



## Ministry of Fisheries and Ocean Resources

Male', Republic of Maldives

### Technical description and specification of the ice plant

Industrial seawater-cooled Tube ice plant complete unit with the daily ice production capacity of 30 tons and 50 tons cold storage and associated machineries and equipment to be supplied.

#### 1. Scope of the Work

- Supply and install 30 tons seawater-cooled saltwater tube ice plant as per the technical requirement.
- Supply and install 50T ice storage as per the technical requirement.
- Complete all required civil work.
- Design and construction of seawater intake system (with seawater tank and water filter systems) connecting from sea to condenser.
- Design and supply and complete installation of support steel frame structure and housing for ice plant.
- Design and supply and installation of powerhouse room.
- Design and supply and installation of generator set for plant with oil tank and piping line with control and distribution panel.
- Work site management and supervision of construction and machinery installation work.
- Conducting testing and commissioning of the ice plant system and ice storage facility.
- Conducting technical training on the operation of ice plant and training on basic repair and maintenance of ice plant machineries.

#### 2. Technical requirement:

*The Contractor may propose machineries / equipment with different model or specification. However, contractor requires to submit technical documents of proof with similar higher performance level than the suggested model.*

##### 2.1. Ice Plant

Detail	Requirement (minimum)	Proposed
Seawater-cooled tube ice plant system	Processing capacity 30 T	
Ice tube diameter	25 to 35 mm	
	Water pre-chiller	

Electrical control panel system	Electrical control system for all refrigeration units with remote control app As applicable electric control should include PLC, Thermal Relay, Air Switch, Ice control, Water level control, temperature controller and temperature sensor	
Evaporators and Ice blade	Titanium made evaporators, equipped with S.S. knife mechanism	
Compressor & Refrigeration system	Titanium made Compressor (Hanbell/Bitzer) with seawater cooled-condenser system,	

## 22. B. Ice Storage System

Detail	Requirement (minimum)	Proposed
Ice storage bin with refrigeration unit	50 Ton Storage	
Control panel system	PLC processed electrical control system	
The ice store cooling system	The ice store cooling system shall be independent from the ice making system.	
Temperature	-10~-15 degree Celsius	
Refrigeration system	Screw compressor (Hanbell/Bitzer) with water cooled-condenser system,	

## 23. Water Supply System

Requirement (minimum)	Proposed
Condenser pumps with piping	
water intake system	
Water filtering system	

## 24. Power Generation System

Requirement (minimum)	Proposed
<ul style="list-style-type: none"> <li>- Cummins diesel generator approx. 250KVA with direct injection air cooled conforming to ISO 3046 /BS 5514 (or higher standard) shall be included               <ul style="list-style-type: none"> <li>o Alternator: Stanford brushless AC alternator</li> <li>o Separately excited, self-regulated</li> <li>o Class 'H' insulation</li> <li>o Automatic voltage regulator</li> <li>o Synchronized Panel</li> <li>o Power cable and fittings</li> <li>o Diesel Tank (with minimum capacity of 1000L)</li> </ul> </li> </ul>	

<ul style="list-style-type: none"> <li>○</li> <li>○ Diesel transfer pump</li> </ul>	
- Synchronized control and distribution panel	
- All energy used on the ice plant should come from the facility's power generation system.	

<b>25. Design Condition</b>		
<b>Details</b>	<b>Requirement (minimum)</b>	<b>Proposed</b>
- Ambient Temperature	~36 °C	
- Make up Seawater temperature	+30 °C	
- Main current	400 Volts, 50 Hz, 3 phases	
- Pilot current	230 Volt, 50 Hz, 1 phase	

<b>26. Ice plant building structure</b>	
<b>Requirement (minimum)</b>	<b>Proposed</b>
<ul style="list-style-type: none"> <li>- Steel structure self-supporting with frame column beam and trusses roof purlin prefabricated for bolt assembling on site, heat resistance metal sheet for roof and siding. All equipment shall be housed in the same building.</li> <li>- A boundary wall (height 3ft) for the ice plant site shall be built by the contractor.</li> </ul>	
- All energy used on the ice plant should come from the facility's power generation system.	
<ul style="list-style-type: none"> <li>- Concept drawing (layout/side/ground view) for the prefab building and ice plant site shall be provided by the applicant. Concept drawing should include.               <ul style="list-style-type: none"> <li>○ Ice making machine.</li> <li>○ Cold Storage (Ice storage)</li> <li>○ Power generation room (e.g.: generator set)</li> <li>○ Spare Parts Room</li> <li>○ Office</li> <li>○ Boundary wall</li> <li>○ Toilet</li> </ul> </li> </ul>	
- Should include diagram, drawing or photos of major components of ice plant system, refrigeration equipment and power generation machine.	

<b>27. Duration</b>	
<b>Requirement (minimum)</b>	<b>Proposed</b>
28. All construction works including commissioning of ice plant system should be completed handed over to the Ministry of Fisheries and Ocean Resources within 240 days of the signing.	

### **3. Other Technical Descriptions/ provisions**

#### **1. Approximate Land Area for the construction of ice plant facility will be allocated near harbour area**

- Near harbour area, approximately 3000 sqft
- Ice Plant and Cold Storage (Storage of Ice)
- Machinery room (eg:- generator set) approximately 240 sqft
- Spare Parts Room/Godown: approximately 70 sqft
- Office: approximately 120 sqft
- Toilet: approximately 30 sqft

#### **2. Duty Exemption**

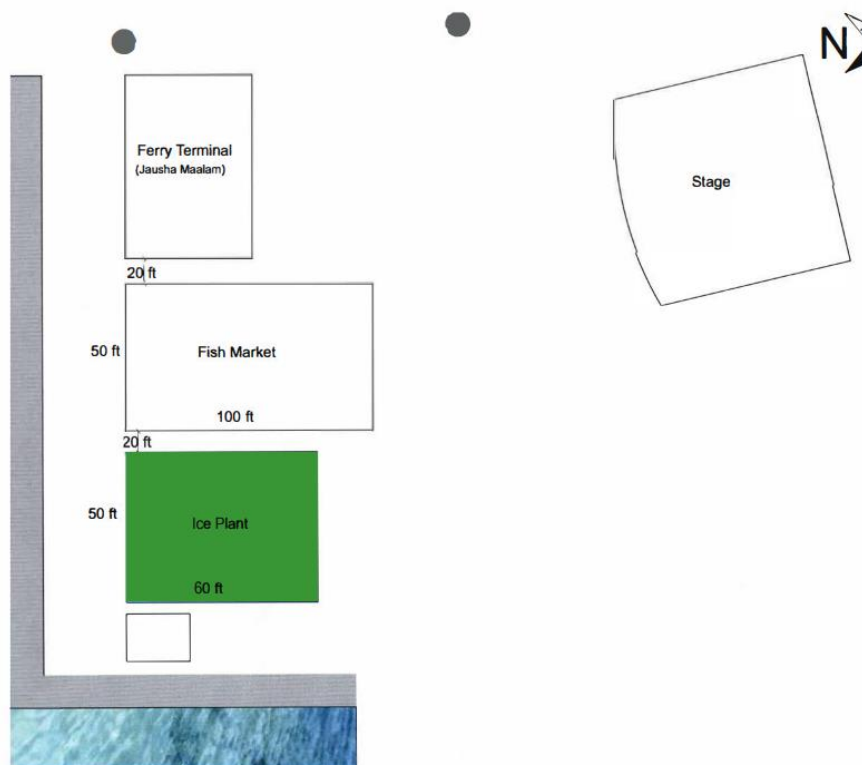
- Import duty for following items imported for the ice plant work will be exempted by the ministry.
  - o Ice making machines, refrigeration equipment and all associated machineries and equipment.
  - o Materials required for the building ice storage facility.
  - o Generator set and associated equipment.

#### **3. Environment Impact Assessment (EIA)**

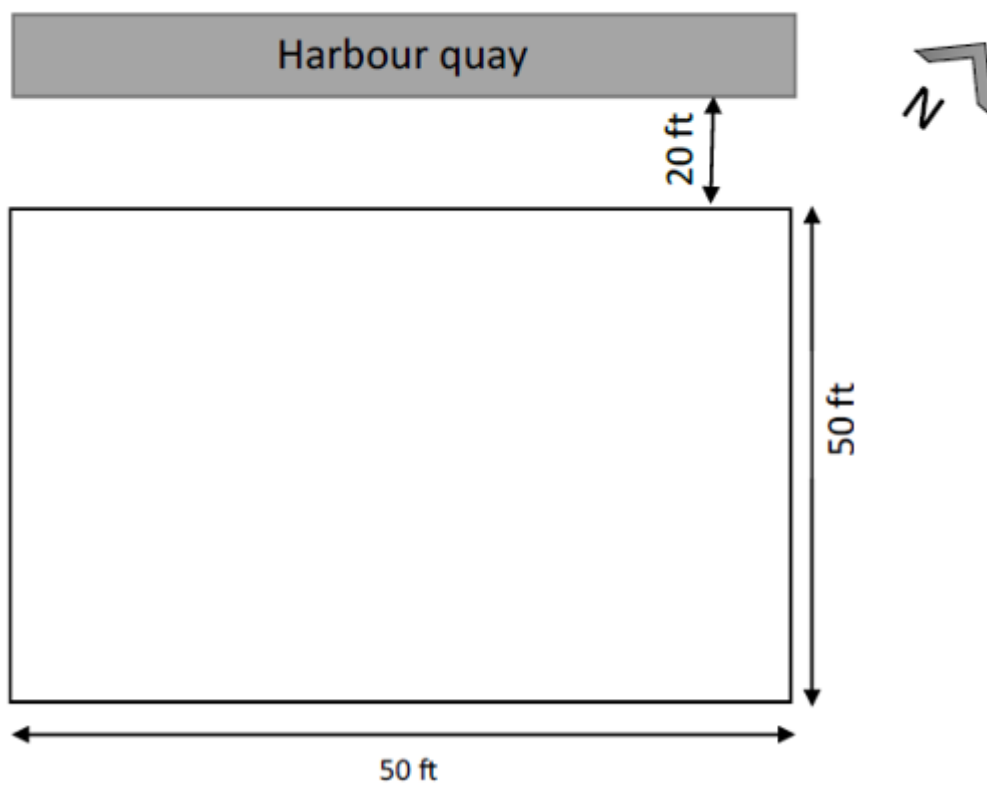
- The Environment Protection and Preservation Law of the Maldives (Law No. 4/93) requires a comprehensive Environmental Impact Assessment (EIA) to be undertaken prior to the commencement of the project.
- EIA costs should be borne by the contractor. It is also responsibility of the contractor to complete the EIA work as per the rules and regulations of Environment Protection Agency (EPA).

Attachment (drawings)

Ha.Dhidhoo

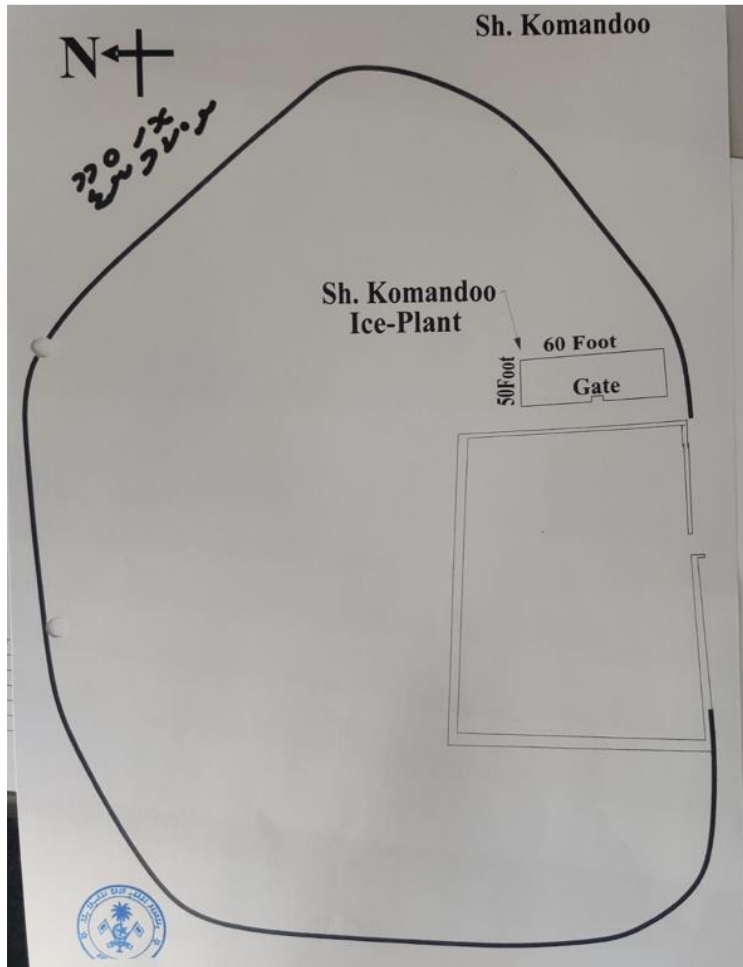


Drawing 1 – Gdh. Rathafandhoo (50 x 50ft)





Sh.Komandoo



Hdh.Kulhudhufushi

land size: 3334.68 sqft Area

