

# CHARCON

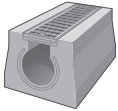
## HARD LANDSCAPING

CLEARWAY

TECHNICAL INFORMATION  
www.aggregate.com/clearway

## CLEARWAY®

### LINEAR DRAINAGE



A CONCEALED LINEAR DRAINAGE SYSTEM WITH A DISCRETE CROSS-FALL WHICH DIRECTS SURFACE WATER TO WATER INLET. SPECIFICALLY DESIGNED FOR HARD LANDSCAPED AREAS, CLEARWAY® OFFERS A COST EFFECTIVE SOLUTION FOR ALL APPLICATIONS.

Slot and grid options available. Slot is suitable for heavy duty applications.

Installed flush with hard landscaped surface.

Subtle cross fall towards water inlet on each unit.

Efficient removal of surface water without need for gullies and expensive underground connecting pipework.

Easy maintenance.

Slot flared towards drainage bore to inhibit debris blockages.

#### APPLICATIONS

Clearway is suited to medium and heavy trafficking classes. Use in all hard landscaping areas. Slot option is suitable for dockyards, airports and industrial sites.

#### MANUFACTURING STANDARD

Clearway is manufactured using a semi dry method tested in accordance with European Standard BS EN 1433.

All Aggregate Industries products are manufactured in accordance with ISO 9001 with factory compliance to ISO 14001.

#### PERFORMANCE

**Strength:** The strength requirements are met to the manufacturing standard. Loading standard conforms to EN 1433 up to Class F (Class F = 900kN), dependant upon type selected.

#### COMPLEMENTARY PRODUCTS

Designed for use with Aggregate Industries block paving and British Standard kerb.



#### COLOUR SWATCH



1. Grey

PRODUCT DATA		
Type	Slot unit	Super heavy duty grid
Class (up to)	F (900kN)	F (900kN)
Length (mm)	400	400
Width (overall) (mm)	324	324
Depth (overall) (mm)	257	257
Nominal bore	150	150
Weight (approx. kg)	53	48
Colours	Grey	Grey



Q10.  
For NBS clauses, refer to Aggregate Industries technical services.

Inlet options - Slot drain aperture width 15mm, Grid aperture width 15mm, Ductile iron grid width 143mm.  
Accessories - Silt top boxes with chequered grating (Class D), Super heavy duty silt box type H (Class F) - weight 96kg solid, 84kg grated lid.  
Supply of complete silt boxes only (either with a solid lid or grating) - separate supply of boxes, lids and gratings is prohibited in line with EN1433.



OHS 61759



FM 96927



EMS 96928

## CLEARWAY®

## LINEAR DRAINAGE

## TRAFFICKING SELECTOR (EN 1433 STANDARD CLASSIFICATION)

Unit/bore (mm)	Class A 15kN	Class B 125kN	Class C 250kN	Class D 400kN	Class E 600kN	Class F 900kN	Unit weight (kg)
<b>Main units</b>							
Slot/150	•	•	•	•	•	•	53
Super heavy duty/ 150 ductile iron	•	•	•	•	•	•	48
<b>Accessories</b>							
Silt box top	•	•	•	•	•	•	148
Silt box top with grate	•	•	•	•	•	•	148
Inspection unit super heavy duty/150	•	•	•	•	•	•	48

## EN 1433 STANDARD CLASSIFICATIONS

Class A (15kN): Pedestrian areas, walkways and cycle tracks.

Class B (125kN): Pedestrianised areas and car parks with limited vehicle access.

Class C (250kN): Kerbside drainage to public highways, parking areas, service stations and pedestrian areas.

Class D (400kN): Public highways and general parking areas.

**(Note:** Grid systems should not be used for fast moving traffic.)

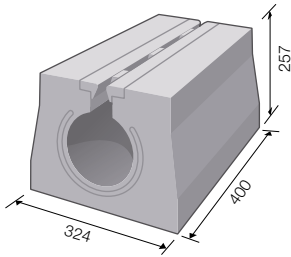
Class E (600kN): Heavy industrial sites, dockyards and lorry parks.

Class F (900kN): Airport taxiways and specialist industrial sites.

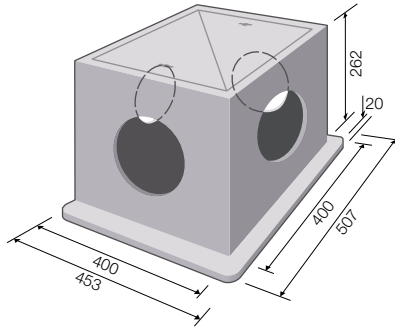
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## LINEAR DRAINAGE

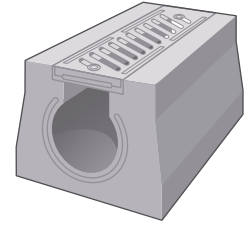
### CLEARWAY UNITS



CLEARWAY SLOT.



SILT BOX TOP (DUCTILE IRON).  
01195 SUPPLIED WITH SOLID TOP  
(D400 GRATE AVAILABLE TO ORDER).

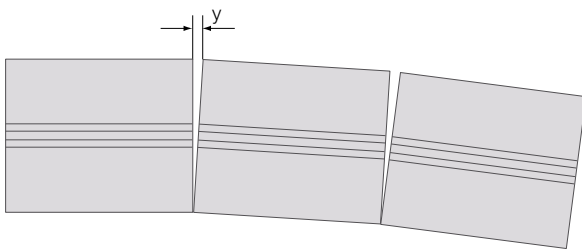


CLEARWAY GRID.

### RADII OVER 3.0 M

Radius (m)	4	5	6	7	8	10	12	14	16	18	20	25	30
Gap width at surface (mm) Y	30	24	20	17	15	12	10	9	8	7	6	5	4

### CLEARWAY LAID TO RADII



PLAN VIEW.

# CLEARWAY® DESIGN CONSIDERATIONS

## LINEAR DRAINAGE

### NATURAL FALL SYSTEMS - DESIGN CONSIDERATIONS

#### SYSTEM DRAINAGE AREAS: GRADIENT AGAINST RAINFALL INTENSITY BY NOMINAL BORE

Gradient	Rainfall intensity (discharge l/s)	Area drained 30mm/hr	40mm/hr	50mm/hr	75mm/hr
Nominal bore (mm)	150	150	150	150	150
1:50 (2.00%)	25.2	3020	2270	1810	1210
1:100 (1.00%)	17.7	2130	1600	1280	850
1:200 (0.50%)	12.5	1500	1120	900	600
1:300 (0.33%)	10.1	1220	910	730	490
1:400 (0.25%)	8.7	1050	790	630	420
1:500 (0.20%)	7.8	940	700	560	370
1:1000 (0.10%)	5.5	650	490	390	260

#### GENERAL PRINCIPLES

The aim is to ensure prompt and cost-effective removal of surface water during and immediately after rainfall.

Optimum balance of cost efficiency and performance is achieved by parallel drainage runs at 30-35 m intervals across drainage area.

**Note:** Wider spacing between runs is possible, but (dependent on rainfall intensity) may result in slower removal of surface water and increased costs – for extra outlets and additional underground pipework.

Maximum recommended width of the drained area to any one run is 35 metres.

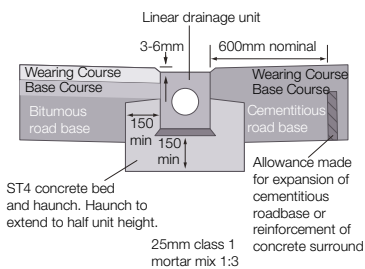
Choose slot or grid unit options according to type and frequency of anticipated trafficking. These options do not affect the design of drainage performance.

#### SELF-CLEANSING VELOCITY

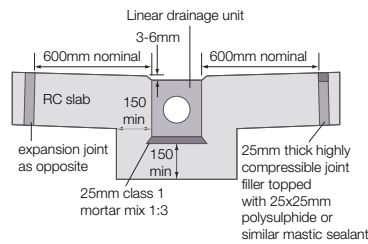
A flow rate of 0.76 metres per second is normally sufficient to avoid silt settlement in the channel inverts. Longitudinal gradients required to achieve this velocity are: 0.60% (1:167).

Will operate successfully at slacker gradients, though occasional flushing out may be needed.

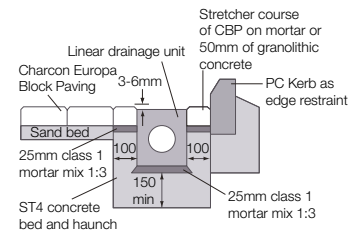
#### INSTALLATION



BASIC UNIT - FLEXIBLE/SEMI-FLEXIBLE INSTALLATION



BASIC UNIT - RIGID INSTALLATION



BASIC UNIT - BLOCK PAVED INSTALLATION

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## LINEAR DRAINAGE

### SUSTAINABILITY AND LOCAL SOURCING

**ENERGY USE:** Aggregate Industries is at the forefront of sustainability and has committed to reduce carbon emissions by 20% by 2016 based on a 2012 base line.

**RECYCLABLE:** 100% of the product can be recycled thus reducing the amount of material that is sent to landfill.

**MANUFACTURING LOCATION:**

Produced in the UK, with locally sourced materials under strict environmental and social legislation, for local supply.

**RESPONSIBLE SOURCING:** Aggregate Industries is the first company in the world to achieve a BES 6001:2008 Responsible Sourcing Certificate from BRE Global. Products are assessed on:

Quality management.

Environmental management.

Health and safety management.

Greenhouse gas emissions.

Minimising raw material usage.

Labour practice.

Biodiversity.

Community engagement.

### KEY AGGREGATE AND RECYCLED CONTENT

Clearway is manufactured using a high quality quartzite aggregate.

### GENERIC GREEN GUIDE RATING\*

Not applicable.

### POLICIES

Aggregate Industries' policies on the environment and community, health and safety and sustainable solutions for different product applications can be viewed on our website [www.aggregate.com](http://www.aggregate.com)

### INSTALLATION STANDARD

Install in accordance with Aggregate Industries recommendations. For specific guidance refer to [www.aggregate.com](http://www.aggregate.com) or call the technical helpline on 01335 372222.

### MAINTENANCE AND CLEANING

Aggregate Industries can supply on request advice on specific stain removal and general maintenance, suitable cleaning products, referrals to specialist cleaning companies.

### COSHH DATA

Full COSHH data on the Charcon range of products is available on request. Please call the technical helpline on 01335 372222.

### TECHNICAL SUPPORT

DETAILED GUIDANCE AND ASSISTANCE WITH THE PREPARATION OF SPECIFICATION OF THE CHARCON RANGE OF HARD LANDSCAPING PRODUCTS, INCLUDING MODEL CLAUSES, IS AVAILABLE THROUGH THE SALES OFFICE. A FREE TECHNICAL DESIGN SERVICE IS ALSO AVAILABLE.

**FOR FURTHER INFORMATION, PLEASE REFER TO OUR TECHNICAL SERVICES ON 01335 372222.**

\*Ratings based upon generic green guide values (2009) supplied by BRE Global Ltd, [www.thegreenguide.co.uk](http://www.thegreenguide.co.uk)

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