HOUSING
PLUMBING & SEWER CONNECTIONS

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BIMOSE TRIBAL COUNCIL

COPPER PIPING ALLOWED BELOW GRADE

7.3.3.12. Copper Joints Used Underground

(1) Except as provided in Sentence (2), joints in copper tubes installed underground shall be,

(a) made with either flared or compression fittings, or

(b) brazed using a brazing alloy within the American Welding Society's AWS-BCuP range.

(2) Compression fittings shall not be used underground under a *building*.

COPPER PIPING ALLOWED BELOW GRADE

7.3.5. Protection of Piping

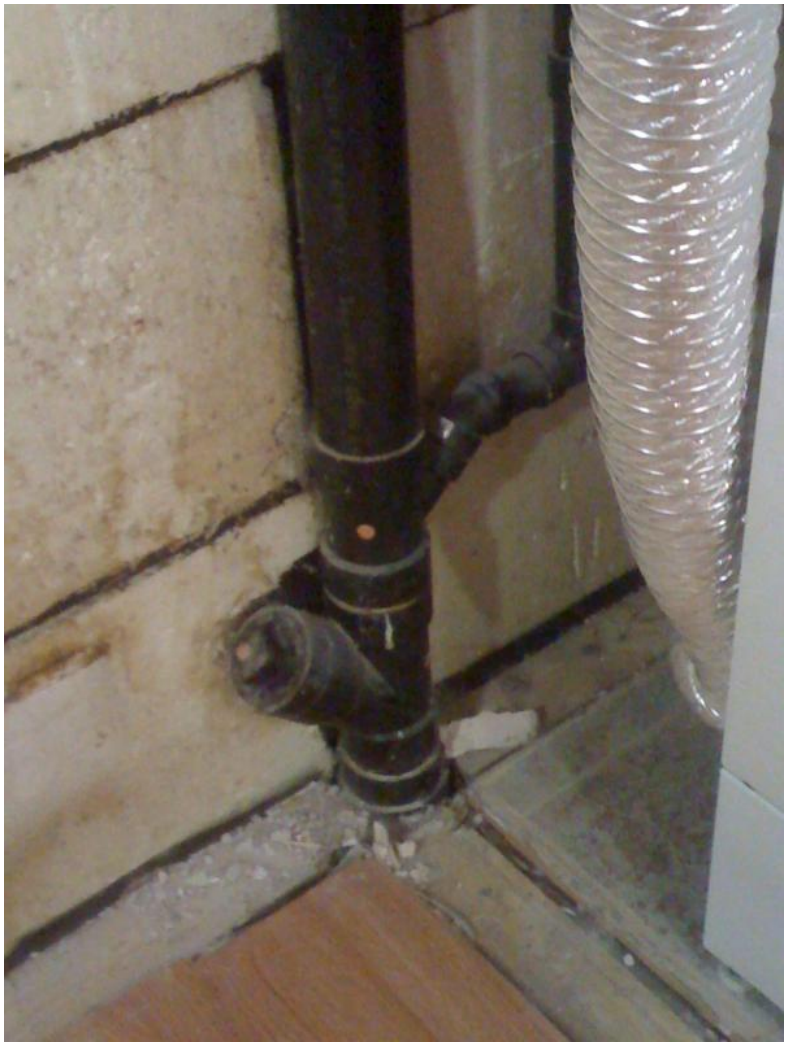
7.3.5.1. Backfill of Pipe Trench

(1) Where piping is installed underground, the backfill shall be carefully placed and tamped to a height of 300 mm over the top of the pipe and shall be free of stones, boulders, cinders and frozen earth.

SIZING OF SEWER PIPING

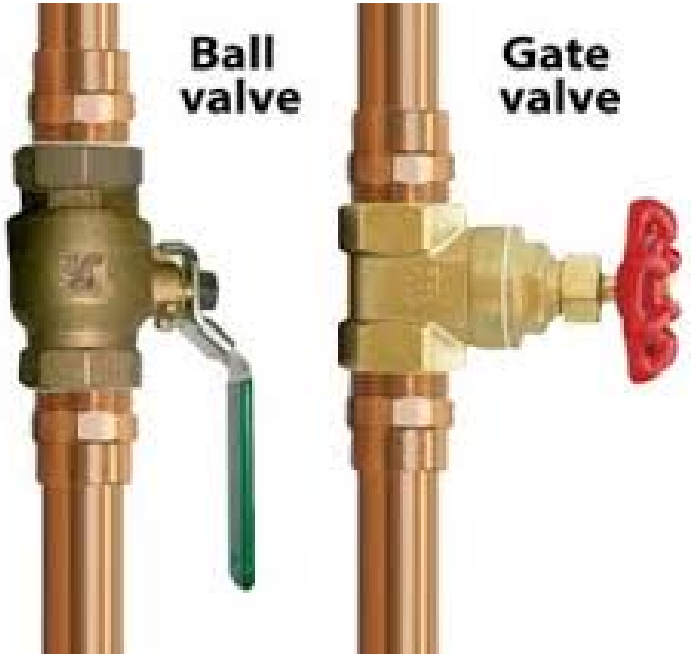
MINIMUM SIZE OF SEWAGE PIPE IS 4” WITH A 4” CLEANOUT WITHIN THE BUILDING FOOTPRINT

SIZING OF SEWER PIPING



WATER PIPING

MINIMUM SIZE OF WATER SERVICE PIPING IS ¾”



COPPER PIPING ALLOWED BELOW GRADE

Table 7.2.7.4.
Permitted Use of Copper Tube and Pipe

Forming Part of Sentence 7.2.7.4.(2)

Item	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
	Type of Copper Tube or Pipe	*Water Distribution System*		*Building Sewer*	*Drainage System*		*Venting System*	
		Under ground	Above ground		Under ground	Above ground	Under ground	Above ground
1.	K & L hard	N	P	P	P	P	P	P
2.	K & L soft	P	P	N	N	N	N	N
3.	M hard	N	P	N	N	P	N	P
4.	M soft	N	N	N	N	N	N	N
5.	DWV	N	N	N	N	P	N	P

Notes to Table 7.2.7.4.:

P — Permitted

N — Not Permitted

SEPARATION OF WATER & SEWER

7.3.5.7. Spatial Separation

(1) Except as permitted in Sentences (2) and (3), a buried *water service pipe* shall be separated from the *building drain*, *building sewer* and a *private sewage disposal system*, by not less than 2 440 mm measured horizontally, of undisturbed or compacted earth.

(2) The *water service pipe* may be closer than 2 440 mm or be placed in the same trench with the *building drain* or *building sewer* if,

(a) the following conditions are met:

(i) the bottom of the *water service pipe* at all points is at least 500 mm above the top of the *building drain* or *building sewer*, and

(ii) when in a common trench with the *building drain* or *building sewer*, the *water service pipe* is placed on a shelf at one side of the common trench,

(b) the *water service pipe* is constructed of a single run of pipe with no joints or fittings between the street line or source of supply on the property and the inside face of the *building*, or

(c) the *building drain* or *building sewer* is constructed of piping which is pressure tested in accordance with Subsection 7.3.7. at 345 kPa.

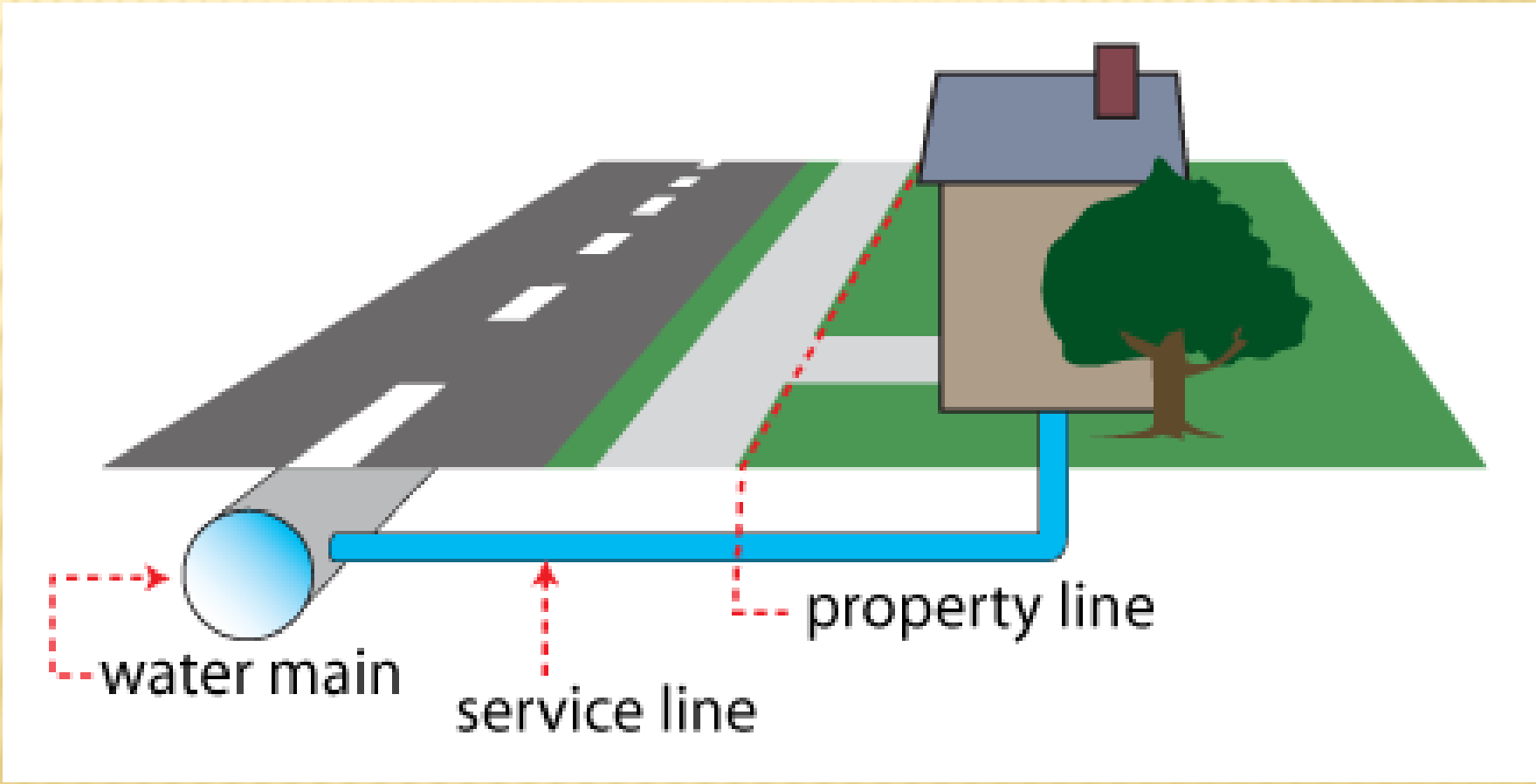
RESIDENTIAL WATER SERVICE LINES AND WASTEWATER/SEWER LATERALS

RESIDENTIAL WATER SERVICE LINES & WASTEWATER LATERALS

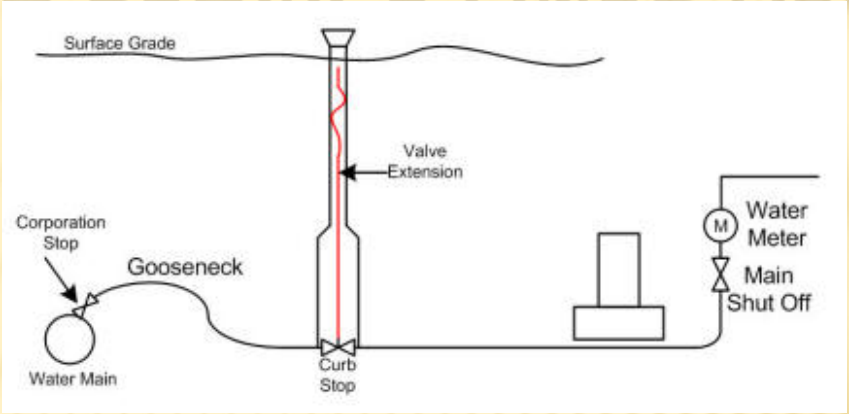
Presentation Contents

- Water Service Lines Defined
- Sizing Water Service Lines and materials
- Wastewater Laterals Defined
- WW lateral sizing and materials

WHAT ARE WATER SERVICE LINES?

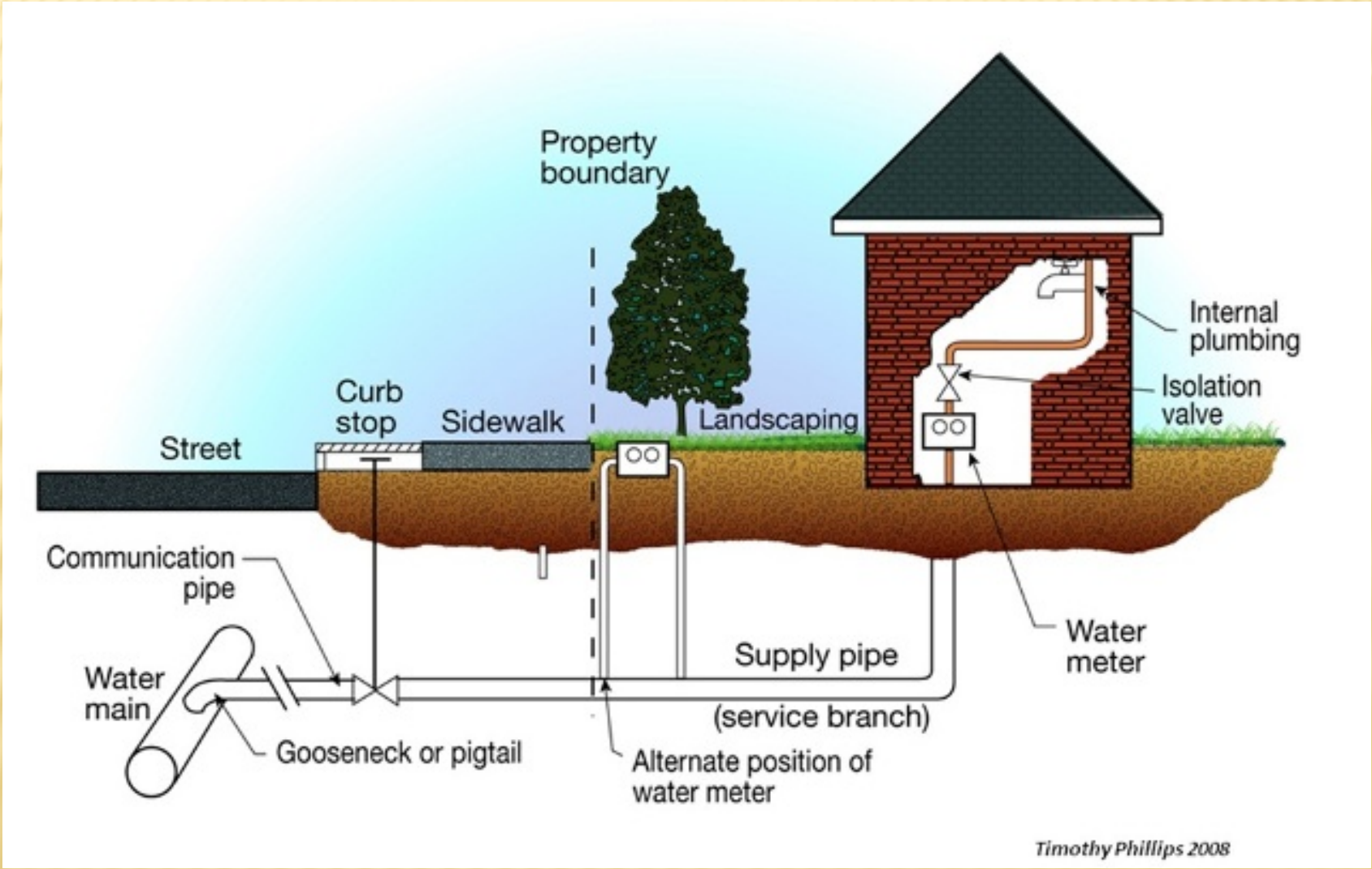


WATER SERVICE LINES DEFINED



- A pipe, hose, tube, or other line for conveying water
- Other appurtenances include Corp and Curbstop valves
- Normal potable water pressure to a home ranges from 60 – 85 psi or 413 to 585 kpa

WATER SERVICE LINES



SIZING THE WATER SERVICE PIPE

The minimum size for a water service pipe is 3/4" and this will likely be sufficient for most residential

SIZING THE WATER SERVICE PIPE

Factors to consider when Sizing:

- Total water demands of all the fixtures, appliances, auxiliary uses and future demand possibilities.
- Pressure supplied to the building and if it fluctuates throughout the day
- Rise in elevation to the highest fixture, from the point where it enters the building

MINIMUM WATER SERVICE SIZE REQUIRED FOR RESIDENTIAL STRUCTURES

Class of Building	Minimum Service Class of Building Size - Internal Diameter Peak Hour Pressures ≥ 350 kPa	Minimum Service Class of Building Size - Internal Diameter Peak Hour Pressures < 350 kPa
Single-Family Dwelling	20 mm	25 mm
Two-Family Dwelling (Duplex)	Two separate 20 mm	Two separate 25 mm
Four-Family Dwelling (Fourplex)	40 mm	40 mm

RESIDENTIAL STRUCTURE SIZES

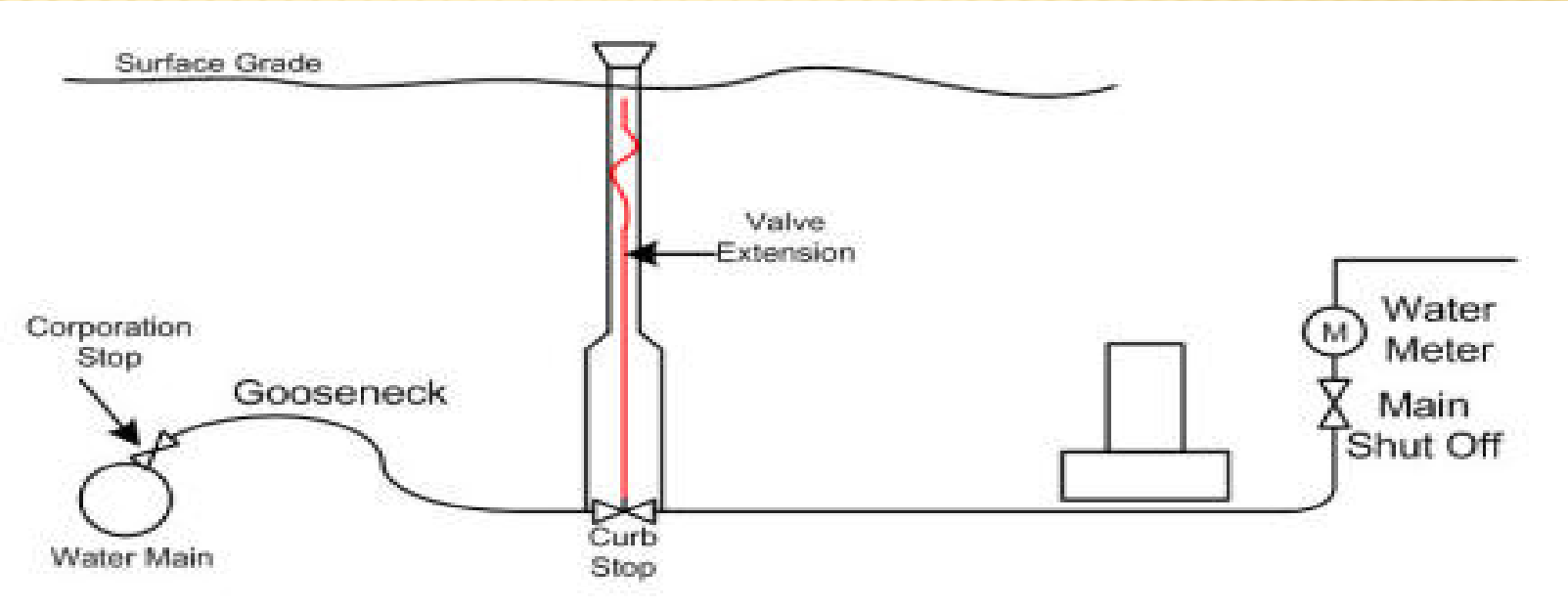
- A larger service size than that indicated in Table 3 will be required where, in the opinion of the Engineer, the length of the service pipe, the potential demand, the supply pressure or other conditions warrant an increase.

COMMERCIAL & INDUSTRIAL STRUCTURES

- Water services for industrial, commercial, or institutional applications shall be sized and located according to all relevant codes and regulations and in accordance with current industry standards as presented in AWWA Manual M22 and shall be subject to approval by the Engineer.

WATER SERVICE LINE MAIN COMPONENTS

Typically only three joints required in the underground portion, and they are usually brazed, compression or flared joints

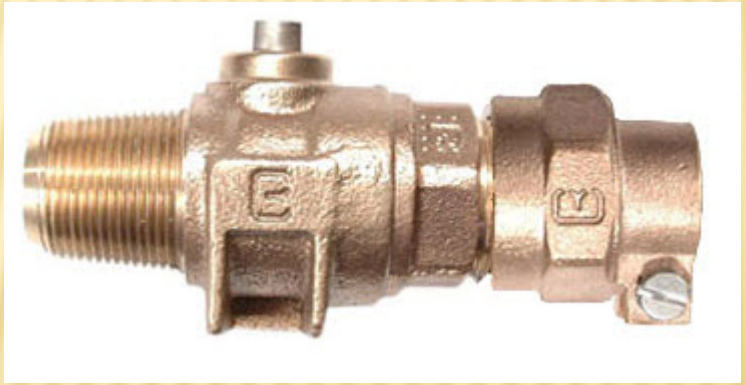


WATER SERVICE MAIN COMPONENTS

- Corporation Stop
- Gooseneck
- Curb Stop
- Main Shut Off

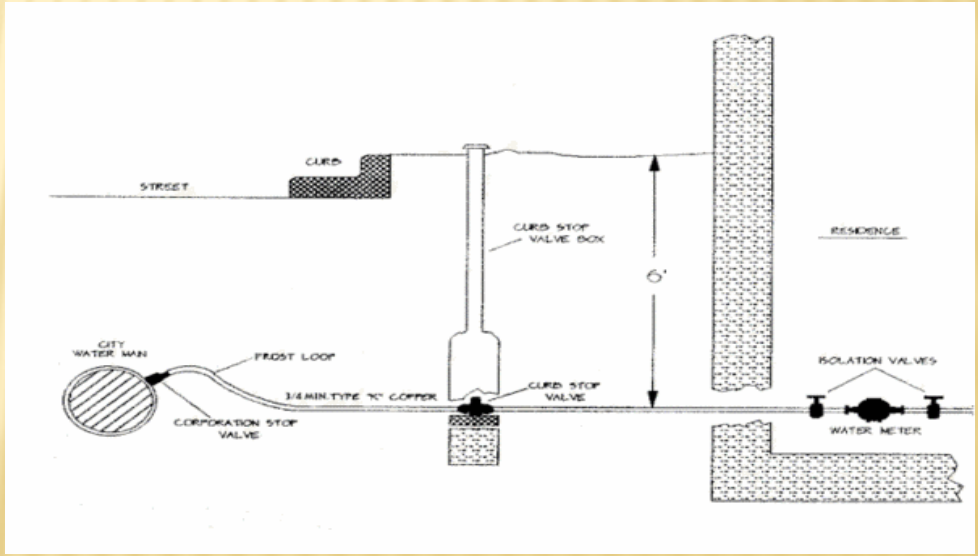
WATER SERVICE MAIN COMPONENTS

- Corporation Stop – The valve installed on the water main by the municipality. This is usually done under pressure using a "Live Tapping" device.



WATER SERVICE MAIN COMPONENTS

- Gooseneck/Frost Loop - An arched bend in the water service is typically installed to prevent strain on the corporation stop from soil movement and pipe expansion.



WATER SERVICE MAIN COMPONENTS CONT'D

- Curb stop is a quarter turn ball valve that can be fitted with a valve key to turn on/off the water and is protected by a small diameter valve box that extends to height of the finished grade.

WATER SERVICE MAIN COMPONENTS CONT'D

- Main Shut Off - As soon as the water service enters the building an isolation valve must be installed inside the building.

WATER SERVICE LINE CONSTRUCTION MATERIALS

- Prior to the 1950s, lead was commonly used for water service piping,
- Copper was also used
- Today's preferred materials are copper and certain polyethylene pipes.
- The underground water service pipe is installed below the frost line, most often with Type K or Type L soft copper and more recently PEX

WATER SERVICE LINE CONSTRUCTION MATERIALS CONT'D

- Lead is a toxic metal that is harmful to human health; there is NO safe level for lead exposure.
- Water may absorb lead from services pipes potentially increasing the concentration of lead in tap water above Health Canada's standard.
- The best long-term solution is to replace lead service pipes.

HOW TO DETERMINE IF YOUR SERVICE PIPE IS LEAD

- 1. Locate the emergency water shut-off valve or water meter in your home (usually found in the basement).

- 2. Check the colour of the pipe coming out of the ground and into the meter – you may have to lightly sand the surface.

HOW TO DETERMINE IF YOUR SERVICE PIPE IS LEAD

If the pipe is:

- The colour of a Canadian penny – it's copper
- Bright blue or black – it's likely plastic tubing (polyethylene)
- Grey – it's galvanized iron or lead

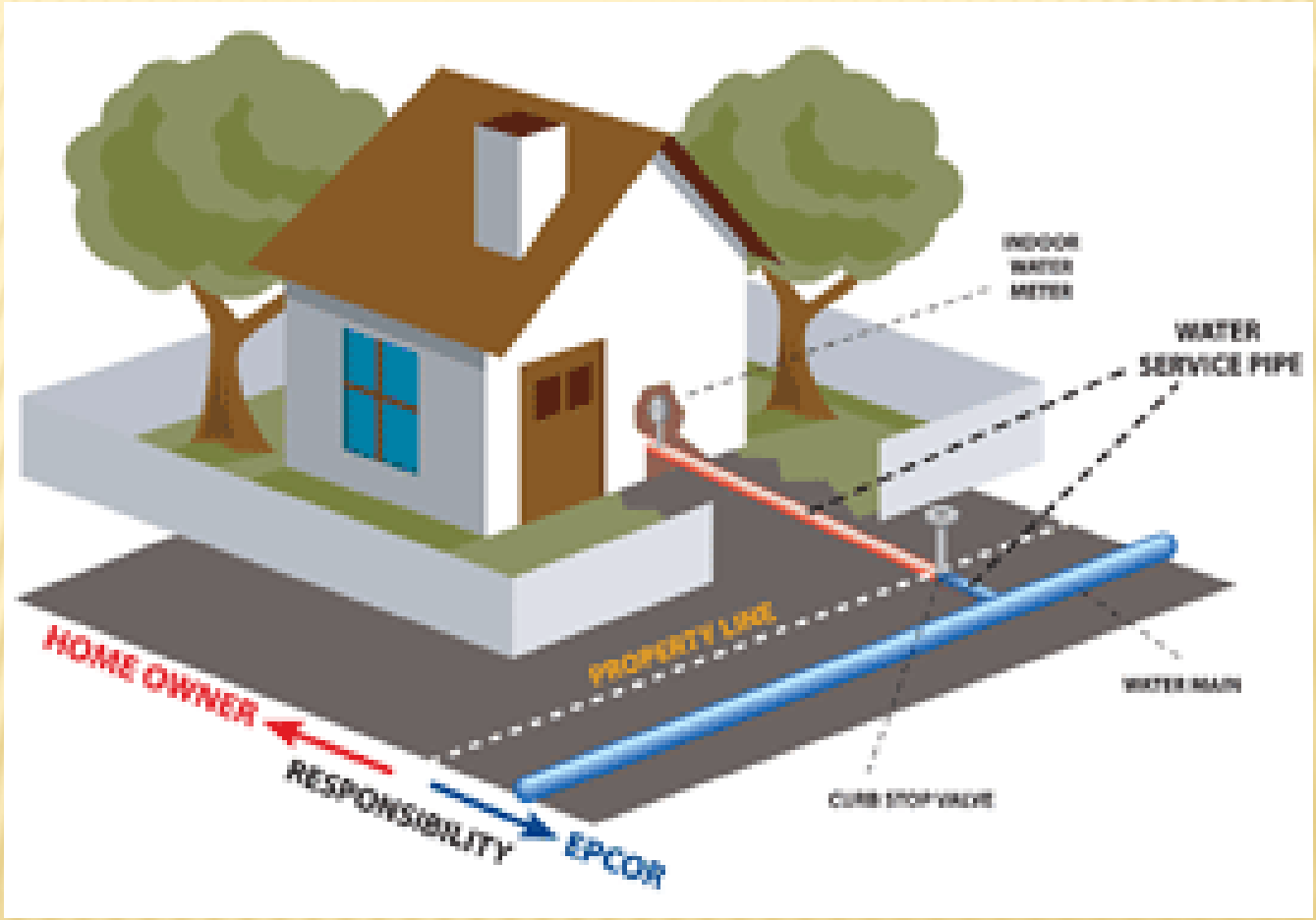
HOW TO DETERMINE IF YOUR SERVICE PIPE IS LEAD

The next indicators are the hardness and fittings.

- Don't attempt to test the hardness of your pipe if you suspect it's plastic.

- If it’s a lead pipe, you’ll be able to etch gently into the pipe with a sharp-tipped object

WATER SERVICE LINE CONSTRUCTION MATERIALS CONT'D



WATER SERVICE LINE CONSTRUCTION MATERIALS CONT'D

- AWWA C901 – Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service
- AWWA C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

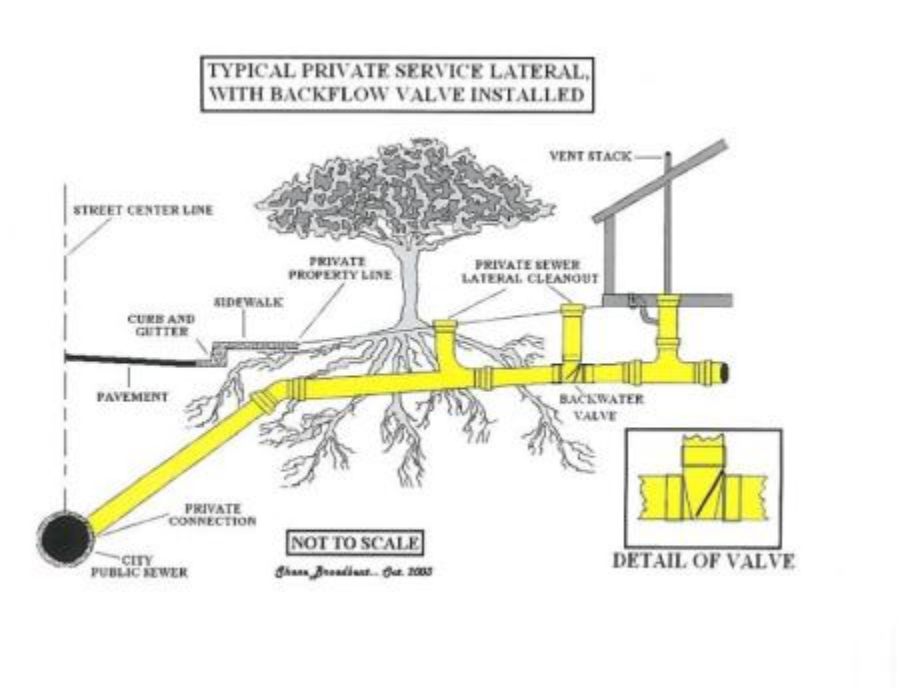
ARE SERVICE LINES AND WASTEWATER LATERALS REGULATED ON FIRST NATION LANDS?

- Ontario Building Code
- Safe Drinking Water Act
- Guideline for Safe Drinking Water On First Nations
- Protocol for Centralised Drinking Water Systems in First Nations Communities;
- Protocol for Centralised Wastewater Systems in First Nations Communities; and
- Protocol for Decentralised Water and Wastewater Systems in First Nations Communities.

APPLICABLE CODES

- Ontario Building Code - OBC,
- WATER PIPE SIZING REQUIREMENTS DESCRIBED IN PART 7 OF THE ONTARIO BUILDING CODE.

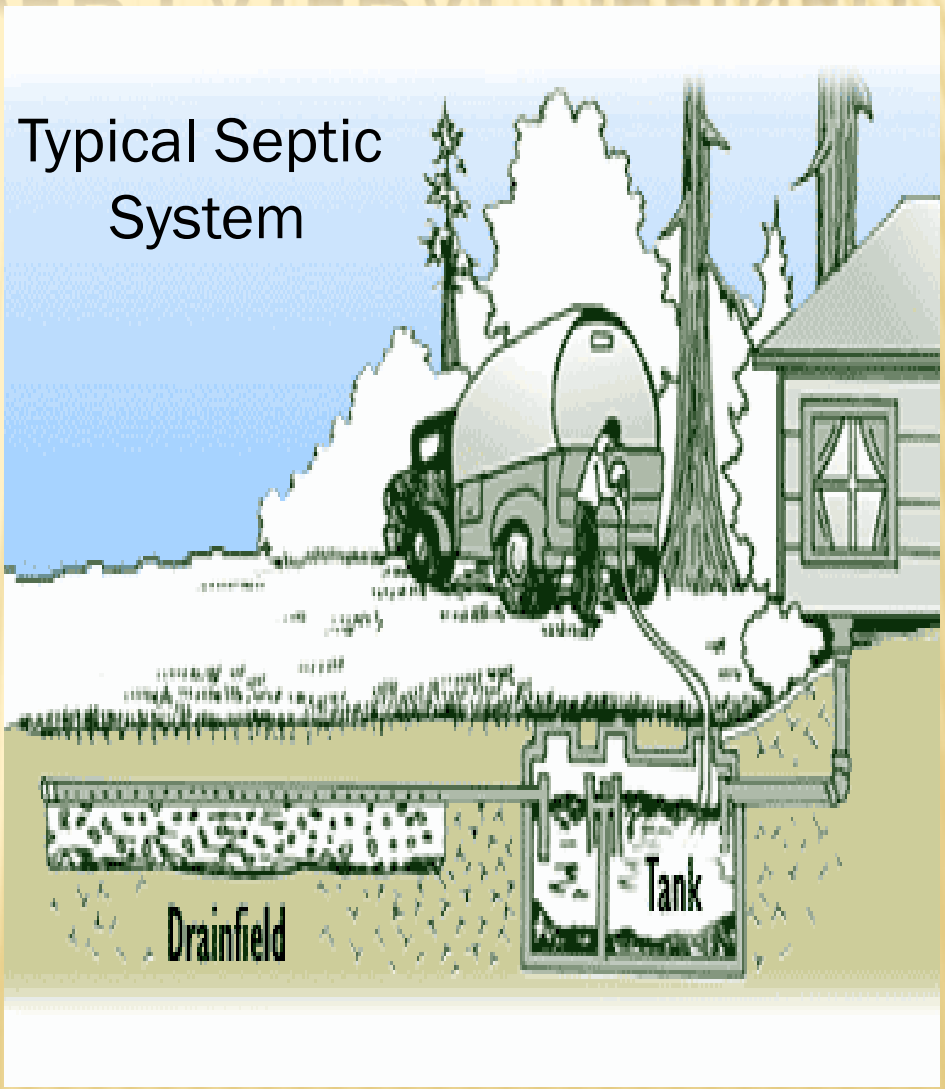
WHAT ARE WASTEWATER/SEWER LATERALS?



WASTEWATER/SEWER LATERAL DEFINED

- Sewer line that carries black and grey wastewater from the sanitary fixtures and floor drains inside your home to the communal wastewater collection mains or to a nearby septic system.
- Toilet waste is “black water”
- “Grey Water” includes; showers, laundry, brushing your teeth, dishwashing, housekeeping etc.

WASTEWATER/SEWER LATERAL DEFINED



WASTEWATER/SEWER LATERAL SIZING

- OBC 7.4.9.4. Minimum Size of Building Drains and Sewers
- (1) Every sanitary building drain and every sanitary building sewer shall be at least 4 in. (100 mm) size.
- (2) Every storm building drain and every storm building sewer shall be at least 4 in. size. (100 mm)

WASTEWATER/SEWER LATERAL SIZING

- Maximum Permitted Hydraulic Load Drained to a Horizontal Sanitary Drainage Pipe
- Ontario Building Code Table 7.4.10.8. outlines the max load

WASTEWATER LATERAL PIPE SELECTION AND DESIGN

Based on the following criteria;

- Sewer Pipes and Appurtenances
- Rigid Pipe Design
- Flexible Pipe Design
- Minimum 1% grade and Maximum of 2%
- Minimum of 1% would provide a flow rate of between 2 and 3 ft/sec

WASTEWATER LATERAL PIPE SELECTION AND DESIGN

- Other Considerations include;
- Pipe Depth
- Pipe Location
- Pipe Bedding

TYPES OF WASTEWATER LATERAL PIPES

- Type of pipe varies by the age of your house
- Clay, cast-iron, or plastic sewer pipe have been and still are used
- Clay and cast-iron are older types; plastic is the newest

TYPES OF WASTEWATER LATERAL PIPES CONT'D

- In terms of home renovation, you may find yourself being steered in the direction of PVC or ABS plastic pipe over clay and cast-iron. While plastic pipe is undoubtedly easier to work with, clay and iron have strong points: long lifespan and strength (for the iron).

TYPES OF WASTEWATER LATERAL PIPES CONT'D

THANK YOU!

Questions?

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