DEVELOPMENT CONSTRUCTION SPECIFICATION

C223

DRAINAGE STRUCTURES

SPECIFICATION C223 - DRAINAGE STRUCTURES

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SPECIFICATION C223 : DRAINAGE STRUCTURES

GENERAL

C223.01 SCOPE

1. This Specification covers the construction of drainage structures and shall be read in conjunction with Specification C220 STORMWATER DRAINAGE - GENERAL and other drainage Specifications as applicable:

Associated Specifications

C221	-	Pipe Drainage
C222	-	Precast Box Culverts
C224	-	Open Drains, including Kerb and Gutter

2. The work to be executed under this Specification consists of the construction of headwalls, wingwalls, pits, gully pits, inspection pits, junction boxes/pits, drop structures, inlet and outlet structures, energy dissipators, batter drains and other supplementary structures as shown on the Drawings.

Extent of Work

C223.02 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

C213	-	Earthworks
C220	-	Stormwater Drainage - General
C221	-	Pipe Drainage
C222	-	Precast Box Culverts
C224	-	Open Drains, including Kerb and Gutter
C271		Minor Concrete Works

(b) Australian Standards

AS 3996	-	Metal access covers, road grates and frames

(c) RTA Specifications

3204	-	Preformed Joint Fillers for Concrete Road Pavements and Structures

CONSTRUCTION

C223.03 GENERAL

1. Drainage structures shall be constructed in concrete and in accordance with Specification C271 – MINOR CONCRETE WORKS.

Concrete Work

2. All structures shall be constructed as soon as practicable and shall be completed not later than 28 days after the construction of the associated culverts, unless otherwise approved by Council's Development Engineer.

Time for Completion

C223.04 ALIGNMENT

1. Unless otherwise shown on the Drawings, headwalls and pits shall be constructed

parallel to the road centreline and wingwalls at 135° to the headwall.

2. Where the culvert is laid skew to the road, the wingwalls and headwalls shall be splayed so that the front edge of the wing bisects the angle between the centreline of the culvert and the headwall. ***Skew Angle***

3. Energy dissipators shall be constructed on the axis of the culvert. ***Energy Dissipators***

C223.05 HEADWALLS AND WINGWALLS

1. The wingwalls shall be constructed to retain the batters effectively. Where the dimensioned drawings do not satisfy this requirement Council's Development Engineer shall be notified before the headwalls and wingwalls are constructed. Council's Development Engineer shall direct the Contractor as to the action to be taken. ***Batter Retention***

2. Where rock is encountered at the bottom of excavations for wingwalls and headwalls, the depth of cut-off walls in uniform rock over the full width of the foundations may be reduced to less than that shown in the Drawings, but must be not less than 150mm into sound rock. ***Rock Foundations***

C223.06 PITS

1. All new pits, including gully grates and frames complying with AS 3996, shall be constructed to the details shown on the Drawings. Modification of existing pits is only to be carried out if such is shown on the Drawings. ***Modification***

2. Where pits and drop structures are deeper than 1.2m the Contractor shall install suitable galvanised step irons at a vertical spacing of 450mm in one wall of the pit, for the full depth of the pit. ***Step Irons***

C223.07 PRECAST UNITS

1. Where precast units are provided in the design they shall be handled and installed in accordance with the manufacturer's instructions. ***Manufacturer's Instructions***

2. Unless otherwise approved by Council's Development Engineer, precast units shall not be delivered to the site before satisfactory documentary evidence has been submitted to Council's Development Engineer that quality tests have been carried out. ***Delivery***

C223.08 JOINTING

1. Where drainage structures abut concrete paving, kerb and gutter or other concrete structures, a 10mm wide joint shall be provided between the structure and paving, or kerb and gutter or other concrete structures. The joint shall consist of preformed jointing material complying with RTA Specification 3204. ***Preformed Jointing Material***

C223.09 MASS CONCRETE BEDDING

1. Mass concrete bedding shall not be placed on earth or rock foundations until the foundations have been inspected and approved by Council's Development Engineer. Following such approval, the surface of the foundation shall be dampened and a layer of concrete not less than 50mm thick, shall be placed over the excavated surface and shall be finished to a smooth even surface. ***Foundation Inspection***

2. Unreinforced concrete bases may be cast on earth or rock foundations without the mass concrete bedding. ***Unreinforced Concrete Base***

C223.10 BACKFILL

1. Backfilling shall not commence until the compressive strength of concrete has reached at least 15MPa unless otherwise approved by Council's Development Engineer. ***Commencement***

2. Selected backfill shall be placed against the full height of the vertical faces of structures for a horizontal distance equal to one-third the height of the structure. ***Selected Backfill***

3. Selected backfill shall consist of a granular material in accordance with the requirements in Specification C213 - EARTHWORKS. ***Composition***

4. Special care shall be exercised to prevent wedge action against vertical surfaces during the backfilling. Where the sides of the excavation are steeper than 4 horizontally to 1 vertically they shall be cut in the form of successive horizontal terraces at least 600mm in width, as the backfill is placed. ***Horizontal Terraces***

5. Backfill on both sides of wingwalls up to stream bed level shall be carried up to level simultaneously. Backfilling and compaction shall commence at the wall. Compaction shall be in accordance with Specification C220 - STORMWATER DRAINAGE - GENERAL. ***Procedure***