



# Water Connection Repair Method and Techniques

# Water Service Disruption Report

- Are prioritized then submitted to Clearances and Locations Work Group.

[illegible]

- Section A of the Water Service Disruption Report.

[illegible]

# Water Service Disruption Report

- Section B of the Water Service Disruption Report.

Hydrants out of Service Location of Hydrant	Hydrant GIS No.	Off		Crew Initials	On		Crew Initials
		YYMMDD	Time		YYMMDD	Time	
Connection drawings for: _____							
Excavation Obstructions:				Additional Information Required:			
Tree: _____ Comments: _____				Correlation Required: _____ Yes; _____ No;			
Utility Pole: _____ Comments: _____				Slow Leak: _____ Yes; _____ No;			
Fence: _____ Comments: _____				Hydro Excavate: _____ Yes; _____ No;			
Vehicle: _____ Comments: _____				Washout Visible: _____ Yes; _____ No;			
Pavement: ____; Concrete: ____; Paving Stone: ____; Blvd: ____:				Broke into Sanitary Main: _____ Yes; _____ No;			
Other: _____				Broke into Storm Main: _____ Yes; _____ No;			
Temporary Water Provisions:				Traffic Controls:			
Water Trailer: _____ (On Site); _____ (Arranged For);				Detour Required: _____ Yes; _____ No;			
Temporary Connection: _____ (Installed); _____ (Arranged For);				Bus Route: _____ Yes; _____ No;			
From: _____; To: _____				Post for No Parking: _____ Yes; _____ No;			
Fill-up: _____ (Time On); _____ (Time Off); _____							
PROPERTY DAMAGE: Yes: _____; No _____;							
OTHER REMARKS / OBSERVATIONS:							
TWE 03/0401							

# Clearances and Locations Work Group

- Provides: drawings, utility locations, location numbers and forms.
- Coordinates the removal of obstructions if required.



# Daily Work Sheet

- The daily work sheet is created to provide other departments with the location of the Water & Sewer work being performed.

DATE: Friday May 9 - 03													
Water and Sewer Maintenance Section													
:W&SMT1													
STATUS	LOCATION:	REPAIR TYPE:	PRIORITY	JOB #	Loc:	ACTIVITY:	GL	SIGNING:	GIS	UTL>LOC:	STAFFING:		
Current	1006 Tiffin Crescent	Sanitary Connection	MBL	664	3112	5-6500	05-270	S/S			LABOURERS -	Parker/Klassen	
2nd	Massey Drive & Marr Avenue	Water Main	MP1	146	3114	5-6100	02-150	On Site			BACKHOE OPERATOR -	Dmytrowich - 2343	
Hold	175/303 Delaronde Road	Repair C/B Lead	MP1	775	3079	5-6710	07-310	On Site	27126		T/A OPERATORS -	Pingue	
Hold	Arnhem St. & McNaughton Avenue	Hydrant (McAvery)	MP2	243	3059	5-6300	02-160	On Site	23535				
Hold	Field House	Water Connection	MBL	49246	1724067	5-6410	02-170	Crew					
:W&SMT2													
STATUS	LOCATION:	REPAIR TYPE:	PRIORITY	JOB #	Loc:	ACTIVITY:	GL	SIGNING:	GIS	UTL>LOC:	STAFFING:		
Hold	Clarence Avenue - 8th St. - 9th St.	Water Main	MP1	146	3115	5-6100	02-150	S/S			LABOURERS -		
Hold	15 Moxon Crescent	Sanitary Connection	MBL	664	3108	5-6500	05-270	S/S			BACKHOE OPERATOR -		
			MBL								T/A OPERATORS -		
			MBL										
:W&SMT3													
STATUS	LOCATION:	REPAIR TYPE:	PRIORITY	JOB #	Loc:	ACTIVITY:	GL	SIGNING:	GIS	UTL>LOC:	STAFFING:		
Hold	Dudley Street	Sanitary Connection	FMP	46806	1724067	5-6100	17-596	N/A			LABOURERS -		
			MBL								BACKHOE OPERATOR -		
			MBL								T/A OPERATORS -		
Hold	8th Street Yard	Cleanup Yard	MBL	49195	1724067	5-6100	02-150	N/A					
:W&SMT4													
STATUS	LOCATION:	REPAIR TYPE:	PRIORITY	JOB #	Loc:	ACTIVITY:	GL	SIGNING:	GIS	UTL>LOC:	STAFFING:		
Hold	Isabella Street / Eastlake Avenue	Repair C/B Lead	MBL	48959	1724067	5-6710	07-310	S/S			LABOURERS -		
Hold	Isabella Street / Eastlake Avenue	Valve (WPL)	MP2	146	3031	5-6200	02-150	S/S	1168		T/A OPERATORS -		
			MBL										
			MBL										
DAY OFF/DO		VACATION:		SICK:				OTHER:		ADDITIONAL STAFFING:			
Ross, Young, Maskwa & Crews, Olchove,		Hilton, Swidzinski				Collins - Medical				Loader - Cousins @ Landfill -			
Priority Legend													
(MP1) Maintenance Priority - (MBL) Maintenance Backlog - (MPS) Maintenance Program Support - (FMP) Funded Maintenance Program													
Pending Water & Sewer Work													
STATUS	LOCATION:	REPAIR TYPE:	PRIORITY	JOB #	Loc:	ACTIVITY:	GL	SIGNING:	GIS				
Hold	Boychuck Dr. South of Taylor St.	Sanitary MH F&C	MBL	760	3010	5-6620	07-310	Crew	21925				
Hold	Boychuck Dr. South of Taylor St.	Sanitary MH F&C	MBL	760	3010	5-6620	07-310	Crew	21924				
Hold	4200 Block Taylor Street	Sanitary MH F&C	MBL	563		5-6620	05-260	Crew	8575				
Hold	412 Avenue C South	Sanitary Stop (C&S)	MP2	48237	1724067	5-6400	02-170	S/S					
Hold	213 Avenue I South	Sanitary Stop (C&S)	MP2	48150	1724067	5-6400	02-170	S/S					
Hold	4th Avenue & 23th Street	Sanitary Top	MBL	573	3012	5-6620	05-260	S/S	3813				
Hold	Ottawa Avenue / 20th Street	San Bev Top	FMP	573	3068	5-6620	05-260	S/S	3231				

# Daily Work Sheet Section A

- Section A shows the tasks for each Supervisor IV.

DATE: Friday May 9 - 03							
Water and Sewer Maintenance Section							
PIECOWYEW&SMT1							
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Hold	15 Moxon Crescent	Sanitary Connection	MBL	664	3108	5-6500	05-270
			MBL				
			MBL				
			MBL				
:W&SMT3							
STATUS	LOCATION:	REPAIR TYPE	PRIORITY	JOB #	Loc:	ACTIVITY:	GL
Hold	Dudley Street	Cathodic Protection	FMP	46806	1724067	5-6100	17-596
			MBL				
			MBL				
			MBL				
Hold	8th Street Yard	Cleanup Yard	MBL	49195	1724067	5-6100	02-150
:W&SMT4							
STATUS	LOCATION:	REPAIR TYPE	PRIORITY	JOB #	Loc:	ACTIVITY:	GL
			MBL				
Hold	Isabella Street / Eastlake Avenue	Repair C/B Lead	MBL	48959	1724067	5-6710	07-310
Hold	Isabella Street / Eastlake Avenue	Valve (WPL)	MP2	146	3031	5-6200	02-150
			MBL				
			MBL				
DAY OFF/EDO		VACATION:		SICK:			
Ross, Young, Maskwa & Crews, Olchove,		Hilton, Swidzinski				Collins - Medical	
Priority Legend							
(MP1) Maintenance Priority - (MBL) Maintenance Backlog - (MPS) Maintenance Program Support - (FMP) F							

# Daily Work Sheet Section B

- Section B shows additional information.

on					
SIGNING:	GIS	UTL>LOC:	STAFFING:		COMMENTS:
S/S			LABOURERS -	Parker/Klassen	
On Site			BACKHOE OPERATOR -	Dmytrowich - 2343	
On Site	27126		T/A OPERATORS -	Pingue	Gravel required to complete
On Site	23535				
Crew					
SIGNING:	GIS	UTL>LOC:	STAFFING:		COMMENTS:
S/S			LABOURERS -		No homes out!
S/S			BACKHOE OPERATOR -		
			T/A OPERATORS -		
SIGNING:	GIS	UTL>LOC:	STAFFING:		COMMENTS:
N/A			LABOURERS -		
			BACKHOE OPERATOR -		
			T/A OPERATORS -		
N/A					
SIGNING:	GIS	UTL>LOC:	STAFFING:		COMMENTS:
			LABOURERS -		
S/S			BACKHOE OPERATOR -		
S/S	1168		T/A OPERATORS -		
OTHER:			ADDITIONAL STAFFING:		COMMENTS:
			Loader - Cousins @ Landfill -		
unded Maintenance Program					



# Daily Work Sheet Section C

- Section C shows work pending.

Pending Water & Sewer Work									
STATUS	LOCATION:	REPAIR TYPE:	PRIORITY	JOB #	Loc:	ACTIVITY:	GL	SIGNING:	GIS
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Hold	213 Avenue I South	Curb Stop (C&S)	MP2	48150	1724067	5-6400	02-170	S/S	
Hold	4th Avenue & 23th Street	San Bev Top	MBL	573	3012	5-6620	05-260	S/S	
Hold	Ottawa Avenue / 20th Street	San Bev Top	FMP	573	3068	5-6620	05-260	S/S	

# Pick up Materials

- The Supervisor IV will pick up the required materials



# Choosing Shoring

- Choose size and type of shoring based on type of soil, trench width and trench depth.



# Trailer Location









- Locate trailers clear of the excavation.



# APWA Colour Codes

- Representatives from utility companies can field locate their lines if required.

## APWA Colour Codes

	Electric Power Lines
	Gas, Oil, or Steam
	Communications Lines, Cables, or Conduit
	Potable Water
	Reclaimed Water, Irrigation, and Slurry Lines
	Sewers and Drain Lines
	Temporary Survey Markings
	Proposed Excavation



# Cutting Asphalt

- Cut the asphalt with an earth saw (winter) or asphalt saw (summer)



# Asphalt / Concrete Recycling

- Asphalt or concrete will be stripped, separated and hauled away



# Emergency Water Supply Trailer

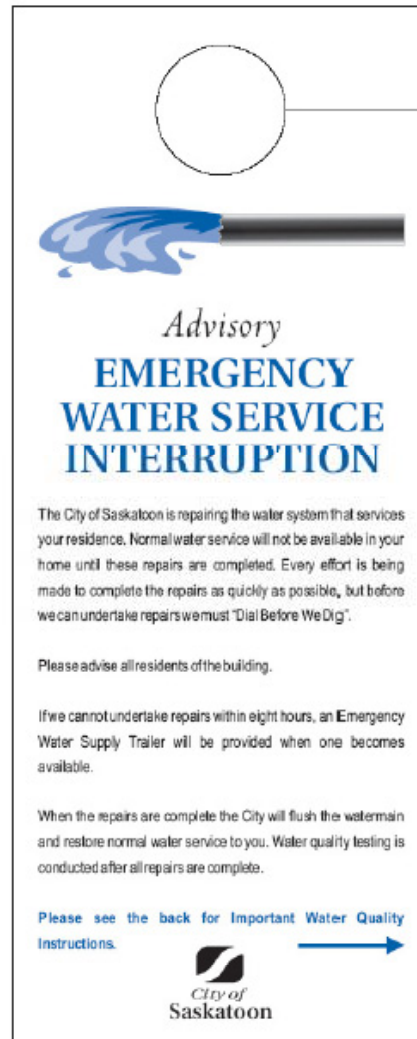
- Emergency water supply trailers and temporary hook ups are options to consider when there is a water outage.





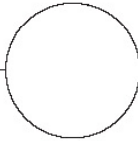
# Service Interruption Advisory

- Advisory door hangers are used to assist in notifying residents of a water outage.



# Service Interruption Advisory


- The back of the door hanger also has information on what to do when the water is turned back on.



Water service has been / will be turned off:

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

- Water service turned off before 11:00 a.m. is normally restored the same day.
- Water service turned off after 11:00 a.m. is normally restored the following day.




**WHEN THE  
WATER RETURNS...**

Interruptions in the water supply can cause naturally occurring deposits in the watermain to be disturbed. Air may also enter your plumbing.

When the water service has been restored, we advise that you open each tap in your home, one at a time, for about 20 seconds each. This should release any air trapped in your home's water lines.

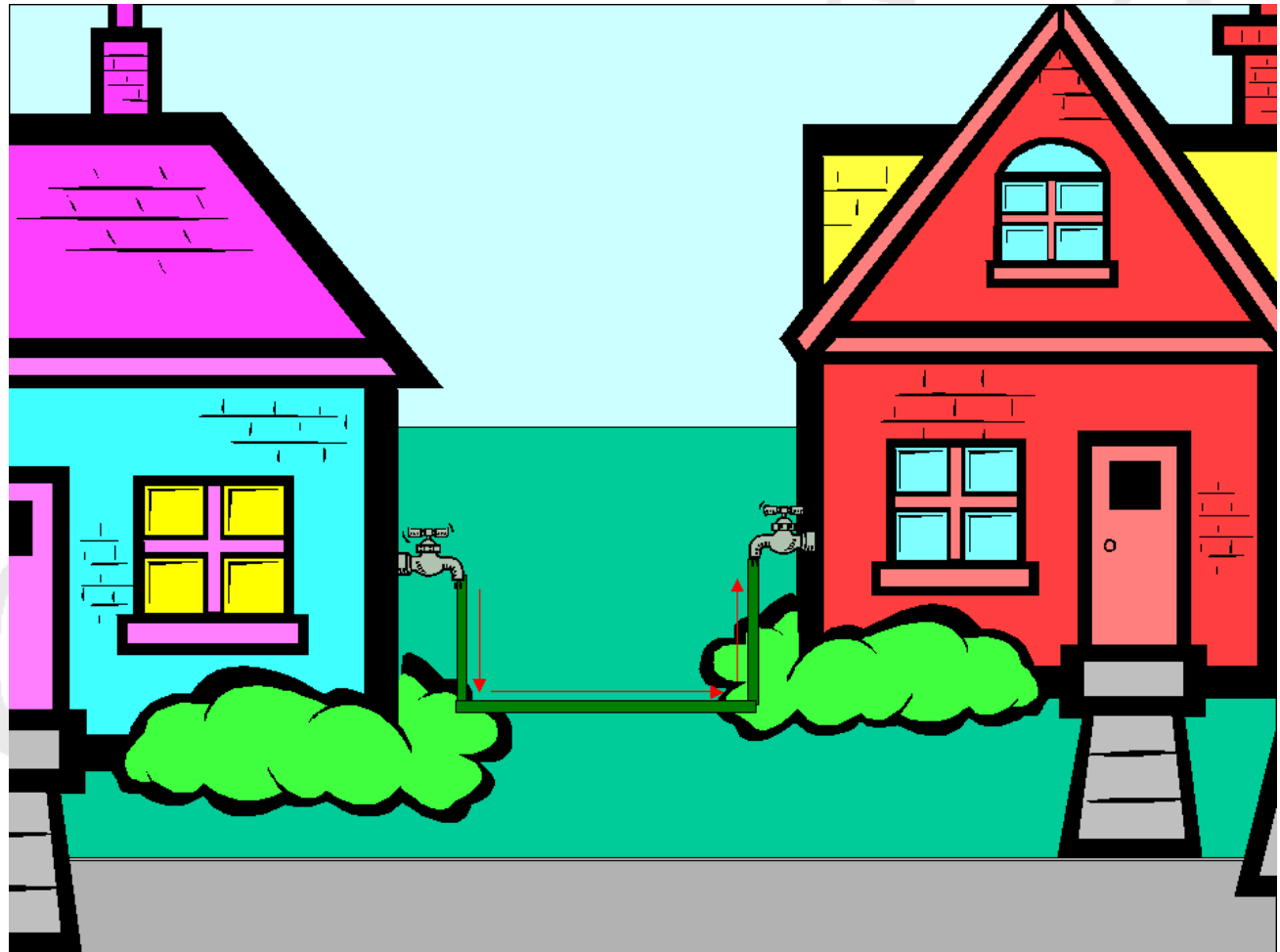
If your water is cloudy or contains grit, continue to run your hot and cold water taps until the water runs clear. You may need to run your hot water long enough to completely exchange the water in your hot water heater.

The City of Saskatoon thanks you for your cooperation.  
For more information please call 975-2491.



# Temporary Water Connection

- Temporary water connections connect to neighbouring residences.



# Excavation

- Ensure excavation is on the opposite side of the sewer connection, - if possible.





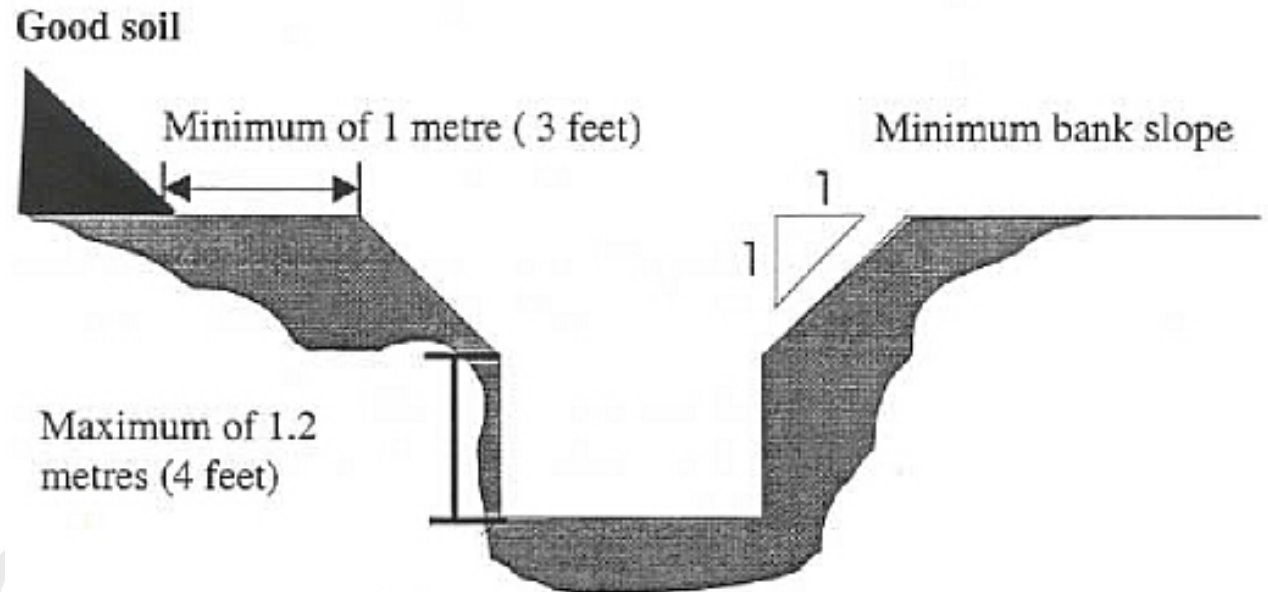
# Spoil Piles

- Keep 1.2 m (4ft) from the edge of the excavation to the toe of the spoil pile.



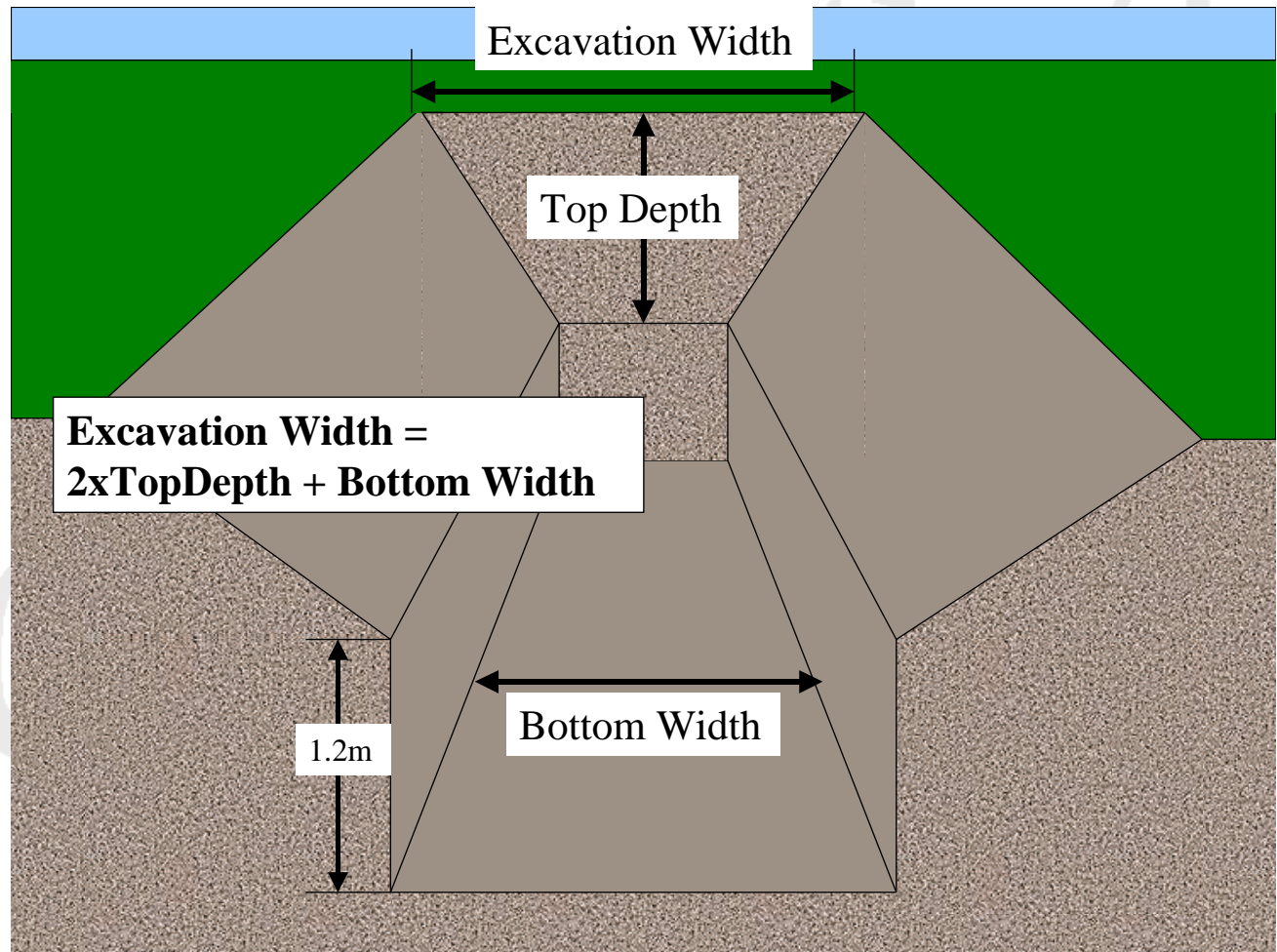
# Sloping The Trench Walls

- Protect labourers in an excavation by sloping the walls or installing shoring.



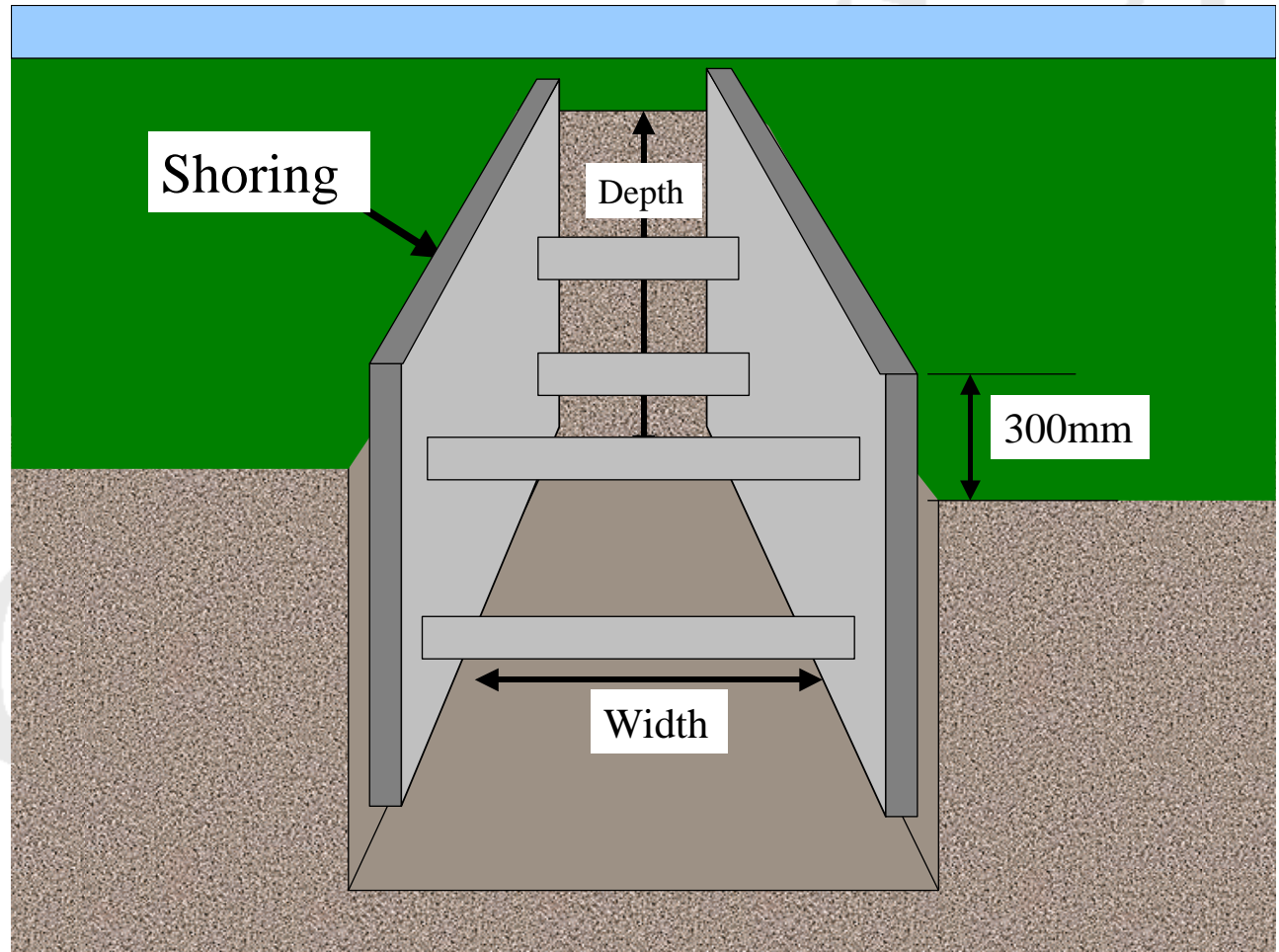
# Excavation Size

- Calculate the size of the excavation.



# Excavation With Shoring

- Install shoring instead of sloping the excavation walls.





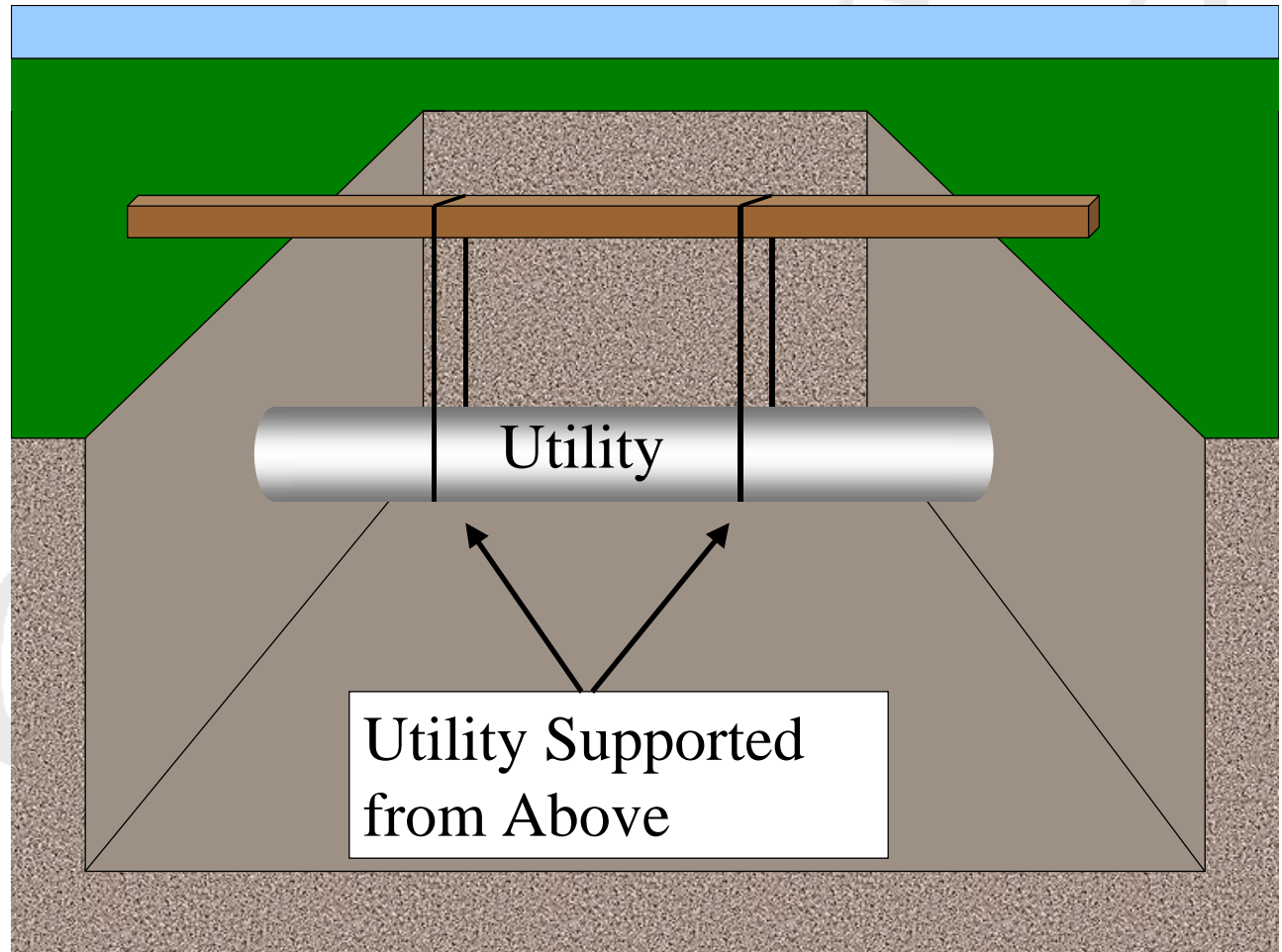
# Unknown Service Depth

- The Labourer shall probe for underground utilities using the feeling rod.



# Supported Utility

- Other Utilities must be supported



# Excavator/Backhoe Safety

- In the event of hitting a natural gas line turn off all equipment, immediately.





# Power Line Safety

- Do not exit equipment if it has contacted a power line.



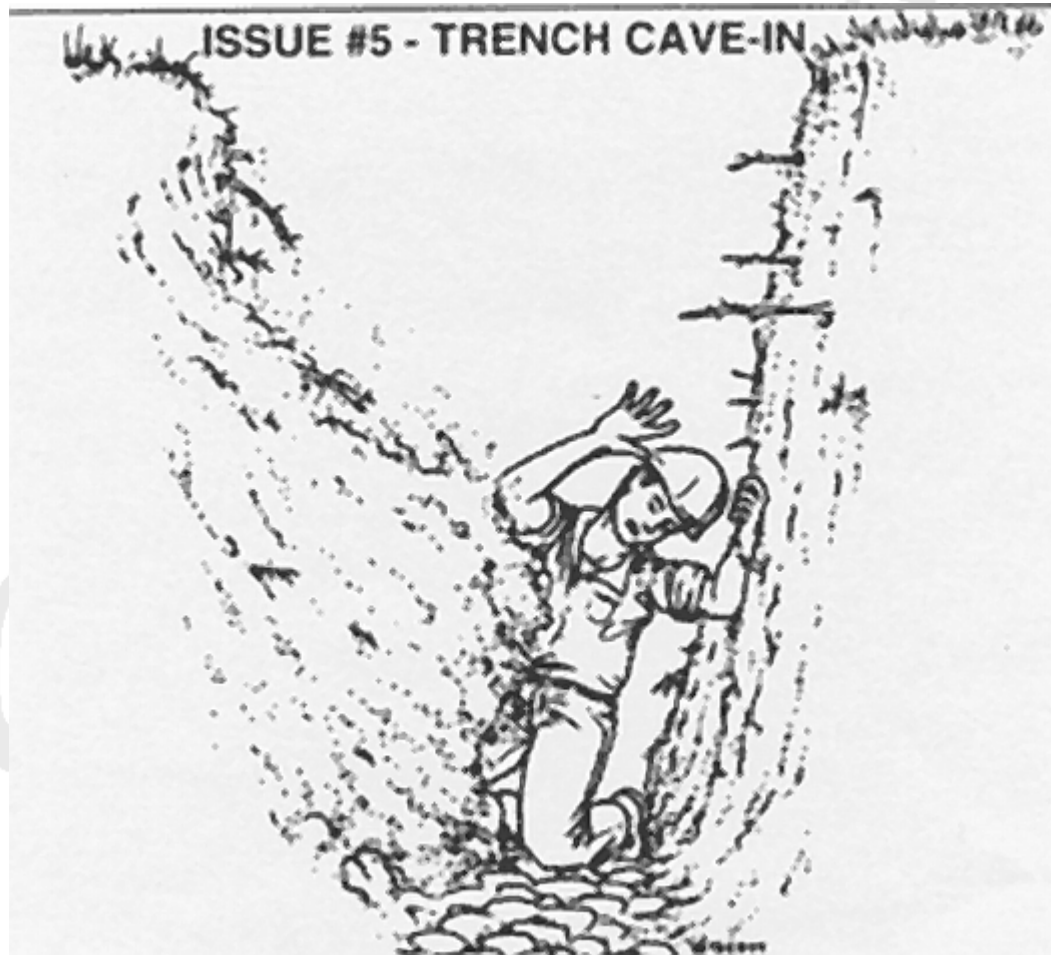
# Excavation Safety

- Keep everyone out of the Danger Zone.



# Excavation Safety

- Do not enter an excavation until all safety requirements have been followed..





# Submersible Pump

- A submersible pump may be used to remove water.



# Shoring and Trailer

- Inspect the shoring before use.





# Unloading Shoring

- Hook up chain of adequate length so as not to crowd lift or flexibility.



# Shoring Installation

- Use the excavator/backhoe to install shoring.
- Naturally frozen soil is not a substitute for shoring.



# Shoring Endplates

- Endplates must be installed if the excavation ends are not sloped





# Tool Disinfection

- All tools must be disinfected prior to use.



# Tool Disinfection

- Soak items with disinfectant solution (Minimum 5% sodium hypochlorite solution).



# Entering Excavation

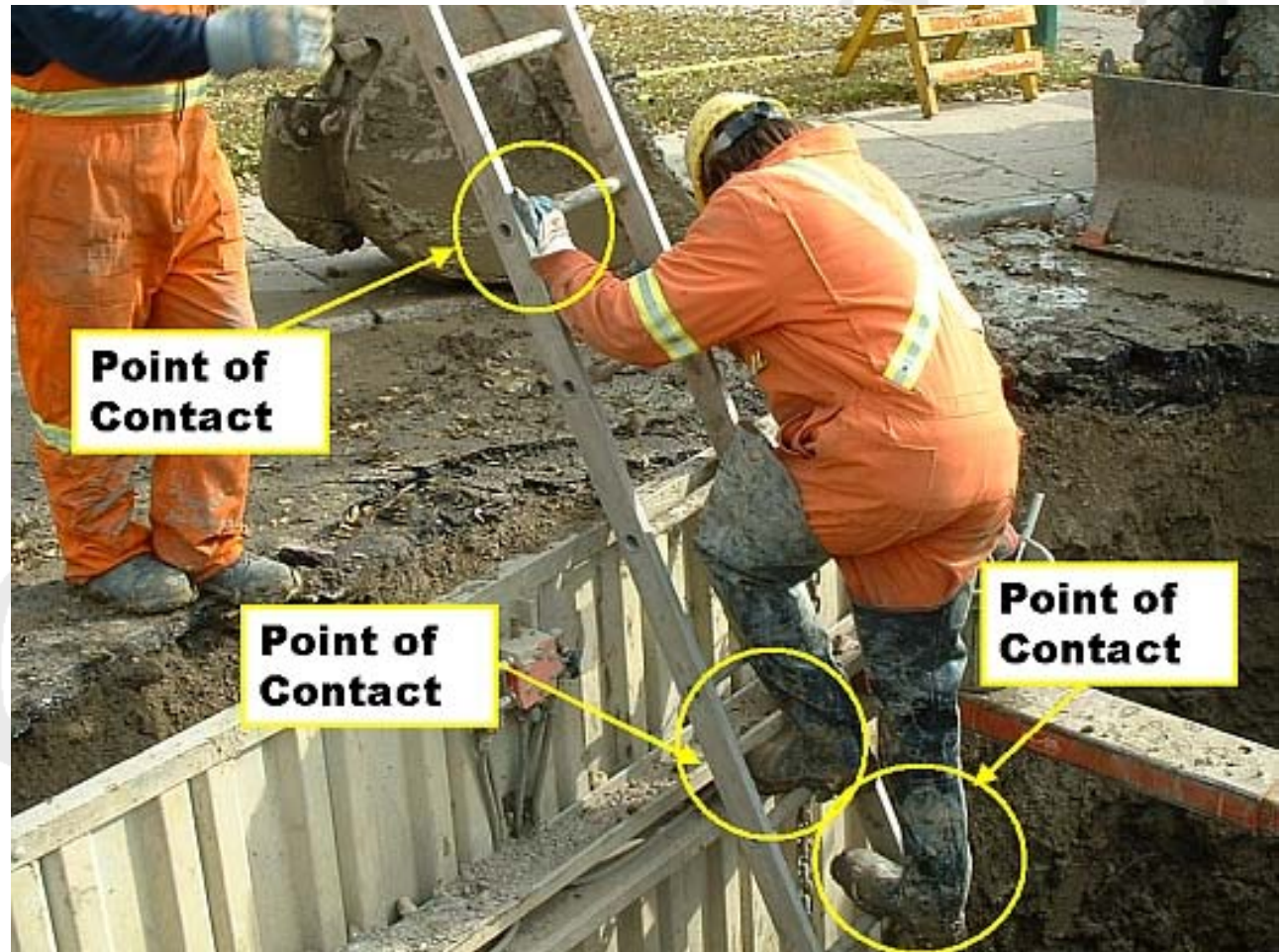
- Wear personal protective equipment.
- Lower tools with a bucket and rope.





# Using Ladder

- Three points of contact.



# Excavation By Hand

- Clear area around the pipe with a shovel.





# Wash Pipe

- Wash and inspect condition of pipe.

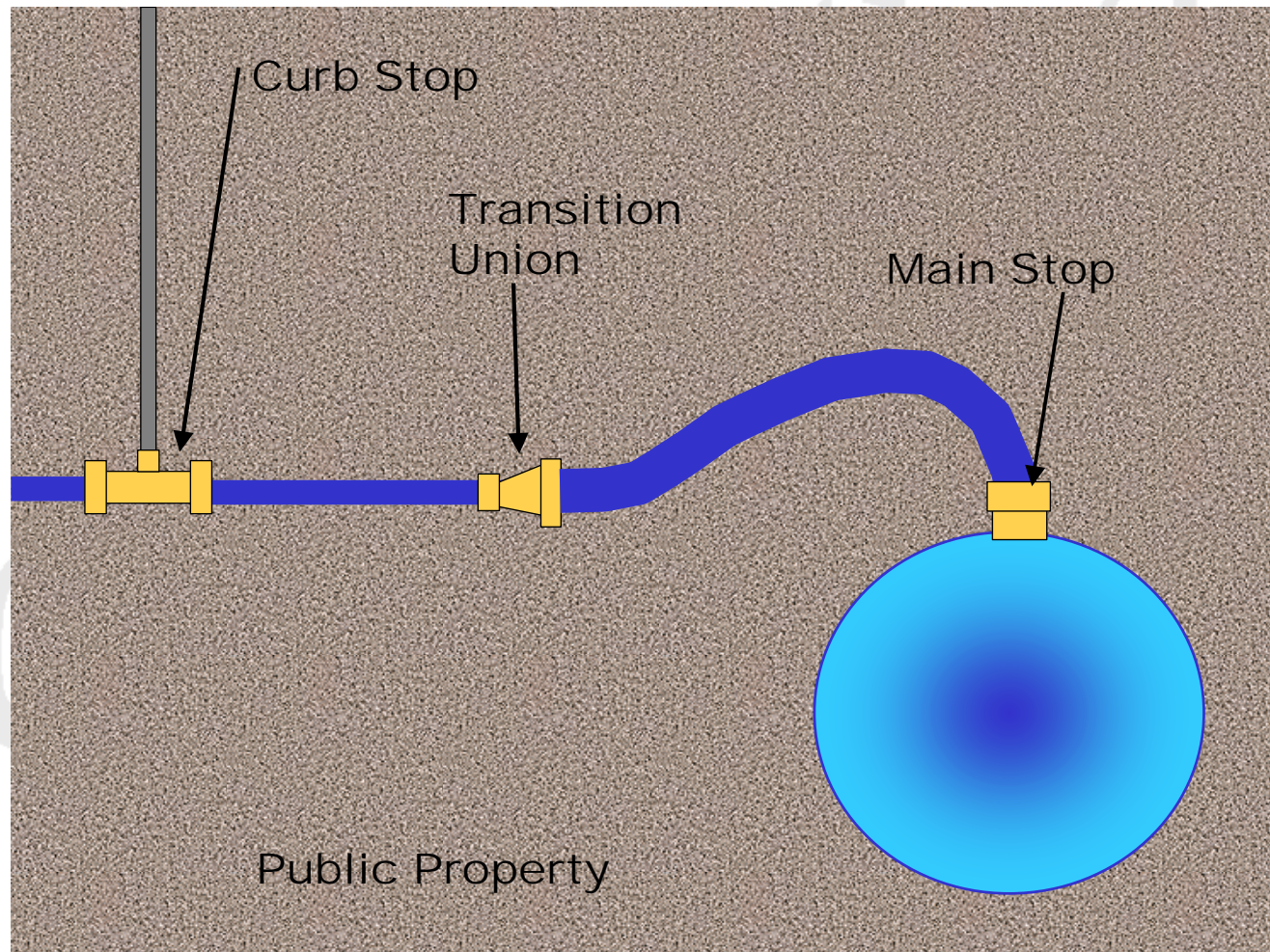


# Water Connection Repair



# Water Connection

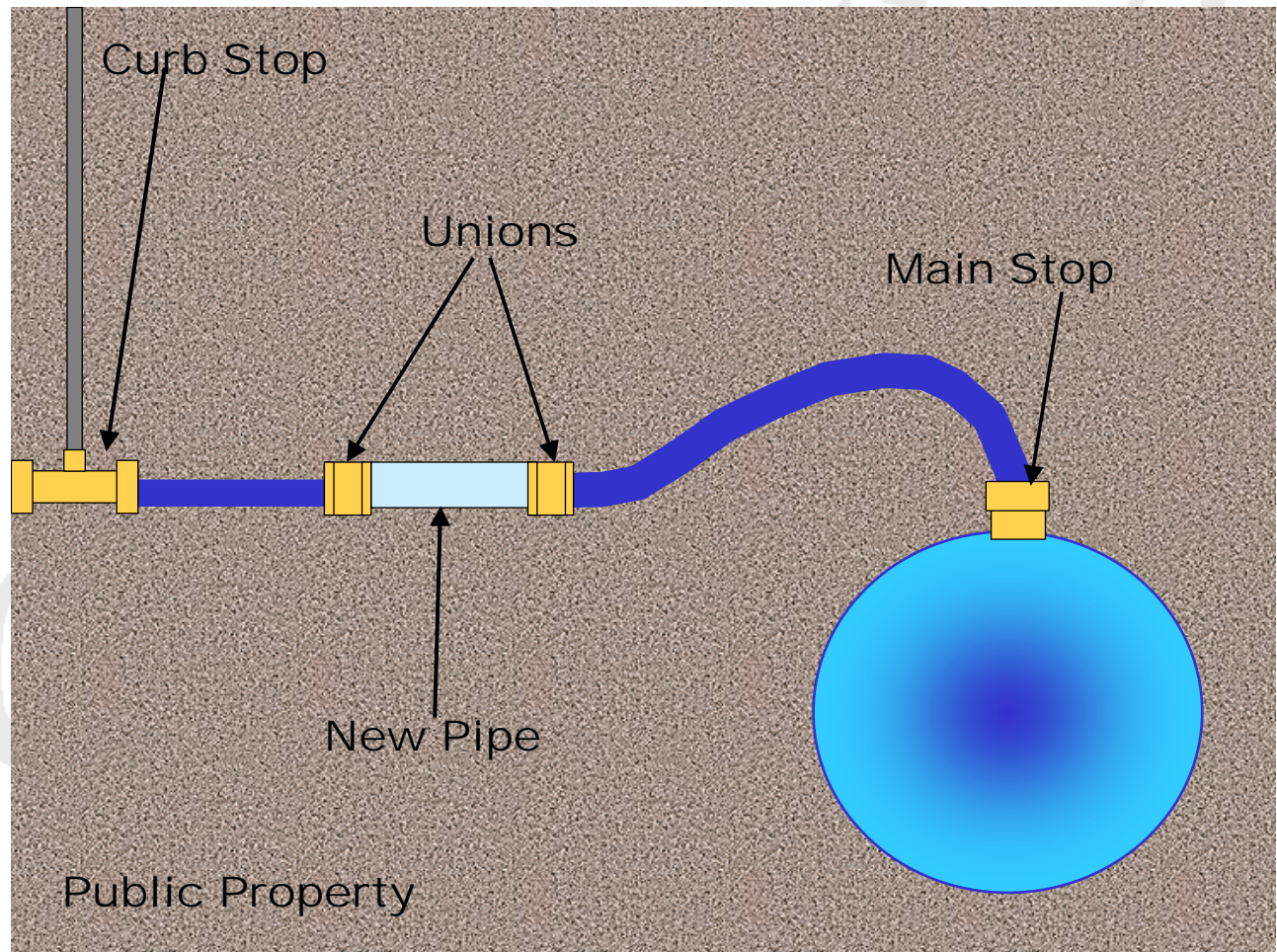
- Water connection repairs include anything from the main to the curb stop.





# Replacing Pipe

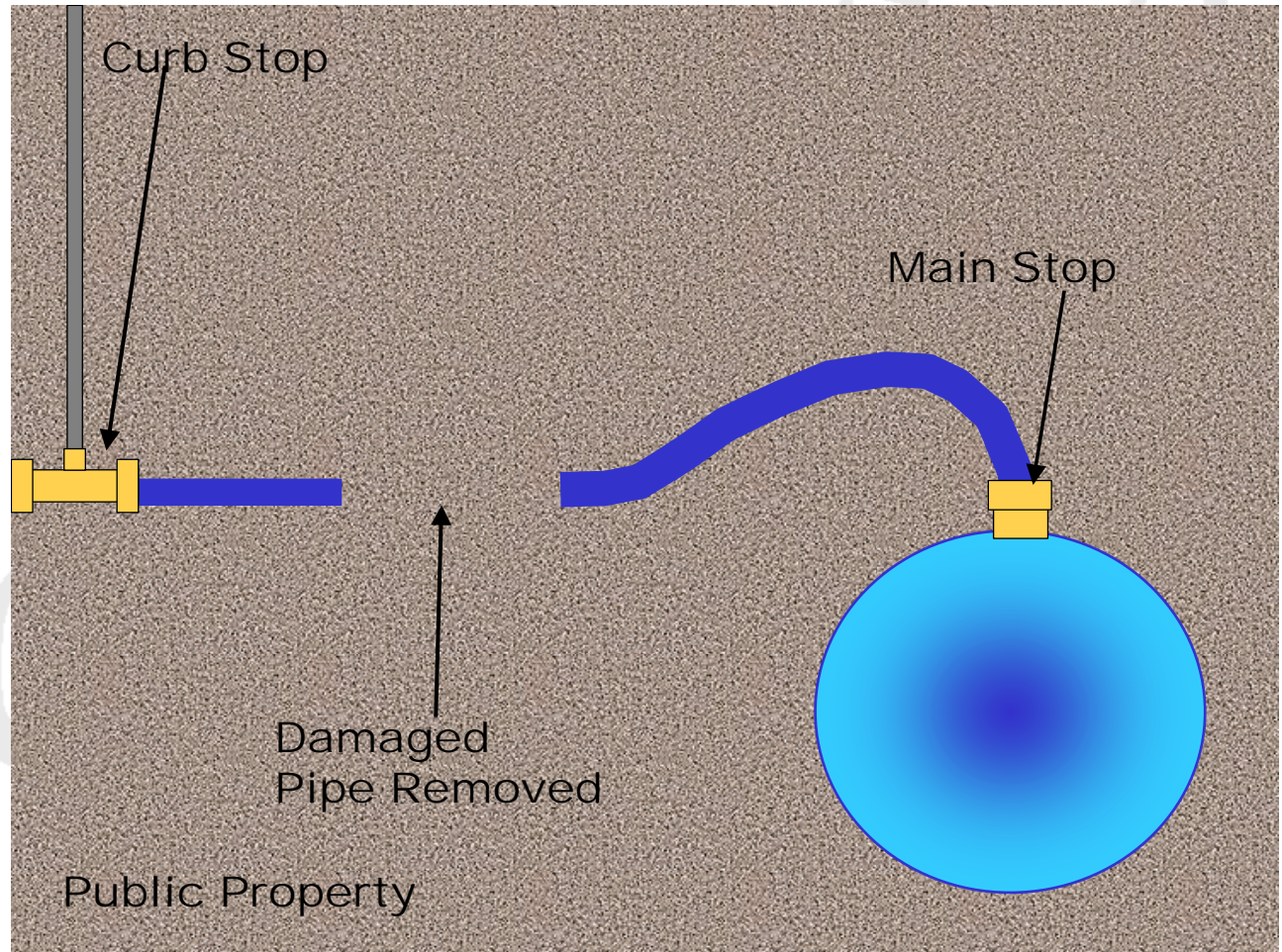
- Small damaged sections of pipe can be replaced, and connected with unions.





# Remove Damaged Pipe

- Cut out damaged pipe.



# Polyethylene Insert

- Inserts shall be used on polyethylene pipe.





# Union

- The union will be used to connect the new pipe to the existing pipe.



# Install Union

- Install union on the pipe.





# Replacing the Main Stop



# Replacing a Main Stop

- A service clamp or tapping sleeve must be used when replacing a main stop.



# Remove Existing Main Stop

- To remove the main stop, disconnect the pipe, then unscrew the main stop from the main.





# Protect Water Supply

- Tie a rag around the end of the pipe to prevent debris from entering.





# Wash the Watermain

- Clean the entire circumference of the watermain.



# Install Service Saddle

- Put the top section of the service saddle on the pipe.





# Connect Straps

- Attach the straps to the service saddle.



# Affix Nuts

- Hand tighten the nuts to the bolts on the straps.





# Tighten Nuts

- Tighten the nuts alternately.



# Tighten Clamp or Sleeve

- Tighten the clamp or sleeve with the drill.



# Tighten Alternately

- The nuts must be tightened alternately.





# Install Main Stop

- Thread the main stop into the clamp or sleeve.





# Installing Pipe

- If using existing pipe, check it for damage prior to inserting into the main stop.

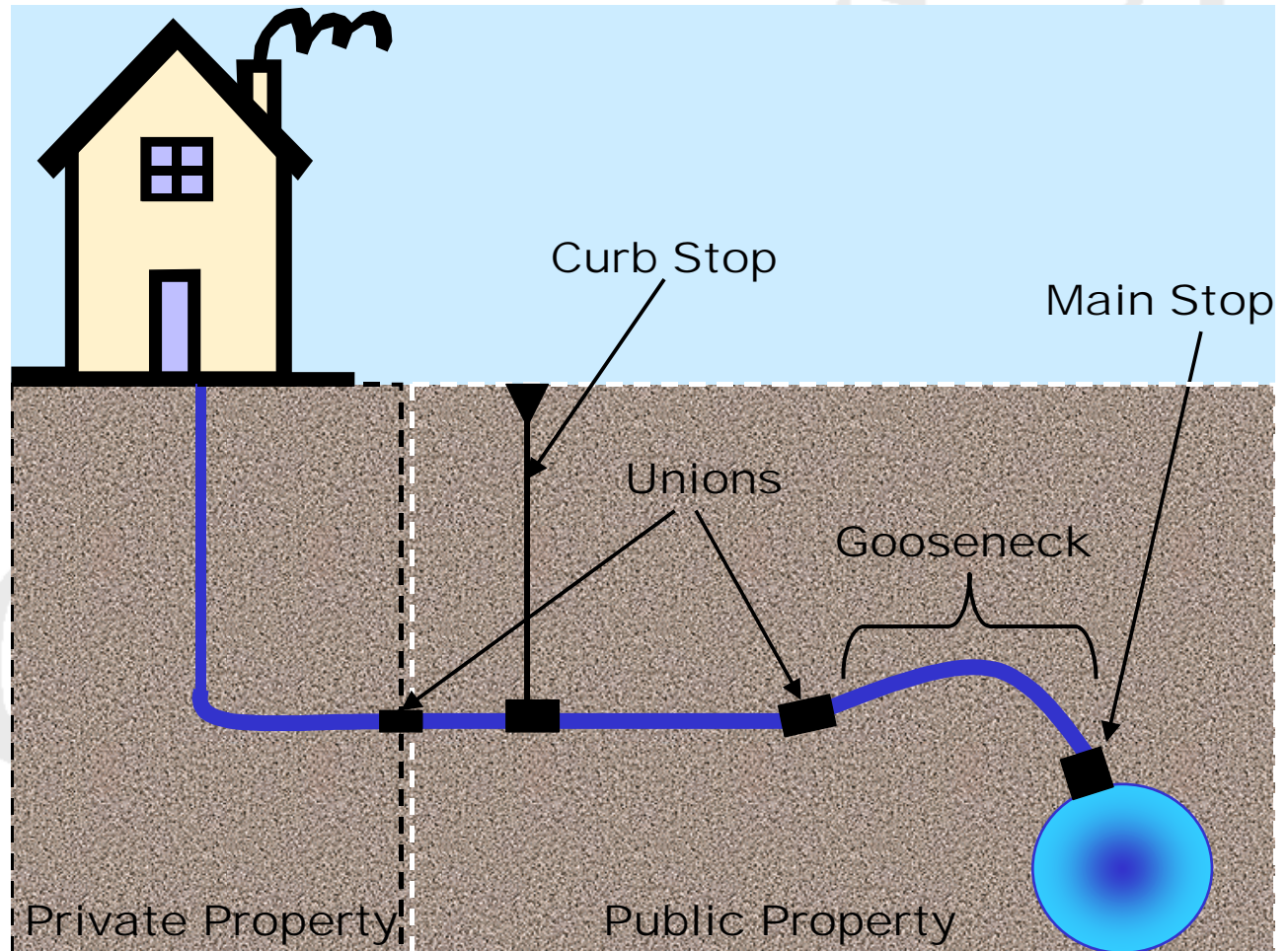




# Installing Copper Gooseneck Section

# Gooseneck

- Install a gooseneck section from the main stop.





# Cut Pipe

- Cut pipe back 1m (3ft), to allow for gooseneck.





# Cut Copper Pipe

- Cut the copper pipe with the copper pipe cutters.



# Bend Copper Pipe

- Bend the copper pipe until it has an angle of approximately 85





# Join Gooseneck

- Connect gooseneck and existing pipe together with a union.



# Connect Gooseneck to Main

- Slide the compression nut onto the pipe.





# Insert Pipe Into Main Stop

- Insert pipe and thread compression nut.



# Tighten Compression Nut

- Tighten the compression nut using crescent wrenches.





# Open Main Stop

- Slowly turn the main stop to the open position.



# Inspect For Leaks

- Inspect the new repair for leaks.





# Anode Installation



# 12 lb Anode

- The 12lb anode is used on copper connection pipe.



# Brass Clamp

- A brass clamp will connect the anode wire to the pipe.





# Install Clamp

- Install clamp and tighten.



# Top Screw

- Loosen the screw on the top of the clamp.



# Anode Wire

- Insert Anode wire into clamp.





# Tighten Screw

- Tighten the top screw with the anode wire in place.



# Wet Anode

- Wet the cardboard anode packing before backfilling.



# Post Replacement





# Labourer Exiting Excavation

- Remove all hand tools from excavation.
- Exit and remove ladder.



# Connection Flushing

- Flush through the private connection tap.



# Tap Aerator

- Remove the aerator from the tap before flushing.





# Flushing Through Hydrant

- The repair may require flushing through the hydrant.



# Water Quality Testing

- Test for turbidity and chlorine.
- Take a water sample in water sample jar.



# Test Results

- Keep repair isolated until test results are received.





# Removal of Shoring

- The shoring should be removed and placed on it's trailer.



# Backfill, General Information





# Saturated or Unsuitable Soil

- Remove unsuitable material





# Backfill Materials

- Cover and compact services connection and mains with 150mm (6inches) of granular material.





# Non-shrink Backfill Materials

- Non-shrink backfill shall be used beneath concrete or paving stone.



# Backfilling Other Utilities

- Ensure utilities are supported according to the specifications of the owner of the utility.





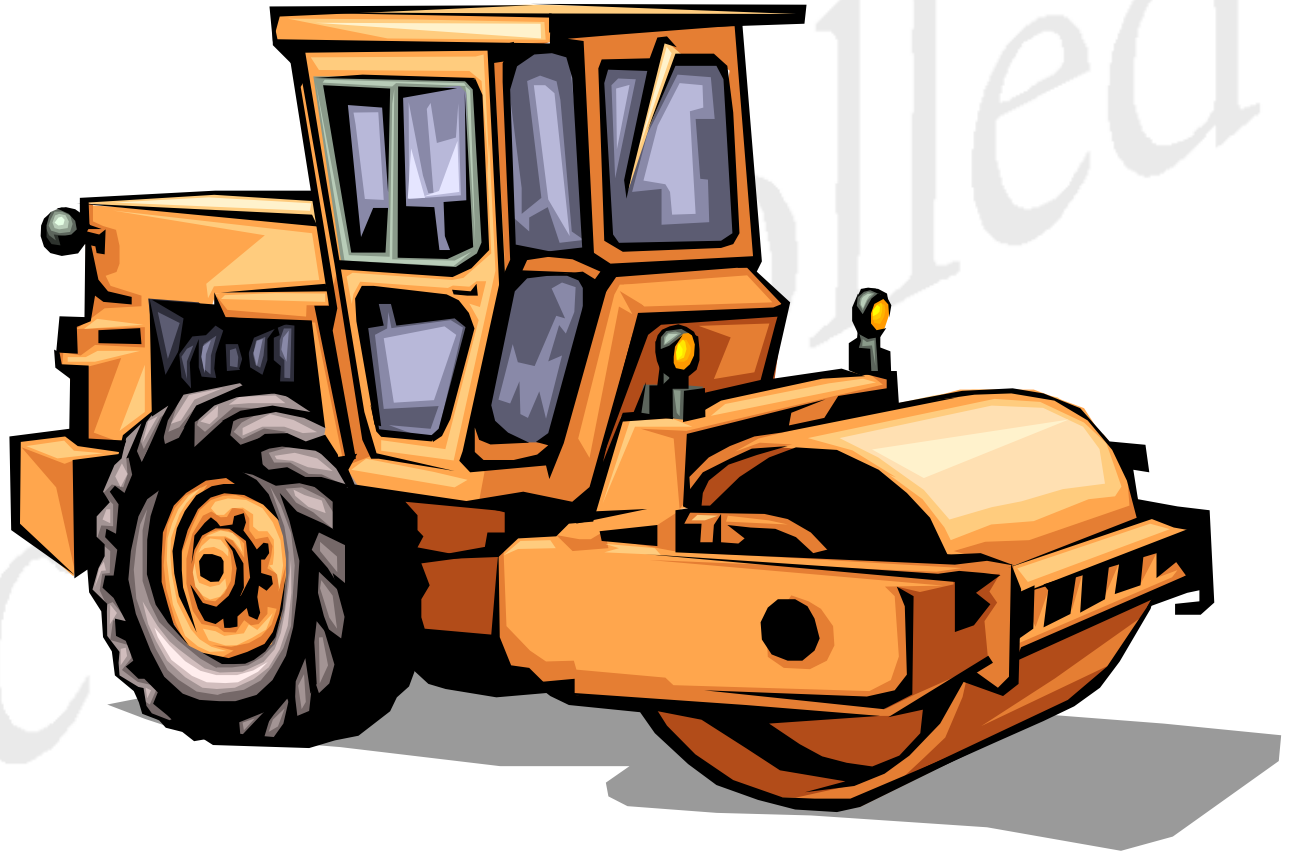
# Backfill Material

- Backfill material must conform to City of Saskatoon standards.



# Compactors

- Method of compaction to be used will be decided based on suitability.



# Handheld Plate Tamper

- Handheld plate tampers are to be used for compacting in the pipe zone, around manholes etc.





# Hydraulic Tamper

- Hydraulic tamper is an attachment for the excavator.



# Walk Behind Tamper

- Walk behind vibratory compactor.





# Tamping with Excavator/Backhoe

- Tamping using excavator/backhoe bucket is not an approved method of compacting.





# Traffic Control


- Remove all unnecessary traffic control devices.



# Site Restoration

- Re-sodding





Thank You  
Any Questions?