

**CW 2165 - STORMWATER RETENTION BASIN REVETMENT
AND SOIL STERILIZATION**

TABLE OF CONTENTS

1.	DESCRIPTION.....	1
	1.1 General	1
	1.2 Referenced Standard Construction Specifications	1
	1.4 Referenced Standard Details.....	1
2.	MATERIALS.....	1
	2.1 Geotextile Fabric.....	1
	2.2 Aggregate	1
	2.3 Securing Pins.....	1
	2.4 Soil Sterilant.....	1
3.	CONSTRUCTION METHODS	2
	3.1 Preparation of Revetment Sub-grade	2
	3.2 Geotextile Fabric.....	2
	3.3 Revetment Surface Course.....	2
	3.4 Soil Sterilization	2
4.	METHOD OF MEASUREMENT AND BASIS OF PAYMENT	3
	4.1 Preparation of Revetment Sub-grade	3
	4.2 Geotextile Fabric.....	3
	4.3 Revetment Surface Course.....	3
	4.4 Soil Sterilization	3

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1. DESCRIPTION

1.1 General

.1 This specification covers construction of stormwater retention basin revetment including preparation of sub-grade, supply and placement of geotextile fabric, revetment surface course, supply and application of soil sterilant and related operations.

1.2 Referenced Standard Construction Specifications

- .1 CW 3110 – Sub-Grade, Sub-Base and Base Course Construction
- .2 CW 3130 – Supply and Installation of Geotextile Fabrics
- .3 CW 3710 – Products Approved for Use in Surface Works

1.4 Referenced Standard Details

- .1 SD-026 – Stormwater Retention Basin Shoreline Revetment

2. MATERIALS

2.1 Geotextile Fabric

.1 Geotextile fabric to be a woven fabric in accordance with Approved Products for Surface Works. Minimum width to be 1.8 metres wide.

2.2 Aggregate

.1 Aggregate for surface course to be clean, round, crushed rock free of thin elongated or laminated pieces, organic material or other deleterious material. At least 90%, by actual particle count to consist of angular, cubical fragments having at least one fractured face. Aggregate to have a minimum 50% (fifty percent) igneous granite rock content, with remaining content being primarily dolomite and hard limestone rock. Gradation is to be in accordance with Table CW 2165.1:

TABLE CW 2165.1 – Revetment Surface Course Gradation

Canadian Metric Sieve Size	Percent of Dry Weight Passing
50 000	100%
25 000	20% - 60%
20 000	0% - 10%
12 500	0% - 1%

2.3 Securing Pins

.1 Securing pins to be 4.8 millimetre diameter steel bars, 450 millimetres long. Fabricate with one pointed end and one flattened end to retain a steel washer. Steel washers to have a minimum outside diameter of 40 millimetres.

2.4 Soil Sterilant

.1 Soil sterilant (herbicide) to be Princep Nine-T™ (Syngenta) or approved equal.

3. CONSTRUCTION METHODS

3.1 Preparation of Revetment Sub-grade

- .1 Excavate the sub-grade in accordance with CW 3110. Shape and trim sub-grade to the lines and depth in accordance with SD-026 unless indicated otherwise in the Drawings and Specifications.
- .2 Compact sub-grade the full width of the excavation to a minimum 90% of Standard Proctor Density.

3.2 Geotextile Fabric

- .1 Protect geotextile fabric against contamination from dirt, dust and other deleterious materials. Keep geotextile fabric in its protective covering shaded from ultraviolet light and elevated off the ground until installed.
- .2 Install geotextile fabric in accordance with the manufacturer's recommendations over the full width and length of the revetment excavation. Install long dimension of fabric parallel to the waterline.
- .3 Remove lumps and loose material in bottom of excavation and unroll geotextile fabric smooth, free of tension, stress folds and creases.
- .4 Overlap joints a minimum of 600 millimetres.
- .5 Install securing pins with washers at maximum 1500 millimetre intervals, 100 millimetres in from each exterior edge. Install additional pins as required to prevent geotextile fabric slippage.
- .6 Repair damaged geotextile fabric as directed by the Contract Administrator by placing a patch of the same geotextile fabric over the damaged area and securing with pins. Extend the patch a minimum 600 millimetres beyond edges of the damaged area.

3.3 Revetment Surface Course

- .1 Place revetment surface course directly over geotextile fabric to the width and thickness shown on SD-026 unless indicated otherwise in the Drawings and Specifications in a manner that will not damage the geotextile fabric. Drop height not to exceed 300 millimetres.
- .2 Spread and level revetment surface course with equipment operating from previously placed revetment surface course or the ground adjacent to the revetment.
- .3 Avoid sudden stops or turns from equipment operating on the revetment surface course.

3.4 Soil Sterilization

- .1 Obtain required permits from governing agencies before starting application of soil sterilant and provide copy of permit to the Contract Administrator.
- .2 Provide 48 hours notice to the Contract Administrator before application of soil sterilant to allow the Contract Administrator to provide notice to the Water and Waste Department's, Wastewater Services, Field Service Operations Engineer.
- .3 Personnel applying soil sterilant must be licensed by the Province of Manitoba to perform this type of work.
- .4 Apply Princep Nine-T™ to dry soil at an application rate of 24 kilograms of product mixed with 500 – 2200 litres of water per hectare over the entire area of the stormwater retention basin to the upper limit of the revetment.

- .5 Application rate for approved equal products will be approved by the Contract Administrator.
- .6 Gently agitate the mixture while applying.
- .7 Disc the soil lightly after sterilant application.
- .8 Provide the Contract Administrator with documentation after applying soil sterilant indicating the type, amount, mixture concentration and application rate, date, time, weather conditions and area where soil sterilant was applied.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

4.1 Preparation of Revetment Sub-grade

- .1 Preparation of revetment sub-grade including excavation, trimming and compaction will be measured on an area basis and paid for at the Contract unit Price for "Preparation of Revetment Sub-grade". Area paid for will be the total number of square metres of revetment sub-grade prepared in accordance with this specification, accepted and measured by the Contract Administrator.

4.2 Geotextile Fabric

- .1 Supply and installation of geotextile fabric will be measured on an area basis and paid for at the Contract unit Price for "Geotextile Fabric for Revetment". Area paid for will be the total number of square metres of geotextile fabric supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.
- .2 Joint overlap will be considered a single layer when measuring the total area of geotextile fabric installed.
- .3 Repair of damaged geotextile fabric will be at own expense.

4.3 Revetment Surface Course

- .1 Supply and installation of revetment surface course will be measured on an area basis and paid for at the Contract unit Price for "Revetment Surface Course". Area paid for will be the total number of square metres of surface course supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

4.4 Soil Sterilization

- .1 Supply and application of soil sterilant to stormwater retention basins will be measured on an area basis and paid for at the Contract unit Price for "Soil Sterilization". Area paid for will be the total number of hectares of soil sterilant supplied and applied in accordance with this specification, accepted and measured by the Contract Administrator.