

Annex A

TECHNICAL SPECIFICATIONS

Response to COVID-19, Expansion of Hospitals Project

SCOPE OF WORKS AND GENERAL INFORMATION

1. Scope

Under the national response framework to COVID-19, UNHCR is supporting the Lebanese government in increasing the health system capacity to contain COVID-19 cases across the country. UNHCR response includes the expansion of the capacity of public/private selected hospitals through the construction prefabricated premises annexed to those hospitals and receiving COVID-19 cases from both Syrian refugee and host communities.

The scope of works includes the implementation of a reliable HVAC system within the constructed prefabricated premises and in alignment with WHO standards as stipulated in the annexed BoQs and drawings.

This document is complementary to the UNHCR general conditions contract for civil works. It stipulates the required specifications as per the following sections:

- A. Plumbing
- B. Ventilating and Air conditioning

Method of Measurement Mechanical Trades

A. Plumbing

1. General rules for Plumbing

1.01 Rates for measured plumbing work are deemed to include the costs of:

working internally, externally and in plant rooms,

assembling and jointing together component parts of composite units and providing connecting flanges and jointing material,

providing everything necessary for jointing,

patterns, moulds, templates and the like,

making minor changes and modifications in layout required,

temporary work including removing and making good after, disconnecting, setting aside and re-fixing equipment for the convenience of other trades,

cleaning and flushing piping systems,

disinfection of cold water system,

priming or painting off site and proprietary finishes or surface treatment applied as part of the production process,

painting on site including color coding, plates, discs, labels and charts for the identification of plant, equipment, appliances, pipes, valves and the like,
bedding and pointing components or units of equipment, ancillaries and the like,

cutting and pinning ends of supports for equipment, ancillaries and pipes,

marking the positions of and cutting or forming holes, mortices, chases and the like and making good after,

builder's work in connection with plumbing work including all work shown on the drawings, described in the specification or reasonably to be implied as necessary for the proper execution of the plumbing work,

preparing instruction manuals and spare parts lists and submitting required number of copies,

training Employer's personnel in the operation and maintenance of the systems including providing instructors,

electrical works from control panels/controllers to motors and equipment's, including, but not limited to, power and control cables, cable trays, conduits, terminations, tagging and all auxiliaries as deemed necessary,

PLUMBING PIPING INSULATION

1. Insulation

1.01 Each kind of insulation to pipes is given separately, stating the thickness.

1.02 Each diameter of pipe is given separately.

1.03 Insulation to pipes is given in meters.

1.04 Rates for measured work are deemed to include the costs of:

smoothing the material and working around supports,

protective covering and jacketing,

special protection or finish at openings through walls, valve chambers and the like,

insulation to flanged pipework,

working insulation around ancillaries including boxes or valves,

working non-sectional insulation over flanges and pipe fittings,

fitting sectional coverings around pipe fittings,
insulation boxes.

GENERAL-DUTY VALVES FOR PLUMBING PIPING

DOMESTIC WATER PIPING

SANITARY WASTE, VENT AND STORM DRAINAGE PIPING

1. Pipework

1.01 Each kind of pipe is given separately, stating the Standard to which it complies.

1.02 Each diameter of pipe is given separately. Diameters stated are nominal diameters.

1.03 Pipes are given in meters measured the length over all fittings and branches.

1.04 Rates for measured work are deemed to include the costs of:

curved pipes, flexible pipes and extensible pipes,

flow and return header pipes,

pipework required to be temporarily fixed in position, dismantled for
chromium-plating or other special finishing and subsequently re-fixed,
purpose-made pipes and purpose-made fittings,

labours on pipes,

providing everything necessary for jointing,

joints in the running length,

joints of a special or ornamental character and extra demountable couplers
in the running length, bends, tees, crosses, joints, unions, nipples, plugs and flanges,

pipe fittings including cutting and jointing pipes to fittings,

screwed sockets, tapings, bosses and welding necks welded to pipes or flanges including
perforating the pipe or flange,

special connections, special joints and isolated joints in pipes,

manual air vents,

drain valves and plugs,

drip trays,

standard pipe supports, non-standard pipe support assemblies, spring compensated components and pipe anchors and guides,

laying and fixing in ducts, trenches and chases or embedded in in-situ concrete or screeds,

excavating trenches for buried pipes, including backfilling, disposal of surplus excavated material and earthwork support,

wrapping for underground pipes,

wrapping and waterproofing for exposed insulated pipes, pipe sleeves and packing, except for sleeves and sleeve seals for pipes penetrating fire resistant - rated assemblies such as masonry walls, gypsum board partitions and slabs etc. since these are covered under Architectural works,

wall, floor and ceiling plates,

flashing plates, sleeves, escutcheons, flashings and seals.

2. Accessories for Pipework

2.01 Isolating valves, balancing valves, pressure relief valves, automatic air valves, traps and the like are each given separately.

2.02 Connections to existing services and breaking into existing pipes are each given separately.

2.03 Each type of accessory is given separately. Diameters, dimensions and details are stated in descriptions, where necessary, to identify the work.

2.04 Accessories are enumerated.

2.05 Rates for automatic air valves and the like are deemed to include the costs of associated isolating valves.

DOMESTIC WATER PIPING SPECIALTIES

SANITARY WASTE PIPING SPECIALTIES

1. Equipment and Ancillaries

1.01 Each kind of equipment (including plumbing fixtures) and ancillaries is given separately, stating the size and pattern, rated duty, capacity, loading etc. as appropriate.

1.02 Each type is given separately. Diameters and dimensions are stated in descriptions, where necessary, to identify the work.

1.03 Equipment and ancillaries are enumerated.

1.04 Rates for measured work are deemed to include the costs of:

- factory assembled components and controls,
- loose equipment supplied by the manufacturer,
- electrical terminations/connections,
- valves, strainers, flexible connections, controls, instruments and fittings shown on the Drawings,
- concrete bases and support pads, and other related concrete work, plate-work and supporting steelwork,
- supports and fixing,
- insulation and jacketing for cold and hot equipment,
- loose keys, tools, spares (where specified) and the like and racks for holding tools,
- cleaning off protective wrappings.

2. Accessories for Pipework

2.01 Floor cleanouts, floor drains, roof drains and other drains, vent cowls, back flow preventers and the like are each given separately.

2.02 Gratings and frames, where not included with the items to which they relate, are given separately.

2.03 Isolating valves, balancing valves, pressure relief valves, automatic air valves, traps and the like are each given separately.

2.04 Connections to existing services and breaking into existing pipes are each given separately.

2.05 Each type of accessory is given separately. Diameters, dimensions and details are stated in descriptions, where necessary, to identify the work.

2.06 Accessories are enumerated.

2.07 Rates for automatic air valves and the like are deemed to include the costs of associated isolating valves.

B. Ventilating and Air Conditioning

1. General rules for HVAC

1.01 Rates for heating, ventilating and air conditioning work are deemed to include the costs of:

working internally, externally and in plant rooms,

assembling and jointing together component parts of composite units and providing connecting flanges and jointing material,

providing everything necessary for jointing, patterns, moulds, templates and the like,

making minor changes and modifications in layout required, temporary work including removing and making good after,

disconnecting, setting aside and re-fixing equipment for the convenience of other trades,

cleaning and flushing piping systems,

priming or painting off site and proprietary finishes or surface treatment applied as part of the production process,

painting on site including color coding,

plates, discs, labels and charts for the identification of plant, equipment, appliances, pipes, valves and the like,

bedding and pointing components or units of equipment, ancillaries and the like,

cutting and pinning ends of supports for equipment, ancillaries and pipes,

marking the positions of and cutting or forming holes, mortices, chases and the like and making good after,

builder's work in connection with heating, ventilating and air conditioning work including all work shown on the Drawings, described in the Specification or reasonably to be implied as necessary for the proper execution of the heating, ventilating and air conditioning work,

preparing instruction manuals and spare parts lists and submitting required number of copies,

training Employer's personnel in the operation and maintenance of the systems including providing instructors,

electrical works from control panels/controllers to motors and equipment, including, but not limited to, power and control cables, cable trays, conduits, terminations, tagging and all auxiliaries as deemed necessary,

temporarily operating each installation (except for testing) including attendants, insurances and providing fuel and electricity for power and lighting.

DUCT INSULATION

HVAC EQUIPMENT INSULATION

HVAC PIPING INSULATION

1. Insulation

1.01 Each kind of insulation is given separately, stating the thickness.

1.02 Work to each diameter of pipe is given separately.

1.03 Work to each type of ducting is given separately. Dimensions of ducts are stated in descriptions of work given in metres.

1.04 Work to pipes is given in metres.

1.05 Work to ductwork is given in square metres or metres.

1.06 Rates for measured work are deemed to include the costs of:

smoothing the material and working around supports,

protective covering and jacketing,

special protection or finish at openings through walls, valve chambers and the like,

insulation to flanged pipework,

working pipe insulation around ancillaries including boxes or valves,

working non-sectional pipe insulation over flanges and fittings,

fitting sectional pipe coverings around fittings,

insulation boxes on pipe insulation,

working duct insulation around fittings,

working duct insulation around special fittings and for ancillaries.

AIR DUCT ACCESSORIES

1. Ductwork

1.01 Each kind of ducting is given separately stating the type of material.

1.02 Each type of ducting is given separately.

1.03 Flexible ducting and extensible ducting are each given separately. Dimensions are stated in descriptions.

1.04 Flexible ducting and extensible ducting are given in meters measured the length as fully extended.

1.05 Rates for measured work are deemed to include the costs of:

for the extra weight of any and all materials required for forming seams or welds or for stiffening or jointing or for waste and losses,

stiffeners, joints and sealing,

joints in the running length,

providing materials, heat, bolts, nuts, washers and everything necessary for

making joints in ducting,

cutting and forming openings and jointing ducting to fittings,

special connections and special joints in ducting including connections between ducting of differing materials, connections between ducting and

equipment, isolated joints and flexible connections between ducting and plant,

nozzle outlets, test holes and covers and access doors including forming and stiffening of openings,

components for supporting ductwork including fixing,

weathering aprons, flashing plates and the like, except where required to be measured separately,

cowls and terminals.

2. Accessories for Ductwork

2.01 Intake louvres and the like are each given separately.

2.02 Weathering aprons, flashing plates and the like, when not included with the items to which they relate, are each given separately.

2.03 Each type of accessory is given separately. Dimensions are stated in descriptions.

2.04 Accessories are enumerated.

REFRIGERANT PIPING

1. Pipework

1.01 Each kind of pipe is given separately, stating the Standard to which it complies.

1.02 Each diameter of pipe is given separately. Diameters stated are nominal diameters.

1.03 Pipes are given in meters measured the length over all fittings and branches.

1.04 Rates for measured work are deemed to include the costs of:

curved pipes, flexible pipes and extensible pipes,

flow and return header pipes,

pipework required to be temporarily fixed in position, dismantled for chromium-plating or other special finishing and subsequently re-fixed, purpose-made pipes and purpose-made fittings,

labours on pipes,

providing everything necessary for jointing,

joints in the running length,

joints of a special or ornamental character and extra demountable couplers in the running length,

flanges, unions and di-electric joints,

pipe fittings including cutting and jointing pipes to fittings,

screwed sockets, tappings, bosses and welding necks welded to pipes or

flanges including perforating the pipe or flange,

special connections, special joints and isolated joints in pipes,

expansion loops,

manual air vents,

drain valves, plugs and taps,

drip trays and tundishes,

standard pipe supports, non-standard pipe support assemblies, spring compensated components and pipe anchors and guides, laying and fixing in ducts, trenches and chases or embedded in in situ concrete or screeds, pipe sleeves and packing, except for sleeves and sleeve seals for pipes penetrating fire resistant - rated assemblies such as masonry walls, gypsum board partitions and slabs etc. since these are covered under Architectural works, wall, floor and ceiling plates.

2. Accessories for Pipework

2.01 Flexible connections are enumerated.

2.02 Isolating valves, balancing valves, pressure relief valves, automatic air valves, strainers, traps and the like are each given separately.

2.03 Connections to existing services and breaking into existing pipes are each given separately.

2.04 Each type of accessory is given separately. Diameters, dimensions and details are stated in descriptions, where necessary, to identify the work.

2.05 Accessories are enumerated.

2.06 Rates for automatic air valves and the like are deemed to include the costs of associated isolating valves.

3. Equipment and Ancillaries

3.01 Each kind of equipment and ancillaries is given separately, stating the size and pattern, rated duty, capacity, loading etc. as appropriate.

3.02 Each type is given separately. Diameters and dimensions are stated in descriptions, where necessary.

3.03 Equipment and ancillaries are enumerated.

3.04 Controls and instruments for each complete system are given as items.

3.05 Rates for measured work are deemed to include the costs of:
factory assembled components and controls,
loose equipment supplied by the manufacturer,
electrical terminations/connections,
valves (excluding control valves), strainers, flexible couplings, fittings,
accessories, other miscellaneous components and the like, as shown on the Drawings,
concrete bases and support pads, and other related concrete work,

plate work and supporting steelwork,
supports and fixing,
insulation and jacketing for cold and hot equipment, including providing
detachable mattresses and working insulation around special fittings and for
ancillaries,
anti-vibration mountings, including anti-vibration material and sound insulating
material,
loose keys, tools, spares (where specified) and the like and racks for holding
tools.

AXIAL HVAC FANS

DIFFUSERS, REGISTERS, AND GRILLES

SPLIT-SYSTEM AIR-CONDITIONERS

1. Equipment and Ancillaries

1.01 Each kind of equipment and ancillaries is given separately, stating the size and
pattern, rated duty, capacity, loading etc. as appropriate.

1.02 Each type is given separately. Diameters and dimensions are stated in descriptions,
where necessary.

1.03 Equipment and ancillaries are enumerated.

1.04 Radiators are enumerated. Number of sections, number of elements and height are
stated in descriptions.

1.05 Controls and instruments for each complete system are given as items.

1.06 Rates for measured work are deemed to include the costs of:

factory assembled components and controls,

loose equipment supplied by the manufacturer,

electrical terminations/connections,

refrigerant piping and accessories for air conditioning split equipment,

valves (excluding control valves), strainers, flexible couplings, fittings,

accessories, other miscellaneous components and the like, as shown on the
Drawings,

concrete bases and support pads, and other related concrete work,
plate work and supporting steelwork,

supports and fixing,

insulation and jacketing for cold and hot equipment, including providing

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detachable mattresses and working insulation around special fittings and for ancillaries,

anti-vibration mountings, including anti-vibration material and sound insulating material,

loose keys, tools, spares (where specified) and the like and racks for holding tools.

END OF MECHANICAL MOM