

CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINES

CONTROL OF EROSION AND SEDIMENTATION

C211

CONSTRUCTION SPECIFICATION

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Keeping the Capricorn Municipal Development Guidelines up-to-date

The Capricorn Municipal Development Guidelines are living documents which reflect progress of municipal works in the Capricorn Region. To maintain a high level of currency that reflects the current municipal environment, all guidelines are periodically reviewed with new editions published and the possibility of some editions to be removed. Between the publishing of these editions, amendments may be issued. It is important that readers assure themselves they are using current guideline, which should include any amendments which may have been published since the guideline was printed. A guideline will be deemed current at the date of development approval for construction works.

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 in compliance with the requirements of the Environmental Protection Act, 1994 and Amendments, Regulations and Policies, and Local Government's Adopted Policies where available.

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) QLD State Legislation

The Environmental Protection Act, 1994 and Amendments, Regulations and Policies

(c) Other

- Institution of Engineers Australia, Queensland Division (IEAQ)
 - Soil Erosion and Sediment Control - Engineering Guidelines for Queensland Construction Sites, 1996.
- Brisbane City Council (BCC)
 - Integrated Environmental Management System Manual, 1997.

C211.03 EROSION AND SEDIMENTATION CONTROL STRATEGY

1. For consideration of erosion and sedimentation control measures, the site shall be divided into sections based on the catchment area draining to each permanent drainage structure in the works. In addition to the area bounded by the road reserve, the sections shall include:

Site Sections

- (a) access and haulage tracks,
- (b) borrow pits and
- (c) compound areas, such as Contractor's facilities and concrete batching areas.

CONTROL OF EROSION AND SEDIMENTATION

2. Prior to pre-start meeting, the Contractor shall submit to Local Government an Erosion and Sedimentation Control Strategy for each of the nominated sections. This Strategy shall be superimposed on half-sized Erosion Control and Stormwater Management drawings of the works and shall be detailed for each catchment area of the works. The Strategy should incorporate the measures included on the plan to protect adjoining landowners, significant areas and receiving waters. The contractor shall incorporate into the Strategy those additional measures deemed necessary to accommodate the proposed construction methods and construction sequence to be employed for the construction of the works.

Section Plan

3. The Strategy shall consist of scale diagrams indicating:

- (a) features of the site including contours and drainage paths,
- (b) relevant construction details of all erosion and sedimentation control structures to be employed,
- (c) all permanent and temporary erosion and sedimentation control measures, including the control measures to be implemented in advance of, or in conjunction with, clearing and grubbing operations as required under the Specification for CLEARING AND GRUBBING C212,
- (d) an order of works based upon construction and stabilisation of all culverts and surface drainage works at the earliest practical stage, and
- (e) proposed time schedules for construction of structures and implementation of measures to control erosion and sedimentation.
- (f) Strategies for identification and protection of vegetation as required by Local Government.

**Plan
Inclusions**

4. The IEAQ Guidelines and the Brisbane City Council Manual 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.

Guidance

5. No work shall commence until Local Government has approved the Erosion and Sedimentation Control Strategy. 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. The strategy shall be provided to Local Government prior to the pre-start meeting.

**Contractor's
Responsibility**

6. The Contractor shall adhere to the approved Erosion and Sedimentation Control Strategy. The Contractor shall submit a revised Strategy for approval by Local Government in advance of intended variation from the approved Strategy.

**Adherence to
Plan**

C211.04 EROSION AND SEDIMENTATION CONTROL MEASURES

1. Erosion and sedimentation control measures shall include, but shall not be limited to, the following:

- (a) The minimisation of disturbance of the natural ground and retention of vegetation.
- (b) The installation of permanent drainage structures before the removal of topsoil and commencement of earthworks for formation within the catchment area of each structure.
- (c) The prompt completion of all permanent and temporary drainage works, once commenced, to minimise the period of exposure of disturbed areas.
- (d) 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 before the adjacent ground is disturbed and the excavation is commenced.

Scope

- (e) The passage of uncontaminated water through the site without mixing with contaminated runoff from the site.
- (f) 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.
- (g) The provision of sediment filtering or sediment traps, in advance of and in conjunction with earthworks operations, to prevent contaminated water leaving the site.
- (h) 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.
- (i) The limitation of areas of erodible material exposed at any time to those areas being actively worked.
- (j) 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.
- (k) 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 C212 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***

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, unless detailed otherwise shown on the Drawings. 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 unless detailed otherwise as shown in the Drawings. ***Plastic Pipe Outlet***

C211.07 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 Practical Completion of the Works.

***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 disposed of in such locations that the sediment will not be conveyed back into the construction areas or into watercourses. The Contractor shall provide and maintain suitable access to permanent sedimentation control structures to allow cleaning out in all weather conditions.

***Removal of
Sediment***

TEMPORARY EROSION AND SEDIMENTATION CONTROL

C211.08 GENERAL

1. The Contractor shall ensure that effective erosion and sedimentation control is provided at all times.

***Contractor's
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 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 Strategy.

***Maintenance
by Contractor***

C211.09 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***

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***

C211.10 TEMPORARY SEDIMENT TRAPS

1. Temporary sediment-trapping devices shall be provided during construction to remove sediment from sediment-laden runoff flowing from areas of 0.5 hectares or more before the runoff enters natural watercourses or adjacent land.

***Sediment
Traps***

C211.11 BATTER PROTECTION

1. The Contractor shall take all necessary action to protect batters from erosion.

***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

C211.12 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 for cleaning out sedimentation control works.

Access

C211.13 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.

***Contractor's
Responsibility***