



DEVELOPMENT CONSTRUCTION SPECIFICATION

C211

CONTROL OF EROSION AND SEDIMENTATION

Amendment Record for this Specification Part

This Specification is Council's edition of the AUS-SPEC generic specification part and includes Council's primary amendments.

Details are provided below outlining the clauses amended from the Council edition of this AUS-SPEC Specification Part. The clause numbering and context of each clause are preserved. New clauses are added towards the rear of the specification part as special requirements clauses. Project specific additional script is shown in the specification as italic font.

The amendment code indicated below is 'A' for additional script 'M' for modification to script and 'O' for omission of script. An additional code 'P' is included when the amendment is project specific.

Amendment Sequence No.	Key Topic addressed in amendment	Clause No.	Amendment Code	Author Initials	Amendment Date
<i>EXAMPLE 1</i>	<i>Provision for acceptance of nonconformance with deduction in Payment</i>	<i>XYZ.00</i>	<i>AP</i>	<i>KP</i>	<i>2/6/97</i>
1	Measurements and Payments Pay Items	C211.20	O	JRM	10/10/00
2	Reference Documents (c) Other "NSW Department of Land and Water Conservation (DLWC)" removed. Department of Housing "Managing Urban Stormwater – Soil and Construction Manual 1998" inserted	C211.02	M	JRM	12/10/00
3	Erosion and Sediment Control Plan Clause (1) "DLWC Publication" Urban Erosion and Sediment Control" removed. Department of Housing "Managing Urban Stormwater – Soil and Construction Manual 1998" inserted.	C211.03	O	JRM	20/2/00
4	Reference Documents (b) State Legislation. All Acts removed. New Act. Protection of Environment Operations Act 1997" inserted.	C211.02	M	JRM	20/2/01
5	Erosion and Sedimentation Control Plan Clauses (1)(2)(3) removed.	C211.03	O	JRM	20/2/01

	Remaining Clauses renumbered				
6	Earthworks for Permanent Erosion and Sedimentation Control Basins Clause (2) and (3) "C213" inserted.	C211.05	A		
7	Cleaning Sedimentation Control Structures Clause (1) and (2)	C211.08	OA	JRM	20/2/01
8	General Clause (2) "Clean Waters Act 1970" removed. "Protection of Environment Operations Act 1997" inserted.	C211.10	M	JRM	20/2/01
9	Batter Protection Clause (1)	C211.13	A	JRM	20/2/01

SPECIFICATION C211 CONTROL OF EROSION AND SEDIMENTATION

GENERAL

C211.01 SCOPE

1. The work to be executed under this Specification consists of the construction of structures and the implementation of measures to control erosion and sedimentation. These may be temporary or permanent.
2. The Contractor shall plan and carry out the whole of the Works to avoid erosion and sedimentation of the site, surrounding country, watercourses, waterbodies and wetlands.

C211.02 REFERENCE DOCUMENTS

1. Documents referenced in this specification are listed in full below whilst being cited in the text in the abbreviated form or code indicated.

**Documents
Standards Test
Methods**

(a) Council Specifications

- | | | |
|------|---|-----------------------|
| C212 | - | Clearing and Grubbing |
| C213 | - | Earthworks |
| C273 | - | Landscaping |

(b) State Legislation

Protection of the Environment Operations Act 1997

(c) Other

Department of Housing – “Managing Urban Stormwater – Soil and Construction Manual 1998”

C211.03 EROSION AND SEDIMENTATION CONTROL PLAN

1. The Department of Housing publication “Managing Urban Stormwater – Soil and Construction Manual 1998” provides guidance on typical permanent and temporary erosion and sedimentation control measures which may be required and guidance in the preparation of an Erosion and Sedimentation Control Plan.
2. No work shall commence until Council has approved the Erosion and Sedimentation Control Plan. Such approval shall not relieve the Contractor of the full responsibility to provide whatever measures are required for effective erosion and sedimentation control at all times.
3. The Contractor shall adhere to the approved Erosion and Sedimentation Control Plan. The Contractor shall submit a revised Erosion and Sedimentation Control Plan for approval by Council fourteen days in advance of intended variation from the approved plan.

Guidance

**Contractor's
Responsibility**

**Adherence to
Plan**

C211.04 EROSION AND SEDIMENTATION CONTROL MEASURES

1. Erosion and sedimentation control measures shall include, but shall not be limited

Scope

to, the following:

- (a) The installation of permanent drainage structures before the removal of topsoil and commencement of earthworks for formation within the catchment area of each structure.
- (b) The prompt completion of all permanent and temporary drainage works, once commenced, to minimise the period of exposure of disturbed areas.
- (c) The stabilisation of diversion and catch drains to divert uncontaminated runoff from outside the site, clear of the site. Catch drains shall be installed and lined, as specified or as directed by the Superintendent, before the adjacent ground is disturbed and the excavation is commenced.
- (d) The passage of uncontaminated water through the site without mixing with contaminated runoff from the site.
- (e) The provision of contour and diversion drains across exposed areas before, during and immediately after clearing and the re-establishment and maintenance of these drains during soil removal and earthworks operations.
- (f) The provision of sediment filtering or sediment traps, in advance of and in conjunction with earthworks operations, to prevent contaminated water leaving the site.
- (g) The restoration of the above drainage and sedimentation control works on a day to day basis to ensure that no disturbed area is left without adequate means of containment and treatment of contaminated water.
- (h) The limitation of areas of erodible material exposed at any time to those areas being actively worked.
- (i) The minimisation of sediment loss during construction of embankments by means such as temporary or reverse superelevations during fill placement, constructing berms along the edge of the formation leading to temporary batter flumes and short term sediment traps.
- (j) The progressive vegetation of the site, in accordance with the Specification for LANDSCAPING, as work proceeds.

PERMANENT EROSION AND SEDIMENTATION CONTROL

C211.05 EARTHWORKS FOR PERMANENT EROSION AND SEDIMENTATION CONTROL BASINS

1. Earthworks for permanent erosion and sedimentation control basins shall be constructed to the planned levels and dimensions shown on the Drawings or such levels and dimensions as determined by the Superintendent. **Planned Levels**
2. The entire storage and embankment foundation area of permanent erosion and sedimentation control basins shall be cleared in accordance with the Specification for CLEARING AND GRUBBING and shall be stripped of topsoil and any unsuitable material under embankments removed in accordance with the Specification for EARTHWORKS. C213 **Site Preparation**
3. The embankments shall be constructed in accordance with the Specification for EARTHWORKS. C213 **Compaction Requirements**
4. If payment for embankment construction is on a Schedule of Rates basis, at least three days before construction of the embankment the Contractor shall provide the Superintendent with survey information which will be sufficient to subsequently measure **Contractor to Provide Survey**

the volume of the constructed embankment.

Information

C211.06 INLETS, SPILLWAYS AND LOW FLOW OUTLETS FOR SEDIMENTATION CONTROL BASINS AND SEDIMENT TRAPS

1. Inlets and spillways shall be constructed using rock filled woven galvanised steel mattresses laid on a needle punched, mechanically bonded, non-woven geotextile filter fabric, as shown on the Drawings or as directed by the Superintendent. The rock filled mattresses shall be laid in accordance with the manufacturer's instructions and Specification.

**Rock
Mattresses**

2. A low flow outlet consisting of a 150 mm diameter plastic pipe shall be installed as shown in the Drawings. No extra payment shall be made for this work which shall be regarded as part of the construction of the sedimentation control basin.

**Plastic Pipe
Outlet**

C211.07 DROP INLET SEDIMENT CONTROL

1. Drop inlet sediment traps and inlet control banks shall be constructed on completion of each gully pit unless otherwise directed by the Superintendent. These drop inlet sediment traps and inlet control banks are additional to the temporary sedimentation control measures that may be required under Clause C211.10 during construction of the gully pits.

**Time of
Construction**

2. The drop inlet sediment traps are intended to remove sediment from the surface flow before it enters the drainage system. The inlet control banks shall be constructed as required to prevent the surface flows bypassing the gully pits.

Purpose

3. The drop inlet sediment traps shall be constructed as shown on the Drawings. The associated inlet control banks shall consist of at least two courses of sandbags containing a 10:1 sand/cement mix. The bags shall be keyed at least 25 mm into the surface, dampened sufficiently to ensure hydration of the cement and tamped lightly to provide mechanical interlock between adjacent bags.

Control Banks

C211.08 CLEANING SEDIMENTATION CONTROL STRUCTURES

1. The Contractor shall clean out permanent sedimentation control structures, cleaning out whenever the accumulated sediment has reduced the capacity of the structure by 50 per cent or more, or whenever the sediment has built up to a point where it is less than 300 mm below the spillway crest. All permanent sedimentation control structures shall be cleaned out by the Contractor prior to the completion of the maintenance period and issuing of Certificate of Completion by Principal Certifier.

**Contractor's
Responsibility**

2. Accumulated sediment shall be removed from permanent sedimentation control structures in such a manner as not to damage the structures. The sediment removed shall be removed from the site. The Contractor shall provide and maintain suitable access to permanent sedimentation control structures to allow cleaning out in all weather conditions.

**Removal of
Sediment**

C211.09 RESERVED

(For additional Site Specific Permanent Control Measures.)

TEMPORARY EROSION AND SEDIMENTATION CONTROL

C211.10 GENERAL

1. The Contractor shall ensure that effective erosion and sedimentation control is

Contractor's

provided at all times during the Contract.

Responsibility

2. Runoff from all areas where the natural surface is disturbed by construction, including access roads, depot and stockpile sites, shall be free of pollutants as defined in the Protection of the Environment Operations Act 1997 before it is either dispersed to stable areas or directed to natural watercourses. The Contractor shall be responsible for all temporary erosion and sedimentation control measures required for this purpose.

Pollutant Free

3. The Contractor shall provide and maintain slopes, crowns and drains on all excavations and embankments to ensure satisfactory drainage at all times. Water shall not be allowed to pond on the works unless such ponding is part of an approved Erosion and Sedimentation Control Plan.

**Maintenance
by Contractor**

C211.11 TEMPORARY DRAINS

1. Runoff from areas exposed during the work shall be controlled by construction of temporary contour drains and/or temporary diversion drains. Generally, a temporary contour drain or temporary diversion drain takes the form of a channel constructed across a slope with a ridge on its lower side. They may require progressive implementation and frequent alteration as the work progresses.

**Control of
Runoff**

2. Contour drains, which follow points on the natural surface of approximately the same elevation, shall be provided immediately after a construction site is cleared to intercept and divert runoff from the site to nearby stable areas at non-erosive velocities. Contour drains shall be formed with a grade of neither less than 1 per cent nor more than 1.5 per cent and shall be spaced at intervals of neither less than 20 m nor more than 50 m, depending on the erodibility of the exposed soil. Contour drains shall be constructed as shown on the Drawings.

**Contour
Drains**

3. Diversion drains shall be provided across haul roads and access tracks when such roads and access tracks are identified as constituting an erosion hazard due to their steepness, soil erodibility or potential for concentrating runoff flow. Diversion drains shall be formed to intercept and divert runoff from the road or track to stable outlets. Spacing of diversion drains shall not be greater than that required to maintain runoff at non-erosive velocities.

**Diversion
Drains**

C211.12 TEMPORARY SEDIMENT TRAPS

1. Temporary sediment-trapping devices shall be provided during construction to remove sediment from sediment-laden runoff before the runoff enters natural watercourses or adjacent land.

**Sediment
Traps**

C211.13 BATTER PROTECTION

1. The Contractor shall take all necessary action to protect batters from erosion during the Contract in accordance with specifications – Landscaping C273.

**Contractor's
Responsibility**

2. Scour of newly-formed fill batters during and after embankment construction shall be minimised by diverting runoff from the formation away from the batter until vegetation is established.

Scour Control

C211.14 MAINTENANCE AND INSPECTION

1. The Contractor shall inspect all temporary erosion and sedimentation control works after each rain period and during periods of prolonged rainfall. Any defects revealed by such inspections shall be rectified immediately and these works shall be cleaned, repaired and augmented as required, to ensure effective erosion and sedimentation control thereafter.

**Contractor's
Responsibility**

2. The Contractor shall provide and maintain access from within the road reserve or from other locations acceptable to the Superintendent, for cleaning out sedimentation control works.

Access

C211.15 REMOVAL

1. All temporary erosion and sedimentation control works shall be removed by the Contractor when revegetation is established on formerly exposed areas before the end of the Contract. All materials used for the temporary erosion and sedimentation control works shall be removed from the site or otherwise disposed by the Contractor to the satisfaction of the Superintendent.

Contractor's Responsibility

SPECIAL REQUIREMENTS

C211.16 RESERVED

C211.17 RESERVED

C211.18 RESERVED

C211.19 RESERVED

MEASUREMENT AND PAYMENT

C211.20 RESERVED

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