

# Precast concrete pipes and ancillary concrete products —

## Part 230: Specification for road gullies and gully cover slabs

# Committees responsible for this British Standard

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- Association of Consulting Engineers
- British Cement Association
- British Precast Concrete Federation Ltd.
- Concrete Pipe Association
- Concrete Society
- County Surveyors' Society
- Department of the Environment (Property Services Agency)
- Department of Transport
- Federation of Civil Engineering Contractors
- Institution of Civil Engineers
- Institution of Highways and Transportation
- Institution of Water and Environmental Management
- Pipe Jacking Association
- Water Services Association of England and Wales

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# Contents

|                                                                          | Page               |
|--------------------------------------------------------------------------|--------------------|
| Committees responsible                                                   | Inside front cover |
| Foreword                                                                 | ii                 |
| Section 1. General                                                       |                    |
| 1.1 Scope                                                                | 1                  |
| 1.2 References                                                           | 1                  |
| 1.3 Definitions                                                          | 1                  |
| Section 2. Materials                                                     |                    |
| 2.1 Cement                                                               | 2                  |
| 2.2 Aggregates                                                           | 2                  |
| 2.3 Other concrete materials                                             | 2                  |
| 2.4 Concrete mix, casting and finish                                     | 2                  |
| Section 3. Dimensions and tolerances                                     |                    |
| 3.1 Nominal size                                                         | 4                  |
| 3.2 Internal manufacturing diameter and actual diameter                  | 4                  |
| 3.3 External manufacturing diameter and top flange                       | 4                  |
| 3.4 Rodding eye                                                          | 4                  |
| 3.5 Water seal                                                           | 4                  |
| 3.6 Gully cover slab thickness                                           | 4                  |
| 3.7 Gully outlet                                                         | 4                  |
| Section 4. Tests                                                         |                    |
| 4.1 General                                                              | 9                  |
| 4.2 Test requirements                                                    | 9                  |
| Section 5. Inspection procedures and marking                             |                    |
| 5.1 Inspection procedures                                                | 10                 |
| 5.2 Marking                                                              | 10                 |
| Annex A (informative) Information to be supplied in an enquiry and order | 11                 |
| Annex B (informative) Recommended facilities for purchasers              | 11                 |
| Annex C (normative) Method of test for water absorption by concrete      | 11                 |
| Annex D (normative) Method of test for watertightness of gully           | 12                 |
| Figure 1 — Typical trapped gully with spigot outlet                      | 6                  |
| Figure 2 — Typical untrapped gully with spigot outlet                    | 7                  |
| Figure 3 — Typical trapped gully with socket outlet                      | 8                  |
| Table 1 — Limits of chloride content of concrete                         | 3                  |
| Table 2 — Nominal sizes and tolerances for gullies and gully outlets     | 5                  |
| List of references                                                       | Inside back cover  |

## Foreword

This Part of BS 5911 has been prepared under the direction of Technical Committee B/505, Waste water engineering. It specifies requirements for road gullies and road gully cover slabs previously specified in BS 5911-2:1982 and includes the following new information:

- a) definitions of trapped and untrapped gullies, and gully cover slabs;
- b) definitions of size and dimensions;
- c) specification for cements including those with ground granulated blast-furnace slag (g.g.b.s.) or pulverized-fuel ash (p.f.a.).

It is published together with an amendment to BS 5911-2:1982, which now deals only with requirements for inspection chambers.

For a purchaser's enquiry or order to be fully understood, it is essential that the manufacturer be given the information set out in Annex A.

Annex B recommends facilities that are of assistance to purchasers.

As part of the new approach to harmonization of standards in Europe, work is being undertaken in CEN/TC 165 "Waste water engineering" on a standard covering inspection chambers but its programme of work does not include concrete road gullies and road gully cover slabs.

*Product certification.* Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing product surveillance which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes are forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of Association members.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

# Section 1. General

## 1.1 Scope

This Part of BS 5911 specifies requirements for precast concrete road gullies manufactured from monolithic concrete or prefabricated sections of concrete. A gully outlet may incorporate a permanent former, with or without a jointing profile for the connection of pipelines. Requirements are also specified for gully cover slabs.

## 1.2 References

### 1.2.1 Normative references

This Part of BS 5911 incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed on the inside back cover. For a dated reference, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this Part of BS 5911 only when incorporated in the reference by amendment or revision. For an undated reference, the latest edition of the cited publication applies; together with any amendments.

### 1.2.2 Informative references

This Part of BS 5911 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

## 1.3 Definitions

For the purposes of this Part of BS 5911, the following definitions apply.

### 1.3.1

#### unit

a gully (whether trapped or untrapped) or a gully cover slab

### 1.3.2

#### untrapped gully

a hollow cylinder, with base, manufactured from concrete with an outlet to facilitate the connection of pipelines, which acts as a rodding eye

**NOTE** It is permissible for the outlet to incorporate a permanent former, with or without a jointing profile for the connection of pipelines.

### 1.3.3

#### trapped gully

a gully as described in 1.3.2 but with the outlet so designed as to form a water seal, and provided with a rodding eye

### 1.3.4

#### nominal diameter

a numerical designation of the diameter of a gully which is a convenient round number approximately equal to the internal diameter in millimetres

### 1.3.5

#### nominal depth

a numerical designation of the depth of a gully, or gully outlet, which is a convenient round number approximately equal to the internal depth in millimetres

### 1.3.6

#### manufacturing dimension

a dimension which a manufacturer seeks to achieve

### 1.3.7

#### actual dimension

a dimension as measured

### 1.3.8

#### gully cover slab

a frame or surround manufactured from concrete, with or without a drainage slot, to accommodate a road gully grating and frame

### 1.3.9

#### batch

the number of units of a particular specification produced under uniform conditions during a given production period by one particular process

## Section 2. Materials

### 2.1 Cement

The cement shall either:

- a) be factory-produced by the cement manufacturer and conform to one of the following standards as appropriate:

| Type of cement                        | Standard to be conformed to |
|---------------------------------------|-----------------------------|
| ordinary and rapid-hardening Portland | BS 12                       |
| Portland blast-furnace                | BS 146                      |
| sulfate-resisting Portland            | BS 4027                     |
| Portland pulverized-fuel ash (p.f.a.) | BS 6588                     |

or

- b) consist of one of the following combinations of cement conforming to BS 12 and g.g.b.s. or p.f.a. in accordance with the following, to be included as part of the concrete mix by simultaneously combining them with the other concrete materials at the concrete mixer:

| Cementitious component other than cement | Standard to be conformed to | % (m/m) of total cementitious content |
|------------------------------------------|-----------------------------|---------------------------------------|
| g.g.b.s.                                 | BS 6699                     | 0 % to 65 %                           |
| p.f.a.                                   | BS 3892-1                   | 15 % to 35 %                          |

Where special combinations of cement conforming to BS 12 and g.g.b.s. or p.f.a. are to be used for additional resistance to sulfate attack (see note), the percentage by mass of the total cementitious content shall be in the ranges 70 % to 90 % or 25 % to 40 % respectively.

In all cases where combinations of cement conforming to BS 12 and g.g.b.s. or p.f.a. are used, the relevant proportion of g.g.b.s. or p.f.a. shall be fully documented in the production records.

NOTE The requirements specified in 2.4.1 for minimum cement content and maximum water/cement ratio ensure that any of the permitted cements or standard combinations of cement conforming to BS 12 and g.g.b.s. or p.f.a. provide resistance to sulfate attack equivalent to classes 1 and 2 of Table 6.1 of BS 8110-1:1985. Where resistance to either class 3 or class 4 conditions as specified in Table 6.1 of BS 8110-1:1985 exists, see 2.4.1.

### 2.2 Aggregates

#### 2.2.1 General

Aggregates shall consist of materials conforming to BS 882.

NOTE The manufacturer may modify the gradings to suit the manufacturing process (see clause 0 of BS 882:1992).

#### 2.2.2 Mechanical properties

The limiting values on the mechanical properties of coarse aggregates shall be either:

- a) a minimum of 10 % fines value of 100 kN, when tested in accordance with BS 812-111; or
- b) a maximum aggregate impact value of 30 %, when tested in accordance with BS 812-112.

When tested in accordance with BS 812-105.1, flakiness index shall be not more than 35.

#### 2.2.3 Nominal maximum size

The nominal maximum size of aggregate shall not exceed 20 mm.

### 2.3 Other concrete materials

#### 2.3.1 Water

Water shall be clean and free from harmful matter in such quantities as affect the properties of the concrete in the plastic or hardened state.

NOTE 1 See appendix A of BS 3148:1980.

NOTE 2 As a general rule, potable water, whether treated for distribution through the public supply or untreated, is suitable for making concrete.

#### 2.3.2 Admixtures

2.3.2.1 Admixtures shall conform to BS 5075.

NOTE Admixtures should not impair the durability of the concrete, nor combine with the ingredients to form harmful compounds nor increase the risk of corrosion of reinforcement.

2.3.2.2 The chloride ion content of admixtures shall not exceed 2 % (m/m) of the admixture nor 0.03 % (m/m) of the cement, when used in:

- a) any concrete containing reinforcement or other embedded metal; and
- b) any concrete made with cement conforming to BS 4027.

### 2.4 Concrete mix, casting and finish

#### 2.4.1 Cement content

2.4.1.1 The fully compacted concrete shall contain not less than 330 kg/m<sup>3</sup> of cement (inclusive of any g.g.b.s. or p.f.a.) and shall have a water/cement ratio of not greater than 0.45.

2.4.1.2 Where the requirement is for class 3 exposure conditions, as specified in Table 6.1 of BS 8110-1:1985, a special combination of cement conforming to BS 12 and g.g.b.s. or p.f.a. shall be used (see 2.1 b), and the minimum cementitious content shall be increased from 330 kg/m<sup>3</sup> to 380 kg/m<sup>3</sup>, or, alternatively, 330 kg/m<sup>3</sup> of cement conforming to BS 4027 shall be used.