


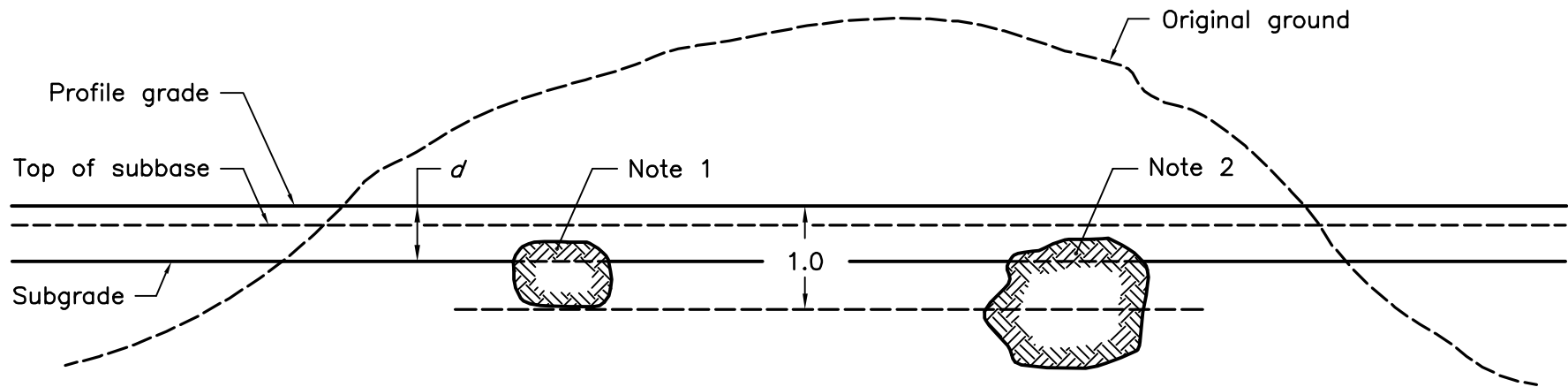
**NOTES:**

- 1 Cut slope shall be 3H:1V or steeper when specified.
- 2 Fill slope shall be 3H:1V or flatter when specified.
- 3 Distance shall be 1.5m minimum when ditch is not required.

A This OPSD to be read in conjunction with OPSD 202.010 and OPSD 202.020.

B All dimensions are in metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2009	Rev	2	
<b>EARTH/SHALE GRADING</b>	-----			
UNDIVIDED RURAL	-----			
<b>OPSD 200.010</b>				




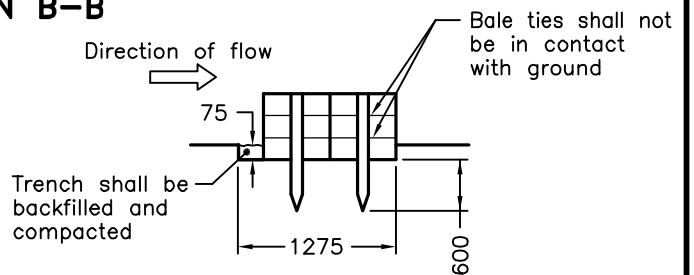
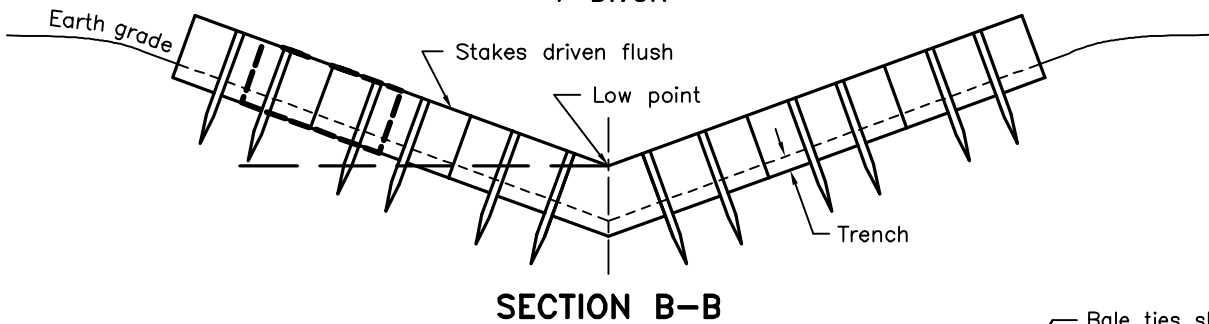
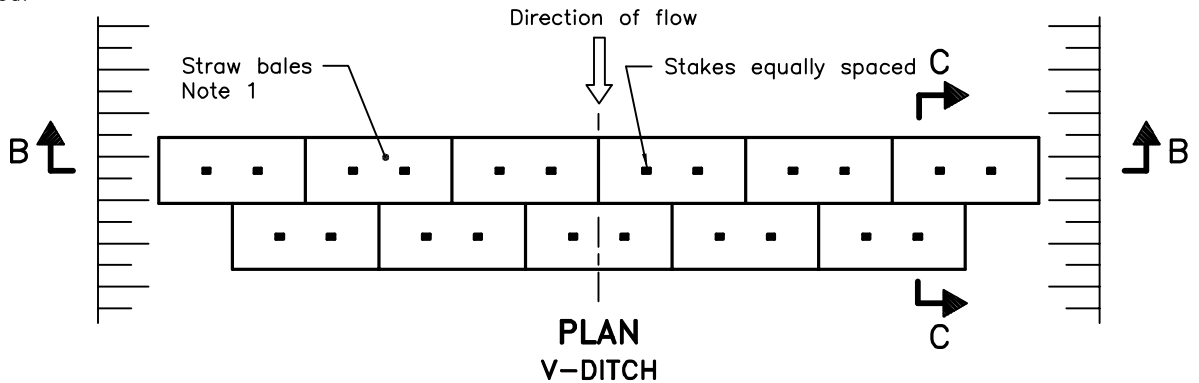
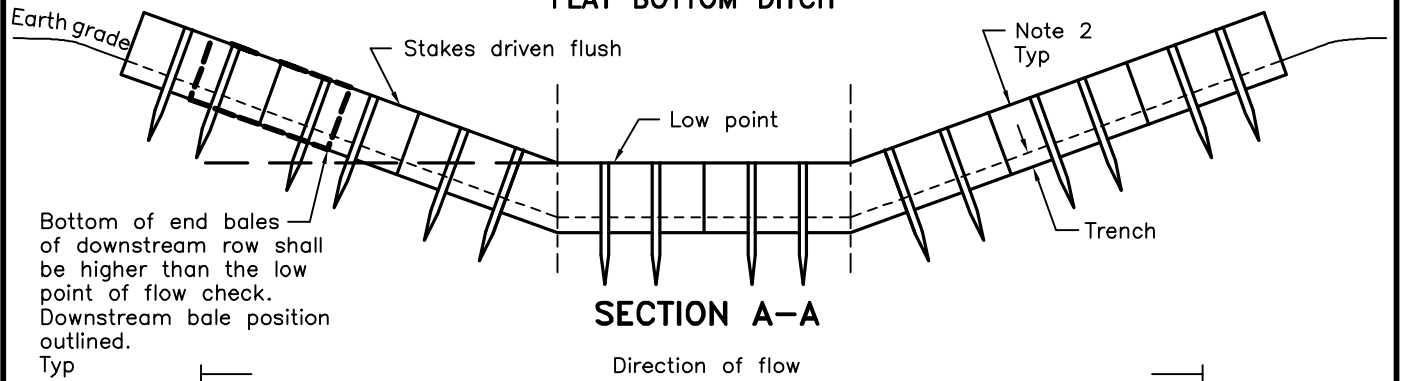
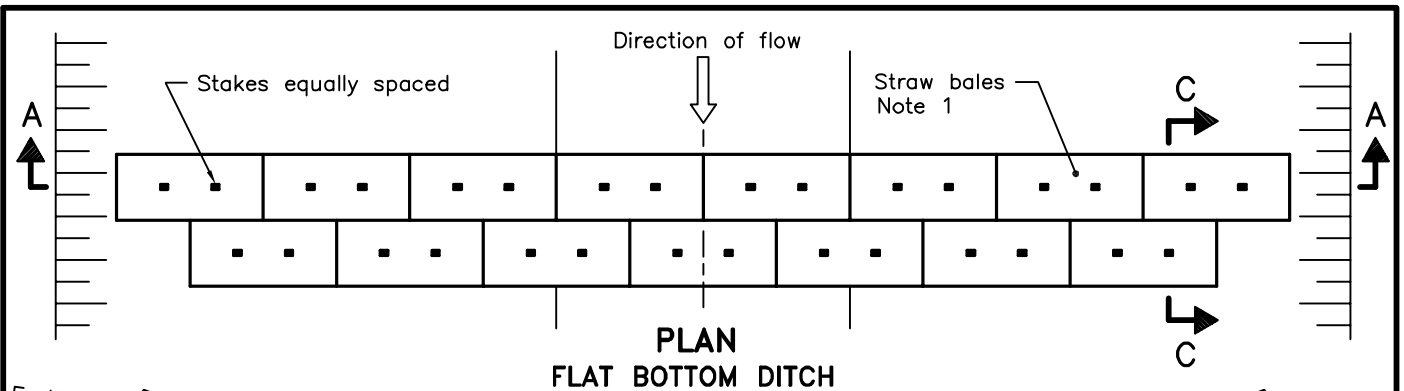
**LEGEND:**

$d$  = Depth of roadbed granular

**NOTES:**

- 1 Boulders partially within depth  $d$  but not deeper than 1.0m below profile grade shall be removed completely.
  - 2 Boulders partially within depth  $d$  but deeper than 1.0m below profile grade shall be shattered to 0.6m below subgrade and then excavated to a minimum of 0.3m below subgrade.
- A Excavation below subgrade shall be backfilled with approved material.  
 B Profile grade and subgrade lines apply across the transverse section.  
 C All dimensions are in metres unless otherwise shown.


ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	3	
<b>BOULDER TREATMENT</b>				
CUT SECTIONS-SUBGRADE				<b>OPSD 204.010</b>

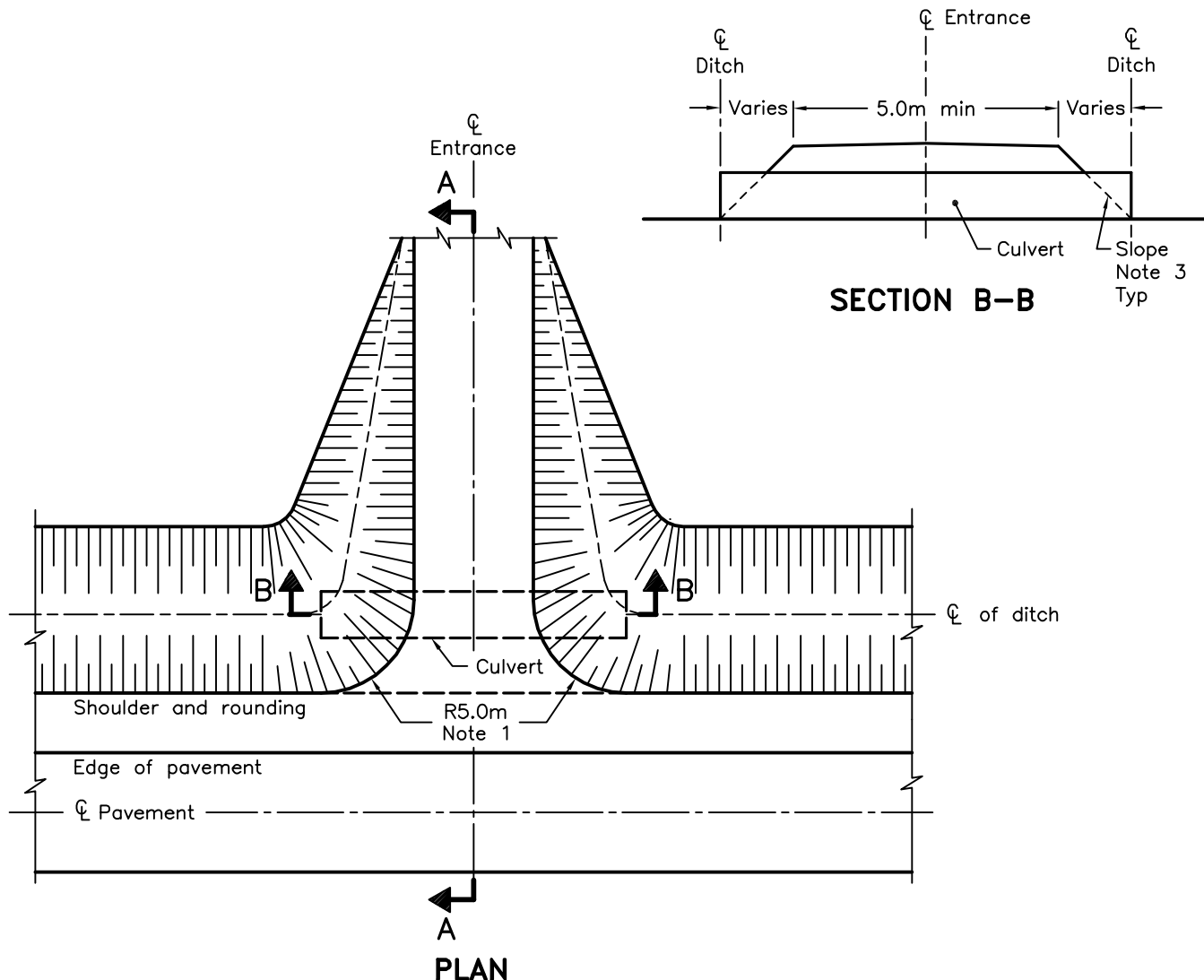


**NOTES:**

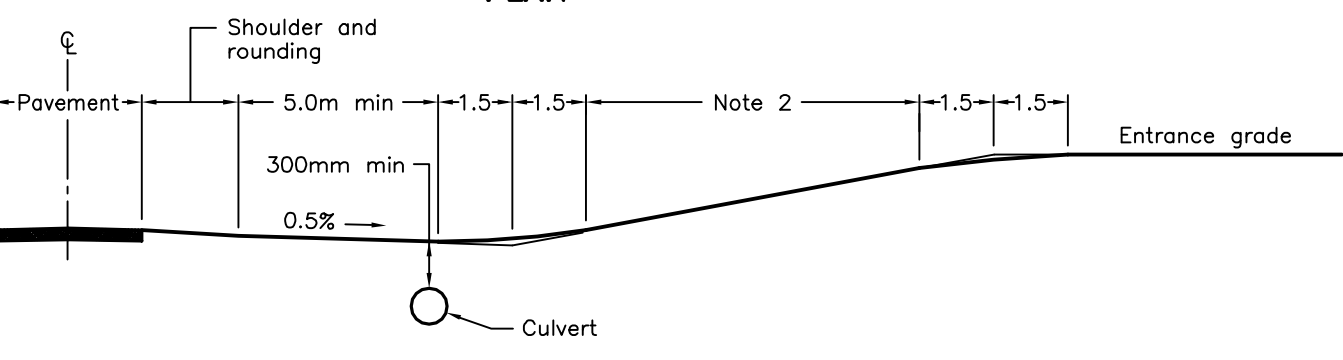
- 1 Number of bales varies and shall suit ditch.
- 2 Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.

A All dimensions are in millimetres unless otherwise shown.

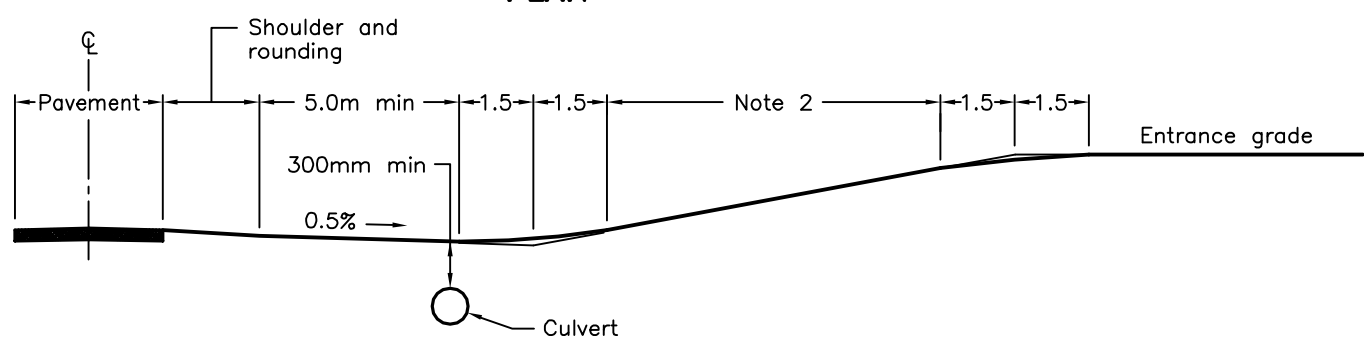
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2	
<b>STRAW BALE FLOW CHECK DAM</b>	<b>OPSD 219.180</b>		
<p>-----</p> <p>-----</p>			



**SECTION B-B**



**PLAN**



**SECTION A-A**

**NOTES:**

- 1 Radius shall be 8.0m when entrance is used for farm equipment.
- 2 Maximum gradient: 6% for residential entrances and 10% for farm and field entrances.
- 3 Slope shall be 3H:1V or flatter when specified.
- A All dimensions are in metres unless otherwise shown.

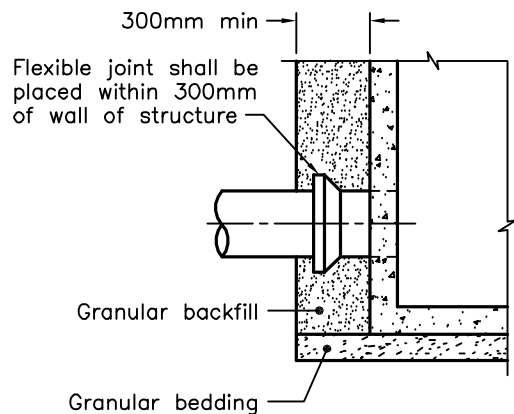
ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2010 Rev 2

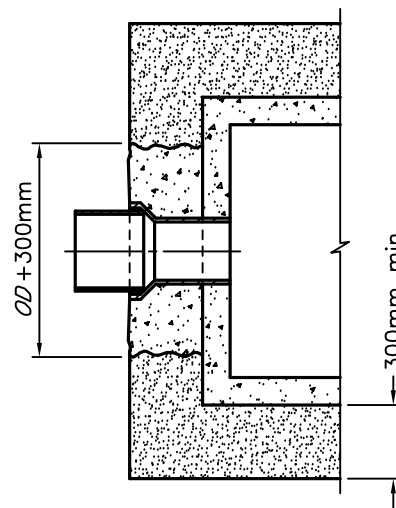
**RURAL ENTRANCES  
TO ROADS IN EARTH CUT**



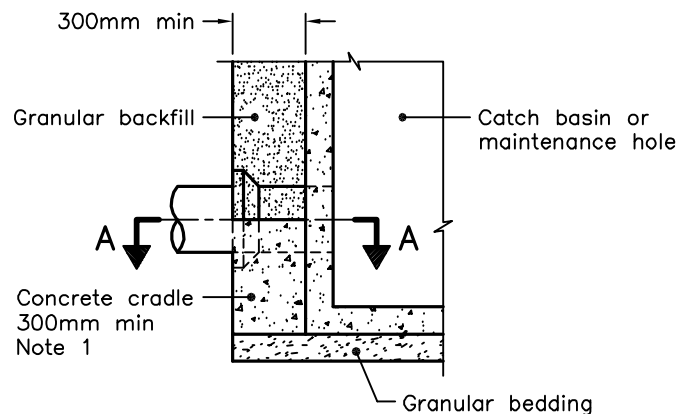
**OPSD 301.020**



**ELEVATION  
FLEXIBLE JOINT  
RIGID AND FLEXIBLE PIPE**



**SECTION A-A**



**ELEVATION  
CONCRETE CRADLE  
RIGID PIPE**

For installation of these connectors refer to manufacturer's instructions.

A full length of pipe may be used in conjunction with a flexible watertight connector.

**FLEXIBLE, WATERTIGHT CONNECTOR  
RIGID AND FLEXIBLE PIPE**

**NOTES:**

1 Pipe shall be supported with concrete or unshrinkable fill to the first pipe joint.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

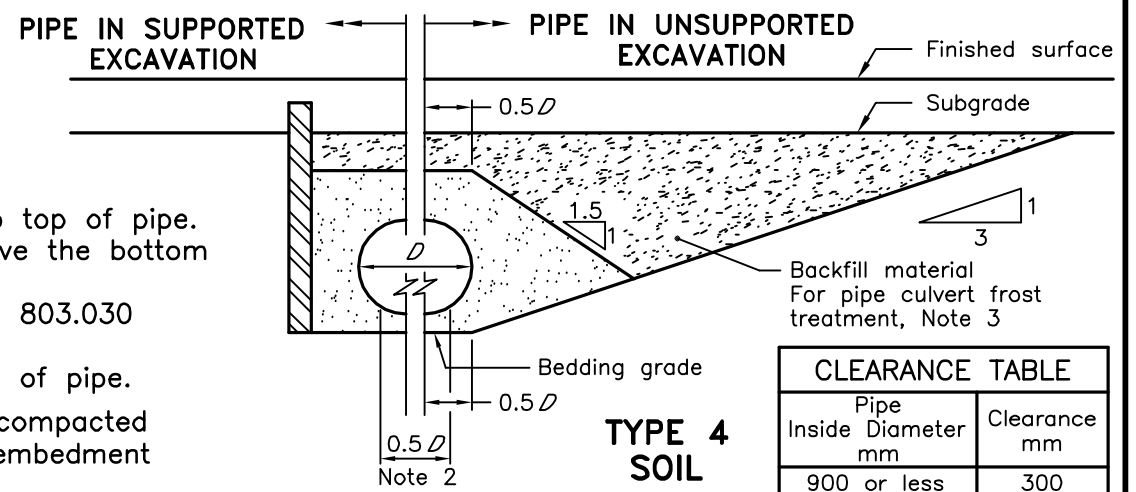
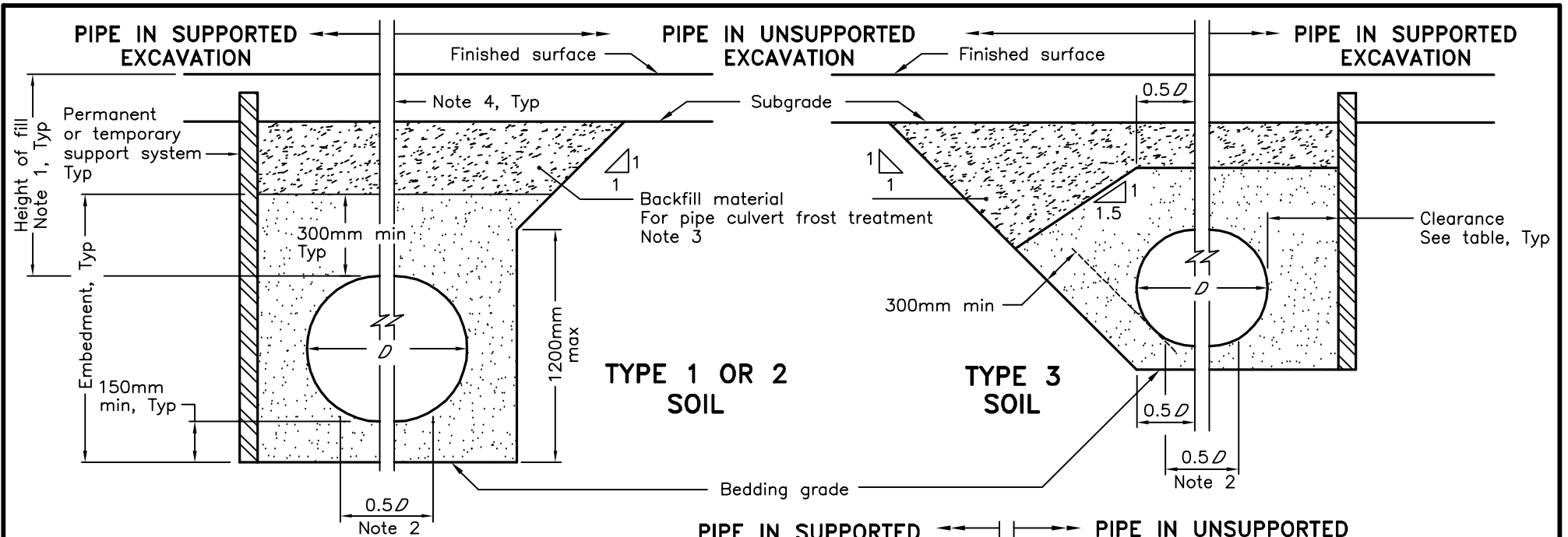
Nov 2016

Rev 4

**SUPPORT FOR PIPE  
AT CATCH BASIN  
OR MAINTENANCE HOLE**



**OPSD 708.020**



**LEGEND:**

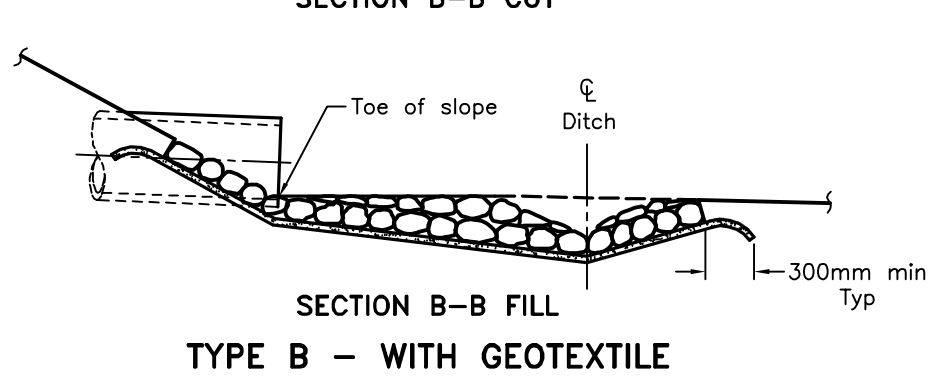
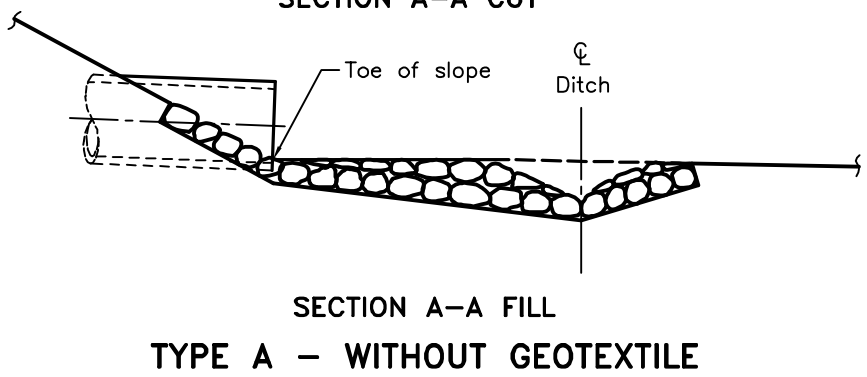
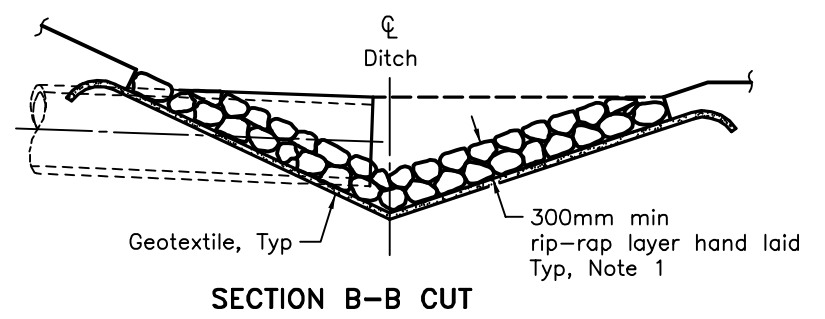
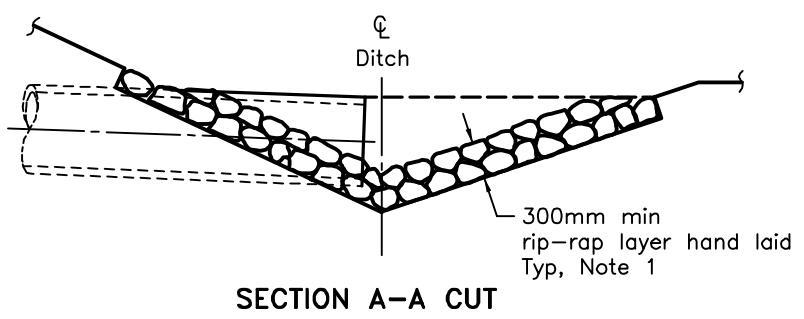
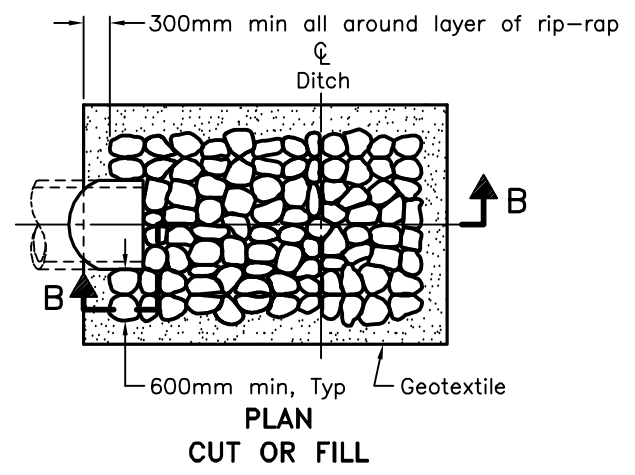
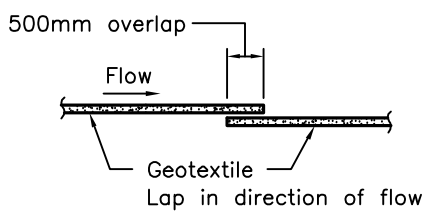
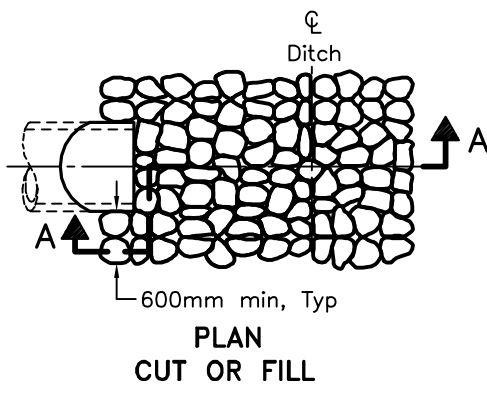
$D$  - Inside diameter

**NOTES:**

- 1 Height of fill is measured from the finished surface to top of pipe.
  - 2 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
  - 3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
  - 4 Condition of excavation is symmetrical about centreline of pipe.
- A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
- B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
- C All dimensions are in metres unless otherwise shown.

CLEARANCE TABLE	
Pipe Inside Diameter mm	Clearance mm
900 or less	300
Over 900	500

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev	3
<b>FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION</b>	<b>OPSD 802.010</b>		



**NOTES:**

1 The thickness of the rip-rap layer shall be at least 1.5 times the rip-rap mean diameter.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2013

Rev 2

**GENERAL RIP-RAP LAYOUT  
FOR SEWER AND CULVERT OUTLETS**



**OPSD 810.010**