DEPARTMENT *of* INFRASTRUCTURE, ENERGY *and* RESOURCES, TASMANIA

ROADWORKS SPECIFICATION

R36 - KERB AND GUTTER June 2004

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R36.1 SCOPE

This Specification describes the construction of concrete kerbs, kerb and gutters, V-gutters, edge strips, kerb ramps and gutter crossings at the locations shown on the Drawings and to the detail dimensions shown on the Standard Drawings.

The work shall also include the excavation and disposal of existing concrete kerbs, kerb and gutters, kerb ramps, gutter crossings, V-gutters and edge strips including the kerb surrounds of existing traffic islands.

R36.2 MATERIALS

R36.2.1 Concrete

Concrete shall comply with Specification R81, and shall be as follows:

i) Concrete for insitu form construction shall be class N20 concrete of nominal slump 60 mm.

ii) Concrete used in kerb extrusion machines shall have a minimum cement content of 260 kg per cubic metre or 210 kg cement and 20 kg silica fume per cubic metre of concrete placed, and shall be mixed with sufficient water to produce a consistency which maintains the design profile after extrusion. The combined aggregate grading shall be arranged so that not more than 80 percent passes the 6.7 mm A.S. Sieve. Shrinkage shall be tested in accordance with A.S. 1012, Part 13, and, after a period of three (3) weeks air drying, shall not exceed 600 microstrain.

Course aggregate durability shall comply with the requirements of AS 2758.1.

R36.2.2 Pavement Materials

Base and Subbase materials used shall comply with the relevant parts of Specification R40 defined for this Contract.

R36.3 FOUNDATION PREPARATION

R36.3.1 Kerb, Kerb and Gutter, Kerb Ramps and Gutter Crossings

i) New Pavement

The subbase layer shall extend beneath the kerb and other units, as shown on the Drawings.

Where the base course thickness is greater than 160 mm, the foundation for the kerb and other units shall be built up to the required level with base course material.

Where the base course thickness is less than 160 mm, the top of the subbase shall be finished to a depth of 160 mm below the design finished surface level.

The foundation shall extend a minimum of 150 mm beyond the back of the kerb.

ii) Existing Pavement

Excavation for the foundation of kerbs and other units in existing pavements shall be to a depth below design finished surface level corresponding with the specified pavement thickness, and extending 500 mm into the existing pavement from the face of kerbs or lip of kerb and gutters, and extending 150 mm behind the back of kerb.

The sides of the excavation shall extend at an inclination of 45 degrees beyond these limits.

Pavement materials shall be supplied and placed as specified, and the foundation prepared as in Clause R36.3.1 (i) for new pavements.

R36.3.2 V-gutters and Edge Strips

The foundation for V-gutters and edge strips shall be a minimum of 75 mm thick and shall extend beyond each face of the unit by a minimum of 150 mm. The foundation shall be constructed of material of maximum nominal size 30 mm, satisfying the quality requirements of subbase 1, and compacted to a minimum characteristic dry density ratio of 95% Modified compaction.

R36.3.3 M3 Mountable Kerb and B3 Barrier Kerb

These types of kerb shall be installed on the top of the pavement, which shall be brushed free of dust and loose stones prior to installation.

R36.4 CONSTRUCTION

R36.4.1 Insitu Form Construction ♦

The construction of kerbs, kerb and gutters, V-gutters, edge strips and crossings by insitu form construction shall be in accordance with Specification R81.

The kerb face shall be trowelled smooth with a tool custom made to the design profile. Other exposed surfaces of the sections shall be steel trowel finished except for kerb ramps which shall have a coarse broom textured finish with Braille rivet plates where specified.

Kerbs, kerb and gutters, V-gutters, edge strips and crossing shall be constructed in bays not exceeding 3 metres length. For crossings, the bay length shall exclude the 1.1 metre transition each side.

R36.4.2 Machine Extrusion Construction

Kerbs, combination kerb and gutters, V-gutters and edge strips may be constructed using an extrusion machine capable of being fitted with appropriate moulds which produce the profile required.

To overcome irregularities in the foundation, the extrusion machine shall be capable of automatically adjusting the mould position, while in operation, to the required line and grade. The machine shall be operated to produce compacted concrete with un-rendered surfaces substantially free from pitting.

The kerb faces and other exposed faces shall be finished as specified for insitu form construction.

R36.4.3 Joints ♦

Construction joints shall be provided at maximum 3 metre intervals for insitu form and machine extrusion construction. Joints shall be formed or cut through the full cross-section using a template and the edges finished with a suitable grooving tool.

Expansion joints shall be provided at both sides of all pits constructed prior to kerb. Construction joints shall be 15 mm wide and filled with a pre-moulded filler extending over the full cross-section. Pits constructed into broken out kerb do not require expansion joints.

R36.4.4 Temporary Installation of Precast Units

Where specified, traffic islands or medians shall be delineated using precast segments of M3 mountable kerb for the purposes of assessment under traffic prior to final installation.

Precast units, straight and approximately 1 metre in length, shall be placed to delineate the traffic islands and medians, excluding sharp corners. They shall be backed with suitable material to minimise movement of the units if struck by vehicles. A three-week assessment period shall be allowed for, with the island or median subjected to full traffic movements, during which the Superintendent may direct that the locations or number of units be altered. After the assessment period, the Superintendent shall confirm the final position of the island or median.

The Contractor shall then construct the island or median in its final position, according to this specification.

R36.4.5 M3 Mountable Kerb - Permanent Installation

The permanent installation of type M3 mountable kerb shall be to the positions indicated on the Drawings or confirmed by the Superintendent after a defined assessment period.

Precast units may be used for the permanent installation of straight segments of islands or medians, provided that each unit is fixed in position. Fixing shall be by either spiking through each unit or tags cast into it, using two steel spikes at least 10 mm in diameter, driven at least 100 mm into the underlying pavement, or by proprietary glue for the purpose, applied according to the manufacturer's instructions.

R36.4.6 V-gutters and Edge Strips

These shall be installed on the prepared foundation, and the backfill material on one or both sides shown on the Drawings shall be installed according to the relevant Part of the Specification.

R36.4.7 Tolerances

All sections shall be constructed with a smooth, uniform appearance and the horizontal and vertical alignment shall not deviate from the design alignment by more than $\pm$ 10 and $\pm$ 5 mm respectively. Cross-section dimensions shall be within $\pm$ 5 mm of those shown on the Standard Drawings.

R36.4.8 Curing and Protection ♦

The Contractor shall prevent freshly placed and finished concrete from premature drying, for a period of twenty-four (24) hours after pouring, by keeping surfaces wet or covered.

Concrete shall be continuous moist cured for not less than three (3) days and during this period precautions shall be taken, including erection of signs or barriers, to prevent loading the concrete by trafficking or vibratory compaction of fill within 1m. Kerbs may be backfilled after 3 days.

R36.5 REMOVAL OF EXISTING KERBS AND RELATED UNITS

Where existing kerbs, kerb and gutters, gutter crossings, kerb ramps, V-gutters and edge strips are in areas of excavation, they shall be removed as part of the excavation. Where such units shown on the Drawings to be removed are not in areas of excavation, they shall be removed, and any excavations made shall be reinstated to adjacent surface levels with materials consistent with the requirements of pavement subbase and base, or otherwise as specified.

R36.6 PAYMENT

R36.6.1 Measurement for Payment ♦

Payment for the construction of kerbs, kerb and gutters, V-gutters, edge strips and gutter crossings shall be based on the rate quoted in the Schedule of Rates. The unit of measurement shall be linear metres.

The measurement of kerb transitions shall be proportioned equally between the two (2) kerb types involved.

The 1.5 metres of kerb and gutter either side of the centreline of side entry pits, kerb-side grated pits and kerb scuppers shall not be measured. The cost of construction of those 3 metres shall be deemed to have been included in the rate for side entry pits, kerb-side grated pits and kerb scuppers.

The measurement of gutter crossings shall include the 1.1 metre transition each side.

Payment for the construction of kerb ramps shall be based on the tendered rate per unit quoted in the Schedule of Rates and shall include Braille Rivet plates. The cost of construction of the 450 mm transition each side shall be included in the rate for kerb ramps.

Payment for the removal of existing concrete kerbs, kerb and gutters, gutter crossings, kerb ramps, V-gutters and edge strips, including the kerb surrounds of existing traffic islands, shall be based on the tendered rate quoted in the Schedule of Rates. The unit of measurement shall be linear metres.

R36.6.2 Rates of Payment

The rate for construction of kerbs, kerb and gutters, gutter crossings and kerb ramps over new pavements shall include the cost of foundation trimming, supply and compaction of pavement base where required, placing and removal of formwork where required, supply and placing of concrete and concrete finishing and curing.

The rate for construction of kerbs, kerb and gutter, gutter crossings and kerb ramps within the existing pavement shall include the cost of excavation, supply, placing and compaction of pavement subbase and base, supply and placing of formwork where required, supply and placing of concrete, concrete finishing and curing and disposal of surplus excavated material. This rate shall apply where the existing pavement is widened less than 0.5 m measured from edge of existing pavement to lip of new gutter or face of new kerb where there is no new gutter.

The rate for construction of V-gutters and edge strips shall include the cost of excavation and disposal of material, supply, placing and compaction of foundation material, supply and placing of formwork where required, supply and placing of concrete, and concrete finishing and curing.

The rate for the temporary installation of precast units shall include the cost of surface preparation, supply and placing of units and backing material, relocation of the units as directed by the Superintendent, and their removal after the end of the assessment period.

The rate for permanent installation of M3 mountable kerb shall include the cost of surface preparation, supply, placing and removal of formwork where required, supply and placing of concrete and concrete finishing and curing.

The rate for the removal of existing kerbs, kerb and gutters, gutter crossings, kerb ramps, V-gutters and edge strips, where not included in excavation, shall include the cost of removal and disposal of the units, plus reinstatement of the excavations made.