



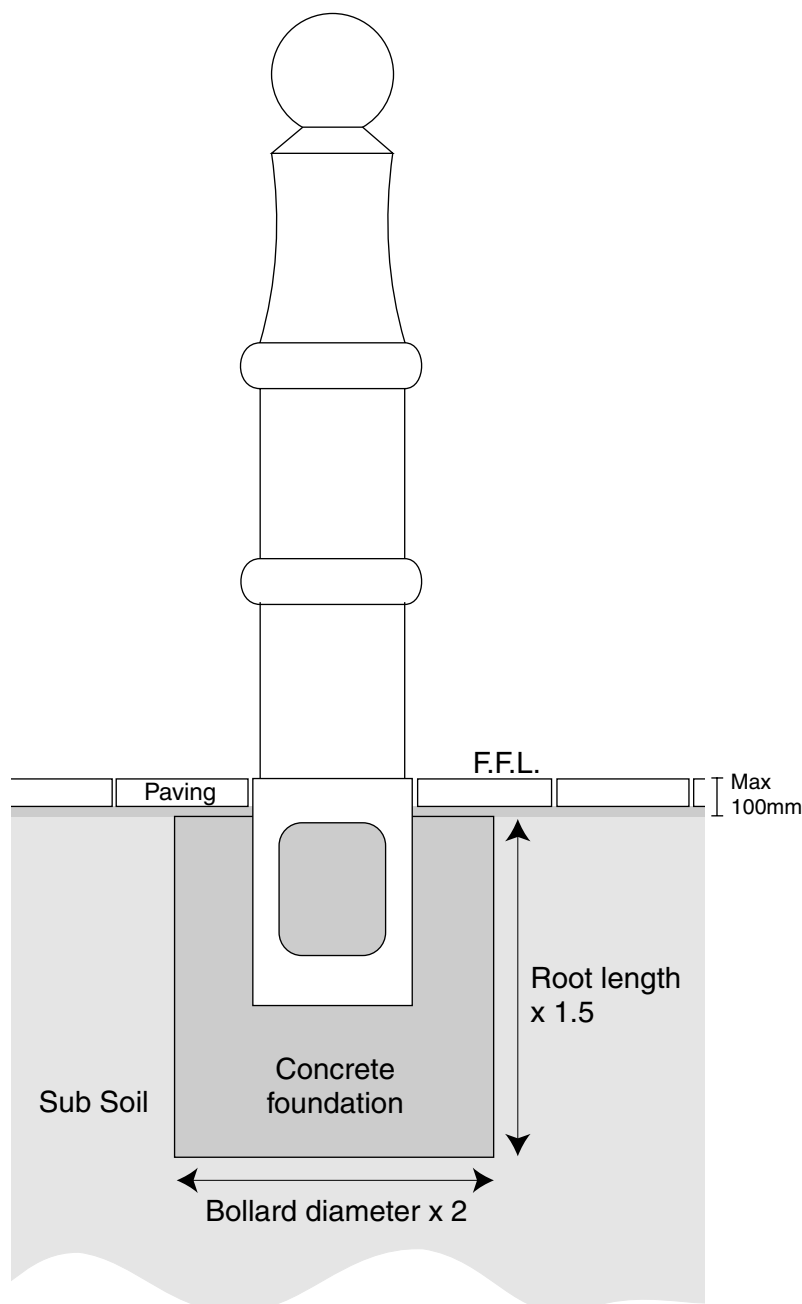
Installation

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Bollards

ROOTED BOLLARD FIXING



Bollards should always be securely fixed in 3:2:1 concrete mix, sulphate resisting if necessary. Certain sites, (dependant upon location) may require a quick setting concrete to be used.

Extended roots are recommended for bollards where paving and bedding material take up more than a third of the standard 300mm bollard root length.

Ensure that concrete fill is allowed to fall within the root window (where provided), this will anchor the bollard more securely.

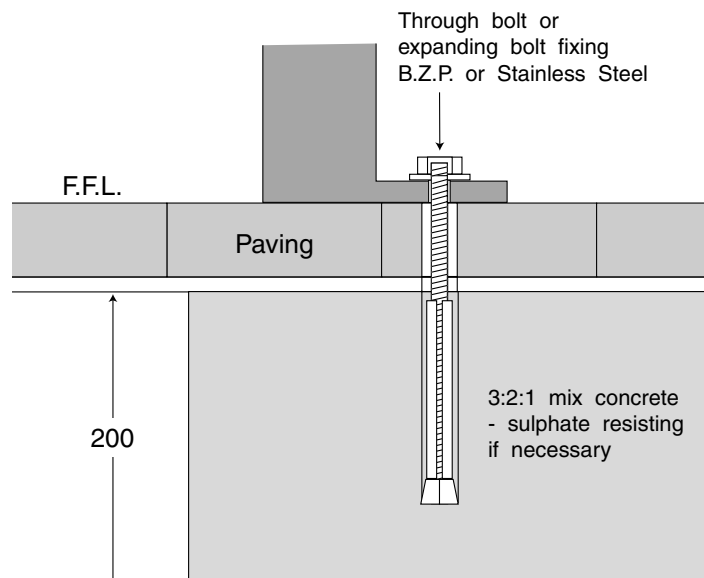
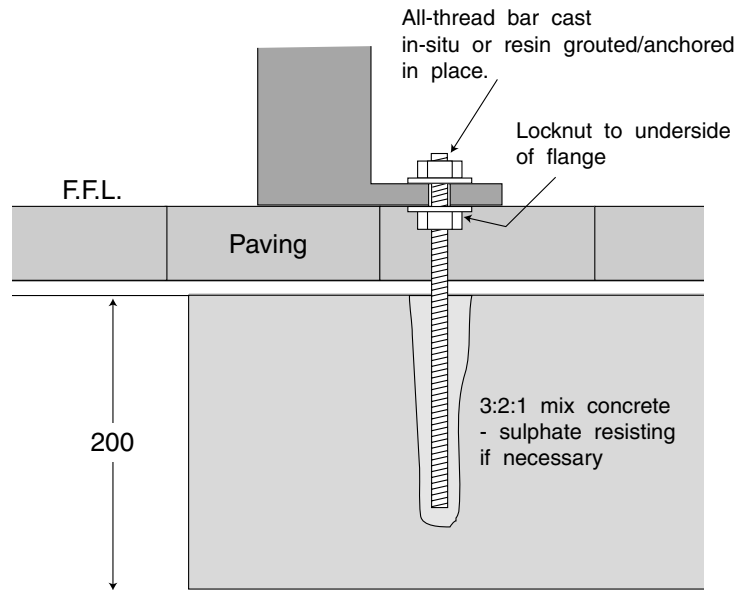
No product must ever be rolled or dropped during site installation. We recommend that individual packaging material is left in place as long as possible during the installation process to minimise the potential damage.

Great care is needed when installing finished painted products. Given the weight of most designs, paint damage most often occurs during installation. Touch up paint is available (at a cost), call our Sales office for further information.

FLANGED BOLLARD FIXING

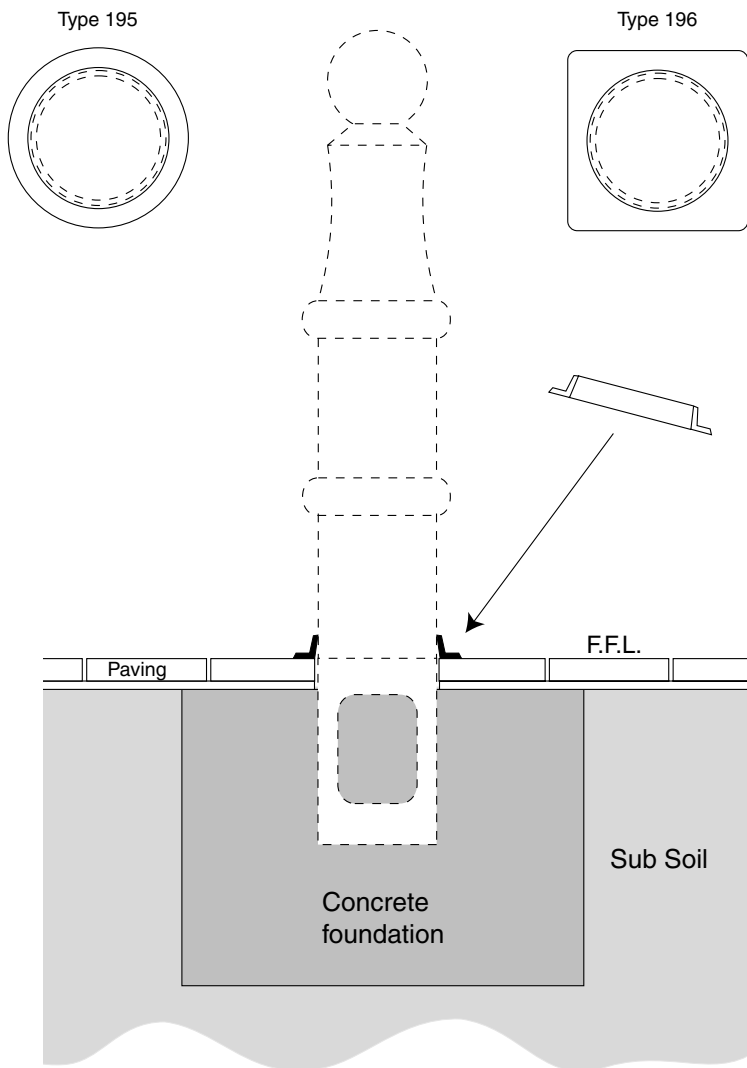
These two options indicate typical fixing arrangements although others may be accommodated.

The suggestions are for non-specific applications only, as individual service & site conditions may necessitate other methods of fixing.



Bollards

195 & 196 COVER PLATE INSTALLATION



Loose fit cover plate prior to installation of bollard if superstructure does not allow post-installation fitment.

When the bollard is in place and all abutting surfacing works are complete, adhere the cover plate to the surfacing and bollard using water-resistant adhesive (generally not supplied).

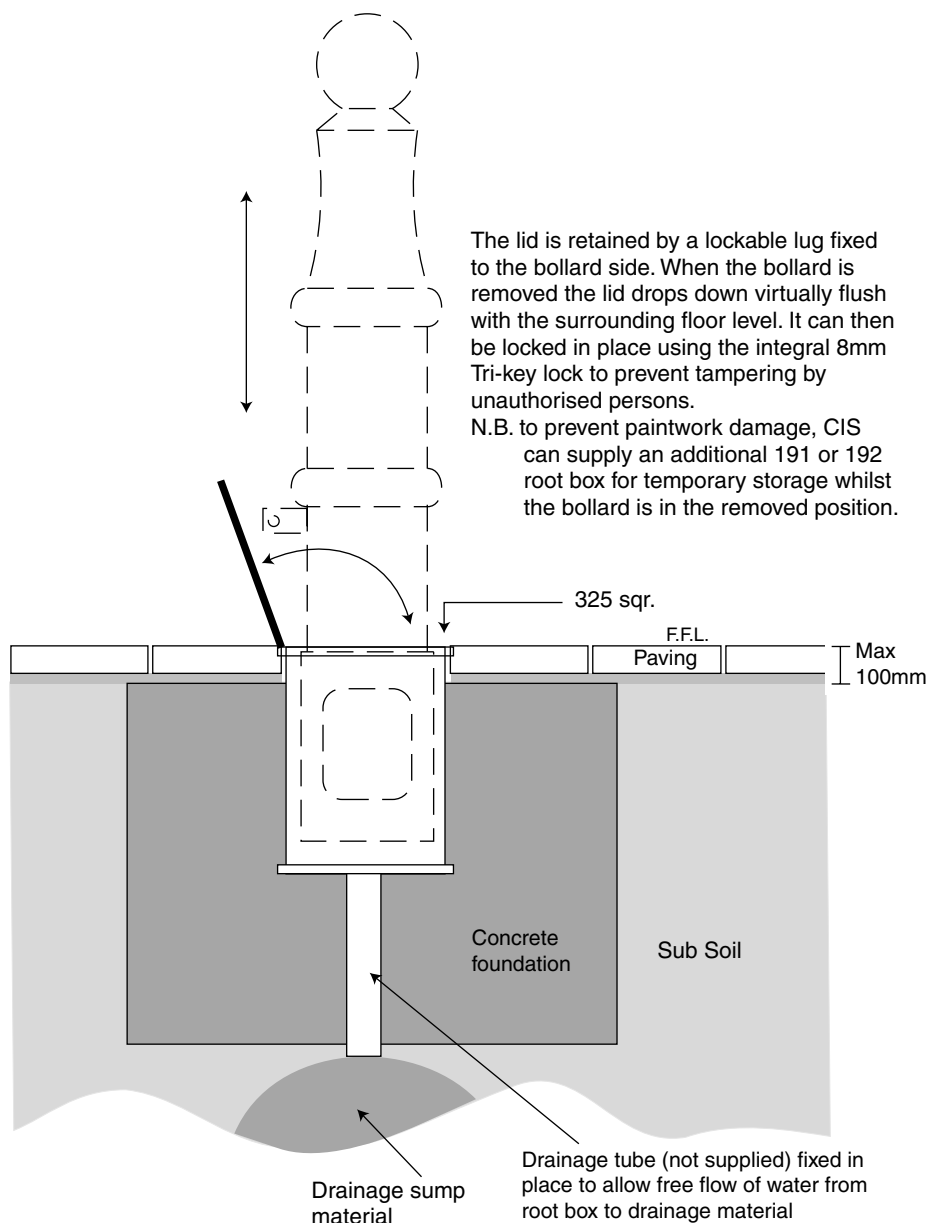
ROOT BOX 191/192 INSTALLATION

We recommend a 3:2:1 concrete mix, sulphate resisting if necessary, 400x400x600mm deep for light - medium duty traffic over-run, assuming 'good' soil characteristics. For heavy duty service the foundation design may have to be altered depending on the soil characteristics.

In the cases of heavy duty usage CIS should be informed at the point of order placement so that necessary provisions may be made.

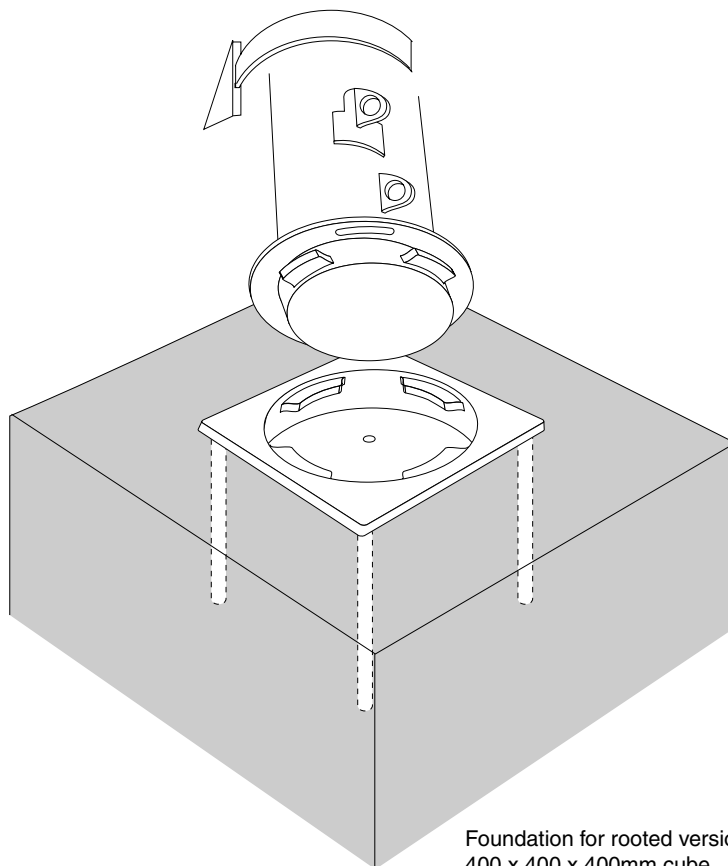
Extended root bollards should have at least 200mm of concrete below the base. The data is suggested only for non-specific applications as individual requirements and site conditions may dictate otherwise. Please refer to our Technical Department for advice in debatable cases.

Unless otherwise requested the bollard will not be in aluminium, although wherever possible we would recommend its use due to the ease of lifting. In any event we recommend that you select the optional 32mm diameter lifting out hole at 640mm above FFL and its respective galvanised steel lifting bar.

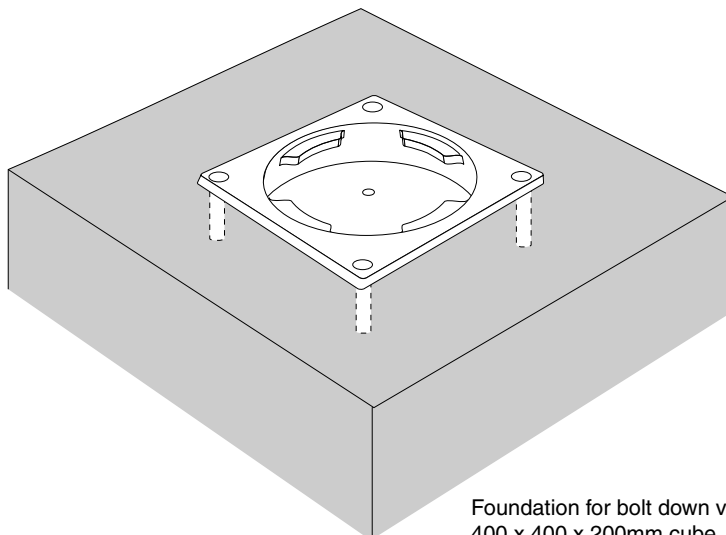


Bollards

BAYONET INSTALLATION



Foundation for rooted version
400 x 400 x 400mm cube

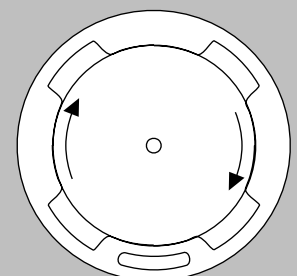
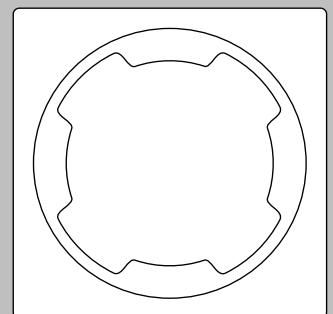


Foundation for bolt down version
400 x 400 x 200mm cube

This type of socket has a separate cover plate for use should the bollard be removed for any length of time. The cover plate should be stored independently from the bollard.

Should the bollard be removed frequently for any length of time, it may be prudent to purchase a second base unit, in order that the bollard can be securely stored.

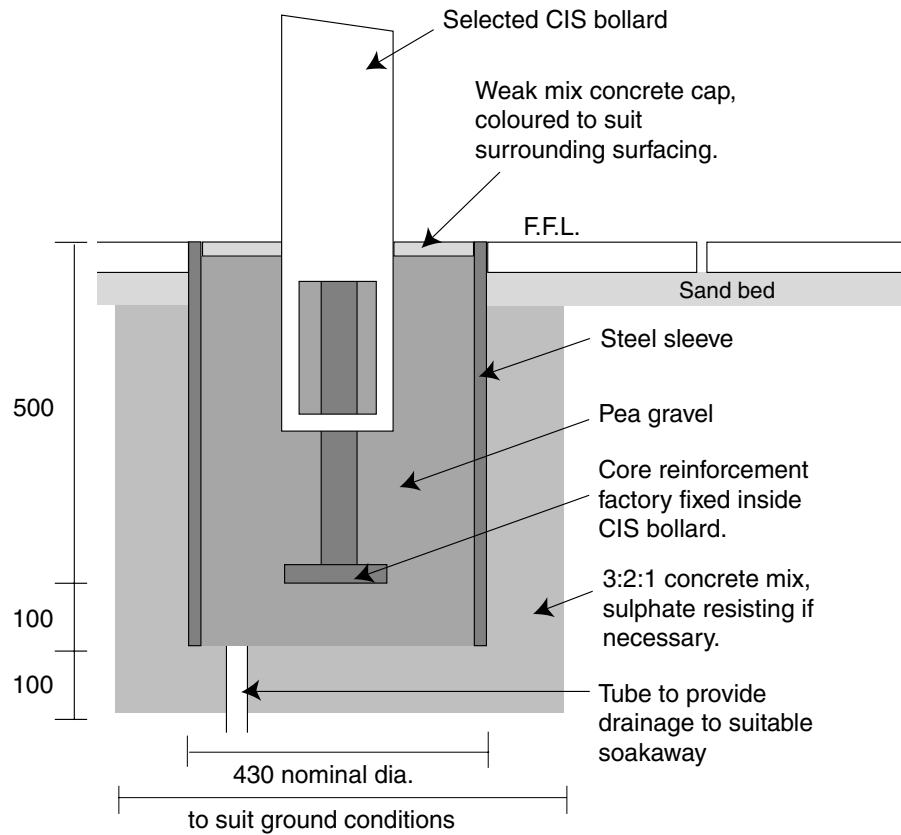
Provision should be made by the use of a plastic tube (not supplied) through the concrete foundation to a drainage sump material below concrete level. This should provide adequate irrigation of rainwater.



ANTI-RAM RAID INSTALLATION

Care is required when designing suitable foundations for this type of bollard. We would always recommend consulting a local qualified Structural Engineer.

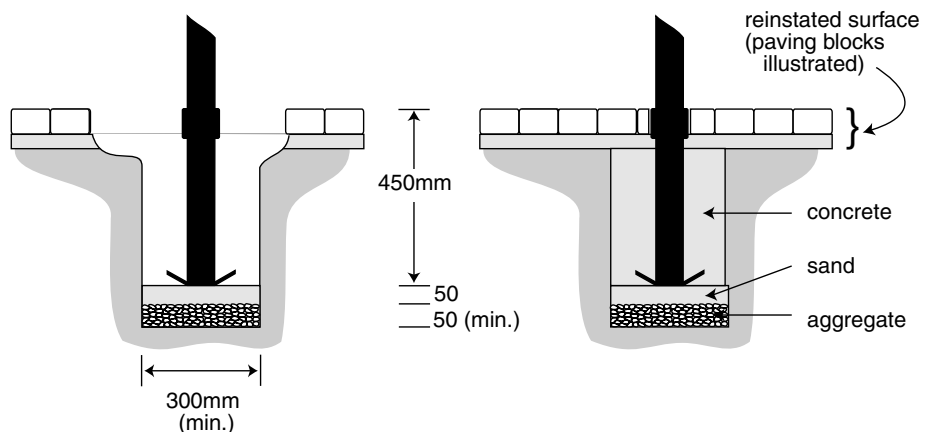
For anti-ram raid, core only bollards, concrete foundations should be a minimum of 4 x diameter of the bollard and 2 x the root length of the bollard. If in any doubt always check with your Structural Engineer.



197 INSTALLATION

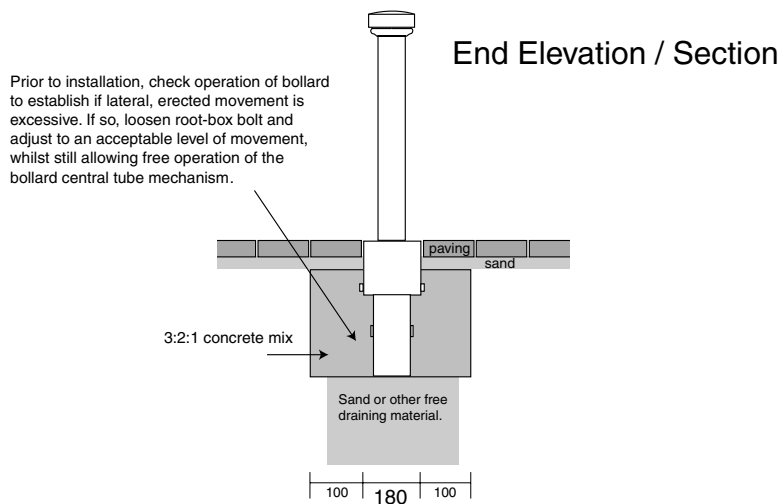
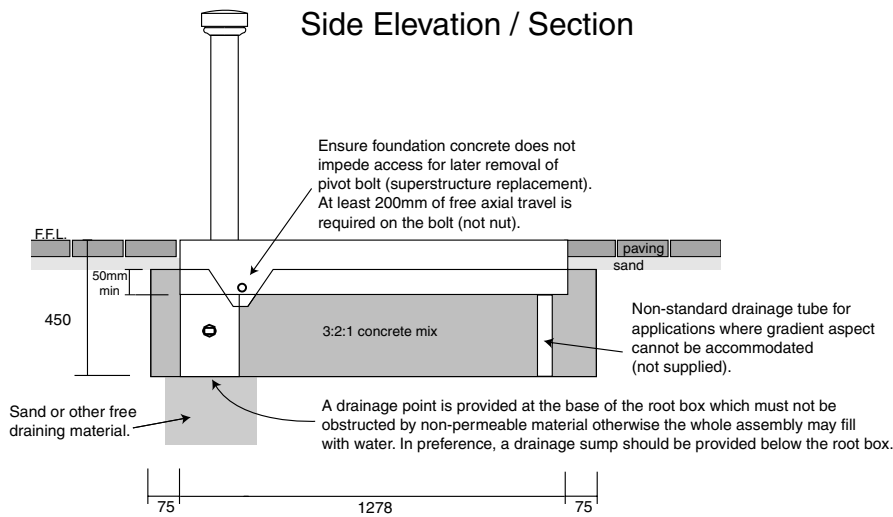
Ensure the pivot point of the bollard is fixed at finished floor level so that the bollard can open and close without hinderence. This bollard should be installed with the flow of traffic so that wheels traverse either side of the collapsed bollard, not driven over.

A separate padlock (not normally supplied) locks the bollard in either open or closed positions. This folding bollard is designed to give excellent resistance to nudging by cars, as it does not solely rely on a padlock for all its strength, unlike most other designs.

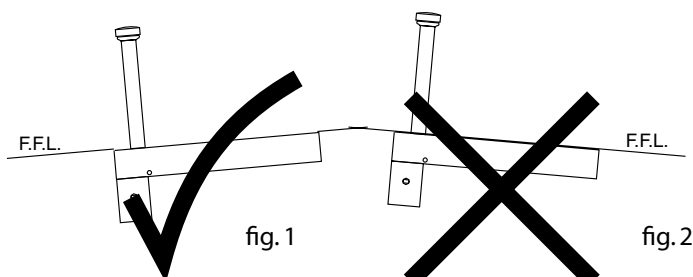


Bollards

FOLDING 194 INSTALLATION



Gradients



For light to medium duty a 3:2:1 concrete mix should be used (sulphate resisting if necessary) assuming 'good' soil characteristics.

For heavy duty service the foundation design may require alteration depending on site and expected service conditions.

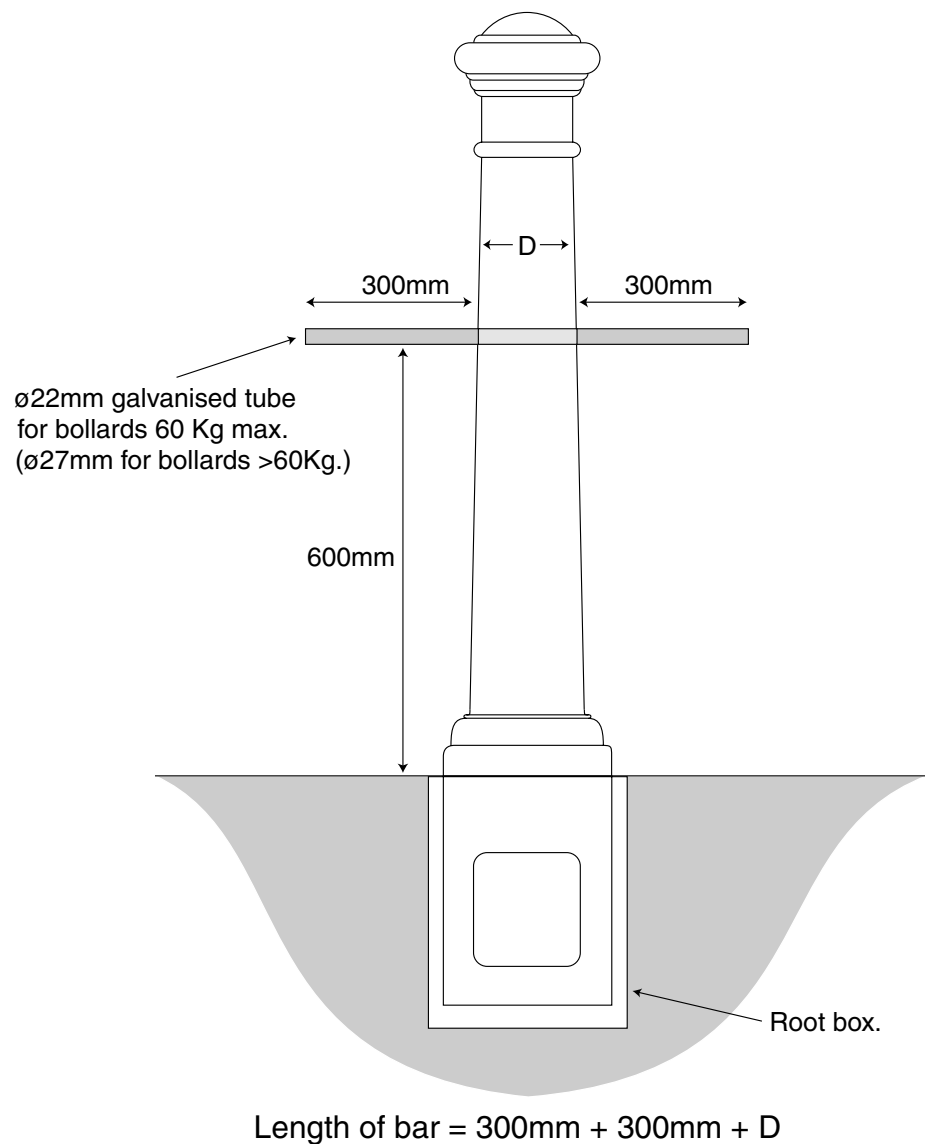
When the bollard is to be sited on a gradient, please ensure that installation is executed as in fig. 1. In cases where fig. 2 is the only site option available then CIS must be informed at the point of order so that an additional passageway may be factory fitted to allow water to escape from the rear (bollard cap) end of the box.

This data is suggested for non-specific applications only as individual requirements and site conditions may dictate otherwise. Please refer to our technical department for advice in debatable cases.

Due to the fold down nature of this product, vertical adjustment is not possible.

REMOVABLE BOLLARD LIFT-OUT BAR

Bollards

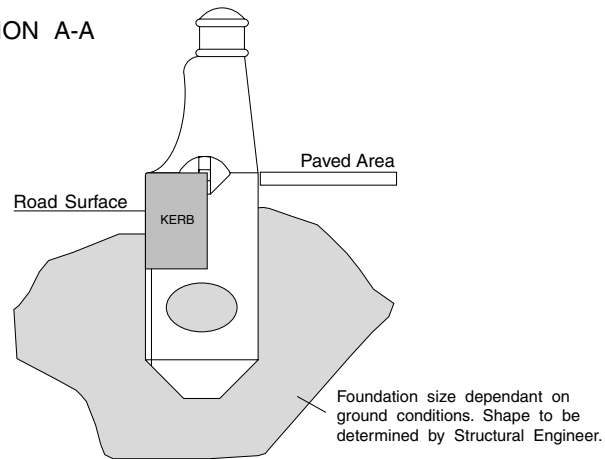


Recommended for bollards in excess of 30kgs.

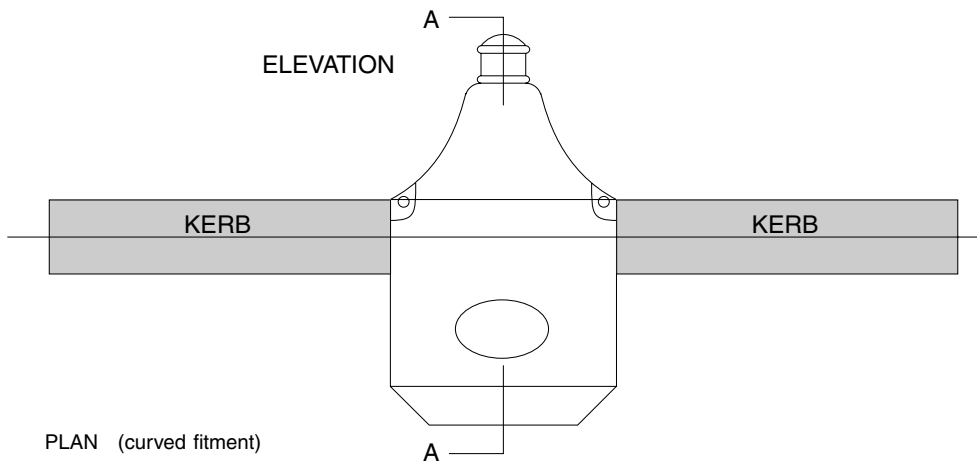
The lift out bar is independent of the bollard and is required to be stored in a safe but convenient place. When this option is chosen, lifting the bollard becomes a two person operation.

193 INSTALLATION

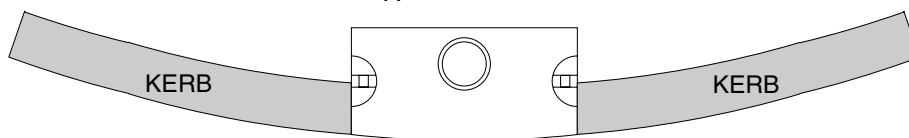
SECTION A-A



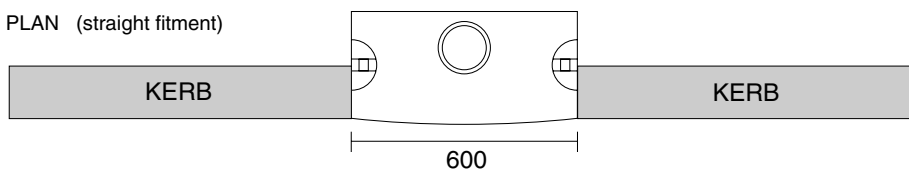
ELEVATION



PLAN (curved fitment)



PLAN (straight fitment)



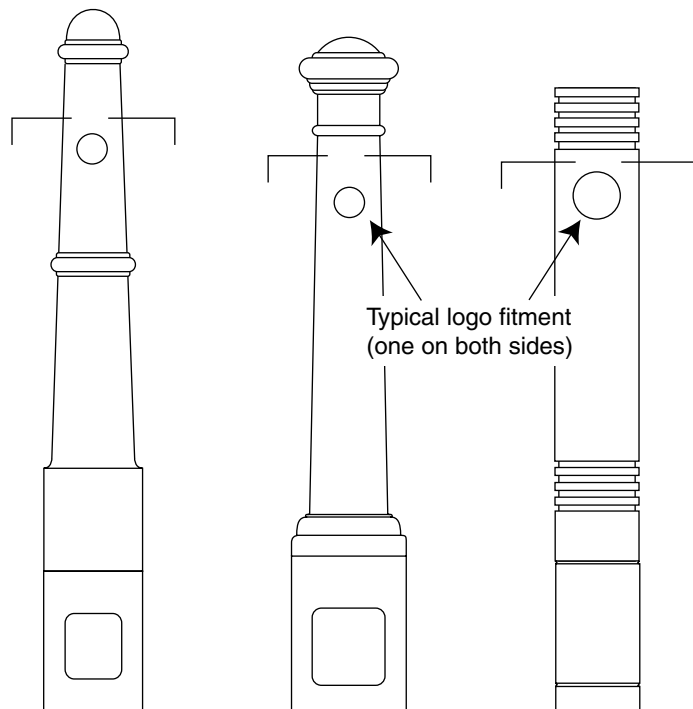
Bollard 193 has been designed to deflect lorry trailer wheels, thus preventing them from mounting kerbs and damaging railings or pedestrians.

The bollard kerb face profile suits standard half batter kerbs to BS 7263 part1:1994. This bollard should only be used as part of the kerblines, (as shown opposite) and should not be set back within the paved area beyond the kerb.

Lifting eyes are cast within the bollard to facilitate easy site lifting via fork lifts, hiabs or similar vehicles. Care is required when handling, as this bollard weighs in excess of 200kgs.

LOGO & CREST POSITIONING

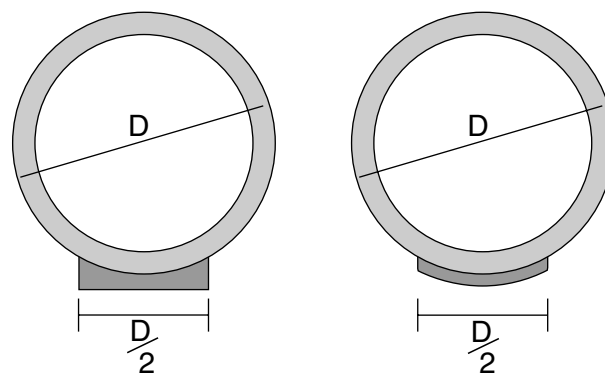
Crests are available to fit most styles of bollard. It is essential that good quality artwork is provided by the customer in order that crests/logos can replicate the original designs.



Sections

Type A

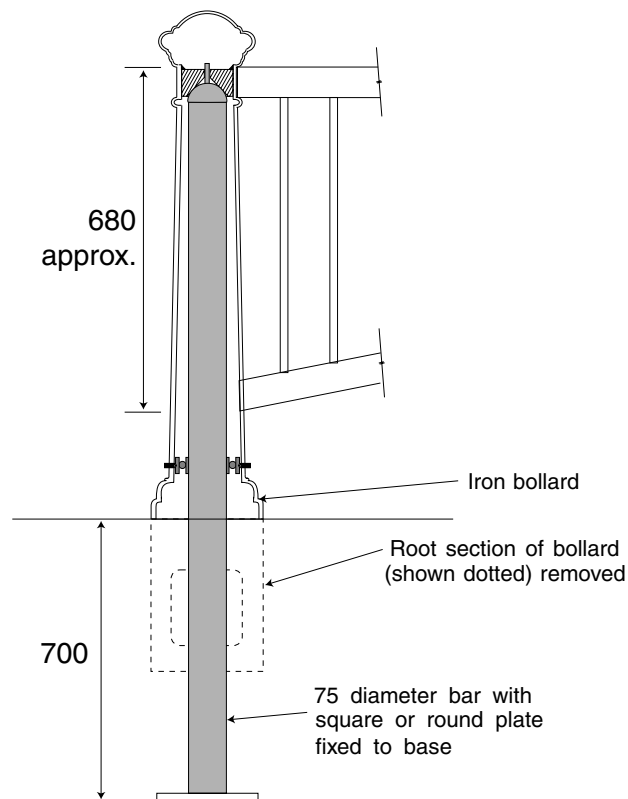
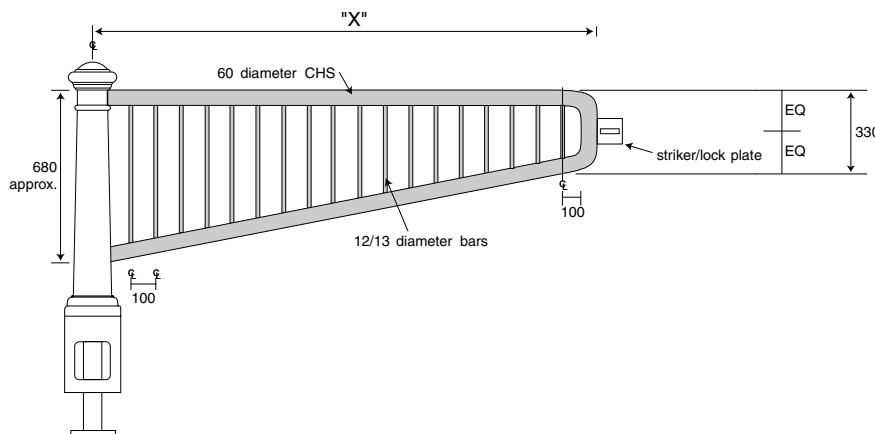
Type B



Section 'A' shows a shouldered and flat face to the crest that is required if the diameter 'D' is less than 75mm. Section 'B' shows a curved face crest for bollards over 75mm diameter.

Bollards

GATE INSTALLATION



With this design of gate no hinges are used. The bollard pivots around a solid steel core specially constructed within the confines of the bollard.

Foundations for the gate are dependant upon each gate leaf width. The longer the gate leaf the larger the foundations need to be. We would suggest a minimum foundation size of 600x600x800mm deep. As soil conditions vary we would recommend consulting a qualified Structural Engineer.

The bollard housing needs to be free for movement and therefore should not be part of the foundation detail. Bollard housing should be raised slightly above finish floor level by approx. 5 - 10 mm. This will allow for eventual wear over years of operation.

Pivoting bollard gates are factory lubricated, but may require occasional further lubrication (approximately 2 year intervals dependant upon usage). Provision should be made for locking the gate in both the open and closed positions.

Restrictors can be added at the factory in order to limit the gate in opening only 90 or 180 degrees. Should this be specified ensure that the gate is installed in the correct hand.

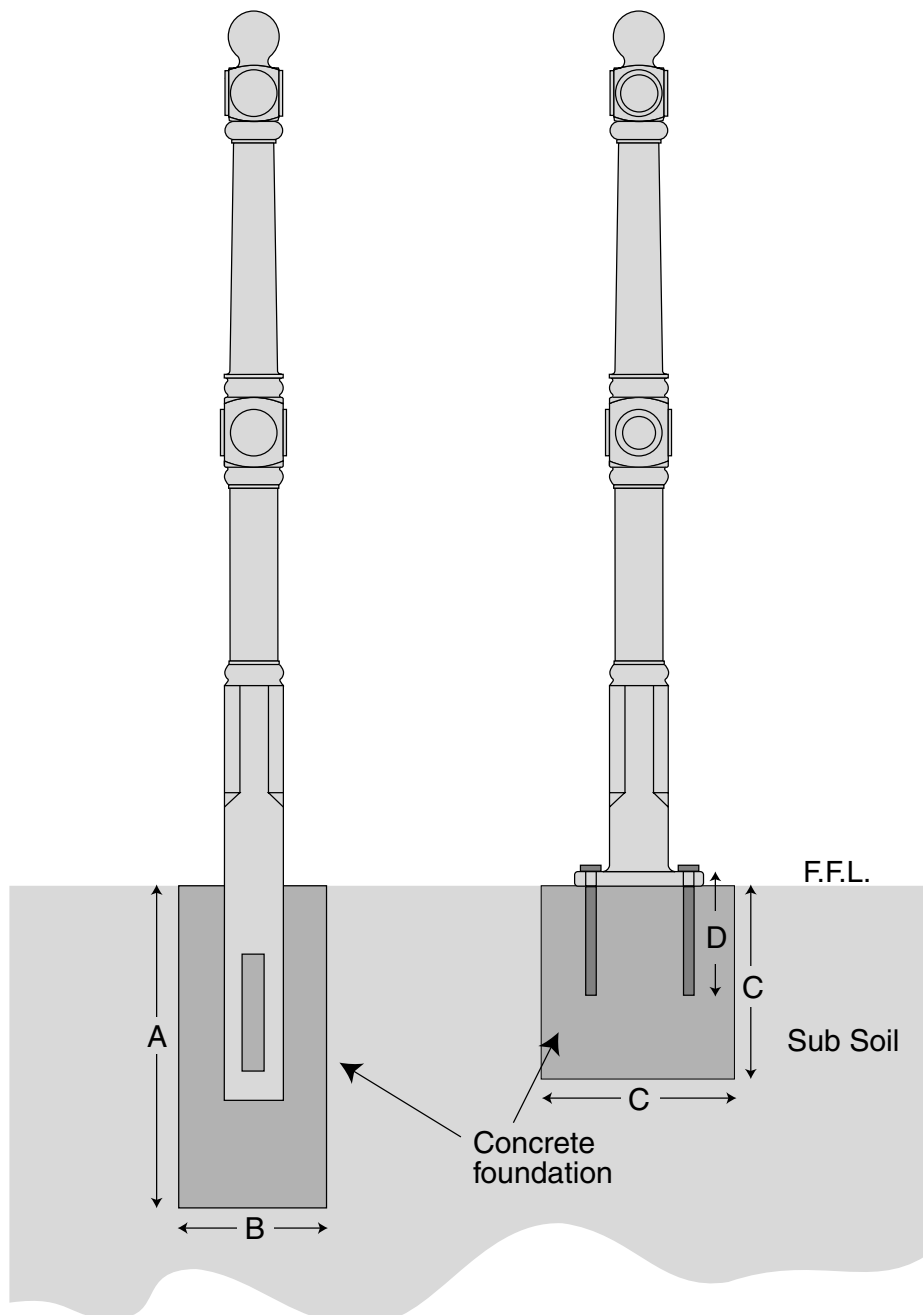
ROOTED AND FLANGED RAIL POST INSTALLATION

The concrete foundation should be a 3:2:1 mix, sulphate resisting if necessary.

With rooted versions the foundation depth 'A' should be 1.5 x the root depth, width 'B' should be 2.5 x the post width, assuming good soil conditions.

For flange mounted versions dimension 'C' should be 1.5 x the base plate width. Mounting bolt depth 'D' is a minimum of 150mm, and can be either a grouted in or chemical anchor type.

Railings

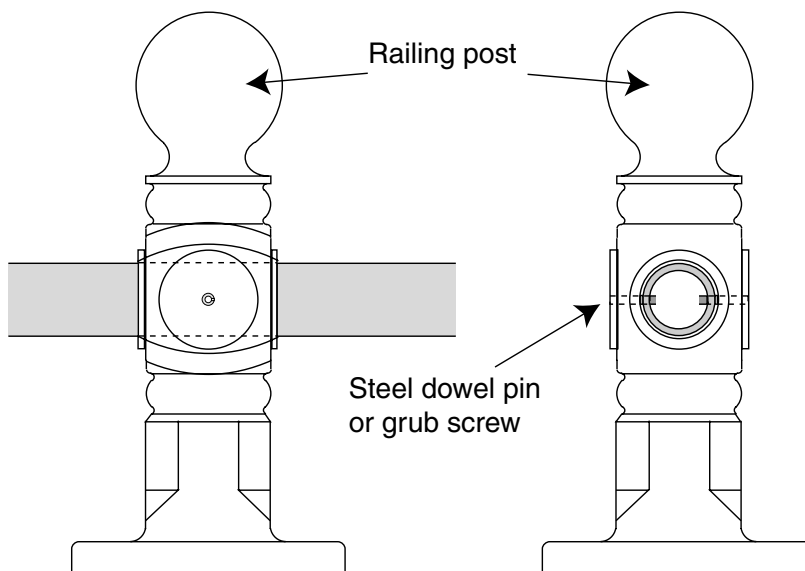


Railings

RAIL FIXING

Side Elevation

Rail Axis Elevation



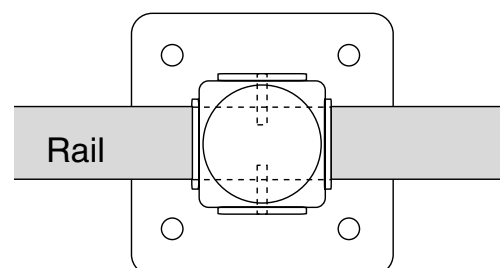
Pass the rail through the post to the desired position. Drill through opposite sides of the railing post and tube to receive two 6 or 8mm diameter steel pins (optional extra) drifted below the surface. Fill the resultant holes and the gap around the tube with an adhesive sealant (optional extra), then dress flat and touch-up paintwork to match surround.

The design of the railing post may preclude the location of the pins diametrically opposite each other.

The free ends of the tube must always be fixed.

Tube is supplied to site galvanised in 6.4 metre lengths. Site cutting and bending is normally carried out by others. Due to this policy, tube cannot be supplied painted. Any paint would instantly become damaged when inserting a length of tube through several railposts. We recommend site painting upon completion of the scheme.

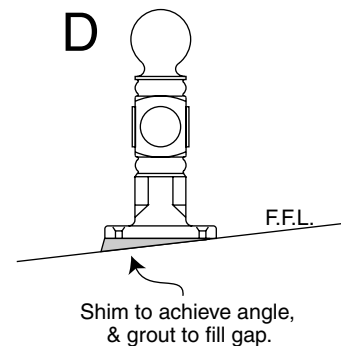
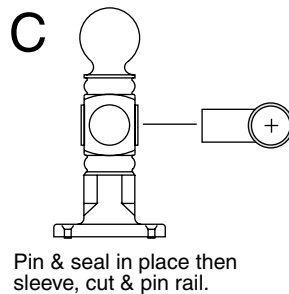
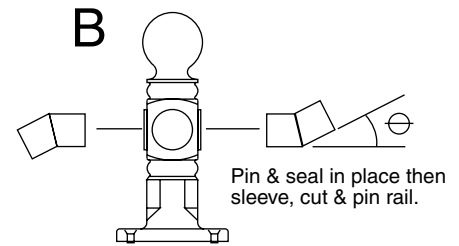
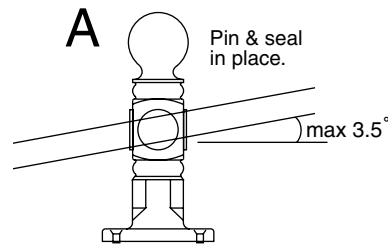
Plan



GRADIENT FIXING METHODS

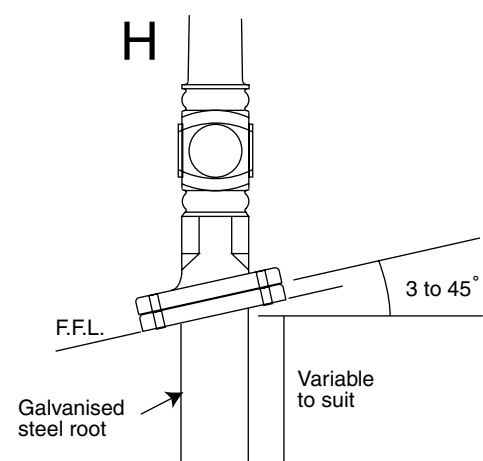
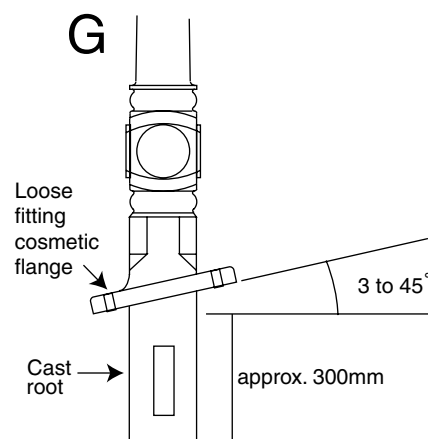
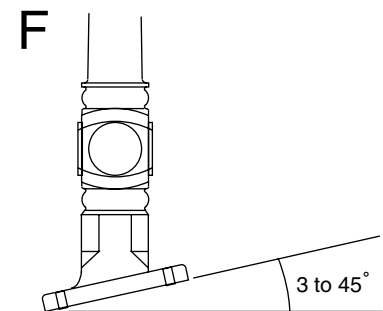
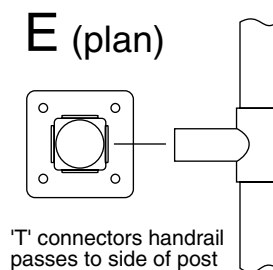
Standard applications

For shallow angles any of the options A, B, C, or D can be chosen. As standard all posts will accommodate these variations. This is the most cost effective way of overcoming gradients within a project.



Special applications

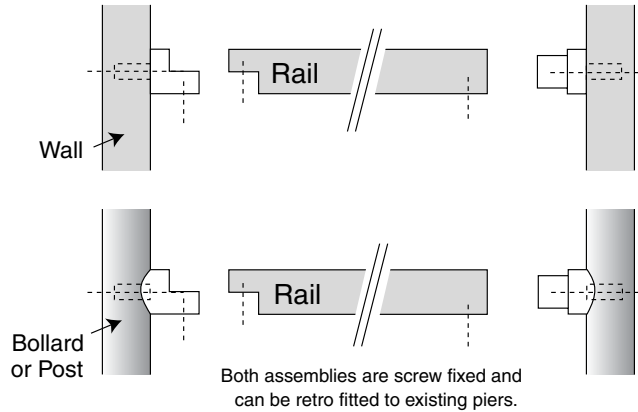
For greater angles than the above we can offer raked flanges and bosses. This can become expensive as modifications are required to the pattern equipment. Please note that where certain angles are too large it may not be possible to angle bosses as the boss shape becomes very protracted.



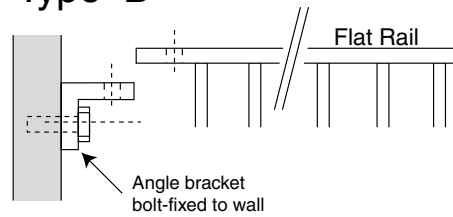
Railings

TYPICAL ABUTMENT SOLUTIONS

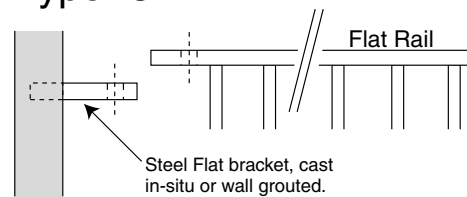
Type A (291 system)



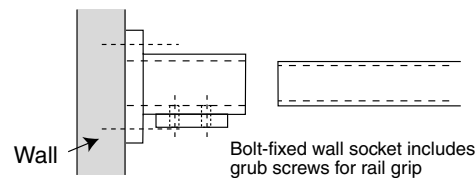
Type B



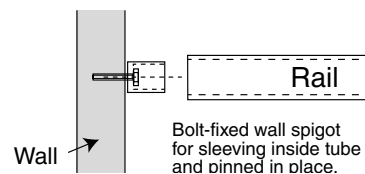
Type C



Type D



Type E



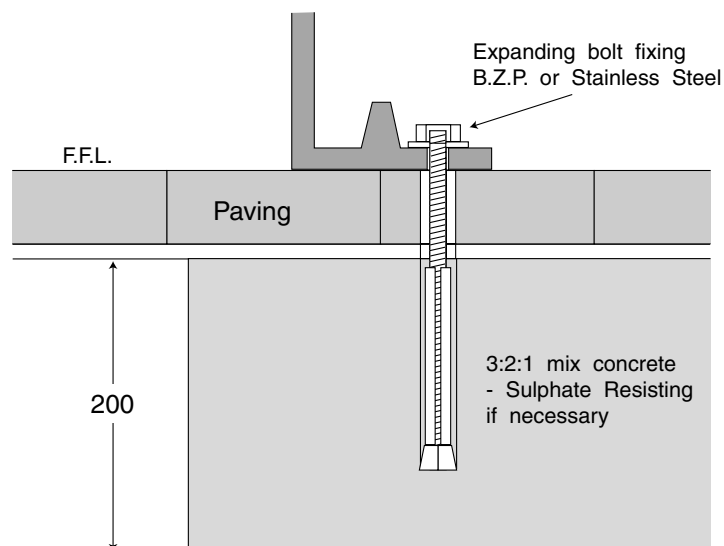
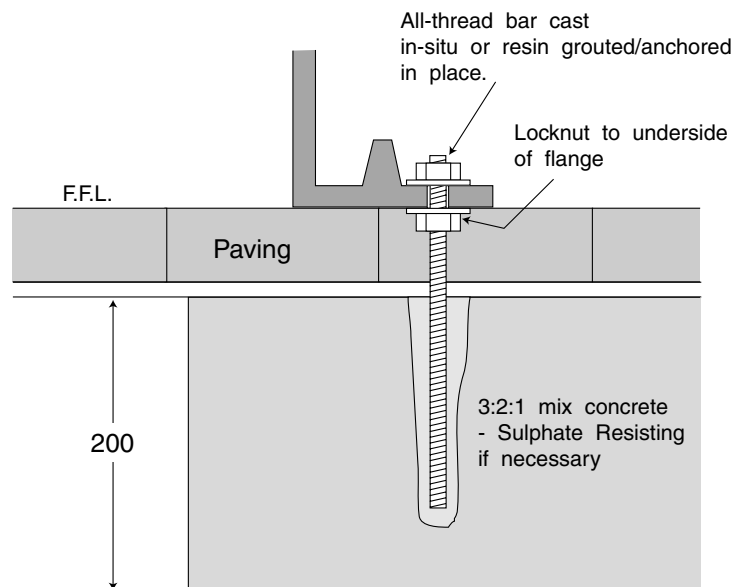
Should you require subsequent removal of panels after completion of a project for access or maintenance the following options are available. If required our sales office can give general advise regarding the most suitable application for your particular scheme.

LITTER BIN FIXING

These two options indicate typical fixing arrangements although others may be accommodated.

The suggestions are for non-specific applications only as individual service and site conditions may necessitate other methods of fixing.

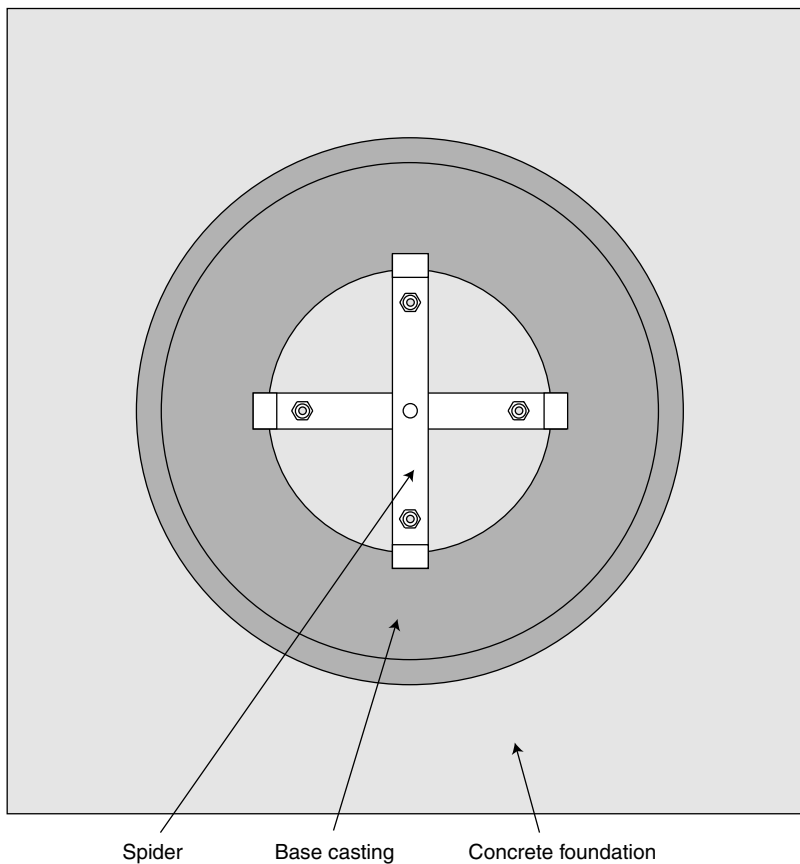
Please consult our Technical Department for advice.



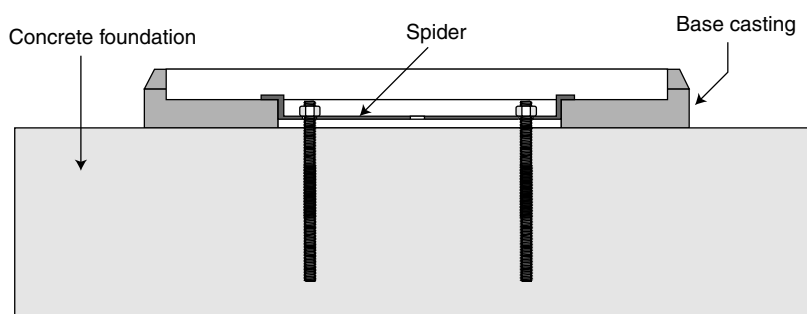
Litter bins

LITTER BIN FIXING

Plan



Section through base



We recommend as a minimum requirement a concrete base slab of 600mm square or diameter having a depth of no less than 200mm.

The spider arrangement should be clamped in place by the use of an expanding type bolt (approximately M10 in size) centrally anchored at least 120mm into the foundation slab. For areas where higher security is required the centrally mounted bolt can be replaced by four M10 bolts on a 200mm pitch circle diameter - provision has been made for this on the spider unit.

Alternatively the litter bin could be fixed in place permanently using either an epoxy resin grout between the bin base and the foundation slab, or the base lip could be submerged into the concrete foundation to a maximum depth of 10mm above the internal base lip.

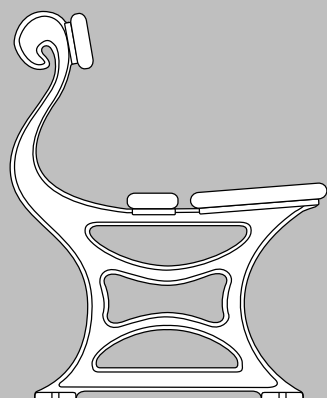
Where the finished surface is tarmacadam or blockwork and mechanical fixings are used, then they should penetrate into a suitable foundation as described above.

SEAT FIXING

These two options indicate typical fixing arrangements although others may be accommodated.

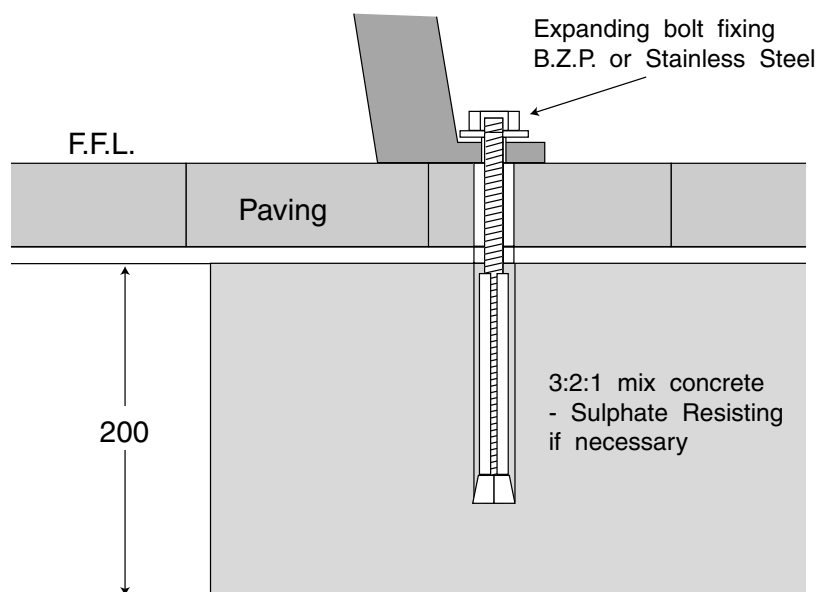
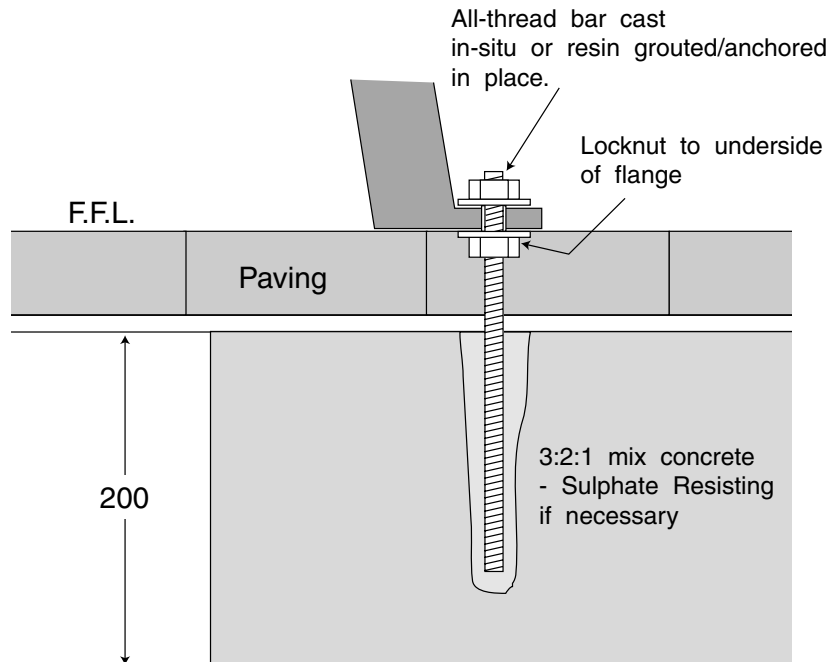
The suggestions are for non-specific applications only as individual service and site conditions may necessitate other methods of fixing.

Please consult our Technical Department for advice.



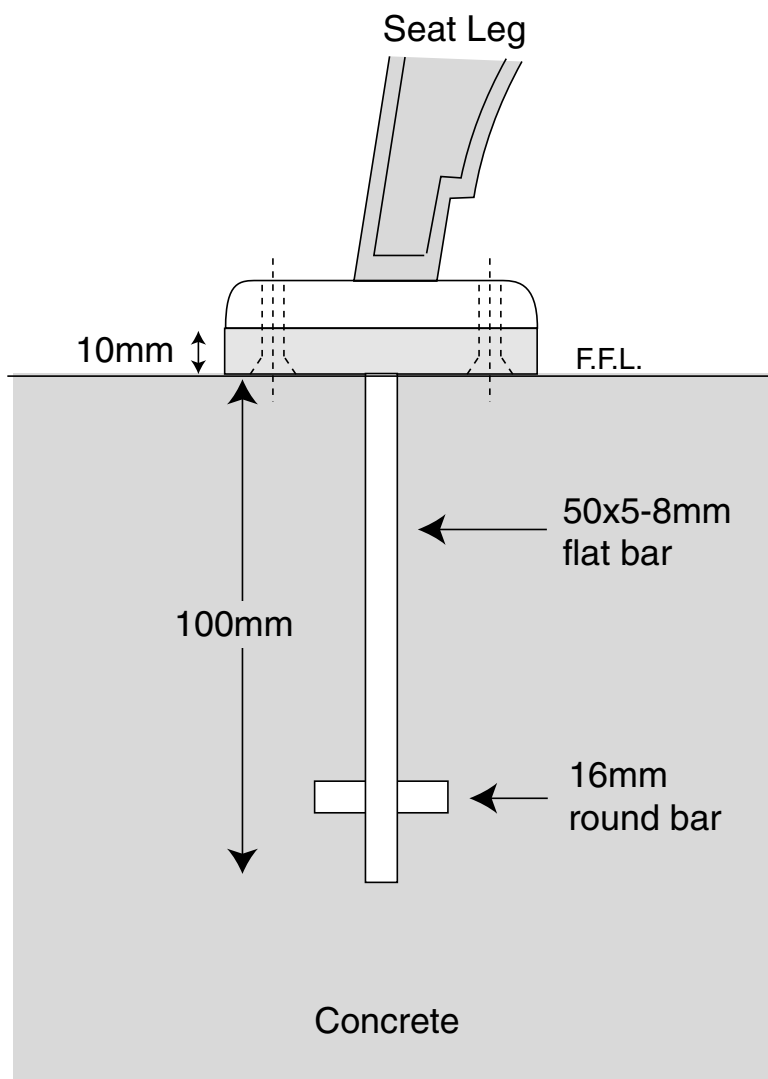
Concrete foundation

Foundation per seat end
length = product depth + 150mm
width = 300mm



Seating

ANTI-THEFT SEAT FIXING



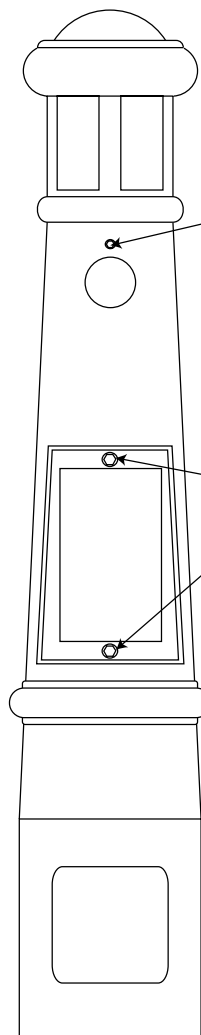
Anti - theft seat fixings can be supplied as shown. Dependant upon the site you may chose either two per seat (diametrically opposed) or four (one per leg) for higher security.

Should the seat need to be removed for any reason, then it will be necessary to drill out the retaining bolts on site.

LAMP CHANGING

All works to electrical equipment should be carried out by a qualified electrician. Power should always be terminated prior to any attempt to gain access to any part of the bollard.

Note individual bollard designs may differ in certain characteristics. Please contact our Technical department for further advice before attempting to replace any equipment.

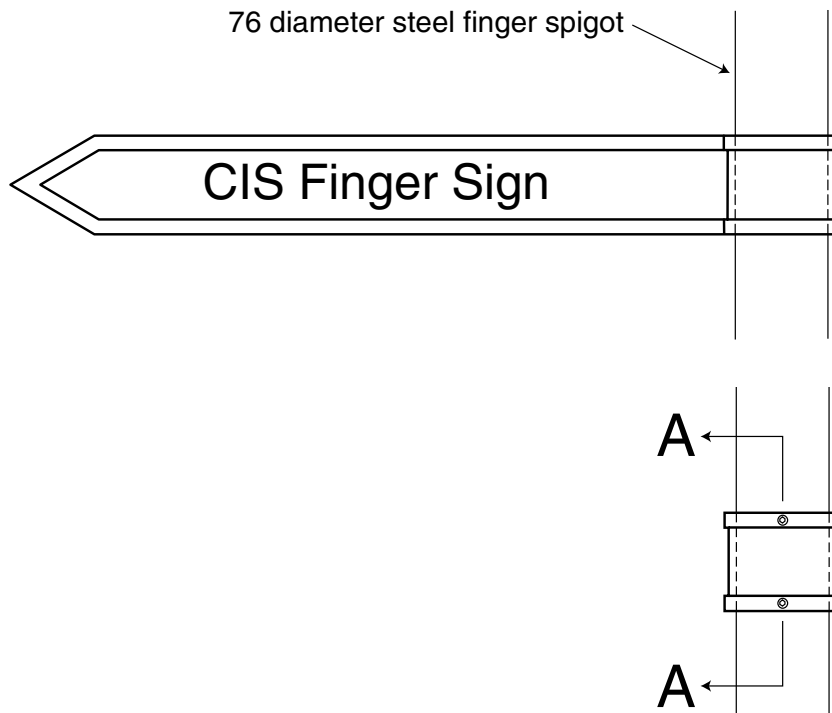


Undo grub screws, twist top anti-clockwise, top will come off, bulb can then be removed.

Undo cover plate, assembly with light fitting should then be removed. To change timer box.

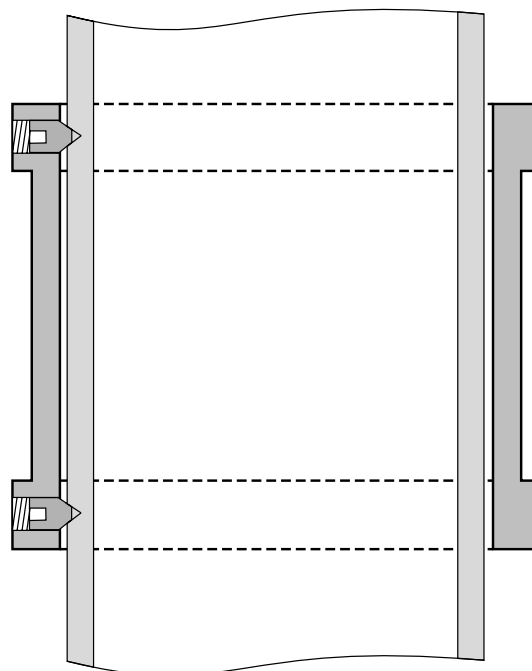
Signage

FINGER INSTALLATION



Section A-A

M8 grub screws supplied with finger to be screwed through boss into CSK surface of steel spigot - drilled on-site by installation contractor after adjusting to desired direction.



As standard a 1 - 1.5 metre length of plain galvanised tube is supplied with all finger posts. The fingers are to be sleeved over making sure spacer rings (if specified) are in place. Make an allowance for the finial and site cut the tube to the required length. Point fingers in the appropriate directions and tighten grub screws located to the rear of the boss.

When specifying it may be prudent to allow for 1 or 2 spacer rings in order that extra fingers may be added at a later date.

Fingers may be permanently fixed in position by replacement of the grub screws with steel pins (not supplied) inserted through a site drilled hole.

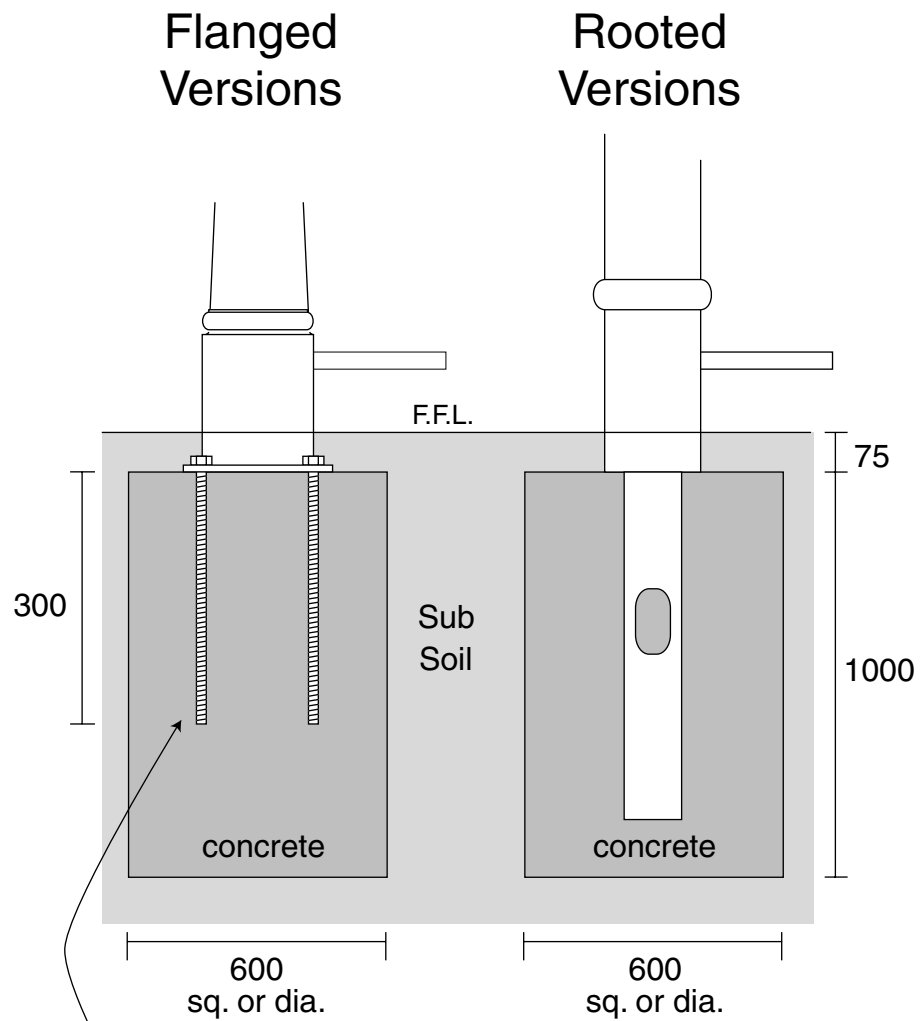
NOTICEBOARD POST INSTALLATION

Signage

Foundation designs illustrated are suggestions only, as site conditions and service loadings may dictate otherwise. Foundation bolts are not supplied as standard but may be provided, if requested. Our sales staff will assist.

The concrete should be at least 3:2:1 mix, sulphate resisting, if necessary.

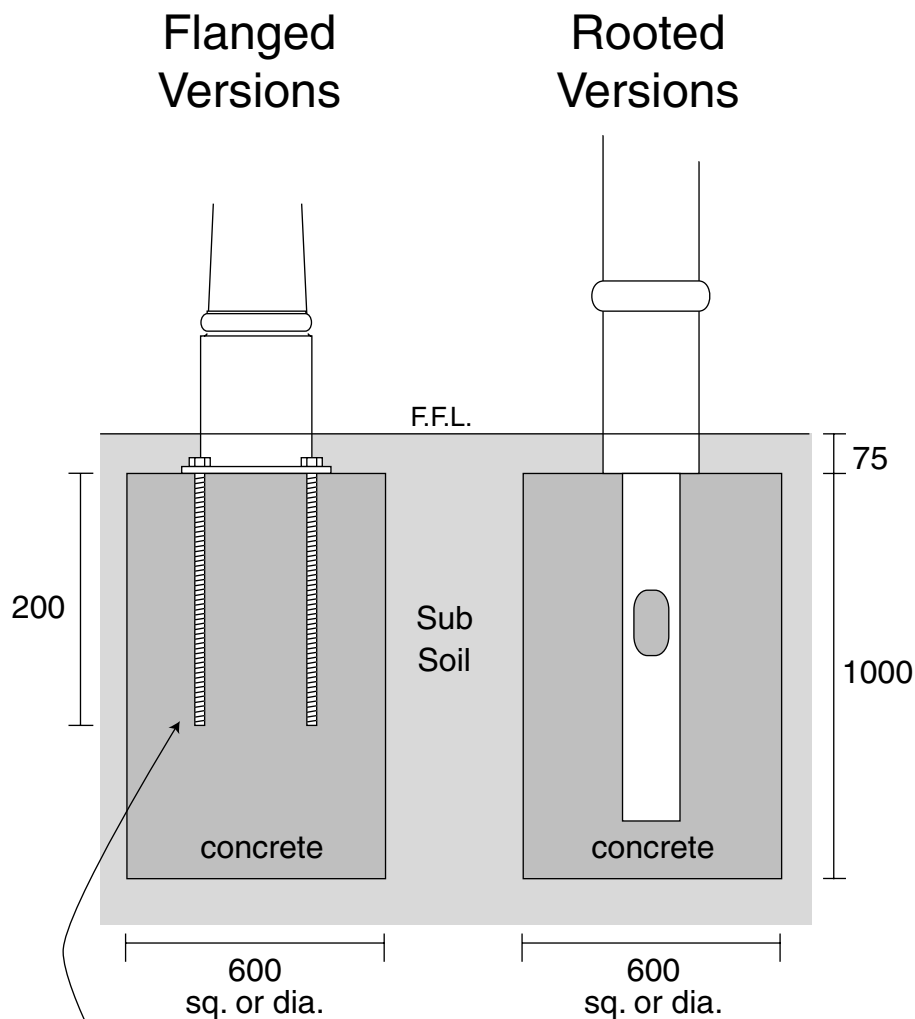
Ensure that FFL to the underside of the tapping rail is approximately 200mm.



300mm long anchor bolts can be cast in-situ, resin or parabol fixed.

Signage

FINGER POST INSTALLATION



Plated 200mm long anchor bolts can be cast in-situ, resin or parabol fixed.

The foundation designs illustrated are suggestions only, as site conditions and service loadings may dictate otherwise.

Foundation bolts are not supplied as standard but may be provided if requested. Our sales staff will assist.

The concrete should be at least 3:2:1 mix, sulphate resisting if necessary.

The steel finger spigot is supplied 1500mm long for site cutting to length by the installation contractor. Please make provision for an extra 50mm for fitment of the finial, as illustrated.

The steel finger spigot can be increased in length at a later date by provision of a CIS adaptor.

Please ensure that the FFL to underside of the first finger distance is a minimum of 2.25m to reduce pedestrian hazard. The lifting of fingers may be achieved with the use of spacers, available on request.

TREE GRILLE AND FRAME INSTALLATION

Box out area to suit outside dimensions of sub-frame - grille + 35mm = frame \pm 3mm.

Ensure the depth around edge has a minimum of 100mm of concrete under the angle or outer frame.

Compact sub-soil base for firm bed for concrete strip and infill with concrete (a 3:2:1 mix is advised, sulphate resisting if necessary) around the edge. Reinforce if loading requires it.

Assemble outer frame and bed frame fixings in concrete foundation. Bed in angle frame ensuring top is level and at a height to suit the surfacing.

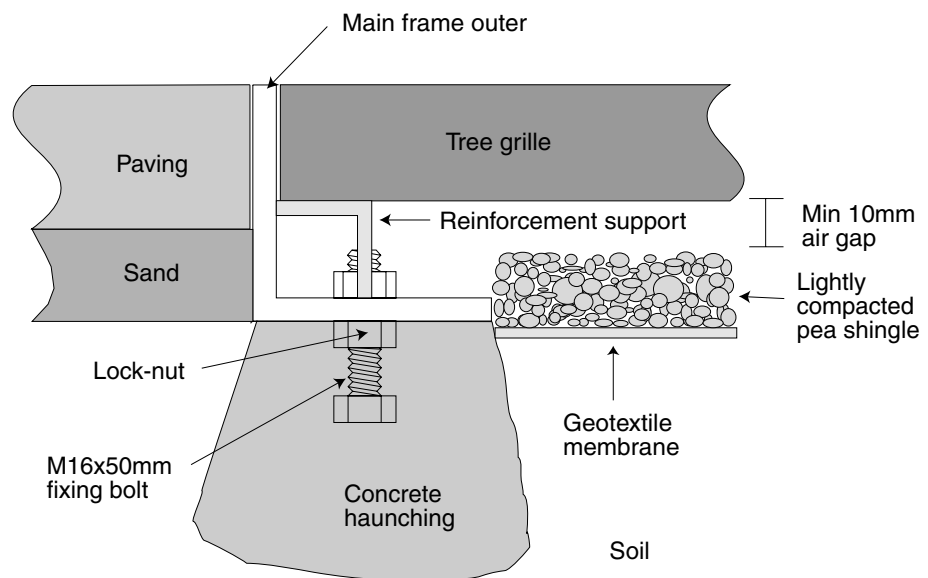
Ensure fixings used to join angle frames are tight and pulled up to maximum torque. Re-check level.

When concrete strip has set sufficiently to hold angle frame, check tightness of inner support frame fixing bolts, ensuring they are tightened up to maximum torque to achieve optimum frame rigidity and allow concrete strip to fully cure (allow minimum 24 hrs).

Fit tree grilles, ensure that anti-vandal bolts are fitted and the nuts are applied finger tight. Sufficient space for operative's arms should be left below the grille for anti-vandal bolt fitment.

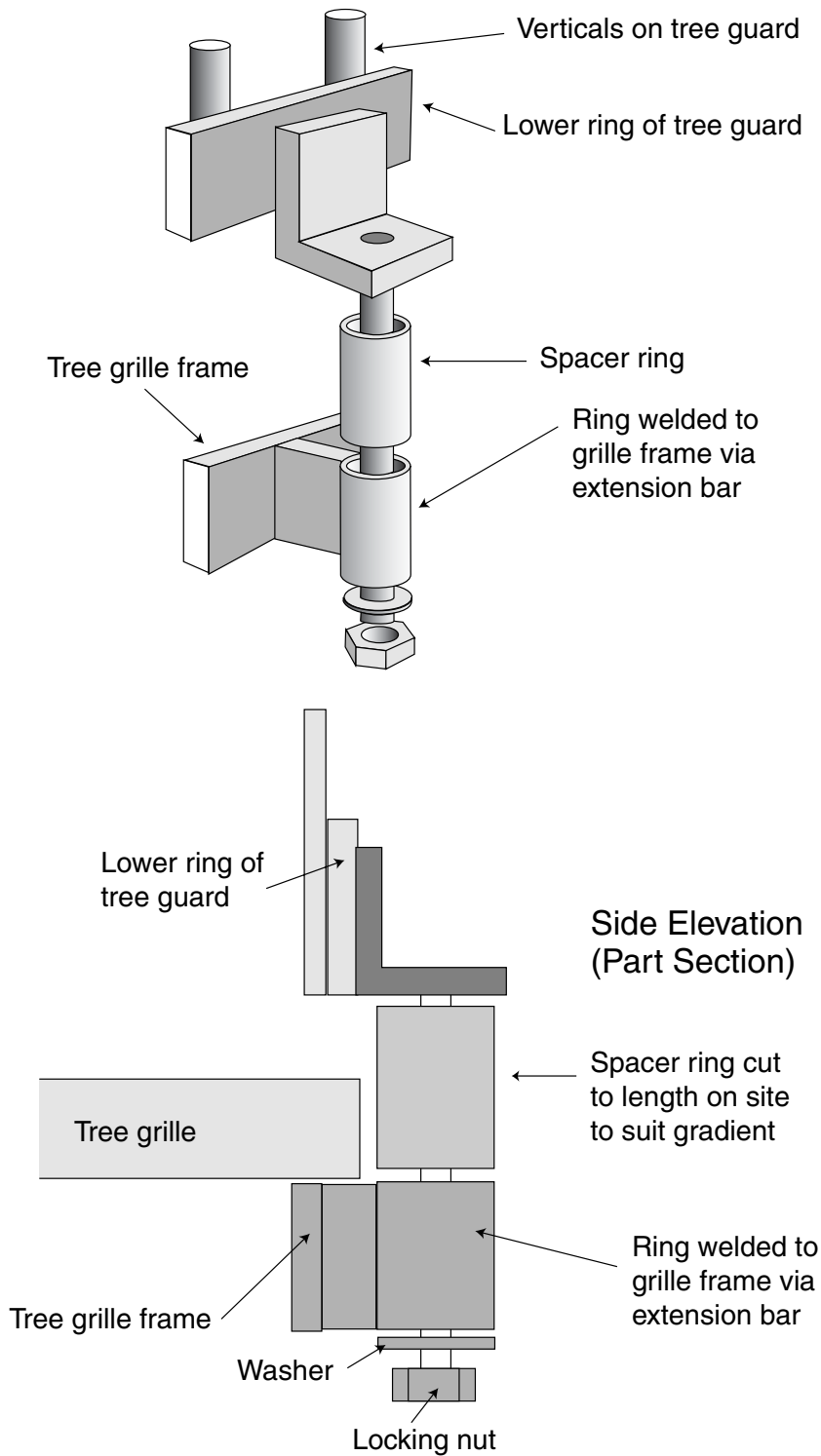
Infill with pea gravel ensuring that the area under the inner aperture is compacted firm and free from voids and that the anti-vandal bolts are obscured from view.

Typical Section



Tree Protection

TREE GUARD FIXING



The tree guard/frame will accommodate three to four of these brackets depending on the design of the grille and guard. All components are provided if a frame fixed guard is ordered.

ANTI-VANDAL FRAME FIXING

Install the CIS tree grille frame as instructed on page 11.26.

Locate adjoining tree grille sections within the frame in their correct position and align the cast legs on the underside.

Pass a half bracket (one 'L' section and its respective bolt) through the grille aperture and push the in-situ bolt through the cast-on lugs located at the grille edges.

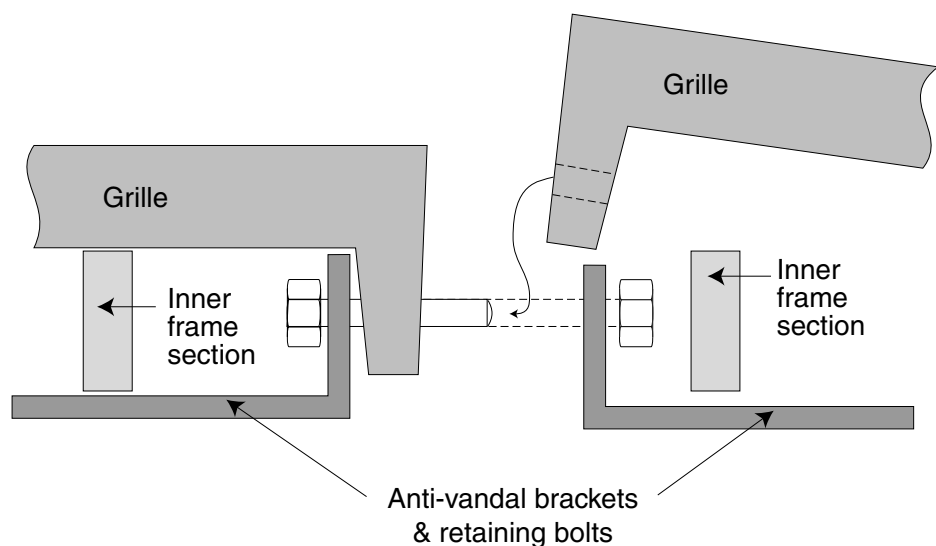
Pass the other half bracket ('L' section) through the tree grille aperture and locate its hole on the bolt already protruding through the grille lugs.

Grip both half brackets firmly so that they are in intimate contact with their respective grille lugs and fit the nut on the bolt.

Tighten the nut and bolt using conventional spanners which are suitable for access.

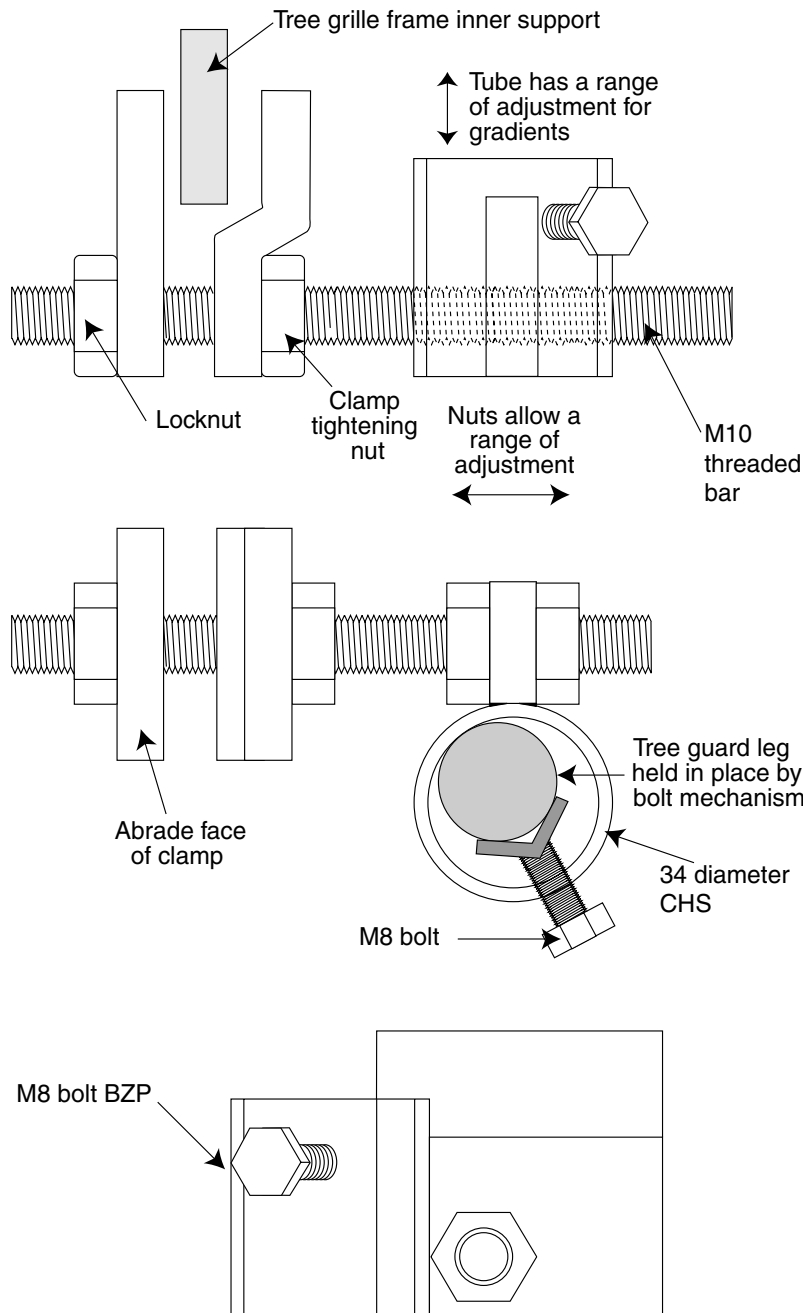
This sequence is not meant to be easy as it is intended to be an anti-vandal, tamper resistant assembly.

Tree Protection



Tree Protection

RETRO-FITTING TREE GUARDS



This is fabricated in 8mm mild steel with BZP threaded bar & bolts in a single colour gloss finish.

You should use a minimum of three fittings but one per tree guard leg is preferred.

This design is for retro-fit purposes only and should not be used in lieu of CIS factory fitted brackets if a requirement is known prior to ordering.

ROOT DIRECTOR INSTALLATION

Choose your Root Director by rootball diameter: RD640 has a top opening of 580mm, RD1050 is 960mm.

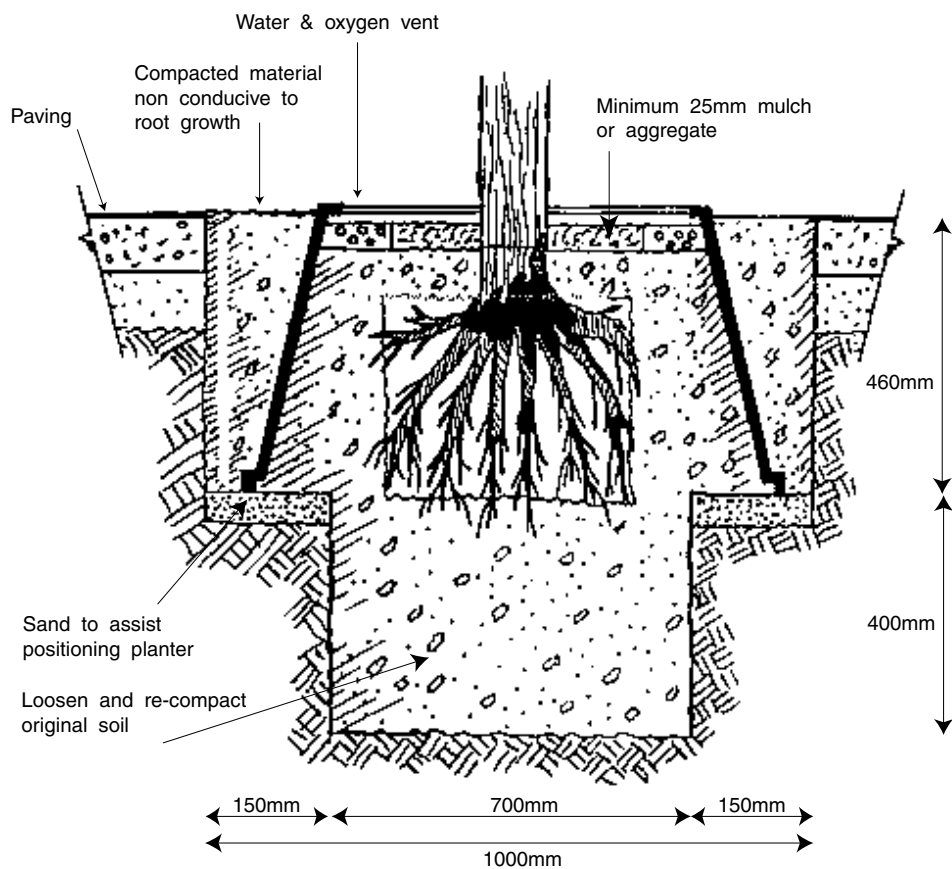
We suggest backhoe excavation of a square hole about 100mm deeper than the Root Director so that sand can be used to assist final levelling. The soil beneath the centre of the new tree should be loosened to a depth of 400mm to ensure there are no obstructions and assist root penetration downwards.

Stake holes can be simply cut, using a stanley knife or similar, before placing the Root Director, and give firm vandal-proof support for the stakes.

If a tree grate finishing flush with the paving is to be installed on top of the Root Director its thickness should be allowed for, otherwise the upper lip of the Root Director should be flush with the surrounding surface.

If the original soil is suitable as a planting medium it can be re-used to backfill inside the Root Director. Alternatively your tree supplier can suggest an appropriate material.

The backfilling outside the Root Director should be no more permeable to the roots than the undisturbed ground. Internal and external backfilling should proceed together so that the Root Director is not unduly distorted.



Tree Protection

REROOT BARRIER INSTALLATION

The ReRoot barrier should be installed when the tree pit has been fully excavated and before any backfilling has taken place.

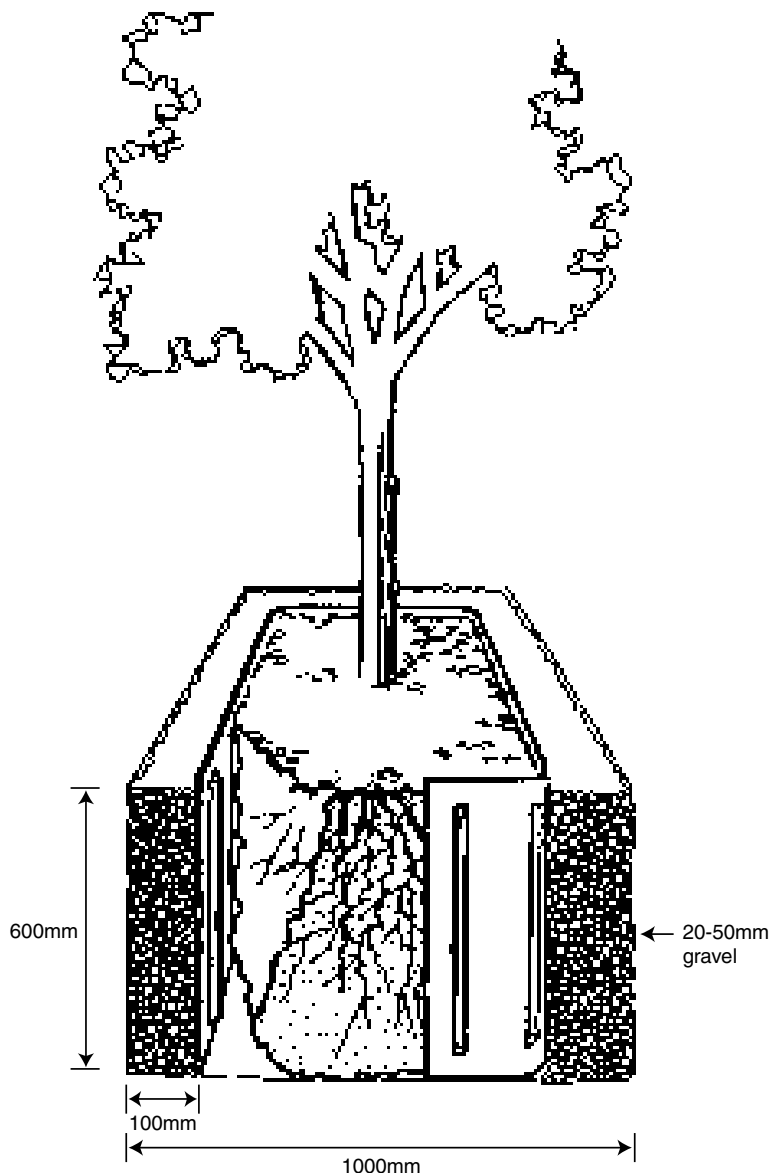
For a surround type barrier the base of the tree pit should be loosened to aid drainage. The barrier is then formed around the pit perimeter allowing as generous clearance as possible (minimum of 150mm) to ease backfilling and allow the roots to spread. Minimum dimensions shown should be observed. The barrier should then be cut to length with a sharp stanley type knife allowing a minimum overlap of 300mm.

The join should then be taped using ReRoot polypropylene jointing tape. Both sides of the join must be taped and it is very important that the surfaces be clean and free of dust, dirt, grease etc. and that there are no gaps through which a root hair could penetrate.

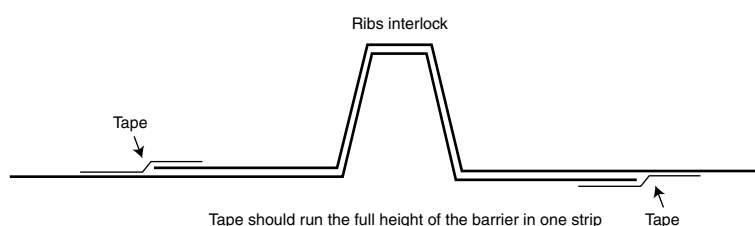
It is most important that the ribs face inwards towards the tree roots.

The top edge of the barrier should be installed to protrude very slightly above the finished level, i.e. 5-10mm but not more than 20mm.

Backfill carefully as you plant the tree, building up both sides of the barrier in layers. 20-50mm gravel is recommended for backfilling outside the barrier because this will aid aeration.



ReRoot join cross section





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Fixings

All fixing details and foundations are purely advisory. Ground and service conditions may vary locally. We advise you to consult a structural engineer if in any doubt.

In line with our policy of continual improvement, we reserve the right to change, without prior notice, any of the data contained in this publication. The information given is believed to be correct at the time of printing.

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