regulations contained herein (including violations of conditions or safeguards established in connection with approval)

shall constitute a misdemeanor as per Kentucky Revised Statute Chapter 100.. Any person who so violates these requirements shall upon conviction thereof, be fined not less than one hundred dollars (\$100.00) but not more than five hundred (\$500.00) for each conviction. Each day of violation shall constitute a separate offense.

Nothing herein contained shall prevent the Planning Commission from taking such other lawful action as is necessary to prevent or remedy any violation.

F. As-Built Construction Plans

After the completion of the construction of the storm water management facilities, three (3) sets of prints, one (1) digital copy (clearly marked "As-Built"), and one (1) set of reproducible mylars shall be submitted to the Planning Commission Staff for the As-Built System.

The As-Built Construction Plans for the storm water management system shall include the following information which has been determined in the field after construction:

1. The location of each structure, piping system and detention/retention area must be shown on a plan view sheet. This shall include the location of all catch basins, storm manholes, piping systems, drainage swales or located streams, head walls, springs, box culverts, and the flooding limits and volumes of detention/retention basins.
2. Information for each basin, or other similar structures shall include the grade elevation, the flow line elevation, and type of structure including throat length, if applicable.
3. Information for storm manholes shall include a rim elevation and a flow line elevation.
4. Information for piping systems shall include the pipe sizes, pipe lengths, the pipe type, and slope of pipe installed.
5. Information for drainage swales or re-located streams shall include a cross section indicating the extent of the constructed swale and a generalized slope with flow arrows.
6. Information for head walls shall include the type of head wall and the flow line elevation.
7. Information for springs shall include the type (i.e. constantly flowing or wet weather (flowing) and the actual treatment installed.
8. Information for box culverts shall include the size and type, the flow line elevation and the design loading.
9. Information for detention/retention basins shall include a stage/storage curve for the constructed basin indicating the invert of the principle spillway (s), the invert of the emergency spillway, and the elevation of the top of the embankment. Additional data for the principle spillway shall include the size and type. Additional data for the emergency spillway shall include a cross section indicating the control section of the constructed spillway.
10. Certification that volumes and construction meets the intent of these regulations and the approved construction plans.
11. Show a bench mark.

630 Lots and Lot Sizes

A. General Requirements

1. The size, width, depth, shape, orientation, and yards of lots shall not be less than specified in the Zoning Ordinance for the district in which the lots are located and shall be appropriate for the type of development and use contemplated.
2. All lots shall have frontage upon an approved and improved public street, except that in a Planned Unit Development lots having access to a street or common parking area along a pedestrian way may be allowed if the development meets with the specifications outlined in the Zoning Ordinance.
3. Side lot lines shall be substantially at right angles or radial to street lines, unless a variation from this rule will give a better street or lot plan. Right of way shall be substantially parallel to the street centerline. **(Amended August 10, 2006)**
4. Double frontage and reverse frontage lots should be avoided except where essential to overcome specific disadvantages of topography and orientation. A planting screen easement of at least fifteen (15) feet contained within the required setback, across which there shall be no right of access, shall be provided along the line of lots abutting such an arterial street or highway.
5. Where a watercourse separates the buildable area of the lot from the street by which it has access, a note shall be placed on the plat indicating the type and size of culvert or other structure, approved by the City or County Engineer.

640 Blocks

A. Block Shape

Block length and width or acreage within bounding streets shall be such as to accommodate the size of lot required in the area by the Zoning Ordinance, and to provide for convenient access, circulation control, and safety of street traffic. Blocks shall be of such sizes and shapes as considerations of topography and street layout shall dictate.

Pedestrian through walks may be required when necessary to assist circulation or provide access to community facilities. Such walks shall have a right-of-way width of not less than twelve (12) feet and a paved walk of not less than four (4) feet.

650 Easements

A. General Requirements

To the fullest extent possible, easements shall be centered on or adjacent to rear or side lot lines. Easements shall be fully indicated on the Final Subdivision Plat.

B. Pedestrian Easements

1. The Planning Commission shall require, when it deems it necessary to facilitate pedestrian access to community facilities or other nearby streets, perpetual unobstructed easements at least twelve (12) feet in width. The Planning Commission may require a paved walk of at least four (4) feet in width for pedestrian safety within such an easement.
2. Where a subdivision borders on a watercourse in an area designated in the Comprehensive Plan for public recreational use, the Planning Commission may require easements to be reserved for public access to the water.

C. Utility and Drainage Easements

Where topography or other conditions make it impractical, to include utilities or drainage facilities within street rights-of-way, perpetual unobstructed easements at least twelve (12) feet in width for such utilities shall be provided across property outside the street lines and with satisfactory access to the street, unless otherwise specified by the utility company.

D. Storm Water Easements

Where a subdivision is traversed by a watercourse, drainage way, channel or stream, there shall be provided a storm water easement or drainage right-of-way conforming substantially with the lines of such watercourse, and such further width as may be deemed necessary with design and approval by the City or County Engineer to permit the construction of improvements designed to restrict the flooding of said watercourse on adjoining properties. Parallel streets or medians may be required.

E. Widening or Realignment of Existing Roads

Where the subdivision borders an existing street and the Comprehensive Plan indicates a plan for realignment or widening of the street that would require reservation of some land of the subdivision, the Planning Commission may require that such areas be shown and marked on the plat "Reserved for Street Realignment (or Widening) Purposes". Land reserved for street widening may not be counted in satisfying the minimum front yard or minimum lot area requirement of the Zoning Ordinance.

660 Land Requirement for Community Facilities and Adequacy and Accessibility to Public Facilities

A. In reviewing subdivision plats, the Planning Commission will consider the adequacy and accessibility of existing or proposed community facilities to serve the additional dwellings proposed by the subdivision.

Where a proposed park, playground, or other recreational area, proposed school site, or other public uses, shown in the Comprehensive Plan is located in whole or in part within a proposed subdivision, such proposed public use or park, if not dedicated to public use, or conveyed to the City, County or the Board of Education, shall be reserved for a period not more than two years from the date of final approval of the Final Subdivision Plat by the Planning Commission for acquisition by the Fiscal Court, the City Council, the Board of Education or other public agency by purchase or other means.

At a minimum, open space (exclusive of retention/detention basins) shall constitute no less than four (4%) percent of the gross area of any subdivision or development site except in the Rural Residential zones. This open space area shall have at least sixty (60%) percent of its perimeter abutting a public street edge. **(Amended March 2008)**

B. In reviewing subdivision plats and site plans, the Planning Commission will consider the adequacy and accessibility of existing or proposed community facilities to serve the additional dwellings or non-residential structures and uses proposed. This review shall be based on service or facility standards adopted by the Planning Commission. Community facilities and services that may be reviewed for adequacy and accessibility include:

1. Public Schools
2. Transportation Facilities
3. Potable Water Supply
4. Sanitary Sewer Collection and Treatment
5. Storm Water Management and
6. Parks and Recreation

670 Urban Sediment Control

A. Technical Principles

The subdivider shall provide effective sediment control measures in the planning and construction of subdivisions. A Notice of Intent (NOI) for storm water discharge is required on all construction sites that will disturb five (5) or more acres. The permit will be obtained from the Kentucky Division Of Water, The Natural Resources and Environmental Protection Cabinet (Division of Water) prior to grading. A practical combination of the following technical principles shall be applied:

1. The smallest practical area of land shall be exposed at any one time during development.
2. When land is exposed during development, the exposure shall be kept to the shortest practical period of time.
3. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during development.
4. Sediment basins (debris basins, desilting basins, or silt traps) shall be installed and maintained to remove sediment from runoff waters from land undergoing development.
5. Provisions shall be made to effectively accommodate the increased runoff caused by changed soil and surface conditions during and after development.
6. The permanent final vegetation and structures shall be installed as soon as practical in the development.
7. The development plan shall be fitted to the topography and soils so as to create the least erosion potential.
8. Wherever feasible, natural vegetation shall be retained and protected.
9. All seeding and fertilizing shall be done in conformance with the guidelines or Urban Sediment Control prepared by the Woodford County Conservation District.
10. During grading, excavation, or construction no erosion, siltation or water impoundment shall occur on any adjoining property as the result of such grading, excavation or construction activity. If erosion, siltation or water impoundment should occur it shall be corrected by the contractor immediately, to the satisfaction of the City or County Engineer.

680 Miscellaneous

A. Preservation of Existing Features

Existing features which would add significant aesthetic or historic value to residential development, or natural or man-made assets of Versailles, Midway, or Woodford County, such as trees, groves, woodlands, watercourses, vistas, historic spots, historic or architecturally significant buildings, and similar irreplaceable assets, shall be preserved. No more than twenty (20%) percent of the existing trees, groves, or woodlands, can be removed. Trees, groves, or woodlands being removed shall be specifically identified on the Preliminary Plan, as “Tree Protection Areas”, with appropriate acreages and percentages.

These “Tree Protection Areas” will be depicted as easements on the Final Record Plat with notes indicating that it is the responsibility of the property owner to maintain them. If any of the existing trees die or become a danger to the surrounding area, the property owner shall contact the Planning Director in writing for permission to remove and replace the tree (s). They will need to indicate the location of the tree (s) being removed and identify what type (s) of tree (s) are being planted. The new tree (s) must be native Kentucky tree species that are at least 1 ½ inch caliper and 10 feet tall

when installed.

B. Preservation of Natural Cover

Land to be subdivided shall be laid out and improved in reasonable conformity to existing topography, in order to minimize grading and cut and fill, and to retain, insofar as possible, the natural contours, limit storm water runoff and conserve the natural cover and soil.

C. Self-Imposed Restrictions

The subdivider may place restrictions on the development more restrictive than those required herein or by the Zoning Ordinance. Such restrictions, if any, may be required to be indicated on the Subdivision Plat.

D. Modifications of Standards

The Planning Commission may modify the special requirements in any individual case where, in the Planning Commission's judgment, such modifications would eliminate undue hardship and are in the public interest. No modifications shall be granted which will have the effect of nullifying the intent and purpose of these Regulations or the Comprehensive Plan. In granting any adjustment, the Planning Commission shall attach such conditions as are necessary, in its judgment, to secure substantially the objectives of the standards or requirements so adjusted.

E. Construction Procedure

Equipment or structures used in construction shall not be allowed to remain in close proximity to newly occupied lots in the subdivision. Once construction is halted for a thirty (30) day period, the developer may be required to remove the construction equipment from the premises.