



## Channel Drainage Guide



**Marshall's**

*Creating Better Spaces*

# The Case for Linear Drainage

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Linear drainage solutions are the preferred choice amongst specifiers and contractors as they are simple and straight forward to design and cost effective to install.

Marshall's unique channel drainage systems combine the clear-cut advantages of linear drainage over point drainage with the benefits of high quality, robust concrete.

### Surface water interception

- More efficient at intercepting running water
- Ponding is reduced or eliminated

### Ease of design

- Shallow depth construction means less conflict with underground services
- Limited number of components required
- Simple and straightforward to design, do not require complex crossfalls
- Channel systems can act as both a gully in point drainage and a carrier pipe to store and transport water

### Ease of installation

- Channel line and level can be set out with ease
- Shallow construction means reduced excavation, saving installation time and cost
- Inherently strong and robust precast concrete reduces on site damage
- Fewer expensive manholes required

### Reduced maintenance

- Easy access through removable grates or regular access points
- Inherently strong and robust precast concrete reduces on site damage

### Aesthetics

- Wide choice of metal gratings, galvanised steel slot tops or textured and colored concrete to enhance any scheme

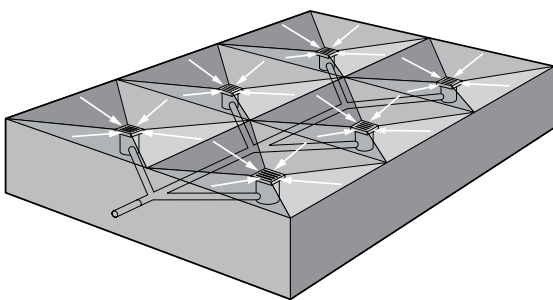


Fig. 1 Typical point drainage system, illustrating the need for complex crossfalls with attendant implications for design, installation and cost

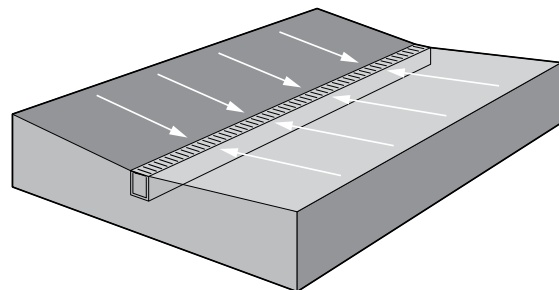
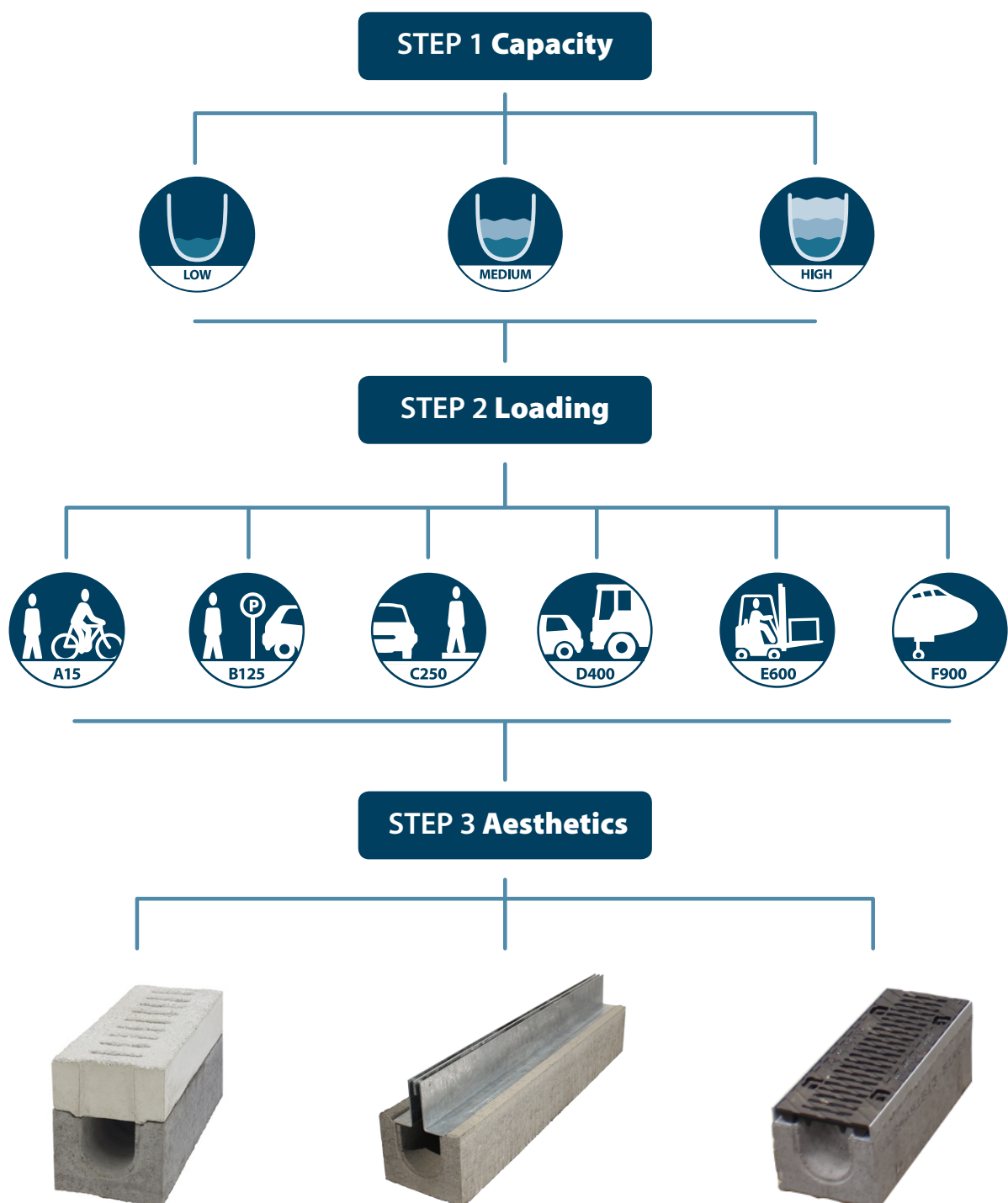


Fig. 2 Typical equivalent linear drainage system

# Linear Drainage Decision Hierarchy

The two key decision criteria to identify the correct linear drainage solution are hydraulic capacity and load classification. Hydraulic capacity is concerned with the volume of water which needs to be removed, this can be classified as either low, medium or high. And secondly load, what loading will the drainage be subject to, ranging from pedestrians and cycles only (A15) to areas for especially high wheel loads (F900). Both of these factors are largely determined by the project with very little opportunity for change. At Marshalls we don't allow these factors to prohibit client choice. It is our aim to offer a choice of aesthetically inspired linear drainage solutions irrespective of capacity and loading requirements.





# Step 1 & Step 2 Choose your Capacity and Desired Loading

**The two key decision criteria for channel drainage are: hydraulic capacity – the volume of water which needs to be moved load classification and the loading that the drainage will be subject to.**

There are 18 possible combinations of hydraulic capacity and load classification, it is therefore imperative to offer a range of channels with the breadth to provide solutions for every project and scheme. Marshalls range of high performance robust concrete channels for all capacity requirements and any loading application are detailed below:

## Birco Lite Channel



- Available in 1000mm and 500mm lengths
- Invert width of 100mm
- Available in 5 constant invert depths of 155 (0/0), 180 (5/0), 205 (10/0), 230 (15/0) and 255mm (20/0)
- 20 inbuilt fall channels with a gradient of 0.5%, each 1000mm long
- T-Junctions, End caps, Cap outlets and Outfalls
- Tops – Cast Iron grates



## Birco 100 Channel



- Available in 1000mm and 500mm lengths
- Invert width of 100mm
- Available in 5 constant invert depths of 100 (0/0), 150 (5/0), 200 (10/0), 250 (15/0) and 300mm (20/0)
- 20 inbuilt fall channels with a gradient of 1%, each 1000mm long
- T-Junctions, End caps, Cap outlets and Outfalls
- Tops – Cast Iron grates



## Birco 150 Channel



- Available in 1000mm and 500mm lengths
- Invert width of 150mm
- Available in 5 constant invert depths of 150 (0/0), 200 (5/0), 250 (10/0), 300 (15/0) and 350mm (20/0)
- 20 inbuilt fall channels with a gradient of 1%, each 1000mm long
- T-Junctions, End caps, Cap outlets and Outfalls
- Tops – Cast Iron grates



## Birco 200 Channel



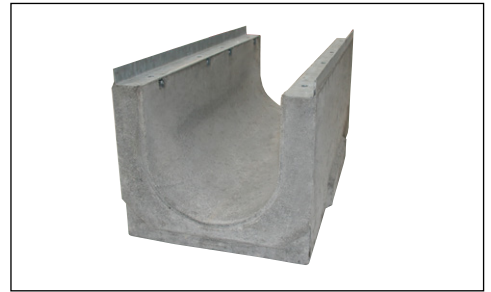
- Available in 1000mm and 500mm lengths
- Invert width of 150mm
- Available in 5 constant invert depths of 150 (0/0), 200 (5/0), 250 (10/0), 300 (15/0) and 350mm (20/0)
- 20 inbuilt fall channels with a gradient of 1%, each 1000mm long
- T-Junctions, End caps, Cap outlets and Outfalls
- Tops – Cast Iron grates



## Birco 300 Channel



- Available in 1000mm lengths
- Invert width of 300mm
- Available in 2 constant invert depths of 335 (0/0) and 475mm (5/0)
- End caps, Cap outlets and Outfalls
- Tops – Cast Iron grates



## Landscape Drain



- Available in 1000mm and 500mm lengths
- Invert width of 100mm
- Available in 5 constant invert depths of 100 (0/0), 150 (5/0), 200 (10/0), 250 (15/0), 300mm (20/0)
- 20 inbuilt fall channels with a gradient of 1%, each 1000mm long
- T-Junctions, End caps, Cap outlets and Outfalls
- Tops – Mono Slot, Duo Slot and Pave Drain (Concrete and Natural Stone)



## Decathlon



- Available in 2000mm, 1500mm, 1200mm and 1000mm lengths
- Invert widths of 150mm, 250mm, 375mm, 525mm and 600mm
- Available in 5 constant invert depths of 490, 592, 717, 902 and 1014mm
- Stop ends, Manhole covers and frames and Silt boxes
- Tops – Concrete (Perforated, Heelguard and In-Situ)



## Traffic Drain



- Available in 1000mm and 500mm lengths
- Available in 4 constant invert depths of 210 (0/0), 260 (5/0), 310 (10/0), 360mm (15/0)
- Base transition unit available
- Radius units available
- End caps, Cap outlets and Cover plates
- Tops – Cast Iron



## Max-E Channel



- Available in 500mm lengths
- Available in 4 constant invert depths of 205 (0/0), 295 (5/0), 365 (10/0), 630mm (15/0)
- Base transition unit available
- Tops – Concrete, In-laid and Cast Iron



## Birco Shallow Channel



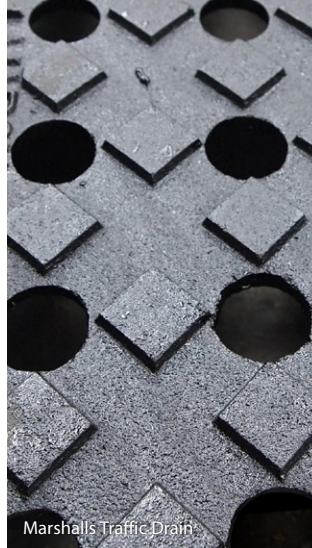
- Available in 1000mm lengths
- Invert widths of 100, 150 and 300mm
- Available in 6 constant invert depths of 20, 40, 50, 80, 130, 180mm
- End caps and Cap outlets
- Tops – Cast Iron grates







Marshalls Mono Slot Drain, Doncaster



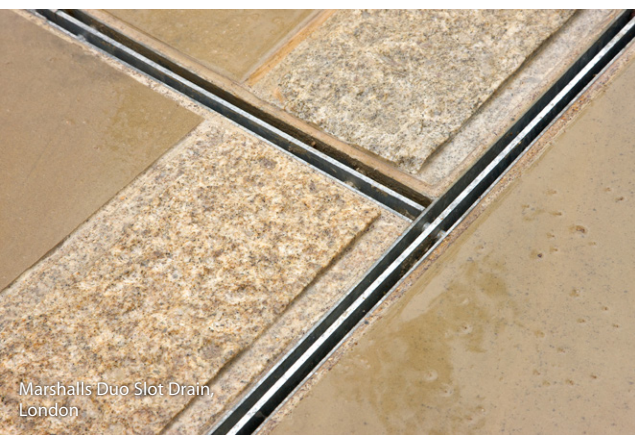
Marshalls Traffic Drain



Marshalls Max-E-Channel  
Conservation Silver Grey, Glasgow



Marshalls Birco 150, Cardiff



Marshalls Duo Slot Drain,  
London



Marshalls Pave Drain Granite,  
Hartlepool



Marshalls Birco 200, Gloucestershire



Marshalls Birco 100 Heelsure, London



Marshalls Birco 300, Wigan



# Case Study

## London 2012 Olympic and Paralympic Games

### The Athletes Village

Kym Jones was the Landscape Architect/Lead Consultant responsible for the delivery of the Athletes Village Public Realm. Kym said of the project: "I was very excited when I found out I would be working on the delivery of the Athletes Village public realm, not only is it a prestigious project, there's nothing like it in terms of scale, it's unprecedented."

"The design of the public realm is a very strong concept, with hard and soft landscaping interfacing nicely, there's an excellent balance between the two parts."

"We have worked with Marshalls before but nothing on this scale. The quality of the materials and installation is exceptional, and the project has opened my eyes to a greater range of Marshalls materials, products and opportunities. The materials have been selected to stand the test of time, they're designed to be robust and will last long after the Games have finished."

"This was a difficult project to deliver, but Marshalls had a very hands on approach throughout; from supply chain, design to delivery, even locating project managers on site."

"Everyone involved in this project would agree with me that every aspect exudes quality; it really does raise the bar for all future developments."

Kim concludes: "It was exciting that so many world class athletes enjoyed the space for the duration of the Games, but what's more exciting is that a new community will come and take ownership of this space. The Olympic Games was just a small part of this legacy's lifecycle and what we've created will be here for generations to come."

#### **KYM JONES**

– Managing Director of Applied Landscape Design



"In building the venues and staging the Games we have 'raised the bar' for both the construction industry and future large-scale events."

An ODA representative

Marshalls Duo Slot Drain, Olympic Park



Step 3 - Choose your Aesthetic

Hydraulic capacity and load classification are two key considerations when using linear channel drainage, although, to a degree both are predetermined by project specifics. The style of drainage top is a third consideration which can be made with far more freedom. With a number of different channel top formats in a variety of materials Marshalls offers choice with a solution to enhance any project.

CAPACITY

LOW

LOW CAPACITY

Drains an area up to 750m<sup>2</sup>\* or typical run lengths up to 30 lin m

MEDIUM

MEDIUM CAPACITY

Drains an area up to 1750m<sup>2</sup>\* or typical run lengths up to 100 lin m

HIGH

HIGH CAPACITY

Drains an area in excess of 1750m<sup>2</sup>\* or typical run lengths over 100 lin m

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# Marshall's

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