



BACKWATER VALVES

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WHAT IS A BACKWATER VALVE?

A backwater valve is an accessory which, when installed at the point where backflowing could eventually occur, remains open under normal circumstances to allow the free evacuation of drainages, but closes automatically when there is an accidental return of the flow of sewage systems or drainage canals.

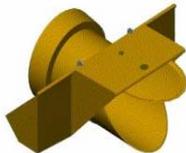
There are four models of backwater valves to protect the places which are exposed to suffering accidental backflowing. These models are:



FLAT VALVE



**FLAT VALVE WITH
MANIFOLD TOP**

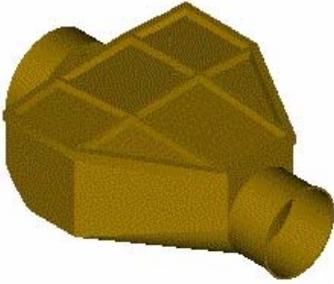


SHUTTER SET

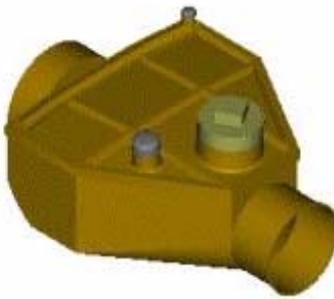


BOTTOM SUMP VALVE

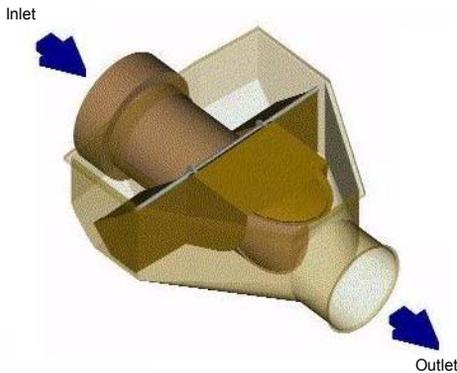
FLAT BACKWATER VALVE



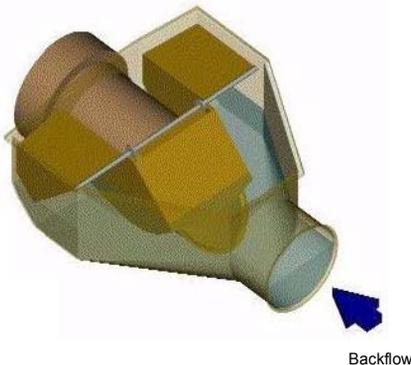
FLAT BACKWATER VALVE WITH MANIFOLD TOP



FLAT BACKWATER VALVE AT NORMAL DRAIN FLOW STATUS



FLAT BACKWATER VALVE CLOSED TO PROTECT AGAINST BACKFLOW



FLAT BACKWATER VALVE

Due to the need for the evacuation of wastes that are poured through the sewage systems to flow freely to reach their final destiny, it is an indispensable condition that these ducts allow this free flow. This condition may occasionally be altered and consequently drainage systems may be obstructed. This produces overflowing of these wastes at any point where this system opens to the exterior.

To protect against these accidental backflows in public or domestic sewage lines there are BACKWATER VALVES, which as an exclusive characteristic constantly remain open while the flow is normal, but close automatically when they detect any backflow that may cause overflowing of the sewage at the places which are protected by these valves.

While these valves remain open to the flow of liquid discharges, whether they are contaminated or not by solid loads, the evacuation is carried out freely, without the valve interfering with the free circulation of the contents, whatever its pressure or volume of flow.

The functioning of the FLAT VALVES is activated automatically without the need of external help and it takes place due to the displacement of the lateral floats which automatically rise over the flood produced by the backflow and move the shutter diaphragm to stop the backflow. Once this abnormal situation is over, the floats fall back to open the valve.

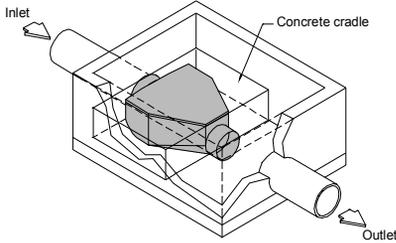
At the user's will, these FLAT VALVES may be provided with a manifold top to connect them to an submersible pump, a cleanout and an access for pressurized water to clean the sediments when the discharges to be evacuated require it.

FLAT VALVES are suitable to use with clay, concrete and PVC pipes. They may be produced with any type of couplings on request. They are produced in 4", 6" and 8" diameters. For greater diameters, refer to.

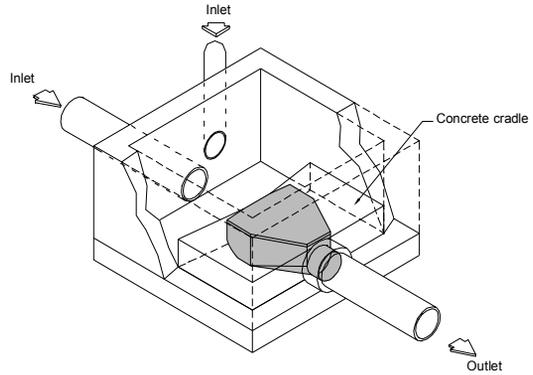


OPTIONS TO INSTALL FLAT VALVES

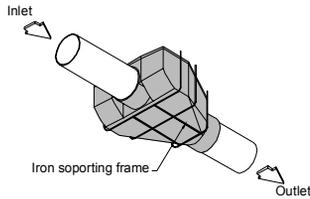
FLAT VALVE ASSEMBLED INTO A PIT WHICH RECEIVES ONLY ONE PIPE



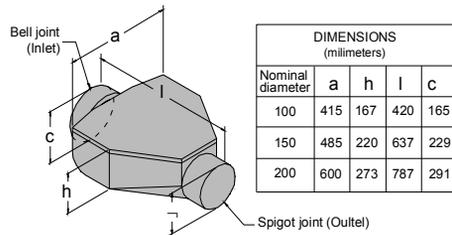
FLAT VALVE ASSEMBLED INTO A PIT WHICH RECEIVES TWO OR MORE PIPES



FLAT VALVE HANGING FROM THE CEILING



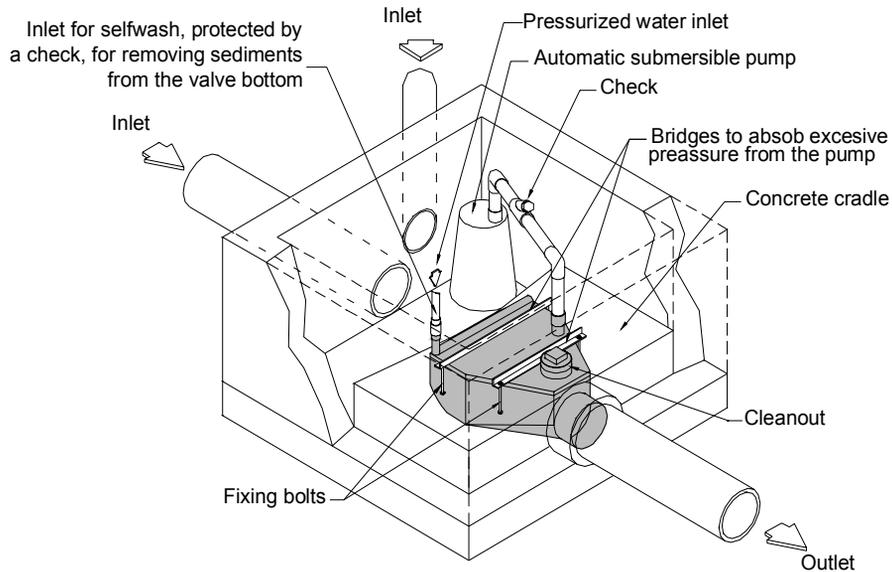
EXTERNAL DIMENSIONS



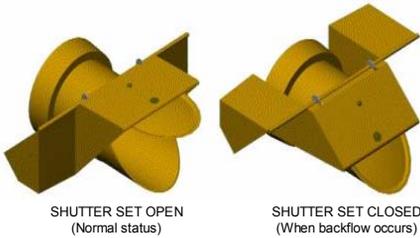
Notes about any installation option:

1. VALVE TOP ALWAYS HAS TO BE UPWARD
2. NORMAL FLOW INTO VALVE IS FROM THE BELL JOINT INLET, TOWARD THE SPIGOT JOINT

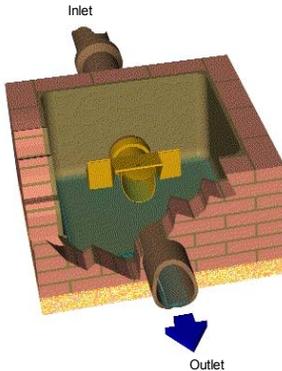
FLAT VALVE WITH MANIFOLD TOP COUPLED TO A SUBMERSIBLE EJECTOR PUMP



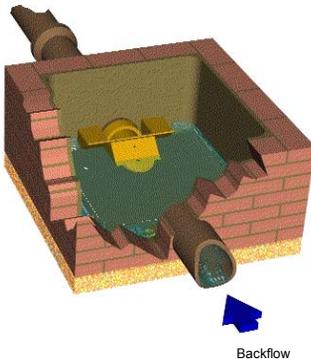
SHUTTER SET



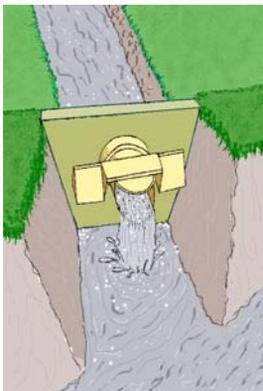
SHUTTER SET ASSEMBLED INTO A PIT, AT NORMAL DRAIN FLOW STATUS



SHUTTER SET ASSEMBLED INTO A PIT, CLOSED TO PROTECT AGAINST BACKFLOW



SHUTTER SET ASSEMBLED TO A DAM TO PROTECT A CANAL



SHUTTER SETS

Any open canal or pipe which is destined to conducting liquids that flow on their bottom are susceptible to suffering obstructions, saturations or inversions of the normal flow caused by unforeseen surges in their final sewage discharges.

Whatever the situation or the cause of this phenomenon may be, the result will be the same: the contents will overflow through the openings to the exterior of the system or out of the ditches where it should flow.

Since this has to do with unforeseen situations, it is indispensable to provide protection at the points where the drainage or sewage systems are exposed to this risk. This protection may be automatic or autonomous so that it will operate without external help when the circumstances require blocking a backflow. Likewise, since these ducts are generally not pressurized, the elements which are destined for this protection must not restrict the easy flow of the drainage.

The SHUTTER SETS fully comply with this requirement; they constantly remain open. This guarantees that the normal flow will not be restricted in the least. They close automatically when there is a backflow.

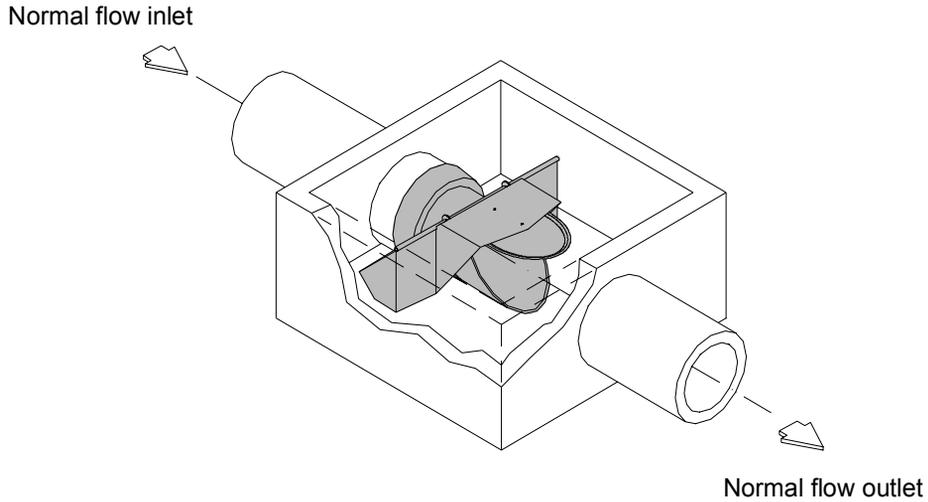
SHUTTER SETS are activated by the same flood that causes the backflow. This way, when the normal level rises, the lateral floats of the SHUTTER SETS move back lowering the shutter diaphragm to its shut position. Once the emergency situation is over, the floats fall back allowing the normal flow of the discharge.

SHUTTER SETS are available in any diameter greater than 10" (250 millimeters) and at the user's request, they may be provided with any type of coupling which is suitable for the different commercial pipeline systems.

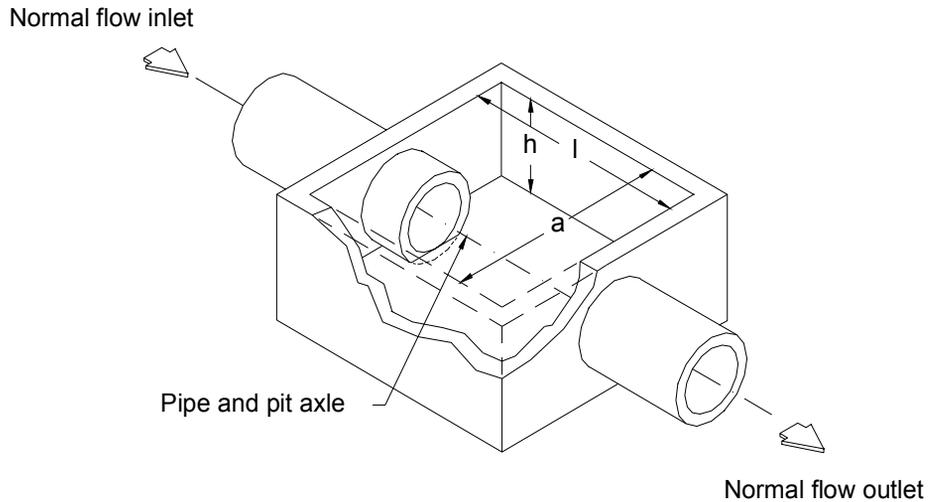


SHUTTER SET

SHUTTER SET ASSEMBLED INTO A PIT



PIT TO INSTALL A SHUTTER SET

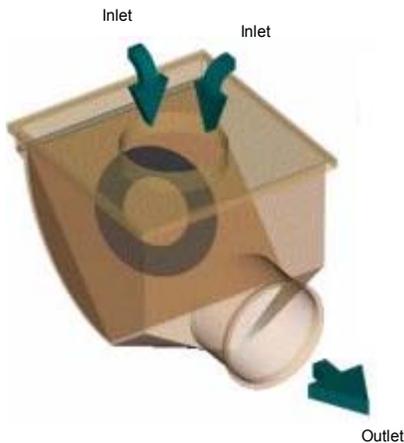


MINIMUM DIMENSION TO BUILD A SHUTTER PIT (centimeters)														
An increase of at least 30 centimeters in "a" and "l" dimensions is recommended to improve working space														
Inlet pipe diameter	15	20	25	30	35	40	45	50	52,5	60	67,5	75	90	100
a	52	62	68	68	72	88	97	109	118	127			154	
h	25	31	39	46	53	59	63	71	77	83			122	
l	60	72	74	89	104	116	134	146	158	171			253	

BOTTOM SUMP BACKWATER VALVE



BOTTOM SUMP BACKWATER VALVE AT NORMAL DRAIN FLOW STATUS



BOTTOM SUMP BACKWATER VALVE CLOSED TO PROTECT AGAINST BACKFLOW



BOTTOM SUMP BACKWATER VALVES

Facing the contingency that an effluent pipe from a public or private sewage system is exposed to suffering backflows and consequently to overflowing through the openings of the system which is served upstream, the bottom sump backwater valve turns out to be an excellent protection alternative against this kind of accident.

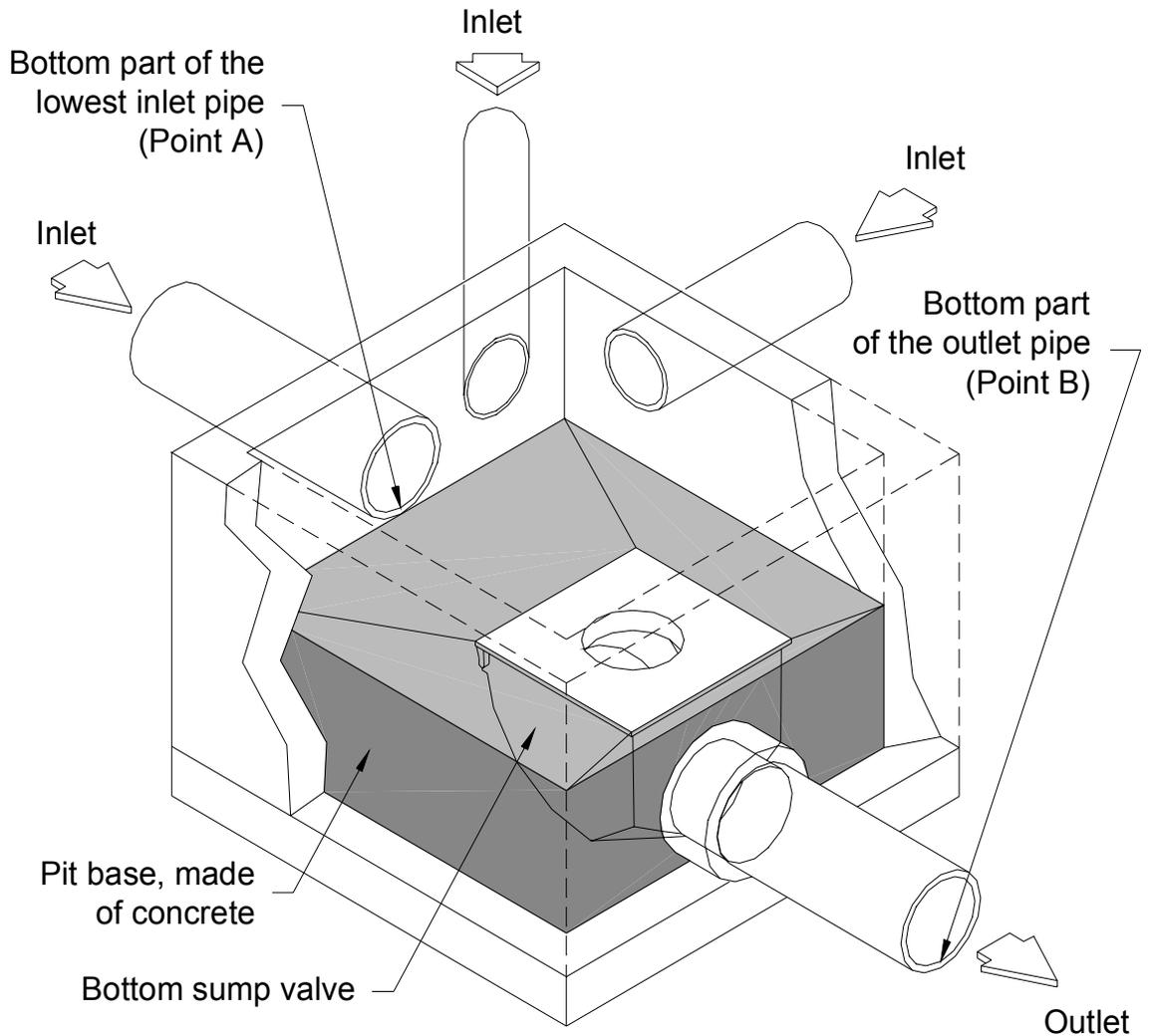
BOTTOM SUMP BACKWATER VALVES are specially suitable when the level of this pipe is lower than the bottom part of the pipes that unload there. This valve receives the load vertically, which allows receiving the pipes that flow into it from any side of the sump where it will be installed. Likewise, given that it receives these flows vertically from different heights, it allows establishing a convenient step in the profile of the drainage system avoiding the need to go unnecessarily deeper during the pipeline layout or elevating the receptor pipe.

This valve works automatically; since it is embedded under the bottom of the sump where it is to be installed, the top of the valve will be on the same level as the bottom of the sump to receive the discharge vertically from any direction and guide it without any obstruction to the outlet pipe. However, whenever there is a backflow, the floater flood-gate rises over it to produce the stoppage internally against the top, guaranteeing that no backflow reaches the protected sump.

BOTTOM SUMP VALVES are made to protect 6" and 8" (150 and 200 millimeters) diameter pipelines and to be able to utilize them, it will be necessary to have minimum differences between the bottom part of the inlet pipe and the bottom part of the outlet pipe of 28 and 35 centimeters (11 and 13 3/4 inches) for the 6" and 8" (150 and 200 millimeters) nominal diameter valves respectively.



BOTTOM SUMP VALVE ASSEMBLED UNDER THE CONCRETE BASE



OUTLET PIPE DIAMETER	MINIMUM VERTICAL DISTANCE BETWEEN POINTS A and B
15 centimeters	28 centimeters
20 centimeters	35 centimeters

- SEWAGE THAT RETURNS THROUGH DRAINS?

- SURGES THAT FLOOD SEWAGE SYSTEMS AND OPEN DITCHES?

The water that circulates through any drainage duct must flow freely down the slope that will guide it to its final sewage discharge. Therefore, it is indispensable that this circulation be completely free of any obstacles that may obstruct this circulation; however, this characteristic allows that when a backflow accidentally takes place, overflowing happens through the points where sewage waters should normally be evacuated.

The situations where this type of accidents happen are:

1. Drainage points located under the level where the flow of the system could overflow in case it becomes surcharged. No matter if they are on flat terrains or on slopes **(go to 10th page)**
2. Terrains which are located under the maximum levels of expected surges in the final sewage discharges of a canal or sewage system. **(go to 11th page)**

HOW TO ACHIEVE PROTECTION AGAINST OVERFLOWING OF SEWAGE SYSTEMS AND OPEN DITCHES?

Sewage overflowing is produced by obstructions or saturation in these systems. These unforeseen accidents inevitably produce floods when the discharges that cannot be evacuated normally are stopped and sent back. The same thing happens when surges rise over open ditch outlets or sewage system outlets.

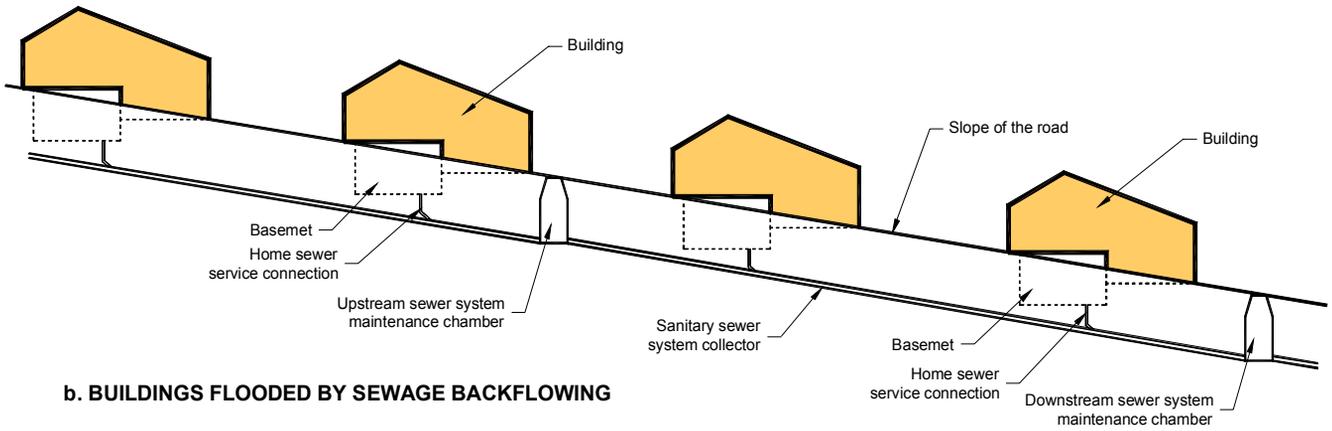
As a result of the above, it is necessary to protect the places which are exposed to this danger with backwater valves which freely allow evacuation, but which avoid backflowing when any reflux happens.

If by any circumstance you are interested in this topic, do not hesitate to contact us; VAR LIMITADA is interested in knowing about and solving your problem.

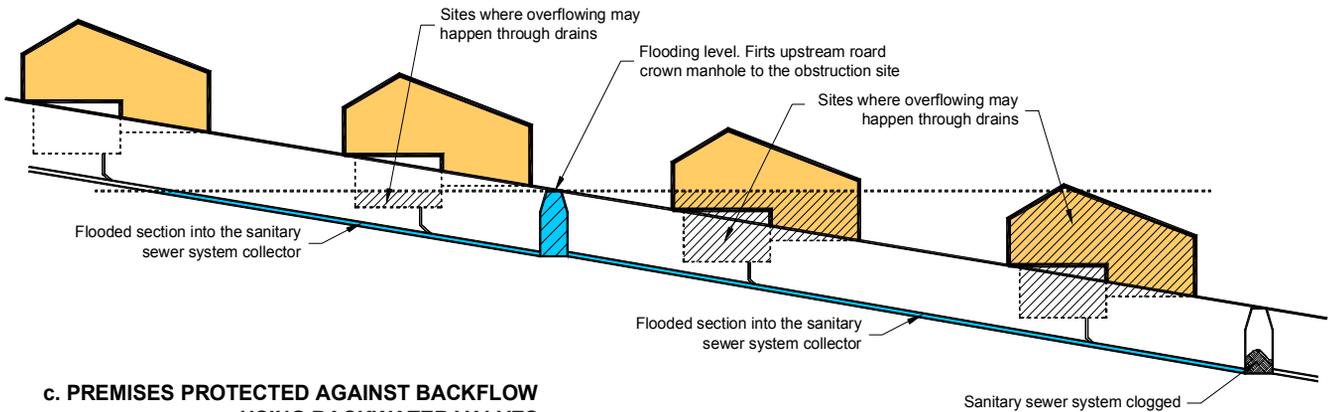
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CONSEQUENCES OF THE OBSTRUCTION OF A MAIN SEWER SYSTEM AT ANY POINT OF THIS

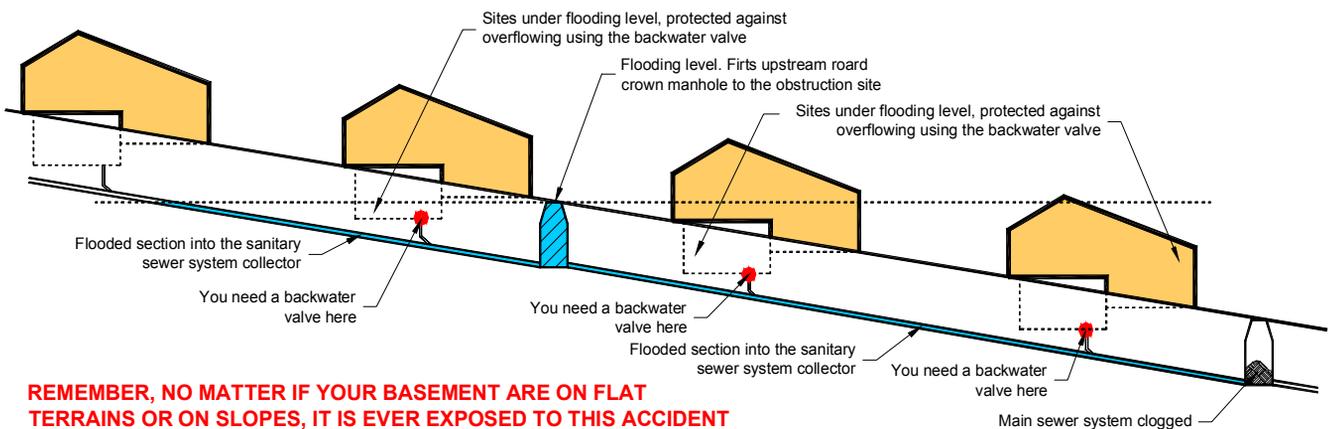
a. SEWAGE SYSTEM FLOWING NORMALLY



b. BUILDINGS FLOODED BY SEWAGE BACKFLOWING



c. PREMISES PROTECTED AGAINST BACKFLOW USING BACKWATER VALVES



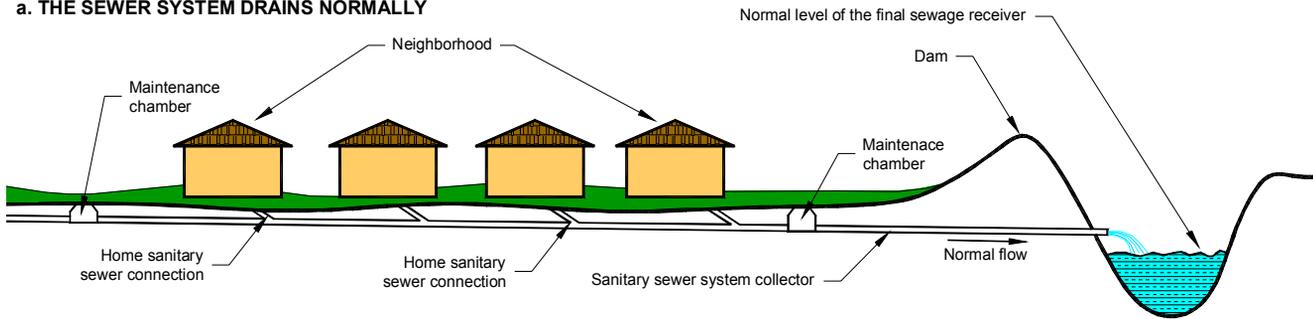
REMEMBER, NO MATTER IF YOUR BASEMENT ARE ON FLAT TERRAINS OR ON SLOPES, IT IS EVER EXPOSED TO THIS ACCIDENT

PREMISES AND SITES EXPOSED TO BE AFFECTED BY OVERFLOW OF SEWAGE SYSTEMS

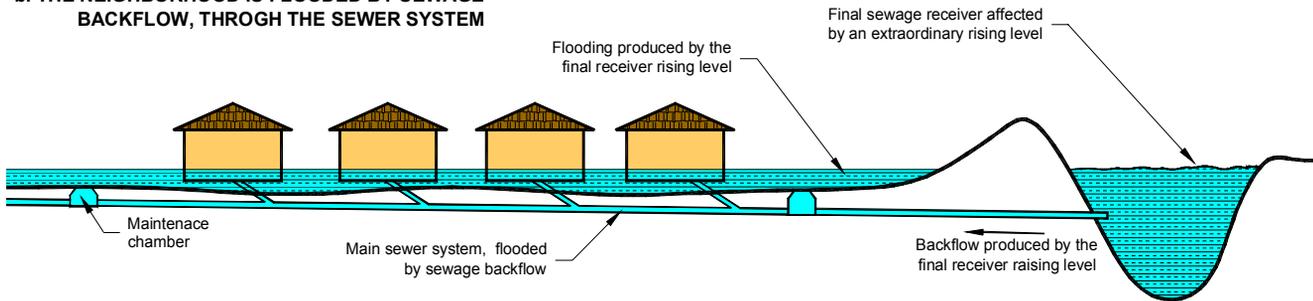
Drainage points located under the level where the flow of the system could overflow in case it becomes surcharged. This is the risk of any basement draining directly to the main sewer system

CONSEQUENCES OF AN EXTRAORDINARY RISING LEVEL OF A FINAL RECEIVER, WHEN IT INVADES THE OUTLET OF THE SEWER THAT POUR TO THIS ONE

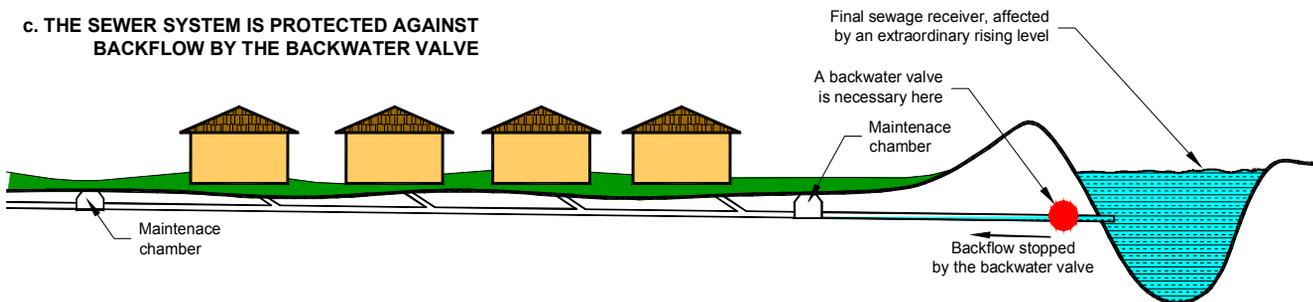
a. THE SEWER SYSTEM DRAINS NORMALLY



b. THE NEIGHBORHOOD IS FLOODED BY SEWAGE BACKFLOW, THROUGH THE SEWER SYSTEM



c. THE SEWER SYSTEM IS PROTECTED AGAINST BACKFLOW BY THE BACKWATER VALVE





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