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# ***Frames and Covers, Carriageway***

*General information on Frames and Covers for use  
in the carriageway.*

## ***About this document ...***

### **Author**

The author of this document may be contacted at:

Carl Morrell  
Underground Specialist & Civils Field Project Manager  
Openreach (BOCE13)  
Post Point HW M490PO Box 78961  
1 Braham Street  
London  
E1W 9TD  
Telephone: +447801623998  
Fax:  
Email: carl.morrell@openreach.co.uk

### **Content approval**

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# Version History

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Issue 15	24-Mar-2023	Carl Morrell	Add the InstallPlus diagram to section 8.2
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Issue 5	17-Dec-2008	Chief Engineer AEI Technical Documentation team	Change of author and approver
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Issue 3	19-Jan-2004	Jim Battman	Change of author
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Issue 1	30-Mar-2000	Simon Attar	EDRS

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# 1 *Introduction*

This Practice provides general information on Frames and Covers for use in the carriageway. Two designs are available and each is produced in the three standard sizes. Frames and Covers, Carriageway No 1, No 2, No 3 or No 4. The designs are known as 'C', 'D' and 'E' types respectively, the particular type being available at any one time is determined solely on commercial grounds.

# 2 *Description*

Frame and Cover, Carriageway Nos 1C, 2C and 3C are illustrated in Figures 1, 2 and 3 respectively. Each complete unit consists of a frame together with either 2 Covers No 1C in the case of the Frame and Cover, Carriageway No 1C; or 4 or 6 Covers No 2C in the larger frames and covers (Figs 2 and 3).

The covers are manufactured in Spheroidal Graphite (SG) cast iron, the distinguishing feature of this cover design being the three seating lugs which extend beyond the triangular outline of the cover.

*Note:* The D400, CW4 size Carriageway Frames & Covers ('D400' is stamped on the surface of the cover) should only be installed in Grass Verges, Unmade Ground, Pedestrian Precincts, Private Driveways and Footway locations where a Carriageway F&C has been deemed necessary.

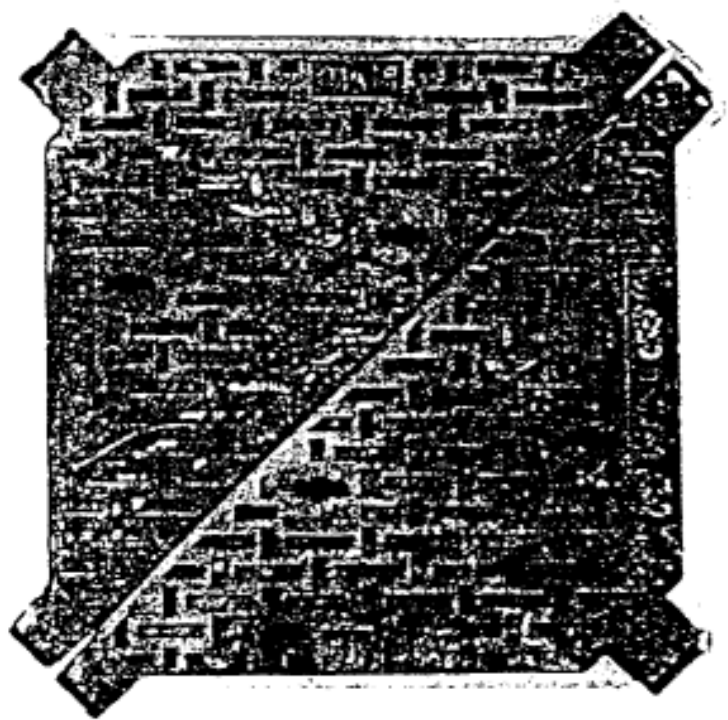


Fig 1

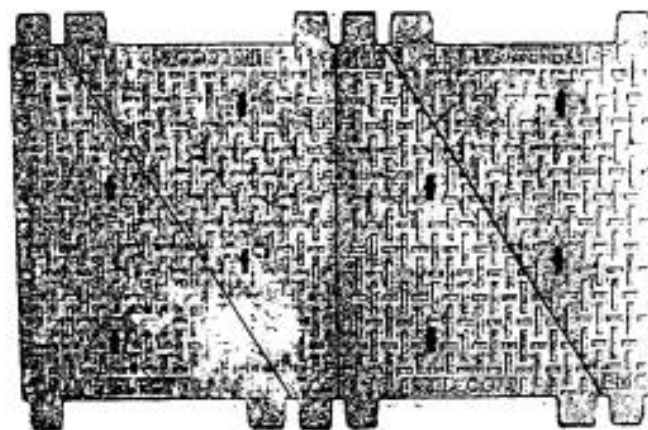


Fig 2

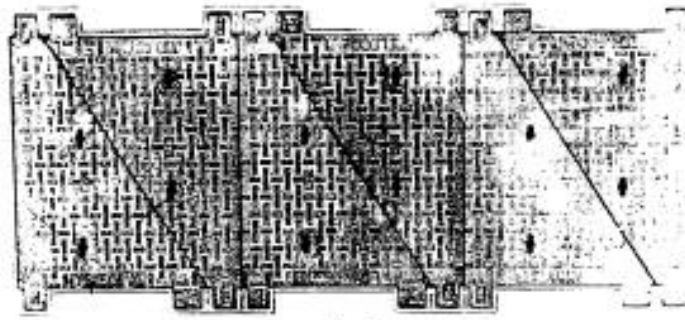
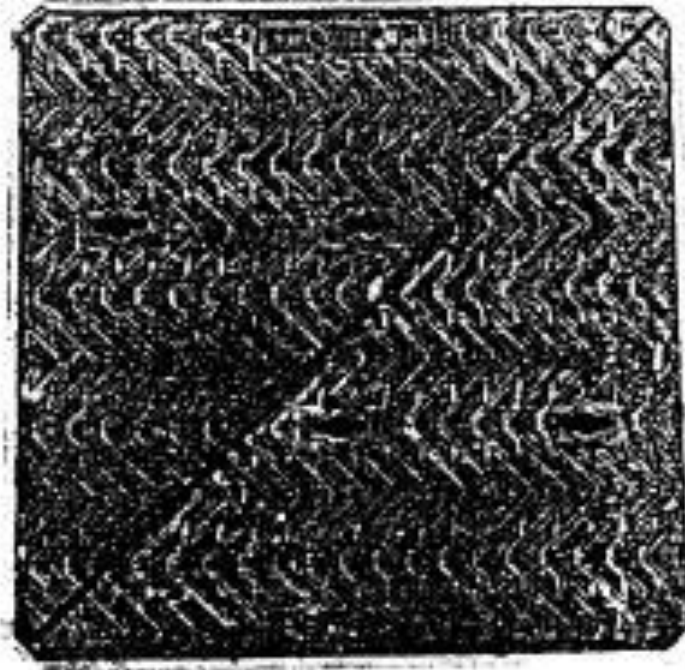


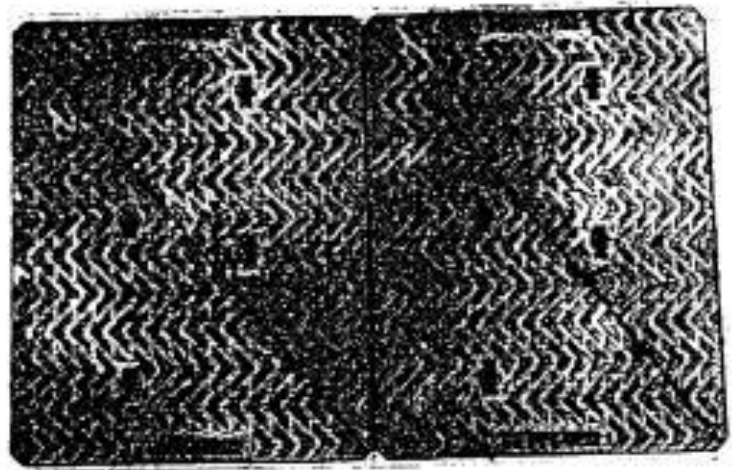
Fig 3

Frame and Cover, Carriageway Nos 1E, 2E, 3E and 4E are illustrated below. Each complete unit consists of a frame together with either two SG iron covers No 1 in the case of the F/C C/W No 1, or 4 or 6 Covers No 2 in the larger frames and covers.

C/W 1



C/W 2



C/W 3



C/W 4





### 3 General Data

The sizes available and their respective weights and dimensions, are as follows:

Frame and Cover Carriageway	Weight kg			Nominal Clear Opening mm
	Frame	Cover	Total	
1C	89.0	49.0	187	610 x 610
2C	178.0	55.0	398	1220 x 685
3C	254.0	55.0	584	1830 x 685
1D	86.0	60.0	206	610 x 610
2D	135.0	65.0	395	1220 x 685
3D	177.0	65.0	567	1830 x 685

Frame and Cover:	Stores Code:	Frame (Kg):	Cover (Kg) Coupled in Pairs:	No of Pairs:	Roll Bar Weight (Kg):
Carriageway 1E	057243	36.7	46.0	x1	N/A
Carriageway 2E	057244	76.8	68.0	x2	N/A
Carriageway 3E	057245	101.2	68.0	x3	N/A
Carriageway 4E	057246	42.9	59.0	x1	N/A
Carriageway 1E Lockable	057247	42.2	48.0	x1	1.4
Carriageway 2E Lockable	057248	82.3	69.5	x2	2.8
Carriageway 3E Lockable	057249	106.7	69.5	x3	4.1
Carriageway 4E Lockable	057250	47.8	60.6	x1	1.8

### 4 Load Bearing Capacity

Frames and Covers Carriageway Types C and D are designed to meet BS EN 124 Class E 600 and the E range is designed to D 400.

### 5 Cover Connecting Pins

With both C and D designs adjacent covers are pinned together in pairs, the pins secured by steel clips. The purpose of the connecting pins is to prevent displacement of the covers under high traffic loads, each cover being restrained by the weight of the adjacent cover. The pins also ensure security for locked covers.

#### THE PINS MUST NOT BE REMOVED UNDER ANY CIRCUMSTANCES

For the 'E' range, the adjacent covers are permanently pinned together with a bolt and shear nut.

## 6 ***Conditions of Use***

Frames and Covers, Carriageway Type C, D or E are designed for use on any jointing chamber entrance either in the carriageway or in the absence of a defined kerb line where the clearance between the frame and the carriageway surface is 1 metre or less.

## 7 ***Cover Removal and Replacement***

The methods to be used when removing or replacing Carriageway Covers are dealt with in EPT/UGP/B013.

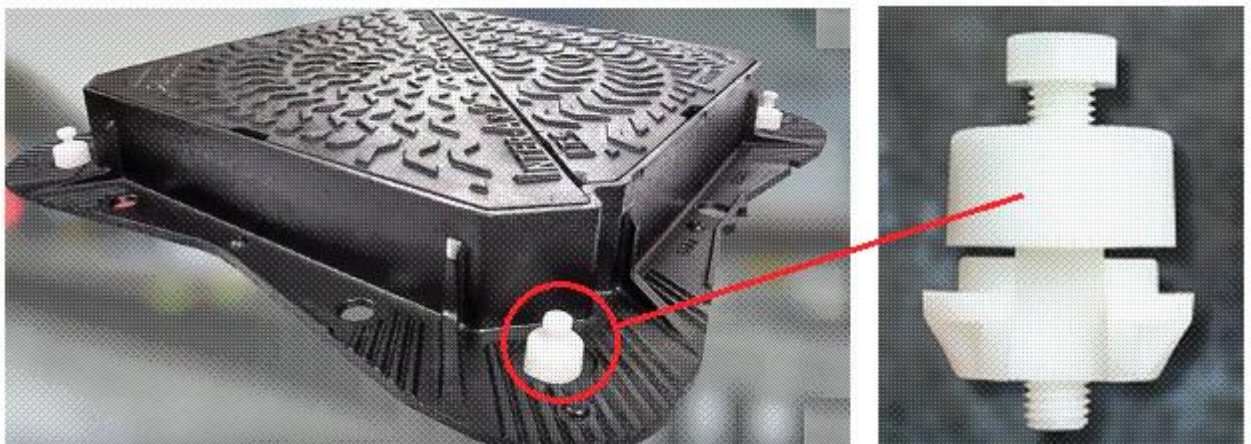
## 8 ***Installation***

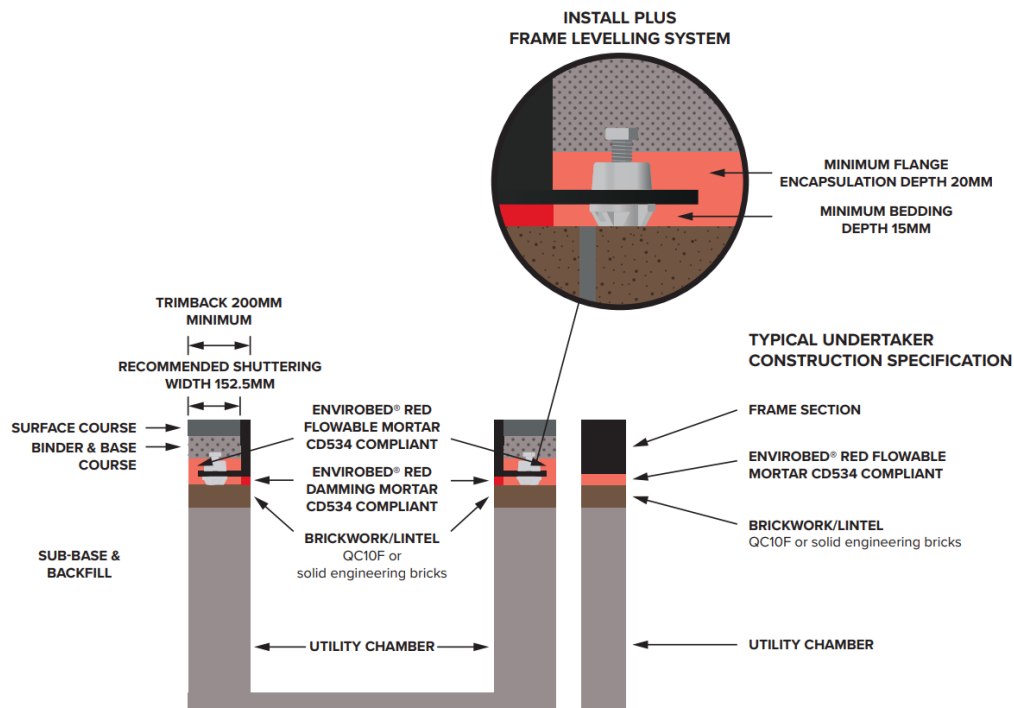
### 8.1 **General**

Frames and Covers, Carriageway Types C, D or E must be installed in accordance with Specification LN 550.

### 8.2 **SG PAM UK 'Install Plus' Levelling System**

The new carriageway InstallPlus frame & covers replace the current issue carriageway ironwork. They still come with a non-slip surfacing and meet BS EN124 E600 or D400 category i.e. 60/40 ton loading. However, they are now supplied with fittings which offer a quick levelling facility.





The InstallPlus consists of adjustable nylon bolts at around the side of the frame. These fixtures ensure a minimum gap between the frame and chamber top. They can then be adjusted to align the height of the frame flush with the carriageway surface and they provide a minimum bedding depth indicator.

It is mandatory for carriageway frames to be levelled using the new InstallPlus system and Flowable materials; Only Instarmac Envirobed-Red CD534 (formerly HA104) cementitious Flowable and Bedding mortars are approved for use with InstallPlus.

As of 26<sup>th</sup> April 2021 the colour of the Instarmac Envirobed Flowable and Bedding mortars became RED (known as “Envirobed-Red”) with the packaging updated to reflect this. This change was made to ensure that the correct products are being used as part of a carriageway frame and cover installation and that it is easily auditable. There is no change in the performance or cost of the product, only the colour is different.

**Please note:** From the 26<sup>th</sup> April 2021 only Instarmac Envirobed-Red flowable and damming mortars should be purchased and used for the installation of carriageway frame & covers. There will likely be a ~3 month transition period from this date where the old Envirobed stock will need to be used up and the new Envirobed-Red product is used. There is no issue with using a combination of Envirobed & Envirobed-Red during this transition period.

Old Envirobed Flowable Mortar



New Envirobed-Red Flowable Mortar



This technical standard will also apply to Specification LN320 - Re-Levelling Of Frames & Covers in the Footway & Carriageway by Highway Authorities.

SG PAM UK Install Plus Video is available [HERE](#)

Install Plus Civils Folders available [HERE](#)

Openreach Carriageway Frames and Covers Installation Specification.



Openreach  
Carriageway Frames



ENVIROBED-CD534-  
FLOWABLE-RED.pdf

Openreach 'Install Plus' Materials Checklist.



Openreach Install  
Plus Materials Checklist



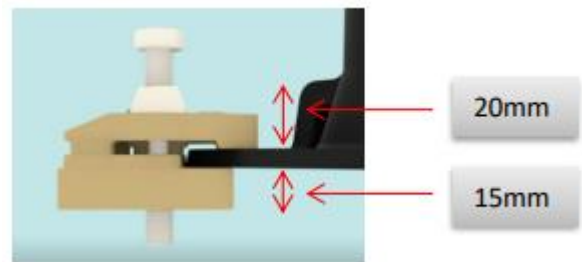
Openreach  
Carriageway Frame 8



Also, included is the Install-Plus Retro-Fit Revelling system



Openreach  
Carriageway Frame (



## Stores List

BT Code	Saint-Gobain PAM Code	BT Code to include Install Plus	Saint-Gobain PAM Code Install Plus	Item to include Install Plus	Size (mm)	Class
<b>E600 Units</b>						
015667	185942	095665	259871	Carriageway 1 - Install Plus	610 x 610 x 150	E600
015668	185943	095666	259872	Carriageway 2 - Install Plus	1220 x 685 x 150	E600
015669	185944	095667	259873	Carriageway 3 - Install Plus	1840 x 685 x 150	E600
015671	185945	095668	259874	Carriageway 1 Lockable - Install Plus	610 x 610 x 150	E600
015672	185946	095669	259875	Carriageway 2 Lockable - Install Plus	1220 x 685 x 150	E600
015673	185947	095670	259876	Carriageway 3 Lockable - Install Plus	1840 x 685 x 150	E600
<b>D400 Units</b>						
057246*	222944	095671*	259879	Carriageway 4 - Install Plus	915 x 445 x 150	D400
057246**	222713	095671**	259877	Carriageway 4 - Install Plus	915 x 445 x 150	D400
57250	224830	095672	259878	Carriageway 4 Lockable - Install Plus	915 x 445 x 150	D400
* BT DirectMagna Park Packaging Specification						
** Heavy & Dirty						

## Bedding Materials

Instarmac Product Code	Description	Unit Weight	Units per pallet
Instarmac 18B	CD534 compliant cementitious bedding mortar	18kg tub = 2x 8kg bags and 2x 1ltr polymer bottles	40
Environbed Flow	CD534 compliant cementitious flowable bedding mortar	18kg bag and 2.5 ltr polymer bottle	48

## 9 Replacement of Obsolete Frames and Covers Carriageway

Frames and Covers, Carriageway Types C, D or E may be used to replace any obsolete type. The installation of a new Frame and Cover to an obsolete size jointing chamber or manhole shaft may require some alteration to the structure; details of such alterations are included in Drawing CN 1750.

## 10 Protection of Underground Plant

Details of the methods that are available in order to protect underground plant are contained in EPT/UGP/B012.

# 11 ***References***

## **ISIS Documents**

EPT/UGP/B012      Protection of Underground Plant Against Unauthorised Entry

EPT/UGP/B013      Removal and Replacement of Carriageway Covers

## **BT Specifications**

LN550              Underground Duct Laying & Associated Works

## **BT Drawings**

Drawing CN 1750      Renewing Existing Frames & Covers

## **British Standards**

BS EN 124              Gully tops and manhole tops for vehicular and pedestrian areas

<b>END OF DOCUMENT</b>
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