City of Nedlands

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Specification for the Construction of Crossovers

Please Note:

- Crossovers are NOT automatically approved with the Building License.
- For advice, level and inspections, please contact the City's Civil Compliance Officer on 9273 3500.

1. General

The separate approval of the City must be obtained prior to the construction of any crossover. Building Licenses are not an approval to construct a crossover. A Nature Strip Development Application must be submitted in order to gain approval for any works not on private property and located within the road reserve.

The owner and the builder are responsible for ensuring that a crossover complies with the specifications detailed below. The City shall retain the verge deposit until a crossover has been constructed according to the approved specification. If necessary, the City will use the deposit to pay for remedial works to the crossover and verge. If the cost of the remedial work exceeds the deposit then the City will recover the extra costs from the property owner.

The specifications have been developed to ensure that:

- The crossover is fit for its purpose.
- The crossover does not create any tripping hazards within the road reserve and that any footpaths remain fully accessible.
- Storm-water runoff from the property is prevented from draining onto the road reserve.
- Storm-water runoff from the road and footpath is prevented from draining in to private property.
- The crossover does not weaken the integrity of the adjacent road pavement.

2. Definitions

Civil Compliance Officer shall be the City Officer responsible for the supervision of the work.

The Contractor shall mean the person responsible for the construction of the crossover.

Crossover is that section of the “drive-in” that crosses from the property boundary to the kerbline and may in places cross or adjoin the footpath.

An Apron is that section of the crossover that provides an at-grade crossing of a non or semi-mountable kerbline. An apron must provide for the retention of storm water within the road channel, whether it is constructed of concrete or bitumen.

Sweep is that part of the approach which is the transition between the road kerb and the kerbing of the approach.

3. Procedure

3.1 Application

An owner of a property or their agent, wishing to construct their own vehicle crossover, is to apply in writing using the Nature Strip Development Application form and stating specific requirements relating to their proposed crossover. Applications should make consideration of this specification and the City's Nature Strip Development Guidelines. Approval, conditions and specifications to construct a crossover shall be issued by the City.

3.2 Assessment

Following receipt of an application to construct a crossover, the site may be inspected by the Civil Compliance Officer to determine any conditions, which will apply to the approval, at the request of the contractor.

3.3 Final Inspection

Final inspection will be made following advice from the applicant that construction is completed. The crossover shall be inspected and approved by the Civil Compliance Officer prior to payment of a subsidy, if applicable.

3.4 Crossovers may be constructed in in-situ concrete, bitumen and concrete or clay brick pavers.

3.5 The minimum width of any crossover is 3.0m and the maximum width of any crossover and/or adjoining crossover is to be 6.0m. Larger crossovers may be approved by the City only in special circumstances.

3.6 Crossovers are to be constructed perpendicular to the kerbline with a minimum clearance of 0.6m from a side boundary (Refer Drawing No. NED_XOVER_2007_02.pdf Page 03 and shall align with the internal access onto the property.

a. 3.7 The location of crossovers shall be no closer to an intersection (Refer Drawing No. NED_XOVER_2007_02.pdf Page 03) than 6.0 metres from the tangent point of the intersection radius with the street alignment. Where this is not achievable within the block limits it shall be as far from the intersection tangent point as possible.

3.8 Crossover levels at the property boundary are to be established by the contractor. At the request of the contractor, advice may be sought from the Civil Compliance Officer.

3.9 The minimum clearance of any existing pole in the verge is to be 0.6m, and 2.0m to any street tree. Where a tree is within 2.0 metres of an existing crossover, advice shall be obtained from Parks Services on the

future size of the tree and the advisability of the existing crossover location being retained.

3.10 Crossovers to be constructed within close proximity of a signalised intersection shall be individually assessed by the Civil Compliance Officer, in accordance with the requirements of Main Roads Western Australia.

3.11 Where a crossover connects the property boundary with a main road, approval for the crossover shall in the first instance, be sought from the Commissioner Main Roads Western Australia. Where a crossover connects a property with a blue road (as defined by the Metropolitan Region Plan) the City and the Department of Planning and Urban Development are to issue joint approval for the crossover**.**

3.12 The owner of the property to which the crossover is being constructed shall bear the cost of any public utility service adjustments required as a result of constructing the vehicle crossover. In this regard, the location of the crossover is subject to approval by the relevant authorities.

3.13 The location of any crossover may be subject to additional requirements where specific safety or operational reasons are evident.

4. Details

4.1 Specification and Drawings

All works associated with the construction of the crossover shall be carried out in accordance with the specification and drawings contained herewith and to the satisfaction of the Civil Compliance Officer.

4.2 Insurance

The works shall be covered by the contractor's insurance policies for worker's compensation and public risk (person and property). The latter policy shall provide sufficient cover for all claims arising from the construction of the crossover.

4.3 Obstruction and Safety Precautions

The work shall be carried out with minimum disruption to pedestrian and vehicular traffic. Every precaution shall be taken to ensure the safety of persons and property.
All excavations, materials, plant and equipment must be made safe, barricaded and to the satisfaction of the Civil Compliance Officer.
All work is to be carried out in accordance with the Occupational Health Safety and Welfare Act 1990 and Regulations as amended, and the Main Roads WA Code of Practice for Traffic Management for Work on Roads.

4.4 Testing

Testing shall be carried out in accordance with relevant Australian Standards.

4.5 Making Good

Any reinstatement necessary, caused as a result of the contractor's work, shall be carried out by the contractor, at the contractors cost.

4.6 Public Utilities

It is the responsibility of the owner or contractor to apply to the relevant public utility authorities for approval to alter any utility service that is in conflict with the proposed crossover. Any costs incurred in the alteration of any service and subsequent reinstatement of the verge to original shall be borne by the owner or contractor.

4.7 Verge Trees

Where verge trees or tree roots intrude into the proposed crossover works to the tree may only be completed by the City of Nedlands. The contractor will arrange for City to approve or otherwise, the removal of any trees or roots affected by the crossover via a Nature Strip Development Application. Any costs incurred in this regard will be the responsibility of the contractor or the applicant and will be carried out by the City of Nedlands**.**

4.8 Levels

It is necessary for the levels at the street alignment to comply with those of the existing footpath in grade and level. Where there is no footpath or any doubt as to the correct levels, the Civil Compliance Officer is to be notified at least 24 hours prior to the commencement of the works so that the levels can be established.

All kerbing at the junction of the crossing and road pavement must be removed. The crossing must be constructed so that the crossing rises from the gutter level to a height no less than 100mm above the gutter level or the top of the adjacent existing kerbing whichever is the greater, at a point 600mm behind the kerb line. If this is not done, the crossover may allow the entry of the road drainage runoff into ratepayer's private property.

4.9 Disposal of Unwanted Materials

Any surplus material arising from the construction of the crossover shall be removed or disposed of by the contractor. Pre-cast barrier kerbing and concrete footpaths which are affected by the crossover shall be neatly cut with a concrete saw and disposed of by the contractor

5. Materials

5.1 Limestone

Crushed limestone shall be free from all deleterious materials and graded to the following grading envelope:-

Passing 75.00mm	100%
Passing 19.50mm	50 – 75%
Passing 2.36mm	30 – 50%

Limestone / Sub-base to be placed to a depth of 100mm and to be compacted to 95% density.

5.2 Screed Sand

Screed sand shall be well graded, free from deleterious materials and organic matter and must not contain soluble salts that may cause efflorescence.

5.3 Jointing Sand

Jointing sand shall be well graded, pass a 2.36mm sieve and be free from deleterious materials likely to cause staining.

5.4 Expansion Joints

An expansion jointing strip shall be placed between the internal driveway and the crossover and mountable road kerbing and the crossover and the adjoining footpath as shown on Drawing No NED_XOVER_2007_02.pdf Page 02.

5.5 Control Cracking Joints

Control Cracking joints shall be made with an approved jointing tool as shown in Drawing No. NED_XOVER_2007_02.pdf Page 02. The edges of the concrete and joints shall be smooth trowelled in a 25mm band.

5.6 Redundant Crossovers

Vehicle crossovers that are no longer required or no longer connect with an internal driveway shall be removed at the cost of the property owner. The new kerb that is to go across this redundant crossover is to be done by a professional kerbing contractor to a standard equal to the existing kerb each side of the old crossover and the cost shall be borne by the property owner.

5.7 Final Inspection

The work shall be inspected after completion and any defects shall be made good by the contractor to the satisfaction of the Civil Compliance Officer.

6. CONSTRUCTION – CONCRETE CROSSOVER

6.1 Formation

The crossover formation shall be boxed out to a minimum depth of 100mm and constructed in accordance with the details shown on Drawing No. NED_XOVER_2007_02.pdf Page 02. Boxing out for the formation shall be carried out taking due care to protect the surrounding verge, road surface, public utility services, vegetation and footpath if applicable.

The subgrade generally consists of sand, which is adequately compacted provided it is compacted to a density of 7 blows per 300mm as determined by a standard penetrometer. Where the subgrade has been disturbed or has failed, the old material shall be removed and the contractor shall replace the defective material with suitable sand which is to be compacted to a minimum density of 7 blows per 300mm as determined by a standard penetrometer.

6.2 Concrete

All concrete used shall develop a minimum compressive strength of 20mpa and have a maximum slump of 90mm using 14mm aggregate. Additives shall be used in accordance with the manufacturer recommendations.

6.3 Surface Finish

The concrete shall be screeded to correct levels and finished with a float or broom to produce a non-slip dense fine textured surface free from defects such as depressions, honeycomb sections or the accumulation of fine dusty accretions.

6.4 Drainage

All new property development and crossovers require all stormwater to be retained on-site. Therefore if a driveway slopes towards the road then a suitable drainage system must be provided on site to prevent stormwater runoff flowing on to the verge, road or footpath.

This condition may be satisfied by installing a drainage channel across the driveway and within the property. This is then connected to a 900mm x 900mm deep soakwell via a 100mm diameter pvc pipe

7. CONSTRUCTION – BRICK CROSSOVER

7.1 Bricks

Bricks shall be new or second hand, solid, manufactured in clay or concrete and have sharp or true bevelled arises. They shall have an equivalent transverse strength of 25Mpa as determined by AS1226.3

The Civil Compliance Officer will only permit bricks with a lesser thickness of 60mm if it can be demonstrated that the transverse strength is not less than 25Mpa.

7.2 Brick Samples

The contractor shall supply the Civil Compliance Officer if requested, with manufacturer specifications at least 24 hours before the commencement of work. This requirement will only apply if the Civil Compliance Officer is not satisfied with the proposed brick to be used for the crossover.

7.3 Concrete

All concrete used shall be pre-mixed with a minimum compressive strength of 25mpa at 28 days and a maximum slump of 90mm using 20mm aggregate. Additives if approved shall be used in accordance with the manufacturer's

7.4 Formation

The crossover formation shall be constructed in accordance with the details indicated in Drawing No. NED_XOVER_2007_02.pdf Page 01. Boxing out for the formation of the crossover shall be to a minimum depth of 180mm and compacted, taking due care to protect the surrounding verge, road surface, utility services, vegetation and footpath (if applicable).

The subgrade generally consists of a sand base. The contractor must ensure that compaction of subgrade and base is in accordance with specifications listed below. Where the subgrade has failed the contractor shall replace the defective material with suitable sand, which is to be compacted to a minimum density of 7 blows per 300mm as determined by a standard depth penetrometer.

7.5 Base Construction

The base material (limestone) shall be placed at optimum moisture content and spread such that the final compacted thickness is a minimum of 100mm. The materials shall be worked to the correct lines and levels and thoroughly compacted. Alternative base materials such as rock base and cement stabilised sand may be permitted, subject to approval by the Civil Compliance Officer.

7.6 Bedding Sand Placement

Bedding sand shall be placed screeded at optimum moisture content. The finished thickness of the sand shall be 30mm ±5.

7.7 Placement of Bricks

Brick crossovers shall be constructed in accordance with the details indicated on Drawings No. NED_XOVER_2007_02.pdf Page 04. Bricks shall be laid in either a 45º or 90º herringbone pattern, leaving a space of 2 – 3mm between each brick.

Immediately after the laying of the bricks, a minimum of three passes shall be made over the surface with a suitable vibrating plate compactor. During compaction, the paving shall be protected from damage by utilising a suitable protective medium between the surface of the plate compactor and the paving units.

As soon as practicable after compaction, the bricks shall be set by brooming the jointing sand into the joints. To ensure that the joints are completely filled, the pavement shall receive one or more passes of the plate compactor and the joints refilled.

7.8 Edge Restraints

The edges of the crossover are to be restrained as shown on Drawing No NED_XOVER_2007_02.pdf Page 03. A single row of header bricks shall be set on the beam using a mortar mix of four parts bricklayer's sand and one part cement.

7.9 Concrete Apron

All brick-paved crossovers are required to have constructed a concrete beam / apron as per Drawing No. NED_XOVER_2007_02.pdf Pages 01 & 04 where they meet the kerbline. Aprons are not to reduce available footpath width to less than 1.2m to ensure accessible access is retained along the footpath.

7.10 Redundant Crossovers

Vehicle crossovers that are no longer required or no longer connect with an internal driveway shall be removed at the cost of the property owner.

7.11 Jointing Sand

Jointing sand shall be well graded, pass a 2.36 mm sieve and be free from deleterious materials likely to cause staining.

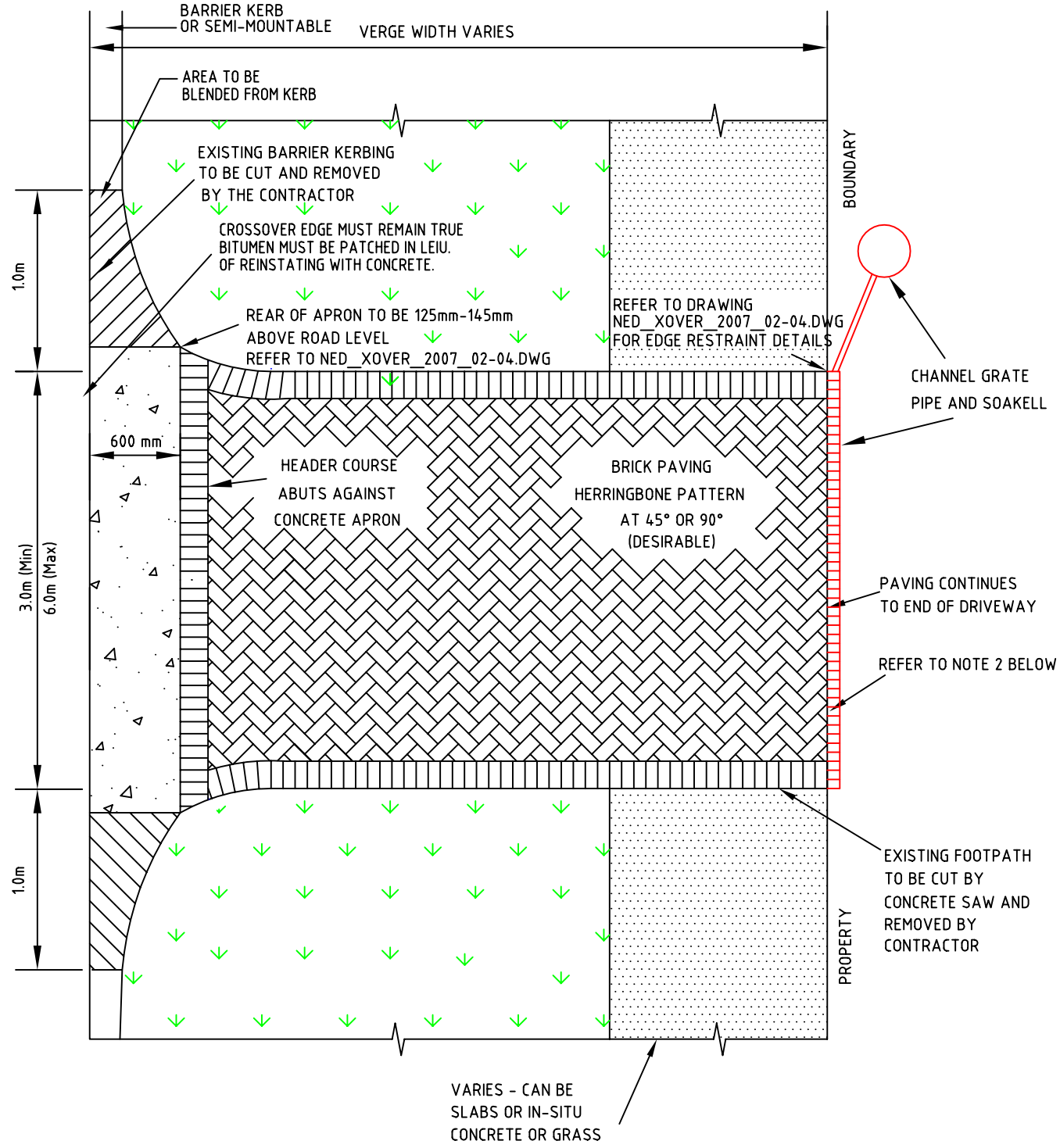
7.12 Final Inspection

The work shall be inspected after completion and any defects shall be made good by the contractor to the satisfaction of the Civil Compliance Officer.

7.13 Drainage

All new property development and crossovers require all stormwater to be retained on-site. Therefore if a driveway slopes towards the road then a suitable drainage system must be provided on site to prevent stormwater runoff flowing on to the verge, road or footpath.

This condition may be satisfied by installing a drainage channel across the driveway and within the property. This is then connected to a 900mm x 900mm (Diameter x Depth) minimum size soakwell via a 100mm minimum diameter pvc pipe.



NOTE:

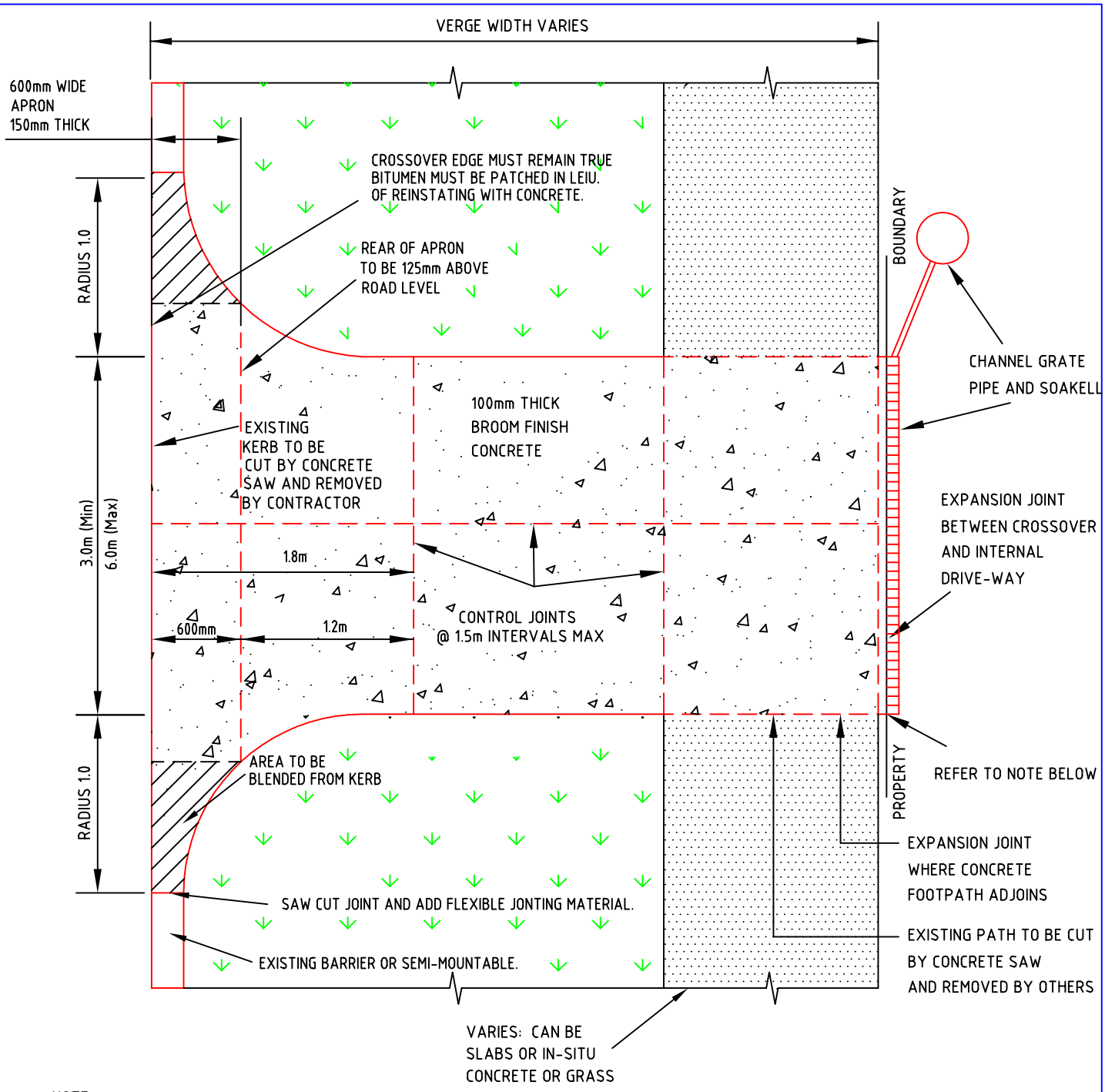
1. REFER TO A4 NED_XOVER_2007_02-04.DWG FOR BRICK-PAVING DETAILS
2. LEVELS AT BOUNDARY SHALL MATCH THE EXISTING FOOTPATH OR VERGE LEVELS WHICH EVER IS APPLICABLE. REFER TO MAINTAINANCE SUPERVISOR IF ANY QUERIES.

STANDARD BRICK-PAVED CROSSOVER WITH A COCNRETE APRON

CITY OF NEDLANDS

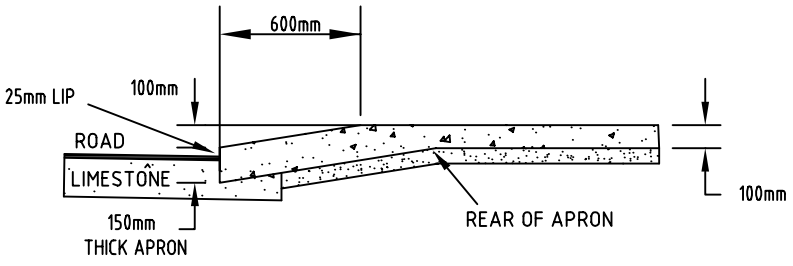
TECHNICAL SERVICES

SCALE:	DRAWN:	DRAWING NO:
N.T.S.	L.P.	NED_XOVER_2007_02-01.DWG
DATE:	CHECKED:	SHEET 1 of 4
01/02/07	A.V.	A4



NOTE

LEVELS AT BOUNDARY SHALL MATCH THE EXISTING FOOTPATH OR VERGE LEVELS WHICH EVER IS APPLICABLE.
REFER TO MAINTAINANCE SUPERVISOR IF ANY QUERIES.



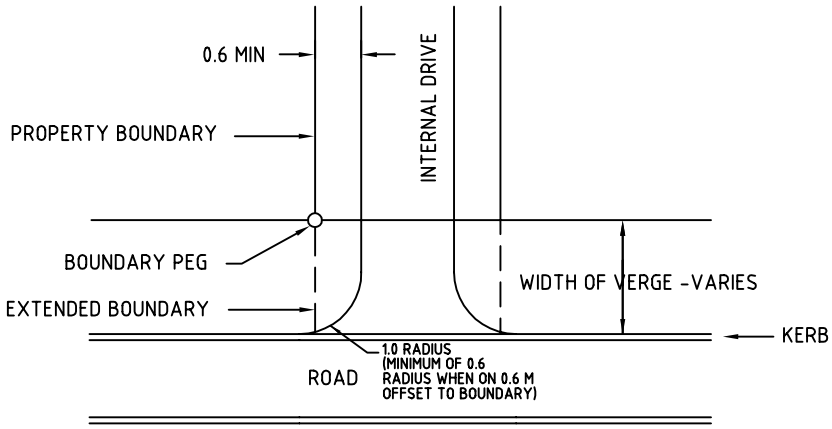
TYPICAL CROSSOVER SECTION

STANDARD CONCRETE CROSSOVER

CITY OF NEDLANDS

TECHNICAL SERVICES

SCALE: N.T.S.	DRAWN: L.P.	DRAWING NO: NED_XOVER_2007_02-02.DWG SHEET 2 of 4
DATE: 01/02/07	CHECKED: A.V.	A4

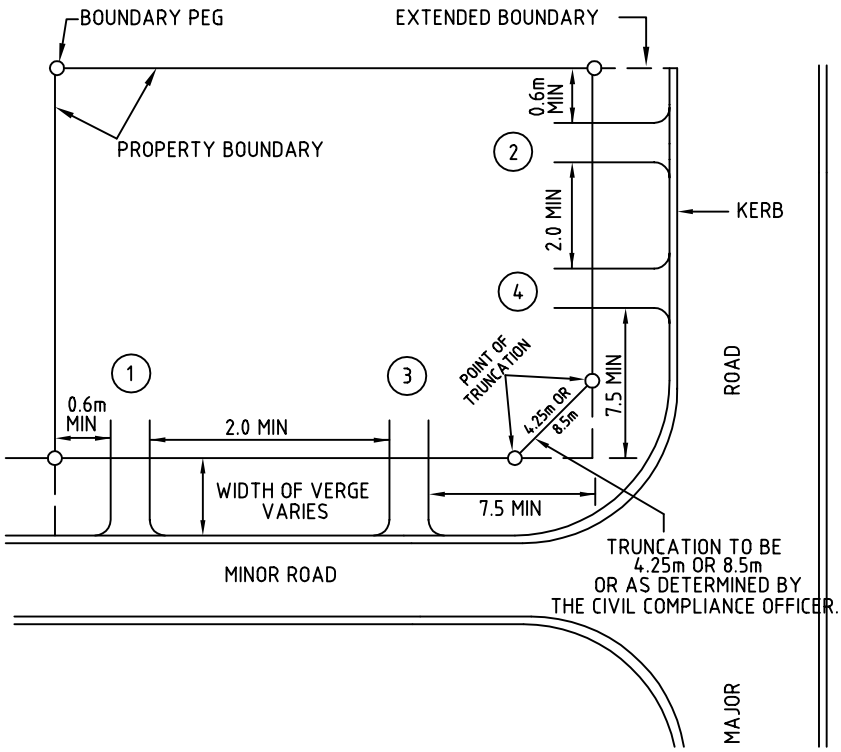


TYPICAL CASE 1

NOTE 1:

WIDTH OF CROSSOVER ALLOWED IS BETWEEN 3.0m - 6.0m FOR RESIDENTIAL

(NOT TO SCALE)

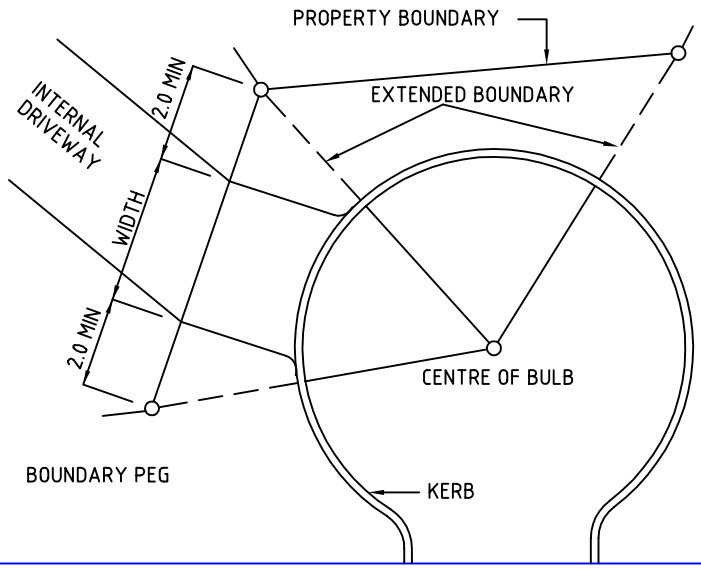


TYPICAL CASE 2

NOTE 2:

NUMBERS IN CIRCLE SHOW PREFERENCE OF LOCATIONS OF CROSSOVER.

(NOT TO SCALE)



TYPICAL CASE 3

NOTE 3:

CROSSOVERS TO BE LOCATED WITHIN THE AREA CREATED BY JOINING THE BOUNDARY PEGS TO THE CENTRE OF THE CUL-DE-SAC BULB.
ANY DIFFICULTIES IN LOCATING THE CROSSOVER OR OTHER QUERIES, PLEASE CONTACT THE CIVIL COMPLIANCE OFFICER.

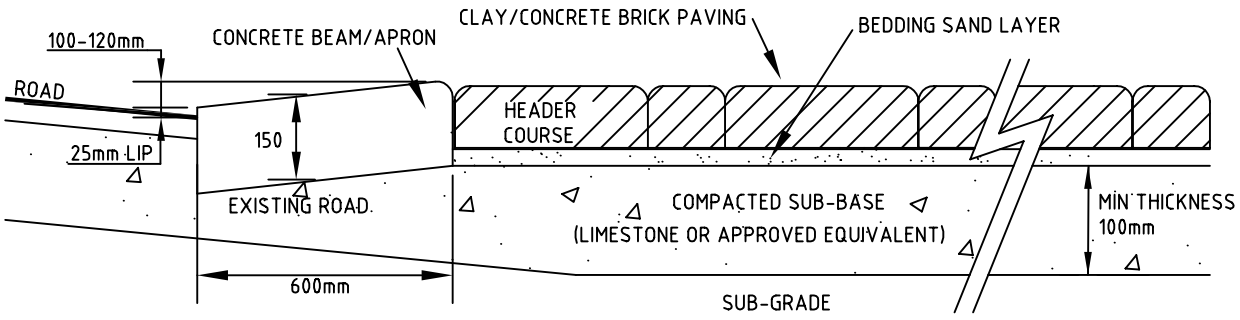
(NOT TO SCALE)

STANDARD CROSSOVER LOCATIONS

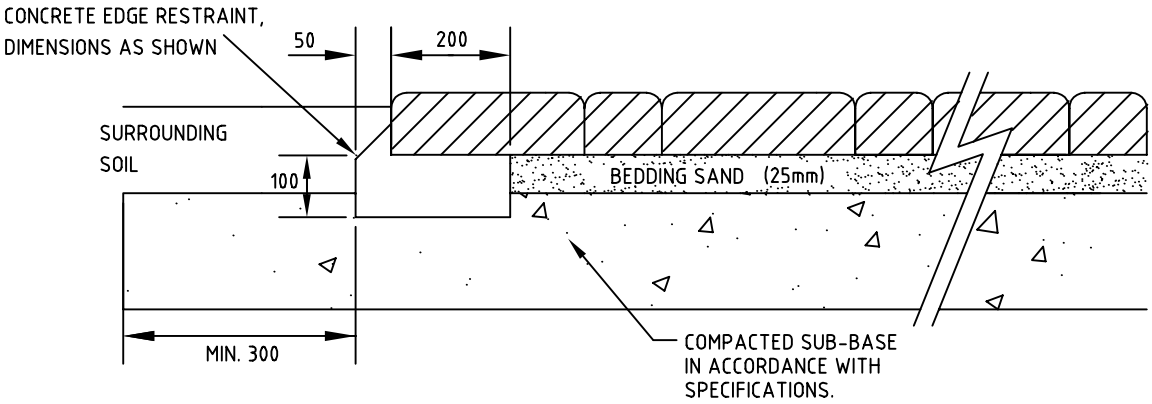
CITY OF NEDLANDS

CITY ASSETS

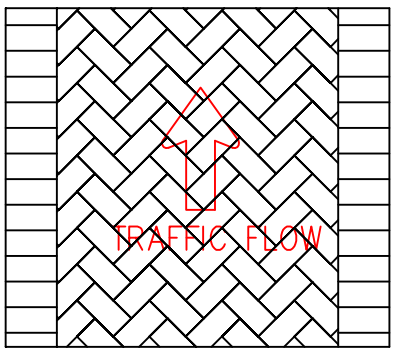
SCALE: N.T.S.	DRAWN: L.P.	DRAWING NO: NED_XOVER_2007_02-03.DWG
DATE: 01/02/07	CHECKED: A.V.	SHEET 3 of 4
		A4



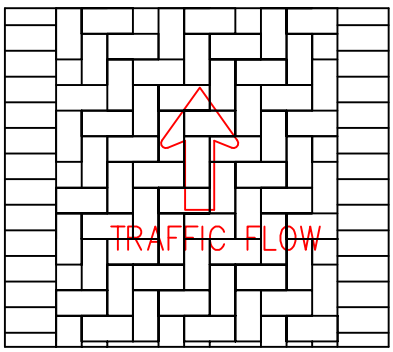
BRICK CROSSOVER ABUTTING A CONCRETE APRON.



EDGE RESTRAINT DETAIL - BRICK PAVED CROSSOVER



45° HERRINGBONE
(230mm x 115mm STANDARD &
230mm x 152mm PAVERS)



90° HERRINGBONE
(230mm x 115mm STANDARD &
230mm x 152mm PAVERS)

CROSSOVERS
RESIDENTIAL BRICK PAVING PATTERNS
APPROVED LAYING PATTERNS AND CROSSOVER EDGE RESTRAINTS

CITY OF NEDLANDS

TECHNICAL SERVICES

SCALE: N.T.S.	DRAWN: L.P.	DRAWING NO: NED_XOVER_2007_02-04.DWG
DATE: 01/02/07	CHECKED: A.V.	SHEET 4 of 4
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