



## AUS-SPEC

### Infrastructure Specifications

#### 1122 Kerbs and channels (Gutters)

**1122 KERBS AND CHANNELS (GUTTERS)**

IMPORTANT: This document has been adapted from the NATSPEC suite of specification templates for use in the Cessnock City Council area by both Council and industry. NATSPEC regularly updates the base templates (currently in April and October each year), and Council may incorporate changes into its version of AUS-SPEC from time to time. To assist in highlighting any changes made by Council to the NATSPEC templates, the following conventions are used.

- See ANNEXURE M at the end of this document which contains (where practical) Cessnock City Council customisations (also known as 'office master' text). References to the Annexure are to also be inserted at relevant clauses in the main body of the document.
- Where content is added to the main body of the document, it is to be shown **in brown text like this**.
- Where content is deleted or excluded from the main body of the document, it is to be shown ~~struck through like this~~. Such clauses are to have no effect.

Where there is a conflict between main body text and Cessnock City Council specific clauses, Council's specific clauses shall prevail.

**1 GENERAL****1.1 RESPONSIBILITIES****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****General**

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

- 0136 *General requirements (Construction)*.
- 0152 *Schedule of rates (Construction)*.
- 0161 *Quality management (Construction)*.
- 0319 *Auxiliary concrete works*.
- 1101 *Traffic management*.
- 1102 *Control of erosion and sedimentation (Construction)*.
- 1151 *Road openings and restoration*.
- 1352 *Pipe drainage*.
- 1354 *Drainage structures*.

**1.3 STANDARDS****General**

Standard: For kerb types to Austroads AGRD03 (2016) Section 4.6.4 and for kerb elements Austroads AGRD05A (2023) Section 5.

**1.4 INTERPRETATION****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****General**

Absolute level tolerance under a 3 m long straightedge:  $\pm 10$  mm at any point on the finished surface.

Relative level tolerance under a 3 m long straightedge: 5 mm to the top or face of kerbs, and to the surface of channels.

Profile dimension: Less than 5 mm and overall width not more than 15mm.

Exception: Kerb laybacks, grade changes or curves, or at gully pits requiring channel depression.

## 1.6 SUBMISSIONS

### 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 to *1151 Road openings and restoration*.

### Calculations

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

### 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.

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, 3 days before the works commence.

### Products and materials

Proprietary products: Submit the manufacturer's technical data.

### Samples

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

### Tests

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

## 1.7 INSPECTIONS

### 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.
- Trial section: Completed kerb and channel (gutter) trial section.
- 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

#### General

Concrete properties, delivery, placing, compaction, finishing, curing and protection: To *0319 Auxiliary concrete works*.

### 2.2 PROPRIETARY PRODUCTS

#### General

Requirement: Conform to the manufacturer's recommendations.

### 3 EXECUTION

---

#### 3.1 REMOVAL AND DISPOSAL

##### Footpath and road pavement preparation

Saw cutting: Before excavating and removing existing kerbs and channels (gutters), saw cut along the kerbs and channels (gutters), footpaths, driveways and road pavements as documented. Minimise damage and disturbance to the remainder of the footpath and road pavement.

Damaged footpaths, driveways and road pavement: Reinstate to the pre-construction condition.

##### Excavation

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

##### Services

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

Damaged services: Reinstate stormwater drainage pipes and/or other services damaged by the works to the pre-construction condition.

##### Disposal

General: Remove excavated material and demolished kerb and channel (gutter) from site.

#### 3.2 FOUNDATION

##### Foundation material

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

Subgrade or subbase material: Compact to form a firm base with a minimum thickness of 75 mm and extending at least 150 mm beyond the proposed alignment of the back of the kerb. Match the adjoining pavement subgrade/subbase compaction or compact to 95% standard maximum dry density to AS 1289.5.1.1 (2017), as appropriate.

Concrete base: Provide a concrete base and mortar bed for stone and kerb channels above the compacted subgrade or subbase, as documented.

#### 3.3 KERB AND CHANNEL (GUTTER)

##### Construction

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

##### 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.

##### Finish

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

Type: Steel float finish or as documented.

##### Joints

Joint type and location: As documented.

Contraction joint: Provide as follows:

- Extruded kerb: Cut a minimum of 50% of the cross-sectional area. Do not distort the kerb or adjacent surfaces. Tool the top of the joint to create a groove minimum 20 mm deep and 5 mm wide at a spacing of 2.5-3 m.
- Formed kerb: Form joint at the documented locations.

Construction joint in concrete kerb and channel: Roughen the surface of the set concrete at the location of the joint. Remove loose or soft material, foreign matter and laitance. Dampen the surface just before placing the fresh concrete and coat with a neat cement slurry.

Expansion joint: 15 mm wide filled with preshaped filler material extending for the full width and depth of the edging.

Concrete pavement: If channels and/or kerbs are cast adjacent to a concrete pavement, continue the same joint type, as documented for the concrete pavement, across the channels and/or kerbs.

**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 documented. **Connection to the kerb shall only be made with an approved kerb adapter (refer to Council's standard drawings).**

Pipes: To 1352 *Pipe drainage*.

**Vehicular or pedestrian access**

Driveways: Discontinue barrier kerb opposite all driveways and construct kerb laybacks as documented (refer to Council's standard drawings).

Footpath crossovers: Construct to meet the laybacks as documented or reinstate to match existing materials (refer to Council's standard drawings).

**Gully pits**

New gully pits: To 1354 *Drainage structures*.

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 or brick 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****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.

Layers: Compact in maximum 150 mm thick layers.

Relative compaction: 95% when tested to AS 1289.5.4.1 (2007) for standard compactive effort or density index 70 to AS 1289.5.6.1 (1998), if non-cohesive material.

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

**Pavement backfill**

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

**3.5 TESTING****Quality**

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

**4 ANNEXURE A****4.1 ANNEXURE - SCHEDULES****Kerb and channel (gutter) schedule**

	A	B	C
Unit size			
Face finish			
Edge profile			

**Kerb and channel (gutter) joints schedule**

	A	B	C
Type			
Location			
Joint width (mm)			

#### 4.2 ANNEXURE - SUMMARY OF HOLD AND WITNESS POINTS

For private developments, certain Hold and Witness Points where specifically noted below require representatives of both the Superintendent and the Principal Certifier (e.g. Council) to authorise release.

Clause and description	Type	Submission/Inspection details	Submission/Notice times	Process held
SUBMISSIONS Authority approvals  Road opening permit	H	Approval of application	10 days before site commencement	Site commencement
SUBMISSIONS Execution details  Temporary drainage	H – Superintendent and Principal Certifier	Details of procedures/devices	10 days before site commencement	Temporary drainage
INSPECTION Notice  Footpath and road pavement preparation	W – Superintendent and Principal Certifier	Set-out of saw-cutting to existing kerbs and channels (gutters), footpaths, driveways and road pavements	1 day before removal	-
INSPECTION Notice  Footpath and road pavement preparation	W – Superintendent and Principal Certifier	Reinstatement of damaged footpath, road pavement and services	Before completion of the works	-
INSPECTION Notice  Foundation material	W – Superintendent and Principal Certifier	Shaped and compacted foundation material	1 day before placement of kerbs and channels	-
INSPECTION Notice  Trial section	W – Superintendent and Principal Certifier	Completed trial section of kerbs and channels (gutters)	3 days before continuing with placement kerbs and channels	-
INSPECTION Notice  Stormwater outlets	W – Superintendent and Principal Certifier	Completed stormwater outlets in kerbs and channels	Before completion of the works	-
INSPECTION Notice  Vehicular and pedestrian access	W – Superintendent and Principal Certifier	Location of driveway crossovers in kerbs and channels	After set-out completed	
INSPECTION Notice  Backfill behind kerb/ Pavement backfill	W	Completed backfill	After completion	

Clause and description	Type	Submission/Inspection details	Submission/Notice times	Process held
------------------------	------	-------------------------------	-------------------------	--------------

Note: H = Hold Point, W = Witness Point

#### 4.3 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 <sup>a</sup>	AS 1289.5.1.1 (2017)
Bedding	Material quality: Particle size distribution	1 contract	1 per 200 m <sup>3</sup> a	AS 1141.11.1 (2020)
	Compaction/moisture content	1 drainage line/structure	1 per layer, per 20 Lin. m	AS 1289.5.4.1 (2007) AS 1289.5.7.1 (2006)
Selected backfill	Material quality: Maximum particle size Plasticity index	1 contract	1 per 100 m <sup>3</sup> a	AS 1289.3.3.1 (2009)
	Compaction/moisture content: Cohesive Cohesionless	1 contract 1 contract	1 per 100 m <sup>3</sup> a 1 per 100 m <sup>3</sup> a	AS 1289.5.4.1 (2007) AS 1289.5.6.1 (1998)
Kerb and gutter	Geometry	1 contract	1 cross section per 25 m	Survey and 3 m straightedge

a. or part thereof, per lot

#### 4.4 ANNEXURE - PAY ITEMS

This Annexure applies to Council projects. For private development works use of this schedule is optional, at the Superintendent's discretion.

Pay items	Unit of measurement	Schedule rate inclusions
<b>1122.1 Kerb and channel (gutter)</b>	Lin. m measured along the length of the kerb and gutter including kerb laybacks and perambulator ramps	All costs associated with all documentation and approval and: Removal and disposal of existing kerb and gutter, excavation, forming, compaction of foundations, provision of base, concreting, expansion and contraction joints, backfilling restoration of footpaths, pavement, driveways and compaction adjacent to the completed kerb, and making good adjacent surfaces as documented
<b>1122.2 Adjustments to gully pits</b>	Each for the drainage structures scheduled	All costs associated with: Cutting back, adjustment, concreting and backfilling
<b>Traffic management</b>	Lump sum	To 1101 <i>Traffic management</i>
<b>Erosion and sedimentation control</b>		To 1102 <i>Control of erosion and sedimentation (Construction)</i>
<b>Concrete lining</b>		To 0319 <i>Auxiliary concrete works</i>

#### 4.5 ANNEXURE - REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS 1141		Methods for sampling and testing aggregates
AS 1141.11.1	2020	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 the 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 1289.5.7.1	2006	Soil compaction and density tests - Compaction control test - Hilf density ratio and Hilf moisture variation (rapid method)
Austrroads AGRD		Guide to road design
Austrroads	2016	Geometric design
AGR03		
Austrroads	2023	Drainage – Road surface, network, basins and subsurface
AGR05A		
EN 15804	2012	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
ISO 14025	2006	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 21930	2017	Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services

#### 5 ANNEXURE M – CESSNOCK CITY COUNCIL SPECIFIC CLAUSES

M1.	Variations to or non-conformances with Council's AUS-SPEC are to be evaluated with reference to the procedure in Council's <i>Development Engineering Handbook</i> . Acceptance is to be obtained in writing from:  an authorised representative of Council's Director of Infrastructure and Engineering Services.	<b>Variation procedure</b>
M2.	This specification applies in addition to any development consent (DA) conditions. If there is any inconsistency, the conditions of consent shall prevail.	<b>DA Conditions</b>
M3.	Refer to the Cessnock City Council <i>Development Engineering Handbook</i> for final inspection, works-as-executed and handover requirements.	<b>Completion</b>

#### 6 AMENDMENT HISTORY

0	15/01/2024	First Published
---	------------	-----------------