ARTICLE 5
DESIGN AND IMPROVEMENT STANDARDS

SECTION 5.1 PURPOSE

The purpose of this Article is to set forth the basic and minimum design and improvement standards required as a prerequisite for development or in conjunction with Lot, street, utility, other physical development in the Subdivision. The Developer may exceed the standards set forth in these regulations, or in some cases, the Planning Commission may require a Developer to exceed the standards.

SECTION 5.2 SUBDIVISION DESIGN PRINCIPLES

Design principles are those criteria that are used to guide the process of design to achieve minimum goals. The principles that **shall** be utilized to layout Subdivisions are:

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A. Circulation patterns are laid out to discourage through traffic within the neighborhoods but to provide for connectivity to multiple outlets from the neighborhood.

B. Right-angle street intersections reduce traffic hazards.

C. Cul-de-sacs should serve no more than thirty (30) dwelling units nor extend more than thirteen hundred (1300) feet.

D. Residential Lots are situated with backs to Thoroughfares such as Collector or Arterial streets. These Lots are also given additional depth, and planting screen or fence to buffer lights and noises of Thoroughfares. Backing Lots to a Thoroughfare reduces traffic hazards and inefficiencies that result from uncontrolled access.

E. Major access points to the Subdivision are located away from major intersections but lined up with other streets of equal classification.

F. ADA compliant sidewalks will be used to provide pedestrian access within the Subdivision and to adjacent areas. If alternate methodology will improve drainage or other significant design elements, the alternate designs may be approved. (See Street Design Standards table)

G. Curbs and gutters will be used to enhance the safety of the neighborhood and to convey storm water when appropriate. Curbs and gutters must not conflict with ADA requirements. (See Street Design Standards table)

The principles that **should** be utilized to layout Subdivisions are:

A. Curved streets are aesthetically superior to a grid layout and fit the existing topography more efficiently within neighborhoods. The grids may be more efficient for Collector streets.

B. Cul-de-sacs limit traffic, provide access to odd parcels of land, and create appealing courtyard-like clusters of dwellings.

C. Variation of Building Setbacks and orientations along streets may create visual interests.

D. Traffic calming methods can be designed to benefit safety by reducing speed and cut-through traffic, but must be designed to safely pass emergency vehicles. Alternate Collector routes reduce speeds on Residential streets. City of Bowling Green design guidelines must also be followed. See Section 4.8 for maintenance responsibility.

E. Additional Building Setback improves appearance of entrance.

F. Street trees define streetscape and scale.

G. Overall development plan saves key trees and groups of trees.

H. Power, telephone, and cable tv lines buried in Right-Of-Way and Easements enhance appearance. Must be in compliance with City and County Ordinances.

I. Street lighting improves safety and visibility within developments. Must be in compliance with City and County Ordinances.

J. Access Management. Subdivisions with street Improvements within the City of Bowling Green shall comply with City Guidelines concerning proper Access Management. All other areas of Warren County are encouraged to implement the same guidelines in Subdivision Development. Good Access Management reduces access points on major routes, conflict points for traffic, delay and improves service flows and capacity of the Roadways.

SECTION 5.3 ADEQUATE PUBLIC FACILITY STANDARDS

A. **WATER SUPPLY AND SEWER** - The Developer shall provide a water and sewer (when applicable) distribution system adequate to serve the proposed Subdivision. The water and sewer mains shall be of adequate size and quality and designed in accordance with applicable City or County Ordinances and standard specifications design standards of Bowling Green Municipal Utilities or Warren County Water District. The plans shall show proposed water and sewer mains adequately sized in accordance with the specifications of the serving utility, including a fire protection plan showing all proposed fire

hydrants properly spaced for complete fire protection. Details of construction material and methods shall be provided. See appendix D for more information on fire protection.

B. **PUBLIC ROADS** - The Planning Commission is responsible for assuring that street development conforms to the Comprehensive Plan of Warren County, and amendments, additions, and changes thereto, and in conformity to street or highway plans officially adopted by the Applicable jurisdictions. Proposed streets shall be considered in their relationship to existing and planned streets, to topographical and drainage conditions, to public convenience and safety, and in their appropriate relation to the proposed uses of the land to be served by such streets.

C. **TELEPHONE, NATURAL GAS, COMMUNICATIONS AND ELECTRIC SUPPLY** - Every Subdivision shall be provided with adequate and proper telephone and electric supply. Natural gas supply and other communications shall be provided at the Developer's option dependent upon the ability of the local supplier to meet the demands of the development.

D. **UTILITY EASEMENTS** - Easements shall be provided for utilities wherever necessary.

SECTION 5.4 PUBLIC NEED STANDARDS AND REQUIREMENTS

A. **OPEN SPACE REQUIREMENTS** - All single family residential developments or Subdivisions containing more than ten (10) Lots with Lot sizes of less than 1 acre shall be required to provide **at least 6.5 percent (6.5%) of the total land area as "Common Open Space"** within the Subdivision. All "Common Open Space" must be shown on the Preliminary Lot Layout, Final Plat and recording Plat.

1. All required Common Open Space shall be constructed or developed by the Developer. All Common Open Space shall be maintained by the property owner or Developer until at least fifty percent of the Lots of proposed Subdivision has been developed and sold. Only at that time shall the property owner or Developer have the option of transferring ownership of the Common Open Space to either the local municipality or governing body, or a properly constituted Homeowners Association acceptable to the Planning Commission. Only after the local government or Homeowners Association voluntarily agree to take possession of the Common Open Space area through a transfer of deed will the Developer's responsibility for maintenance be terminated.

2. Common Open Space shall be defined as *the area of a Subdivision open and unobstructed to the sky and which is legally accessible to and usable by all residents of the development***.** Common Open Space may include, along with natural environmental elements, formal landscaped

areas, wooded areas, watercourses, greenway trails, and recreational facilities such as swimming pools, golf courses, playgrounds and the area of Right-Of-Way from back of curb to the property line. Common Open Space shall not include yards, driveways, vehicle travel ways, parking Lots, and most drainage areas.

3. In some cases, when approved by the Planning Commission Staff Engineer or Executive Director, required Common Open Space may include permanent drainage areas specially designed to provide usable Common Open Space. Permanent drainage Improvements that qualify for this exception must **not** have side Slopes of more than 6:1 (alternate designs may be considered by the Staff Engineer) and must be grass-lined and appropriately landscaped as specified by the Planning Commission Landscape Architect, and be able to serve some type of recreational activity during dry weather conditions (such as a golf course, soccer practice field, picnic or passive play area).

B. OPTIONAL PUBLIC PARKLAND REQUIREMENTS – Instead of satisfying the standard 6.5% Common Open Space requirement, all residential Subdivisions or developments shall have the option of dedicating 5 percent (5%) of the total land area as "Public Parkland" within the Subdivision. All "Public Parkland" must be shown on the Preliminary Lot Layout, Final Plat, and Recording Plat**.**

1. "Public Parkland " shall be defined as **the area of a Subdivision open and unobstructed to the sky and which is owned by the local municipality or government and is legally accessible to all citizens of Warren County.**

2. Public parkland may include, along with natural environmental elements, formal landscaped areas, wooded areas, watercourses, greenway trails, recreational facilities such as public swimming pools, public golf courses, playgrounds, picnic and passive play areas.

3. Those Developers who dedicate at least 5% of the total land area to Public Parkland shall not be required to meet the 6.5% Common Open Space requirement.

4. All proposed "Public Parkland" dedications shall be reviewed by the appropriate local government and the Planning Commission for acceptance. If the appropriate local government does not wish to accept the dedication the property owner of Developer will be required to meet the original 6.5% Common Open Space requirements outlined in 5.4A.

SECTION 5.5 LOT AND BLOCK STANDARDS

The following standards for Lots and Blocks shall be the minimum required by the Planning Commission:

A. **BLOCK STANDARDS** - In general, intersecting streets that determine Block length shall be provided at such intervals as necessary to meet existing street patterns, topography, and requirements for safe and convenient vehicular and pedestrian circulation. Residential Blocks generally shall not exceed one thousand four hundred (1,400) feet in length, nor be less than five hundred (500) feet in length, with the Block width generally being no less than two hundred (200) feet. Subdivision layout shall be as necessary for the perspective use, including adequate provision for off-street parking, truck loading and unloading, buffer areas, pedestrian movements, and proper vehicular access to adjacent streets.

B. **LOT SHAPE** - Excessive depth in relation to width should be avoided, with a proportion of two and one-half (2 1/2) to one (1) normally being considered as desirable maximum. Depth to width ratios in excess of ten (10) to one (1) are considered unacceptable for tracts twenty (20) acres or smaller.. Depth and width dimensions shall be taken perpendicular to each other. Pointed or very irregular shaped Lots shall be avoided where possible. Narrow Border Strips shall be prohibited. Any Lot or portion of a Lot that abuts a public ROW shall be of sufficient depth and width to be buildable. No Lot shall be configured for the sole purpose of preventing access to public ROW from adjacent landowners.

C. **LOT FRONTAGE AND ACCESS** - Minimum Lot Frontage and access standards are set forth in the Zoning Ordinance/Resolution as well as City ordinances.

D. **LOT LINES** - Side Lot lines should generally be at right angles to straight street centerlines and radial to curved street centerlines. Rear Lot lines should consist of straight-line segments with a minimum number of deflections.

E. **LOT AREA AND MINIMUM BUILDING SETBACK LINE** - Lots for residential or non-residential use shall meet the minimum standards required by the Zoning Ordinance/Resolution.

F. **DOUBLE FRONTAGE LOTS** - Double Frontage Lots should not be used except where employed to prevent excessive vehicular driveway access to streets or to separate residential areas from other areas of conflicting land or traffic use.

G. **LAND REMNANTS** - If remnants of land exist after subdividing, and have no apparent future use that can be property controlled, they shall be incorporated into the proposed Lotting scheme.

H. **STREET ADDRESSES** - Street address numbers shall be assigned to each Lot by the Planning Commission to provide a separate and distinct address for each Lot.

SECTION 5.6 DRAINAGE STANDARDS

Every Subdivision and development shall provide satisfactory drainage of storm water by means of underground storm sewer pipes and/or surface ditches. The basic standard for design of drainage systems for Subdivisions will be to keep runoff characteristics after development at the same or lower level as existed before development. The "Built-out" conditions appropriate to the zoning classification shall be the design basis for control structures. This regulation shall be true for storms of all intensities and durations. To achieve these objectives, storm water retention systems will be required in most cases.

A. **TOPOGRAPHIC SURVEY** - A Topographic Survey shall include the quantitative measurement of existing conditions. The conditions shall include drainage divides, areas, runoff characteristics and outfall points. The Topographic Survey shall include existing conveyance methods, including storm sewers, channels, sinkholes/surface depressions, and containment areas. The Topographic Survey for all developments shall comply with the applicable laws for the Commonwealth of Kentucky, federal government, and local governments.

B. **DRAINAGE PLAN** - The Drainage Plan will show existing and proposed contours of the project, the street layout and street names, Lotting pattern with Lot numbers and the location of all Drainage Structures. Street centerline stationing should be indicated. The drainage calculations shall be for Built-out conditions based on the zoning classification. All Culverts shall be terminated with Headwalls. The Drainage Plan shall include the following elements:

1. **STATEMENT OF CRITERIA** - The plan shall include a statement of the criteria used in the drainage design, including the rate of precipitation, formula used in sizing Drainage Structures, and any constants for factors involved. Appendix B shows standard criteria and methods.

2. **GRADE** - The plan shall show the size, invert elevations, and percent of Grade of all storm drains, catch basins, outlets and inlets and indicate the pipe material used.

3. **DRAINAGE AREA** - The total drainage area contributory to each drainage pipe or channel, including off-site area shall be shown.

4. **DRAINAGE DITCHES** - If drainage ditches are used, indicate design, velocity, and method of Erosion control to be used on banks and

bottoms; The plan shall show plan, dimensional, cross-section, and flow line profiles of all proposed and existing ditches.

5. **MAXIMUM FLOOD STAGE ELEVATIONS** - The plan shall furnish maximum flood stage elevations on any structure either on or adjacent to the property, or whose proximity may affect the drainage or access to the property; and,

6. **ELEVATIONS** - The plan shall show elevations that must be based on Mean Sea Level Datum as established using third order accuracy or better using the World Geodetic System 1984 (WGS 84) for horizontal control and National Geodetic Vertical Datum of 1988 (NGVD 88) for vertical control.

7. **STANDARD DRAINAGE FEATURES** – To the maximum extent possible all drainage features shall be specified as KDOH standard drawings.

C. **DRAINAGE DITCHES** - Drainage ditches or swales shall be designed to minimize the Erosion. See Appendix B for requirements for ditch construction and appropriate linings. Sod materials and method of construction shall be in accordance with the standard specifications for construction in the City of Bowling Green or the Kentucky Department of Highways.

1. Ditches shall be designed so that each segment will function without Erosion.
2. Channel cross-section will be conducive to maintenance.
3. Channel linings will be chosen that are both functional and maintainable.
4. Grass linings and low Slopes are conducive to stormwater quality treatment.

D. **MANHOLES** - Manholes shall be constructed of pre-cast concrete with a concrete foundation.

E. **INLETS OR CATCH BASINS** Inlets or catch basins shall be constructed of concrete with reinforced concrete tops. The type of manholes, inlets, and other Drainage Structures shall be indicated on the plans for the proposed work.

F. **BOX CULVERTS** - Any box culvert, whether cast-in-place or pre-cast shall be constructed of reinforced concrete.

G. **TRENCHING (Street-cut permit will be required in existing roads)** - Drainage shall be constructed according to the approved improvement plans for the proposed work. Refer to Section 6.2.G and 6.2.H for trenching requirements.

H. **FLOODPLAINS AND FLOODWAYS** - No road or principle or accessory structure construction is permitted in floodplains and/or floodways. Construction of any other facility in the floodplain may require a permit from the Kentucky Division of Water. Construction of any kind within the floodway requires a permit from the Kentucky Division of Water. Floodways of navigable rivers must have the approval of the U.S. Corps of Engineers.

I. **RELATIONSHIP TO SANITARY SEWER SYSTEMS** - No storm water drainage system may be designed, constructed, or connected so as to flow into any public or private sanitary sewer system.

J. **RETENTION/DETENTION BASINS** - Where required to be included in the Subdivision design, Retention and Detention Basins shall be provided by the Developer. Such facilities shall be designed so that they will drain within 24 hours and no standing water will remain in the basin during dry weather, unless a permanent pond is to be constructed of sufficient size that the standing water will not stagnate and present health hazards. In certain cases, other non-basin retention/detention techniques such as underground vault storage may be utilized. The Planning Commission may require a perimeter fence around the Retention/Detention Basins in some circumstances. Storage basins shall not have side Slopes exceeding 3:1 and 6:1 maximum required for consideration as green space. The staff Engineer may consider alternate Slope treatments.

K. **DRYWELL INSTALLATION** - The depth of the drywells shall be determined as the depth necessary to intercept a sub-terrain aquifer, solution, fissure, cavity, or cave. The drilled bore hole shall extend a minimum of 12 inches into the void area. The unobstructed end of a minimum 8 inch cast iron casing pipe shall be inserted to a minimum 3 foot depth into the solid rock, measured by the length of drill bit withdrawn. The inlet end of the casing shall be grouted in place allowing a casing pipe stand of 3 to 5 feet. The exposed casing shall be perforated by the means of a drill or welding torch. The dry well inlet shall be constructed per the illustration for a Typical Drywell found in Appendix A.

L. **STORM DRAINAGE EASEMENTS** – On-site and off-site Easements for storm water drainage systems shall be shown on the final and Recording Plat in locations and sizes approved by the Planning Commission. Special notes relating to the maintenance of such Easements shall be placed on the final and Recording Plat. Drainage Easements may be combined with utility and

other Easements if sufficient widths are provided, however, no drainage Easement containing underground storm sewers may be combined with a utility Easement containing underground electric or natural gas lines except at necessary crossing points unless sufficient clearance between the facilities is provided.

M. **SOIL EROSION AND SEDIMENT CONTROLS** - Drainage Plans and Construction Plans must include an Erosion Prevention and Sediment Control Plan and Best Management Practices (BMP) plan, developed based on all applicable City/County/State/Federal ordinances and guidelines.

Specific storm water requirements are outlined in Appendix B.

SECTION 5.7 STREET STANDARDS

Each Subdivision shall be served by Public streets or streets for which improvement bonds have been posted. A Public street shall be provided for convenient access to each property within the Subdivision and each Subdivision Developer shall furnish proof that the proposed Subdivision is afforded proper access by way of a Public street. All new Public road access to the Subdivision and the individual Building sites shall be not lower than the Regulatory Flood Protection Elevation. Whenever the proposed Subdivision contains or is adjacent to a railroad Right-Of-Way or limited access highway, no street shall be planned to intersect such Right-Of-Way, except by prior written approval of the appropriate agency. All streets classified herein as Arterials, Collectors, Frontages, or Alleys, shall conform to the following standards: (See Appendix A)

A. **RESPONSIBILITY OF STREETS** - The Developer shall construct streets and appurtenances including all clearing, grading, laying of subbase, base, pavements, culvert, bridges, storm drainage facilities, and other structures. The respective legislative bodies shall not accept any street until it has been inspected by the city or county Engineer, and it has been determined that such construction is in conformance with the approved plans and adopted standards.

B. **CONFORMITY WITH COMPREHENSIVE PLAN** - The location of streets in a proposed Subdivision shall conform in general alignment with the recommendations of the Comprehensive Plan of Warren County.

C. **STREET GEOMETRICS** - All streets shall conform to the applicable geometric, cross-section and sight distance triangle standards.

D. **STREET CONTINUITY** – The Planning Commission may require consideration for the inclusion of streets based on an overall Thoroughfare plan to provide for major routes through the city and county. Streets shall be related to topography and shall provide for the continuation of existing or

dedicated streets in adjoining or nearby tracts, and provide for connection to unsubdivided tracts, especially those that would otherwise be landlocked.

E. **STREET NAMES** - The Developer shall name the streets in the proposed Subdivision but shall avoid the use of street names that closely approximate phonetically or in spelling the name of any existing street, except that the extension of any existing street will carry the same name as the existing street. Further, the Planning Commission should direct that any street be given the same name as an existing street where it is apparent that the proposed street will become an extension of any existing street upon the improvement of an intervening parcel of undeveloped land. Generally, no street should change direction ninety (90) degrees or more without a change in name, except in the case of a Loop or Circle street. The street names should be in conformance with the street naming and property numbering regulations of the Planning Commission. The connection of two differently named streets should be avoided but may be allowed if provisions are made for renaming one or the other of the existing streets.

F. **PLANNING FOR CONFLICTING TRAFFIC OR LAND USE** - Whenever the proposed Subdivision contains or is adjacent to a railroad Right-Of-Way, or conflicting change in land use, the Planning Commission shall require Frontage Roads, or one of the following Lotting systems: reverse Frontage Lots, Lots with rear service Alleys, or Lots with additional depth as may be appropriate for protecting these abutting properties and to afford separation of conflicting types of traffic and land use. When the proposed Subdivision contains or is adjacent to an Arterial street, the Planning Commission shall require Frontage Roads parallel to the Arterial street for the protection of abutting properties and to afford adequate separation of traffic from the adjoining Lots.

G. **INTERSECTIONS** - Street curb intersections shall be rounded by a radius of at least twenty (25) feet. (See Exhibit 5-1) Where one (1) or more streets involved in an intersection is a highway or Thoroughfare, intersection standards shall be increased at the discretion of the Planning Commission upon the advice of the street or highway department or as recommended in *A Policy on Geometric Design of Highways and Streets* by AASHTO. Multiple intersections involving the junction of more than two (2) streets shall be avoided. Centerlines of streets shall intersect as nearly at right angles as possible, but in no case, at an angle of less than eighty (80) degrees. Streets intersecting the same street shall be offset at least one hundred fifty (150) feet between centerlines. Minimum safe sight distance at an intersection shall be determined as a straight line of unobstructed view measured in each direction across the corner between points, each fifty (50) feet back along the intersection of the Right of Way lines. Between three and one-half (3 1/2) feet and ten (10) feet above the surface of the pavement no bushes, trees, structures, or other obstructions shall block the view.

H. **ENTRANCES** – Entrances to be located on any other class Roadway except Local streets shall require the approval and appropriate permit, if required, from the City, County, and /or State. Entrances shall be required to meet minimum Sight Triangle and Stopping Sight Distance requirements.

I. **STREETS SERVING MULTI-FAMILY USES** - Streets serving these multi-family uses shall connect directly to a Collector or Arterial street so as not to generate large volumes of traffic on Local streets

J. **HALF STREETS** - Dedication of new Half streets along tract boundaries shall not be permitted except to complete the other half where such street has been previously Platted.

K. **STUB STREETS** - Stub streets shall be required as part of a continuing street plan as defined by the Planning Commission. Access to any adjacent undeveloped ten (10) acre tract must be provided. A temporary turn-around 50 feet wide and 24 feet long, referenced from the centerline, must be provided. The turn-around shall be paved with the same pavement design as the adjacent street unless the turn-around is expected to be removed in another phase within six (6) months. In such case, DGA is an acceptable surface course. Curb and gutter on the temporary turn-around is not required. The Stub street shall extend to the tract boundary. Stub streets extending only one Lot will not require a turnaround but will be required to extend to the property line. The name of the Stub street must be consistent as it connects or continues.

L. **STREET LIGHTING**

1. Subdivisions in Warren County may have street lights provided in accordance with Warren Fiscal Court Ordinance No. 88-46, ORDINANCE TO PROVIDE MEANS WHEREBY EXISTING AND PROPOSED SUBDIVISIONS CAN OBTAIN THE INSTALLATION OF STREET LIGHTS. (See Appendix C)

2. All Subdivisions in the City of Bowling Green must be provided with streetlights with the design to be approved by the city. The city will provide street lights to a Subdivision after it is fifty (50) percent developed and dedicated to the city, but only wood poles will be provided without cost. Where underground utilities have been installed, the City will be responsible for the cost of a wood pole installation, with the Developer responsible for providing and installing the conduit needed for underground service lines. If decorative poles and poles of an alternate material are desired, the Developer will be required to pay the difference between the alternate and the wood pole. Conduit must be installed, and provisions for payment to the City must be made prior to acceptance of the streets for maintenance.

M. **STREET NAME SIGNS AND TRAFFIC CONTROL DEVICES** - Street name signs shall be placed on diagonally opposite corners of each street intersection in conformance with the street signing plan as approved by the Planning Commission. Traffic control devices, including sign faces and posts, shall be installed in accordance with the current edition of the *Manual on Uniform*

Traffic Control Devices (MUTCD) of the U.S. Department of Transportation, Federal Highway Administration, current edition. Construction plans shall be accompanied by a street sign plan showing the proposed location of street signs and traffic control devices. All signage must be installed after the base course in constructed and before the Plat is recorded. If in city limits, signs shall be furnished and installed by the City of Bowling Green, and the Developer will be billed for the costs of such signs. In all other areas of the county, signs shall be furnished and installed by Developer. If in the city limits of Bowing Green, all pavement markings shall be thermoplastic and installed by Developer.

N. **DEDICATION OF RIGHT-OF-WAY** - A Subdivision Platted among existing streets shall dedicate such additional Right-Of-Way to meet the minimum standards set forth in these regulations. When the Subdivision is located on only one (1) side of an existing street, only one-half (1/2) of the width, measured from the centerline of the Right-Of-Way shall be provided.

O. **SIDEWALK CONSTRUCTION** - Minimum width of sidewalks parallel with the Roadway shall be four (4) feet. The sidewalk shall be a minimum thickness of four (4) inches. Sidewalks shall continue to the pavement edge by an ADA-compliant ramp at intersections to facilitate crossing. Forms for sidewalks shall be either steel or wood with flexible forms, which will deflect to conform with radii. Sidewalk cross Slopes shall not exceed 1:50 per ADA.

P. **CUL-DE-SACS** – Commercial solid paved Cul-De-Sacs shall not be longer than six hundred (600) feet, including the turnaround which shall be provided with a Right-Of-Way radius of sixty (60) feet and a curb radius of fifty (50) feet. Industrial solid paved Cul-De-Sacs shall not be longer than six hundred (600) feet, including the turnaround which shall be provided with a Right-Of-Way radius of sixty (60) feet and a curb radius of fifty (50) feet. Residential solid paved Cul-De-Sacs shall not serve more than thirty (30) dwelling units or be longer than thirteen hundred (1300) feet, including the turnaround which shall be provided at the closed end with a Right-Of-Way radius of fifty (50) feet and a curb radius of forty (40) feet, for RS-1A, 1B, and 1C and right-of-way radius of sixty (60) feet and a curb radius of fifty (50) feet for RS-1D, RM-2, 3 and 4. Transitional curves on all cul-de-sac turnarounds shall have a curve radius of seventy-five (75) feet, or as recommended in *A Policy on Geometric Design of Highways and Street*s by AASHTO. Alternate turnaround designs utilizing islands or other features shall be approved on a case-by-case basis by the Staff Engineer.

Q. **MEDIANS** – Medians may be permitted in street cross sections when approved by the Planning Commission. Medians shall only be allowed when the street cross section is designed to provide for all necessary traffic movements inherent in the standard cross sections contained in Appendix A. Provision for the maintenance of any Median areas and associated plantings shall be noted on the final and Recording Plat of the property. Plantings shall be of a nature that will not conflict with sight distance or other traffic related requirements.

R. **PRIVATE STREETS** – Private Streets may be permitted by the Planning Commission in Planned Unit Development. Plats containing Private streets shall conform to all other Subdivision regulations, unless different requirements are listed in the following:

1. **NO DISRUPTION TO THROUGH MOVEMENT** - Private streets may be permitted only if they meet the definition of Local streets; if they provide absolutely no present or future impediment to necessary through traffic movement in the general area; and, if adjoining

properties and the general area already have, or are capable of providing a proper, efficient and safe street system that will in no way depend upon the Private streets.

2. **RIGHT-OF-WAY AND SETBACK** - Private street Right-Of-Ways and Building setback lines shall be shown on the Plat and shall meet at least the minimum requirements of these Subdivision regulations and the Zoning Ordinance as required for Public streets to assure conformance if such streets are ever accepted for public dedication at a later date.

3. **STREET IMPROVEMENT STANDARDS** - Any permitted Private street shall conform to standards established for Public street sections in these regulations.

4. **FUTURE ACCEPTANCE BY GOVERNMENT** - Any Plat containing permitted Private streets shall have such streets so labeled and shall contain the following signed certification by the owner:

> "The owners of this property and any successors in title hereby agree to assume full liability and responsibility for any construction, maintenance, reconstruction, snow removal, cleaning or other needs related to the Private streets so designed on this Plat, and do hereby fully relieve the local government from any such responsibility. The owners understand that the Private streets will not result in any reduction in taxes required by and payable to Warren County. Furthermore, if the owners in the future should request that the Private streets be changed to Public streets, the owners do fully agree that, before acceptance of such streets by the local government, the owners will bear full expense of reconstruction or any other action necessary to make the streets fully conform to the requirements applicable at that time for Public street prior to dedication and acceptance. Finally, the owners also agree that these streets shall be dedicated to public use without compensation to the owners and without the owner's expense in making such streets conform to the requirements applicable at that time for Public streets, if at some future date, Warren County so requests." (Owner's signature, date).

5. **GOVERNMENT AND UTILITY ACCESS** - Any plan containing permitted Private streets shall show and label all other Easements normally required; shall conform to all other applicable sections of these regulations and other local ordinances; and shall contain the following certification signed by the owner(s):

"The owners of this property hereby agree to grant full rights of access to this property over the designated street, utility, and other Easements for governmental and utility agencies to perform their normal responsibilities." (Owner's signature, date).

6. **MAINTENANCE RESPONSIBILITY** - A homeowner's association or other mechanism which provides for equitable common responsibility for Private street maintenance and repair shall be required to be established by the Developer. The Developer's responsibility to create such a mechanism shall be noted on the final and Recording Plat of the Subdivision. A requirement that each property owner be individually responsible for maintenance and repair of the portion of the street abutting the Lot shall not be considered as acceptable for fulfilling the requirements of this section.

S. **STREET CONSTRUCTION** - In order to provide for roads of suitable location, width, and improvement to accommodate prospective traffic and afford satisfactory access to police, fire, sanitation, and road maintenance equipment and to coordinate roads so as to compose a convenient system and avoid undue hardships to adjoining properties, the following design standards for roads are the minimum required. Exhibit 5-1 describes the appropriate minimum or maximum standard acceptable for Subdivision development.

1. **EARTHWORK (GRADING, EMBANKMENTS, CUT/FILL, EXCAVATION)** Refer to Section 6.2.E.

2. *Blank Section*

3. *Blank Section*

4. **SUBGRADE PREPARATION** - Refer to Section 6.2.I

5. **AGGREGATE BASE** – Refer to Section 6.2.K

6. **CONCRETE STREET PAVING** - Refer to Appendix F

7. **BITUMINOUS CONCRETE (ASPHALT) BASE AND SURFACE** - Refer to Appendix F

8. **STREET CROWN** - A street crown of one-fourth (1/4) inch per foot of street width from the center of the street shall be required for a standard section. Other non-standard cross Slopes may be used if designed and submitted by the Developer's Engineer and approved by the Planning Commission Staff Engineer and the City or County Engineer.

9. **STANDARD CURB AND GUTTER** - Standard curb and gutter when used for Public streets shall measure twenty-four (24) inches from back of curb to the outer edge of gutter. The back of curb shall be a full fourteen (14) inches in depth. The curb shall be a full eight (8) inches in thickness for its entire width. The gutter shall Slope ½" per foot toward the curb. Subgrade for curb and gutter shall be constructed per Section 6.2.I.

10. **VALLEY OR MOUNTABLE CURB AND GUTTER** - A concrete valley or mountable curb shall be permitted on Residential Local Public streets. (See Appendix A).

T. **STREET IMPROVEMENT REQUIREMENTS FOR DEVELOPMENT ADJOINING EXISTING ROADWAY** - Any substantial development of subdivided property may reasonably be anticipated to create a burden on existing Public roads, thereby posing a traffic and safety hazard. In order to mitigate that hazard and to advance the interest in having safe and adequate Roadways, the following requirements shall apply whenever a Subdivision is proposed for property abutting an existing public Roadway which does not meet the Right-Of-Way and Pavement Width standards for the functional classification of that street:

PROPOSED SUBDIVISIONS WHICH ABUT LOCAL, COLLECTOR OR ARTERIAL STREETS - Whenever a Subdivision is proposed for property which abuts a Local or Collector street as defined in these Subdivision Regulations, the Developer shall be required to dedicate Right-Of-Way necessary to comply with the standards as set out in Exhibit 5-1 of these regulations. It is assumed that the same Right-Of-Way dedication will be required on the opposite side of the Roadway at such time as that property develops, thereby providing the full necessary Right-Of-Way width. In reference to projects that require a Traffic Impact Study, the recommendations for construction of Roadway Improvements shall also be required as determined by the Approved Traffic Impact Study. The Planning Commission may permit a long term performance bond or Letter Of Credit to be posted in lieu of construction of such Improvements where such are intended to augment programmed Improvements to be made by the government.

EXHIBIT 5-1

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SECTION 5.8 STANDARDS FOR TRAFFIC IMPACT STUDY

Scope of Required Traffic Impact Study (TIS) - Three levels of study have been identified based on the number of trips that a development is projected to generate in a 24-hour period and during Peak Hour. Traffic impact analyses shall be submitted if the development site 24-hour trip generation is above 500 ADT or development site Peak Hour trips is above 100 VPH.

Project Category	**Criteria**	**Study Horizon**	**Study Area**
I	1. Projected site-generated ADT of 500-3000 OR Projected site-generated Peak Hour trips of 100-500 per hour AND 2. No significant modification of traffic signals or Roadway geometry required	Year of completion, Assuming full build-out and occupancy	1. All site access points, adjacent Roadways, and major intersections. 2. The first signalized intersection on each street serving the site if within ¼ mile.
II	1. Projected site-generated ADT of 3000-6000 OR Projected site-generated Peak Hour trips of 500-1000 per hour OR 2. Installation or modification of traffic signals or Roadway geometry required, regardless of project size	1. Year of completion, assuming full build-out and occupancy AND 2. Five years after Completion	1. Same as 1 and 2 in category I. 2. The first signalized and major unsignalized intersection on each street serving the site if within ¼ mile
III	1. Projected site-generated ADT>6000 OR Projected site-generated Peak Hour trips> 1000 Per Hour OR 3. Installation or modification of two or more Traffic signals, addition of travel lanes, or Modification of interchange required, Regardless of project size	1. Year of completion, assuming full build- out and occupancy AND 2. Five years after Completion	1. Same as 1 and 2 in category I. 2. The first signalized and major unsignalized intersection on each street serving the site if within ½ mile

SECTION 5.9 STANDARDS FOR CONSTRUCTION FILL MATERIALS FOR STREETS

Any Fill, which is to be utilized for the purpose of construction of any Public or Private street, shall conform to the following provisions at a minimum. Higher standards may be required where these standards are not sufficient to ensure stability. Refer to Section 6.2.D & 6.2.E for construction requirements.

A. *Blank Section*

B. *Blank Section*

C. *Blank Section*

D. **FILL SLOPE** - No compacted Fill shall be made which creates an exposed surface steeper in Slope than three (3) feet horizontal to one (1) foot vertical. A flatter Slope may be required for stability and safety.

E. **SLOPES TO RECEIVE FILL** - Fills shall not be permitted on natural Slopes steeper than three (3) feet horizontal to one (1) foot vertical unless a geotechnical analysis proving the stability of the soil is submitted to, and approved by, the Planning Commission Engineer.

F. *Blank Section*

G. *Blank Section*

SECTION 5.10 SURVEYING AND MONUMENTATION STANDARDS

The Subdivision must be surveyed meeting KAR property survey requirements. The following monument standards shall be applicable to all Subdivision Plats:

A. **TYPE** - Monuments shall comply with 201 KAR 18.150 as a minimum. Monuments should be a minimum of an eighteen (18) inch long ferrous (iron) pin.

B. **LOCATION OF MONUMENTS AND MARKERS** - Monuments and markers shall be placed so as to coincide with the intersections of the Lot or property line. At the intersection of all angles in the boundary line of the survey; at the intersection of street property lines, and at the beginning and ending of all curves in streets and Alleys, and at all points where Lot lines intersect such curves. All monuments and markers shall meet the Kentucky Minimum Standards.

C. **CONTROL MONUMENTS** – At a minimum two (2) permanent Control Monuments shall be placed within each Subdivision that requires any street Improvements and more than four (4) Lots. Such monuments shall have horizontal coordinates and vertical elevation shown on the Final and Recording Plat. The monument should be placed to third order accuracy or better using the World Geodetic System 1984 (WGS 84) for horizontal control and National Geodetic Vertical Datum of 1988 (NGVD 88) for vertical control. The control for the two (2) required monuments shall be placed on two of the following described points. There shall be an unobstructed line of sight between the monuments. Monuments shall be located at all centerline street intersections, points of curvature, point of tangent, and point of intersections that fall within the pavement. Monuments shall be a ferrous marker of five inches or greater in length. Monuments shall be set once final surface has been placed on the streets. If the Recording Plat is to be recorded prior to the placement of the final surface, than temporary monumentation should be required at the same points using a two-inch magnail or equivalent. Once the final surface is in then permanent control shall be set.

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