

Engineering Construction Specification C11 Kerbs and channels (gutter)

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This document is a modified version of AUS-SPEC 1122
Kerbs and channels (gutter) October 2018 version

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1 General

1.1 Responsibilities

1.1.1 General

Requirement: Provide new kerbs and channels (gutters) and associated works including removal and disposal of existing kerbs and channels (gutters), as documented.

1.2 Cross references

1.2.1 General

Requirement: This worksection is not a self-contained specification. In addition to the requirements of this worksection, conform to the following:

- *C01 General requirements (Construction)*
- *C02 Quality management (Construction)*
- *C03 Control of traffic*
- *C04 Control of erosion and sedimentation (Construction).*
- *C13 Road openings and restoration*
- *C23 Stormwater drainage (Construction)*
- *C25 Pipe drainage*
- *C27 Drainage structures*
- *C28 Auxiliary concrete works*

1.3 Standards

1.3.1 General

Standard: To AS 2876.

Council's Standard Drawings.

1.4 Interpretation

1.4.1 Definitions

General: For the purposes of this worksection the following definition applies:

- Kerbs and channels (gutters): Includes all forms of concrete channels (gutters), dish drains and mountable median and barrier kerbing.

1.5 Tolerances

1.5.1 General

Requirement: To AS 2876 clause 9.

1.6 Submissions

1.6.1 Authority approvals

Road opening permit: Submit an application to the relevant Council for approval for works to road or footpath, including the following:

- Location of services.
- Opening and compaction specifications refer to Council's standard drawing.

Provision for traffic

Documentation: Submit a Traffic control plan for control of vehicular and pedestrian traffic to conform with C03 Control of traffic. Construct the works with the least possible obstruction to traffic, both vehicular and pedestrian. This is a HOLD POINT.

Temporary drainage

Documentation: Submit details of procedures/devices to maintain effective drainage of the works area during construction. This is a HOLD POINT.

Road opening permit

Application: Submit Section 138 application to council for approval to undertake works to road or footpath. This application includes but is not limited to the following information:

- Ascertain the location of services.
- Opening and compaction specifications.

1.6.2 Calculations

Gully pits: Submit details and hydraulic capacity calculations, if adjustments to the pit are required.

1.6.3 Execution details

Temporary drainage: Submit details of procedures/devices to maintain effective drainage of the works area during construction.

Construction method: Submit details of proposed methods, 2 weeks before commencement of works. Notify affected residents and businesses.

Disposal: Submit location for disposal of excavated and demolished materials, 2 days before excavation.

Sawcut: Submit drawings showing locations of sawcutting of existing redundant kerb and gutter, 1 day before setting out.

Gully pit adjustment: Submit details for reinstatement of existing gully pits, 1 day before demolition.

Pavement backfill: Submit details of materials and compaction, confirm kerb type, profile and concrete strength 3 days before the works commence.

Confirm the kerb type, profile and concrete strength

1.6.4 Products and materials

Proprietary products: Submit the manufacturer's technical data.

1.6.5 Samples

Joint fillers and sealants: Submit a sample of the proposed preformed joint filler.

1.6.6 Tests

Results: Submit results of testing to **ANNEXURE – MAXIMUM LOT SIZE AND MINIMUM TEST FREQUENCIES**.

Type test results: Data on extrusion/slip forming performance as required.

1.7 Inspections

1.7.1 Notice

Give notice so that inspection may be made of the following:

- Footpath and road pavement preparation:
 - Set-out of saw cutting to existing kerbs and channels (gutters), footpaths, driveways and road pavements.
 - Reinstatement of damaged footpath, road pavement and services.
- Foundation material: Shaped and compacted foundation material.

- Stormwater outlets: Completed reconnection of stormwater outlets in kerbs and channels.
- Vehicular and pedestrian access: Location of driveway crossovers in kerb and channels after completing set-out.
- Backfill behind kerbs/Pavement backfill: Completed backfill.

2 Materials

2.1 Concrete

2.1.1 General

Concrete properties, delivery, placing, compaction, finishing, curing and protection: To the *C28 Auxiliary concrete works* worksection.

2.2 Proprietary products

2.2.1 General

Requirement: Conform to the manufacturer's recommendations.

3 Execution

3.1 Removal and disposal

3.1.1 Footpath and road pavement preparation

See IPWEA PN 2 for information on kerb and channel condition rating.

Pre-construction Inspection: Assess the condition of the footpath, driveways and road pavement surrounding the area of kerb and channel (gutter) involved in the works. This is a WITNESS POINT or a dilapidation report from the applicant to record existing damages?

Saw-cut: Along the footpath, driveways, kerb and gutter and road pavement where shown on the drawings or as directed. Minimise damage and disturbance to the remainder of the kerb and gutter, footpath and road pavement. This is a WITNESS POINT.

Damage to footpath: Reinststate footpath, kerb and gutter, driveways and/or road pavement damaged or disturbed by the work to their approved pre-construction condition. Dowel into existing structures. All cost associated with any restoration work shall be borne by the contractor. This is a WITNESS POINT.

Refer to standard drawings for dwelling details

3.1.2 Excavation

Extent: Demolish and remove the existing redundant kerb and channel (gutter) and excavate to the documented level.

3.1.3 Services

Existing services: Carefully remove kerb and channel (gutter) so as to prevent damage to existing services, including existing house stormwater drainage pipes which discharge into the channel / gutter.

Damaged services: Restore stormwater drainage pipes and/or other services damaged by the works to their pre-construction condition. All cost associated with any restoration work shall be borne by the contractor. This is a WITNESS POINT.

3.1.4 Disposal

General: Remove excavated material and demolished kerb and channel (gutter) from site and legally dispose of to an approved site. This is a HOLD POINT

3.1.5 Unauthorised Disposal

Under no circumstances shall excavated material be disposed of privately to any person or to any unauthorised site.

3.2 Foundation

3.2.1 Foundation material

Shaping and compaction: Before placing kerbs and/or channels (gutters), shape and compact the foundation material to a firm base.

Relative compaction: To AS 2876 except where placed on pavement courses, then to the requirements of the respective pavement course. The foundation material in all cases will be subject to Superintendent's approval. This is a HOLD POINT

3.3 Kerb and channel (gutter)

3.3.1 Construction

Method: Construct in fixed forms, by extrusion or by slipforming.

3.3.2 Trial section

Kerb and channel (gutter): Construct a 3 m trial section to the documented level of finish to show capability of the forming equipment.

Incorporation: Subject to approval, incorporate the trial section in the completed works.

3.3.3 Finish

Top surface: Uniform width, free from humps, sags and other irregularities.

Type: Steel float finish or as documented.

3.3.4 Joints

Requirement: To AS 2876 clause 11 and Council's standard drawings.

3.3.5 Stormwater outlets

Existing house stormwater outlets: Reconnect and extend through the new kerb and/or gutter to match the existing pipe type and size or as shown in Councils standard drawings.

Pipes: To the *C25 Pipe drainage* worksection.

3.3.6 Vehicular or pedestrian access

Driveways: Discontinue barrier kerb opposite all driveways and construct kerb laybacks as documented.

Footpath crossovers: Construct to meet the laybacks as documented or reinstate to match existing materials.

3.3.7 Gully pits

New gully pits: To the *C27 Drainage structures* worksection.

Reinstatement of existing: Adjust and reconstruct existing gully pits as follows:

- Adjust top of cast in situ pits or precast pits to new kerb and channel (gutter) profile.
- Demolish and reconstruct to match the design standard of the existing gully pit, gully pits if required to align with new line or level of the kerb and channel (gutter).

- Fix new wall sections in concrete securely to the retained wall sections.
- Retain or improve the hydraulic capacity of the original gully pit.
- Form regular cavity shapes, oriented not to impede flow of water into and out of the pit.

3.4 Backfilling and reinstatement

3.4.1 Backfill behind kerb

Backfill and reinstatement timing: Minimum 3 days after concrete placement, backfill and reinstate the material behind the kerbs and/or channels (gutters).

Material: Granular material, free of organic material, clay and rock greater than 50 mm diameter. Add turf or seeding as required.

Layers: Compact in maximum 150 mm thick layers.

Relative compaction: 95% when tested to AS 1289.5.4.1 for standard compactive effort or density index 70 to AS 1289.5.6.1, if non-cohesive material.

Surface treatment: Free draining and free from undulations and trip hazards.

3.4.2 Pavement backfill

Adjacent to the new channels (gutters): Backfill and reinstate pavement material as documented.

3.5 Testing

3.5.1 Quality

Requirement: Test for all characteristics in conformance with **ANNEXURE - MAXIMUM LOT SIZES AND MINIMUM TEST FREQUENCIES**.

4 Annexures

4.1 Annexure - Summary of hold and witness points

Reference No:	Clause and description	Type*	Submission/Inspection details	Submission/Notice times	Process held
C11-HP01	SUBMISSIONS Authority approvals Section 138 application	H	Approval of application	10 days before site commencement	Site commencement
C11-HP02	SUBMISSIONS Execution details Temporary drainage	H	Details of procedures/devices	10 days before site commencement	Temporary drainage
C11-HP03	INSPECTION Notice Footpath and road pavement preparation	H	Set-out of saw-cutting to existing kerbs and channels (gutters), footpaths, driveways and road pavements	1 day before removal	For development inspections book through "MyInspect".
C11-HP04	INSPECTION Notice Footpath and road pavement preparation	H	Reinstatement of damaged footpath, road pavement and services and completed backfilling adjacent to works.	1 day prior to completion of the works	For development inspections book through "MyInspect".
C11-WP05	INSPECTION Notice Foundation material	W	Shaped and compacted foundation material	1 day before placement of kerbs and channels	
C11-WP06	INSPECTION Notice Trial section (where required)	W	Completed trial section of kerbs and channels (gutters)	3 days before continuing with placement kerbs and channels	
C11-WP07	INSPECTION Notice Stormwater outlets	W	Completed stormwater outlets in kerbs and channels	Before completion of the works	-
C11-WP08	INSPECTION	W	Location of driveway	After set-out completed	

Reference No:	Clause and description	Type*	Submission/Inspection details	Submission/Notice times	Process held
	Notice Vehicular and pedestrian access		crossovers in kerbs and channels		
*H = Hold Point W = Witness Point					

4.2 Annexure - Maximum lot sizes and minimum test frequencies

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
Siting and excavation	Geometry	1 drainage line/structure	1 per drainage line/structure	Survey
Foundation	Compaction	1 drainage line/structure	1 per 20 Lin. m *	AS 1289.5.1.1
Bedding	Material quality: • Particle size distribution	1 contract	1 per 200 m ³ *	AS C08.11.1
	• Compaction/moisture content	1 drainage line/structure	1 per layer, per 20 Lin. m	AS 1289.5.4.1 AS 1289.5.7.1
Selected backfill	Material quality: • Maximum particle size • Plasticity index	1 contract	1 per 100 m ³ *	AS 1289.3.3.1
	Compaction/moisture content: • Cohesive • Cohesionless	1 contract 1 contract	1 per 100 m ³ * 1 per 100 m ³ *	AS 1289.5.4.1 AS 1289.5.6.1
Kerb and gutter	Geometry	1 contract	1 cross section per 25 m	Survey and 3 m straight edge
* Note: or part thereof, per lot				

4.3 Annexure - Referenced documents

The following documents are incorporated into this worksection by reference:

AS C08		Methods for sampling and testing aggregates
AS C08.11.1	2009	Particle size distribution - Sieving method
AS 1289		Methods of testing soils for engineering purposes
AS 1289.3.3.1	2009	Soil classification tests - Calculation of the plasticity index of a soil
AS 1289.5.1.1	2017	Soil compaction and density tests- Determination of dry density/moisture content relation of a soil using standard compactive effort
AS 1289.5.4.1	2007	Soil compaction and density tests - Compaction control test - Dry density ratio, moisture variation and moisture ratio
AS 1289.5.6.1	1998	Soil compaction and density tests - Compaction control test - Density index method for a cohesionless material
AS 1289.5.4.1	2007	Soil compaction and density tests - Compaction control test - Dry density ratio, moisture variation and moisture ratio
AS 1289.5.6.1	1998	Soil compaction and density tests - Compaction control test - Density index method for a cohesionless material
AS 1289.5.7.1	2006	Soil compaction and density tests- Compaction control test - Hilf density ratio and Hilf moisture variation (rapid method)
AS 2876	2000	Concrete kerbs and channels (gutters) - Manually or machine placed
Council's Standard Drawings		