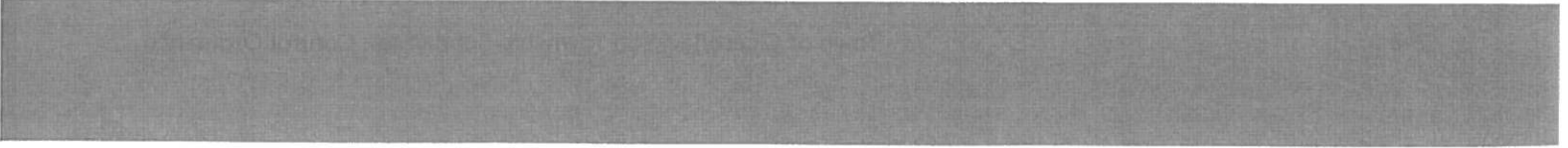




# **Article Seven**

## Principles and Standards of Design

*May 18, 2006*  
© 2006, *Bradley E. Johnson, AICP*



---

## Article Seven

# Principles and Standards of Design

### 7.1 General

- A. The subdivision layout shall be of such a character that it protects the health, safety, and general welfare of the residents in the jurisdiction of the Plan Commission.
- B. Whenever a proposed subdivision borders an existing street, the Commission may require the reconstruction or widening of such street as a condition of plat approval. Additional dedication of right-of-way shall be required per the Cicero/Jackson Township Comprehensive Plan/Transportation Plan Map and or the Hamilton County Thoroughfare Plan.
- C. In designing and approving subdivision streets, the following factors shall receive consideration:
  - a. accessibility for emergency vehicles and school buses;
  - b. safety for both vehicular and pedestrian traffic;
  - c. efficiency of service for all users;
  - d. livability or amenities as affected by traffic elements in the circulation system; and
  - e. economy of both construction and use of land.
- D. When there is a situation of unusual physical conditions or a controlled design environment in evidence and it can be satisfactorily demonstrated to the Commission that a private street is the only feasible solution, said private street may be permitted and shall be constructed to a depth equal to Local Roads or Streets, and adequate covenant provision are made for direct responsibility and control by the property owners involved to provide for the perpetual operation, liability, and maintenance of said private streets at no expense to the governing jurisdiction.
- E. In addition to the requirements established herein, all subdivision plats shall comply with the following rules, laws, and regulations:
  - a. All applicable statutory provisions.
  - b. The local zoning ordinance, building and housing codes, and all other applicable laws of the appropriate jurisdiction
  - c. The Comprehensive Plan, Thoroughfare Plan, and Capital Improvement Plan of the Town of Cicero/Jackson Township, including all public facilities, open space, and recreation plans, as adopted.
  - d. The rules and regulations of the Indiana Department of Environmental Management, The Department of Natural Resources, Aeronautics Commission, Hamilton County Drainage Board, and other appropriate agencies.
  - e. The rules, regulations and standards of the Indiana Department of Transportation if the subdivision or any lot contained therein abuts a state highway.
  - f. All applicable planning and regulatory guidelines, including access control, driveway manuals, parking and traffic control ordinances, and other applicable guides published by the local governmental units.
  - g. The "Indiana Manual of Uniform Traffic Control Devices" for placement and installation of traffic control devices.

---

## 7.2 Street Standards

- A. The street layout shall provide adequate vehicular and pedestrian access to all lots and parcels of land within the subdivision, and where streets cross other streets, jogs shall not be created. Streets shall conform to the following principles and standards:

### Principles

- a. Proposed streets shall be adjusted to the contour of the land so as to produce usable lots and streets of reasonable gradient.
  - b. Residential street systems shall be designed to minimize through traffic movement, but certain proposed streets, where appropriate, shall be extended to the boundary line of the tract to be subdivided so as to provide for normal circulation of traffic within the vicinity.
  - c. Wherever there exists a dedicated or platted portion of a street or alley adjacent to the proposed subdivision, the remainder of the street or alley to the prescribed width shall be platted within the proposed subdivision.
  - d. Residential street patterns shall provide reasonably direct access to the primary circulation system.
- B. Standards within the Corporate Limits of the Town of Cicero
- a. Minimum pavement widths, to be installed at the developer's expense, shall be as follows:
    1. Primary Arterials: Four (4) lanes at 12 feet each, 16 feet center turn lane, plus two (2) feet for curb and gutter.
    2. Secondary Arterials: Four (4) lanes at 12 feet each, or two (2) lanes at 12 feet each plus two (2) parking lanes at ten (10) feet, plus two (2) feet for curb and gutter.
    3. Collector or Commercial/Industrial: 38 feet back of curb to back of curb (2 feet for curb and gutter).
    4. Local Roads or Streets: 30 feet back of curb to back of curb (2 feet for curb and gutter).
    5. Private Streets: 22 feet edge of pavement to edge of pavement.
  - b. Minimum pavement depths to be in accordance with the Town of Cicero's Construction Standards and Specifications per road classification.
  - c. Street Grades, Curves and Sight Distances
    1. The minimum vertical grade for all streets shall be 0.5%.
    2. The maximum vertical grade for Primary Arterials and Secondary Arterials shall be 5%.
    3. The maximum vertical grade for Collector shall be 8%.
    4. The maximum vertical grade for Local Roads or Streets shall be 8%.
    5. The first 25 feet of an intersection roadway, from the outer edge of a through roadway, shall be designed with a two percent (2%) downward grade. With a sag vertical curve situation, the two percent (2%) grade shall connect with the remaining street profile grade using a minimum vertical curve length of 50 feet. The sag vertical curve may start at the edge of the through roadway. With a crest vertical curve at the approach to an intersection, the two percent (2%) downward grade shall extend 25 feet from the edge of the through roadway and the crest vertical curve can begin at that point. The length of the crest vertical curve shall meet the requirements of the 1990 AASHTO Standards for crest vertical curves.
    6. Vertical curves shall be designed to meet or exceed 1990 AASHTO Standards for sag and crest vertical curves.
    7. Local Roads or Streets and Collectors shall have a design speed of 30 mph. Primary Arterials and Secondary Arterials shall have a minimum design speed of 50 mph.
    8. Horizontal centerline curve radii shall meet or exceed 1990 AASHTO Standards. If a horizontal curve is required, Local Road or Street and Collectors shall have a 300 foot minimum centerline radius. The minimum tangent distance between reverse curves shall be 100 feet.

- 
- 
9. Cul-de-sac streets shall be not longer than six hundred (600) feet, unless the Plan Commission shall determine after public discussion that a greater distance better serves the interest of public health, safety, and welfare, including traffic flow considerations; such distance to be measured from the center of the turning circle to the intersection of the center line of the cul-de-sac street and the centerline of a through street.
  10. A temporarily dead-ended street shall be permitted in which a street is proposed to be and should logically be extended but is not yet constructed. An adequate easement for a turn-around shall be provided for any such temporary dead-end street which extends two hundred (200) feet or more in length. Such easement shall be automatically vacated to abutting property owners when said dead-ended street is legally extended.
  11. A developer may request permission from the Board of Public Works to delay the installation of the one (1) inch surface layer of asphalt, but not to exceed one (1) year. The developer shall be required to submit a separate performance bond or letter of credit to cover the cost of the installation of the one (1) inch surface layer of asphalt.
- d. Intersection
1. Streets shall be laid out so as to intersect as nearly as possible at right angles. A proposed intersection of two (2) new streets at an angle of less than seventy-five (75) degrees shall not be acceptable. All streets shall intersect at 90 degrees whenever possible for a minimum distance of one hundred (100) feet.
  2. Not more than two (2) streets shall intersect at any one (1) point, unless specifically approved by the Plan Commission.
  3. Proposed new intersection along one (1) side of an existing street shall, whenever practicable, coincide with any existing intersection on the opposite side of such street. Street jogs with center line offsets of less than one hundred fifty (150) feet shall not be permitted.
  4. Street curb intersections shall be rounded by radii of at least 25 feet. A radius of 40 feet shall be used at the intersection with a Primary Arterial, Secondary Arterial or Collector street.
  5. The above minimum radii shall be increased when the angle of street intersection is less than 90 degrees.
  6. At the intersection of any proposed Local Road or Street with any existing street, acceleration and deceleration lanes, and passing or left turn lanes may need to be provided in accordance with standards established by the handbook, A Policy of Geometric Design of Highways and Streets, by the American Association of State Transportation and Highway Officials. All acceleration/deceleration lane widths shall be twelve (12) feet.
- e. Curbs and Gutters
1. All public streets within the corporate limits of the Town of Cicero shall have curbs and gutters.
  2. All curb and gutter sections placed on Primary Arterials, Secondary Arterials, or Collectors shall be of the barrier type. Roll-type curb and gutter sections will be required for Local Roads or Streets.
- f. Right-of-Way
1. The minimum right-of-way of Local Roads or Streets shall be fifty (50) feet within the Corporate Limits of the Town of Cicero or as stated in the Cicero/Jackson Township Comprehensive Plan/Transportation Plan Map.
  2. Where Local Roads or Streets intersect Arterials and Collectors, there shall be a triangular area with two 30 foot sides.
  3. At Local Roads or Streets, property line corners shall be rounded by an arc, the minimum radius of which shall be twenty (20) feet.

4. All cul-de-sacs on Local Roads or Streets shall terminate in a circular right-of-way with a minimum diameter of one hundred (100) feet and minimum roadway diameter of eighty (80) feet. All cul-de-sacs on Commercial/Industrial streets shall terminate in a circular right-of-way with a minimum diameter of one hundred twenty (120) feet and minimum roadway diameter of one hundred (100) feet.

g. Signs

1. The developer shall fund and install all required street name signs and regulatory signs in accordance with the Town of Cicero Construction Standards and Specifications and the Manual on Uniform Traffic Control Devices.
2. One (1) street sign shall be installed at each intersection indicating the name of each street thereat.

h. Construction Road/Entrance

1. The petitioner is required to build and maintain a construction road entrance for all subdivisions having multiple phased construction. This entrance will consist of nine (9) inches of No. 2 stone and shall be shown on the construction plans. All entrances shall have access from a Primary Arterial, Secondary Arterial, or Collector street. The purpose of this road is to eliminate heavy construction traffic on Local Roads or Streets.

**7.3 Sidewalks, Pedestrian Paths, Jogging Paths, and Bicycle Paths**

- A. Sidewalks shall be at least five (5) feet wide adjacent to Primary Arterials, Secondary Arterials, Collectors and in Commercial/Industrial or multi-family developments. Sidewalks shall be at least four (4) feet wide at all other locations. Sidewalks are to be concrete four (4) inches thick. The back of the sidewalk shall be located one (1) foot inside the right-of-way line or as approved by the Town Engineer.
- B. Pedestrian paths may be required in lieu of sidewalks when approved by the Plan Commission and Town Council and shall be constructed to a minimum width of eight (8) feet. The developer shall install pedestrian paths along all Arterial and Collector streets that abuts the development. The paths shall be constructed of asphalt, paving stones, or other similar impervious hard surface material.
- C. The developer shall be required to install sidewalks and or paths in open space areas and public right-of-way that abuts common areas and non-building lots.
- D. Sidewalks shall be installed on each lot prior to occupancy of any dwelling unit on the lot. If all lots are not developed within three (3) years from the issuing of the first Certificate of Occupancy, the developer shall install all sidewalks on all building lots.
- E. Private streets and streets outside the Corporate Limits of the Town of Cicero are exempt from the sidewalk/pedestrian paths requirement.

**7.4 Easements**

- A. Easements to permit access for maintenance and repair of surface, subsurface infrastructure, and utility installations shall be provided on the copies of the Primary Plat, Secondary (Final) Plat, and Construction Plans. Location of easements shall be reviewed by the Town Engineer and representatives of local utility companies.
- B. Easements shall be as shown below and shall provide continuity from block to block, and shall be located along rear, side, or front lot lines, one-half (1/2) the width of the easement shall be taken from each lot. In the case of lots extending to the boundary of the lands platted and not adjoining another plat, the full width of the easement shall be provided on such peripheral lots.

---

---

Depth of Infrastructure from Finished Grade

up to 15 feet  
>15 feet to 25 feet  
> than 25 feet

Minimum Total Easement

20 feet  
30 feet  
40 feet

- C. Where a subdivision is traversed by a watercourse, drainageway, channel, or stream, the petitioner shall designate drainage easements on both sides of the watercourse, the width to be determined by the Plan Commission and in the case of a regulated drain, the Hamilton County Drainage Board.
- D. When a proposed drainage system shall carry water across private lands outside the subdivision, appropriate drainage rights must be secured by the petitioner and shown on the Construction Plans.

**7.5 Storm Drainage and Culverts**

- A. Down spouts shall not be discharged into any part of the enclosed storm drainage system. Storm drainage pipes or systems, subsurface drains or sump pump outlets shall not discharge into streets, roadside ditches or over curbs.
- B. Storm drainage systems shall be designed to prevent overtopping of curbs by a storm not exceeding the 10 year design storm. Inlets shall be placed at all low points in the grade of the gutter and at intersections to prevent stormwater from flowing across traffic lanes and crosswalks.
- C. Culverts for Local Roads or Streets shall be designed such that the road shall not be overtopped by a 25 year storm event. Other road Classifications shall be designed to prevent overtopping by a 100 year storm event.
- D. Surface water drainage flows shall be shown on the Primary Plat for each and every lot and block.
- E. The drainage plan shall show the effected watershed.
- F. The design criteria for side and rear yard drainage swales is:
  - a. Minimum flow line grade of swales shall be one percent (1%). Swales not meeting the one percent (1%) minimum grade will be required to install underdrains two feet below the proposed flow line.
  - b. Maximum flow line grade of ditches shall be seven percent (7%). Swales greater than one percent (1%) shall be protected with an erosion control mat.
  - c. Front and back slope of swales shall not be steeper than a 4 (horizontal) to 1 (vertical) slope.
- G. The design criteria for detention/retention is:
  - a. Local basins are those which have a total land area contributing flow to the detention/retention basin, including on-site and off-site areas, of less than five (5) acres. Minimum hydraulic performance levels and accepted design methodologies for local basins shall conform to the following:
    - 1. Release, at a minimum, the peak discharge resulting from the 100-year design storm event runoff at the 10-year design storm event runoff peak discharge rate for existing watershed conditions.
    - 2. Release the peak discharge resulting from a 2-year design storm event runoff from the contributing watershed area at the 2-year design storm event runoff peak discharge rate for existing watershed conditions.
  - b. Regional basins are those which have a total land area contributing to the basin, including on-site and off-site areas, of five (5) acres or larger. Minimum hydraulic performance levels and accepted design methodologies for regional basins shall conform to the following:
    - 1. Release runoff resulting from a 2-year design storm event over the entire contributing watershed for post-development conditions at a peak rate and velocity no greater than the peak rate and velocity from the 2-year design storm event runoff based on the pre-development watershed conditions.



- 
- 
2. The developed site runoff during the runoff from both the 10-year and 100-year design storm events shall be designed to be released at a peak rate and velocity no greater than the peak rate and velocity from the 10-year design storm event runoff based on pre-development watershed conditions.
- c. All detention/retention designs shall use runoff hydrographs and routing techniques.
  - d. The minimum accepted bottom transverse slope of dry detention basins shall be one percent (1%) and must be designed to include underdrains. Vegetated bank side-slope shall be no steeper than 3 (horizontal) to 1 (vertical).
  - e. Vegetated areas of wet detention basins shall have an earthen embankment constructed with side slopes no steeper than 3 (horizontal) to 1 (vertical). Earthen embankment armored with rock rip-rap shall not be accepted.
  - f. The maximum ponding depth for parking lot detention shall be seven (7) inches for the 100-year storm event runoff from the entire contributing watershed.
  - g. Minimum normal depth of a wet pond, calculated at the shallowest point in the pond, shall be eight (8) feet.
  - h. Emergency spillways shall be capable of handling one and one-quarter times the peak discharge and peak flow velocity resulting from the 100-year design storm event runoff from the entire contributing watershed, assuming post-development conditions, draining to detention/retention facility. However, engineering judgement may dictate use of a higher design standard. Many types of emergency spillways are allowable provided adequate provision is made for the discharge of the flow through the facility and a minimum freeboard of one-foot (1) is provided for larger regional ponds above the maximum anticipated flow depth through the emergency spillway.

#### **7.6 Water**

- A. The developer shall install water main supply system in a manner prescribed by the Town of Cicero's Construction Standards and Specifications. All plans shall be designed in accordance with the Town of Cicero's Construction Standards and Specifications and the Indiana Department of Environmental Management. In addition, the design shall meet or exceed the minimum standards described in the latest edition of Recommended Standards for Water Works as published by the Health Education Service. All plans shall be approved by the Town Engineer.
- B. In low density zoning, if a public water system is not available, individual wells shall be used in accordance with the standards and specifications of the Hamilton County Board of Health.

#### **7.7 Sanitary Sewer**

- A. The developer shall install sanitary sewer collection system in a manner prescribed by the Town of Cicero's Construction Standards and Specifications. All plans shall be designed in accordance with the Town of Cicero's Construction Standards and Specifications and the Indiana Department of Environmental Management. In addition, the design shall meet or exceed the minimum standards described in the latest edition of Recommended Standards for Sewage Works as published by the Health Education Service. All plans shall be approved by the Town Engineer.
- B. Private sewage disposal system on individual lots consisting of a septic tank and tile absorption field or other approved sewage disposal system, shall be laid out in accordance with the standards and specifications of the Hamilton County Board of Health.

---

## 7.8 Lighting

- A. The petitioner shall be required to provide and maintain street lighting within the subdivision. Street lighting shall be designed so as to provide an appropriate degree of illumination for various activities based on their location along arterial, collector, or local streets and the intensity of the surrounding land uses. This lighting shall be funded by the developer. Illumination standards shall be as follows:

<u>Streets</u>	<u>Commercial</u>	<u>Residential</u>
Arterials	1.2 footcandles	0.6 footcandles
Collectors	0.8 footcandles	0.4 footcandles
Local	0.6 footcandles	0.3 footcandles

- B. At a minimum, lighting shall consist of high-pressure sodium bulbs or comparable, a minimum of one hundred (100) watts each, and mounted on standards of non-corrosive metal not to exceed thirty feet in height. Lighting standards shall be mounted in an approved concrete foundation.
- C. The maintenance and operation of street lighting shall be the responsibility of the petitioner. The developer shall be required to implement restrictive covenants to cover their operation.
- D. Minor Subdivisions are exempt from the lighting requirement.

## 7.9 Block Standards

- A. Blocks should not exceed one thousand two hundred (1200) feet in length. In the design of blocks longer than eight (800) feet, the Commission may specify the provision of pedestrian crosswalks near the center of the block, or wherever would be most useful to facilitate pedestrian circulation to a school, park, recreation area, shopping center, or other significant neighborhood destination. Minimum length of blocks shall be three hundred (300) feet.
- B. Blocks shall have sufficient width to provide for two (2) tier of lots of appropriate depth. Exceptions to this prescribed block width shall be permitted in blocks adjacent to major transportation facilities, watercourses, and industrial and commercial areas.

## 7.10 Lot Standards

- A. The developer shall have placed, under the supervision of a Registered Land Surveyor, concrete monuments four (4) inches square and forty (40) inches long with an iron rebar or pipe cast in the center, at each corner or angle of the outside boundary of each subdivision's section prior to issuing building permits.
- B. The developer shall have placed, under the supervision of a Registered Land Surveyor, five-eighths (5/8) inch diameter or larger iron or steel rebars or pipes weighing a minimum of one (1) pound per foot and being at least twenty-four (24) inches long at the corners of each lot. They shall be set prior to the issuance of any Building Permit.
- C. Lot dimensions shall comply with the minimum standards of the Zoning Ordinance.
- D. Double frontage lots shall be prohibited except where necessary to provide separation of residential development from arterial streets or to overcome specific disadvantages of topography and orientation.
- E. The lot size, width, depth, shape, grade location, and orientation shall be in proper relation to street and block design and to existing and proposed topographical conditions.
- F. All lots shall abut on a public street or an approved private street.
- G. Side lines of lots shall be at approximately right angles to straight streets and radial lines on curved streets. Some variation from this requirement is permissible, but pointed or very irregular lots should be avoided.
- H. Building setback lines shall conform to the provisions of the Cicero/Jackson Township Zoning Ordinance and shall be shown on the Primary and Secondary (Final) Plat.



- 
- I. Lots abutting a watercourse, drainageway, channel, stream, or flood plain shall have additional minimum width or depth as required to provide an adequate building site and afford the minimum usable area required by the Zoning Ordinance from front, rear, and side yards. The minimum required lot area shall not include the water area.
  - J. Lots that abut Primary and Secondary Arterials and Collector streets shall require a five (5) foot non-access easement along their perimeters. The non-access easement shall be shown on the Primary and Secondary (Final) Plat.

**7.11 Open Space Area**

- A. The developer shall be required to plat on the ratio of providing three (3) acres of open space area for every one hundred (100) dwelling units. In no case shall the total open space area be less than two (2) acres and no individual areas shall be less than one (1) acre. A dwelling unit shall be defined as a single-family home, or each dwelling unit in a condominium, or apartment/rental unit property.
- B. No more than fifty percent (50%) of the minimum required open space area shall be clubhouses, tennis courts, basketball courts, and swimming pools, excluding parking lots that produce impervious surfaces within the subdivision.
- C. The open space shall have a total frontage on one (1) or more public or private streets of at least two hundred (200) feet, and no part of the area shall be narrower or shallower than two hundred (200) feet except for stream-valley and other linear areas which shall at no point be narrower than fifty (50) feet. Easements, crosswalks, and road frontage to provide public access to the open space shall be shown on the Primary and Secondary (Final) Plat.
- D. No more than fifty percent (50%) of the minimum required open space area shall be wet detention, flood plain or wetlands. Drainage easements shall not be included or considered as meeting the open space requirements hereunder.
- E. The developer shall be required to deed all open space areas to a Homeowner's Association as required in the subdivision's restrictive covenants or deed an equal part of all open space areas to each lot within the subdivision as required in the restrictive covenants.
- F. Minor Subdivisions are exempt from the open space area requirement.

**7.12 Parking Spaces for Clubhouse**

- A. The developer shall provide one (1) parking space per one hundred fifty (150) square feet of finished clubhouse floor space.

**7.13 Subdivision and Street Names**

- A. The proposed name of the subdivision shall not duplicate, or too closely approximate phonetically, the name of any other subdivision in the county. The Plan Commission shall have final authority to approve the name of the subdivision which shall be determined at the time of the Primary Plat approval.
- B. Street names shall not duplicate any existing name within the county except where a new street is a continuation of an existing street. Street names that may be spelled different but sound the same as existing streets shall not be used.
- C. The Plan Commission shall have final authority to approve all names of streets (in case of conflicts) at the time of Primary Plat approval.

**7.14 Model Homes**

- A. No more than five (5) model homes may be approved at the discretion of the Plan Commission at the time of primary plat approval.
- B. Model homes are allowed only in the first section of a subdivision.

