

# Article 6 UTILITY DESIGN AND CONSTRUCTION STANDARDS

## Standards

### 600 General

A professional engineer, licensed in Ohio, shall design any plans for public water supply, stormwater and wastewater facilities.

### 601 Water Supply

- a. Where a public water supply is reasonably accessible or required because of groundwater pollution problems, the subdivision shall be provided with a complete water distribution system including a connection for each lot. Appropriately spaced fire hydrants shall be required by the planning commission in conformance with NFPA standards. Public water distribution and public well systems shall meet the requirements of the Ohio Environmental Protection Agency, as cited in the Ohio Revised Code.
- b. Where public water supply is not available, as determined by the planning commission and the county health department, or not required, the subdivider shall supply acceptable evidence of the availability of water. The subdivider may be required to drill one (1) or more test wells in the area to be platted. Individual private wells shall be located at least fifteen (15) feet from property lines; fifty (50) feet from all septic tanks; fifty (50) feet from all tile fields and other sewage facilities; fifteen (15) feet from all sewer lines; and shall not be located within any areas of flooding. As a precaution against seepage, a watertight seal shall be provided around the well casing. If no zoning is in effect, the minimum lot area requirements of these Regulations shall apply. In all cases where it has been determined that individual water supplies from private wells are not feasible, a public water distribution system shall be required.

c. When a public water main is accessible, the developer shall install adequate water facilities subject to the specifications of the Ohio Environmental Protection Agency and the county health department. Depending on the number of housing units, residential subdivisions shall be connected to an existing public or community water supply system if such service is available within the distances defined in Table 7.

<b>Size of Development</b>	<b>Distance</b>
1 Unit	400 Feet
2 Units	600 Feet
3 Units	800 Feet
4 Units	1000 Feet
5 - 15 Units	2000 Feet

For developments with more than 15 units and located within one (1) mile of an existing public or community water system, they shall provide a connection to such water supply system. For developments with more than 15 units and located more than one mile from an existing system, the water supply system strategy shall be determined on a case-by-case basis taking into consideration density of the development, costs, groundwater availability and quality.

d. Private wells and other water distribution systems may be accepted for maintenance and operation by the county sanitary engineer if the ownership is vested to the county and if the water distribution system has been constructed according to the specifications and approved by the sanitary engineer.

### 602 Fire Protection

- a. Fire hydrants with two and one half (2 ½) inch outlets and one (1) large pumping connection shall be provided by the subdivider in all subdivisions.
- b. Hydrants shall be located between property lines and roadway ditches with all outlets facing or parallel to the street. Hydrants shall be placed at the corners of all blocks and at midblock for blocks exceeding eight hundred (800) feet in length. Hydrants shall also be required at the entrance and end of all cul-de-sacs exceeding four hundred (400) feet in length.

- c. Hydrants shall be spaced to provide necessary fire flow. The average area per hydrant shall not exceed 120,000 square feet. In addition, hydrants shall be spaced so that each residence shall be within 600 feet of a hydrant.
- d. A hydrant shall be located at all low points and at all high points with adequate means of drainage provided.
- e. The type of hydrant and control valves and the location of the hydrant shall be approved by the fire chief or person responsible for the fire protection for political subdivision in which the plat is located.
- f. The minimum size of any water line serving any hydrant shall not be less than six (6) inches in diameter and shall be on circulating water lines. The size and location of water lines shall be approved by the county engineer, the fire chief, or person responsible for the fire protection.
- g. Where no public water supply is available, the planning commission may require fire ponds with dry hydrants.

**603 Sanitary Sewers**

- a. Where an adequate public sanitary sewer system is reasonably accessible in the determination of the planning commission, public sanitary sewers shall be installed to adequately serve all lots, including lateral connections to the public system. Public sewer system extensions shall meet the requirements of the Ohio Environmental Protection Agency and county standards. Combinations of sanitary sewers and storm sewers shall be prohibited.
- b. Where a public sanitary sewer system is not reasonably accessible, the subdivider may provide a central treatment plant for the subdivision, provided that such central treatment plant is installed in accordance with state, EPA, and county health department requirements.
- c. Lots may be served by individual disposal systems only with approval of appropriate state and county health officials. Where the installation of individual disposal systems is considered, the absorptive ability of the soil, surface drainage, ground water level and topography shall be the criteria used for determining whether or not the installation of individual systems is permissible. In no case shall the discharge from an individual disposal system, including curtain drains, discharge into a public roadway ditch. When individual, on-lot sewage systems are approved, each lot so served shall be of a size and shape to accommodate the necessary length of a leach field at a safe distance from and at a lower elevation than the proposed building(s). Such lot size and shape shall conform to the requirements of the zoning district in which they are located. If no zoning is in effect, the standards set forth in these Regulations shall be met.
- e. Depending on the number of housing units, residential subdivisions shall be connected to an existing public sanitary sewer system if public service is available within the distances defined in Table 11 (below).

<b>Table 11: Sanitary Sewer Extensions</b>	
<b>Size of Development</b>	<b>Distance</b>
1 Unit	400 Feet
2 Units	600 Feet
3 Units	800 Feet
4 Units	1000 Feet
5 - 10 Units	2000 Feet

- f. for developments with more than 10 units and located within one mile of an existing public sanitary sewer system, adequate justification shall be provided as to why they should not provide a connection to the existing public sewer system.

## 604 Design Criteria for Sanitary Sewers

These design criteria are not intended to cover extraordinary situations. Deviations will be allowed and may be required in those instances when considered justified by the county sanitary engineer.

a. **Design Factors:** Sewer capacities shall be adequate to handle the anticipated maximum hourly quantity of sewage and industrial waste together with an adequate allowance for infiltration and other extraneous flow. Sewers shall be designed for the total tributary area using the criteria in Table 12.

Development Type	Flows
1-family and 2-family dwellings	0.2 c.f.s./acre
1-2 story apartments 3-6 story apartments	0.2 c.f.s./acre 0.2 c.f.s./acre
Commercial - Small store, offices Commercial - Shopping centers High-Rise	0.2 c.f.s./acre 0.2 c.f.s./acre As directed by county sanitary engineer
Industrial	As directed by county sanitary engineer

**Note:** These design factors shall apply to watersheds of 300 acres or less. Design factors for watersheds larger than 300 acres and smaller than 1,000 acres shall be computed on the basis of a linear decrease from the applicable design factor for an area of 300 acres to the design factor of .05 c.f.s./acre for an area of 1,000 acres unless otherwise directed by the County Sanitary Engineer.

b. **Size:** The diameter of sewers proposed shall not exceed the diameter of the existing or proposed outlet, whichever is applicable, and shall be no less than eight (8) inches.

c. **Minimum Slope:** All sewers shall be designed to give mean velocities, when flowing full, of not less than 2.0 feet per second and not greater than 10.0 feet per second. All velocity and flow calculations shall be based on the Manning Formula using an “n” value of 0.013.

d. **Alignment:** All sewers shall be laid with straight alignment between manholes, unless otherwise directed or approved by the county sanitary engineer.

Sewer Size (inches)	Minimum Slope (feet per 100 feet)
8	0.60
10	0.44
12	0.36
15	0.28
18	0.24
21	0.20
24	0.16

e. **Manholes:** Manholes shall be installed at the end of each line; at all changes in grade, size, or alignment; at all intersections; and at distances not greater than 400 feet for sewers 15 inches and smaller, and 500 feet for sewers 18 inches in diameter and larger. The difference in elevation between any incoming sewer and the manhole invert shall not exceed 12 inches except where required to match crowns. The use of drop manholes will require approval by the county sanitary engineer.

f. **Sewerage Location:** Sanitary sewers shall be located within street or alley rights-of-way unless topography dictates otherwise. When located in easements on private property there shall be access to all manholes. A manhole shall be provided at each street or alley crossing. End lines shall be extended to provide access from street or alley right-of-way when possible.

## 605 Drainage and Storm Sewers

All storm drainage design shall be planned and executed so as to preserve natural topographic features and vegetative cover, to minimize change to existing topography, and to preserve natural drainage systems.

- A. Natural drainage channels with easements of adequate width shall be provided as determined by the county engineer and approved by the planning commission. Storm drainage from lots, including drain tile around basements, shall not be permitted to discharge into any sanitary sewer facility, but shall connect to an adequate drainage outlet.
- b. The subdivider shall construct all necessary facilities including underground pipe, inlets, catch basins, or open drainage ditches, as determined by the planning commission, to provide for the adequate disposal of subsurface and surface water and maintenance of natural drainage courses. The best available technology shall be used to minimize off-site stormwater runoff, increase onsite filtration, encourage natural filtration functions, simulate natural drainage systems, and minimize off-site discharge of pollutants to ground and surface water. Best available technology may include measures such as retention basins, recharge trenches, porous paving and piping, contour terraces, and swales. Stormwater management shall follow the standards established in Rainwater and Land Development: Ohio's Standards for Stormwater Management, Land Development and Urban Stream Protection, Second Edition, 1996 (Department of Natural Resources, Division of Soil and Water Conservation) or any later version that is published as an update. Subdivision development shall not increase the rate of runoff and an increase in the volume of runoff shall require a reduction in the rate of runoff equal to ½ the percent increase in the volume of runoff.
- c. When necessary, outlet ditches of an approved type and size shall be required as part of the construction. If same is across private property, rights-of-way or easements shall be obtained by the subdivider or developer for the construction and future maintenance. These rights-of-way or easements shall be shown on the construction and future maintenance. These rights-of-way or easements shall be shown on the construction plans. Whenever possible, post-development drainage patterns shall be the same as pre-development drainage patterns. The design of streets and grading shall be such that runoff from roofs, driveways and other impervious surfaces will be collected in ditches and/or gutters in short runs three hundred (300) feet to four hundred (400) feet in length. The runoff shall then be diverted from the surface, into a natural water course. Streets shall be located away from water courses unless storm sewers are to be installed. The channel downstream of the subdivision shall be improved adequately by the developer to convey the storm runoff from the subdivision and across the adjacent property owner so that damages from flooding are minimized.
- d. The subdivider shall guard against the creation or continuation of swampy areas or stagnant pools, unless they are a component of a designed wetlands open space. The planning commission may require fill, swale, and/or channel improvements in order to forestall such problems.
- e. Adequate measures for the protection of open and closed drainage channels shall be provided. Maintenance easement widths shall be determined by the county engineer. The velocity flow on an open ditch shall not exceed four (4) feet per second in soil ditches or six (6) feet per second in turf gutters. Paved gutters will be required if velocities of flow are greater than those specified, or if it is otherwise likely that destructive erosion will result. Drainage ditches shall not be permitted to discharge into any sanitary sewer facility.
- f. No water course shall be altered in such a way as to change the amount or direction of flow; no fill, building or structures shall be situated in natural water courses unless provision is made for the flow of water in a manner satisfactory to the county engineer.

## 606 Electric, Gas, and Telephone Improvements

- a. Electric and telephone service shall be provided within each subdivision. Telephone, electric, and conduits, and cables shall be constructed underground except in cases where the county engineer determines that topographic, bedrock, or underground water conditions would result in excessive costs to the subdivider. In all instances a permit shall be obtained from the County Engineer prior to construction. (See Appendix K)

b. Overhead utility lines where permitted shall be located at the rear of all lots unless the county engineer, upon the recommendation of utility company, provides reasons that justify the location of easements at another location. The width of the easement per lot shall be not less than ten (10) feet and the total easement width shall be not less than twenty (20) feet.

c. Whenever a sanitary sewer line and electric and/or telephone line are each placed underground in the same utility easement, the total easement width shall be not less than twenty (20) feet.

d. Whenever a major gas transmission line is on or adjacent to property proposed to be subdivided, adequate measures shall be taken to insure that all buildable sites are at a minimum safe distance from the transmission line easement, as recommended by the gas transmission company and the Public Utilities Commission of Ohio.

### **607 Oversize and Offsite Improvements**

The county planning commission, may require that utilities, pavements, and other land improvements for the proposed subdivision be designed oversized, and/or with extensions provided, to serve nearby land which is an integral part of the neighborhood service or drainage area as determined by the county engineer and/or sanitary engineer.

The subdivider shall be required to pay only his or her percentage cost of construction of major arterial streets as determined by the county engineer. The subdivider shall be required to pay for all oversize improvements that pertain to sanitary sewers and waterlines and storm drainage requirements inherent to the plat and shall be required to pay for oversized sanitary sewer and/or water line improvements where such oversizing has been required for conformance with the sanitary sewer and water comprehensive plan of the county.