

General Conditions and Specifications for Cooling and Refrigeration Works

Cooling

First: General Conditions:

- 1- The contractor must read all the specifications stated in the “conditions and specifications booklet”. Once the contractor starts working, this shall mean that s/he had read and fully approves all what had been stated in the “conditions and specifications booklet”.
- 2- The contractor must submit complete set of designs (drawings) of each item at least one week before contractor commences work on it. These designs (drawings) shall be reviewed by the Consultant. The contractor shall not commence work on any item before receiving an approved copy of the executive designs (drawings) of the item.
- 3- The contractor shall submit samples to the Consultant for approval before commencing work. The Consultant has the right to reject these samples in case these do not meet Project specifications.
- 4- The Contractor shall submit to the Consultant the original manuals of the suggested units showing the technical specifications and performance curves of the bid-for equipments; to test to adherence to technical specifications.
- 5- Prior to commencing implementation, Contractor shall submit to Consultant for approval detailed drawings of the installation process. Contractor shall observe ventilation (outlets) required for air condition units. Contractor shall undertake maintenance and repair work during the warranty period agreed on.
- 6- Contractor must submit documents proving (item) adherence to Project specifications, manufacture date, origin. All the equipments must have stamped data sheet identifying manufacturer, model number, capacity, and source origin.
- 7- Consultant has full authority to monitor work procession. If Contractor is behind schedule in completing any item/phase, Consultant has full authority to assign another contractor to undertake the delayed items/phases while deducting the costs from the original Contractor without referring to any legal procedure.
- 8- Contractor is fully responsible for his labor force with regard to injuries, death, theft, or anything else. Contractor will also be responsible for labor daily accommodation and residence at the site.
- 9- Contractor shall keep in order the contracted work site: Contractor shall keep the work site clean of any unneeded rubbles, and shall protect contracted work against damage and weather conditions. In case any damage occurs based on Contractor negligence; Contractor shall be responsible for repairing the damage on his own account.
- 10- Contractor is responsible for repairing any damages in contracted items until final hand over.

- 11- All the equipments and materials brought by Contractor to the work site will be deemed property of the Owner and will not leave site before completion of work and elementary hand over unless there is a written permit from Owner or Consultant.
- 12- Owner may conclude Contract with the Contractor in any of the following cases:
 - a. If Contractor became bankrupt or submitted a bankruptcy claim.
 - b. Contractor stopped work for more than a week without written leave/permit from Consultant, or without force majeure.
 - c. If Contractor violates any Contract term; or showed negligence in undertaking any of Contract obligations.
- 13- In case work is withdrawn in part or in all from Contractor; Owner shall notify Contractor in writing to conduct and attend an inventory of all the work, supplies, equipments and tools present on site. The inventory list shall be mutually signed by Contractor, Consultant and Owner.
- 14- In case Contractor raises certain objections on the inventory list; Contractor shall clarify his objections at the end of the inventory list.
- 15- In case Contractor fails to attend the inventory; the inventory list shall be mailed to Contractor with one week period to respond. In case Contractor fails to respond within the week period, the inventory list shall be deemed approved by Contractor and made final. Owner shall then have the following rights:
 - a. To undertake the completion of the work deducting from Contractor account.
 - b. Offer the completion of work in a tender.
 - c. Contract with another contractor to complete the work deducting from original Contractor account.
 - d. Contractor shall be liable to all damage incurred upon Owner.
 - e. Contractor shall pay to Owner all incurred costs including administrative costs.
- 16- The duration of the project is ZZZZ months, starting zz/zz/yyyy ending zz/zz/yyyy. Contractor shall consult with all other concerned contractors on site to finalize and submit a conflict-free implementation/work schedule to be approved prior to starting implementation/work.
- 17- In case Contractor delays in completing work/items according to approved implementation/work schedule; Owner shall have the right to penalize Contractor a delay fine to be deducted from the remaining installments as clarified in the General Specifications. Owner shall have the right to assign others to undertake the necessary repairs/work under Owner supervision with costs deducted from Contractor account.
- 18- Contractor will do elementary tests on the efficiency of contracted items before sending a written notification to Owner or Consultant for elementary hand over of item. In case a simple malfunction –that can be repaired without hindering item operation and without hindering Owner from full utilization of the item- occurs during elementary hand over tests or operation; Consultant shall set another date after one week for elementary hand over; so that Contractor may fix the malfunction, and address any concerns.

- 19- Contractor shall guarantee all the contracted work/supplies delivered for one year from date of elementary hand over. Contractor shall submit all the manuals and operation guides of the item/contracted work. Contractor shall undertake any needed repairs within 36 hours of receiving malfunction notification; without any delay; during the warranty period.
- 20- Contractor shall undertake maintenance work for at least once at the start of each month (unless otherwise specified in the contract) for one year from elementary hand over. Contractor maintenance personnel shall record the readings of the different meters in relation to compressors pressures, humidity, temperature, ...etc.; in the presence of the Project technicians; to prepare jointly signed reports.
- 21- Contractor shall train technicians or personnel assigned for training by the Owner. These Personnel shall undertake operation, monitoring and control of the refrigeration units after the elementary hand over.

Second: Specifications for insulation of cold stores and affiliates

1- Required work

Contract Scope:

- 1- Thermal insulation for fast cooling chambers and cold stores.
- 2- Supplying and installation (assembling) of insulated sliding doors for the chambers (stores)
- 3- Supplying and installing (assembling) 10 cm thickness insulation wall inside the fast cooling chamber to separate between the exhaled / extracted air of the fans. Attached to this wall will be the extract fans.
- 4- Supplying and installing (assembling) a pivot door as an entrance to the area behind the fast cooling coils; for maintenance and repair works.
- 5- Supplying and installing an electric tarp to cover the fast cooling tunnel.
- 6- Supplying and installing (assembling) insulating PVC strip-doors for every chamber.
- 7- Installing (assembling) treated iron bars (pipes) as blocks to protect the sliding doors from the inside and outside.
- 8- Providing warranty for work done and supplies for one year period starting from date of elementary hand over.

2- General Technical Specifications of works

Thermal Insulation

A) Walls and ceiling:

Made of pre-made sectors of easily assembled sandwich panels. Each sector will compose of :

- Two layers of galvanized steel sheets with thickness no less than 0.5 mm and distance between the two layers must be 10 cm to the walls and ceiling of the chambers. Distance between the two layers is 5 cm for the ceiling of the corridor outside the chambers and in the docking (uploading, downloading areas) and also for the walls and ceiling of the sorting and packing hall.
- The galvanized steel sheets shall be painted and covered with a thin layer of Poly Ethylin to protect the sheets during casting and assembling.
- Poly Urithan will be pressed to fill between the two layers of sheets with a density of 40 – 42 Kgm/m³ .
- Sheets will be assembled in dovetails (male & female).
- The insulation sheets assembled to the walls shall be fastened to the floor using galvanized iron of no less than 1 mm thickness –strengthened PVC may also be used.
- Ceilings will be hung/mounted using T shape aluminum parts; provided that these are hung on Gamelan stretchers or concrete structure using pressure-able bars /

- rods with Thermal Break in case of the ceiling of more than 6 m width for 10 cm sheets; and of more than 4 m width for 5 cm sheets.
- All the joints in the ceiling and walls shall eventually be filled with Poly Urithan from above.
 - Aluminum angles shall be fitted in all corners (between the different walls and between the walls and the ceiling). These aluminum angles shall be set to fix and assemble corners coiled from the inside made of PVC with rubber ends.
 - Aluminum angles (**cabat**) shall be fitted to all the outer corners of the chambers.

B) Floors:

- Floors shall be insulated with two sheets of extruded poly-styrene; after finishing/completing the assembly of walls and ceiling. The thickness of each layer is 5 cm with density of 32 Kg/m³ ; it shall be alternately placed atop of each other so that the separating distance doesn't exceed the depth of distance between the two layers.
- The floor shall then be covered with a layer of Poly Ethylin with thickness of no less than 80 micron with a 10 cm of outer protection layer to protect against humidity and concrete work.
- The final layer is 15 cm of concrete, and skirting board 30 cm high and 15 cm thick, adjacent to the insulating walls. The concrete shall link between the floor and the skirting board to give more strength to the skirting board and protect it.
- The skirting board shall be curved in the meeting point with the floors.
- A space shall be kept on molding the skirting board between the skirting board and the walls to facilitate the placement of silicon or other flexible certified adhesives

C) Thermal insulated doors:

Certified manufacturers (Fermode – MTH)

Doors shall be designed and manufactured for heavy duty from imported iron sheets galvanized while hot. The sheets shall be painted in white color with thickness no less than 0.5 mm. Poly Urythan shall be injected between the layers with thickness no less than 92 mm and density of no less than 40 Kg/m³. Doors shall be covered with a layer of Poly Ethylin to protect it during transporting and assembly.

Chamber doors shall be sliding and manually operated, easily opened and closed from the inside and outside. The (**holook**) is made of aluminum and plastic and shall be supplied with accessories.

All doors must be complete with temperature control joins in all cases.

Accessories shall be of brand names or foreign origin; preferably US origin; and should be made from PVC treated against shocks or from rust resistant steel.

The dimensions for the sliding doors should be 3 m height X 2 m width.

It should be noted that the door leading to the area behind the (mabkhar ??) should be with fringes made of 10 cm thickness parts full with the frames, all the accessories, and imported Joins with dimensions 140 X 60 cm.

Strip Curtain Doors

Shall be made of Crystal Clear vinyl of 3 mm thickness. It should be resistant to low temperatures and maintain its characteristics. The curtains shall be made of strips 20 cm in width, to be fixed to hang from atop the sliding doors from the inside using stainless steel or aluminum each strip will have 5 cm overlapping with the other strip. The curtains shall be mounted to fully cover all the openings. The dimensions of the curtains shall be bigger than the doors with at least 15 cm from each side; the last strips on each side should preferably be colored.

Electric Tarp

Supply and install electric tarp with the following specifications:

- working on 220 volts/50 hertz, and connected to an appropriate CB key in the control board.
- Speed of 10 RPM, and the engine should be mounted so that it doesn't affect the chamber atmosphere.
- The tarp should be made of stainless steel, (Tanabeer) should be made of molded aluminum and the external stands from iron galvanized hot or electrostatically painted to protect against rust.
- A two moves waterproof operation switch should be mounted next to the fast cooling entrance door.
- The tarp should be made of cloth that is resistant to air pressure and strengthened with a plastic layer so that it's impervious.
- The cloth should be fortified with supporters of pipes or (bars) made of plastic or aluminum. The distance between these supporters should be no less than 50 cm (the dimensions of the cloth: 15 X 2.8 m).
- Fenders made of 30 kgm/m³ density sponge covered with the same material of the curtain to fend against the ballets bumping into the front wall, and to ensure air tight control inside the fast cooling tarp (as shown in the attached drawing).
- All material used should be stainless (resistant to rust).

Iron Fenders

To supply and install fenders for the sliding doors and insulating walls outside the chamber; with the following specifications:

- fenders should be made of seamless (un welded) pipes (table 80).
- The diameter of the pipe should be no less than 4 inches with 60 cm height from the final floor.
- Concrete is to be poured into the pipes after assembly to ensure strength.
- Pipes shall be galvanized hot with Zinc.
- These pipes shall be fastened to the floor using imported (gwayet) 12mmX10 cm; in accordance to the drawings attached.

Third: Specifications for refrigeration work and affiliates

1- Designing basics and weather conditions

This part is already in English (page 10)

2- Required work

Contract Scope:

- 1- To supply and install mechanical and electrical equipments necessary for the refrigeration work and affiliates.
- 2- To undertake the cleaning of the refrigeration circuit after completing installation.
- 3- Undertake leaking tests.
- 4- Supply and install (assembly) thermal insulation for the refrigeration agent
- 5- Supply and charge the circuit with refrigeration agent (R 22)
- 6- Supply and install a system for reducing temperature inside the storing chambers.
- 7- Supply and install lights inside the cooling and fast cooling chambers.
- 8- Supply and install control and operation panel for refrigeration works.
- 9- Undertake operation tests, verify warranty numbers, and deliver the project.
- 10- Issue warranty for the supplied and installed works/equipments for one year from elementary hand over.
- 11- Perform regular maintenance for one year from date of elementary hand over.
- 12- Train supervisors and technicians assigned by Owner on operation, monitoring and control.