9.1 Drain Trough Terminal Protection - General

Drain trough terminal protection is normally located at the toe of concrete drain troughs to provide erosion protection from water spilling from the drain trough.

9.2 Environmental Constraints

Be aware of the following environmental constraints:

- Prevent material from washing into the water channel.
- Do not throw debris or waste bagging materials into the water channel.
- Concrete truck should be cleaned in suitable area away from the water channel.
- Clean up oil leaks and spills.
- Disturbed areas are to be acceptably restored.
- Excess material is to be properly disposed of in a location and manner approved by the Bridge Project Engineer.

9.3 Safety

Refer to Alberta's Occupational Health and Safety Regulation, General Safety Requirements for specific approved safety requirements:

- Part 12 Lifting and Handling Loads
- Part 15 Personal Protective Equipment
- Part 16 Power Mobile Equipment

9.4 Material

All materials necessary for the construction of drain trough terminal protection are to be supplied by the Contractor.

9.4.1 Bags Filled with Concrete

Drain trough terminal protection is normally constructed with burlap or reinforced polyethylene bags filled approximately two-thirds full of fresh Class B Concrete and placed on a shaped and prepared foundation.

- The burlap or reinforced polyethylene bags shall be approximately 400 mm x 700 mm in size.

- Class B Concrete used to fill bags shall be as specified under Section 4 – "Cast-In-Place Concrete" of the Specifications for Bridge Construction.

9.4.2 Rock Riprap Alternate

If Class 1M rock riprap is approved in lieu of bags filled with concrete:

- Class 1M rock riprap shall be as specified in Section 10 "Heavy Rock Riprap" of the Specifications for Bridge Construction.

- Filter fabric used underneath the rock riprap shall be Terrafix 270R or approved equivalent.

9.5 Preparation and Placing

The Bridge Inspector shall ensure the following:

- The depression is compacted, and having the shape of a dish approximately 450 mm deep and 3 m in diameter.

- Bags are filled with two-thirds full of fresh concrete. Bags are sewed, stapled or folded to form a straightedge closure, and immediately placed in the work. The first bag is placed in the center (bottom) of the dish with subsequent bags placed in a circular direction around the first bag. Each bag is to overlap the closed end of the bag previously placed, and also the bag beside it, so that a shingled effect is produced.

- Folded bags must be handled so as to avoid spillage, and the folded part is to be on the underside side when in place. The bags are to be rammed and packed against each other so as to obtain a closed and uniform surface.

- The outer edge of the concrete-filled burlap bags of the complete drain trough terminal protection are to be level.

- In lieu of the bags filled with concrete, the Bridge Project Engineer may approve Class 1M rock riprap place to a minimum depth of 350 mm. The dish formed in the subgrade is to be covered with filter fabric. The filter fabric is keyed 300 mm into the subgrade at the perimeter of the dish in order to anchor the filter fabric. Rock riprap is then placed so that the filter fabric is fully covered.

9.6 Checklist

9.6.1 Bridge Inspector's Responsibilities

- Review applicable specifications and study drawings.
- Check to ensure that all materials meet applicable specifications.
- Check to ensure the prepared foundation is adequately compacted.
- Check to ensure that the top finished dish profile of the drain trough terminal protection conforms to the size and shape as detailed on Standard Drawing S-1410.
- Initiate payment when work is acceptably completed.

9.6.2 Bridge Project Engineer's Responsibilities

- Review with the Contractor and the Bridge Inspector the environmental constraints governing the project site.
- Confirm and approve rock riprap if used in lieu of bags filled with concrete for drain trough terminal protection.
- Review and approve Contractor's proposal for excess or waste material disposal and location.