

Strength tests

Top and Base Blocks have been designed to withstand accidental 80 KN axle loading.

General

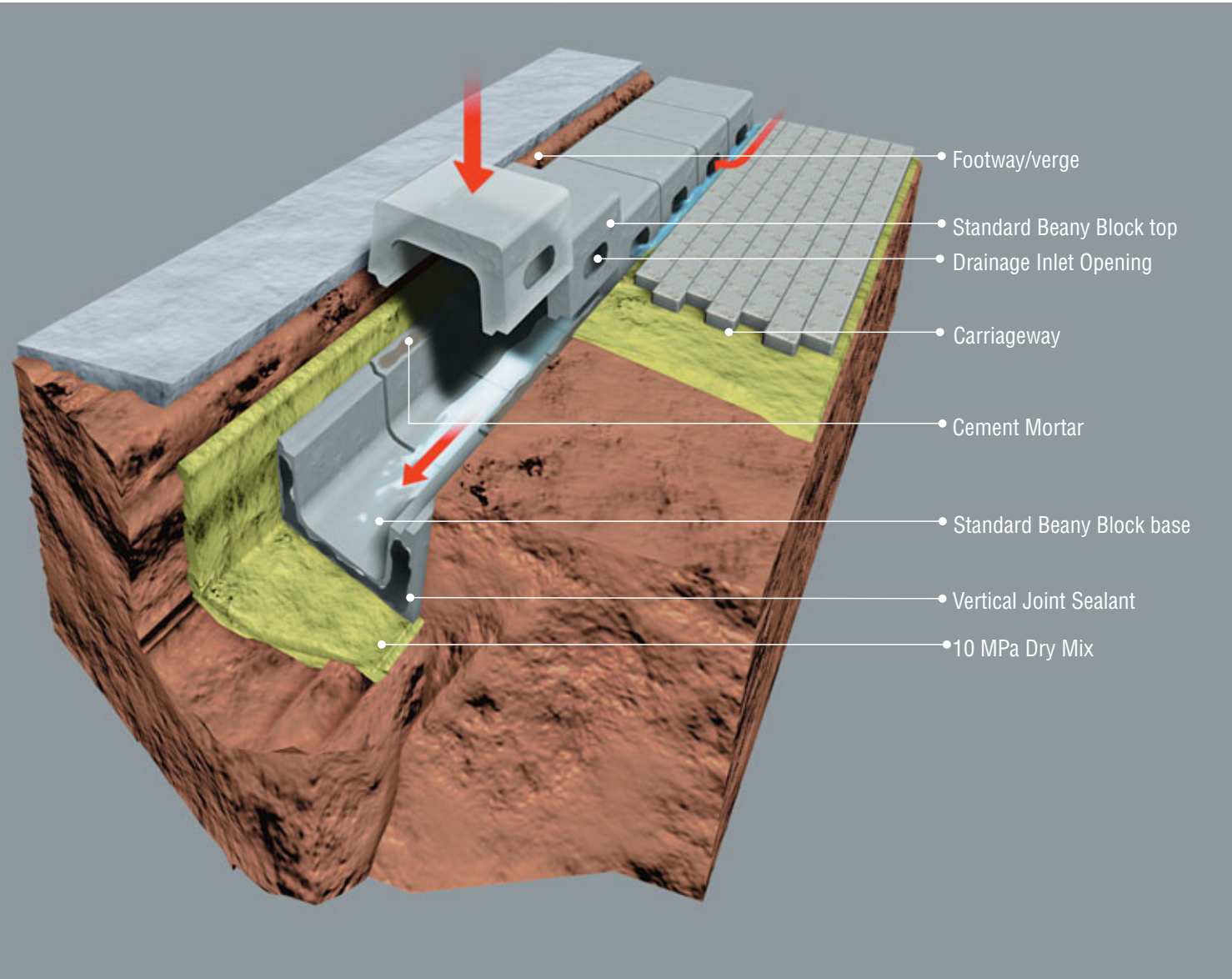
Beany Block was invented by Neil (Beany) Beanland, C Eng., M.I.C.E., M.I.H.T., Dip. T.E., a former highway design engineer with West Yorkshire Metropolitan County Council.

Since these units were introduced on a commercial scale in early 1982, lengths varying between a few metres and several kilometres have been installed in all types of schemes, from motorway and trunk roads to estate roads and car parks throughout the United Kingdom.

Construction and laying

Base blocks are laid, commencing at the outfall, on a 3:1 dry mix concrete bed with adjacent invert levels corresponding. Cement mortar is trowelled onto one Block vertical face and the adjacent Block is bedded and tamped towards it to give a tight joint.

The mortar joint should be pointed to seal the joints. For a watertight seal, a mastic sealant can be used. Top Blocks are bedded onto the Base Blocks using a cement mortar as a bedding and on the vertical faces.

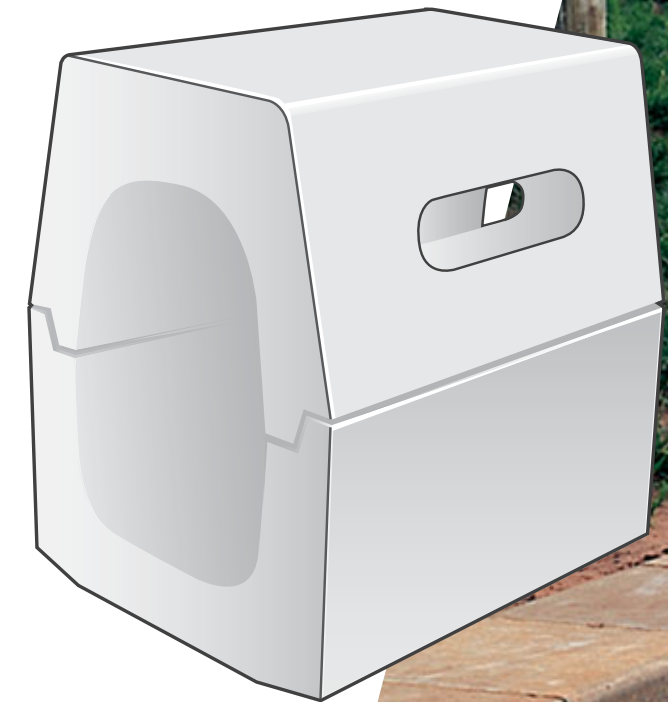


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TECHNICRETE Beany Block®

Kerb drainage at its most efficient

The Technicrete Beany Block is a simple and practical system with excellent surface drainage efficiency for many roadway designs. The large flow capacity/unit ratio makes it superior and more cost effective than conventional kerbing and drainage systems.



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Technicrete Beany Block

The combined kerb & drain system

The **Technicrete Beany Block** is simple yet practical and its excellent surface drainage efficiency, together with its comparatively large flow capacity/unit weight ratio, makes it superior to and more cost effective than conventional kerbing and drainage for many roadway designs. Vehicle entrances can be easily accommodated using the Mountable Beany top. This unit allows the bottom channel flow to be uninterrupted. The Beany Block is also designed to be used in conjunction with SABS Fig. 3 & Fig. 4 Barrier Kerbs.

The system

The system consists of a series of Base Blocks of standard channel section and Top Blocks of inverted channel section with an opening in one side face. When laid end to end they form a combined kerb and surface water drainage unit strong enough to withstand normal traffic loading. Each standard Top and Base Block is 500mm in length and weighs approximately 85kg. The Top Block oval openings give an aesthetic appearance and provide for greater inlet capacities than conventional kerb inlets. Standard blocks may be used for curve radii of 30m or more. "Splay" blocks are available to order for radii between 6m and 30m.

Uses

- Any application where high inlet capacity is required;
- Beany produces 400mm length of inlet opening for every 1m of kerb;
- Wide carriageways;
- Parking areas;
- Taxi ranks and bus depots;
- Wash bays and vehicle service areas;
- Median islands;
- Industrial areas;
- Drainage around buildings and walkways;
- Toll plazas.

Advantages

Time saving (design and construction)

No long drainage sections required in the contract documents when Beany Blocks are used.

Cost saving

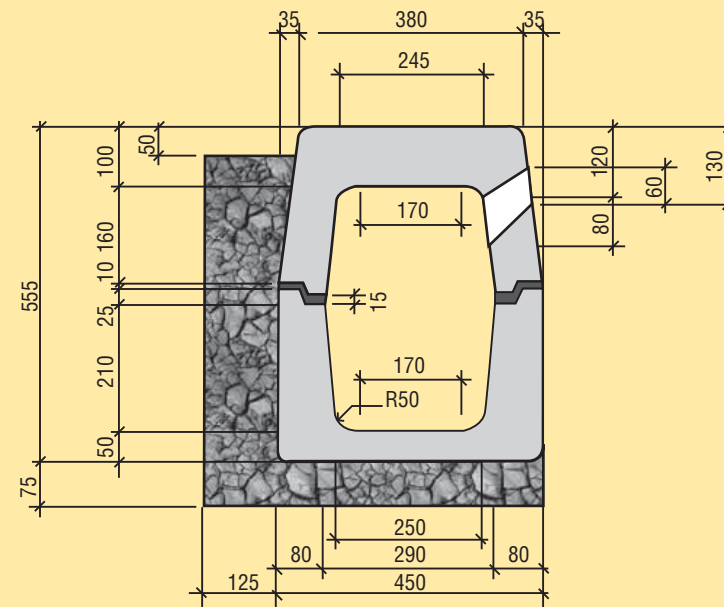
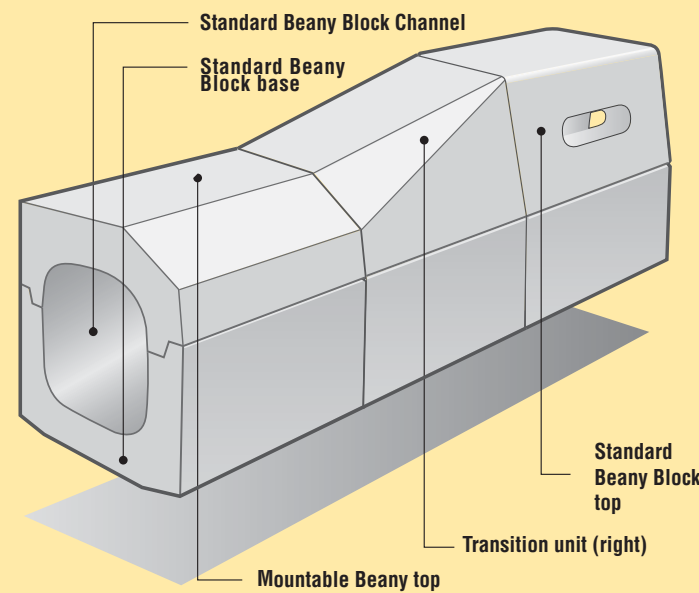
Substitutes for kerbs, stormwater pipework, kerb inlets and parts of footways. Contractual claims due to damaged services etc., are less likely than when laying conventional drainage.

Solving specific problems in conventional drainage:

- Insufficient fall;
- Conflicting levels of service mains and cables;
- Ponding adjacent to low points;
- Traffic safety and control on existing carriageways.

Additional cost savings can be achieved on schemes involving:

- Wide carriageways plus footways;
- Carriageways having 'flat' longitudinal falls;
- Rock in sub-grade;
- Shallow outfall;
- Existing services or foul drainage at conflicting levels.



Hydraulic properties

Flow capacities and velocities for various channel gradients can be derived from "Hydraulic Research (Wallingford) Charts for the Hydraulic Design of Channels and Pipes". As a quick reference, calculations have been carried out for two flow conditions:

- 1- Top and base blocks running full
- 2- Top and base blocks with base only running full

Hydraulic constraints are shown in **TABLE 1**. Examples of velocities and capacities for the two flow conditions with roughness value (k) = 0.6mm are shown in **TABLE 2**.

- Flow velocities and capacities may also be derived from the Colebrook White equation for open channel flow, roughness value 0.6mm and using the hydraulic constants shown in **TABLE 1**.
- After determining the respective velocities and capacities, drainage system calculations can be undertaken in the usual way.
- Inlet apertures are shaped and positioned to give maximum drainage efficiency as well as a pleasing appearance.
- Minimum recommended self cleansing velocity 0.6m/s.
- For comparison, the increased capacities over conventional pipes are approximately:

Top and base: 32% greater capacity than a 300 diameter pipe
Base : 40% greater capacity than a 225 diameter pipe

TABLE 1

	C.S. Area A (m ²)	Wetted Perimeter P(m)	Hydraulic Radius R= $\frac{A}{P}$ (m)	$\frac{P}{R}$
Top & base	0.087	0.928	0.094	9.86
Base	0.047	0.569	0.083	6.84

TABLE 2

Channel slope	1) Top & base		2) Base only		
	1 in.	%	Vel. (m/s)	Cap. (l/s)	Vel. (m/s)
10	10.00	5.77	503	5.34	252
15	6.67	4.71	411	4.35	206
20	5.00	4.07	355	3.77	178
30	3.33	3.32	290	3.07	145
50	2.00	2.57	224	2.38	112
75	1.33	2.10	183	1.94	92
100	1.00	1.81	158	1.68	79
150	0.67	1.48	129	1.37	65
200	0.50	1.28	112	1.18	56
250	0.40	1.14	100	1.06	50
300	0.33	1.04	91	0.96	46
350	0.29	0.96	84	0.89	42
400	0.25	0.90	79	0.83	39
450	0.22	0.85	74	0.78	37
500	0.20	0.80	70	0.74	35