

The following information is shared to provide a more in depth explanation of the requirement and the role of a *Backwater Valve* in a Sewer Discharge System.

From the [2018 North Carolina Plumbing Code, Section P3008](#), the requirement for a back water valve is technically stated as a device for prevention of *Sewage backflow*;

715.1 Sewage backflow. Where the plumbing fixtures are installed on a floor with a finished floor elevation below the elevation of the manhole cover of the next upstream manhole in the public sewer, such fixtures shall be protected by a *backwater valve* installed in the building drain, branch of the building drain or horizontal branch serving such fixtures. Plumbing fixtures installed on a floor with a finished floor elevation above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not discharge through a *backwater valve*.

Exceptions:

1. In existing buildings, fixtures above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not be prohibited from discharging through a backwater valve.
2. Where the sewer service line ties directly to a manhole, that manhole is considered to be the next upstream manhole.
3. Where hub drains are located in the crawl space for condensate waste, a backwater valve or check valve shall be installed.

715.2 Material. Bearing parts of backwater valves shall be of corrosion-resistant material. Backwater valves shall comply with ASME A112.14.1, CSA B181.1 or CSA B181.2.

715.3 Seal. Backwater valves shall be constructed to provide a mechanical seal against backflow.

715.4 Diameter. Backwater valves, when fully opened, shall have a capacity not less than that of the pipes which they are installed.

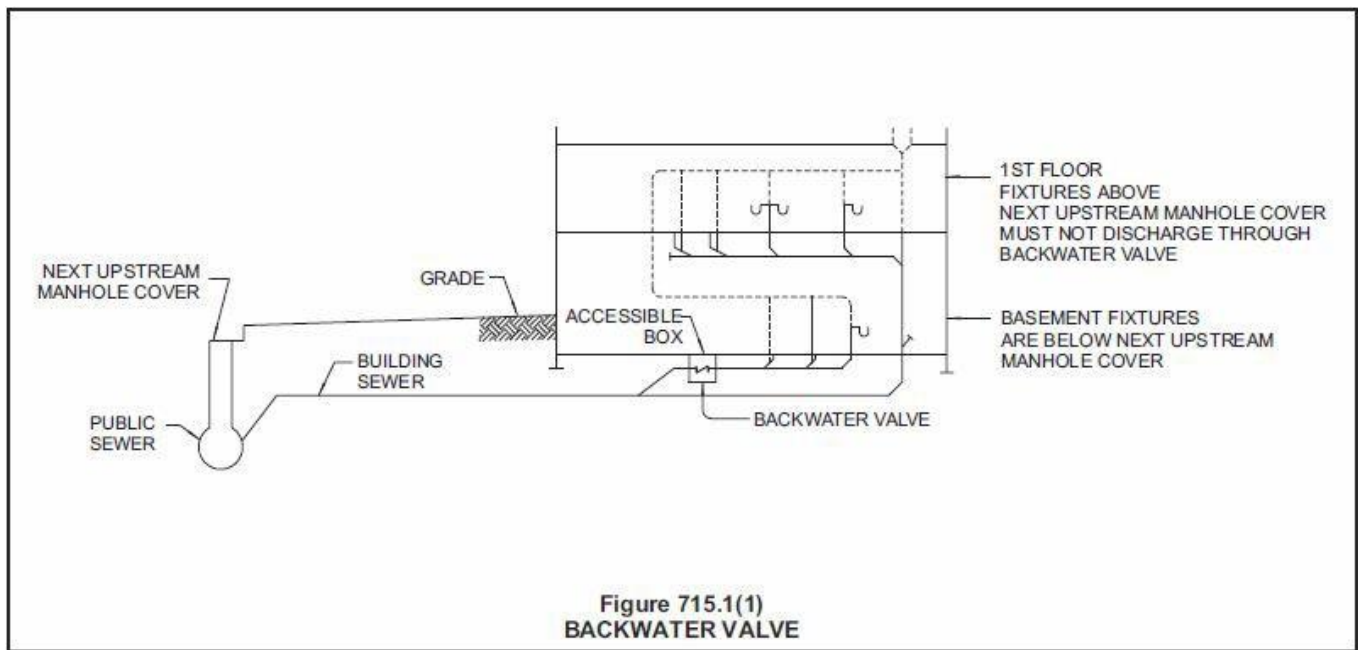
715.5 Location. Backwater valves shall be installed so that the working parts are accessible for service and repair.

[This technical explanation is better clarified by the additional 2015 International Plumbing Code Commentary for Section 715.1. It reads as follows;](#)

A *backwater valve* is required in areas where the public sewer may back up into the building through the sanitary drainage system [see Figure 715.1(1)]. When plumbing fixtures are located on a floor that is above the next upstream manhole cover from the building sewer connection to the public sewer, the sewer will back up through the street manhole before entering the building.

Public sewers may become blocked or overloaded, which will result in sewage backing up into the manholes and any laterals (taps) connected to the sewer system. The point of overflow for the public sewer will be the top of the manholes in the backed-up portion of the system.

Fixtures or drains located at an elevation below that of the tops of the manholes for the relative portion of the sewer system are subject to *backflow* and must be protected by *backwater valves* [see Figure 715.1(1)]. Plumbing fixtures that are not subject to *backflow* are not permitted to discharge through a *backwater valve*. In theory, limiting the fixtures that discharge through a *backwater valve* will prevent waste from upstream fixtures from backing up through downstream fixtures because it cannot pass through the *backwater valve* when the public sewer is blocked or overloaded. Additionally, the valve will be protected from excess wear and potential failure resulting from debris and accumulations.



In order to apply this explanation to your specific home to determine if a backwater valve is required, you will need to make a few assessments regarding your homes private sewer system:

- First, you will need to determine the direction your sewer system flows leaving your home. The easiest method is to locate your systems in ground exterior cleanouts. Usually visible in the yard, these cleanouts are typically a white 4" diameter pipe with a cap located at or slightly above ground level.
- Identifying this directional sewer flow is critical in locating the first upstream manhole serving your sewer system. Depending on the natural topography of your specific lot and your neighborhood, the public manholes could be located in the street to the front, side or back of your home or could be located lot line in an easement. Manholes are normally easy to locate, even on unusual terrain. Once you have found one, look for a series of manholes, typically they are placed no more than 100 feet apart. Manholes and the sewers they serve normally flow downhill in the direction of the area's topography, so the first upstream manhole in relation to your sewer line should be the next one up.
- Now that you have located your first upstream manhole, it's time to determine the overflow point of your lowest plumbing fixture in your home (if there were a sewer backup). Consider the design of your home. Do you have a ranch, split level or multi-story? What plumbing fixtures do you have on the lowest habitable floor of your home. Typically, you may have a half or complete bathroom group, or you may have only a kitchen or a laundry or some combination of all. If you have a half bath configuration, your toilet (water closet) would most likely be the overflow point. If you have a separate shower on that lowest floor, that shower drain would probably be the lowest potential overflow point in your home. If you have a laundry room in a basement, the washer box could likely be the overflow point.

- Now you have identified all the major components necessary to make a preliminary elevation evaluation of your sewer systems. Compare what you have learned with **Figure 715.1(1)**. Based upon your investigation and this illustration, do you need a Backwater Valve? If you have all confidence that your sewer system **does not** meet the criteria for backflow protection, then chances are that you do not need to follow up with any further action. If you feel that your sewer system **does** meet the criteria for backflow protection or if you are still unsure as to the elevation of your sewer system, then the next step will be to secure the services of a licensed Plumbing Contractor to evaluate and if needed install a Backwater Valve. He will be required to pull a permit before the work is started and to ensure that the work is inspected once completed.

Either way, you now have a better understanding of your sewer system and the important role a Backwater valve plays in protecting a home's sewer system from potential sewage backup.

If after reading this and following these steps you still have questions, please call;

Chuck Hill
Moore Co. Inspections Supervisor
(910) 947-2221

Scott Thomas
Village of Pinehurst Building Code Official
(910) 295-8666