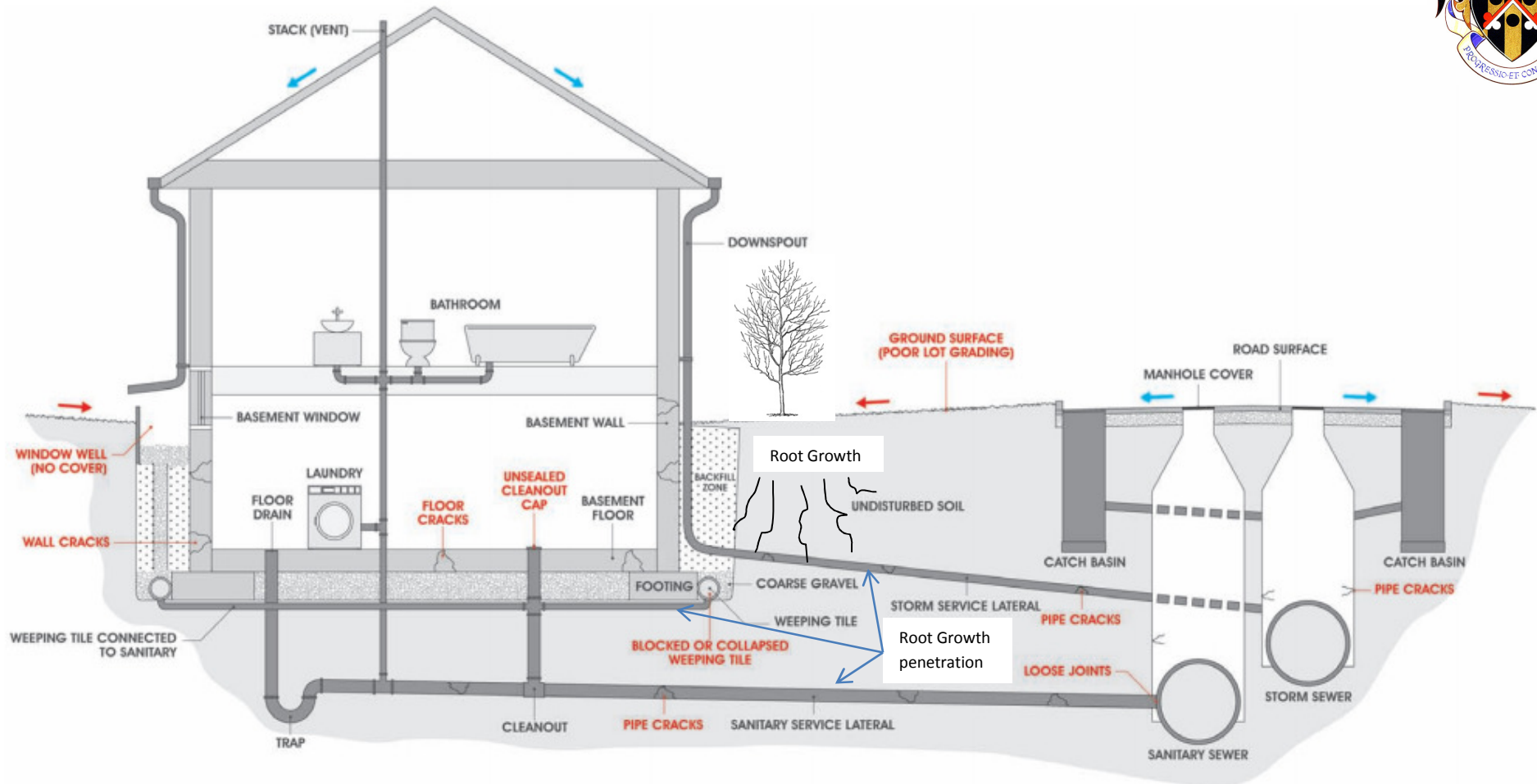
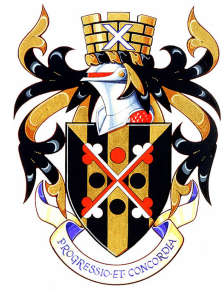


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How flooding can occur in a home: Infiltration flooding, overland flooding and sewer backup



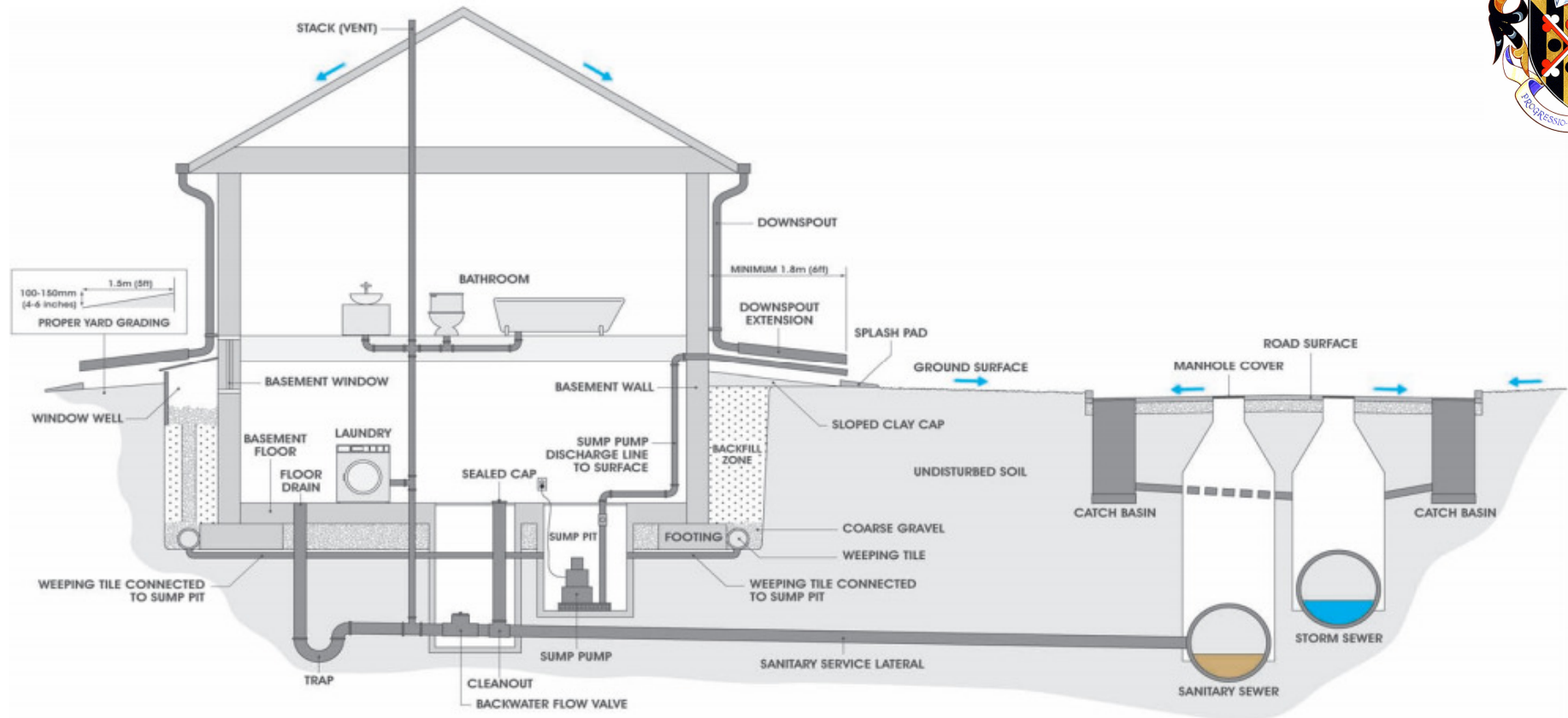
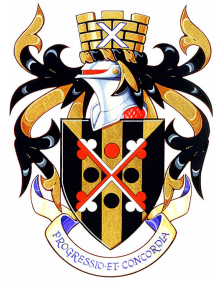
Issues to look for in this diagram:

This diagram shows a home that is at risk of basement flooding from infiltration flooding, overland flooding, and sewer backup. In this diagram:

- The cracks in the foundation wall and basement floor are unsealed;
- Downspouts are connected to the municipal sewer system or are discharging too close to the foundation;
- The yard is improperly graded and slopes toward the home;
- The weeping tiles have not been maintained and are damaged;
- There is no backwater valve installed on the sanitary service lateral;
- The sewer laterals have not been maintained, are cracked and have loose joints;
- The weeping tile is connected to the sanitary system (Note: this condition may exist in older subdivisions and in some cases, separation of the weeping tile may be impractical);
- The backfill area beside the foundation wall is uncapped with clayey soils;
- The sewer cleanout is uncapped and unsealed;
- There is no window well cover in place; and,
- Root growth has penetrated/obstructed the weeping tile or sanitary service lateral.

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Solutions to prevent basement flooding in a typical residential home



Solutions to look for in this diagram:

This home has been retrofitted with recommended options.

To reduce overland flooding, infiltration flooding and sewer backup:

- A properly graded yard directs water away from the home;
- The backfill zone has been capped with an impermeable soil (e.g. clay);
- The downspouts have been disconnected from the municipal sewer systems;
- Extensions on the downspouts and sump-pump discharge pipe keeps water away from the home;
- A cover has been placed on the window well;
- Video inspection conducted on sanitary lateral to identify and correct any root growth infiltration; and,
- Tree roots causing obstruction of weeping tile or service laterals have been removed.

To reduce infiltration flooding:

- Any cracks in the foundation walls and basement floor have been sealed; and,
- Weeping tiles have been repaired and are in good working order.

To reduce sewer backup:

- A mainline, "normally open" backwater valve has been installed in the sanitary sewer lateral;
- The weeping tile has been severed from the sanitary lateral and drained into a sump-pit, and water is pumped from the basement to the lot's surface using a sump-pump. (Consider backup power supply and water level alarms); and
- Cracks and loose joints in the sanitary sewer lateral have been repaired.

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Basement Flood Prevention - Glossary of Terms

Backwater valve (sometimes referred to as a backflow valve): A valve that is placed in the sewer lateral that helps to prevent water from backing up from the municipal sewer into the basement.

Catch basin: Catch basins direct surface storm water to the underground storm or combined sewer system.

Cleanout port: Cleanout ports allow for access to the home's sewer laterals for cleaning and maintenance purposes. Cleanout ports may be located either in the basement, close to where the sanitary sewer lateral enters the basement, or outside of the home, usually somewhere close to the foundation or between the home and the street.

Combined sewer: A sewer that has been designed to convey both sanitary sewage and storm sewage. This type of sewer often services older areas of Canadian communities.

Foundation drain: See "Weeping tile."

Groundwater: Water that is contained within soil and between rocks below the earth's surface.

Swale: A grassy, shallow ditch-like depression used to direct storm water flows.

Urban flooding: Urban flooding occurs in urban areas, where there is a high concentration of buildings and impermeable surfaces, such as roadways, parking lots and roofs. This type of flooding can result from heavy rainfall, snowmelt or surcharging sewer systems. Urban flooding can occur in areas that are not at risk of flooding from rivers or other natural surface water bodies.

Weeping tile: A series of tiles or a perforated pipe located along the bottom of a building's foundation that is used to collect and drain groundwater away from the building.

Sanitary sewage: Sewage that is created by use of a building's plumbing (for example, sinks, toilets, dishwashers, laundry machines) and is considered a highly contaminated health hazard.

Sanitary sewer: An underground sewer-pipe that is designed to convey only sanitary sewage.

Sanitary sewer lateral: An underground pipe that connects a home's plumbing to the municipal sanitary or combined sewer system.

Sewer backup: Sewage that is forced back through storm and sanitary sewer laterals from sanitary, storm or combined sewers. Sewage flooding typically enters lower levels of a home through plumbing fixtures, including floor drains, sewer cleanouts and basement toilets, sinks and showers.

Storm sewage: Storm sewage is created directly by rainfall and snowmelt. This water is cleaner than sanitary sewage, but can be contaminated with chemicals and debris.

Storm sewer: An underground sewer-pipe that is designed to convey only storm water flows.

Storm sewer lateral: An underground pipe that connects a home to the underground, municipal storm sewer system.

Storm water management: The practice of managing overland and underground water flows created by rainfall and snow-melt. Storm water management is commonly the responsibility of the municipal government.

Sump-pit: A sump-pit collects water from the home's weeping tiles.

Sump-pump: A sump-pump is a device that is placed into the sump-pit to pump weeping tile discharge out of the basement.

Surcharge: The technical term for water backup in a sewer pipe due to insufficient capacity from overloading or blockage. See "Sewer backup."