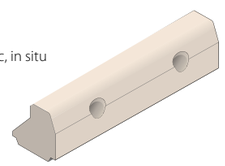
Mini Beany®

Combined Kerb and Drainage System

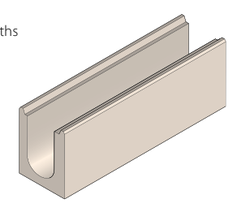
Mini Beany® 1000mm Top Block

- Mini Beany carries the British Standard Kitemark
- A further development to the robust combined kerb and drainage system
- Top Blocks now available in 1000mm length
- 500mm long radius top blocks are available
- Half battered profile suitable for use with tarmac, in situ concrete and concrete block paving
- Reduces mechanical lifts per metre from 2 to 1 for top unit.



Mini Beany® Pressed Base

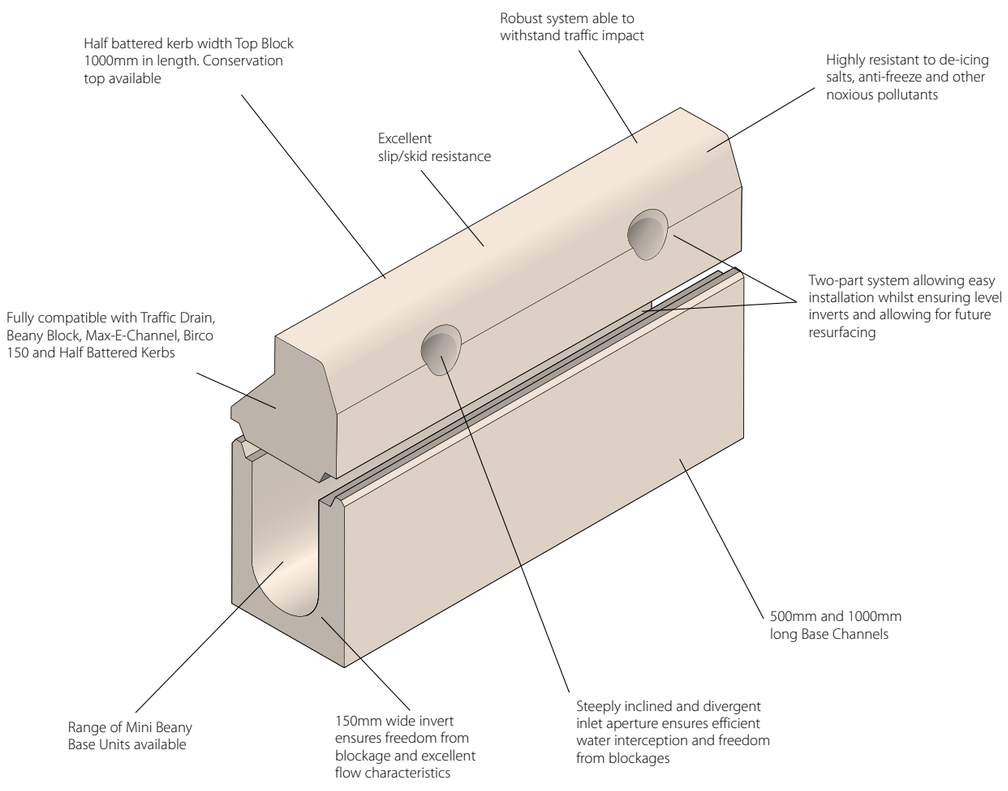
- Developments in production means increased strength of channel bases, resulting in improved installation with no requirement for front haunching, just bedding and backing concrete
- Available in 1000mm lengths in four invert depths
- 500mm long radius bases are available
- Fully compatible with Traffic drain and the current range of trapped outfalls and ancillary items
- Quicker to install with significant savings on installation.



Special Finishes

Conservation Mini Beany
A silver-grey coarse textured finish top unit, manufactured with granite aggregate, complements perfectly areas of high architectural, historical and scenic value. This product profile complements Conservation Kerb 205 x 255mm. Marshalls Silver Grey Conservation Paving, Kerb and Edging along with Mistral Concrete Block Paving and Conservation Setts, are ideally suited to complement this surface finish.

Conservation Mini Beany (205 x 255mm) is available with coarse texture to two faces and is available from stock.

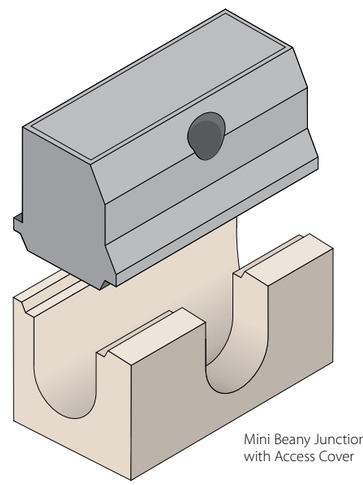


Mini Beany®

Combined Kerb and Drainage System

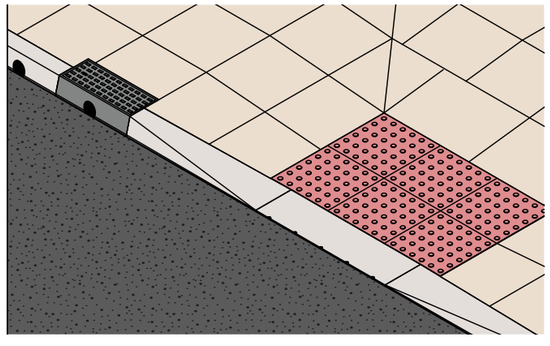
Mini Beany Versatility
Mini Beany is totally compatible with the rest of the Marshalls range of commercial linear drainage systems.

The addition of traffic drain further extends the use of the Mini Beany system, allowing for flows at locations such as across junctions, entrances or at nosing – in fact anywhere that requires vehicle access.



Mini Beany Junction with Access Cover

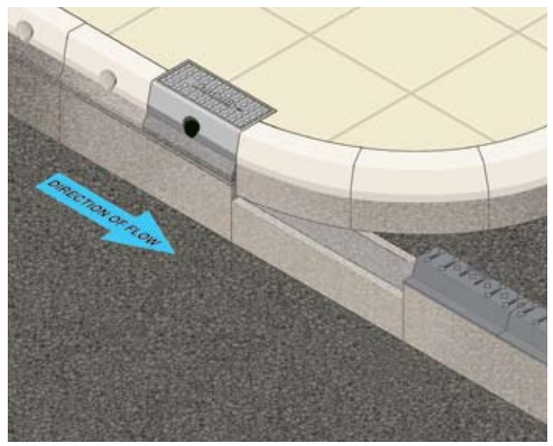
Mini Beany Drop Crossing Detail
Mini Beany drop crossing detail now has centre stones with inlet holes to allow drainage at drop crossing applications.



Mini Beany Drop Crossing Detail

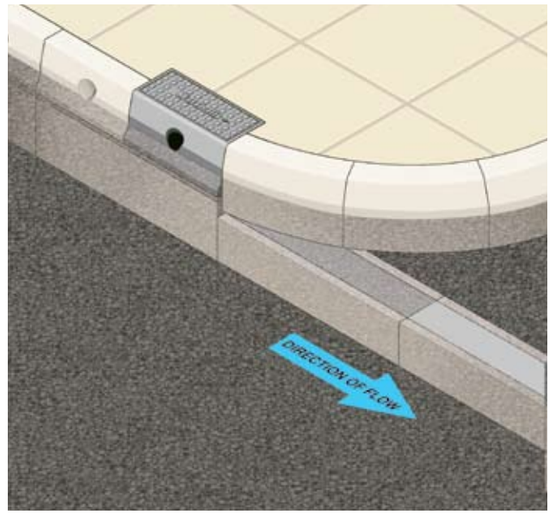
Mini Beany Junction Detail
The T Junction unit is used where there is a requirement to form a T junction with the base channels.

Mini Beany to Traffic Drain
Mini Beany can be used with Traffic Drain where the drainage run continues but the kerb line finishes. A smooth channel invert ensures undistributed flow.



Mini Beany to Traffic Drain

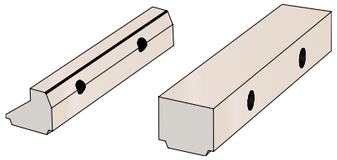
Mini Beany to Cover Plate
The system has been specifically designed so where base units and cover plates are used to carry flows under carriageways or vehicular crossings, a minimum of 150mm of road material can be laid above the units to prevent damage and reflective carriageway surface cracking.



Mini Beany to Cover Plate

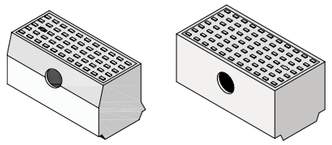
Components

TOP COMPONENTS



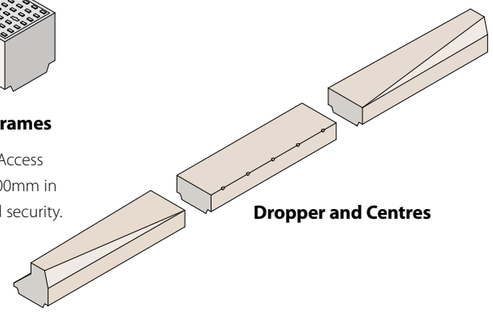
Mini Beany Top Block

Half Battered, 45º Splayed, and Conservation Bullnose Tops in 1000mm lengths.



Mini Beany Access Cover and Frames

Half Battered, Conservation Bullnose Access Covers (nearside or offside hinged) 500mm in length. All now lockable for improved security.

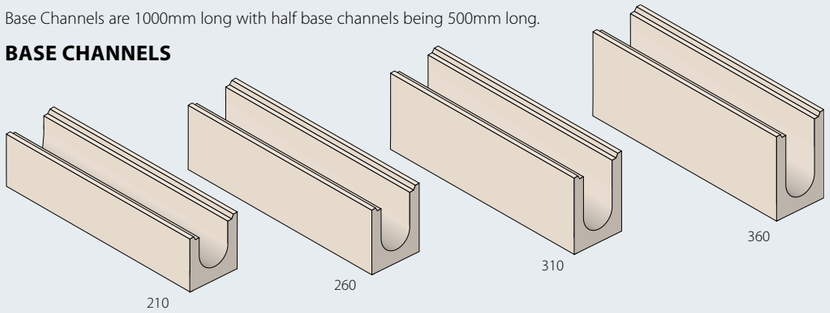


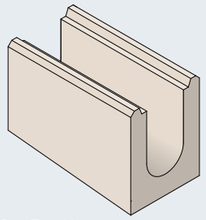
Dropper and Centres

BASE COMPONENTS

Base Channels are 1000mm long with half base channels being 500mm long.

BASE CHANNELS





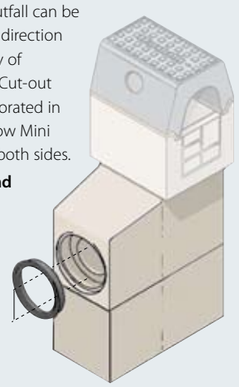
Base Transitions
210-260, 260-310, 310-360

OUTFALLS

High Capacity Outfall

Comprising a two section concrete trapped Outfall, Silt Box and cast iron Beany Access Cover. Outlet for 225mm or 150mm diameter pipework with universal seals. The bottom two sections of the outfall can be orientated in any direction allowing flexibility of pipework layout. Cut-out panels are incorporated in the Silt Box to allow Mini Beany runs from both sides.

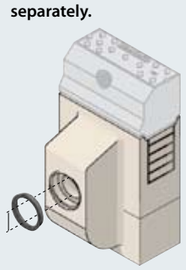
Note: Silt Box and Beany cast iron Access Cover and Frame available separately.



Inline Side Outlet Outfall

Comprising a two section concrete trapped Outfall, with cast iron Mini Beany Access Cover and Frame. Side outlet for 150mm diameter pipework with universal seal. Cut-out panels to allow Mini Beany Runs from both sides.

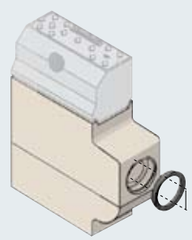
Note: Cast iron Access Cover and Frame available separately.



Inline End Outlet Outfall

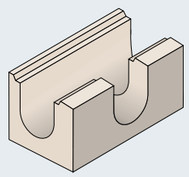
Comprising a two section concrete trapped Outfall, with cast iron Mini Beany Access Cover and Frame. End outlet for 150mm diameter pipework with universal seal. Cut-out panel to allow Mini Beany run from one side only.

Note: Cast iron Access Cover and Frame available separately.



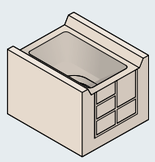
Mini Beany T Junction

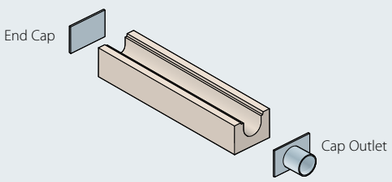
Available in all 5 base channel depths. 500mm in length.



Silt Box

Transition between Mini Beany and Beany Block or Max-E-Channel systems. If required, it can also be used at the location of silt traps in the Mini Beany run. It has cut-out panels to allow for Mini Beany runs from two sides, or, Mini Beany and Beany Block from each side. There is a hole in the base of the Silt Box.





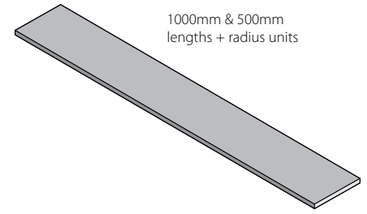
RADIUS BLOCKS

Top Components	Radius	Unit Reference
	Greater than 56m	1000mm
	30.1 - 56 External	500mm
	30.1 - 56 Internal	500mm
	30.0 - 10.0 External	30/10 External
	30.0 - 10.0 Internal	30/10 Internal
	9.9 - 6.0 External	9/6 External
	9.9 - 6.0 Internal	9/6 Internal
	45° Bend External	45° External
	45° Bend Internal	45° Internal

Base Components	Radius	Unit Reference
	Greater than 56m	1000mm
	30.1 - 56 External or Internal	500mm
	30.0 - 10.0 External or Internal	30/10
	9.9 - 6.0 External or Internal	9/6
	45° Bend External or Internal	45° Bend

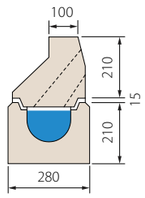
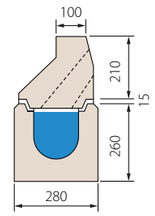
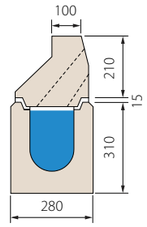
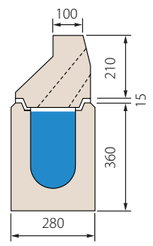
Cover Plates

Galvanised steel Cover Plates for use with Mini Beany Base Units where a Top Unit is not required, such as drop crossings.

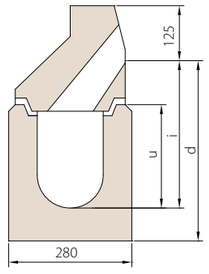
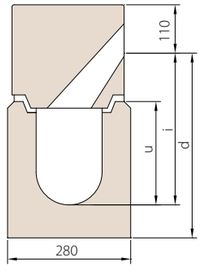


1000mm & 500mm lengths + radius units

FLOW CAPACITY (litres/sec)

Mini Beany with 210 Base Unit	Mini Beany with 260 Base Unit	Mini Beany with 310 Base Unit	Mini Beany with 360 Base Unit
			
Equivalent Pipe Diameter (mm) 140	Equivalent Pipe Diameter (mm) 170	Equivalent Pipe Diameter (mm) 190	Equivalent Pipe Diameter (mm) 210

Note: 1. Flow figures, l/s, are derived from spatially varied flow work carried out by HR Wallingford

	Mini Beany Half Battered			Conservation		
						
ref.	d	i	u	d	i	u
210	310	235	135	320	245	135
260	360	285	185	370	295	185
310	410	335	235	420	345	235
360	460	385	285	470	395	285

Hydraulic Data

The Mini Beany hydraulic data stated in the following tables comprises of flow capacity, in litres per second (l/s) and velocity in metres per second (m/s). This data has been calculated using spatially variable flow design principles.

Base 210

Gradient	Zero		1 in 1000		1 in 500		1 in 400		1 in 300		1 in 200		1 in 100		1 in 50	
Length(m)	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s
10	6	0.38	7	0.44	7	0.44	8	0.50	8	0.50	9	0.56	9	0.56	13	0.81
20	6	0.38	7	0.44	7	0.44	8	0.50	8	0.50	10	0.63	11	0.69	14	0.88
30	5	0.31	7	0.44	8	0.50	8	0.50	9	0.56	10	0.63	12	0.75	14	0.88
40	5	0.31	6	0.38	8	0.50	8	0.50	9	0.56	11	0.69	13	0.81	15	0.94
50	5	0.31	6	0.38	8	0.50	9	0.56	9	0.56	11	0.69	13	0.81	15	0.94
75	4	0.25	6	0.38	8	0.50	9	0.56	10	0.63	13	0.81	14	0.88	17	1.06
100	3	0.19	6	0.38	8	0.50	9	0.56	11	0.69	14	0.88	17	1.06	19	1.19

Base 260

Gradient	Zero		1 in 1000		1 in 500		1 in 400		1 in 300		1 in 200		1 in 100		1 in 50	
Length(m)	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s
10	10	0.42	11	0.46	12	0.50	13	0.54	14	0.58	15	0.63	17	0.71	22	0.92
20	9	0.38	11	0.46	12	0.50	13	0.54	14	0.58	16	0.67	18	0.75	22	0.92
30	9	0.38	11	0.46	12	0.50	13	0.54	14	0.58	16	0.67	21	0.88	24	1.00
40	9	0.38	11	0.46	13	0.54	13	0.54	14	0.58	17	0.71	19	0.79	24	1.00
50	8	0.33	11	0.46	13	0.54	13	0.54	15	0.63	17	0.71	20	0.83	25	1.04
75	8	0.33	10	0.42	13	0.54	14	0.58	16	0.67	19	0.79	22	0.92	26	1.08
100	7	0.29	10	0.42	14	0.58	14	0.58	16	0.67	21	0.88	26	1.08	29	1.21
150	5	0.21	9	0.38	15	0.63	15	0.63	18	0.75	24	1.00	27	1.13	31	1.29

Base 310

Gradient	Zero		1 in 1000		1 in 500		1 in 400		1 in 300		1 in 200		1 in 100		1 in 50	
Length(m)	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s
10	13	0.42	16	0.52	17	0.55	18	0.58	18	0.58	20	0.65	24	0.77	30	0.97
20	13	0.42	15	0.48	17	0.55	18	0.58	19	0.61	21	0.68	25	0.81	30	0.97
30	13	0.42	15	0.48	17	0.55	18	0.58	19	0.61	21	0.68	25	0.81	32	1.03
40	13	0.42	15	0.48	17	0.55	18	0.58	19	0.61	22	0.71	26	0.84	32	1.03
50	12	0.39	15	0.48	17	0.55	18	0.58	20	0.65	23	0.74	27	0.87	33	1.06
75	11	0.35	15	0.48	17	0.55	19	0.61	21	0.68	25	0.81	28	0.90	34	1.10
100	10	0.32	14	0.45	17	0.55	19	0.61	22	0.71	26	0.84	30	0.97	36	1.16
150	9	0.29	14	0.45	18	0.58	20	0.65	23	0.74	30	0.97	34	1.01	39	1.26
200	7	0.23	13	0.42	18	0.58	21	0.68	25	0.81	33	1.06	37	1.19	43	1.39

Base 360

Gradient	Zero		1 in 1000		1 in 500		1 in 400		1 in 300		1 in 200		1 in 100		1 in 50	
Length(m)	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s
25	18	0.46	21	0.54	23	0.59	24	0.62	25	0.64	28	0.72	33	0.85	40	1.03
50	17	0.44	20	0.51	23	0.59	24	0.62	26	0.67	30	0.77	35	0.90	42	1.08
75	16	0.41	20	0.51	23	0.59	25	0.64	27	0.69	32	0.82	36	0.92	44	1.13
100	15	0.38	19	0.49	23	0.59	25	0.64	28	0.72	34	0.87	38	0.97	46	1.18
125	14	0.36	19	0.49	23	0.59	25	0.64	29	0.74	35	0.90	40	1.03	48	1.23
150	13	0.33	19	0.49	24	0.62	26	0.67	30	0.77	37	0.95	42	1.08	50	1.28
175	12	0.31	18	0.46	24	0.62	26	0.67	31	0.79	39	1.00	44	1.13	52	1.33
200	11	0.28	18	0.46	24	0.62	27	0.69	32	0.82	41	1.05	46	1.18	54	1.38
225	10	0.26	18	0.46	24	0.62	27	0.69	32	0.82	43	1.10	48	1.23	55	1.41
250	9	0.23	17	0.44	24	0.62	28	0.72	33	0.85	45	1.15	50	1.28	57	1.46
275	8	0.21	17	0.44	25	0.64	28	0.72	34	0.87	47	1.21	51	1.31	59	1.51

Theoretical Outfall Capacities

Outfall Type	Outlet Pipe Diameter (mm)	m/s	m/s
Mini Beany High Capacity Outfall	225	3.61	87
Mini Beany Inline End Outlet Outfall	150	2.67	29
Mini Beany Inline Side Outlet Outfall	150	2.67	29

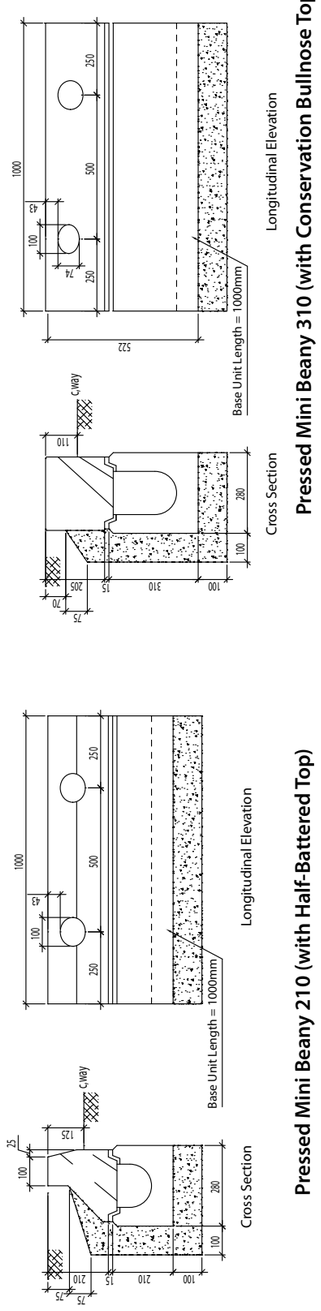
Component Codes

Top Components				
Top Units	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
NEW Mini Beany				
HB Top 1000mm	95	**DR6720100**	15	1,425
HB Top 500mm	43	**DR6720200**	30	1,290
Cons Top 1000mm Tex	139	**DR9312100**	10	1,390
Cons Top 500mm Tex	69.5	**DR9312110**	20	1,390
Drop Kerb LH	82	**DR6899200**	1	82
Drop Kerb RH	82	**DR6899300**	1	82
Drop Kerb Centre Stone	70	**DR6899400**	1	70
Top Unit Radials	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
NEW Mini Beany				
Half Battered				
HB Cut 30/10 Ext Rad	44	**DR6723100**	30	1,320
HB Cut 9/6 Ext Rad	44	**DR6723200**	30	1,320
HB Top 45d Corn Ext	92	**DR6925000**	1	92
HB Top 90d Corn Ext	92	**DR6925500**	1	92
HB Cut 30/10 Int Rad	44	**DR6723110**	30	1,320
HB Cut 9/6 Int Rad	44	**DR6723210**	30	1,320
HB Top 45d Corn Int	92	**DR6925010**	1	92
HB Top 90d Corn Int	92	**DR6925510**	1	92
Conservation				
Top 30/10 Ext Cons Tex	35	**DR9312150**	20	700
Top 9/6 Ext Cons Tex	35	**DR9312250**	20	700
Top 45d Ext Cons Tex	46	**DR9313100**	1	46
Top 90d Ext Cons Tex	46	**DR9313200**	1	46
Top 30/10 Int Cons Tex	35	**DR9312200**	20	700
Top 9/6 Int Cons Tex	35	**DR9312300**	20	700
Top 45d Int Cons Tex	46	**DR9313150**	1	46
Top 90d Int Cons Tex	46	**DR9313250**	1	46
Access Covers	**Unit Weight (kg)**	**Item Code**		
NEW Mini Beany				
HB Acs Cover N/S	38	**DR6910101**	1	38
HB Acs Cover O/S	38	**DR6910201**	1	38
Cons Access Cover	40	**DR6910270**	1	40
Cover Plates	**Unit Weight (kg)**	**Item Code**		
Mini Beany				
Cover Plate 500mm	12	**DR6910300**	1	12
Cover Plate 1000mm	6	**DR6910400**	1	6
Cover Plate 30/10	6	**DR6910500**	1	6
Cover Plate 9/6	6	**DR6910600**	1	6
Cover Plate 45d	5	**DR6910700**	1	5
Cover Plate 90d	4	**DR6910800**	1	4

Base Components				
Base Channels 1000m Length	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
Mini Beany Press Chan				
210 1000mm	102	**DR6960100**	16	1,632
260 1000mm	109	**DR6970100**	12	1,308
310 1000mm	122	**DR6980100**	12	1,464
360 1000mm	144	**DR6990100**	12	1,728
Base Channels 500m Length	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
Mini Beany Press Chan				
210 500mm	51	**DR6960200**	32	1,632
260 500mm	55	**DR6970200**	24	1,308
310 500mm	61	**DR6980200**	24	1,464
360 500mm	77	**DR6990200**	24	1,728
Base Channels 30/10 Radius	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
Mini Beany Press Chan				
210 30/10	51	**DR6961100**	32	1,632
260 30/10	55	**DR6971100**	24	1,320
310 30/10	61	**DR6981100**	24	1,464
360 30/10	77	**DR6991100**	24	1,848
Base Channels 9/6 Radius	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
Mini Beany Press Chan				
210 9/6	51	**DR6961200**	32	1,632
260 9/6	55	**DR6971200**	24	1,320
310 9/6	61	**DR6981200**	24	1,464
360 9/6	77	**DR6991200**	24	1,848
Base Channels 45° Radius	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
Mini Beany Press Chan				
210 45° Corner	102	**DR6962200**	1	102
260 45° Corner	102	**DR6972200**	1	102
310 45° Corner	122	**DR6982200**	1	122
360 45° Corner	144	**DR6992200**	1	144
Base Channels 90° Radius	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
Mini Beany Press Chan				
210 90° Corner	102	**DR6962100**	1	102
260 90° Corner	109	**DR6972100**	1	109
310 90° Corner	122	**DR6982100**	1	122
360 90° Corner	144	**DR6992100**	1	144
Base Channels Transition Units	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
210 - 260	54	**DR6963300**	1	54
260 - 310	61	**DR6973300**	1	61
310 - 360	72	**DR6983300**	1	72
Caps	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
210 End Cap	1	**DR6963100**	1	1
260 End Cap	1	**DR6973100**	1	1
310 End Cap	1	**DR6983100**	1	1
360 End Cap	1	**DR6993100**	1	1
210 End Cap Outlet	2	**DR6963200**	1	2
260 End Cap Outlet	2	**DR6973200**	1	2
310 End Cap Outlet	2	**DR6983200**	1	2
360 End Cap Outlet	3	**DR6993200**	1	3
Outfalls	**Unit Weight (kg)**	**Item Code**	**Pack Size**	**Pack Weight (kg)**
Inline Side Outfall	150	**DR6890000**	1	150
Inline End Outfall	142	**DR6890100**	1	142
Silt Box	72	**DR6899100**	1	72

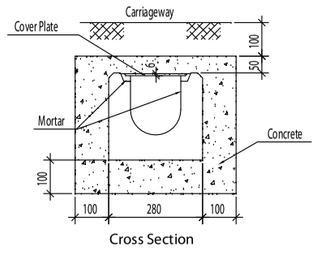
Standard Details

Drawing 1 of 6



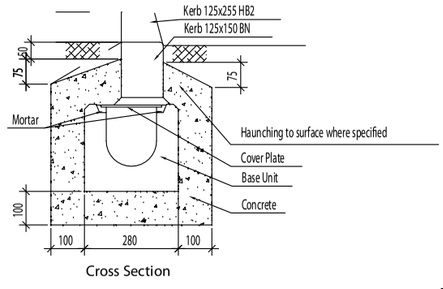
Standard Details

Drawing 2 of 6



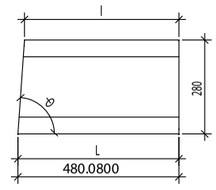
Cross Section

Base Unit & Cover Plate

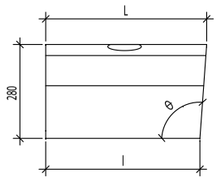


Cross Section

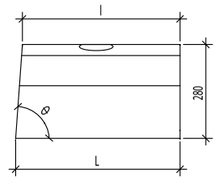
Base Unit & Cover Plate



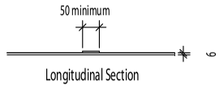
Base Units 210, 260, 310, 360
(External or Internal Radius)



Top Unit
(External Radius)

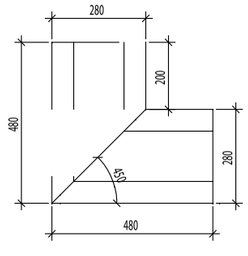


Top Unit
(Internal Radius)

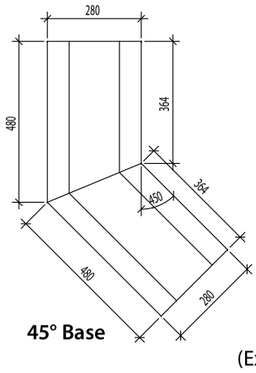


Longitudinal Section

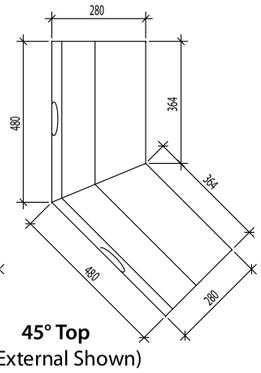
Cover Plate & Jointing Tape



90° Base



45° Base

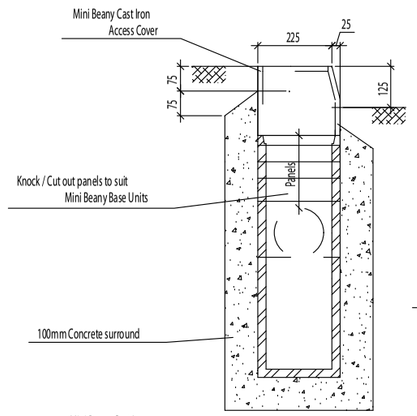


45° Top
(External Shown)

Type of Block	Radius	L	l	θ
30/10 (External & Internal Radius) All base units	30.00m-10.00m	480	470	88°
9/6 (External & Internal Radius) All base units	9.90m-6.00m	480	460	86°
30/10 (External Radius) Top Unit	30.00m-10.00m	480	472	92°
9/6 (External Radius) Top Unit	9.90m-6.00m	480	460	94°
30/10 (Internal Radius) Top Unit	30.00m-10.00m	480	470	88°
9/6 (Internal Radius) Top Unit	9.90m-6.00m	480	460	86°

Cover Plate Dimensions

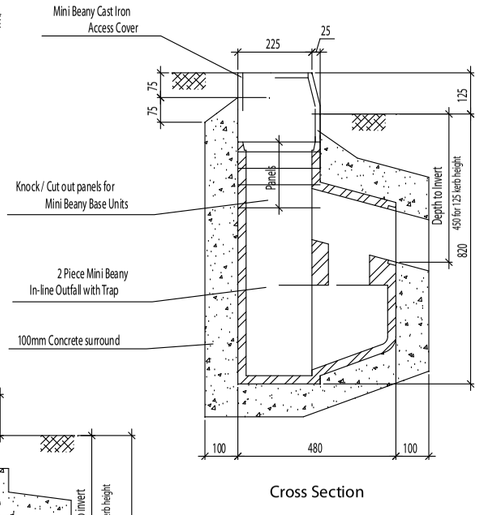
-Straight : 500 x 185 x 6 & 1000 x 185 x 6
-30/10, 9/6 & 90° supplied to match respective bases
-all 6.0 mm thick



Cross Section

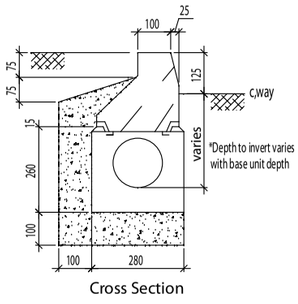
Longitudinal Elevation

Mini Beany In-line End Outfall



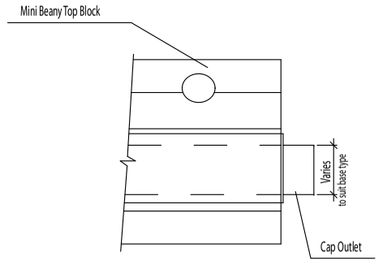
Cross Section

Mini Beany In-line Side Outfall
(Length = 500m)

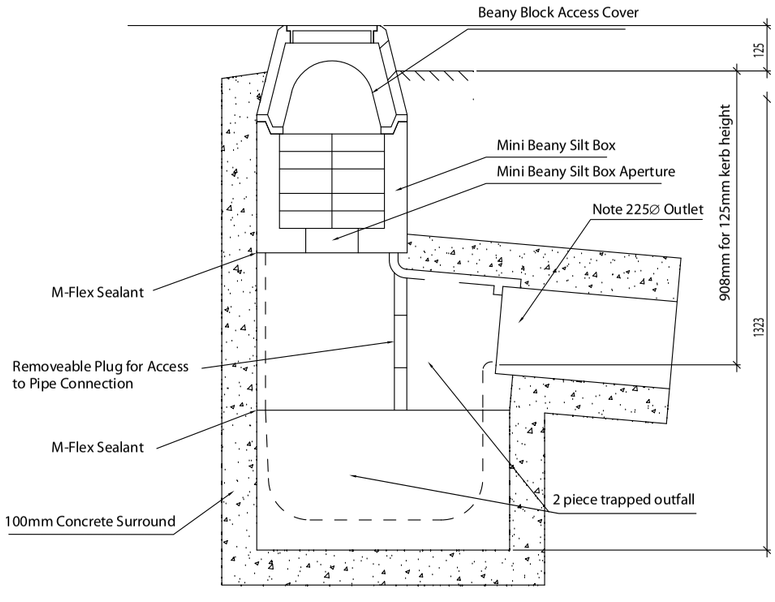


Cross Section

Mini Beany Cap Outlet

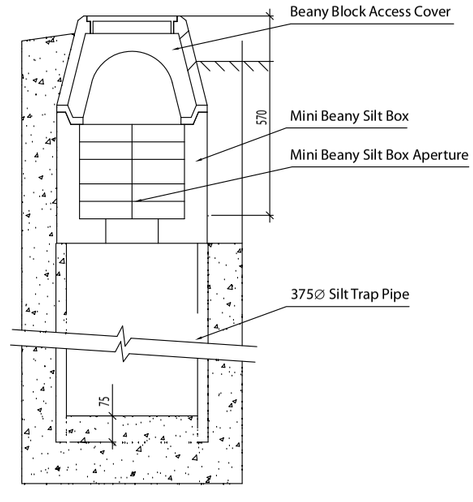


Longitudinal Elevation



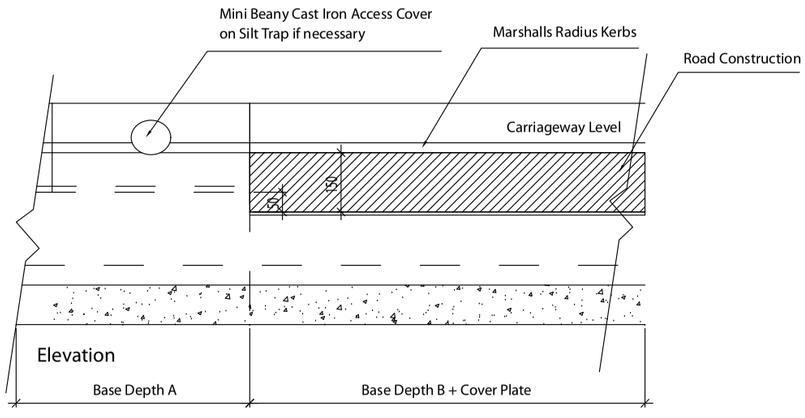
Cross Section

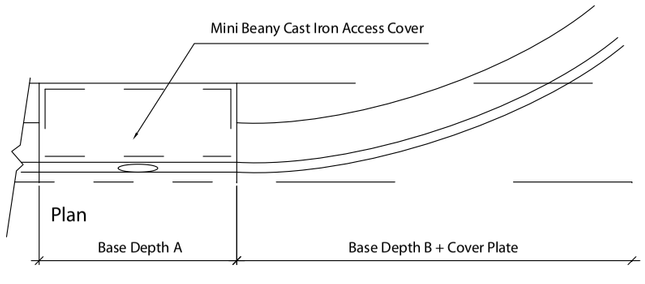
Mini Beany Trapped Gully



Cross Section

Mini Beany Silt Trap Assembly



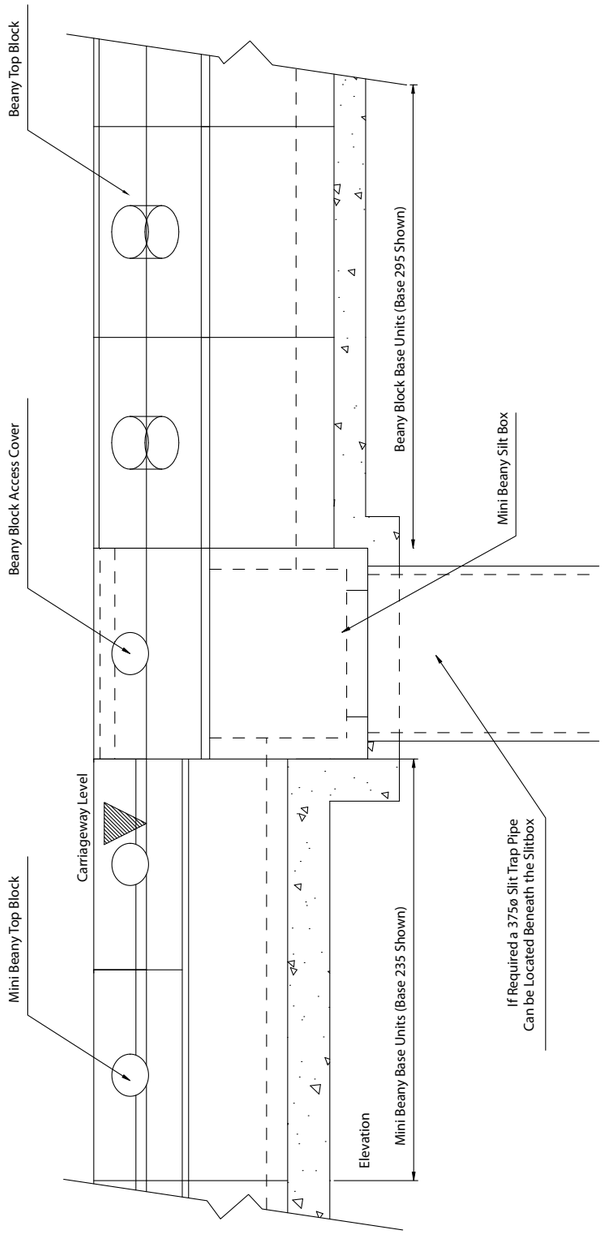


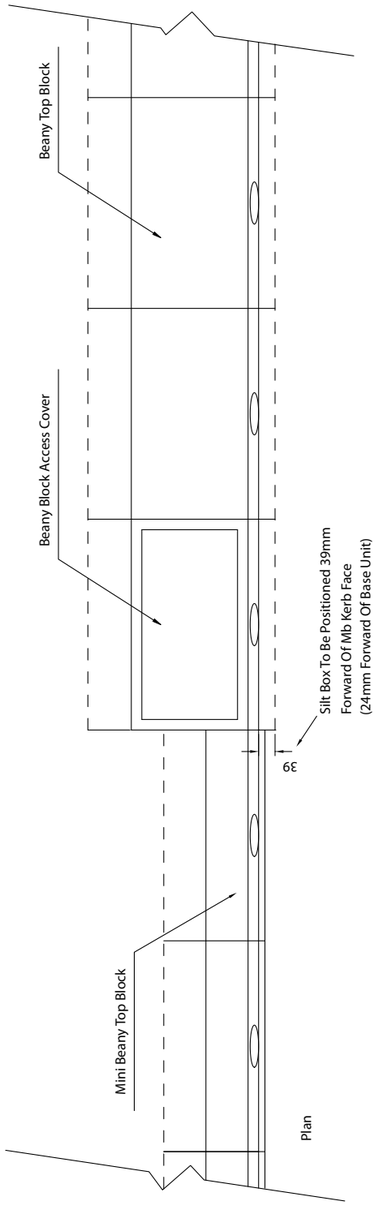
Base Depths	
Base Depth A	Base Depth B
260	210
310	260
360	310

Mini Beany Vehicle Crossing Transition

Standard Details

Drawing 6 of 6





Mini Beany To Beany - On-line Block Transition

Notes For New Mini Beany

Drawings 1 to 7

1.. Mortars shall be;

i) A Mortar class 12 cement mortar to BS EN 998-2 for bedding the Top Blocks

ii) Marshalls' M-Flex for bedding Silt Boxes onto the Beany Trapped Gully Unit

iii) Marshalls' M-Seal for bedding the sections of the Marshalls' Trapped Gully Unit sections

2. Concrete bed, haunch and surround shall be;

i) A mix ST1 concrete to BS 8500-1&2 and BS EN 206-1 for Base Units used in the normal kerb application

ii) A mix ST4 concrete to BS 8500-1&2 and BS EN 206-1 for Base Units used within the carriageway (i.e. where Base Units are used with cover plates and are trafficked)

iii) A mix ST4 concrete to BS 8500-1&2 and BS EN 206-1 for Beany Trapped Gully, Silt Traps, Catch Pits and outfall details

iv) The specification for carrier pipe concrete surround is by others

3. Marshalls' vertical joint sealant, M-Seal, shall be applied to all Base Units.

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

5. Movement joint details that fully isolate the Mini Beany whilst maintaining restraint shall be provided adjacent to all concrete slabs, even when the slab is covered by other materials.

6. For Mini Beany with cover plate applications, a minimum of 50mm of concrete cover above the cover plate will be required.

7. All dimensions are in millimetres.

Specification

Introduction
The following specification covers the complete Mini Beany system including ancillary fittings and is compatible with the Standard Detail Sheets.

Where the Manual of Contract Documents for Highway Works is used, information for 'Appendix 5/5: Combined Drainage and Kerb systems' is available on request.

Mini Beany

1. The combined kerb and drainage system shall be Mini Beany, manufactured in pre-cast concrete, with the exception of certain fitments which are manufactured in cast iron as supplied by Marshalls, Halifax HX5 9HT in accordance with Standard Detail Sheets.

2. The combined kerb and drainage shall consist of a two part system consisting of top blocks with a ***straight backed half battered/straight backed 45º splayed*/conservation BN profile*** together with constant depth base units that are ***210/260/310/360**** deep. The overall width of the system shall be not less than 280mm.

3. All components of the Mini Beany system shall comply with the British Standard BS EN1433:2002, load classification E600 and the following:

   (i) The water inlet aperture shall increase in size towards the inside of the unit with a minimum divergence angle of 5°

   (ii) The angle of incline of the water inlet aperture shall be at least 30° to the horizontal

   (iii) Water inlet apertures shall be wholly within individual units and not within 100mm of the end of each unit

   (iv) When installed, the depth of construction from the top of the base channels to the drained area surface shall be not less than 100mm

   (v) The Top Block shall have an Unpolished Skid Resistance Value (USRV) in excess of 70 when tested in accordance with BS 7263:Part 3

   (vi) The system shall have a minimum of 12,850mm^2/m water inlet aperture area

4. The combined kerb and drainage system comprising straight top and base units, splay cut top and base units for radius use, straight and radius cover plates, outfalls, silt traps, junctions, access covers, end caps, cap outlets and sealant shall be installed to the line and levels indicated in the contract documents and in accordance with the manufacturers instructions and Standard Details.

Note: * delete as required

Construction

Introduction
Installation of the Mini Beany Combined Kerb and Drainage System should be carried out in accordance with the Specification and Standard Detail Sheets. The following method of installation is recommended.

Excavation
Sufficient material should be excavated to accommodate Top Block and Base Units, concrete bedding and haunching, any 'soft spots' or poorly compacted formation should be made good.

Where Base Units and Cover Plates are to be installed beneath new pavements, the pavements shall be completed to top of roadbase level for flexible construction, or to top of sub-base level for rigid construction, before excavation for the Units commences.

Setting Out
Setting out pins should be accurately located, with a string line level with the top front corners of the Base Units. Line and level will depend on the kerb upstand. Pins can be located to the rear of the Units to avoid having to lift the Units over the string line.

Plenty of setting out pins should be inserted where Mini Beany is laid on horizontal curves (e.g. every 5m for radius of 30m) and the appropriate 'splay' Units used for radii of 30m or less.

The various radius units are:-

Type of Unit	Radii	L (mm)	I (mm)
50/30.1 (External & Internal Radius) All base units	50.0m to 30.0m	500	500
30/10 (External & Internal Radius) All base units	29.9m to 10.0m	480	470
9/6 (External & Internal Radius) All base units	9.9m to 6.0m	480	460
50/30.11 (External Radius) Top Block	50.0m to 30.0m	500	500
30/10 (External Radius) Top Blocks	29.9m to 10.0m	480	470
9/6 (External Radius) Top Blocks	9.9m to 6.0m	480	460
30/10 (Internal Radius) Top Blocks	29.9m to 10.0m	480	470
9/6 (Internal Radius) Top Blocks	9.9m to 6.0m	480	460

Radius For Zero Gap	
Product Type	**Radius (m)**
30/10	15.2
9/6	7.6

Radius Units
The theoretical maximum gap between adjacent Top Block corners when laid to horizontal curves is 4mm .

Top Blocks and 480mm long Base Units are available for either external or internal horizontal curves.

In practice, gaps between Base Units may be slightly greater due to laying tolerances and application of vertical joint sealant.

The approximate number of radius Top Blocks and Base Units required for a quarter circle (external radius) is 3.21 x horizontal radius e.g. for a 15m radius, 48 No.

Base Units
Base Units shall be laid to correspond to carriageway channel levels, or where beneath the carriageway, be laid to a straight grade. Starting at the Outfall, i.e. working uphill, the Units should be bedded on to a freshly mixed foundation of the appropriate grade and thickness of concrete (refer to Standard Detail Sheet).
Concrete bed, haunch and surround shall be:

i) A mix ST1 concrete to BS 8500-1&2 and BS EN 206-1 for Base Units used in the normal kerb application

ii) A mix ST4 concrete to BS 8500-1&2 and BS EN 206-1 for Base units used within the carriageway (i.e. where Base units are used with cover plates and are trafficked)

iii) A mix ST4 concrete to BS 8500-1&2 and BS EN 206-1 for Beany Trapped Gully, Silt Traps, Catch Pits and outfall details

iv) The specification for carrier pipe concrete surround is by others

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

The joint sealant is applied during installation of the base units, prior to installation of the top blocks. Sufficient M-Seal joint sealant should be trowel applied to one end face of the bases. Surplus sealant shall be removed from the inner surface of the Units.

1 drum of M-Seal should be sufficient for the following length of Mini Beany:

M-Seal Requirement	
Base Type	**Coverage (m/18l)**
210	240
260	185
310	150
360	125

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. Cutting of Base Junctions or Outfall Units is not recommended.

At the termination of any Mini Beany runs, not located at outfalls, the base units shall be closed using galvanised steel end caps as detailed in the Standard Detail Sheets.

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

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. Cement mortar shall be Class 12 in accordance with BS EN 998-2. These should be tamped into position close to previously laid Units and the alignment checked. The levels should be checked using the string line and a spirit level. In addition, the general alignment should be checked from all directions as each Block is laid. Surplus mortar shall be removed from the units as work proceeds.

Top Blocks shall be close jointed with adjacent top and front faces corresponding and any Unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

Construction

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.

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, other than cast iron or steel, shall be carried out with a concrete saw or disc cutter.

Cover Plates

Cover Plates 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. The Cover Plates should be close jointed and the joints sealed with 50mm wide M-Tape. Cover Plates shall be suitably protected before and during installation in order that the protective coating is not damaged.

Where cutting is necessary, one or two plates shall be cut so that no single plate is less than 250mm. Cut or damaged plates shall be renovated using Defcon Z or similar approved in accordance with BS 729: 1971 (1986).

Cover Plates

1. In order to obtain a 'good line', it is very important to lay the Top Units on the specified thickness of compacted mortar using the string line and Base Units as a guide. Too thin a layer of mortar will not allow sufficient sideways movement of the units to achieve an acceptable alignment.

2. It is not necessary for Top and Base Unit vertical joints to line up although there will be more tolerance for adjustment of the Tops, if the joints are close together on curves of 10m radius or less.

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

4. Outfalls, Silt Traps and Access Covers shall be constructed in accordance with the Standard Detail Sheet using the appropriate type of Base Unit. Units shall be bedded on sufficient M-Flex sealant over a gully pot, Outfall Unit or vertical pipe, to make a watertight joint. Where necessary in situ smooth concrete benching shall be shaped to the full depth of the Base Unit. In Silt Traps, the pipe shall be bedded into mix ST4 concrete which shall be fully compacted to make a watertight seal.

5. Cable Duct Blocks shall be bedded on cement mortar in accordance with the Standard Detail Sheet.

6. In situ concrete haunching or surround should not be placed until the installed blocks have been inspected and approved by the Engineer. The haunching/surrounding should be carried out as one operation to complete lines of Top and Base Units/Cover Plates in accordance with the Standard Detail Sheet. The top of the concrete surround for Base Units and Cover Plates under new carriageways shall be finished level with the top of the roadbase for flexible construction or top of sub-base level for rigid construction. Construction plant or vehicles crossing the Units shall be suitable in relation to thickness of concrete cover so that damage is not caused to the Units, Cover Plates, concrete bedding or haunching.

7. Adjacent carriageway and/or footway construction shall not be commenced within 3 days of any jointing or haunching/surrounding concrete being placed. Base Units, Outfalls, Junctions or Bends not covered by fully bedded Top Units, Cover Plates or covers and frames, shall be adequately supported against loadings imposed by construction traffic.

8. Where flexible surfacing is laid greater than 15mm above the bottom of the drainage aperture, it shall be cut and shaped after rolling when partially cooled at each Top Unit, to form a smooth chamfer.

9. On completion of the works, the Mini Beany System shall be cleaned out by high pressure water jetting (100-150 bar at 200 l/min minimum) and left free from obstructions and all Outfalls and Silt Traps shall be emptied. Top Unit drainage apertures shall be covered by timber boards or other approved method, during jetting operations. The cleaning process shall be repeated where necessary after the completion of any remedial works.

10. When used in conjunction with the Manual of Contract Documents for Highway Works, reference should be made to Appendix 5/5.

    For works not carried out under the above specification, it may be necessary to clarify cement mortar in accordance with BS EN 998-2 and concrete ST1, ST4 and grade C25/30 as specified in BS 8500-1 & 2 and BS EN 206-1.

11. Installation operations should be discontinued if weather conditions are such that the performance of the Mini Beany may be jeopardised.

    Installation should not be undertaken when the temperature is below 3°C on a falling thermometer and below 1°C on a rising thermometer.

12. All necessary Personal Protective Equipment (PPE) should be worn on site, as the site rules dictate. Goggles, ear protection, dust masks and protective footwear must always be worn whenever cutting operations are undertaken.

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Max-E-Channel