MINISTRY OF HEALTH & FAMILY WELFARE,
GOVERNMENT OF INDIA
(Department of Health Research)

# Tender

# For

**Supply, installation, testing & commissioning of Internal furnishing & related minor Civil, Plumbing, Electrical, LAN,WI-FI works etc for DHR at 2nd Floor of Red Cross Building , New Delhi**

## Volume-III

## Technical Specifications

## APRIL 2013

HSCC (INDIA) LTD.
(CONSULTANTS & ENGINEERS FOR MEGA HOSPITALS & LABORATORIES)
E-6(A), sector-1, NOIDA(U.P) 201301 (India)

Phone : 0120-2542436-40 Fax : 0120-2542447

**PQ tender No. HSCC/DHR/Fur/2013**

## TECHNICAL SPECIFICATION

**Supply, installation, testing & commissioning of Internal furnishing & related minor Civil, Plumbing, Electrical, LAN,WI-FI works etc for Department of Health Research at 2nd Floor of Red Cross Building , 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 :**

| Material Type | Description/ Selection Criterion |
|---|---|
| 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. |

## 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%<br>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%<br>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%<br>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 thickness) | : | min 0.5 N/mm square.(for all |
| 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 :

## Full Height Partition & WORKSTATIONS:

Providing & Fixing minimum 65mm thick & 3000 Ht. tile Based Partition having inner framework in CRC steel covered with tiles on both sides are covered with aluminium powder coated trims on top and end sides. Partition has Aluminium raceway at bottom and at middle level. Partitions are provided with option of various kinds of tiles like prelaminated board tiles, glass tiles, fabric tiles & white marker tiles. All metallic parts undergo a 7 stage antirust treatment and are epoxy powder coated and baked at 200○ temp. to a powder coating thickness of 50-60 microns. The modular partitions are independent and not grouted in the floors. The modular partitions are an assembly of the following parts:-

Frames - Frame forms the basic support structure for all other components. The main vertical member of the frame bearing all the load is made of 1.2mm CRCA steel and the horizontal members are made of 1.0mm CRCA steel. The frames also have prefabricated slots for fixing brackets to support worktops, sharer tops, gable ends, overhead hampers etc. The bottom tiles are mounted over a skirting of 135mm height. The skirting is designed so that switch cutout can be provided at the skirting level and are snap fitted on both sides with skirting raceway plates made of 1.0mm thick Aluminium sheet. The bottom raceway panels are epoxy powder coated and baked at 200○ temp. to a powder coating thickness of 50-60 micron.

Levellers - Each frame is provided with two Nos. 12mm leveling bolts which allows 10-25 mm adjustment for floor unevenness.

Post - The frames are inter connected at the junctions by aluminium connectors/posts. The posts are made of aluminium extrusions of 1.2mm thickness duly powder coated.

Top Trim Joinery - Full Height Partitions are provided with top adjustors which allows 10-50 mm adjustment for ceiling unevenness. L shaped top Patti is provided to cover the adjustors and fix partition with the ceiling / Beam.

GROOVE COVERS - The vertical gaps between the tiles shall be properly and uniformely maintained and shall be vertically covered by fixing specially extruded aluminium section to maintain uniform groove on both the sides of the partition..

WIRE MANAGEMENT - WIRE MANAGMENT - Partitions system has concealed wire management capabilities to meet requirement and are engineered for responsive and safe operations of power, telecommuncations and data (LAN). It has seperate components for electrical, data and telephone cables having adequate capability of both the vertical and horizontal wire movements. Slots/cutouts are provided on Raceways to fix all electrical and data points.

TILES - The Partition tiles are provided in Pre Laminated Particle Board/Fabric on Soft board/White Marker Laminate / Magnetic Tile /Glass finishes.
The PRELAMINATED PARTICLE BOARD TILE are provided in 12mm Prelaminated Particle Board having decorative laminate on top and white balancing on unexposed face,

having all exposed edges sealed with PVC edge banding tape, pressed at 200○ C with hot melt glue on special edge banding machine. The tiles are supported with Tile Hook made of MS steel sheet duly galvanized to clip on to the partition frame.

The FABRIC TILES are made of 9mm soft board inside and backed by 3mm MDF board & covered with fabric pasted on them by PVA glue. The tiles are supported with Tile Hook made of MS steel sheet duly galvanized to clip on to the partition frame.
The MARKER TILES are made up of 9mm particle board pasted with 1mm white marker laminate, on the exposed face having all exposed edges sealed with PVC edge banding tape, pressed at 200○ C with hot melt glue on special edge banding machine. The tiles are supported with Tile Hook made of MS steel sheet duly galvanized to clip on to the partition frame.

The MAGNETIC TILES are made up of fabric finish tile on CRCA sheet duly powder coated. The overall thickness of the tile is 12mm and is provided with magnetic coins is required. The tiles are supported with Tile Hook made of MS steel sheet duly galvanized to clip on to the partition frame.

The DOUBLE SKINNED GLASS TILE - is made up of 5mm thick clear / Glass of Modi / Asahi make and is fixed on both side of partition. The glass tile is provided with aluminium frame work and is fixed with aluminium section using transparent rubber beading. These glass tiles are completely inter changeable with other regular tile.

Door Unit: Providing and fixing minimum 35mm thick factory made Flush Door shutters in the full height partition made of machine cut seasoned hard wood battens held within a frame made of a strip of 29mm wide hard wood edge miter jointed and then faced with 3mm commercial ply on both sides pasted with suitable resin glue hot pressed in machine to produce an accurate and warp free plank. Further faced with 1mm laminate of approved shade to make the total thickness of flush shutter of 37mm and providing and fixing first class teak wood lipping along the edges of the shutters finished with melamine polish. The door unit is provided with the following fixtures in each door shutters.

1. ISI marked anodized aluminium butt hinges 4 Nos.
2. Chromium plated brass 100 mm nortice latches and lock with 6 levers and a pair off lever handles with necessary screws etc. complete - 1 No
3. Hydraulic door closures with double speed adjustment with necessary accessories and screws etc. - 1 No.
4. ISI marked anodized aluminium hanging floor door stopper - 1 No.

## Workstation consisting of the following: :

65 MM THK. PARTITION (1230 Ht.) :

Providing & Fixing tile Based Partition System of overall thickness 65mm having inner framework of CRC steel covered with tiles on both sides and covered with aluminium powder coated trims on top and end sides. Partition has steel raceway at bottom and at

middle level. Partition system provides option of various kinds of tiles like prelaminated board tiles, fabric tiles & white marker tiles. All metallic parts undergo a 7 stage antirust treatment and are powder coated in matt finish to a thickness of 40-60 microns. The modular partitions are independent and not grouted in the floors. The modular partitions are an assembly of the following parts:-

FRAME - Frame forms the basic support structure for all other components. The main vertical member of the frame bearing all the load is made of 1.2mm CRCA steel and the horizontal members are made of 1.0mm CRCA steel. The frames also has prefabricated slots for fixing brackets to support worktops, gable ends etc. The bottom module are mounted over a skirting of 135mm height. The skirting is designed so that switch cutout can be provided at the skirting level and are snap fitted on both sides with skirting plates made of 0.8mm thick CRCA steel.

LEVELLERS - Each frame is provided with two Nos. 12mm leveling bolts which allow 10-25mm adjustment for floor unevenness.
POST - The frames are connected at the junctions by aluminium connectors/posts. The posts are made of aluminium extrusions of 1.3mm thickness.
TRIMS -The exposed vertical and horizontal faces of the frames are snap fitted with curve trims. The trims are made of aluminum extrusions of 1.5mm thickness and 65mm width and are covered with ABS caps.

GROOVE COVERS - The vertical gaps between the tiles shall be properly and uniformely maintained and shall be vertically covered by fixing specially extruded aluminium section to maintain uniform groove on both the sides of the partition.

WIRE MANAGEMENT - Partitions system has concealed wire management capabilities to meet requirement and are engineered for responsive and safe operations of power, telecommunications and data (LAN) and has separate components for electrical, data and telephone cables having adequate capability of both the vertical and horizontal wire movements. Slots/cutouts are provided on Raceways to fix all electrical and data points.

TILES - The partition tiles shall be provided in Pre Laminated Particle Board/Fabric on Soft board/White Marker Laminate Finishes.
The Prelaminated Particle Board tile are provided in 12mm Prelaminated Particle Board with decorative laminate on top and white balancing on unexposed face, having all exposed edges sealed with PVC edge banding tape, pressed at 200○ C with holt melt glue on special edge banding machine. The tiles are supported with Tile Hook made of MS steel sheet duly galvanized to clip on to the partition frame.

The Fabric Tiles are made of 9mm softboard inside and backed by 3mm MDF board & covered with fabric pasted on them by PVA glue. The tiles are supported with Tiles Hook made of MS steel sheet duly powder coated to clip on to the partition frame.
The Marker Tiles are made up of 9mm particle board pasted with 1mm white marker laminate, on the the exposed face having all exposed edges sealed with PVC edge banding

tape, pressed at 180o C with hot melt glue on special edge banding machine. The tiles are supported with Tile Hook made of MS steel sheet duly galaunised to clip on to the partition frame

Work surface : Providing & Fixing post formed work surface made of 25mm thick plain Particle Board with 0.7mm decorative laminate on top & 0.6mm thick balancing laminate on unexposed face with front edge profiled in desired shape. All exposed edges are sealed with 2mm thick PVC edge banding tape pressed at 200o C with hot melt glue on special machines. The worktop is supported with cantilever brackets made of MS steel duly powder coated. Worksurface is also provided with ABS wire manager of 50mm dia

## CPU TROLLEY:

Providing & Fixing CPU trolley of 240mm height with adjustable width from 250 to 320mm width made of 1.6mm thick CRCA steel sheet duly powder coated with 2 Nos. lockable castors & 2 Nos. non lockable castors.

## KEY BOARDS:

Providing & fixing keyboard tray of size 500x220x75mm made up of 1.2mm thick CRCA steel sheet duly powder coated. The Keyboard tray runs on ball slides for smooth movement.

## DRAWER UNIT :

Providing & Fixing drawer pedestal unit with 2 drawer & 1 filling of an over all sizes 380x575x725. The drawer unit is made of 18mm thick prelaminated particle board with all exposed edges sealed with 2mm thick PVC edge banding tape and unexposed edges sealed with 0.6mm PVC banding tape pressed at 200o C with hot melt glue on special machines. The inner drawer is made of 0.6mm CRCA steel duly powder coated & has proper locking arrangement with drawer sliding on nylon rollers channels.

## HIGH EXECUTIVE TABLE:

Providing & Fixing CEO Series Table of an overall size 3000x900/1200x750 with top made of 36mm thick MDF board pressed with 0.4mm thick membrane foil clad pressed with PU glue. The foil is precoated with a layer of polyurethane for better scratch resistance. The table has 2 former module on both sides, supported on steel vertical duly powder coated. The main table understructure has verticals and modesty made of 18mm thick prelaminated particle board with decorative laminate on both side. The modesty and verticals are supported by legs in curved shape. The modesty is provided with two metallic strips duly powder coated as per the sample photograph.

## SIDE UNIT

Providing & fixing CEO Series side unit of an overall size 1200x500x750 with top made of 36mm thick board pressed with 0.4mm thick membrane foil clad pressed with PU glue. The foil is be precoated with a layer of polyurethane for better scratch resistance. Side unit understructure body is made of 18mm thick prelaminated particle board with openable shutter on one side and 2 drawers + 1 filing on other side in 18mm membrane finish facia with proper locking arrangement. All the exposed edges sealed with 2mm PVC edge banding tape and all unexposed edges sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines.

**BACK UNIT:**

Providing & Fixing CEO Series back unit of an overall size 3000x500x750 with top made of 36mm thick board pressed with 0.4mm thick membrane foil and pressed with PU glue. The foil is precoated with a layer of polyurethane for better scratch resistance. Storage unit has body made of 18mm thick prelaminated particle with openable shutter storage on both side and 2 Drawer and 1 filing drawer unit in center with facia in membrane finish. All the exposed edges sealed with 2mm PVC edge banding tape and all unexposed edges sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines.

**SECRETARY TABLE WITH SIDE & BACK UNIT :**

Table with Drawer, Keyboard & CPU

Providing & Fixing Champhered Table of an overall size 2900x1050x750 with top made of 36mm thick board pressed with 0.4mm thick membrane foil clad pressed with PU glue. The foil is precoated with a layer of polyurethane for better scratch resistance. The main table has verticals made of 25mm thick postformed particle board and modesty made of 18mm thick prelaminated particle board having decorative laminate on both sides. All the exposed edges are sealed with 2mm PVC edge banding tape and all unexposed edges are sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines. The table also has a provision of drawer made up of 18mm thick pre laminated particle board body with facia made of 18mm thick membrane foiled with proper locking arrangement. Keyboard & CPU are made up of 18mm Pre Laminated Particle Board

**SIDE UNIT :**

Providing and fixing Champhered Side Table of an overall size 1200x500x750 with top made of 36mm thick board pressed with 0.4mm thick membrane foil clad pressed with PU glue. The foil is precoated with a layer of polyurethane for better scratch resistance. The understructure body is made of 18mm thick Pre Laminated Particle Board. The facia is made of 18mm thick membrane foiled with profiled edges with two drawers and one filing

on one side and one openable shutter with shelf on other side with proper locking arrangement. All the exposed edges are sealed with 2mm PVC edge banding tape and all unexposed edges are sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines.

**BACK UNIT :**

Providing and fixing Champhered back storage unit of an overall size 2900x500x750 with top made of 36mm thick MDF board pressed with 0.4mm thick membrane foil clad pressed with PU glue. The foil is precoated with a layer of polyurethane for better scratch resistance. The body is made of 18mm thick Pre Lamianted Particle Board & facia is made of 18mm thick membrane foiled profiled with proper locking arrangement. The storage unit of size 2400x500x750 has two storages with openable shutters on both sides and lateral filing unit in center. All the exposed edges are sealed with 2mm PVC edge banding tape and all unexposed edges are sealed with 0.6mm edge banding tape pressed at 200 degree Centigrade with hot melt glue on special machines

**Table For (JOINT SECRETARY - 1,2 & 3) 1650x900x750mm + Former Module 1200x900x750mm :**

Providing and fixing presidential table of overall size of 2850x900x750 with top made of 36mm thick post formed particle board. The main table understructure has verticals made of 36mm thick post formed legs supported with 32mm (D) steel studs duly powder coated and modesty made of 18mm thick prelaminated particle board having decorative laminate on both side. The table has a former module of an overall size 1200x900 supported on steel vertical post of 65mm dia duly powder coated. The table has a former module of an overall size 1200x900 supported on steel vertical post of 65mm dia duly powder coated. The former module is made up of 36mm thick board pressed with 0.4mm thick membrane foil clad pressed with PU glue. The foil is precoated with a layer of polyurethane for better scratch resistance.

**Side Unit :** Presidential side table of an overall size 1050x500x750 with top made of 36mm post formed particle board. The understructure body is made of 18mm thick Pre Laminated Particle Board. The side unit has one shutter on one side with facia made of 18mm thick post formed laminate with half rounded edges and other side has shelf and vertical for placing CPU,UPS etc. The unit has keyboard tray made of CRCA steel sheet duly powder coated. All the exposed edges sealed with 2mm PVC edge banding tape and all unexposed edges sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines.

**Back Unit** : Presidential back storage unit of an overall size 1800x500x750 with top made of 36mm thick post formed particle board. The understructure body is made of 18mm thick Pre Laminated Particle Board. The sides and facia are made of 18mm thick post formed

particle board. The unit has two storages with openable shutters having single top with proper locking arrangement. All the exposed edges sealed with 2mm PVC edge banding tape and all unexposed edges sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines.

**Table for Scientist & P.S. Joint Secretary with Drawer, Keyboard & CPU Size 1800x900x750:**

Providing and fixing Sr. P.P.S table of size 1800x900x750 with top made of 25mm thick plain particle board having post formed decorative laminate on top and balancing laminate on unexposed face. The understructure is made of 18mm thick prelaminated particle board with all exposed edges sealed with 2mm PVC edge banding tape and all unexposed edges sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines. Table has a provision for wire manager caps at top. The table also has a provision of drawer of size 450x575x725 made up of 18mm thick pre laminated particle board body with facia made of 18mm thick membrane foiled with proper locking arrangement. Keyboard & CPU are made up of CRCA Steel.

**Side Unit for Seientist & P.S. Joint Secretary**

Providing & Fixing Side Storage Unit of overall size 900x450x725 with top made of 25mm thick postformed particle board and understructure made of 18mm prelaminated particle board, having one openable shutter box on one side with shelf and two top drawers and one filing drawer on other side. All exposed edges are sealed with 2mm thick PVC edge banding tape and all unexposed edges sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines. The unit is provided with proper locking arrangement .

**Table for P.S., Steno & Staff with Drawer, Keyboard & CPU**

Providing and fixing table of size 1350x750x750 with top made of 25mm thick plain particle board having post formed decorative laminate on top and balancing laminate on unexposed face. The understructure is made of 18mm thick prelaminated particle board with all exposed edges sealed with 2mm PVC edge banding tape and all unexposed edges sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines. Table has a provision for wire manager caps at top. The table also has a provision of drawer of size 450x575x725 made up of 18mm thick pre laminated particle board body with facia made of 18mm thick membrane foiled with proper locking arrangement. Keyboard & CPU are made up of CRCA Steel.

**Storages (Openable shutter)**

Providing & Fixing Storage Units with top made up of 25mm postformed particle board with 0.6mm decorative laminate pressed on it. The understructure is made of 18mm prelaminated particle board having openable shutters. All the exposed edges of the storage are sealed with 2mm thick PVC edge banding tape and all unexposed edges

sealed with 0.6mm edge banding tape pressed at 200o C with hot melt glue on special machines, with proper locking arrangement. The shelves are made of 0.8mm thick CRCA steel sheet duly powder coated.

**Meeting Table (HFM) (for 6 Person)**

Providing & Fixing Meeting Table of an overall size 1800x900x750 with top made of 25mm thick prelaminated particle board. The table has understructure with verticals made of 25mm thick prelaminated particle board & modesty made of 18mm thick prelaminated particle board having decorative laminate on both sides. All exposed edges are sealed with 2mm PVC edge banding tape and unexposed edges sealed with 0.6mm PVC edge banding tape pressed at 200o C with hot melt glue on special machines.

**Conference Table**

Providing & Fixing Conference Table of height 750mm with two seater module of size 1350(W)x550(D). The top made of 36mm thick MDF board pressed with 0.4mm thick membrane foil clad pressed with PU glue. The foil is precoated with a layer of polyurethane for better scratch resistance. The table vertical are made of 25mm thick postformed particle board & modesty made of 18mm thick prelaminated particle board with decorative laminate on both sides.All the edges are sealed with 2mm PVC edge banding tape and unexposed edges sealed with 0.6mm PVC edge banding tape pressed at 200o C with hot melt glue on special machines.

The Round corner piece is made up of 36mm thick MDF board pressed with 0.4mm thick membrane foil clad pressed with PU glue and supported with post of 65mm dia made of CRCA sheet duly powder coated. The complete table unit is made up of combination of tables and round corner pieces as per site measurements.

**Reception Table with Side Module**

Providing and fixing reception table of an overall size of 1500x700x1050 with top made up of 25mm thick Pre Laminated Particle Board having exposed edges sealed with PVC edge banding tape. The top is supported on steel vertical studs of 50mm(D) and lower Modesty in perforated steel sheet duly powder coated. The main table has a transaction top made of 10mm thick toughened glass supported on steel studs and upper Modesty duly powder coated. The main table top is supported by two side tables with top in elliptical shape of size 500x300x585 made of 25mm thick Pre Laminated Particle Board duly supported by steel studs of 50mm(D), with perforated steel modesty underneath duly powder coated.

**Centre Table**

Providing and supplying **center table of size 900X450X450** with top made of 12mm thick bevelled glass and understructure with a shelf is made of 18mm thick prelaminated particle board with all exposed edges sealed with 2mm PVC edge banding tape and unexposed edges sealed with 0.6mm PVC edge banding tape pressed at 200o C with hot melt glue on special machines.

**Side Table**

Providing and supplying **Side table of size 450X450X450** with top made of 12mm thick bevelled glass and understructure with a shelf is made of 18mm thick prelaminated particle board with all exposed edges sealed with 2mm PVC edge banding tape and unexposed edges sealed with 0.6mm PVC edge banding tape pressed at 200o C with hot melt glue on special machines.

**Reception Sofa**
Providing and supplying of steel sofa having chrome plated legs capsule pipe of 40x20 mm of 14 gauges. The pipe will be duly chrome plated with thickness of 45-50 microns. The seat and back will be made of good quality high density foam with a density of 32 kg per cum. The inner structure will consist of good quality wood and hot pressed ply of 12 mm thickness duly anti termite treated. The thickness of foam in seat and back will be 5 inches and upholstered with good quality of leatherite of approved colour/ shade.
**Sofa**
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. Leatherite or fabric sofa having arm covered with leatherite or fabric.

**High Back Revolving Chair for HFM**

**High Back Revolving Chair**
**Upholstry/Frame**: One piece ply in seat & back with foam & polyfill and leatherite upholstery
**Seat & back size** : 520 mm (w) x 500 mm (D) , 520 mm (w) x 800 mm (H)
**Arms**: Wooden arms with melamine polish with chrome plated end caps
**Mechanism** : Central tilt mechanism/ Torsion bar mechanism
**Height Adjustment** : Gas Lift
**Base** : Chrome plated base with twin wheel castors

**Visitor's Chair for HFM**

**Visitor Chair**
**Upholstry/Frame**: One piece ply in seat & back with foam & polyfill and leatherite upholstery
**Seat & back size** : 520 mm (w) x 500 mm (D) , 520 mm (w) x 580 mm (H)
**Arms**: Wooden arms with melamine polish with chrome plated end caps
**Base** : Chrome plated fixed base with PVC shoes

**Chairs for Director & Deputy Director:**

Medium Back Revolving Chair
Upholstry/Frame: One piece ply and ring type spring in seat & back with foam & polyfill and leatherite upholstery
Seat & back size : 520 mm (w) x 500 mm (D) , 520 mm (w) x 580 mm (H)
Arms: Wooden arms with melamine polish
Mechanism : Central tilt mechanism/ Torsion bar mechanism
Height Adjustment : Gas Lift
Base : Wooden base with twin wheel castors

**Visitor Chair for Director & Deputy Director**

Visitor Chair
Upholstry/Frame: One piece ply and ring type spring in seat & back with foam & polyfill and letherite upholstery
Seat & back size : 520 mm (w) x 500 mm (D) , 520 mm (w) x 580 mm (H)
Arms: Wooden arms with melamine polish
Base : Powder coated fixed base

**Chair for joint Sec., Scientist & P.S.J.S**

**High Back Revolving Chair**
**Upholstry/Frame**: 12 mm hot pressed ply covered with moulded PU foam in seat & Back with ABS/ PP Cover & Fabric upholstery
**Seat & back size** : 500 mm (w) x 460 mm (D) , 500 mm (w) x 720 mm (H)
**Arms**: D-shape steel inserted PU arms
**Mechanism :** Center tilt mechanism
**Height Adjustment :** Gas Lift
**Base :** Steel Inserted nylon base with twin wheel castors

**Visitor's Chair for Consultant/Tech/ Deo/PS/Peon**

**Visitor Chair**
**Upholstry/Frame**: 12 mm hot pressed ply covered with moulded PU foam in seat & Back with ABS/ PP Cover & Fabric upholstery
**Seat & back size** : 500 mm (w) x 460 mm (D) , 500 mm (w) x 490 mm (H)
**Arms**: D-shape steel inserted PU arms
**Base** : Fixed steel base with PVC shoes

**Chair for Workstation, P.S. Steno & Staff**

**Medium Back Revolving Workstation Chair**
**Upholstry/Frame**: PU mould in seat & Back with ABS/ PP Cover & Fabric upholstery
**Seat & back size** : 490 mm (w) x 460 mm (D) , 430 mm (w) x 500 mm (H)
**Arms**: Steel inserted PU arms
**Mechanism :** Push back mechanism
**Height Adjustment :** Gas Lift
**Base :** Steel Inserted nylon base with twin wheel castors

**Chair for Conference Table, Reception Table**

**Medium Back Revolving Chair**
**Upholstry/Frame**: PU mould in seat & Back with polyprpylene Cover & Fabric upholstery
**Seat & back size** : 490 mm (w) x 460 mm (D) , 430 mm (w) x 470 mm (H)

**Arms**: Y-shape PVC arms
**Mechanism :** Push back
**Height Adjustment :** Gas Lift
**Base :** Steel Inserted nylon base with twin wheel castors

**Chairs Visitor for Steno**

**Visitor chair**
**Upholstry/Frame:** 12 mm hot pressed ply in seat and back with PU moulded foam and fabric upholstery with PVC lipping all around.
**Seat & back size** : 480 mm (w) x 440 mm (D) , 480 mm (w) x 460 mm (H)
**Arms**: Steel inserted PU arms
**Base** : Fixed steel base with PVC shoes

**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.

## 1.22 LIST OF APPROVED MAKES : CIVIL WORKS

| Sl.No. | MATERIALS | | MANUFACTURERS |
|---|---|---|---|
| 1. | Doors & Windows fixtures/ Fittings | : | Everite, Hardima, Global, Crown |
| 2. | Door Closer / Floor spring Hardima | : | Doorking, Everite, Hardwyn, Amar Darmy, |
| 3. | Aluminium Sections. | : | Hindalco, Jindal, Indal , Bhoruka, |
| 4. | Clear Glass/ Clear Float Glass AIG / Toughened Glass | : | Saint Gobain(SG),Modi,Gujrat Guardian, Tata , |
| 5. | Laminates | : | Formica, Decolam, Century, Marino, Green Ply |
| 6. | Synthetic Enamel Paints | : | Berger (Luxol gold), Asian(Apcolite), ICI Dulux (Gloss), Nerolac (Full gloss hard drying) |
| 7. | Oil Bound Distemper | : | Asian (Tractor), Berger (Bison), Nerolac (Super Acrylic). |
| 8. | Cement Paint | : | Snowcem Plus, Berger (Durocem Extra), Nerolac (Nerocem with titanium),. |
| 9. | Plastic Emulsion Paint | : | ICI, Asian, Nerolac |
| 10. | Other Paints/Primers | : | ICI Dulux, Asian, Berger, Nerolac |
| 11. | Cement | : | OPC 43 grade conforming to BIS-8112 and approval of source by Engineer |
| 12. | Reinforcement Steel | : | TMT steel conforming to BIS-1786 and approval of source by Engineer |
| 13. | Glass Mosaic Tiles | : | Italica, Bizzaza. Pallidio |
| 14. | Back-up Rod. | : | Supreme Industries or equivalent |
| 15. | M.S. Pipe | : | Jindal Hisar, Prakash-Surya, BST, Kalinga, Tata |
| 16. | Polycarbonate Sheets | : | GE Plastics or approved equivalent |
| 17. | Wooden/Metal Fire Check Doors Control, | | : Navair, Shakti-met, Godrej, Pacific Fire Promat |
| 18. | Gyspum Board System | : | India Gypsum, Laffarge, Boral |

| Sl.No. | MATERIALS | | MANUFACTURERS |
|---|---|---|---|
| 19. | Sunken Portion Treatment | : | Choksey, Roffe, Krytone,Sika, |
| 20. | Admixtures for concrete. | : | Cico, Vam Organics, Roffe, Pidilite,FOSROC |
| 21. | Ceramic Tiles | : | Johnson, Somany, Kajaria, Nitco |
| 22 | Pre-Laminated Particle Board | : | Novopan, Greenlam, Kitlam, Marino |
| 23. | Flush Door Shutters. | : | Century, Kitply, Novapan, Green Ply, Marino |
| 24. | Glazed Tiles | : | Bell, Somany, Johnson, Kajaria, Cera, |
| 25. | PVC Water Stops | : | Supreme, Fixopan or approved equivalent |
| 26. | White Cement. | : | Birla White, J.K. |
| 27. | Powder Coating Material Pure Polyester. | : | Jotun , Berger, Goodlass Nerolac |
| 28. | Masking Tapes | : | Suncontrol , Wonder Polymer. |
| 29. | Stainless Steel Screws For Fabrication and fixing of Windows. | : | Kundan , Puja , Atul. |
| 30. | Dash Fasteners./Anchor bolts | : | Hilti, Fischer, Bosch. |
| 31. | Stainless Steel Bolts, Washers and Nuts. | : | Kundan, Puja, Atul. |
| 32. | Stainless Steel Pressure Plate Screws. | : | Kundan, Puja, Atul. |
| 33. | Stainless Steel Friction Stay. | : | Securistyle, Earl Bihari. |
| 34. | E.P.D.M. Gaskets. | : | Anand Reddiplex, Enviro Seals |
| 35. | Weather Silicon. | : | Dow Corning, Wacker, GE |
| 36. | Structural Silicon at butt joints | : | - Do - |
| 37. | PVC continous fillet for periphery | | |

| | | | |
|---|---|---|---|
| | packing of Glazings /Structural glazings. | : | Roop, Anand, Forex Plastic. |
| 38. | Floor Springs. | : | Doorking, Opel or equivalent |
| 39. | Water proofing / Injection Grouting | : | Specilized agency as approved by engineer |
| 40. | 6mm thick Reflective Glass | : | Glaverbel, Glavermas, Saint Gobain. |

| Sl.No. | MATERIALS | MANUFACTURERS |
|---|---|---|
| 41. | Door Locks. | : ACME, Godrej, Harrison, Hardima, Mobel |
| 42. | Door Seal – Woolpile Weather Strip | : Anand -Reddiplex. |
| 43. | Aluminium Grill | : Hindalco, Decogrille or approved Equivalent |
| 44. | Vitrified Tiles | : Restile , Naveen, Bell-Ceramics, Kajaria, Somani, |
| 45 | Carpets | : Hollitex, Standard, Mohawk |
| 46. | Aluminium Cladding sheets | : Alstrong , Alpolic, Alucobond, Alucomat Alu Decor |
| 47. | Aluminium Die-cast handles & two point locking kit | : Giesse, Securistyle, Alu-alpha |
| 48. | Stainless steel D-handles | : D-line, Giesse, Dorma,Hardima |
| 49. | Fabric for Auditorium | : ESSMA, Raymonds or equivalent |
| 50. | Stainless Steel Pipes/Flats | : 304 Grade (as approved by Engineer) |
| 51. | Structural Steel | : Conforming to BIS 2062 and approval of source by Engineer |
| 52. | Ready Mix Concrete | : ACC,BIRLA, Ahlcon or approvedequivalent |
| 53. | Epoxy Flooring/ wall coating | : Fosrock, Beck, Famaflor, |
| 54. | SBS bitumen based Self adhesive membrane Material 1.5 | : Grace-Bituthene CP1.5, Texsa-Texself |
| 55. | Acoustic Mineral Fibre | : USG-Radar, Armstrong, 21st Century, Acostyle |
| 56. | Curtain wall/Structure Glazing/Hermatic seal Sliding | |

| | | | |
|---|---|---|---|
| | Doors | : | Specialised Agency to be approved by Engineer |
| 57. | Fire Panic bar | : | Briton, Monarch, Von-Duprin, Dorma, Mobel |
| 58 | Ply board | : | Greenply, Kitply, Century, Archid, Marino |

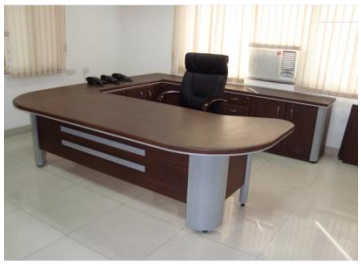
| Sl.No. | MATERIALS | | MANUFACTURERS |
|---|---|---|---|
| 59 | PVC Doors (Solid Profile) | : | Rajshri or approved equivalent |
| 60 | PVC Doors (Hollow Profile) | : | Syntex, Plasopan or approved equivalent |
| 61 | PVC Flooring | : | LG, Tarkett, Responsive or approved equivalent |
| 62 | SS Railing | : | Specialised Agency to be approved by Engineer |
| 63 | Interlocking Paver Tiles | : | Ultra, Shree or Approved Equival |
| 64 | Wall Clading Tiles | : | Ultra, Shree or Approved Equivalent |
| 65 | Acoustic Seals | : | Anand Reddiplex , Enviroseal or equivalent |
| 66 | Smoke Seals | : | Pemko or Equivalent |
| 67 | Fire rated door closer/Mortice Lock/ Door Co-ordinator | | Dorma, Becker F.S. Australian or approved equivalent |

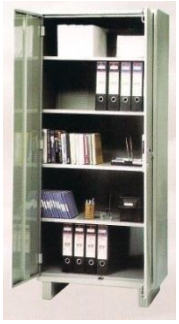
**Note : Wherever makes have not been specified for certain items, the same shall be as per BIS and as per approval of Engineer**

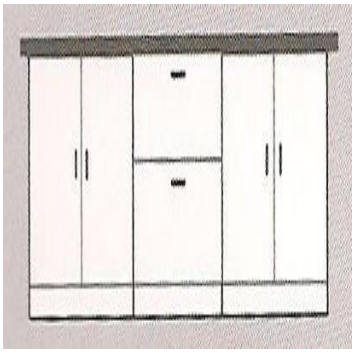
**LIST OF APPROVED MAKES : PLUMBING WORKS**

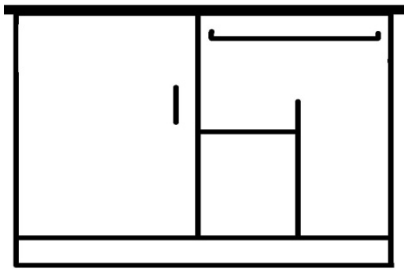
| S.No. | Materials | Relevant IS Code | Manufacturers |
|---|---|---|---|
| 1. | Vitreous China Sanitary ware | 2556 | Hindustan Sanitary ware, Cera, Kohler, American standard |
| 2. | White Glazed Fire Clay Sink | 771 | Sanfire, Cera, Neycer, Hindware. |
| 3. | Stainless Steel Sink | | Jayna, Jaguar, Commander, Nirali |
| 4. | Plastic seat cover of W.C | 2548 | Commander, Cera, Kohler Jaquar, American standard |
| 5. | Geyser | | Racold, Jaguar, Rheem, Usha Lexus |
| 6. | C.P. Fittings Mixer/Pillar taps | 1795 | Aquabaths, Othello, Jaquar, Kingston, Marc |
| | Washers, C.P. brass accessories | 4291/4827 | |
| 7. | Centrifugally /Sand cast iron pipes & fittings | 3989/1729 | Neco, Hepco, SKF |
| 8. | G.I. Pipes | 1239 Part I | Jindal-Hissar, Tata, Prakash-Surya B.S.T., SAIL, |
| 9. | G.I. Fittings | 1239 Part I | Unik, K.S., Zoloto Zenith |
| 10. | Gunmetal Valves | 778 | Zoloto, Leader, |
| 11. | Brass stop & Bib Cock | 781 | Zoloto, Sant, L&K, Jaquar |
| 12. | Ball valve with floats | 1703 | Zoloto, Leader, Sant, Jayco |
| 13. | Stoneware pipes & Gully Traps | 651 | IS Marked pipes |
| 14. | R.C.C. pipes | 458 | IS Marked pipes |
| 15. | D.I. Manhole Covers | 1726 | RIF, NECO, SKF |
| 16. | Water Tank | | Sintex, Polycon, Uniplast |
| 17. | Mirror | | Golden, Atul, Modi guard Gujrat Guardian |
| 18. | Hand drier | | Kopal, Automat, Euronics |
| 19. | PVC flusing cistern | | Commander, Parryware, Duralite |
| 20. | Insulation of Hot water pipes | | Vidoflex insulation, Superlon, Paramount Kaiflex |

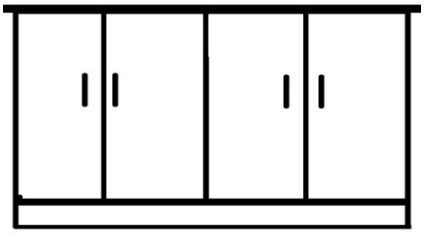
| | | | |
|---|---|---|---|
| 21. | PVC Rain Water Pipes. | | Supreme, Prince, Finolex. Oriplast |
| 22. | D.I pipes | | Jindal, Tata, Electrosteel. |
| 23. | Sluice valve / NRV | | Kirloskar, Kilburn, Zoloto Castle, |
| 24. | Water supply pumps | : | KIRLOSKAR, WILO, GRUNDFOS |
| 25. | Submersible pumps | : | KIRLOSKAR, GRUNDFOS, KSB, Mather & Platt |
| 26 | UPVC pipes & fittings | ; | FInolex , Prince, Supreme, Oriplast |
| 27. | Chlrorinator | : | ALFA, USA, Ion exchange, Sigma DH Combine Inc. |
| 28. | HDPE Solution tank | : | WATCON, ION EXCHANGE, Water Supply Specilist P (Ltd) |
| 29. | C.P Flush Valves | : | Jaquar, DOCOL(Germany) marketed by GEM, Ideal |
| 30 | C.P Angle Valves, bib cock | : | Othello, Jaquar, Marc, Kingston ,Aquabaths |
| 31 | Decorative bath room fittings | : | Jaquar (Florentine range), Marc (equivalent) Aquabaths (equivalent) |











# Technical Specification of the Active Items (LAN Work)

1. **Layer 3 Core Switch (Sr. no. 1.1 in the BOQ item)Make (HP/Cisco/Juniper/Brocade)**

| Feature | Component Description | Compliance (Yes/No) | Remark |
|---|---|---|---|
| | | | |
| **Architecture** | The switch Shall be non-blocking in architecture | | |
| | The switch support stackable with 40Gbps (Full Duplex) stacking BW. | | |
| | Shall support 2 x 10-Gigabit SFP+ port | | |
| | The switch Shall be 19" Rack Mountable | | |
| | Shall support up to 140 Gbps switching capacity | | |
| | Shall have up to 105 Mpps switching throughput | | |
| **Reliability** | Shall support virtual chassis/Stacking creation across nine active switches | | |
| | Should support external redundant power supply to provide high reliability | | |
| | Shall support VRRP ( Virtual Router Redundancy Protocol) | | |
| | Shall support Ring Protection Protocol or equivalent | | |
| | Shall support Virtual Cable Test or equivalent to detect cable problems | | |
| | Shall support Smart-Link or equivalent to achieve 50ms link failover over L2 | | |
| **Layer 2** | Shall support 32 K MAC addresses | | |
| | Shall support 1000 VLANs based on port, protocol, MAC address, and IP subnet | | |
| | Shall support 4000 VLAN IDs | | |
| | Shall support Voice VLAN | | |
| | Shall support GVRP | | |
| | Shall support Local and Remote port mirroring | | |
| | Shall support Storm suppression | | |
| | Shall support VLAN mapping | | |
| | Shall support DHCP Client, Relay | | |
| | | | |
| **Layer 3 feature from The DAY 1** | Shall support IPv4 & IPv6 Routing. | | |
| | Shall support Routing table size - 12,000 entries | | |

| | | | |
|---|---|---|---|
| | Shall support IPv4: Static routing, RIP, OSPFv2, BGP, and ISIS from the DAY1 | | |
| | Shall support Route policy, and policy-based routing | | |
| | Shall support IPv6: RIPng, OSPFv3, BGP4+ for IPv6 from the DAY 1 | | |
| | Shall support Route policy, and policy-based routing | | |
| | Shall support Manual IPv6 tunnel, 6to4 tunnel, ISATAP tunnel | | |
| | Shall support MBGP for IPv6 | | |
| | | | |
| | | | |
| **IPv4 and IPv6 Multicast** | Shall support IGMP Snooping, IGMP v1/v2/v3 | | |
| | Shall support PIM-DM/SM/SSM | | |
| | Shall support MSDP for IPv4 and IPv6 | | |
| | Shall support Multicast VLAN for IPv6 or IPv6 | | |
| | Shall support MLD Snooping v1/v2 | | |
| | Shall support PIM-DM/SM/SSM for IPv6 | | |
| | | | |
| | | | |
| **ACL/QoS** | Packet filtering at Layer 2 (L2) to Layer 4 (L4); providing traffic classification based on source MAC address, destination MAC address, source IP (IPv4/IPv6) address, destination IP (IPv4/IPv6) address, port, protocol, VLAN | | |
| | Support scheduling modes like Strict Priority (SP), WRR, and SP+WRR | | |
| | Packet filtering based on time range | | |
| | Port-based and VLAN-based ACL | | |
| | ACL policies in the ingress direction and the egress direction | | |
| | Each port supports eight output queues. | | |
| | | | |
| | | | |
| **Security** | AAA, RADIUS authentication | | |
| | MAC address authentication, 802.1x authentication, and portal authentication | | |
| | SSH 2.0, HTTPS and SSL | | |
| | Port Isolation and Port Security | | |
| | IP Source Check | | |
| | ARP Detection | | |
| | uRPF | | |
| | STP Root Guard and BPDU Guard | | |
| | DHCP Snooping | | |
| | Binding of IP+MAC+PORT | | |
| **Management & Maintenance** | Configuration through CLI, Telnet, and Console port | | |
| | SNMPv1/v2/v3, RMON | | |
| | UDLD/DLDP or equivalent | | |

| | | | |
|---|---|---|---|
| | Web-based Management | | |
| | Ping for IPv6 and IPv4 | | |
| **Warranty** | The vendor Shall support for software fixes and upgrades to the switch available free of cost till the life of the product<br>The vendor shall provide 3 years product warranty and software upgrades inclusive | | |

**2. Layer 2 Switch (Sr. no. 2.1 in the BOQ item) Make (HP/Cisco/Juniper/Brocade)**

| Feature | Component Description | Compliance (Yes/No) |
|---|---|---|
| **Architecture** | The switch shall have 24 x 10/100/1000 Base-T ports including four dual-personality ports (SFP/Copper). One SFP port should be populated with 1 Giga Transceivers-LX fiber modules. | |
| | The switch shall support upto 4 No 10G Ports. | |
| | The switch shall have min. 1 No. of 10G SFP port populated with 10 G Transceivers-SR fiber module. | |
| | The switch shall be 19" Rack Mountable | |
| | Shall have min 86 Gbps switching capacity | |
| | Shall have min 64 Mpps switching throughput | |
| **Reliability Features** | Shall support external redundant power supply | |
| | Shall support Virtual Cable Test or equivalent to detect cable problems | |
| | Shall support 50ms or less link failover | |
| **Layer 2 features** | Shall support 15K MAC addresses | |
| | Shall support 4000 VLANs | |
| | Shall support VLANs based on port, protocol, MAC address, and IP subnet | |
| | Shall support Voice VLAN | |
| | Shall support IEEE 802.1s (MSTP) | |
| | Shall support IEEE 802.3x (full-duplex flow control) and backpressure flow control (half-duplex) | |
| | Shall support Link aggregation up to 128 aggregation groups, each supporting up to eight GE ports or four 10GE ports | |
| | Shall support Traffic mirroring, Port mirroring and remote port mirroring | |
| | Shall support Broadcast, multicast and unicast storm control | |
| | Shall support Jumbo frames support (9K) | |
| | Shall support DHCP Client, Relay | |
| **IPv4 and IPv6 Routing and Multicast features** | Shall support IPv4 and IPv6 Static routing from day-1 | |

| | | |
|---|---|---|
| | Shall support IGMP Snooping v1/v2/v3 | |
| | Shall support Multicast VLAN and IPv6 multicast VLAN | |
| | Shall support MLD Snooping v1/v2 | |
| | Shall support 256 multicast entries | |
| **ACL/QoS** | Packet filtering at Layer 2 (L2) through Layer 4 (L4); providing traffic classification based on source MAC address, destination MAC address, source IP (IPv4/IPv6) address, destination IP (IPv4/IPv6) address, port, protocol, VLAN | |
| | Shall support Packet filtering based on time range | |
| | Shall support packet redirection | |
| | Shall support flexible queue scheduling algorithm, which can be set based on ports and queues; supporting Strict Priority (SP), WRR, and SP+WRR | |
| | Shall support the remarking of 802.1p and DSCP priorities of packets | |
| | Shall support Rate limiting with a granularity of 64 kbps | |
| **Security** | Shall support Hierarchical user management and password-based protection | |
| | Shall support AAA/RADIUS/TACACS authentication | |
| | Shall support MAC address authentication, 802.1x authentication | |
| | Shall support Multiple 802.1x users per port | |
| | Shall support SSH 2.0, HTTPS and SSL | |
| | Shall support IP-MAC-port binding | |
| | Shall supportIP Source Guard | |
| | Shall support ARP detection | |
| | Shall supportMAC address learning limit on a port | |
| | Shall support STP Root Guard and BPDU Guard | |
| | Shall support DHCP Snooping | |
| **Management & maintenance** | Shall support Configuration through CLI, Telnet, and Console port | |
| | Shall support SNMPv1/v2/v3 | |
| | Shall support Remote Monitoring (RMON) alarms, events and history records | |
| | Shall support Web-based Management | |
| | Shall support NTP | |
| | Shall support System logs and hierarchical alarms | |
| | Shall support power alarms, fan and temperature alarms | |
| **Environmental** | Operating temperature should support 32°F to 113°F (0°C to 45°C) | |

| | | |
|---|---|---|
| | Operating relative humidity should support 10% to 90%, noncondensing | |
| | Nonoperating/Storage temperature should support -40°F to 158°F (-40°C to 70°C) | |
| | Nonoperating/Storage relative humidity should support 5% to 95%, noncondensing | |
| **Electrical characteristics** | Voltage: 100-240 VAC | |
| | Idle power: <40W | |
| | Maximum power rating: <110 W | |
| | Frequency: 50/60 Hz | |
| **Warranty** | The vendor Shall provide 3 years product warrantyand software upgrades inclusive | |

### 3. Access Point (Sr. no. 3.1 in the BOQ item) Make (HP/Cisco/Juniper/Brocade)

| Features | Description | Compliance (Yes/No) |
|---|---|---|
| **Architecture** | The access point should have 1 x RJ-45 auto-sensing 10/100/1000 port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T) | |
| | Should be dual-radio supporting 802.11a/b/g/n | |
| | The AP should have dedicated 802.11n support without allowing legacy clients (802.11a/b/g) on the same radio to achieve maximum 802.11n data rates | |
| | Should support per-radio software-selectable configuration of the 2.4 GHz and 5 GHz frequency bands and Should be available on both radios | |
| | Should have upto Six Integrated, dual-band, omni antenna (4dBi gain for 2.4GHz & 7dBi gain for 5 Ghz) | |
| | Should be able to deploy them either for Local Client Access, Mesh connectivity and Wireless Packet detection mode | |
| | The access point should be PoE compliant and operate on the existing power supplied by IEEE 802.3af power injectors | |
| | Should be Plenum-rated for indoor wireless coverage | |
| | | |
| **Mobility Features** | Should support self-healing, self-optimizing local mesh extending network availability to areas without an Ethernet infrastructure | |
| | Should be Wi-Fi Alliance certified for interoperability with all IEEE 802.11a/b/g client devices | |
| | Should support up to 16 Service Sets with unique SSIDs with a unique MAC address | |

| | | |
|---|---|---|
| | Each SSID should be independently configurable for authentication, encryption, VLANs, and up to four QoS levels | |
| | Should support TOS/DiffServ and 802.1p for end-to-end QoS across wired and wireless networks | |
| | Should support QoS classification based on TCP/UDP port | |
| | Should support direct source-to-destination traffic forwarding (distributed traffic forwarding) to maximize application delivery | |
| | | |
| **Security features** | Should support IEEE 802.11g WPA and WPA2 Wireless Multimedia (WMM), WMM Power save EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, IEEE 802.11h | |
| | Should support enforcement of client authorization based on user credentials (802.1X/EAP), hardware identifiers (MAC address, WEP key), and HTML login | |
| | Should support hardware-assisted encryption using WPA2/AES (IEEE 802.11i), WPA/RC4 and/or WEP | |
| | Should support simultaneous detection and prevention of wireless threats on 2.4 GHz and 5 GHz frequency bands | |
| | Should support Layer-2 client isolation per Service Set | |
| | Should support protocol filtering per Service Set to deny unwanted traffic | |
| | Should support IP filtering per-user and per-Service Set to forward traffic to a pre-defined location | |
| | Should support management communication via SSH/SSL, IPSec, and digital certificates | |
| | | |
| **Management features** | Should support both centrally controlled mode (configured and updated via wireless controller) and autonomous mode which is software selectable | |
| | Should support auto-selection of RF channel and transmit power | |
| | Should support PCAP packet capture on WLAN or LAN interface | |
| | Should support SNMP, CLI, and web-based management interfaces | |
| | Operating temperature of up to 50ºC | |
| **PoE&Power Adapter** | Access Point should be supplied with Power Adapter and PoE. | |
| **Warranty and Support** | The vendor Shall provide 3 years product warranty | |

4. **Firewall (Sr. no. 4.1 in the BOQ item) Make (Cyberoam/Cisco/Juniper/Fortinet)**

| | Unified Threat Management Appliance specifications | Compliance |
|---|---|---|
| | | |
| | General Specification | |
| 1.1 | Product or OEM should be ISO 9001-2008 Certified | |
| | Post Sales support should have ISO 20000 Certification | |
| 1.2 | OEM should have regional presence for sales & support | |
| 1.3 | Proposed appliance should support inbuilt hdd for storage of Logs & reports. | |
| 1.4 | Proposed solution should comply FCC and CE norms | |
| 1.5 | The proposed solution should match following criteria. | |
| | a. Hardware platform must be 64 bit | |
| | b. Must be based on Multicore Parallel Processing Architecture | |
| | c. 8 number of 10/100/1000 interface with Hardware Bypass | |
| | d. 30,000 number of new connection | |
| | e. 1,000,000 number of concurrent connection | |
| | f. 3000 Mbps Firewall throughput | |
| | g. 750 Mbps IPS throughput | |
| | h. 550 Mpbs UTM throughput | |
| 1.6 | The proposed solution should have unrestricted user/node license. | |
| 1.7 | The proposed solution must work as standalone HTTP proxy server with integrated Firewall, Anti Virus, Anti Spam, Content filtering, IPS. | |
| 1.8 | The proposed solution must support User based policy configuration for security & internet management. | |
| 1.9 | The proposed solution should provide on appliance reports based on user not only on the base of IP address. | |
| 2.0 | Proposed appliance should support MIX mode deployment. | |
| | Administration, Authentication & General Configuration | |
| 2.1 | The proposed solution should support administration via secured communication over HTTPS, SSH and from Console. | |
| 2.2 | The proposed solution should be able to export and import configuration backup including user objects | |
| 2.3 | The proposed solution should support Route (Layer 3)/transparent mode (Layer 2). | |
| 2.4 | The proposed solution should support integration with Windows NTLM, Active Directory, LDAP, Radius or Local Database for user authentication. | |
| 2.5 | The proposed solution must support automatic transparent Single Sign on (ASSO) for user authentication. SSO must be proxy independent and support all applications for authentication. | |
| 2.6 | The proposed solution should support Dynamic DNS configuration. | |
| 2.7 | The proposed solution should provide bandwidth utilization graph on daily, weekly, monthly or yearly for total or individual ISP link. | |

| | | |
|---|---|---|
| 2.8 | The proposed solution should provide real time data transfer/bandwidth utilization done by individual user/ip/application. | |
| 2.9 | The proposed solution should support Parent Proxy with IP/FQDN support. | |
| 2.10 | The proposed solution should support NTP. | |
| 2.11 | The proposed solution should support user/ip/mac binding functionality to map username with IP address & MAC address for security reason. | |
| 2.12 | The proposed solution should have multi lingual support for Web admin console. | |
| 2.13 | The proposed solution should support Version roll back functionality. | |
| 2.14 | The proposed solution should support session time out & Idle time out facility to forcefully logout the users. | |
| 2.15 | The proposed solution should support ACL based user creation for administration purpose. | |
| 2.16 | The proposed solution should support LAN bypass facility in case appliance is configured in Transparent mode. | |
| 2.17 | The proposed solution should support inbuilt PPPOE client and should be capable to automatically update all required configuration whenever PPPOE get changed. | |
| 2.18 | The proposed solution should support SNMP v1, v2c & v3. | |
| 2.19 | The proposed solution must be firmware based instead of normal software with capability to keep three firmware instant roll back. | |
| 2.20 | The proposed solution must provide flexible, granular role-based GUI administration. | |
| 2.21 | The proposed solution must provide support of multiple authentication servers for each module (Firewall, Different type of VPN) | |
| 2.22 | The proposed solution must support of Thin Client (Microsoft TSE, Citrix) authentication and must be able to differentiate users coming from same IP address. | |
| | Multiple ISP load balancing and Failover | |
| 3.1 | The proposed solution should support load balancing & failover for more than 2 ISP. | |
| 3.2 | The proposed solution should support explicit routing based on Source, Destination, Username, Application. | |
| 3.3 | The proposed solution should support weighted round robin algorithm for Load balancing. | |
| 3.4 | The proposed solution should provide option to create failover condition on ICMP, TCP or UDP protocol to detect failed ISP connection. | |
| 3.5 | The proposed solution should send alert email to admin on change of gateway status. | |
| 3.6 | The proposed solution should have Active/Active (Round Robin) and Active/Passive gateway load balancing and failover support. | |

| | | |
|---|---|---|
| | High Availability | |
| 4.1 | The proposed solution should support High Availability Active/Passive or Active/Active | |
| 4.2 | The proposed solution should be ICSA certified High Availability solution. | |
| 4.3 | The proposed solution should send notification to admin on change of appliance status in High Availability. | |
| 4.4 | The HA traffic between two peers must be encrypted. | |
| 4.5 | The proposed solution should support Link, device & Session failure. | |
| 4.6 | The proposed solution should support automatic & manual synchronization between appliances in cluster. | |
| | Firewall | |
| 5.1 | The proposed solution should be standalone appliance with hardened OS. | |
| 5.2 | The proposed solution should be ICSA &Webcoast checkmark certified firewall. | |
| 5.3 | The proposed solution should support stateful inspection with user based one-to-one & dynamic NAT, PAT. | |
| 5.4 | The proposed solution must support user identity as matching criteria along with Source/Destination IP/Subnet/group, destination Port in firewall rule. | |
| 5.5 | The proposed solution should facilitate to apply unified threat policy like AV/AS, IPS, Content filtering, Bandwidth policy & policy based routing decision on firewall rule for ease of use, also unified threat controls must be applied on inter zone traffic. | |
| 5.6 | The proposed solution should support user defined multi zone security architecture. | |
| 5.7 | The proposed solution should have predefine application based on port/Signature & also support creation of custom application based on port/protocol number. | |
| 5.8 | The proposed solution should support ibound NAT load balancing. | |
| 5.9 | The proposed solution should support 802.1q VLAN tagging support. | |
| 5.10 | The proposed solution should support dynamic routing like RIP1, RIP2, ISPF, BGP4. | |
| 5.11 | The proposed solution should support Cisco compliance command line interface for Static/Dynamic routing. | |
| 5.12 | The proposed system should provide alert message on Dash Board whenever default password is not changed, non secure access is allowed & module subscription is expiring. | |
| 5.13 | The proposed system must provide Mac Address (Physical Address) based firewall rule to provide OSI Layer 2 to Layer 7 security | |
| 5.14 | The proposed solution must be support IPv6 as per www.ipv6ready.org guidelines | |

| | | |
|---|---|---|
| 5.15 | The proposed solution must support 3G UMTS, GSM, GPRS modem via USB interface for VPN and Gateway Failover - Load Balancing. | |
| 5.16 | The proposed solution should support Fully Qualified Domain Name (FQDN) based host and host group. | |
| 5.17 | The proposed solution should support Differentiated Services Code Point (DSCP) | |
| | IPS | |
| 6.1 | The proposed solution should be webcoast checkmark certified. | |
| 6.2 | The proposed solution should have signature based and protocol anomaly based Intrusion prevention system. | |
| 6.3 | The proposed solution should have 4000+ signature database. | |
| 6.4 | The proposed solution must support creation of custom IPS signature. | |
| 6.5 | The proposed solution must support creation of multiple IPS policy for different zone instead of blanket policy at interface level. | |
| 6.6 | The proposed solution must support configuration option to disable/enable category/signature to reduce the packet latency. | |
| 6.7 | The proposed solution should give username along with IP in IPS alerts and reports. | |
| 6.8 | The proposed solution should automatically takes update from update server. | |
| 6.9 | The proposed solution must support blocking of anonymous open HTTP Proxy running on 80 port or any other port & also should support client based open proxy like Ultra surf. . | |
| 6.10 | The proposed solution should able to detect & block known P2P based instant messaging application like Skype& known chat application like WLM, Rediffbol etc. | |
| 6.11 | The proposed solution should generate the alerts for attacks | |
| 6.12 | The proposed solution should generate historical reports based on top alerts, top attackers, severity wise, top victims, protocol wise. | |
| | Gateway Anti Virus | |
| 7.1 | The proposed solution should have an integrated Anti Virus solution. | |
| 7.2 | The proposed solution should have webcoast checkmark certification for Antivirus/Anti Spyware. | |
| 7.3 | The proposed solution must work as SMTP proxy not as MTA or relay server. | |
| 7.4 | The proposed solution should support scanning for SMTP, POP3, IMAP, FTP, HTTP, FTP over HTTP protocols. | |
| 7.5 | The basic virus signature database of proposed solution should comprise complete wild list signatures and variants as well as malware like Phishing, spyware. | |
| 7.6 | The proposed solution should have facility to add signature/disclaimer in mails. | |

| | | |
|---|---|---|
| 7.7 | The proposed solution must support on appliance quarantined facility and also personalized user based quarantine area. | |
| 7.8 | The proposed solution should support blocking of dynamic/executable files based on file extension. | |
| 7.9 | For SMTP traffic, the proposed solution should support following actions for infected, suspicious or protected attachments mails. | |
| | a. Drop mail | |
| | b. Deliver the mail without attachment | |
| | c. Deliver original mail | |
| | d. Notify to administrator | |
| 7.10 | The proposed solution should support multiple anti virus policy for sender/recipient email address or address group for notification setting, quarantine setting & file extension setting instead of single blanket policy | |
| 7.11 | The proposed solution should update the signature database at a frequency of less than one hour & it should also support manual update. | |
| 7.12 | For POP3 & IMAP traffic, the proposed system should strip the virus infected attachment& send notification to recipient& Admin. | |
| 7.13 | The proposed solution should scan http traffic based on username, source/destination IP address or URL based regular expression. | |
| 7.14 | The proposed solution should provide option to bypass scanning for specific HTTP traffic. | |
| 7.15 | The proposed solution should support real mode & batch mode for HTTP virus scanning. | |
| 7.16 | The proposed solution should provide historical reports based on username, IP address, Sender, Recipient& Virus Names. | |
| 7.17 | The proposed solution should have virus detection rate above 98%. Submit the required document. | |
| | Gateway Anti Spam | |
| 8.1 | The proposed solution should have an integrated Anti Spam solution. | |
| 8.2 | The proposed solution should have webcoast checkmark certification for Anti Spam. | |
| 8.3 | The proposed solution should have configurable policy options to select what traffic to scan for spam. | |
| 8.4 | The proposed solution should support spam scanning for SMTP, POP3, IMAP. | |
| 8.5 | The proposed solution should support RBL database for spam detection. | |
| 8.6 | The proposed solution must support mail archive option to keep copy of incoming & outgoing mails to administrator defined email address. | |
| 8.7 | The proposed solution should have multiple configurable policy for email id/address group for quarantine setting, different actions instead of blanket policy. | |

| | | |
|---|---|---|
| 8.8 | The proposed solution must support on appliance quarantined facility and also personalized user based quarantine area with email release option | |
| 8.9 | The proposed solution should support real time spam detection & also supports proactive virus detection technology which detects and blocks the new outbreaks immediately and accurately. | |
| 8.10 | For Smtp traffic, the proposed solution support following actions | |
| | a. Tagging | |
| | b. Drop | |
| | c. Reject | |
| | d. Change recipient | |
| | e. Deliver the mail to recipient | |
| 8.11 | The proposed solution should support IP/Email address white list/Black list facility. | |
| 8.12 | The proposed solution should support option to enable/disable ant spam scanning for SMTP authenticated traffic. | |
| 8.13 | The proposed solution should support spam detection using Recurrent pattern detection technology (RPD) to identify spam out breaks. | |
| 8.14 | The proposed solution should support language independent spam detection functionality. | |
| 8.15 | The proposed solution should block image based spam mails i.e. email message with text embedded in a image file. | |
| 8.16 | The proposed solution should provide historical reports based on username, IP address, Sender, Recipient& spam category. | |
| 8.17 | The proposed solution must provide Anti-Spam Message Digest feature per user. | |
| 8.18 | The proposed solution must save bandwidth by blocking 85% of spam messages at gateway level itself without downloading the message using advanced IP Reputation Filtering feature. | |
| | | |
| | **Proxy Solution Web content filtering** | |
| 9.1 | **The proposed solution should be webcoast checkmark certified.** | |
| 9.2 | **The proposed solution should be integrated solution with local database instead of querying to database hosted somewhere on the internet.** | |
| 9.3 | **The proposed solution must work as Standalone HTTP proxy.** | |
| 9.4 | The proposed solution must have 82+ web category with 40 Million URL database. | |
| 9.5 | The proposed solution must have following features inbuilt | |
| | **a. Should able to block HTTPS based URLs with the help of Certificates.** | |
| | b. Should able to block URL based on regular expression | |
| | c. Should support exclusion list based on regular expression | |
| | **d. Must have support to block any HTTP Upload traffic.** | |

| | | |
|---|---|---|
| | e. Should able to block Google cached websites on based of category. | |
| | f. Should able to block websites hosted on Akamai. | |
| | **g. Should able to identify & block requests coming from behind proxy server on the base of username & IP address.** | |
| | h. Should able to identify & block URL translation request. | |
| 9.6 | **The proposed solution should support application control blocking features as follows** | |
| 9.7 | **a. Should able to block known Chat application like Yahoo, MSN, AOL, Google, Rediff, Jabber etc** | |
| 9.8 | b. Should support blocking of File transfer on known Chat application and FTP protocol. | |
| 9.9 | **The proposed solution must block HTTP or HTTPS based anonymous proxy request available on the internet.** | |
| 9.10 | **The proposed solution should provide option to customize Access denied message for each category.** | |
| 9.11 | The proposed solution should be CIPA compliant and should have predefined CIPA based internet access policy. | |
| 9.12 | The proposed solution should be able to identify traffic based on Productive, Neutral, unhealthy &non working websites as specified by admin. | |
| 9.13 | The proposed solution should have specific categories that would reduce employee productivity, bandwidth choking sites and malicious websites. | |
| 9.14 | **The proposed solution should able to generate reports based on username, IP address, URL, groups, categories & category type.** | |
| 9.15 | The proposed solution should support search criteria in reports to find the relevant data. | |
| 9.16 | The proposed solution should support creation of cyclic policy on Daily/Weekly/Monthly/Yearly basis for internet access on individual users/group of users. | |
| 9.17 | The proposed solution should support creation of internet access time policy for individual users or on group basis. | |
| 9.18 | **The proposed solution should support creation of Data transfer policy on daily/weekly/monthly/yearly basis for individual user or group basis.** | |
| 9.19 | **The proposed solution should support creation of cyclic data transfer policy on Daily/weekly/Monthly/yearly basis for individual user or on group.** | |
| 9.20 | The proposed solution should have integrated bandwidth management. | |
| 9.21 | The proposed solution should able to set guaranteed and burstable bandwidth per User/IP/Application on individual or shared basis. | |
| 9.22 | The proposed solution should provide option to set different level of priority for critical application. | |

| | | |
|---|---|---|
| 9.23 | The proposed solution should provide option to define different bandwidth for different schedule in a single policy & bandwidth should change as per schedule on the fly. | |
| 9.24 | The proposed solution must provide web category based bandwidth management and prioritization. | |
| 9.25 | The proposed solution must provide logging and extensive controls on Instant Messaging (IM) traffic for Yahoo and MSN messengers<br>1. Log of chat sessions for all or specific set of users.<br>2. Rules to control allow or deny chat, voice, web cam and file transfer for specific ID or Group of IDs.<br><br>3.Archieve of transferred files.<br><br>4. Antivirus scanning on file transferred. | |
| | VPN | |
| 10.1 | The proposed solution should be webcoast checkmark certified. | |
| 10.2 | The proposed solution should be VPNC Basic interop& AES interop certified. | |
| 10.3 | The proposed solution should support IPsec (Net-to-Net, Host-to-Host, and Client-to-site), L2tp & PPTP VPN connection. | |
| 10.4 | The proposed solution should support DES, 3DES, AES, Two fish, Blowfish, Serpent encryption algorithm. | |
| 10.5 | The proposed solution should support Preshared keys & Digital certificate based authentication. | |
| | The proposed solution should support Main mode & Aggressive mode for phase 1 negotiation. | |
| 10.6 | The proposed solution should support external certificate authorities. | |
| 10.7 | The proposed solution should support export facility of Client-to-site configuration for hassle free VPN configuration in remote Laptop/Desktop. | |
| 10.8 | The proposed solution should support commonly available IPsec VPN clients. | |
| 10.9 | The proposed solution should support local certificate authority & should support create/renew/Delete self signed certificate. | |
| 10.10 | The proposed solution should support VPN failover for redundancy purpose where more than one connections are in group & if one connection goes down it automatically switch over to another connection for zero downtime. | |
| 10.11 | The proposed solution should have preloaded third party certificate authority including VeriSign/Entrust.net/Microsoft and provide facility to upload any other certificate authority. | |
| 10.12 | The proposed solution should support Threat free Ipsec/L2TP/PPTP VPN tunnel. | |

| | | |
|---|---|---|
| 10.13 | **The proposed solution must provide on appliance SSL-VPN solution with Web Access (Clientless), Full Tunnel and Split Tunnel control. Solution should provide per user / group SSL-VPN access (Must be free license for unlimited users)** | |
| 10.14 | SSL-VPN solution should be certified by VPNC for SSL Portal / Firefox Compatibility / Java Script / Basic and Advanced Network Extensions. | |
| | **Logging & Reporting** | |
| 11.1 | **The proposed solution must have On-Appliance integrated iView reporting solution.** | |
| 11.2 | **The proposed solution should support minimum 1000+ drill down reports.** | |
| 11.3 | The proposed solution should provide reports in HTML, CSV, PDF, Excel & graphical format. | |
| 11.4 | **The proposed solution should support logging of Antivirus, Antispam, content filtering, Traffic discovery, IPS, Firewall activity on syslog server.** | |
| 11.5 | **The proposed solution should provide detailed reports for all files uploaded via HTTP or HTTPS protocol. The report should include username/IP address/URL/File name/Date and Time.** | |
| 11.6 | **The proposed solution should provide data transfer reports on the based of application, username, IP-address.** | |
| 11.7 | **The proposed solution should provide connection wise reports for user, source IP, destination IP, source port, destination port or protocol.** | |
| 11.8 | **The proposed solution should have facility to send reports on mail address or on FTP server.** | |
| 11.9 | **The proposed system solution provide approximate 45 regulatory compliance reports for SOX, HIPPA, PCI, FISMA and GLBA compliance.** | |
| 11.10 | **The proposed solution should support Auditing facility to track all activity carried out Security appliance.** | |
| 11.11 | **The proposed solution should support multiple syslog servers for remote logging.** | |
| 11.12 | **The proposed solution should forward logging information of all modules to syslog servers.** | |
| 11.13 | **The proposed solution should have configurable option for email alerts/automated Report scheduling.** | |
| 11.14 | **The proposed solution should be able to provide detailed reports about all mails passing through the firewall.** | |
| 11.15 | **The proposed solution should provide reports for all blocked attempts done by users/IP address.** | |
| 11.16 | **The proposed solution must be capable to derive logs and reports of proprietary devices including UTMs, Proxy Firewalls, Custom Applications and Syslog-compatible devices.** | |

| | | |
|---|---|---|
| 11.17 | **The proposed solution must be capable to provide Multiple Dashboard Report along with custom to customize the dashboards.** | |
| 11.18 | **The proposed inbuilt reporting solution should be capable to do the forensic analysis to help organizations reconstruct the sequence of events that occurred at the time of security breach through iView logs and reports.** | |

**END OF VOLUME**