

HINDUSTAN SHIPYARD LTD : VISAKHAPATNAM-530 005

**TECHNICAL SPECIFICATION FOR OFF-LOADING OF JOINERS & CARPENTRY
WORKS ON 53,000 DWT BULKCARRIERS OUR- YARD NO. 11138**

SCOPE AND DESCRIPTION OF WORK OF THE CONTRACTOR:

**1. WALL AND CEILING PANELS, DOORS, TOILET MODULES, HANDRAILS, STAIR
CASE & MISCELANEOUS**

1.1 Assembly/Installation of Partition panels, lining panels & ceiling panels, window boxing, Doors, toilet modules and handrails as per the respective drawings
The entire work indicated in the following drawings in the scope of this contract..

1.1.1. Wall paneling consisting of the following drawings:

- a) Wall Panels – Drawing no.21109
- b) Panel Arrgt.of 1st Accommodation Deck – Drawing No.21101
- c) Panel Arrgt.of 2nd Accommodation Deck – Drawing No.21102
- d) Panel Arrgt.of 3rd Accommodation Deck – Drawing No.21103
- e) Panel Arrgt.of 4th Accommodation Deck – Drawing No.21104
- f) Panel Arrgt.of 5th Accommodation Deck – Drawing No.21105
- g) Panel Arrgt.of 6th Accommodation Deck – Drawing No.21106
- h) Panel Arrgt of Engine Control Room - Drawing No 21107
- i) Panel Arrgt of Main Ladder - Drawing No 21108

1.1.2. Ceiling Paneling as per the following Drawings:

- a) Ceiling Drawing no.21307.
- b) Ceiling Arrgt. of Ist Accommodation Deck – Drawing No.21301
- c) Ceiling Arrgt. of 2nd Accommodation Deck – Drawing No.21302
- d) Ceiling Arrgt. of 3rd Accommodation Deck – Drawing No.21303
- e) Ceiling Arrgt. of 4th Accommodation Deck – Drawing No.21304
- f) Ceiling Arrgt. of 5th Accommodation Deck – Drawing No.21305
- g) Ceiling Arrgt. of 6th Accommodation Deck – Drawing No.21306
- h) Panel ceiling arrangement of ECR – Drawing no.21107
- i) Panel ceiling arrangement of Main ladder – Drawing no.21108

1.1.3. Doors & Cabin Plan as per the following Drawings:

- a) Fire proof door – Drawing no.22002 and 22003
- b) Cabin plan of 1st Accommodation Deck – Drawing No.20111
- c) Cabin plan of 2nd Accommodation Deck – Drawing No.20112
- d) Cabin plan of 3rd Accommodation Deck – Drawing No.20113
- e) Cabin plan of 4th Accommodation Deck – Drawing No.20114
- f) Cabin plan of 5th Accommodation Deck – Drawing No.20115
- g) Cabin plan of 6th Accommodation Deck – Drawing No.20116
- h) Public bath Toilets in all Accommodation Decks – Drawing No.20211

- 1.1.4. a) Joint Drawing No.21308:
 Profiles – I – Drawing No.21309
 Profiles – II –Drawing No.21310.
 b) Fire proof Door Drawing No. – 22002 (B & C Class only)
 c) Arragt. of Interior Storm Rail Drawing No. – 24512

1.1.4 Toilet Modules & Sanitary Fittings:

- Sanitary Discharge System - Drg.No. 26002.
 Sanitary discharge system list of valves and fittings- Drg. No. 26003.

- 1.1.5 Hand Rails& Staircase in Accomodation - Drg. No. 24511-12

MISCELLANEOUS:

- 1.1.6 Window boxes for side scuttles & Windows - Drg. No. 24113-24115
 1.1.7 List of Warning and indicating plate - Drg. No. 20119.
 1.1.8 Certified Marking, Cabin Names and Key Plates Plan - Drg No. 20121.
 1.1.9 Arrangement of Gratings for stores in Accom. - Drg. No. 36011.
 1.1.10 Builder Name plate - Drg. No. 38007.
 1.1.11 Wooden gratings in steering gear room - Drg. No. 30015A
 1.1.12 CO2 room arrgt (Wooden blocks under CO2 cylinders) - Drg. No. 74201A,74202A
 1.1.13 Installation of Official NTC Arrgt Marking - Drg. No. 50042A
 1.1.14 Details of Ship Name board - Drg No. 39005A
 1.1.15 Arrgt of Galley and Pantry(sanitary fittings) - Drg No. 20210A
 1.1.16 Wooden foundation for Rescue Boat Davit - Drg No. 35017A
 1.1.17 Erectionof draught Stop (Fire Proof partition pan) - Drg No 21001
 1.1.18 Wood Work in Store rooms & shelves (forecastle & deck house)—Drg No 36008
 1.1.19. MFG DWG of wooden seat for electrical equipment - Drg No 80009
 1.1.20 Gyro platform at wheel hose wings as per drawing issued by concern drawing office
 1.1.21 Wooden frames for batteries - Drg No 81983
 1.1.22 Fab & Fixing of Photo Frames as per drawing issued by concern drawing office.
 1.1.23 Wooden Seating for M.E Spares (cylinder head, crank shaft etc.,)

2. FURNITURE, HARDWARE, CURTAINS ETC, IN ACCOMMODATION SPACES:

- 2.1 Installation of Furniture, Hardware, Curtains, Mattresses etc., on board ship.
 2.2 Work on board shall be executed as per the following drawings.
 2.2.1 Cabin plan of 1st acc. dk. To 6th acc. dk.- drawings nos. 20111B to 20117B General Arrangement - Drawing No. 20001B.
 2.2.2 Furniture items as per Furniture List - Drawing No.20118A
 2.2.3 List of Curtains – Drawing No. 20120A

3. PROVISION REFRIGERATED STORES:

- 3.1 The total work as per the drg.no.36000C (23 Sheets) Insulation & Arrangement of Refrigerated Provision store shall be carried out under the scope of this contract.
 3.2 Priming of steel surfaces of the Refrigerated Provision Stores shall be carried out by HSL.

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The party should attend to the damaged surfaces due to welding of foundations, partitions etc shall be mechanically cleaned and primed. Scheme Painting in the Refrigerated Provision

Stores shall be as per painting scheme as follows

On steel Bhd, deck head and deck including angle supports:

1 x modified Epoxy - dark brown - 100 micron

1 x modified Epoxy - white - 100 micron

(HSL will provide mechanically cleaned and primed surface to the Contractor)

- 3.3 Work shall be started after thorough study of the Drawing No: 36000A and materials to be used.
- 3.4 The following is the approximate description of works in the above drawing.
- Installation of Deck covering, 3mm Rubber sheet on floor & M.S angles on wall supports
 - Installation of floor, wall, ceiling panels (PUF) as shown given in the drawing
 - Installation of Insulated doors
 - Installation of 2/3-tier stainless steel shelves
 - Installation of meat rails and hooks.
 - Sealing of gaps in panels.
 - Laying of PVC gratings.
 - Installation of shelves in Dry provision stores.
 - Installation of blood poll sink
- 3.5 Gaps between the paneling, shelves etc., shall be properly closed to the satisfaction of Supervising department/Owner as instructed by the Supervising department.
- 3.6 Gaps around scuppers, cooler foundation, meat hooks etc., in PUF boards shall be sealed with silicon sealing / caulking.
- 3.7 The Sand & Cement required for underlay shall be in Contractor's scope of supply.**
- 3.8 The works those are necessary to be carried out as a part of the Arrangement of Insulation Refrigerated provision store works but not indicated either in the specification or not shown in the drawings as a part of the awarded contract, modifications required, if any to suit at site or suggested by HSL/Owners shall be carried out without extra cost, upto a maximum extent area of 10m² per ship. Beyond that the additional are shall be treated as additional job and shall be paid as per contract rate.

4. SOUND, THERMAL AND FIRE CLASS INSULATION, SHEET METAL LINING AND AIR DUCT INSULATION

- 4.1 The insulation work is to be carried out as per the latest insulation practice under Shipyard Inspection.
- 4.2 The work is to be carried out as per drawings issued along with the specification and to the satisfaction of HSL, MMD and Ship Owners. The thicknesses at various bulkheads, decks, deck heads and air ducts (Round or rectangular) are to be followed as stipulated in the drawings to maintain required temperatures inside the rooms during heat balance tests and also noise level tests at the time of commissioning, thereafter during the guarantee period of the vessel.

4.3 Pins, Lugs, Sheet metal Angles etc., Pins for fixing insulation, MS Lugs, Sheet Metal Angles and Boundary Bars are to be fabricated as required and welded as per the details indicated in the drawing Nos. 23110C, and as per Yard general practice.

4.4 All steel surfaces including frames, stiffeners, brackets and beams over which insulation is to be laid are to be cleaned and primed with one coat of ZSP primer by HSL before releasing the areas to insulation contractor. **The burnt areas due to pin welding and any damaged areas during the execution of work shall be mechanically cleaned and primed by the contractor.**

4.5 After priming, the surfaces shall be allowed to dry before commencing painting as given below under the supervision and guidance of Shipyard / Paint supplier's representatives

QUANTUM OF WORK:

The following are the approximate areas of different types of insulation to be carried out. **Payment will be made on the actual measurements jointly taken by Contractor and Hull Outfit department.**

4.6 **FOR A-60 FIRE CLASS INSULATION:**

4.6.1 A-60 Fire Class insulation on bulkheads:
Ceramic fiber of 170 Kg/m³ density 20mm+20mm - 600 m² (approx)
on plain area and stiffeners.

4.6.2 A-60 Fire Class insulation on deck:
Ceramic fiber of 170 Kg/m³ density 30mm on plain area - 23 m² (approx).
and stiffeners

4.7 **Heat Insulation :**

4.7.1 Heat insulation on bulkhead:
Rock wool of 100 Kg/m³ density – 100mm thick on plain area and -50mm thick on stiffener area thick approximately

4.7.2 Heat insulation on Deck Rock wool of 100 Kg/m³ density – 100mm thick on plain area and - 50mm thick on stiffener area

} 3000 m² (Total area of 50mm)

4.8. **Sheetmetal ceiling and linings:**

4.8.1 Galvanised steel sheet cover over bulkhead insulation /Bare bulkhead

4.8.2 Galvanised steel sheet cover over Deck insulation /Bare deck

} 307 m² (approximate)

- 4.9 Fiber Glass Aluminium foil cloth lining:
 Fiber glass aluminium foil cloth over bulkhead insulation /
 deck insulation – (approx) } 1051 m²

4.10 **PAINTING OF SURFACES BEHIND INSULATION (EXCEPT FOR AIR DUCTS):**

All the surfaces behind insulation are to be given **one coat of Anti-corrosive primer – 7135 Sigma primer ZP/Sigmarine 24 Brown paint as per painting scheme after cleaning, as described in item (3.2) above to dry film thickness of 75 microns.**

Frames, stiffeners, beams, lugs etc., in way of all insulated surfaces are also to be given one coat of above paint after cleaning.

4.11 **BRIEF LAYING PROCEDURE FOR VARIOUS TYPES OF INSULATION :**

4.11.1 **THERMAL, SOUND AND FIRE CLASS INSULATION ON WALLS AND CEILINGS:**

The extent of insulation and various methods of laying for wall and ceilings shall be as per the drawing No.23110 C.

In general, the insulation slabs of various thicknesses and densities are to be impaled over the M.S. pins referred at item 3.3 above against the steel surfaces and held in place with clip type washers.

4.11.2 **SHEET METAL LINING:**

4.11.2.1 **G.I. SHEET LINING:**

The GI Sheet lining of 24 Gauge shall be executed as per the Drawing 23110. The exposed surface of sheet lining shall be degreased by wiping with a cloth moistened with white spirit and pretreated with a coat of wash primer at 10 microns and painted as stated below.

- a) 1 x 75 DFT Anti-Corrosive primer (7135 Sigma Primer ZP/Sigmarine 24 Yellow)
- b) 1x35 DFT – Enamel finish (7238 Sig marine BTD / Sigmarine 48 White 7000)

4.11.3 **INSULATION OF AIR DUCTS:**

4.11.3.1 **THERMAL INSULATION OF AIR DUCTS:**

The required adhesive is to be applied over the cleaned surfaces of the trunks. Alu. Foil faced insulation slabs of 20/30/50 mm thick having 100/170 kg/m³ density are to be cut to the size as required and fixed on to the glue. Care shall be taken to see that no air gaps

are left between adjacent slabs. Any unavoidable crevices are to be filled with insulation material. The joints are to be covered with self adhesive alu. Foil tape. Insulation works shall be executed as per guidance drawing.no.23110 C & 25101 to 25105 C.

Rectangular trunking shall be insulated after painting is completed as per Painting Scheme.

4.11.3.2 **FIRE CLASS INSULATION OF AIR DUCTS :**

The ducts penetrating fire class divisions shall be insulated with the respective type of insulation to an extent of 450 mm on either side of division Also ducts requiring Fire Class Insulation to be provided with Fire Class Insulation. Details of Insulation over ducting will be similar to Bulkheads/Deck and areas are included in the quantum of work in Fire Class Insulation.

5. LAYING OF FLOORING:

5.1 This contract is for laying of different types of flooring on board the ship, finishing and polishing the surfaces to the satisfaction of Shipyard and Owners representatives as per the technical specification, laying procedure (Installation method of flooring) and as per drawing No.23510 B and as instructed by concern yard department after proper cleaning of the painted surface to the satisfaction of the Shipyard.

5.2. **DESCRIPTION OF WORK PER SHIP:**

Primed and scheme painted surfaces shall be released to flooring contractor. Contractor has to lay the flooring as described below.

5.2.1	Laying of Light weight deck covering as per approved procedure to a minimum thickness of 8mm to 12mm	Approx. area.	970	
		Sq.M.		
5.2.2	Laying of A60 Floating floor as per approved procedure	Approx. area.	286	Sq.M.
5.2.3	Laying of A60 Dk .Covering	Approx. area.	266	Sq.M.
5.2.4	Fixing of PVC vinyl flooring	Approx. area.	1110	Sq.M.
5.2.5	Fixing of Non Slip Synthetic Rubber mat	Approx. area.	58.42	Sq.M.
5.2.6	Fixing of Carpet	Approx. area.	370.	Sq.M.
5.2.7	Fixing of Non Slip Tiles	Approx. area.	115.	Sq.M
5.2.8	Fixing of Ceramic Tiles	Approx. area.	19.	Sq.M
5.2.9	Application of white cement	Approx. area.	76	
		Sq.M.		

5.3 **CONTRACTORS SCOPE OF SUPPLY OF MATERIALS:**

5.3.1 Non-skid Ceramic Tiles for flooring, skirting tiles (curved shape as required at site).

5.3.2 White cement

5.3.3 Steel clips and expanded wire mesh for flooring in wet space if necessary.

5.3.4 Silicon sealing compound and glue for fixing the skirting tiles.

5.3.5 Any other materials other than indicated in the scope of supply of Shipyard at para-4 which are required for successful completion of flooring works as per Technical Specification and Drawings.

5.3.6 For all the above materials samples are to be submitted for HSLs approval.

5.3.7 All the required machinery, tools and labour to carry out the work.

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5.4. SHIPYARD SCOPE OF SUPPLY OF MATERIAL:

- 5.4.1 The materials required for Sl. Nos 2.1 to 2.8 as stated above as per Drawing No.23510 B-Arrangement of Deck covering. (Except the materials shown at para '3' above)
- 5.4.2 Lighting, water supply & crane shall be provided depending on necessity and availability.

5.5 GENERAL MEASURES TO BE TAKEN WHILE LAYING OF FLOORING:

- 5.5.1 The flooring shall be given a slope towards the scuppers and gutters wherever necessary and as instructed by Yard Departments to suit at site.
- 5.5.2 The entire work of flooring shall be carried out under the inspection and to the satisfaction of Shipyard & Owners representatives. On successful and satisfactory completion of work including final polishing a certificate shall be obtained from the competent authority of the yard departments for the purpose of payment of bills.
- 5.5.3 Mixing of flooring composition shall be carried out in a separate tray preferably outside the ship. In case of any incidental spillage, the deck shall be immediately cleaned and washed. In case of any delay in doing so, the cleaning shall be arranged by Shipyard at contractors cost.
- 5.5.4 Any incidental work which are not specified in the technical specification but essential for the successful completion of the work shall be carried out by the contractor without extra cost.
- 5.5.5 The areas indicated above are only approximate. Payment will be made for the actual measurements taken at site jointly by the representatives of contractor and Hull Outfit Department and duly certified by the competent authority of yard departments.
- 5.5.6 The contractor shall be responsible to make judicious use of the material supplied by the Shipyard. Shipyard reserves the right to make minor alterations in design, for improvement and for any other reasons arising out of the circumstances.5.7 Final cleaning of flooring surface is to be done at the time of Accommodation Survey and handing over of the cabins.

6. GENERAL:

- 6.1 Assembly/Installation work on board shall be to the utmost satisfaction of Owner's/MMD/ Classification Societies and HSL.
- 6.2 The survey shall be carried out in presence of representatives of Shipyard, Owners, Surveyors of Classification Societies and MMD as per the drawings. The survey reports duly certified by MMD Surveyors/Classification Surveyors and Owner's representatives are to be properly documented as per HSL Q. C. department procedures.
- 6.3 After studying the concerned drawings, the exact locations of the ceiling & bhd panel supporting, doors, toilet modules side scuttles/window boxing, handrails,furniture etc. should be marked. The markings shall be shown to concerned department for their inspection. After obtaining clearance only, the contractor shall proceed with welding of the supporting foundations and framework for erecting the panels, doors, side scuttles/window boxing, handrails , furnitures etc.
- 6.4 Once erection of framework on steel bhds/deck/deckheads are completed, the clearance for dimensions and alignment from concerned yard department shall be obtained before install-

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ing the equipment. The paneling should be done by the contractor only after obtaining clearance from the supervising department for completion of all works behind linings and ceilings.

- 6.5 Cutting of panels where necessary as per drawing to suit the location shall be carried out with utmost care without damaging the surface decor.
- 6.6 Cutting of openings for switches, Window boxes, furniture foundations electrical equipment foundations, lights, vent dampers, vent diffusers/grills, pipe valves, fire hose boxes etc. required in-linings and ceilings as per the respective drawings, co-ordination drawings and at site information.
- 6.7 Fabrication & Erection of opening with doors made of CMB Panels/Sheet Metal in ceilings, linings as required per drawings and to suit at site, in way of pipe valves, fire hose boxes, ventilation dampers and other recesses.
- 6.8 Chipping, cleaning, painting of metallic sections, damaged areas of steel surface of bhds, ceilings and floorings due to welding/burning while carrying out the hot works.
- 6.9 Erection of Drought stoppers in linings and ceilings as shown in the drawings and covering of openings of pipes, cables, vent. trunks etc. in way of drought stoppers with approved compound as per the drawings and to the satisfaction of HSL/Surveyors/Owners.
- 6.10 PVC skirting shall be fixed to the lining/partition panels after completion of flooring as per the details given in the drawings.
- 6.11 Paneling, doors, toilet modules and window boxings shall be cleaned during erection,before Owner/MMD Surveys and while handing over of Accommodation to Owners before sailing.
- 6.12 All the door fittings like handles, hooks, door closures, vent . louvres etc., shall be fixed. The door locks shall be fixed as per the Master key system of respective door drawings.
- 6.13 Handrails in Alleyways and Stairways are to be erected as per drawings.
- 6.14 Once the insulation, flooring and paneling works are completed, furniture, hardware, doors and other materials shall be installed. Some of the bigger size furniture items shall be received in disassembled condition which were once assembled at manufacturer's workers and disassembled for the convenience of transportation. The details are indicated in the supplier's furniture drawings. All such items which are received in disassembled condition shall be assembled and erected on board the vessel as per the layout drawings.
- 6.15 After erection on board the furniture / other items shall be touch up / finishing to be done with varnish / polish / paints as per Instructions given by manufacturer / HSL. Required Varnish / Polish / Paints are in contractor's scope.
- 6.16 Final polishing / painting for the furniture / other items shall be carried out as instructed by the supervising department before delivery of the ship to the satisfaction of HSL / Owners. Required Polish and Paints are in contractor's scope.
- 6.17 Gaps between the furniture, floor, paneling, door, window boxes etc., shall be properly closed to the satisfaction of supervising department / Owners / MMD as instructed by the supervising department. Required material for this purpose is HSL's scope.
- 6.18 Furniture, other items and hardware shall be fastened carefully in position without

damaging flooring and paneling.

- 6.19 The contractor should take proper care not to spoil the furniture, upholstery etc. He should see that they are not exposed to heat, rain etc., during handling of furniture and other material.
- 6.20 Burnt areas due to welding of furniture foundations / holding down devices shall be mechanically cleaned and painted as per painting scheme. The contractor shall employ qualified welders to carryout the welding works wherever required. Shipyard will supply electrodes and scheme paints for this purpose.
- 6.21 The material shall be weighed before taking on board the Ship for installation and recorded in presence of the department concerned. Copy of the weight records is to be sent to Drawing Office through the supervising department periodically. Contractor shall maintain record of Inspections carried out by Hull outfit Dept/Q.C/Owners/Surveyors at different stages as required. Work measurement for deck wise, drawing wise, mutually signed by both contractor tractor and supervising department is to be submitted periodically as decided at the time of awarding the contract. Payment shall be made on actual work done.
- 6.22 Contractor shall maintain a record of materials drawn and the areas where these materials are used, the same shall be shown to the concerned before drawing successive quantities.
- 6.23 Contractor shall keep the working areas neat. After completion of installation in individual rooms, each cabin shall be thoroughly checked / cleaned including bulkhead and ceilings, before handing over to HSL.
- 6.24 Contractor has to take complete responsibility of all the items / materials in the respective cabins during working till handing over to HSL.
- 6.25 Locking arrangement of furniture items and maintenance of furniture keys should be the responsibility of the contractor till indication is given by the concerned department.
- 6.26 Curtains for beds, doors, windows, chart table, shower etc shall be stitched, by taking measurements on board the ship. The design of the curtains shall be as decided by Shipyard and owners. Required curtain cloth and curtain rods for the above curtains will be supplied by Shipyard. The curtains shall be rigged in position for MMD Surveyor and before the delivery of the ship.
- 6.27 Cabin plates & number plates shall be installed as per the drawings.
- 6.28 Modification required to suit at site for coordination and remarks/modification suggested by HSL/Owners/MMD shall be carried out with out additional claim. Incase of insulation works some times if any areas of Insulation laid may have to be removed and refixed due to coordination problems. Such areas are to be carried out by the contractor with in the cost of original contract value with out claiming extra cost.
- 6.29 Required staging is to be provided by contractor itself.
- 6.30 Cutting & Fairing of doors opening & wherever required are to be carried by contractor it self.
- 6.31 The contractor shall carryout the work in coordination with the other contractors/

departments for the following works.

i) Ducting iii) Plumbing iii) Electrical etc.

- 6.32 The contractor shall employ sufficient no. of employees depending upon the work load from time to time to meet the schedules of HSL.
- 6.34 The contractor shall employ skilled workmen, qualified welders and Supervisor to perform the good workman ship.
- 6.35 The required tools and instruments shall be arranged by contractor himself.
- 6.36 Locking arrangement of their works and maintenance should be the responsibility of the contractor till the work is handed over to the concerned department.
- 6.37 Contractor has to remove any temporary/unwanted supports existing at the time insulation and after completion of the job.
- 6.38. The contractor shall submit the following to Outfit Accomodation department (J &C) and Ship Building Outsourcng Department.
 - a. Plan of action in the form of pert /Gant chart for the entire project completion
 - b. Monthly wise pert chart/ gant chart
 - c. Daily status/performance report.
 - d. Daily plan of action for the next day

Note: All the above jobs are liable for small amount of rework. The contractor has to attend the same without additional claim

7. INSPECTION & SURVEY:

- 7.1 HSL reserves the right to inspect the job while in progress during execution by the representatives of HSL / MMD / Owners. Contractor shall provide required facilities for such inspection.
- 7.2 Survey shall be done in presence of concerned yard departments / Quality Control / Owners / Class / MMD as per HSL inspection schedules.
- 7.3 The Survey remarks by Owners/ MMD shall be carried out by the Contractor on top priority and remarks shall be present for re-survey.

8. SCOPE OF WORK OF SHIPYARD:

- 8.1 Shipyard shall provide all the materials required as per drawings for completion of work.
- 8.2 Shipyard shall provide detailed working drawings, coordination drawings to carryout the work as required under contract.
- 8.3 Shipyard shall supply required number of approved welding of electrodes.
- 8.4 The required primer and paints will be given.
- 8.5 Shipyard shall provide required facilities like lighting, power supply, crane etc. depending upon the necessity and availability.