



Beany® Block 🕏

appealing solution for a variety of projects.



Combined Kerb and Drainage System

The original and the largest capacity combined kerb and drainage system on the market. Trusted and proven over more than 30 years with over 1 million linear meters installed and working. A two piece concrete system available in either standard or textured finishes combines the largest hydraulic capacity with the strongest loading classification. Supported by a range of accessories to deliver a flexible, versatile and aesthetically





Beany Block 🛇

Combined Kerb and Drainage System

Highly resistant to de-icing salts, anti freeze and other noxious pollutants

Half battered straight backed Beany Top 500mm (range of Top Units available)

> Steeply inclined and divergent inlet aperture ensures efficient water interception and freedom from blockages

Excellent slip/skid resistance

Fully compatible with Max-E-Channel/ Mini Beany/Traffic Drain/ Pre-cast Concrete Kerb

Two part system allowing easy installation whilst ensuring level inverts and allowing for future resurfacing

500mm long Base Channel (range of base depths available)

- Beany Block carries the British Standard Kitemark
- High capacity.
- Proven and trusted.
- Great problem solver.
- General installation detail ensures load classification E600.
- A full and comprehensive range.
- Withstands installation damage.

Beany Block is the original combined kerb and drainage system which has been on the market for over 30 years. This tried, tested and proven system provides a unique, flexible and cost-effective solution to highway drainage requirements.

Mini Beany, Traffic Drain and Max-E-Channel further extend the use of this product.

The System

Beany Block consists of base units of standard channel section and top units of inverted channel section, with an elliptical aperture in the centre of one side face. When installed they form a combined kerb and surface water drainage system strong enough to withstand loadings imposed by both road and construction traffic.

The system has excellent surface drainage efficiency which coupled with its large flow capacity, makes Beany Block superior to and much less expensive than conventional kerb and point drainage on many highway and non-highway schemes.

Versatile

Beany Block is suitable for inclusion in highway schemes (although the system is likely to be most cost-effective in flat areas), reconstruction works where existing drainage systems have failed or where there is no existing surface water drain. Beany Block has been installed in schemes ranging from a few metres to several kilometres, from motorways and trunk roads to estate roads, service yards and car parks throughout the UK, Ireland and mainland Europe.

Despite its simplicity, Beany Block has many important design features which give it significant engineering benefits over alternative systems.

Note

Engineers wishing to incorporate Beany Block within a scheme should read this or use our free, no obligation Design Service.



Beany Block installation, mechanically handled

Cost Advantages

Beany Block is ideal where specific problems would arise with conventional drainage methods for example:

- Where there is insufficient fall to the outfall point.
- Where, in flat areas, either numerous, closely spaced gullies or false falls would be required in the carriageway.
- Where long gully connections would be needed.
- Where surface water drainage pipes would conflict with service mains and cables.
- Where ponding would occur at low points.
- Where traffic safety and control measures would be required when widening existing carriageway.

Beany Block is likely to be more economical than conventional kerb/point drainage where carriageways have crossfall, few vehicular crossings or where a surface water drain would be required for highway drainage purposes. Cost savings have been significant on highway and non-highway schemes incorporating lengths of the Beany Block system. For comparison purposes, conventional methods should include the following as appropriate:

- Surface water drain (including reinstatement).
- Gullies.
- Gully connections.
- Manholes.
- Kerbs.
- Channel Blocks.
- Extra 200mm width of footway plus a small amount of carriageway.
- Service diversions.
- Traffic safety and control (existing carriageways).



Beany Block is a simple two part system Straight Backed Top Unit and 295 Base

High Capacity Performance

- Beany Block is a high capacity system able to store storm water. Where limitations are placed on outfall capacities, Beany can help eliminate the need for storage reservoirs or balancing ponds.
- Beany Block can be used in flat areas or steep gradients.
- Inlet apertures are less than 500mm apart, reducing running or fast flowing water on the carriageway and eliminating ponding.

Construction Savings

- The Beany System combines water interception and transportation in one system. This minimises or eliminates the need for carrier drains, gullies and manholes, reducing construction costs and saving time.
- Simple two-part system straightforward to design and detail, reducing design times and cost. Easy to set out and straightforward to install.
- The overall construction period can be reduced as carriageway
 materials may be laid in a continuous sequence. Unlike laying
 conventional drainage, excavations are kept to a minimum without
 exposing the formation and sub-base surfaces to possible periods of
 adverse weather.
- Underground cables and services can be avoided so contractual/ insurance claims are likely to be much less than when laying conventional drainage.

Low Maintenance

 Beany Block will require periodic inspection and emptying of Silt Traps, Outfalls and Catchpits. The number of Silt Traps and Outfalls are likely to be fewer than in a conventional drainage systems*. If a blockage does occur, it can easily be located and rectified by rodding or jetting from an access point or through a top block aperture adjacent to the blockage.

* It is reccommended to have an access point at the head of the run and every 50m and a Silt Trap every 100m

Conservation Beany Block

- A silver grey coarse textured finish top unit, manufactured with granite aggregate, complements perfectly areas of high architectural, historical and scenic value. This product complements Marshalls Silver Grey Conservation Paving Kerb and Edging along with Mistral Concrete Block Paving and Conservation Setts. Mini Beany and Mono Beany are also available in Conservation.
- Conservation Beany is available with coarse texture to 2 or 3 faces and manufactured to order for an agreed quantity.



Engineering Benefits

Manufacture

Principal components are manufactured from natural coloured, hydraulically pressed concrete.

The high inherent strength and durability of pressed concrete means the Beany System can:

• Allow complete compaction of surfacing materials adjacent to the channel during construction.

Top Blocks

- Symmetrical Top Units available to allow reversal of the units as appropriate to collect storm water from both sides of a run.
- Allows access for road rollers to fully compact carriageway surfacing material right up to the channels edge without damaging the units – of particular importance where carriageways have steep super elevation

Elliptical Water Inlet Aperture

- Located centrally within each top block to give maximum strength and wider on the inside of the top block preventing resistance against loads imposed by overriding heavy vehicles.
- Positioned and shaped to give maximum drainage efficiency as well as a pleasing appearance.
- Wider on the inside of the top block to prevent blockages, inclined at 45 degrees to prevent silting and also to allow inspection of and rodding access to the base unit inverts.
- The elliptical inlet aperture is 120mm wide and 90mm in height

Road and Vehicular Crossings

- The system has been specifically designed so that 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.
- The base unit maintains line and level under road crossings helping to keep construction time and costs to a minimum.
- Beany Block is fully compatible with the Max-E-Channel system. This allows for easy transition of Beany Block to Max-E-Channel.
- Instances where the flow collected in a run of Beany needs to continue across a junction or entrance and where interception of surface run-off is still required is possible with the use of Max-E-Channel.
- The invert is maintained and the differential height of the Beany and Max-E-Channel system is specifically designed to allow continuity of pavement level.

Pedestrian Crossing

- The system has been designed to allow for the construction of pedestrian drop crossings. Flow can continue in base units and cover plate support the standard kerbs used at the crossing.
- The advantage of separate base and top blocks is that it is easy to retrofit pedestrian crossings in any length of Beany.

- Provide resistance to horizontal displacement by heavy vehicles when held rigidly in place on site by backing concrete and the road materials on the front face.
- Withstand de-icing salts and freeze/thaw effects reducing maintenance and increasing service life.
- The manufacturing process enables tight dimensional control which produces consistent units for ease of on-site construction.



Beany Drainage from both sides using symmetrical top



Wider on the inside of the Top Block to prevent blockages. Inclined at 45° to prevent 'silting' and also to allow inspection of and rodding access to the Base Unit inverts.



Beany to Cover Plates



Beany to Max-E-Channel (cast iron with holes)



Beany at pedestrian crossing point

Linear Drainage

TOP COMPONENTS

Half battered straight backed



- Half battered front face profile.
- Straight back to assist with paving up to the back of the unit.
- Kerb upstand 75-125mm.
- 500mm in length.

Half battered straight backed (low hole)



- Half battered front face profile.
- Straight back to assist with paving up to the back of the unit.

asphalt or high kerb

500mm in length.

upstand applications.

Kerb upstand 150mm. • Kerb upstand For use with porous 75-125mm.

•

500mm in length.

Half battered profile to

both front and back face.

Symmetrical to allow top

to be rotated to drain

from both sides.

Half battered

symmetrical





- Half battered profile to both front and back face.
- Symmetrical to allow top to be rotated to drain from both sides.
- Kerb upstand 150mm.
 - For use with porous asphalt or applications requiring high kerb upstand.
 - 500mm in length.

45° splayed straight backed



- 45 degree splayed front face profile.
- Straight back to assist with paving up to the back of the unit.
- Kerb upstand 75-100mm.
 - 500mm in length.

BEANY BLOCK BASE COMPONENTS

All Base Units, Ancillary items and Transition Units are 500mm long

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A trapped outfall is available to suit either 150mm or 225mm diameter outfall pipe. Note: Gully Outfall does not include base outfall or access cover and frame.



BASE END CAPS

For Base 205 & 295

Junction

Base end caps are available for 205, 295 and 365 base units. The galvanised steel plates act as permanent formwork to a concrete surround.

Junction/Outfall

For Base 205 & 295

This is an optional detail to the use of engineering bricks.

Outfall (shown sectioned for

illustrative purposes)

For Base 205, 295 & 365



Components

Top Components

Cover Plates

- Allows for 150mm of cover above the base unit with cover plate.
- Permits the use of standard drop kerbs at vehicular/pedestrian crossings before and after cover plated units.
- Allows sufficient road construction material above the protective concrete cover to avoid possible damage to the units and plates by heavy traffic.

Stop End Top Unit

- Available right and left handed (RH shown).
- Forms the transition from the Beany Block system to normal half battered kerbs at pedestrian or vehicular crossings.
- Forms the transition from the Beany Block system to normal half battered kerbs at pedestrian or vehicular crossings.

Access Covers

- All Beany Block access covers are now lockable for improved security.
- Cast Iron access covers and frames are available for use at outfalls, silt traps and access points.
- Compatible with all top blocks.
- Universal hinge can be changed to to either end of the acess lid to cater for offside or nearside applications
- Provide large access opening for the emptying of silt traps and outfall sumps using traditional equipment.



Stop End Top Unit (RH)



Cable Duct Blocks

 Polymer concrete cable duct units are available to permit insertion of traffic signal loop detector or other small cables between carriageway and footway/verge.

Bus Stop Units

- The Beany Bus Stop CKD's height and positioning means that passengers can be confident of safe and easy access to buses and other road transportation.
- The units also have our elliptical water inlet aperture to allow surface water collection from the carriageway and avoids standing water on the carriageway around the bus stop.

Radius Blocks

- Top and base units for external and internal horizontal curve radii from 50 metres down to 6 metres.
- Smaller radii can be manufactured to order.

Radius	Type of Unit
>50	Standard
50.0-19.1	50/20
19.0-10.8	19/11
10.7-7.7	10/8
7.6-6.0	7/6
<6.0	Special to order
Right angle	90°
45° angle	45°





Straight Backed/Symmetrical Access Cover

45° Splayed Access Cover



Straight Backed/ Symmetrical Cable Duct - ø50



45° Splayed Cable Duct ø50

Hydraulic Data

FLOW CAPACITY



Linear Drainage

Hydraulic Data

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

Symmetrical HB & Straight Backed Top Block

Base 205																
Gradient	Z	ero	1 in	1000	1 in	500	1 in	400	1 in	300	1 in	200	1 in	100	1 ir	n 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
50	31	0.48	37	0.58	42	0.66	45	0.70	48	0.75	55	0.86	64	1.00	79	1.23
100	27	0.42	36	0.56	43	0.67	47	0.73	52	0.81	62	0.97	71	1.11	86	1.34
150	24	0.38	35	0.55	44	0.69	48	0.75	55	0.86	69	1.08	78	1.22	93	1.45
200	20	0.31	33	0.52	44	0.69	50	0.78	59	0.92	76	1.19	85	1.33	99	1.55
250	17	0.27	32	0.50	45	0.70	52	0.81	62	0.97	83	1.30	92	1.44	106	1.66

Base 295																
Gradient	Ze	ero	1 in	1000	1 in	500	1 in	400	1 ir	300	1 in	200	1 in	100	1 ir	n 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
50	47	0.53	56	0.64	63	0.72	66	0.75	71	0.81	80	0.91	93	1.06	115	1.31
100	43	0.49	55	0.63	64	0.73	68	0.77	75	0.85	89	1.01	102	1.16	123	1.40
150	37	0.42	53	0.60	65	0.74	70	0.80	79	0.90	96	1.09	110	1.25	131	1.49
200	35	0.40	51	0.58	65	0.74	72	0.82	83	0.94	105	1.19	118	1.34	140	1.59
250	30	0.34	50	0.57	66	0.75	74	0.84	87	0.99	113	1.28	127	1.44	148	1.68
300	26	0.30	48	0.55	67	0.76	76	0.86	91	1.03	122	1.39	135	1.53	156	1.77
350	22	0.25	46	0.52	68	0.77	78	0.89	95	1.08	130	1.48	143	1.63	164	1.86

Base 365																
Gradient	Ze	ero	1 in	1000	1 in	n 500	1 in	400	1 in	300	1 in	200	1 in	100	1 ir	n 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
50	61	0.58	73	0.70	81	0.77	85	0.81	91	0.87	102	0.97	119	1.13	147	1.40
100	57	0.54	71	0.68	82	0.78	87	0.83	95	0.90	111	1.06	128	1.22	155	1.48
150	53	0.50	69	0.66	83	0.79	89	0.85	99	0.94	120	1.14	137	1.30	164	1.56
200	48	0.46	68	0.65	84	0.80	91	0.87	104	0.99	128	1.22	145	1.38	173	1.65
250	44	0.42	66	0.63	85	0.81	94	0.90	108	1.03	137	1.30	154	1.47	182	1.73
300	39	0.37	64	0.61	85	0.81	96	0.91	112	1.07	146	1.39	163	1.55	191	1.82
350	35	0.33	62	0.59	86	0.82	98	0.93	117	1.11	155	1.48	172	1.64	200	1.90
400	31	0.30	61	0.58	87	0.83	100	0.95	121	1.15	164	1.56	181	1.72	208	1.98

Base 630																
Gradient	Ze	ro	1 in	1000	1 in	500	1 in	400	1 in	300	1 in	200	1 in	100	1 ir	n 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
100	136	0.66	164	0.79	183	0.88	192	0.93	206	1.00	233	1.13	271	1.31	334	1.61
150	131	0.63	161	0.78	184	0.89	195	0.94	212	1.02	245	1.18	283	1.37	345	1.67
200	125	0.60	159	0.77	186	0.90	198	0.96	217	1.05	256	1.24	295	1.43	357	1.72
250	119	0.57	157	0.76	187	0.90	201	0.97	223	1.08	268	1.29	307	1.48	369	1.78
300	113	0.55	154	0.74	188	0.91	204	0.99	229	1.11	280	1.35	319	1.54	381	1.84
350	107	0.52	152	0.73	189	0.91	207	1.00	235	1.14	292	1.41	331	1.60	393	1.90
400	101	0.49	150	0.72	190	0.92	210	1.01	241	1.16	303	1.46	342	1.65	404	1.95
450	96	0.46	147	0.71	191	0.92	213	1.03	246	1.19	316	1.53	354	1.71	416	2.00
500	90	0.43	145	0.70	193	0.93	216	1.04	252	1.22	327	1.58	366	1.77	428	2.07
550	84	0.41	143	0.69	194	0.94	219	1.06	258	1.25	339	1.64	377	1.82	440	2.13
600	78	0.38	140	0.68	195	0.94	222	1.07	264	1.28	351	1.70	390	1.88	451	2.18

Hydraulic Data

Beany[®] Block & 45° Splayed Top Block

Base 205	Base 205															
Gradient	Ze	ero	1 in	1000	1 in	500	1 in	400	1 in	300	1 in	200	1 in	100	1 iı	n 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
50	30	0.47	36	0.56	41	0.64	43	0.67	46	0.72	53	0.83	61	0.95	75	1.17
100	27	0.42	35	0.55	41	0.64	44	0.69	49	0.77	59	0.92	67	1.05	81	1.27
150	24	0.38	34	0.53	42	0.66	46	0.72	52	0.81	65	1.02	73	1.14	87	1.36
200	21	0.33	33	0.52	42	0.66	47	0.73	55	0.86	71	1.11	79	1.23	93	1.45
250	18	0.28	31	0.48	43	0.67	49	0.77	58	0.91	77	1.20	85	1.33	99	1.55
300	15	0.23	30	0.47	44	0.69	50	0.78	61	0.95	83	1.30	91	1.42	105	1.64

Base 295																
Gradient	z	ero	1 in	1000	1 in	n 500	1 in	400	1 in	300	1 in	200	1 in	100	1 ir	n 50
Length (m)	l/s	m/s	l/s	m/s	l/s	m/s	l/s	m/s								
50	45	0.51	55	0.63	61	0.69	64	0.73	68	0.77	77	0.88	90	1.02	111	1.26
100	42	0.48	53	0.60	62	0.70	66	0.75	72	0.82	85	0.97	97	1.10	118	1.34
150	39	0.44	52	0.59	63	0.72	68	0.77	76	0.86	92	1.05	105	1.19	125	1.42
200	35	0.40	50	0.57	63	0.72	69	0.78	79	0.90	99	1.13	112	1.27	133	1.51
250	31	0.35	49	0.56	64	0.73	71	0.81	83	0.94	106	1.20	119	1.35	140	1.59
300	28	0.32	47	0.53	65	0.74	73	0.83	86	0.98	114	1.30	126	1.43	147	1.67
350	24	0.27	46	0.52	65	0.74	75	0.85	90	1.02	121	1.38	134	1.52	154	1.75
200 250 300 350	35 31 28 24	0.40 0.35 0.32 0.27	50 49 47 46	0.57 0.56 0.53 0.52	63 64 65 65	0.72 0.73 0.74 0.74	69 71 73 75	0.78 0.81 0.83 0.85	79 83 86 90	0.90 0.94 0.98 1.02	99 106 114 121	1.13 1.20 1.30 1.38	112 119 126 134	1.27 1.35 1.43 1.52	133 140 147 154	1 1 1

Base 365	Base 365															
Gradient	Z	ero	1 in	1000	1 in	500	1 in	400	1 in	300	1 in	200	1 in	100	1 iı	n 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
50	60	0.57	71	0.68	79	0.75	83	0.79	88	0.84	99	0.94	115	1.10	142	1.35
100	56	0.53	70	0.67	80	0.76	85	0.81	92	0.88	107	1.02	123	1.17	150	1.43
150	53	0.50	68	0.65	81	0.77	87	0.83	96	0.91	115	1.10	131	1.25	158	1.50
200	49	0.47	67	0.64	81	0.77	89	0.85	100	0.95	122	1.16	139	1.32	167	1.59
250	45	0.43	65	0.62	82	0.78	91	0.87	103	0.98	130	1.24	147	1.40	174	1.66
300	41	0.39	64	0.61	83	0.79	93	0.89	107	1.02	138	1.31	155	1.48	182	1.73
350	37	0.35	62	0.59	84	0.80	94	0.90	111	1.06	146	1.39	163	1.55	190	1.81
400	33	0.31	60	0.57	85	0.81	96	0.91	115	1.10	154	1.47	171	1.63	197	1.88

Base 630																
Gradient	Ze	ero	1 in	1000	1 in	500	1 in	400	1 in	300	1 in	200	1 in	100	1 ir	n 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
100	136	0.66	162	0.78	181	0.87	190	0.92	203	0.98	229	1.11	267	1.29	329	1.59
150	130	0.63	160	0.77	182	0.88	192	0.93	208	1.01	241	1.16	278	1.34	340	1.64
200	125	0.60	158	0.76	183	0.88	195	0.94	214	1.03	252	1.22	289	1.40	351	1.70
250	119	0.57	155	0.75	184	0.89	198	0.96	219	1.06	263	1.27	301	1.45	362	1.75
300	114	0.55	153	0.74	185	0.89	201	0.97	225	1.09	274	1.32	311	1.50	373	1.80
350	108	0.52	151	0.73	186	0.90	203	0.98	230	1.11	285	1.38	323	1.56	384	1.86
400	103	0.50	149	0.72	188	0.91	206	1.00	235	1.14	296	1.43	334	1.61	395	1.91
450	97	0.47	145	0.70	189	0.91	209	1.00	241	1.16	307	1.48	345	1.67	406	1.96
500	91	0.44	144	0.70	190	0.92	212	1.02	246	1.19	318	1.54	356	1.72	417	2.01
550	86	0.42	142	0.69	191	0.92	214	1.03	252	1.22	329	1.59	367	1.77	428	2.07
600	80	0 39	140	0.68	192	0.93	217	1.05	257	1 24	340	1 64	378	1.83	439	212

Theoretical Outfall Capacities			
Outfall Type	Outlet Pipe Diameter (mm)	l/s	m/s
Beany Outfall with Base 205	150	36	3.32
Beany Outfall with Base 295	150	38	3.52
Beany Outfall with Base 365	150	40	3.67
Beany Outfall with Base 205	225	82	3.40
Beany Outfall with Base 295	225	87	3.60
Beany Outfall with Base 365	225	91	3.75
Beany Outfall with Base 365	225	91	3.75

For hydraulic rates of Beany bases and cover plates, refer to the Max-E Channel and concrete top hydraulic table.

Beany Block Component Codes

A Top Blocks

Top Blocks	Length (mm)	Width (mm)	Height (mm)	Unit Weight (kg)	Item Code
HB Straight Back	500	430	255	71	DR700020
HB Straight Back Conservation	500	430	255	75	DR9300023
HB Straight Back Low Hole	500	430	255	71	DR700030
HB Symmetrical Low Hole	500	430	255	71	DR700035
HB Symmetrical	500	430	255	73	DR700010
45 Splayed Straight Back	500	430	255	76	DR700060
HB Bus Stop 180 Upstand	500	430	350	71	DR791010

* Special finishes may be available upon request

С	Constant D	epth Cl	nannels					
Co Ch	nstant Depth annels	Length (mm)	Width (mm)	Invert Width (mm)	Depth (mm)	Invert Depth (mm)	Unit Weight (kg)	Item Code
20	5 Press chan	500	430	280	205	135	70	DR720021

205 Press chan	500	430	280	205	135	70	DR720021
295 Press chan	500	430	280	295	205	85	DR720010
365 Press chan	500	440	280	365	275	96	DR720030
630 Press chan	500	440/490	280/360	630	555	110	DR720045

D Radial Channels

Radial Base Channels	Unit Weight (kg)	Item Code
205 Base 50/20m	69	DR808010
205 Base 19/11m	69	DR808030
205 Base 10/8m Cut	69	DR808040
205 Base 7/6m Cut	69	DR808040
205 Base 45° External Corner	174	DR900210
295 Base 50/20m	79	DR800020
295 Base 19/11m	79	DR800030
295 Base 10/8m Cut	79	DR800040
295 Base 7/6m Cut	79	DR800050
365 Base 50/20m Cut	95	DR820010
365 Base 19/11m Cut	95	DR820030
365 Base 10/8m Cut	95	DR820040
365 Base 7/6 Cut	95	DR820050
630 Base 50/20m	105	DR825020
630 Base 19/11m Cut	105	DR825030
630 Base 10/8m Cut	105	DR825040
630 Base 7/6m Cuit	105	DR825050

More radius and corner units can be made

F

available on request



1

B Radial Tops

Radial Tops	Unit Weight (kg)	Item Code
HB 50/20m Ext	71	DR730020
HB 19/11m Ext	71	DR730030
HB Cut 10/8m Ext	71	DR730040
HB Cut 7/6m Ext	71	DR730050
HB Cut 10/8 Int	71	DR730240
HB Cut 7/6 Int	71	DR730250
HB Cut 50/20m Int	71	DR730210
HB Cut 19/11m Int	71	DR730230
HB St Back 10/8m Int	71	DR740240
HB St Back 7/6 Int	71	DR740250
HB St Back 7/6 Int	76	DR751050
HB St Back 50/20m Ext	69	DR740020
HB St Back 19/11m Ext	69	DR740030
HB St Back Cut 10/8m Ext	69	DR740040
HB St Back Cut 7/6m Ext	69	DR740050
HB St Back Cut 50/20 Int	69	DR740210
HB St Back Cut 19/11 Int	69	DR740230
45° SP Str Bk Cut 50/20 Int	76	DR751009
45° SP Str Bk Cut 50/20 Ext	76	DR751010
45° SP Str Bk Cut 19/11 Ext	76	DR751031
45° SP Str Bk Cut 10/8 Ext	76	DR751040







E	Transit	Ion Cha	nneis					
1	Transitions Channels	Length (mm)	Width (mm)	Invert Width (mm)	Depth (mm) Upsteam/Downstream	Invert Depth (mm) Upsteam/Downstream	Unit Weight (kg)	Item Code
2	205 - 295	500	430	280	205/295	135/205	100	DR870010
2	295 - 365	500	430	280	295/365	205/275	87	DR870021
F	End Ca	ips			G Out	falls & Access Cove	ers	

End Caps	Unit Weight (kg)	Item Code
205 Base End Cap	2.2	DR720025
295 Base End Cap	3	DR720015
365 Base End Cap	3.8	DR720035

H Cable Duct Blocks

Cable Duct Blocks	Unit Weight (kg)	Item Code
Cable Duct Block HB	12	DR920040
Cable Duct Block Splay	12	DR920050

Standard Kerb Transitions

Standard Kerb Transitions	Unit Weight (kg)	Item Code
Stop End Top Block L/H	87	DR790010
Stop End Top Block R/H	87	DR790011

J Cover Plates

Outfalls and Access Covers

205 Base Outfall

205 Base Junction

295 Base Outfall

295 Base Junction

365 Base Outfall

Gully Outfall 150

Gully Outfall 225

295 Base Outfall/Junction

HB Universal Access Cover 45° SP Near Side Access Cover

45° SP Offside Access Cover

205 Base Outfall/Junction

Cover Plates	Unit Weight (kg)	Item Code
Cover Plate Cut 50/11m	16	DR910010
Cover Plate Standard	16	DR910005

Unit Weight

(kg)

87

87

87

87

87

87

87

227

242

51

95

95

Item Code

DR850041

DR850051

DR850061

DR850010

DR850020

DR850030

DR850070

DR460401

DR460406

DR915017 DR915020

DR915025

* Radius cover plates available upon request



Drawing 2 of 8

TYPE OF UNIT	RADIUS	_	-	θ
		(mm)	(mm)	
50/20- BASE 205, 295 OR 365 (EXT.&INT.RAD.)	50.0 - 19.1	488	481	89
19/11 " " "	19.0 - 10.8	488	473	88
10/8 и п	10.7 - 7.7	488	464	87
7/6 и п	7.6 - 6.0	488	457	86
50/20 - BASE 630 (EXT. & INT. RAD.)	50.0 - 19.1	500	493	89
19/11 " " "	19.0 - 10.8	500	484	88
10/8 " " "	10.7 - 7.7	500	473	87
7/6 и п	7.6 - 6.0	500	463	86
50/20 - TOP (EXT.RAD.)	50.0 - 19.1	488	481	91
19/11 " "	19.0 - 10.8	488	473	92
10/8 " "	10.7 - 7.7	488	464	93
7/6 " "	7.6 - 6.0	488	457	94
50/20 - TOP (INT.RAD.)	50.0 - 19.1	488	481	89
19/11 " "	19.0 - 10.8	488	473	89
10/8 " "	10.7 - 7.7	488	464	87
7/6 " "	7.6 - 6.0	488	457	86



- 50/11, 10/8, 7/6 And 90⁰ **Cover Plate Dimensions:** - Straight: 500 X 340. Supplied To Match Respective Bases. - All 12.5 Thick.





θ

430

θ



Base 205, 295 Or 365

(Ext. Or Int. Radius)

_



430

0IO

Top (Ext. Radius)



021

348

430

45⁰ Top And Base (Internal)



°5 00

348



Base Unit Bend



Drawing 4 of 8



www.marshalls.co.uk/commercial/water-management

Linear Drainage



Drawing 6 of 8



Linear Drainage www

Drawing 7 of 8





Notes For Beany Block Details Sheets

Drawings 1 to 8

 Mortars shall be;
 A Mortar class 12 cement mortar to BS EN 998-2 for bedding the Top Blocks

 ii) Marshalls' M-Flex for bedding Base Block Outfalls onto the Beany Trapped Gully Unit

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

Concrete bed, haunch and surround shall be;
i) A mix ST1 concrete to BS 8500-1&2 and BS EN 206-1 for Base Blocks used in the normal kerb application

ii) A mix ST4 concrete to BS 8500-1&2 and BS EN 206-1 for Base Blocks used within the carriageway (i.e. where Base Block 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 Blocks.
- For Base 630 applications, all Outfalls, Silt Traps and junctions should be formed by a brick Catch Pit structure;
 i) The outfall pipe diameter, gradient, depth to invert, depth of trap shall be by others

ii) The internal dimensions of the catch pit shall be 540 wide \times 1000 long for Base 630 applications

iii) Corbelled brickwork with a maximum of 22mm steps shall be used to support the Access Cover and Frames

- Beany Block Access Covers and Frames are universal for use in both "nearside" and "offside".
- Movement joint details that fully isolate the Beany Block whilst maintaining restraint shall be provided adjacent to all concrete slabs, even when the slab is covered by other materials.
- Stop End Top Blocks Units are available as left hand (LH) or right hand (RH) for use at transitions to half battered kerbs.
- For Beany Block with cover plate a minimum of 50mm concrete cover (d) and 100mm of surfacing (D) will be required.
- 9. All dimensions are in millimetres.

Specification

Introduction

The following specification covers the complete Beany Block system including ancillary fittings and is compatible with the Standard Detail drawings.

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.

Beany Blocks

- The combined kerb and drainage system shall be Beany Block, manufactured in pre-cast concrete, with the exception of certain fitments as supplied by Marshalls Halifax HX3 9HT in accordance with Standard Detail Sheets.
- 2. The combined kerb and drainage system shall consist of a two part system consisting of top blocks with a symmetrical half battered/ straight backed half battered/or 45° splayed profile* together with base blocks that are 205/295/365/ or 630mm* deep.
- All components of the Beany Blocks, shall comply with the British Standard BS EN1433, Load Classification E600 and the following:
 - 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) The Top Block shall have an Unpolished Skid Resistance Value
 (USRV) in excess of 70 when tested in accordance with BS 7263:Part
 3
 - (v) The system shall have a minimum of 16,100mm²/m water inlet aperture area
- 4. The combined kerb and drainage system comprising straight top and base blocks, splay cut top and base blocks for radius use, straight and radius cover plates, cable duct blocks, outfalls, silt traps, access covers, stop end top blocks, end caps and sealant shall be installed to the line and levels indicated in the contract documents and in accordance with the manufacturer's instructions and Standard Details.

Note: * delete as required

Construction

Introduction

Installation of the Beany Block Combined Kerb and Drainage System should be carried out in accordance with the Specification and Standard Detail drawings.

The following method of installation is recommended.

Excavation

Sufficient material should be excavated to accommodate Top 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, in accordance with the Contract drawings, with a string line level with the top front corners of the Base Units. Line and level will depend on the kerb upstand. 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.

Plenty of setting out pins should be inserted where Beany Blocks are laid on horizontal curves (e.g. every 5m for radius of 30m) and the appropriate 'splay' Units used for radii of 50m or less.

Note:

The theoretical maximum gap between adjacent Top Block corners when laid to horizontal curves is 4mm and is zero when the radius is:

Type Of Block	Radius For Zero Gap (M)
50/20	30.0
19/11	14.0
10/8	8.7
7/6	6.8

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

The approximate number of Blocks required for a quarter circle (external radius) i.e. 90° road junction, may be calculated from: Top and Base $3.21 \times R$ Where R = horizontal radius (m) e.g. for Standard Top and Base Blocks laid to a 15m radius, No. = $3.21 \times 15 = 48$ Units (24m)

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 a standard mix complying with BS 8500-2:

(i) Mix ST1 for kerb installations

(ii) Mix ST4, for base and cover plates in the carriageway

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

Sufficient M-Seal bituminous mastic jointing compound should be trowelled on to one or both end faces so that the joint will be well sealed when the next Unit is tamped into position. Surplus sealant shall be removed from the inner surface of the Units as work proceeds.

18 litres of M-Seal should be sufficient for the following length of Beany Block:

M-Seal Requirement			
Base Type	Coverage (lin.m/18l)		
205	90		
295	70		
365	55		
630	35		

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.

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 M12 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. Any Unit deviating by more than 3mm in 3m from line and level shall be made good by lifting and relaying.

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 in accordance with BS 729: 1971 (1986).

Beany Block Stop End Top Unit

The Beany Block Stop End Top Units should be used at any transitions from Beany Block to half battered kerbs. At the ends of Beany Block runs,

Construction

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

Beany Block End Caps

Where the Beany Block run does not terminate at an outfall, the base unit shall be sealed using the Beany Block End Cap. This is available for Base 250, 295 and 365 and is formed of galvanised mild steel. The End Cap shall be securely placed against the vertical end of the base unit and haunched with fresh concrete.

Notes

- 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 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. 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 (see Note 10). 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.

 In order to reduce the risk of carriageway surface cracking, special consideration should be given to treatment of flexible surfacing layers above Base Blocks and Cover Plates Type A.
 Example (i)





Fig. 17 Base Block and Cover Plate Type A

Where the surfacing is less than 100mm or where Blocks are to be laid in an existing carriageway, additional drawings may be required showing vertical staggers at the course interfaces so that the tops of the main trench sides are not less than 100mm from the final carriageway surface. These will vary with the number and thickness of each course as well as the total cover above the Units.

Two typical examples are as shown in fig. 18 and 19.

Example (ii)



Fig. 18 Base Block and Cover Plate detail where D<100mm

Example (iii)



Fig 19 Base Block and Cover Plate detail where D=0 (existing c/way)

 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.

Construction

- 9. 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. A special steel cutting tool is available from Marshalls.
- 10. On completion of the works, the Beany Block 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.
- 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 mix ST1, ST4 and grade C25/30 as specified in BS 8500-2.

 Conventional gully gratings should have a maximum overall depth of 140mm to allow bedding over Base Units (as in Access Cover Type 2, Standard Detail Sheet).







