SEDIMENT TRAP

A sediment trap is a runoff detention area created by constructing an embankment across a runoff drainage/conveyance feature (e.g. ditch, swale) or by excavating below grade to create a depression. The purpose of the trap is to detain runoff and provide an opportunity for gravitational settling of sediment. Sediment traps are typically applied near the end of a treatment train (i.e. end of pipe measure) to provide sediment removal before water is discharged to the receiver. They are meant to receive flows from smaller drainage areas – less than or equal to 2 ha – that don't drain to a sediment control pond or other detention feature.

Application

- At or near the end of a treatment train (i.e. end of pipe) for sediment removal from stormwater (via detention) before it is discharged offsite.
- Typically installed across drainage/conveyance features.
- For ***drainage areas ≤ 2 ha*** that do not drain to another detention feature (e.g. sediment control pond).

Design and installation

- Construct the trap at grade by constructing berms or below grade by excavating.
- Design to provide at least 125 m^3 of storage for each hectare of contributing drainage area.
- Construct with stabilization on the bottom and all side slopes. Suitable stabilizations measures for sediment traps include well-established vegetation with turf reinforcement mats (if needed) or rock underlain with non-woven geotextile fabric.
- Trap should be designed to be between 1.0 and 2.0 metres deep. Minimum depth recommended is to avoid re-suspension of previously settled sediment. Maximum depth recommended is for safety reasons. Where a depth > 2 metres is unavoidable, the local municipality should be consulted to determine whether the trap needs to fenced off.
- Sediment trap should be ≤ 20 metres long and the maximum width should be half the length.
- Ensure proper grading of 0.5H: 1V side slopes and compaction to prevent slumping and slope failure.
- Recommended sediment trap side slope grade is 0.5H:1V
- Sediment trap outlet should be a stable open channel spillway located at the downstream end of the trap. Spillway construction is critical to prevent failure of the structure during high flows. All specifications provided by the plan designer should be implemented.
- Construct a check dam structure (rock or filter sock) at the outlet to provide additional detention and opportunity for sediment settling. Filter socks should be configured to form a pyramid for added stability and more opportunity for sediment retention. Any check dam structure should be lower in the centre and extend up the channel slopes to ensure that water leaving the trap flows over the centre of the check dam rather than around the sides.
- Erosion protection measures should be installed immediately downstream of the spillway outlet.
- Refer to design detail in Figure B2-18 for sediment trap design within a ditch.

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 at the inlet, outlet or side slopes. Repair eroded areas by filling in rills, smoothing out the surface and re-installing or augmenting the stabilization that was in place. Consider whether the stabilization measures in place are failing due to poor condition or because flows are higher than anticipated.
- Remove sediment that has accumulated to 50% of the height of the sediment trap.
- Observe and/or analyze (e.g. handheld turbidity testing) sediment trap effluent to assess whether the trap continues to effectively remove suspended sediment.
- Where effluent turbidity is elevated, consider sediment trap storage capacity and stabilization to pinpoint reasons for under-performance. Consider adding additional measures upstream (e.g. ditch/swale stabilization) and/or downstream of the trap to achieve greater sediment removal.
- 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.
- Ensure spillway remains structurally sound and repair as needed when damage occurs. Replace and regrade the stone as required to maintain its shape.

Decommissioning

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

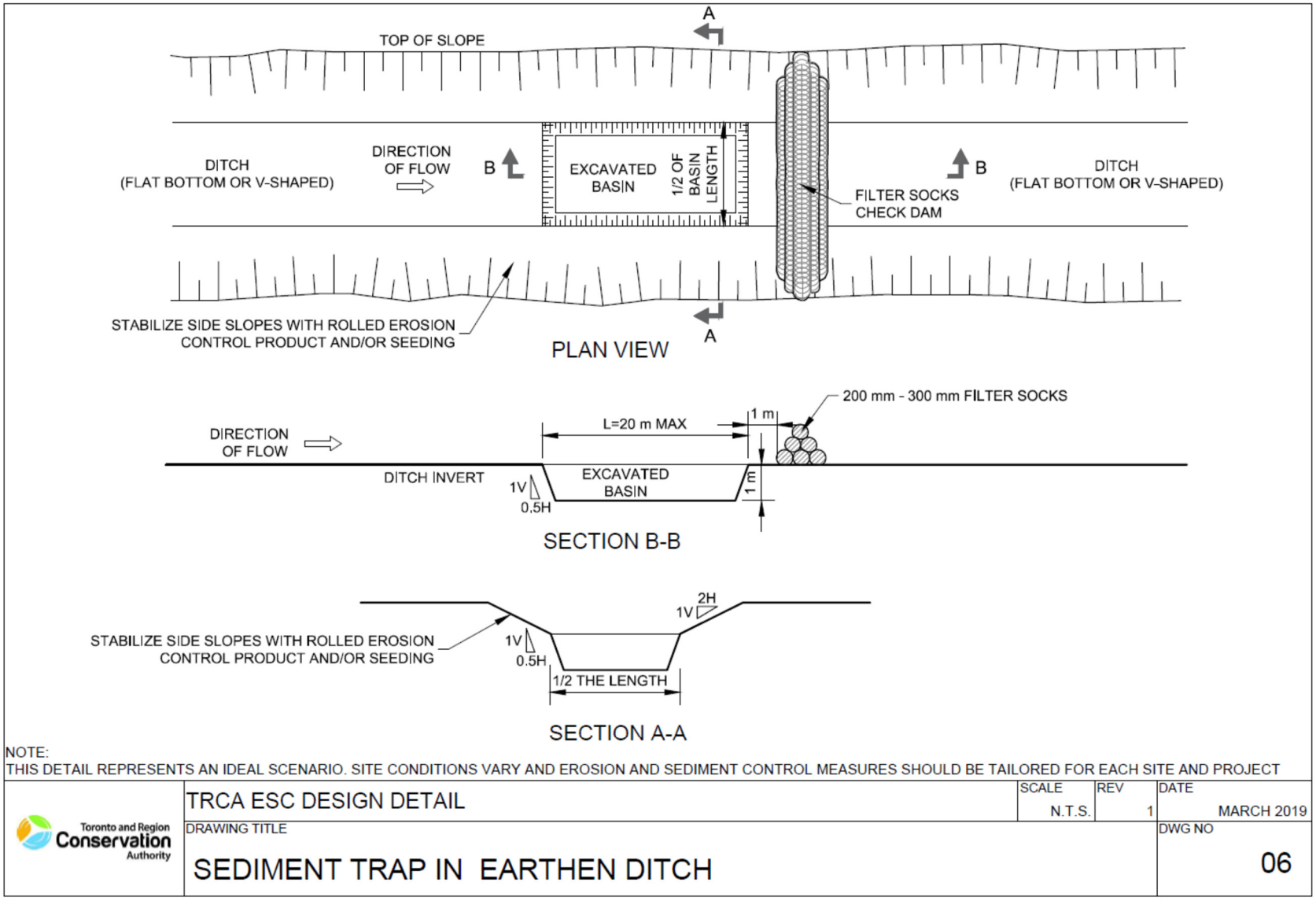

Figure B2-18: Design detail for sediment trap within an earthen ditch