

**All INDIA INSTITUTE OF MEDICAL SCINECS (AIIMS),  
NEW DELHI**

**Tender**

**For**

**Supply, installation, testing & commissioning of Dining Furniture including other related miscellaneous works etc. for Dining Block at All India Institute of Medical Sciences (AIIMS) at Ansari Nagar, New Delhi.**

**Volume-III**

**Technical Specifications**

**MAY 2014**



**HSCC (INDIA) LTD.**

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**PQ tender No. HSCC/AIIMS-Dining /Fur/2014**

## TECHNICAL SPECIFICATION

### **Supply, installation, testing & commissioning of Dining Furniture including other miscellaneous related works etc. for Dining Block at All India Institute of Medical Sciences (AIIMS) at Ansari Nagar, New Delhi**

#### **❖ Following Basic Material to be Used in Office Furniture with prior approval of Client :**

##### **Material Requirements For All Revolving And Tubular Chairs :**

1. Cushion chairs are made out of flexible polyurethane foam molded to have consistent hardness of 20-24 kg .
2. The polyurethane foam should be molded with density 45 +/- 2 kg/meter cube and hardness 20 +/- 2 kg on hampdness machine at 25% compression.
3. Armrest of chairs should be made out of integral skin polyurethane foam of shore hardness 'a' 50-70 and reinforced with ms steel insert except unless otherwise specified.
4. Gas lift mechanism for height adjustments tested for 100000 cycles of operation.
5. Chair base of the pedestal consists of 5 prongs made of 5 mm thick ms plates.
6. Plastic cladding is provided to make the pedestal look good aesthetically. The ms pedestal should be tested for load bearing.
7. Twin wheel castors are made of nylon and should be tested to carry a load upto 82 kgs on the chair.
8. All steel components should be powder coated conforming to :-
  - ❖ Dry film thickness more than 45 microns.
  - ❖ Salt spray test to withstand corrosion.
  - ❖ Adhesion as per din 53152 standards.
  - ❖ Scratch hardness as per bs 3900/e2
  - ❖ Impact test.
  - ❖ Pencil scratch test

##### **Mandatory Tests To be Done By Manufacturer on Chairs :**

- Seating Impact test.
- Arms Strength Test
- Back Durability Test.
- Castor/ Chair durability test.
- Base Test.
- Castor retention test.
- Castor Pull Out test.
- Castor Breakability Test.

### **Powder Coating Tests :**

All MS components shall be epoxy polyester powder coated using the seven chamber pretreatment process with the powder thickness greater than 40 microns Dry Film Thickness.

Tests to Be Carried Out on Powder Coating :-

- Cross Cut Test- To check Adhesion
- Impact Resistance Test – To 150 kgs/cm as per BS 3900/E3.
- Scratch Hardness- Upto 4 kgs as per BS 3900/E2.
- Salt Spray Test.

### **Anti Rust Treatment To Be Followed For All Metal Components :**

The manufacturer should have anti rust treatment facilities for treating all the metal components. The anti rust treatment shall consist of Removal of oil by treating metal Components with sodium carbonate and alkaline phosphate at 60 degrees centigrade followed by Rinsing with water at normal temperature. The rinsed components are to be dipped in phosphoric acid solution at 45 degrees centigrade for 10 minutes minimum for de-rusting followed by Rinsing. Components shall undergo phosphating by dipping in phosphating tank containing iron hydrogen phosphate dissolved in phosphoric acid at normal temperature for minimum 5 minutes followed by rinsing and finally Dipping components in chromic phosphatic acid reducing agent chemical at temperature of 80 degree centigrade(+/-10%) for minimum period of 60 seconds.

## **Specifications For Materials And Processes To Be Used On Furniture**

### **Specifications For Steel Used In Chairs and Other Items :**

- Cold rolled steel for MS sheet shall have thickness ranging from 0.63mm to 1.2mm as per IS:513-1994.
- Hot rolled steel for MS sheet shall have thickness ranging from 2.5mm to 3.15mm as per IS:10748 Group I.
- MS ERW tubes used for tubular components should satisfy IS-7138.

### **Specification For Fabric To Be Used For Upholstery :**

<b><u>Material Type</u></b>	<b><u>Description/ Selection Criterion</u></b>
100% Polyester, fiber dyed	For a Span of 1.2 Meters shall have weight 330-grams/ meters.

100% poly Propylene	For a Span of 1.2 Meters shall have weight 230-grams/ meters.
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## **Material Specifications :**

### **1) Plain Particle Board (Medium Density) :**

Particle boards conforming to IS 2380(1977) with physical characteristics as under

Density	:	600 –900 kg per meter cube.
Moisture content	:	5.10%
Water absorption	:	2 hour test – max 15% 24 hour test – max 40%
Swelling in water	:	2 hour – max. 5% thickness
Swelling due to water absorption	:	max 6%
Tensile strength perpendicular to surface square.(for all thickness)	:	min 0.3 Newton per millimeter
Tensile strength after cyclic test	:	min 0.3 N/mm square
Screw withdrawal strength on face	:	min 1250 N
Screw withdrawal strength on edge	:	min 850 N

### **2) Medium Density Fiber Boards :**

Medium Density Fiber Board conforming to IS: 2380-1977 with following physical characteristics

Specific Gravity	:	0.5 to 0.9
Density	:	600 –900 kg per meter cube.
Moisture content	:	5 to 10%
Water absorption	:	2 hour test – max 7% 24 hour test – max 15%
modules of rupture upto 20mm thick	:	min 30 N/mm square.
Modules of rupture above 20 mm thick:	:	min 25 N/mm square.
Linear expansion in thickness due to surface absorption	:	max 5%
Swelling due to general absorption after 24 hour soaking in		
Thickness	:	max 4%
Length	:	max 0.4%
Width	:	0.4 % min.
Tensile strength perpendicular to surface thickness)	:	0.7 N/mm square.(for all
Screw withdrawal strength on face	:	min 1500 N
Screw withdrawal strength on edge	:	min 1250 N

### 3) Pre Laminated And Twin Particle Boards :

Prelaminated and twin particle boards as per IS:2380-1977.

Density	:	600 –900 kg per meter cube.
Moisture content	:	5 to 10%
Water absorption	:	2 hour test – max 15% 24 hour test – max 30%
Swelling in water	:	2 hour – max. 8% in thickness
Modules of rupture	:	min. 15 N/mm square.
Tensile strength perpendicular to surface (for all thickness)	:	min 0.5 N/mm square.
Screw withdrawal strength on face	:	min 1550 N
Screw withdrawal strength on edge	:	min 850 N

The following characteristics are according to annexure of IS:128323-1990.

Resistance to steam- No sign of blister, delaminating or change in surface finish.

Resistance to crack – No sign of crack and delamination.

Resistance to cigarette burn.

Resistance to stain.

Abrasion Resistance (min) in no of revolutions.

### 4) Post formed Laminate Sheets :

The pos formed (high pressure decorative laminate) one side bearing 0.6 or 0.8 mm thick decorative conform to NEMA specification- ANSI/NEMA/LD-3-1991.

The physical characteristics and test requirements are as per NEME-LD-3-1991.

Impact strength - Ball Impact resistance min 20”

Wear resistance - Min 400 cycles.

Gross dimensional change in machine direction - Max. 1.1%

Gross dimensional change in cross machine direction - 1.4% max.

High temperature resistance - slight effect is accepted on specimen at the final examination.

Stain resistance-No effect is acceptable on the specimen.

Formability - Min radius 12.5mm.

Blister Resistance - Min 40 Sec.

Boiling water immersion test (2 hour test) as per IS:2046-1969.

Increase in weight - Max. 30%.

Increase in thickness - Max 30%.

## 5) Decorative Laminated Sheets :

Decorative thermosetting synthetic resin bonded laminated sheets are used in 1.0mm thickness and are of type 1 with having one side bearing the decorative surface. The finish, shade, color and pattern shall be mutually decided by the purchaser and supplier. Physical characteristics and test requirements are as per appendix of IS:1046-1969. Resistance to dry heat – no blistering or appreciable surface deterioration or loss of gloss. Dimensional stability in low humidity test at 70+/- 2deg C for 24 hours.- less than 0.5% in length and width dimensions. Resistance to immersion in boiling water.

Increase in weight - max 5%  
Increase in thickness - max 5%

Resistance to staining for 24 hours with standing against agents specified in IS 2046-1969. specimen should not show blistering at the final examination. Cross breaking strength for 0.6mm thick—2000 kg per CM Square.  
Cross breaking strength for 1.0 mm and 1.5mm thick – min 4000 kg per CM square.  
Impact strength - min 0.035 kg fm  
Machinery test - no Slitting or cracking.

## 6) Epoxy Powder Coating.

Epoxy powder used for coating shall be of a standard shade or as specified at the time of tender. The specific gravity of powder 1.6(+/-0.2) gives a DFT of 50-60 microns. Pencil Hardness of 2H; Cross hatch Adhesion(DIN 553151) or GT – ‘O’ gloss @ 60 DIN 67530 of 80 +/- 5% for all standard except black for which it shall be 45 +/-5 for black. The coating should be able to withstand min 500 hour of salt spray test. Impact resistance of 150kgcm.

## **ITEM SPECIFICATIONS :**

1. Providing and Fixing ISI marked phenol bonded block board of 19mm thick in table tops, shelves, footrests, side etc. cut edges exposed to be finished with teak wood gola of size 20x5mm & unexposed with margin of size 20x3mm with sprit polishing including fixing

with fevicol/ superior glue, steel screws, nails etc. all complete as per the direction of Engineer in charge.

2. Providing and Fixing ISI marked phenol bonded 6mm ply wood in of required thick in ward robes, almirah, table etc. with glue (fevicol or SR 998) screws, nails etc. all complete as per the direction of Engineer in charge.
3. Providing and Fixing 100mm wide vertical blinds in required size and shape with all accessories as per the sample approved by Engineer in charge (Mac/ Vista make)
4. Providing and Fixing notice board made of 12mm thick cellotax board with back of 6mm thick phenol bonded ply with all round aluminum beading (C-channel) of 16 gauge with blue or mahroon cloth of best available on face with corner brackets etc complete as per the direction of Engineer in charge.
5. Providing and Fixing 10mm thick table top plain glass with edge rounded off in required size and shape as per the direction of Engineer in charge (Modi guard/ Saint gobin/ Tata make)
6. Providing and Fixing powder coated telescopic sliding drawer channel 300mm long with necessary screws etc complete as per the direction of Engineer in charge.
7. Providing and Fixing 1mm thick SS piano hinges bright finished nickle plated with screws of overall width 35mm.
8. Providing and Fixing magnet catcher of approved quality and make as per the direction of Engineer in charge - Double stop horizontal type.
9. Providing and Fixing teak wood cornic 50x50mm at the junction of panelling and wall all complete as per the approved design by Engineer in charge.
10. Providing and fixing aluminium work for doors, windows, ventilators and partitions extruded built up standard tubular sections/appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fastners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/neoprene gasket etc. Aluminium sections shall be smooth, rust free straight, mitred and joined mechanically wherever required including cleat angle, aluminium snap beading for glazing/ paneling, C.P. brass/stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge.(Glazing, paneling and dash fasteners to be paid for separately)

11. Steel work welded in built up section/framed work including cutting, hoisting, fixing in position and applying primer coat of approved steel primer for making of base frame of Laboratory tables etc.
12. Stainless Steel (Grade 304) work welded in built up section/framed work including cutting, hoisting, fixing in position for making of base frame of Laboratory tables etc.
13. Providing and Fixing bright finished brass handles with screws etc. completely:
14. Providing and Fixing white marker board having MS backing of approved quality i/c magnetic duster, set of pens and magnetic pointers all complete as per the direction of Engineer in charge.
15. Providing and Fixing special quality bright finished brass cupboard or ward robe locks with 4 levers i/c necessary screws etc. complete (best make of approved quality) Harrison/ Plaza/ Godrej make 40mm.
16. Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade. Two or more coats of new work over an under coat of suitable shade with ordinary paint of approved and manufacture.
17. Providing & fixing of polished 18mm thick Granite work top over 6mm thick ply with arelite etc. complete as per drawing , design, specification as per direction of Engineer in charge.
18. Providing edge moulding to 18mm th counters, vanities etc. including machine polishing to edge to give high glow finish etc. complete as per design approved by Engineer in charge
19. Extra for providing opening of required size and shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in granite including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.
20. Providing and Fixing decorative high pressure laminated sheet of plain/ wood grain in gloss/ matt/ suded finish with high density protective surface layer and reserve side of adhesive bonding quality confirming to IS: 2046 Type, including cost of adhesive of approved quality.
21. Providing and Fixing glazing in door, windows, ventilator, shutter and partation etc. with EPDM rubber/ neoprene gasket etc. complete as per drawing and the direction of Engineer in charge (cost of aluminium snap beading shall be paid beading shall be paid in basic items)
22. Providing and Fixing 12mm th. Pre laminated particle board flat pressed three layer or graded wood particle board in panelling fixed in aluminium doors, window shutters and



partation frames with CP brass/ stainless steel screws etc. complete as per architectural drawings and directions of engineer in charge. Prelaminated particle board with decorative lamination on both sides, Grade-I, Type II, IS:12823 marked.

23. **Multiseater Chair :**

Triple seater multiseater chair with perforated metal sheet duly powder coated with arms in capsule pipe, side in 2" round pipe and bottom support in 3"x1/2" in 14 gauge.

24. **Stool :**

Lab Stool revolving type without back with steel fixed base with shoes. The seat is covered with latheriate/ fabric uphoistery.

25. **SOFA ( 3 & 2 Seater) :**

Wooden sofa: Fully upholstered sofa with good quality seasoned wood duly anti termite treated . In seat, good quality flat spring steel are used and are covered by "U" foam. Seat cushion has premium quality rubber. The back is made of high density foam duly upholstered with fabric or leatherite. The armrest are made of seasoned teakwood duly spirit polish

26. Providing and Fixing CP brass extension nipple for sanitary fittings as per direction of Engineer in charge
27. Providing and Fixing CP brass caps for bib cock/ angle valve etc for sanitary fittings as per direction of Engineer in charge
28. Providing and Fixing CP brass bottle trap for wash basin and sink of make Parko/ Kingston/ Jaguar/ Vijay - 32mm dia waste.
29. Providing and Fixing CP brass close hole basin mixer pillar top of approved quality and make of Parko/ Kingston/ Jaguar/ Vijay - 15mm nominal bore of standrad back type
30. Providing and Fixing CP brass long body bib cock of approved quality confirming to IS standard and weight not less than 690 gms
31. Providing and Fixing white viterous china Lab Sink with CI brackets, CP brass chain with rubber plug, 40mm CP brass waste and 40mm CP brass trap with necessary CP brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required

32. Providing and Fixing Stainless steel A ISI 304 (18/8) kitchen sink as IS:13983 with CI bracket and stainless steel plug 40mm, including painting of fittings and brackets, cutting and making good the wall wherever required. Kitchen sinks without drain board and  
Providing and Fixing Stainless steel A ISI 304 (18/8) kitchen sink as IS:13983 with CI bracket and stainless steel plug 40mm, including painting of fittings and brackets, cutting and making good the wall wherever required. Kitchen sink with drain board

**33. GENERAL Specification for Civil/PHE/Electrical works etc. :-**

- 1.01 The specifications and mode of measurements for Civil and Plumbing works shall be in accordance with C.P.W.D.specifications 2009 Volumes I and II with up to date correction slips unless otherwise specified in the nomenclature of individual item or in the specifications. The entire work shall be carried out as per the C.P.W.D. specifications in force with up to date correction slips upto the date of opening of tender.
- 1.02 For the item not covered under CPWD Specifications mentioned above, the work shall be executed as per latest relevant standards/codes published by B.I.S. (formerly ISI) inclusive of all amendments issued thereto or revision thereof, if any, upto the date of opening of tenders.
- 1.03 In case of B.I.S. (formerly I.S.I) codes/specifications are not available, the decision of the Engineer based on acceptable sound engineering practice and local usage shall be final and binding on the contractor.
- 1.04 However, in the event of any discrepancy in the description of any item as given in the schedule of quantities or specifications appended with the tender and the specifications relating to the relevant item as per CPWD specifications mentioned above, or in drawings the former shall prevail.
- 1.05 In general the building floor to floor height is 4.00 mtr unless specified otherwise in the drawing. However, the rates for different items of work shall be for up to 4.5 m floor to floor height at all levels, lifts, leads and depths of the building except where otherwise specified explicitly in the item of work or in special conditions appended with the tender. All works above the top most terraces (main) shall be paid under the level existing below (i.e. machine room, mumty etc)
- 1.06 The work shall be carried out in accordance with the architectural, structural, plumbing and electrical drawings etc. The drawings shall have to be properly co-related before executing the work. In case of any difference noticed between the drawings, final decision, in writing of the Engineer shall be obtained by the contractor. For items, where

so required, samples shall be prepared before starting the particular items of work for prior approval of the Engineer and nothing extra shall be payable on this account.

- 1.07 All materials to be used on works shall bear I.S. certification mark unless specifically permitted otherwise in writing. In case I.S. marked materials are not available (not produced), the materials used shall conform to I.S. Code or CPWD specifications, as applicable in this contract.

In such cases the Engineer shall satisfy himself about the quality of such materials and give his approval in writing. Only articles classified as "First Quality" by the manufacturers shall be used unless otherwise specified. All materials shall be tested as per provisions of the Mandatory Tests in CPWD specifications and the relevant IS specifications. The Engineer may relax the condition regarding testing if the quantity of materials required for the work is small. Proper proof of procurement of materials from authentic manufacturers shall be provided by the contractor to the satisfaction of Engineer. Grade of cement used shall be OPC 43 Grade unless otherwise specified explicitly. The contractor shall get the Design Mix for RCC done by the labs approved by OWNER only. Reinforcement Steel used shall be of TMT Fe-500 unless otherwise specified.

- 1.08 In respect of the work of the sub-agencies deployed for doing work of electrification, air-conditioning, external services, other building work, horticulture work, etc. for this project and any other agencies simultaneously executing other works, the contractor shall afford necessary coordination and facilities for the same. The contractor shall leave such necessary holes, openings, etc. for laying / burrying in the work pipes, cables, conduits, clamps, boxes and hooks for fan clamps, etc. as may be required for the electric, sanitary air-conditioning, fire fighting, PA system, telephone system, C.C.T.V. system, etc. and nothing extra over the agreement rates shall be paid for the same.
- 1.09 Unless otherwise specified in the bill of quantities, the rates for all items of work shall be considered as inclusive of pumping out or bailing out water if required for which no extra payment will be made. This will include water encountered from any source such as rains, floods, or due to any other cause whatsoever.
- 1.10 Any cement slurry added over base surface (or) for continuation of concreting for bond is added its cost is deemed to have in built in the item unless otherwise/explicitly stated and nothing extra shall be payable or extra cement considered with consumption on this account.
- 1.11 The rate for all items in which the use of cement is involved is inclusive of charges for curing.
- 1.12 The contractor shall clear the site thoroughly of all scaffolding materials and rubbish etc. left out of his work and dress the site around the building to the satisfaction of the Engineer before the work is considered as complete.
- 1.13 Rates for plastering work (excluding washed grit finish on external wall surfaces) shall include for making grooves, bands etc. wherever required and nothing extra shall be paid for the same.

- 1.14 The rates quoted for all brick/concrete work shall be deemed to include making openings and making good these with the same specifications as shown in drawings and/or as directed. No extra payment shall be made to the contractor on this account.
- 1.15 Rates for all concrete/plaster work shall include for making drip course moulding, grooves etc. wherever required and nothing extra shall be paid for the same.
- 1.16 Rates for flooring work shall include for laying the flooring in strips/as per sample or as shown in drawings wherever required and nothing extra shall be paid for the same.
- 1.17 The drawing(s) attached with the tender documents are for the purpose of tender only, giving the tenderer a general idea of the nature and the extent of works to be executed. The rates quoted by the tenderer shall be deemed to be for the execution of works taking into account the "Design Aspect" of the items and in accordance with the "Construction Drawings" to be supplied to the Contractor during execution of the works.
- 1.18 The quoted rate shall be for finished items and shall be complete in all respects including the cost of all materials, labour, tools & plants, machinery etc., all taxes, duties, levies, octroi, royalty charges, statutory levies etc. applicable from time to time and any other item required but not mentioned here involved in the operations described above. The client/OWNER/Employer shall not be supplying any material, labour, plant etc. unless explicitly mentioned so.
- 1.19 On account of security consideration, there could be some restrictions on the working hours, movement of vehicles for transportation of materials and location of labour camp. The contractor shall be bound to follow all such restrictions and adjust the programme for execution of work accordingly.
- 1.20 The contractor has to ensure co-ordination with Institute authorities to maintain the smooth functioning / operation of existing Institute without disruption during the execution of work. This may require working rescheduling the normal working hours, working in restricted period etc. Nothing extra shall be payable on this account.  
  
He shall also ensure that all work sites within the Institute complex are properly cordoned off by means of barricades and screens upto a height of 3.0 m above ground level. The contractor shall use painted CGI sheets which are in good condition mounted on steel props.
- 1.21 Stacking of materials and excavated earth including its disposal shall be done as per the directions of the Engineer-in-Charge. Double handling of materials or excavated earth if required shall have to be done by the contractor at his own cost.

**List of approved makes:**

<b>S. No.</b>	<b>Materials</b>	<b>Manufacturers</b>
1	Aluminum Sections	Hindalco, Jindal, Indal, Boruka
2	Structural steel	Confirming to BIS 2062
3	Synthetic Enamel paint	ICI Dulux, Asain, Burger, Nerolac
4	Laminates	Formica, Decolam, Century, Marino, Green Ply
5	Clear Glass/ Clear Float Glass/ Toughened Glass	Saint Gobain (SG), Modi, Tata
6	Pre laminated Particle board	Novapan, Greenlam, Kitlam, Marino
7	CP Brass long body Bib cock	Jaquar, Marc, Parko, Aquabaths
8	Vitreous lab China Sink	Cera, Neycer, Hindware, Sanfire
9	Stainless steel Kitchen Sink	Jayna, Nirali, Commander
10	LCD TV 32"	Samsung, Sony,
11	R O system	Ureka Forbes, Kent

**END OF VOLUME**