



Driveway and footpath works procedure manual

Engineering and Works

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1.0 Preamble

The aim of the manual is to standardise the implementation of the policies adopted by Kiama Municipal Council in relation to driveways/footpaths and their construction. This manual assists all those which deal with driveway/footpath issues, which may include:

- contractors
- developers
- builders
- architects, engineering consultants and building designers
- property owners.

This manual has also been prepared to ensure that all driveway/footpath works are completed in a safe, consistent and standardised manner that minimises public liability issues and promotes better asset longevity. Typical issues that arise are:

- incomplete construction of the footpath/driveway
- landscaping in footpath area
- unacceptable/slippery finishes
- trip hazards from incomplete backfilling along edge of driveway
- rubbish being left in road reserve
- incidental damage to kerb and roadway
- scraping of vehicle undersides.

Under Section 138 of the Roads Act 1993, Council is the nominated consent authority for all works within the road reserve on local roads in the Municipality. Council therefore inspects all driveway/footpath works within public road reserves to ensure compliance with the relevant standards, policies and legislative requirements and achieve outcomes in the best interest of the community.

2.0 Policy relating to footpaths and driveways

2.1 Authorised Contractors

2.1.1 Who are they?

Council currently compiles a freely available list of Contractors who are authorised to undertake driveway, footpath, and kerb and gutter works on local roads within the Municipality. Only those Contractors on the current Authorised Contractor List are permitted to undertake these works. A regularly updated Authorised Contractor List is available from Council's Customer Services.

All works completed in the road reserve by an Authorised Contractor are subject to pre and post construction inspection by Council Officer's to ensure compliance with the specifications of this document (Appendix 2). Any works found to be non-compliant or substantially varied from the specification will be required to be rectified prior to final approval. Council will remove a contractor from the Authorised Contractor List for repeated failures to meet specification or failure to rectify non-compliant works.

2.1.2 How to become an Authorised Contractor

Any Contractor may apply to be included on the Authorised Contractor List by completing the following:

- submission of the 'Application for acceptance: Authorised Contractor List' included in Appendix 1
- payment of the annual registration fee (refer Council's fees and charges schedule).
Note: this registration expires on 30 June each year regardless of application date
- payment of a refundable Asset Damage Bond (refer Council's fees and charges schedule)

- submission of a copy of the Contractor's current public liability insurance certificate with a minimum cover value of \$20,000,000.

2.1.3 Advice to owners, builders and developers

Council makes no representations as to quality or workmanship of any of the Authorised Contractors other than having appropriate insurances to work in a road reserve. It is the responsibility of the person engaging any Contractor to undertake their own reference and licence checks through the NSW Office of Fair Trading to determine if they are suitable for the works to be completed.

Any works in the road reserve completed by an unauthorised Contractor may be deemed illegal and subject to further action, including rectification and/or removal of the unauthorised work at the applicant/owner's cost and may also involve payment of additional fees.

All works completed in the road reserve by an Authorised Contractor is subject to pre and post construction inspection by Council Officer's to ensure compliance with the specifications of this document. Any works found to be non-compliant or substantially varied from the specification will be required to be rectified prior to final approval. While Council may take action against a Contractor by removing them from the Authorised Contractor List and revoking their bond for repeated failures to meet specification or failure to rectify non-compliant works, it is ultimately the responsibility of the owner/builder/developer to ensure the work is compliant prior to final approval.

It is therefore, advised that final payment for the works **not** be made until approval has been issued by Council.

2.2 Application Procedure

2.2.1 Driveway application

The Owner/Builder/Developer is to obtain an updated Authorised Contractor List from Council's Customer Services, which details contractor names and contact details.

Quotations are to be obtained from Authorised Contractors to carry out the works. Alternatively, the Applicant can become an Authorised Contractor (*see above*) to complete the works.

The selected Authorised Contractor will lodge with Council an '*Application to construct footpath crossing and general concrete works*' form and pay the application fee (refer Council's fees and charges schedule). **Note:** the owner is required to sign this application form giving consent to the works.

**** No construction works in the road reserve shall be commenced until an '*Application to construct footpath crossing and general concrete works*' is lodged with Council.**

The Authorised Contractor arranges for the works to be inspected prior to pouring of concrete or laying of pavers (i.e. at the formwork stage) and again at completion of the works.

2.2.2 Processing time for driveway applications

The target times for the processing of a driveway application, from the time it arrives at Customer Services to processing, is as follows:

- a) approval for single access - 1 week
- b) approval for second access - 2 weeks

2.3 Second driveway access applications

2.3.1 Second driveway access policy

Council's policy is that only one vehicular driveway access to each single residential dwelling lot is to be permitted. The main reasons for this policy are so that:

- traffic hazards to pedestrians and vehicles, especially the former, are not increased unnecessarily
- kerbside parking is not reduced by the additional driveway access
- flexibility in locating drainage pits, especially gully pits at low points, and outlets for roof water lines are maintained
- gutter capacity is not further reduced because of turbulence created by the additional driveway
- the cumulative effect of increased impervious areas and associated water runoff does not impact on the stormwater drainage system
- flexibility in locating public utility structures and street furniture, such as electricity poles, Telstra's pillars, bus stops, etc. is maintained.
- footpath restoration costs of road opening authorities, which have to be borne by the community as a whole, are not increased
- the residential streetscape is not made less pleasing due to the increased paved surfaces within the footpath area
- Council policy is in keeping with the Roads and Maritime Services' policy ('*Guide to Traffic Generating Developments*') with site consolidation.

2.3.2 Details required with second driveway access applications

Under special circumstances, consideration will be given to the provision of a second driveway access. In such cases, the owner must apply to Council in writing, as follows:

- A. Letter requesting permission for a second driveway access; this letter must set out the reasons for the necessity of the second driveway access.
- B. Dimensional sketch plan of the site including:
 - location of dwelling
 - location of existing/future garage/carport/hardstand
 - width of property
 - distances of existing/future parking area from front and side boundaries
 - distances between existing/proposed layback.

2.3.3 Second driveway application assessment

Each application for a second driveway access will be assessed individually and will be based on a number of factors. The following are examples on why a second driveway access application may be refused:

- insufficient room to park a vehicle within the property boundary
- second access less than 10m from face of kerb on corner block
- inadequate area to provide a circular drive
- poor sight distance on proposed access to pedestrian and/or vehicle traffic
- potential conflict with existing driveway accesses on neighbouring property
- adverse impact from surface water runoff onto neighbouring properties
- adverse impact on amenity to adjoining neighbours
- ample on-street parking availability.

If the second driveway access forms part of further development within the property, i.e. a garage, carport etc, then Council will not accept the second access application unless it forms part of an overall Development Application for these structures.

2.4 Unauthorised footpaths and driveways

If driveway/footpath works are completed without prior Council approval, action may be taken against the owner including but not limited to, fines, cost recovery and/or issue of Orders for the illegal works to be removed.

If an unauthorised driveway is found and considered to be of a reasonable standard, a letter will be sent to the owner and/or contractor, requesting explanation as to why no prior approval was sought and why it should not be removed. If the answer is satisfactory, the owner/contractor will be required to pay all outstanding fees, before a letter is issued noting that it is illegal, but is of a standard that Council will accept.

Note: unauthorised works that are a public safety hazard or are largely non-compliant with Council's standard specifications will not be accepted by Council until necessary rectifications are completed.

2.5 Scraping driveway policy

Council's driveway specifications are compiled in reference with the standard vehicle as defined by Australian Standard 2890 and is designed to permit access to most models of vehicles at present on the market without scraping. These specifications however do not provide for any modifications such as tow bars, body kits, lowering of exhaust systems or suspensions, special/unique sport vehicles, heavily laden vehicles or vehicles travelling at excess speed.

If any applicant wishes to install a new driveway or modify an existing driveway to permit access to vehicles modified as above, the property owner will be required to bear the increased costs of the alterations involved.

For any driveways constructed by Council, they will be considered to be satisfactory if the owner has not, within a period of four weeks of its construction, advised Council in writing of any difficulties being experienced. If such advice is not received, any future difficulties will only be rectified at the owner's expense.

3.0 Design specifications for footpath and driveways

3.1 Principal requirements for driveways

A driveway is used to provide vehicular access from the road carriage way to properties and should meet the following objectives:

- a) provide reasonable grades for the passage of most common vehicles
- b) provide reasonable grades for all pedestrian traffic, both along the driveway and along the footpath
- c) complement and support the drainage function of the kerb and gutter
- d) take account of existing property levels and proposed road levels
- e) adequately support most expected vehicle loads
- f) provide a sound, durable, low maintenance, all weather surface
- g) provide a safe surface for the passage of vehicles and pedestrians
- h) provide a surface with a visually pleasant appearance which blends in with the streetscape
- i) provide a surface which can be conveniently, successfully and economically restored if opened for the provision of services or public utility mains.

3.2 Surface finishes

The following driveway finishes are permitted within the road reserve:

- a) plain concrete

- b) coloured concrete
- c) brick paving
- d) concrete block paving
- e) stencilled and stamped concrete
- f) exposed aggregate to specifications.

If any finishes other than plain concrete are used, Council requires the owner to sign a declaration which states the owner's obligations (Appendix 2).

Ceramic or quarry tile finishes are not permitted, as tiled surfaces can become slippery when wet, and are difficult and expensive to restore satisfactorily.

If a driveway surface finish other than the above is proposed, Council will consider the application individually based on merit.

3.3 Determining driveway levels

In determining driveway levels it is evident that each site will have its own restraints and/or considerations to be addressed. Appendix 3 and 4 show typical calculation tables and sketches which will assist with calculating acceptable driveway profiles. Designers/Contractors are encouraged to discuss with Council any variations on these levels prior to quoting or commencing works.

3.4 Driveway and layback widths

3.4.1 Layback dimensions

A. Width

- standard width 3.0m
- maximum width if specifically requested but not required 4.5m
- maximum width for garages on reduced building lines garage width (opening)

B. Moving laybacks

Reconstruct old layback totally if:

- no request for second access
- no overlap with new layback
- reconstruct partially if total width exceeds 4.5m and no extenuating circumstances
- if reconstruction required then reconstruct to standard width of 3.0m

Note: All widths do not include the wing, which is 0.45m in length on either side of the layback.

3.4.2 Driveway boundary widths

- standard width 3.0m
- maximum width if specifically requested but not actually required 4.5m
- maximum width for double garage on normal building alignment 5.0m
- maximum width on reduced building alignment garage width (opening)

3.5 Conditions for footpath and driveway works other than plain concrete

Council recognises the increasing desire for residents to create a less harsh and a more natural or "attractive" appearance in the construction of footpath crossings.

To achieve this aim Council will accept coloured concrete, brick or concrete block paving, and patterned or moulded concrete finishes in the footpath crossing subject to the following conditions:

- a) coloured concrete to be restricted in range to colours which blend in with, and do not conflict with the existing street scene

- b) brick and block paving to be constructed on an appropriate sound base and the joints to be formed so as to provide an even walking surface
- c) are only approved in streets which are fully serviced and in which the need to provide additional underground services within a reasonable time period is not evident
- d) the Director of Engineering and Works, or his representative, approves of the particular surface finish from the aspects of its structural adequacy and its relative convenience for maintenance work
- e) the owner/developer acknowledges and accepts that if the footpath crossing is required to be opened in future, while every effort will be made to restore the footpath crossing to its original condition, an exact match with the existing surface may not be possible due to wear, age, colour fading, material unavailability etc
- f) in the case of patterned or moulded concrete finishes, Council will accept no responsibility for any reinstatement work.

3.6 Service authorities and new subdivisions or developments

If underground services have not yet been provided in a new development area, the owner cannot construct a concrete driveway across the footpath. If a formwork inspection is requested, the formwork will not be approved. Where a service authority damages an existing driveway, this service authority will be responsible for its repair in accordance with the requirements of this manual utilising a Council Authorised Contractor.

Appendix 1 - Specification for the construction by an Authorised Contractor

These specifications apply to an Authorised Contractor ("the Contractor") when constructing:

- A. vehicular access
- B. concrete footpaths
- C. concrete kerb and gutter.

1.0 General

1.1 Costs

The applicant is responsible for all costs. These include excavation, laying of concrete, backfilling, turfing, alterations to existing structures (e.g. fences, gates, driveways and footpaths), roof water drainage or any other works which may be specified or required. The cost involved in altering utility services is detailed in section 1.8 of this specification. For the construction of such works as outlined by this specification, Council shall require the payment of the Contractor's bond as detailed in section 1.5, in addition to a survey and inspection fee to cover design, set out and inspections by Council. The fee required shall be in accordance with the fees and charges as set by Council for each year.

1.2 Materials

Vehicular driveways may be constructed using the following materials:

- a) plain concrete
- b) coloured concrete
- c) brick paving
- d) concrete block paving
- e) stencilled concrete.

Footpaths and kerb and gutter must be constructed using plain concrete only. Under no circumstances will the use of polished concrete, stamped concrete, or tiles be permitted without written approval from the Director Engineering and Works.

1.3 Trees

No tree is to be cut down or pruned without the written consent of Council in accordance with Kiama Development Control Plan 2012 – Chapter 3 – Preservation and Management of Trees and Vegetation.

1.4 Public liability insurance

All nominated contractors/applicants must carry public liability insurance with a minimum cover of twenty million dollars (\$20,000,000) and be able to show evidence of such policy before commencing work. It is the responsibility of the Contractor to ensure their insurances are current. Any Contractor with expired insurances will be removed from the published Authorised Contractor List.

1.5 Contractor Asset Damage Bond

All Contractors shall submit a refundable bond with Council to ensure that all work is carried out to Council's specifications. This bond will be used to cover Council's costs in rectifying damage incurred by the Contractor on a Council asset, i.e. existing kerb, footpath etc, or in carrying out any necessary alterations to the completed work to make it compliant with the required standard. If the costs incurred by Council exceed the value of the bond, Council will issue an invoice for those costs.

The amount of this bond will be in accordance will Council's current 'Fees and Charges'.

1.6 Provision for traffic

Adequate provision shall be made for the safe and convenient passage of pedestrians and vehicles along that section of road reserve adjacent to the work. Suitable traffic barriers and warning signs to regulate and protect pedestrian traffic shall be provided, erected and maintained, as may be necessary and as directed by the Driveway Inspector. Adequate illumination of these signs and barriers shall be provided and maintained at night as well as warning lights on barriers. Such lighting shall be kept illuminated from sunset to sunrise. Barricades, signs, lights and other safety equipment will not be provided by Council and will be the Contractor's responsibility.

No excavated material, or materials and plant required in the construction of the works shall be deposited on any footpath or roadway so as to obstruct pedestrian or vehicular traffic, or any drainage of the road or footpath. All footpaths shall be trimmed, and materials and plant shall be kept within the narrowest practicable limits, and, if directed by the Driveway Inspector, within a hoarding.

Should the Contractor after notice in writing from the Driveway Inspector fail to carry out any provision of this section of the specification, the Council will carry out the work and deduct the cost from the Contractor's Asset Damage Bond held by Council. If the costs incurred by Council exceed the value of the bond, Council will issue a sundry debtors note.

1.7 Design and setting out

The Contractor will be responsible for the setting out of the driveway to comply with this specification and/or the approved design. Any obvious anomalies encountered during construction should be reported to Council's Driveway Inspector for evaluation.

1.8 Alterations and damage to mains, services and drainage structures

Before commencing work, the Contractor shall contact "Dial Before You Dig" on telephone number 1100 to obtain information on existing services. It is recommended that the Contractor confirm the location and depth of all public services and house services prior to commencement of work. The Contractor shall be responsible for any damage to public utilities, private services or drainage structures resulting from their operations.

Where alteration to any public utility or private service is necessary, the Contractor shall notify Council's Driveway Inspector and arrange with the service authority concerned to have such alterations made as expeditiously as possible.

Where it is necessary to make alteration to any of Council's stormwater drainage structures, such alteration shall be carried out as directed by the Council's Driveway Inspector at no cost to Council. These alterations may entail the prior payment of additional bonds to Council depending on the scope of the works.

The cost of any alterations shall be borne by the applicant. The applicant shall be informed of the possibility of this occurring in the estimate.

1.9 Inspections

At least twenty four (24) hour's clear notice is to be given to Council when work has reached the following stages:

1.1.1 Concrete

- a) Formwork – when the site is excavated with formwork and reinforcement in place, ready for pouring of concrete.

b) Final – when all work has been completed and the site has been tidied up.

1.1.2 Road Pavement

At each stage of the road pavement construction.

Inspections are arranged by telephoning Council's Customer Service Centre on 4232 0444 between the hours of 8:30am and 4:30am Monday to Friday.

1.10 Safety of works

The Contractor is to ensure that all stages of the work are carried out in accordance with the specifications, regulations and applicable laws and in a safe manner and left in a safe state. The provision of signposting, barricades, lights and other necessary safety measures is the responsibility of the Contractor. All safety equipment (including lights) must be in good working order. Prices are to include all measures for traffic control and pedestrian safety.

The Contractor shall fulfil the obligations under the Work Health and Safety Act 2011 (the WHS Act) to ensure that the land and buildings, plant or substances are safe and without risk to health. The WHS Act imposes a duty upon persons who have, to any extent, control of non-domestic premises used as a place of work. The duty is of work or as a means of access thereto or egress there from; or as a place where they may use plant or substances provided for their use of operation at work.

The Contractor is advised that problems with vandalism of safety equipment can be expected and they should adequately insure their equipment. Any damage or theft of safety equipment must be made good by the Contractor as soon as possible. The Contractor must have access at short notice to barricades, lights, and other necessary safety equipment to replace stolen or damaged equipment.

All claims for damages allegedly arising because of the works were carried out in an unsafe manner or left in an unsafe state so as to endanger the Contractor, sub-contractor and their employees or the public, shall be the sole responsibility of the Contractor. The Contractor will be required to instil in their employees an awareness of safety and to supervise employees' actions to ensure such safety. Attention is drawn to the Contractor's responsibilities under the WHS Act.

1.11 Environmental requirements

Kiama Municipal Council is committed to local environment protection and provision of safe conditions for residents. The Contractor is required by legislation to ensure there will be no damage to the environment and that the health and safety of all persons and property is maintained.

Under Section 120 of the *Protection of the Environment Operations Act 1997* ("the POEO Act") it is an offence for any person to pollute waters. A pollution incident is defined within this legislation as "*an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill, or other escape or deposit of a substance as a result of which pollution has occurred, is occurring or is likely to occur*".

This means that an actual pollution incident does not have to have occurred for an offence to be committed. The fact that there are no controls in place to prevent an incident occurring is classed as an offence under the act. Pollution of water also encompasses the stormwater drainage system as well as natural waterways.

It is the responsibility of the person carrying out the work to ensure that controls are in place before a job is commenced, to prevent a pollution incident occurring.

It is the responsibility of the Contractor to make any sub-contractors they may be using, aware of the environmental requirements before any work is undertaken. As the Contractor you have signed the '*General terms and conditions for acceptance as an Authorised Contractor*', noting clause 2 "*All works shall be completed in accordance with Council's Driveway and Footpath Works Procedure Manual*". This means that you are acknowledging that you have read and understood the environmental requirements section of the manual.

It is therefore a requirement to put in place erosion and sediment controls prior to work commencing, have the controls in place during the work and to clean up any potential contaminants which could cause pollution to enter a waterway once the job has been completed.

This should include but is not limited to:

- putting in place onsite (eg. sediment control fencing) and offsite (eg. sediment control socks around stormwater inlets) controls to prevent spillage and pollutants from entering drains or waterways
- ensure work places are maintained in a condition to provide a safe environment for pedestrians, workers and passing vehicles
- putting in place controls to prevent sand, sediment, top soil and the like from being washed, carried or blown from construction and work sites
- ensuring supervisors and workers on the site are aware of the environmental protection and safety requirements
- having adequate pollution control and spill clean-up resources available at each work site and ensure all workers know what to do in the event of a pollution incident occurring.

Penalty Infringement Notices (PIN) and clean up notices are used where breaches are considered minor in nature. The Protection of the Environment Operations (General) Regulation 2009 details the penalty fees applicable to each offence under the POEO Act.

Penalty fees are:

	Individual	Corporation
Penalty Infringement Notice (PIN)	\$4,000	\$8,000
Clean-up notice: 1 July 2017 – 30 June 2018	\$535	\$535
Clean-up notice: on or after 1 July 2018	\$550	\$550

Where the incident is considered to be a major pollution incident, there is the potential for prosecution and maximum penalties for corporations and individuals are described in the relevant sections of the POEO Act.

1.12 Repair of work following wet weather

The Contractor shall ensure that at all times all necessary measures are provided to protect the works from the effects of rain to the satisfaction of the Council. The Contractor is responsible for the repair of all storm damage, but shall not carry out any repair work without prior approval of the methods by the Council.

2.0 Construction

2.1 Description

The work shall be constructed in-situ to comply with the attached standard drawings and shall be aligned in straight lines as shown, or as may be directed, and shall be true to the grades shown on the drawing and without local irregularities.

2.2 Subgrade

All soft and yielding and other unsuitable material shall be removed and the subgrade shall be thoroughly compacted and finished to a firm, smooth surface or uniform bearing value. All concrete driveways and footpaths shall be poured onto a 25mm thick sand or metal dust base which has been spread to an even thickness, thoroughly soaked with water and well compacted prior to the pouring of concrete. All laybacks, kerbs, gutters and dish drains shall be poured onto a 100mm thick layer of compacted DGB or approved equivalent.

2.3 Formwork

Formwork shall be built true to line and braced in a substantial and unyielding manner. It shall be mortar tight and the interior surfaces shall be adequately oiled, greased or soaped to ensure non-adhesion of the concrete. The material used for exposed surfaces shall be sized softwood timber dressed on one side and both edges. Undressed timber may be used for backing to unexposed surfaces. Formwork is to be provided at all vertical faces.

2.4 Ready-mixed concrete

The minimum concrete compressive strength (F'c) at 28 days is to be 20MPa for driveways and footpaths and 25MPa for laybacks, kerbs, gutters and dish drains.

2.5 Placing concrete

Care shall be taken to fill every part of the formwork by continuous tamping, spading or slicing and to work the coarsest aggregate back from the exposed surfaces. Exposed surfaces of concrete shall be struck off and broom finished, and corners and edges so drawn shall be left neatly rounded. Concrete shall not be disturbed after it has been in the formwork for 10 minutes.

2.6 Thickness of concrete

Unless shown otherwise on the attached standard plans, the thickness of the concrete shall be in accordance with the following:

- a) single residential / dual occupancy driveways - minimum thickness 130mm
- b) medium density / commercial / industrial driveways - minimum thickness 150mm with SL72 reinforcing mesh located with a minimum cover of 50mm
- c) footpaths - minimum thickness 75mm. Reinforcing mesh not required unless shown. In areas where the footpath forms part of the vehicular driveway, the appropriate thicker slab is to be used.

2.7 Reinforcement

All reinforcement shall be free from rust, grease, tar, paint oil, mud, mill scale, mortar or any other coating, and shall be stored under a waterproof shelter and supported above the surface of the ground. The reinforcement when in position shall be secured against displacement due to the flow and working of the concrete. The minimum clear cover to reinforcement is to be 50mm.

2.8 Expansion joints

All expansion joints shall be perpendicular and filled with a strip of fibre and bitumen or granulated cork matrix, 10 millimetres thick extending completely through the slab. Where kerb and gutter is cast in position, expansion joints shall be provided at intervals of not more than 4 metres. The kerb shall be discontinued to allow construction of gutter driveways for vehicular access and at such points (where shown on drawings or where directed) a gutter driveway shall be constructed with an expansion joint at both ends of the opening.

Where a vehicular driveway is to be provided, an expansion joint shall be placed at the back of the gutter driveway. Where a vehicular driveway is to connect to an existing concrete driveway inside the property, an expansion joint shall be placed at the boundary alignment.

Where a concrete footpath is cast in position, expansion joints are to be provided at intervals of not more than 6 metres and false joints are to be marked every 1.2 metres unless otherwise instructed.

Expansion joints shall be placed between existing and new work.

All false joints on the vehicular driveway and footpath slabs shall be made to form a straight, well defined line using an appropriate jointing tool.

2.9 Kerb and gutter

Integral kerb and gutter shall be constructed in-situ to the dimensions shown on Council's standard drawing R01. The kerb shall be aligned in straight lines and in circular curves as marked out on the ground or as may be directed, and shall be true to grade and without irregularities.

In areas where adjacent existing kerb and gutter have dimensions different to Council's standards, the new kerb and gutter shall be constructed to match the existing subject to prior approval of Council's driveway inspector.

2.10 Finish

After removal of formwork any rough or porous places or holes shall be picked over and dressed up with a 2 to 1 cement mortar. The exposed surface shall be broom finished with bull nosed edges to leave the surface plain and smooth and uniform in colour and appearance. All kerb and guttering, and laybacks shall be finished with a steel float to leave the surface plain, smooth and uniform in appearance and must be in plain concrete.

Ceramic or quarry tiles are not permitted due to their slippery nature when wet.

Upon final inspection by Council, if it is found that the surface finish is slippery and is considered a public safety hazard, the works will not be approved. Additional surface treatments will be required at the applicant's cost to the satisfaction of Council.

2.11 Curing and protection

After completion of concreting for any section, that section shall be covered with wet bags or canvas and kept moist for a period of 3 days or longer if directed, to prevent rapid drying out of the concrete. The work is to be protected from damage for the same period.

2.12 Refilling

After concrete has set sufficiently, and not sooner than 3 days after placing, spaces around the sides of the work shall be refilled with sound material which shall be thoroughly compacted in layers not greater than 150mm, with all potential trip hazards removed.

2.13 Regrading and returfing

Regrading and returfing shall be undertaken on either side of the concrete work, with a maximum slope of 1 vertical:6 horizontal. All disturbed footpath areas shall be returfed with a grass type to match that existing and shall be free of weeds at the time of laying.

2.14 Excess spoil

Excess spoil shall be removed from the job and in general the footpath area is to be left in a tidy condition.

2.15 Difference in levels

Where there is a difference of levels, between those existing at fence alignment and designed levels, suitable adjustments within the owner's property will be necessary. This situation will be noted on the plan and will be the subject to negotiation between the Contractor and the owner. It is suggested that greater ease of access will be obtained if sharp changes of grade are avoided.

2.16 Road shoulder

If directed by the Council's Driveway Inspector, the existing road shoulder shall be regraded, reshaped and trimmed as necessary to allow for the proper control and free flow of drainage.

2.17 Paving

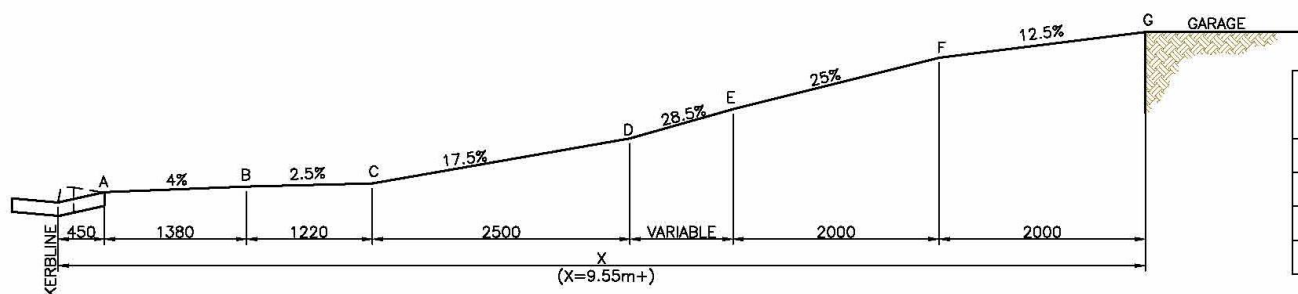
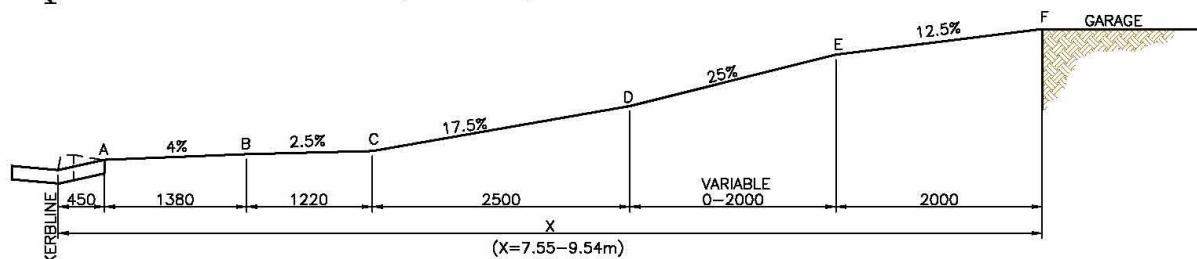
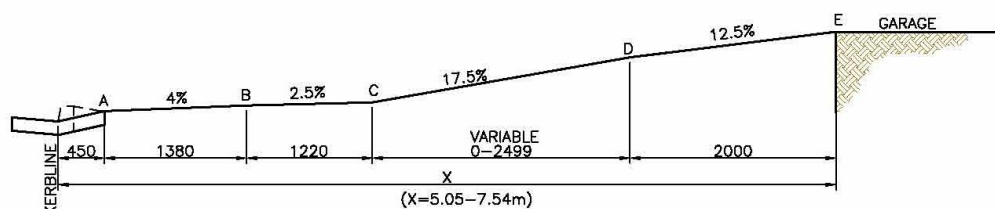
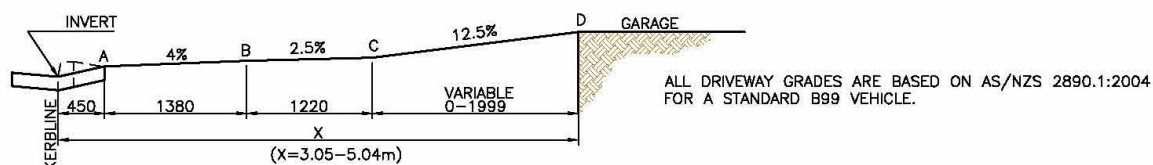
Interlocking clay or concrete pavers may be used and shall be laid on a 25mm sand bed over a concrete base. The thickness of the concrete base shall be as per 2.6 of the specification. For example, a residential driveway will require 130mm thick concrete.

2.18 Road pavement

All road pavement restorations shall be completed in accordance with Council's Specification '*Road Openings and Restorations*' (Aus-spec 306U), available separately from Council.

Appendix 2 – Driveway level calculation reference material

MAXIMUM UP GRADES FOR DRIVEWAYS (STANDARD KERB)



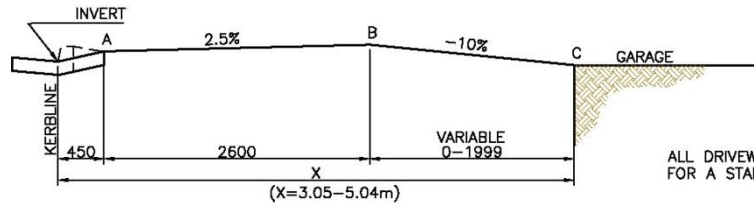
SAMPLE DRIVEWAY POINT HEIGHTS

DISTANCE FROM KERBLINE TO GARAGE X (m)	HEIGHT DIFFERENCE TO GUTTER INVERT (m)						
	A	B	C	D	E	F	G
3.05	0.1	0.155	0.186	—	—	—	—
3.50	0.1	0.155	0.186	0.242	—	—	—
4.00	0.1	0.155	0.186	0.304	—	—	—
4.50	0.1	0.155	0.186	0.367	—	—	—
5.00	0.1	0.155	0.186	0.429	—	—	—
5.50	0.1	0.155	0.186	0.264	0.514	—	—
6.00	0.1	0.155	0.186	0.352	0.602	—	—
6.50	0.1	0.155	0.186	0.439	0.689	—	—
7.00	0.1	0.155	0.186	0.527	0.777	—	—
7.50	0.1	0.155	0.186	0.614	0.864	—	—
8.00	0.1	0.155	0.186	0.623	0.736	0.986	—
8.50	0.1	0.155	0.186	0.623	0.861	1.111	—
9.00	0.1	0.155	0.186	0.623	0.986	1.236	—
9.50	0.1	0.155	0.186	0.623	1.111	1.361	—
10.00	0.1	0.155	0.186	0.623	0.751	1.251	1.501
11.00	0.1	0.155	0.186	0.623	1.036	1.536	1.786
12.00	0.1	0.155	0.186	0.623	1.321	1.821	2.071
13.00	0.1	0.155	0.186	0.623	1.606	2.106	2.356
14.00	0.1	0.155	0.186	0.623	1.891	2.391	2.641
15.00	0.1	0.155	0.186	0.623	2.176	2.676	2.926
16.00	0.1	0.155	0.186	0.623	2.461	2.961	3.211
17.00	0.1	0.155	0.186	0.623	2.746	3.246	3.496
18.00	0.1	0.155	0.186	0.623	3.031	3.531	3.781
19.00	0.1	0.155	0.186	0.623	3.316	3.816	4.066
20.00	0.1	0.155	0.186	0.623	3.601	4.101	4.351

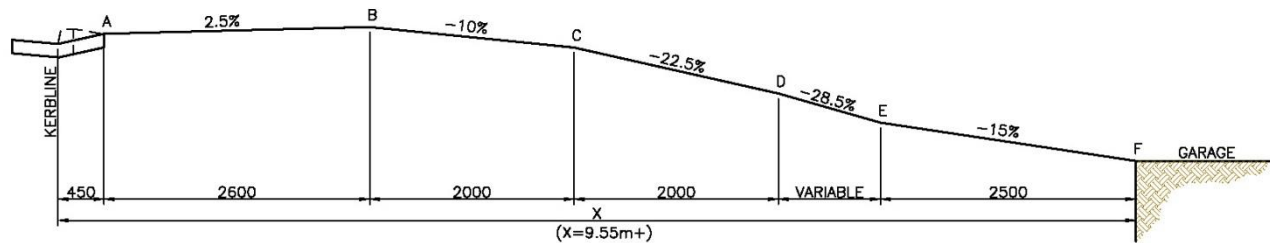
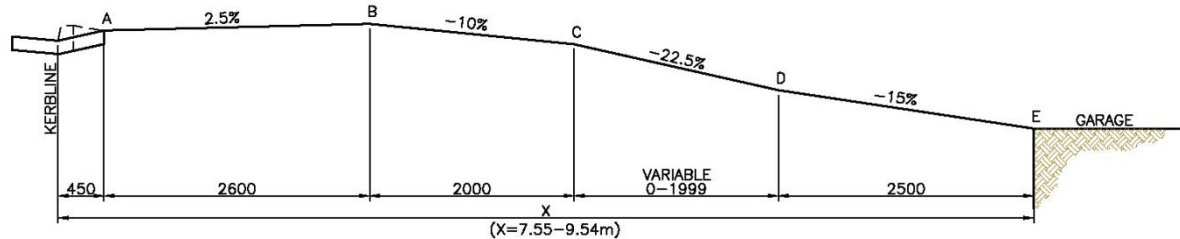
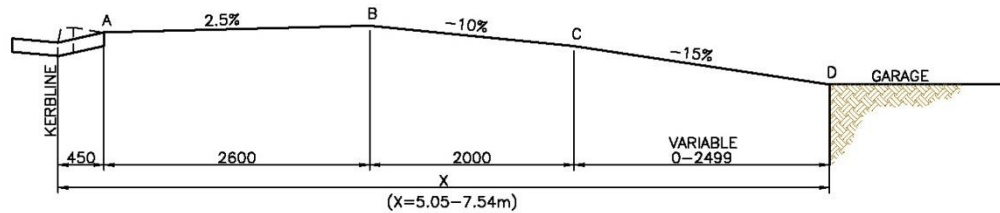
GARAGE FLOOR LEVEL FORMULA

DISTANCE FROM KERBLINE TO GARAGE X (m)	GARAGE FLOOR LEVEL ABOVE GUTTER INVERT (m)
3.05–5.04	$[(X-3.05) \times 0.125] + 0.186$
5.05–7.54	$[(X-5.05) \times 0.175] + 0.435$
7.55–9.04	$[(X-7.55) \times 0.250] + 0.873$
9.55 +	$[(X-9.55) \times 0.285] + 1.373$

MINIMUM DOWN GRADES FOR DRIVEWAYS (STANDARD KERB)



ALL DRIVEWAY GRADES ARE BASED ON AS/NZS 2890.1:2004 FOR A STANDARD B99 VEHICLE.



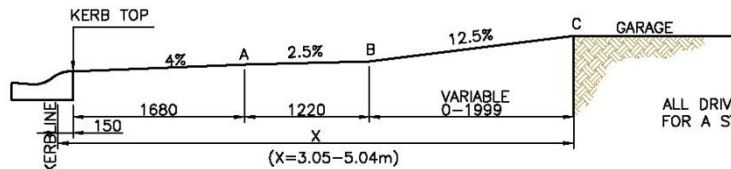
SAMPLE DRIVEWAY POINT HEIGHTS

DISTANCE FROM KERBLINE TO GARAGE X (m)	HEIGHT DIFFERENCE TO GUTTER INVERT (m)					
	A	B	C	D	E	F
3.05	0.1	0.165	-	-	-	-
3.50	0.1	0.165	0.120	-	-	-
4.00	0.1	0.165	0.070	-	-	-
4.50	0.1	0.165	0.020	-	-	-
5.00	0.1	0.165	-0.030	-	-	-
5.50	0.1	0.165	-0.035	-0.103	-	-
6.00	0.1	0.165	-0.035	-0.178	-	-
6.50	0.1	0.165	-0.035	-0.253	-	-
7.00	0.1	0.165	-0.035	-0.328	-	-
7.50	0.1	0.165	-0.035	-0.403	-	-
8.00	0.1	0.165	-0.035	-0.136	-0.511	-
8.50	0.1	0.165	-0.035	-0.249	-0.624	-
9.00	0.1	0.165	-0.035	-0.361	-0.736	-
9.50	0.1	0.165	-0.035	-0.474	-0.849	-
10.00	0.1	0.165	-0.035	-0.485	-0.613	-0.988
11.00	0.1	0.165	-0.035	-0.485	-0.898	-1.273
12.00	0.1	0.165	-0.035	-0.485	-1.183	-1.558
13.00	0.1	0.165	-0.035	-0.485	-1.468	-1.843
14.00	0.1	0.165	-0.035	-0.485	-1.753	-2.128
15.00	0.1	0.165	-0.035	-0.485	-2.038	-2.413
16.00	0.1	0.165	-0.035	-0.485	-2.323	-2.698
17.00	0.1	0.165	-0.035	-0.485	-2.608	-2.983
18.00	0.1	0.165	-0.035	-0.485	-2.893	-3.268
19.00	0.1	0.165	-0.035	-0.485	-3.178	-3.553
20.00	0.1	0.165	-0.035	-0.485	-3.463	-3.838

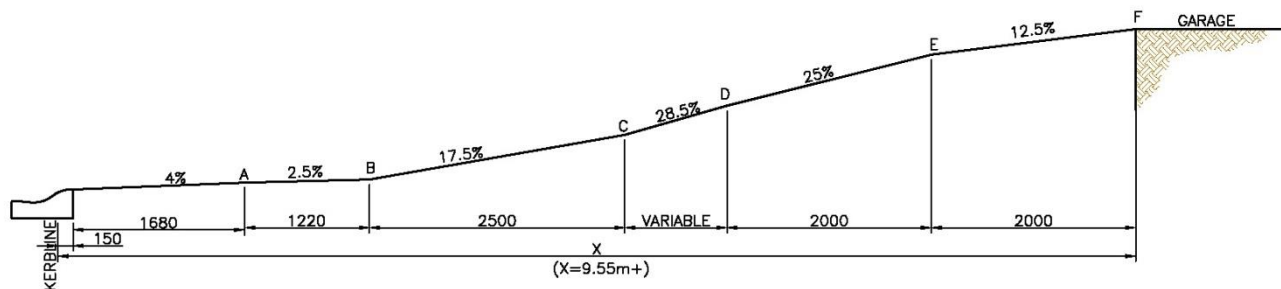
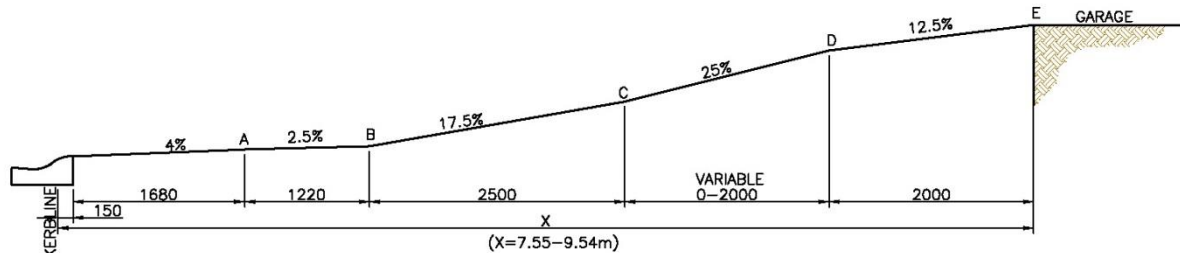
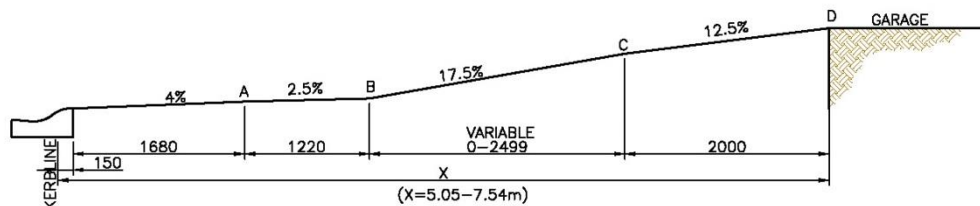
GARAGE FLOOR LEVEL FORMULA

DISTANCE FROM KERBLINE TO GARAGE X (m)	GARAGE FLOOR LEVEL BELOW GUTTER INVERT (m)
3.05-5.04	$[(X-3.05)x -0.10]+0.165$
5.05-7.54	$[(X-5.05)x -0.15]-0.035$
7.55-9.04	$[(X-7.55)x -0.225]-0.41$
9.55 +	$[(X-9.55)x -0.285]-0.86$

MAXIMUM UP GRADES FOR DRIVEWAYS (ROLL TOP KERB)



ALL DRIVEWAY GRADES ARE BASED ON AS/NZS 2890.1:2004 FOR A STANDARD B99 VEHICLE.



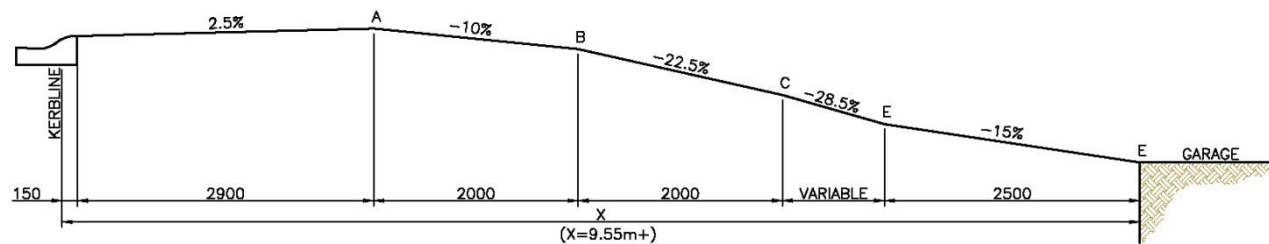
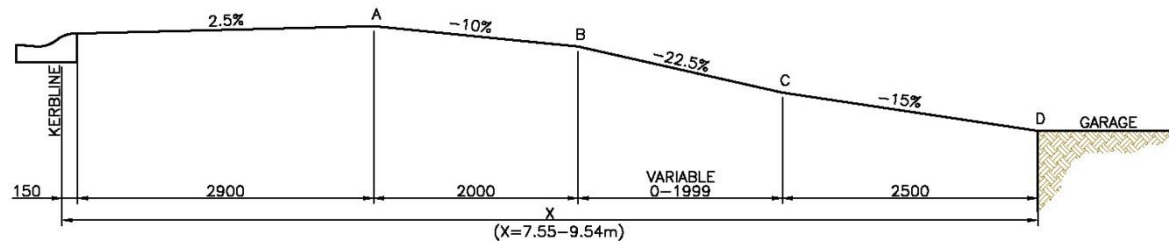
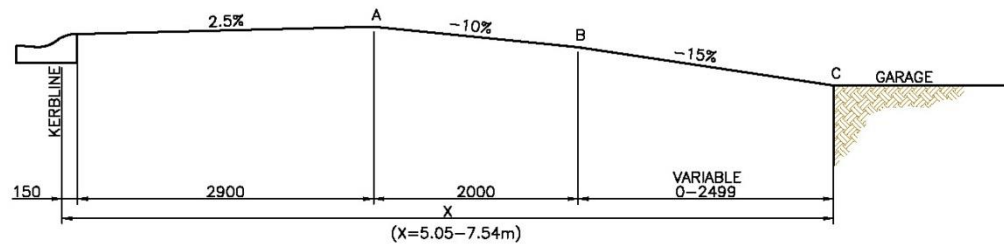
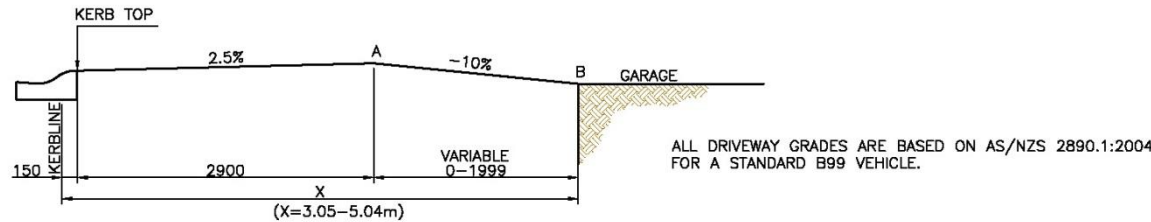
SAMPLE DRIVEWAY POINT HEIGHTS

DISTANCE FROM KERBLINE TO GARAGE X (m)	HEIGHT DIFFERENCE TO ROLL KERB TOP (m)					
	A	B	C	D	E	F
3.05	0.067	0.098	0.098	—	—	—
3.50	0.067	0.098	0.154	—	—	—
4.00	0.067	0.098	0.216	—	—	—
4.50	0.067	0.098	0.279	—	—	—
5.00	0.067	0.098	0.341	—	—	—
5.50	0.067	0.098	0.176	0.426	—	—
6.00	0.067	0.098	0.264	0.514	—	—
6.50	0.067	0.098	0.351	0.601	—	—
7.00	0.067	0.098	0.439	0.689	—	—
7.50	0.067	0.098	0.526	0.776	—	—
8.00	0.067	0.098	0.535	0.648	0.898	—
8.50	0.067	0.098	0.535	0.773	1.023	—
9.00	0.067	0.098	0.535	0.898	1.148	—
9.50	0.067	0.098	0.535	1.023	1.273	—
10.00	0.067	0.098	0.535	0.663	1.163	1.413
11.00	0.067	0.098	0.535	0.948	1.448	1.698
12.00	0.067	0.098	0.535	1.233	1.733	1.983
13.00	0.067	0.098	0.535	1.518	2.018	2.268
14.00	0.067	0.098	0.535	1.803	2.303	2.553
15.00	0.067	0.098	0.535	2.088	2.588	2.838
16.00	0.067	0.098	0.535	2.373	2.873	3.123
17.00	0.067	0.098	0.535	2.658	3.158	3.408
18.00	0.067	0.098	0.535	2.943	3.443	3.693
19.00	0.067	0.098	0.535	3.228	3.728	3.978
20.00	0.067	0.098	0.535	3.513	4.013	4.263

GARAGE FLOOR LEVEL FORMULA

DISTANCE FROM KERBLINE TO GARAGE X (m)	GARAGE FLOOR LEVEL ABOVE ROLL KERB TOP (m)
3.05–5.04	$[(X-3.05) \times 0.125] + 0.098$
5.05–7.54	$[(X-5.05) \times 0.175] + 0.348$
7.55–9.04	$[(X-7.55) \times 0.250] + 0.785$
9.55 +	$[(X-9.55) \times 0.285] + 1.285$

MINIMUM DOWN GRADES FOR DRIVEWAYS (ROLL TOP KERB)



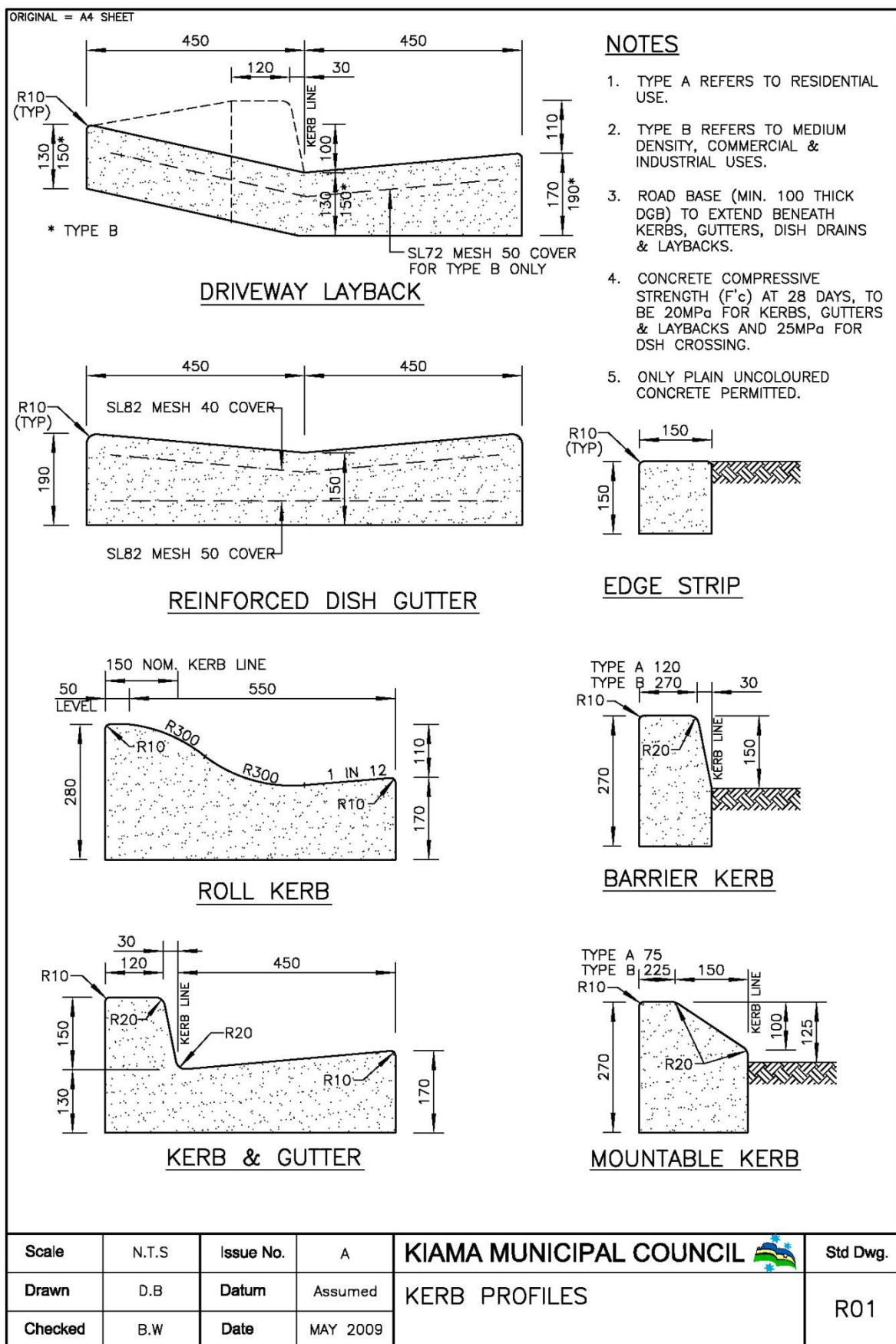
SAMPLE DRIVEWAY POINT HEIGHTS

DISTANCE FROM KERBLINE TO GARAGE X (m)	HEIGHT DIFFERENCE TO ROLL KERB TOP (m)				
	A	B	C	D	E
3.05	0.0725	0.073	—	—	—
3.50	0.0725	0.028	—	—	—
4.00	0.0725	-0.023	—	—	—
4.50	0.0725	-0.073	—	—	—
5.00	0.0725	-0.123	—	—	—
5.50	0.0725	-0.128	-0.195	—	—
6.00	0.0725	-0.128	-0.270	—	—
6.50	0.0725	-0.128	-0.345	—	—
7.00	0.0725	-0.128	-0.420	—	—
7.50	0.0725	-0.128	-0.495	—	—
8.00	0.0725	-0.128	-0.229	-0.604	—
8.50	0.0725	-0.128	-0.341	-0.716	—
9.00	0.0725	-0.128	-0.454	-0.829	—
9.50	0.0725	-0.128	-0.566	-0.941	—
10.00	0.0725	-0.128	-0.578	-0.706	-1.081
11.00	0.0725	-0.128	-0.578	-0.991	-1.366
12.00	0.0725	-0.128	-0.578	-1.276	-1.651
13.00	0.0725	-0.128	-0.578	-1.561	-1.936
14.00	0.0725	-0.128	-0.578	-1.846	-2.221
15.00	0.0725	-0.128	-0.578	-2.131	-2.506
16.00	0.0725	-0.128	-0.578	-2.416	-2.791
17.00	0.0725	-0.128	-0.578	-2.701	-3.076
18.00	0.0725	-0.128	-0.578	-2.986	-3.361
19.00	0.0725	-0.128	-0.578	-3.271	-3.646
20.00	0.0725	-0.128	-0.578	-3.556	-3.931

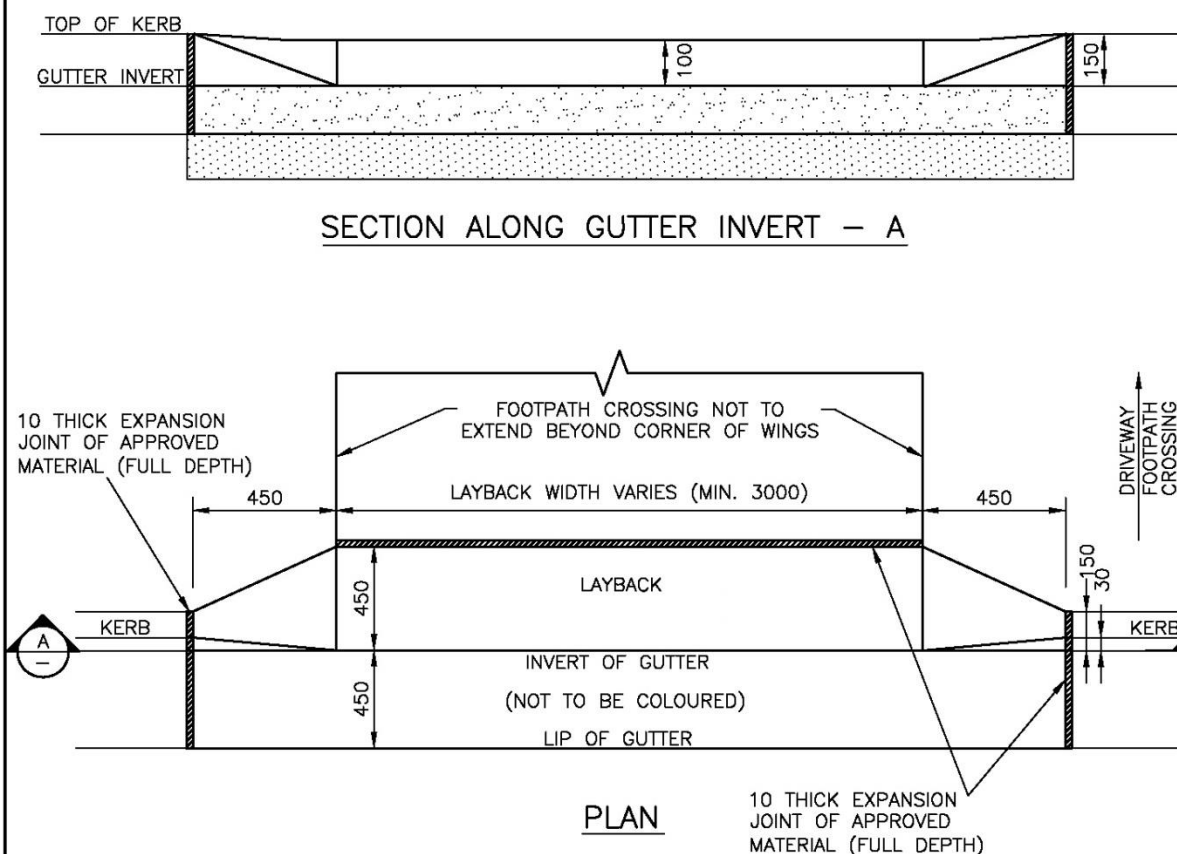
GARAGE FLOOR LEVEL FORMULA

DISTANCE FROM KERBLINE TO GARAGE X (m)	GARAGE FLOOR LEVEL BELOW ROLL KERB TOP (m)
3.05-5.04	$[(X-3.05) \times -0.10] + 0.073$
5.05-7.54	$[(X-5.05) \times -0.15] - 0.127$
7.55-9.04	$[(X-7.55) \times -0.225] - 0.502$
9.55 +	$[(X-9.55) \times -0.285] - 0.952$

Appendix 3 - Standard drawings




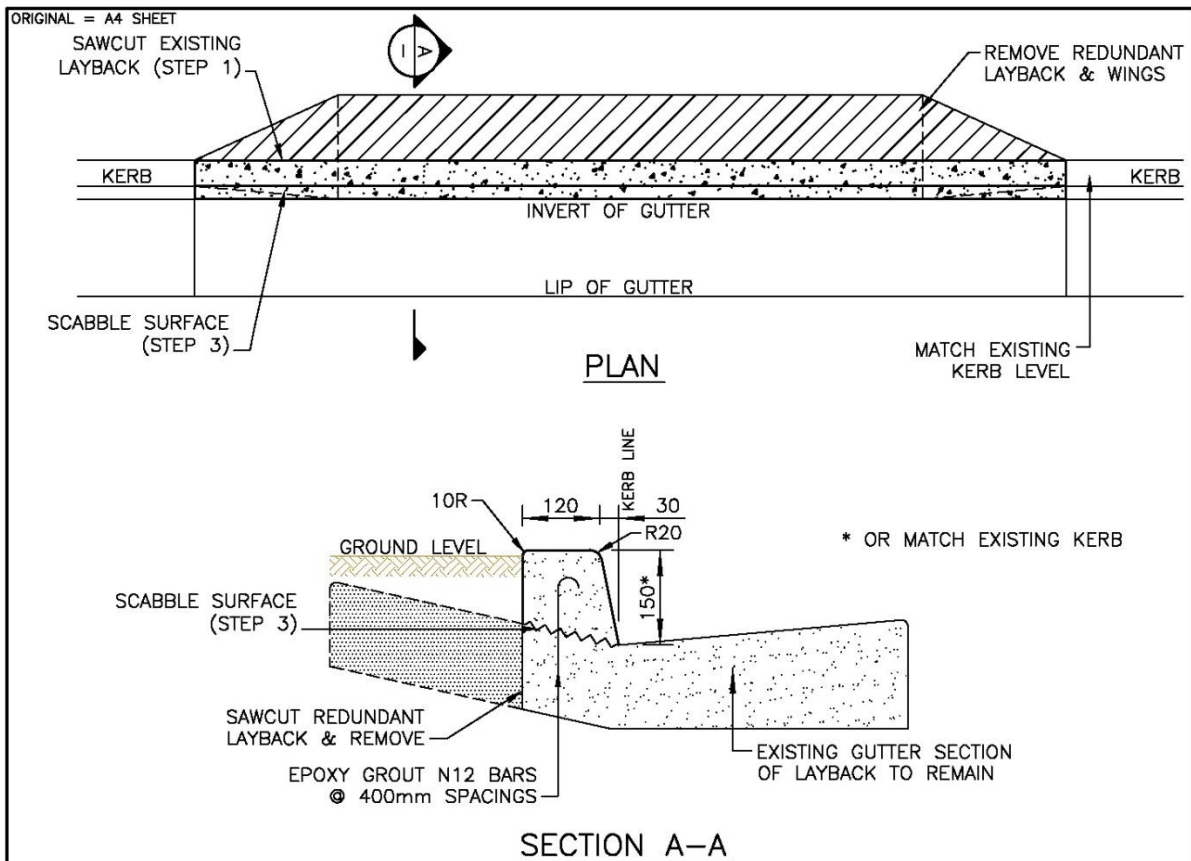
ORIGINAL = A4 SHEET



NOTES

- REFER TO KIAMA COUNCIL'S STANDARD DRAWING R01 FOR DRIVEWAY LAYBACK SPECIFICATIONS.
- MINIMUM DRIVEWAY CROSSING SPECIFICATION:-
 - SINGLE RESIDENTIAL DWELLING – 130mm THICK, 20MPa CONCRETE.
 - MEDIUM DENSITY/COMMERCIAL/INDUSTRIAL DEVELOPMENTS – 150mm THICK, 20MPa CONCRETE WITH SL72 MESH CENTRALLY PLACED.
- FOOTPATHS SHALL BE MINIMUM 75mm THICK, 20MPa CONCRETE ON 25mm THICK LAYER OF LEVELLING SAND OR BLUE METAL DUST. MINIMUM FOOTPATH WIDTH IS 1200mm.
- ALL PAVING IS TO BE LAID ON A 25mm SAND BED ON A CONCRETE SLAB OF THICKNESS AS SPECIFIED IN NOTES 2 & 3 ABOVE.
- ALL EXISTING KERB & GUTTER, FOOTPATHS, BITUMEN ROAD ETC AFFECTED BY THE NEW WORKS SHALL BE SAWCUT PRIOR TO REMOVAL. ALL NEW WORKS SHALL MATCH EXISTING WITH NO GAPS OR STEPS.
- MASTIC EXPANSION JOINTS SHALL BE PROVIDED IN FOOTPATHS AT MAXIMUM 6m SPACING AND IN THE DRIVEWAY CROSSING AT THE PROPERTY BOUNDARY, BACK AND ENDS OF LAYBACK AND AT JOINTS WITH CONCRETE PATHS.
- FOOTPATH DUMMY JOINTS ARE TO BE PLACED ACROSS PATHS & SPACED TO SUIT WORK. MAXIMUM SPACING = 1200mm.
- DUMMY JOINTS ON DRIVEWAYS SHALL BE PROVIDED FOR THE FULL WIDTH AND SHALL ALIGN WITH FRONT & BACK OF PATHS.
- RESTORE BITUMEN ROAD FOR THE FULL LENGTH OF THE NEW GUTTER A MINIMUM WIDTH OF 350mm UNLESS SPECIFIED BY COUNCIL'S REPRESENTATIVE.
- DAMAGE TO EXISTING FOOTPATHS, REQUIRE FULL PANEL REPLACEMENT TO NEAREST TRANSVERSE DUMMY JOINT TO MATCH EXISTING.
- WHEN ALL WORKS ARE COMPLETED, THE EDGES OF THE DRIVEWAY CROSSINGS/FOOTPATHS ARE TO BE BACKFILLED & COMPACTED WITH SUITABLE SOIL & TURF.
- PROPOSED DRIVEWAYS ARE TO BE NO CLOSER THAN 6m FROM TANGENT POINT OF CORNER, 0.5m FROM STORMWATER LINTELS OR ANY SERVICE AUTHORITY'S PIT, POLE OR TURRET. WRITTEN APPROVAL FROM THE RELEVANT SERVICE AUTHORITY MUST BE SUBMITTED TO COUNCIL WITH THE DRIVEWAY APPLICATION FOR ANY SERVICE PITS TO BE CONTAINED WITHIN A DRIVEWAY.
- ALL DRIVEWAY/FOOTPATH WORKS MUST BE CORDONED OFF UNTIL COMPLETED FOR PUBLIC SAFETY.

Scale	N.T.S	Issue No.	A	KIAMA MUNICIPAL COUNCIL 	Std Dwg.
Drawn	D.B	Datum	Assumed	LAYBACK & ACCESS DETAIL	R02
Checked	B.W	Date	MAY 2009		



NOTES

1. REFER TO KIAMA COUNCIL'S STANDARD DRAWING R01 FOR KERB SPECIFICATIONS.
2. THIS DRAWING SHALL ONLY BE USED WHERE THE EXISTING LAYBACK GUTTER IS IN GOOD CONDITION. IF THE GUTTER IS DAMAGED PRIOR TO OR DURING CONSTRUCTION, REFER TO COUNCIL'S STANDARD DRAWING R02 FOR FULL LAYBACK REPLACEMENT.

REPLACEMENT METHOD

STEP 1: REMOVE LAYBACK AND WINGS TO THE APRON LEVEL.

STEP 2: MAKE A VERTICAL SAWCUT AND REMOVE REAR SECTION OF LAYBACK.


STEP 3: SCABBLE SURFACE OF LAYBACK WHERE KERB IS TO BE JOINED.

STEP 4: DRILL HOLES AT MAXIMUM 400mm CENTRES AND PLACE 150mm LONG STARTER BARS INTO EXISTING CONCRETE. BARS TO BE FIXED WITH EPOXY GROUT AND SET A MINIMUM 70mm INTO CONCRETE.

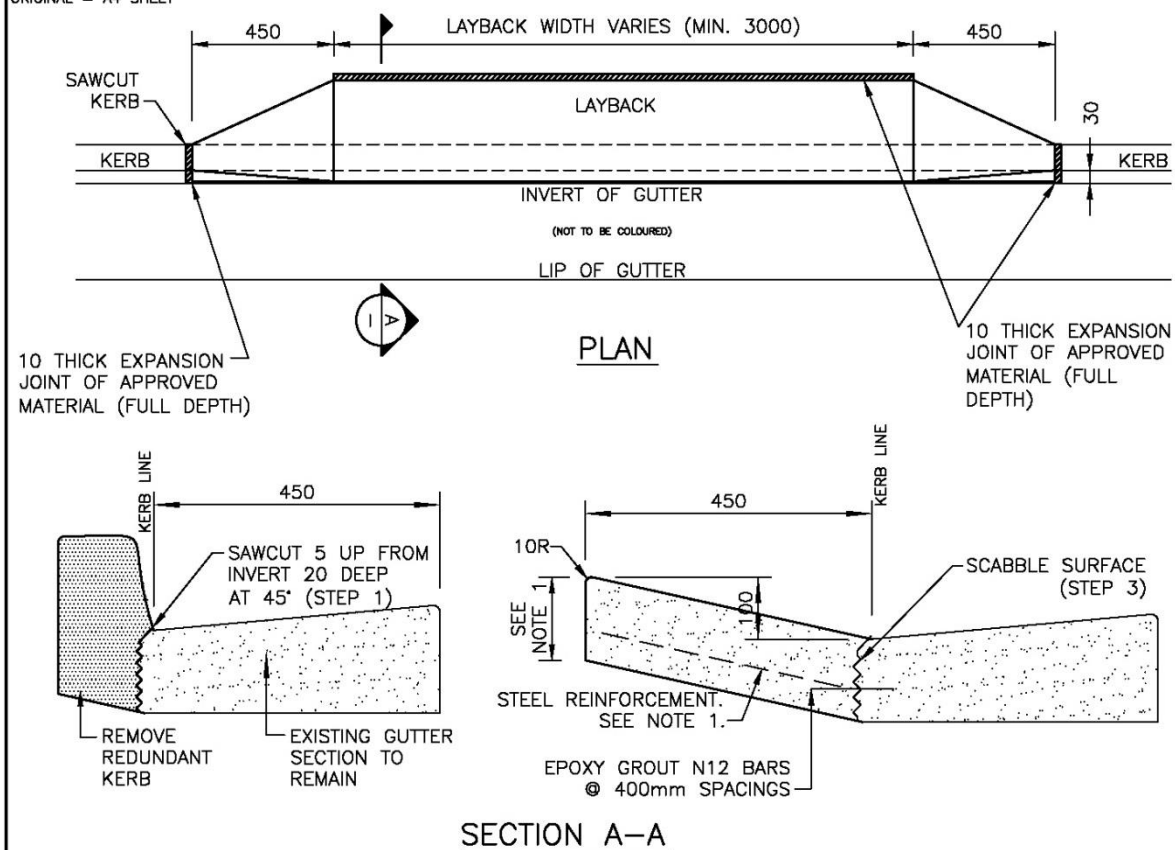
STEP 5: SECURELY FIX FORMWORK TO PREVENT LATERAL MOVEMENT OR BOWING.

STEP 6: THOROUGHLY CLEAN SCABBLED SURFACE WITH WATER OR BROOM. CONTACT COUNCIL TO ARRANGE INSPECTION.

STEP 7: AFTER FORMWORK HAS BEEN APPROVED, APPLY 'CEMSTICK' OR SIMILAR BONDING AGENT TO THE SCABBLED SURFACE AND POUR KERB USING ONLY PLAIN CONCRETE.

Scale	N.T.S	Issue No.	A	KIAMA MUNICIPAL COUNCIL 	Std Dwg.
Drawn	D.B	Datum	Assumed	REPLACEMENT OF REDUNDANT LAYBACK WITH KERB	R03
Checked	B.W	Date	MAY 2009		

ORIGINAL = A4 SHEET



NOTES

1. REFER TO KIAMA COUNCIL'S STANDARD DRAWING R01 FOR LAYBACK SPECIFICATIONS, INCLUDING THICKNESS OF NEW LAYBACK AND PROVISION OF STEEL REINFORCEMENT.
2. THIS DRAWING SHALL ONLY BE USED WHERE THE EXISTING LAYBACK GUTTER IS IN GOOD CONDITION. IF THE GUTTER IS DAMAGED PRIOR TO OR DURING CONSTRUCTION, REFER TO COUNCIL'S STANDARD DRAWING R02 FOR FULL LAYBACK REPLACEMENT.

REPLACEMENT METHOD

STEP 1: SAW CUT EXISTING KERB 5 UP FROM GUTTER INVERT, 20 DEEP AT 45°. TRANSVERSE SAWCUT KERB AT EITHER END OF PROPOSED LAYBACK.

STEP 2: REMOVE REDUNDANT SECTION OF KERB.

STEP 3: SCABBLE SURFACE OF GUTTER WHERE LAYBACK IS TO BE JOINED.

STEP 4: DRILL HOLES AT MAXIMUM 400mm CENTRES AND PLACE 150mm LONG STARTER BARS INTO EXISTING CONCRETE. BARS TO BE FIXED WITH EPOXY GROUT AND SET A MINIMUM 70mm INTO CONCRETE.

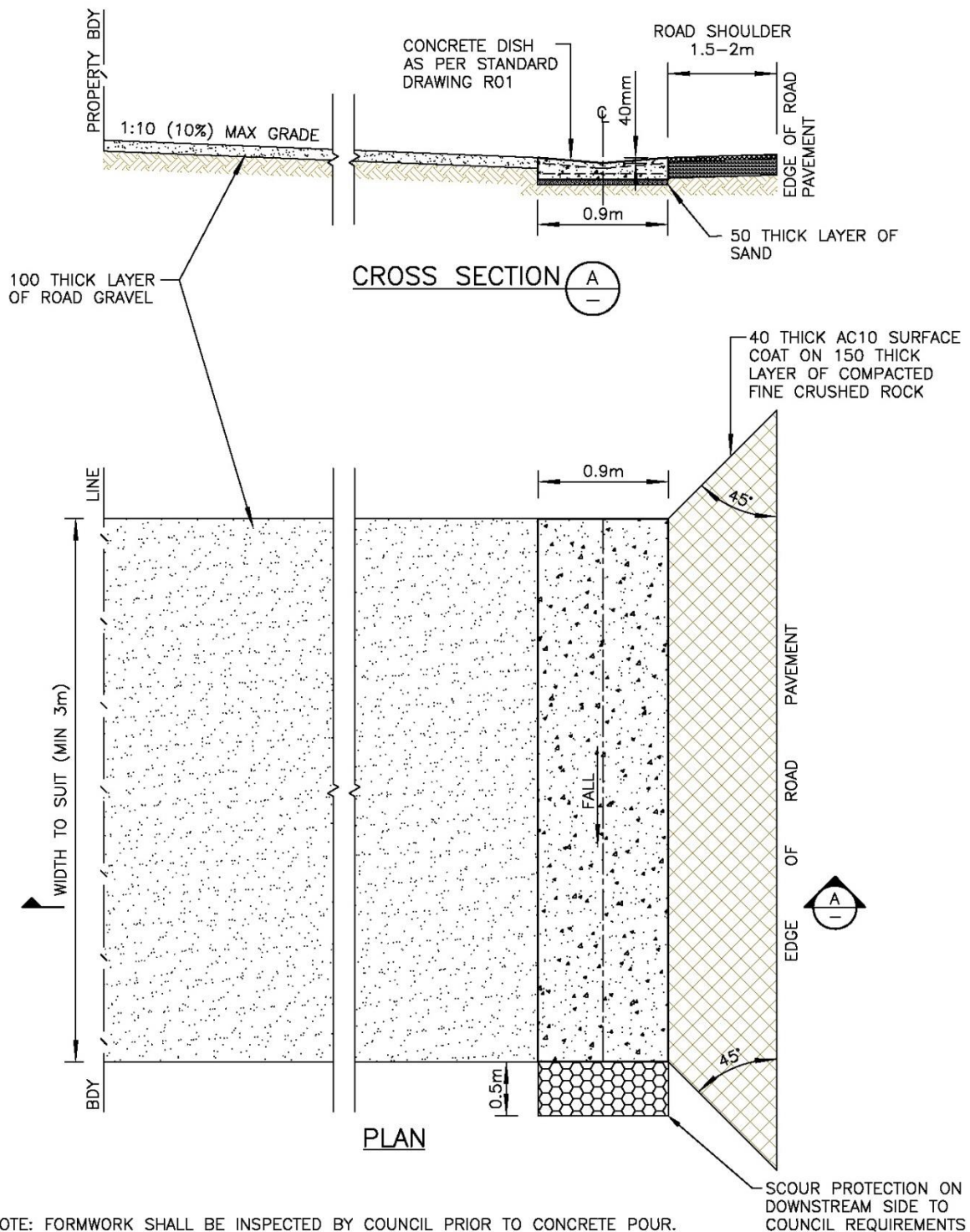
STEP 5: SECURELY FIX FORMWORK TO PREVENT LATERAL MOVEMENT OR BOWING.

STEP 6: THOROUGHLY CLEAN SCABBLED SURFACE WITH WATER OR BROOM. CONTACT COUNCIL TO ARRANGE INSPECTION.

STEP 7: AFTER FORMWORK HAS BEEN APPROVED, APPLY 'CEMSTICK' OR SIMILAR BONDING AGENT TO THE SCABBLED SURFACE AND POUR KERB USING ONLY PLAIN CONCRETE.

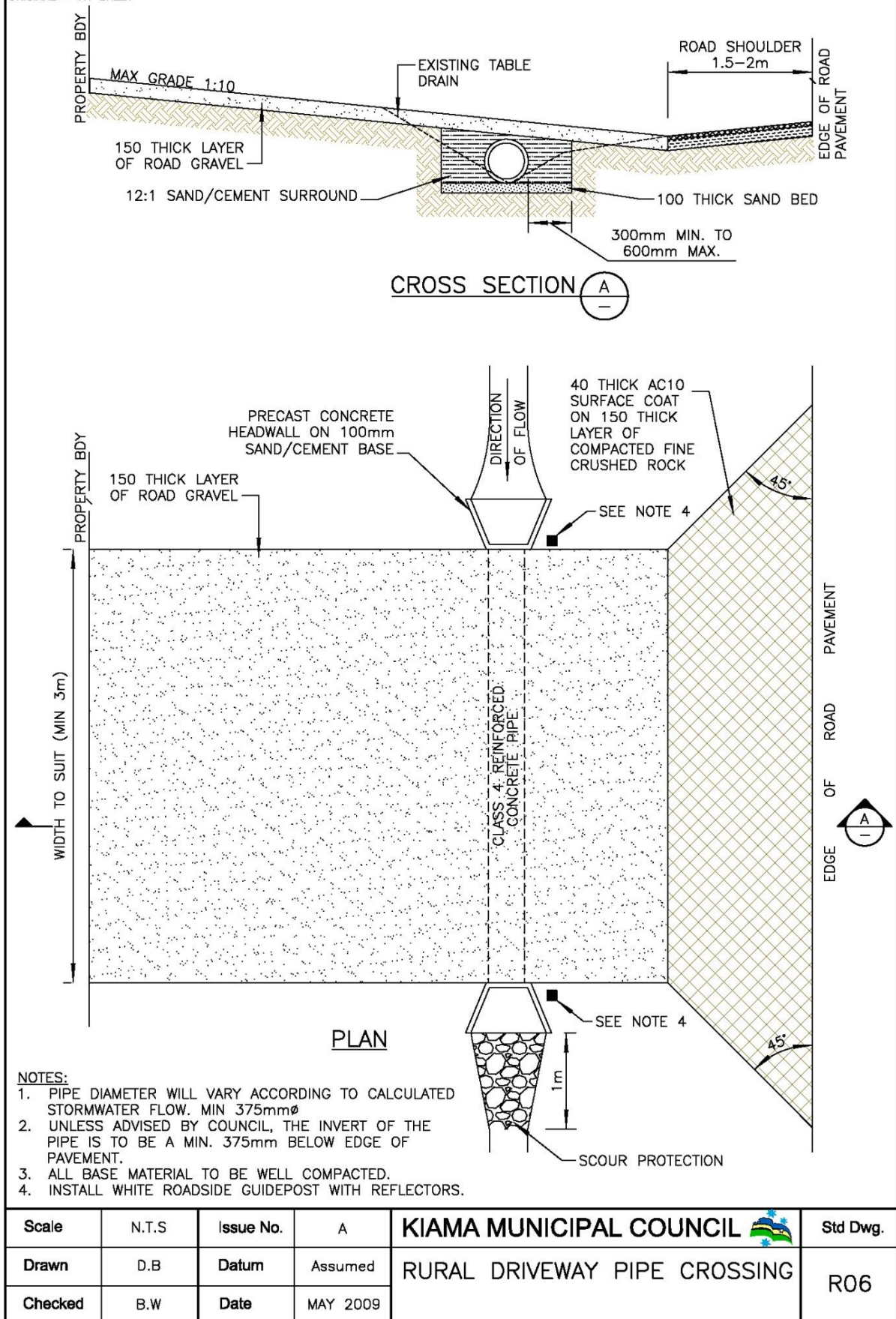
Scale	N.T.S	Issue No.	A	KIAMA MUNICIPAL COUNCIL	Std Dwg.
Drawn	D.B	Datum	Assumed	REPLACEMENT OF REDUNDANT	R04
Checked	B.W	Date	MAY 2009	KERB WITH LAYBACK	

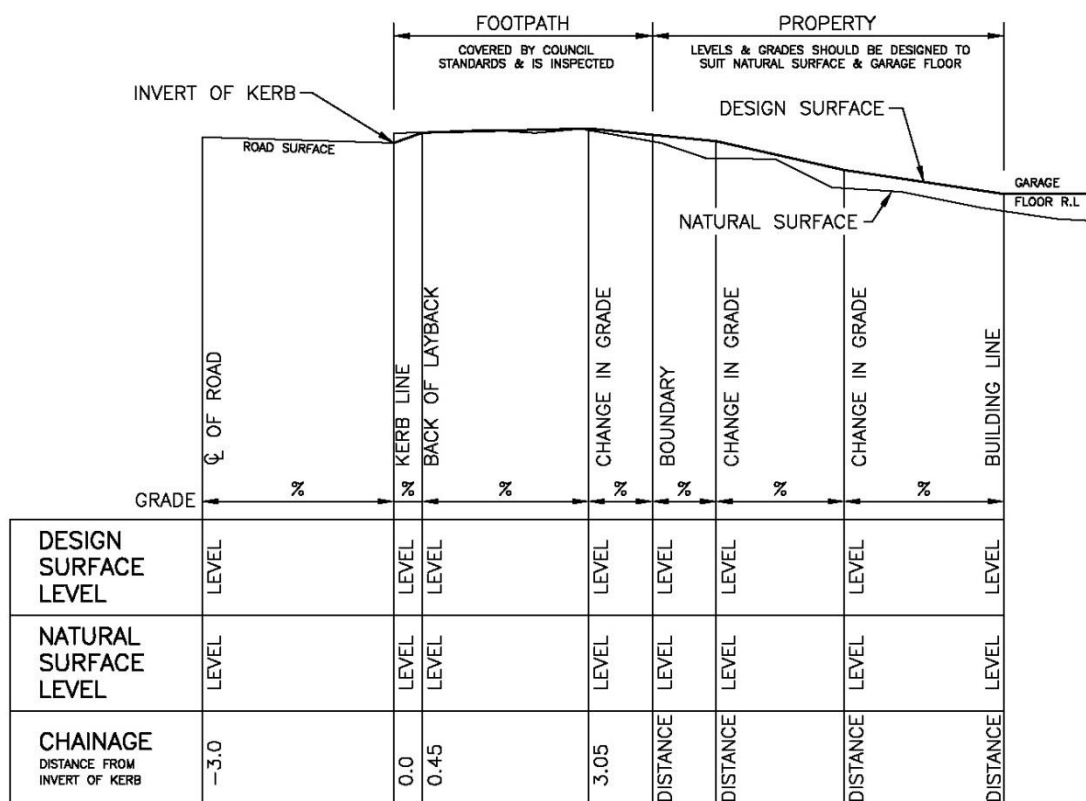
ORIGINAL = A4 SHEET



Scale	N.T.S	Issue No.	A	KIAMA MUNICIPAL COUNCIL	Std Dwg.
Drawn	D.B	Datum	Assumed	RURAL DRIVEWAY DISH CROSSING	R05
Checked	B.W	Date	MAY 2009		


ORIGINAL = A4 SHEET





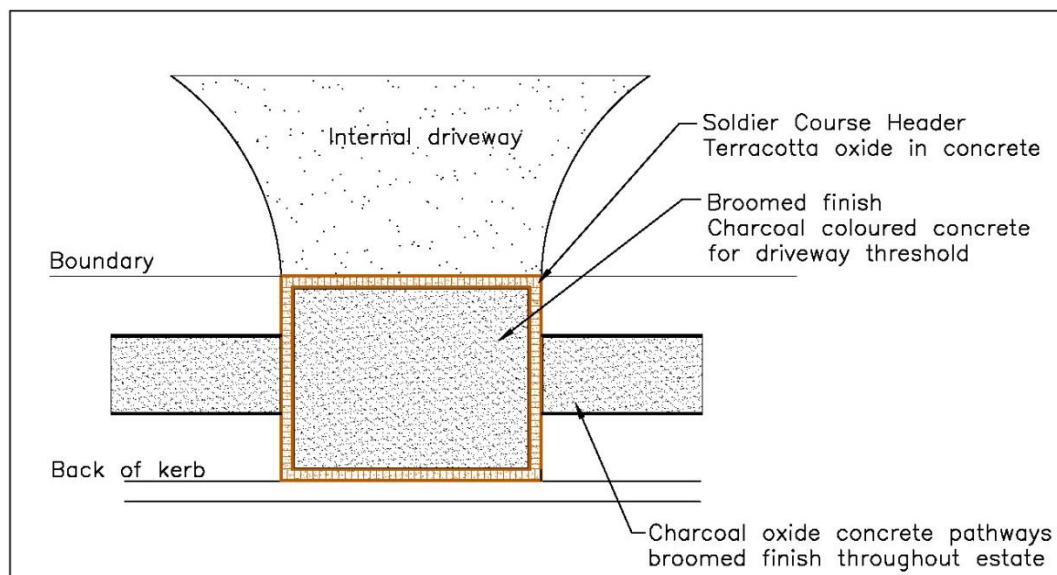
NOTES


1. ALL DRIVEWAY PROFILES SHALL BE SUBMITTED AT 1:100 HORIZONTAL AND VERTICAL SCALE.
2. ALL DRIVEWAY PROFILES SHALL COMPLY WITH AS2890.
3. THE LONGITUDINAL DRIVEWAY PROFILE SHALL BE TAKEN ALONG THE STEEPEST SECTION OF THE DRIVEWAY. FOR CURVED DRIVEWAYS, THIS WILL BE THE WHEELPATH ALONG THE INSIDE OF THE CURVE.
4. FOR DRIVEWAYS WITH SIGNIFICANT LEVEL DIFFERENCE ACROSS THE DRIVEWAY, A LONGITUDINAL PROFILE FOR EACH WHEELPATH WILL BE REQUIRED TO BE SUBMITTED.

Scale	1:100	Issue No.	A	KIAMA MUNICIPAL COUNCIL 	Std Dwg.	
Drawn	D.B	Datum	Assumed		SAMPLE DRIVEWAY LONGSECTION	R07
Checked	B.W	Date	MAY 2009			

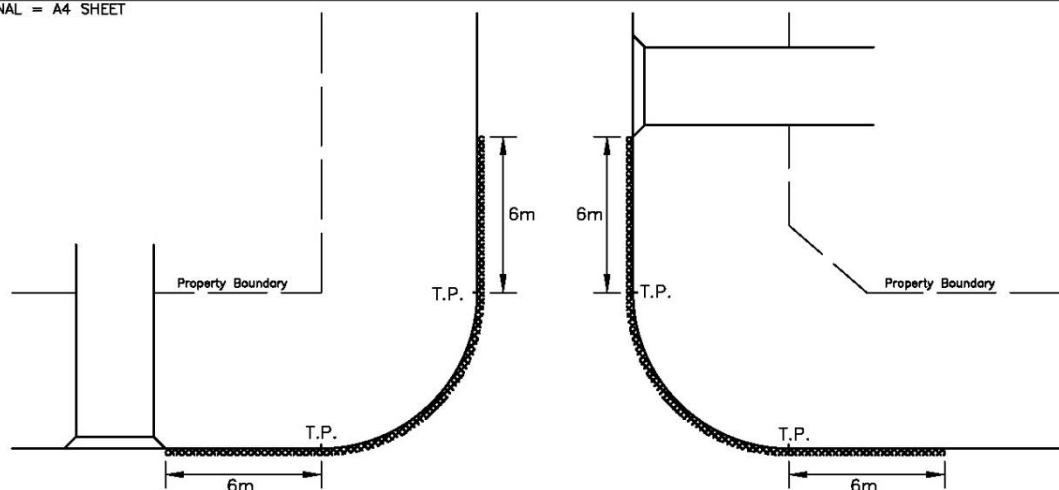
NOTES:

1. ALL DRIVEWAY CROSSOVERS IN THE ELAMBRA ESTATE ARE TO BE CONSISTENT WITH THE INCLUDED ILLUSTRATION BELOW AND BE CONSTRUCTED IN ACCORDANCE WITH COUNCIL'S DRIVEWAY & FOOTPATH WORKS PROCEDURE MANUAL.
2. A HEADER COURSE STENCILLED TO DELINEATE THE CROSSOVER FROM THE FOOTPATH, SHALL INCLUDE A 'SOLDIER COURSE' IN 'TERRACOTTA' COLOUR OXIDISED CONCRETE BY COLOURMIX® OR A SUITABLE BRAND EQUIVALENT.
3. THE 'SOLDIER COURSE' SHALL HAVE A BRICK SIZE IN THE PATTERN OF 230mm X 115mm.
4. THE DRIVEWAY THRESHOLD INFILL SHALL BE 'CHARCOAL' COLOUR OXIDISED CONCRETE BY COLOURMIX® OR SUITABLE BRAND EQUIVALENT.
5. ALL OXIDE SHALL BE ADDED AT THE RATE OF 10KG PER 1 CUBIC METRE OF CONCRETE.
6. THE DRIVEWAY THRESHOLD SHALL BE TEXTURED TO HAVE A BROOMED FINISH.

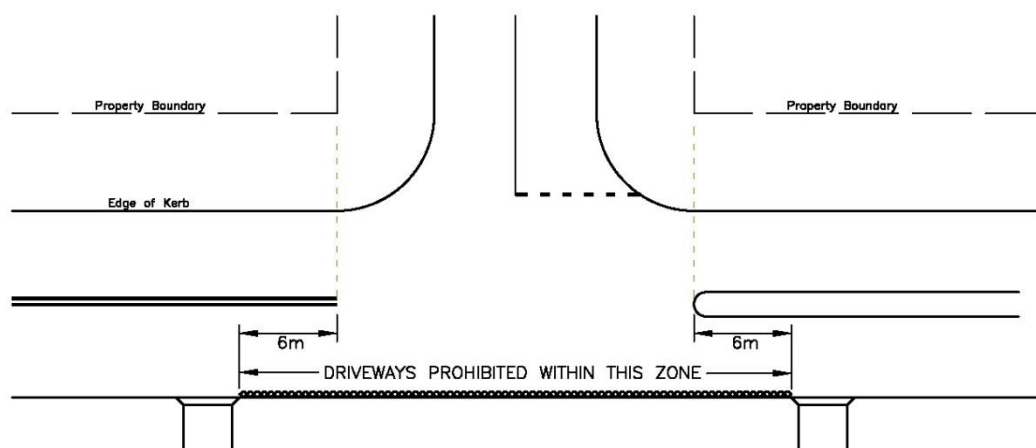


Scale	N.T.S	Issue No.	A	KIAMA MUNICIPAL COUNCIL 	Std Dwg.
Drawn	D.B	Datum	Assumed	ELAMBRA ESTATE DRIVEWAY	R08
Checked	B.W	Date	AUG 2009	CROSSOVERS	

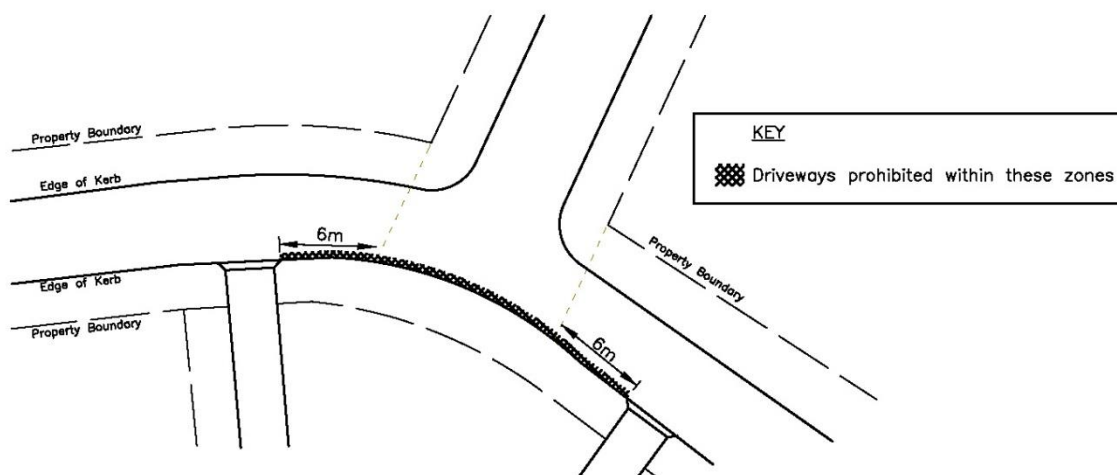
ORIGINAL = A4 SHEET




a) Driveway locations in relation to corner sites



b) Driveway locations in relation to intersections



c) Driveway locations in relation to curved intersections

Scale	N.T.S	Issue No.	A	KIAMA MUNICIPAL COUNCIL 	Std Dwg.
Drawn	T.H	Datum	Assumed	DRIVEWAY LOCATIONS	R09
Checked	D.B	Date	JUNE 2010		