TECHNICAL INSTRUCTION NO. 1 OF 1980

GUIDE LINES FOR CHOICE OF SPECIFICATIONS FOR DOORS AND WINDOWS

1. In view of rising cost and pressure on timber wealth of the country and taking into account the progress made by the wood processing industry, specifications for joinery have been constantly under review of this HQ and following TIs and policy letters have so far been issued on the subject:–

(a) TI No. 5 of 1968- Flush Doors restriction in use of Flush doors.

(b) TI No. 27 of 1969-Doors and windows for domestic accommodation-restrictions imposed vide TI No. 5 of 1968 removed and caution given that flush doors must conform to latest IS specifications.

(c) TI No. 23 of 1972- Panelled doors-Highlights advantages of factory made panelled doors as compared to flush doors.

(d) E-in-C’s Branch letter No. 97795/E2 Plg of 13 Mar 72 imposing restrictions in use of flush doors in certain situations which was subsequently cancelled vide E-in-C’s Branch letter No. 97795/E2 Plg of 24 July 1972 after issue of TI No. 23 of 1972.

2. It may be appreciated that the above TIs have essentially been issued as a guide for the information of executives at all levels so that advantages & inadequacies of specifications adopted in the past are known and most suited specifications are chosen to suit a particular location at a given time. It would be a mistake to adopt any specification without keeping in view the latest market and local conditions. For instance, while in certain areas of Madhya Pradesh teak wood joinery and in Srinagar valley Deodar joinery may be comparable in cost to factory made panelled doors with class ‘c’ and ‘d’ species of timber, in other areas where cost of usually accepted species of timber of class ‘a’ and ‘b’ (Teak and Deodar) are very high, resort to class ‘c’ and ‘d’ species of timber as per IS 1003 of 1977 for joinery may work out to be economical after kiln seasoning and suitable preservative treatment which is essential for these species. Similarly, in certain locations factory made doors, where seasoning, preservative treatment and finish of final product can be reasonably ensured, can be provided at site at a cheaper cost. Use of flush doors on locations not subjected to extreme conditions should be considered where economical. In short, there can be no single mandatory specification for all times for joinery to be used in MES works spread all over India. The selection of specifications, therefore, must depend on:

(a) Location
(b) Nature and type of work
(c) Availability of local materials
(d) Current market trends/cost

3. Keeping the above in view following guide lines are issued:–

Door and Window Frames

4. Conventional door & window frames so far have been of timber and the same continue to be used in most of the works. However, frames of steel (angle iron:pressed steel sheet) have also become quite popular now that as the cost of good timber has gone very high. In fact, the cost of angle iron frames in Delhi today is approximately 50% lower than teak wood frames and 25% cheaper than second class hard wood frames. Pressed steel frames are, however, still marginally costlier
than teak wood frames but have longer life and uniform workmanship. In certain areas of Rajasthan, stone frames are also in vogue. CBRI Roorkee has published a technical digest (NO 19) on RCC frames which can be successfully adopted in medium type of constructions. Specifications of such frames are given in IS:6523 of 1972. In view of the foregoing, it is the responsibility of competent engineer authority to evaluate all relevant aspects and adopt the best suited specifications for a particular job. Details of specifications for various types of frames are available from the following sources :-

(a) **Timber frames:** The aspects of timber permissible to be used for frames is given in Table 1 of IS 4021 of 1976 'Timber door, window and ventilator frames'. As a general rule, hard woods are preferred for frames for permanent construction. Soft woods other than Deodar are only to be used in temporary structures. Appreciable economy is possible by using standard sizes of opening which are related to sizes of timber usually marketed.

(b) **Pressed steel frames:** These frames are manufactured from plain steel of 1.25 mm thickness. Detailed specifications are given in IS 4351 of 1976 'Steel door frames'.

(c) **Angle iron/Tee iron frames:** No IS exists but specification can be drawn after making enquiries. Suitable sizes are as under :-

- Angles 40x25x4 or 40x25x5, T-Iron, 30x30x3
- Angles 50x30x4 or 50x30x5, T-Iron 40x40x6

(Specifically rolled sections in accordance with IS 1038-1975 are also used).

(d) **RCC frames:** Concrete used shall be of grade not weaker than M20. Maximum size of coarse aggregate permissible is 10 mm. Details are given in IS 6523 of 1972.

(e) **Stone frames:** These are used in certain specific regions of Rajasthan where stone is suitable for carving out frames. There are no standards for the same and specifications should be drawn after studying the local practice.

(f) **Oxychloride frames:** The shape and sections of these frames are similar to those of wooden frames. These are manufactured and available in Gujarat. Our TI No 13 of 1973 gives details but potential of this does not seem to have been explored in MES.

**Door/Window Shutters**

5. Door shutters have all along been manufactured entirely out of timber or in combination with panels of plywood, block boards or veneered particle boards all of which are timber products. Of late, a few manufacturers have come out with doors made out of plastic based material but the cost has been so far prohibitive for use in normal type of Govt construction. With the rise in cost of timber some of the old practices like ledged braced and batten doors (which though easy to manufacture require more timber) or solid timber panelled doors are being gradually replaced with doors shutters having panels made out of plywood, block boards, particle boards, hard boards or asbestos boards. Flush Doors are generally cheaper than solid timber doors of corresponding sizes. With a view to reduce pressure on class 'a' and 'b' species of timber, secondary species of timber are now permitted for use in stiles and rails but these species must be kiln seasoned and proper preservative treatment given before being made use of in joinery.
Steel Windows

6. Steel windows conforming to IS and made out of standard sections have found wide use in construction. These have longer life and are termite proof. The initial cost of these has been generally higher than the wooden windows of corresponding sizes, but of late at Delhi and a few other places their cost is found to be lower on account of rising cost of superior species of timber. This aspect should be carefully studied and steel windows may be specified in preference to timber windows whenever warranted on the grounds of economy.

7. Keeping the above factors in view, the specifications should be finalised. For the guidance of all concerned the specifications for door and window shutters and its related components and processes are available in following IS Codes and specifications:

(a) Specifications for timber paneled & glazed shutters IS-1003 (Part I)-1977 'Door Shutters'; IS-1003 (Part II) 1966 'Window Ventilator Shutters'.

(b) Seasoning of timber - IS 1141-1973.

(c) Preservation of timber - IS 401-1967.

(d) Plywood for paneling of door shutter-BWR Grade conforming to IS 303-1975.

(e) Block Boards: Grade I exterior grade conforming to IS 1659-1969.

(f) Synthetic Resin Adhesives: BWR Type synthetic resin adhesive (IS 848-1974) conforming to exterior grade.

(g) Wooden flush door shutters (solid core type):
Part II Particle board face panels- IS 2202 (Part II) of 1966.

(h) Wooden flush doors: Type tests, methods of tests for IS 4020 of 1967.

(i) Steel doors, windows and ventilators- IS 1038 of 1975.

(j) Steel windows for industrial bldgs- IS 1361 of 1978.

(k) Fixing and glazing of metal doors, windows and ventilators IS 1081 of 1960.

8. While specifying any of the manufactured component it must be ensured that it is not a monopoly of one particular manufacturer. If a material is specified which is manufactured only by one firm there is every likelihood of 'monopoly situation' arising and the cost going up. Such a situation should be avoided. Our aim should be to ensure quality consistent with economy which is possible by eliminating monopolistic tendencies.