

**GENERAL SPECIFICATION
FOR CIVIL ENGINEERING WORKS**

2006 Edition

AMENDMENT NO. 4/2010 (April)

VOLUME 1

SECTION 1

GENERAL

APPENDIX 1.1 STANDARDS

(a) Delete references

Delete the following standards from Section 1.1.1:-

BS 747: 1977(1986)	Specification for roofing felts
BS 2494: 1990	Specification for elastomeric seals for joints in pipework and pipelines
BS 3100: 1976(1984)	Specification for steel castings for general engineering purposes
BS 3981: 1976(1985)	Specification. Iron oxide pigments for paints
BS 5911: Part 100: 1988	Specification for unreinforced and reinforced pipes and fittings with flexible joints
BS 5911: Part 200: 1989	Specification for unreinforced and reinforced manholes and soakaways of circular cross section

(b) New references

Add the following standard to Section 1.1.1:-

BS 5911-1: 2002	Concrete pipes and ancillary concrete products. Specification for unreinforced and reinforced concrete pipes (including jacking pipes) and fittings with flexible joints
BS 5911-3: 2002	Concrete pipes and ancillary concrete products. Specification for unreinforced and reinforced concrete manholes and soakaways

- (f) Clause 5.18 **Replace the sub-clause (1) with following:-**
- (1) Elastomeric joint rings shall be Type WC complying with BS EN 681-1. The rings shall be compatible with the type of joint and, unless otherwise approved by the Engineer, shall be obtained from the same manufacturer as the joint.
- (g) Clause 5.25 **Replace the clause with following:-**
- Precast concrete manhole units shall comply with BS 5911-3. Cover slabs and reducing slabs shall be reinforced as required to comply with the load test requirements stated in BS 5911-3.
- (h) Clause 5.28 **Replace the sub-clause (1) with following:-**
- (1) Manhole covers, gully gratings and kerb overflow weirs shall be Grade EN-GJL-150 cast iron complying with BS EN 1561. Bolts and nuts shall comply with BS 4190.
- (i) Clause 5.29 **Replace the item (a) of sub-clause (1) with following:-**
- (a) Frames and gates shall be cast iron complying with BS EN 1561, Grade EN-GJL-220.
- (j) Clause 5.30 **Replace the item (a) of sub-clause (1) with following:-**
- (a) Bodies and wedges shall be cast iron complying with BS EN 1561, Grade EN-GJL-220 and shall have renewable gunmetal seat rings.
- (k) Clause 5.31 **Replace the item (a) of sub-clause (1) with following:-**
- (a) Frames and flaps shall be cast iron complying with BS EN 1561, Grade EN-GJL-220.
- (l) Clause 5.32 **Replace the item (a) of sub-clause (1) with following:-**
- (a) Bodies and valve sections shall be cast iron complying with BS EN 1561, Grade EN-GJL-220.
- (m) Clause 5.33 **Replace the sub-clause (3) with following:-**
- (3) The bodies and covers of small and large orifice valves shall be cast iron complying with BS EN 1561, Grade EN-GJL-220. The trim and float shall be stainless steel complying with BS EN 10084, BS EN 10085, BS EN 10087, BS EN 10095, BS EN 10250-4 and PD 970, Grade 1.4401.

(n) Clause 5.34 **Replace the sub-clause (3) with following:-**

(3) Handwheels, tee keys, headstocks, guide brackets for stems, supporting brackets, surface boxes and other fittings for penstocks and valves shall be cast iron complying with BS EN 1561.

(o) Clause 5.83 **Replace the 2nd paragraph of sub-clause (2) with following:-**

Concrete pipes and fittings : BS 5911-1

(p) Clause 5.91 **Replace the 2nd paragraph of sub-clause (2) with following:-**

Precast concrete units
for manholes : BS 5911-3

SECTION 8 PILING WORKS

(q) Clause 8.18 **Replace the sub-clauses (1), (3) and (6) with following:-**

(1) Cast iron pile shoes for precast concrete piles shall be manufactured from chill hardened iron as used for making grey iron castings complying with BS EN 1561, Grade EN-GJL-150. The chilled iron point of the shoe shall be free of major blow-holes and other surface defects.

(3) Cast steel pile shoes for precast concrete piles shall be manufactured from steel complying with BS EN 10293, Grade A.

(6) Cast steel pile shoes for steel bearing piles shall be manufactured from steel complying with BS EN 10293, Grade A.

VOLUME 2

SECTION 18 STEELWORK

(r) Clause 18.10 **Replace the clause with following:**

Carbon manganese steel castings shall comply with BS EN 10293.

SECTION 21 MARINE WORKS

(s) Clause 21.18 **Replace the sub-clause (1) with following:**

(1) Joint filler for slip joints in seawalls shall consist of three plies of Type 1B fine granule surfaced bitumen felt of 1.4 kg/m² nominal mass in accordance with BS EN 13707.

(t) Clause 21.19 **Replace the item (a) with following:**

- (a) Cast iron for bollards, pumphouse screens and screen guides shall be Grade EN-GJL-150 complying with BS EN 1561.

(u) Clause 21.21 **Replace the Table 21.5 with following:**

Table 21.5: Properties of rubber for fenders

Property	Value	Test method and condition Part No. of BS 903
Density	1100 kg/m ³ to 1300 kg/m ³	Part A1
Hardness (International rubber hardness degrees)	≤ 72	BS ISO 48 Method N
Tensile strength	≥ 16 N/mm ²	BS ISO 37
Elongation change	≥ 350%	BS ISO 37
After accelerated air ageing test: Hardness (increase in IRHD) Reduction in tensile strength Reduction in elongation	≤ 8° ≤ 20% ≤ 20%	BS ISO 188 Method A at 70°C x 96 hours
Oil resistance (measured by volume change percentage) Industrial gasoline Heavy oil	± 60% ± 20%	BS ISO 1817 at 23°C x 22 hours
Compression set	≤ 30%	Part A6 Method A at 70°C x 22 hours using Type 2 test pieces
Ozone resistance	no crack visible	BS ISO 1431-1 at 40°C x 100 hours
Tear resistance	≥ 60 kN/m	BS ISO 34-1 Method C at 23°C
Abrasion resistance (volume loss at 3000 revolutions)	≤ 1500 mm ³	Part A9 Method C

(v) Clause 21.23 **Replace the sub-clause (1) with following:**

(1) Priming coat for temporary tide gauges shall be lead based priming paint complying with BS 2523. Undercoat and finishing coat for temporary tide gauges shall be micaceous iron oxide paint complying with BS EN ISO 10601.

(w) Clause 21.24 **Replace the sub-clauses (1), (2) and (3) with following:**

(1) Precast concrete pipes for submarine outfalls shall comply with BS 5911-1 and shall have gasket type flexible rebated joints with clamps and bolts.

(2) The clamps and bolts shall be cast steel complying with BS EN 10293 and shall be painted with two coats of coal tar epoxy of a type approved by the Engineer to a dry film thickness of 300 µm.

(3) Gaskets for joints in precast concrete pipes shall be Type WC (drainage) rubber gaskets complying with BS EN 681-1. The rubber gaskets shall be moulded jointless in ring moulds and shall not contain any reclaimed rubber.

SECTION 22

WATER SUPPLY PIPEWORKS

(x) Clause 22.20 **Replace the clause with following:**

Elastomeric joint rings shall comply with BS EN 681-1, Type WA. Elastomeric joint rings for DI pipes and fittings shall comply with BS 4772, Clause 2.3.4. The dimensions of rings for use with flanged joints shall comply with BS 4865: Part 1. The rings shall be compatible with the type of joint and, unless otherwise approved by the Engineer, shall be obtained from the same manufacturer as the joint.

SECTION 24

BUILDING WORKS

(y) Clause 24.02 **Replace the clause with following:**

Isolating membrane for asphalt roofing shall be black sheathing felt complying with BS EN 13707, Class 4A(i) and shall weigh at least 17 kg per 810 mm wide by 25 m long roll.

**Quality Management & Standards Unit
Civil Engineering and Development Department
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