

ROCK CHECK DAMS

Rock check dams are flow interrupters applied across low flow construction site conveyance channels to reduce flow velocities and thereby decrease the erosivity of the water and promote sediment settling. These temporary dam structures are constructed from granular material and geotextile fabric. They are applied in series at intervals determined based on the gradient of the conveyance channel.

Due to their limited capacity to pond water, they are ineffective at causing settling of fine particles. Other products that are also used as check dams are filter socks and natural fibre logs or wattles.



Figure B2-9: Rock check dam

Application

- Perpendicular to flows in low flow conveyance channels on construction sites (e.g. interceptor swales).
- Particularly important in long or steeply sloped (3H:1V or steeper) channels.
- In any concentrated flow path where flow interruption for erosion prevention or sediment settling is needed.
- Never installed in natural watercourses or other natural water features.

Design and installation

While check dams can be composed of other products and materials (e.g. filter socks, logs), only rock check dams are discussed in this section. Spacing guidance provided is applicable to other types of check dams.

- Rock check dams should be constructed with the following three layers:

Layer	Material	Thickness	Notes
Bottom	Granular material	50 mm diameter stone stacked 45 cm high	
Middle	non-woven geotextile	n/a	<ul style="list-style-type: none"> ○ Trench in at upstream end extended beyond the check dam anchor to form an underlying “spill apron”
Top	Granular material	150 mm diameter stone in a layer ≥ 10 cm	<ul style="list-style-type: none"> ○ Extend from the conveyance channel invert to the top of the bottom layer ○ Form a spillway 0.3 m below the top of the drainage ditch to prevent outflanking

- Construct check dam to create upstream gradient of 2H:1V, downstream gradient of ≤ 4 H:1V and centre of the dam ≤ 1.0 m high

- Avoid undermining by making the outer sides approximately 0.5 m higher than the center and notch the center (~ 15 cm deep) to concentrate flow in low area
- Refer to Ontario Provincial Standard Drawings in Figures B2-10 and B2-11 for depiction of rock check dam designs in V-notch and flat bottom conveyance channels, respectively.
- Place multiple dams in series along long or steeply sloped (3H:1V or steeper) channels.
- Space check dams such that top of the middle (spillway) of each downstream check dam at the same elevation as the base of the previous dam.
- Ensure erosion control measures are applied in the area draining to the conveyance channel in order to minimize sediment loads to the channel. Ensure the flows from the channel are conveyed to a sediment control measures (e.g. sediment trap) for additional sediment removal as needed.

Inspection and maintenance

- Inspect weekly, and before and after significant rainfall (see definition in Section 10.1.2) or snowmelt events, and keep a record of the inspection.
- Look for any signs of erosion and areas where water is undermining the check dam and consider how spillway construction or flow rates can be adjusted to prevent continued undermining.
- Ensure check dams remain structurally sound. Replace and regrade the stone as required to maintain its shape.
- Where erosion is observed and stabilization measures are absent or inadequate, consider adding stabilization measures.
- Determine whether high flow rates are causing excessive erosion and if so, consider reducing the size of the area draining to the swale, or re-grading the swale to a flatter slope.
- Sediment and/or debris accumulation behind the check dam should be removed before it reaches approximately 30% of the device height.
- Any repair or maintenance needs identified should be repaired within 48 hours or sooner if natural receptors are at imminent and foreseeable risk of adverse impact.



Decommissioning

- When conveyance channel is no longer in use, remove and properly dispose of sediment, granular material and geotextile.

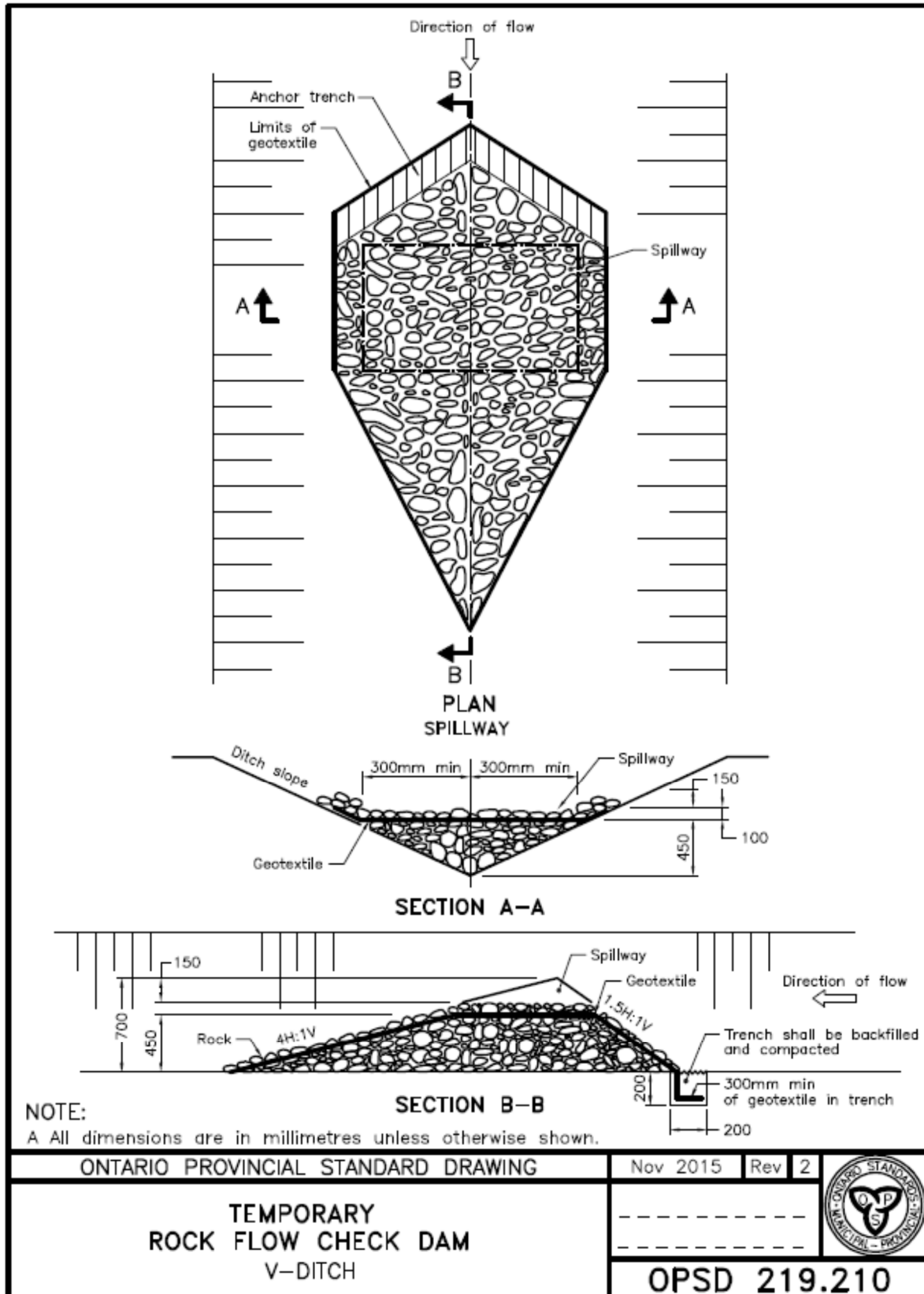


Figure B2-10: Ontario Provincial Standard Drawing (Nov. 2015) for temporary rock check dam in a v-shaped conveyance channel