

SCOPE OF WORK
CONSTRUCTION OF NEW OFFICES

I. SCOPE OF WORK:

1. The contractor shall construct new offices over UNFPA building according to this specification and drawings at West Mazzeh. The work will include:

- 1.1 Site preparation and demolishing works.
- 1.2 New steps at office entrance.
- 1.3 Supplying and installing tanks platform and relocating water tank.
- 1.4 Dismantling, reinstalling Sandwich panels walls and supplying and installing new sandwich panels.
- 1.5 Gypsum board walls, ceiling and partitions.
- 1.6 Modifying existing steel frame where it contradicts new walls.
- 1.7 Provide and install suspended gypsum board ceiling.
- 1.8 Doors and windows.
- 1.9 Sanitary utilities.
- 1.10 Supplying and installing solar system for hot water.
- 1.11 Cement board for sanitary utilities.
- 1.12 Ventilation for toilets area.
- 1.13 Ducting works.
- 1.14 Electrical works
- 1.15 Water and sewer distribution
- 1.16 SRF (Shatter Resistant Film) for all glass doors and windows.
- 1.17 Installation of CCTV system & digital video recorder
- 1.18 External and internal lights
- 1.19 Data and telephone connections.
- 1.20 TV system for meeting room.
- 1.21 Painting works for all wall, steel parts and roof isolation.
- 1.22 UN logo paint at upper roof.
- 1.23 Polishing existing tiles
- 1.24 Supplying and installing emergency escape steel stairs with concrete foundation.
- 1.25 Supplying and installing A/C units and relocating existing A/Cs.
- 1.26 Supplying and installing reinforced walls at northern façade composite from steel and gypsum board.
- 1.27 Thermal styrofoam isolation for all walls and ceiling.
- 1.28 Repairing and isolating existing roofs that are leaking during heavy rain.
- 1.29 Drawing UN blue sign over the inclined steel corrugated roof

II. IMPORTANT NOTES:

1. All works shall be executed by a qualified Engineers and Technicians who are specialized in this field of work.
2. Contractor shall submit a construction schedule to accomplish the above works.

III. GENERAL REQUIREMENT:

3. **Specifications:** All Specifications shall be in accordance with the relevant British Codes of Practice. Between the specifications stated here and the Codes of Practice, the more stringent of the two shall be adopted.
4. **Approvals by the UNFPA Project Manager:** The Contractor shall seek the approval for all stages of the project, giving at least Two (2) days advance notice for the purposes of inspection.

Submittals: The Contractor shall prepare a Format of Submittals and a list of all submittals, such as material approval, method statements, approval status of work to be done, etc, before the commencement of the works.

Works: The Contractor shall not undertake any works and shall not cover up any work prior to obtaining the approval from the UNFPA Project Manager.

Materials and Fixtures: Samples of all materials and fixtures, before they are used on the project, must be presented to the UNFPA Project Manager for inspection and approval. As and when requested, the Contractor shall provide all the test certificates for the materials, which are going to be used for the works.

5. **Working Site:** On the working site, the Contractor shall:

Ensure that the safety norms and regulations are strictly followed at all times. The Contractor would be requested to immediately dismiss from the site the workers in violation of these regulations.

Ensure that the proper equipment and methods are used to carry out the works.

Ensure that all surplus and debris is disposed off the site and outside the UNFPA premises, unless otherwise instructed.

Ensure that the Contractor Onsite Supervisor is fluent in English.

6. **Damage to Existing Infrastructure:** The Contractor shall ensure that sufficient care be taken to safeguard the existing infrastructure in the working area so as to prevent damages during the works.

These points shall be identified and marked before commencing the works.

Constraints

- The construction program is short. The Contractor shall complete all works within the time identified in the contract documents.
- The Contractor shall acquire all insurances and have all the required bonds.
- The Contractor shall ensure that the works are executed complying with all statutory requirements of WFP as well as security requirements, fire safety regulations, and other national or international regulation that might apply to the project. Any part of the works, which fails to comply, may need to be adjusted or replaced at the Contractor cost.
- The Contractor shall comply with the contents and recommendations of relevant design standards, on a national and international level.
- The Contractor should provide adequate protection to all the personnel working on site.

- Public passages, and public roads, shall be left free and not obstructed by contractor's plants and materials
- The Contractor shall provide all the materials required for the works unless in the designs and specifications it is detailed that the employer or other UN Agencies will provide them.
- The Contractor shall be aware that the exact site layout may be subject to change and shall allow for alterations to the proposed site configuration in his price.
- The contractor shall comply with health & safety standard, if these are local, international or instructed by the Employer as the case may be

IV.

TECHNICAL SPECIFICATIONS:

A. SITE PREPARATION, EXCAVATIONS AND BACKFILLING MATERIALS:

The contractor shall transfer all goods at UNFPA store to another store specified UNFPA Project manager, dismantle Dixon shelves to reinstall it again in the new store.

The contractor shall construct 2 meters high steel platform, transfer water tanks for this new location and complete all necessary piping and hydrophone pump.

The contractor shall dismantle all sandwich panels and reuse again what can be used for construction works.

B. STEELWORKS:

Contractor will provide all materials, labour and equipment required to complete the works in every respect, whether such materials are required as part of the permanent structure or a temporary one. These are such that shall be required for fabrication or erection or maintenance including specifically structural steel plates, flats, bars, welding rods, rivets, bolts and nuts, paint, welding sets in the shop and at site. Contractor shall provide all workshop facilities, derricks, cranes, pulley blocks, wire ropes, hemp or manila ropes, winches, erection cleats and temporary braces or supports and all other materials required to deliver the Works completed in every respect.

The Contractor shall prepare all the necessary fabrication shop drawings and these shall be submitted to the Project Manager for approval before fabrication is commenced. All such drawings shall show the dimensions of all parts, method of construction, welding and bolting. Also, the Contractor shall submit for approval a list of all material along with the samples and the test certificates.

The Contractor shall comply with all safety requirements for erection of structural steelwork. For all the works, workmanship shall be of first class quality, through, true to line, level and dimension as shown in the drawings or instructed by the Project Manager.

The welding electrodes shall be of the best quality and of an appropriate grade. All welding electrodes shall be stored properly and kept dry. Any electrode, which has part of its flux coating broken away or is damaged, shall be rejected.

Bolts and nuts used for the works shall, unless otherwise specified, be black bolts and nuts manufactured by an approved manufacturer.

For all the works, workmanship shall be of first class quality, through, true to line, level and dimension as shown in the drawings or instructed by the Project Manager. The Contractor shall submit for approval a list of all material along with the samples and the test certificates. Comply with all safety requirements for erection of structural steelwork

All parts assembled for bolting shall be in close contact over the whole surface and all bearing stiffeners shall bear tightly at top and bottom without being drawn or caulked. The component parts shall be so assembled that they are neither twisted nor damaged. Drilling done during assembling shall not distort the metal or enlarge holes. The butting surfaces at all joints shall be so cut and milled so as to butt in close contact throughout the finished joints.

Hand flame cutting and punching of holes will not be permitted.

All welding for the works shall be carried out by first class welders. The Project Manager may at his discretion order periodic tests for the welder and /or of the welds produced. The Contractor shall carry out all such tests at his cost.

As much as possible, the welding work shall be done in the shop. The pieces shall be manipulated to ensure down hand welding for all shop joints as far as possible. All parts to be welded shall be arranged so as to fit properly on assembly. After assembly and before the general welding is to commence, the parts are to be tack welded with small fillet or butt welds as the case may be. The tack welding must be strong enough to hold the parts together but small enough to be covered by the general welding. The welding procedure shall be so arranged that the distortion and shrinkage stresses be reduced to a minimum.

All members of trusses and lattice girders shall be straight throughout their length, unless shown otherwise on the drawings, and shall be accurately set to the lines shown on the drawings. Sheared edges of gussets or other members to be straightened and dressed where necessary.

The Contractor shall be responsible for checking the alignment and level of foundation and correctness of foundation bolt centres, well in advance of starting erection work, and shall be responsible for any consequences or for non-compliance thereof. Discrepancies, if any, shall immediately be brought to the notice of the Project Manager.

Contractor shall be responsible for accurately positioning, levelling and plumbing of all steelwork and placing of every part of the structure in accordance with the approved drawings and to the satisfaction of the Project Manager. All stanchion base, beam and girder bearings etc. shall be securely supported on suitable steel packs. All reference and datum points shall be fixed near the work site for facilitating the erection work.

All steelwork shall be erected in the exact position as shown on the drawings. All vertical members shall be truly vertical throughout and all horizontal members truly horizontal, fabrication being such that all parts can be accurately assembled and erected. No permanent bolting, welding or grouting shall be done until proper alignment has been obtained.

- (a) Mixed as a stiff mortar well rammed into place from all sides, OR

(b) Mixed as thickly as possible consistent with fluidity and poured under a suitable head and tamped until the space has been properly filled.

C. PAINTING:

The Contractor shall apply the coverage of paint as per the manufacturer's data for the type of paint to be used and the coverage rate approved by the UNFPA Project Manager. All materials shall be applied strictly in accordance with the manufacturer's recommendations. Any additions of thinner must be made under the supervision of the UNFPA Project Manager, and as permitted by the manufacturer. Samples of all materials used for the painting work shall be approved by and deposited with the UNFPA Project Manager.

The Contractor shall provide all the equipment required for the paint works, including scaffolding, access platforms, compressors, etc. Brushes, rollers, spray guns and the likes used for carrying out the work shall be kept clean and free from foreign matter, at all times.

Paint shall not be applied when the relative humidity is 80% or more for both internal, as well as external applications.

Paint shall be brought to the site in the sealed, labelled containers, stating:

Manufacturer's name

Date of manufacture

Type of paint

Colour

Instructions for thinning, mixing and applying

Paint shall be stored in sealed containers, according to the manufacturer's recommendations. The paint shall not be subjected to extreme temperatures. Paint shall be used within its stated shelf life or within 18 months, whichever is less.

D. STEELWORK PAINTING

All steelwork to be painted shall be first cleaned of rust, scale, loose paint, oil, and all deleterious matter before applying primer. The cleaning shall be carried out by approved means, using power driven tools, followed by steel wire brushing and dusting, wherever necessary.

Metal primer, for application to steel surfaces, shall either be zinc chromate or red oxide-based primer of an approved make.

Primer for application to galvanized surfaces shall be a suitable metal primer of approved make.

Priming of surfaces shall be carried out immediately after the preparation of surface. Second coat of primer shall be applied without exposing and as per manufacturer's recommendations.

One undercoat of oil paint, of approved colour, shall be applied to the primed surface. Putty shall be applied at the same time, wherever possible. All edges, angles and projections shall have a stripe undercoat applied as soon as the first coat is dry.

Priming and undercoats shall be lightly rubbed down with fine sandpaper before subsequent coats are applied.

Surfaces for painting must be dry and free from dust, dirt, rust, efflorescence or condensation.

The minimum dry film thickness of the paint coating, including rust protection should be 200 microns. At least two coats of primer and finish paint, each, must be applied.

E. PLASTERED SURFACES PAINTING

The Contractor shall prepare all plastered surfaces as necessary and make ready for painting. Unless otherwise instructed:

The interior plastered surfaces shall be painted with two coats of suitable primer and two coats of emulsion paint.

The exterior plastered surfaces shall be painted with two coats of suitable primer and two coats of enamel paint.

The UNFPA Project Manager shall approve the constitution of the primer and the emulsion or enamel paint.

F. TIMBER SURFACES PAINTING

The Contractor shall prepare all timber surfaces as necessary and make ready for painting. Unless otherwise instructed, all timber doors, windows, plywood box covering for the rolling shutter blinds, etc. shall be painted with two coats of suitable primer and with two coats of gloss (oil) paint.

J. FLOORING & CLADDING

Ceramic Tile for bathrooms walls and flooring:

Tiles shall conform to the relevant British standards. Tiles that are cracked, chipped or warped shall not be used for the works.

Preparation of surface: All masonry faces shall be cleaned thoroughly by removing dirt, loose mortar, efflorescence etc. The concrete surfaces shall be brushed to remove all laitance and roughened to provide a bond for the bedding.

Fixing tiles: The masonry and concrete faces shall be given a coat of cement plaster 12mm thick (in proportion 1:4). The surface of the plaster shall be scarified with wire brush for getting a good bond between the tiles and the bedding.

The tiles shall be soaked in clean water for about half an hour before using. The back of the tile shall be buttered with 1:2 plastic cement mortar to a thickness slightly in excess of the finished thickness required and the tile pressed to the wall and tapped back in position. Alternatively a rich fatty mortar shall be applied on the bedding and the tile pressed into it, care being taken to ensure that the keys of the tile are buttered up with mortar. Joints shall be uniform, even, straight and as thin as possible in any case not more than 3.0 mm. After the surfaces of tiles have been fixed, the joints shall be cleaned of gray cement and refilled with cement paste of the same shade as that of the tiles. The tiled surface shall be left wet for a period of 7 days.

The Contractor shall provide the glazed rounded corner convex or concave, as necessary. After the completion of the work, the Contractor shall ensure that the surface is cleaned of all stains.

H. DOORS AND WINDOWS: TIMBER & ALUMINIUM

Timber Works

Timber used for joinery shall be of good approved quality and shall be well seasoned, Cut Square, free from excess wane, from sapwood dead knot or other defects.

All timber for carpentry, joinery, rough frame work, backings, grounds, fixing strips and the like shall be treated with an approved wood preservative and the Contractor shall strictly observe the manufacturer's instructions for using this material. The maximum permissible moisture content in timber shall be in accordance with the relevant British standards.

All workmanship shall be of the best quality. Scantlings and boarding shall be accurately sawn and shall be of uniform width and thickness throughout. All carpenter's work shall be left with a sawn surface except where otherwise specified. Work shall be framed together and securely fixed in the best possible manner and with properly made joints. The Contractor shall provide all brads, nails, screws, plugs, pins, etc., as necessary and as directed. All work is to be properly tenoned, shouldered, wedged, pinned, braded, etc. and properly glued with the best quality glue.

All timber brought to the site shall be subjected to anti-termite treatment.

All joinery shall be finished off in a proper manner, planed and sand papered as required.

Use of nails shall not be permitted. Fixing of members shall be done by using screws or round brads, heads of which shall be properly punched in ends of timber, built into walls, and shall have air space left between themselves and the walls.

All exposed faces of woodwork shall be sand papered once before erection. The colouring or other preservatives shall not be applied without prior approval of the UNFPA Project Manager.

The Contractor shall provide frames for doors and windows with Mild Steel holdfasts made of 40mm x 3mm thick flats 200mm long and fixed into jambs M-15/10 P.C.C. 1200mm high frames with 6 Nos. and frames above 2000mm with 8 Nos. holdfasts. Each holdfast will be fixed to the frame with 3 Nos. 50mm GI screws.

For fixing timber frames to concrete, rawl plugs and screws of 16 gauge shall be used wherever specified. Rawl plugs and screws of gauge 16 shall also be used for fixing rawl rough grounds, framing, hangers, hat hooks, curtain rails etc. Unless otherwise specified, screws used for the work shall be galvanised.

All timber surfaces coming into contact with masonry or concrete shall be given two coats of wood preservative or solignum approved by the UNFPA Project Manager.

Panelled and glazed shutters, styles and rails shall be as shown in the drawings, moulded and mortised together. The shutters shall be square and free from twist.

All glazing is to be of double sheet glass of selected quality and approved by the UNFPA Project Manager. It shall be clear and free from defects. It shall be cut to the required size and fixed to frame either with spring clips, with approved quality, or with teakwood beading as per details.

All surfaces of timber resting on or bedded in masonry or concrete shall be well coated with coal tar.

Fixtures: All doors and windows shall be provided with best quality fixtures as specified in the drawing. Samples of all fittings shall be submitted to the UNFPA Project Manager, for approval. Unless otherwise specified, hinges, tower bolts, aldrops, handles, baby latches, etc. shall be of best quality brass oxidised of specified size. Mortise lock, hydraulic closer and other fixtures shall be of approved make. All the fittings shall be fixed with brass screws.

Painting shall be carried out only after the joinery has been inspected and approved by the UNFPA Project Manager. The surface preparation and applying of primer coats of paint and final coats of paint shall be carried out as per specifications for painting. Unless otherwise specified a minimum of 2 coats of primer paint and 3 coats of final paint to be applied.

Where polishing or varnishing is specified, the surface to be varnished or polished shall be protected from contamination such as inadvertent painting and surface damage. The polishing or varnishing shall be according to the specifications for varnishing or polishing under the section Painting.

I. Aluminium Doors and Windows

Aluminium alloy shall conform to relevant British Standards. The Contractor shall submit the sample of section he is proposing to use for the frame, for approval. He shall also indicate the weight of section per one meter length. He shall also submit for approval the sample of hinges, handles, peg-stays or any other items that may require the approval of the UNFPA Project Manager.

The glass panels, unless otherwise specified, shall be double of 4mm thickness for windows and 5.5mm thickness for doors and shall be free from flaws, specks and bubbles. They shall have properly squared corners and straight edges. Fixing to frames shall be done with approved glazing pins and approved quality PVC/ rubber beading.

Frames consisting of extruded hollow tube sections or other profiles shall be square and flat, the corners of the frame being fabricated to a true right angle. The hinges shall be either of projection type, or friction hinges. Necessary coupling of approved shape shall be provided for composite windows. All holes required for fixing frame, for fixing glazing shall be provided. Only brass screws shall be used for fixing the frame to concrete members.

Vertical and horizontal members shall be of adequate rigidity to resist lateral forces.

All the fixtures for centre hung shutters, top and bottom hung shutters, or side hung shutters shall be got approved before they are used. The fixtures used should be such that it should be possible to open the shutter to any angle.

Unless otherwise specified, aluminium doors shall be provided with floor springs of approved quality and make.

All aluminium members shall be supplied in either matt or polished finish including anodising them by electrochemical process to an approved colour and to a thickness of average 0.25mm. The frame shall be protected with a layer of clear transparent lacquer based methacrylates or cellulose butyrate. The coating shall be removed after installation is completed and after completing finishing work in the adjoining area.

The erection of frame shall be same as detailed under steel windows. Where aluminium frames come in contact with steel members, they shall be separated by either a 3mm thick rubber gasket for full width of aluminium member or any other approved film so as to avoid metallic corrosion.

J. EXHAUST SYSTEM:

The contractor shall provide and install complete Exhaust system with Exhaust fans for toilets facility.

K. SUSPENDED CEILING:

The contractor shall provide suspended gypsum board ceiling of good quality for the building.

L. SANITARY WORKS:

PLUMBING (Internal Plumbing): For hot and cold water feed to sanitary ware, use polypropylene pipe of an appropriate size. Minimum diameter of pipe shall be 18 mm. The pipes will be securely fixed to walls and floors with polypropylene clips. All joints to be water tight and sealed with appropriate sealant. Connections to sanitary ware shall be properly secured and free from any movement. The type of this pipes and pipes fittings should be (European standard) all materials shall be original products attached with certificates and must at first be approved by the UNFPA Project Manager before use.

All pipe works hot/cold to be tested after completion of work for a minimum period of 24 hours, with sufficient pressure and with the outlets closed. Any leakage through the joints has to be repaired.

Provide and fit isolation valves for each sanitary fitting and to the hot and cold feeds on the main distribution pipes. The contractor will do all the pipe work for the sanitary fittings shown on the drawings and all the main distribution for the connection to the water heater. The contractor shall connect the building to the existing water system.

The quantity is to be calculated in running meter for pipes from the drawings. The rate should include the cost for all material, pipes, fittings, testing and labour cost to finish this work.

Sanitary ware: The following sanitary ware shall be vitreous china:

Wash hand basins minimum dimensions 45x60cm, with chromium steel hot and cold taps; vandal proof stoppers & S-trap and they should install them in the marble table 3 cm thickness the sizes are according to the attached drawing. W/C commodes with flushing cistern in each toilet & seat covers.

Provide, in showers, chromium steel hot and cold taps, stainless steel delivery pipe and vandal proof shower.

The UNFPA Project Manager shall approve all the sanitary ware.

DRAINAGE: All drainage pipes shall be PVC in the following sizes:

From HWB 50 mm dia.

From showers 75 mm dia.

From W/C's 100 mm dia.

From floor surface 75 mm dia

Provide all drainage pipes for the sanitary wear. Provide two main pipelines, separate from W/C main manhole and from shower etc. These main waste pipes shall be 160 mm and 110 mm PVC. The contractor shall connect the sewerage lines to the existing sewer line

All waste pipes from sanitary ware will have a water trap or siphon before it is connected to the main waste pipe. Provide cleaning eyes to each waste pipe for access to clear blockages.

Provide surface water drains to floor slab with water trap or siphon before connection to main waste pipe. Every floor drainage outlet shall be connected by 75 mm PVC pipe and fitted with stainless steel grill. Fix 10 cm dia. stainless steel gutter plate in shower room outlet.

M. Emergency Escape stairs

The contractor shall excavate 250 x 250cm wide and 70 cm deep to fit the required concrete slab foundation. Before pouring the concrete slab he shall level and clean the site to the satisfaction of the Project Manager.

The contractor shall construct a 220 x 220cm wide and 60cm thick concrete foundation for the steel stand of the stairs. Cement shall be 350kg/m³ type and produce a 225 N/mm² type of concrete.

The contractor shall supply and install a steel construction stair as per the attached drawings. This construction shall be fixed to the foundation plate, using a steel sheet 20 x 20 x 1cm thick and 4 steel screws 20mm diameter.

MECHANICAL WORKS

TECHNICAL SPECIFICATION

1 . Technical Specifications

1.1. HVAC System

1.1.1. Split air conditioner

For cooling, heating, dehumidification and ventilation.

Min Working Outdoor Temperature: -7 °C (winter)/+45 °C (summer)

Energy Efficiency rating : A

MINI Phases / 220 V

All operating functions can be selected using the display remote control and wired control panel.

Heating mode follows the principle of heat pumps.

Robust, weather-resistant outdoor unit and Anti-defrost feature.

Supply with Drainpump.

1.1.2.5 Notice and Inspection Instructions

Pipework for refrigerant systems shall be of refrigeration quality copper.

Pipelines shall be firmly secured and measures shall be taken to prevent vibration weakening joints and connections. Pipework shall be designed and run so that any oil in the compressor discharge refrigerant which passes through the oil separator (where fitted) is carried through the system and returned.

After erection the whole of the refrigeration pipework shall be hidden in the wall and pressurized and tested for leaks.

All copper pipework shall be insulated by proper insulation thickness and diameter according to the used copper pipe diameter, and according to the manufacture instructions.

The copper pipework between indoor and outdoor unit shall be one piece with no welding or connections fitting.

The insulated pipes by (ArmaFlex) shall be covered by PVC adhesive tape.

The outdoor units shall be mounted in less high than the indoor unit and according to the manufacture instructions. And install an oil trap by bending the cooper pipe at the outdoor unit when necessary.

Give sufficient notice so that inspection may be made of the equipment in place before connection and commissioning.

Supply all components and install to manufacturer's recommendations.

Outdoor equipment: Provide clearance around units for condenser air flow and maintenance access.

Provide a drawing of the equipment as installed.

All surfaces of ductwork shall be clean, dry and dust free.

Require sleeves at all sealed duct penetrations through walls, floors, and roofs.

Details of all foundations for apparatus, construction of ducts, sumps, chases, etc. Structural steel work, cutting away and making good in walls, floors, ceilings, etc., not detailed by the Engineer on the tender drawings shall be the responsibility of the Contractor who shall provide such drawings for acceptance by the Engineer.

Unless otherwise specified sufficient oil or gas shall be supplied to fill oil or gas filled equipment provided under this Contract. The oil or gas shall be of appropriate

Type and suitable in all respects for use in the equipment when it is operated under the condition laid down in this Specification.

The design and all materials and processes used in the construction of the equipment shall be such as to reduce to a minimum the risk of development of acidity in the oil or gas. Special measures such as nitrogen sealing or the use of inhibited oils are not required unless specified by the Engineer.

Test:

All air conditioners shall be tested for 2 hours twice a day for 2 days before hand over.

Leak test 100% of duct by light inside test: Use extreme care in the fabrication and installation of the ductwork to ensure that it will be airtight. Test ductwork for leaks in sections as the work progresses before insulating.

1.1.2.6 Operating and Maintenance Instructions

Provide written operating and maintenance instructions containing:

Contractor's contact details for service calls.

Manufacturer's maintenance and operation literature.

Manufacturer's warranty certificates if the manufacturer's warranty period is greater than the defects liability period.

1.1.3. Air Conditioner Drainage

Minimum Drain Pipe diameter for the selected A.C indoor units shall be at minimum of Ø32mm, with all required fittings and branches, at minimum slope of 2% to the nearest and possible Bathroom Floor Drain location.

Joining pipes with PVC connecting joints (PVC Sockets).

The nearest location of drainage shall be supported with odor stopper.

All Drainage pipes of A.Cs shall be installed according to manufacture instructions and recommendations of both A.C and Piping

2 . General Installation procedure

Accessories:

Use manufacturer's brackets and accessories where these are available and suitable for the mounting substrate.

If items are concealed, provide access doors of size required for easy access to the items. Provide access doors per specification.

Protection:

Deliver fixtures to site protected from damage under site conditions by coatings, coverings and packaging. Remove only sufficient protection to permit installation.

Sleeves:

Where pipes pass through walls, floors and ceilings, sleeves of the same material as the service pipe shall be used. All sleeves shall project 2mm clear of the finished surfaces of walls and floors.

The Contractor shall be responsible for ensuring that the sleeves are in the correct position at the time they are built in.

The space between the pipes and sleeves shall be packed with a suitable flexible material to maintain the fire rating of the walls and floors.

Inspection:

The contractor shall check and review the drawings and visit the site and give sufficient notice so that inspection may be made of the following:

Submissions:

Samples

Submit nominated samples for approval of the Engineer.

If it is intended to incorporate samples into the works, submit proposals for approval. Only incorporate samples in the works which have been approved.

Do not incorporate other samples.

Keep endorsed samples in good condition on site, until practical completion.

Shop Drawings:

If required, submit dimensioned drawings showing details of the fabrication and installation of services and equipment, including relationship to building structure and other services, cable type and size, and marking details.

Electrical Works

1. Technical Specifications

1.1. General purpose sockets

General purpose socket boxes are located in reference to furnished plan, as following:

- ✓ Sockets outlets are to be far from edges of doors at 20cm.
- ✓ Sockets outlets are to be far from corners of walls at 60cm.
- ✓ Sockets outlets are to be mounted on surface.
- ✓ Sockets outlets are to be single phase, three wires and rated 16 A, 220v.
- ✓ Mounting heights for outlet boxes are as shown in drawings. They are generally mounted at 50cm from finished floor level.
- ✓ Kitchen and bathrooms sockets are mounted at 120cm high from the finished floor level.
- ✓ The out let should be of good quality.

1.2. Lighting system

This section includes lighting system for the building with lighting devices, switches and wires.

1.2.1. Devices:

- ✓ LED hidden lights with 25W, Distributed as shown in drawing.
All of Devices should be of good quality.

1.2.2. Switches:

Switches are mounted as shown in drawing. They should mount at high of 120 cm from finished floor level. The switches should be of good quality.

1.3. Fire alarm

Equipment's

1.3.1. FIRE HEAT SENSOR:

-Incorporates Fixed Temperature and Rate of Rise Heat elements

- Twin LEDs allow 360 viewing – green when polling, turn red in fire.
- Pulsing/non-pulsing controlled from panel electronically addressed (LPCB & VDS approved to Classes A1, B & C).
- SIL Level 2 approved variants available.

Indoor siren:

- Loop Powered.
- Single Loop Address – addressed.
- Variable Sound Output 90 ~ 102dB (A) (± 2 dB(A)) output at 1 meter.
- High Intensity LED technology.
- Variable flash frequency.
- Weatherproof Kit available.
- 51 User-Selectable Tones (all tones EN54-3 compatible).

Analogue Dual Relay controller:

- Loop powered
- Single loop address
- 2 Independently controlled changeover relays
- Relays contact rated at 30 V dc at 1 A
- Auxiliary monitored input
- DIN-Rail version available
- Both models feature an integral short-circuit isolator
- Both models approved by LPCB & VDS

Analogue addressable manual call point:

Features: □

- Integral short-circuit isolator
- Non-frangible element fitted as standard (conforms to EN54)
- Addressed with TCH-B100 Hand Held Programmer
- Surface or flush mounting (if surface mounting, requires SR MOUNTING BOX – sold separately)
- SIL Level 2 approved variants available

FIRE PHOTOELECTRIC. SMOKE DETECTOR:

Removable, High Performance Chamber Twin LEDs allow 360
turn red in fire

□ viewing –green when polling,

- Locking mechanism (sensor to base).
- Pulsing/non-pulsing controlled from panel.
- Approved by LPCB & VDS.
- SIL Level 2 approved variants available.

Approvals:

LPCB & VDS
approved to
Classes A&C

FIRE CONTROL PANEL:

The panel should be installed inside the reception room where the security guard stands.
ANALOUGE ADDRESSABOE 2 LOOPS FIRE PANEL WITH BUILT IN LCD SCREEN utilizes a Full colour, 7" 800 x 480 touch screen graphical display to provide a clear, simple and intuitive user interface. 80-character zone location and 80-character device messages allow a clear, concise description of each detection device location to be configured. Resistive touch screen technology permits control functions to be available, even when wearing protective gloves, 10000 event logs.

EXPANSION OPTIONS

Input/ output cards can be fitted in spare slots within the panel. The family includes:

- 8-way conventional detection board
- 4-way sounder output board
- 8-way volt free relay contact board
- 16 channel programmable input/output board

Description:

- Analogue Heat sensor
- Analogue photoelectric smoke sensor
- Analogue call point
- Analogue Indoor siren
- Analogue outdoor siren
- 2 loop Analogue fire control panel with net card TCP/IP, built in touch screen and printer module.
- Analogue Dual Relay controller

1.3.2. Wire

Comply with VDE, Re-NYY 1.5mm² cable is applied to connect detectors and pull stations in series circuit.

Cables are to be silicone rubber insulated, with overall PVC sheath bonding to coated Aluminum foil.

1.3.3. Equipment Installation

Connect the FIRE PANEL with a disconnect switch with lockable handle or cover.

Manual Stations: Mount semi flush in recessed back boxes.

Ceiling-Mounted Smoke Detectors: Not less than 100 mm from a sidewall to the near edge.

For exposed solid-joist construction, mount detectors on the bottom of joists. On smooth ceilings, install not more than 9 m apart in any direction.

The selection and placement of smoke detectors shall take into account both the performance characteristics of the detector and the areas into which the detectors are to be installed to prevent nuisance alarms or improper operation after installation.

Smoke detectors shall not be installed in areas where air velocity is greater than 1.5m/sec, and shall not be located in a direct airflow. If siting of detectors in such areas is unavoidable, use detectors specifically designed for use in such conditions.

Audible Alarm Devices: Install not less than 150 mm below the ceiling.

FIRE PANEL: Surface mounts with tops of cabinets not more than 1800 mm above the finished floor.

1.4 AC installation:

Split AC type is to be installed as shown on drawings.

Capacities are also shown on drawing for each room.

Ac is to be wired with 3x4 mm² cable.

1.5 Data equipment

This Section includes passive equipment such as wire, cable, connecting devices, installation, and testing for wiring systems to be used as signal pathways for voice and high-speed data transmission suitable for local area networks (LANs).

Scope of work consists of the installation of a generic structured wiring system based upon a star topology to connect all manner of applications covering voice and data transmission.

1.5.1 Patch Panels:

The contractor should supply and install three sets of patch panels 24 ports with the following specifications:

PHYSICAL

- Dimension (L x H) 19" x 1U

MECHANICAL

- Plug insertion life 750 Cycles
- Plug and Jack contact force 100 grams min, using FCC approved plug
- Plug retention force 30 lbs minimum

- Temperature -40oC to 68oC

ELECTRICAL

- Current Rating 1.5 Amps
- Insulation Resistance 500 Mega-Ohm minimum
- Contact Resistance 20 Milli-Ohm maximum
- Transmission performance 100/1000/10000 Mbps

STANDARDS

- UL UL Certified
- FCC Part 68
- TIA/EIA 568-B.2-1 (Category 6 transmission performance)

1.5.2 Data network:

Copper Cables (for Data): Comply with Standard, UTP twisted (cat 6a cables are mandatory).

Data outlet is to be (RG45) to comply with cat 6a

UTP. Workstation Outlets:

Outlets are located in reference to furnished plan, as following:

- Outlets are to be far from edges of doors at 20cm. Outlets are to be far from corners of walls at 60cm. Other Outlets are to be located as shown in the drawing.

Outlets are to be mounted on surface.

- Mounting heights for outlet boxes are as shown in drawings. They are generally mounted at 50cm from finished floor level.
- Data Outlets are mounted next to Telephone outlets in same box.
- Must perform data flow test on cables.

1.5.3 System Requirements

General: Coordinate the features of materials and equipment so they form an integrated system. Match components and interconnections for optimum future performance.

Expansion Capability: Unless otherwise indicated, provide spare fibers and conductor pairs in cables, positions in patch panels, cross connects, and terminal strips, and space in backbone cable trays and wire ways to accommodate 20 percent future increase in active Workstations.

Adjust arrangements and locations to accommodate and optimize arrangements and space requirements of telephone switch and LAN equipment.

All the data and voice cables must be terminated in the server room including the CCTV system cables. This termination must be done on rack mounted patch panels which will be provided by the vendor. the vendor will terminate all passive cables on both ends including labeling and numbering all sockets, testing all cables and sockets, and providing a Fluke report for each endpoint.

1.5.3.1 The network cabinet that will enclose the patch panels in the server room will be provided by WFP, the supplier should provide Cat6a patch panels as needed.

1.6 Surveillance system:

Main purpose of this system is to cover building entrance and surrounding areas to insure security for the building

Surveillance TV monitor network is to be used.

Provide the following:

Colored IP bullet cameras (ceiling \ wall) mounted.

Network video Recorder (NVR), rack mounted to be installed in the Server rack with capacity to record 14 days of the full cameras supplied.

Power over Ethernet switch (POE) 24 ports 802.3at Type 1 or 2 standard can support up to 10 POE IP camera supplied by your offer and 10 POE Access point.

CAT 6a cables is to be used to wire system component. The system should support monitoring the cameras from the security desk

& to allow him to monitor all the cameras and process the system as needed.

1.7 Central Television system:

The contractor shall supply and install coaxial cable from the setline dish to the meeting room

1.8 Panel boards

For distribution of electric power and for protection of circuits.

Tow three phase panel board is added and connected to existing panel as shown in drawings.

Disconnect switches is to be thermal and electromagnetic protection, with rating as shown on drawings.

All circuit breakers are B type.

Panels are located at high of 150cm from the finished floor level.

1 . General Installation

procedure Accessories:

Use manufacturer's brackets and accessories where these are available and suitable for the mounting substrate.

Protection:

Deliver fixtures to site protected from damage under site conditions by coatings, coverings and packaging. Remove only sufficient protection to permit installation.

Inspection:

The contractor shall check and review the drawings and visit the site and give sufficient notice so that inspection may be made of the following

Submissions:

Samples

Submit nominated samples for approval of the Engineer.

If it is intended to incorporate samples into the works, submit proposals for approval. Only incorporate samples in the works which have been approved.

Do not incorporate other samples.

Keep endorsed samples in good condition on site, until practical completion.