

ANNEXURE- A

HINDUSTAN SHIPYARD LTD. : VISAKHAPATNAM - 530 005.

TECHNICAL SPECIFICATION FOR SURFACE CLEANING , PRIMING AND PAINTING OF OUTSIDE HULL AND INTERNAL SUPERSTRUCTURE SURFACES OF VESSELS UNDER CONSTRUCTION.	P.R.Q No. : Revision No. : '1' Department : M&E.O Date : 15-12-2011 Pages : 1 of 6
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1. **DESCRIPTION OF WORK :**

- 1.1 To carry out surface cleaning, priming and painting of outside hull, internal and superstructure surfaces as required by HSL. These works are to be carried out at different stages of construction to delivery of the vessel (New Vessels)
2. The rates indicated are per 10 m² (Ten square meters) of area for the following operations which may have to be carried out at various places as stated at clause 1.1 above and as per standards specified. The works shall be carried out to the satisfaction of HSL / Ship owners.

Sl.No.	Description
1.	Copper slag blasting in panels SA 2 ½ Standard
2.	Sweep blasting with copper slag in panels
3.	Copper slag blasting for outer Hull and other exposed areas on board ship To SA 2 ½ Standard
4.	Grit blasting in panels SA 2 ½ Standard
5.	Sweep/Commercial grit blasting in panels/ on board ship
6.	Application of primer on blasted surfaces
7.	Epoxy HB painting
8.	Grit blasting for ship construction SA 2 ½ Standard
9.	Sweep blasting with copper slag for ship construction

- 2.1 The Contractor should ensure to comply with the DFT per each coat and total DFT (Dry Film Thickness as per painting scheme of the respective vessel.
- 2.2 HSL will allocate to contractor operation / location from the above works basing on HSL requirement on contractor's capability to take up above work etc. HSL reserves the right to cancel any / all operations / locations from the purview of sub-contractor without assigning any reason.
- 2.3 The orders will be issued for the actual quantity of work done, total amounts to be paid as and when yard departments forward their work entrusting / work allotment certificates certified by competent authority.
- 2.4 For specification of blasting work refer Annexure-I.

3. **SCOPE OF SUPPLY AND WORK OF THE CONTRACTOR :**

- 3.1 Surface cleaning, priming and painting as in clause-2 above.
- 3.2 The following shall be arranged by the contractor at his expenditure.
 - 3.2.1 Blasting units and or other cleaning tools that are necessary to carry out the above jobs to the required standard.
 - 3.2.2 Sufficient labour and supervising staff needed for satisfactory execution of work within the schedule period.
 - 3.2.3 Necessary lodging and boarding and also transport for his personnel during their stay at HSL.
 - 3.2.4 Necessary compressed air.
 - 3.2.5 Necessary gas proof safety electrical lamps.
 - 3.2.6 Blower and / or supply / exhaust fans for ventilation in the tanks. It is to be noted that 10 to 15 air changes per hour are required as recommended by the paint suppliers. Exhausting is to be continued for 24 hours after painting also.
 - 3.2.7 Necessary approved safety devices for their personnel during blasting, cleaning and painting.
 - 3.2.8 Necessary materials viz. copper slag / shots / girt / sand/ quartz, cloth for swab and blast cleaning the surfaces, tarpaulin and other materials and spares needed for operating their equipments etc.
 - 3.2.9 All other tools viz. chipping hammers, scrappers, disc sanders, wire brushes / manual or power operated, nylon / other type of brushes (hand roller) tanks or drums for storing and carrying fresh water etc., that are needed for the job. Collecting fresh water from the nearest top point available on jetty and carrying to the work spot.
 - 3.2.10 Blasting work includes collection of blasting materials like copper slag / quartz / grit and cleaning the work spot by completely removing blasted materials after completion of blasting as required by HSL.
 - 3.2.11 Proper covering / protection to be provided to the equipment/men/material near the work spot of the contractor without causing any damages, paint marks etc., and if any damage is occurred, same shall be rectified at contractor's cost.
 - 3.2.12 General staging provided for the purpose of ship construction can be utilised by the contractor. For other areas, the contractor has to provide staging by himself by collecting staging materials from yard departments.

4. **SCOPE OF SUPPLY & WORK OF SHIPYARD :**

4.1 Shipyard shall arrange the following:-

- 4.1.1 Cranes including mobile cranes as and when required (subject to availability).
- 4.1.2 Supply of any scaffolding or staging planks as necessary (subject to availability)
- 4.1.3 Storage space, if available for contractors equipment on payment.
- 4.2 Shipyard shall supply.
- 4.2.1 Electricity supply (not for electric compressor) for lighting, 'free of cost'
- 4.2.2 Water etc., can be supplied as per terms applicable to other contractors.
- 4.2.3 Necessary primers / paints and thinners as required per painting scheme.

5. **SCHEDULE OF WORK :**

- 5.1 The works in different areas will be entrusted to the contractor by the yard departments as and when the areas are available and ready for treatment (surface cleaning, priming and painting as necessary). The work has to be commenced by the contractor as per schedule.
- 5.2 Contractor has to complete the job within the scheduled period as given by the yard departments.

6. **INSPECTION / SUPERVISION :**

- 6.1 The job shall be supervised and inspected twice, once immediately after blasting and once after priming / painting, by the HSL Representatives and / or Owners Representatives.
- 6.2 No primer / Paint shall be applied unless the blasted / cleaned surface is inspected and approved by the HSL and Owners Representatives.
- 6.3 Inspection and application of primer / paint shall be finished within maximum 12 hours after cleaning / blasting.
- 6.4 The cleaning, priming, painting shall be done to the entire satisfaction of paint supplier's representatives since their paints are being used under certain rigid guarantee conditions.
- 6.5 The instructions regarding application, mixing thinning of paints / primer etc. and other recommendations will have to be adhered to paints specification and / or as indicated by the supervising department and / or paint supplier's representatives.
- 6.6 The application of each coat of paint is not to be proceeded with unless the cleaned surfaces or painted surface is inspected and passed by the Representatives of Owners of the ship / HSL / Paint Suppliers.

7. **OTHER CONDITIONS :**

- 7.1 The contractor shall carryout the cleaning, and priming / painting work during the day shift and also in night shift as required to complete the work in scheduled time at Fitting out jetty/building dock / berth etc.,
- 7.2 The work shall be done in the continuous process. In case the work is held up for want of anything such as labour, lack of materials and tools falling within the scope of supply of contractor, efforts shall be made by the contractor to resume the work within reasonable time. The Contractor shall be responsible for the same. If the work is not taken up/ completed with in reasonable time to meet the schedule, the same will be got executed through another contractor at the risk and cost of the first contractor.
- 7.3 Application of primer / paint in hot sun shall be avoided. Convenient time for application of primer / paint shall be chosen by the contractor and the supervising departments. The materials supplied by shipyard shall be used / consumed very sparingly without any unnecessary wastage and under strict control. Proper day to day account of materials shall be maintained by the contractor. In case any material is found wasted, for such wastages and the losses on account of the same shall have to be made good by the contractor.
- 7.4 For any damage, if caused to the equipment supplied by Shipyard, the Contractor shall be held responsible and he shall get the same rectified at his cost.
- 7.5 It is clearly understand that contractor will supply all the equipment / facilities / labour / materials etc. entirely at his risk and shipyard will not be responsible for any damage, pilferage, accidents, that may take place during the course of the execution of the work. Further, the responsibility of keeping the above insured rests with contractor. If the contractor fails to do so, the consequence shall be his responsibility.
- 7.6 Transportation of equipment, materials etc., as above to and fro from places of work, will have to be carried out by contractor at his cost. However, necessary crange facilities would be provided by HSL if any heavy materials / equipments are to be carried, around on board the vessels on 'free of cost' basis.
- 7.7. The work has to be commenced by the contractor within short notice(s) (say within 24 hours). Shipyard reserves the right to cancel the contract or any part of it at any time during its tenancy without giving any notice and without assigning any reasons thereof.
- 7.8 Proper care to be taken during execution of the works at clause 2 without causing any loss to the equipment / ship.
- 7.9 Scuppers to be plugged of / fitted with special drains to prevent water from running down the ship's side and bottom during cleaning and painting.
- 7.10 Echo Sounder, Anodes, Propellers, windows, side scuttles, outfit items on exposed decks etc., to be effectively protected from blasting/priming/painting. If the same are not protected, the rectification cost will be recovered from the bills.

- 7.11 No abrasive blasting to be executed in the neighbor hood of wet paint.
- 7.12 Precautions to be taken to prevent grit / slag from entering rudder and propeller shaft bearings and other equipments nearby.
- 7.13 The first coat of paint / primer to be applied before rusting of the cleaned surface occurs. If abrasive blasted surfaces have rusted re-blasting or sweeping has to be carried out at the cost of the contractor.
- 7.14 Each coat of primer / paint shall be completed before start of the following coat.
- 7.15 The work shall be completed to the full satisfaction of the paint suppliers, owners of the ship and HSL. The contractor shall produce the bills for the actual works done along with a certificate signed by the supervising department of the Shipyard and counter signed by the competent authority.
- 7.16 Precautions to be taken to prevent used abrasives from contaminating primed / painted surfaces. If such contamination takes place, abrasives must be removed and possible damages of the coating (s) must be repaired free of cost.
- 7.17 Painting procedures required by new IMO and other rules coming into force will be intimated and the same are to be followed as and when required

CHIEF MANAGER (OAD&M)

Encl : Annexure-I

SPECIFICATION FOR BLASTING WORKS

1. Grit / Quartz / Slag blasting works are to be SA 2 ½ quality.
2. SA 2 1/2 means near white metal. The entire surface shall show blast cleaning pattern and shall be completely free from contaminations by oil, grease, dirt or other matters and all visible residues except that tightly bounded residues of mill scales or rust shall be permissible up to the following limits.
 - 2.1 For the whole surface an average of not more than 5% area only allowed without proper surface i.e. at least 95% of the surface shall be clean bare steel.
 - 2.2 For any single square of 25 mm side. Not more than 10% i.e. at least 90% of the square shall be clean bare steel.
3. The blast cleaning is maintained by long enough to ensure that mill scale, rust and foreign matter are removed so thoroughly that any residue of these appear only as slight shadows, streaks or discolouration on the surface.
4. Finally the dust is removed with vacuum cleaner or with clean dry compressed air or with a clean brush.
5. Immediately after blasting, the surface is to be cleaned as at clause 4 above and applied with a coat of primer. The primer shall be applied in one stage to the required DFT. The application of primer shall be by conventional spraying / airless spraying / hand brushing / roller brushing.
6. As blasted surfaces shall be applied with primer immediately after blasting, a day's work shall be selected in such a way as to complete the blasting and priming of the respective area on the same day.
7. On blasted / primed surfaces of holds, shell sides, bulk heads and tank top areas fresh water swabbing is to be carried out as per the requirement of Supervising / Painting Department.
8. In order to achieve adequate surface profile for application of heavy duty composition paints, it is recommended that the abrasive used should conform to British standards specification 2451.

CHIEF MANAGER (OAD&M)

ANNEXURE- B

HINDUSTAN SHIPYARD LTD. : VISAKHAPATNAM - 530 005.
DRY DOCK AND SHIP REPAIRS DIVISION

TECHNICAL SPECIFICATION FOR SURFACE CLEANING , PRIMING AND PAINTING OF OUTSIDE HULL AND INTERNAL SUPERSTRUCTURE SURFACES OF VESSELS UNDER REPAIR	Revision No. : '0' Department : DDSR Date : 27-12-11 Pages : 1 of 6
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1. **DESCRIPTION OF WORK :**

1.1 To carry out surface cleaning, priming and painting of outside hull, internal and superstructure surfaces as required by DDSR. These works are to be carried out at different stages of repair and similar structures including accessories like Anchor chains, Seats, Bollards etc.,

2. Contractor shall quote the rates for per 10 q. M of area in general and for each miscellaneous item separately for the following operations which may have to be carried out at various places as stated in clause 1.1 and as per standards specified. The works shall be carried out to the satisfaction of department / Ship owners.

Sl.No.	Description
1	Copper slag blasting SA 2 ½ Standard including removal of slag from blasted areas
2	Copper slag seep blasting including removal of slag from blasted areas.
3.	Copper slag blasting on loose plates SA 2 ½ Standard
4.	Painting of the above plates with epoxy primer
5.	Painting of epoxy HB paints by airless spray
6.	Grit blasting with SA 2 ½ Standard
7.	Sand blasting including removal of sand from the blasted areas
8.	Sand sweep blasting including removal of sand from the blasted areas
9.	Chipping for hopper area for Dredgers

2.1 The Contractor should ensure to comply with the DFT per each coat and total DFT (Dry Film Thickness as per painting scheme of the respective vessel.)

2.2 HSL will allocate to contractor operation / location from the above works basing on HSL requirement on contractor's capability to take up above work etc. HSL reserves the right to cancel any / all operations / locations from the purview of sub-contractor without assigning any reason.

2.3 The actual bills will be issued for the actual total amounts to be paid as and when yard departments forward their work entrusting / work allotment certificates certified by competent authority.

2.4 For specification of blasting work refer Annexure-II.

3. **SCOPE OF SUPPLY AND WORK OF THE CONTRACTOR :**

3.1 Surface cleaning, priming and painting as in clause-2 above.

3.2 The following shall be arranged by the contractor at his expenditure.

3.2.1 Blasting units and or other cleaning tools that are necessary to carry out the above jobs to the required standard.

3.2.2 Sufficient labour and supervising staff needed for satisfactory execution of work within the schedule period.

3.2.3 Necessary lodging and boarding and also transport for his personnel during their stay at HSL.

3.2.4 Necessary compressed air.

3.2.5 Necessary gas proof safety electrical lamps.

3.2.6 Blower and / or supply / exhaust fans for ventilation in the tanks. It is to be noted that 10 to 15 air changes per hour are required as recommended by the paint suppliers. Exhausting is to be continued for 24 hours after painting also.

3.2.7 Necessary approved safety devices for their personnel during blasting, cleaning and painting.

3.2.8 Necessary materials viz. copper slag / shots / girt / sand/ quartz, cloth for swab and blast cleaning the surfaces, tarpaulin and other materials and spares needed for operating their equipments etc.

3.2.9 All other tools viz. chipping hammers, scrappers, disc sanders, wire brushes / manual or power operated, nylon / other type of brushes (hand roller) tanks or drums for storing and carrying fresh water etc., that are needed for the job. Collecting fresh water from the nearest top point available on jetty and carrying to the work spot.

3.2.10 Blasting work includes collection of blasting materials like copper slag / quartz / grit and cleaning the work spot by completely removing blasted materials after completion of blasting as required by HSL.

3.2.11 Proper covering / protection to be provided to the equipment/men/material near the work spot of the contractor without causing any damages, paint marks etc., and if any damage is occurred, same shall be rectified at contractor's cost.

4. **SCOPE OF SUPPLY & WORK OF SHIPYARD :**

4.1 Shipyard shall arrange the following:-

4.1.1 Cranes as and when required (subject to availability).

4.1.2 Supply of any scaffolding or staging planks as necessary (subject to availability)

4.1.3 Storage space, if available for contractors equipment on payment.

4.2 Shipyard shall supply.

4.2.1 Electricity supply (not for electric compressor) for lighting, 'free of cost'

4.2.2 Water etc., can be supplied as per terms applicable to other contractors.

4.2.3 Necessary primers / paints and thinners as required per painting scheme.

5. **SCHEDULE OF WORK :**

5.1 The works in different areas will be entrusted to the contractor by the yard departments as and when the areas are available and ready for treatment (surface cleaning, priming and painting as necessary). The work has to be commenced by the contractor as per schedule.

5.2 Contractor has to complete the job within the scheduled period as given by the yard departments.

6. **INSPECTION / SUPERVISION :**

6.1 The job shall be supervised and inspected at every stage and after priming / painting, by the HSL Representatives and / or Owners Representatives.

6.2 No primer / Paint shall be applied unless the blasted / cleaned surface is inspected and approved by the HSL and Owners Representatives.

6.3 Inspection and application of primer / shall be finished within maximum 12 hours after cleaning / blasting.

6.4 The cleaning, priming, painting shall be done to the entire satisfaction of paint supplier's representatives since their paints are being used under certain rigid guarantee conditions.

6.5 The instructions regarding application, mixing thinning of paints / primer etc. and other recommendations will have to be adhered to paints specification and / or as indicated by the supervising department and / or paint supplier's representatives.

6.6 The application of each coat of paint is not to be proceeded with unless the cleaned or painted surfaces is inspected and passed by the Representatives of Owners of the ship / HSL / Paint Suppliers.

7. **OTHER CONDITIONS :**

7.1 The contractor shall carryout the cleaning, and priming / painting work during the day shift and also in night shift as required to complete the work in scheduled time at Fitting out jetty/building dock / berth /DDSR etc.,

7.2 The work shall be done in the continuous process. In case the work is held up for want of anything such as labour, lack of materials and tools falling within the scope of supply of contractor, efforts shall be made by the contractor to resume the work within reasonable time. The Contractor shall be responsible for the same. If the work is not taken up/ completed with in reasonable time to meet the schedule, the same will be got executed through another contractors at the risk and cost of the first contractor.

7.3 Application of primer / paint in hot sun shall be avoided. Convenient time for application of primer / paint shall be chosen by the contractor and the supervising departments. The materials supplied by shipyard shall be used / consumed very sparingly without any unnecessary wastage and under strict control. Proper day to day account of materials shall be maintained by the contractor. In case any material is found wasted, for such wastages and the losses on account of the same shall have to be made good by the contractor.

7.4 For any damage, if caused to the equipment supplied by Shipyard, the Contractor shall be held responsible and he shall get the same rectified at his cost.

7.5 It is clearly understand that contractor will supply all the equipment / facilities / labour / materials etc. entirely at his risk and shipyard will not be responsible for any damage, pilferage, accidents, that may take place during the course of the execution of the work. Further, the responsibility of keeping the above insured rests with contractor. If the contractor fails to do so, the consequence shall be his responsibility.

7.6 Transportation of equipment, materials etc., as above to and fro from places of work, will have to be carried out by contractor at his cost. However, necessary crange facilities would be provided by HSL if any heavy materials / equipments are to be carried, around on board the vessels on 'free of cost' basis.

7.7. The work has to be commenced by the contractor within short notice(s) (say within 24 hours). Shipyard reserves the right to cancel the contract or any part of it at any time during its tenancy without giving any notice and without assigning any reasons thereof.

7.8 Proper care to be taken during execution of the works at clause 2 without causing any loss to the equipment / ship.

- 7.9 Scuppers to be plugged of / fitted with special drains to prevent water from running down the ship's side and bottom during cleaning and painting.
- 7.10 Echo Sounder, Anodes, Propellers, windows, side scuttles, outfit items on exposed decks etc., to be effectively protected from blasting/priming/painting. If the same are not protected, the rectification cost will be recovered from the bills.
- 7.11 No abrasive blasting to be executed in the neighbor hood of wet paint.
- 7.12 Precautions to be taken to prevent grit / slag from entering rudder and propeller shaft bearings.
- 7.13 The first coat of paint / primer to be applied before rusting of the cleaned surface occurs. If abrasive blasted surfaces have rusted re-blasting or sweeping has to be carried out at the cost of the contractor.
- 7.14 Each coat of primer / paint shall be completed before start of the following coat.
- 7.15 The work shall be completed to the full satisfaction of the paint suppliers, owners of the ship and HSL. The contractor shall produce the bills for the actual works done along with a certificate signed by the supervising department of the Shipyard and counter signed by the competent authority.
- 7.16 Precautions to be taken to prevent used abrasives from contaminating primed / painted surfaces. If such contamination takes place, abrasives must be removed and possible damages of the coating (s) must be repaired free of cost.
- 7.17 Painting procedures required by new IMO and other rules coming into force will be intimated and the same are to be followed as and when required.

CHIEF MANAGER
(DDSR PAINTING)

Encl : Annexure-II

ANNEXURE – B

SPECIFICATION FOR BLASTING WORKS

1. Grit / Quartz /Copper Slag blasting works are to be SA 2 1/2 quality.
2. SA 2 1/2 means near white metal. The entire surface shall show blast cleaning pattern and shall be completely free from contaminations by oil, grease, dirt or other matters and all visible residues except that tightly bounded residues of mill scales or rust shall be permissible up to the following limits.
 - 2.1 For the whole surface an average of not more than 5% area only allowed without proper surface i.e. at least 95% of the surface shall be clean bare steel.
 - 2.2 For any single square of 25 mm side. Not more than 10% i.e. at least 90% of the square shall be clean bare steel.
3. The blast cleaning is maintained by long enough to ensure that mill scale, rust and foreign matter are removed so thoroughly that any residue of these appear only as slight shadows, streaks or discolouration on the surface.
4. Finally the dust is removed with vacuum cleaner or with clean dry compressed air or with a clean brush.
5. Immediately after blasting, the surface is to be cleaned as at clause 4 above and applied with a coat of primer. The primer shall be applied in one stage to the required DFT. The application of primer shall be by conventional spraying / airless spraying / hand brushing / roller brushing.
6. As blasted surfaces shall be applied with primer immediately after blasting, a day's work shall be selected in such a way as to complete the blasting and priming of the respective area on the same day.
7. On blasted / primed surfaces of holds, shell sides, bulk heads and tank top areas fresh water swabbing is to be carried out as per the requirement of Supervising / Painting Department.
8. In order to achieve adequate surface profile for application of heavy duty composition paints, it is recommended that the abrasive used should conform to British standards specification 2451. Chilled cast iron angular grits to Grade G-18 or G-24 of BS 2451 or iron shots conforming to Grade S-320 of the same specification will give the requisition profiles where projected at 60 to 80 PSI.

**CHIEF MANAGER
(DDSR PAINTING)**