

***TENDER***

***FOR***

**CONSTRUCTION OF ANALYTICAL LAB AT KANAGALA  
FACTORY OF HLL LIFECARE LIMITED AT BELGAUM**

**PART-IV  
PRICE BID**

**TENDER NO. HITES/IDS/16/02  
APRIL 2016**



**M/S HLL INFRA TECH SERVICES LTD. (HITES)  
(SUBSIDIARY OF HLL LIFECARE LTD, A GOVERNMENT OF INDIA ENTERPRISE)  
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## CONTENTS

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S.NO	ITEM	PAGE NO.
1.	Commercial Conditions	3-5
2.	Special Conditions	6
3.	Technical specification	7
4.	List of Approved makes	10

## **1 COMMERCIAL CONDITIONS**

1.0.1 The tendered rate shall inter alia be deemed to include for the provision of all materials, process, operation and special requirements detailed in the particular specification irrespective of whether these are mentioned in the description of equipment schedule and Bill of quantities or not. It is an express condition of the contract that the tendered rates for various items in the Bill of Quantities shall be deemed to include for the full, entire and final condition of the contractor respective items of the works in accordance with the provision of the contract.

1.0.2 The tendered rate shall include for all taxes, duties, etc. as applicable and shall be quoted on the works contract basis for Construction of Analytical lab at Kanagala factory of HLL Lifecare Limited at Belgaum.

1.0.3 The tendered rate shall remain firm and free from variation due to rise in the cost of materials/ equipment, labour or any other reasons whatsoever during the contract period and valid extension on the case may be.

1.0.4 The quantum of excise duty included in the tendered price, the rate at which they were assumed etc. shall be indicated in the tender.

### **1.1 UNIT RATES**

1.11 Only approved work will be measured on completion and priced as per rates quoted against the respective items.

### **1.2 BRIEF DESCRIPTION OF PRICING**

1.2.1. Unforeseen difficulties for which provision has not been made in the tender will in no way relieve the successful tenderer from the full execution of the work.

1.2.2 The price quoted shall be the final amount for this finished work.

### **1.3 INCOME TAX**

Any payment to the contractor as per contract, will be made after deducting income tax as per the rules and regulations.

### **1.4 SALES TAX AND EXCISE DUTY**

The tenderer shall clearly indicate sales tax, Excise and other duties as applicable in his offer for carrying out this work.

### **1.5 SUBMISSION OF BILL**

- 1.5.1 The contractor shall from time to time prepare and submit interim bills of the work executed and on completion of the contract, he shall prepare and submit the final bill. The measurements sheets in support of the interim and final bills shall be prepared by the contractor on the basis of measurements taken by him jointly with the project engineer and the said measurement sheets shall be submitted by him with the relevant bill.

### **1.6 EXTRA ITEMS**

The contractor is bound to carry out any items of work necessary for the completion of the job even though such items may not have been included in the schedule of probable quantities or rates, such items being necessary or essential for completing the job. Variation order in respect of such additional items and their quantities will be issued in writing by the employer.

- 1.6.1 All shavings, cuttings and other rubbish as it accumulates from time to time during the progress of work and on completion including that of the sub-contractors and special tradesman and all materials condemned by the project engineer shall be cleared and removed from the site by the contractor without any extra charge.
- 1.6.2 All measuring steel taps, scaffolding, ladders instruments and tools that may be required for taking measurements shall be supplied by the contractor.

## **1.7 OVER TIME WORK**

If the contractor is required to work night or on holidays in order to maintain the time schedule he shall take prior approval from the Engineer-in-charge. He should also provide and maintain at his own cost sufficient lights as may be necessary to enable the work to proceed satisfactorily during the night.

1.7.1. The contractor shall give full facilities to all other contractors working on site. He shall also arrange his programme of work so as not hinder the progress of other trades. The decision of the Engineer-in-charge on any point of dispute between the various parties shall be final and binding.

1.7.2. It is specifically pointed out that the contractor shall not be entitled to any compensation whatsoever on account of delay in procurement or supply of controlled materials and the rates quoted in the contract are fixed till the completion of the contract.

1.7.3. The contractor shall co-operate with other agencies appointed by the owners for the work to proceed smoothly with the least possible delay and to the satisfaction of the owners, architects and the consultants.

1.7.4. The owners shall provide a source for power supply at one convenient point at site. The contractor shall at his own cost install a separate meter at the said source and lay additional cables from the said source also at his own cost. For the electricity consumed by the contractor he shall pay the owner the actual cost at the rate charged by the local authority for power for constructional purposes. The contractor shall also obtain the necessary permit for utilizing power for constructional purposes.

## **2 SPECIAL CONDITIONS**

### **2.1. EXECUTION WORK**

2.1.1. The whole of the work as described in the contract (including bills of materials, specification and all drawings pertaining thereto) and as advised by the Engineer-in-charge from time is to be carried out and completed in all parts to the entire satisfaction of the Employer. Any minor details of construction which are obviously and fairly intended, or which may not have been definitely referred to in this contract, but which are usual construction practice and essential to the work, shall be included in this contract.

### **2.2. CERTIFICATE OF COMPLETION**

- 2.2.1 The contractor shall intimate to the Engineer-in-charge in writing as and when the works are completed and put into beneficial use in order to enable the consultants to check certify to the owners to take over the plants.
- 2.2.2 The work shall not be considered as completed and put into beneficial use until the consultants have certified in writing that the same has been completed and put into beneficial use.
- 2.2.3 The defects liability period of one year shall commence from date of such completion or any specific date mentioned therein.

### **2.3. OTHER CONDITIONS**

2.3.1 The contractor has to do all liasoning works and obtain statutory approval from Electricity board, Electrical inspectorate and any another body if required for the successful energisation of electrical supply. No charges will be paid to the contractor in this regard. However, statutory fees if any will be paid by HLL. All necessary drawings and documents required for the same has to be prepared and submitted by the contractor with the concurrence and approval of the Engineer- in -charge.

## TECHNICAL SPECIFICATION FOR MODULAR WALL & DOOR PANELS

### ➤ **Sandwich Wall Panel**

Sandwich type wall panel are of mainly two types: Progressive and Non progressive type. A progressive wall system indicates that we can start working progressively in a linear motion until it ends. A Non Progressive indicates that we can start and stop at any point and work in any direction. When removing any portion or section we can start at any point and end at any point. This facility shall utilize majorly progressive type wall panels and non progressive type wall panels have been considered at certain locations for the future movement /removal of equipment inside the facility.

The clean room panels should meet the Euro classes minimum reaction to fire B-S3,d0 or Class "0" . The minimum density for PUF utilized for the ceiling panels shall not be less than 40+/-2 kg/m<sup>3</sup>.

The following wall panels shall be utilized of varying thickness from 35-100 mm and made out of different skins and infill insulation material as mentioned below:

1. **PCGI+PCGI (PUF)**: Both side Epoxy Powder coated (60-80 microns) 0.8mm thick G.I sheets (hot dipped with zinc coating of 120 gsm) with PUF as infill of density not less than 40+/-2 kg/m<sup>3</sup>.
2. **PCGI+PSS (PUF)**: One side Epoxy Powder coated (60-80 microns) 0.8mm thick G.I sheet (hot dipped with zinc coating of 120 gsm) and other side 0.8 mm thick Plain SS 304 sheet smoothed to 240 grit with PUF as infill of density not less than 40+/-2 kg/m<sup>3</sup>.
3. **PGI+PSS (PUF)**: One side 0.8mm thick Plain G.I sheet (hot dipped with zinc coating of 120 gsm) and other side 0.8 mm thick Plain SS 304 sheet smoothed to 240 grit with PUF as infill of density not less than 40+/-2 kg/m<sup>3</sup>.
4. **PSS+PSS (PUF)**: Both side 0.8 mm thick Plain SS 304 sheet smoothed to 240 grit with PUF as infill of density not less than 40+/-2 kg/m<sup>3</sup>.

For maintaining the homogeneity the civil walls and columns shall be suitably cladded with insulated wall panels with one sided GI epoxy powder coated and other side plain GI sheet panels and packed suitably with aluminum composite panel sheets and silica wherever necessary. Necessary stiffeners shall be provided inside to avoid buckling. Panel shall be in the form of planks of 1.2 /1.25 m (approximately or as specified) width, and length or as per the site condition. Vendor should provide single length of panels without any horizontal joints till 6 m (maximum) height.

Panels shall be installed using anodized/powder coated aluminum angular connector of 30 x 30 mm with insulation or a Box section at the bottom forming a continuous self-supporting structure. The joint width between the panels shall not exceed 3 mm as per the GMP requirements, 2,3 and 4 way modular panel connectors shall be used at 2,3 and 4 panel junctions for proper thermal breaking. All the connections should be properly leveled using laser leveler/ water tube/spirit level. All vertical panels shall be fixed on the floor level and on the top.

The base runners provide for the wall panels to be of powder coated GI to avoid the corrosion attack. The panel sides will be reinforced with a perimetral anodized aluminum frame for enhancing the rigidity of the panel.

Factory finished cutouts in wall panels for fixing the electrical/communication sockets/module boxes/Magnehelic gauges, view panels and riser grills shall be provided. All the gaps between the walls joints between panel to panel, walls opening for elements such as sockets, Magnehelic gauges boxes etc shall be sealed with FDA approved food grade silicon sealant for all areas. The wall cutouts shall be provided with suitable profiles made from the powder coated sheet for covering any exposed part of the insulation material.

Site cutouts for utility fixing of equipments like pass boxes, autoclaves; DHS or any other shall be finished smoothly. Necessary anodized aluminum covings shall be provided between equipment body and the wall panel and sealed with FDA approved silicon sealant for all areas.

The clean room wall panels will have provision for stove enameled MS conduits with threaded ends (external threaded) for the movement of cables or wires for all areas. MS conduit shall be in compliance with the national standards (IS9537 Part 2).MS conduit of 25 & 32 mm diameter with minimum 1.5 mm thickness shall be utilized. All door top panels except for emergency doors shall be provided with a conduit for door interlocking and access control cables.

Panels shall be resistant to the action of usual cleaning agents (detergents and disinfectants) used in pharmaceutical industry. Panels to be provided with plastic foil/protective covering in the processing and installation stages to avoid damages and the wall surfaces to be clean of excess color or oil traces.

In case of damage the window/view panel should be changeable without removing the wall panels.

Vendor to provide the fixing drawings, test certificates of material of construction (PUF density, Powder coating etc), for approval from Consultant/Employer/Client.

### ➤ **Doors**

This facility utilizes mainly two types of doors as mentioned below:

1. Clean Room Doors with shutter/leaf thickness of not less than 46 mm and door frame matching the adjacent wall panel thickness (50-150 mm thickness) with infill of PUF with both side epoxy powder coated (60-80 micron) G.I sheet (hot dipped with zinc coating of 120 gsm).
2. Emergency type modular doors (Red Colour) with shutter/leaf thickness of not less than 46 mm and door frame matching the adjacent wall panel thickness(50-100 mm thickness) with panic bars with infill of PUF with both side epoxy powder coated (60-80 micron) G.I sheet (hot dipped with zinc coating of 120 gsm).



➤ **Modular Clean Room Doors:**

Modular doors leaves shall be made from 0.8 mm thick powder coated GI/ plain GI / 0.8 mm thick plain stainless steel 304 with infill as PUF as mentioned in the door schedule. Door Frame will be made of 1.2 mm thick epoxy powder coated GI sheet or with anodized aluminum. Doors shall be provided with necessary stiffeners and rounded aluminum edging to avoid the build-up of particles and to allow the whole surface to be kept perfectly clean. The panel sides will be reinforced with a perimetral anodized aluminum frame for enhancing the rigidity of the panel. Door profiles to be designed such that no seal joint is needed all around. To minimize the presence of leaks and the accumulation of particles the joint with two points of contact is preferred.

The clean door panels should meet the Euro classes' minimum reaction to fire B-S3, d0 or Class"0".

Internal hinges in a 3/4 part construction made from SS 304 with butt ball bearing and counter sunk screw shall be provided. The door will be opened manually and will be closed slowly by a hydraulic retracting mechanism. The door closure shall have a stainless steel finish (preferred) and should be suitable to work against differential pressure of up to 25 Pascal and lockable at 90° (Dorma make model TS 71 or suitable).

Doors requiring interlocks will be provided with electro-mechanic interlocks. Door leaves shall be provided with bottom drop seals and the same shall be properly concealed and securely fixed at the bottom of door leaves.

All the doors shall be provided with SS 304 smoothened to 240 grit "D" handles of 18 mm diameter and 254 mm length on both sides .Wherever specified lock and key, not less than 1.2 mm thick SS304 smoothened to 240 grit factory fitted kick plates to be provided on both sides to avoid foot shocking. Vendor to take care that the gap between the frame and the door leaf and the door bottom and the floor shall not be more than 2mm to avoid excess ex-filtration/Infiltration of air from the rooms.

As specified fully flushed double glazed view panel in aluminum frame work of 450x600mm/150 mm ø diameter size with 6 mm toughened glass (with 4 sided beveled and smooth edges) & moisture traps using silica gel between panes shall be provided.

All joints between view panel and door panel to be sealed using FDA approved food grade silicon sealant. Double face VHB tapes of required thickness or using FDA approved food grade silicon sealant to be provided on the periphery of the view panel frame to avoid any play between view panel frame and the slot in the door leaf.

In case of damage the window/view panel should be changeable without removing the door panels. The doors shall be provided with tags mentioning the name of the room.

Vendor to provide the drawings with all accessories clearly shown, test certificates of material of construction (PUF density, Powder coating etc), for approval from Consultant/Employer/Client.

## **1. LIST OF APPROVED MAKES FOR CIVIL WORKS**

S. No	Materials	Manufacturers / Agencies
1	Ready mixed Concrete	L&T/RMC/RAMCO/ACC/Birla/Ultratech
2	Ordinary Portland Cement (Minimum 43 Grade)	ACC/UltraTech/India Cement/ Birla/Ramco
3	Reinforcement (Each LOT shall accompany manufacturer's Test Certificate)	SAIL/ TISCO( TATA)/ RINL/ VSP/ JINDAL
4	Stainless Steel	Salem Steel
5	Structural Steel	Conforming to BIS 2062 and approval of source by Engineer (TISCO/SAIL/VSP/JINDAL)
6	White Cement	JK Cement/ Birla White/Asian
7	Sand	Sand / M Sand ( Crushed aggregate) to comply with CPWD spec / relevent IS code spec.
8	Bricks, Stones slabs, Lime, Neeru Stone aggregate	Material / Sample to be got approved before use
9	Vitrified Tiles/Anti Skid Cermaic Tiles	Johnson, Nitco,Kajaria /RAK
10	Flush doors	Samrat,Kanchan Prima, Swastik (Kitply), Century/Kutty/ Greenply/ Uniply/ Archid
11	FRP Doors	Fibrevent / Techno skills
12	Aluminium Fittings	Everite, Garnish,Crown Classic
13	Hydraulic floor Spring	Dorma
14	Aluminium Extruded Sections	Jindal/ NALCO/Hindalco/ Indalco
15	Aluminium Doors/Windows	As approved by E-IN-C
16	Paints/ Synthetic enamel Paint/Distempers/ Acrylic emulsion/Cement primer/Deluxe multi surface paint	Asian, Nerolac, Berger
17	Glazing (high performance glass for DGU and SGU)	Saint Gobain / Asahi / Pilkington
18	Glass	Saint Gobain / Asahi / Modiguard
19	French Spirit Polishing	Sheenlac
20	ACP	Alucobond/Alcopla
21	Precast Cement Concrete Tiles	Eurocon/ Ultra make
22	Paver Block	As approved by Engineer In Charge
23	Water proofing Works	FOSROC/ SIKA / Pidilite / CICO/Penetron /

		Polyplus
24	Hydraulic Door Closers	Hardwyn, Everite, Garnish
25	Water Proofing Cement Paint	Snowcem India/ ICI/ Nerolac/ Berger/ asian
26	Ceramic / Glazed Floor Tiles	Nitco, Johnson,Kajaria, Somany
27	Super plasticizer	CICO, Roff / Pidilite
28	False Ceiling (a) Fibre (b) Galvanized Steel (c) Calcium Silicate	Armstrong / AMF Armstrong/Hunter Douglass Aerolite / Promat Armstrong
29	Stainless Steel Works	As approved by Engineer-in-charge
30	Curtain/Wall/Structural Glazing	Specialist Agency to be employed with Prior Approval of E-In-C
31	Adhesive	Pidilite, Araldite
32	Plastic Laminates	Formica, Greenlam, Bakelite HYLAM
33	Powder Coatings	Berger/Nerocoat/Jenson & Nicholson
34	Tile Joint Filler	Bal Adhesives & Grouts,"ROFFE" Rainbow Tile Mate, Silicon Sealnet of GE Bayer Silicon/"Zentrival FM" of MC-Bauchemie (India) P Ltd
35	Resin Bonded Glass Wool	Crown Fibre Glass/Rock lloyd
36	MS Tubes	TATA / Lloyd/NSL
37	Roof Water Proofing	SIKA/Pidilite/Fosroc/ BASF
38	Silicon Sealant	Dow Corning
39	Anchor Fastener	Hilti, Bosch
40	Formwork Release Agent	Fosroc, MBT, MC Baucheme CICO, ADO Conmat
41	EPOXY	FOSROC. SIKA
42	Cast Iron Pipe and Fittings (Soil Pipes)	BIC, HEP, NECO, Ajmera
43	CPVC FITTINGS	ASTRAL / ASHIRWAD
44	CPVC PIPES	ASTRAL / ASHIRWAD
45	Stoneware Pipes & Fittings	Dalmia, Parry
46	Cast Iron Pressure Pipes & Fittings	Tisco, BRM, KESORM
47	GI Pipes (ISI marked)	TATA, Zenith, Jindal, Gujarat Steel, ITC
48	GI Fittings (ISI marked)	'R' Brand KS/UNIK
49	PVC PIPES	SUPREME / PRINCE /ASTRAL
50	PVC FITTINGS	SUPREME / PRINCE /ASTRAL
51	PVC floor Trap	SUPREME / PRINCE
52	CP Brass Sanitary and water supply Fittings	Jaguar (Florentine)
53	Sanitaryware	Parryware/Hindware/Cera
54	Polyethylene/Polypropylene CISTERN	EVERLAST/FLUSHFLO/ESYFLO/ CHALLENGER/CHAMPION/COMMANDER,

		MARVEL
55	CI Fixtures	Ashok Iron Works/Bombay Iron Works/A Husainji / Ismaelji
56	Plywood Products, Parcticle Boards & Veneers	Duroply (Green Marked, BWR Century Plywood, Green Plywood Kitply, Mysore Boards
57	Water proofing System	SIKA/Pidilite/Fosroc/ BASF
58	CP Waste, Spreaders for Urinals	Jaguar / Orient / Parko
59	SFRC Manhole Covers	KK/SK & Precast Concrete
60	PVC Pipes/Fittings	SUPREME / PRINCE /ASTRAL / Finolex
61	SS Sink	Nirali, Hindware, Franke
62	Mirror	Modifloat/Saint Gobain

## 2. LIST OF APPROVED MAKES FOR ELECTRICAL AND SUBSTATION ITEMS

S. No	Materials	Manufacturers / Agencies
1	H.T.Panel	Crompton/ABB/Schneider/Siemens/L&T
2	Transformer	Crompton/kirloskar/ABB/BHEL/Schneider
3	RMU	Crompton/ABB/Schneider/Siemens
4	DG Engine	Caterpillar/Cummins/kirloskar/
5	Alternator	Stamford/Caterpillar/Crompton greaves
6	Bus trucking/Rising mains	(Along with all accessories) L&T /Schneider/Legrand Control & Switchgear)
7	LT Panels	L&T/SIEMENS/SCHNEIDER/ ABB
8	APFC Panels	L&T/Sprague/EPCOS/INEL
9	ACBs	Same as in (4)
10	MCCBs	Same as in (4)
11	MCBs with DBs	Legrand/Schnider/Siemens/Havells
12	Accessories of HT/LT Panels	As per manufacturer's specified make
13	HT/LT UG cables	Torrent/Universal/Gloster/Havells/Polycab
14	Wiring cables – FRLS grade	Polycab/Havells/RR Cables/Finolex
15	Switches (SFU)	ABB/L&T/Siemens/Schneider
16	Modular Switches (SFU)	Legrand/Carbtree/Panasonic/MK
17	Piano Type switches and Boxes	Anchor/Leader
18	Cubicle Type Fuse Unit	Siemens /GE/L&T/Schneider
19	SFUs/Isolators	Siemens/GE/L&T/ABB/ SCHNEIDER
20	Starters / Contractor/Bi metal Relay	Siemens/L&T/ABB/Schneider
21	Push Button/Indicating Lamps (LED type)	Siemens/L&T/ABB/Schneider
22	CTs	Kappa/Intrans/PGR power/Indus/Kapco
23	Control Fuse Base with HRC fuse	GE/L&T/Siemens/Schneider

24	Cable trays	Profab/ Elcon/OBO Bettermann/Copper B line
25	Measuring Instruments	AE/Conserv/Rishab/ L&T
26	MS Conduit	Supreme /BEC/NIL /or any Other ISI marked
27	PVC Conduit	Precision/Avon Plast/Clipsal/Balco
28	Light Fittings	Philips/Wipro/Crompton/Havells
29	Capacitors	Siemens/L&T / Crompton greaves/Schnedider
30	Relays	GE/L&T/Siemens/Schneider
31	Digital Meters	Enercon/Alacrity/L&T
32	Jointing Kits	Rey Chem/3 Birla

<b>3. APPROVED MANUFACTURERS LIST - ELV SYSTEM</b>			
<b>Public Address system</b>			
Arm. shielded multi pair communication copper cable	Polycab	Finolex	Varsha
Ceiling mounted speaker	Bosch	Philips	Sony
Wall mounted speaker	Bosch	Philips	Sony
Amplifier	Bosch	Philips	Sony
Goose neck microphone	Bosch	Philips	Sony
Table top micro phone	Bosch	Philips	Sony
Call station cum voice alarm router	Bosch	Philips	Sony
Rack	Rittal	Netrack	APW
<b>Voice and Data system</b>			
PVC rigid/flexible conduits	Avone	Emjay	Precision
GI Back boxes	MK	Legrand	Eqt
6 core optic fiber cable	Legrand	Digi link	AMP
UTP Cat 5 / Cat 6 copper cable	Legrand	Digi link	AMP
Twisted pair multi core unarm. copper cable	RR cable	Finolex	Varsha
RJ 11 socket	Legrand	Digi link	AMP
Face plate	Legrand	Digi link	AMP
Patch cord - 1 mtr	Legrand	Digi link	AMP
Patch cord - 2 mtr	Legrand	Digi link	AMP
Terminal block for telephone	Krone	Connectwell	Eqt
Patch panel	Legrand	Digi link	AMP
Ethernet switch	Legrand	Digi link	AMP
Rack	Legrand	Rittal	APW
EPABX	Nortel	Avaya	Alcatel
<b>Audio Video System</b>			
Projector	Panasonic	Sanyo	Eqt
Speakers	Bosch	Philips	Toa

Amplifiers	Bosch	Philips	Toa
Projector screen	Draper	Liberty	Eqt
Rack	Rittal	Netrack	APW
Cables	Polycab	Finolex	Varsha
CCTV system			
Coaxial cable - CCTV system	RR cable	Finolex	Varsha
Indoor fixed type camera	Panasonic	LG	Honeywell
PTZ camera	Panasonic	LG	Honeywell
Digital Video Recorder	Panasonic	LG	Honeywell
Hard Disk	Thoshiba	Samsung	Seagate
LCD monitor	Panasonic	LG	Samsung
PTZ controller	Panasonic	LG	Honeywell
Power supply unit	MK	Eqt	Eqt
Rack	Rittal	Netrack	APW
Projector screen	Draper	Liberty	Eqt
Rack	Rittal	Netrack	APW
Cables	Polycab	Finolex	Varsha
Access System			
Cables	Polycab	Finolex	Varsha
Equipments	Cardkey	Honeywell	Eqt

#### **4. LIST OF APPROVED MAKES OF FIRE FIGHTING SYSTEM INSTALLATION**

S. No.	Details of Materials / Equipment	Manufacturer's Name
1.	Fire / Sprinkler Main Pump / Jockey	Kirloskar KSB Wilo - Mather & Platt Grundfos
2.	G.I. / M.S. Pipes (IS : 1239 / IS : 3589)	Jindal Prakash Tata Steel
3.	Standard M.S. Fittings	Seamless Fittings Pipeline Products
4.	DI / CI / Forged Steel Fittings	Jainsons Industries VS SS Fittings BM Fittings
5.	Double / Single Headed Landing Valve	New Age

		Safeguard Minimax
6.	Fire Hose	CRC Jayashree New Age Padmini Safeguard
7.	First Aid Hose Reel (LPCB Approved)	New Age Padmini Safeguard Minimax
8.	Branch Pipe	New Age Safeguard Minimax
9.	Fireman Axe	New Age Safeguard Minimax
10.	Installation Control Valve	Tyco Viking Victaulic
11.	Fire Extinguishers	Alert - Tyco Minimax Safefire Safeguard
12.	Water Flow Switch	Honeywell Rapid Control System Sensor Spray Safe
13.	Pipe clamp & supports	Chilly Euroclamp Kanwal
14.	GM / Forged Brass Valves	Danfoss RB Honeywell Zoloto
15.	Butterfly Valve/ check valve	Audco Danfoss Honeywell
16.	Air Release Valve	Arco OR RB Zoloto
17.	Anti-Vibration Mounting & Flexible Connections	Cori Dunlop Flexionics

		Kanwal Industrial Corporation Resistoflex
18.	Pressure Gauge	Emerald Fiebig H Guru Wika
19.	Welding Rods	ADOR Esab Advani
20.	Fastener	Fisher Hilti
21	Flexible hose for sprinkler	New Age Tyco

### **5. LIST OF APPROVED MAKES OF FIRE DETECTION AND ALARM SYSTEM INSTALLATION**

S. No.	Details of Materials / Equipment	Manufacturer's Name
1.	Smoke / Multi criteria/Detectors	Notifier Edwards Honeywell (XLS-3000)
2.	Heat Detectors	Notifier Edwards Honeywell (XLS-3000)
3.	Control Modules / Monitor Modules / Fault Isolators	Notifier Edwards Honeywell (XLS-3000)
4.	Main Control Panel	Notifier Edwards Honeywell (XLS-3000)
5.	Manual Call Stations / Hooters /Speakers	Notifier Edwards Honeywell (XLS-3000)
6.	Sealed Maintenance free Batteries	Exide GS Batteries (Japan Storage Co. Ltd.) Hitachi
7.	PA System	Notifier BOSCH Ates Honeywell
8.	PVC insulated copper conductor FRLS cable	National Polycab Skytone



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**6. LIST OF APPROVED MAKES FOR EQUIPMENT & MATERIALS**

<u>Sl. No.</u>	<u>Details of Materials / Equipment</u>	<u>Manufacturer's Name</u>
<u>1</u>	Elevators	OTIS Elevator Company Kone Elevators India Pvt. Ltd. Johnson lifts

**7. LIST OF APPROVED MAKES OF MATERIAL FOR STRUCTURAL GLAZING WORKS**

1	Aluminium Extrusions	Hindalco, Nalco, Indal, Jindal.
2	Stainless Steel	Salem Steel.
3	EPDM	AMEE Rubber Ind., Bohara Rubber.
4	Fiber Glass Wool	U. P. Twiga Fiberglass Ltd., Lloyds insulations or approved equivalent.
5	Rock Wool	Vetrotex Ind., Lloyds insulations or approved equivalent.
6	Aluminium Composite Panel	Alucobond, Alcopla, Alpollic, Reynobond.
7	Clear Float Glass	Shanghai Pilkington/ St. Gobain/ Modi/ Asahi
8	Coated Glass	Shanghai Pilkington / St.Gobain / Asahi.
9	Spider Fittings	Dorma,
10	Aluminium Solid sheet	Hindalco, Nalco, Indal, Jindal
11	Powder Coating	Jotun or approved equivalent
12	PVDF Coating	Duranar PPG or approved equivalent
13	Expansion Anchor Fasteners	Hilti, Fischer (SS Grade 316)
14	Screws, nuts bolts, washers rivets.	Kundan, Arrow (SS Grade 304)
15	Chemical Anchors	Hilti, Fischer
16	Door & Window Accessories	
	a. Lockset	Giesse, Hafele or approved equivalent
	b. S.S. Friction hinges	Seccuristyle, Hafele or approved equivalent

	c. Patch Fittings	Dorma
	d. Floor springs and Door Closers	Dorma
	e. Door Handles	Dorma
	f. Panic Bars	Dorma
17	Structural Silicon Sealant	Dow Corning
18	Weather Silicon Sealant	Dow Corning
19	Spacer tapes	Norton or approved equivalent
20	Foam Spacers (Backer rods)	Norton or approved equivalent