
**Subdivision
Control Ordinance
Article Seven**

**Major Subdivision
Construction Standards**

Construction Standards

7.1 Purpose and Use

The following pages state the construction standards for all major subdivisions. Each section is broken down into specific categories. These categories include:

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7.2 Additional Construction Standards that Apply

This Article represents general and basic construction standards for the public improvements to be included in major subdivisions of Madison County. The Plan Commission and Board of County Commissioners, through the Planning Director, County Engineer, County Surveyor or other elected or appointed official or board may supplement and clarify the provisions of this Article by the formulation and issuance of detailed requirements, either in manual form or by reference to accepted technical standards which shall be deemed incorporated by reference into this Article.

Storm Water and Drainage Standards

7.3 Storm Water and Drainage Standards

- A. **General Requirements:** A stormwater sewer or a surface drainage system adequate to serve the subdivision and potential subdivisions in the drainage area of which the subdivision is a part shall be provided by the subdivider.
- a. If, in the opinion of the Plan Commission, a hardship would be created by sizing the system to the entire drainage area, the Plan Commission may recommend that the involved governmental agency join with the subdivider in financing the drainage requirements that are beyond the requirements of the subdivision.
 - b. When the surface drainage, in the opinion of the Plan Commission, is adequate, easements for such drainage shall be provided.
 - c. Roadside drainage shall not be disrupted by public driveways or other obstructions.
 - d. The subdivider shall initiate and petition the Madison County Drainage Board to establish a legal drain and a maintenance assessment fund for the extension of any legal-urban drain, if required.
- B. **Street Drainage System General Requirements:** The streets shall serve as the primary drainage system and be designed to carry, at a minimum, the storm water from the streets and the adjacent land and structures:
- a. The street drainage system shall consist of curbs, gutters, and storm sewers where required by this Ordinance.
 - b. Drainage inlets shall be spaced and their capacity shall be adequate to limit the spread of water into the street. 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.
 1. Storm drainage systems shall be designed to prevent overtopping of curbs by a 10-year storm.
 2. Local streets shall have a minimum 12 foot wide section free from water during a 10 year storm.
 3. Collector and arterial streets shall have a minimum 24 foot wide section free from water during a 10 year storm.
 4. All water shall be contained within the right-of-way for a 50-year storm.
 - c. Protective gratings shall be placed over all inlets and bar screens placed over all outlet piping 10 inches or larger, and shall be subject to approval by the County Engineer.
 - d. All streets having curb and gutter on which storm water flows across intersections and/or driveways, shall be provided with concrete cross-gutters at all such intersections and driveways.
- C. **Underdrains:** The sub-divider shall provide for the placement of the under drains 18 inches outside the curb line. The purpose of the subsurface piping system is to provide drainage for the street sub-base and/or the swales.
- a. The subsurface drainage system shall discharge to the storm sewer system or to the surface drainage system upon approval from the County Engineer.
 - b. No subsurface drainage system connections will be permitted to the sanitary sewer system.
- D. **Off-street Drainage System General Requirements:** The following standards shall apply to the off-street portion of a subdivision drainage system:

Storm Water and Drainage Standards

(continued)

- a. The design of the off-street drainage system shall include all watersheds affected by the subdivision, and shall extend to a water course or ditch adequate to receive the storm drainage as determined by the County Engineer.
 - b. No storm drainage course, other than those which collect only lot surface drainage within a single block, shall be located within 75 feet of a building, as measured from the top of the ditch bank.
- E. **Side and Rear Yard Swales:** All side and rear yard swales shall meet the following requirements:
- a. The minimum flow line grade of swales shall be 1%.
 1. Swales not meeting the 1% minimum grade will be required to install underdrains two feet below the proposed flow line. Swales of less than 1% shall be planted with grass seed.
 2. Swales with a slope between 1% and 3% shall be sodded.
 3. Swales with a slope 3% or greater shall have a concrete or rip rap surface, or be enclosed in a pipe, as specified by the County Engineer.
 - b. The maximum flow line grade of ditches shall be 7%. Ditches with greater than a 7% flow line grade shall be protected with an erosion control mat.
 - c. The front and back slope of swales shall not be steeper than a 4 (horizontal) to 1 (vertical) slope.
- F. **Detention Ponds:** All storm water detention ponds shall meet the following requirements:
- 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 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 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 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 1% and must be designed to include underdrains. Vegetated bank side-slopes shall be no steeper than 4 (horizontal) to 1 (vertical).
 - e. Vegetated areas of wet detention basins shall have an earthen embankment constructed with side slopes no steeper than 4 (horizontal) to 1 (vertical). Earthen embankments armored with rock rip-rap shall not be accepted.
 - f. The maximum ponding depth for parking lot detention shall be 4 inches for the 100-year storm event runoff from the entire contributing watershed.

Storm Water and Drainage Standards

(continued)

- 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 1 foot is provided for larger regional ponds above the maximum anticipated flow depth through the emergency spillway.
- G Drainage Easements:** Drainage Easements shall be provided consistent with the Design Standards provided by Article 6 of this Ordinance. Easements shall be provided on the Final Plat for all existing, constructed, or reconstructed water courses.
- H. Order of Construction:** The locations, grading, and placement of subgrade (base) material for all roads, public driveways, and public parking areas shall be accomplished as the first work done on any subdivision construction.
- I. Excavation and Fills:** Excavations and fills shall meet the following requirements:
- a. Fills shall not encroach or impede flows of natural watercourses or constructed channels.
 - b. Grading shall not be done in such a way so as to divert water onto the property of another land owner without the expressed consent of the land owner.
 - c. During grading operations, necessary measures for dust control shall be exercised.
 - d. Grading equipment shall not be allowed to cross streams. Provisions shall be made for the installation of temporary or permanent culverts or bridges.

Erosion Control Standards

7.4 Erosion Control Standards

- A. **General Requirements:** Erosion, and sediment control shall conform with the requirements of the Natural Resource Conservation Service (NRCS) and other provisions of this Ordinance, other requirements adopted by Madison County, or other requirements of the County Engineer.
- B. **Erosion Control Plan Requirements:** No changes shall be made in the contour of the land, nor shall grading, or excavating begin until a plan for minimizing erosion and sedimentation has been reviewed and approved by the County Engineer.
 - a. The erosion control plan shall be submitted as an element of the subdivision construction plans.
 - b. If NRCS review and approval is required, a copy of said approval shall be provided by the subdivider to the Planning Director for the records of the Plan Commission and to the County Engineer.
- C. **Sedimentation Control:** Whenever sedimentation is caused by stripping of vegetation, regrading, or other development activities, it shall be the responsibility of the applicant, person, corporation, or other entity causing such sedimentation to remove it from all adjoining surfaces, drainage systems, and watercourses, and to repair any damage at his/her expense.
 - a. The County Engineer and/or Planning Director may require the subdivider to remedy any sedimentation that they identify.
 - b. Failure by the subdivider to control sedimentation may be used by the Technical Review Committee or Plan Commission as grounds to deny a Final Plat, by the Board of County Commissioners as grounds to refuse the acceptance of public improvements, or by the Planning Director as grounds to withhold the issuance of Improvement Location Permits for structures on lots in the affected subdivision.
 - c. The clean-up of all erosion control barriers and the results of any erosion control failure shall be covered by the erosion control bond provided consistent with Article 5 of this Ordinance.
- D. **Watercourse Requirements:** No applicant, person, corporation, or other entity shall block, impede the flow of, alter, construct any structure, deposit any material or thing, or commit any act which will affect normal or flood flow in any communal stream or watercourse without having obtained prior approval from the Madison County Drainage Board and/or the Indiana Department of Natural Resources, Division of Water, whichever is applicable.
 - a. It is the responsibility of the applicant and any person, corporation, or other entity doing any action on or across a communal stream, watercourse, or swale, or upon the flood plain or floodway area of any watercourse during the period of development, to return these areas to their original or equal conditions upon completion of said activities.
 - b. It is the responsibility of the applicant or owner to keep all major watercourses, not under the jurisdiction of any public agency, open and free flowing.
 - c. The applicant or owner will assume the responsibility for maintaining in open and free flowing condition in all minor streams, watercourses, and drainage systems, constructed or otherwise improved in accordance with this Article, which are necessary for proper drainage.

Street Standards

7.5 Street Standards

- A. **General Requirements:** All streets and alleys shall be completed to grades shown in plans, profiles and cross-sections provided in the approved subdivision Construction Plans.
- All plans shall be prepared by a registered professional engineer or licensed surveyor .
 - All stages of development (street construction) must be inspected consistent with the adopted procedures of Madison County.
- B. **Construction Requirements:** The streets shall be graded, surfaced and improved to the dimensions shown in approved cross-sections, and shall meet the following requirements:

Street Construction Requirements			
Pavement Requirements	Local Road	Collector Road	Arterial Road
Concrete (Option #1)*			
Uniform Design Thickness**	6 inches	7 inches	9 inches
Lime Stabilized Base	12 inches	12 inches	12 inches
Total Thickness**	18 inches	19 inches	21 inches
Asphalt (Option #2)*			
Asphaltic Surface Course	1 inch	1 inch	1 inch
Hot Asphaltic Binder Course	2.5 inches	2.5 inches	2.5 inches
Hot Asphaltic Stabilized Base	3.5 inches	5.5 inches	9.5 inches
Lime Stabilized Base	12 inches	12 inches	12 inches
Total Thickness**	19 inches	21 inches	25 inches
Notes:			
* intersections and parking strips along local streets shall be constructed consistent with collector street requirements.			
** Asphalt, Concrete and pavement base materials measuring less than the specified thickness by more than 1 inch shall not be accepted by the Board of County Commissioners			

- Additional requirements may be imposed by the County Engineer, Planning Director, Plan Commission, or Board of County Commissioners to account for unusual soil conditions, extraordinary traffic volume, heavy loads, or other abnormal use characteristics.
- Poorly drained ground or muck ground may need #2 stone or railroad stone under the base. It shall meet the approval of the County Engineer.
- The final grade of the base and all road surfaces shall be 2% from center to both edges.
- All HAC materials and application must meet INDOT specifications, unless otherwise modified by the provisions of this Ordinance. All HAC mixing and application shall be performed under proper weather conditions as defined by the County Engineer.
- The base for all streets shall extend 2 feet beyond the asphalt road surface on both sides of the road.
- Concrete streets shall have transverse contraction joints every 1/2 street width. Expansion joints shall only be used at cold construction joints or at street intersections. Keyway and tied center line construction joints shall be utilized unless a sawed centerline joint is used. If utilizing a sawed centerline joint, # 5 bars @ 3'0" on center shall be used to tie the two street half sections.

Curb & Gutter Standards

7.6 Curb & Gutter Standards

- A. **Curb and Gutter Standards:** All curbs and gutters shall be constructed to the following specifications.
- a. The base for the curb and gutter shall be well compacted on the existing roadway base.
 - b. Curb and gutter shall be a 6 bag mix of cement for concrete.
 - c. All curbs and gutters shall be poured on site with proper joints. The use of precast sectionalized curbs and gutters shall be prohibited.
 - d. Curbs shall have contraction joints every 10 feet and expansion joints every 100 feet.
 - e. The grade of any curb shall not be less than .50% in order to provide appropriate drainage to storm water inlets.
- B. **Inlet Standards:** Inlets shall be located at all low points in the street grade and other locations as storm water system calculations require.
- a. Inlets shall be provided so that surface water is not carried across or around any intersection, nor for a distance of greater than
 1. 400 feet on a local road,
 2. 300 feet on a collector road, or
 3. as specified by the County Engineer based on approved calculations and a 10 year storm design and maximum spread on an arterial road.
 - b. Additional inlets shall be required when encroachment of storm water into the street disrupts traffic under the 10 year storm design.
 - c. Inlet grates should be depressed slightly below the plane of the gutter to improve removal of runoff water. Inlet grates shall be heavy-duty type and appropriate for bicycle traffic.

Street Light Standards

7.7 Street Light Standards

- A. Street lights shall be pole mounted on standards of non-corrosive metal not to exceed 28 feet in height. Light standards shall be mounted in appropriate concrete foundations.
- B. Street lights shall consist, at a minimum, of high-pressure sodium bulbs or comparable, a minimum of 100 watts each.
- C. All electric lines providing service to the street lights shall be located underground.

Street Sign Standards

7.8 Street Sign Standards

- A. Street signs shall be installed by Madison County at all locations specific on the Preliminary Plat and otherwise required by the County Engineer and/or Board of County Commissioners.
- B. The subdivider shall assume all costs for street sign installation as the Final Plat for each section or phase of the subdivision is accepted by the Board of County Commissioners. Payment of sign fees shall be provided at the time of Final Plat application, and shall be consistent with the standard rates established by the County Engineer and adopted by the Board of County Commissioners.

Sidewalk Standards

7.9 Sidewalk Standards

- A. Sidewalks shall be concrete within subdivisions in accordance with the Standard Specifications of the Indiana Department of Transportation, latest edition, with contraction (tooled) joints a maximum of every 6 feet apart. Sidewalks shall be a minimum of 4 inches thick in all locations, with a 4 inch base of either compacted stone or sand, and be of a width consistent with the design standards of Article 6 of this Ordinance.
- B. Americans with Disabilities Act compliant ramps for wheelchairs and bicycles shall be provided appropriately on all sidewalks and pathways. Ramps are to be located at all intersections and other transition access points.
 - a. Rolled curbs are not a substitute for wheelchair ramps.
 - b. It is the legal responsibility of the developer to assure compliance with current ADA laws.
 - c. The developer or his engineer may be required to sign-off on the compliance with ADA laws.

Monument & Marker Standards

7.10 Monuments and Marker Standards

- A. Monuments and markers shall be placed so that the center of the bar, or marked point, shall coincide exactly with the intersection of lines to be marked, and shall be set so that the top of the monument or marker is level with the finished grade.
- B. Permanent concrete markers 30 inches deep with 5/8 inch rebar shall be installed at the perimeter (outside boundary) of the overall subdivision.
- C. Markers consisting of 5/8 inch rebar 8 inches long shall be set in concrete as street control at the following locations:
 - a. the intersection of all street center lines in the subdivision.
 - b. the beginning and ending of all curves in street right-of-way lines and centerline of streets at the beginning and ending of all curves and street intersections.
- D. Markers consisting of rebar at least 30 inches long and not less than 5/8 inch in diameter, shall be placed at the following locations:
 - a. all angles formed by the intersection of lot lines,
 - b. all other lot corners not established by a monument, and
 - c. all points required to delineate the location or extent of reservations, easements, or dedications not otherwise defined.
 - d. centerline of right-of-ways.