



Inners	Tree guards
Frames	Root control
Tree grilles	Raised grilles
Continental	Correct usage
Shaped grilles	Hinged grilles

# Tree Protection

# Tree Protection

## SQUARE GRILLES

Well designed grilles enable the tree to receive natural water, prevent surrounding soil from being compacted and add architectural flair to the paved surface.

Designs vary to function under different circumstances. Fine mesh grilles are offered where minimum change to the surface is needed. They will retain planting material but allow the free passage of pushchairs, wheelchairs, supermarket and shopping trolleys.

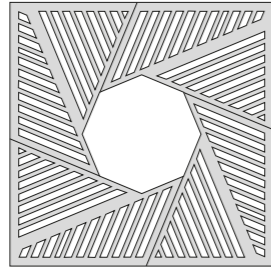
Type 1011 and 1012 are pedestrian only grilles and will not accept vehicle overrun of any type. They are intended as budget grilles and are extremely competitively priced.

Product availability and dimensions

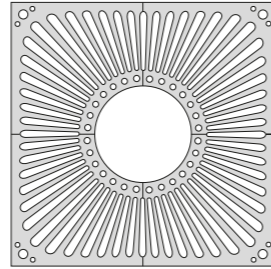
Grille Type	Outside dimension across flats									
	800	900	1000	1200	1400	1500	1600	1800	2000	2250
1001	500	500	500	600						
1002	<b>440</b>	<b>440</b>	<b>440</b>	<b>440</b>	<b>440</b>	<b>440</b>			600	700
1003	<b>400</b>	<b>600</b>	<b>600</b>	<b>600</b>						
1004	425	425	425	425		460				
1005		<b>500</b>	<b>600</b>	<b>600</b>						
1005q				465						
1006	<b>400</b>	<b>600</b>	<b>600</b>	<b>600</b>	<b>600</b>	<b>600</b>	<b>800</b>			
1007		<b>600</b>	<b>600</b>	<b>600</b>	<b>600</b>			1020	1020	1225
1008		500	500	600						
1009				600						
1010				440		600		600		
1011		<b>600</b>	<b>600</b>							
1012		<b>600</b>	<b>600</b>							

Inside dimension across flats or ø

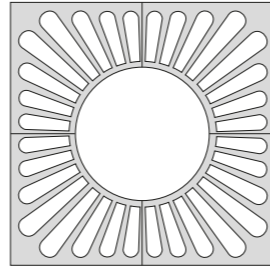
Products in bold are available from stock



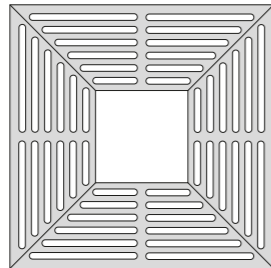
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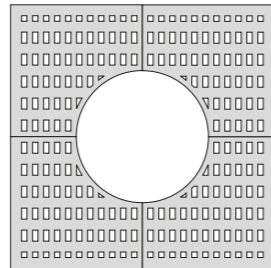
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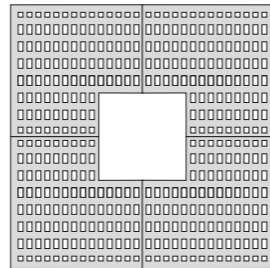
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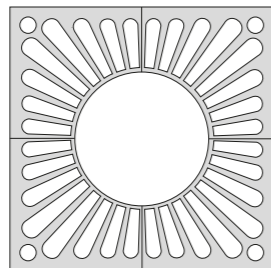
1004



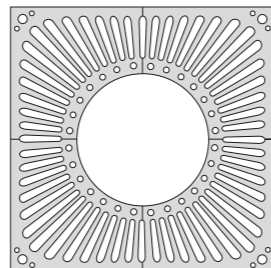
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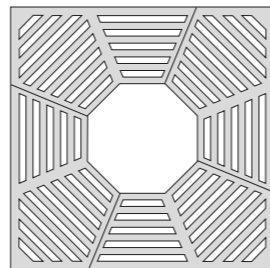
1005q



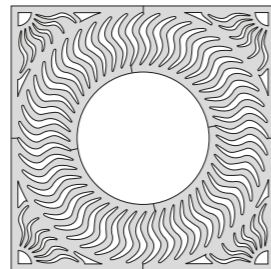
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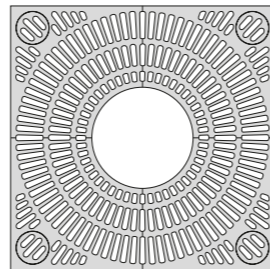
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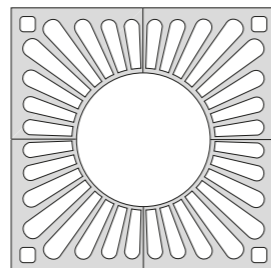
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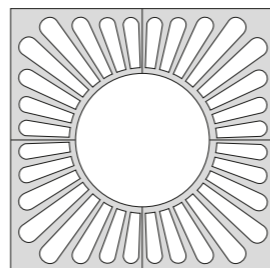
1009



1010



1011



1012

# Tree Protection

## SQUARE GRILLES

Designs 1001 to 1010 used with a medium duty frame will take vehicle overrun up to 6.5 tonnes SMWL (for occasional traffic only). With a heavy duty frame vehicular overrun weights are up to 11.5 tonnes SMWL (for occasional traffic only).



1002



1002



1010



1006



1004



1005q



1010

## ROUND GRILLES

Circular grilles give a dramatic effect when combined with imaginative blockwork patterns or can be used to break up large areas of angular paving.

They may also be used in conjunction with the equivalent square designs (page 10.2).



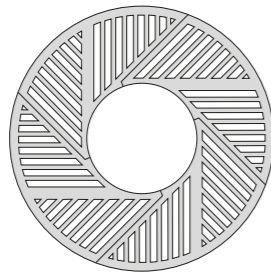
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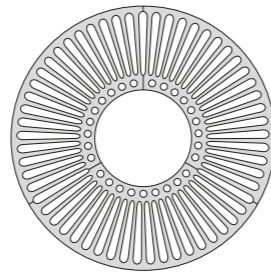
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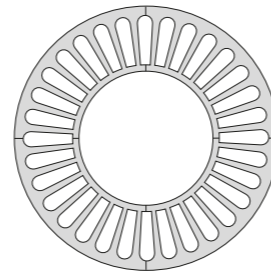
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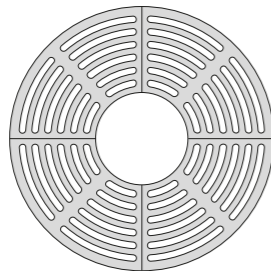
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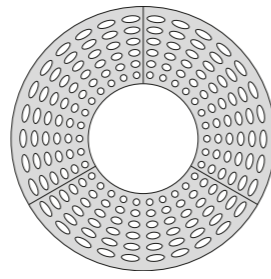
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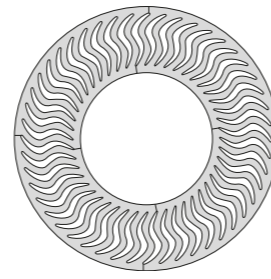
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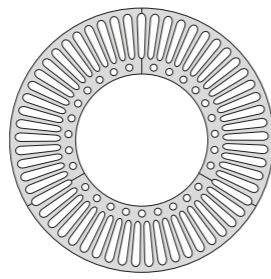
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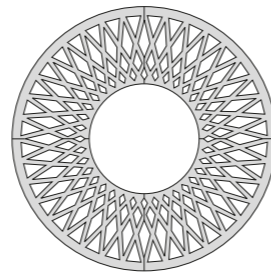
1025



1026



1027



1028

Designs 1021 to 1028 used with medium duty frames will take vehicular overrun up to 6.5 tonnes SMWL (for occasional traffic only). When heavy duty frames are used this figure increases to 11.5 tonnes SMWL (for occasional traffic only).

Product availability and dimensions

Grille Type	Outside diameters							
	800	900	1000	1200	1400	1800	2000 2250	
1021			500	500	600			
1022	440		440	440	500	600		
1023			600	600	600	800	800 1000	
1024			440	440	500			
1025	400		500	500	600			
1026			600	600	700			
1027			600	600	600	1020	1020 1225	
1028			500	500	600			
			Inside diameters					

Products in **bold** are available from stock



1025

# Tree Protection

# Tree Protection

## SHAPED GRILLES

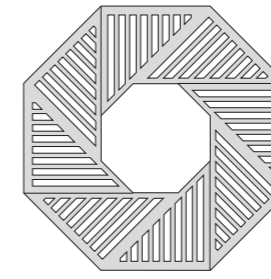
Octagons and hexagons provide an interesting alternative to squares without introducing the need for curves.

Their use can give some very striking combinations within the blockwork design. All are supplied complete with medium or heavy-duty frames and anti-vandal bolts.

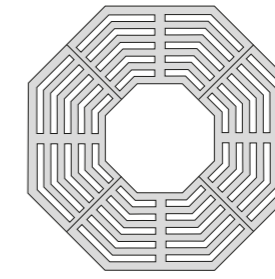
Product availability and dimensions

Grille Type	Outside dimensions across flats			
	800	1000	1200	1400
1041	420	500	500	580
1042	420	500	500	580
1043	420	500	500	580
1044		400	500	580
1051			400	
1052		500	500	600
		Inside dimensions across flats		

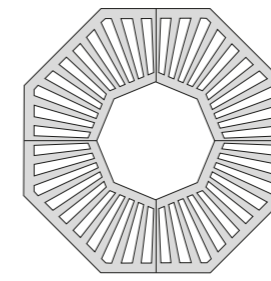
Products in **bold** are available from stock



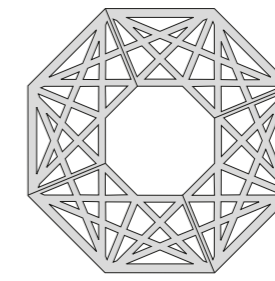
1041



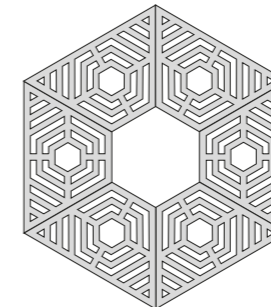
1042



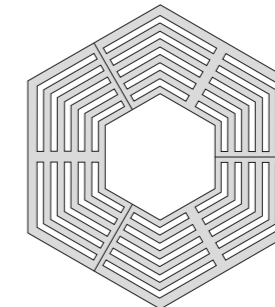
1043



1044



1051



1052

Designs 1041 to 1052 used with medium duty frames will take vehicular overrun up to 6.5 tonnes SMWL (for occasional traffic only). When heavy duty frames are used this figure increases to 11.5 tonnes SMWL (for occasional traffic only).



1041



1044

# Tree Protection

## CONTINENTAL GRILLES

Originally designed to integrate with very ornate, traditional French architecture, this range is particularly suitable where something a little different is required. Each grille is available in a single size only.

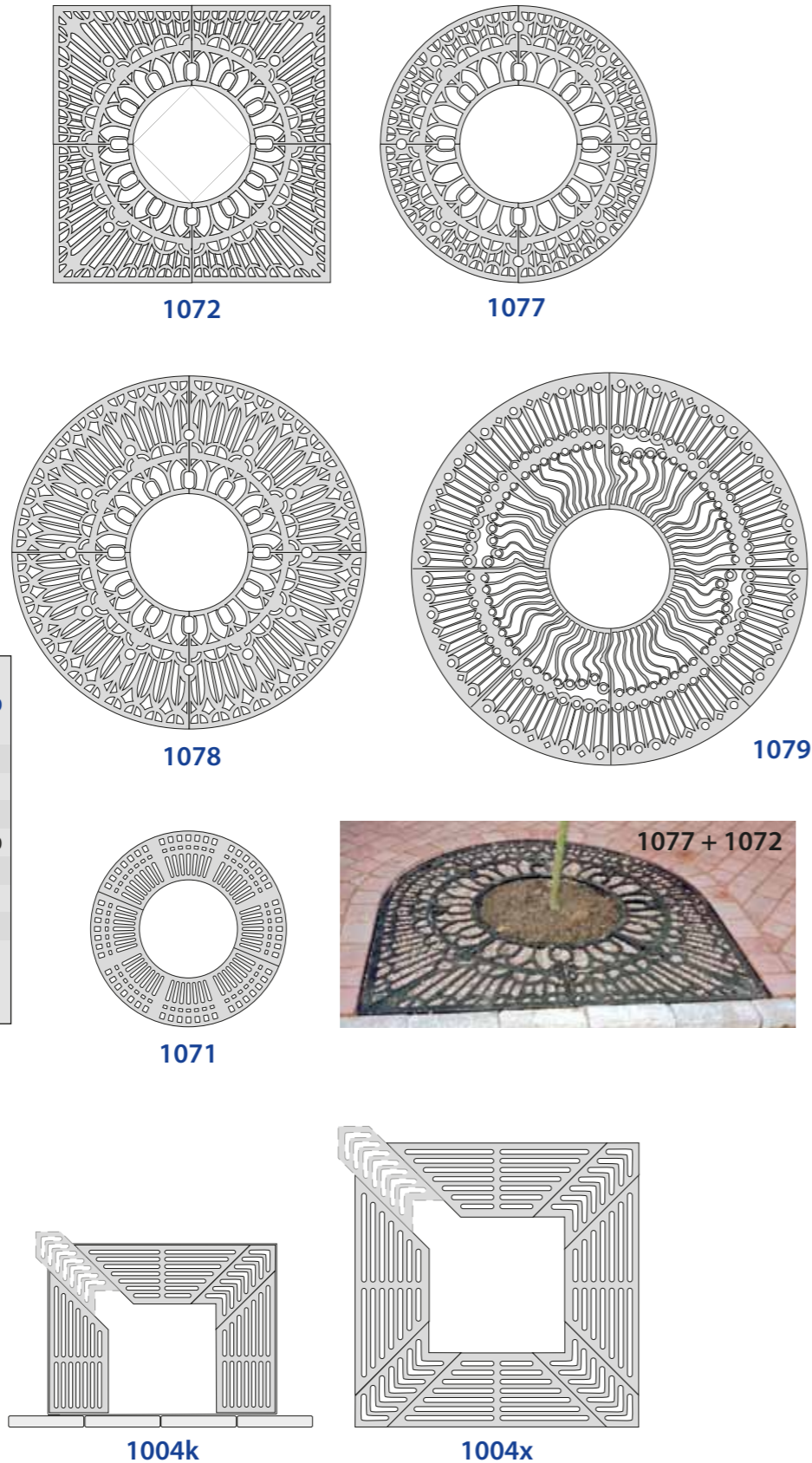
The entire range is made in ductile (SG) iron as standard. The articulated jointing system, used with flexible medium duty frames allows the grilles to be used in occasional traffic areas.

Product availability and dimensions

Grille	Outside widths					
Type	1000	1200	1400	1414	1800	2000
1071	500					
1072			600			
1077			600			
1078					600	
1079						600
1072/1077			600*			
1002/1022	440	440				
1003/1023	600	600				
1007/1027	600	600			1020	
	Inside diameters					
	* no articulated joint					

## GRILLES FOR LARGER TREES

Simple modifications to the 1004 grille enable it to be made in virtually any size. Please consult our technical staff for help with any special problems you may have.

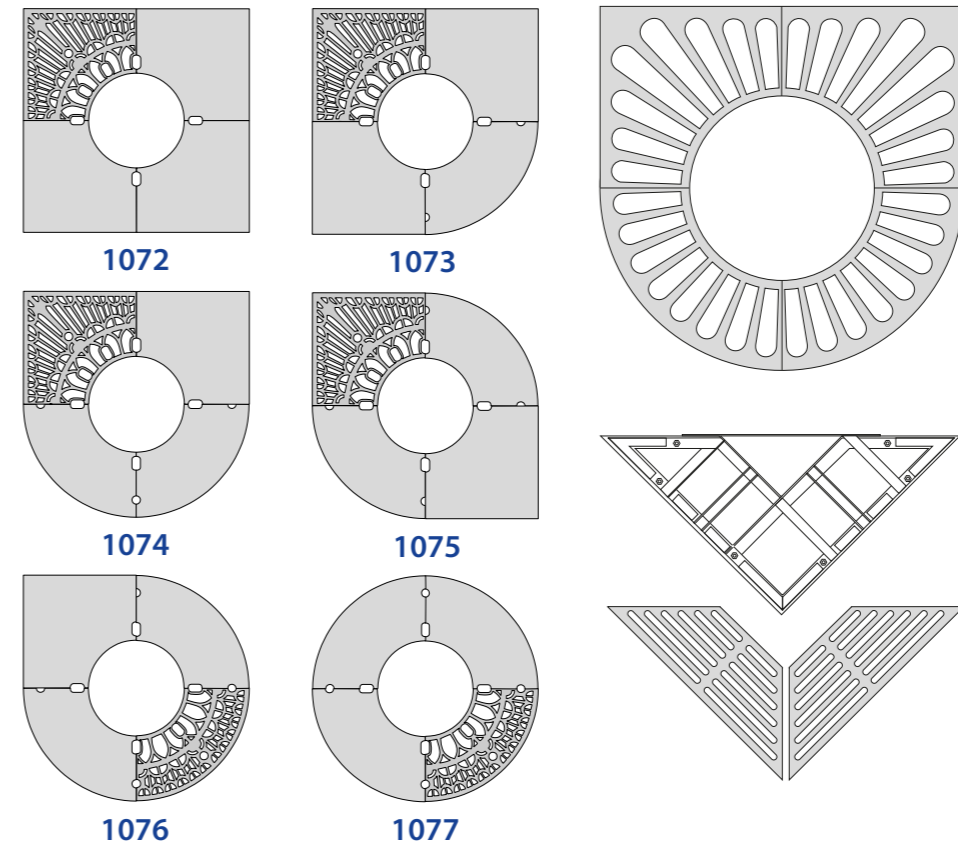


# Tree Protection

## ALTERNATIVE PATTERNS

Using both round and square versions of the same design these 'D' and tear drop shaped derivations are achieved.

1072 & 1077 combinations are illustrated but other designs possible include 1002 & 1022, 1003 & 1023, 1007 & 1027.



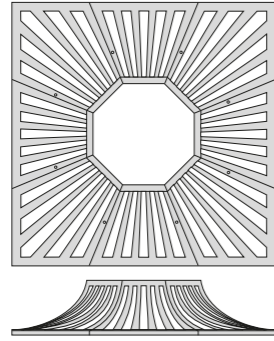
CIS Street Furniture was chosen by Legoland (Windsor) to satisfy all of their tree protection requirements at the Legoland theme park. Various combinations of products were used based on the 1002/1022 grille design. Patterns formed include square, round & 'D' shaped. In some cases inners have been used to further protect young trees. Guard type 1180 was chosen along with a spherical finial type A to protect the trunk of the tree.

# Tree Protection

## RAISED GRILLES

Raised grilles are unusual in their effect in that they contain vertical elements and thus make very distinctive features. The elevation can be used to display plaques etc.

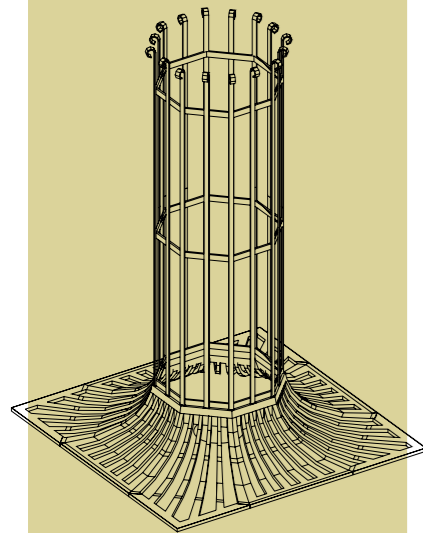
This range is predominantly in cast iron and requires a special medium duty frame giving extra support.



1061



1061 + 1120



This particular grille design is excellent in a car park type environment as it is sympathetic to both pedestrians and vehicles alike.

The gentle curves allow vehicular overrun up to 6.5 tonnes SMWL when used with a CIS Street Furniture medium duty frame, or 11.5 tonne SMWL when combined with a heavy-duty frame.

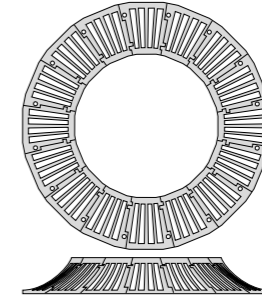
# Tree Protection

## RAISED GRILLES

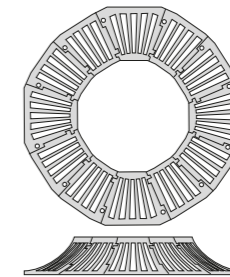
Grilles from 1062 to 1064 are designed to be used on more mature trees. The large base aperture can accommodate sizes of tree up to 1 metre in diameter. Due to their convex design they are ideally used around trees with bulbous root systems.



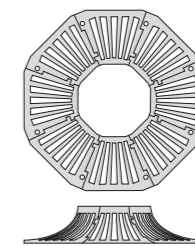
1064



1064



1063



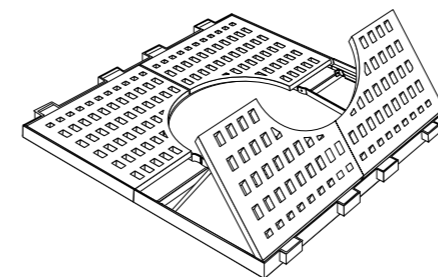
1062



1063

### Product availability and dimensions

Grille Type	Outside dimensions across flats			
	1000	1200	1450	1720
1061	400	460		
1062		460		
1063			740	
1064				1000
Inside dimensions across flats				



## HINGED GRILLES

The problem of weed and litter removal from under tree grilles is solved with our hinged grilles. The square designs can be manufactured with integral hinges - a simple lock stops others lifting without a common key. Litter and weed removal made easy!

# Tree Protection

# Tree Protection

## FRAMES

## FRAMES

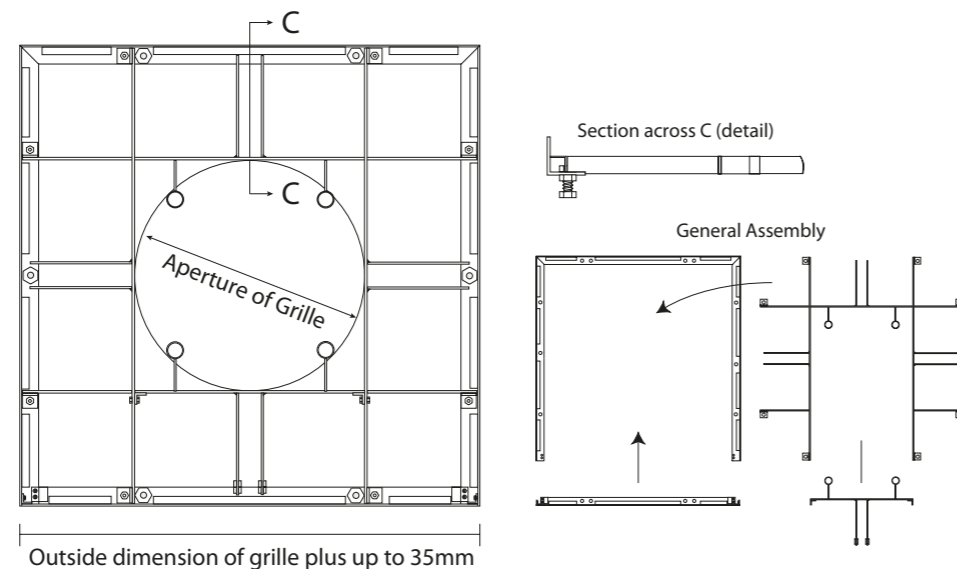
Frames are necessary to stabilise the grilles and stop them sagging around trees. All types support the grille and retain the surrounding surface, the correct choice depends upon several factors.

Frames are offered in four sections as standard. This means that both the inner and outer frame are split, ensuring that all circumstances can be accounted for.

The large variety of sizes and shapes of frames has only allowed us to give examples for each weight. Frames are available for all grilles, even if not illustrated. Rimless types are made to order.

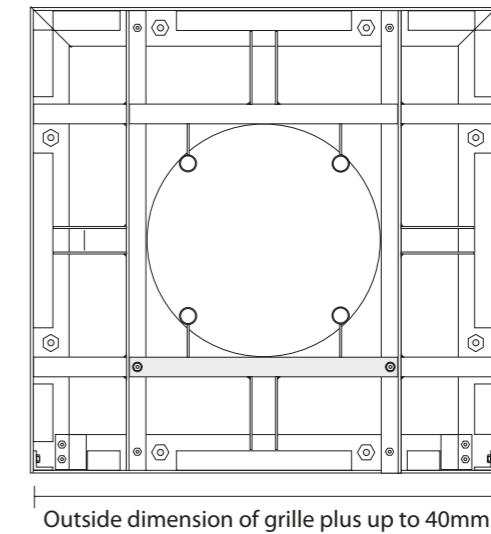
### Medium Duty Frames

These are the most versatile type of frame, suitable up to 2000mm. They can accept bolted down segments if required and will offer good retention to block paviers. Medium duty frames will carry all tree guards, using the adjustable mounting system. These frames will accept a 6.5 tonne SMWL vehicle overrun (for occasional traffic only).



### Heavy Duty Frames

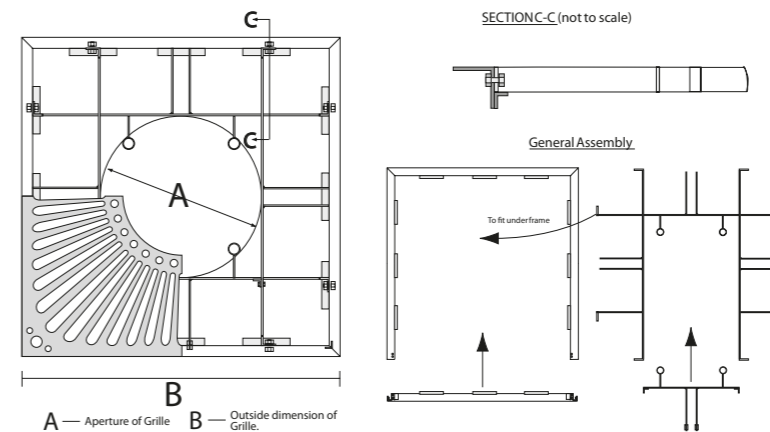
Heavy duty frames offer full support for vehicle overrun when used with cast iron grilles. They also provide excellent resistance to side thrust for paviers, retaining the full height of block and sand base. These frames will accept a 11.5 tonne SMWL vehicle overrun (for occasional traffic only).



Please note that frames can be up to 35-40mm (dependant on frame type) larger than the stated size for the grille casting i.e. a 1200 sq. grille could have a frame measuring 1235-1240 sq. overall. Before designing tree pits etc. please contact our sales office for assistance. Should you wish to build the pits in advance of the delivery of grilles and frames then why not ask for a template. CIS Street Furniture can provide templates for all designs of grille and frame. Note: A small charge may be made dependant upon order size.



### Rimless Frames



Rimless frames can be manufactured to suit our entire range of products. These are particularly useful if you are fixing to a predetermined pit size or there are physical restraints on the size of the planting bed. The grille is designed to sit on top of the frame, so the overall size is that of the assembled castings only.

## TREE GUARDS

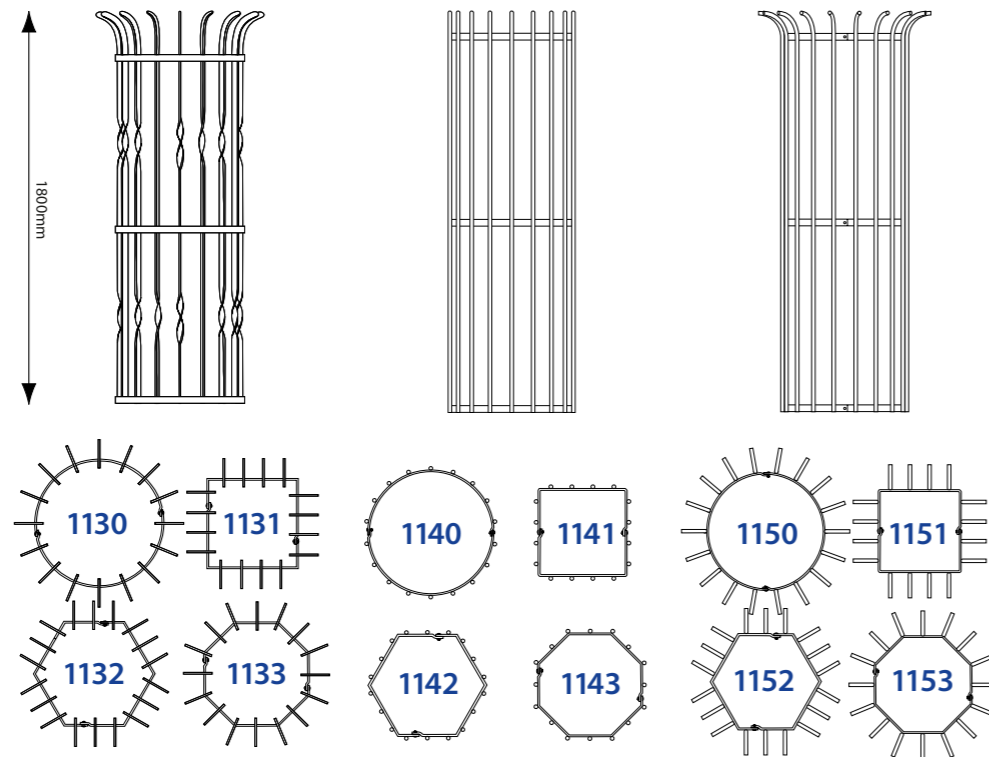
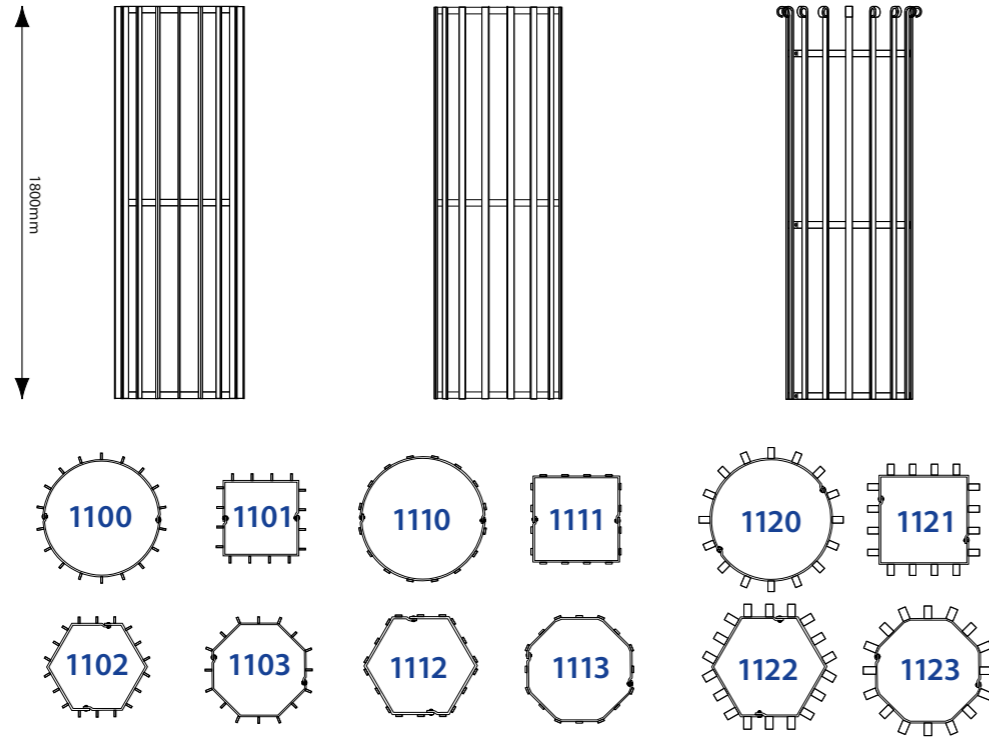
In an urban setting young trees in particular are vulnerable to damage from bicycles and other equipment, as well as gratuitous vandalism. Tree guards offered by CIS Street Furniture are of strong construction and varying design and provide the ideal answer to such problems.

The guards shown may be fitted to medium or heavy duty frames or ground fixed when used in parkland. The simple adjusting mechanism allows guards to be easily set on most gradients.

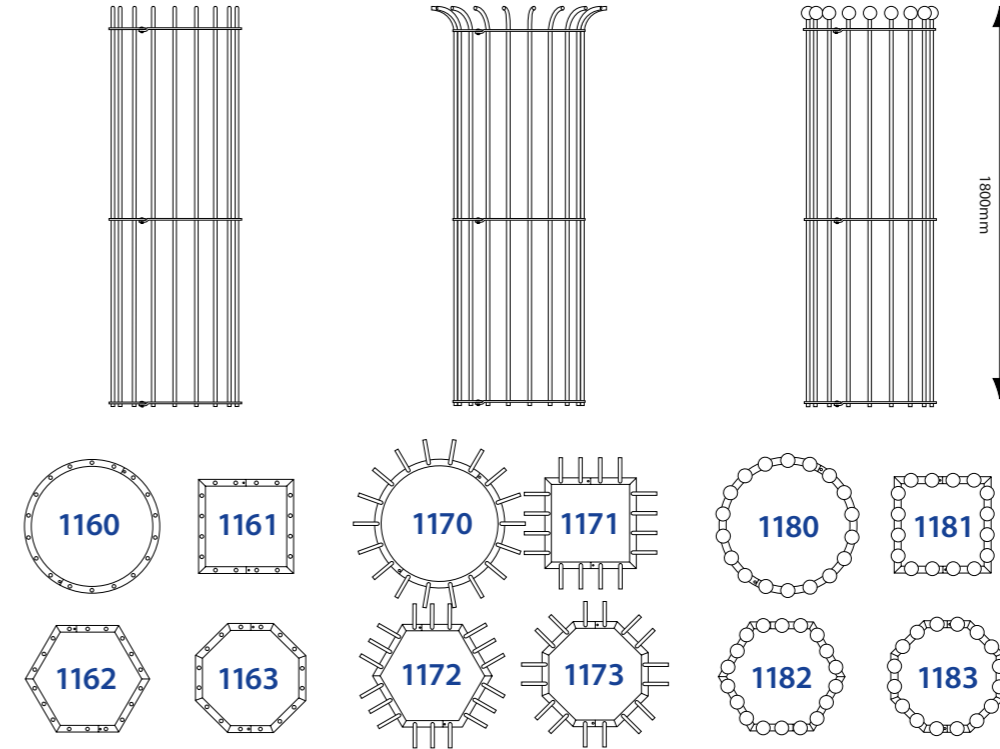
Each guard type is manufactured in a number of standard sizes to fit all grilles.



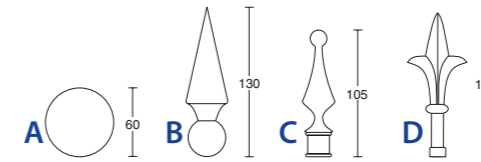
# Tree Protection



# Tree Protection



Guards of the 1180 series have a choice of finials. Please state the letter of the finial required when specifying.



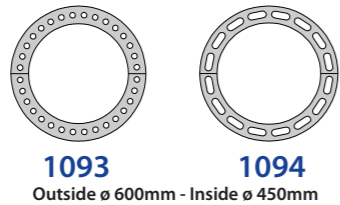
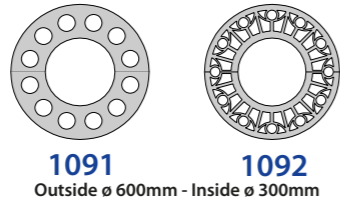
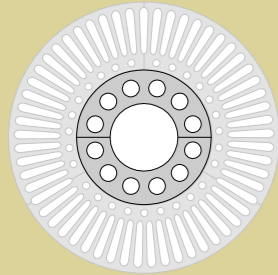
## TREE GUARDS



# Tree Protection

## REMOVABLE INNERS

Young trees need only a small grille aperture, especially if guards are not used. The soil close to the tree can be protected using inner sections which can be removed later. The inners illustrated will fit all grilles with 600mm apertures.



## GETTING IT RIGHT

**Fig 1.** This picture shows a home made anti-vandal and guard fixing detail, no doubt added as an afterthought. This detracts from the clean and simple lines of the existing grille and frame.

**Fig 2.** Forward planning makes sure you know how big the tree will grow before fixing a guard around it. Luckily this ill-fitting guard hasn't damaged the tree yet.



# Tree Protection

## GETTING IT RIGHT



**Fig 3.** A grille far too small for the tree is now embedded within the trunk. Our removable inners would have given a neat appearance for the young tree but allowed for expected growth.

**Fig 4.** Cost cutting has meant this grille was installed without a frame. The castings add to soil compaction and the unsupported grille sections will eventually start to sink.

**Fig 5.** This grille was used without a frame and its inner aperture is far too small for the grown tree. Our appropriate grille frames and inners eliminate this problem.

**Fig 6.** Here a concrete grille has been used without a frame. Our grille frames are designed to stop soil compaction.

**Fig 7.** Inadequate irrigation through paving over has caused secondary thickening of the roots which is lifting the surface.

**Fig 8.** Without anti-vandal fixings these sections have been disturbed - it is only a matter of time before they end up thrown through a shop window.

These products have not been supplied by or recommended by CIS Street Furniture



# Tree Protection

## ROOT DIRECTION

Designed for the protection of pavements and hard landscape areas, the root director systems divert root growth downwards and outwards avoiding the unsightly and hazardous root damage.

- ✓ Protection for paved surrounds
- ✓ Encourages a deeper root growth pattern
- ✓ Enhances tree drought tolerance through deeper rooting
- ✓ Improves tree stability
- ✓ Integral ribs to prevent root girdling
- ✓ Optional integral irrigation/aeration inlet vents
- ✓ Compatible with most makes of tree grille
- ✓ Simple to install

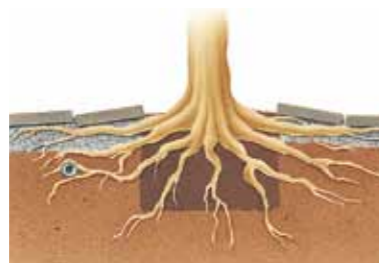
### How tree roots damage pavements



Standard tree planting for street tree in unprotected tree pit.



Roots begin to spread beyond the confines of the planting pit.



As the tree grows the roots undergo secondary thickening which begins to lift paving and cause extensive damage. Cutting roots to repair paving or excavating the service pipe will seriously destabilise the tree, probably leading to its death and removal.

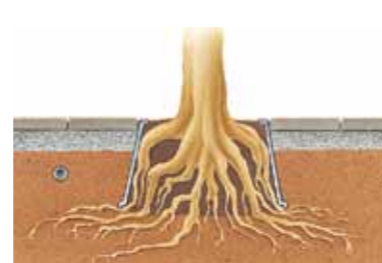
### How root directors prevent root damage



Tree planted within root director.



As the tree establishes, the roots spread out and are guided downwards and outwards by the root director walls and integral ribs.



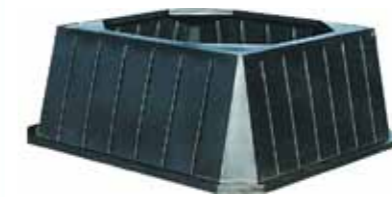
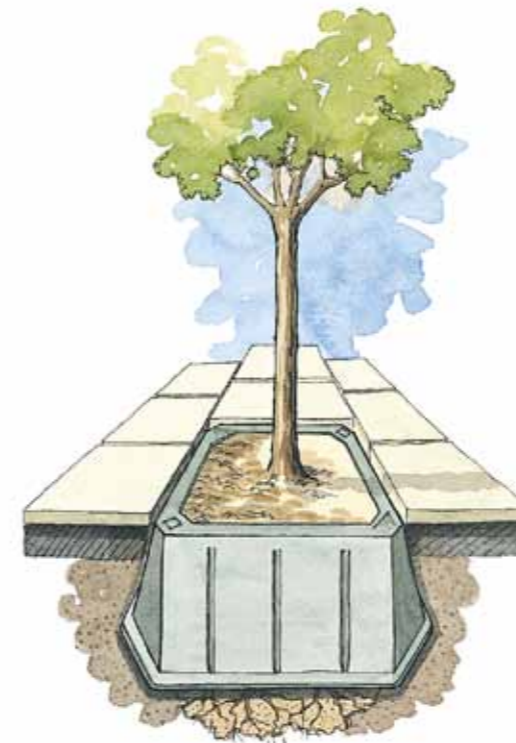
The established tree roots spread below the barrier where secondary thickening does not harm paving. Deeper root growth also improves tree stability and drought resistance.

# Tree Protection

## ROOT DIRECTOR

### Modular Pavement Protection

Without ribs roots will tend to grow along the root barrier rather than downwards. In surround applications this can lead to root girdling which in the longer term could suffocate the tree. Both 2110 and 2111 have root deflecting ribs formed into them.



Product availability and dimensions

Type		Width	Depth
2110	Base	870 x 870	450
	Top	640 x 640	
2111	Base	1300 x 1300	530
	Top	1050 x 1050	

### Linear Pavement Protection

2120 is a versatile root barrier system for the protection of paved surrounds to either individual or groups of trees. Supplied in man-handleable sized rolls with integral root deflecting ribs, it works on the same principle as the 2110. It is easy to install with no specialist equipment.

The standard depth of 600mm is available by the metre up to 50 metre rolls.

Its flexible design allows the barrier to curve around obstacles but is rigid enough to hold its form during backfilling.



## IRRIGATION

### Precinct system

Designed for locations requiring a permanent irrigation/aeration solution, the Precinct features a heavy cast aluminium inlet with a lift and swivel vented cap. Ideal for setting in paved surrounds, tree grilles etc. the Precinct incorporates an aluminium tee section and 60mm distributor circuit for fast watering.

It has a 60mm diameter circuit, 100mm diameter cast inlet and is available in 5m and 8m lengths.

### Civic system

The Civic is a well proven large capacity watering system popular with contractors and architects who like its ease of installation and ability to cope with fast watering. Using the same tee section as the Precinct, the Civic features an aluminium powder coated inlet with vented cap on a retainer chain.

The Civic has an 80mm diameter aluminium inlet, 60mm diameter circuit and is available in 5m and 8m lengths.



# Tree Protection

# Tree Protection

## ROOT IRRIGATION

### Metro system

Metro waterers are probably the most cost effective tree irrigators on the market. Simple but extremely effective, the Metro range comes in sizes to suit all tree planting applications.

Product availability and dimensions

Size	Pipe ø	Length	Application	Type	Code
Small	35mm	1.25m	Specimen shrubs & standard trees	Plastic	2130
				Plastic with chain	2131
				Metal with chain	2132
Medium	35mm	1.75m	Standard trees & selected standards to 8-10cm girth	Plastic	2133
				Plastic with chain	2134
				Metal with chain	2135
Large	35mm	2.5m	Selected standards heavy standards	Plastic	2136
				Plastic with chain	2137
				Metal with chain	2138
Extra large	35mm	4.0m	Extra heavy standards & semi-mature	Plastic	2139
				Plastic with chain	2140
				Metal with chain	2141





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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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