



सत्यमेव जयते

GOVERNMENT OF MAHARASHTRA

PUBLIC WORKS AND HOUSING DEPARTMENT

STANDARD SPECIFICATIONS

(Volume II)



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INTRODUCTION

It has often been experienced that there is no uniformity in the wording of items and specifications in the tender papers prepared by various officers. In several cases, particularly where architectural features are involved the local officers are not in a position to bring out the full requirements of these features in the wording of items or in the specifications.

This situation gives rise to avoidable extra items during execution. It is also noticed that cropping up of extra items is mostly due to incorrect and ambiguous wording in the items of tender papers and specifications and in some cases due to not adhering to the details in the drawings. Similar situation exists in connection with road and bridge works. Although in the case of bridge works some headway has been made by the Design Organisation, even here, the approach has been mostly from the design point of view. It is necessary to have standardised items and specifications in the case of bridges also. In road works also, there is a large amount of diversity in the expressions used in the items and the specifications.

In the past, attempts were made in this direction but somehow or the other this question was not pursued further.

Considering all the above difficulties and in view of urgency and importance of this matter, the post of Special Officer for Standard Specifications and Draft Tender Papers was created.

The work in the present form was started with the appointment of Shri A. G. Naik, Retired Superintending Engineer as Special Officer and two Assistants—Shri A. G. Borkar, Assistant Engineer and Shri K. S. Agashe, Deputy Engineer.

In view of the statutory obligation of adopting metric system the specifications have been drawn up in metric system alone on the basis of metric standards wherever they had been already evolved and adopting improvised equivalents where they were not available.

The Standard Specifications have been grouped into six main sections as below :—

- (1) Basic Materials,
- (2) General Items,
- (3) Bridge Work,
- (4) Cross Drainage Works,
- (5) Road Work,
- (6) Building Work

These specifications will guide the technical staff of Buildings and Communications and Irrigation and Power Departments in construction works and in adoption of metric system.

K. V. JOGLEKAR,
Chief Engineer.

Bombay, 1st January 1964.

INSTRUCTIONS

The Standard Specifications have been grouped under the following sections :—

- | | |
|---------------------|---------------------------|
| A. Basic Materials, | CD. Cross Drainage Works, |
| B. General Items, | Rd. Road Work, |
| BR. Bridge Work, | Bd. Building Works. |

The first two sections cover specifications for Basic Materials and General Items pertaining to all normal construction work. The other sections include specification for the various items of work which are required under those respective sections. The specifications under each section are distinguished by the prefix mentioned against each. The list of items under each section is given at the beginning of that section. Indian standards have been adopted and referred to wherever necessary. A list of such Standards referred to, is given at the beginning of each section. These Standards should be available in the Divisions.

The wording of the items has been standardised to form the basis for preparing the list of items for the Standard Schedule of Rates. In order to avoid repetition and to keep down the volume of write up, different alternatives like type of stone, type of mortar (cement or lime) proportion of mix of each type of mortar etc. which have to be actually used in a particular item of work have been included in the same item either as alternatives for deleting the unwanted alternatives or as blanks to be filled in while preparing the list. For purposes of Schedule of Rates, each item mentioned in the Specifications will have to be split up into a number of separate items to provide for each alternative or combination of alternatives and for each figure that will have to be filled up in the blanks where left. Whatever the alternative or combination of alternatives that may be retained in the item of the schedule and whatever figures may be included in the blanks for that item, the specifications drawn up for the item will be applicable for all the split up items.

For every one of such split up items, the number of the specification to be quoted in the tender and referred to will be the single number of the corresponding combined item which provides for all the alternatives and blanks in the Standard Specifications. The reference should include the prefix of the particular section, letter of the particular group and the serial number of the item. Thus in Bd. G. 5, Bd. will refer to the section of Building Work, G will refer to Brick work group in that section and 5 will refer to the item No. 5 in the list of the items in that group.

The specifications for each item covers :—

- (i) general scope of the item,
- (ii) materials required,
- (iii) processing of the materials,
- (iv) construction operations,
- (v) finishing,
- (vi) all the elements which are included in the item, and
- (vii) mode of measurement, deductions to be made etc. and payment.

If specifications are to be added for any new items they may be drafted likewise.

The analysis of scheduled rate for any item will be framed to cover all the elements included in that item, as specified in the Standard Specifications.

These specifications shall be thoroughly studied before deciding whether any addition to the Standard Specifications is required or some portion is required to be modified due to new materials different processing, architectural ornamentation etc. Such additions or modifications shall be included in the special provisions to be mentioned in the specifications for the particular items, in addition to the reference made to the Standard Specifications.

Where necessary, the specifications have been supplemented by sketches for clarity. The Engineer shall also supply detailed drawings where required. When, however, any discrepancy is found between the drawing and the estimates or the specifications, the Engineer's decision as to which shall be followed shall be final. "Engineer" shall mean the Executive Engineer in charge of the work and shall include the superior Engineer Officers of the Engineering Department of the Government of Maharashtra, i. e., the Superintending Engineer, Chief Engineer, etc.

Metric system has been adopted through out these specifications for weights, measurer etc., but their equivalents in foot-pound-second units have also been given in brackets in most cases to give a proper idea of metric weights and measures. Rationalised metric standards have been adopted wherever they have been evolved or in use.

SECTION Bd.
BUILDING WORK

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List of Indian Standards referred to

1. I.S. 63—1964. Whiting for paints.
2. I.S. 73—1961. with Amendment No. 1. Paving bitumen.
3. I.S. 102—1962. with Amendment No. 1. Ready Mixed Paint, Brushing, Red lead, Non-setting, Priming.
4. I.S. 2339—1963. with Amendment No. 1. Aluminium Paint, Brushing for general purposes, in dual container.
5. I.S. 195—1963. Fireclay mortar for laying Fireclay Refractory Bricks.
6. I.S. 197—1969. Methods of Test for Varnishes and Lacquers.
7. I.S. 204—1974. Tower Bolts.
8. I.S. 205—1966. with Amendment Nos. 1 and 2. But Hinges.
9. I.S. 206—1973. Tee and strap hinges.
10. I.S. 207—1964. Gate and Shutter Hooks and Eyes.
11. I.S. 208—1972. Door Handles.
12. I.S. 2107, 2108—1962. Malleable Iron Castings.
13. I.S. 277—1969. with Amendment No. 1. Galvanised steel sheets (plain and corrugated).
14. I.S. 278—1969. with Amendment Nos. 1 and 2. Galvanised steel barbed wire for Fencing.
15. I.S. 281—1973. Sliding Door Bolts for use with Padlocks.
16. I.S. 337—1952. with Amendment Nos. 1 and 2. Varnish, Finishing, Interior.
17. I.S. 338—1952. with Amendment Nos. 1 and 2. Varnish, Undercoating, Exterior, Natural Resin.
18. I.S. 339—1952. with Amendment No. 1. Varnish, Undercoating, Exterior, Synthetic.
19. I.S. 342—1952. with Amendment No. 1. Varnish Acid Resisting--
(a) Clear and (b) Tinted
20. I.S. 346—1952. with Amendment Nos. 1 and 2. Varnish Spirit Clear Hard.
21. I.S. 347—1952. with Amendment No. 1. Varnish, Shellac for General Purposes.
22. I.S. 348—1968. French Polish.
23. I.S. 362—1962. with Amendment No. 1. Parliament Hinges.
24. I.S. 363—1970. Hasps and Staples.
25. I.S. 404—1962. Lead Pipes for other than Chemical Purposes.
26. I.S. 407—1966. Brass Tubes for General Purposes.
27. I.S. 412—1962. with Amendment Nos. 1, 2 and 3. Expanded Metal (Steel) for General Purposes.
28. I.S. 419—1967. with Amendment No. 1. Putty for use on wooden Frames.
29. I.S. 420—1953. Putty for use on Metal Frames.
30. I.S. 427—1965. Distemper, dry.
31. I.S. 428—1969. Distemper, Oil Emulsion.
32. I.S. 452—1973. Door Springs, Rat Tail Type.
33. I.S. 453—1973. Double Acting Spring Hinges.
34. I.S. 459—1970. Unreinforced Corrugated Asbestos Cement Sheets.
35. I.S. 2932—1964. with Amendment Nos. 1 and 2. Enamel, Brushing, Exterior, Type 1 (Synthetic)--(1) Undercoating. (2) Finishing.
36. I.S. 524—1968. Varnish, Finishing, Exterior, Type 1 (Synthetic).
37. I.S. 525—1968. Varnish, Finishing, Exterior and General Purposes, Type 2.
38. I.S. 651—1971. Salt-Glazed Stoneware Pipes and Fittings.
39. I.S. 654—1972. with Amendment No. 1. Clay Roofing Tiles, Mangalore Pattern.
40. I.S. 702—1961. Industrial Bitumen.
41. I.S. 771—1963. White Glazed Earthenware Sanitary Appliances.
42. I.S. 774—1971. with Amendment No. 1. Flushing Cistern for Water Closets and Urinals (Valveless Syphonic Type)
43. I.S. 775—1970. Brackets for Supports for Lavatory Basins and Sinks.
44. I.S. 777—1970. Glazed Earthenware Tiles.
45. I.S. 779—1968. with Amendment Nos. 1, 2 and 3. Water Meters (Domestic Type).
46. I.S. 781—1967. with Amendment Nos. 1 and 2. Sand-cast Brass Screw-Down Bib-Taps and Stop-Taps for Water services.
47. I.S. 782—1966. Caulking Lead.
48. I.S. 783—1959. Code of Practice for Laying of concrete pipes.
49. I.S. 800—1962. with Amendment Nos. 1 and 2. Code of Practice for Use of Structural Steel in General Building Construction.
50. I.S. 1003—1966. Part I with Amendment Nos. 1, 2 and 3. Part II with Amendment Nos. 1 and 2. Timber Panelled and Glazed Doors and Windows.

51. I.S. 1038-1968. Steel Doors, Windows and Ventilators.
52. I.S. 1077-1970. Common Burnt Clay Building Bricks.
53. I.S. 1081-1960. Code of Practice for Fixing and Glazing of Steel Doors, Windows and Ventilators.
54. I.S. 1196-1968. Code of Practice for Laying Mastic Asphalt Flooring.
55. I.S. 1203-1958. with Amendment No. 1. Methods for Testing Tar and Bitumen, Determination of Penetration.
56. I.S. 1230-1968. with Amendment No. 1. Cast Iron Rain-water Pipes and Fittings.
57. I.S. 1237-1959. with Amendment Nos. 1 to 3. Cement Concrete Flooring tiles.
58. I.S. 1239-Part I Mild Steel Tubes and Tabulars.
--1973, Part II 1969.
59. I.S. 1257-1958. Black Japan, Type B. Exterior.
60. I.S. 1322-1970. Bitumen Felts for Water-proofing and Damp-proofing.
61. I.S. 1328-1970. Veneered Decorative plywood.
62. I.S. 1363-1967. with Amendment No. 1. Black Hexagonal Bolts with Nuts and Black Hexagonal Screws.
63. I.S. 1443-1972, Code of Practice for Laying and Finishing of Cement Concrete Flooring Tiles.
64. I.S. 1464-1973. Ridge and Ceiling Tiles.
65. I.S. 1477- (Part I Code of Practice for Finishing of Iron and Steel in Buildings Painting and Allied Finishes : Part I Operations and workmanship, Part II and II) 1971
Painting.
66. I.S. 1526-1960. with Amendment No. 1. Sizes and shapes for Firebricks.
67. I.S. 1536-1967. with Amendment No. 1. Centrifugally Cast (Spun) Iron Pressure Pipes for Water, Gas and Sewage.
68. I.S. 1537-1960. with Amendment No. 1. Vertically Cast Iron Pressure Pipes for Water Gas and Sewage.
69. I.S. 1538-1969. with Amendment No. 1. Cast Iron Fittings for Pressure Pipes for Water, Gas and Sewage.
70. I.S. 1542-1960. Sand for Plaster.
71. I.S. 1592-1970. Asbestos Cement Pressure Pipes.
72. I.S. 1609-1966. Code of Practice for Laying Damp-proof coursing using Bitumen Felts.
73. I.S. 1626-1960. Asbestos Cement Building Pipes, Gutters and Fittings (Spigot and Socket Type).
74. I.S. 1630-1960. with Amendment No. 1. Mason's Tools for Plaster work and Pointing work.
75. I.S. 1634-1973. Code of Practice for Design and Construction of wood stairs.
76. I.S. 1661-1972. Code of Practice for Cement and Cement-Lime Plaster Finishes on Walls and Ceilings.
77. I.S. 1700-1973. Drinking Fountains.
78. I.S. 1711-1970. Self-closing Taps.
79. I.S. 1726-1974. Cast Iron Manhole Covers and Frames intended for use in Drainage work.
80. I.S. 1728-1960. Sheet Metal Rain-water Pipes up to 100 mm. Nominal size Gutters Fittings and Accessories.
81. I.S. 1742-1972. Code of Practice for Building Drainage.
82. I.S. 1761-1960. Transparent Sheet Glass for Glazing and Framing purposes.
83. I.S. 1795-1974. Pillar Taps.
84. I.S. 1834-1961. Hot Applied Sealing Compounds for Joints in concrete.
85. I.S. 1838-1961. Preformed Fillers for Expansion Joint in concrete non-extruding and Resilient Type (Bitumen Impregnated Fibre)
86. I.S. 1946-1961. Code of Practice for Use of Fixing Devices in Walls, Ceilings and Floors of Solid Construction.
87. I.S. 2064-1973. Code of Practice for Selection. Installation and Maintenance of Sanitary Appliances.
88. I.S. 2104-1962. Watermeter boxes.
89. I.S. 2114-1962. with Amendment No. 1. Code of Practice for Laying *in situ*. Terrazo floor finish.
90. I.S. 2118-1962. Code of Practice for construction of Jack-Arch Type of Built up Floor and Roof.
91. I.S. 2185-1967. with Amendment No. 1. Load Bearing Hollow Concrete Blocks.
92. I.S. 2191-Parts I with Amendment Nos. 1 and 2. Wooden Flush Door Shutters (Cellular and Hollow Core Type).
-1973 and II-1966
93. I.S. 2202-Parts I with Amendment Nos. 1 and 2. Wooden Flush Door Shutters (Solid Core Type).
-1973 and II-1966

Bd. A. EXCAVATION

List of items of excavation

Serial No.	Item	Page
Bd.A.1.	Excavation for foundation in earth, soils of all types, sand, gravel and soft murum, including removing the excavated material up to a distance of 50 metres beyond the building area and all lift, stacking and spreading as directed dewatering, shoring and strutting, preparing the bed for the foundation and necessary back filling complete.	259
Bd.A.2.	Excavation for foundation in hard murum including removing the excavated material up to a distance of 50 metres beyond the building area and all lift, stacking and spreading as directed, dewatering, shoring and strutting, preparing the bed for the foundation and necessary back filling complete.	259
Bd.A.3.	Excavation for foundation in hard murum and boulders including removing the excavated materials up to a distance of 50 metres beyond the building area and all lift, stacking and spreading as directed dewatering, shoring and strutting, preparing the bed for the foundation and necessary back filling complete.	259
Bd.A.4.	Excavation for foundation in soft rock and old cement and lime masonry foundations including removing the excavated materials up to a distance of 50 metres beyond the building area and all lift, stacking as directed, dewatering, shoring and strutting, preparing the bed for the foundation and necessary back filling complete.	259
Bd.A.5.	Excavation for foundation in hard rock by blasting including trimming and levelling the bed by chiselling where necessary and removing the excavated material and stacking it in measurable heaps within a distance of 50 metres from the building area and all lift, dewatering and back filling complete.	259
Bd.A.6.	Excavation for foundation in hard rock by chiselling, wedging, line drilling, etc., including trimming and levelling the bed, removing the excavated material up to a distance of 50 metres beyond the building area, all lift, stacking as directed dewatering and back filling complete.	260
Bd.A.7.	Excavation for foundation in laterite rock soft or hard, including trimming and levelling the bed for the foundation, removing the excavated material up to a distance of 50 metres beyond the building area, all lift, stacking as directed dewatering and back filling complete.	260
Bd.A.8.	Removing the excavated materials of all categories including loading, conveying, unloading, spreading or stacking beyond the initial free lead of 50 m.— (i) for every 50 m. up to 1 km. (ii) for every 100 m. beyond 1 km.	260
Bd.A.9.	Dewatering the excavated trenches and pools of water in the building area by using pumps and other devices including disposing of the water to safe distance as directed.	261

Serial No.	Item	Page
Bd.A.10.	Filling in plinth and floors with approved excavated materials in 15 cm. to 20 cm. layers including watering and compaction complete.	262
Bd.A.11.	Filling in plinth and floors with contractor's soil, sand or murum in 15 cm. to 20 cm. layers including watering and compaction complete.	263
Bd.A.12.	Providing dry trap/granite/quartzite/gneiss rubble stone solingcm. thick including hand packing and compacting complete.	264
Bd.A.13.	Providing and filling in the foundation with sand of approved quality including compaction.	264