

Appendix C

STORMWATER RETENTION AND DETENTION

Section 25-38.11 PURPOSE - STORMWATER MANAGEMENT ORDINANCE

The purpose of this ordinance is to diminish threats to public health and safety caused by the runoff of excessive stormwater; reduce economic losses to individuals and the community at large; and protect, conserve and promote the orderly development of land and water resources. The provisions of this ordinance further regulate, guide and control:

- A. The subdivision layout, redevelopment and improvement of lands located within the City of Oxford.
- B. The construction of buildings and drainage of the sites on which structures are located, including parking and other paved areas.
- C. The design, construction and maintenance of stormwater drainage facilities and systems.

Section 25-38.12 GENERAL CRITERIA AND STANDARDS

- A. Applicability

This ordinance shall be applicable within the City of Oxford's jurisdictional area and shall apply to any residential development of four acres or more or any nonresidential development of three acres or more. This ordinance shall also apply to any development having less than four acres but greater than two acres, and having 50% or greater impervious surface.

- B. Limitation on Stormwater Runoff

No development shall be undertaken that increases the rate of surface runoff to downstream property owners or drainage systems.

- C. Detention of Excess Stormwater Runoff

The increased stormwater runoff resulting from the proposed development shall be detained by the provision of retention or detention facilities; sometime referred to as "Stormwater Retarding Structures or Facilities".

- D. Storage Capacity

Retention or detention facilities shall be designed with sufficient capacity to accommodate all runoff caused by the development in excess of that runoff which would occur from the site if left in its natural, undeveloped condition. This storage shall be sufficient to store all excess flows for the 25-year storm of 24-hour duration.

- E. Channel Stability

The stormwater runoff from the proposed development shall not increase channel instability downstream.

- F. Retention/Detention Facilities in Floodplains

If detention storage is provided within a floodplain of a major stream, no storage volume for the facility may be provided below the high water elevations established for that floodplain.

G. Stormwater Bypass

Drainage systems shall have adequate capacity to bypass, through the development, the natural flow from all upstream areas.

H. Drainage Way Maintenance

It shall be unlawful to dump trash, debris, landscape waste and other deleterious materials in any and all drainage ways in the City.

Section 25-38.13 IMPROVEMENT REGULATION

(a) **Required Information**

The following information and data prepared and certified by a registered professional engineer in the State of Mississippi shall be furnished with the plans of each proposed residential, commercial and industrial development.

1. *Contour Map*: A topographic map with two-foot (2') minimum interval contours, meeting National Map Accuracy Standards, of the land to be developed and such adjoining land whose topography may affect the layout or drainage of the developed. On such a map, the following shall be shown:
 - a. The banks and centerline of streams and channels;
 - b. The normal shoreline of lakes, ponds and retention/detention basins, and lines of inflow and outflow;
 - c. The locations, size and slope of stormwater conduits and drainage swales;
 - d. Storm, sanitary and combined sewers and outfalls of record;
 - e. Delineation of upstream and downstream drainage features and watersheds which might be affected by the development;
 - f. Base flood (100-year) elevation (BFE) and floodways for the property, established pursuant to Oxford's Flood Ordinance;
 - g. Environmental features including the limits of wetlands areas and any designated natural areas.
2. *Drainage Plan*: A comprehensive drainage plan shall be designed to safely and completely handle the stormwater runoff and to detain increased stormwater runoff. This plan shall provide and be accompanied by maps and/or other descriptive material showing the following:
 - a. The extent and area of each watershed tributary to the drainage channels in the development;
 - b. The storm sewers and other storm drains to be built, the basis of their design, the outfall and outlet locations and elevations, receiving stream or channel and its high water elevation, and the functioning of the drains during high water conditions;
 - c. Existing streams and floodplains to be maintained and new channels to be constructed including their locations, cross-sections and profiles;

- d. Proposed culverts and bridges to be built including their materials, elevations, waterway openings and basis of design;
- e. Existing retention/detention facilities to be maintained, enlarged or altered and new facilities to be built including their design;
- f. The estimated location and percentage of impervious surfaces existing and expected to be constructed when the development is completed;
- g. The slope, type and size of all sewers, and other waterways;
- h. Any proposed environmental enhancement or mitigation features;
- i. Retention/detention basins to be built including a plot or tabulation of storage volumes with corresponding water surface elevations and of the basin outflow rates for those water surface elevations;
- j. For all retention/detention basins, design hydrographs of inflow and outflow for the 25-year peak flows from the site under natural and developed conditions;
- k. The formula for determining the storage for a retention/detention basin is:

The storage capacity of the proposed detention basin shall be computed in acre - feet (in conjunction with its proposed spillway) so that the Q_{25} (4% chance) urbanized runoff in cfs shall be reduced to no more than the Q_{25} (4% chance) rural or natural runoff in cfs.

Special consideration will be given to areas where the subject developer only owns a portion of the entire drainage basin.
- l. The live detention storage to be provided shall be calculated on the basis on the 25-year frequency rainfall as published by the U.S. Weather Bureau for this area;
- m. Landscaping plan for retention/detention facility;
- n. One of more typical cross-sections of all existing and proposed channels or other open drainage facilities, showing the elevation of the existing land and the proposed changes thereto, together with the high water elevations expected from stormwater runoffs under the controlled conditions called for by this ordinance, and the relationship of structures, street and other utilities.

(b) **Detention Basins:** Detention basins shall be constructed to temporarily detain the stormwater runoff in excess of the volumes of runoff occurring on the site before development and will conform to the following standards:

1. Storage Volumes

The volume of storage provided in these basins, together with such storage as may be authorized in other detention facilities, shall be sufficient to control the excess runoff from the 25-year storm of any duration;

2. Maximum Depth

The maximum planned depth of stormwater stored shall not exceed five feet unless natural ground conditions lend themselves to greater depths.

3. Approach Slopes

The approach slopes of the basin shall conform as closely as possible to natural land contours. Regrading is preferable if necessary to keep the slopes under ten percent. Erosion control measures shall be provided as well as devices or measures to insure public safety.

4. Outlet Control Structures

Outlet control structures shall be designed as simply as possible and shall operate automatically. They will be designed to limit discharges into existing or planned downstream channels or conduits so as not to exceed predetermined safe capacities and not in excess of flows which would have occurred with the land in its natural, undeveloped condition. If necessary, velocity dissipation measures shall be employed to ensure that the discharge does not increase downstream erosion.

5. Spillway

Emergency overflow facilities shall be provided unless positive measures are installed to control the inflow so as not to exceed the safe capacity of the basin.

6. Appearance

Detention facilities shall where possible, use natural topography and natural vegetation. In lieu thereof, these facilities shall have planted trees and vegetation such as shrubs and permanent ground cover on their borders.

7. Fencing

Detention structures shall be enclosed by a six-foot (6') fence when required by the Director of Public Works or his designated representative.

(c) **Retention Basins:** Basins designed with permanent pools shall conform to the standards for detention basins as specified, unless modified or amended as follows:

1. Minimum Depths

The minimum normal depth of water before the introduction of excess stormwater shall be three feet.

2. Facilities for Emptying

For emergency purposes, cleaning or shoreline maintenance, facilities shall be provided or plans prepared for the use of auxiliary equipment to permit emptying and drainage.

3. Pollution Abatement

Aeration facilities may be required, dependent on the quality of the influent and detention time.

4. Side Slopes

The side slopes shall be of non-erosive material with a slope of 4:1 or flatter. The ledge shall be four to six feet wide, three feet below normal water depth and sloping gently toward the shore to prevent people or objects from sliding into deep water. There shall be a freeboard of 18 inches above the high water elevation on all retention basins. Alternate designs for side slopes may be

considered under special circumstances where good engineering practice is demonstrated.

5. Sediment Storage

Adequate area for sediment storage shall be provided in all retention basins.

- (d) **Maintenance of Facilities:** All improvements, including landscaping, shall be maintained in perpetuity and cannot be developed for any other use which would limit or cause to limit the use of the improvements. The improvements shall be owned and/or maintained by the Property Owner's Association of the development and each property owner shall own a proportionate share of the improvements and shall bear his proportionate responsibility for the continued maintenance in accordance with the above.

Each property owner shall, within the contents of his deed, be liable for the combined maintenance of the improvements. A special note to this effect shall appear on any final plat of subdivision or any plat of condominium and their declarations.

The Property Owner's Association shall be formed by the Developer in perpetuity for the maintenance of the improvements. Membership shall be mandatory by all property owners. Articles of agreement of the Property Owner's Association must be approved by the Board of Aldermen of the City of Oxford before recording.

When problems arise due to inadequate maintenance, the City Engineer or Public Works Director or their Agents of the City of Oxford may inspect the improvements and compel the correction of the problem by written notice. Whenever facilities fail, the Property Owner's Association may contract with the City of Oxford for the correction of the problem provided the City is adequately reimbursed.

- E. **Inspection of Facilities:** The City Engineer shall inspect all drainage facilities while under construction. When facilities are not constructed according to approved plans, the City of Oxford has the explicit authority to compel compliance and have any situations corrected which are not according to the approved plans. All drainage facilities located on private property shall be accessible at all times for inspection by the City Engineer or other responsible public official.
- F. **Regional Detention:** The requirements for on site retention/detention facilities may be waived by the City of Oxford if it is determined that a development project is too small, or if engineering, aesthetic or economic factors make a combined or regional facility more practical for construction by the City. In this case, the City of Oxford shall require a fee and/or dedication of land from the developer, which the City shall use to construct the regional facility. This fee and/or dedication of land shall be based on the proportionate share for the development in its completely developed state of the present costs of constructing the regional facility.

Section 25-38.14 . MISCELLANEOUS

1. Penalties for Violation - Any person found to be in violation of any of the terms and provisions of this ordinance shall be guilty of a misdemeanor and subject to a fine not to exceed \$500.00 or imprisoned for no more than ninety (90) days or both such fined and imprisonment. A continuance of a violation without reasonable effort on the part of the defendant to correct it shall be and constitute a new and separate offense each day.
2. Validity - If any term or provision of this Ordinance shall be held to be unconstitutional or otherwise unenforceable, the remainder thereof shall not be affected thereby and shall remain in full force and effect.
3. Conflict - All ordinances heretofore adopted on the subject of this ordinance which are in conflict herewith are hereby repealed and the application provisions of the ordinance are substituted in their place.

4. Variations - The City of Oxford Board of Adjustments shall have the power to authorize variations from the provisions or requirements of this ordinance as will not be contrary to the public interest. No variation from the strict application of any provision shall be granted unless it is found that:
 - a. Literal interpretation of the provisions of this ordinance would deprive the owner of reasonable use of their land; and
 - b. Granting the variation would be in harmony with the general purpose and intent of this ordinance and will not be injurious to the neighborhood or other wise detrimental to the public welfare.