

## SECTION - 4600

### CARPENTRY AND JOINERY

#### 1. SCOPE

The work covered under this section of Specifications consists of providing all material, labour, plant, equipment, appliances and performing all operations in place of existing doors. Repairing of existing doors whereas required and provision of hard railing (including rectification of door opening with cement sand mortar) in any floor and at any height connected with the fabrication and erection of all woodwork, mill work, construction assembly, surface finish treatment and building in of all cabinet type items, supports etc. of wood or metal and incidentals, associated woodwork appurtenances, procuring and applying preservatives, installation of "Finish Hard Ware" in connection with finish woodwork as per details shown on the Drawings or as directed by the Engineer.

#### 2. MATERIALS

##### 2.1 Timber

##### 2.1.1 Hard Wood :

Hard wood shall comprise of Oak, beech, Walnut Mahogany, Teak, Golden Teak, Iroko and Sheesham.

##### 2.1.2 Soft Wood :

All soft wood shall consist of pines, spruce, hemlock and douglas fir or cedrous deodar (referred in the document as deodar), wood locally known as 'Partal' to be used in shutter core where specified.

##### 2.1.3 General Characteristics :

All the timber shall be in accordance with the requirements of BSI No: 1186, 'Quality of Timber and Workmanship in Joinery'.

The whole of the timber shall be from the heart of sound and fully grown tree, uniform in substance, straight in fibre, first class quality properly seasoned, free from large or loose dead-knots, open shakes and excessive sapwood. The scantlings of all timbers shall be bright, sound and square edged. The moisture content of timber shall not be more than 10 (ten) percent in case of soft wood and 7 (seven) percent in case of hard wood.

##### 2.1.4 Preservation of Wood:

Prior to installation of all finish wood works in their respective positions, preservatives shall be applied to safeguard the wood work against fungus, termite and bores.

The preservatives shall be of the best available quality as approved by the Engineer. The method of application shall be strictly in accordance with the manufacturer's instructions. The treatment and application of all the preservatives shall comply with the requirements of BS-CP 98:1964.

#### 2.1.5 Adhesive :

The adhesives shall conform to the requirements of BSI No. 745 "Animal Glues for Wood" manufactured by M/s Hoest shall be considered approved for this Project or as directed and approved by the Engineer.

#### 2.1.6 Nails and Screws :

All nails and screws shall comply with requirements of BSI NO. 1202 and BSI NO. 1210 respectively.

### 2.2 Ply Wood

The ply wood shall comply in all respects with BSI No. 1455:1963. All the ply wood shall only be obtained from KDC Board (Pvt.) Limited, Jhelum as approved by the Engineer. All plywood shall be manufactured with phenol pharamaldehyde or any other approved water proof adhesive but not with urea pharamaldehyde.

Ply wood used for doors, and other similar works shall be to the thickness and size as shown on the Drawings or as directed by the Engineer. The grade shall be first quality and the face and back shall be free from end joints, dead knots, overlaps, patches and other similar defects. The surfaces shall be free, smooth for painting or polishing.

### 2.3 Medium Density Fibre (MDF) Board

Medium density fibre board to be used on the project shall be LASANI manufactured by Al-Noor MDF Board Industries of thicknesses as specified in the drawings. Board shall be manufactured with water proof resinous glues and shall be guaranteed by the manufacturer. All boards required for the exterior surfaces of cabinets shall be laminated with formica in approved colour and texture in factory as specified elsewhere.

## 3. SAMPLES

All samples of the material used for the work under this Section of Specification shall be approved by the Engineer and same type of material shall be used throughout the work. If the Engineer desires to get the material tested, this will be got done by the Contractor at his own cost from a laboratory approved by the Engineer.

## 4. FABRICATION

'Unwrought' timber shall be used. Sawing shall be done with sufficient oversize margin to finally meet the requirements of specified sizes and dimensions of the finished work.

All framing shall be joined and glued properly as shown on the Drawings or as directed by the Engineer. All joints shall be secured with sufficient number of nails. The Contractor shall perform all necessary mortizing, tenoning, grooving, matching, tangoing, housing, rebating and all operations required for the correct jointing. The Contractor shall also provide all metal plates, screws, nails and other fixing material that may be ordered by the Engineer for the proper execution of the joinery work. Fabrication that develop defects due to bad workmanship or unsound materials not conforming to these specifications and the directions of the Engineer, shall be cut out and replaced at Contractor's own expense before the expiry of the maintenance period.

## 5. PROTECTION OF MATERIALS

All materials and assembled units shall be protected from weather and stored in such a way as to prevent decay, warping and attack by fungus and termites.

## 6. WOODEN DOORS

### 6.1 Materials

6.1.1 First class Deodar wood as approved by the Engineer shall be used for door frames and door shutters except the core of shutters which shall be partal wood as specified and shown on drawings.

6.1.2 Architraves, beads, lippings shall be of Deodar wood of specified sizes and fixed as per details shown on Drawings.

### 6.2 Ground, Blocking & Nailing Strips

Ground, blocking and nailing strips shall be provided as necessary to receive the work included herein and as required for the work of other trades.

Except as otherwise shown or specified, ground blocking and nailing strips shall be secured in place as follows:

6.2.1 To steel--- by means of 3/8" diameter bolts spaced not over 3 feet.

6.2.2 To brick wall ---- by the use of cut nails spaced not more than 1.5 feet apart and driven directly into the block.

6.2.3 To poured concrete ---- by means of 1/4" diameter galvanized expansion bolts spaced not more than 1.5 feet part or by any approved method.

### 6.3 Exterior and Interior Door Frames

All exterior and interior door frames shall be fabricated of M.S (16 SWG) frame as shown on schedule/drawings.

All exposed surfaces of frames and architraves/beads shall be painted with synthetic matt finished enamel paint of approved shade as per the instructions of the Engineer.

### 6.4 Door Shutters

The shutters will be fixed to the frames with approved quality fittings as per hardware schedule.

6.4.1 All doors, shutters shall be fabricated in a workman like manner strictly to the correct sizes and shapes as shown on the Drawings or as directed by the Engineer.

6.4.2 The door shutters shall be built in sections, properly jointed and glued together. The surfaces shall be prepared for painting or polishing.

6.4.3 All door shutters shall be ½" thick solid core shutter veneered with 5mm thick commercial ply, Formica laminated with hardware wood as shown on drawings.

- 6.4.4 Each door shall be constructed so as to permit the installation of hinges, knobs and locks in the position shown on the Drawings.
- 6.4.5 Completed doors shall be sound, rigid and free from defects and warp. All edges shall be aligned and smooth, joints shall be close fitting, hard wood doweled or mortised framed and of a strength to maintain frame and of strength to maintain the structural properties of the member connected. All adjoining faces and edges shall be flush and smooth. Edges shall be rectangular and solid.
- 6.4.6 All exposed surfaces of M.S. frames and wooden shutters shall be painted with synthetic matt finished enamel paint of approved shade as per the instructions of the Engineer.
- 6.4.7 Chamfers shall be made as shown on the drawings or as directed by the Engineer.

#### 6.5 Fitting, Hanging and trimming

All the doors shall be fitted, hung and trimmed as hereinafter specified and as indicated on the Drawings.

Doors shall have a clearance of 1/8" at sides and top unless otherwise directed by the Engineer and shall have 3/16" clearance at bottom. Doors shall be hung and trimmed with hardware as specified. All the locks shall be installed at the same height and shall be located at height as directed by the Engineer. Where directed by the Engineer margin for carpet shall be incorporated in the door shutter.

#### 6.6 Hardware

Hardware shall be of best quality local make extra heavy duty and first class finished material except door locks and door closures which shall be imported of Japanese origin as per attached hardware schedule. The Contractor shall obtain prior approval from the Engineer for quality, shape, pattern, and brand of all the hardware materials by providing samples and catalogues, etc., and shall provide and fix only the approved hardware materials.

Hardware shall be carefully and securely fitted. Upon handing over the work, hardware shall be demonstrated to operate freely. Keys shall be placed into respective locks and upon acceptance of the work keys shall be tagged and delivered to the Engineer.

#### 6.7 Quality Assurance

##### 6.7.1 Tolerances: Doors shall be fabricated to following tolerances

- Size: Plus or minus 1/16 in overall dimensions
- Maximum Warp: 1/8"
- Squareness: Maximum diagonal difference 1/8" of (between length of diagonal measured on face of door from upper right corner to lower left corner and length of diagonal measured from upper left corner to lower right corner).

- 6.7.2 Manufacturer's Qualifications: The manufacturer of doors herein specified shall have been in business of manufacturing doors of type specified for minimum period of five years.

#### 6.8 Submittal

- 6.8.1 Provide manufacturer's literature completely describing products.
- 6.8.2 Provide shop drawings showing door types, details and locations, referred to the door type and hardware group shown on door and hardware schedules.
- 6.8.3 Provide certificates stating that doors were constructed with timber of the species specified having moisture content and meeting equilibrium and relative humidity requirements.
- 6.8.4 Submit samples of plywood for selection of colour and grain.
- 6.8.5 Procurement of materials shall be made only after the shop drawings and samples have been approved by the Engineer.

#### 6.9 Product Delivery, Storage and Handling

- 6.9.1 Deliver and store products in waterproof, protective containers with seals unbroken and labels intact until time to use.
- 6.9.2 Keep products dry, stack products off ground on level platforms, fully protected from weather, including direct sunlight.
- 6.9.3 Identify type, size and location of each door before delivery in order to permit installation at correct location.

#### 6.10 Installation

- 6.10.1 Install doors at correct openings and assure smooth swing and proper closer with frames.
- 6.10.2 Install finish hardware in accordance with manufacturer directions.

### 9. DEFECTIVE WORK

In the event of non-conformance to specification and drawings, the wood works shall be rejected by the Engineer and the Contractor shall remove and replace the rejected work by new work of same specifications.

### 10. SURFACE PREPARATION

The surfaces of all wood works shall be prepared in the manner as directed by the Engineer for polishing or painting.

### 11. MOCK-UP SAMPLE

After approval of shop drawings and tests etc., the contract shall submit at his own cost one mock-up sample of each type of wood works complete with all fixing, fixtures accessories prior to the actual fabrication of the bulk.

The samples shall be returned to the Contractor for incorporation in the works after installation of at least 80% of the works.

## 12. MEASUREMENT & PAYMENT

### 12.1 General

Except otherwise specified herein or elsewhere in the Contract Documents, no measurement and payment will be made for the under mentioned specified works related to the relevant items of the Bill of Quantities. The cost thereof shall be deemed to have been included in the quoted unit rate of the respective/items of the Bills of Quantities.

The rates quoted by the Contractor in the Bill of Quantities shall include work to be executed under these specification in any floor and at any height except where otherwise specifically stated in the relevant item of Bill of Quantities and the Contractor shall not be entitled to any claim or claim any compensation on this account.

12.1.1 Glazing where required and all finished hardware fittings in carpentry and joinery works, including locks, kick, push plate & door closure, architrave, beading, handles, locking arrangements and etc.

12.1.2 Prime coat, painting with synthetic enamel paint/lacquer polish in carpentry and joinery works/hand railing.

12.1.3 Anti termite treatment to wood works and adhesives

12.1.4 Steel balusters, steel base and steel strip for wooden railing.

12.1.5 Deodar wood blocking, shipping & base frame work in cabinets/hand railing.

12.1.6 filling of Class – "C" (1:2:4) in M.S. door frame..

### 12.2 Wooden Door

#### 12.2.1 Measurement

Measurement of acceptably completed works of all types of wooden doors will be made on the basis of net actual area in square foot / meter fabricated and installed in position as shown on the Drawings or as directed by the Engineer. Net area will be measured in accordance with plastered masonry opening in between jambs and plastered head and bottom of shutter.

#### 12.2.2 Payment

Payment will be made for acceptable measured quantity of all types of wooden doors on the basis of unit rate per square foot / meter quoted in the Bill of Quantities against respective item and shall constitute full compensation for all the works.

## 12.3 Kitchen Cabinets

### 12.3.1 Measurement

Measurement of acceptably completed work of kitchen cabinets will be made on the basis of net actual running foot of kitchen cabinets provided and installed in position as shown on the Drawings or as directed by the Engineer.

### 12.3.2 Payment

Payment will be made for acceptable measured quantity of kitchen cabinets on the basis of unit rate per running foot quoted in the Bill of Quantities. Payment shall constitute full compensation for all the works related to the item.

\*\*\* End of Section 4600 \*\*\*