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 appealing solution for a variety of projects.
Beany Block

**Combined Kerb and Drainage System**

- 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).

**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 recommended 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.
Linear Drainage Design Guide

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.
- 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.

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.
- 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.

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.
- 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.

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.
- Beany Block at pedestrian crossing point
- The advantage of separate base and top blocks is that it is easy to retrofit pedestrian crossings in any length of Beany.

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 elliptical inlet aperture is 120mm wide and 90mm in height.

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

Beany Drainage from both sides using symmetrical top

Beany to Cover Plates

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

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.
- Kerb upstand 150mm.
- For use with porous asphalt or high kerb upstand applications.
- 500mm in length.

**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 75-125mm.
- 500mm in length.

**Half battered symmetrical (low hole)**
- 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

**BASE UNITS**

- Base 205
- Base 295
- Base 365
- Base 630

**TRANSITION UNITS**

- 205 to 295 Transition
- 295 to 365 Transition

**ANCILLARY ITEMS**

- Junction For Base 205 & 295
- Outfall (shown sectioned for illustrative purposes) For Base 205, 295 & 365
- Junction/Outfall For Base 205 & 295

**BASE END CAPS**

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

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

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.
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 access lid to cater for offside or nearside applications.
- Provide large access opening for the emptying of silt traps and outfall sumps using traditional equipment.

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.

<table>
<thead>
<tr>
<th>Radius</th>
<th>Type of Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;50</td>
<td>Standard</td>
</tr>
<tr>
<td>50.0-19.1</td>
<td>50/20</td>
</tr>
<tr>
<td>19.0-10.8</td>
<td>19/11</td>
</tr>
<tr>
<td>10.7-7.7</td>
<td>10/8</td>
</tr>
<tr>
<td>7.6-6.0</td>
<td>7/6</td>
</tr>
<tr>
<td>&lt;6.0</td>
<td>Special to order</td>
</tr>
<tr>
<td>Right angle</td>
<td>90°</td>
</tr>
<tr>
<td>45° angle</td>
<td>45°</td>
</tr>
</tbody>
</table>

Stop End Top Unit (RH)

Bus Stop Unit Top (RH)

Bus Stop Unit Top (LH)

Straight Backed/ Symmetrical Access Cover

45° Splayed Access Cover

Straight Backed/ Symmetrical Cable Duct - ø50

45° Splayed Cable Duct ø50
## Flow Capacity

<table>
<thead>
<tr>
<th>Beany Block Straight Backed, Half Battered with Base 205 Unit</th>
<th>Beany Block Straight Backed, Half Battered with Base 295 Unit</th>
<th>Beany Block Straight Backed, Half Battered with Base 365 Unit</th>
<th>Beany Block Straight Backed, Half Battered with Base 630 Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
<td><img src="image3.png" alt="Diagram" /></td>
<td><img src="image4.png" alt="Diagram" /></td>
</tr>
<tr>
<td>Equivalent Pipe Diameter (mm) 300</td>
<td>Equivalent Pipe Diameter (mm) 350</td>
<td>Equivalent Pipe Diameter (mm) 375</td>
<td>Equivalent Pipe Diameter (mm) 525</td>
</tr>
</tbody>
</table>

### Beany Block Half Battered Symmetrical

<table>
<thead>
<tr>
<th>ref</th>
<th>d</th>
<th>l</th>
<th>u</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base 205</td>
<td>355</td>
<td>285</td>
<td>135</td>
</tr>
<tr>
<td>Base 295</td>
<td>445</td>
<td>355</td>
<td>205</td>
</tr>
<tr>
<td>Base 365</td>
<td>515</td>
<td>425</td>
<td>275</td>
</tr>
<tr>
<td>Base 630</td>
<td>780</td>
<td>705</td>
<td>555</td>
</tr>
</tbody>
</table>

### Beany Block 45° Splayed

<table>
<thead>
<tr>
<th>ref</th>
<th>d</th>
<th>l</th>
<th>u</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base 205</td>
<td>405</td>
<td>335</td>
<td>135</td>
</tr>
<tr>
<td>Base 295</td>
<td>495</td>
<td>405</td>
<td>285</td>
</tr>
<tr>
<td>Base 365</td>
<td>565</td>
<td>475</td>
<td>275</td>
</tr>
<tr>
<td>Base 630</td>
<td>830</td>
<td>755</td>
<td>555</td>
</tr>
</tbody>
</table>
The Beany Block 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.

### Symmetrical HB & Straight Backed Top Block

#### Base 205

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>Gradient</th>
<th>0</th>
<th>1 in 1000</th>
<th>1 in 500</th>
<th>1 in 400</th>
<th>1 in 300</th>
<th>1 in 200</th>
<th>1 in 100</th>
<th>1 in 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>31</td>
<td>0.48</td>
<td>37</td>
<td>0.58</td>
<td>42</td>
<td>0.66</td>
<td>45</td>
<td>0.70</td>
<td>48</td>
</tr>
<tr>
<td>100</td>
<td>27</td>
<td>0.42</td>
<td>36</td>
<td>0.56</td>
<td>41</td>
<td>0.67</td>
<td>44</td>
<td>0.73</td>
<td>47</td>
</tr>
<tr>
<td>150</td>
<td>24</td>
<td>0.38</td>
<td>35</td>
<td>0.55</td>
<td>44</td>
<td>0.69</td>
<td>48</td>
<td>0.75</td>
<td>55</td>
</tr>
<tr>
<td>200</td>
<td>20</td>
<td>0.31</td>
<td>33</td>
<td>0.52</td>
<td>44</td>
<td>0.69</td>
<td>50</td>
<td>0.78</td>
<td>59</td>
</tr>
<tr>
<td>250</td>
<td>17</td>
<td>0.27</td>
<td>32</td>
<td>0.50</td>
<td>45</td>
<td>0.70</td>
<td>52</td>
<td>0.81</td>
<td>62</td>
</tr>
</tbody>
</table>

#### Base 295

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>Gradient</th>
<th>0</th>
<th>1 in 1000</th>
<th>1 in 500</th>
<th>1 in 400</th>
<th>1 in 300</th>
<th>1 in 200</th>
<th>1 in 100</th>
<th>1 in 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>47</td>
<td>0.53</td>
<td>56</td>
<td>0.64</td>
<td>63</td>
<td>0.72</td>
<td>66</td>
<td>0.75</td>
<td>71</td>
</tr>
<tr>
<td>100</td>
<td>43</td>
<td>0.49</td>
<td>55</td>
<td>0.63</td>
<td>64</td>
<td>0.73</td>
<td>68</td>
<td>0.77</td>
<td>75</td>
</tr>
<tr>
<td>150</td>
<td>37</td>
<td>0.42</td>
<td>53</td>
<td>0.60</td>
<td>65</td>
<td>0.74</td>
<td>70</td>
<td>0.80</td>
<td>79</td>
</tr>
<tr>
<td>200</td>
<td>35</td>
<td>0.40</td>
<td>51</td>
<td>0.58</td>
<td>65</td>
<td>0.74</td>
<td>72</td>
<td>0.82</td>
<td>83</td>
</tr>
<tr>
<td>250</td>
<td>30</td>
<td>0.34</td>
<td>50</td>
<td>0.57</td>
<td>66</td>
<td>0.75</td>
<td>74</td>
<td>0.84</td>
<td>87</td>
</tr>
<tr>
<td>300</td>
<td>26</td>
<td>0.30</td>
<td>48</td>
<td>0.55</td>
<td>67</td>
<td>0.76</td>
<td>76</td>
<td>0.86</td>
<td>91</td>
</tr>
<tr>
<td>350</td>
<td>22</td>
<td>0.25</td>
<td>46</td>
<td>0.52</td>
<td>68</td>
<td>0.77</td>
<td>78</td>
<td>0.89</td>
<td>95</td>
</tr>
</tbody>
</table>

#### Base 365

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>Gradient</th>
<th>0</th>
<th>1 in 1000</th>
<th>1 in 500</th>
<th>1 in 400</th>
<th>1 in 300</th>
<th>1 in 200</th>
<th>1 in 100</th>
<th>1 in 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>61</td>
<td>0.58</td>
<td>73</td>
<td>0.70</td>
<td>81</td>
<td>0.77</td>
<td>85</td>
<td>0.81</td>
<td>91</td>
</tr>
<tr>
<td>100</td>
<td>57</td>
<td>0.54</td>
<td>71</td>
<td>0.68</td>
<td>82</td>
<td>0.78</td>
<td>87</td>
<td>0.83</td>
<td>95</td>
</tr>
<tr>
<td>150</td>
<td>53</td>
<td>0.50</td>
<td>69</td>
<td>0.66</td>
<td>83</td>
<td>0.79</td>
<td>89</td>
<td>0.85</td>
<td>99</td>
</tr>
<tr>
<td>200</td>
<td>48</td>
<td>0.46</td>
<td>68</td>
<td>0.65</td>
<td>84</td>
<td>0.80</td>
<td>91</td>
<td>0.87</td>
<td>104</td>
</tr>
<tr>
<td>250</td>
<td>44</td>
<td>0.42</td>
<td>66</td>
<td>0.63</td>
<td>85</td>
<td>0.81</td>
<td>94</td>
<td>0.90</td>
<td>108</td>
</tr>
<tr>
<td>300</td>
<td>39</td>
<td>0.37</td>
<td>64</td>
<td>0.61</td>
<td>85</td>
<td>0.81</td>
<td>96</td>
<td>0.91</td>
<td>112</td>
</tr>
<tr>
<td>350</td>
<td>35</td>
<td>0.33</td>
<td>62</td>
<td>0.59</td>
<td>86</td>
<td>0.82</td>
<td>98</td>
<td>0.93</td>
<td>117</td>
</tr>
<tr>
<td>400</td>
<td>31</td>
<td>0.30</td>
<td>61</td>
<td>0.58</td>
<td>87</td>
<td>0.83</td>
<td>100</td>
<td>0.95</td>
<td>121</td>
</tr>
</tbody>
</table>

#### Base 630

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>Gradient</th>
<th>0</th>
<th>1 in 1000</th>
<th>1 in 500</th>
<th>1 in 400</th>
<th>1 in 300</th>
<th>1 in 200</th>
<th>1 in 100</th>
<th>1 in 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>136</td>
<td>0.66</td>
<td>164</td>
<td>0.79</td>
<td>183</td>
<td>0.88</td>
<td>192</td>
<td>0.93</td>
<td>206</td>
</tr>
<tr>
<td>150</td>
<td>131</td>
<td>0.63</td>
<td>161</td>
<td>0.78</td>
<td>184</td>
<td>0.89</td>
<td>195</td>
<td>0.94</td>
<td>212</td>
</tr>
<tr>
<td>200</td>
<td>125</td>
<td>0.60</td>
<td>159</td>
<td>0.77</td>
<td>186</td>
<td>0.90</td>
<td>198</td>
<td>0.96</td>
<td>217</td>
</tr>
<tr>
<td>250</td>
<td>119</td>
<td>0.57</td>
<td>157</td>
<td>0.76</td>
<td>187</td>
<td>0.90</td>
<td>201</td>
<td>0.97</td>
<td>223</td>
</tr>
<tr>
<td>300</td>
<td>113</td>
<td>0.55</td>
<td>154</td>
<td>0.74</td>
<td>188</td>
<td>0.91</td>
<td>204</td>
<td>0.99</td>
<td>229</td>
</tr>
<tr>
<td>350</td>
<td>107</td>
<td>0.52</td>
<td>152</td>
<td>0.73</td>
<td>189</td>
<td>0.91</td>
<td>207</td>
<td>1.00</td>
<td>235</td>
</tr>
<tr>
<td>400</td>
<td>101</td>
<td>0.49</td>
<td>150</td>
<td>0.72</td>
<td>190</td>
<td>0.92</td>
<td>210</td>
<td>1.01</td>
<td>241</td>
</tr>
<tr>
<td>450</td>
<td>96</td>
<td>0.46</td>
<td>147</td>
<td>0.71</td>
<td>191</td>
<td>0.92</td>
<td>213</td>
<td>1.03</td>
<td>246</td>
</tr>
<tr>
<td>500</td>
<td>90</td>
<td>0.43</td>
<td>145</td>
<td>0.70</td>
<td>193</td>
<td>0.93</td>
<td>216</td>
<td>1.04</td>
<td>252</td>
</tr>
<tr>
<td>550</td>
<td>84</td>
<td>0.41</td>
<td>143</td>
<td>0.69</td>
<td>194</td>
<td>0.94</td>
<td>219</td>
<td>1.06</td>
<td>258</td>
</tr>
<tr>
<td>600</td>
<td>78</td>
<td>0.38</td>
<td>140</td>
<td>0.68</td>
<td>195</td>
<td>0.94</td>
<td>222</td>
<td>1.07</td>
<td>264</td>
</tr>
</tbody>
</table>
### Beany® Block & 45° Splayed Top Block

#### Theoretical Outfall Capacities

<table>
<thead>
<tr>
<th>Outfall Type</th>
<th>Outlet Pipe Diameter (mm)</th>
<th>l/s</th>
<th>m/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beany Outfall with Base 205</td>
<td>150</td>
<td>36</td>
<td>3.32</td>
</tr>
<tr>
<td>Beany Outfall with Base 295</td>
<td>150</td>
<td>38</td>
<td>3.52</td>
</tr>
<tr>
<td>Beany Outfall with Base 365</td>
<td>150</td>
<td>40</td>
<td>3.67</td>
</tr>
<tr>
<td>Beany Outfall with Base 205</td>
<td>225</td>
<td>82</td>
<td>3.40</td>
</tr>
<tr>
<td>Beany Outfall with Base 295</td>
<td>225</td>
<td>87</td>
<td>3.60</td>
</tr>
<tr>
<td>Beany Outfall with Base 365</td>
<td>225</td>
<td>91</td>
<td>3.75</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Top Blocks</th>
<th>Length (mm)</th>
<th>Width (mm)</th>
<th>Height (mm)</th>
<th>Unit Weight (kg)</th>
<th>Item Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>HB Straight Back</td>
<td>500</td>
<td>430</td>
<td>255</td>
<td>71</td>
<td>DR700020</td>
</tr>
<tr>
<td>HB Straight Back Conservation</td>
<td>500</td>
<td>430</td>
<td>255</td>
<td>75</td>
<td>DR700023</td>
</tr>
<tr>
<td>HB Straight Back Low Hole</td>
<td>500</td>
<td>430</td>
<td>255</td>
<td>71</td>
<td>DR700030</td>
</tr>
<tr>
<td>HB Symmetrical Low Hole</td>
<td>500</td>
<td>430</td>
<td>255</td>
<td>71</td>
<td>DR700031</td>
</tr>
<tr>
<td>45° Splayed Straight Back</td>
<td>500</td>
<td>430</td>
<td>255</td>
<td>76</td>
<td>DR700060</td>
</tr>
<tr>
<td>HB Bus Stop 180 Upstand</td>
<td>500</td>
<td>430</td>
<td>350</td>
<td>71</td>
<td>DR791010</td>
</tr>
</tbody>
</table>

* Special finishes may be available upon request

### B. Radial Tops

<table>
<thead>
<tr>
<th>Radial Tops</th>
<th>Unit Weight (kg)</th>
<th>Item Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>HB 50/20m Ext</td>
<td>71</td>
<td>DR730020</td>
</tr>
<tr>
<td>HB 19/11m Ext</td>
<td>71</td>
<td>DR730030</td>
</tr>
<tr>
<td>HB Cut 10/8m Ext</td>
<td>71</td>
<td>DR730040</td>
</tr>
<tr>
<td>HB Cut 7/6m Ext</td>
<td>71</td>
<td>DR730050</td>
</tr>
<tr>
<td>HB Cut 7/6 Int</td>
<td>71</td>
<td>DR730240</td>
</tr>
<tr>
<td>HB Cut 7/6 Int</td>
<td>71</td>
<td>DR730250</td>
</tr>
<tr>
<td>HB Cut 19/11m Ext</td>
<td>71</td>
<td>DR730320</td>
</tr>
<tr>
<td>HB St Back 10/8m Int</td>
<td>71</td>
<td>DR740240</td>
</tr>
<tr>
<td>HB St Back 7/6 Int</td>
<td>71</td>
<td>DR740250</td>
</tr>
<tr>
<td>HB St Back 7/6 Int</td>
<td>76</td>
<td>DR751050</td>
</tr>
<tr>
<td>HB St Back 50/20m Ext</td>
<td>69</td>
<td>DR740020</td>
</tr>
<tr>
<td>HB St Back 19/11m Ext</td>
<td>69</td>
<td>DR740030</td>
</tr>
<tr>
<td>HB St Back Cut 10/8m Ext</td>
<td>69</td>
<td>DR740040</td>
</tr>
<tr>
<td>HB St Back Cut 7/6m Ext</td>
<td>69</td>
<td>DR740050</td>
</tr>
<tr>
<td>HB St Back Cut 50/20 Int</td>
<td>69</td>
<td>DR740210</td>
</tr>
<tr>
<td>HB St Back Cut 10/11 Int</td>
<td>69</td>
<td>DR740230</td>
</tr>
<tr>
<td>45° SP Str Bk Cut 50/20 Int</td>
<td>76</td>
<td>DR751009</td>
</tr>
<tr>
<td>45° SP Str Bk Cut 50/20 Ext</td>
<td>76</td>
<td>DR751010</td>
</tr>
<tr>
<td>45° SP Str Bk Cut 10/11 Ext</td>
<td>76</td>
<td>DR751031</td>
</tr>
<tr>
<td>45° SP Str Bk Cut 10/8 Ext</td>
<td>76</td>
<td>DR751040</td>
</tr>
</tbody>
</table>

### C. Constant Depth Channels

<table>
<thead>
<tr>
<th>Constant Depth Channels</th>
<th>Length (mm)</th>
<th>Width (mm)</th>
<th>Invert Width (mm)</th>
<th>Depth (mm)</th>
<th>Invert Depth (mm)</th>
<th>Unit Weight (kg)</th>
<th>Item Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>205 Press chan</td>
<td>500</td>
<td>430</td>
<td>280</td>
<td>205</td>
<td>155</td>
<td>78</td>
<td>DR720021</td>
</tr>
<tr>
<td>295 Press chan</td>
<td>500</td>
<td>430</td>
<td>280</td>
<td>295</td>
<td>205</td>
<td>85</td>
<td>DR720010</td>
</tr>
<tr>
<td>365 Press chan</td>
<td>500</td>
<td>440</td>
<td>280</td>
<td>365</td>
<td>275</td>
<td>96</td>
<td>DR720030</td>
</tr>
<tr>
<td>630 Press chan</td>
<td>500</td>
<td>440/490</td>
<td>280/360</td>
<td>630</td>
<td>555</td>
<td>110</td>
<td>DR720045</td>
</tr>
</tbody>
</table>

### D. Radial Channels

<table>
<thead>
<tr>
<th>Radial Base Channels</th>
<th>Unit Weight (kg)</th>
<th>Item Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>205 Base 50/20m</td>
<td>69</td>
<td>DR800810</td>
</tr>
<tr>
<td>205 Base 19/11m</td>
<td>69</td>
<td>DR800830</td>
</tr>
<tr>
<td>205 Base 10/8m Cut</td>
<td>69</td>
<td>DR800840</td>
</tr>
<tr>
<td>205 Base 7/6m Cut</td>
<td>69</td>
<td>DR800840</td>
</tr>
<tr>
<td>205 Base 45° External Corner</td>
<td>174</td>
<td>DR900800</td>
</tr>
<tr>
<td>295 Base 50/20m</td>
<td>79</td>
<td>DR800020</td>
</tr>
<tr>
<td>295 Base 19/11m</td>
<td>79</td>
<td>DR800030</td>
</tr>
<tr>
<td>295 Base 10/8m Cut</td>
<td>79</td>
<td>DR800040</td>
</tr>
<tr>
<td>295 Base 7/6m Cut</td>
<td>79</td>
<td>DR800040</td>
</tr>
<tr>
<td>365 Base 50/20m Cut</td>
<td>95</td>
<td>DR800010</td>
</tr>
<tr>
<td>365 Base 19/11m Cut</td>
<td>95</td>
<td>DR800030</td>
</tr>
<tr>
<td>365 Base 10/8m Cut</td>
<td>95</td>
<td>DR800040</td>
</tr>
<tr>
<td>365 Base 7/6m Cut</td>
<td>95</td>
<td>DR800040</td>
</tr>
<tr>
<td>630 Base 50/20m</td>
<td>105</td>
<td>DR820010</td>
</tr>
<tr>
<td>630 Base 19/11m Cut</td>
<td>105</td>
<td>DR820010</td>
</tr>
<tr>
<td>630 Base 10/8m Cut</td>
<td>105</td>
<td>DR820010</td>
</tr>
<tr>
<td>630 Base 7/6m Cut</td>
<td>105</td>
<td>DR820010</td>
</tr>
</tbody>
</table>

* More radius and corner units can be made available on request
Beany Block with reference numbers indicated in **bold** black are available ex-stock. Beany Block with reference numbers indicated in *light* are manufactured to order. Contact our sales office to discuss your requirements.

**Beany Block Component Codes**

| Beany Block with reference numbers indicated in **bold** black are available ex-stock.
| Beany Block with reference numbers indicated in *light* are manufactured to order.
| Contact our sales office to discuss your requirements. |
**Half Battered Top Block With Base 205, 295 or 365**

<table>
<thead>
<tr>
<th>Base Unit</th>
<th>H (Mm)</th>
<th>h (Mm)</th>
<th>T (Mm)</th>
<th>Depth: C'way Channel To Invert (125 Kerb Upstand (Mm))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base 205</td>
<td>480</td>
<td>205</td>
<td>70</td>
<td>285</td>
</tr>
<tr>
<td>Base 295</td>
<td>570</td>
<td>295</td>
<td>90</td>
<td>355</td>
</tr>
<tr>
<td>Base 365</td>
<td>640</td>
<td>365</td>
<td>90</td>
<td>425</td>
</tr>
<tr>
<td>Base 630</td>
<td>905</td>
<td>630</td>
<td>75</td>
<td>705</td>
</tr>
</tbody>
</table>

**45° Splayed Top Block With Base 630**

<table>
<thead>
<tr>
<th>Kerb Upstand (Mm)</th>
<th>X* (Mm)</th>
<th>Y (Mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>46</td>
<td>200</td>
</tr>
<tr>
<td>100</td>
<td>40</td>
<td>175</td>
</tr>
<tr>
<td>110</td>
<td>37</td>
<td>165</td>
</tr>
<tr>
<td>120</td>
<td>34</td>
<td>155</td>
</tr>
<tr>
<td>125</td>
<td>33</td>
<td>150</td>
</tr>
<tr>
<td>150</td>
<td>27</td>
<td>125</td>
</tr>
</tbody>
</table>

(*) For Base 630 Add 5mm To X Values

Where X is Dimension To Top Outside Edge Of Base Block

**Base Unit Setting Out Detail**
## Beany Block Standard Details

### Linear Drainage Design Guide

<table>
<thead>
<tr>
<th>TYPE OF UNIT</th>
<th>RADIUS</th>
<th>L (mm)</th>
<th>I (mm)</th>
<th>8°</th>
</tr>
</thead>
<tbody>
<tr>
<td>50/20 - BASE 205, 295 OR 365 (EXT. &amp; INT. RAD.)</td>
<td>90.0 - 19.1</td>
<td>488</td>
<td>481</td>
<td>89</td>
</tr>
<tr>
<td>19/11 * * *</td>
<td>19.0 - 10.8</td>
<td>488</td>
<td>473</td>
<td>88</td>
</tr>
<tr>
<td>10/8 * * *</td>
<td>10.7 - 7.7</td>
<td>488</td>
<td>464</td>
<td>87</td>
</tr>
<tr>
<td>7/6 * * *</td>
<td>7.6 - 6.0</td>
<td>488</td>
<td>457</td>
<td>86</td>
</tr>
<tr>
<td>50/20 - BASE 630 (EXT. &amp; INT. RAD.)</td>
<td>50.0 - 19.1</td>
<td>500</td>
<td>493</td>
<td>89</td>
</tr>
<tr>
<td>19/11 * * *</td>
<td>19.0 - 10.8</td>
<td>500</td>
<td>484</td>
<td>88</td>
</tr>
<tr>
<td>10/8 * * *</td>
<td>10.7 - 7.7</td>
<td>500</td>
<td>473</td>
<td>87</td>
</tr>
<tr>
<td>7/6 * * *</td>
<td>7.6 - 6.0</td>
<td>500</td>
<td>463</td>
<td>86</td>
</tr>
<tr>
<td>50/20 - TOP (EXT. RAD.)</td>
<td>50.0 - 19.1</td>
<td>488</td>
<td>481</td>
<td>91</td>
</tr>
<tr>
<td>19/11 * *</td>
<td>19.0 - 10.8</td>
<td>488</td>
<td>473</td>
<td>92</td>
</tr>
<tr>
<td>10/8 * *</td>
<td>10.7 - 7.7</td>
<td>488</td>
<td>464</td>
<td>93</td>
</tr>
<tr>
<td>7/6 * *</td>
<td>7.6 - 6.0</td>
<td>488</td>
<td>457</td>
<td>94</td>
</tr>
<tr>
<td>50/20 - TOP (INT. RAD.)</td>
<td>50.0 - 19.1</td>
<td>488</td>
<td>481</td>
<td>89</td>
</tr>
<tr>
<td>19/11 * *</td>
<td>19.0 - 10.8</td>
<td>488</td>
<td>473</td>
<td>89</td>
</tr>
<tr>
<td>10/8 * *</td>
<td>10.7 - 7.7</td>
<td>488</td>
<td>464</td>
<td>87</td>
</tr>
<tr>
<td>7/6 * *</td>
<td>7.6 - 6.0</td>
<td>488</td>
<td>457</td>
<td>86</td>
</tr>
</tbody>
</table>

**Cover Plate Dimensions:**
- Straight: 500 X 340.
- 50/11, 10/8, 7/6 And 90°
- Supplied To Match
- Respective Bases.
- All 12.5 Thick.
Outfall Using Gully Pot & Stop End Detail

- Beany Access Cover And Frame
- Carriageway Level
- Base Outfall
- Aperture
- Gully Pot As Specified Internal Dim. 375x900 (Supplied By Others)
- Mflex Sealant (See Note 1)
- Concrete Pipe Surround
- (At Change From Top And Base Unit To Kerb)

Longitudinal Section

Outfall Direct To 225 Dia. Pipe

- Beany Access Cover And Frame
- Concrete
- Mortar
- Gully Pot As Specified Internal Dim. 375x900
- Mflex Sealant (See Note 1)
- Cross Section

Outfall Pipe Invert Depth From Carriageway Level (Mm)

<table>
<thead>
<tr>
<th>Depth</th>
<th>BeanyBase</th>
<th>225d</th>
</tr>
</thead>
<tbody>
<tr>
<td>205</td>
<td>701</td>
<td>738</td>
</tr>
<tr>
<td>295</td>
<td>791</td>
<td>828</td>
</tr>
<tr>
<td>385</td>
<td>861</td>
<td>898</td>
</tr>
</tbody>
</table>

All Figures Assume 125mm Kerb Upstand

150 ø 225 ø Outfall Direct To 225 Dia. Pipe (Direction As Required)

- Beany Access Cover And Frame
- Concrete
- Mortar
- Gully Pot As Specified Internal Dim. 375x900
- Mflex Sealant (See Note 1)

Cross Section

- Outfall Pipe
- Direction As Required

- Top And Base Unit
- Beany Access Cover And Frame
- Hb2 Kerb
Standard Details

Drawing 4 of 8
Standard Details

Drawing 6 of 8

Linear Channel Drainage Design Guide

Beany Block Standard Details

Base Unit & Cover Plate

At Dropped Carriageway

Cross Section

Longitudinal Section

Cover Plate Bend

Cable Duct Block
(Also Supplied To Suit 45˚ Splayed Profile)

Base Unit & Cover Plate
Below Carriageway

Cross Section

Base Unit
Concrete
(See Note 2)

Concrete
(See Note 2)

Hb2 Kerb
Bin Kerb
Cover Plate
M-mortar

Cover Plate

M-tape50 Min.

12.5

Standard Cover Plate Bend
Detail And Specified In Beany Block Schedule.

˚= Angle As Shown In 'Bend' Or 'Junction'

Concrete
(See Note 2)

Concrete
(See Note 2)

430

75

(See Note 1)

Mortar28

Hb2 Kerb
Cover Plate
Bn Kerb

50 Dia. Hole

150

Cable Duct Block
(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15

Carriageway

(See Notes)

DD

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Longitudinal Section

Cover Plate

50 Min.

M-tape

125

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

50 Dia. Hole

At Dropped Carriageway

(100 Long)

150

430

75

(See Note 1)

Mortar

Base Unit

Concrete

Concrete

(See Note 2)

125

Cross Section

Below Carriageway

(See Note 2)

150

430

15
Stop End Top Blocks, Dropper Kerbs, And Centrestones, Are All Bedded On Mortar Onto Beany Bases Fitted With Cover Plates.
Notes For Beany Block Details Sheets

Drawings 1 to 8

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 Base Block Outfalls onto the Beany Trapped Gully Unit
   iii) Marshalls’ M-Flex 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 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.

4. 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 x 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

5. Beany Block Access Covers and Frames are universal for use in both “nearside” and “offside”.

6. 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.

7. Stop End Top Blocks Units are available as left hand (LH) or right hand (RH) for use at transitions to half battered kerbs.

8. 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.
**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:

<table>
<thead>
<tr>
<th>Type Of Block</th>
<th>Radius For Zero Gap (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50/20</td>
<td>30.0</td>
</tr>
<tr>
<td>19/11</td>
<td>14.0</td>
</tr>
<tr>
<td>10/8</td>
<td>8.7</td>
</tr>
<tr>
<td>7/6</td>
<td>6.8</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>M-Seal Requirement</th>
<th>Base Type</th>
<th>Coverage (lin.m/18l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>205</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>295</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>365</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>630</td>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>

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,
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
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 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.

7. 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)

\[
D = \text{Wearing Course} + \text{Base Course Surfacing}
\]

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)

8. 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.
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.

11. 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.

12. 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).