Marshalls

Creating Better Spaces

INSTALLATION GUIDELINES

Marshalls

Creating Better Spaces

INSTALLATION GUIDELINES

CONTENTS

Birco Channel

Marshalls
Creating Better Spaces

Installation Guidelines

www.marshalls.co.uk/watermanagement

1. Excavation

a. Sufficient material should be excavated to accommodate channel units, concrete bedding and haunching.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. Setting out pins should be accurately located to the correct line and level with a string line level with the top rear corners of the channel units.

b. It may be advantageous to locate setting out pins to the rear of the units to avoid having to lift the units over the string line.

3. Outfalls

a. Birco Outfalls should be installed first.

b. Sufficient material should be excavated to accommodate the trapped Birco Gulley.

c. 150mm of ST4 mix (BS 8500-1&2) concrete of the appropriate mix is placed in the bottom of the excavation.

d. The bottom section of the two part Birco Gulley is lowered into position, with the appropriate pipe adaptor placed the aperture for connection to the underground pipework.

e. A suitable section of the wall of the outfall unit shall be cut out to allow adjacent drainage channels to abut without restricting the flow of water. Cutting shall be achieved by using a concrete saw or disc cutter.

f. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part Birco Gulley so as to provide a seal between the top and bottom sections.

g. The top section of the two part Birco Gulley is lowered into position

h. The bedding concrete should be laid and brought up to the appropriate level dependant on surface finish as shown in the Birco Standard Detail Sheet.

Guidelines continued overleaf...

4. Channel Installation

a. Bedding concrete (ST1 to BS 8500-1&2) of the appropriate thickness and depth shall be laid as specified in the Birco Standard Detail Sheets.

b. The top of the Birco Channel shall be 5mm below the final pavement surface.

c. Channel Units shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill

d. Alternatively, the Channel Units may be bedded on to a layer of 10 to 40mm cement mortar (M12 mortar to BS EN 998-2) on a previously prepared concrete foundation.

e. The concrete haunching shall be of a concrete grade appropriate to the Drainage Channel Loading Class as specified in the Birco Standard Detail Sheets.

f. Haunching shall be carried out as one operation to a complete line of Channel Units, to the dimensions indicated in the Birco Standard Detail

g. Where channels are laid on or adjacent to existing or proposed concrete slabs, transverse joints shall be formed within the Units and haunching adjacent to the slab joints.

h. Longitudinal movement joints shall also be formed between the haunching and the slabs as described in the Birco Drain Standard Detail Sheets.

i. Where cutting the Birco Channel Units is required, they shall be cut with a concrete saw or disc cutter, so that no single Unit is less than 350mm long. Birco gratings shall not be cut unless directed by the engineer. Any cut galvanised steel shall be renovated using Defcon Z, or similar approved.

5. Channel Joint Sealant

a. Jointing of adjacent channels shall be carried prior to fixing the gratings. Marshalls' M-Flex sealant should be gunned into the sealant groove formed when adjacent channels abut.

b. Surplus sealant shall be removed from the inner surface of the units as work proceeds.

Guidelines continued overleaf...

6. Grating Installation

a. Adjacent Carriageway and/or footway construction shall not be commenced within 3 days of any jointing or haunching/ surrounding concrete being placed.

b. Birco gratings shall be securely bolted to Birco Channel Units, before adjacent pavement construction is commenced.

c. All gratings shall be evenly spaced with bolts tightened down securely to the appropriate torque (Lite: 25Nm, 100, 150 and 200: 75 Nm, 300:100Nm).

d. On completion of the works, the drainage channel units shall be cleaned out and left free from obstruction. This shall be carried out either by removal of gratings or by high pressure water jetting (100-150 bar at 200 litres/min minimum). Unless otherwise agreed with the specifier, the slot openings shall be covered by timber boards or other method during jetting operations.

e. Outfall units shall be emptied.

f. The cleaning process should be repeated where necessary on completion of any remedial works.

7. Birco End Caps/End Cap Outlets

a. Where the Birco Channel run does not terminate at an outfall, the base unit shall be sealed using the Beany Block End Cap or End Cap Outlet.

b. These are to be held in position by installing 150mm of concrete haunching.

c. Marshalls M-Flex sealant should be gunned into the sealant groove.

Scan the QR Code to watch the installtion video

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

Pave Drain

Marshalls
Creating Better Spaces

Installation Guidelines

www.marshalls.co.uk/watermanagement

1. Excavation

a. Sufficient material should be excavated to accommodate the drainage channel, concrete bedding and haunching.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. The top of the Pave Drain should be 5mm below the finished pavement surface.

b. It may be advantageous to use setting out pins and string lines to achieve the desired level for the channels.

3. Outfalls

a. Pave Drain outfalls should be installed first.

b. Sufficient material should be excavated to accommodate the trapped Landscape Drain outfall units

c. 150mm of C25/30 mix (BS 8500-1&2) concrete is placed in the bottom of the excavation

d. The bottom section of the two part outfall is lowered into position

e. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part Pave Drain outfall so as to provide a seal between the top and bottom sections

f. The bedding concrete should be laid and brought up level with underside of the pavement bedding course.

g. The Access Cover & Frame Units should be set directly onto a 10mm bed of mortar with mortar Class12 to BS EN 998-2:2003 along each side of the outfall unit

4. Channel Installation

a. Bedding concrete (C25/30 to BS 8500-1&2) of the appropriate thickness and depth shall be laid

b. Channels shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill, channel ends should abut as tightly as possible.

c. Alternatively, the channels may be bedded on to a layer of 10 to 40mm cement mortar (M12 mortar to BS EN 998-2) on a previously prepared concrete foundation.

d. Where cutting is necessary, channels shall be cut so that no single Unit is less than 350mm in length.

e. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

Guidelines continued overleaf...

5. Channel Joint Sealant

a. Jointing of channels shall occur prior to the fixing of the grating. A bead of M Flex sealant should be gunned in to the grove formed when adjacent channels abut.

b. Surplus sealant shall be removed from the inner surface of the Units as work proceeds.

6. Top Block Installation

a. The string line should be set to the level of the top corner of Units.

b. Again, starting at the Outfall, the Units should be set directly onto a 10mm bed of mortar to mortar class 12 BS EN 998-2:2003.

c. The Top Blocks should be tamped into position close to previously laid Units and the alignment checked.

d. The levels should be checked using the string line and a spirit level.

e. In addition, the general alignment should be checked from all directions as each Block is laid. Any Unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

f. The joints between adjacent top units are dry and units should be laid hand tight to achieve either a 6mm or 12mm opening as detailed on drawing.

g. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 200mm in length. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

h. The Pave Drain top units should be protected during the construction phase to prevent debris entering the slots.

7. Pave Drain End Caps

a. Where the Pave Drain run does not terminate at an outfall, the base unit shall be sealed using the correct sized Pave Drain End Cap.

b. The End Cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete (C25/30 mix to BS 8500-1&2).

Scan the QR Code to watch the installtion video

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

Slot Drain Mono/Duo

Marshalls
Creating Better Spaces

Installation Guidelines

www.marshalls.co.uk/watermanagement

1. Excavation

a. Sufficient material should be excavated to accommodate the drainage channel, concrete bedding and haunching.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. The top of the Slot Drain should be 5mm below the finished pavement surface.

b. It may be advantageous to use setting out pins and string lines to achieve the desired level for the channels.

3. Outfalls

a. Slot Drain outfalls should be installed first.

b. Sufficient material should be excavated to accommodate the trapped Slot Drain outfall units

c. 150mm of C25/30 mix (BS 8500-1&2) concrete is placed in the bottom of the excavation

d. The bottom section of the two part outfall is lowered into position

e. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part Slot Drain outfall so as to provide a seal between the top and bottom sections

f. The top section of the two part Slot Drain is lowered into position

g. The bedding concrete should be laid and brought up level with underside of the pavement bedding course.

h. The Access Cover & Frame Units should be set directly onto a

i. 10mm bed of mortar with mortar Class12 to BS EN 998-2:2003 along each side of the outfall uni

4. Base Unit/Channel Installation

a. Bedding concrete (C25/30 to BS 8500-1&2) of the appropriate thickness and depth shall be laid

b. Channels shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill, channel ends should abut as tightly as possible.

c. Alternatively, the channels may be bedded on to a layer of 10 to 40mm cement mortar (M12 mortar to BS EN 998-2) on a previously prepared concrete foundation.

d. Where cutting is necessary, channels shall be cut so that no single Unit is less than 350mm in length.

e. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

Guidelines continued overleaf...

5. Channel Joint Sealant

a. Jointing of channels shall occur prior to the fixing of the grating. A bead of M Flex sealant should be gunned in to the grove formed when adjacent channels abut.

b. Surplus sealant shall be removed from the inner surface of the Units as work proceeds.

6. Top Unit Installation

a. The string line should be set to the level of the top corner of Units.

b. Again, starting at the outfall, the units should be dry laid onto the channel, use a mortar bed for levelling purposes if required to class 12 from BS EN 998-2:2003

c. The top units should be tamped into position close to previously laid Units and the alignment checked.

d. The levels should be checked using the string line and a spirit level.

e. In addition, the general alignment should be checked from all directions as each unit is laid. Any Unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

f. The joints between adjacent top units should be sealed with Marshalls M Tape to prevent ingress of bedding material from the surrounding pavement.

g. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 350mm in length. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

h. Any cut galvanised steel shall be renovated using Defcon Z or similar approved material.

7. Slot Drain End Caps

a. Where the Slot Drain run does not terminate at an outfall, the base unit shall be sealed using the correct sized Slot Drain End Cap.

b. The End Cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete (C25/30 mix to BS 8500-1&2).

8. Pavement Installation

a. Where Slot Drain is being laid adjacent to flexibly laid paving the inlet apertures should be sealed against ingress of bedding or jointing material during the construction phase.

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

Scan the QR Code to watch the installtion video

Landscape Drain

Marshalls
Creating Better Spaces

Installation Guidelines

www.marshalls.co.uk/watermanagement

1. Excavation

a. Sufficient material should be excavated to accommodate the drainage channel, concrete bedding and haunching.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. The top of the Landscape Drain should be 5mm below the finished pavement surface.

b. It may be advantageous to use setting out pins and string lines to achieve the desired level for the channels.

3. Outfalls

a. Landscape Drain outfalls should be installed first.

b. Sufficient material should be excavated to accommodate the trapped Landscape Drain outfall units

c. 150mm of C25/30 mix (BS 8500-1&2) concrete is placed in the bottom of the excavation

d. The bottom section of the two part outfall is lowered into position

e. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part Landscape Drain outfall so as to provide a seal between the top and bottom sections

f. The top section of the two part Landscape Drain is lowered into position

g. The bedding concrete should be laid and brought up level with underside of the pavement bedding course.

h. The Access Cover & Frame Units should be set directly onto a 10mm bed of mortar with mortar Class12 to BS EN 998-2:2003 along each side of the outfall unit

Guidelines continued overleaf...

4. Channel Installation

a. Bedding concrete (C25/30 to BS 8500-1&2) of the appropriate thickness and depth shall be laid

b. Channels shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill, channel ends should abut as tightly as possible.

c. Alternatively, the channels may be bedded on to a layer of 10 to 40mm cement mortar (M12 mortar to BS EN 998-2) on a previously prepared concrete foundation.

d. Where cutting is necessary, channels shall be cut so that no single Unit is less than 350mm in length.

e. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

5. Channel Joint Sealant

a. Jointing of channels shall occur prior to the fixing of the grating. A bead of M Flex sealant should be gunned in to the grove formed when adjacent channels abut.

b. Surplus sealant shall be removed from the inner surface of the Units as work proceeds.

Guidelines continued overleaf...

6. Top Block Installation

a. The string line should be set to the level of the top corner of Units.

b. Again, starting at the Outfall, the Units should be set directly onto a 10mm bed of mortar to mortar class 12 BS EN 998-2:2003.

c. The Top Blocks should be tamped into position close to previously laid Units and the alignment checked.

d. The levels should be checked using the string line and a spirit level.

e. In addition, the general alignment should be checked from all directions as each Block is laid. Any Unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

f. The joints between adjacent top units are dry and units should be laid hand tight to achieve either a 6mm or 12mm opening as detailed on drawing.

g. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 60mm in length. Units should be cut from flat end only so not to reduce or remove recess for drainage. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

7. Landscape Drain End Caps

a. Where the Landscape Drain run does not terminate at an outfall, the base unit shall be sealed using the correct sized Landscape Drain End Cap.

b. The End Cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete (C25/30 mix to BS 8500-1&2).

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

Scan the QR Code to watch the installtion video

Traffic Drain

Marshalls
Creating Better Spaces

Installation Guidelines

www.marshalls.co.uk/watermanagement

1. Excavation

a. Sufficient material should be excavated to accommodate traffic drain Top and Base Units, concrete bedding and concrete haunch.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. Setting out pins should be accurately located to the correct line and level with a string line level with the top front corners of the Base Units.

b. It may be advantageous to locate setting out pins to the rear of the Units to avoid having to lift the Units over the string line.

c. Sufficient setting out pins should be inserted where Traffic Drain base blocks* are laid on horizontal curves.

* Traffic drain base components same as mini beany

3. Outfalls

a. Traffic Drain outfalls* should be installed first.

* Traffic drain outfall units same as mini beany

b. Sufficient material should be excavated to accommodate the required Traffic Drain outfall unit

   i. Inline Side Outfall Unit
   ii. Inline End Outfall Unit
   iii. High Capacity Outfall

c. 125mm of ST4 mix (BS 8500-1&2) concrete of the appropriate mix is placed in the bottom of the excavation

d. The bottom section of the required traffic drain outfall is lowered into position

e. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part traffic drain outfall so as to provide a seal between the top and bottom sections

f. The top section of the two part traffic drain outfall is lowered into position

g. The bedding concrete should be laid and brought up flush to the top of the traffic drain outfall

h. The traffic drain Cast iron Access Cover & Frame Unit is located on top of the top section of the outfall unit and should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

i. Traffic Drain Access Covers and Frames are hinged and handed to the direction of the traffic, specified "nearside" and "offside".

1

2

3

Guidelines continued overleaf...

4. Base Unit/Channel Installation

a. When used in conjunction with the Mini Beany system, Traffic Drain base channels are the same as Mini Beany base channels.

b. Base Units shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill

c. C20/25 concrete to BS 8500-1&2 and BS EN 206-1 for applications up to load classification C250 to BS EN 1433

d. A C25/30 concrete to BS 8500-1&2 and BS EN 206-1 for applications up to load classification F900 to BS EN 1433

e. Alternatively, the Base Units may be bedded on to a layer of 10 to 40mm cement mortar (M12 mortar to BS EN 998-2) on a previously prepared concrete foundation.

5. Channel Joint Sealant

a. Sufficient M-Seal bituminous mastic jointing compound should be trowelled on to one end face of the Base Unit so that the joint will be well sealed when the next Unit is tamped into position.

b. Surplus sealant shall be removed from the inner surface of the Units as work proceeds.

6. Traffic DrainTop Unit Installation

a. The string line should be set to the level of the top corner of Units.

b. Again, starting at the Outfall, the Units should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

c. Traffic drain top units should be bed on the following materials

d. A Mortar class 12 cement mortar to BS EN 998-2 for bedding of the Cast Iron Top Units for applications up to Load Classification D400 to BS EN 1433

e. Marshalls' M-Bond epoxy mortar for bedding of Cast Iron Top Units for applications E600 and F900 to BS EN 1433

f. The top units should be tamped into position close to previously laid Units and the alignment checked.

g. The levels should be checked using the string line and a spirit level.

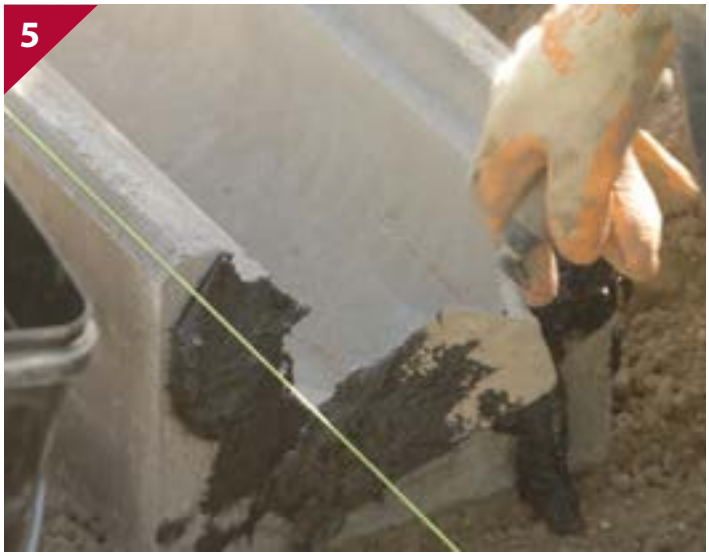
h. In addition, the general alignment should be checked from all directions as each unit is laid. Any Unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

i. Top units shall be laid with the top of the unit 5mm below the final pavement level.

j. The inside and outside of the joints between Base and Top Units should be pointed and cleaned out with a brush or rag as work proceeds.

k. It is not necessary for Top Block and Base Unit vertical joints to line up

l. When installed, the minimum depth of construction above the top of the base unit to the drained area surface level shall be not less than 125mm.



Guidelines continued overleaf...

7. Cover Plates

a. Cover Plates, when used, should be bedded on cement mortar to the specified thickness, pointed inside and outside of the joints with the inside of the Base Units being cleaned out as work proceeds.

b. The Cover Plates should be close jointed and the joints sealed with 50mm wide M-Tape.

c. Cover Plates shall be suitably protected before and during installation in order that the protective coating is not damaged.

d. An ST4 mix concrete should be used for the bed and haunch of Base Units where cover plates are used.

8. Traffic Drain End Caps

a. Where the traffic drain run does not terminate at an outfall, the base unit shall be sealed using the Traffic Drain End Cap of required depth.

b. The End Cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete (ST1 mix to BS 8500-1&2).

9. Pavement Installation

a. Where Traffic Drain is laid on or adjacent to existing or proposed concrete slabs, transverse joints shall be formed within the units and haunching adjacent to the slab joints and also longitudinal movement joints between the haunching and the slabs.

b. Where necessary, top unit drainage apertures shall be protected against the ingress of material during concreting operations.

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

1. Excavation

a. Sufficient material should be excavated to accommodate Top and Base Units, concrete bedding and haunching.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. Setting out pins should be accurately located to the correct line and level with a string line level with the top front corners of the Base Units.

b. It may be advantageous to locate setting out pins to the rear of the Units to avoid having to lift the Units over the string line.

c. Sufficient setting out pins should be inserted where Max-E-Channel Bases are laid on horizontal curves

3. Outfalls

a. Max-E-Channel Outfalls should be installed first.

b. Sufficient material should be excavated to accommodate the Trapped Max-E-Channel Gulley

c. 125mm of concrete of the appropriate mix is placed in the bottom of the excavation

d. The bottom section of the two part Max-E-Channel Gulley is lowered into position

e. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part Max-E-Channel Gulley so as to provide a seal between the top and bottom sections

f. The top section of the two part Max-E-Channel Gulley is lowered into position

g. The bedding concrete should be laid and brought up flush to the top Max-E-Channel Gulley

h. The max-E-Channel Base Outfall Block should be set directly onto a liberal quantity of stiff, cement mortar

i. The Cast iron Access Cover & Frame Units should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

Guidelines continued overleaf...

4. Base Unit Installation

a. Bedding concrete of the appropriate mix and to the appropriate thickness and depth shall be laid

b. Base Units shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill

c. Alternatively, the Base Units may be bedded on to a layer of 10 to 40mm cement mortar on a previously prepared concrete foundation.

d. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 200mm in length.

e. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

5. Channel Joint Sealant

a. Sufficient M-Seal bituminous mastic jointing compound should be trowelled on to one end face of the Base Unit so that the joint will be well sealed when the next Unit is tamped into position.

b. Surplus sealant shall be removed from the inner surface of the Units as work proceeds.

6. Top Block Installation

a. The string line should be set to the level of the top corner of Units.

b. Again, starting at the Outfall, the Units should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

c. Cement mortar shall be Class M12 in accordance with BS EN 998-2 for applications up to and including D400 and should be M Bond epoxy mortar for higher loading applications.

d. The M Bond epoxy mortar should be mixed in accordance with the instructions on the container.

e. The Top Units should be tamped into position close to previously laid Units and the alignment checked.

f. The levels should be checked using the string line and a spirit level.

g. In addition, the general alignment should be checked from all directions as each Unit is laid. Any Unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

h. The inside and outside of the joints between Base and Top Units should be pointed and cleaned out with a brush or rag as work proceeds.

Guidelines continued overleaf...

a. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 200mm in length. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

b. It is not necessary for Top and Base Unit vertical joints to line up

c. The front and rear concrete haunching is installed to the dimensions shown on the standard detail or drawing.

7. Max-E-Channel End Caps

a. Where the Max-e-Channel run does not terminate at an outfall, the base unit shall be sealed using the Max-E-Channel End Cap.

b. The End Cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete.

8. Pavement Installation

a. Where Max-e-Channel is laid on or adjacent to existing or proposed concrete slabs, transverse joints shall be formed within the units and haunching adjacent to the slab joints and also longitudinal movement joints between the haunching and the slabs.

b. Where necessary, the Top Unit drainage openings shall be protected against the ingress of material during concreting operations by covering with Waterproof Cloth Tape.

Scan the QR Code to watch the installtion video

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

1. GRC Insitu Lid Former

a. Mark out the required line of drainage.

b. Mark out the required level for Channels and Lids.

c. Excavate trench with an additional depth and width of 100mm each side than the respective dimensions of the selected Channel and Lid. For channel depths see the Marshalls drainage design guide. Suitable trench support and edge protection should be used if identified by the site risk assessment.

d. Line the trench bottom with a 100mm deep layer of semi-dry concrete to provide a bed for the Channel.

e. Lift the channel into position using a vacuum lifting device configuration similar to the picture below. Seek further guidance on lifting equipment from the relevant supplier. When using a mechanical grab a wooden brace should be placed at the top of the base and at the same level of where the grab will apply pressure.

f. Tamp the top of the Channel along its length until it is to line and level.

g. If necessary "prop" the Channel against the trench sides and internally to ensure the Channel stays true to line.

h. Bed the lid former on top of the Channel using a high strength mortar. Make provision for expansion joints normally at same frequency as concrete bays.

i. Place factory supplied reinforcement cage in place. Cage designed to 112.5kn wheel load. Greater loads can be catered for upon request.

j. Ensure the plastic slot bungs (blue) are in place to prevent concrete ingress.

k. When mortar has achieved its strength, pour concrete to the sides of Channel and to required finished slab levels. Concrete to be minimum grade C25.

l. Remove plastic caps and finish slots to required standard.

m. After concreting the system should not be loaded with passing traffic until the concrete has had time to fully cure.

Guidelines continued overleaf...

2. Pre-Cast Concrete Heelguard Lids

a. Mark out the required line and level for Channels and Lids.

b. Excavate trench with: An additional depth of approximately 100mm deeper than the combined depth of the selected Channel and Lid. An additional width of 100mm each side over and above the width of the top of the selected Channel.

c. Line the trench bottom with a 100mm deep layer of semi-dry concrete to provide a bed for the Channel.

d. Place the Channel and tamp the top of the Channel along its length until it is to line and level.

e. If necessary "prop" the Channel against the trench sides and internally to ensure the Channel stays true to line.

f. Pour concrete to the sides of Channel and trowel off level at top. Allow to cure as per good building practice.

g. Using M12 Lifting Sockets, mechanically lift lids and lower onto high strength bedding mortar applied to both sides and full lengths of units and adjust to the correct line and level. This may also be used to take out any discrepancies in level. Clear away any excess Mortar.

h. After concreting the system should not be loaded with passing traffic until the concrete has had time to fully cure.

3. Pre-Cast Concrete Perforated Top Lids

a. Mark out the required line and level for Channels and Lids.

b. Excavate trench with: An additional depth of approximately 100mm deeper than the combined depth of the selected Channel and Lid. An additional width of 100mm each side over and above the width of the top of the selected Channel.

c. Line the trench bottom with a 100mm deep layer of semi-dry concrete to provide a bed for the Channel.

d. Place the Channel and tamp the top of the Channel along its length until it is to line and level.

e. If necessary "prop" the Channel against the trench sides and internally to ensure the Channel stays true to line.

f. Pour concrete to the sides of Channel and trowel off level at top. Allow to cure as per good building practice.

g. 7. Using M12 Lifting Sockets, mechanically lift lids and lower onto high strength bedding mortar applied to both sides and full length of unit and adjust to the correct line and level. This may also be used to take out any discrepancies in level. After placing Lid haunch clear away any excess Mortar.

h. After concreting the system should not be loaded with passing traffic until the concrete has had time to fully cure.

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

1. Excavation

a. Sufficient material should be excavated to accommodate the Units, concrete bedding and haunching.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. Setting out pins should be accurately located to the correct line and level with a string line level placed to the rear of the kerb.

b. Sufficient setting out pins should be inserted where Mono Beany Units are laid on horizontal curves

3. Outfalls

a. Mono Beany Outfalls should be installed first.

b. Sufficient material should be excavated to accommodate the Trapped Mono Beany Gulley

c. 125mm of ST4 mix (BS 8500-1&2) concrete of the appropriate mix is placed in the bottom of the excavation

d. The bottom section of the two part Mono Beany Outfall is lowered into position

e. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part Beany Outfall so as to provide a seal between the top and bottom sections

f. The bedding concrete should be laid and brought up flush to the top of the Mono Beany Outfall.

g. The Cast iron Access Cover & Frame Units should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

4. Mono Beany Unit Installation

a. Bedding concrete (ST1 to BS 8500-1&2) of the appropriate thickness and depth shall be laid

b. Mono Beany Units shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill

c. Alternatively, the Mono Beany Units may be bedded on to a layer of 10 to 40mm cement mortar (M12 mortar to BS EN 998-2) on a previously prepared concrete foundation.

d. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 200mm in length and no cuts shall be within 50mm of the inlet aperture. No cutting shall impair the stability of the Unit.

e. All cutting and trimming of the Units shall be carried out with an appropriate cutting tool.

Guidelines continued overleaf...

5. Mono Beany Joint Sealant

a. Sufficient Marshalls' M-Flex sealant should be gunned into the sealant groove at either end of the unit.

6. Mono Beany End Cap

a. Where the Mono Beany run does not terminate at an outfall, the base unit shall be sealed using the Mono Beany End Cap.

b. The End Cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete (ST1 mix to BS 8500-1&2).

7. Pavement Installation

a. Where Mono Beany is laid on or adjacent to existing or proposed concrete slabs, transverse joints shall be formed within the units and haunching adjacent to the slab joints and also longitudinal movement joints between the haunching and the slabs.

b. Where necessary, the Unit drainage openings shall be protected against the ingress of material during concreting operations by covering with Waterproof Cloth Tape.

Scan the QR Code to watch the installtion video

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

1. Excavation

a. Sufficient material should be excavated to accommodate Top and Base Units, concrete bedding and rear concrete haunch.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. Setting out pins should be accurately located to the correct line and level with a string line level with the top front corners of the Base Units.

b. It may be advantageous to locate setting out pins to the rear of the Units to avoid having to lift the Units over the string line.

c. Sufficient setting out pins should be inserted where Mini Beany Blocks are laid on horizontal curves

3. Outfalls

a. Mini Beany Outfalls should be installed first.

b. Sufficient material should be excavated to accommodate the required Mini Beany outfall unit

   i. Inline Side Outfall Unit
   ii. Inline End Outfall Unit
   iii. High Capacity Outfall

c. 125mm of ST4 mix (BS 8500-1&2) concrete of the appropriate mix is placed in the bottom of the excavation

d. The bottom section of the required Mini Beany Gulley is lowered into position

e. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part Mini Beany Gulley so as to provide a seal between the top and bottom sections

f. The top section of the two part Mini Beany Gulley is lowered into position

g. The bedding concrete should be laid and brought up flush to the top of the Mini Beany Gulley

h. The Mini Beany Cast iron Access Cover & Frame Units located on top of the outfall unit should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

i. Mini Beany Access Covers and Frames are hinged and handed to the direction of the traffic, specified "nearside" and "offside".

Guidelines continued overleaf...

4. Base Unit Installation

a. Bedding concrete (ST1 to BS 8500-1&2) of the appropriate thickness and depth shall be laid

b. Base Units shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill

c. Alternatively, the Base Units may be bedded on to a layer of 10 to 40mm cement mortar (M12 mortar to BS EN 998-2) on a previously prepared concrete foundation.

d. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 200mm in length and no cuts shall be within 50mm of the inlet aperture. No cutting shall impair the stability of the Unit.

e. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

5. Channel Joint Sealant

a. Sufficient M-Seal bituminous mastic jointing compound should be trowelled on to one end face of the Base Unit so that the joint will be well sealed when the next Unit is tamped into position.

b. Surplus sealant shall be removed from the inner surface of the Units as work proceeds.

6. Top Block Installation

a. The string line should be set to the level of the top corner of Units.

b. Again, starting at the Outfall, the Units should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

c. Cement mortar shall be Class M12 in accordance with BS EN 998-2.

d. The Top Blocks should be tamped into position close to previously laid Units and the alignment checked.

e. The levels should be checked using the string line and a spirit level.

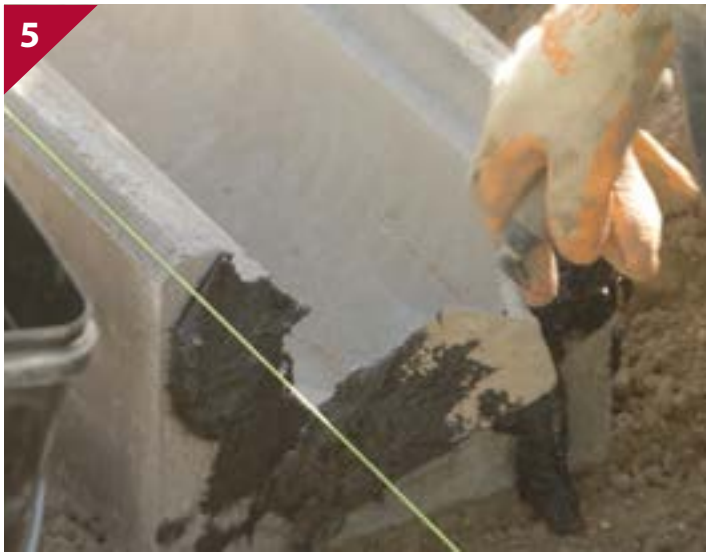
f. In addition, the general alignment should be checked from all directions as each Block is laid. Any Unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

g. The inside and outside of the joints between Base and Top Units should be pointed and cleaned out with a brush or rag as work proceeds.

h. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 200mm in length. All cutting and trimming of the Units shall be carried out with a concrete saw or disc cutter.

i. It is not necessary for Top Block and Base Unit vertical joints to line up

j. The rear concrete haunching is installed to within 50mm of the top of the Top Block



Guidelines continued overleaf...

7. Cover Plates

a. Cover Plates, when used, should be bedded on cement mortar to the specified thickness, pointed inside and outside of the joints with the inside of the Base Units being cleaned out as work proceeds.

b. The Cover Plates should be close jointed and the joints sealed with 50mm wide M-Tape.

c. Cover Plates shall be suitably protected before and during installation in order that the protective coating is not damaged.

d. An ST4 mix concrete should be used for the bed and haunch of Base Units where cover plates are used.

8. Mini Beany End Caps

a. Where the Mini Beany Block run does not terminate at an outfall, the base unit shall be sealed using the Mini Beany End Cap of required depth.

b. The End Cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete (ST1 mix to BS 8500-1&2).

9. Pavement Installation

a. Where Mini Beany is laid on or adjacent to existing or proposed concrete slabs, transverse joints shall be formed within the units and haunching adjacent to the slab joints and also longitudinal movement joints between the haunching and the slabs.

b. Where necessary, the Top Unit drainage openings shall be protected against the ingress of material during concreting operations by covering with Waterproof Cloth Tape.

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

Scan the QR Code to watch the installtion video

Beany Block

Marshalls
Creating Better Spaces

Installation Guidelines

www.marshalls.co.uk/watermanagement

1. Excavation

a. Sufficient material should be excavated to accommodate top and base units, concrete bedding and haunching.

b. Any 'soft spots' or poorly compacted formation should be made good.

2. Setting Out

a. Setting out pins should be accurately located to the correct line and level with a string line level with the top front corners of the Base Units.

b. It may be advantageous to locate setting out pins to the rear of the units to avoid having to lift the units over the string line.

c. Sufficient setting out pins should be inserted where Beany Blocks are laid on horizontal curves

3. Outfalls

a. Beany Outfalls should be installed first.

b. Sufficient material should be excavated to accommodate the Trapped Beany Gulley.

c. 125mm of ST4 (BS 8500-1&2) concrete of the appropriate mix is placed in the bottom of the excavation.

d. The bottom section of the two part Beany Gulley is lowered into position.

e. Sufficient M-Flex sealant is gunned onto the top horizontal surface of the bottom section of the two part Beany Gulley so as to provide a seal between the top and bottom sections.

f. The top section of the two part Beany Gulley is lowered into position.

g. The bedding concrete should be laid and brought up flush to the top Beany Gulley.

h. The Beany Base Outfall Block should be set directly onto a liberal quantity of stiff, M12 cement mortar (in accordance with BS EN 998-2).

i. The cast iron access cover & frame units should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

4. Base Unit Installation

a. Bedding concrete (ST1 to BS 8500-1&2) of the appropriate thickness and depth shall be laid.

b. Base units shall be laid onto the freshly mixed bedding concrete, starting at the outfall, i.e. working uphill.

c. Alternatively, the base units may be bedded on to a layer of 10 to 40mm cement mortar (M12 mortar to BS EN 998-2) on a previously prepared concrete foundation.

d. Where cutting is necessary, one or two Units shall be cut so that no single Unit is less than 200mm in length and no cuts shall be within 50mm of the inlet aperture. No cutting shall impair the stability of the unit.

e. All cutting and trimming of the units shall be carried out with a concrete saw or disc cutter.

Guidelines continued overleaf...

5. Channel Joint Sealant

a. Sufficient M-Seal bituminous mastic jointing compound should be trowelled on to one end face of the base unit so that the joint will be well sealed when the next unit is tamped into position.

b. Surplus sealant shall be removed from the inner surface of the units as work proceeds.

6. Top Block Installation

a. The string line should be set to the level of the top corner of units.

b. Again, starting at the Outfall, the units should be set directly onto a liberal quantity of stiff, cement mortar to completely fill the whole of the joint.

c. Cement mortar shall be Class M12 in accordance with BS EN 998-2.

d. The top blocks should be tamped into position close to previously laid Units and the alignment checked.

e. The levels should be checked using the string line and a spirit level.

f. In addition, the general alignment should be checked from all directions as each block is laid. Any unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

g. The inside and outside of the joints between base and top units should be pointed and cleaned out with a brush or rag as work proceeds.

h. Where cutting is necessary, one or two units shall be cut so that no single unit is less than 200mm in length. All cutting and trimming of the units shall be carried out with a concrete saw or disc cutter.

i. It is not necessary for top block and base unit vertical joints to line up.

j. The rear concrete haunching is installed to within 50mm of the top of the top block.

7. Cover Plates

a. Cover plates, when used, should be bedded on cement mortar to the specified thickness, pointed inside and outside of the joints with the inside of the base units being cleaned out as work proceeds.

b. The Cover plates should be close jointed and the joints sealed with 50mm wide M-Tape.

c. Cover plates shall be suitably protected before and during installation in order that the protective coating is not damaged.

d. An ST4 mix concrete should be used for the bed and haunch of base units where cover plates are used.

Guidelines continued overleaf...

8. Beany Block Stop End Top Unit

a. The Beany Block Stop End top units should be used at any transitions from Beany Block to half battered kerbs.

b. At the ends of Beany Block runs, these should be bedded onto freshly mixed concrete (ST1 mix to BS 8500-1&2) and kerb installation continued.

c. Where they are to be used at dropped crossings, they should be bedded onto freshly mixed mortar and the dropper kerb and centre stone installation continued.

9. Beany Block End Caps

a. Where the Beany Block run does not terminate at an outfall, the base unit shall be sealed using the Beany Block End Cap.

b. The end cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete (ST1 mix to BS 8500-1&2).

10. Pavement Installation

a. Where Beany Block is laid on or adjacent to existing or proposed concrete slabs, transverse joints shall be formed within the units and haunching adjacent to the slab joints and also longitudinal movement joints between the haunching and the slabs.

b. Where necessary, the top unit drainage openings shall be protected against the ingress of material during concreting operations by covering with waterproof cloth tape.

In accordance with the Health and Safety at Work etc Act 1974, the Manual Handling Operation Regulations 1992 (as amended 2004) and the Construction (Design and Management) Regulations 2007, risk assessments should be carried out to protect workers from risks associated with musculoskeletal disorders and work related upper limb disorders.

This may require the use of lifting aids to assist installation.

Scan the QR Code to watch the installtion video