

**CHAPTER 7
DEVELOPMENT ORDINANCE**

The following pages are excerpts from the Guilford County Development Ordinance that relate to drainage issues.

2-1.4 Easements

B) Drainage Easement An easement which grants the right of water drainage to pass in open channels or enclosed structures

C) Drainage Maintenance Easement An easement which grants to the Governing Body the right to alter the typical drainage channel section and/or profile in order to improve water flow.

4-6.4 Easement Encroachments

B) Drainage Maintenance and Utility Easements: Water-related improvements, such as boat docks, may be placed or constructed within drainage maintenance and utility easements.

5-13.7 Drainage

The design of storm drainage systems and plans, including calculations, shall clearly indicate the easements and dedicated areas required for the construction and maintenance of the drainage system.

A. General Drainage Requirement

1. All watercourses which carry a flow of five (5) cubic feet per second (cfs) or more during a ten (10)-year storm, as calculated in accordance with the Jurisdiction's Storm Sewer Design Manual, shall be treated in one or more of the three ways listed in Section 5-13.7(B), (C), and (D) which follow. Except where Section 5-13.7(A)2) below leaves the determination to the developer, the Technical Review Committee shall determine the treatments to be used, based upon the pipe size necessary to handle drainage and adopted open space plan. Open drainage channel requirements shall be based upon a one-hundred (100) year storm, and enclosed systems shall be based upon a ten (10)-year storm. If the channel is a perennial stream in a water supply watershed, or is identified on the open space plan map or requires a pipe of sixty-six (66) inch diameter or greater, the determination of drainage treatment shall be made by the Technical Review Committee. In making this determination, the Technical Review Committee shall consider the following factors:
 - a. The type of development;
 - b. The treatment employed by nearby developments;
 - c. The probability of the creation of a lengthy greenway or drainageway and open space;
 - d. The probability of the creation of future maintenance problems;

- e. The probability of erosion or flooding problems; and
 - f. The adopted the open space plan.
 - g. Stream buffer requirements and channelization limitations for WCA and GWA areas, as described in Article VII (Environmental Standards).
2. If the channel is not a perennial or intermittent stream within a WCA or GWA of a designated water supply watershed, or is not identified on the open space plan and requires less than a sixty-six (66) inch diameter pipe, the determination of drainage treatment shall be made by the property owner in a manner consistent with this Section.
- B. Enclosed Subsurface Drains
1. This Section applies to enclosed subsurface drains. Profiles and enclosure standards shall be in accordance with the Jurisdictions Storm Sewer Design Manual.
 2. A utility easement designed to accommodate storm water shall be placed on a recorded plat when determined necessary by the Jurisdiction. The required utility easement shall be centered on the enclosure when practical, but in no case shall the outside wall of the enclosure be located less than five (5) feet from the edge of the utility easement. The utility easement shall be of a width determined necessary for maintenance purposes by the Jurisdiction based upon enclosure depth, topography and location of existing and proposed improvements, but no less than fifteen (15) feet.
 3. The utility easement shall be kept free and clear of any buildings or other improvements which would interfere with the proper maintenance of the underground enclosures. The Jurisdiction shall not be liable for damages to any improvement located within the utility easement area caused by maintenance of utilities located therein. Furthermore, utility easements may be used for future installations of any underground utility, provided that:
 - a. Any underground utility to be installed by any utility provider other than the Jurisdiction shall be subject to approval by the appropriate department.
 - b. Any government agency or private company installing additional underground lines after development has been completed by the owner of the property shall be responsible for the replacement of all fencing, pavement and grassed area disturbed by such installation.
 - c. The Jurisdiction shall not be responsible for damages caused by installation of additional lines by any private utility company.
- C. Open Channel in Dedicated Drainageway and Open Space Area
1. This Section applies to an open channel in a dedicated drainageway and open space area. The drainageway and open space area shall be dedicated by a recorded plat and shall be labeled "Dedicated to Guilford County and the public for Drainageway and Open Space." If a portion of the drainageway and open space lies within a proposed thoroughfare shown on the thoroughfare plan, it shall be labeled "Dedicated to Guilford County and the public for Drainageway and Open Space or Thoroughfare."
 2. The dedicated drainageway and open space area along any stream that would require a sixty-six (66) inch or larger diameter pipe shall include the land between the natural one-hundred (100) - year flood contour lines as determined by the Jurisdiction. (Caution: Article VII [Environmental Regulations] or federal wetland regulations will prohibit or restrict fill placement in certain locations.)
 3. In case of severe topography, additional width may be required to assure reasonable ease of maintenance.

4. The dedicated drainageway and open space area shall abut public street right-of-way on at least thirty (30%) percent of its perimeter except when the Technical Review Committee determines that adequate access is otherwise provided. The minimum length of street frontage at each location where drainageway and open space abuts public street right-of-way shall be sixty (60) feet. The maximum distance, measured by straight lines on either side of the drainageway and open space, between points at which the drainageway and open space abuts street right-of-way shall be one thousand (1,000) feet.
5. The centerline of the drainage channel that would require a sixty-six (66) inch or larger diameter pipe shall be located no less than fifty (50) feet from any street or property line provided that the dimensions of the drainageway and open space area conform to all other requirements of this Section. The minimum distance from centerline shall be twenty (20) feet along smaller drainageways.
6. Drainageway and open space shall be left in its natural condition or graded to a section approved by the Jurisdiction which will allow economical and efficient maintenance and shall be stabilized with permanent vegetative cover.
7. Lots abutting public open space may be reduced in size in accordance with the provisions in Section 4-4.1 (D) (Lots Adjoining Public Open Space). If lot sizes have been reduced with the provisions of this Ordinance, the following note shall appear of the plat:

"The required area of Lots ____ through ____ has been reduced in accordance with Section 4-4.1(D) of this Ordinance. All other dimensional requirements of this Ordinance shall apply."

D. Open Channel on Private Property Within Drainage Maintenance and Utility Easement

1. This Section applies to open channels on private property within a drainage maintenance and utility easement. This method shall not be utilized in any subdivision intended for single-family detached dwellings unless the Technical Review Committee, determines that an open channel would not become a missing segment in a system of stormwater piping and that the open channel is well removed from all anticipated building locations.
2. The drainage maintenance and utility easement shall include the required drainage channel and the land between the channel and the natural one-hundred-year flood contour as determined by FEMA or by calculations approved by the US Army Corps of Engineers; or, in some cases, it may be reduced by modifying the drainage maintenance and utility easement topography to a typical required drainage channel section as provided for in this Section. However, the minimum total width of a drainage maintenance and utility easement shall be no less than specified below.

Cubic Feet Per Second in 100-Year Storm	Required Distance From Stream Centerline
5 - 17 cfs	15 ft.
17 - 70 cfs	30 ft.
70 or more cfs	50 ft. plus 1/2 channel width

cfs = Cubic Feet Per Second

3. The drainage maintenance and utility easement width shall be centered on the typical required drainage channel section, unless the Technical Review Committee approves other drainage maintenance and utility easement alignments because of topographic conditions.
4. In case of severe topography, additional width may be required to assure reasonable ease of maintenance.
5. The drainage maintenance and utility easement topography may be modified if permitted under Section 7-4 (Soil Erosion and Sedimentation Control). In such cases, the approved typical required drainage channel section shall include the necessary channel to accommodate a one-hundred (100) year flood. The area outside of the required drainage channel may be filled; but any resulting slope shall be no steeper than two (2) to one (1), unless the slope is protected by masonry paving, rip-rap, or other material which meet the Jurisdictions specifications.
6. If the Technical Review Committee determines suitable access to the drainage maintenance and utility easement is not otherwise provided, access shall be guaranteed by a suitably located access easement which shall be no less than twenty (20) feet in width.
7. It shall be the responsibility of the owner to maintain provide all streams located on their property. If the Governing Body determines that it is in the public interest to alter the typical required channel section and/or profile of the stream to improve flow, the Jurisdiction may enter the property within the indicated access or drainage maintenance and utility easement and carry out the necessary work without liability for any damage to the property, or improvements thereon, located within the easement.
8. Drainage maintenance and utility easements may be utilized for any underground utility provided that:
 - a. Underground utility lines to be installed by any utility provider other than the Jurisdiction shall be subject to approval by the Enforcement Officer.
 - b. The government agency or private company installing underground lines after development has been completed by the owner of the property shall be responsible for the replacement of all fencing, pavement and grassed areas disturbed by such installation.
 - c. The Jurisdiction shall not be responsible for damage caused by the installation of additional lines by any private utility company.
 - d. The Jurisdiction shall not be liable for damages to any improvements located within the drainage maintenance and utility easement area caused by maintenance of utilities located therein.
9. No buildings or structures except for water related improvements shall be placed or constructed within the access or drainage maintenance and utility easement. All drives, parking areas, or other improvements, shall be constructed no closer than two (2) feet horizontally from the top of any back slope along any open watercourse.

E. Flood Standards

1. All subdivision proposals shall be consistent with the need to minimize flood damage;
2. All subdivision proposals shall have public utilities and facilities, such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

3. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards; and
4. Base flood elevation data shall be provided for subdivision proposals whenever the one hundred (100) year storm flow is five hundred (500) cubic feet per second or greater.