VEHICLE CROSSOVER SPECIFICATION

Document Control Statement –This Standard is maintained by the City of Karratha Engineering Services unit. Any printed copy may not be up to date, and you are advised to check the electronic copy at the City of Karratha Website to ensure that you have the current version. Alternatively, you may contact Customer Service on (08) 9186 8555.

1. SCOPE

1.1 Purpose

This standard specification provides requirements for the design and construction of crossovers within the City of Karratha. Crossovers are the driveway portion between a property line and the road edge, enabling vehicles to cross from a private property onto a public road. Stakeholders shall comply with the requirements of this document, including property owners, developers, designers, and contractors. This specification provides crossover requirements for new developments including requirements for rear-access driveways. The City shall advise if these requirements apply retrospectively to existing infrastructure.

The crossovers in this specification apply to vehicles up to 10 tonnes. Crossovers anticipating vehicle traffic with a gross vehicle mass exceeding 10 tonne will require further engineering and design to be produced by the Proponent's Engineers.

Property owners or contractors are encouraged to contact the City and other relevant service authorities before the crossover construction if they need clarification on any aspect of this specification.

1.2 Applicable Standards

The installation, materials and workmanship shall comply with all relevant current Australian Standards, Codes and Regulations and all reference codes and Standards listed in the prefaces to those standards and codes.

Where Australian Standards and Codes do not exist the appropriate International Standard or Codes shall apply. Request an instruction from the City for amendments to Standards, Codes or Regulations that come into effect during the works and affect the works of the contract.

Document	Title
AS 1289 Suite	Methods of testing soil for engineering purposes
AS 2870	Residential Slab & Footings - Classification
AS/NZS 2890.1	Parking facilities – Part 1: Off-street car parking
AS 3727.1	Pavements – Part 1: Residential
AS/NZS 4455.2	Masonry Units, Pavers, Flags and Segmental Retaining Wall Units – Part 2: Pavers and flags
AS/NZS 4586	Slip Resistance Classification
AS/NZS 4671	Steel for the reinforcement of concrete

IPWEA LGGSD 2017	Institute of Public Works Western Australia – Local Government Guidelines for Subdivisional Development
MRWA 5D	Main Roads Western Australia – 5D - Driveways
MRWA Spec 501	Main Roads Western Australia – Pavements
MRWA Spec 505	Main Roads Western Australia – Specification – 505 Segmental Paving
MRWA Spec 901	Main Roads Western Australia – Concrete – General Works
SPP 3.1	State Planning Policy 3.1 – Residential Design Codes
WAPC	Residential Design Codes (R-Codes)
WALGA Crossover Guidelines	Western Australian Local Government Association – Crossover Guidelines 2016
KSD/CO/001 KSD/CO/002 KSD/CO/003 KSD/CO/004 KSD/CO/005 KSD/CO/006	City of Karratha – Crossover Standard Drawings

1.3 Definitions

Term	Description
Heavy Vehicles	Heavy Vehicles specified in this specification are all vehicles having a gross mass of 10 tonne or more up to 147 tonnes, conforming with Western Australia legislation for axle loads, tyre pressures and dimensions for vehicles permitted on public roads and streets
Light Commercial Vehicles	Vehicles having a gross mass of 3 tonne or more up to 10 tonnes, conforming with Western Australia legislation for axle loads, tyre pressures and dimensions for vehicles permitted on public roads and streets
Light Vehicles	Vehicles having a gross mass of up to 3 tonnes, conforming with Western Australia legislation for axle loads, tyre pressures and dimensions for vehicles permitted on public roads and streets

2. DESIGN REQUIREMENTS

2.1 General Requirements

Crossovers shall provide a safe and efficient means of accessing roadways.

The crossover should be designed to tie into existing verge levels, including existing footpaths.

Crossovers should be designed for the largest vehicle anticipated during its service life. Designers should consider the largest anticipated vehicle class (commercial or light vehicle) and width.

The requirements on density for crossovers are outlined in the R-Codes which specifies a maximum density of 1 crossover per 20m of frontage where housing density is greater than R40. A single crossover per property is to be provided where required for housing density less than R40. Narrow lots should be constructed with paired crossovers to minimise conflict and retain verge space for street trees, lighting, overhead power and on-street parking. Materials used for crossovers shall be concrete, complying with

this specification. Any additional crossovers to an established lot or stand-alone house will require a new Development Application (DA) to be submitted to the City's Planning team. The DA will need to be accompanied with detailed design and drawings prepared by an Engineering Consultant for the review and approval by the City's Engineering Services team.

Existing kerbing along the edge of the road is to be removed to the width of the crossover in accordance with the City Standard Drawings.

A subbase and/or basecourse are applicable for heavy vehicles. A pavement design must be provided to the City's Engineers for review and approval prior to construction.

2.2 Width

Table 1 below summarises the minimum and maximum widths of crossovers.

Table 1: Crossover Width AS/NZS 2890.1

Application	Minimum Width (m)	Maximum Width (m)
Light Vehicle Single Access	3.0	[1]6.0 (for lots with a frontage in excess of 12.5m)
Light Commercial Vehicles	6.0	*12m or as per swept path analysis*
Heavy Vehicles	*As per swept path analysis*	*As per swept path analysis*

[1] A maximum of 3.0m is required for lots with a frontage of 12.5m or less except where the R-Codes allow the construction of a double garage in which case a maximum width of 4.5m applies.

The Crossover application for light commercial vehicles or heavy vehicles must be accompanied by swept path analysis to determine the crossover width and must allow for two of these vehicles to occupy the crossover at one time.

The minimum and maximum width of domestic driveways shall be in accordance with AS/NZS 2890.1.

2.3 Wings

Crossover wings or haunching shall be constructed in accordance with the City of Karratha standard drawings:

- KSD/CO/001, KSD/CO/002 – Residential Crossover (refer Appendix).
- KSD/CO/003, KSD/CO/004, KSD/CO/005 – Commercial Crossover (refer Appendix).

2.4 Clearance

Crossovers shall have the minimum clearances from the following property boundaries, utilities, and street furniture in accordance with Table 2.

Table 2: Crossover Minimum Clearances Excluding Wings

Clearance from	Minimum Clearance (m)
Street Corner Tangent Point	6.0
Property Boundary Side	1.5
Road Reserve Boundary	1.5
Rear access driveway for subdivided block (e.g., battle-axe driveway)	0.5
Side-entry pits	1.0
Street trees	2.0

Protruding electrical pits and sewer pits	1.0
Streetlights/Power Poles	1.0
Bus stops	1.0
Bus shelters	2.0
Pram ramps	1.0

Further guidance for clearance of crossovers from street corners is given in KSD/CO/001 to KSD/CO/003 AS2890.1 Figure 3.1 and SPP 3.1.

Verges adjacent to crossover driveways shall have adequate sight distance. Minimum sight distances are given in Table 3; these are given in accordance with AS/NZS 2890.1 Figure 3.2, for the greater of a desirable 5-second gap in traffic or the minimum stopping sight distance.

Table 3: Minimum Sight Distances

Frontage Road Speed (km/h)	Sight Distance (Y) along frontage road (m)
40	55
50	69
60	83
70	97
80	111
90	130
100	160
110	190

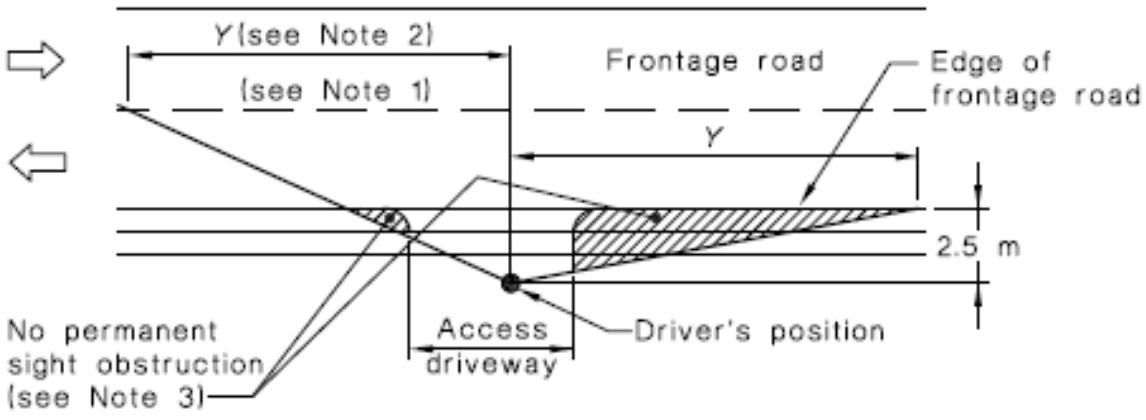

Figure 1: Sight Distance (Y) Required – Extract from AS/NZS 2890.1 Figure 3.2.

2.1 Gradient

The maximum gradient of a crossover shall be 1:8 in accordance with IPWEA LGGSD 2017 Clause 2.2.1.2.

For new developments, the overall gradient of a crossover shall be no steeper than 1:20 between the edge of

the frontage road and the property boundary in accordance with AS/NZS 2890.1 Clause 3.3(a) to allow for safe disability access from the footpath to the property boundary.

The maximum change of grade shall not be more than 1:8 in accordance with MRWA 5D 2020 to prevent vehicles from scraping their underside.

Where the driveway crosses a footpath, the gradient shall be no steeper than 1:40 across the

footpath over a lateral distance of at least 1.0m, in accordance with AS/NZS 2890.1Clause 3.3(d).

2.2 Subgrade

Sites should be classified in accordance with AS 2870, and the soil tested to AS 1289.5.2.1. The City shall specify if subgrades are required to be improved.

2.3 Material – Concrete

Concrete mix for crossovers shall be supplied in accordance with *CKS-100 – Concrete Specification*.

Crossover concrete shall be designed to be poured on-site in accordance with Table 7:

Table 4: Concrete Crossover Requirements

Description	Specification
Concrete Supply Specification	CKS-100 – General Concrete Supply & Installation Specification
Concrete Strength	N32/100/20
Concrete Thickness (minimum) – Light Vehicles (mm)	100
Concrete Thickness (minimum) – Light Commercial Vehicles (mm)	150
Concrete Thickness – Heavy Vehicles (mm)	A pavement design is required for all heavy vehicles.
Reinforcement	SL82 AS/NZS 4671:2019, min 50mm cover all round.
Base (mm)	100mm compacted crusher dust for Residential crossovers. 100mm (minimum) compacted crushed rock (Main Roads WA roadbase Type A) for Commercial crossovers. A pavement design is required for all heavy vehicles.
Expansion Joints	Expansion joints shall be provided at 6m intervals for crossovers over 12m length, consisting of 12mm thick Bituminous impregnated particle board strip extending full width and depth of concrete and sealed with suitable sealant to prevent Isolation joint shall be in between any adjoining footpath and kerbs. Contraction joints shall be ¼ of the thickness deep and 5mm wide, formed with a cutting tool at 3m intervals.
Finish	Non-slip Broomed finish, minimum AS 4586:2013 Class P3 MRWA Spec 901.32 U4 (Wood floated surface finish with a broomed finish; maximum allowable surface irregularities 2mm abrupt, or 5mm in a 3m template).

2.4 Drainage

Drainage pipes located underneath crossovers shall comply with CKS-500 *Stormwater Design Guidelines* and standard drawings.

If a culvert is required underneath a crossover, design engineers shall ensure there is sufficient material depth between the crossover surface and the drainage pipe to confirm a minimum level of resistance against drainage pipe failure due to vehicle traffic loads. Loads shall be taken from AS/NZS 3725:2007 and load limits shall be determined from manufacturer specifications and testing to AS/NZS 4058:2007.

3. CONSTRUCTION

3.1 Traffic & Pedestrian Management

During the crossover construction, an alternate route shall be provided for pedestrians in a safe manner with adequate signage or barricades complying with AS 1742.3 to ensure pedestrian safety.

3.2 3.2 Service Location

The property owner is responsible for contacting Dial Before You Dig (1100) and all other service and utility providers prior to commencing construction to ensure that underground services and infrastructure are not damaged and correct clearances are maintained.

4. REAR ACCESS CROSSOVER

Rear access driveways shall comply with the City's standard drawings KSD/CO/006.

Refer to clause 5 in the Crossover Policy (TE06) for more details.

5. SUMMARY OF REQUIREMENTS

SCHEDULE OF REQUIREMENTS **General**		
ITEM	**Light Vehicles**	**Commercial Vehicles / Heavy Vehicles**
Minimum width (m)	3.0	6.0 – 12.0m or as per the swept path analysis
Maximum width (m)	6.0	As per swept path analysis
Wings (m)	Refer drawing KSD/CO/001	Refer drawing KSD/CO/003 To be checked for oversize vehicles
Pavers		
Basecourse	MRWA 501.11 Crushed Rock Base	MRWA 501.11 Crushed Rock Base
Base Thickness (mm)	150	200

Slip Resistance	Class “W” AS/NZS 4586:2004	Class “W” AS/NZS 4586:2004
Concrete		
Concrete Supply	CKS-100	CKS-100
Concrete Thickness (mm)	100	150 (minimum) / based on the pavement design.
Reinforcement	AS4671 SL82 mesh	AS 4671 SL82 mesh
Finish	AS 4586:2013 Class P3 Broomed	AS 4586:2013 Class P3 Broomed

All works shall be constructed and finished to the standards implicit in the City’s Specification Documents, notwithstanding that not all items of work may be drawn, specified or detailed. Materials and finishes shall be consistent with those items which are fully documented.

6. APPENDIX

6.1 KSD/CO/001 / KSD/CO/002 – Residential Crossover Standard Drawings

6.2 KSD/CO/003 / KSD/CO/004 / KSD/CO/005 - Commercial Crossover Standard Drawing

6.3 KSD/CO/006 - DAMPIER REAR ACCESS RESIDENTIAL CROSSOVER STANDARD DRAWING

Standard Number:	**CKS-300**
Previous Standard/Number:	**Vehicle Crossover Specification 2019**
Last Reviewed:	**January 2025**
Next Reviewed:	**January 2026**
Responsible Officer:	**Principal Engineer Coordinator**