

Fabric Wrap Drop Inlet Protection

SEDIMENT CONTROL TECHNIQUE

Type 1 System		Sheet Flow		Sandy Soils	✓
Type 2 System		Concentrated Flow	✓	Clayey Soils	✓
Type 3 System	✓	Supplementary Trap		Dispersive Soils	

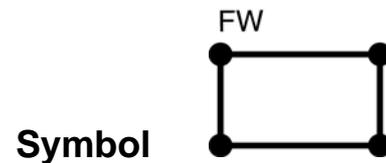


Photo 1 – Use of non-woven filter cloth is preferred as a wrap rather than woven fabric (shown)



Photo 2 – Shade cloth should not be used, also note no sediment collection trench formed around the drop inlet

Key Principles

1. The critical design parameters are the filtering capacity of the fabric, and the size of the temporary trench excavated around the stormwater inlet (Photo 1).
2. The use of heavy-duty, non-woven filter cloth is strongly preferred instead of woven fabric.
3. If a woven fabric is used (e.g. sediment fence fabric), then it is critical that an excavated trench is formed around the stormwater inlet to act as a settling pond.
4. Excavating a shallow trench around the inlet (Photo 1) not only improves the sedimentation process, but also allows sediment to collect within the trench rather than on the fabric.
5. This technique should only be used when the use of a *Gully Filter Bag* is not considered appropriate for the site conditions.

Design Information

The hydraulic capacity of the sediment trap is governed by the design flow rate of the fabric wrapped stormwater inlet grate.

Maximum catchment area of 0.1ha.

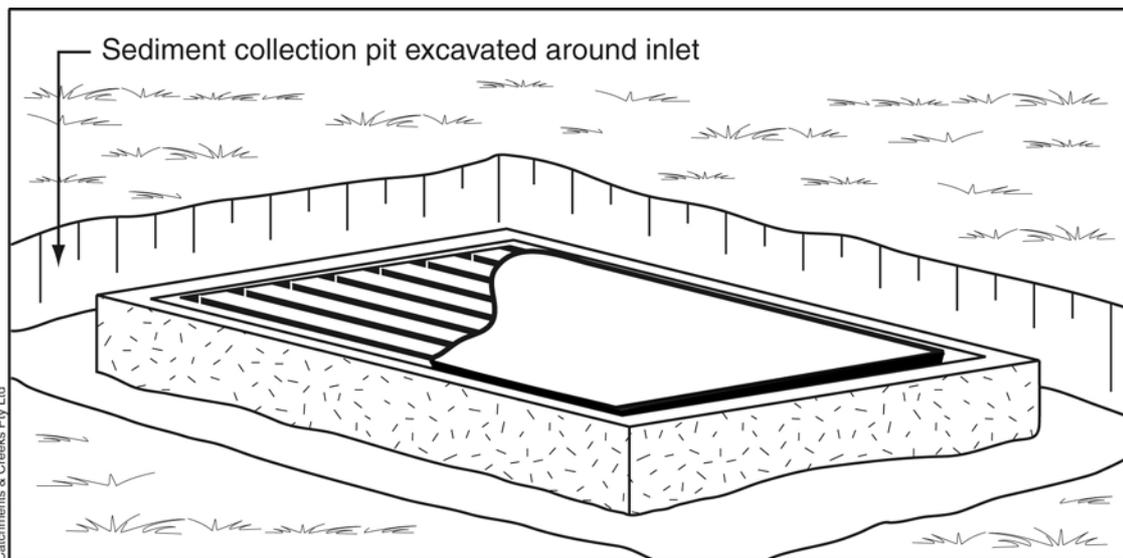


Figure 1 – Fabric wrap drop inlet protection (fabric shown partially exposed for visual display purposes only)

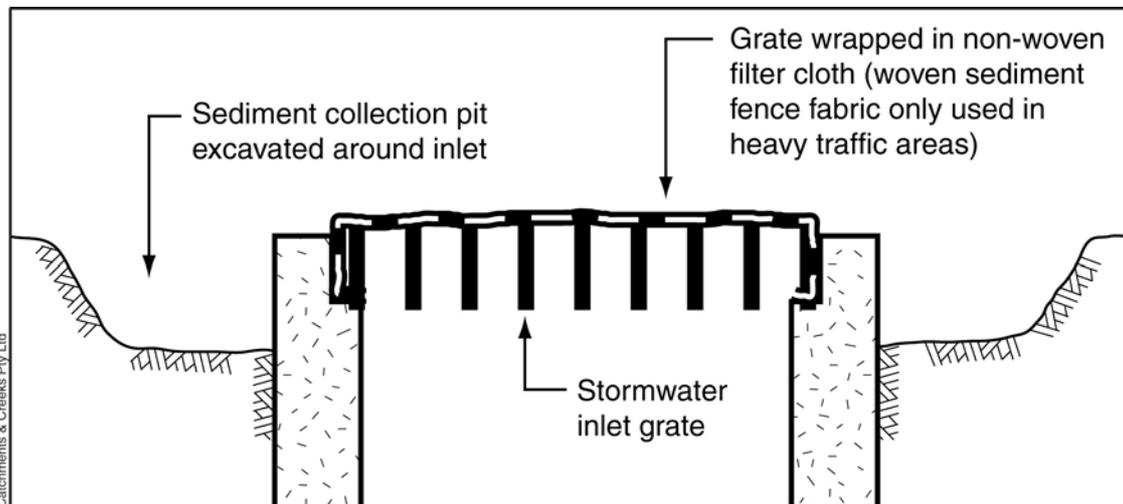


Figure 2 – Fabric wrap drop inlet protection with optional sediment collection trench

Description

Fabric wrap drop inlet protection systems consist of filter fabric wrapped around the stormwater inlet grate. It is essential for the inlet grate to be completely covered with fabric and that all other flow entry points are also fully protected with filter cloth.

Purpose

Used to limit sediment movement into an underground drainage network.

Most commonly used on small residential building sites.

Consideration should be given to the use of a gully bag insert before adopting this technique.

Limitations

Primarily used to collect the coarser sediment particles. This technique provides limited collection of clay-sized particles, as such there is usually no measurable change in the turbidity of water passing through the fabric.

Should only be used in small sub-catchments, otherwise consider using a Fabric, Block & Aggregate, or Mesh & Aggregate drop inlet protection system.

In most circumstances these traps should be supplementary to a more substantial downstream sediment trap.

Catchment area limited to around 0.1ha.

Advantages

Cheap and simple to construct and maintain.

Generally does not represent a traffic or safety hazard, unless not adequately maintained after storm events.

Disadvantages

Requires regular maintenance including de-silting and repair to torn fabric.

Drainage problems can occur if poorly maintained.

High susceptible to sediment blockage.

Fabric is susceptible to damage by vehicles.

Common Problems

Sometimes used in locations where a more substantial drop inlet sediment trap should be used.

Fabric is easily damaged (torn) by vehicles.

Shade cloth is often (inappropriately) used to reduce traffic damage.

Special Requirements

Allowance should always be made for potential bypass flows in the event of sediment blockage of the fabric.

Excavating a shallow trench around the inlet will allow sediment to collect within the trench rather than on the fabric.

If pedestrian or vehicular traffic is expected to damage the fabric, then a more durable fabric should be used. In such cases sediment fence fabric is generally preferred. If a woven fabric is used, then the sediment trapping ability is governed by the excavated trench is formed around the stormwater inlet.

Location

Surrounding minor field (drop) inlets when only coarse sediment collection is required.

Best used on small building sites.

Site Inspection

Take note of where bypass water will flow.

Ensure that any water that bypasses the inlet will not cause flooding problems.

Check for damage to the fabric.

Materials

- Fabric (light traffic areas): heavy-duty, needle-punched, non-woven filter cloth ('bidim' A34 or equivalent).
- Fabric (heavy traffic areas): polypropylene, polyamide, nylon, polyester, or polyethylene woven or non-woven reinforced fabric. The fabric width should be at least 700mm, with a minimum unit weight of 140gsm. Fabrics should contain ultraviolet inhibitors and stabilisers to provide a minimum of 6 months of useable construction life (ultraviolet stability exceeding 70%).

Installation

1. Refer to approved plans for location and dimensional details. If there are questions or problems with the location, dimensions or method of installation contact the engineer or responsible on-site officer for assistance.
2. Ensure that the installation of the sediment trap will not cause undesirable safety or flooding issues.
3. Select the appropriate fabric for the site conditions.
4. Wrap the fabric around or over the stormwater inlet grate in such a manner that prevents any water entering the stormwater inlet without passing through the fabric.
5. Ensure all other flow entry points are covered with fabric such that water cannot enter the stormwater inlet without passing through a suitable filter.
6. Take all necessary measure to minimise safety or flooding risk caused by operation of the sediment trap.

Maintenance

1. Inspect the barrier after each runoff-producing rainfall event and make repairs as needed to the sediment trap.
2. Remove collected sediment and dispose of in a suitable manner that will not cause an erosion or pollution hazard.
3. Replace the fabric if it is torn or damaged.
4. Sediment deposits should be removed immediately if they represent a safety risk.