

MAZAGON DOCK SHIPBUILDERS LIMITED

माझगांव डॉक शिपबिल्डर्स लिमिटेड

“EXPRESSION OF INTEREST” (EOI) ref no.EY/CD/SGM/MRLC-2/TRC for Cleaning, Blasting, Priming & Painting etc (MRLC-2)



माझगांव डॉक शिपबिल्डर्स लिमिटेड
MAZAGON DOCK SHIPBUILDERS LIMITED

Mumbai (मुंबई)-400010

रुचि की अभिव्यक्ति (ईओआई) का आमंत्रण

NOTICE INVITING EXPRESSION OF INTEREST (EOI)

FROM REPUTED VENDORS FOR

“TRIENNIAL RATE CONTRACT FOR AQUA-JET CLEANING, CHEMICAL CLEANING, WIRE BRUSH CLEANING, BLASTING, PRIMING, PAINTING, POWDER COATING, BUS BAR CLEANING & PAINTING, CLEANING OF FLEXIBLE LINKS, BLANKING OF MACHINE SURFACE & PHP etc WORK OF INS SHANKUSH (MRLC-2) AS PER ATTACHED SOW ”.

1. EOI Ref. No. : EY/CD/SGM/MRLC-2/2022/TRC
2. Description : Triennial rate contract for Aqua-jet cleaning, chemical cleaning, wire brush cleaning, blasting, priming, painting, powder coating, bus bar cleaning & painting, cleaning of flexible links, blanking of machine surface & PHP etc work of INS Shankush(MRLC-2) as per attached SOW(scope of work)
3. Date of Issue of EOI : 12-07-2022
4. Last date for Submission of EOI : 03-08-2022



CERTIFIED

ISO 9001: 2008

for Submarine Division

माझगांव डॉक शिपबिल्डर्स लिमिटेड

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रुचि की अभिव्यक्ति (ईओआई) का आमंत्रण

“EXPRESSION OF INTEREST” (EOI)

EOI No: - EY/CD/SGM/MRLC-2/TRC for Cleaning, Blasting, Priming & Painting etc (MRLC-2)

EOI date :

CLOSING DATE :

OPENING DATE :

1. **SUB : INVITATION OF “EXPRESSION OF INTEREST” (EOI) from Reputed Vendors with expertise in the field of Triennial rate contract for Aqua-jet cleaning, chemical cleaning, wire brush cleaning, blasting, priming, painting, powder coating, bus bar cleaning & painting, cleaning of flexible links, blanking of machine surface & PHP etc work of INS Shankush(MRLC-2)**

Mazagon Dock Shipbuilders Limited is the India’s premier shipyard under the Ministry of Defence Production constructing warships, Submarines. The company invites Expression of Interest from reputed ISO certified indigenous firm’s engaged in shipbuilding activities/ marine structures for long term participation in its production programme for Hull activities for Project-MRLC 2.

SUB: *Triennial rate contract for Aqua-jet cleaning, chemical cleaning, wire brush cleaning, blasting, priming, painting, powder coating, bus bar cleaning & painting, cleaning of flexible links, blanking of machine surface & PHP etc. work of INS Shankush(MRLC-2) as per attached SOW.*

MAZAGON DOCK SHIPBUILDERS LIMITED INVITES expression of interest (EOI) IN TRIPLICATE from reputed ISO certified Indigenous Contractors/ship builders with expertise in the field of ship building/Submarine structures for the following Work.

1. **Scope of work:** Attached with this EOI.(Annexure-1)

2. **Qualification Criteria:**

Bidders should have mandatory experience of *Cleaning, Blasting, Priming & Painting etc activities* on Submarines in the past 3 years (Documentary evidence like order copies & work completion certificates to be furnished) in following areas:-

- a) **Aqua-jet cleaning, chemical cleaning, wire brush cleaning, blasting, priming, painting, powder coating, bus bar cleaning & painting activities in Submarines.**

i. Firm should have similar experience in submarines. As the submarine is more complex structure than others which contains compact tanks, bilges, cofferdam, torpedo tubes, confined spaces, etc. Firm has to submit the past performance/ work completion certificates as evidence of similar jobs done in last 3 years. Firm should have ISO 9001 :2015 certification and has to be compliant to HSE policy of MDL.

b) Bidders must have minimum following personnel on its permanent pay roll (proof to be submitted along with the offer).

- i) Four supervisors having passed NACE level-I/IIT Inspector's certificate course/SSPC India Inspector's course.
- ii) 10 skilled and experienced (minimum 3 years) wire brush and power tool cleaning operator.
- iii) Six nos. skilled and experienced (minimum 3 years) Spray Painters
- iv) Five nos. skilled and experienced (minimum 3 years) brush Painters
- v) 12 nos. Skilled and experienced (minimum 3 years) Blasters.
- vi) 15 nos. unskilled labour.

Post techno commercially qualification employees of contractor as listed at **para.2b** shall undergo Oral, practical & theoretical examination by MDL as below as per qualification procedure mentioned in Norsok standard NORSOK M-501 (Rev-4).

- a. **Supervisor** shall have to appear and pass oral & theoretical examination in English concerning required power tool cleaning, blasting and painting procedures, Standards for surface preparation, painting processes and inspections, machine operation, maintenance and other qualify checks, safety hazards and protection of equipment, quality controls, inspections and data recordings, planning of assigned activities, manpower handling and shall have good communication skills, knowledge about working and precautions in confined spaces and HSE rules.
- b. **Operators** for Degreasing and Water cleaning should pass oral and practical test also he should have knowledge about the cleaning procedure of oil. dust. grease, soluble salt, safety and PPEs. These operators should have special skills for working in confined spaces.
- c. **Operator** for power tools should pass oral and practical test. They should have practical knowledge of different power tools required for subject work, safety hazards and protection of equipment, knowledge about mechanical cleaning standards. These operators should have special skills for working in confined spaces.
- d. **Blasters** should pass oral and practical test for subject of work for blasting activities. Blasters should have knowledge about blasting standards ISO 8501-1, safety gears, precautions, safety hazards. Blasters should have special skills for working in confined spaces.
- e. The **Painters** should pass oral and practical test for subject work with brush, airless spray gun, Pot gun. They should also have knowledge about all the painting machines, knowledge of checking wet film thickness, mixing ratio, pot life of paints, paint mixing procedure, stripe coat skills, knowledge about safety hazards and protection of equipment.

NOTE:

1. The practical test for above mentioned operators will be conducted on the standard test panels or actual jobs including confined spaces depends upon MDL. The short listed contractors should bring requisite machinery and consumables including abrasives for blasting, bristle blasting wheels and all safety devices, PPEs, enclosure materials for blasting in situ conditions in workshops, on-board tanks, as mentioned above at their own cost for practical test. MDL will provide jobs for test, degreasing solution, water, air and paint for test. The contractor meeting above qualification criteria will only be considered for price bid opening.

2. Technical Qualification of firms in the form of oral, Practical & theoretical examination of employees (Supervisors, Operators, Blasters & Painters) will not be required for those vendors who have been already qualified in East Yard for Submarine Blasting, Painting activities (P75/ SSK projects) with validity till date of tender.
3. The contractors should have minimum following machineries to meet the qualification criteria :

| Sl. | MACHINE/EQUIPMENT | QTY(minimum) |
|--------|--|--------------|
| i) | Bristle blasting machine with safety devices with ail accessories | 04nos. |
| ii) | Orbital Sander Machine with all accessories | 05 nos. |
| iii) | Suitable Needle Scalar with all accessories | 02 nos. |
| iv) | Suitable Pencil grinder with all accessories | 02 nos. |
| v) | Suitable Grinding Machine with all accessories | 05 nos |
| vi) | Suitable Dehumidifier with all accessories | 02 nos |
| vii) | Air-less paint spray machine with all accessories | 04 nos. |
| viii) | Blasting hopper with all safety devices | 12 nos. |
| ix) | Industrial vacuum cleaners with all accessories | 04 nos. |
| x) | Exhaust blower for temporary enclosures with alf accessories | 02 nos. |
| xi) | Portable Heavy duty Industrial Dust collector with all accessories | 01 no |
| xii) | Suitable Temporary Enclosure material | 04 sets |
| xiii) | Suitable Breathing air hood with air inline filter for operatives | 06 sets |
| xiv) | Portable Abrasive recovery system with accessories | 01 Nos |
| xv) | Pneumatic Paint mixing machine | 03 Nos |
| xvi) | Mechanical wire brushing/ buffing machine | 03 Nos |
| xvii) | Pneumatic suction blowers | 03 Nos |
| xviii) | High pressure water jet blasting machine | 02 Nos |
| xix) | Digital Weighing scale | 02 Nos |
| xx) | Mechanical Chipping machine | 05 Nos |
| xxi) | Portable Water collection/suction machine | 02 Nos |

Note: In addition to above, any other equipment considered essential to carry out the requisite work, such equipment shall also be provided by the contractor.

4. Valid calibrated Inspection Equipment to be possessed by contractor:

| Sl. | Description of Equipment | Qty. |
|-----|---|----------|
| a) | ISO Grit Roughness comparator | 05 Nos |
| b) | ISO Shot Roughness comparator | 02 Nos. |
| c) | Needle manometer to check the air pressure in blasting nozzle | 05 Nos. |
| d) | Bresle Kit with patches and de-ionized water to measure,Saits | 02 Kits. |
| e) | Sling Hygrometer to measure Relative Humidity | 10 Nos. |
| f) | Dew Point Calculator | 10 Nos |
| g) | Instrument for Surface Temperature Measurement | 03 Nos |
| h) | Wet Film Thickness Gauges | 10 Nos |
| i) | DFT Meter | 05 Nos. |
| j) | Dust test Kit | 02 Nos |
| k) | ISO 8501-1 Standard | 01 No. |

3. Financial Qualification Criteria:

Bidders must submit the following documents along with their offer:

- i) Details of company Profile and valid Shop & Establishment registration certificate.
- ii) Audited / Certified Balance sheet, Profit / Loss account for past 3 years.
- iii) Bidder's average Audited Annual financial turnover certificate.(for past 3 years)
- iv) Valid ISO certificate.
- v) The bidders experience and past performance on similar services (*Cleaning, Blasting, Priming & Painting etc activities* on Submarines) in the last 3 years (Order copies & work completion certificates to be appended).
- vi) List of employees on their pay roll & their work experience/qualification related to SOW.

4. Terms & Conditions Of EOI: Participating firms shall indicate acceptance of terms & conditions of EOI as given below:

4.1 Confidentiality: All the information provided to the vendors shall be treated as confidential and should not be disclosed in any manner to any unauthorized person under any circumstances.

4.2 Statutory Requirement, Official Secret Act, Safety and Security Rules

In the event of placement of Order, contractor shall also abide to all statutory requirements, Official Secrets Act 1923, Security and Safety Rules. The documents are available on MDL website. ~~Bidders are required to submit a non disclosure agreement on Rs.500 stamp paper in the format as per Enclosure I~~

4.3 Submission of EOI:

EOI complete in all respect with all supporting documents in a Envelope securely closed (Sealed) superscribed with EOI No, due date, Time and firm's name addressed to:-

HOD, East Yard Commercial Department
4th floor, SSA workshop Bldg, Alcock Yard
Mazagon Dock Shipbuilder Limited
Mumbai-400010

4.4 EOI should be deposited on or before the EOI closing date and time.

**TENDER BOX for East yard-Commercial, situated at MDL Reception Centre(near Main Gate)
MAZAGON DOCK SHIPBUILDERS LIMITED, Dockyard Road, Mumbai-400010**

Also MDL reserves right to demand/ask for soft copy through non Rewritable CD.

4.5 Bid rejection Criteria

1. The following conditions / deviations are non-negotiable and therefore any bid falling under these conditions / deviations shall be summarily rejected. Bidders to note that they shall not be provided any opportunity to rectify these conditions / deviations post bid opening:

- i) The Bids received after tender closing date and time.
- ii) Bids received without EMD (other than those who are exempted from payment of EMD), if specified in the tender
- iii) Bidders who are debarred under PPP MII order 2017, GeM, CPPP including Tender holiday issued by MDL.

2. For the following conditions (other than non-negotiable conditions indicated at 4.5.1), equal time & opportunity for submission of deficient techno-commercial documents and clarification shall be given to the bidders. Bidders are required to submit such documents / clarifications within the duration / date stipulated by MDL, failing which their bids shall be rejected (with the approval of relevant CFA) in following cases:

- i) ~~Bidders not submitting Integrity Pact (IP).~~
- ii) ~~Bidders submitting integrity pact with deviation in MDL format, subject to approval of deviation by MDL.~~
- iii) ~~In case of e tenders, the original of the uploaded copy of Integrity Pact if not received within specified period by MDL in the tender.~~
- iv) Bidder's failure to submit sufficient or complete details, in case of deficiencies noticed for evaluation of the bids.
- v) Incomplete / misleading / ambiguous bids in the considered opinion of TNC / CNC.

- vi) Bids with technical requirements and / or terms not acceptable to MDL / Customers / External agency nominated as applicable.
- vii) Bids received without pre-qualification documents where required as per the tender.
- viii) Bids not meeting the pre-qualification parameters stipulated in the tender enquiry.
- ix) ~~Bidders not agreeing to supply spares (onboard spares, B & D spares) / post sale product support / post work completion support.~~
- x) ~~Wherever PVC is allowed as per Tender but the bidder(s) quoted fixed price or vice versa. As regards to items where prices are administered by the GoI/ PVC may be acceptable even if not indicated in the tender subject to approval by MDL.~~
- xi) ~~High seas sales/ sales in transit.~~
- xii) Unreasonably longer delivery period quoted by the firm.
- xiii) Validity period indicated by bidders is shorter than that specified in the tender enquiry.
- xiv) Bidders not agreeing to furnish required Security Deposit / Required Contract Performance Guarantee till completion of the supplies / services as per contract.
- xv) Bidders not agreeing to furnish Performance Bank Guarantee for Equipment supplied / Services rendered or not agreeing for retention of equivalent amount by MDL up to the period till completion of contractual & Guarantee / Warranty obligations.
- xvi) ~~In case of e tenders, the original of the uploaded copy of EMD (DD/BG) not received by MDL.~~
- xvii) ~~Bidders not agreeing to provide assistance wherever required for installation, STW, HATs, SATs and Training of equipment supplied by them.~~
- xviii) Bidders not meeting the eligibility criteria given in tender regarding the Class of Supplier as per PPP MII Order 2017.
- xix) Bidders not submitting the declaration certificate for Local Content & location of value addition.
- xx) Bidders not indicating / not declaring / not specifying the local content percentage or / and location of local value addition in the declaration certificate.
- xxi) Bidders submitting incomplete declaration certificate for Local Content or declaration certificate not certified by appropriate authority as per tender.
- xxii) Bidders selecting both policies for purchase preference in the declaration certificate.
- xxiii) ~~Bidders not submitting Bid Security declaration in the prescribed format. (Note: Applicable for all bidders & applicability of this condition shall be based on further directives, if any).~~
- xxiv) Non submission of unique GeM Seller ID by bidder within reasonable time post opening of tender but before price bid opening. (MoF OM No.F.6/9/2020- PPD dated 24 Aug 2020)
- xxv) Non-submission of Compliance Certificate w.r.t Land Border Clause as per the enclosed format.Encl-3 (Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017).

4.6 Opening of EOI:

The EOI received will be opened on the due date at the declared time or next working day if closing date happens to be holiday declared by MDL. Participated firms, who wish to remain present during the EOI opening, should nominate on their company's letterhead the name and designation of one person authorized to remain present at the time of opening the EOI and send this letter so as to reach the undersigned at least one working day prior to closing date of the tender.

5. Purpose:

For identifying the firms who are interested to execute the work as per the standards and process as desirable for the scope of work.

All the EOI received by MDL, on or before the due date & time would be scrutinized w.r.t the scope of work. Upon completion of meetings and scrutiny, MDL will finalize tender. The firms may please note that mere meeting of the requirement mentioned in the EOI does not entitle any firm the right for awarding the tender or contract.

6. Expression of Interest & Selection of Bidders:

Technical offers submitted against expression of interest shall be evaluated by MDL user in line with present requirements as stated in the technical documents/EOI. MDL team may further visit to bidder's premises to ascertain the capability and capacity required to undertake the task. MDL team thereafter shall shortlist the suitable bidders based on the technical offers and visit report of MDL team to progress further. Decision of MDL team/User with regards to short listing of bidders shall be final. MDL has right to accept and reject expression of interest at any stage of the process.

7. Contact Person:

- (i) For any further technical details/queries, firms may contact Mr Sudarshan Behera, CM(PLG-EY), Tel no. 022-2376-3599 & mail- sbehera@mazdock.com
- (ii) For any commercial details/queries, firm may contact S.G.Madaye, M(C-EY), Tel No. +91 22 23762615 or , Fax no. +91 22 23741386, E-mail Id : sgmadaye@mazdock.com

8. Public Grievance Cell:

A Public Grievance Cell headed by Shri. R R Kumar, General Manager has been set up in the Company. Members of public having complaints or grievances are advised to contact him on Wednesday between 10.00 hours and 12.30 hours in his office on Third Floor, D-1 Building, East Yard , or send their complaints / grievances to him in writing for redressal. Contact Telephone No is 23782338. Interested firms are requested to submit their Expression of Interest (EOI) on or before the due date & time.

Thanking you,

S.G.Madaye, M(C-EY)
For MAZAGON DOCK SHIPBUILDERSLIMITED

Enclosure:-

- a) Official Secrets Act 1923 (Available on MDL Website)
b) Scope of Work (SOW) – Annexure-1

Note: The documents mentioned under reference and formats shall be downloaded from MDL's Website: www.mazdock.com > Tender/EOI

ANNEXURE - I

1. **Scope of work for** Aqua-jet cleaning, chemical cleaning, wire brush cleaning, Blasting, Priming, Painting, powder coating, bus bar cleaning & painting, cleaning of flexible links, blanking of machine surface and PHP etc. work of INS Shankush

| | | |
|----|----------------------------|---|
| 2. | Description of Work | Aqua jet, Chemical & Wire Brush Cleaning, Blasting, Priming, Painting, powder coating, bus bar cleaning & painting, cleaning of flexible links, blanking of machine surface and PHP etc. work of INS Shankush & its sub-assemblies, Components as per the Scope of work and other details enclosed herewith at Annexures : 1, 2 & 3 |
|----|----------------------------|---|

3. **Contract Period:** 36 months (Till the delivery of INS SHANKUSH) with effect from placement of order.
4. **Inspections:** By MDL EY-QA, SRMT, Customer rep and paint OEM rep. as per approved QA plan.




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MARKON DOCK SHIPBUILDERS LIMITED

**(PART-A) SCOPE OF TECHNICAL WORK & SPECIFICATIONS FOR
AQUA JET CLEANING, BLASTING, PRIMING, PAINTING, POWDER COATING, BUS BAR
CLEANING & PAINTING, CLEANING OF FLEXIBLE LINKS ETC.**

The Scope of Work to be carried out on **rate contract** basis includes but not limited to the following activities;

1. Aqua jet cleaning of external hull, superstructure, MBT tanks, internal tanks, sections, compartments, GRP structures including Submarine Loading Pontoon & related marine assets.
2. Grit blasting and vacuum blasting of pressure hull, internal tanks, compartments and GRP casing etc.
3. Shot blasting with glass beads on sonar dome & Sonar S.S. plates.
4. Cleaning, chipping & wire brushing in situ of tanks, compartments, foundations, loose parts, seating etc.
5. Chemical cleaning of tanks.
6. Pipes blasting & painting in Pipe shop blasting & painting chamber and touch ups at situ.
7. Powder coating of various components & assemblies of submarine, bus bar cleaning & painting and cleaning of flexible links etc.
8. Blanking of Machine Surface, PHP, and other equipment's.


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SUBMARINE DIVISION
मैज़ासॉन डॉक शिपबिल्डर्स लिमिटेड
MAZAGON DOCK SHIPBUILDERS LIMITED

Brief Title: Contract for Aqua jet cleaning, Chemical Cleaning, Wire Brushing, Blasting, Priming & Painting etc. work of INS Shankush & it's sub-assemblies (Pontoon and it's cradles), Components, Powder Coating, Bus bar cleaning & painting, Cleaning of flexible links blanking of machine surface and PHP etc. as per the Scope of Work

| A) <u>Surface preparation:</u> | | |
|---------------------------------------|---|----------------------------|
| Sr No | Description | Quantity (Sq. Mtr) |
| 1 | Degreasing & Aqua Jet Cleaning with Fresh Water | 29750 |
| 2 | Blasting With Steel Grit (45 to 50 HRC) onboard | 14750 |
| 3 | Grit Blasting in EY blasting chamber with Steel Grit (45 to 50 HRC) | 3000 |
| 4 | Chipping & Cleaning | 11850 |
| 5 | Mechanical wire Brushing | 5000 |
| 6 | Bristle Blasting | 3500 |
| 7 | Degreasing & Water Rinsing | 22750 |
| 8 | Mechanical Sandering on Painted Surface | 13750 |
| 9 | Degreasing, cleaning & oiling of tanks | 200 |
| 10 | Foam filling activities/Cementing Activities | 100 |
| 11 | Metal putty filling on pitted areas of PH | 270 |
| 12 | AL Grit (AL2 O3 Alumina abrasive) blasting at situ & in EY Blasting chamber | 5000 |
| 13 | Vacuum Blasting | 350 |
| 14 | Blasting with glass bead (for Sonar Dome & any item of SS) | 250 |
| 15 | Blasting with glass beads in chamber (for SS exhaust trunk, loose parts etc.) | 400 |
| 16 | Blasting of GRP panels | 1700 |
| 17 | Chemical Cleaning of SS distillate tank | 25 |

B) Priming & Painting (other than pipe painting)

1) For pressure hull, casing and bridge fin, MBT's. Internal tanks, Decks and bulk heads, bilges, Battery room, compartments, foundation Equipment, Pontoon & its assemblies, Misc. items and all other painting work except pipe painting work, the unit rate shall be applicable for achieving the specified thickness as per painting specification including stripe coat and other related documents, irrespective of the number of coats.

2) Priming in situ as well as of loose parts in painting chamber.

- 3) Painting of pressure hull, superstructure, inside tanks, bilges, compartments as well as of loose parts.
- 4) Paint, primer & thinner recommended by tkms or imported primer, thinner and paint will be supplied by MDL.
- 5) Paint, primer & thinner recommended for pressure hull, internal tanks, bilges and battery pits will be supplied by MDL
- 6) Other than pressure hull, internal tanks, bilges and battery pits, remaining areas such as supper structures, casing, GRP structures, pipes, equipment's, external tanks, bridge fins etc. paint (other than imported paint) required for these structures' is in the vendor's scope.

| Sr No | Description | Quantity (Sq. Mtr) |
|-------|--|---------------------|
| 1 | Priming/Painting (Other than Pipe painting) Painting up 50 micron with IN approved epoxy paint scheme (paint is in the vendors scope) | 13750 |
| 2 | Priming/Painting (Other than Pipe painting) Painting up to 60 micron thick – IN approved Epoxy Paint Scheme (Paint is in vendors Scope) | 19750 |
| 3 | Priming/Painting (Other than Pipe painting) Painting up to 150 micron with IN approved epoxy paint scheme (paint is in the vendors scope) | 22750 |
| 4 | Priming & Painting (Other than Pipe painting) Painting up to 50 micron with IN approved Epoxy Paint Scheme | 20000 |
| 5 | Priming & Painting (Other than Pipe painting) Painting up to 150 micron IN approved Epoxy Paint Scheme | 30000 |
| 6 | Priming & Painting (Other than Pipe painting) Painting up to 250 micron (V-60/V-61)with IN approved Paint Scheme | 3000 |
| 7 | Priming & Painting (Other than Pipe painting) Painting up to 500 micron (V-60/V-61) with IN approved Paint Scheme | 11000 |
| 8 | Priming & Painting (Other than Pipe painting) Painting up to 750 micron (V-60/V-61) with IN approved Epoxy Paint Scheme | 3500 |
| 9 | Priming & Painting (Other than Pipe painting) Painting up to 1000 micron (V-60/V-61) with IN approved Epoxy Paint Scheme | 1500 |
| 10 | Priming & Painting (Other than Pipe painting) Painting up to 1500 micron thick(applying V-607) with IN approved Paint Scheme | 750 |
| 11 | Priming & Painting (Other than Pipe painting) Painting up to 2000 micron thick(applying V-607) with IN approved Paint Scheme | 750 |



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 AZAGON DOCK SHIPBUILDERS LIMITED


C) Priming and Painting of Pipes

The unit rate should be applicable for completing the specified priming, painting and band marking work per meter length of pipes irrespective of the number of coats. Paint, primer and thinner required for pipes is in the vendor's scope. The number of coats to be applied as per specified painting scheme.

| Priming and Painting of Pipes | | |
|--------------------------------------|--|--|
| Sr. No. | Description of Activity | Approx. Length (running meter.) |
| 1. | Priming, painting & band marking of small bore pipes (DN 50 mm and below) – 3 coats (including priming) each 50-microns / as per painting specification.(Paint material is in the vendor's Scope) | 13,000 mtrs |
| 2. | Priming, painting & band marking of large bore pipes (Above DN 50 to DN150 mm), consider average 3 coats (including priming) each of approx. 50 microns / as per painting specification.(Paint material is in the vendors Scope). | 5720 mtrs. |
| 3. | Priming, painting & band marking of large bore pipes (Above DN 150 to DN250 mm), consider average 3 coats (including priming) each of approx. 50 microns / as per painting specification.(Paint material is in the vendors Scope). | 550 mtrs. |

D) Blasting of Pipes

| Blasting of Pipes | | |
|--------------------------|--------------------------------|--|
| Sr. No. | Description of Activity | Approx. Length (running meter.) |
| 1. | Blasting of Pipes (Sa 2.5) | 14750 mtrs |


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SUBMARINE DIVISION
महागाव डॉक शिपबिल्डर्स लिमिटेड
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E) Powder Coating

| <u>Powder Coating</u> | | |
|-----------------------|-------------------------|--------------------------|
| Sr. No. | Description of Activity | Approx. Area (Sq. Inch.) |
| 1. | Powder coating | 265000 Sq. Inch |

F) Cleaning and painting of Bus Bar:

| Sr.No. | Activity | Qty (area) m2 |
|--------|---|---------------|
| 01 | Bus bar cleaning and painting (450 microns) | 100 |

G) Cleaning of Flexible Links

| Sr.No. | Activity | Qty in Nos |
|--------|--|------------|
| 01 | Cleaning of flexible links of dimension 410mm x 125mm x 18mm (LXWXH) each. | 40 |

H) Blanking of Machine parts,PHP,other equipment's, and machinery

Firm has to arrange all the blanking material such as wooden blanks, plywood, gaskets, aluminum sheets as per the user requirement for the protection of Machine surface and equipment's before the start of blasting activity. The unit rate shall be applicable for completing the blanking of above said the structure as per the user satisfactory level.

| Sr.No. | Activity | Qty (area) m2 |
|--------|--|---------------|
| 01 | Blanking of machine surface, PHP, other equipment's and machinery before grit blasting | 2500 |

Notes:

- 1 It is important to note that maintenance of cleanliness and hygiene and protection of various sophisticated equipment/systems on board Submarine is utmost important throughout the execution of contract. Protection of the surrounding equipment during blasting and painting activities is in the vendor's scope.

2 Duration of Contract

- a. All the above activities are to be carried out for Indian Naval Submarine INS Shankush & its sub-assemblies. The total duration of the contract shall be 36 months (Till the delivery of Submarine). The work is to be carried out mainly in MDL and also at NDMB/MBPT if required.

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CHIEF MANAGER (HULL - EY)
पनडुब्बी विभाग
SUBMARINE DIVISION
साइमॉन बोर्क शिपबिल्डर्स लिमिटेड
LAGON DOCK SHIPBUILDERS LIMITED

- b. The entire work for the activities A, B is to be carried out in different phases (based on the overall schedule of the project) as per guidance/instructions of MDL representative/ EIC (Hull-EY) from time to time. The contractor will have to make necessary arrangement to work round the clock whenever required. The in situ /on board blasting work to be carried out in second shift & third shift too.
- c. Contractor have to prepare a detailed schedule of all activities in consultation with EIC (Hull-EY) and submits the final schedule to EIC (PIg-EY) and EIC (Hull-EY).
- d. **Timely completion of work**: Any delay on part of the contractor in completing respective stage of the activity will seriously affect the subsequent MDL Outfit work and timely completion of this project. The contractor must ensure that each stage of activity is completed in time, duly certified by the inspection agencies (EY-QA/SRMT/Ship's Staff/ Paint OEM/ HITU/MFAB) strictly in accordance with the schedule, by deploying adequate competent manpower, material & facilities as required.

3 Actual scope of work and work completion certificate

- a. The actual quantum of work shall be as per the requirement at site, as specified by MDL EIC (Hull-EY). However, areas mentioned herein are indicative only. Payment will be made as per actual quantity executed at site.
- b. All work is to be carried out only as per the instruction of EIC (Hull-EY) and his authorized representative in accordance with the terms of the order/ as per the defect list of MRLC (INS Shankush).
- c. Payment shall be applicable only on the basis of unit rates specified in the order and "Actual quantum of work done" duly certified by EIC (Hull – EY).
- d. On satisfactory completion of the respective stage/activity/work assigned to the firm from time to time (including the relevant inspection & clearance by MDL (QA-EY)/ Naval inspection agency (SRMT)/ customer Rep/Paint OEM Rep), the firm has to obtain a detailed "**Work Completion certificate**" duly indicating MDL Order No., Certificate No., Date, DL No, Item No. as per order and details of actual work completed.
- e. Any activity is to be considered for work completion certificate only after clearance by MDL Hull-EY, MDL QA-EY/Naval Inspecting Agency (SMRT)/customer Rep/ Paint OEM Rep. Any rework carried out by the firm due to non-certification by Inspection agency shall not be considered as additional work.

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MAZAGON DOCK SHIPBUILDERS LIMITED

f. **Minor Touch up Works:** The area once completed by the firm duly cleared by MDL (EY-QA) and Naval Inspecting Agency (SRMT) and certified by EIC (Hull-EY) the firm would require to carry out minor touch up works of priming and re-painting in some specific cases, due to site constrains. Such minor re-work is normally negligible in quantity and difficult to quantify. The firm is to carry out such minor re-works at site, as per EIC (Hull-EY)'s instructions, **at no extra cost**. Any major re-work is however not covered in such minor touch up works and the same will be treated separately as per the terms of the order.

g. The firm has to submit all the records/ data of the work completion certificates in soft copy half yearly for further compilation to EIC (Hull-EY) and EIC (Plg-EY).

h. QAP to be submitted by subcontractor after placement of order for approval from MDL.

4 **Monthly Progress Report:**

On the last day of every month, the firm has to submit a "Monthly Progress Report" to EIC (Plg-EY) with copy to EIC (Hull-EY) and EIC (Com-EY) comprising the following details: -

- i. Total cost of work completed and duly certified up to end of the previous month.
- ii. Work certified during the month and it's cost.
- iii. Work completed during the month, awaiting certificate and it's cost.
- iv. Work in progress along with the expected date of completion and the approx. cost estimate for the quantum of work done.
- v. Paint, Primer, thinner supplied by Vendor and consumption report for each WCC.

5 **Material & Facilities to be provided by MDL**

- i) All paints, primer, thinners which are imported in nature/ recommended by tkms. However, the firm has to keep a weekly record of material received, consumed and balance.
- ii) Only those paints, primer and thinner (Indian origin) which are applied on the pressure hull, internal tanks, bilges and battery pits. However, the firm has to keep a weekly record of material received, consumed and balance.
- iii) Storage place to the extent possible.
- iv) Fresh water for aqua jet cleaning.
- v) Electric power.
- vi) Compressed Air available at site
- vii) Temporary lighting facilities at site and on-board.
- viii) Scaffolding/staging material will be provided by MDL. However, erecting the same to be done by the firm.
- ix) Crane facility as available in the workshops.
- x) Assistance of Lifting/Shifting of heavy items more than 40 kg. in weight.
- xi) Supply of cool air on board for painting work

6. **Labour, Material & Facilities to be provided by Contractor**


- i. All the indigenous paints, primers and thinner applied on the Non pressure hulls, Super structure areas, bridge fin, seating's, foundations, GRP structure, pipes of any diameter, pontoons and its sub-assemblies/marine assets etc./other than these structures if anything recommended by EIC Hull.
- ii. Appropriate man power comprising of the followings: -
 - a) One full time authorized and competent "Site-in-charge" stationed in MDL every day, for the entire period of contract, to co-ordinate all the activities related to production & inspections.
 - b) Adequate numbers of competent supervisors and skilled & experienced labours of respective trades, to work in different shifts round the clock as per the requirement of the jobs and schedule of work. **(Note: All supervisors, Blasters and painters are required to be qualified by MDL as per Qualification procedure mentioned in Norsok standard NORSOK M-501 (Rev-4) prior to utilizing them on the project)**
- iii. **Aqua jet Cleaning equipment:** - Firm has to arrange Pumps/Hydro jet cleaning equipment, hoses, pressure gauges and valves, cables & connectors and other facilities required for low pressure & High pressure Aqua jet cleaning.
- iii. **Grit Blasting machine:** For on board Grit Blasting work, hoses, online air filter, various hoppers, blaster hood, suction arrangement and associated accessories. (including safety device dead man handle).
- iv. Super AL grit (AL2 O3 Alumina abrasive) for on board in situ Grit Blasting and for grit blasting in EY blasting chamber of following grade and specification –

(Sample to be submitted for approval.)

Chemical composition

| | | |
|--------|---|-----------|
| AL2 O3 | - | 75 to 80% |
| Sio2 | - | 4.72% |
| Fe2 O3 | - | 3.19% |
| Ti O2 | - | 0.5% |
| Ca O | - | 0.8% |

| | | |
|-----------------|---|----------------|
| Grade Mesh size | - | 0.5 mm to 1 mm |
| Type of grain | - | Angular form |
| Bulk density | - | 3.93 gm/cc |
| Color | - | Greyish black |


ANIL PATIL

मुख्य प्रबंधक (हल - पू. ख.)
CHIEF MANAGER (HULL - EY)

पनडुब्बी विभाग
SUBMARINE DIVISION
माझगाव डॉक शिपबिल्डर्स लिमिटेड
MAZAGON DOCK SHIPBUILDERS LIMITED

- v) **Portable Enclosure:** Firm has to arrange for cordon off area for blasting with plastic/tarpaulin Cover sheets and associated arrangement for proper covering area to be grit blasted on board. Enclosure should be perfect in all respect to avoid splattering of grit beyond blasting area. The firm has to provide suitable suction arrangement for collection of grits from the surrounding areas. The firm to make necessary arrangement for cleaning & sweeping the entire area as required on daily basis/wherever work is done on board to ensure proper hygiene of the work place.
- vi) To make sure blanking of all openings and protecting on board equipment and machined surfaces shall be contractor's responsibility with materials.
- vii) Firm has to arrange Vacuum blasting machine with associated hoses and accessories.
- viii) Firm has to arrange Steel grits of grade of G18/G25 for vacuum blasting. (Sample to be submitted for approval.)
- ix) Firm has to arrange Glass Beads for shot blasting approved grade and specification. (Sample to be submitted for approval.)
- x) Firm has to arrange Recommended specification: High grade spherical silica glass beads of dia 0.1 to 1.0 mm containing min. 68% SiO_2 free from lead and iron oxides.
- xi) Firm has to arrange Material for chemical cleaning of distillate tank comprising degreasing solution (SI 56) K-2 spray and K-2 passivation chemical. Also litmus papers, copper sulphate solution for necessary inspection.
- xii) Firm has to arrange Scrappers, Mechanical wire brushes etc. of different sizes and capacities to suit the specific need of the chipping / cleaning and mechanical wire brushing jobs.
- xiii) Firm has to arrange Painting equipment and facilities including brushes, rollers, Airless spray painting machine, conventional spray equipment with accessories. Mixing pots, painting weighing machine/ mixing machine.
- xiv) Firm has to arrange Wet film thickness gauge and dry film thickness gauge.
- xv) Firm has to arrange Thermo hygrometer for measuring of humidity.
- xvi) Firm has to arrange Thermo meter for measuring steel temp.
- xvii) Firm has to arrange Industrial vacuum cleaners, hoses and associated items. Sweeping & cleaning facilities.
- xviii) Firm has to arrange Safety equipment e.g. safety belts, shoes, gloves, goggles with head gear, helmets, self-contained type respirators, painting gas filter mask & dead man handle etc.
- xix) Firm has to arrange Cloth pieces, alcohol/chemical required for painting and cleaning.

- xx) Firm has to arrange Measuring tapes, caliper and weighing instruments.
 - xxi) Firm has to arrange Pictorial / sample surface preparation standards SIS / SSPS /NACE / ISO for SA 2.5.
 - xxii) Firm has to arrange Tarpaulins, plastic sheets, etc. material for protection of "on board equipment" or any other items.
 - xxiii) Firm has to arrange Portable heavy duty dust extraction equipment to extract dust from the blasting area.
 - xxiv) Firm has to arrange portable grit filtering equipment to clean the dust from the grits.
 - xxv) Firm has to arrange portable breathing air filter and suitable hood.
 - xxvi) Firm has to arrange Salt test and dust test kits.
 - xxvii) Firm has to arrange Surface profile comparators
 - xxviii) Firm has to arrange Bristle blasting machines.
 - xxix) Firm has to arrange Any other equipment / facility required for execution of the work but not specifically mentioned above.
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MAZAGON DOCK SHIPBUILDERS LIMITED

SPECIAL TERMS & CONDITIONS

1. For the required blasting and painting, suitable labour and equipment will have to be arranged by the contractor.
2. Imported primer, paint and thinner recommended by tkMS will be supplied by MDL.
3. Indigenous primer, paint and thinner for pressure hull, internal tanks, bilges and battery pits will be supplied by MDL.
4. All the indigenous paints, primers, thinner apart from pressure hull, internal tanks, bilges and battery pits painting is in the contractor's scope. Vendor has to supply indigenous paints, primers, thinner as per the approved paint scheme for the INS SHANKUSH (Except Sl. No.3 items) from approved OEM
5. The contractor must ensure optimum utilization of thinner, primer and paints issued by MDL for priming/painting purposes. We (MDL) reserve the right to check the consumption of paint/primer/thinner by the contractor vis-à-vis the coverage capacities of supplied primer/paints. You shall collect primer/paint/thinner from our Store and maintain proper record of receipts and details of consumptions. Proper record including batch No. Expiry dates etc. should be maintained by you in order to meet ISO requirements. You shall prepare formats and submit to MDL for approval.
6. Vendor Should have valid ISO 9001: 2015 certification.
7. General safety rules and MDL HSE policy will have to be strictly observed. Moreover, cleanliness of highest standard will have to be maintained by the contractor especially in regard to splattering of blasted material. The blasting material used by the contractor will be scattered over near costly equipment's such as cranes, welding sets, compressors, pumps, etc. thereby damaging them. It is, therefore, absolutely essential that the contractor arranges for sufficient tarpaulins for covering the nearby equipment's and also to form enclosures so that the dust formed in all types of blasting does not settle over nearby equipment. Also, the dry dock to be cleaned immediately after blasting to avoid damage to the dock pumps/machinery. You shall take all possible precautions including spreading of tarpaulins to cover dry dock floor, pump pit, water channel, etc. by cleaning immediately and on daily basis. MDL will provide necessary blanks for plugging the opening/penetrations. You shall arrange blanking of the penetrations.

You are advised to take all necessary measures, including the following: -

- a) Covering of blasting area with tarpaulin canopy (curtain) around the ship hull up to dock wall to prevent blast medium's dust spreading into air.
- b) Cover dry dock floor and water drains with tarpaulins.
- c) Cover dry dock pump pit with tarpaulins
- d) On daily basis, simultaneously after blasting operation of a 'particular shift, the collection of spent blasting material from dry dock floor and water channels and taking out of dry dock.
- e) Used blasting abrasives, taken out of dry dock should not be dumped on wharf of dry dock, but to be packed in sacks/bags to prevent flying of dust due to wind and flowing off by rain.
- f) Cleaning of dry dock pump pit of any waste abrasive material.

- g) Cleaning of all surrounding areas to be carried out for grit and dust removal which is generated during blasting.
8. Necessary temporary lighting during work will be arranged by MDL. You shall meet day-to-day operations for arranging temporary lights.
9. The contractor will also initially prepare and submit a broad schedule and thereafter prepare monthly schedule of activities in consultation with MDL and will comply with the broad schedule. In addition, you shall have to submit a daily report of the progress made in a format acceptable to MDL and submit a copy of the same each to Project-in-charge and Planning Department.
10. Regarding billing, you MUST indicate the total quantum of blasting as well as painting work completed against total order quantity while running bills are submitted by you.

The necessary certificate for satisfactory completion of work from EY-Hull / Ship Manager should be submitted along with your bills. The bills should be submitted within four weeks of completion of work to Accounts Section, East Yard- MDL.

11. You will have to commence the work at short notice (usually not more than two hours). Such intimation will be given by MDL verbally or by telephone at any time round the clock on any day including Sundays and holidays, although efforts will be made to give notice in advance to the contractor.
12. The awarded work, how so ever big or small, will have to be carried out by the contractor as per our project requirement. Expressing inability to undertake the work as per our requirement will not be accepted and it will be considered as a default.
13. You will provide all equipment (in working condition), facilities, qualified and experienced manpower (Supervisors Painters, Operatives, labour etc.), approved materials as per relevant inspecting agency/customer that will be adequate to execute various jobs including blast medium as required, fume extractors, dust extractors, necessary enclosures at your cost and entirely at your risk. We shall not be responsible for any damage / breakage / pilferage / accidents that may take place. Further, the responsibility of keeping your materials insured will be fully yours and at your expenses.
14. Electric supply, cranes, temporary lights and required compressed air also will be provided by MDL free of cost to the contractor.
15. You will have to carry out painting/priming by airless spray guns or by airless spray equipment or by brush/roller as required by us and specified by us. For brush painting, necessary brushes, etc. should be arranged by the contractor.
16. MDL shall provide A/C hose connection if needed while carrying out painting work at free of cost.
17. You shall retain all qualified technical personnel in your service payroll for blasting and painting activities to be carried out at MDL. You must also have Elcometers (digital), necessary measuring/testing instruments and submit periodic calibration certificates for review by MDL/SRMT from time to time.


SHEKHAR PATIL
CHIEF MANAGER (HULL - EY)

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सुपरमरीन डिवीजन
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महासागर डॉक शिपबिल्डर्स लिमिटेड
MAHARAJAN DOCK SHIPBUILDERS LIMITED

18. MDL QA-EY shall carry out porosity testing with MDL instruments. You will arrange the necessary assistance and labour.
19. The staging and scaffolding material shall be provided by MDL. Subcontractor has to arrange erection of scaffoldings.
20. Other Items like venturi blower/Man coolers etc if available shall be provided by MDL.
21. Surface preparation after blasting will be checked by our Quality Control Dept. or any other inspecting authority and painting will have to be carried out only thereafter. Similarly, quality of painting and thickness of same will also be checked by our Quality Control Dept. or any other inspecting authority and their decision will be final and binding on you.
22. The workmanship should be of highest standards and acceptance of blasted surface prior to painting and also acceptance of painting shall be subject to approval by our representatives and also representatives of owner/Classification Society/ Paint manufacturer's representative or any other inspecting agency. The blasted area will have to be painted as per Submarine Paint Scheme.
23. We reserve the right to cancel the Rate Contract at any time without giving any notice and without assigning any reasons whatsoever.
24. The blasting must be carried out to specific/standard SA 2.5 and as regards painting, the dry film thickness of each coat shall be as specified in the Submarine Paint Scheme.
25. Handling / transportation of those materials such as pipes, seating's, clamps, small items etc. that can be carried out manually by use of trolley in our yard by your manpower and equipment. Lifting/shifting facility for heavy items will be provided by MDL.
26. Required vacuum cleaners, exhaust blowers to remove gas, fume, dust with long hoses and broad / narrow section heads should be arranged by you. However, electricity for operating the same will be arranged by MDL.
27. Proper intimation should be given to our Quality Control or any other inspecting agencies for inspecting the blasting/painting work carried out by the contractors. In case of stoppage of work in any of the shifts, the same should be intimated to our inspection authorities well in advance and in writing, so that unnecessary deployment of inspectors can be avoided.
28. The grits blasting machines/Dust extractors for blasting to be arranged by the contractor for various types of works should be of good quality and should be acceptable to MDL/inspecting authorities and customer.
29. Usually maximum relative humidity permitted is 80% or below for carrying out any type of blasting and painting work. The contractor should have minimum two portable


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dehumidifiers to use at work site. The contractor should have required and duly calibrated instrument for measuring humidity and concurrence of MDL inspection authorities should be taken before carrying out any work.

30. Proper records should be maintained by the contractor's regarding humidity, paint details such as make, batch no., expiry date etc. for every new tin.
31. Generally during rains/high humidity, no blasting work should be done. However, our Quality Control authorities should be consulted regarding the same and work should be either stopped or carried out as per their orders. In case of urgent requirement dehumidifiers to be used to bring down the humidity level to permissible limit for blasting and painting activity.
32. The supervisors should be well qualified & experienced in their job and their close co-ordination with the Quality Control/Production/user/Planning Depts./other agencies is very essential for carrying out the work offered to you as per MDL schedules and requirements.
33. After blasting work, the splattered blasting material should be removed and the site should be left in very clean state. The waste should be removed from our yard by making necessary arrangements and disposed off at locations permitted by Govt.
34. The approx. area/value indicated in our Tender document / Contract is only for the purpose of limit on contract value, which will be amended if the value of the work carried out exceeds the same. However, in the event value of the work offered by MDL during the contract period is less than the contract value, no compensation, whatsoever, on the plea of idle labour/equipment loss, establishment charges, etc. will be considered. Contractors must plan their work force and equipment taking into consideration MDL's requirement/work load.
35. ~~The workers shall be periodically medically examined before assignment of work by clinical examinations of X-ray of chest (large plate) through Govt. approved agency.~~
36. The medical examinations shall be repeated after every six months while Radiological examination after a period of two years.
37. The workers exposed to blast dust shall be provided with filtered air by using online air filter or self-contained type respirator.
38. Mazagon Dock Shipbuilders Limited has appointed M/s. Shree Consultancy Service for assisting MDL to implement PF & ESI Act for contract labour. The Consultant has been provided with a porta cabin behind Reception Cabin, North Yard, MDL.


You will have to adhere to all the labour Rules & Regulations as per STACS.

- a) You may have to route your labourers through the Consultant appointed by MDL.


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MAZAGON DOCK SHIPBUILDERS LIMITED

- b) All the contract labourers will be reporting to the Consultant first and after completion of formalities i.e. filling of PF, ESI, FPF Forms, Labour Challan, etc. the Consultant will check the labour challan and countersign the same. The labour challan will be signed by the nominated Personnel Officer for all the contract labour. Thereafter, Security Dept. will issue gate passes to each new workmen and renew for continuation.
- c) You have to prepare attendance card for each workman on first day of the month and the same will be authenticated by the Consultant and Divisional Personnel Dept. of MDL centrally. Everyday contractor's supervisors are to hand over attendance cards of the labourers to MDL Security and then only labourers will be allowed to enter MDL. The collected attendance cards will be passed on to the Consultant immediately in the morning and Consultant will arrange to mark attendance on muster roll of respective contractors. The contractor's supervisors will collect back the attendance cards from the Consultant every day in the afternoon.
- d) Muster roll of the contractor will be maintained by the Consultant and contractor will be allowed to take the muster roll only for disbursement of wages on 7th of every month.
- e) Contractor is to return the muster-cum-attendance rolls to the Consultant immediately after making the payment.


39. You are required to register yourself with the office of the Regional Labour Commissioner (Central) and obtain licenses for carrying out the work for Mazagon Dock Shipbuilders Limited.


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MAZAGON DOCK SHIPBUILDERS LIMITED

RATE SHEET

Annexure -3

| Sr No | Description | Unit | Qty | Rate | Amout |
|-------|--|--------|-------|------|-------|
| 1 | Degreasing & Aqua Jet Cleaning with Fresh Water | Sq.Mtr | 29750 | | |
| 2 | Blasting With Steel Grit (45 to 50 HRC) | Sq.Mtr | 14750 | | |
| 3 | Grit Blasting in EY blast chamber with Steel Grit (45 to 50 HRC) | Sq.Mtr | 3000 | | |
| 4 | Chipping & Cleaning | Sq.Mtr | 11850 | | |
| 5 | Mechanical wire Brushing | Sq.Mtr | 5000 | | |
| 6 | Bristle Blasting | Sq.Mtr | 3500 | | |
| 7 | Degreasing & Water Rinsing | Sq.Mtr | 22750 | | |
| 8 | Mechanical Sandering on Painted Surface | Sq.Mtr | 13750 | | |
| 9 | Degreasing, cleaning & oiling of tanks | Sq.Mtr | 200 | | |
| 10 | Foam filling activities/Cementing Activities | Sq.Mtr | 100 | | |
| 11 | Metal putty filling on pitted areas of PH | Sq.Mtr | 270 | | |
| 12 | AL Grit (AL2 O3 Alumina abrasive) blasting situ & in EY Blasting chamber | Sq.Mtr | 5000 | | |
| 13 | Vacuum Blasting | Sq.Mtr | 350 | | |
| 14 | Blasting with glass bead (for Sonar Dome & any item of SS) | Sq.Mtr | 250 | | |
| 15 | Blasting with glass beads in chamber (for SS exhaust, truck, loosed parts etc.) | Sq.Mtr | 400 | | |
| 16 | Blasting of GRP panels | Sq.Mtr | 1700 | | |
| 17 | Chemical Cleaning of SS distillate tank | Sq.Mtr | 25 | | |
| 18 | Priming/Painting (Other than Pipe painting) Painting up 50 micron with IN approved epoxy paint scheme (paint is in the vendors scope) | Sq.Mtr | 13750 | | |
| 19 | Priming/Painting (Other than Pipe painting) Painting up 60 micron thick – IN approved Epoxy Paint Scheme (Paint is in vendors Scope) | Sq.Mtr | 19750 | | |
| 20 | Priming/Painting (Other than Pipe painting) Painting up to 150 micron with IN approved epoxy paint scheme (paint is in the vendors scope) | Sq.Mtr | 22750 | | |
| 21 | Priming & Painting (Other than Pipe painting) Painting up 50 micron with IN approved Epoxy Paint Scheme | Sq.Mtr | 20000 | | |
| 22 | Priming & Painting (Other than Pipe painting) Painting up to 150 micron with IN approved Epoxy Paint Scheme | Sq.Mtr | 30000 | | |
| 23 | Priming /Painting (Other than Pipe painting) Painting up to 250micron (V-60/V-61) with IN approved Paint Scheme | Sq.Mtr | 3000 | | |
| 24 | Priming/ Painting (Other than Pipe painting) Painting up to 500 micron (V-60/V-61) with IN approved Paint Scheme | Sq.Mtr | 11000 | | |


 SHEKHAR PATIL
 SUBMARINE DIVISION
 MAZAGON DOCK SHIPBUILDERS LIMITED

| | | | | | |
|----|---|----------------|--------------------|--|--|
| 25 | Priming/Painting (Other than Pipe painting) Painting up to 750 micron (V-60/V-61) with IN approved Paint Scheme | Sq.Mtr | 3500 | | |
| 26 | Priming/Painting (Other than Pipe painting) Painting up to 1000 micron (V-60/V-61) with IN approved Paint Scheme | Sq.Mtr | 1500 | | |
| 27 | Priming/Painting (Other than Pipe painting) Painting up to 1500 micron thick(applying V- 607) with IN approved Paint Scheme | Sq.Mtr | 750 | | |
| 28 | Priming/Painting (Other than Pipe painting) Painting up to 2000 micron thick(applying V- 607) with IN approved Paint Scheme | Sq.Mtr | 750 | | |
| 29 | Priming/ Painting and band marking of small bore pipes (DN 50mm and below) in running meters | Running Mtr | 13000 m | | |
| 30 | Priming/painting & band marking of large bore pipes (Above DN 50 to 150mm) in running meters | Running Mtr | 5720 m | | |
| 31 | Priming/painting & band marking of large bore pipes (Above DN 150 to 250mm) in running meters | Running Mtr | 550 m | | |
| 32 | Blasting of Pipes in running meters | Running Mtr | 14750 m | | |
| 33 | Powder coating in sq inch | Sq.Inches | 265000 sq. inch | | |
| 34 | Bus Bar cleaning and painting (450 micron) with IN approved scheme | Sq.Mtr | 100 m2 | | |
| 35 | Cleaning of flexible links with dimension 410mm x 125mm x 18mm (LXWXH) each | Nos | 40 Nos | | |
| 36 | Blanking of machine surface, PHP, other equipment's and machinery before grit blasting with material in the vendors Scope | Sq.Mtr | 2500m2 | | |

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MAZAGON DOCK SHIPBUILDERS LIMITED

**(PART-B) SCOPE OF WORK FOR RATE CONTRACT OF
AQUA JET CLEANING, BLASTING, PRIMING, PAINTING, POWDER COATING, BUS BAR
CLEANING & PAINTING, CLEANING OF FLEXIBLE LINKS FOR INS SHANKUSH.**

The scope of work to be carried out on rate contract basis includes water jet cleaning, degreasing, blasting, priming, painting, Powder coating, Bus bar cleaning & painting, cleaning of flexible links & etc. The work shall be carried out in blasting chamber, workshops, open areas, Dry dock, and slip way at East Yard, Alcock Yard, NDMB and MbPT as per MDL's requirement.

A. CONTRACTOR'S SCOPE OF WORK:

I) WATER JET CLEANING, BLASTING, PRIMING AND PAINTING: -

a) Scope for Degreasing and Water-Jet Cleaning:

- i) Degreasing and Water-jet cleaning to be carried out on all structures including sections, tanks, cradles, pipes, pontoons & sub-assemblies, etc. before blasting.
- ii) Degreasing with Alkaline / Neutral degreasing agent (Liboline) to be carried out to remove oil, grease and other impurities.
- iii) After degreasing high pressure water-jet cleaning at about 250-300 bar pressure to remove soluble salt from the surface.
- iv) Contractor to ensure that the salt contents remains $< 7\mu\text{g}/\text{cm}^2$ after water-jet cleaning. Salt test to be offered to QA / SRMT for inspection.

b) Scope for Blasting of Various Structures:

- i) Different abrasives to be used for Blasting are Fused Alumina, Steel Grit, Glass bead abrasives for Submarine structures. The roughness and preparation grade should be compliant with the following requirement: -
 - Sa 2.5 grade according to the ISO 8501-1 standard.
 - MG grade surface profile according to the ISO 8503-1 and 2 standards for roughness.
- ii) These abrasives have to be homogeneous sizes and colour, free of dust and salts. The contractor must provide chemical and physical property test reports along with abrasive sample for approval.

For storage, manufacturer's recommendations have to be followed. Generally abrasive to be stored in clean, dry spaces and bags must be closed properly. It is necessary to keep option for use of different abrasives as mentioned above for uninterrupted blasting operation throughout the year, Minimum stock level of 5T abrasive to be maintained through out of the year.

c) Scope of Work for Primer Application:

All structures required to be primed either by shop primer or holding primer immediate after blasting operation. Application with Airless Spray and the stripe coat with brushes/rollers only will be accepted. No separate payment for stripe coat will be applicable. The Dry Film Thickness of primer should be as per paint scheme recommended by the 'Indian Navy'.

d) Scope of Work for Paint Application:

All sections, structures, cradles, tanks and non-accessible areas (fuel oil tanks, lubrication oil tanks, bilge draining tanks, etc.) are needed to be painted with complete final scheme after blasting. **The complete final painting of submarine will be done as per paint scheme approved by 'Indian Navy'**. As special coating V60 & V61 scheme is applied in the internal/ external areas of submarine which has got very short span of pot life, therefore only experienced painters with MDL qualification will be permitted for this activity. The Painting rate is applicable as per **DFT/Square meter**. (As per paint Scheme). No separate payment for stripe coat will be paid.

Note: All primer, paint & thinner supplied by the contractor for the project shall be stored in a temperature controlled store at contractor's premises after procurement from OEM. Daily Temperature and humidity data of the paint store to be maintained. MDL representative will make periodical visit to witness storage condition of the paint.

The paint material brought IN to MDL will be stored at MDL provided paint store.

e) QA Inspection and Certification:

The job is to be inspected and approved at each stage by the East Yard QA inspector and SRMT/ Owners representative/ Paint OEM representatives before commencement of the next stage as per approved QAP.

II VACUUM BLASTING AND PRIMING: -

a) Contractors Scope of work :

- i) Vacuum blasting is to be carried out on the internal and external structures including all corners, butts and seams to Sa2.5 finish to the satisfaction of the QA-EY/SRMT/Other inspection agencies..
- ii) Abrasives required for the blasting to be supplied by the contractor (abrasives to be approved by MDL QA & SRMT)
- iii) Vacuum blasting machine with associated accessories should be of good quality to be arranged by contractor. At least 20mtr length of hoses to be kept stand by to reach the location of work.

b) Contractors Scope of Work for Primer Application:

All structures are required to be primed either by shop primer or holding primer immediate after vacuum blasting operation. Application with Airless Spray and the stripe coat with brushes will be only accepted. The Dry Film Thickness of primer should be as per recommended by Paint Supplier.

c) QA Inspection and Certification:

The job is to be inspected and approved at each stage by the East Yard QA inspector and SRMT before commencement of the next stage.

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III) GLASS BEAD BLASTING AND PRIMING:

a) Contractor's Scope of work:

- i) Glass bead blasting is to be carried out to the fabricated structures/pipes/ducts including all corners, butts and seams to Sa2.5 finish to the satisfaction of the QA-EY and SRMT inspectors.
- ii) Silica glass beads used for blasting should be free from Lead and Iron, (Glass Beads are to be approved by MDL QA & SRMT). The physical and chemical test report to be submitted to QA/SRMT for approval.
- iii) Glass bead blasting machine with associated accessories should be of good quality and to be approved by MDL QA & SRMT representative.

b) Contractor's Scope of Work for Primer Application:

All structures required to be primed either by shop primer or holding primer immediate after glass bead blasting operation. Application with Airless Spray and the stripe coat with brushes will be only accepted. The Dry Film Thickness of primer should be as per recommended by Paint Scheme.

c) QA Inspection and Certification:

The job is to be inspected and approved at each stage by the East Yard QA inspector and SRMT stationed in MDL before commencement of the next stage.

IV) Contractor's Scope of work for Bristle blasting

a) Bristle blasting will be carried out on structures/ seatings mostly on the hot work areas, post painting and section joining areas to minimize dust contamination to the already fitted equipment/systems. This process should produce Sa 2.5 surface cleanliness and roughness of 25 to 50 microns.

b) Contractor will provide suitable bristle blasting machines including accessories and consumable bristle wheels as per requirement.

V) Contractor's Scope of Work for Chipping/scraping and cleaning

a) Chipping/ scraping to be carried out on external and internal structure/fittings including tanks and confined spaces to remove old paint V60 & V61 and the area to be thoroughly cleaned. All old paint to be removed from situ and to be disposed off outside of MDL as per governing rules & regulations of the state.

b) Contractor will provide all necessary manual and mechanical tools including consumables and accessories as per requirement.

VI) Contractor's Scope of work for Mechanical sandering on painted surface.

a) Generally after blasting and priming the recoating intervals gets exceeded for final coating due to scheduled repair works in between, hence the old paint surface is required to be lightly abraded by manual/mechanical sandering to remove a thin layer of paint

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film up to 5-10 microns. The abraded surface to be cleaned with appropriate thinner to re-active the abraded paint film for over coating.

b) Contractor will provide all consumables for sanding and necessary tools & accessories

VII) **Contractor's Scope of work for foam filling activities.**

a) Foam filling/Cementing is required to be carried out on the bilges areas below the torpedo tube/ stowage areas in Sec -42.

b) The foam filling material will be provided by MDL and contractor has to carry out foam filling activities. The applicator has to undergo qualification test for application of foam filling by QA-EY/SRMT.

VIII) **Contractor's Scope of work for Metal Putty filling on pitted areas of PH.**

a) Post hull survey the acceptable pitted areas of PH is required to be filled with putty and there after smoothening to be done for hull fairing prior to coating application.

b) The putty materials will be provided by MDL but the putty application will be in the contractor's scope along with necessary tools.

IX) **Contractor's Scope of work for Blasting on GRP Panels.**

All GRP Panels are to be blasted with dust type (Fine grade) abrasive of Fused Alumina to remove old paint and to create a surface profile of Appx 25 microns. The blaster is required to be qualified by EY- QA/SRMT for this special blasting operation. Abrasives size and quality need to be approved by QA/SRMT. All needed equipment and abrasives will be supplied by the contractor.

X) **Contractor's Scope of Work for Blasting & Priming at NDMB & MbPT.**

Contractor has to arrange blasting machine along with compressor and accessories for blasting and painting work at NDMB & MbPT at a short notice of one week.

XI) **Contractor's Scope of Work Blasting and Painting of Pipes.**

For blasting of pipes different abrasives to be used is "White Corundom" (Aluminum Oxide) with F24 grade. Blasting surface should have Sa 2.5 finish, fine Grade to the satisfaction of the QA-EY and SRMT inspectors. The Dry Film Thickness (DFT) of the paint shall be as per paint scheme. The relevant paint scheme will be given at the time of job allocation.

XII) **Scope of Work for Outsourcing of Services for Powder Coating of various structures**

a) **Subcontractor's scope of work/ supply:**

- i. Collect various structures/Fittings from MDL indicated by Submarine / Ship's Staff.
- ii. Carry out surface treatment/preparation prior to powder coating as applicable for aluminum surface.
- iii. Structures Surface should be free from Oil, dust, foreign material and uniformly treated.

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- iv. Subcontractor should offer pre-coating inspection to MDL i.e. before powder coating at subcontractor premises.
 - v. Powder coating with Name RAL 7038, Powder coating thickness: DFT 65 micron +/-5% or If recommended by the Indian Navy will be intimated well in advance before the work get started
 - vi. Carry out powder coating to min 65 microns' +/- 5% thickness and curing at suitable temperature, ensure that heating process should not damage the structure/item.
 - vii. Powder coated surface must be free from defects like orange pill, sagging, over spray etc.
 - viii. Subcontractor to offer final inspection to MDL at subcontractor's premises.
- b) **Inspection Agency:** QA / SRMT (Submarine Refit Monitoring Team)/Ship staff/tKMs.
- c) **Mobilization:** Subcontractor should make vehicle arrangement for collecting various structures/items from MDL as per availability/ as and when offered by the user and deliver the same at MDL within 07 days after successful completion of work.
- d) **Inspection and Work Completion Certification (WCC)**
- i) Offering of the work completed for inspection and getting the required clearance from inspection agencies is the responsibility of subcontractor.
 - ii) The job should be completed to the satisfaction of Inspection agencies.
 - iii) On successful completion of the inspection, Work Completion Certificate (WCC) will be issued by MDL designated Production Executive not below the rank of Chief Manager.
 - iv) **Rework/Non-conformity:** Rejected powder coated structures after inspection, to be re done by contractor without any additional cost to MDL and should be re-offered for inspection by MDL/ inspection agencies.

Note: Subcontractor shall take all necessary precautions to minimize wastage/ rework/No damage to structures/items. Safe custody of various structures/items is the responsibility of the contractor.

XIII) SOW for Cleaning and painting of Bus Bars

Fluidized bed coating for electrical bus bars with Abctie ® 1060 powders.

- 1) **Removal of Old paints: -**
Remove all old coating material over bus bars without damaging the bus bars surface.
- 2) **Cleaning:-**
Clean the surface prior to application of coating to remove all contaminants like grease, oil and dirt. Multi step cleaning process can be used to remove contaminants / moisture / oxides etc. All edges of bus bars must be properly conditioned (like sharp edges, Notches, dents etc.) to get uniform coating.
- 3) **Masking: -**
Surface that do not require powder coating are to be properly masked with high temperature tape. Masking to be applied to each location and will remains on the part until curing cycle is over.
- 4) **Preheating: -**
Preheat the substrate at the temperature between 200 °C to 280 °C (depending on geometry) is strongly recommended in order to improve adhesion of Abctie ® 1060. Please follow preheating guideline as per TDS. Metal Surface temperature before dipping should be carefully recorded and controlled with contact probe.


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5) **Dipping in fluidized bed: -**

Compressed air supply must be filtered to remove any trace of moisture, oil and other contaminants. Dip the parts in the fluidized bed for 2 to 10 seconds depending on desired thickness. After dipping, any remaining excess powder should be removed by shaking or air blowing the coated parts.

6) **Coating thickness: -**

Ensure that finished coating should be Uniform and has no defect such as pin holes, Voids, thin areas near sharp edges or corners, blisters, bubbles etc. Coating thickness of at least 400 µm is advised.

7) **Coated part controls: -**

It is recommended to performance a high voltage porosity test according to ISO 29601/IN recommendation.

Facility Recommendations for applicator.

- 1) Oven: - The Oven used for preheating must be able to heat at least 250 °C, with even and precise control. The transfer time between the preheating oven and fluidized bed should be as short as possible.
- 2) Fluidized bed: - Applicator must have adequate set up of fluidized bed with facilitate parameters like earthling / air / pressure/ give good powder turbulence / filtered air supply / fluid bed dimensions allow \pm 20% powder expansion from a still to fluidized state.
- 3) Skilled Manpower.
- 4) Material Storing Capacity: - After application bus bars must be properly stored and ensure that coating must not be damage during transportation.

Note:- Before using product Please read Carefully the product data sheet.

XIV) Procedure for cleaning of Flexible Links

This document describes the Scope of Work for undertaking preservation and specialized packaging of the copper battery links:

Step 1: The oil, grease, dirt and dust on the surface of the battery links shall be cleaned using suitable cleaning agent.

Step 2: The existing oxidation layer shall be removed to the extent possible from the surface of the battery links by using appropriate Derusting and Descaling Chemical for Oxide and Scale Removal. This may be done using spray method or by dipping the battery links into a bath at the required temperature to obtain the desired result. Neutral solution must be used for cleaning. Care is to be taken to ensure that the battery links are not scratched or damaged in any manner.

Step 3: The battery links to be wiped clean using a clean cotton cloth so as to eliminate

any traces of the descaling chemical.

Step 4: The battery links to be wrapped and sealed with appropriate Copper Grade VCI paper with PE coating so as to protect the battery links against moisture and oxidation. Suitable industrial desiccants to be placed inside the VCI paper packing which will absorb any traces of moisture inside the package.

Step 5: The battery links to be wrapped with appropriate VCI film and to be vacuum sealed.

Step 6: The packaged Battery links to be placed inside heat treated pinewood boxes designed for lifting by forklift. Internal walls of wooden boxes to be lined with suitable HDPE material.

Technical Qualification Criteria for contractor.

1. Firm should have similar experience in submarines. As the submarine is more complex structure than others which contains compact tanks, bilges, cofferdam, torpedo tubes, confined spaces, etc. Firm has to submit the past performance/ work completion certificates as evidence of similar jobs done in last 3 years. Firm should have ISO 9001:2015 certification and has to be compliant to HSE policy of MDL.
2. Bidders must have minimum following personnel on its permanent pay roll (proof to be submitted along with the offer).
 - a) Four supervisors having passed NACE level-1/IIT Inspector's certificate course/SSPC India Inspector's course.
 - b) 10 skilled and experienced (minimum 3 years) wire brush and power tool cleaning operator.
 - c) Six nos. skilled and experienced (minimum 3 years) Spray Painters
 - d) Five nos. skilled and experienced (minimum 3 years) brush Painters
 - e) 12 nos. Skilled and experienced (minimum 3 years) Blasters.
 - f) 15 nos. unskilled labour.
3. Post techno commercially qualification employees of contractor as listed at para.2 shall undergo Oral, practical & theoretical examination by MDL as below as per qualification procedure mentioned in Norsok standard NORSOK M-501 (Rev-4).
 - a. **Supervisor** shall have to appear and pass oral & theoretical examination in English concerning required power tool cleaning, blasting and painting procedures, Standards for surface preparation, painting processes and inspections, machine operation, maintenance and other qualify checks, safety hazards and protection of equipment, quality controls, inspections and data recordings, planning of assigned activities, manpower handling and shall have good communication skills, knowledge about working and precautions in confined spaces and HSE rules.
 - b. **Operators** for Degreasing and Water cleaning should pass oral and practical test also he should have knowledge about the cleaning procedure of oil, dust, grease, soluble salt,

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safety and PPEs. **These operators should have special skills for working in confined spaces.**

- c. **Operator** for power tools should pass oral and practical test. They should have practical knowledge of different power tools required for subject work, safety hazards and protection of equipment, knowledge about mechanical cleaning standards. **These operators should have special skills for working in confined spaces.**
- d. **Blasters** should pass oral and practical test for subject of work for blasting activities. Blasters should have knowledge about blasting standards ISO 8501-1, safety gears, precautions, safety hazards. **Blasters should have special skills for working in confined spaces.**
- e. The **Painters** should pass oral and practical test for subject work with brush, airless spray gun, Pot gun. They should also have knowledge about all the painting machines, knowledge of checking wet film thickness, mixing ratio, pot life of paints, paint mixing procedure, stripe coat skills, knowledge about safety hazards and protection of equipment.

NOTE:

1) The practical test for above mentioned operators will be conducted on the standard test panels or actual jobs including confined spaces depends upon MDL. The short listed contractors should bring requisite machinery and consumables including abrasives for blasting, bristle blasting wheels and all safety devices, PPEs, enclosure materials for blasting in situ conditions in workshops, on-board tanks, as mentioned above at their own cost for practical test. MDL will provide jobs for test, degreasing solution, water, air and paint for test. The contractor meeting above qualification criteria will only be considered for price bid opening.

2) Technical Qualification of firms in the form of oral, Practical & theoretical examination of employees (Supervisors, Operators, Blasters & Painters) will not be required for those vendors who have been already qualified in East Yard for Submarine Blasting, Painting activities (P75/ SSK projects) with validity till date of tender.

4. The contractors should have minimum following machineries to meet the qualification criteria

| SI | MACHINE/EQUIPMENT | QTY(minimum) |
|------|---|--------------|
| i) | Bristle blasting machine with safety devices with all accessories | 04nos. |
| ii) | Orbital Sandering Machine with all accessories | 05 nos. |
| iii) | Suitable Needle Scalar with all accessories | 02 nos. |
| iv) | Suitable Pencil grinder with all accessories | 02 nos. |
| v) | Suitable Grinding Machine with all accessories | 05 nos |


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| vi) | Suitable Dehumidifier with all accessories | 02 no. |
| vii) | Air-less paint spray machine with all accessories | 04 nos. |
| viii) | Blasting hopper with all safety devices | 12 nos. |
| ix) | Industrial vacuum cleaners with all accessories | 04 nos. |
| x) | Exhaust blower for temporary enclosures with all accessories | 02 nos. |
| xi) | Portable Heavy duty Industrial Dust collector with all accessories | 01 no. |
| xii) | Suitable Temporary Enclosure material | 04 sets |
| xiii) | Suitable Breathing air hood with air inline filter for operatives | 06 sets |
| xiv) | Portable Abrasive recovery system with accessories | 01 Nob |
| xv) | Pneumatic Paint mixing machine | 03 Nos |
| xvi) | Mechanical wire brushing/ buffing machine | 03 Nos |
| xvii) | Pneumatic suction blowers | 03 Nos |
| xviii) | High pressure water jet blasting machine | 02 Nos |
| xix) | Digital Weighing scale | 02 Nos |
| xx) | Mechanical Chipping machine | 05 Nos |
| xxi) | Portable Water collection/suction machine | 02 Nos |

Note: In addition to above, any other equipment considered essential to carry out the requisite work, such equipment shall also be provided by the contractor.

5. Valid calibrated Inspection Equipment to be possessed by contractor:

| Sl | Description of Equipment | Qty. |
|-----------|---|-------------|
| a) | ISO Grit Roughness comparator | 05 Nos |
| b) | ISO Shot Roughness comparator | 02 Nos. |
| c) | Needle manometer to check the air pressure in blasting nozzle | 05 Nos. |
| d) | Bresle Kit with patches and de-ionized water to measure Salts | 02 Kits. |
| e) | Sling Hygrometer to measure Relative Humidity | 10 Nos. |
| f) | Dew Point Calculator | 10 Nos |
| g) | Instrument for Surface Temperature Measurement | 03 Nos. |
| h) | Wet Film Thickness Gauges | 10 Nos |

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| i) | DFT Meter | 05 Nos. |
| j) | Dust test Kit | 02 Nos |
| k) | ISO 8501-1 Standard | 01 No |

6. Compatible Safety Equipment to be provided for Operators by contractor:

| <u>SI</u> | <u>Description of Equipment</u> | <u>Qty.</u> |
|-----------|---|-------------------------|
| a) | Face Screen for high pressure water washing | One with each Operator |
| b) | Rain Suit for high pressure water washing | One with each Operator |
| c) | Gum Boots for high pressure water washing | One with each Operator |
| d) | Blasting Hood | 08 Nos |
| e) | Heavy Duty blasting overall | One with each Operator. |
| f) | Heavy Duty blasting gloves | One with each Operator |
| g) | Heavy Duty Leg padding | Two Nos. |
| h) | Painting vapour Mask | One with each Operator. |
| i) | Painting overall | One with each Operator. |
| j) | Painting Hood | One with each Operator. |
| k) | Painting Shoe covers | One with each Operator. |
| l) | Breathing air filter and hoses | 03 Nos. |
| m) | Safety goggles | One with each Operator |

MDL SCOPE:

- MDL has two nos. blasting/painting chamber in EY & in front of pipe shop with requisite machineries for blasting and painting activities of the fabricated structures/pipes of submarine in East Yard. All these facilities are to be handled by competent manpower of the contractor. However, for blasting work at situ at EY/SY/Alcock yard/NDMB/ MbPT contractor shall provide blasting/Painting machine and other required equipment/machines as per requirement.
- Free Air, power and water required for Water jet cleaning/ blasting & painting operation will be provided by MDL.


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3. Crane facility for handling the structure inside the workshop. Assistance for loading and unloading of heavy structures in the chamber, compressed air supply, scaffolding/staging material, temporary lighting, will be provided at free of cost. Contractor may visit the yard to understand the facilities.
4. Indigenous origin Primer, thinner & paint for the painting of Pressure hull, MBTs & internal tanks.
5. All imported nature paints as per requirement of the project.

SAMPLE QAP

| | | | | | |
|--|-------------------|-------------------------|------|------------|-----|
| MAZAGON DOCK SHIPBUILDERS LTD. EAST YARD | PROJECT - MRLC | <u>DOCUMENT NO -P01</u> | | Rev No. | Nil |
| | QUALITY PLAN | EY/QAP/MRLC /H/1002 | Date | | |
| | PAINT SYSTEM | Page 01 of 04 | | | |
| BLASTING AND PAINTING OF INS SHANKUSH (MRLC) | | | | | |

| Sl No | Inspection Phase | Type of Inspection | Reference Document/Standa rds | Min Level Required/ Protocol to be filled | Inspected By | | |
|----------|--|--|--|---|----------------------|---------------|---------|
| | | | | | Producti on QA | EY - QA | RM T |
| 01 | Surface cleanlines s prior to blasting | - Greasy substances Visual inspection - Soluble salt Test(Bresle) | Water Spray test/ Visual ISO 8502-6/9 | Not Visible Salt level < 7 µg/cm | W | W | W |
| | | | | MDL Protocol PO1-PS1 | | | |
| 02 | Atmospher ic condition prior to surface preparatio n | - Humidity - Dew Point - Surface Temp | ISO 8502-4 Technical data sheet of paint to be referred | Relative Humidity up to 85% (Refer TDS) MDL Protocol PO1-PS1 Surface T > Dew point + 3°C | W | W | RW |
| 03 | Abrasive inspection | Certificate of conformity | Internal procedure | Should be contaminati on free and | W | R W | --- |

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| | | Vial Test | | produce MG surface profile and Sa 2.5 Std surface cleanliness | | | |
| 04 | Surface preparatio n Condition | Preparation quality | ISO 8501-1 | Sa 2.5 Std | | | |
| | | Surface profiling | ISO 8502-3 Visual | Medium profile Grade | W | W | W |
| | | Dust particles | | Dust particle dimension $\square \leq \square 2$ Quantity of dust $\leq \square 2$ | | | |
| | | Greasy Substance | | Visual MDL Protocol PO1-PS1 | | | |
| 05 | Atmospher ic Conditions prior to paint system application | - Hygrometry | ISO 8502-4 | Relative Humidity up to 85% (Refer TDS) | W | W | W |
| | | - Dew Point | | | | | |
| | | - Surface Temp | | Surface T > Dew point + 3°C | | | |
| | | | | MDL Protocol - PO1-AEP1 | | | |
| 06 | Paint Inspection | Manufacturer, batch reference, validity/expirati on, pot life, recoating time for each coat. | SCI -002525 SCI-002083 Internal procedure | MDL Protocol - PO1-AEP1 | W | W | W |


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| 07 | Inspection after paint application (Primer & anti corrosive coat) | DFT Visual aspect inspection | ISO – 2808 ISO – 4628 | MDL Protocol - PO1-AEP1 | W | W | W |
|----|--|---------------------------------|--------------------------|-------------------------|---|---|---|

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|--------------------|-------------------|--------------------|
| PREPARED BY | CHECKED BY | APPROVED BY |
| Name : | Name : | |
| Designation : | Designation : | |
| Signature : | Signature : | |

Responsibility matrix for blasting and painting for MRLC

| <u>Sr. No.</u> | <u>Description</u> | <u>MDL</u> | <u>Contractor</u> |
|----------------|---|------------|-------------------|
| 1 | Water jetting / Degreasing | | x |
| 1.1 | Water jetting equipment | | x |
| 1.2 | Water at one point | X | |
| 1.3 | Degreasing Agents | | X |
| 2 | Grit Blasting | | X |
| 2.1 | Provision of Grits (Fused Alumina, Steel grit, Fused Aluminum Oxide, Glass Beads) | | X |
| 2.2 | Blasting chamber and associated accessories available with MDL (presently only in EY& Pipe shop) | X | |
| 2.3 | Providing temporary blasting enclosure wherever required | | X |
| 2.4 | Cleaning of blasting chambers, dust collectors, conveyor system | | X |
| 2.5 | Removal of old paint/dust / grits out of MDL and disposal as per Govt. Rules. | | X |
| 2.6 | Maintenance of blasting chamber at MDL with accessories excluding cleaning above | X | |
| 2.7 | Setting up temporary blasting chamber and maintenance of blasting chamber / accessories at NDMB & MbPT | | X |
| 2.8 | Compressor for blasting work at NDMB & MbPT | X | |
| 2.9 | Blasting equipment for blasting at NDMB & MbPT | | X |
| 2.10 | Storage place in MDL for blasting abrasives and other degreasing / cleaning material, blasting & priming machinery and paints | X | |
| 2.11 | Storage / maintenance of storage place | | X |
| 2.12 | Vacuum blasting equipment with accessories | | X |
| 2.13 | Industrial vacuum cleaners, dust collectors, Grit extractor, exhaust blowers to remove gas, fume, dust with long hoses and broad / narrow section heads | | X |
| 3 | Priming / painting | | x |
| 3.1 | Provision of paint schemes | X | |

शेखर पाटिल
SHEKHAR PATIL
मुख्य प्रबंधक (हल - पु. ख.)
CHIEF MANAGER (HULL - EY)
पनडुली विभाग
SUBMARINE DIVISION
महासमुद्र डॉक शिपबिल्डर्स लिमिटेड
MAZAGON DOCK SHIPBUILDERS LIMITED

| | | | |
|-----|---|---|---|
| 3.2 | Provision of thinner, primers and paints imported (at MDL or MDL stores) | X | |
| 3.3 | Provision of thinner, primers and paints indigenous (for supply & apply areas) as mentioned in scope of work | | X |
| 3.4 | Provision of blanking material for blanking openings | | X |
| 3.5 | Transportation of issued material to site | | X |
| 3.6 | Equipment / supporting equipment for application of primer / paint (spray guns, brushes / rollers, mixing post, mechanical agitators, cleaning material etc.) except those available in blast chambers. | | X |
| 3.7 | Providing safety equipment/PPE to operatives | | X |
| 3.8 | Transport of Equipment /Material to ND(MB), MBPT | X | |
| 4 | Utilities | | |
| 4.1 | Power supply 230 V (at available point) | X | |
| 4.2 | Power supply 110 V (at available point) | X | |
| 4.3 | Compressed air for all the activities required for blasting and paintings at MDL. | X | |
| 4.4 | Material handling (more than 100 kgs each) | X | |
| 4.5 | Material handling (less than 100 kgs each) | | X |
| 4.6 | Scaffolding material | X | |
| 4.7 | Assembly / dismantling of scaffolding | X | |
| 4.8 | Tarpaulin / plastic covers | | X |
| 4.9 | Temporary lighting | X | |
| 5 | Labor, miscellaneous material & facilities | | X |
| 5.1 | Qualified supervisors | | X |
| 5.2 | Skilled and trained operatives (Qualified by MDL) | | X |
| 5.3 | Covering of equipment near blasting area with tarpaulin to prevent setting of dust. | | X |
| 5.4 | Covering of blasting area with tarpaulin canopy (curtain) to prevent abrasive dust spreading into other areas. | | X |
| 5.5 | Covering of items which area not to be painted | | X |
| 5.6 | Cleaning of dry dock immediately after blasting | | X |
| 6 | Quality assurance and inspections | X | |
| 6.1 | Providing QA plan (Proposed by firm and approved by Design-EY/QA/SRMT) | X | X |
| 6.2 | Calibrated DFT meter, Hygrometer, surface temperature instrument, salt test kit and dust test kit. | | X |
| 6.3 | Availability of bresle patches at site for salt test | X | |
| 6.4 | Availability of dust test tapes/kit at site. | | X |
| 6.5 | Assistance to inspection agency | | X |
| 7 | Documentation | X | X |
| 7.1 | Keeping records of humidity, batch numbers, expiry dates and material issued / utilized. | X | X |
| 7.2 | To reconcile primers / paints used against paint schemes | | X |
| 8 | Fulfilment of ISO & HSE requirement | | X |
| 8.1 | Maintenance of painting related documents & documented information | X | X |
| 8.2 | Maintenance of Annual health checkup record of employees as per factory Act & HSE requirement | | X |

| | | | |
|-----|---|--|---|
| 8.3 | Availability of TDS & MSDS at site | | X |
| 9 | Contractors should follow all the required Covid-19 protocols from time to time as given by Govt. | | X |
| 10 | Contractors should follow all the safety norms issued by MDL Safety officers from time to time | | X |


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