



SPECIFICATIONS - CONSTRUCTION OF CROSSOVERS

1. GENERAL

- a) The specification is made pursuant to the provisions of *Schedule 9.1, clause 7(2) of the Local Government Act, 1995 and Regulation 12 of the Local Government (Uniform Local Provisions) Regulations 1996*.
- b) The construction of crossovers shall be executed under the delegated authority of, and to the direction of, the Manager Infrastructure Projects or an authorised deputy.
- c) An application and diagram/sketch of the proposed location of the crossover must be submitted to the City of Fremantle for approval of the crossover by the Manager Infrastructure Projects or an authorised deputy. Prior to commencement of any works for crossover construction, an Excavation Permit must be obtained from the City of Fremantle.
- d) Footpaths are generally to have priority over crossovers and this shall be reflected by the footpath continuity through the crossover unless otherwise notified by the Manager Infrastructure Projects or an authorised deputy. If however, the footpath is constructed of existing concrete slabs, these are to be replaced with a new footpath and according to the City of Fremantle Footpath Specifications. In the event of the City upgrading the footpath, crossovers may be saw cut and partially removed to cater for this occurring.
- e) All materials used in the construction of crossovers shall be in accordance with the City's standard specification and any materials used which are inferior to those specified or as directed by the Manager Infrastructure Projects or an authorised deputy shall be liable to rejection or replacement without any payment or compensation being made to the owner and / or contractor.
- f) Protection of works and the public shall be provided by the owner and / or contractor who shall supply and keep supplied as directed all necessary signs, barricades, road warning lamps, temporary bridges or any other safety items for adequate traffic control.
- g) The traffic warning signs must be in accordance with *Australian Standard AS1742 Manual of Uniform Traffic Control Devices* where work is in progress on or adjacent to the road pavement.
- h) The owner and / or contractor shall be responsible for preserving all public and private property. They shall protect from disturbance or damage all land monuments and property marks until the Manager Infrastructure Projects or an authorised deputy has witnessed or otherwise referenced their location.

Any damage which may occur to any City facilities, assets, trees, existing services or private property during the course of the works or which may subsequently become evident from the operations thereof, shall be the sole responsibility of the owner and / or contractor who shall be held responsible for the repair, replacement, legal claims, liability or any other occurrence which may arise from the carrying out of any such works.



2. ALIGNMENT AND PROFILE

- a) All crossovers shall be at right angles (90 degrees) to the carriageway kerb lines unless approved otherwise by the Manager Infrastructure Projects or an authorised deputy.
- b) Where internal driveways have been installed, the crossover level shall be within 5 mm of the level of the internal driveway height at the property line.
- c) There shall be a 2% cross-fall away from the property boundary for a minimum distance of 1.5 metres.
- d) If height at property boundary is greater than 400 mm or below road channel level, the crossover must be constructed with a series of grade changes.
- e) No crossover shall be constructed closer than 12 metres to the property alignment of another road intersecting with the carriageway that the driveway services, nor shall it infringe upon any part of a corner truncation of 6 meters unless otherwise approved by City of Fremantle.
- f) No crossover shall be constructed closer than 3 meters from a verge tree unless otherwise approved by the Manager Infrastructure Projects or an authorised deputy.

3. CONCRETE CONSTRUCTION

- a) Concrete

The works shall consist of:

- 100 mm for residential and
- 150 mm for commercial

thick cast insitu premixed concrete constructed on a prepared sub-grade in accordance with this specification and in close conformity with the lines, grades, thickness and typical cross-sections shown on the drawing.

All concrete used in the works shall develop a minimum compressive strength of 25 megapascals at 28 days and comply with *Australian Standard AS3600 Concrete Structures*. Slump at the point of delivery shall be 75 mm (+/- 15 mm). Maximum allowable aggregate size for crossovers is 20 mm.

No admixtures shall be used in the concrete unless specifically approved. If required, high early strength additive shall be used to give rapid hardening as per Australian Standards *AS1478 and AS1479, Chemical Admixtures for Concrete*.



b) Excavation

The excavation for the crossover bed shall be taken out to the levels, lines and grades as approved by the Manager Infrastructure Projects or an authorised deputy and all the excavation shall be executed cleanly and efficiently to provide for a consolidated sound base free from depressions or any deleterious materials to give a minimum 100 mm depth of concrete pavement.

It shall be the owner and / or contractor's responsibility to ensure that all excavated material is removed from the site at the same time as the excavation is carried out. No excavated material shall be stockpiled on site or buried in the verge. It shall be the owner and / or contractors' responsibility for all backfill and cleanup.

c) Compaction

All excavation shall be thoroughly compacted to produce a Perth Penetrometer Reading of a minimum seven (7) blows per 300 mm.

d) Forming

The forms shall be of such cross-section and strength and so secured as to resist the pressure of the concrete when placed, without springing or settlement. The method of connection between sections shall be such that the joints shall not move in any direction. The maximum deviation of the top surface of the form shall not exceed 4 mm in 3 meters or the inside face not more than 4 mm in 3 meters longitudinally.

The form, when set, will be uniformly supported for its entire length at the specified elevation. All forms shall be cleared following use.

e) Placing concrete

Concrete shall be thoroughly compacted against the faces of forms. The pavement shall be screeded by hand finishing methods.

f) Finishing

Final finishing shall not commence until bleed water has disappeared from the surface. The finish shall be obtained by screeding to the correct levels and floating to provide a dense surface free of any depressions, float marks, irregularities, honeycomb sections or accumulation of fine dusty accretions liable to cause excessive surface wear.

The final finish shall be deep broom finish (approximately 2 mm deep) with edges and joints picture framed. All work to be of a high quality and uniform appearance and executed in a tradesman-like manner. Any concrete slurry on Telstra boxes must be thoroughly cleaned off.



g) Jointing

Contraction joints

Contraction joints shall be made in the form of plain dummy construction joints minimum 10 mm deep and finished with an approved jointing tool. No ridges shall be left on the sides of the dummy joints by the jointing tool. Dummy joints are to be constructed in the following locations:

- i. in the centre of the crossover, 90 degrees to the kerb line (not necessarily following the centre line of the internal).
- ii. in line with and parallel to the kerb line at a distance of 1.5 metres from the kerb line and thereafter at approximately 1.5 metre intervals.
- iii. a second option for construction joints is to use a quick-cut saw (or similar machine) to make 30mm deep cuts in the concrete after it has cured. Distances apart shall be the same as in clause ii.

Expansion Joints

A 12 mm wide expansion joint shall be provided for the full depth of concrete between:

- i. the crossover and driveway along the lot boundary
- ii. the kerb and crossover splay
- iii. the crossover and any concrete footpath
- iv. maximum six (6) metre intervals

Expansion joining material shall be either bitumen-impregnated canite or similar pre-cut approved material.

h) Completion

Forms are not to be removed from the concrete within a time period of at least eight (8) hours since placement of concrete. This time period may be reduced with the approval of the Manager Infrastructure Projects or an authorised deputy and depending upon weather conditions.

On completion, the verge area is to have good top soil placed along the damaged verge and foot path edge (not yellow sand). The side is to be left in a clean and tidy condition to the satisfaction of the Manager Infrastructure Projects or an authorised deputy. Any kerb, slabs or City property shall be returned to the City's Works Depot at 81 Knutsford Street (corner of Montreal Street), Fremantle.

Any lawn that has been disturbed is to be replaced with the same type of grass and top dressed. Any sprinklers that are damaged during construction of the path must be repaired.



i) Tolerances

Thickness of concrete crossover is to be a minimum of 100 mm

Width of crossover to be the minimum designed width and not more than 20 mm wider than the minimum designed width.

Crossover surface shall be true to line and not deviate more than 10 mm under a three (3) metre straight edge.

Surface of irregularities, including abutting to service authority manholes etc shall not exceed +3 mm.

j) Owner and/or contractor's responsibilities

- i. Colouring of concrete (to owner's requirements) via direct liaison with owner for this service.
- ii. Liaison with owners to provide access and notification of intention to commence works.
- iii. The protection of concrete surface from rain, vehicular traffic etc.

4. BRICK / BLOCK PAVING CONSTRUCTION

- a) All bricks used should have a minimum thickness of 60 mm and be full depth homogenous units of solid construction or alternatively, be of non-solid construction with a minimum characteristic breaking load of 5kN.
- b) The existing ground shall be boxed out and shaped to the required dimensions and levels. Compaction of the sub-grade shall be carried out using overlapping passes of a vibrating plate compactor.

If a slabbed footpath exists, slabs are to be removed and brick paving continued.

The excavation shall be made to provide a firm sound base, free from depressions or soft spots or any deleterious materials.

c) Base

The base material shall be a limestone / rock base, loosely spread in one layer to the required level and if necessary, water added before compaction to reach the desired moisture content. Using the vibrating plate compactor in a series of overlapping passes, the base shall be thoroughly compacted. The base construction shall extend beneath any new edge restraints constructed as part of the pavement and be closely trimmed to the required levels. The sand bedding shall not be used to fill undulations. The minimum thickness to be 150 mm (fully compacted).



d) Edge Restraint

A firm edge restraint (preventing lateral movement of paving units at the edges) is required. The edge restraint must be in the form of precast or cast insitu concrete strip with a minimum width of 300mm.

e) Sand Bedding Layer

The bedding material must be a well-graded bricklayers sand. The bedding layer shall be well compacted and achieve a uniform thickness of approximately 30 mm.

f) Laying bricks / blocks

Paving bricks / blocks should be placed with 2 mm gaps between adjacent units, maintaining correct joining alignment but without pre-compaction of the sand-bedding layer. Gaps at the pavement edge (adjacent to the edge restraints) are to be neatly filled by cutting pavement units to size with a hydraulic guillotine or bolster for concrete units and a diamond saw for clay units.

g) Compaction and joint filling

After laying, the paving units are to be immediately compacted and brought to level by three passes of the vibrating plate compactor.

Prior to compaction, the sand for joint filling is to be broomed over the pavement and into the joints. Excess sand is to be removed (washed single sized sand is required, beach sand is acceptable).

5. ASPHALT CONSTRUCTION (FOR COMMERCIAL CROSSOVER)

a) Sub-base course

Sub-base course shall consist of crushed limestone (50 mm maximum particle size) compacted to give the required 200 mm thickness, having a density of at least 95% of the modified maximum dry density as determined in accordance with *Australian Standard AS1289 Method of Testing Soils for Engineering Purposes*.

b) Base Course:

Base course shall consist of road base, compacted to give the required 75 mm thickness, having a density of at least 98% of the modified maximum dry density as determined in accordance with *Australian Standard AS1289 Method of Testing Soils for Engineering Purposes*. The base thickness shall be no less than indicated on the plan.

Asphalt:

Asphalt shall be as approved by the Manager Infrastructure Projects or an authorised deputy and consist of 7 mm aggregate and 25 mm in thickness.

Asphalt shall only be laid upon a base which is dry and clean and only when weather conditions are considered suitable by the Manager Infrastructure Projects or an authorised deputy. No mixture shall be laid when the air temperature is below ten (10) degrees celsius.



The contractor shall:

- i. Thoroughly sweep the areas to be surfaced immediately prior to surfacing being placed and correct any defects in prime course.
- ii. Evenly and smoothly apply a tack coat to the area to be surfaced of 55% bituminous emulsion at the rate of 0.55 litres per square metre, sprayed in advance of the surfacing work. Work to be adequately signed to prevent public or vehicles moving on the work. Care must be taken that this work is not taken too far in advance of the surfacing.
- iii. Mix, deliver, spread and roll the surfacing material to a minimum 25 mm thickness. The material shall be delivered to the site in approved tipping trucks, suitably covered to reduce any loss in temperature of the premix material.

6. KERBING

- a) Existing insitu barrier kerbing shall be cut with a concrete cutting saw or existing precast barrier kerbing should be removed without damage to pavement or remaining kerbing. Where insitu mountable kerbing is provided, paving bricks / blocks are to be laid level with the top of such kerb.
- b) Reinstatement must be made to kerbing, concrete paving footpaths or bituminous road services damaged during the crossover construction to the satisfaction of the Manager Infrastructure Projects or an authorised deputy. Any concrete must be totally removed from the road surface.
- c) The area must be cleared of debris, bitumen and concrete products on completion of the works.
- d) Any special conditions placed on the construction or location of a crossover by the Manager Infrastructure Projects or an authorised deputy must be adhered to.

7. PROTECTION OF WORKS

- a) Along the length of work, wooden stakes shall be placed at regular intervals with a top and bottom brightly coloured ribbon attached between the stakes.
- b) The owner and / or contractor shall be responsible for wet weather damage. They shall always have available materials to protect the surface of new works (eg polythene sheeting).
- c) At the completion of concrete finishing and after erection of signs, barricades and ribbons, provide persons to guard the works against vandalism.
- d) When the air temperature exceeds 35 degrees celcius, precautions shall be taken to avoid premature stiffening of the fresh concrete mix and to reduce water absorption and evaporation losses. The sub-grade shall be thoroughly moistened (but not saturated) immediately before concrete placement begins to reduce evaporation losses. The concrete shall be cured for at least 3 days after placement, using a liquid membrane compound. The compound shall be applied to the concrete surface strictly in accordance with the manufacturers' instructions.



8. CITY OF REMANTLE APPLICATION FOR CROSSOVER REBATE

In accordance with the *Local Government (Uniform Local Provisions) Regulations 1996 Clause 15*, the City of Fremantle will contribute half the cost (to a maximum of \$487.05) of constructing a standard single concrete crossover (2.7 metres x 2.7 metres) as estimated by the City, if this is the first crossover to the land and approved by the City.

For information on eligibility and submitting an Application for Crossover Rebate, visit the City's website at www.fremantle.wa.gov.au/cityservices/Building/Crossovers or contact the City's Infrastructure and Project Delivery Administration Officer on 08 9432 9999.