









	eProcurement System for PSUs under MoD MDL Tenders Published Corrigendum Details	Date : 29-Sep-2023 10:51 AM  Print																
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Mazagon Dock Shipbuilders Limited

Scope of Supply: Modular Accommodation (VIP Compartment) for 7ships.

MDL Tender no. 1700000464 dated 11 Aug 2023

E-Tender ID: 2023_MDL_93266_1

Corrigendum No. 3 Dated 29.09.2023

01. Tender due dates are revised as follows:

Sr No	Corrigendum for	Existing (as per Tender)	To be Read As
1	Tender Closing Date & Time (Bid Submission End Date)	29 Sep 2023 1400 Hrs	13 Oct 2023 1400 Hrs
2	Bid opening Date & Time	29 Sep 2023 1600 Hrs	13 Oct 2023 1600 Hrs

02. Please refer the following changes:

- i. To publish the changes in tender terms & condition of tender:

SNo.	Existing as per tender	To be read as
1	<p>Tender Clause No. 3(b) Commercial/ Financial criteria: Firm to submit following details/documents:</p> <p>(i) Bidders Company Profile and Shop & Establishment registration certificate/registration certificate from local body for conducting business/ factory or industry license. Also, copy of GST & CIN document as available.</p> <p>(ii) List of equipment held by them with model / year / working status along with details of their manufacturing facilities and personnel with designation, qualification and experience to determine their capabilities. SSI / NSIC units can alternatively submit valid certificate indicating their capacity.</p> <p>Note: Above two points are not applicable for permanently registered vendor with MDL for the tendered item/equipment/system. Bidders registered with MDL should submit the copy of valid registration certificate indicating items/services for which they are registered with MDL in part-1 techno commercial bid.</p>	<p>Tender Clause No. 3(b) Commercial/ Financial criteria: Firm to submit following details/documents:</p> <p>(i) Bidders Company Profile and Shop & Establishment registration certificate/registration certificate from local body for conducting business/ factory or industry license. Also, copy of GST & CIN document as available.</p> <p>(ii) Deleted</p> <p>Note: Above two points are not applicable for permanently registered vendor with MDL for the tendered item/equipment/system. Bidders registered with MDL should submit the copy of valid registration certificate indicating items/services for which they are registered with MDL in part-1 techno commercial bid.</p>

	<p>(iii) Bidder’s average turnover during last 03 years (FY 2020-21, FY 2021-22 & FY 2022-23) should be at least INR 1.69 Crore (Rupee One Crore Sixty-Nine Lakh Only). For assessing the same Audited / Certified Balance sheet, Profit / Loss account for the corresponding 03 years’ period to be submitted.</p> <p>(iv) The value of the supplies during last 03 years before tender closing date should not be less than INR 11.25 Crore (Rupee Eleven Crore Twenty-Fifty Lakh Only) Order copies to be submitted along with its proof of completion.</p> <p><i>Note:</i></p> <p><i>i. Bidder shall submit all documents pertaining to techno-commercial pre-qualification along with Part I bid. Non submission of any document may lead to rejection of bid.</i></p> <p><i>ii. Credentials of the partners of Joint ventures cannot (repeat cannot) be clubbed for the purpose of compliance of Pre-Qualification Criteria(PQC) in supply of Goods / Equipment, and each partner must comply with all the PQC criteria independently. However, for the purpose of qualifying the Financial Standing Criteria, the Financial Standing credentials of a Holding Company can be clubbed with only one of the fully owned subsidiary bidding company, with appropriate legal documents proving such ownership.</i></p>	<p>(iii) Bidder’s average turnover during last 03 years (FY 2020-21, FY 2021-22 & FY 2022-23) should be at least INR 1.69 Crore (Rupee One Crore Sixty-Nine Lakh Only). For assessing the same Audited / Certified Balance sheet, Profit / Loss account for the corresponding 03 years’ period to be submitted.</p> <p>(iv) Deleted</p> <p><i>Note:</i></p> <p><i>i. Bidder shall submit all documents pertaining to techno-commercial pre-qualification along with Part I bid. Non submission of any document may lead to rejection of bid.</i></p> <p><i>ii. Credentials of the partners of Joint ventures cannot (repeat cannot) be clubbed for the purpose of compliance of Pre-Qualification Criteria(PQC) in supply of Goods / Equipment, and each partner must comply with all the PQC criteria independently. However, for the purpose of qualifying the Financial Standing Criteria, the Financial Standing credentials of a Holding Company can be clubbed with only one of the fully owned subsidiary bidding company, with appropriate legal documents proving such ownership.</i></p> <p><i>iii. Bidder to note that the shortfall information/documents shall be sought only in case of historical documents which pre-existed at the time of the tender opening i.e. submitted along with original bid and which have not undergone change since then.</i></p>
2	<p>Tender Clause No. 4(f)</p> <p>Authorized Indian agent of the overseas bidders can submit EMD in the form of NEFT in Indian Rupees. Similarly authorized Indian agent of the overseas bidders can submit BG as per list of banks approved by SBI / Canara bank as bank of international</p>	Deleted

	<p>repute published on MDL website on behalf of foreign bank. Bidders to advise their bank/banker to send EMD directly to commercial department or through SWIFT to dispense with additional step of verification of authenticity of signatories. In case of EMD transmitted through SWIFT, it shall be the responsibility of the bidder that he directs the receiving banker to forward the message duly authenticated to the concerned commercial executives mentioned in the tender. Bids without EMD, other than those who are exempt from payment of EMD will not be considered. EMD of unsuccessful bidders will be returned after finalization of the tender and shall be interest free.</p>	
<p>3</p>	<p>Tender Clause No. 7(b)</p> <p>Liabile rejection criteria:</p> <ul style="list-style-type: none"> (i) Failure to submit sufficient or complete details for evaluation of the bids within the given period which may range in between two to three weeks depending on the deficiencies noticed in the drawings / technical data which shall not however conflict with validity period. (ii) Incomplete / misleading / ambiguous bids in the considered opinion of TNC /CNC. (iii) Bid with technical requirements and or terms not acceptable to MDL/Customers/External agency nominated as applicable. (iv) Bids received without pre-qualification documents where required as per the tender. (v) Bidders not meeting the Pre-Qualification criteria stipulated in Tender/TSP. (vi) Bidder not agreeing to provide assistance wherever required for installation, commissioning, STW, HATs of equipment supplied by them till successful commissioning of Ships. (vii) Bidder not agreeing to supply spares (on board spares etc.) / post sale product support / post work 	<p>Tender Clause No. 7(b)</p> <p>Liabile rejection criteria:</p> <p>a. Clauses under i to xxix stands deleted.</p> <p>b. The following is newly added. Non-compliance/non-acceptance to any of the terms and conditions of the tender other than following shall render the bid liable for rejection;</p> <ul style="list-style-type: none"> (i) Clause mentioned under loading criteria <p>Note:</p> <ul style="list-style-type: none"> a. Equal time and 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 will be rejected. b. Bidder to note that the shortfall information/documents shall be sought only in case of historical documents which pre-existed at the time of the tender opening i.e. submitted along with original bid and which have not undergone change since then.

completion support.

- (viii) Quote received with Price Variation Clause (PVC) where Fixed Price is allowed as per tender or quote received with fixed price where PVC is allowed as per tender.
- (ix) The original of the uploaded copy of EMD (BG) if received after seven MDL working days of the tender closing date.
- (x) Bidders not meeting the eligibility criteria given in tender regarding the Class of Supplier as per PPP MII Order 2017.
- (xi) Bidders not submitting the declaration certificate for Local Content & location of value addition.
- (xii) Bidders not indicating/not declaring/not specifying the local content percentage or/and location of local value addition in the declaration certificate.
- (xiii) Bidders submitting incomplete declaration certificate for Local Content or declaration certificate not certified by appropriate authority as per tender.
- (xiv) Non-submission of unique GeM Seller ID by bidder within reasonable time post opening of tender but before price bid opening. (MoF Office Memorandum OM No.F.6/9/2020-PPD dated 24 Aug 2020).
- (xv) Non-submission of Compliance Certificate w.r.t Land Border Clause as per the enclosed format. (Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017)
- (xvi) Unreasonably longer delivery period quoted by the bidder.
- (xvii) Validity period indicated by bidders is shorter than that specified in the tender enquiry.
- (xviii) Bidders not agreeing to furnish required Security Deposit as mentioned in the tender.
- (xix) Bidder not agreeing to furnish Performance Bank Guarantee for

	<p>Equipment supplied.</p> <p>(xx) The original of the uploaded copy of Local Content Declaration if received after seven MDL working days of the tender closing date.</p> <p>(xxi) Bidders not agreeing for Warranty period as specified in the tender.</p> <p>(xxii) Any deviation sought, which is not acceptable to MDL.</p> <p>(xxiii) Bid received without 'Certificate of conformity' duly filled in & signed.</p> <p>(xxiv) If the bidder is declared as 'under liquidation' in the recent past and or is under scanner by any statutory bodies must confirm their present status with respect to liquidation / banned / scanner with adequate supporting documents. Non-submission of adequate document or if submitted document is not acceptable, the bidder shall be liable for rejection.</p> <p>(xxv) In case bidder has uploaded scanned image of IP but original copies of IP are not submitted to MDL within 07 MDL working days from tender closing date.</p> <p>(xxvi) Bids received from Indian bidder in foreign currency.</p> <p>(xxvii) If the GST rating of supplier / contractor on GST portal/ Govt. website is found to be negative/ blacklisted, the MDL reserves the right to reject the offer of such bidders.</p> <p>(xxviii) Bidders not quoting for all the line items in the tender.</p> <p>(xxix) Any deviation w.r.t. of tender documents.</p>	
4	<p>Tender Clause No. 8 SUBMISSION OF OFFER IN TWO BID SYSTEM:</p> <p>a) Part I (Techno Commercial Bid):</p> <p>(iv) Acceptance of Tender terms, GT&C and STACS in the prescribed formats duly 'Accepted OR Not Accepted' as applicable and deviations, if any, for each of the clause.</p>	<p>Tender Clause No. 8 SUBMISSION OF OFFER IN TWO BID SYSTEM:</p> <p>a) Part I (Techno Commercial Bid):</p> <p>(iv) Acceptance of Tender terms & GCC in the prescribed formats duly 'Accepted OR Not Accepted' as applicable and deviations, if any, for each of the clause.</p>

5	Tender Clause No. 10 SECURITY DEPOSIT(SD)	This clause stands deleted
6	Tender Clause No. 12 PERFORMANCE BANK GUARANTEE (PBG)	This clause stands deleted
7	(New Clause i.e. 10A in place of Tender Clause 10 & 12)	PERFORMANCE SECURITY (PS): <p>(a) Separate Performance Security for an amount of 5% of the value of the contract (excluding taxes & duties) payable in Indian Rupees shall be submitted to ensure due performance of the contract by the successful bidder for respective order of MDL & GRSE.</p> <p>(b) Performance security may be furnished in the form of NEFT / Demand Draft / Pay order / Bank Guarantee / Insurance Security Bond / e-Bank Guarantee in favour of Mazagon Dock Shipbuilders Limited, Mumbai from the list of Banks approved by SBI / Canara Bank published on MDL website.</p> <p>(c) Performance Security is to be furnished within 25 days after notification of the award of contract and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the supplier, including warranty obligations.</p> <p>(d) Bidders are requested to submit the PSBG only as per the lists of banks (Nationalized/Scheduled Banks excluding the Co-Operative banks) approved by SBI/Canara published on MDL Website, payable at Mumbai. Submission of BG from any other Bank will not be accepted. PSBG shall be on INR 500 Non-Judicial Stamp Paper.</p> <p>(e) Performance Security can also be remitted online through MDL website: https://www.mazagondock.in/OnlinePayment.aspx.</p> <p>Or</p> <p>one can find Online payment tab on MDL website home page as under:</p> <ul style="list-style-type: none"> • Go to www.mazagondock.in • Click on Online payment tab available on home page. • 4 option viz. Career, Tender, Security, Scrap/ Disposal will be available. • Click on the Tender tab and make

the payment online using Debit cards, Credit Cards, Net banking, BHIM/ UPI etc. after filling the required details.

(f) Further, the bidder should specifically mention the details of company name as well as nature of remittance, tender number/order number etc. in the text/narration fields of Bank's NEFT remittance in order to identify the same. The duly filled & signed copy of enclosure is to be submitted to Commercial-P17A.

(g) Where the duration of contract is very long and banks are unwilling to issue BGs for long duration, rolling bank guarantee towards performance security can be obtained where it will be valid for at least one year with claim period of three months within which the same can be extended for further period by amendment.

(h) Performance security on reducing balance can also be submitted when the contract period extends beyond one year. This will be effective on completion of one year and thereafter on six monthly / yearly basis.

(i) Bidder shall indicate their option of PSBG submission i.e. whether rolling or reducing or standard PSBG. In case no option is mentioned then it shall be construed that standard PSBG (Total PSBG value valid till entire period of contract) shall be submitted by bidder.

(j) In cases where the supplier / contractor has not submitted the Performance Security and already commenced supply / services, MDL shall be withholding the Performance security from his bills if any. In such case, interest is to be recovered for the period starting from 26th day of transmission / notification of order/contract by any mode and amount involved at the relevant rate of interest and it will be SBI BPLR plus 2%.

(k) No exemption can be granted to any unit including MSME, SSI units and MDL Registered suppliers.

(m) In case of failure to submit performance security by the supplier within 25 days of transmission / notification of order by any mode, MDL reserves the right forfeit EMD (if available) and MDL reserves the right to

		<p>cancel the order and invoke the risk purchase clause.</p> <p>(n) In the event of a breach of contract / failure to execute the order satisfactorily by the contractor / defects due to poor workmanship leading to non-performance of the Equipment/Item and bidder failure to attend the defects within 45 days of time from date of intimation or as agreed during TNC, the performance security will be forfeited and credited to MDL's account / Bank guarantee will be encashed by MDL. MDL's decision in this regard shall be final and binding on the bidder.</p> <p>(o) Performance Security will be refunded to the contractor without interest, after he duly performs and completes the contract in all respects but not later than 60(sixty) days of completion of all such obligations including the warranty under the contract.</p> <p>(p) In case delivery / completion of all contractual obligations of the supplier, including warranty obligations are likely to be delayed, the validity of the PSBG shall be extended suitably till the completion of delivery / all contractual obligations of the supplier, including warranty obligations on instruction from MDL. In case of non-extension / non-renewal as requested, MDL shall encash the PSBG before expiry of its validity period.</p> <p>(q) In the event of postponing of delivery of deliverables/services or extension of guarantee desired & sought by MDL, the Performance Security has to be extended and its amendment charges shall be borne by MDL.</p>
8	<p>Tender Clause No. 15: PAYMENT TERMS:</p> <p>Clause No 15(c)(i): Payment of 90% of the value of the supplies against delivery and acceptance as may be payable and as reduced by any deductibles and / or the amount leviable towards liquidated damages, if any plus 100% taxes, duties etc. as applicable on production of proof of inspection, receipt and acceptance at MDL between 15 to 20 days.</p> <p>Clause No 15(d): Payment for Service Line items: Payment for work carried out as per PO line</p>	<p>Tender Clause No. 15: PAYMENT TERMS:</p> <p>Clause No 15(c)(i): Payment of 95% of the value of the supplies against delivery and acceptance as may be payable and as reduced by any deductibles and / or the amount leviable towards liquidated damages, if any plus 100% taxes, duties etc. as applicable on production of proof of inspection, receipt and acceptance at MDL within 15 days.</p> <p>Clause No 15(d): Payment for Service Line items: Payment for work carried out as per PO</p>

	<p>item services for installation will be made in the following stages;</p> <ol style="list-style-type: none"> a) On completion of preliminary inspection: 20% b) On completion of Final inspection: 70% c) On completion of Handing over: 10% <p>On completion on above respective activities etc., payment for all kinds of services like STW, HAT, SAT, installation, commissioning assistance, training wherever included in the same order will be admissible for payment between 15 to 20 days against certification by the designated acceptance authority after satisfactory completion of the respective activities/services and submission of the invoice with relevant documents.</p> <p>Clause No 15(d):</p> <p>Training: 100% payment for training will be made between 15 to 20 days. The payment will be released against certification by the designated acceptance authority after satisfactory completion of the training activity and submission of the invoice with relevant documents.</p>	<p>line item services for installation will be made in the following stages;</p> <ol style="list-style-type: none"> a) On completion of preliminary inspection: 20% b) On completion of Final inspection: 70% c) On completion of Handing over: 10% <p>On completion on above respective activities etc., payment for all kinds of services like STW, HAT, SAT, installation, commissioning assistance, training wherever included in the same order will be admissible for payment within 15 days against certification by the designated acceptance authority after satisfactory completion of the respective activities/services and submission of the invoice with relevant documents.</p> <p>Clause No 15(d):</p> <p>Training: 100% payment for training will be made within 15 days. The payment will be released against certification by the designated acceptance authority after satisfactory completion of the training activity and submission of the invoice with relevant documents.</p>
9	<p>Tender Clause No. 22: LOADING CRITERIA: Deviations sought by the bidder in respect of Freight, Insurance, payment terms shall be loaded on the bidder/s quoted prices during price evaluation by MDL. Among the equal bids, bidders with ISO 9000 series accreditation over non-ISO bidders, firstly manufacturers than their authorized dealers will be given preference. The loading criteria that will be adopted are illustrated in detail in a separate enclosure. The loading shall be carried out as under:</p> <ol style="list-style-type: none"> a. Payment Terms: It is desirable that the bidder accepts the Payment terms indicated in the tender. Varied payment terms quoted by bidders as compared to the terms stated in the Tender document shall be normalized by adopting the Prime Lending Rate of State Bank of India plus 2% thereon on the amount (s) at variation and / or for the period (in no. of days) at variation. b. Delivery of the goods: Delivery at MDL/GRSE should be responsibility of the supplier. However, for unavoidable 	<p>Tender Clause No. 22: LOADING CRITERIA: Deviations sought by the bidder shall be loaded on the bidder/s quoted prices during price evaluation by MDL for ranking of bids to judge L1, as under.</p> <ol style="list-style-type: none"> a. Payment Terms: Varied payment terms quoted by bidders as compared to the terms stated in the Tender document shall be normalized by adopting the Basic Prime Lending Rate of State Bank of India plus 2% thereon on the amount (s) at variation and / or for the period (in no. of days) at variation. b. Deleted. c. For the additional delivery period sought by the bidder over the stipulated date of delivery as per Tender, 0.50% per completed week will be loaded to the quoted price. d. For financial evaluation(Ranking), all bids shall be converted to Indian Rupees based on the "Bill for Collection (BC) selling "exchange rate

	<p>reasons, if bids are exclusive of transport and / or insurance, the same will be loaded at the cost to be incurred by MDL/GRSE.</p> <p>c. For the additional delivery period sought by the bidder over the stipulated date of delivery as per Tender, 0.50% per completed week will be loaded to the quoted price.</p> <p>d. Conversion of foreign currency into Indian Rupee shall be made at the selling exchange rate on the date of opening of price bid. If the date of opening of price bid happens to be holiday or non-transaction day, the exchange rate on immediate previous working day will be adopted. These currency conversion rates would be obtained from the website of 'State Bank of India' (SBI) at www.sbi.co.in.</p> <p>e. Deviations sought in respect of rate per week and / or maximum ceiling in respect of liquidated damages shall be loaded to the quoted price. For example, the maximum ceiling towards liquidated damages stipulated in the Tender is 5% and the bidder seeks to limit it to, say 3.50% then the price quoted will be loaded by 1.5%. If the rate of LD per week is 0.50% per week or part thereof as per tender and the bidder seeks it as, say, 0.40% per week or part thereof, the maximum ceiling on LD as per tender will first be equated to weeks (10 weeks in this case) and the rate proposed by the bidder i.e. 0.40% will be multiplied by the so equated maximum period (which works out to 4%) and the quoted price will be loaded accordingly by 1%. Delivery being the essence of the contract, it is desirable if the bidder(s) adhere to the stipulated clause.</p>	<p>on the last deadline for bid submission (Techno-commercial offer). If the last deadline for bid submission happens to be holiday or non-transaction day, the exchange rate on immediate previous working day will be adopted. The rate could be obtained from RBI/SBI rates as available on Internet. These currency conversion rates would be obtained from the website of 'State Bank of India' (SBI) at www.sbi.co.in.</p> <p>e. Deleted.</p>
10	<p>Tender Clause No. 23: RANKING OF BIDS:</p> <p>Clause No a.(ii): The total of basic cost (including Packing, Forwarding, Freight & Insurance), shall be basis for the purpose of comparison of bids. Taxes and duties shall be excluded for ranking the bids.</p>	<p>Tender Clause No. 23: RANKING OF BIDS:</p> <p>Clause No a.(ii): The comparison of the responsive tenders shall be on total outgo on Least Cost Net of Credit Basis (LCNC), for the procurement to be paid to the supplier, including all elements of costs, duties, levies, freight, insurance etc. excluding</p>

		GST (where ITC is available).
11	<p>Tender Clause No. 27</p> <p>FREAK LOW CASE:</p> <p>(a) If the L-1 quote is substantially lower than estimate or NLPP, the placement of order in such cases, results into either non-performance of the vendor or delayed performance or cancellation of orders at the risks and costs at so belated stage that the adverse effect of this has already occurred on project schedule.</p> <p>(b) If the quoted L-1 rate is less than Cost Estimate / NLPP by more than 40% and difference between basic rates of L1 & L2 is more than 30% then such quote is to be treated as freak low quote.</p> <p>(c) In case of freak low quote, meeting may be held with L-1 bidder to ascertain whether the quoted prices are "workable".</p>	<p>Tender Clause No. 27</p> <p>FREAK LOW CASE:</p> <p>(a) If the L-1 quote is substantially lower than estimate or NLPP, the placement of order in such cases, results into either non-performance of the vendor or delayed performance or cancellation of orders at the risks and costs at so belated stage that the adverse effect of this has already occurred on project schedule.</p> <p>(b) If the quoted L-1 rate is less than estimate by more than 40% w.r.t. estimate and if the quoted L-1 rate is less than L2 by more than 30% w.r.t. L2 then such quote is shall be treated as freak low quote.</p> <p>(c) In case of freak low quote, meeting may be held with L-1 bidder to ascertain whether the quoted prices are "workable". The proper justification shall be given by the bidder Freak Low Bid.</p>
12		<p>Additional Tender Clauses:</p> <p>i. If a Bidder quotes NIL charges/ consideration against the tender, the bid shall be treated as unresponsive and will not be considered.</p> <p>ii. Bidders to fill in rates and prices for all items of the Services described in price schedule. Items for which no rate or price is entered by the Bidder will not be paid for by the MDL when executed and shall be deemed covered by the other rates and prices in the price schedule.</p> <p>iii. In case techno-commercially accepted bidder/s does not agree to extend the offer validity, the offers of all techno-commercially accepted bidder/s including the bidder who has not agreed to extend their offer validity shall be opened and proceed further with valid bids. If the bidder who has not agreed to extend their offer validity found to be L1 then his price shall be used as reference price for negotiation purpose as applicable.</p> <p>iv. Tie Breaker: When multiple bidders quote same price for particular item(s)/services under such situation, following action in given sequence</p>

shall be done:

- (a) In case of divisible, 50-50 qty to be given to each.
- (b) In case of non-divisible, supplementary bid to be obtained.
- (c) In case of both divisible and non-divisible, lottery option to be exercised after above options are not conclusive.

v. **Right to Reject any or all Bids:** MDL reserves its right to accept or reject any or all Bids, abandon/ cancel the Tender process, and issue another tender for the same or similar Goods/Services at any time before the award of the contract. It would have no liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for such action(s).

vi. **Conflict of Interest among Bidders/ Agents:** A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of MDL's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- a. they have controlling partner (s) in common; or
- b. they receive or have received any direct or indirect subsidy/ financial stake from any of them; or
- c. they have the same legal representative/agent for purposes of this bid; or
- d. they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or
- e. Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid.

		<p>f. In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorise only one agent/dealer. There can be only one bid from the following:</p> <p>(aa) The principal manufacturer directly or through one Indian agent on his behalf; and</p> <p>(ab) Indian/foreign agent on behalf of only one principal.</p> <p>g. Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid;</p> <p>h. In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business.</p> <p>Note: The undertaking by the bidders for above para (Conflict of Interest among Bidders/ Agents) to be obtained along with Part I bid.</p>
13	Enclosure-1: Standard Terms & conditions (STACS)	This clause stands deleted
14	Enclosure-2: General Terms & Conditions (GT&C)	This clause stands deleted
15	(New Clause in place of STACS & GT&C)	<p>GENERAL CONDITIONS OF CONTRACT (GCC) FOR GOODS AND SERVICES & ACCEPTANCE FORMAT</p> <p>Refer Appendix-1</p>
16	TFE Acceptance Format	Please refer Modified TFE Acceptance Format at Appendix-2
17	<p>Enclosure-3</p> <p>INTEGRITY PACT</p> <p>Section 4 – Sanctions for Violation:</p>	<p>Enclosure-3</p> <p>INTEGRITY PACT: Section 4 – Sanctions for Violation:</p>

	b) The Earnest Money Deposit/ Security Deposit /Performance Bond shall stand forfeited either fully or partially, as decided by the Principal/Buyer, and the Principal/Buyer shall not be required to assign any reason there for.	b) The Earnest Money Deposit/ Security Deposit /Performance Bond shall stand forfeited either fully or partially, as decided by the Principal/Buyer, and the Principal/Buyer shall not be required to assign any reason there for. All bidders note that the word refer in above Para as "Security Deposit" will be considered as "Performance Security" during evaluation of bid.
18	Enclosure-6: Security Deposit Bank Guarantee format (SDBG)	This clause stands deleted
19	Enclosure-7:Performance Bank Guarantee (PBG) format	This clause stands deleted
20	(New format in place of Enclosure 6 & 7)	Performance Security Bank Guarantee (PSBG) format Refer Appendix-3

03. Also, there is change in following clauses in the TSP Revision 2.

Appendix	Srl / Page No.	Amendment / Changes
Appendix - 9	1.48	Shipyards supply items Qty Reduced from 02 to 01.
	6.17	Item changed to shipyard supply
	6.18	Deleted
	6.19	Item changed to shipyard supply & Serial No updated as 6.18
Appendix - 13	Page 69	Paint scheme updated for decks not covered with epoxy deck covering scheme as per Enclosure - 1
Appendix - 14	1	LED BASED AUTO EMERGENCY LANTERN - Qty Increased from 10 to 12
	2	LOOPING IN BASE - Qty Increased from 12 to 18
	3	LOOPING IN BASE 3rd OUTLET CAP - Qty Increased from 12 to 18
	4	DOUBLE POLE SWITCH 6A - Qty Increased from 22 to 30
	6	Description changed from "BULKHEAD FITTING CABIN TYPE" as "LIGHT - BULKHEAD FITTING CABIN TYPE"
	7	DECORATIVE LIGHT - Qty Increased from 4 to 6
	8	LED TUBE LIGHT 24W WITH SEMI MILKY DIFFUSER-PANELLED - Qty Increased from 33 to 37
	9	BUNK LIGHT FOR MESSSES & CABINS (LED -3 WATTS). - Qty Increased from 2 to 3
	12	LED LIGHT, 12W WITH SEMI MILKY DIFFUSER FOR BATH & W/C PANELLED - Qty Reduced from 4 to 3
	13	LED LIGHT 1W WITH SEMI MILKY - PANNELED - Qty Increased from 3 to 4
	New	HCOS 1 Qty added as Srl No. 19
Appendix - 15	Page 73 & 74	Cu/Ni Pipes are deleted from the scope and Qty updated as per Enclosure - 2

Based on the above changes, the TSP Revision 2 is amended to as Revision 3. Bidders are requested to refer TSP Revision 3 for above changes over TSP Revision 2 and quote accordingly. The TSP Revision 3 is appended below.

Paint Scheme: For decks not covered with epoxy deck covering scheme - decks and dadoes of general surfaces in dry compartment. Surfaces preparation – blasting to standard SA 2.5 conforming to Swedish standard.

A. M/S. SIGMA (PPG)

Sr. No.	Description of Paints / Products	No of coats	Per coat DFT	Pattern Number
1	SIGMACOVER 280	1	50	N8010 -P063130
2	SIGMA COVER 630 (GREY)	1	150	N8010 -P063132
3	TOP COAT IN RAL 6028, PINE GREEN - SIGMADUR GLOSS	1	100	N 8010- 720488223

OR

B. M/S. AKZO NOBEL

Sr. No.	Description of Paints / Products	No of coats	Per coat DFT	Pattern Number
1	INTERGARD 269	1	50	N8010 –TB00829
2	INTERGUARD 5600 (GREY)	1	150	N8010- P063132
3	TOP COAT IN RAL 6028, PINE GREEN - INTERTHANE 990	1	100	N 8010- 720488222

OR

C. M/S. JOTUN

Sr. No.	Description of Paints / Products	No of coats	Per coat DFT	Pattern Number
1	INTERGARD 269	1	50	N8010 –TB00829
2	INTERGUARD 5600 (GREY)	1	150	N8010- P063132
3	TOP COAT IN RAL 6028, PINE GREEN - INTERTHANE 990	1	100	N 8010- 720488222

	MAZAGON DOCK SHIPBUILDERS LTD. (A Govt. Of India Undertaking)	DESIGN-OUTFIT	T.S.P. NO.	MT64400002M	
			REV. NO.	3	
	Dockyard Road, Mumbai –400 010.	YARDS 12651-64, 3022-24	DATE	25 Sept 2023	
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Appendix-15

LIST OF PIPES & IT'S FITTINGS

(a) Piping work will be measured in inch meter (i.e. NB of pipe in inches x Length of pipe in Meters) for each type of material. The lengths of Valves, bellows, flanges, strainers, flexible, gauges (pressure, temperature, and level), flow meters, sensors and other fittings including deck/bulkhead fittings will also be considered for evaluating the total pipe length. The approximate quantities shall be as follows:

(b) **Pipes:** Pipes of various sizes with the following material (~~6mm to 65 mm Diameter~~):

1. Carbon steel conforming to ASTM A106 Gr B.
2. Copper pipes to NES 830

(c) **Pipe fittings:**

1. All carbon/Stainless steel pipe fittings as per ANSI B16.11 & ANSI B16.9.
2. Union couplings

(d) **Gaskets:** All gaskets used in joining shall be of asbestos free material conforming to BS7531 for Pressure class PN10 and temperature 80⁰ C.

(e) **Fasteners:** all All fasteners used on board shall be of High tensile bolts with one washer and nut duly galvanized.

Dimensions & other requirements conforms to BS3692

Fasteners threads are NPT.

Pipe supports with clamps (as per NES) duly galvanized

(f) **Piping insulation:** Pipes required to be insulated shall be indicated in the respective Piping arrangement drawing and the same shall be carried out by the supplier. The insulation is carried out to prevent loss of heat from ventilated compartment through pipes. Pipes are to cleaned and degreased prior insulation. The details for pipe insulation is given below:

- | | | |
|-------|-------------------------|--|
| (i) | Insulation Type | : Insulation Cold & hot. |
| (ii) | Material | : Nitrile rubber for cold, Ceramic Fiber |
| (iii) | Thickness | : 19-20mm |
| (iv) | Colour | : White colour preferred |
| (v) | Procedure | : As per the recommendation of material supplier |
| (vi) | Reference specification | : NCD 1433 |

	MAZAGON DOCK SHIPBUILDERS LTD. (A Govt. Of India Undertaking)	DESIGN-OUTFIT	T.S.P. NO.	MT64400002M
		YARDS 12651-64, 3022-24	REV. NO.	3
	Dockyard Road, Mumbai –400 010.	DATE	25 Sept 2023	
		PAGE	74 OF 201	

LIST OF PIPES & IT'S FITTINGS VIP COMPT.

1). Piping/pipe fittings/equipment's within VIP compartments

Supplier scope:

1. Detail design of piping i.e. modelling, 2D drawing generation in Aveva marine
2. Pipes, fittings and accessories, fabrication, pressure testing at shop, installation, pressure testing after installation, insulation wherever applicable.
3. Insulation Material, installation material, fasteners etc. The total quantity of pipe insulation material is **20 Sq.m for Cu**

Sr. No.	Material of pipe	Diameter (Length in meters)										
		10	16	20	25	32	40	50	65	80	100	125
1	Copper Pipes	80	-	10	-	-	-	-	-	-	-	-
2	C.S. Pipes	-	-	-	-	-	3	-	-	-	-	-

Sr. No.	Material of pipe	Union Couplings								
		10	20	25	32	40	50	65	80	
1	Copper Pipes	20	6	-	-	-	-	-	-	-

Sr. No.	Material of pipe	Flanges											
		10	16	20	25	32	40	50	65	80	100	125	150
1	C.S. Pipes	-	-	-	-	-	4	-	-	-	-	-	-

Sr. No.	Valves	Valve			
		10	16	20	40
1	SDSL V/V (GM)	-	-	2	-
2	Ball V/V (GM)	2	-	-	-

Sr. No.	Bulkhead fittings	Bulkhead fittings				
		10	16	20	40	50
1	Screwed	-	-	2	-	-

Sr. No.	Pipe fittings	Reducer					
		100 x 80	50 x 40	65 x 40	65 x 50	20 x 10	25 x 10
1	Copper Pipes	-	-	-	-	2	-

Sr. No.	Material of pipe	T' Piece											
		20X10X20	10X10X10										
1	Copper Pipes	4	12	-	-	-	-	-	-	-	-	-	-

Notes: - All above mentioned quantities are estimated based SHIPYARDS design. Quantities may vary as per supplier design

04. Rest all other terms and conditions of the tender will remain unchanged.

For **MAZAGON DOCK SHIPBUILDERS LTD**

Sagar Shende
M (C-P17A)

Appendix:

Appendix-1: General Conditions of Contract (GCC) For Goods and Services & Acceptance Format.

Appendix-2: TEF Acceptance Format.

Appendix-3: Performance Security Bank Guarantee (PSBG) format

GENERAL CONDITIONS OF CONTRACT (GCC) FOR GOODS AND SERVICES

The word 'Purchaser' refers to MAZAGON DOCK SHIPBUILDERS LIMITED, (MDL), a Company within the meaning of Companies Act, 2013 and it includes its successors or assignees.

The word 'Bidder' (including the term 'tenderer', 'consultant' 'vendor' or 'service provider' in certain contexts) means any legal entity such as firm(s) of Proprietorship / Partnership Firm / Limited Liability Partnership / Private Limited / Limited company / Society registered under Society's Act / Statutory Bodies/ Consortium/ Joint Venture etc. participating in a procurement process.

The word 'Owner' means the person or authority with whom Mazagon Dock Shipbuilders Limited (Purchaser) has contracted to carry out work in relation to which orders are placed by the Purchaser on the Bidder/Supplier/Contractor under this contract for supply or manufacture of certain items and would include Department of Defence Production, Ministry of Defence, Government of India, the Indian Navy, the Coast Guard and any other specified authority.

Unless otherwise indicated specifically by the bidder / contractor in his bid, it shall be construed as his acceptance of all the conditions mentioned in this GCC.

1. **TENETS OF INTERPRETATION** (Applicable for Goods and Services)

Unless where the context requires otherwise, throughout the contract:

- (a) The heading of these conditions shall not affect the interpretation or construction thereof.
- (b) Writing or written includes matter either whole or in part, in digital communications, manuscript, typewritten, lithographed, cyclostyled, photographed, or printed under or over signature or seal or digitally acceptable authentication, as the case may be.
- (c) Words in the singular include the plural and vice-versa.
- (d) Words importing the masculine gender shall be taken to include other genders, and words importing persons shall include any company or association or body of individuals, whether incorporated or not.
- (e) Terms and expression not herein defined shall have the meanings assigned to them in the Contract Act, 1872 (as amended) or the Sale of Goods Act, 1930 (as amended) or the General Clauses Act, 1897 (as amended) or of INCOTERMS, (current edition published by the International Chamber of Commerce, Paris) as the case may be.
- (f) Any reference to 'Goods' shall be deemed to include the incidental Works/ Services also.
- (g) Any generic reference to GCC shall also imply a reference to TEF as well.
- (h) In case of conflict, provisions of TEF shall prevail over those in GCC.
- (i) Any reference to 'Contract' shall be deemed to include all other documents (inter-alia GCC, TEF).
- (j) Any reference to any legal Act, Government Policies or orders shall be deemed to include all amendments to such instruments, from time to time, till date.
- (k) Fall Clause shall be expressly applicable in the case of Rate Contract.

2. **LANGUAGE OF CONTRACT** (Applicable for Goods and Services)

Unless otherwise stipulated in TEF, the contract shall be written in the Official Language or English. All correspondence and other contract documents, which

the parties exchange, shall also be written/ translated accordingly in that language. For purposes of interpretation of the contract, the English documents/ translation shall prevail.

3. **GOVERNING LAWS AND JURISDICTION** (Applicable for Goods and Services)

3.1 **Governing Laws and Jurisdiction**

- (a) This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Laws of India for the time being in force.
- (b) Irrespective of the place of delivery, or the place of performance or the place of payments under the contract, the contract shall be deemed to have been made at the place from which the Purchase Order/Contract/Letter of Intent has been issued. The courts of such a place shall alone have jurisdiction to decide any dispute arising out or in respect of the contract.

3.2 **Changes in Laws and Regulations**

Unless otherwise stipulated in the contract, if after the last deadline for the bid submission (Techno-commercial), any law, regulation, ordinance, order or bye-law having the force of law is enacted, promulgated, abrogated, or changed in India (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/ or the contract Price, then such Delivery Date and/ or Contract Price shall be correspondingly increased or decreased, to the extent that the contractor has thereby been affected in the performance of any of its obligations under the contract. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable.

4. **CONFIDENTIALITY, SECRECY AND IPR RIGHTS** (Applicable for Goods and Services)

(a) **IPR Rights**

All deliverables, outputs, plans, drawings, specifications, designs, reports, and other documents and software submitted by the contractor under this Contract shall become and remain the property of MDL and subject to laws of copyright and must not be shared with third parties or reproduced, whether in whole or part, without MDL's prior written consent. The contractor shall, not later than upon termination or expiration of this Contract, deliver all such documents and software to MDL, together with a detailed inventory thereof. The contractor may retain a copy of such documents and software but shall not use it for any commercial purpose.

(b) **Confidentiality**

All documents, drawings, samples, data, associated correspondence or other information furnished by or on behalf of MDL to the contractor, in connection with the contract, whether such information has been furnished before, during or following completion or termination of the contract, are confidential and shall remain the property of MDL and shall not, without the prior written consent of MDL neither be divulged by the contractor to any third party, nor be used by him for any purpose other than the design, procurement, or other services and work required for the performance of

this Contract. If advised by MDL, all copies of all such information in original shall be returned on completion of the contractor's performance and obligations under this contract.

(c) **Secrecy**

If the Contract declares the subject matter of this Contract as coming under the Official Secrets Act, 1923 or if the contract is marked as "Secret", the contractor shall take all reasonable steps necessary to ensure that all persons employed in any connection with the contract, have acknowledged their responsibilities and penalties for violations under the Official Secrets Act and any regulations framed thereunder.

(d) **Obligations of the contractor**

- (i) Without MDL's prior written consent, the contractor shall not use the information mentioned above except for the sole purpose of performing this contract.
- (ii) The contractor shall treat and mark all information as confidential (or Secret – as the case may) and shall not, without the written consent of MDL, divulge to any person other than the person(s) employed by the contractor in the performance of the contract. Further, any such disclosure to any such employed person shall be made in confidence and only so far as necessary for such performance for this contract.
- (iii) Notwithstanding the above, the contractor may furnish to its holding company or its Subcontractor(s) such documents, data, and other information it receives from MDL to the extent required for performing the contract. In this event, the contractor shall obtain from such holding company/ Subcontractor(s) an undertaking of confidentiality (or secrecy – as the case may be) similar to that imposed on the contractor under the above clauses.
- (iv) The obligation of the contractor under sub-clauses above, however, shall not apply to information that:
 - (aa) The contractor needs to share with the institution(s) participating in the financing of the contract;
 - (ab) now or hereafter is or enters the public domain through no fault of Contractor;
 - (ac) can be proven to have been possessed by the contractor at the time of disclosure and which was not previously obtained, directly or indirectly, from MDL; or
 - (ad) otherwise lawfully becomes available to the contractor from a third party that has no obligation of confidentiality.
- (v) The above provisions shall not in any way modify any undertaking of confidentiality (or Secrecy – as the case may be) given by the contractor before the date of the contract in respect of the contract/ the Tender Document or any part thereof.
- (vi) The provisions of this clause shall survive completion or termination for whatever reason of the contract.

5. **PERMITS, APPROVALS AND LICENSES** (Applicable for Goods and Services)

Whenever the supply of Goods and incidental Services requires that the contractor obtain permits, approvals, and licenses from local public authorities, it shall be the contractor's sole responsibility to obtain these and keep these current and valid. Such requirements may include but not be restricted to export licence or environmental clearance if required. If requested by the contractor, MDL shall make its best effort to assist the contractor in complying with such

requirements in a timely and expeditious manner, without any dilution of the Contractor's responsibility in this regard.

6. **TRANSFER OF TITLE OF GOODS** (Applicable for Goods)

(a) Unless otherwise stated in the contract, notwithstanding any inspection and approval by the Inspecting Officer on the contractor's premises, or any payments made to the contractor, property in the Goods (and resultant rights and liabilities) shall not pass on to MDL until the Goods have been received, inspected, and accepted by the consignee. The Goods and every constituent part thereof, whether in the possession or control of the contractor, his agents or servants or a carrier, or the joint possession of the contractor, his agents or servants and MDL, his agents, or servants, shall remain in every respect at the risk of the contractor, until their actual delivery to a person stipulated in the contract, as the interim consignee for despatch to the consignee. The Contractor shall be responsible for all loss, destruction, damage, or deterioration of or to the Goods from any cause whatsoever while the Goods after approval by the Inspecting Officer are awaiting despatch or delivery or are in the course of transit from the contractor to the consignee or interim consignee, as the case may be. The Contractor shall alone be entitled and responsible for making claims against any carrier in respect of non-delivery, short delivery, mis-delivery, loss, destruction, damage, or deterioration of the Goods entrusted to such carrier by the contractor for transmission to the consignee or the interim consignee as the case may be.

(b) Provided that where, under the terms of the contract, the Goods are required to be delivered to an interim consignee for despatch to the consignee, the Goods shall be at MDL's risk after their delivery to the interim consignee.

7. **EXTENSION OF DELIVERY PERIOD** (Applicable for Goods)

(a) If at any time during the currency of the contract, the contractor encounters conditions hindering timely delivery of the Goods and performance of incidental Works/ Services, he shall promptly inform MDL in writing about the same and its likely duration. He must make a request to MDL for an extension of the delivery schedule. On receiving the contractor's communication, MDL shall examine the situation and, at its discretion, may agree to extend the delivery schedule, with or without liquidated damages and with and without denial clause by issuing an amendment to the contract.

(b) **Conditions for Extension of Delivery Period**

When the period of delivery is extended due to unexcused delay (Note: please ensure that unexcused delay is defined. Otherwise replace "unexcused delay" with the "delays attributable") by the contractor, the amendment extending the delivery period shall, inter alia, be subject to the following conditions:

(i) **Liquidated Damages**

MDL shall recover from the contractor, under the provisions of this clause, liquidated damages on the Goods and incidental Works/ Services, which the contractor has failed to deliver within the delivery period stipulated in the contract.

- (ii) **Denial Clause**
 - (aa) No increases in price on account of any statutory increase in or fresh Imposition of GST, customs duty or on account of any other taxes/ duty/ cess/ levy), leviable in respect of the Goods and incidental Works/ Services stipulated in the said contract which takes place after the original delivery date, shall be admissible on such of the said Goods, as are delivered after the said date; and
 - (ab) Notwithstanding any stipulation in the contract for an increase in price on any other ground, including price variation clause or foreign exchange rate variation, or any other variation clause, no such increase after the original delivery date shall be admissible on such goods delivered after the said date.
 - (ac) Nevertheless, MDL shall be entitled to the benefit of any decrease in price on account of reduction in or remission of GST, customs duty or on account of any other Tax or duty or any other ground as stipulated in the price variation clause or foreign exchange rate variation or any other variation clause which takes place after the expiry of the original delivery date.

(c) **Liquidated damages**

If the contractor fails to deliver any or all of the Goods or fails to perform the incidental Works/ Services (e.g. installation, commissioning or operator training) within the time frame(s) incorporated in the contract, MDL shall, without prejudice to other rights and remedies available to MDL under the contract, deduct from the contract price, as agreed liquidated damages, but not as a penalty, a sum equivalent to the 0.5 % percent (excluding taxes) of the delivered price of the delayed Goods and/ or incidental Works/ Services for each week of delay or part thereof until actual delivery or performance, subject to a maximum deduction of the 5% of the delayed Goods' or incidental Works/ Services' contract price(s). Besides liquidated damages during such a delay, the denial clause shall also apply. Any failure or delay by any sub-contractor, though their employment may have been sanctioned shall not be admitted as a ground for any extension of time or for exempting the contractor from liability for any such loss or damage as aforesaid.

8. **DEFAULTS, BREACHES & TERMINATION OF CONTRACT** (Applicable for Goods and Services)

Termination due to Breach, Default, and Insolvency

(a) **Defaults and Breach of Contract**

In case the contractor undergoes insolvency or receivership; neglects or defaults, or expresses inability or disinclination to honour his obligations relating to the performance of the contract or ethical standards or any other obligation that substantively affects MDL's rights and benefits under the contract, it shall be treated as a breach of Contract. Such defaults shall include inter-alia:

(i) **Default in Performance and Obligations**

If the contractor fails to deliver any or all of the Goods or fails to perform any other contractual obligations (including Code of Integrity or obligation to maintain eligibility and Qualifications based on which contract was awarded) within the period stipulated in the contract or within any extension thereof granted by MDL.

(ii) **Insolvency**

If the contractor is wound up or ceases to otherwise trade or is unable to pay its debts as and when they fall due or is otherwise subject to any insolvency procedure.

- (iii) If a receiver or similar official is appointed overall or any of the assets of the contractor or a petition is presented for its winding up or it entered into a composition with its creditors;

(b) **Notice for Default**

As soon as a breach of contract is noticed, a show-cause 'Notice of Default' shall be issued to the contractor, giving two weeks' notice, reserving the right to invoke contractual remedies. After such a show-cause notice, all payments to the contractor would be temporarily withheld to safeguard needed recoveries that may become due on invoking contractual remedies.

(c) **Terminations for Default**

- (i) Notice for Termination for Default: In the event of unsatisfactory resolution of 'Notice of Default' within two weeks of its issue as per sub-clause above, MDL if so decided, shall by written Notice of Termination for Default sent to the contractor, terminate the contract in whole or in part, without compensation to the contractor.
- (ii) Such termination shall not prejudice or affect the rights and remedies, including under sub-clause below, which have accrued and/ or shall accrue to MDL after that.
- (iii) Unless otherwise instructed by MDL, the contractor shall continue to perform the contract to the extent not terminated. All warranty obligations, if any, shall continue to survive despite the termination.

(d) **Contractual Remedies for Breaches/Defaults or Termination for Default**

If there is an unsatisfactory resolution within this period, MDL shall take one; or more of the following contractual remedies.

- (i) Temporary withhold payments due to the contractor till recoveries due to invocation of other contractual remedies are complete.
- (ii) Call back any loaned property or advances of payment, if any, with the levy of interest at the prevailing rate (MIBID - Mumbai Interbank Bid Rate).
- (iii) Recover liquidated damages and invoke denial clause for delays.
- (iv) Encash and/ or Forfeit performance or other contractual securities.
- (v) Prefer claims against insurances, if any.
- (vi) Terminate contract for default, fully or partially including its right for Risk-and-Cost Procurement as per following sub-clause.

(vii) **Risk and Cost Procurement**

In addition to termination for default, MDL shall be entitled, and it shall be lawful on his part, to procure Goods same to those terminated, with such terms and conditions and in such manner as it deems fit at the "Risk and Cost" of the contractor. Such 'Risk and Cost Procurement' must be initiated (viz. AIP/PR/Tender) within six months from the termination of Contract. The Contractor shall be liable for any loss which MDL may sustain on that account provided the procurement, or, if there is an agreement to procure, such agreement is made. The Contractor shall not be entitled to any gain on such procurement, and the manner and method of such procurement shall be in the entire

discretion of MDL. (Note: deleted being contrary to law). (Note: No contractor would give security after the termination of the contract)

Note: Regarding the Goods which are not readily available in the market and where procurement difficulties are experienced, the period for making risk procurement shall be nine months instead of six months provided above.

(viii) Initiate legal proceedings in a for the recovery of the losses and damages, not addressable by the above means.

9. **CLOSURE OF CONTRACT** (Applicable for Goods and Services)

The contract shall stand closed upon successful performance of all obligations by the firm, including completion of warrantee obligations and final payment. If no claim is received within 03 years from last supplies/services, then no claim shall be entertained thereafter.

10. **COMMUNICATION AND LANGUAGE FOR DOCUMENTATION** (Applicable for Goods and Services)

Any letter, facsimile message, e-mail intimation or notice sent to the Bidder/Supplier/ Contractor at the last known address mentioned in the offer / order shall be deemed to be valid communication for the purpose of the order/contract. Unless stated otherwise by the purchaser, Language for communication and all documentation shall be same, which the Purchaser has used, in the tender enquiry.

11. **PRESERVATION AND MAINTENANCE** (Applicable for Goods)

Should any material require any preservation till its final installation/fitment, the detailed procedure (Long term and short term) for the same as also the time of interval after which the state of preservation needs to be reviewed is to be stated by the Bidder/Supplier/Contractor.

Further the de-preservation prior to the material/equipment being commissioned and the maintenance procedure together with its periodicity is also to be indicated by the Bidder / Supplier / Contractor.

12. **FREIGHT AND INSURANCE.** (Applicable for Goods)

(a) **For Indigenous Bidders**

Bidder shall quote for 'Door Delivery to Purchaser,' all charges towards door delivery viz. transport, Insurance charges etc. shall be borne by the Bidder / Supplier / Contractor.

(b) **For Foreign Bidders**

For overseas bidders, bidder shall agree for supplying the goods on CIF/CIP, Incoterm basis. The Bidder / Supplier / Contractor shall immediately on despatch of the items, inform all relevant details of despatch such as Order Number, Bill of Lading/AWB Number marked as Freight Paid, Insurance policy/document, number of packages, value of consignment, invoice number etc. as per contractual terms.

13. **DEMURRAGE** (Applicable for Goods)

Storage, and Demurrage, fines etc. charges will be payable by the Bidder / Supplier / Contractor for all shipments in case of improper documentation, wrong

declarations, error in weight measurements, packing list, invoice, late receipt of documents etc. i.e. for reasons which are not attributable to the purchaser.

14. **CANCELLATION OF TENDER** (Applicable for Goods and Services)
The Purchaser reserves the right to cancel/withdraw the tender in toto or part and or award the contract / order in full or part without assigning any reason whatsoever and without thereby incurring any liability to the affected Bidder or Bidders or any obligations to inform the affected Bidder or Bidders of the grounds for MDL action.
15. **PURCHASER'S PROPERTY.** (Applicable for Goods and Services)
All property (such as materials, drawings, documents etc.) issued by the Purchaser or any other individual or firm on behalf of the Purchaser in connection with the contract shall remain confidential, being the property of the Purchaser and the Bidder/Supplier/Contractor shall undertake to return all such property so issued and will be responsible for any or all loss thereof and damage thereto resulting from whatever causes and shall reimburse the Purchaser the full amount of loss and damage.
On completion of work in any compartment / location of the purchaser's premises, the Bidder/Supplier/Contractor must ensure that the place is left in a reasonably clean state and all scrap is transferred to nearby scrap-bins.
16. **REJECTION OF MATERIALS** (Applicable for Goods)
If the Goods, or any portion thereof of the equipment found defective / rejected, the Supplier / Contractor shall collect the same from MDL's Stores, all incidental charges being borne by him (inclusive of Custom duty, if payable), within 30 days from the date of intimation to the Supplier / Contractor of such rejection. If not collected within 30 days, MDL shall recover storage charges @ 1 % per month maximum up to 5% of cost of rejected items. MDL reserves the right to dispose off the rejected items at the end of a total period of six months in any manner to the best advantage to MDL and recover consequential damages maximum up to order value.
17. **RECOVERY-ADJUSTMENT PROVISIONS** (Applicable for Goods and Services)
Payment made under one order shall not be assigned or adjusted to any other order except to the extent agreed upon in writing by the Purchaser. During the currency of the contract, if any sum of money is payable by the Bidder / Supplier / Contractor the same shall be deducted from any sum then due or thereafter may become due to the Bidder / Supplier / Contractor under the contract or any other contract with the Purchaser.
18. **INDEMNIFICATION** (Applicable for Goods and Services)
The Bidder / Supplier / Contractor, his employees, licences, agents or Sub-Supplier / Sub-contractor, while on site of the Purchaser for the purpose of this contract, indemnifies the Purchaser against direct damage and/or injury to the property and/or the person of the Purchaser or that of Purchaser's employees, agents, Sub-Contractors / Suppliers occurring and to the extent caused by the negligence of the Bidder / Supplier / Contractor, his employees, licensees, agents or Sub-contractor by making good such damages to the property, or compensating personal injury and the total liability for such damages or injury shall be as mutually discussed and agreed to.

19. **TRANSFER OF SUPPLIERS / CONTRACTOR'S RIGHTS**(Applicable for Goods and Services)
The Bidder / Supplier / Contractor shall not either wholly or partly sell, transfer, assign or otherwise dispose of the rights, liabilities and obligations under the contract between him and the Purchaser without prior consent of the Purchaser in writing.
20. **SUBCONTRACT AND RIGHT OF PURCHASER** (Applicable for Goods and Services)
The Bidder / Supplier / Contractor under no circumstances undertake or subcontract any work / contract from or to any other Sub-contractor without prior written approval of the Competent Authority of Purchaser. In the event it is found that such practice has been indulged in, the contract is liable to be terminated without notice and the Bidder / Supplier / Contractor is debarred all from future tender enquiries / work orders. However, in no circumstances a contractor is permitted to subcontract any part of the contract to the bidders who had quoted for the concerned tender.
21. **PATENT RIGHTS** (Applicable for Goods and Services)
The Bidder / Supplier / Contractor shall hold harmless and keep the Purchaser indemnified against all claims arising as a result of infringement of any patent / copy rights on account of manufacture, sale or use of articles covered by the order.
22. **AGENTS/AGENCY COMMISSION** (Applicable for Goods and Services)
The seller confirms and declares to the buyer that the seller is the original manufacturer or authorized distributor/stockiest of original manufacturer of the goods referred to in this contract and has not engaged any individual or firm, whether Indian or foreign whatsoever, to intercede, facilitate or in any way to recommended to the Buyer or any of its functionaries, whether officially or unofficially , to the award of the Contract / Purchase order to the Seller; nor has any amount been paid, promised or intended to be paid to any such individual or firm in respect of any such intercession, facilitation or recommendation.
The Seller agrees that if it is established at any time to the satisfaction of the Buyer that the present declaration is in any way incorrect or if at a later stage it is discovered by the Buyer that the Seller has engaged any such individual/firm, and paid or intended to pay any amount, gift, reward , fees, commission or consideration to such person, party, firm or institution , whether before or after the signing of this Contract / Purchase order, the Seller will be liable to refund that amount to the Buyer.
The seller will also be debarred from participation in any RFQ/Tender for new projects/program with Buyer for a minimum period of five years.
The buyer will also have a right to consider cancellation of the Contract either wholly or in part, without any entitlement or compensation to the Seller who shall in such event be liable to refund all payments made by the buyer in terms of the Contract along with interest at the rate of 2% per annum or 6% whichever is higher above LIBOR (London Inter Bank Offer Rate) (for foreign vendors) and base rate of SBI plus 2% (for Indian Vendors).
The Buyer will also have the right to recover any such amount from any contracts concluded earlier with Buyer.

23. **USE OF UNDUE INFLUENCE / CORRUPT PRACTICES** (Applicable for Goods and Services) The Bidder / Supplier / Contractor undertakes that he has not used corrupt practices or used any undue influence which is not admissible as per Indian law to obtain contract/order or in doing any business with the purchaser. If found that Bidder / Supplier / Contractor is involved in such wrong practices, then Purchaser is entitled to cancel the contract/s and all or any other contracts and then to recover from the Bidder / Supplier / Contractor the amounts of any loss arising from such contracts' cancellation, including but not limited to imposition of penal damages, forfeiture of Performance security, encashment of the Bank Guarantee and refund of the amounts paid by the Purchaser.
24. **IMMUNITY OF GOVERNMENT OF INDIA CLAUSE**(Applicable for Goods and Services)
It is expressly understood and agreed by and between M/s. (Bidder / Supplier / Contractor) and Mazagon Dock Shipbuilders Limited, Dockyard Road, Mumbai - 400 010 (MDL) is entering into this Agreement solely on its own behalf and not on the behalf of any person or entity. In particular, it is expressly understood and agreed that the Government of India is not a party to this Agreement and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that MDL is an independent legal entity with power and authority to enter into contracts solely in its own behalf under the applicable of Laws of India and general principles of Contract Law. The (Bidder / Supplier / Contractor) expressly agrees, acknowledges and understands that MDL is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions and commissions, breaches or other wrongs arising out of the contract. Accordingly, (Bidder / Supplier / Contractor) hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this contract and covenants not to sue Government of India in any manner, claim, cause of action or thing whatsoever arising of or under this Agreement.
25. **EXPORT LICENCE** (Applicable for Goods and Services)
The export licenses that may be required for delivery of the various items/equipment to MDL shall be arranged by the Bidder / Supplier / Contractor from the concerned authorities in their country without any time and cost implications on the Purchaser.
26. **BANNED OR DE-LISTED CONTRACTORS / SUPPLIERS**(Applicable for Goods and Services)
The Bidder / Supplier / Contractor declares that they being Proprietors / Directors / Partners have not been any time individually or collectively blacklisted or banned or de-listed by any Government or quasi Government agencies or PSUs. If a bidder's entities as stated above have been blacklisted or banned or de-listed by any Government or quasi Government agencies or PSUs, this fact must be clearly stated and it may not necessarily be a cause for disqualifying him.
27. **DUTY OF PERSONNEL OF SUPPLIER/CONTRACTOR** (Applicable for Goods and Services)

MDL being a Defence Public Sector Undertaking, Bidder / Supplier / Contractor undertakes that their personnel deployed in connection with the entrusted work will not indulge in any activities other than the duties assigned to them.

28. **DISPUTE RESOLUTION MECHANISM AND ARBITRATION** (Applicable for Goods and Services)

(a) **Dispute resolution mechanism(DRM)**

- (i) Any dispute/differences between the parties arising out of and in connection with the contract shall be settled amicably by mutual negotiations at HoS/HoD level.
- (ii) In case of non-settlement by (i) above, if at any time, before, during or after the contract period any unsettled claim, dispute or difference arose between the parties, upon or in relation to or in connection with or in any way touching or concerning this tender/agreement/order/contract, the same shall be referred to the concerned Functional Director.
The Functional Director shall then nominate an Executive of the rank of General Manager whom he thinks fit and competent or a Committee of Executives who/which shall then scrutinise the claims/disputes that have been referred to the concerned functional Director and make efforts for amicable settlements by mutual discussions/negotiations.
- (iii) In case no amicable settlement is arrived by (ii) above within a period of three months, then the contractor shall approach Public Grievance Cell and address the disputes as per the provisions made under the relevant clause of the contract.
- (iv) In case the issues/disputes do not get settled within a period of six months from the date of submission of the dispute to the Grievance Cell, then the contractor may invoke Arbitration Clause of the contract.

(b) **Arbitration** (Applicable for Goods and Services)

Unresolved disputes/differences, if any, shall then be settled by Arbitration. The Arbitration proceedings shall be conducted at Mumbai, India, in English Language, under the Arbitration and Conciliation Act, 1996 as amended from time to time and the rules thereunder.

MDL prefers to have arbitration through Institutes such as Indian Council of Arbitration (ICA)/ICA-DR, Mumbai Centre for International Arbitration, International Chamber of Commerce (ICC), Singapore International Arbitration Centre (SIAC) with the mutual consent of the parties.

In case of unresolved difference/dispute between the Purchaser and Supplier, being Central Public Sector Enterprises/Central Govt. departments, the disputes shall be resolved firstly through mutual discussion or through the empowered agencies of the Govt. or through arbitration by reference by either party to the department of Public Enterprises, as per extant guidelines. If disputes/differences remain unresolved/unexecuted, the same shall be referred first to the Cabinet Secretariat and then, if necessary to the PMO.

Any changes to arbitration clause must be vetted by HOD (Legal) before incorporation in contract/PO.

29. **JURISDICTION OF COURTS** (Applicable for Goods and Services)

All contracts shall be deemed to have been wholly made in Mumbai and all claims there under are payable in Mumbai City and it is the distinct condition of the order that no suit or action for the purpose of enforcing any claim in respect of

the order shall be instituted in any Court other than that situated in Mumbai City, Maharashtra State, India i.e. courts in Mumbai shall alone have jurisdiction to decide upon any dispute arising out of or in respect of the contract.

30. **CONTRACT LABOUR (REGULATION AND ABOLITION) ACT 1970**(Applicable for Services)

Contractor / Bidder shall obtain licence under Section 12 and 13 of the Contract Labour (Regulation and Abolition) Act, 1970 and rules made there under and the same should be kept valid at least until the expiry of contract with Purchaser. The registration and Licence under the Contract Labour (Regulation and Abolition) Act 1970 shall be renewed in time every year and if work continues for more than a year, a copy of the Licence is produced as and when demanded by the concerned authorities of Purchaser.

The Contractor / Bidder shall carryout his obligations and duties under the Contract Labour (Regulation and Abolition) Act, 1970 and the rules framed there under.

In the event any employee/s of Contractor / Bidder is advised by the concerned Department to deploy their employees for job during weekly-off, Sundays and holidays, the Contractor / Bidder must inform through Concerned Department the name/s of the employee/s in the prescribed format to CISF / Security and to the concerned Divisional Personnel by mentioning specifically 'Compensatory - Off', before 3 days from the date actual payment.

31. **MINIMUM WAGES ACT** (Applicable for Services)

The Contractor / Bidder shall pay to his employees not less than the minimum wages and allowances applicable to the Engineering Industry as notified from time to time by the Central Government or the State Government whichever is higher under the Minimum Wages Act. Contractor / Bidder shall be responsible for timely payment of wages of all his employees engaged in the Purchaser's Yard, not less than the prescribed minimum wages in each case and without any deductions of any kind, except as specified by Government or permissible under the Payment of Wages Act.

The Contractor / Bidder must settle all the pending dues of the employees i.e. arrears of wages, proportionate leave wages, proportionate bonus payment, etc. Before winding up the site, the Contractor / Bidder shall pay all terminal dues to his employees such as Notice pay, Gratuity, Retrenchment compensation, etc.

32. **BONUS ACT** (Applicable for Services)

The Contractor / Bidder shall pay to his eligible employees a Statutory Bonus as per 'Payment of Bonus Act' at the rate prescribed by the Statutory Authorities from time to time.

33. **FACTORIES ACT** (Applicable for Services)

The Contractor / Bidder shall observe all applicable Rules and Regulations stipulated under Factories Act applicable to contract labour.

The Contractor / Bidder shall maintain a separate register prescribed under the Act and pay Privilege Leave wages to all eligible employees.

On completion of execution of the contract and before winding up, the Contractor / Bidder shall pay proportionate Privilege Leave wages to all eligible employees.

34. **EMPLOYEES' PROVIDENT FUNDS AND MISCELLANEOUS PROVISIONS ACT, 1952** (Applicable for Services)

The Contractor / Bidder, where applicable, shall cover his employees deployed in the Purchaser's Yard

- (a) under the Employees' Provident Funds and Miscellaneous Act, 1952,
- (b) under the Family Pension Scheme, and
- (c) under the Employees' Deposit Linked Insurance Scheme and pay the contributions both in respect of his employees and his own. He shall submit all the necessary returns and other particulars periodically as prescribed under the said Act. Contractor / Bidder shall cover from the first day working all his contract labour on MDL jobs by filling requisite returns to concerned Statutory authorities and obtaining Code Numbers / Account Numbers. Contractor / Bidder shall remit employees' and employers' contributions directly to the concerned authorities along with Inspection and Administrative Charges as per relevant provisions of the concerned Acts and Schemes made there under within 15 days from the close of every month. The Contractor / Bidder must submit copies of P. F. dues payment challans, copy of Form No. 12 (A), copy of form No. 6 (A) (Annually) and copies of Muster Roll of their workmen every month to Corporate Personnel Department before renewal of passes for entry into the yard. The Contractor / Bidder must also attend to P. F. Inspections by concerned authorities and submit copy of the Inspection Report.

The Contractor / Bidder through his own P. F. code number shall fill in P. F. / Pension settlement forms of all the employees engaged in Purchaser's Yard, well in advance of last working day and forwards the said settlement forms to the respective P. F. Commissioner's office for settlement. Contractors who are yet to obtain PF code shall apply for Code nos to PF Commissioners Office and furnish copies of the same to Corporate Personnel Department. Purchaser shall recover PF dues from the contractors running bills till such time the PF Code no is obtained.

The Contractor / Bidder may contact Corporate Personnel Department for the purpose to seek any / all clarification / necessary advice for completion of procedural work such as filling labour challans, E. S. I., P. F. - declaration forms, covering their labour under Group Insurance Policy, etc. An Administrative charge @ Rs. 10/- per employee per month for such consultancy will be recovered from all the contractors from the bills of the respective contracts

35. **EMPLOYEES' STATE INSURANCE ACT** (Applicable for Services)

The Contractor / Bidder should also cover all the eligible contract labourers working on MDL jobs, under the Employees' State Insurance Act and Scheme by furnishing necessary returns to appropriate authority and pay both employees' and employers' contributions in respect of these employees to the concerned authorities within 20 days from the close of every month. The contractor shall produce copy of R. D. F. duly acknowledged by ESI local office for confirmation that the workmen are covered under ESI Act and Scheme.

Contractor / Bidder should produce proof of such remittances to Corporate Personnel Department of MDL along with full details of contributions etc. within 25 days from the close of month. He shall also give an undertaking that he will not engage any one on our work who is not duly covered under the said Act and Scheme. The contract employees who are out of coverage of ESI Act and Scheme should be covered under Group Insurance Policy linked with workman compensation Act. Those Bidders / contractors do not have their ESI Code No.;

they should submit documentary evidence of application for obtaining ESI Code no to Corporate Personnel Department.

36. **SAFETY**(Applicable for Goods & Services)

The Contractor / Bidder must observe all safety precautions in connection with the work to be performed by him, his agents or labourers. In the event of any accident happening in our yard resulting in loss of lives or otherwise damaging any part of the property, the contractor shall be required to make good the loss to the Company and shall be responsible for all consequences that follow from the loss and / or injuries to the persons involved in such accidents. The standard of safety to be observed in the Company shall be decided by the Executive-in-Charge Safety, or any Executive appointed for the purpose before the commencement of work in the yard. It will be essential for contractor to ascertain the standard precautions which contractor is required to observe in discharging his work as per the standards prevalent in MDL. The decision of MDL in matters concerning Safety shall be final and binding on the contractor.

The Contractor / Bidder shall be required to provide his workmen with Boiler Suits of any suitable colour other than blue or white, with the Name of the Contractor in prominent letters on the boiler suits along with personal protection gears like safety shoes, hand gloves etc. workmen of the Contractor / Bidder must wear throughout their working while in the premises of MDL. Contractor's workmen working without safety gears are to be disallowed for work.

37. **POLICE VERIFICATION OF EMPLOYEES** (Applicable for Services)

Contractor / Bidder shall have to produce and submit to the Chief Security Executive of Purchaser, verification through Mumbai Police of Character and Antecedents of their employees / workers for while working on ships under construction in Purchaser's Yards, for working onboard ships under modernisation / refit / repairs at Mumbai ports / Naval Dockyard. Entry passes will not be issued in the absence of Police Verification Report and employees without Police Verification shall not be employed by them in Purchaser's Yard / Mumbai ports / Naval Dockyard and any lapse on the part of Contractor / Bidder shall be viewed seriously as per applicable laws of the land. Employment of any Foreign National during the contract period would be permitted with prior permission of Purchaser.

38. **FORCE MAJEURE**(Applicable for Goods and Services)

If at any time during the execution of the goods / service order, the performance in whole or in part by either Purchaser or and by the Bidder(s) / Supplier(s) / Contractor(s) is / are delayed by any reason of force majeure situations such as acts of civil war, civil commotion, sabotage, hostilities, war, fires, explosions, epidemics, natural calamities like floods, earthquakes, volcanoes, storms, acts of God and laws of respective governments or any other causes beyond the control of either parties, hereinafter referred to as "events", provided notice of the occurrence of such event/s is / are communicated by either party, to the other party within 21 days from the date of occurrence thereof, neither party shall by reason such events be entitled to terminate the contract nor shall either party have any claim for damages against the other in respect of such non-performance and or delay in performance of the contract / order. Executions on either side shall be resumed as soon as practicable after such event has come to an end or ceased to exist and the decision of Purchaser as to whether activities can resume or not, shall be conclusive and final. Occurrence of the events to be

certified by Chamber of Commerce / Indian High Commission or Embassies / Government in that Country.

The performance in whole or in part under the captioned tender / contract is prevented or delayed by reason of any such event for a period exceeding sixty days either party may at its option terminate the contract / further processing of the tender. The relative obligations of both the parties remain suspended during the actual period of force majeure.

The Purchaser may extend the delivery schedule as mutually agreed, on receipt of written communication from the Bidder / Supplier / Contractor regarding occurrence of 'Force Majeure' conditions, but not exceeding six months from the scheduled delivery date. If the 'Force Majeure' conditions extend beyond this period, the Purchaser shall have the right to cancel the order without any financial implication to the Purchaser or on terms mutually agreed to.

**GENERAL CONDITIONS OF CONTRACT (GCC)
ACCEPTANCE FORMAT**

Tender Enquiry No: 1700000464

**Item: Procurement of Modular Accommodation
(VIP COMPARTMENT) for P17A**



माझगाव डॉक शिपबिल्डर्स लिमिटेड

(पूर्व नाम माझगांव डॉक लिमिटेड)
CIN : U35100MH1934GOI002079
(रक्षा मंत्रालय, भारत सरकार का उपक्रम)
राष्ट्र के पोत निर्माता


Bidder's Name:

Sr No.	Description	Acceptance/ Deviation	Remarks (in case of Deviation)
1	TENETS OF INTERPRETATION		
2	LANGUAGE OF CONTRACT		
3	GOVERNING LAWS AND JURISDICTION		
4	CONFIDENTIALITY, SECRECY AND IPR RIGHTS		
5	PERMITS, APPROVALS AND LICENSES		
6	TRANSFER OF TITLE OF GOODS		
7	EXTENSION OF DELIVERY PERIOD		
8	DEFAULTS, BREACHES & TERMINATION OF CONTRACT		
9	CLOSURE OF CONTRACT		
10	COMMUNICATION AND LANGUAGE FOR DOCUMENTATION		
11	PRESERVATION AND MAINTENANCE		
12	FREIGHT AND INSURANCE		
13	DEMURRAGE		
14	CANCELLATION OF TENDER		
15	PURCHASER'S PROPERTY		
16	REJECTION OF MATERIALS		
17	RECOVERY-ADJUSTMENT PROVISIONS		
18	INDEMNIFICATION		
19	TRANSFER OF SUPPLIERS / CONTRACTOR'S RIGHTS		

20	SUBCONTRACT AND RIGHT OF PURCHASER		
21	PATENT RIGHTS		
22	AGENTS/AGENCY COMMISSION		
23	USE OF UNDUE INFLUENCE / CORRUPT PRACTICES		
24	IMMUNITY OF GOVERNMENT OF INDIA CLAUSE		
25	EXPORT LICENCE		
26	BANNED OR DE-LISTED CONTRACTORS / SUPPLIERS		
27	DUTY OF PERSONNEL OF SUPPLIER/CONTRACTOR		
28	DISPUTE RESOLUTION MECHANISM AND ARBITRATION		
29	JURISDICTION OF COURTS		
30	CONTRACT LABOUR (REGULATION AND ABOLITION) ACT 1970		
31	MINIMUM WAGES ACT		
32	BONUS ACT		
33	FACTORIES ACT		
34	EMPLOYEES' PROVIDENT FUNDS AND MISCELLANEOUS PROVISIONS ACT, 1952		
35	EMPLOYEES' STATE INSURANCE ACT		
36	SAFETY		
37	POLICE VERIFICATION OF EMPLOYEES		
38	FORCE MAJEURE		

Note:

- 1. Bidders are requested to resolve all the tender related queries 7 days prior to tender closing date. No queries shall be entertained after this period.**
- 2. Any field of acceptance/ deviation column left blank shall be construed as accepted by bidder.**

TENDER ENQUIRY ACCEPTANCE FORMAT			
Tender Enquiry No: 1700000464			
Item: Procurement of Modular Accommodation (VIP COMPARTMENT) for P17A		 <p>माझगाव डॉक शिपचिल्लर्स लिमिटेड (पूर्व नाम माझगांव डॉक लिमिटेड) CIN : U35100MH1934GOI002079 (रक्षा मंत्रालय, भारत सरकार का उपक्रम) राष्ट्र के पोत निर्माता</p>	
Bidder's Name:			
Sr No.	Description	Acceptance/ Deviation	Remarks (in case of Deviation)
1	PREAMBLE		
2	DESCRIPTION & SCOPE OF WORK		
3	PRE-QUALIFICATION CRITERIA		
4	EARNEST MONEY DEPOSIT (EMD) / BID BOND		
5	VALIDITY PERIOD OF OFFER		
6	DELIVERY PERIOD/COMPLETION SCHEDULE		
7	BID REJECTION CRITERIA		
8	SUBMISSION OF OFFER IN TWO BID SYSTEM		
9	BID MODIFICATION		
10	SECURITY DEPOSIT(SD)	Deleted	
10A	PERFORMANCE SECURITY		
11	WARRANTY/GUARANTEE		
12	PERFORMANCE-BANK GUARANTEE (PBG)	Deleted	
13	PRICING		
14	TAXES & DUTIES		
15	PAYMENT TERMS		
16	PAYMENT MODE		
17	EXCHANGE RATE VARIATION (ERV)		
18	MODE OF DISPATCH		
29	CONSIGNEE		
20	INSPECTION		
21	LIQUIDATED DAMAGES (LD)		
22	LOADING CRITERIA		

23	RANKING OF BIDS		
24	PUBLIC PROCUREMENT POLICY (Preference To Make In India) ORDER 2017		
25	INTEGRITY PACT (IP)		
26	INDEPENDENT EXTERNAL MONITORS (IEM):		
27	FREAK LOW CASE		
28	OPTION CLAUSE		
29	BOOK EXAMINATION CLAUSE		
30	PROGRESS MONITORING & REVIEW MECHANISM		
31	HINDRANCE REGISTER		
32	PUBLIC GRIEVANCE CELL		
33	LAND BORDER		
34	REGISTRATION ON GOVERNMENT E-MARKETPLACE (GEM) PORTAL		
35	ADDITIONAL INSTRUCTIONS		
36	E-PORTAL AND E-TENDER GUIDANCE		
37	CONTACT DETAILS FOR QUERIES		
39	Additional Terms & Conditions		

Note:

1. Bidders are requested to resolve all the tender related queries 07 days prior to tender closing date. No queries shall be entertained after this period.

2. Any field of acceptance/ deviation column left blank shall be construed as accepted by bidder.

PROFORMA BANK GUARANTEE FOR PERFORMANCE SECURITY

(ILLUSTRATIVE FORMAT)

(On Non-Judicial stamp paper of value Rs. 500/-. However, the value of stamp paper to be confirmed from Legal Department, MDL.)

IN CONSIDERATION OF MAZAGON DOCK SHIPBUILDERS LIMITED, a company incorporated under the Companies Act 1956 and having its registered office at Dockyard Road, Mumbai 400010 (hereinafter referred to as the "the Purchaser" which expression shall, unless it be repugnant or contrary to the subject or context thereof, be deemed to mean and include its successors and assigns) having placed an order on Messers a partnership firm/sole proprietor business/a company registered under the Companies Act, 1956 having its office at(hereinafter called " the Contractor/ Supplier" which expression shall, unless it be repugnant or contrary to the subject or context thereof, be deemed to mean and include its successors and assigns) vide order No..... dated..... (hereinafter called "the order" which expression shall include any amendments/alterations to "the order" issued by "the Purchaser") for the supply , delivery at site, installation and commissioning of certain equipment, item/services/civil works etc. as stated in the said Order and the Purchaser having agreed with the Contractor/Supplier to accept a Bank Guarantee in lieu of Performance Security payable under the said order for the fulfillment and performance of the said order, We, Bank having office at (hereinafter referred to as "the Bank" which expression shall include its successors and assigns) hereby agree to pay to the Purchaser without any demur on first demand an amount not exceeding Rs..... (Rupees.....only) being 5% (10% in case of Capital Procurement) of the order value against any loss or damage, costs, charges and expenses caused to or suffered by the Purchaser by reason of non performance and non-fulfillment or for any breach on the part of the Contractor / Supplier of any of the terms and conditions of the said order.

2. We, Bank further agree that the Purchaser shall be sole judge whether the said Contractor/Supplier has failed to perform or fulfil the said order in terms thereof or committed breach of any terms and conditions of the order and the extent of loss, damage, cost, charges and expenses suffered or incurred or would be suffered or incurred by the Purchaser on account thereof and we waive in the favour of the Purchaser all the rights and defences to which we as guarantors may be entitled to.

3. We, Bank further agree that the amount demanded by the Purchaser as such shall be final and binding on the Bank as to the Bank 's liability to pay and the amount demanded and the Bank undertake to pay the Purchaser the amount so demanded on first demand and without any demur notwithstanding any dispute raised by the Contractor/Supplier or any suit or other legal proceedings including arbitration pending before any court, tribunal or arbitrator relating thereto, our liability under this guarantee being absolute and unconditional.

4. We, Bank further agree with the Purchaser that the Purchaser shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said order/or to extend time of performance by the Supplier from time to time or to

postpone for any time to time any of the powers exercisable by the Purchaser against the Contractor/ Supplier and to forbear to enforce any of the terms and conditions relating to the order and we shall not be relieved from our liability by reason of any such variation or extension being granted to the Contractor/ Supplier or for any forbearance, act or omission on the part of the Purchaser or any indulgence by the Purchaser to the Contractor/Supplier or by any such matter or things whatsoever which under the law relating to sureties would have the effect of relieving us.

5. We, Bank further undertake not to revoke this guarantee during its currency except with the previous consent of the Purchaser in writing.

6. We, Bank also agree that the Bank's liability under this guarantee shall not be affected by any change in the constitution of the Contractor / Supplier or dissolution or winding up of the business of the contractor/ supplier.

7. Notwithstanding anything contained herein above:

i) Our liability under this guarantee shall not exceed Rs.....

ii) This Bank Guarantee shall be valid upto and including; and

iii) We are liable to pay the guarantee amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before (validity + 60 days from the date of expiry of this guarantee).

8. This Guarantee shall be governed by Indian laws and the Courts at Mumbai, India shall have the exclusive jurisdiction.

IN WITNESS WHEREOF the Bank has executed this document on this.....day of

For Bank
(by its constituted attorney)
(Signature of a person authorised
to sign on behalf of "the Bank")

	MAZAGON DOCK SHIPBUILDERS LTD. (A Govt. Of India Undertaking)	DESIGN-OUTFIT	T.S.P. NO.	MT64400002M
		YARDS 12651-64, 3022-24	REV. NO.	3
	DATE		25 Sept 2023	
	PAGE		1 OF 201	
Dockyard Road, Mumbai –400 010.				

FORMAT NO: FMT/SB-DES-09



MAZAGON DOCK SHIPBUILDERS LTD.
 (A Govt. Of India Undertaking)

SHIPBUILDING DESIGN OUTFIT
DOCKYARD ROAD, MUMBAI - 400 010

TECHNICAL SPECIFICATION FOR PROCUREMENT OF
MODULAR ACCOMMODATION
VIP COMPARTMENTS

PROJECT : P-17 A

YARD NOS. : 12651 / 12652 / 12653 / 12654 / 3022 / 3023 / 3024

CLIENT : IHQ OF MOD (N)

DOCUMENT NO : MT64400002M

3	Appendix 9 (1.48, 6.17, 6.18 & 6.19), Appendix 13, Appendix 14 & Appendix 15 are updated	25 Sept 23	MDL
2	Amended as per VC held with WDB on 10 th and 19 th May 2023	30 Jun 23	WDB
1	Amended as per IHQ MoD WDB letter CD/17A/147 dated 31 Oct 22	24-Mar 23	WDB
REV NO.	DESCRIPTION	DATE	AUTHORIZED BY
	Abdusalam T DM(D-F)	B Mohamed Ashraf CM(D-F)	C G K Rao DGM/HoS(D-F)/PE(D-P17A)
	Prepared by	Checked by	Approved by

**MAZAGON DOCK
SHIPBUILDERS LTD.**

(A Govt. Of India Undertaking)

Dockyard Road, Mumbai –400 010.

DESIGN-OUTFIT

YARDS
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1. GENERAL REQUIREMENTS

1.1 APPLICATION

The items projected in this specification are for use on Indian Naval Ships (PROJECT 17A) being built by Mazagon Dock Shipbuilders Ltd. and GRSE, Kolkata. A total of seven Ships are likely to be built in which 04 Ship sets are to be supplied at MDL, Mumbai and 03 Ship sets are to be supplied at GRSE, Kolkata.

All the items offered must be suitable for application in Naval Ships.

1.2 SUPPLIER'S OFFER

1.2.1. The offer shall strictly conform to the details indicated in this specification and in the referred standards / drawings / documents (All Latest Issues are to be followed).

1.2.2. Unless referred to by supplier, before submission of offer & obtain clarifications, omission, if any, in the specifications shall not relieve the supplier of his responsibility to ascertain these requirements to perform work and furnish material in accordance with codes specified.

1.2.3. The OFFER should be complete with all relevant details as per Para 2.2.

1.2.4. Any clarification required regarding Technical Specification / Requirement should be sought prior to submission of the offer.

1.2.5. If any item is missing from the tender (BOQ) but is part of technical specification (TSP/SOTR) then it is binding on the firm to supply such items without any additional cost.

1.3 DEVIATIONS

1.2.6. The offer shall strictly conform to the details indicated in this specification and in the referred standards / drawings / documents. All modular accommodation and furniture items shall comply with "*IHQ (N) guideline specifications for modular accommodation and habitability up-gradation for IN ships and IHQ-MoD(N)/DNA policy letter NC/Policy/H-121/Equipment dated 05 Apr 17 on 'Habitability up gradation work on IN Ships'*". The copy of the same is placed at Appendix-21 and 19 respectively.

1.2.7. In case the items offered are NOT conforming to the details given in the Specification, the offer should clearly indicate a comparative statement of the requirement indicated in the Specification vis-a-vis that of the items offered, indicating limitations/advantages, for IHQ of MoD (N) / SHIPYARDS consideration. Refer APPENDIX-1 for Format. Onus of proving the equivalence of the alternate specifications, if any, quoted in lieu of those required as per tender rests with the Supplier. SHIPYARDS & Indian Navy reserves the full right for acceptance or rejection of deviations offered.

1.3.1 No deviations shall be granted after the placement of order.

1.2.8. In case no deviation is indicated in the offer, it shall be presumed that the offer confirms to the technical specifications and therefore binding on the supplier.

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1.4. CERTIFICATE OF CONFORMITY

1.4.1. The offer should be complete with CERTIFICATE OF CONFORMITY as per format detailed at APPENDIX –2.

1.4.2. IMPORTANT NOTE:

The offer received without the “Certificate of Conformity”, duly filled in and signed, may not be considered or will be liable for rejection.

2. PROCUREMENT SPECIFICATIONS

2.1. SCOPE OF WORK

2.1.1. Design, supply, manufacturing, installation & commissioning of all Modular Accommodation VIP compartments as per TSP/SOTR on turnkey basis which includes:

- a) All items / equipment / fittings / local piping (including seating / securing) inside Modular Accommodation VIP compartments as per Part / Item identification List attached at Appendix 9. Installation of equipment, modular panels, Modular doors/wooden doors, deck covering, painting, electrical fittings, piping and pipe fittings and structural insulation supply and fitment of wall papers, wooden covering for arch openings and fitment of SHIPYARDS supplied items is in scope of supplier.
- b) Wooden Doors – all wooden doors are manufactured as per approved drawing, exact dimensions to be collected from site before preparation of drawings.(list attached at Appendix 10)
- c) Modular Partition Bulkheads & deck head / ceiling panels for Modular VIP compartments (list attached at Appendix 11). Panels of BIP Korea, STACO Korea and SUNGMI Korea make are approved by IHQ. For any other make and model of panel prior approval of IHQ is necessary. Without IHQ approval panels will not be accepted.
- d) Deck covering limited to Modular VIP Compartments as per NCD 3717, Issue-4, and Rev-1 dated Oct 17 and approved deck covering drawing is entirely in supplier’s scope (Refer Appendix 13). Painting limited to Modular VIP Compartments as per approved painting scheme is entirely in supplier’s scope.
- e) Supply and installation of compartment electrical / light fittings (Refer Appendix 14) and connectorization will be in supplier’s scope. Cables shall be provided by SHIPYARDS but cable laying shall be undertaken by the supplier as per SHIPYARDS approved drawings.
- f) Supply, fabrication and installation of all pipes & pipe fittings within (starting & terminating) the modular VIP compartment will be in suppliers scope (Refer Appendix 15).
- g) FAT insulation, material supply and installation are under supplier’s scope and are to be strictly in accordance with NCD 1430, Issue 1, Jul 20.
- h) Securing arrangement of all items/equipments is supplier’s responsibility including material required for seating.

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i) Wall papers for aesthetic purposes to be provided on the Modular panels from inside of the room. Wall papers will be as per choice of the ship staff.

2.1.2. The Modular Accommodation VIP Compartments are as follows

- (i) Wardroom (Anteroom) – Fr. 28.5 - 34, 10 Dk (S)
- (ii) CO's Day Cabin – Fr. 27.3 – 29.5, 02 Dk (P)
- (iii) CO's Night Cabin – Fr. 29.5 - 32, 02 Dk (P)
- (iv) CO's Toilet & Bath – Fr. 29.5 - 32, 02 Dk (P)
- (v) Sea Cabin – Fr. 27.3 - 31, 02 Dk (C)
- (vi) Bath & Toilet #02 – Fr. 27 – 28.6 , 02 Dk (S)

2.1.3. Installations of all SHIPYARDS supplied equipment (MBSRE, LINK equipment's. Etc.). Seating / securing arrangement. Refer Appendix-9 for list of SHIPYARDS supplied items.

2.1.4. Supply & installation of all furniture items, plumbing items, any other electrical equipment, and fire-fighting equipment inside modular VIP Compartments is in supplier's scope.

2.1.5. Shipyards will supply and install manhole covers, water tight/gas tight doors and lay only passing through pipes & cables in VIP modular accommodation.

2.1.6. **3D Modeling, drawing generation and updation for P17A Ships.** 3-D modelling, preparation of 2D Layout drawings, generating local pipe sketches for all modular **VIP compartments** in Aveva Marine software is in the scope of supplier as listed in para 2.1.1. Supplier also has to provide services for updating & modification of existing 3D model, 2D layout drawings, and generating pipe sketches in Aveva Marine as per observations during various stage inspections. One team will have to be located at MDL, Mumbai for four ships of MDL and another team to be located at GRSE, Kolkata for the three ships of GRSE.

2.1.7. The other inputs of NID on the modular accommodation layout/ material for P-17A would be provided to OEM by MDL after placement of order. Adherence to NID recommendations will be binding on supplier.

2.1.8. The OEM may suggest latest state of art items for the modular accommodation spaces, meeting the requirement of TSP in the layout. Items deploying space saving techniques whilst meeting the functional & TSP requirements are to be recommended by the OEM to preserve constrained space onboard.

2.1.9. On Board Spares (OBS): List of OBS required shall be indicated in the offer in the ILMS format (INCAT compatible format detailed at Appendix 5) in soft as well as hard copies. The OBS shall be ordered along with the main item/equipment. Modular panels to be part of OBS and All OBS shall be supplied in lockable metallic boxes except modular panels.

2.1.10. Documentation for items and equipment in hard as well as soft copies shall be delivered along with deliverables for each ship set as detailed in the following Table:



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DESCRIPTION	CONTENT	No. of Sets						
		12651	12652	12653	12654	3022	3023	3024
Layout Drawing	Compt. Layout Drawings & Part List including -as fitted drawings	1 set	1 set	1 set	1 set	1 set	1 set	1 set
Technical Manuals	Technical and Operating Instruction Manuals	15	6	6	6	15	6	6
	Technical and Operating Instruction Manual soft copy and JSS-0251-01. Whereas the Software documents should be as per IEEE 12207 standard	15	6	6	6	15	6	6
	On Board Maintenance Manual	15	6	6	6	15	6	6
	Installation and Testing Manual	15	6	6	6	15	6	6
	Parts and Tools Catalogue	15	6	6	6	15	6	6
	Parts and Tools Catalogue soft copies in ILMS format	10	6	6	6	10	6	6
	Preservation Procedures and requirements	15	6	6	6	15	6	6
Technical Data	Installation Drawings	10	6	6	6	10	6	6
	As fitted Drawings including Layout Drawings	10	6	6	6	10	6	6
	Test Procedure and Documentation	10	6	6	6	10	6	6
	Certified Test Reports, FAT's Weight Certificate & other relevant Records	10	6	6	6	10	6	6

Additionally, soft copy of all the above listed documents is to be supplied to Shipyard by the supplier for each shipset.

2.1.11. Training – Training for ship's crew of total 08 personnel for 05 days on board per ship.

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2.2. SCOPE OF OFFER

2.2.1. Preliminary offer to include Part Identification list (indicating Type, model, Make, Rating etc. of each item) with material specifications. All the bought out items should be branded & of reputed make. All bathroom/wash place pipe fittings should be jaguar or equivalent standard to be supplied.

2.2.2. The offer shall strictly conform to the details indicated in this specification and in the referred standards / drawings / documents. All modular accommodation and furniture items shall comply with "**IHQ (N) guideline specifications for modular accommodation and habitability up gradation for IN ships**". The copy of the same is placed at Appendix 21. Firms are required to submit para-wise compliance to these guidelines specifications & TSP.

2.2.3. Installation / securing details of modular bhd. Panels & deck head / ceiling panels Modular items/equipment, control panels & other fittings with ship's structure.

2.2.4. Catalogue or Brief Technical Specification and general arrangement drawing for Modular VIP Compartments items/equipment indicating overall weight, dimension, capacity, etc.

2.2.5. OBS:

(i) The vendors shall mandatorily quote for both requirements (one year and two years) for the total OBS.

(ii) The Suppliers shall indicate the list of OBS as an annexure to the technical offer. Further, they shall also indicate percentage breakup of each line item for One year and Two years OBS separately.

(iii) All the above OBS spares are to be duly packed in SPTA boxes.

2.2.6. Electric Load & electrical power requirement of item/equipment.

2.2.7. User/Reference list of similar equipment supplied.

2.2.8. Proposed quality assurance & quality Inspection plan.

2.2.9. TSP Clause wise compliance matrix. As per para 2.17.9

2.2.10. Documents in support of technical pre-qualification criteria.

2.2.11. Proposed plan for technical assistance for installation, preservation and commissioning, trials, etc.

2.2.12. List of special tools, instruments, jigs & fixtures & facilities required for lifting, transporting, aligning, installing and commissioning of main equipment and their auxiliaries with NCN.

2.2.13. List of installation material commissioning spares with NCN (NATO Code No.).

2.2.14. List of special tools, instruments, jigs & fixtures & facilities required for lifting, transporting, aligning, installing and commissioning of main equipment and their auxiliaries with NCN.

2.2.15. List of special tools, items etc. required to carry out preservation at Yard or on board the ship is to be included in the offer with NCN.

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2.2.16. Clear demarcation between the scope of supply of firm and that of the yard.

2.2.17. Trial and commissioning time of complete system on board.

2.2.18. Delivery time from receipt of order.

2.3. OPERATING PARAMETERS

2.3.1. Ship Mission: The ship shall be capable of carrying out typical 56-day mission, with extended mission time in out of area operation. All equipment which forms part of VIP modular accommodation shall have maximum reliability and maintainability for a mission time of 56 days.

2.3.2. Power Supply: The following shall be available from the ship supply::

415 V AC, 50 Hz, 3 phase, 3 wire for loads more than 3 Kw.

230 V AC, 50 Hz, 1 phase, 2 wire (both phase)

The supply on-board will be with insulated neutral.

2.3.3. Seaway Conditions: (Refer APPENDIX-19 para 14)

2.3.4. Environmental Conditions: The equipment offered for marine applications shall achieve the specified output and functional requirements under tropical conditions. It shall withstand air contamination through oil, salt and other contaminants associated with the marine environment. The equipment shall be water drip proof as a minimum requirement. The equipment shall operate under the following environmental conditions:

SL	Condition	Value
1	Temperature <ul style="list-style-type: none"> • Ambient air • Sea water • Compartment Air 	-10 to 40 °C 1 to 33 °C 25 to 55 °C
2	Relative Humidity at 35 ° C	90%
3	Salinity of Water	Up to 35000 ppm

2.3.5. Materials: A component-wise material specification list shall be provided by the Supplier. Materials / Components approved for use on board naval ships are only to be used. Materials used for all Equipment are to retain anti-corrosion properties during operation under sea conditions for the given period and service life. Materials used are not to emit toxic and foul smelling gases at all the operating modes.

2.4. SHOCK

As per Naval Policy document no.EG/5522/POLICY dated 11 May 07, Modular Accommodation equipment comes under “Category C” & hence do not necessarily mandate shock grading. All Modular Accommodation equipments are to be supported and fastened in a manner so that they do not cause any danger to persons and equipment in close vicinity, owing to shock loads. Equipment should remain captive after shock without breaking loose from their securing. Shock mounts if required are to be provided along with equipment.

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2.5. NOISE AND VIBRATION :

(Refer APPENDIX-19 para 15 b)

- 2.5.1. Every reasonable and practical effort shall be made to minimize equipment noise while designing sub-assembly and component. All parts of the equipment and accessories shall be designed to ensure resistance to fracture, distortion or misalignment due to forces of vibration. All rotating machinery must be balanced with close tolerances.
- 2.5.2. Unless otherwise specified in the relevant procurement specification, the mechanical vibration requirements for all machinery and equipment shall be in accordance with MIL-STD-167 and, accordingly, all limitations, calculations, and analyses for vibration and balancing shall comply with this standard.
- 2.5.3. All equipment shall withstand, without any reduction of reliability and performance, the effects of environmental vibration as defined by latest MIL-STD-167-1 type I.
- 2.5.4. The noise and vibration characteristics of associated auxiliaries, as applicable, shall also be indicated. Calculations to support selection of vibration mountings shall be included.
- 2.5.5. Noise level in personal spaces, Maximum Noise level, Noise measurements, Noise measurements location, Noise survey reporting and Maximum vibration levels are explained in para. 18 to 28 in TSP.

2.6. QUALITY ASSURANCE

As Per APPENDIX 12

- 2.6.1. The detail design, material and workmanship shall be in accordance with the best world-wide recognized marine practices, to ensure reliability, durability and ease of maintenance which comply with the ship's requirements. The design shall be such that weight and size are reduced to the minimum practicable, ensuring no compromise in reliability or significant design criteria. A quality assurance program is to be specified by the manufacturer in his offer. The layout drawings / models are already generated by supplier. Supplier is required to maintain equipment dimensions strictly as per equipment dimensions in the layout drawings / models. The supplier is required to strictly abide by the technical specifications of the items mentioned in the TSP. Deviations will not be accepted.
- 2.6.2. Quality Assurance for equipment / material supply – Inspection will be undertaken by IACS member classification society. At Initial stage, the sample furniture item of each type needs to be approved by WOT/ Shipyards prior to mass production of items / equipment. Sample approval will be only once for all seven ship sets. During the mass manufacturing the supplier is required to submit QAP for material supply which should include following inspection stages for fabricated items. For branded items the inspection will be limited to visual inspection for defects / damages and operational / functional checks.
- i) Raw Material Inspection and verification of material test certificates.
 - ii) In process inspection inclusive of dimensional checks.
 - iii) Final material inspection as per approved drawing and QAP.
- 2.6.3. Quality Assurance for installation and readiness of compartments – Inspection will be undertaken by Shipyards / WOT / Ship Staff / HITU / ETMA. The inspection will include:
- i) Preliminary Inspection of each compartment – check for hot work, quality of welding / workmanship, check for ergonomic aspects, check for aesthetics,

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- ii) Final Inspection of each compartment – Check for maintenance and operational space, check for ergonomic aspects, check on aesthetics, check on overall quality of readiness, check for slope of the compartment for proper draining arrangement, pressure testing of pipe lines, check for gland packing.
- iii) Zero defect inspection / handing over inspection of each compartment
- iv) Compliance with APPENDIX-21 at all stages of inspection.

2.6.4. **QUALITY ASSURANCE PROGRAMME:**

- a) The equipment manufacturer shall submit a quality inspection and control plan, which meets the intent of ISO 9001 before commencing production.
- b) Details of test equipment, test methods, preliminary qualification tests, etc. are to be indicated. Shop floor tests prior to dispatch by supplier should be conducted.
- c) Amendment to the Quality Inspection and control plan proposed, if any, shall be formalized post order after discussions between Third Party Inspection as Nominated by Shipyards.
- d) The equipment manufacturer shall submit approved WPS (Welding Procedure Selection) & PQR (Procedure Qualification Record).

QUALITY IMPROVEMENT PROGRAMME: The supplier should indicate major defects as well as user complaints for the equipment fitted on similar class of ships and the corrective action taken against them. The supplier should also indicate the major improvements carried out in the latest version compared to the previous version.

2.7. **INSPECTION AUTHORITY**

- (a) For drawing approval : Warship Design Bureau (WDB) of Indian Navy/
WOT (MB)/Shipyards.
- (b) For construction : Warship Overseeing Team (WOT).
- (c) For ship trials : HITU & ETMA of IN
- (d) For QC/QAP : IACS member classification society and WOT
- (e) Receipt inspection : WOT / Shipyards
- (f) Design Standards : i) All standards referred at APPENDIX-19 para 44)
ii) KHP Deliverables
iii) MIL-STD1472G

2.8. **INSTALLATION**

2.4.1. **Installation by Supplier:**

- (a) Installation of all item/equipment/furniture (Refer Appendix 9) along with seating / securing / fasteners etc. (including equipment supplied by SHIPYARDS) in all Modular VIP Accommodation compartments.
- (b) All local piping (Refer Appendix-15), Structural insulation (Refer appendix 16), local cables & electrical fittings (refer appendix 14) shall be installed by supplier. Inclusive of cable trays, clamps & fasteners required for securing. For all insulation the material supply is in supplier's scope. Decorative grill for ventilation supply exhaust point will be in supplier's scope.

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- (c) The ships cables terminating in the VIP Modular Accommodation Compartments will be laid by Yard up to the entry point of the respective compartment. The routing of the cables, from the entry point, to the various equipment and local cables within the VIP modular accommodation compartments will be the responsibility of the supplier. The connections at both ends of cables terminating in compartments are to be done by the supplier. The required crimping lugs, crimping sockets, other necessary installation material and tools required to carry out connections will be in supplier's scope.
- (d) Supply and erection of Modular Partition BHD panels and deck head / ceiling panels with profiles (refer appendix 11) is in supplier's scope inclusive of all installation material.
- (e) Supply of Deck covering material and its application (refer appendix 13) as per NCD 3717, Issue-4, Rev-1 dated Oct 17 for all Modular Accommodation VIP spaces will be in Supplier scope.
- (f) Supply and installation of all Burma teak wooden doors, NDS doors and NSD doors with door stopper and retaining hook (Refer appendix 10).

2.4.2. **Installation BY SHIPYARDS:** All manholes, scuttles, GT/WT doors, hatches, passing through cables, passing through pipes and ventilation trunk shall be supplied & installed by SHIPYARDS.

2.9. TRIALS AND COMMISSIONING

- 2.9.1 Supplier shall be responsible for supply, Installation, STW (Setting to Work), testing, tuning & commissioning of complete systems/equipment in modular VIP compartments on board the ship.
- 2.9.2 Supplier shall assist in Harbour Acceptance Trials (HATs) of relevant system/equipment in modular compartments on board the ship.
- 2.9.3 Supplier shall assist in Sea Acceptance Trials (SATs) of relevant system/equipment in modular compartments on board the ship at sea.
- 2.9.4 The supplier will be responsible for handing over of all Modular VIP Compartments after acceptance from various inspection agencies like WOT (MB), ETMA, HITU and Ship Staff.

2.10. DRAWINGS AND DOCUMENTATION

- 2.10.1 The format and content of documentation being provided shall be as per DME specifications 452, JSS-0251-01 & EED-S-048 and IETM level 4.
- 2.10.2 All associated documentation, drawing and item/equipment list applicable shall be in English language. All drawings and documents shall contain dimensions and other parameters in metric units (SI Units). The drawing and documentation shall be complete to permit installation, operation and testing of equipment on board. These shall cover all sub-assemblies and accessories of the equipment. The technical manuals and drawings including the entire final as built drawings & documents with its index shall be provided in both hardcopies as well as on a CD-ROM.
- 2.10.3 Drawings/documents shall be prepared by using following Software:

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Documents – Latest version of MS Word
Orthographic Drawings &
3D Model of Modular Accommodations items } Aveva Marine/ AutoCAD

2.10.2 Post deployment of teams as stated in para 2.1.6, Shipyards will provide the preliminary layout and 3d model in AVEVA Marine/STEP file format of all the VIP Modular compartments enlisted in Appendix-7. The Line out Inspection (LOI) for these compartments has already been completed. Thereafter, the supplier will be responsible for any changes to be incorporated in the layouts sought by Shipyards/IN or changes suggested during stage inspections (Preliminary Inspection (PI), Final Inspection (FI) and handing over (Commissioning) of the compartment). After 3D models of the compartments are shared with the supplier, revised drawings are to be prepared by replacing/revising equipment 3d models as per actual dimensions of the equipment from the binding data and changes arising sub consequently. These revised drawings for all 6 VIP modular compartments are to be submitted within 12 weeks progressively from date of placement of order.

2.10.3 The volumes/library of components in format compatible with Aveva Marine (.stp format) required for 3D modelling is under the scope of supplier. The same volumes are to be used for 3D modelling by the supplier. These library/volume should provide all the required details of all items/fittings such as dimensions, material, weight, CoG etc. These libraries shall be updated & resubmitted by the firm if there are any changes during approval of equipment GA drawing/manufacturing drawing by MDL/GRSE/WDB and the same to be incorporated in the layouts as well. The part list updation in SAP will be in supplier scope.

2.10.4 FACILITIES PROVIDED AT SHIPYARDS FOR DRAWING GENERATION :

- SHIPYARDS shall provide adequate office space for positioning the hardware & team brought by the supplier for generation of layout drawings inside SHIPYARDS premises
- Supplier shall arrange hardware, furniture required for the same on his own cost. Any other facility, required for the smooth execution of the work shall be the responsibility of the supplier.
- SHIPYARDS shall provide 1 Modelling licence and adequate Drafting licenses of AVEVA Marine for the job. However, finer adjustment on the number of licenses shall be done based on an assessment of the requirement by SHIPYARDS executives.
- Printers and Papers for printing the drawings shall be provided by SHIPYARDS; however supplier's team member shall take prior permission of printing and size of paper from the SHIPYARDS Executive.

2.10.5 **HARDWARE REQUIRED FOR THE JOB:** The supplier shall bring own hardware required for executing the Job. The minimum specifications of the hardware shall be to suit the installation and working of AVEVA Marine Software. A detailed requirement for the hardware shall be handed over later. The hardware shall include the following:

- a) PC/Workstations compatible for installation and operation of AVEVA Marine software.
- b) Hardware shall have CD drive and LAN Card but with disabled floppy drives.
- c) Networking items.
- d) Installed legal Operating System/Software.

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e) The Storage media / Hard disk used for the job shall be the property of SHIPYARDS and will not be returned back to the supplier under any circumstances.

- 2.10.6 The Documentation for Equipment & OBS including Comprehensive Part List (CPL) & Part Identification List (PIL) wherever applicable shall be provided in INCAT (Indian Naval Catalogue of Inventory) databank compatible format in electronic media, for Integrated Logistics Management System (ILMS) / Ship's Logistics Management System (SLMS) of IHQ of MoD (N), for the management of spares as detailed at APPENDIX - 5 (6 pages). The CPL/ PIL list of OBS shall be in latest ILMS format attached with these specifications. Payment will be linked to providing information in ILMS format.
- 2.10.4 The technical documentation that the supplier submits shall clearly specify the operation procedures. All maintenance till the end of service life, including procedures to carry out such maintenance shall be clearly specified. All mandatory replacement parts required for maintenance shall be indicated. The documents shall cover the aspects of operation and maintenance, catering from daily routines up to major overhaul, replacement of major assemblies/components and 'Fault analysis'. Test and trial documentation covering installation checks, set to work and load trials as applicable shall be submitted by the supplier.
- 2.10.5 The payment under heading of documentation (for major equipment) shall be released only on receipt of all documentation listed in Table at Para 2.1.10.
- 2.10.6 Latest/Updated Layout drawings for all VIP Modular Accommodation compartments with Bill of Materials to be included.
- 2.10.7 GA drawings of equipment showing overall and principal dimensions in sufficient details to establish the extent of space required in all directions for installation, operations, operation and maintenance to a scale of 1:20. Drawings should include information regarding weight, center of gravity, mounting arrangement with footprint details, lifting points, connection details for cables & pipes, etc.
- 2.10.8 Payment for Design Line items -

The supplier can claim 75% payment for 1st line item of the tender/PO for Yard 12651(1st SHIPYARDS ship of P17A) i.e. Updation & Modification of 3D CAD Model, upon successful completion of all the stages of inspection (Preliminary Inspection (PI), Final Inspection (FI) and handing over (Commissioning) of the compartment) for all the 6 VIP Modular Accommodation compartments for the first MDL ship of P17A i.e. Yard 12651.

The balance amount shall be released after completion of design related activities for the remaining 3 MDL ships and 3 GRSE ships of P17A. This balance 25% payment may be claimed by supplier after successful completion of all the stages of inspection (Preliminary Inspection (PI), Final Inspection (FI) and handing over (Commissioning) of the compartment) for all the 6 VIP Modular Accommodation compartments for the 7th ship of P17A.

- 2.10.9 Payment for Service Line items -

Payment for work carried out as per PO line item services for installation will be made in the following stages;

- a) On completion of preliminary inspection : 20%

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- b) On completion of Final inspection : 70%
- c) On completion of Handing over : 10%

- 2.10.10 The firm may require to modify the drawings time to time as per suggestions from WOT, WDB, ship staff and as required due to changes in GA or systems in respective Shipyards. Firm shall prepare AS FITTED drawing for each compartment after completion of erection/installation in respective Shipyards.
- 2.10.11 For subsequent ship models, if any change due to modification / changes are recommended by Naval agencies then they are to be incorporated in the 3D model by the firm at no extra cost, i.e., for 3 successive ship models at MDL Mumbai premises and 3 other successive ship models at GRSE, Kolkata premises.
- 2.10.12 Assembly drawings of all fabricated/furniture items; these are subject to the purchaser approval before release for manufacture. Drawing should include information regarding bill of material, Weight, center of gravity, mounting details, etc.
- 2.10.13 P & I diagram of the equipment, whenever, applicable.
- 2.10.14 Control and monitoring system circuit diagram showing interlock & details of compatibility with integrated control system.
- 2.10.15 Wiring diagram, cable schedule diagram and other power supply & control relevant information.
- 2.10.16 Any other drawings required for the installation of the equipment.
- 2.10.17 General information & technical specifications of the equipment.
- 2.10.18 Operation and maintenance instruction/manuals.
- 2.10.19 Basic design calculations, wherever applicable.
- 2.10.20 Shipping-in, renewal diagram and procedures (for initial installation and subsequent replacement)
- 2.10.21 Overall weight and weights of assemblies and sub-assemblies.
- 2.10.22 List of special tools / instruments / equipments / jigs and fixtures for installation, alignment & commissioning.
- 2.10.23 List of special tools, jigs and fixtures, facilities and equipment required to lift and transport the equipment.
- 2.10.24 List of recommended installation materials & commissioning spares.
- 2.10.25 Scope / supply of consumable with Indians, international or NATO equivalents, along with chemical composition and physical properties.
- 2.10.26 Requirement of preservatives (Oils, Greases etc.) for operation with international or NATO equivalents, along with chemical composition and physical properties.

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2.10.27 Ship services required.

2.10.28 Desired clearances and wear limits of all wearing components.

2.10.29 Instrumentation list & diagram.

2.10.30 Factory test reports (FATs), material clarification & calibration certificates of the instruments fitted. Periodicity of calibration of each instrument shall be specified.

2.10.31 Part identification list, indicating Part No., Quantity, Makers Name, Materials, etc.

2.10.32 Installation, alignment and setting to work procedures (stating pre-requisite conditions, if any)

2.10.33 List of tally plates. Tally plates should be in accordance with standard ergonomic practices which will be shared with supplier.

2.10.34 Shock calculations (if applicable) indicating shock capabilities as per Dynamic Design Analysis method, complete details of SV mount and selection calculations.

2.10.35 Preservation requirements for OBS Spares.

2.10.36 Log Block/Forms Documents for entering installation inspection / alignment values or other important data, if any.

2.10.37 Drawings are classified as:

1. Layout Drawings (with Bill of Materials) of all Modular Accommodation VIP Compartments with 3D model
2. Part Identification List (with material specification) for above layout drawings.
3. Manufacturing drawings with all details of information regarding weight, center of gravity, mounting arrangement with footprint details, lifting points, connection details for cables & pipes, etc.
3. Installation drawing details of Modular Bulkhead panels, Modular Accommodation equipment and their control panels & other items.
4. Catalogue

2.10.38 PROCEDURE FOR LAYOUT/BINDING DRAWINGS APPROVAL and Quality assurance Plan (QAP):

After placement of order, the manufacturing and binding drawings along with QAP are to be submitted for approval to Shipyards/ WOT/IHQ MoD (N) as per the timelines mentioned in the table below.

Supplier shall update 3D-CAD model & compartment layout drawing for VIP modular compartments under the guidance of Shipyards executive and progressively submit them to Shipyards/WOT/ IHQ MOD (N) for approval. Drawings submitted to Shipyards, shall be complete in all aspects. Incomplete drawings shall not be accepted.

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Any comments/observations suggested by IHQ MoD (N)/ Shipyards/ WOT during the inspection stages on the 2D Layout drawings shall be incorporated in the 3D CAD model and the composite layout drawings by the Sub contractor.

PROCEDURE FOR LAYOUT/BINDING DRAWINGS APPROVAL

Activity/ Event	Duration	Action by	Remark
Shipyards places the order & Supplier deutes experienced design team at Shipyards/Mobilization	D + 1 week	Shipyards/ Supplier	Layout drawing approval will be required only for the first yard 12651.
Submission of detailed manufacturing drawings for fabricated items & draft QAP by firm for approval to Shipyards/WOT/ WDB.	D + 4 Weeks	Supplier	All promulgated changes in layout from Yard 12651 to be incorporated in the respective layout drawings and 3D model in AVEVA of other yards.
Comments on fabrication drawings & QAP by Shipyards and WOT/ WDB.	D + 6 Weeks	Shipyards	For all yards 3D model and layout drawings are maintained separately.
Incorporation of Shipyards and WOT/ WDB comments by firm & resubmission to Shipyards for approval. Shipyards and WOT approves drawing & QAP.	D + 7 Weeks	Supplier	
Progressive Submission of updated layout drawings to Shipyards for comments for each Compartment in Aveva Marine software.	D + 12 weeks	Supplier	Binding data for bought out items & drawings for fabricated items to be submitted only for the first yard.
Comments on layout drawings by Shipyards	15 days from date of submission of the layout drawings (Progressively)	Shipyards	
Incorporation of Shipyards comments by firm & resubmission to Shipyards for approval	15 days from receipt of comments from Shipyards	Supplier	

D stands for : - Date of placement of order.

2.11. TALLY Plates

2.11.1 All major items/equipment/fittings shall have identification tallies located on them. Tally plate matter should be in English language and in SI units. All tallies and diagram plates shall be of stainless steel. Caution / warning tallies shall be in bold black letters on a fluorescent orange background of brass chrome plated or stainless steel material. A diagram plate indicating details of connection shall be provided / affixed near to the terminal box of the motor. Size of tally plate and their letters shall be conformed to specification NES-723.

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2.11.2 INSTRUCTION PLATE:-

An instruction plate listing the start/stop procedure and precautions in brief are to be prominently displayed on the equipment. All instruction plates shall be in stainless steel or brass chrome plated.

2.12. SPARES

- 2.12.1. The Commissioning Spares, On Board Spares, Spares and required test equipment shall be recommended in the offer by the supplier. Such recommendations are to be commensurate with the reliability of critical components and component use in the system. Special tools and test equipment shall be supplied for on board maintenance.
- 2.12.2. Each and every spare (Commissioning spares, and On Board Spares) and tools shall be given unique NCN (NATO Code Nos.), if available.
- 2.12.3. Complete BOM (in lieu of the list of spares) and tools shall be submitted in ILMS format (INCAT compatible format detailed at appendix 5) in soft as well as hard copies, along with the offer.
- 2.12.4. **Commissioning Spares:** Spares and special tools, jig and fixture & test equipment required for flushing, setting to work, testing & tuning and commissioning of the complete system of the equipment and its auxiliary system shall be supplied. An itemized list for the same is also to be indicated in the offer. The commissioning Spares and tools shall be ordered along with the main equipment. Commissioning Spares shall be delivered before STW of the main equipment, tentative schedule of which **shall be indicated in the Tender Enquiry.**
- 2.12.5. **On Board Spares (OBS):** An itemized list of OBS, special tools and special test equipment, which shall be supplied with the main equipment, shall be furnished along with the offer for the main equipment. The OBS and special tools shall cater for all on board maintenance routines and possible repair requirements. Preservation requirement of OBS, if any, shall be indicated in the offer. List of OBS required for auxiliary items shall be indicated in the offer. The OBS shall be ordered along with the main equipment. However, they are to be delivered before STW of the main equipment, tentative schedule of which **shall be indicated in the Tender Enquiry.**
- 2.12.6. The OBS and tools shall include following :-
- All spares required for exploitation up to 1 year and up to 2 years separately (Quantity of OBS which are consumable in nature shall be recommended in sufficient nos.)
 - One set of important assemblies to effect “repair by replacement”.
 - One set of general purpose maintenance tools along with each plant.
 - One set of special tools required for dis-assembling / assembling of components to effect “repair by replacement”.
 - Two sets of sensors & fuses.

2.13. WEIGHT RECORDING/WEIGHT CERTIFICATE

Net weight of each item shall be recorded in the presence of Inspection Agency on the Weight Certificate attached at APPENDIX- 4. The weight certificate shall be delivered along with the documentation for the main item/ equipment. Also the Weight Control Data Sheet shall be issued in the format as detailed at APPENDIX- 3 along with offer. The supplier shall have to submit, reasons for

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variation between allocated weight and actual/certified weight for each and every item, wherever applicable, to IHQ of MoD (N) and SHIPYARDS for their consideration and further necessary action. The supplier shall endeavour to estimate the weight of the equipment/item very precisely so as to restrict the variation in weight to a maximum of 2%. In case, during production, if supplier anticipates the increase in weight by more than 2%, they should immediately inform to IHQ of MoD (N) and SHIPYARDS about the same so that its implications on the ship's performance and other related matters could be examined jointly by IHQ of MoD (N) and SHIPYARDS and appropriate timely corrective actions could be taken. A weight penalty may be imposed on the OEM, if the variance is beyond limits mentioned above. The scale of weight penalty to be decided during TNC.

2.14. DEPLOYMENT OF MANPOWER ON CONCURRENT SHIPS:

Shipyards has to progress on ship construction activities, simultaneously on ships of the same Class/Project or on ships of different projects. View this; there shall be every likelihood of clash of requirement of technical assistance. In such eventuality, in order to avoid delays on one ship due to similar work requirement on other ship, supplier shall depute their dedicated separate/independent team of supervisors/specialists for required technical assistance, on the required ships. Rotation of supervisors/specialist amongst the various ships/projects shall be avoided.

2.15. TECHNICAL ASSISTANCE BY SUPPLIER

The supplier shall provide the necessary representative(s) as when required, in carrying out inspection and supervise the work that is done on the equipment, during the following phases:

- (i) Preparation of Shipyards installation.
- (ii) Monitoring of proper equipment preservation during storage.
- (iii) On-board erection and alignment.
- (iv) Setting to work.
- (v) Harbour Trials.
- (vi) Assistance in trouble shooting.
- (vii) Contractor Sea Trials.
- (viii) Post CST equipment inspections.
- (ix) Assistance in operation during equipment guarantee period.

2.16. TRAINING

2.16.1 Training for Installation, erection and removal of panelling, operation of equipment shall be imparted onboard to ship's crew of 8 persons for a period of 5 days per ship.

2.16.2 The complete training package for installation, on board exploitation and maintenance and for Second Level maintenance along with tool and test kit shall be included in the offer. Third Level (depot level) maintenance shall also be offered together with the required special tools and test equipment. The level and number of personnel recommended for training also shall be indicated.

2.16.3 The supplier shall formulate and provide all necessary training docket and chart for ship staff, Shipyards representatives and shore support personnel for training and indicate availability of models for instruction.

2.16.4 The training sessions are required to cover a minimum of the following:

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- a) On board exploitation and maintenance for second level maintenance along with Tool and Test Kit.
- b) Third level (depot level) maintenance.

2.17. MISCELLANEOUS REQUIREMENTS

2.12.1. PRODUCT SUPPORT: The supplier shall confirm that product support for next 25 years for the equipment offered by them would be guaranteed. **After placement of order if part numbers of any items/assembly gets changed supplier shall immediately inform SHIPYARDS, Indian Navy and Ship so that any future requirement shall refer the latest part numbers.**

2.12.2. STANDARDS: Certificates shall support the standards where standard components are used.

2.12.3. PAINTING: Marine standard painting (powder coating) system shall be applied. All painted items shall be cleaned, degreased and painted with two coats of anticorrosive Marine Paint & two finish coats. Colour & shade will be finalized at the time of drawing approval.

2.12.4. PRESERVATION / PACKING / CONDITIONING:

Preservation/packing shall be carried out at the Supplier's works to preserve at least for a period of 24 months and made suitable for tropical conditions and protected against high humidity.

2.12.5. LIFTING ARRANGEMENT: All components weighing more than 40 kg shall be provided with eyebolts. Any components requiring special handling shall be so marked and shall be accompanied by the necessary handling instructions.

2.12.6. PACKING & SHIPPING:

All equipment shall be adequately packed and protected with supports to ensure adequate protection during all methods of transportation. Each unit within a package/container shall be clearly marked in English for identification. The container shall clearly indicate the commodity description with caution marks, weight, size, etc.

Following items shall be packed in separate containers/boxes with proper list of their contents in English for their easy identification and traceability:

- (a) Deliverables related to Modular VIP Accommodations (to be marked in a separate colour).
- (b) Deliverables related to Installation material and Tools related to Modular VIP Accommodation (to be marked in a separate colour).
- (c) On Board Spares and Tools (to be marked in a separate colour).
- (d) Documentation (to be marked in a separate colour).

A separate document giving complete details and instructions for storage, preservation, handling and transportation after delivery shall be supplied. The supplier shall indicate the delivery schedule, port of embarkation, transport, packing, preservation, insurance, etc.

2.12.7. RECEIPT INSPECTION: Receipt inspection for all items/ fittings /equipment's shall be carried out in SHIPYARDS, jointly by the representative of SHIPYARDS & WOT (Mb.)/(Kol.)

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for transit damages and deficiencies if any. Defective / damaged parts and deficiency, if any, in supply shall be made good by OEM free of cost.

2.12.8. REFERENCE LIST: A reference list of shipboard installations in other Navies for the same / similar type of equipment shall be indicated.

2.12.9. COMPLIANCE MATRIX: A compliance matrix, in the following format, shall be submitted by the Suppliers along with their offer conforming their acceptance or deviation against each Para of the TSP

2.12.10. SECURITY OF INFORMATION: The information contained in this TSP is RESTRICTED in nature. The same shall not to be divulged to any other firm/third party without the prior permission of IHQMoD (N). Adequate measures shall be taken to ensure safe custody of this document.

2.18. WARRANTY

The item/equipment shall be warranted for performance for a period of 48 months from the date of receipt or 12 months from the planned commissioning of the ships whichever is later. The equipment supplied shall be warranted from defects, supplier and performance for the said period and cover all the defects arising from malfunctioning through design faults, inappropriate material, bad production and non-conformance to specifications. Any expense on account of repair/ supply of spares against guarantee defects shall be borne by the supplier. If any defective part to be taken back to OEM's factory (i.e. importing and re-exporting from country of origin), for service purpose the liability of the same shall be borne by the supplier. Supplier shall indicate, in the offer, the rate for extended warranty period, in case the warranty period as detailed above expires.

2.19. MAINTENANCE POLICY

The planned maintenance shall be schedule for a minimum of 24 months refits each refit of approximately 3 Months duration, including a dry-docking of 3 weeks. All maintenance and repair between major overhauls shall be carried out in situ. The design therefore shall provide accessibility to all working parts. The supplier shall define along with a maintenance schedule the planned maintenance intervals and procedure for the equipment.

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SOTR

Part 0 INTRODUCTION

Preamble:

1. This Guideline and Specification is primarily to bring out General Requirements for “accommodation spaces for complement : 312 ” with the purpose of providing state of the art Habitability Standards on Indian Naval ships. These requirements envisage provision of modular accommodation including **dining halls**, sickbay, **WC/bath**/wash rooms/office spaces and **recreational spaces** on a turnkey basis starting from Design of layout, Manufacturing, Erection & Commissioning. The firm as part the techno-commercial offer shall submit a three dimensional layout drawing indicating all fittings that will form part of supply for each typical type of space covered by these specifications. Ship services shall be terminated outside the spaces by the Shipyards and all internal arrangements / distribution including fittings within the spaces shall form part of supplier’s scope.

Scope:

2. This statement of requirements will cover accommodation spaces and as indicated in Appendix –7, generic lists of spaces covered by these TSPs are as follows:

- (i) Wardroom (Anteroom) – Fr. 28.5 - 34, 10 Dk (S)
- (ii) CO’s Day Cabin – Fr. 27.3 – 29.5, 02 Dk (P)
- (iii) CO’s Night Cabin – Fr. 29.5 - 32, 02 Dk (P)
- (iv) CO’s Toilet & Bath – Fr. 29.5 - 32, 02 Dk (P)
- (v) Sea Cabin – Fr. 27.3 - 31, 02 Dk (C)
- (vi) Bath & Toilet #02 – Fr. 27 – 28.6 , 02 Dk (S)

Standards:

3. The design must comply with the requirements specified in the following standards and all other specifications mentioned herein after, unless otherwise: (Refer APPENDIX-19 para 44)

Design

4. Post deployment of teams as stated in para 2.1.6 of TSP, Shipyards will provide the preliminary layout and 3d model in AVEVA Marine/STEP file format of all the Modular accommodation compartments enlisted in Appendix-7. The Line out Inspection (LOI) for these compartments has already been completed. Thereafter, the supplier will be responsible for any changes to be incorporated in the layouts sought by Shipyards/IN or changes suggested during stage inspections (Preliminary Inspection (PI), Final Inspection (FI) and handing over (Commissioning) of the compartment). After the 3D models of the compartments are shared with the supplier, revised drawings are to be prepared by replacing/revising equipment 3d models as per actual dimensions of the equipment from the binding data and changes arising sub consequently. These revised drawings for all 6 VIP modular accommodation compartments are to be submitted within 8 weeks progressively from date of placement of order. Due consideration is to be given to all the design aspects of **Ergonomics, aesthetics, maintainability, utilisation etc. as elaborated in subsequent paragraphs hereinafter.**

On finalisation of the layout post user feedback the supplier will be required to commence erection work on board and complete the same as per ship construction schedule. The detailed ship wise construction schedule will be handed over to the firm by Shipyards. The supplier is required to depute and position representative to Shipyards during the finalisation and approval of these drawings and during subsequent inspection stages.

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PART – I: GENERAL REQUIREMENTS

Accessibility of Structure

5. For the efficient performance of damage control duties the shipside and main watertight bulkheads are to be kept as clear as possible from permanent fittings. Where fitted, linings and items of furniture are to be made readily portable to expedite periodic surveys of the structure.

Material

6. All material used in accommodation areas is to conform to the requirements of the relevant specifications stated in these specifications. Special attention is to be paid to its fire and toxicity characteristics (as per Def. Stan 07-247)

7. Low Flame Spread and Adherence to IMO FTP Code:- (Refer APPENDIX-19 para 27 & 28)

A type test certificate for all major components, where applicable is required to be provided by the supplier and a confirmation is to be provided that the material being used is in conformance with the type test. A low flame spread means the surface thus described will adequately restrict the spread of flame, this being determined in accordance with the “Fire Test Procedures Code, as adopted by the Maritime Safety Committee of the IMO by Resolution MSC.61 (67) International code for application of fire test procedure or Def Stan 07-747 part I, selection of materials on the basis of their fire characteristics. Relevant test certificates from authorised laboratories are to be submitted by the firms along with technical details. Non-combustible materials are considered as low flame spread.

All fabrics used must have following tested qualities:

Parameter	Specification	Value
Bursting Strength	ASTM D-3786: 2001	> 200 lb/ sq. inch
Fabric Weight	ISO 3801: 1977 (83)	300 gm /m² ± 25 gm/m²
Colour Fastness to Rubbing	ISO 105X12: 2001	Dry: 4-5 Wet: 4
Colour Fastness to laundering	ISO C 06 A 2s: 1994	

All bedding components have qualities of resistance to the ignition and propagation of flame, this being determined in accordance with the Fire Test Procedures Code, as adopted by the Maritime Safety Committee of the IMO by Resolution MSC.61 (67).

Polyurethane Foam that would be used should necessarily be moulded Polyurethane Foam of self-extinguishing type and in compliance with requirements above. The foam on formation must have the following physical properties:

- (i) Density: 40-43 Kg/m²
- (ii) Hardness: 20-22 Kg

Wall Panels :-

8. The quantity of wall panels required to be provided by the supplier ship wise is placed at Appendix- 11

<u>Sl. No.</u>	<u>Characteristics</u>	<u>Requirements</u>
1	SHADE	as Per Requirement
2	GLOSS AT “0”	70 ± 5 UNITS

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3	SCRATCH HARDNESS	6 KG
4	CROSS CUT ADHESION	GT=0
5	IMPACT TEST	275 KGCM
6	DFT	50 – 55 MICRON
7	FLEXIBILITY	3mm MANDREL
8	SALT SPRAY	1000 HRS

The entire panelling system should be of detachable panel construction. One removable panel per wall should be provided which on removal will facilitate removal of adjacent panels. In addition, for frequent access an inspection door is to be provided. The fittings on sides exposed to lobbies / passageways are generally heavier than internal fittings. Inner panels should be able to bear load of cabin fittings, whereas lobby / passageway side panels should have load bearing capacity of 80 kg at 4 point loading. Supplier should submit details of fixing arrangement for various fittings i.e. power panels, junction boxes etc.

All panels i.e. bulkhead, ceiling and wet compartments should have proper sealing arrangement so that there is no possibility of access for rodents, insects etc. Further at the time of erection insecticides are to be placed in the recess to prevent growth in future also.

Wall Panels are to be iaw IHQ-MoD(N)/DNA letter NC/Policy/H-121 Equipment dated 05 April 17 placed at Appendix 19 of TSP. Stainless Steel panels are to form the boundaries of wet compartments.

Following aspects are to be adhered to:-

- (i) There should be no gaps in panel joints in bathroom complexes that are likely to allow ingress of water onto the shipside/bulkhead. White cement or an equivalent sealant is to be applied at the joint of panel and base-channel to ensure no ingress/egress of water. The same is to be verified during inspections. The sealing arrangements for inter-panel and panel-base channel sealing are to be indicated in the drawings.
- (ii) Fitment of panel to ensure ease of removal/refit of panels by ship's staff.
- (iii) Access to escape hatches/scuttles, inclination of ladders for ease of movement of personnel, modular furniture clear off underwater tanks/cofferdam manholes, valves of pipes, light fittings and ventilation openings is to be ensured while undertaking modular accommodation work.
- (iv) As a minimum measure, inspection window are to be provided on every third continuous panel at a height not exceeding 1m from the deck level to aid easy access of areas behind the panels. However, the exact requirement of number of Inspection windows is to be finalised whilst execution of the work based on the actual requirement in a particular compartment in consultation with WOT.
- (v) Piercing of any bulkhead panel is not permitted and stiffeners should be provided in way of any fittings on the bulkhead.

Wet Compartment Panels :- (Refer APPENDIX-19 para 34 & 35)

9. Panels in way of wet compartments (including galleys /pantries and serveries) and alleyways are to be suitably designed for fitment of steel coamings so as to prevent water from penetrating into the construction. When installing wet room panels, the panel joints must be sealed to prevent water from penetrating into the construction. Design of wet units should be such that the unit is watertight. Adequate provision for access to structure below the units is to be provided by way of access hatches and removable panels. Unshipping / removal of wet units should not be a requirement to maintain the unit as well as surrounding / supporting structure.

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Cabling and Systems Lines

10. All cabling and system pipes / ducts are to be concealed. Appropriate conduit panels with ducts built into the core of the panels are to be used where required to meet this end. The conduits are to be designed to meet relevant Naval Standards for passage of cables. An inspection chamber or duct is to be provided opening into the passageway, i.e. outside the accommodation. In this inspection chamber, Junction Boxes are provided for integration of the module with the ship systems. Design of all system/cables downstream of the junction box will form part of the module design.

Ceiling Panels:- (Refer APPENDIX-19 para 4 of Appendix E)

11. Layout of ceiling has to be undertaken in consultation with the yard and Navy taking into consideration symmetrical layout in all cabins (as far as feasible) the location of light give clear head room of at least 2.0 m. The quantities of panels and profiles calculated based on drawing of the areas (Appendix- 11) where such panels are to be fitted, should allow for damage, which may occur during installation. The design of the ceiling panel joint should be such that installation easy and fast and allows each individual ceiling panel to be demounted. Ceiling panels are to be insulated to meet acoustic and thermal requirements of the individual compartments. Inspection hatches are to be provided which are to be installed as an integrated part of the ceiling. Other material properties and surface characteristics shall be the same as for wall panels. These panels are required to be double skin with insulation embedded in between.

12. ACTION STRIPPING PLAN The OEM should give a guideline document (04 copies per ship) for removal of non-essential panelling, fittings, furnishings etc. Required for preparing ship for action. The draft action-stripping plan is to be submitted for approval 08 weeks after completion of all composite layout drawings.

Doors.

13. Doors in this case are non-watertight/non-gastight partition doors made out of steel sheets of specifications similar to the material of the panels and duly insulated. Doors must have all features such as kick-off fire escape hatch, A/C ventilation re-circulation louvers, etc. The prototype Hinged cabin door must be subjected to accelerated performance tests for durability of 80,000 (eighty thousand) cycle opening and closing, Strength of hinged door and Slamming Test and Strength of pivoted doors as per Appendix 8.

Locking arrangement of doors.

14. The doors are to be provided with mortise locks with three keys. The key plan of doors with grouping of compartments for master key arrangement is to be prepared by the supplier. It is to be submitted by the OEM within 04 weeks of approval of all composite drawings, and is to be vetted by SHIPYARDS and approved by NSM. The key plan drawing is also to indicate the location of the duplicate key boxes (at least 20 numbers) and these are to be supplied by the OEM.

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Furniture :- (Refer APPENDIX-19, Appendix D)

15. All furniture to be fitted are required to meet the general requirements specified in NES 128. Further, all furniture / equipment fitted should be approved for fitment on board naval ships and are to be state of the art. Further furniture design and layout are to be guided by ergonomics and guided by requirements of personnel living and working on board in services conditions specified for the ship. Guidance on minimum working areas for design of furniture and space allocation are placed at Appendix 6. Minimum additional requirements of certain furniture units are specified in the following paragraphs:

- (a) Wardrobes, kit lockers are to be designed by the contractor as per the scaled requirement of Officers/Senior Sailors/Junior Sailors considering, ergonomics, aesthetics of compartment, approved master décor system of the compartment as per the requirements in NES 107, NES 184 etc. Such furniture is required to be firmly anchored to Deck / Bulkhead as appropriate. These wardrobes/kit lockers must be so made that they are, ready to be assembled at site, easy to ship in through a hatch size of 800X800 mm, are stackable both vertically and horizontally and are easily removable for serviceability. (For kit locker Def stan 128 is to be referred)
- (b) An Integrated Desking unit incorporating Office Tables with Pedestal Units, Computer Workstation etc. are to be made of Pedestal Units and Tops to suite the following requirements in addition to the general requirements specified in NES 128:
 - i. Table Top: The table top unit is to be made out of Non Combustible material with working surface in accordance with para 5 (a). If Burma teak wooden tops are used they must be chosen from Fire retardant marine ply board and laminated with hot press for strong bond. Balanced construction of lamination on both sides should be made to avoid warp. The edges must be treated with hot melt PVC bond / other equivalent treatment so as to make it impermeable to moisture. Notwithstanding, table tops are to be subjected to performance evaluation test for its load carrying capacities.
 - ii. Pedestal Unit: The pedestal units are required to be so made that it is firmly anchored to the Deck of the ship. All the drawer units and sliding mechanism must be tested to dynamic loading for accelerated performance tests to evaluate sliding mechanism and the locking arrangements as per Appendix- 8. Besides, the above said requirements; it must meet the general requirements of NES 128 & NES 107 and material specifications as brought out earlier.
 - iii. Computer table: State of the art computer tables with keyboard tray and mouse pad firmly anchored to deck are to be provided as in all Officers' cabins / JOMS. The table shall be compact and self-containing as far as the entire computer system and its accessories are concerned. Power supply points are to be located close to the table and provision for securing the computer and its accessories for sea should also be integral to the table.
- (c) All the bunks and sleeping units must be designed taking in to consideration of ergonomics, anthropology of average Indian Navy Sailors and officers, ease of operation and maintenance-free structure. These units should have under the bunk storage (full depth self-locking sliding drawer units), Fire retardant upholstery, Reading light, and built in adjustability for fixing on board. The under carries drawer units are also required to be subjected to accelerated performance tests for 75000 cycle with 30 Kg load. Guidance for dimensions of bunks / sleeping units and its usage are given in figure placed at Appendix- 6. Prior to manufacturing of the actual bunks, the manufacturer must get the manufacturing drawing duly approved by the nominated inspecting authority. Prototype performance test certificates are also required to be produced prior fitment on board. (Refer para 1(h) Appendix D of Appendix 19 for bunk dimension)

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- (d) Chairs shall be approved for fitment on board ships and upholstered as specified elsewhere in these specifications. Provision shall be made for all chairs to be anchored to the deck for safe use at sea.
- (e) The filing Cabinets are to be made of CRCA steel conforming to IS 513 / equivalent material. The steel components are required to be pre-treated and powder coated as per specifications discussed earlier. These cabinets are to be so designed that they are firmly anchored to deck and can be vertically/Horizontally extended. These cabinets are required to be tested for its performance of life.

Low flame spread

16. A type test certificate for all major components, where applicable is required to be provided by the supplier and a confirmation is to be provided that the material being used is in conformance with the type test. A low flame spread means the surface thus described will adequately restrict the spread of flame, this being determined in accordance with the “Fire Test Procedures Code, as adopted by the Maritime Safety Committee of the IMO by Resolution MSC.61 (67) International code for application of fire test procedure or Def Stan 07-747 part I, selection of materials on the basis of their fire characteristics. Relevant test certificates from authorised laboratories are to be submitted by the firms along with technical. Non-combustible materials are considered as low flame spread.

Décor

17. The final scheme will be finalised only in consultation with the WDB (SSG)/ WOT during compartment layout / scheme detailing stage.

Noise Levels in Personnel Spaces

18. This section sets down the criteria for noise levels in spaces covered by these SOTRs when the ship is engaged in peacetime mission profiles.

19. Noise level is defined as the A-weighted sound pressure level measured in accordance with ISO 2923.

Maximum noise levels

20. When the ship is proceeding in its normal operating condition and in accordance with the provisions specified at Appendix 6, the noise levels specified in Table1 are not to be exceeded. Acoustic insulation of bulkhead and ceiling panels are to be so designed to achieve the standards within these spaces.

Noise measurements

21. Noise measurement trials are to be offered to Navy and SHIPYARDS post installation in specified operating conditions. Noise measurements are to be conducted in accordance with ISO 2923 and IMO Resolution A.468. Measurements of noise levels are to be carried out using precision grade sound level meters conforming to IEC 651, Type 1 or 2. Subject to demonstration, equivalent standards are acceptable.

Space / Category	At Anchor (with own electrical supply)	Normal Cruising
	dB (A)	dB (A)
Medical Spaces (Sick Bay)	50	60
Berthing Areas	50	60
Mess rooms (also used as battle dressing station)	50	65
Offices, Libraries	65	65
Galley, Pantry, Hobby, Wash Rooms	70	75

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Table 1. Accommodation-Maximum Noise Levels, in dB (A)

22. Where the measured noise exceeds the relevant criteria by 3 dB(A), or contains subjectively annoying low frequency noise, or obvious tonal components, octave band readings are to be taken, with centre frequencies from 31.5 Hz to 8 kHz.

Noise measurement locations

23. Measurement locations are to be chosen so that assessment represents the overall noise environment on board the ship. At least 50 percent of the sleeping accommodation areas are to be surveyed. Distribution of the measurement locations is to be agreed between the contractor and Navy/SHIPYARDS.

24. During measurement trials, recognised noise sources are to be operated at their normal level of noise output (e.g. machinery at design rating), at a constant speed and course, in a depth of water not less than five times the draught of the ship.

Noise Survey Reporting

25. The reporting of results is to comply with ISO 2923, and is to include:

- (a) Measurement locations indicated on a general arrangement plan including, where possible, the measured dB (A) level.
- (b) Tabulated dB (A) noise levels, together with octave band analysis for positions where the level exceeds the specified criterion by 3 dB (A), or where subjectively annoying low frequency or tonal components were present.
- (c) Ship and machinery details.
- (d) Trial details:
 - Loading condition
 - Machinery operating condition
 - Speed
 - Average water depth under keel
 - Weather conditions
 - Sea state
- (e) Details of measuring and analysis equipment (e.g. manufacturer, type and serial numbers), including frequency analysis parameters (e.g. resolution, averaging time, window function).
- (f) Copies of the relevant instrument calibration certificates, together with the results of field calibration checks.

Insulation:- (Refer APPENDIX-20)

26. Thermal and Acoustic insulation of bulkheads and decks in the compartments covered by these SOTRs are in general to be in accordance with requirements laid down in and meet the requirements of IMO Resolution A.468 (XII). Temperatures to be maintained in the compartments, temperature of adjacent compartments.

27. The supplier is required to submit a insulation plan (Acoustic and Thermal) for the compartments covered under these SOTRs along with the offer.

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Air Distribution

28. Modular compartments are to be provided with adequate openings (sound proof) for return air to escape into the passageways. The relevant figures will be provided.

Electrical Services and fittings:

29. The following services shall be provided in accommodation spaces. The installation of electrical fitting and laying of cables shall generally conform to NES 502. Special care shall be taken to provide proper grounding of electrical units for personal safety.

- a) General lighting, operating on 230V, 50Hz, 1Ph, 2 wire (both are live) supply system, including red/blue safety lights, dark adaptation lights, bunk lights, desk lights and mirror lights shall be provided as per requirement. The light fittings shall conform to the illumination specified in NES 587 and/or IHQMOD (N) specification EED-Q-261. DP switches shall be provided to control lights. LED light fittings are preferred for general illumination. The illumination level in these spaces shall be catered for as per NES 587/ EED-Q-261.
- b) All the compartments are to be adequately illuminated and should pass “Adequate Lighting” and “Red Lighting” trials conducted by WOT.
- c) Larger compartments such as SS/JS Mess, Dining Halls, Ward Room etc. and the Senior with Officers cabins shall be provided the lighting circuit from two different sources/phases for the requirement of alternate lighting for general illumination of these compartments.
- d) LED based Decorative lightings/spot lights to be fitted in spaces such as wardrooms, recreation rooms, bar etc. unless specified otherwise.
- e) Battery operated LED based Automatic Emergency Lanterns (AELs) shall be fitted in Messes, Dining halls and other multi-occupancy areas to indicate the exit route in case of black out.
- f) Switch sockets 5A/15A, 230V, 50Hz, 1Ph (2wire) for portable equipment operation, refrigerator and Shaver sockets shall be provided as per quantity indicated and connected from portable equipment power supply system.
- g) The communication facilities such as Main Broadcast/ SRE (Recreation) loud speakers, Telephone exchange auto telephone and VCS unit shall be provided at spaces as specified - in the SHIPYARDS system drawings with changes if any, separately indicated by IHQMOD (N). The fittings and cables for the same shall be provided by SHIPYARDS
- h) Necessary facilities including power supply sockets and signal circuits for TV and Computer with LAN shall be provided in all spaces unless otherwise indicated by IHQMOD (N).
- i) Push and Buzzer units (24V DC) shall be provided in Senior Officers cabin and Ward Room as indicated in SHIPYARDS drawings as part of Call-up system.
- j) The electrical arrangement in W/C and Bath Rooms shall conform to NES 502 and 587. Mirror lights & Amenity sockets for shaver and portable equipment switch sockets shall be fitted in these spaces.

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- k) The internal wiring in the compartments shall be terminated in properly marked and identified connection boxes/ junction boxes (separate for lighting supply, power sockets supply, communication and signal circuits) to enable connection to ships system wiring.
- l) The electrical fittings (DP switches, Loop-in bases, Switch sockets, JBs, lighting fixtures, speakers, bell & buzzer etc) and cables shall be of approved type for installation on warships. For power cables EBXL type of cables to used. For low power and data cables LFH cables are to be used. Cables shall be provided by SHIPYARDS but cable laying shall be undertaken by the supplier as per SHIPYARDS approved drawings. Cable laying standards should be as per warship standards followed by SHIPYARDS in other parts of ship. All electrical switches and switch sockets should be within the metallic enclosure to avoid spread of sparks and fire accident with sandwich panel unless specified otherwise.
- m) The electrical fittings shall be fixed on brackets welded to the bulkhead or deck head. Small fittings on bulkhead as far as possible shall be grouped and fixed on common plate.
- n) Grouping of lighting Circuits: General lighting including bunk/berth and mirror lightings but excluding red safety lighting are to be grouped in two or more number (preferably even) of circuits if the total number of points are more than ten. While one half of these would be supplied from one source, the other half would be supplied from an alternative source. Red safety lightings are to be grouped in a single circuit.
- o) SHIPYARDS will bring the cables only up to the entry point of the respective compartment. Routing of the cables, from the entry point, to the various equipment within the compartments will be the responsibility of the supplier.
- p) All electrical items such as light fittings, switches and sockets should be of marine grade / from reputed manufacturers, unless specified otherwise.
- q) Earthing provisions for all electrical items to be provided as per EMI / EMC guidelines.

Vibration:- (Refer APPENDIX-19 para 15 b)

30. Vibration level is defined as the single amplitude peak value of deck structure vibration during a period of steady-state vibration, representative of maximum repetitive behaviour, in mm/s peak, over the frequency range 1 to 100 Hz.

Lighting

31. Minimum white light requirements for accommodation spaces :- (Refer APPENDIX-19 para 15 d)

Maximum vibration levels

32. Vibration limits are given in units of:

- Peak acceleration (mm/s²), single amplitude, in the range 1 to 5 Hz; and
- Peak velocities (mm/s), single amplitude, in the range 5 to 100 Hz.

33. The supplier is to guarantee that the modular accommodation installation (including panels, furniture etc.) will not cause vibration levels in spaces covered in these SOTRs (with the ship proceeding in its normal condition) to exceed levels specified in Table 2.

**MAZAGON DOCK
SHIPBUILDERS LTD.**

(A Govt. Of India Undertaking)

Dockyard Road, Mumbai –400 010.

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Sl. No.	Location	1 to 5 Hz	5 to 100 Hz
		Peak acceleration mm/s ²	Peak velocity mm/s
		Acceptance numeral	
1	Sleeping cabins, sick bays	126	4
2	Day cabins, offices, conference rooms, mess rooms	157	6
3	W.C & Bathrooms	157	5

SPACE REQUIREMENTS**General Standards**

34. The area standards and space requirements laid down in NES 107 are to be regarded as the absolute minimum subject to actual availability of such space. It is the responsibility of the contractor to see that these standards are NOT eroded.

Critical Dimensions

35. The following Clauses indicate the minimum acceptable clearances required to ensure that any given compartment would fulfil its required function within the area allowance.

36. Clear heights above deck are specified in NES 130 Part 1 and 2 for compartments fitted with deck head linings. In compartments not so fitted, the clear heights above deck are to be 2250mm in way of furniture units but may be reduced to 2050mm in other areas, providing adequate clearance for access to any furniture item is maintained.

37. Where 'carcase' furniture, ex. cupboards, drawers, lockers, is fitted, a clearance equal to the overall depth of the carcase plus 10mm is required in front of that furniture. This will allow individual items to be replaced without interference or dismantling other nearby furniture items.

38. A clear space of 920mm is required in front of desks and secretaries fitted in cabins to allow adequate space for chair movement.

39. The horizontal distance between facing multi-tier bunks/bunk settees is to be not less than 700mm. A minimum vertical distance of 560mm is to be maintained between the top bunk mattress and any overhead obstruction.

40. The horizontal distance in front of a multi-tier bunk/bunk settee and any facing carcase furniture is to be not less than 840mm. If a multi-tier bunk/bunk settee is facing a bulkhead or other permanent obstruction the distance between is to be not less than 640mm.

41. The horizontal distance between facing rows of carcase furniture and any permanent obstruction is to be not less than 840mm.

42. Where settee modules are arranged as facing units the clearance between them is to be not less than 1400mm.

43. Sideboard units and other similar items are to have a clear space in front of them at least 900mm in depth.

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44. All dining tables are to have adequate clearances to allow all seats at table to be accessible. Where tables are sited in rows, the distance between the long near edges of tables in adjacent rows is to be not less than:

- (a) Officers 1900mm
- (b) Ratings 1450mm.

45. The distance between the long near edge of tables and the parallel bulkheads or other permanent obstructions is to be not less than:

- (a) Officers 1250mm
- (c) Ratings 900mm.

46. Widths of main gangways between groups of tables are to be not less than 900mm. In Officers' Cabins the bunk light is to be sited centrally above the head-end of the bunk at a height of 600mm above the top of the mattress.

47. Cap and coat hooks are to be fitted at a height of 1800mm above the deck and the space between hooks is to be at least 250mm. Where large numbers of hooks are required, a second tier is to be arranged at a height of 1425mm above the deck with the hooks sited between those in the top tier. Cap and coat hooks are not to be sited on the sides of furniture items.

48. All types of bunks are traditionally sited in the fore and aft direction with the head-end forward. Bunks may, however, be fitted athwart ships with the approval of WDB if a better layout can be obtained. If bunks are fitted athwart ships then the head-end of the bunks is to be inboard. Jumping bars are to be fitted to facilitate access to and from top bunks; these bars are to be sited approximately 700mm from the bulkhead and 230mm outside the bunk edge.

48. The space occupied by existing ship's structure i.e stiffeners, pillars etc are to be considered while designing the modules / spaces.

Furniture And Fitting Allowance

General

50. All accommodation spaces must be equipped with sufficient amount of furniture and fittings to enable the crew to sleep, eat and relax with as much comfort as the allowable area standards will permit.

51. The general requirements for Soft Furnishings and Fabrics vis-à-vis materials to be used and the make-up and manufacture of all soft furnishings including such items as mattresses, settee seats, backrest cushions, bedding stowage bags, covers, curtains and other miscellaneous items are to be in general as per NES 129. The colour schemes are to be selected in consultation with and approved by the Navy. The use of materials other than those listed in the NES is to be subject to the approval of the Navy. (Refer para 33 of Appendix 19)

52. Furniture is to be fitted so as to minimize gaps and dirt traps. Where gaps exist they are to be sealed with aluminium alloy plates or extrusions painted to match the furniture. The plates or extrusions are to be secured by rivets or machine screws and captive nuts. Self-tapping screws are not to be used.

53. In CO's cabins, Wardrooms and Anterooms, standard modular furniture is to be finished with approved natural Burma teak wood.

54. Each crewmember is to be provided with sufficient personal stowage space to take all his official kit plus space for stowage of limited civilian clothing and sundry items.

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55. Bunks are to be sited fore and aft but bunks may be sited athwart ships if it results in a better layout with the concurrence of WDB.

56. Where excessive shipside flare exists, consideration is to be given to using angled bunks in lieu of the standard vertical bunks.

57. Access doors are to be the standard type sliding door unless otherwise stated and fitted in the common bulkhead with the passageway.

58. Lashing points are to be provided in convenient positions to allow free standing furniture, such as chairs, tables, etc, to be collectively secured in heavy seaways.

59. All cabins are to be fitted with washbasins and a bulkhead mounted fresh water storage tank fitted with a mirror.

Tabular Statement of Scales

60. Table at Appendix 9 itemizes the full range of furniture and fittings and the minimum allowances required for specific compartments are to be as per NES 107 and an extract is placed at Appendix 6 -. These tables are to be taken as minimum requirements and all fittings / furniture required to fulfil all requirements laid down in these SOTRs are to be provided by the contractor. The general guidelines for design of accommodation spaces are listed in the following paragraphs.

PART – II: VIP ACCOMMODATION REQUIREMENTS

CO' Day Cabin

61. The day/dining cabin is to be fitted out to provide office, dining and relaxation facilities. A dividing curtain, supported on an overhead two-position track, is to be fitted to segregate the dining area. Pantry facilities in accordance with NES 121 are to be provided (Pantry is not in the scope of this SOTR)

62. The office area, comprising a desk unit, bookshelves etc., is to be positioned so that the user has a commanding view of the access door and also has space in the immediate vicinity for interviewing. A VCS communications unit is to be sited within easy reach of the desk chair position.

63. Relaxation seating is to be provided by a combination of easy chairs and settee modules. General-purpose stowages and sideboard tops are to be fitted as required for the stowage of personal items and space for VCD/DVD players. One of the cupboard units is to be fitted out for the temporary stowage of bottles and glasses.

64. Within the dining area, tables with deck fixing arrangements to seat a minimum of 8 persons are to be arranged so that efficient steward service is possible at all chair positions. Sideboard units, as required, are to be located on the common boundary with the Pantry. One of the sideboard drawers is to be fitted out for cutlery stowage. A Bar Cupboard is to be incorporated into the sideboard unit.

65. Two access hatches fitted with sliding doors are to be fitted for the passage of dishes etc. to and from the Pantry. The height of the sideboard top in the dining area is to be the same height as the working tops in the

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Pantry so that with the hatches open, dishes may be passed through without any encumbrance. (Pantry is not in the scope of this SOTR)

All the furniture items, dining table, dining chairs, sofa sets are required to have frame of Burma teak and upholstery to be of the highest quality as per approval of ship staff.

CO' Night Cabin

66. The bed berth is to be sited in the fore and aft direction. A VCS communications unit (or an extension of the unit fitted in the Day/Dining Cabin) is to be sited within easy reach of the bed berth. Furniture items are to be fitted to provide hanging and stowage space for clothing and kit; some of these items are to be arranged to form a dressing unit. All furniture items to be of Burma teak.

Private Bathroom

67. An access door is required to be given which will give direct access from the Night Cabin. Door is required to be of teak wood. All wooden items are to be fire retardant.

Access

68. The lobby is to be fitted with cap and coat hooks equal to the number of seats provided at the dining tables. All access doors off the lobby are to be of the hinged type. Except for doorways to the private bathroom, doorsills are not required. Lobby is not in the scope of this SOTR.

Captain's Apartments

General

69. Suites are to be fitted out to enable the occupant to carry out staff duties or Ship management, to provide personal relaxation and, as far as space will permit, a modicum of official entertaining. Each suite consists of a Day/Dining Cabin, Night Cabin and Private Bathroom. A pantry is also provided as part of the Captain's apartments. (Pantry is not in the scope of this SOTR)

Day/Dining Cabin

70. To be fitted out to the same basic requirements as the Flag Officer's Day Cabin. The dining table, with deck fixing arrangements, is to be capable of seating a total of 8 persons. Sideboard units are to be sited on a common bulkhead with the Pantry. Pantry facilities in accordance with NES 121 are to be provided. (Pantry is not in the scope of this SOTR)

Night Cabin

71. To be fitted out in all respects similar to the sleeping cabin provided for Flag Officers. A Security Container is also to be fitted.

All furniture items, sofa sets, dining table, dining chairs to be of Burma teak. Design of all these items will be approved by ship staff. All wooden items are to be fire retardant.

Private Bathroom

72. An access door is required to be given which will give direct access from the Night Cabin. The door is required to be of teak wood. All wooden items are to be fire retardant.

Access

73. Standard hinged doors are to be fitted to all accesses and cap and coat hooks are to be provided outside the access door of the Day/Dining Cabin equal to the number of seats provided at the dining table.

Wardroom

General

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74. Wardroom is to be fitted out solely as Dining Rooms, but may be used for other social activities, e.g. Cinema shows.

75. Dining tables, either 6- or 8-man tables with deck fixing arrangements from the standard range, are to be provided. Clearances as stated in these requirements are to be maintained to ensure efficient steward service at all seat positions.

76. Dining side chairs are to be provided for each place at table with the exception of Mess and Vice Presidents' positions, which are allocated dining armchairs.

77. Places at dining tables are to be provided as far as practicable for as many Officers (excluding Flag and Commanding Officers) as the ship can accommodate. The tables may be provided with collapsible and securable coaming to prevent slipping of plates in rough weather.

78. Sideboard facilities are provided to a length of 1m for every 20 Officers seated. The sideboards are to be made up from standard drawer and cupboard units mounted on plinth units. Sideboard drawers and tops are to be fitted above the other units to bring the finished height of the sideboards to approximately 900mm. Where drawers are required for the stowage of cutlery they are to be fitted with suitable plastic inserts. Sideboards are to be sited along the bulkhead, which is common with the Galley/Pantry.

79. Direct access between these two spaces is to be provided by a door constructed of fireproofed timber in accordance with NES 188, faced both sides with HPL in accordance with the approved decor scheme. The door is to be of the swing type and fitted with automatic door checks, stainless steel kick and fingerplates; clear sight panels at eye level are also to be fitted. Additionally, hatches with sliding or hinged doors are to be provided to allow trays etc. to be passed through. The working surface on the side is to be flush with the sideboard tops.

All furniture items inside Wardroom Ante Room including sofa sets and setae are to be of teak wood. All wooden items are to be fire retardant.

Portraits

80. Provision for a pair of framed, glazed and illuminated Portraits to be hung is to be provided in commanding positions behind the chair occupied by the Mess President.

Miscellaneous Fittings and Items

81. The wardroom is to be tastefully decorated in consultation with the Navy.

82. Napkin racks are to be provided and sited in the vicinity of the main access doors. The number of napkins to be stowed is to be 110% of the places at table.

83. Small, hinged tables/shelves are to be fitted in remote corners of the Wardroom, away from the sideboard, to assist the stewards' service.

84. Cap and coat hooks are to be fitted on a convenient passageway bulkhead outside the Wardroom.

Access Doors

85. Burma Teak Wooden doors are to be provided at the entrances to the wardroom.

Wardroom Anteroom

General



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86. A Wardroom Anteroom is provided and is to be fitted out for relaxation and recreational purposes, including bar facilities.

87. Seating is to be provided for a minimum of 90% of the total number of Officers accommodated. Approximately two-thirds of the seating is to consist of settee modules arranged to form seating alcoves. The remaining seating is to be made up with a combination of easy chairs and dining armchairs. Adequate numbers of bar stools are to be provided but are not to be included when assessing the total seating requirements.

88. An entertainment centre is to be provided in a convenient position, remote from the bar. It is to consist of a standard drawer and cupboard unit, mounted on plinths and fitted with a sideboard top. The sideboard top is to provide a position for a TV receiver and/or Hi-Fi equipment; above this, and secured to the bulkhead, a Bookcase and Trophy Cabinet are to be sited. Provision for fitment of large plasma screen is also to be provided in the entertainment centre.

100. Magazine racks are to be sited, as convenient, above the settee modules.

89. A space immediately adjacent to the main access door is to be arranged with sideboard modules. A stainless steel shelf is to be fitted above the sideboard to house Coffee-making equipment (refer NES 121 Parts 1 and 2 and NES 122 Parts 1 and 2). The length of sideboard is to be 500mm for every 20 Officers accommodated. The sideboard drawers are to be fitted with rattle-free stowages for crockery.

90. Notice Boards, Letter Racks and a Post Box are to be provided in a convenient position adjacent to the main access door.

91. Bar facility is to be provided in the Wardroom Anteroom. The bar is NOT to exceed 10% of the area of area of Wardroom.

92. The bar must include a stainless steel sink with lid and a glass-washing machine. Particular attention is to be paid to the siting of bar: it must NOT be sited near the main entrance of the compartment.

93. Bars are to be constructed from fireproofed plywood with appropriately finished top layer. Working surfaces are to be as the counter top except that the area containing the washing-up sink is to be lined with stainless steel. Shelves and any exposed parts of the back unit are to be white. Concealed fluorescent lighting are to be fitted to highlight display shelves and the bottles fitted on bottle suspension brackets.

94. The bar top of the bar counter is to be at a height of 1075mm above the deck. A stainless steel trough or footrest may be fitted along the bar front at deck level to become a decorative and functional feature.

95. The working space between the bar counter and the back unit must be adequate to allow the barman to work; an absolute minimum of 660mm is to be allowed for a one-man operated bar, but in large bars where more than one operator is working this minimum figure is to be 1000mm.

96. Access to the normal-type bar with a counter is via a hinged counter-flap with a lockable half-door under.

97. Decorative telescopic grilles or decorative roller shutters which can totally enclose the working area of the bar to prevent pilferage are to be provided. Portable corner or intermediate posts are to be provided as necessary. Each grille or shutter is to be fitted with locking arrangements to ensure complete bar security when closed.

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PART – III: WC / BATH COMPARTMENTS

Introduction

98. The WC/Bath compartments have been indicated in drawing placed at Appendix-7. Unit bath facilities are envisaged for Captain whereas others would be provided with common facilities as indicated. All wet units shall be so designed to ensure easy accessibility to surrounding / supporting structure for maintenance / repairs. There should be no requirement to unship the unit for maintenance work / repairs to either the unit or surrounding / supporting structure.

General and Design Requirements for WC Spaces

99. The general and design requirements for WC spaces are given below:

- (a) Special attention shall be given to ventilation arrangements to prevent the spread of odours to surrounding compartments.
- (b) The WC units shall have vacuum sewage system (WC units do not form part of scope of supply) and WCs provided for the Medical Complex shall meet the requirements specified by NES 106 Parts 1 to 4.
- (c) Separate doors shall be provided to each cubical and a lockable communicating door is also to be fitted in the dividing bulkhead. WC cubicles shall be a minimum of 800 mm wide with a 535 mm wide double door opening inwards. The distance from front of seat to inside of door shall be normally not less than 710 mm but where space is limited this distance may be reduced to an absolute minimum of 660 mm.
- (d) The cubicle divisions shall be not less than 1830 mm high above the foot rest with the bottom edge 150 mm clear of the deck to facilitate cleaning.
- (e) All urinals (urinals do not form part of scope of supply) shall be fitted together in a row or in parallel arrangement one compartment and both compartments shall be fitted with washing facilities.
- (f) Boundary bulkheads shall be made watertight to a height of 230 mm above the deck. Compartment doorsills shall be a minimum height of 230 mm.
- (g) Doors giving access to WC and urinal compartments shall be self-closing.
- (h) WC pans shall be installed so that the height of the seat above foot level does not exceed 410 mm. Type of WC Pans to be used shall be Asian type Steel WC for all Sailors and European type China WC for Officers.
- (i) Urinal bowls shall be installed with a minimum separation of 610 mm centre to centre and the rim of the bowl 700 mm above the deck covering.
- (j) The wash basins shall also be made of Stainless Steel.
- (k) Toilet roll holders shall be secured to the cubicle bulkhead 150 mm in front of the WC pan. Spare toilet roll stowage shall be secured to the cubicle bulkhead in a position behind the backrest.
- (l) Deodorizers shall be hung on the bulkheads and not in the WC pans or urinal bowls.**

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General and Design Requirements for Bath Spaces

100. The general and design requirements for Bath spaces are given below:

- (a) Washbasins, showers and baths shall be provided, based on occupancy indicated.
- (b) There shall be no direct access between bathrooms and WC and urinal compartments except in the case of the combined arrangements.
- (c) Bathrooms in sickbays shall be provided as required by NES 106 Parts 1 to 4.
- (d) Layout of Communal Facilities: Shower cubicles shall be arranged singly or in groups and each cubicle shall enclose a minimum deck area of 840 mm square
- (e) Washing positions shall not be fitted against the ship's side. When fitted in rows, the clear space between the fronts of basins shall be not less than 1065 mm and a minimum clear distance of 75 mm shall be maintained between the sides of adjacent basins to facilitate cleaning.
- (f) Shower cubicles shall be formed of screen bulkheads and partitions. Screens and partitions shall extend from 150 mm to 2100 mm above the deck, or 150 mm below the deck head lining, whichever is the least. Access openings to cubicles shall be 535 mm wide.
- (g) In shower entrances, the upper edges of coamings and exposed edges of screen bulkheads shall be fitted with an aluminium alloy 'U' shaped channel section of approved design secured by an approved adhesive.
- (h) Screens or partitions fitted to the ship's structure shall be made portable so that the structure behind can be surveyed.
- (i) The following dimensions shall be maintained in all bathroom and shower compartments:

101. Clearances

Clear Headroom:	not less than 1980 mm
Between fronts of facing washbasins:	not less than 1065 mm
Front of washbasins from bulkhead:	not less than 800 mm
Between fronts of facing showers:	not less than 800 mm
Front of washbasin from bulkhead:	not less than 1100 mm if inclusive of dressing space

102. Height of Fittings

Shower nozzle	1675 mm to 1830 mm above deck covering
Washbasin (rim)	840 mm above deck covering
Mirror (bottom)	535 mm above washbasin rim
Hooks hanging Gown	1700 mm above deck covering
Towel Bar	As convenient
Soap Tray (in Shower)	As convenient

Services

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103. End connection of all services to wet spaces shall be provided just outside these spaces by the yard. All internal arrangement /distribution of these services shall be the responsibility of the modular accommodation supplier. The Services that shall to be provided are listed below:

- (a) Deck Drains: Deck drains shall be fitted for efficient drainage of the compartments. Care shall be taken to ensure that adequate limber holes are provided in any divisional bulkheads to permit water drainage to the deck drains under all conditions of heel and trim.
- (b) Sewage Drains: Sewage drains shall be fitted for the discharge through vacuum system (not in scope).
- (c) Fresh Water: Hot and cold fresh water supplies shall be provided for the washing facilities installed. Fresh water shall be provided for the urinal and WC flushing system.
- (d) Lighting: The electrical arrangement in W/C and Bath Rooms shall conform to NES 502 and 587.

Mandatory fittings

104. **Mandatory fittings that are to be provided are listed below:**

- (a) Water Closets – not in scope (SHIPYARDS supply)
- (b) Urinal Bowls – not in scope (SHIPYARDS supply)
- (c) Toilet Roll Holders
- (d) Spare Toilet Roll Stowage
- (e) Cap and Coat Hooks – 1 per WC cubicle
- (f) Door Bolts
- (g) Door Hold Back Catches
- (h) Hand holds – 1 per WC cubicle and urinal stall
- (i) Deodorizer – 1 per WC cubicle and 1 per 2 urinal stalls
- (j) Washing Facilities
- (k) Fresh Water (FW) Draw off taps 1hot and 1cold per compartment sited as convenient.
- (l) Sited as convenient.
- (m) Container for Infectious Waste – 1 per Compartment.
- (n) Loudspeaker 1w NWT (SHIPYARDS Supply)
- (o) Curtain
- (p) **State of the art fittings like Taps (self-closing) and showers shall be fitted. Such fittings shall be approved for use on board IN ships.**

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PART IV: PROJECT MONITORING AND MANAGEMENT

105. The supplier is to submit a work plan to SHIPYARDS within 04 weeks of LOI/order placement indicating the schedule of the equipment supply, manpower deployment and required readiness of associated system passing through the compartments.

106. The supplier is to position at least 02 Manager / Executive (direct employees) per ship in SHIPYARDS during the on board erection work to monitor and liaise and ensure smooth progress of work. The continuity of these personnel for the entire duration is essential.

107. The supplier may be required to interact with SHIPYARDS and through SHIPYARDS with the suppliers of the Deck covering, Modular Galley, Air Conditioning and Ventilation System (if required) for interfacing the requirements and achieving optimum layout of compartments, the overall responsibility of which will rest with the supplier.

108. Based on the approved drawings OEM will carry out Line out of the compartments on board which will follow by Line out Inspection (LOI). On satisfactory LOI, onboard installation work of seatings and major equipments/items will be undertaken and on completion of major hot work compartments are to be offered for Preliminary Inspection (PI). Pre panelling inspection is required for panelling compartments. On satisfactory PI /PPI installation work of all items to be undertaken and on completion of all items installation and all internal work compartments are to be offered for Final Inspection (FI).

The object of the preliminary Inspection is to check physically congruence of onboard erection with approved drawings, occurrence of interferences on board (if any and their conflict resolution), adequacy of access/maintenance envelope etc. Guideline document of points to be checked in Preliminary Inspection and Final Inspection will be handed over post order. The on board Inspections will be undertaken jointly by WOT and SHIPYARDS and reps. of OEM. The schedule of Inspection will be promulgated by SHIPYARDS within 06 weeks of order. The OEM will formally offer the compartments Stage Inspection and will proceed with subsequent only receipt of written report duly signed by WOT and SHIPYARDS.

109. On completion of all work in each compartment the OEM will hand over the compartments to SHIPYARDS for handing over to Navy. The handing over will be preceded by Final Inspection by a joint team comprising of SHIPYARDS, WOT, Ship Staff (if positioned) and reps of OEM. The schedule of Final Inspection will be handed over by SHIPYARDS within 10 weeks of order.

110. SECURITY

The OEM shall furnish compliance with Official Secrets Act 1923. The antecedents and security clearance of workers employed by the OEM shall be undertaken by OEM and entry passes be issued as per prevalent security regulations by SHIPYARDS Security Officer.

111. FIRE SAFETY

The OEM shall be responsible for taking adequate precautions during the progress of on board for prevention of inception and spread of fire. The OEM shall maintain clean ship condition everyday on completion of work and remove and dispose in designated bins outside the ship on the jetty side any waste material being generated.

112. The OEM shall hand over duplicate keys to the designated SHIPYARDS officer, when the compartments reach lockable state. This is to facilitate fire fighting (if required) during silent hours. Further if the openings of certain compartments are required to undertake any other work in the compartment/adjacent compartment, the OEM will be required to make them available/position reps.

113. All major items are to be coated with a peel-off plastic coat to protect it from inadvertent damage during stowage in Shipyards/transfer to ship and on board the ship during the progress of work.



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APPENDIX - 1
(Refer Para No. 1.3.1)

DEVIATION LIST

The Supplier shall fill in this form for the deviations of their bid from the requirements as stated in the Material Requisition. If no deviation is required Supplier shall fill in "NIL" in the 'Deviation column. Supplier shall sign/date and affix their company seal.

SR. No.	DOCUMENT T No./ CLAUSE No.	REQUIREMENT	DEVIATION WITH REASONS	IHQ of MoD (N) / SHIPYARDS REACTIONS

**SUPPLIER'S COMPANY SEAL
DATE**

SUPPLIER'S SIGNATURE &

**A-ACCEPTED N-NOT ACCEPTED C-CONDITIONAL ACCEPTANCE (SEE
ATTACHED SHEET)**

SHIPYARDS'S / IHQ of MoD (N)'s COMMENT ON DEVIATION.



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**APPENDIX- 2
(Refer Para No. 1.4.1)**

CERTIFICATE OF CONFORMITY

(To be filled in by the *SUPPLIER* & submitted as part of the Offer)

M/s. _____

With reference to the subject Requisition received along with the SHIPYARDS Inquiry and our QUOTATION No. _____ Dated _____ we hereby confirm / clarify the following:

1. REGISTRATION WITH DQA (WP) / DQA (N) / SHIPYARDS:

We are NOT Registered / already REGISTERED (*) with _____ for manufacture and supply of following items

- (a) _____
(b) _____

2. PAST PERFORMANCE:

We have NOT Supplied / have SUPPLIED (*) identical / similar (*) ITEM to SHIPYARDS in the past. The relevant Order references are given below :

- (a) _____
(b) _____

3. REQUISITION / DRAWINGS / SPECIFICATIONS / SOR:

We ARE NOT / ARE (*) fully aware of the relevant Drawings / Specifications / TSP etc. indicated in the REQUISITION and the related Documents.

4. DEVIATION:

The OFFER is fully in compliance with the Requisition WITHOUT any deviation / EXCEPT for the deviations listed in the attached format (*).

5. BINDING DATA:

OUR Drawings with necessary BINDING DATA such as Overall Dimensions, SEATING Details / Bolting Plan, Connection / Interface Details, Face to Face Dimensions is ENCLOSED / NOT Enclosed (*) with the offer. We have noted that any change in Binding Data shall require specific approval from SHIPYARDS/IHQ of MoD (N).

6. DOCUMENTS / DATA:

The following Technical Documents / DATA SHEETS are enclosed herewith

- (a) (To be specified if applicable)

For M/s. _____

Signature: _____

Date : _____

Stamp: _____

(*) Strike out which is *NOT APPLICABLE*.



**MAZAGON DOCK
SHIPBUILDERS LTD.**

(A Govt. Of India Undertaking)

Dockyard Road, Mumbai –400 010.

DESIGN-OUTFIT

**YARDS
12651-64, 3022-24**

T.S.P. NO.

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APPENDIX- 3

(Refer Para No. 2.16)

WEIGHT CONTROL DATA SHEET

EQUIPMENT DESCRIPTION		EQUIPMENT NO.	
COMPARTMENT		LOCATION	

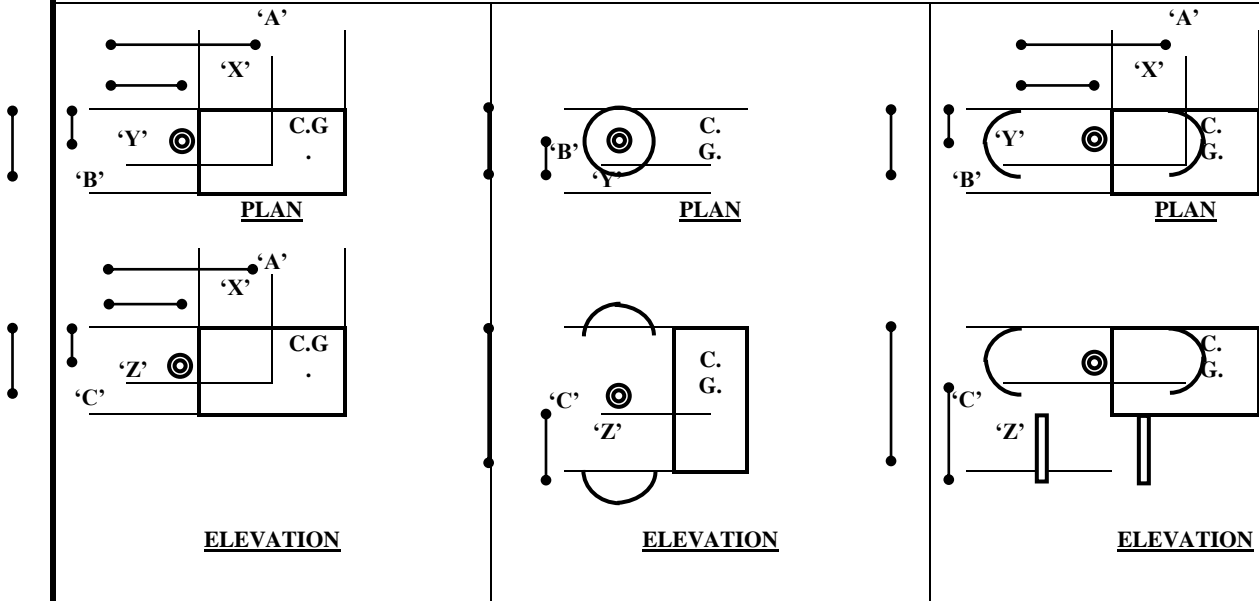
SWBD :

TOLERANCE CODE
 PRELIMINARY EST.
 DESIGN EST.
 M.T.O (CALC)
 WEIGHED
 TOLERANCE ± %

1. WEIGHT (Kg.)

(a)	DRY	Kg ±	%
(b)	FLUID	Kg ±	%
(c)	OPERATING	Kg ±	%
(d)	TEST	Kg ±	%
(e)	TOTAL	Kg ±	%

2. EQUIPMENT DIMENSIONAL DATA (mm) & Co-ordinates of CoG



OVERALL SIZE		CENTRE OF GRAVITY	
'A'		'X'	
'B'		'Y'	
'C'		'Z'	

NOTE :

- ALL OFFERS SHALL INCLUDE THIS DATA SHEET DULY FILLED IN BY THE SUPPLIER (SIGNED, DATED & SEAL AFFIXED).
- ALL FINISHED ITEMS SHALL BE WEIGHED & A CERTIFICATE SHALL BE PROVIDED AS PER ATTACHED SHEET.
- SEPARATE SHEETS SHALL BE COMPLETED FOR EACH INSTALLED EQUIPMENT.
- ORIGIN OF 'X', 'Y' AND 'Z' TO BE INDICIATED.

SUPPLIER'S SEAL

SUPPLIER'S SIGNATURE & DATE

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APPENDIX - 4 (Refer Para No. 2.12.1) WEIGHT CERTIFICATE			
EQUIPMENT DESCRIPTION:		EQUIPMENT NO. :	
The form shall be completed by Supplier & shall be supplied along with the equipment.			
SUPPLIER'S NAME		Ref. Drg. No.	
ADDRESS			
TELEPHONE NO.		Part No.	
ORDER NO.		EQPT. NO.	
METHOD OF WEIGHING: Supplier shall prescribe Method & Equipment Used:			
	DATE OF LAST CALIBRATION	SPECIFIED ACCURACY REQUIREMENT	
	NOTE :-		
RESULT OF WEIGHING TOTAL EQUIPMENT DRY WEIGHT (Excluding packing, temporary protection etc.)		<input style="width: 100%; height: 20px;" type="text"/>	
ALLOCATED WEIGHT (Weight estimate agreed by purchaser and supplier based on order specs).		<input style="width: 100%; height: 20px;" type="text"/>	
REASONS FOR VARIATION BETWEEN ALLOCATED WEIGHT AND CERTIFIED WEIGHT:			
WEIGHING ADDRESS:	WITNESSED BY		
	FOR SUPPLIER	FOR PURCHASER	
	Representative	Representative	
Date:	Signature / Date & Seal	Signature/Date & Seal	

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APPENDIX-5
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DETAILS OF SPARES MANAGEMENT SYSTEM AS PER INCAT COMPATIBLE FORMAT

(Refer Clause No. 2.10.7)

CODES USED IN ILMS RELATIONAL DATA MODEL

Codification Scheme for Item

Sr.No.	Type of Store	Part I	Part II	Part III
1	Naval Stores (DS Cat Number)	N	GpCI	Part No
2	Naval Stores (Admiralty)	N	CIGr	Pattern No
3	E&SP Non-Russian	E	OEM Code	Part No
4	E&SP Russian	S	OEM Code	Part No
5	BEL Stores	E	OEM Code	Part No

Note:

- SNo 1 and 2 are DSCat and Admiralty Scheme respectively. DSCat is preferable.
- All E&SP items need to be finally codified as E&SP Non-Russian, SNo 3.
- Make extra efforts & use scheme as per SNo 3 for all E&SP items.

Few Codes Used in ILMS

	<u>EASKType</u>		<u>ItemDeno</u>
E	Equipment	cc	Cubic centiMETER
A	Assembly	cm	centiMETER
S	Sub-assembly	cuF	Cubic feet
K	Kit	cuM	Cubic METER
		doz	dozen
	<u>EqptType</u>	fm	fathom
MAJ	Major	ft	feet
MED	Medium	gal	gallon
MIN	Minor	gm	gram
		gro	gross
	<u>SubstituteType</u>	kg	kilogram
F	Functional	lb	pound
I	Indigenised	lit	litre
R	Re-referenced (same item)	m	METER
S	Superseding (Item or Item Code)	mg	milligram
		ml	millilitre
		mm	milliMETER
	<u>RoutineType</u>		
Y	Yearly	no	number
Q	Quarterly	pr	pair
M	Monthly	qr	quire
H	Hourly	qtl	quintal
B	Bi-annually	rm	ream
		set	set
		sqF	Square feet
		sqM	Square METERs
		tnM	Tonne Metric (1000 kg)
		yd	yard

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(Page 2 of 5)**CODES USED IN ILMS RELATIONAL DATA MODEL**

<u>Currency Code</u>		<u>Country Code</u>	
Rbl	Russian Rouble	BLG	Republic of Bulgaria
Yen	Japanese Yen	Bel	Belgium
US\$	US Dollar	CAN	Canada
UK#	UK Pound Sterling	DEN	Denmark
SP\$	Singapore Dollar	FIN	Finland
SFr	Swiss Franc	Fra	France
Rs	Rupees	Ger	Germany
Mar	Malaysian Ringitt	HON	Hong Kong
HO\$	Hong Kong Dollar	ITL	Italy
FIM	Finland FIM	Ind	India
Mar	Malaysian Ringitt	JAP	Japan
Eu	Euro Currency	Kor	Republic of Korea
Dkr	Danish Kroner	Mal	Malaysia
Dfl	Netherlands	NOR	Norway
Dug	Dutch Guilden	NRL	Netherlands
CA\$	Canadian Dollar	NZL	New Zealand
Bfr	Belgian Francs	POL	Poland
Ash	Austrian Schilling	Rus	Russia
AU\$	Australian Dollar	SA	South Africa
		SGP	Singapore
		SWZ	Switzerland
		Spn	Spain
		Swe	Sweden
		UAE	United Arab Emirates
		UK	United Kingdom
		USA	United States of America
		Ukr	Ukraine
			<u>PriceType</u>
		A	Inflation Adjusted Price
		C	Central Procurement Price
		D	LP (Direct/Local) Price
		E	POEP (Estimated)
		K	Book Price (Kitaab)
		Q	Budgetary Quote Price

Note : More codes can be added should the need arise.

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SPARE PART DETAILS FOR ILMS COMPATIBILITY BY
OEM/PRODUCTION DIRECTORATES

S No	ELEMENT	STRUCTURE	BY	REMARKS
1.	Item/Eqpt Code	Char(32)	OEM	Consist of OEM Code/Name and OEM Part Number. Part Number to be restricted to 24 Char.
2.	Item/Eqpt Desc	Char(60)	OEM	Put Unique Identifier
3.	Item/Eqpt Denom	Char(3)	OEM	Strictly use Codes supplied by ILMS. It shall mostly be <i>nos.</i> or <i>set.</i>
4.	Substitute Item Code	Char(32)	OEM	OEM name and OEM Part Number.
5.	Year Obsolescence	Char(4)	OEM	In case of main eqpt. only.
6.	EASK Item Code	Char(32)	OEM	Identifier for E/A/S/K
7.	EASK Type	Char(1)	OEM	Eqpt/Assembly/Sub-assembly/Kit
8.	EASK Book Ref.	Varchar(31)	OEM	Book/Drawing reference.
9.	Qty Constituent	Small Integer	OEM	Incase of spare parts, number fitted in the equipment, Small Integer range 0 – 62, 000.
10.	Months Shaft Life	Tiny integ	OEM	Zero(0) for non-shelf item
11.	Specs Name	Char(30)	OEM	DIN, ISI etc.
12.	Specs Value	Varchar(20)	OEM	Number associated with Corresponding specs
13.	Characteristics Name	Varchar(30)	OEM	Special Properties like Max Temp, Drawing etc.
14.	Char Value	Varchar(60)	OEM	Value of Property, Drawing reference etc.
15.	Substitute Type	Char(1)	OEM	Indigenous/Upgraded etc.
16.	Hours Estimated Life	Small Integ	OEM	

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17.	Hours MTBF	Small Integ	OEM	
18.	Hours MTBR	Small Integ	OEM	
19.	Routine Type	Char(1)	OEM	In case of Main Eqpt. only as per attached list of codes. (Yearly, Monthly, Hourly etc.)
20.	Routine Periodicity	Small Integ	OEM	5000 Hrly etc.
21.	Recom BD Spares	Small Integ	OEM	Recommended by mfg.
22.	Recom OB Spares	Small Integ	OEM	Recommended by mfg.

S No	ELEMENT	STRUCTURE	BY	REMARKS
23.	Supplier Name	Char(50)	OEM	Use Supplier's name with unique location identifier eg. BEL Hyderabad. Must exist in Supplier table
	Address	Char(30)		
	Address Line1	Char(30)		
	Address Line2	Char(30)		
	City	Varchar(30)		
	State	Char(20)		
	Pin code	Char(7)		
	Country Code	Char(3)		Use codes provided above. You may use full name of country when in doubt. Telephone No., Fax No. and Email etc. as required.
	KompassControl No	Char(9)		
24.	Dealer Name	Char(50)	OEM	Address and other details as per above format. Put the details in the Supplier Table and use the dealer's name with unique location identifier.
25.	Certification Type	Char(3)	OEM	Certification applicable to Supplier. As per attached list of codes.
26.	Certification No.	Char (30)	OEM	ISO-9000 etc.
27.	Qty	Real	OEM	Total quantity for which price is applicable



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- | | | | | |
|-----|---------------------|------------------------|------------|---|
| 28. | CurrencyCode | Char(3) | OEM | As per attached list of codes |
| 29. | Unit PriceCC | Money | OEM | Price in Currency Code (CC) only unit qty and not for total qty. |
| 30. | TotalPrice | Money | OEM | Price for total quantity. |
| 31. | Price Date | Small Date Time | OEM | |
| 32. | PriceRef | Varchar(60) | OEM | Quotation/Order reference. |



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OEM / SUPPLIER / SUPPLIER / AUTHORIZED DISTRIBUTOR DETAILS

Name of OEM / Supplier	Count of Supplier	Name of Authorized Dealers	Address WITH OUT city, state, country, PIN/ZIP (Company)	City	State	Country	PIN / ZIP Code	All Phone Numbers (Multi line entry)	All Fax Numbers (multi line entry)	All email Addresses (multi line entry)	Company Control No	Certificate Reference	Remarks
	Not null	Not null		Not null	Not null	Not null	Not null	Not null	Not null				
Supplier													
Authorized													

Note: - "Not null" : should not be left blank.



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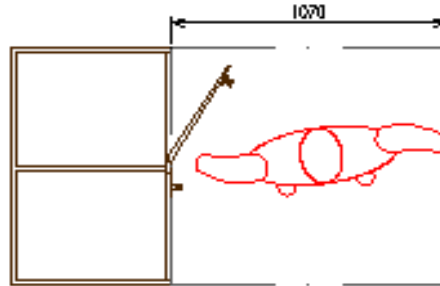
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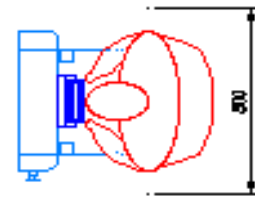
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**APPENDIX-6
1 OF 4**

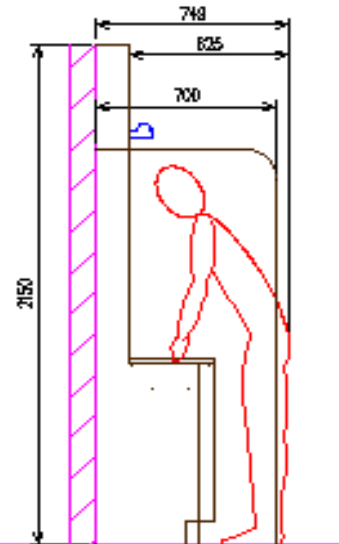
1.1 - Minimum width
required
by officer
to change
his clothes



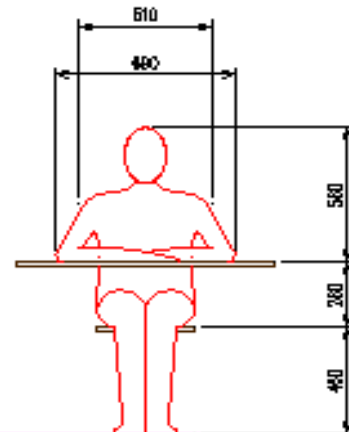
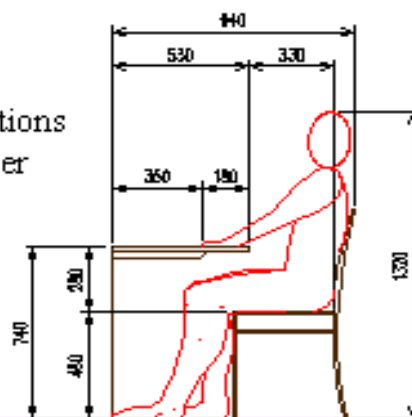
(Extract From Time
Savers Standards of
Building Types)



1.2 - Minimum Dimintions
required by officer
to use Wash basin



1.3 - Minimum Dimintions
required by officer
to work in chair
and table
arrangement





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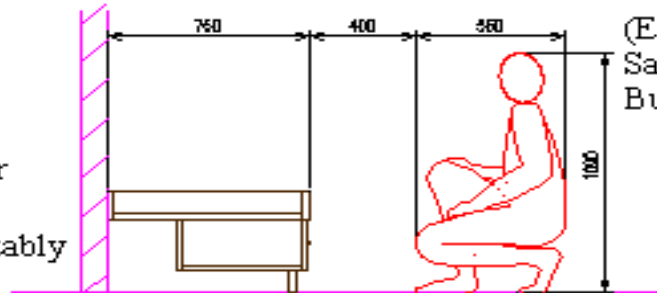
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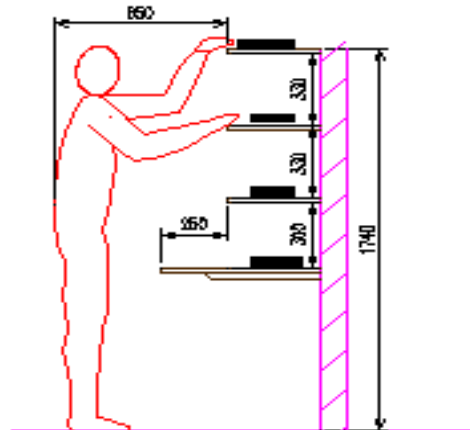
2 OF 4

1.4 - Minimum Space required by officer to use drawer under bed comfortably

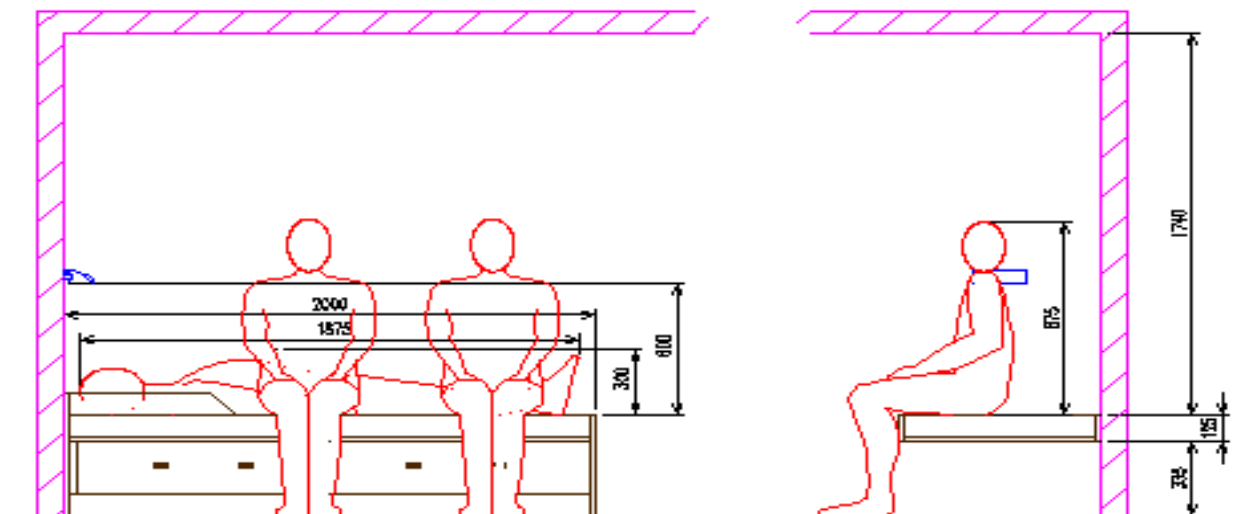


(Extract From Time Savers Standards of Building Types)

1.5 - Basic Height for Rack Placement



1.6 - Basic Dimensions of the Bed and its usage





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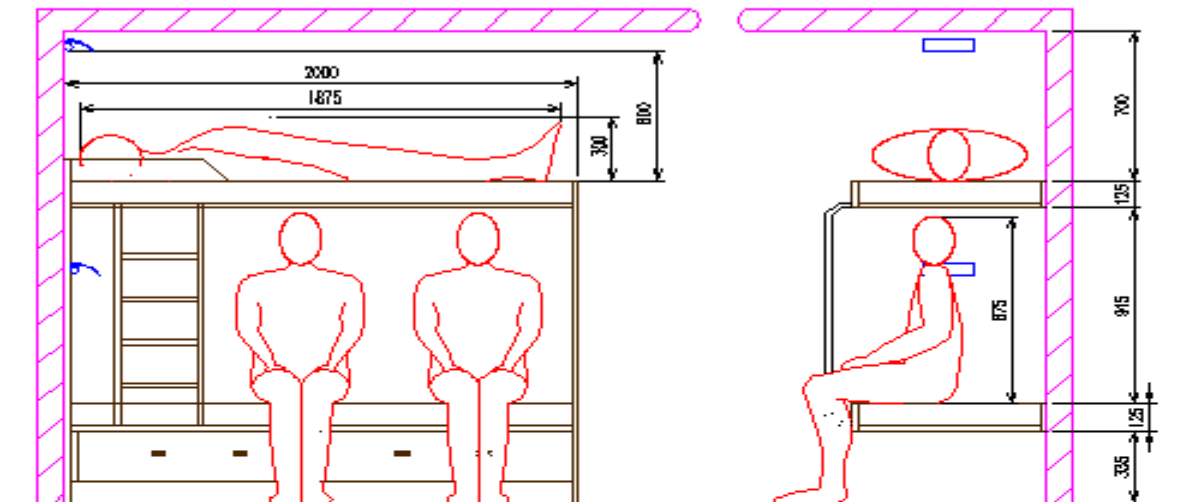
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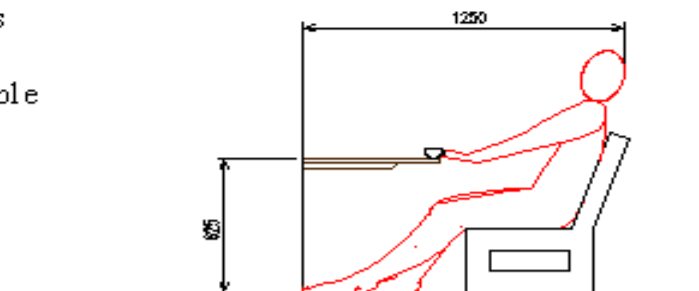
**APPENDIX-6
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(Extract From Time Savers
Standards of Building Types)

1.7 - Basic Dimensions of the Double Bunk Bed and its usage



**1.8 - Minimum Dimensions
required by officer
to sit in a sofa and table
arrangement**





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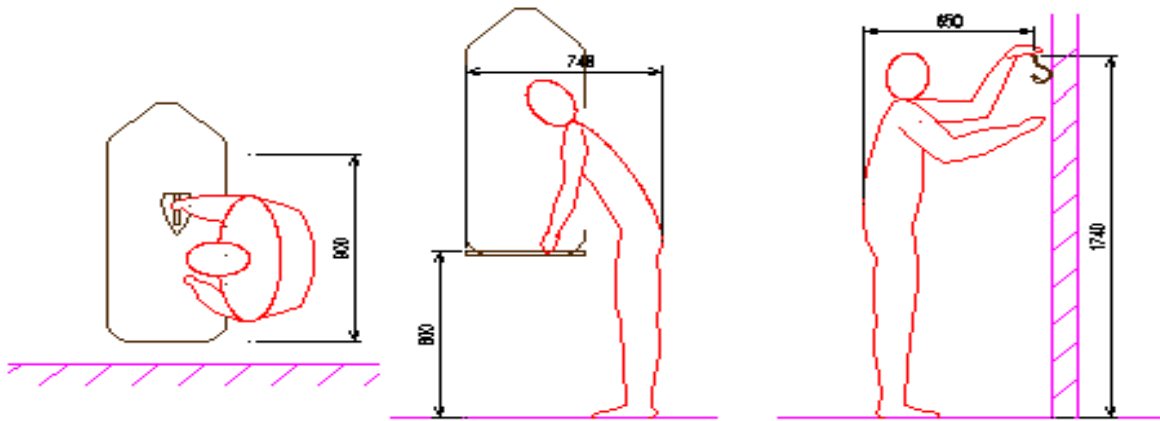
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**APPENDIX-6
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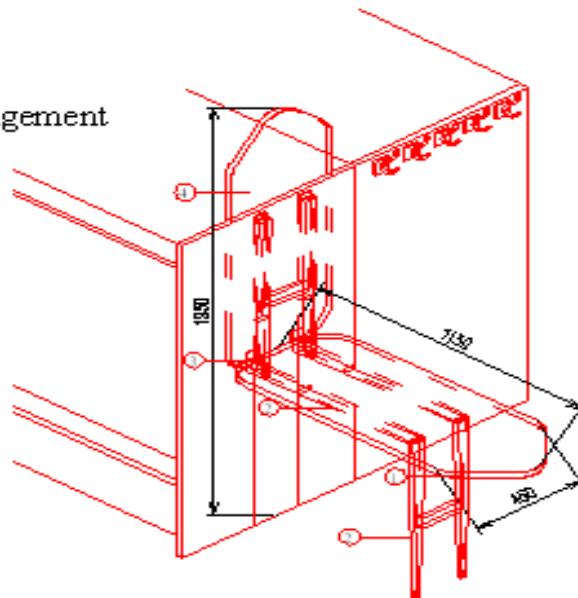
(Detail Drawing of Foldable
Ironing Board For 8 Men Mess)

1.9 - Basic area requirement for ironing and usage of cap and coat hooks



1.10 - Iso Metric View of Board Arrangement

1	Ironing Board in open position
2	Support system for ironing board
3	Hinge
4	Position of Ironing board when not being used



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List of Modular Accommodation VIP Compartments

APPENDIX-7

sr	Compt	Drg.No.	Title	dk	Fr from	Fr to	Loc
1	100911	ML641200159	WARDROOM (ANTEROOM)	10	28.5	34	S
2	020923	ML641100029	CO's DAY CABIN	02	27.3	29.5	P
3	020922	ML641100033	CO'S NIGHT CABIN	02	29.5	32	P
4	020924	ML644100034	COS'S TOILET & BATH	02	29.5	32	P
5	020814	ML641100048	SEA CABIN	02	27.3	31	C
6	020904	ML644100914	BATH & TOILET #02	02	27	28.6	S

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APPENDIX 8 - 1 of 2
TEST PROCEDURE FOR HINGE DOOR UNITS PRODUCTS

(A) Durability of Hinge Door or Wear and Fatigue of Hinge Door: -

Test Purpose:-

To check the durability of the doors.

Test Procedure: -

Attach a mass of 5 Kg to the inside of the door to the vertical centerline. Open and close the door gently through 2000 cycles, opening the door through the lesser of 130° or until 10° from the fully open position. While closing the door, operate any catching mechanism (a device that holds a door in the closed and open position but that can be released by hand pressure without the use of the key).

Note- These doors are to be designed for 80,000 cycles, however during testing, 2000 cycles are to be performed.

Acceptance Test: -

No fracture or cracking of any member, component or joint,
No loosening of joints intended to be rigid,
No free movements of any components that exceed the free movement noted in the initial inspection,
No deformation or wear of any part or component that will affect the unit's function,
No clear audible noise developed during the testing,
No deterioration of the operation of any movable or adjustable parts,
No permanent deflection,
No sign of the pulling away of the wall mounted units from the surface to which they are fixed.

(B) Strength of Hinge Door: -

Test Purpose: -

To check the strength of the hinge door

Test Procedure: -

Attach a mass of 35 kg to the door under test in such a way that the center of gravity coincides with the plane of the door and is 100 mm from the handle edge of the door. Measure the deflection of the door from the fixed position. Open and close the door 10 times, each operation taking 3 to 5 sec.

Acceptance Test: -

No fracture or cracking of any member, component or joint,
No loosening of joints intended to be rigid,
No free movements of any components that exceed the free movement noted in the initial inspection,
No deformation or wear of any part or component that will affect the unit's function,
No clear audible noise developed during the testing,
No deterioration of the operation of any movable or adjustable parts,
No permanent deflection,
No sign of the pulling away of the wall mounted units from the surface to which they are fixed.

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(C) Slamming of hinge Doors: -

Test Purpose: -

To check the strength and durability by slamming the door.

Test Procedure: -

Fully open the door under test without straining any built-in stops, and note its position. Attach one end of a cord to the door handle: if the door does not have a handle, attach the cord to the middle of the handle edge of the door. Pass the cord over a pulley such that the door is fully open, the cord is at right angles to the plane of the door. Attach a 2.04 Kg (20 N) mass-piece to the other end of the cord such that the handle edge of the door can move approximately 10 mm from the fully open position towards the closed position before the mass-piece is lifted off the floor.

Move the door (so that the mass-piece is raised) through 30° towards its closed position. Release the door.

Acceptance Test: -

No fracture or cracking of any member, component or joint,

No loosening of joints intended to be rigid,

No free movements of any components that exceed the free movement noted in the initial inspection,

No deformation or wear of any part or component that will affect the unit's function,

No clear audible noise developed during the testing,

No deterioration of the operation of any movable or adjustable parts,

No permanent deflection,

No sign of the pulling away of the wall mounted units from the surface to which they are fixed.

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APPENDIX-9
FITTING LIST: FOR EACH TYPE OF ACCOMMODATION VIP COMPTS

The items are to be provided with their accessories, seating/securing, cables, pipes, etc. (including SHIPYARDS supplied items) by the Modular Accommodation supplier.

Sl. No.	Description	Qty	Lot 2 / 3
1.	Ward Room	Qty – 1 No.	
1.1	CUPBOARD (NEAR BAR) MADE OF TEAK WOOD WITH 6 GLASS HINGED DOORS OF BRASS HANDLES NEAR BAR COUNTER 2280WX460DX1990H	1	
1.2	WALL PAINTING DECORATIVE	2	
1.3	L-SHAPE BAR COUNTER WITH CUPBOARD, GLASS WASHING MACHINE AND MARBLE TOP MADE OF TEAK WOOD AND SPOT LIGHTS FROM DECK HEAD ON BAR COUNTER 2800WX800X1070	1	
1.4	TWO SEATER SOFA WITH PILLOWS OF EXECUTIVE CLASS 1500W X 780D X 750H	1	
1.5	ASHTRAY CRYSTAL - REPUTED MAKE	3	
1.6	CAP AND COAT HOOK (3 HOOKS IN 1 STRIP) - BRASS HOOKS ON TEAK WOOD PLATE	10	
1.7	WALL CLOCK DECORATIVE - REPUTED MAKE	2	
1.8	WASTE PAPER BIN WITH LID (REPUTED MAKE)	2	
1.9	AIR PURIFIER (REPUTED MAKE)	1	
1.10	BAR STOOL (DIA280 X HEIGHT 520)	6	
1.11	52" LED SMART TV (REPUTED MAKE)	2	
1.12	BOTTLE COOLER-120 LTRS. (REPUTED MAKE)	1	
1.13	SOFA EXECUTIVE CLASS - 3 SEATER WITH PILLOWS 1675W X 760D X750H	5	
1.14	CENTRE TABLE MADE OF TEAK WOOD WITH GLASS TOP (800X600)	4	
1.15	CUPBOARD WITH DRAWER AND MARBLE ON TOP AND HINGED DOOR MADE OF TAKE WOOD WITH BRASS HANDLES 1200W X 350D X 840H	3	
1.16	TABLE NEAR SOFA-TEAK WOOD-INTERNAL STORAGE (600X600)	2	
1.17	TV CABINET WITH MARBLE TOP AND MADE OF TEAK WOOD WITH GLASS DOOR 2000 W X 500D X 650H	1	
1.18	TROPHY CABINET-TEAK WOOD-INTERNAL STORAGE 500WX400DX2000H	1	
1.19	MICROWAVE OVEN	2	
1.20	TABLE, DINING 5600WX1000DX760H	1	
1.21	CHAIR, SITTING 450 x 450 x 850	17	
1.22	RACK MAIL MADE OF TEAK WOOD (300 x 75 x 300)	2	
1.23	LONG MIRROR, WOODEN FRAME (450 x 1200)	1	
1.24	PISTOL CUPBOARD (800 x 300 x 370)	2	
1.25	CABINET, BOOK CASE / TROPHY	1	



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Sl. No.	Description	Qty	Lot 2 / 3
1.26	DRAWER UNIT (760 x 350 x840)	4	
1.27	ICE MAKING MACHINE	1	
1.28	REFRIGERATOR (110 LTR.)	1	
1.29	PIGEON HOLE RACK	1	
1.30	RACK MAGAZINE (400 x 100 x 400)	1	
1.31	TEA & COFFEE MAKER (REPUTED MAKE)	1	
1.32	FLY CATCHER (REPUTED MAKE)	1	
1.33	NOTICE BOARD	2	
1.34	CURTAIN WITH CURTAIN ROD	2	
1.35	7.1 MUSIC SYSTEM (REPUTED MAKE)	1	
1.36	DOOR BELL	1	
1.37	WASH BASIN FOR BAR COUNTER (NO SD PIPE PENETRATION ON DK.) BELOW COMPT IS OPS ROOM	1	
1.38	GLASS WASHING MACHINE	1	
1.39	WALL / CEILING PANEL	AS REQD	
1.40	ALL ELECTRICAL ITEMS MENTIONED IN APPENDIX 14 (COMPARTMENTWISE BREAKUP OF APENNDIX 14 IS PROVIDED IN COMPARTMENT PARTLIST/BOM)	As per BOM	
1.41	NAPKIN RACK	1	
SHIPYARDS SUPPLIED ITEMS, INSTALLATION IN SUPPLIER'S SCOPE INCLUSIVE OF SEATING/SECURING ARRANGEMENT			
1.42	LS-NWT-1-TO-4-WATTS-ADJ (SHIPYARDS SUPPLY)	2	
1.43	AUTEL- EXECUTIVE DESK MOUNTED TELEPHONE (SHIPYARDS SUPPLY)	1	
1.44	AUTEL- CONNECTION BOX (SHIPYARDS SUPPLY)	2	
1.45	AUTEL- TELEPHONE DIRECTORY (SHIPYARDS SUPPLY)	2	
1.46	AUTEL- EX CHORDLESS DESK TELEPHONE (AC TYPE) (SHIPYARDS SUPPLY)	1	
1.47	IPMS-ADD.AFDS-MAN. CALL POINT/DETECTORS (SHIPYARDS SUPPLY)	3	
1.48	IPMS-RJ 45 CONNECTION BOXES FOR POU/PDU (SHIPYARDS SUPPLY)	1	
1.49	LOCAL PRINTERS-LAN SYSTEM (SHIPYARDS SUPPLY)	1	
1.50	PC-WITH-ACCESSORIES-LAN SYSTEM. (SHIPYARDS SUPPLY)	1	
1.51	LAN-SOCKET (SHIPYARDS SUPPLY)	3	
1.52	LAN INTERNET I/O-LAN (SHIPYARDS SUPPLY)	1	
1.53	REC TV-RADIO/TV SOCKET (SHIPYARDS SUPPLY)	2	

Sl. No.	Description	Qty	Lot 2 & 3
2.	Co's Day Cabin	Qty – 1 No.	
2.1	PUFFEE WITH TRIANGULAR TROPHY CABINET MADE OF TEAK WOOD WITH GLASS DOOR AND BRASS HANDLES. (700WX800DX400H)+(460LX460LX1550H)	2	
2.2	TV CABINET WITH CUPBOARD (2450WX350DX1950H) MADE	1	

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Sl. No.	Description	Qty	Lot 2 & 3
	OF TEAK WOOD WITH GLASS DOOR AND BRASS HANDLES.		
2.3	TABLE NEAR SOFA-TEAK WOOD-INTERNAL STORAGE (600X600) WITH GLASS TOP	1	
2.4	TWO SEATER SOFA WITH PILLOWS OF EXECUTIVE CLASS 1500W X 780D X 750H	1	
2.5	L SHAPE CUPBOARD (1480WX370DX600H)+(1480WX460DX600H)	1	
2.6	L SHAPE COMPUTER TABLE WITH DRAWERS (1480DX600DX750H) + (1480DX460DX750H)	1	
2.7	AIR PURIFIER (REPUTED MAKE)	1	
2.8	CAP AND COAT HOOK (3 HOOKS IN 1 STRIP) - BRASS HOOKS ON TEAK WOOD PLATE	4	
2.9	FOLDING DINING TABLE (1400W x 800D x 800H)+(500W x 800D x 800) MADE OF TEAK WOOD	1	
2.10	CHAIR DINING WITHOUT ARMS MADE OF TEAK WOOD FRAME AND HIGH QUALITY MATERIAL OR ANY REPUTED MAKE	4	
2.11	LUXIRIOUS EXECUTIVE CHAIR OF REPUTED MAKE WITH HIGH QUALITY CUSHION	1	
2.12	ASHTRAY CRYSTAL - REPUTED MAKE	1	
2.13	WALL PAINTING DECORATIVE	1	
2.14	12" CABIN FAN OF REPUTED MAKE	3	
2.15	WALL CLOCK DECORATIVE - REPUTED MAKE	2	
2.16	WASTE PAPER BIN WITH LID (REPUTED MAKE)	1	
2.17	SAFE 530X540X660	1	
2.18	52" LED SMART TV (REPUTED MAKE)	1	
2.19	CURTAIN WITH CURTAIN ROD (DECORATIVE)	1	
2.20	WALL PANEL	AS REQ D.	
2.21	SINGLE SEATER SOFA	2	AS PER PART LIST
2.22	REFRIGERATOR (110 LTR.) – REPUTED MAKE	1	AS PER PART LIST
2.23	NOTICE BOARD	1	AS PER PART LIST
2.24	KEY BOARD TYPE-A (330x60x450)	1	AS PER PART LIST
2.25	ALL ELECTRICAL ITEMS MENTIONED IN APPENDIX 14 (COMPARTMENTWISE BREAKUP OF APENNDIX 14 IS PROVIDED IN COMPARTMENT PARTLIST/BOM)	As per BOM	
SHIPYARDS SUPPLIED ITEMS, INSTALLATION IN SUPPLIER'S SCOPE INCLUSIVE OF SEATING/SECURING ARRANGEMENT			
2.26	1- 4 W BOX LOUD SPEAKER (NWT-DE), ADJUST (SHIPYARDS SUPPLY)	1	

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Sl. No.	Description	Qty	Lot 2 & 3
2.27	LT-DIMMER 1000 WATTS (SHIPYARDS SUPPLY)	2	
2.28	DESK LIGHT LED 6 WATT OPAL (SHIPYARDS SUPPLY)	1	
2.29	IPMS-ADDRESSABLE AFDS DETECTORS (SHIPYARDS SUPPLY)	2	
2.30	VCS-MICROPHONE CONNECTION BOX-INTER (SHIPYARDS SUPPLY)	1	
2.31	AUTEL-EX CORDLESS DESK TEL(AC TYPE)-P17A (SHIPYARDS SUPPLY)	1	
2.32	AUTEL- TELEPHONE DIRECTORY-P17A (SHIPYARDS SUPPLY)	1	
2.33	AUTEL- EMERGENCY TELEPHONE(E TYPE)-P17A (SHIPYARDS SUPPLY)	1	
2.34	SPT-SINGLE WAY SPT-BULKHEAD MOUNT (SHIPYARDS SUPPLY)	1	
2.35	ANNOUNCEMENT POINT (SHIPYARDS SUPPLY)	1	
2.36	IBS-MULTI FUNCTIONAL DISPLAY (SHIPYARDS SUPPLY)	1	
2.37	P2P-COMMUNICATION CRADLE WITH HANDSET (SHIPYARDS SUPPLY)	1	
2.38	P2P-BOX LOUDSPEAKER (1-6W) (NWT) (SHIPYARDS SUPPLY)	1	
2.39	REC TV RADIO/TV SOCKET (SHIPYARDS SUPPLY)	1	
2.40	PC-WITH-ACCESSORIES-LAN SYSTEM. (SHIPYARDS SUPPLY)	1	
2.41	LOCAL PRINTERS-LAN SYSTEM (SHIPYARDS SUPPLY)	1	
2.42	LAN-SOCKET (SHIPYARDS SUPPLY)	1	
2.43	LAN INTERNET I/O-LAN (SHIPYARDS SUPPLY)	1	
2.44	VCS-SPLASHPROOF MIC WITH STOWAGE HOOK PP (SHIPYARDS SUPPLY)	1	
2.45	C & C CONN-BOX CB-4 0568-427-7395 STD (SHIPYARDS SUPPLY)	1	
2.46	LSST-Telephone Instrument-P15B (SHIPYARDS SUPPLY)	1	
2.47	LSST-TELEPHONE SOCKET-P15B (SHIPYARDS SUPPLY)	1	
2.48	VCS-LOUDSPEAKER 1/2/4W(NWT) SET AT 1W(SHIPYARDS SUPPLY)	1	
2.49	AUTEL-CONNECTION BOX-P17A (SHIPYARDS SUPPLY)	2	
2.50	ACCS-VIDEO CONFERENCING SUBSYSTEM(SHIPYARDS SUPPLY)	1	
2.51	5A SWITCH SOCKET (SHIPYARDS SUPPLY)	1	
2.52	MICROPHONE WITH CONNECTOR AND 5MTR COILE (SHIPYARDS SUPPLY)	1	
2.53	IPMS-RJ 45 CONNECTION BOXES FOR POU/PDU (SHIPYARDS SUPPLY)	1	

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Sl. No.	Description	Qty	Lot 2 & 3
3.	Co's Night Cabin Qty – 1 No.		
3.1	SAFE 530X540X660MM	1	
3.2	DOOR MAT WITH RUBBER INSERTS (670W X 380	2	
3.3	WALL CLOCK DECORATIVE - REPUTED MAKE	1	
3.4	ASHTRAY CRYSTAL - REPUTED MAKE	1	
3.5	LT-BUNK LIGHT FOR MESSES & CABINS	1	
3.6	WASTE PAPER BIN WITH LID (REPUTED MAKE)	1	
3.7	POUFFE DECORATIVE - REPUTED MAKE	1	
3.8	CAP AND COAT HOOK (3 HOOKS IN 1 STRIP) - BRASS HOOKS ON TEAK WOOD PLATE	2	
3.9	LUXIRIOUS EXECUTIVE CHAIR OF REPUTED MAKE WITH HIGH QUALITY CUSHION	1	
3.10	SINGLE BERTH COT MADE OF TEAK WOOD WITH LUXURIOUS MATTRESS OF 200MM THICK WITH COVER, PILLOWS WITH COVER AND BED SHEETS WITH SPECIALLY PRINTED SHIP LOGO ON BED SHEETS AND PILLOWS. COT SHOULD BE OF INTERNAL STORAGE SPACE OF (2000 L X 1015 W X 1000H), WITH BUNK LIGHT FITTINGS	1	
3.11	WARDROBE UNIT MADE OF TEAK WOOD (WITH DOUBLE DOOR, HANGAR ROD & SHELVES) DOORS ARE HINGED AND SPECIAL PROVISION FOR SHOE RACK. (1000X500X1950)	1	
3.12	LONG MIRROR (450W X 1200H), WOODEN FRAME	1	
3.13	CENTRE TABLE MADE OF TEAK WOOD WITH GLASS TOP 600X500X400	1	
3.14	TABLE TOP (550x800x25 THK.)	1	AS PER PART LIST
3.15	BED SIDE TABLE 420X450X550 TEAK WOOD	1	
3.16	EXECUTIVE CLASS SINGLE SEATER SOFA WITH PILLOWS (850X780X750)	1	
3.17	40" LED SMART TV (REPUTED BRAND)	1	
3.18	WALL PAINTING DECORATIVE (700X 350)	1	
3.19	12" CABIN FAN OF REPUTED MAKE	1	
3.20	DOOR STOPPER AND RETAINING HOOK	1	
3.21	BOOK CASE (600x250x300)	1	
3.22	WALL / CEILING PANELS		AS PER APPENDIX
3.23	OFFICE TRAY (Reputed brand) (370 x 270)	1	
3.24	NOTICE_BOARD TYPE B 600x450	1	
3.25	ALL ELECTRICAL ITEMS MENTIONED IN APPENDIX 14 (COMPARTMENTWISE BREAKUP OF APENNDIX 14 IS PROVIDED IN COMPARTMENT PARTLIST/BOM)	As per BOM	
SHIPYARDS SUPPLIED ITEMS, INSTALLATION IN SUPPLIER'S SCOPE INCLUSIVE OF SEATING/SECURING ARRANGEMENT			
3.26	1- 4 W BOX LOUD SPEAKER (NWT-DE), ADJUST (SHIPYARDS SUPPLY)	1	
3.27	IPMS-ADDRESSABLE AFDS DETECTORS (SHIPYARDS SUPPLY)	1	

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Sl. No.	Description	Qty	Lot 2 & 3
3.28	AUTEL-EX CORDLESS DESK TEL(AC TYPE)-P17A (SHIPYARDS SUPPLY)	1	
3.29	DESK LIGHT LED 6 WATT OPAL (SHIPYARDS SUPPLY)	1	
3.30	C & C CONN-BOX CB-4 0568-427-7395 STD (SHIPYARDS SUPPLY)	2	
3.31	AUTEL-CONNECTION BOX-P17A (SHIPYARDS SUPPLY)	2	
3.32	AUTEL- TELEPHONE DIRECTORY-P17A (SHIPYARDS SUPPLY)	2	
3.33	P2P-COMMUNICATION CRADLE WITH HANDSET (SHIPYARDS SUPPLY)	1	
3.34	P2P-BOX LOUDSPEAKER (1-6W) (NWT) (SHIPYARDS SUPPLY)	1	
3.35	IBS-MULTI FUNCTIONAL DISPLAY (SHIPYARDS SUPPLY)	1	
3.36	VCS-LOUDSPEAKER 1/2/4W(NWT) SET AT 1W (SHIPYARDS SUPPLY)	3	
3.37	REC TV RADIO/TV SOCKET (SHIPYARDS SUPPLY)	1	
3.38	LAN-SOCKET (SHIPYARDS SUPPLY)	1	
3.39	LAN INTERNET I/O-LAN (SHIPYARDS SUPPLY)	1	
3.40	AUTEL- EMERGENCY TELEPHONE(E TYPE)-P17A (SHIPYARDS SUPPLY)	1	
3.41	VCS-MICROPHONE CONNECTION BOX-INTER (SHIPYARDS SUPPLY)	1	
3.42	VCS-SPLASHPROOF MIC WITH STOWAGE HOOK UP (SHIPYARDS SUPPLY)	1	
3.43	PC-WITH-ACCESSORIES-LAN SYSTEM. (SHIPYARDS SUPPLY)	1	
3.44	MICROPHONE WITH CONNECTOR AND 5MTR COIL (SHIPYARDS SUPPLY)	1	
3.45	MIC CONNECTION BOX-17 (SHIPYARDS SUPPLY)	1	

Sl. No.	Description	Qty	Lot 2 & 3
4.	Co's WC & Bath	Qty – 1 No.	
4.1	WASH BASIN (550W X 350D X 1680H) (MIRROR WITH MIRROR LIGHT, SOAP TRAY, REPUTED MAKE TAP , LIQUID SOAP CONTAINER WITH SECURING STAND.) WASH BASIN OF CERAMIC MATERIAL WITH MARBLE TOP AND CLEANING GEAR LOCKER MADE OF TEAK WOOD.	1	
4.2	TOILET PAPER HOLDER OF REPUTED MAKE	1	
4.3	MUG HOLDER	1	
4.4	HAND HOLDS (15DIA TUBE)	1	
4.5	DEO CONTAINER	1	
4.6	CAP AND COAT HOOK (3 HOOKS IN 1 STRIP) - BRASS HOOKS ON TEAK WOOD PLATE	1	
4.7	TOWEL RAIL-600MM	1	
4.8	SHOWER / BATH GLASS CUBICAL 1500X1000X2000 - WITH FOLLOWING PLUMBING FITTINGS WITHIN CUBICAL. (CUBICAL FITTINGS ARE SHOWER MIXER, OVERHEAD	1	

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Sl. No.	Description	Qty	Lot 2 & 3
	SHOWER, SIDE SHOWER , HAND SHOWER, TOWEL HOOK, HAND HOLD 15 DIA, TOILET TRAY, TOWEL RAIL 12DIA SS, SOAP TRAY, WATER TAP/BIB COCK TWIN)		
4.9	GEYSER 25L,1KW	1	
4.10	MODULAR TOILET CURTAIN	1	
4.11	WALL / CEILING PANEL		AS PER APPENDIX
4.12	WASTE PAPER BIN WITH LID (REPUTED MAKE)	1	AS PER PART LIST
4.13	TOILET ,EVAC 910,FLOOR ,TREVI WHITE	1	AS PER PART LIST
4.14	DOOR STOPPER & RETAINING HOOK	1	AS PER PART LIST
4.15	LIQUID SOAP DISPENSER	1	AS PER PART LIST
4.16	TOILET TRAY.	1	AS PER PART LIST
4.17	SOAP TRAY	1	AS PER PART LIST
4.18	SEAT WITH COVER, ISI MARK, FOR WC, WHITE	1	AS PER PART LIST
4.19	ALL ELECTRICAL ITEMS MENTIONED IN APPENDIX 14 (COMPARTMENTWISE BREAKUP OF APENNDIX 14 IS PROVIDED IN COMPARTMENT PARTLIST/BOM)	As per BOM	
SHIPYARDS SUPPLIED ITEMS, INSTALLATION IN SUPPLIER'S SCOPE INCLUSIVE OF SEATING/SECURING ARRANGEMENT			
4.20	1- 4 W BOX LOUD SPEAKER (NWT-DE), ADJUST (SHIPYARDS SUPPLY)	1	

Sl. No.	Description	Qty	Lot 2 & 3
5.	Sea Cabin Qty – 1 No.		
5.1	COMPUTER TABLE	1	
5.2	EXECUTIVE CHAIR	1	
5.3	WALL PAINTING DECORATIVE (500x200x250)	1	
5.4	SINGLE BERTH COT MADE OF TEAK WOOD WITH LUXURIOUS MATTRESS OF 200MM THICK WITH COVER, PILLOWS WITH COVER AND BED SHEETS WITH SPECIALLY PRINTED SHIP LOGO ON BED SHEETS AND PILLOWS. COT SHOULD BE OF INTERNAL STORAGE SPACE OF (2000 L X 1015 W X 1000H) WITH BUNK LIGHT FITTINGS	1	
5.5	FOLDING CHAIR	2	
5.6	WARD ROOM UNIT WITH LOCKER	1	
5.7	CAP AND COAT HOOK (SINGLE) - BRASS HOOKS ON TEAK WOOD PLATE	2	
5.8	WALL CLOCK DECORATIVE - REPUTED MAKE	1	

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Sl. No.	Description	Qty	Lot 2 & 3
5.9	WASTE PAPER BIN WITH LID (REPUTED MAKE)	1	
5.10	BOOK SHELF CABINET (500 x 230 x 260)	1	
5.11	FILING RACK	1	
5.12	32" LED SMART TV (REPUTED MAKE)	1	
5.13	MONEY SAFE (REPUTED MAKE)	1	
5.14	SOFA EXECUTIVE CLASS - SINGLE SEATER WITH PILLOWS 550W X 760D X750H	1	
5.15	MISC. STOWAGE (800 x 400 x 400)	1	
5.16	NOTICE BIARD (600 x 450)	1	
5.17	FAN BHD MOUNTED	1	
5.18	BOARD WRITING	1	
5.19	HINGED TABLE (600 x 450)	1	
5.20	WALL / CEILING PANEL	AS REQ D.	
5.21	DOOR STOPPER & RETAINING HOOK	1	AS PER PART LIST
5.22	SHOE RACK	1	AS PER PART LIST
5.23	KEYBOARD TYPE-A (330W x 60D x 450 H)	1	AS PER PART LIST
5.24	DESK LIGHT LED 6 WATT OPAL	1	AS PER PART LIST
5.25	ALL ELECTRICAL ITEMS MENTIONED IN APPENDIX 14 (COMPARTMENTWISE BREAKUP OF APENNDIX 14 IS PROVIDED IN COMPARTMENT PARTLIST/BOM)	As per BO M	
SHIPYARDS SUPPLIED ITEMS, INSTALLATION IN SUPPLIER'S SCOPE INCLUSIVE OF SEATING/SECURING ARRANGEMENT			
5.26	AUTEL-CONNECTION BOX-P17A (SHIPYARDS SUPPLY)	1	
5.27	AUTEL- TELEPHONE DIRECTORY-P17A (SHIPYARDS SUPPLY)	1	
5.28	AUTEL- EXECUTIVE DESK MOUNTED (A)-P17A (SHIPYARDS SUPPLY)	1	
5.29	REC TV RADIO/TV SOCKET (SHIPYARDS SUPPLY)	1	
5.30	IPMS-ADDRESSABLE AFDS DETECTORS (SHIPYARDS SUPPLY)	2	
5.31	P2P-BOX LOUDSPEAKER (1-6W) (NWT)	1	
5.32	COLOUR PRINTERS (SHIPYARDS SUPPLY)	1	
5.33	P2P-COMMUNICATION CRADLE WITH HANDSET (SHIPYARDS SUPPLY)	1	
5.34	IPMS-RJ 45 CONNECTION BOXES FOR POU/PDU (SHIPYARDS SUPPLY)	1	
5.35	1- 4 W BOX LOUD SPEAKER (NWT-DE), ADJUST (SHIPYARDS SUPPLY)	1	

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6.	BATH & TOILET #02 Qty – 1 No.		
6.1	Wash Basin (550W x 350D x 1680H) with Splash Back & Mirror	1	
6.2	(W.C. Commode & Urinals MDL Supply) with “S Trap” & Air Vent	1	
6.3	Cap & Coat Hooks (3 in one Strip)	1	
6.4	Hand Hold (15 Dia Tube)	1	
6.5	Liquid soap container with securing stand	1	
6.6	Mug Holder	1	
6.7	Deodoriser	2	
6.8	Shower Curtain with Curtain Rod	1	
6.9	Grating for Shower (600W x 500D)	1	
6.10	Shower Unit	1	
6.11	Soap Tray	1	
6.12	Toilet Paper Holder	1	
6.13	Towel Rail (12 Dia S.S. Tube, 350 Long)	1	
6.14	Door Stopper	1	
6.15	LITTER BIN	1	
6.16	ALL ELECTRICAL ITEMS MENTIONED IN APPENDIX 14 (COMPARTMENTWISE BREAKUP OF APENNDIX 14 IS PROVIDED IN COMPARTMENT PARTLIST/BOM)	As per BOM	
6.17	L-4W BOX LOUD SPEAKER (NWT-DE) (SHIPYARD SUPPLY)	1	
6.18	IPMS- ADD AFDS MAIN CALL POINT (SHIPYARD SUPPLY)	1	



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APPENDIX-10

List of Doors for Modular VIP Compartments

Sr.	Compt	DK.No.	Title	Clear opening size	Door Type	Door Orientation
1	100911	10	WARDROOM (ANTEROOM) N-1-06	1700 x 750	NWD	LH
2	100911	10	WARDROOM (ANTEROOM) N-1-11	1700 x 750	NWD	RH
3	020923	02	CO's DAY CABIN N-02-01	1700 x 750	NWD	RH
4	020923	02	CO's DAY CABIN N-02-05	1700 x 750	NWD	LH
5	020923	02	CO's DAY CABIN N-02-26	1700 x 750	NSD	RH
6	020922	02	CO'S NIGHT CABIN N-02-04	1700 X 750	NWD	LH
7	020924	02	COS'S TOILET & BATH N- 02-09	1700 x 750	NDS	RH
8	020814	02	SEA CABIN N-02-07	1700 x 750	NDS	RH
9	020904	02	BATH & TOILET #02 N-02- 02	1700 x 750	NDS	LH

ONLY MODULAR DOOR OF THE COMPT. IS IN THE SCOPE OF MODULAR ACCOMMODATION VIP COMPARTMENTS SUPPLIER.

110000000000014908	NWD1700x750LHMODULAR	3
110000000000014909	NWD1700x750RHMODULAR	2
110000000000014252	NSD1700x750RHMODULAR	1
110000000000014906	DOOR NDS 1700x750, LH, MODULAR	1
110000000000014907	DOOR NDS, 1700x750, RH, MODULAR	2

*** ALL DOORS ARE TO BE PROVIDED WITH BRASS DOOR STOPPER WITH RETAINING HOOK.**

NWD, LH = 3 Nos - NON WATER TIGHT BURMA TEAK WOODEN DOOR (LH)

NWD, RH = 2 Nos. - NON WATER TIGHT BURMA TEAK WOODEN DOOR (RH)

NSD, RH = 1 No. - NON WATER TIGHT DOUBLE SKIN SLIDING DOOR (RH)

NDS, LH = 1 No. - NON WATER TIGHT DOUBLE SKIN DOOR (LH)

NDS, RH = 2 No. - NON WATER TIGHT DOUBLE SKIN DOOR (RH)

All Doors as per Appendix-10 to be supplied in LOT-1

NDS- NON WATER TIGHT DOUBLE SKIN PRE-INSULATED MODULAR DOOR

NSD- NON WATER TIGHT DOUBLE SKIN SLIDING PRE-INSULATED MODULAR DOOR

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APPENDIX-11

LIST OF MODULAR PANELS (WITH LOCATION & LENGTH) WITH/WITHOUT STEEL BULKHEADS FOR EACH YARD

12651/12652/12653/12654/3022/3023/3024 Modular Panels are to be sandwich insulated with insulation thickness shown below:

LIST OF MODULAR PANELS (Qty in Sqm)										
Sr. No.	Comp. Name	Comp. No.	DK	FROM	TO	L x H (Mtrs)	WALL PANEL		DECK HEAD / CEILING PANEL	
							25 mm (Thk.) (sqm)		25 mm (Thk.) (sqm)	
							1 SIDE SS 1 CRCA	BOTH SIDE CRCA	BOTH SIDE CRCA	1 SIDE SS 1 CRCA
1	Wardroom	100911	10	28.5	34	40.84 x 2.3	-----	94	-----	-----
						8.25 x 8	-----	-----	66	-----
2	CO's Day Cabin	020923	02	27.30	29.50	16.69 x 2.3	-----	38.40	-----	-----
						2.8 x 7	-----	-----	19.6	-----
3	CO's Night Cabin	020922	02	29.50	32.00	14.5 x 2.3	-----	33.34	-----	-----
						3.75 x 2.16	-----	-----	8.1	-----
4	CO's W/C & Bath	020924	02	29.50	32.00	12.31 x 2.3	28.31	-----	-----	-----
						3.56 x 1.6	-----	-----	-----	5.7
5	Sea Cabin	020814	02	27.30	31.00	16.83 x 2.3	-----	38.70	-----	-----
						5 x 1.93	-----	-----	9.65	-----
6	Bath & Toilet#02	020904	02	27.25	28.50	6.4 x 2.3	14.72	-----	-----	-----
						1.8x 1.4	-----	-----	-----	2.52
TOTAL							43.0	204.5	103.5	8.22

<u>Item No.</u>	<u>Description</u>	<u>QTY</u>
1)	25mm Thk. Bulkhead Panels with One side SS.304 Gr. & other side CRCA powder coated skin of 0.60mm Thk. For wet areas (B-15 Class)	40.5 Sq.m
2)	25mm Thk. Bulkhead Panels with Both side CRCA powder coated Skin of 0.60 mm Thk. For dry areas (B-15 Class)	204.5 Sq.m
3)	25mm Thk. Ceiling Panels with Both side CRCA Powder coated Skin of 0.60mm Thk. (B-0 Class)	103.5 Sq.m
4)	25mm Thk. Ceiling Panels One side SS.304 Gr.& other side CRCA Powder coated Skin of 0.60mm Thk. (B-0 Class)	8.22 Sq.m

In detail as follows (B-0 & B-15 Class Sandwich Panels & appropriate Profile for above panels to be chosen)

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Appendix-12

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1.0 TECHNICAL SCOPE FOR THIRD PARTY INSPECTION AND QA

A) Drawing Verification -

Supplier will forward drawings and QAP to Shipyards (SY). The supplier's drawings of equipment's/items will be scrutinized by Shipyards (SY) from installation point of view and will be forwarded to the WOT (Mb) with Shipyards comments/observations. WOT (Mb) will return these drawings with comments / observations to Shipyards. Drawings along with the recommendations of Shipyards and WOT (Mb) will be forwarded by Shipyards to supplier for incorporation and submission for approval and stamping.

B) QAP Approval -

QAP for manufacture of items/equipment shall be prepared by the supplier and forwarded to SY & WOT (Mb) for comments on the same. SY will forward the QAP with comments to WOT (Mb) for approval. Inspection will be conducted as per approved QAP.

C) Inspection Activities -

Third party Inspection Agency will carry out inspection as per approved QAP at supplier or Sub-supplier's workshop and issue the inspection test certificates on satisfactory completion of job.

E) Documentation -

Firm will submit Statutory Documents (Manuals, CPL/PIL etc.) to ship owner for approval under intimation to SY.

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Appendix-13

Deck covering as per NCD 3717, Issue-4, and Rev-1 dated Oct 17

Sr	Title	dk	Fr from	Fr to	Loc	DK COV TYPE	APPROX. DECK AREA M2	APPROX. DADO RM
1.	WARD ROOM & ANTE ROOM	10	28.5	34	S	E	72.19	0
2.	CO'S DAY CABIN	02	27.3	29.5	P	P, RM2	25.57	36
3.	CO'S NIGHT CABIN	02	29.5	32	P	P, RM2	10.35	19.53
4.	CO'S WC & BATH	02	29.5	32	P	H1,N1	6.75	15.53
5.	SEA CABIN	02	27.3	31	C	P, RM2	17	22.5
6.	BATH & TOILET#02	02	27.25	28.50	S	H1,N1,RM2	6.75	13.35

Type	Symbol	No. of Compt.	AREA in Sq.m	DADO in Running Meters
DRY	E	1	90.24	-
WET	H1, N1	2	16.88	36.09
PAINTING	P	3	66.15	97.54
Total		6	173.27	133.63

Note: - Refer SHIPYARDS TSP for further details of Deck Covering, TSP will be given post finalization of Modular Accommodation VIP compartments Purchase order.

Paint Scheme: For decks not covered with epoxy deck covering scheme - decks and dadoes of general surfaces in dry compartment. Surfaces preparation – blasting to standard SA 2.5 conforming to Swedish standard.

A. M/s. SIGMA (PPG)

Sr. No.	Description of Paints / Products	No of coats	Per coat DFT	Pattern Number
1	SIGMACOVER 280	1	50	N8010 -P063130
2	SIGMA COVER 630 (GREY)	1	150	N8010 -P063132
3	TOP COAT IN RAL 6028, PINE GREEN - SIGMADUR GLOSS	1	100	N 8010- 720488223

OR

B. M/s. AKZO NOBEL

Sr. No.	Description of Paints / Products	No of coats	Per coat DFT	Pattern Number
1	INTERGARD 269	1	50	N8010 –TB00829
2	INTERGUARD 5600 (GREY)	1	150	N8010- P063132
3	TOP COAT IN RAL 6028, PINE GREEN - INTERTHANE 990	1	100	N 8010- 720488222

OR

C. M/s. JOTUN

Sr. No.	Description of Paints / Products	No of coats	Per coat DFT	Pattern Number
1	INTERGARD 269	1	50	N8010 –TB00829
2	INTERGUARD 5600 (GREY)	1	150	N8010- P063132
3	TOP COAT IN RAL 6028, PINE GREEN - INTERTHANE 990	1	100	N 8010- 720488222



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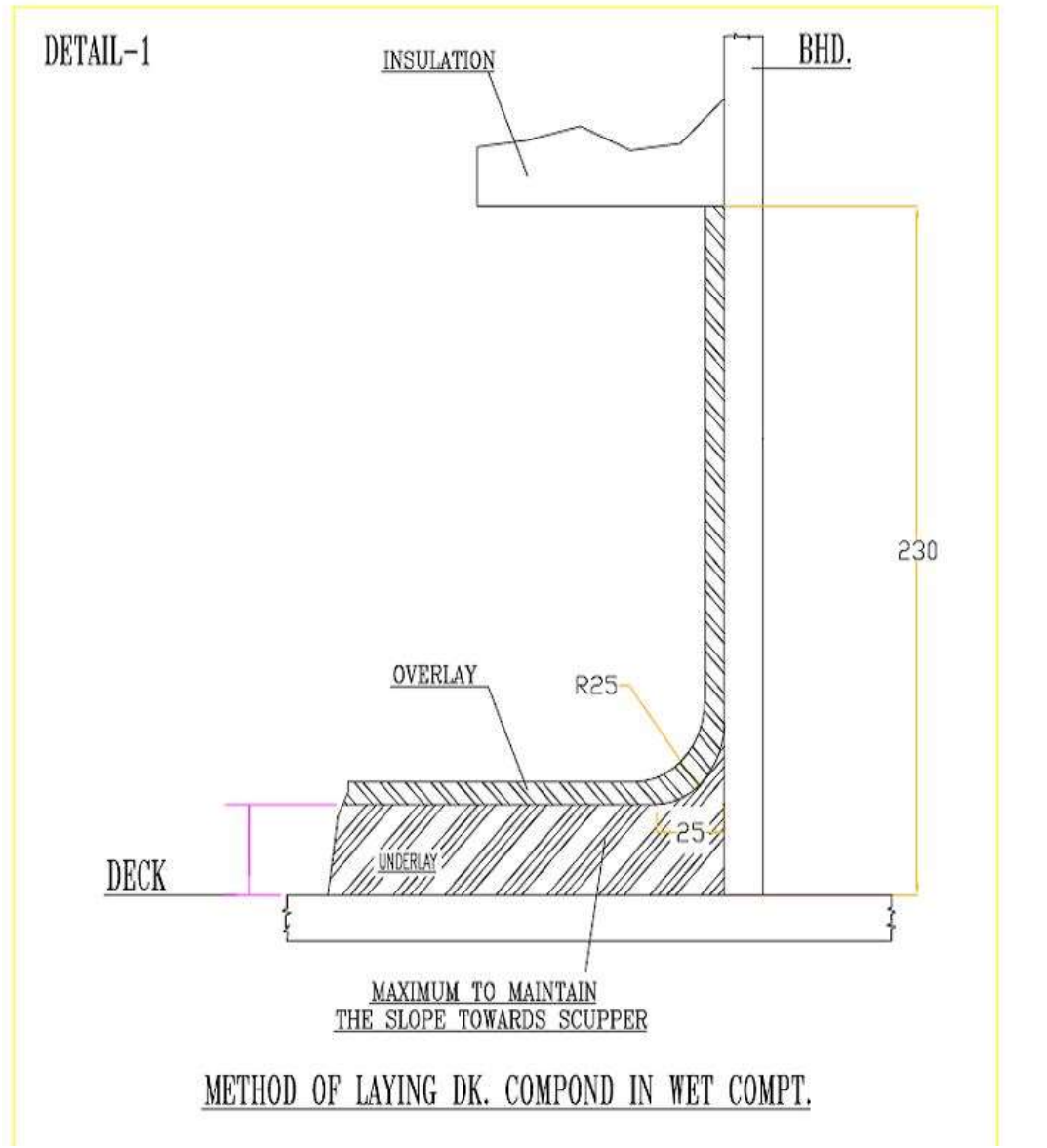
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Note: -

1. Before laying underlay surface preparation and painting to be done as per painting scheme DRG # 1902-01
2. Application as per NCD 3717, Issue-4, and Rev-1 dated Oct 17



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Appendix-14

ELECTRICAL FITTING/EQUIPMENTS IN MODULAR VIP COMPARTMENTS

Sr. No.	ITEM SYMBOL	PATTERN NO.	ITEM DESCRIPTION	QTY	Material No.
1	AEL		LED BASED AUTO EMERGENCY LANTERN	12	11000000000014856
2	L1	N5975-066067	LOOPING IN BASE	18	11000000000014857
3	L1	N5975-066069	LOOPING IN BASE 3rd OUTLET CAP	18	11000000000014858
4	5A		DOUBLE POLE SWITCH 6A	30	11000000000014859
5	25		SPOT LIGHT	32	11000000000014860
6	26		LIGHT - BULKHEAD FITTING CABIN TYPE	6	11000000000014861
7	68		DECORATIVE LIGHT	6	11000000000014862
8	90P		LED TUBE LIGHT 24W WITH SEMI MILKY DIFFUSER- PANELLED	37	11000000000014863
9	92		BUNK LIGHT FOR MESSES & CABINS (LED -3 WATTS).	3	11000000000014864
10	93		MIRROR / NOTICE BOARD (LED 6 W)	4	11000000000014865
11	94		DESK LIGHT (LED 6 W)	3	11000000000014866
12	97P		LED LIGHT, 12W WITH SEMI MILKY DIFFUSER FOR BATH & W/C PANELLED	3	11000000000014867
13	98P		LED LIGHT 1W WITH SEMI MILKY - PANNELED	4	11000000000014868
14	D	ANCHOR ROMA	DIMMER 1000 WATTS	6	11000000000014869
15			MCB Switch socket with enclosure, 6A, 230V,50Hz, with 3 pin socket, Surface type, with earth locking facility	21	15000000000038920
16			MCB Switch socket with enclosure, 16A, 230V,50Hz, with 3 pin Dual socket, Surface type, with earth locking facility	1	15000000000038921
17			MCB Switch socket IN Metal Box, 16A, 230V,50Hz, with 3 pin Dual socket, Surface type, with earth locking facility	1	15000000000024941
18			DP Switch socket with enclosure, 6A, 230V,50Hz, with 3 pin socket Surface type, with earth locking facility	13	15000000000038910
19			HCOS	1	

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1. All LED light fitting (Sr. no. 8, 12 & 13) shall be as per EED-50-28 for AEL & EED-50-33 for LED light fitting and to be procured from DEE approved vendor.
2. Spot light compartment - 1) Wardroom (Anteroom) (8 qty), 2) CO's Day Cabin (4 qty), 3) CO's Night Cabin (0 qty), 4) CO's Toilet & Bath (0 qty), 5) Sea Cabin (0 qty).
3. Cot light, desk light & mirror light are to part of respective fittings/ items hence not to be separately indicated.
4. Supply of electrical fittings (Appendix-14) is in the scope of supplier. Supply of all cables shall be by SHIPYARDS however cable laying shall be in the scope of the supplier. (for detailed electrical scope please refer TSP SOTR clause No. 29 referred above)

5. TECHNICAL & CONSTRUCTIONAL REQUIREMENTS FOR ELECTRICAL FITTINGS:

- I. The cable glands required for the switch socket enclosure will be under the scope of supplier.
- II. The enclosure should be of FR Grade polycarbonate with high impact resistance. The enclosure should be thick and not able to break under severe conditions. The enclosure to have fixed and robust mounting facility. The DP switch, MCB, Socket & Enclosure should be of **Anchor or Havells (Crabtree) or Legrand** make only. The MCB, socket and the enclosure has to be selected in such a way that it should be coloured ones and decorative type matching with the compartment so as to give aesthetic look to the compartment. The connection boxes required for connecting the switch sockets will be under the scope of SHIPYARDS. The single line diagrams for scheme of power supply distribution to switch sockets will be provided by SHIPYARDS. The type and make of MCB's, sockets and enclosures are needed to be approved by SHIPYARDS. Subsequently, enclosure with assembled switch-socket as to be submitted to SHIPYARDS for its approval before bulk supply. The switch sockets should have looping facility in order to connect multiple switch sockets in series. Therefore, separate terminals have to be provided along with the extra cable gland required for looping one switch socket with the other one.

Note: The quantity of DP and MCB switch sockets mentioned above are based on the present configuration. However, the final quantity will be communicated during TNC which may not vary more than 10-15% of the total quantity.

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Appendix-15

LIST OF PIPES & IT'S FITTINGS

(a) Piping work will be measured in inch meter (i.e. NB of pipe in inches x Length of pipe in Meters) for each type of material. The lengths of Valves, bellows, flanges, strainers, flexible, gauges (pressure, temperature, and level), flow meters, sensors and other fittings including deck/bulkhead fittings will also be considered for evaluating the total pipe length. The approximate quantities shall be as follows:

(b) **Pipes:** Pipes of various sizes with the following material (~~6mm to 65 mm Diameter~~) :

1. Carbon steel conforming to ASTM A106 Gr B.
2. Copper pipes to NES 830

(c) **Pipe fittings:**

1. All carbon/Stainless steel pipe fittings as per ANSI B16.11 & ANSI B16.9.
2. Union couplings


(d) **Gaskets:** All gaskets used in joining shall be of asbestos free material conforming to BS7531 for Pressure class PN10 and temperature 80⁰ C.

(e) **Fasteners:** all All fasteners used on board shall be of High tensile bolts with one washer and nut duly galvanized.

Dimensions & other requirements conforms to BS3692
 Fasteners threads are NPT.
 Pipe supports with clamps (as per NES) duly galvanized

(f) **Piping insulation:** Pipes required to be insulated shall be indicated in the respective Piping arrangement drawing and the same shall be carried out by the supplier. The insulation is carried out to prevent loss of heat from ventilated compartment through pipes. Pipes are to cleaned and degreased prior insulation. The details for pipe insulation is given below:

- | | | |
|-------|-------------------------|--|
| (i) | Insulation Type | : Insulation Cold & hot. |
| (ii) | Material | : Nitrile rubber for cold, Ceramic Fiber |
| (iii) | Thickness | : 19-20mm |
| (iv) | Colour | : White colour preferred |
| (v) | Procedure | : As per the recommendation of material supplier |
| (vi) | Reference specification | : NCD 1433 |

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LIST OF PIPES & IT'S FITTINGS VIP COMPT.

1). Piping/pipe fittings/equipment's within VIP compartments

Supplier scope:

1. Detail design of piping i.e. modelling, 2D drawing generation in Aveva marine
2. Pipes, fittings and accessories, fabrication, pressure testing at shop, installation, pressure testing after installation, insulation wherever applicable.
3. Insulation Material, installation material, fasteners etc. The total quantity of pipe insulation material is **20 Sq.m for Cu**

Sr. No.	Material of pipe	Diameter (Length in meters)											
		10	16	20	25	32	40	50	65	80	100	125	
1	Copper Pipes	80	-	10	-	-	-	-	-	-	-	-	-
2	C.S. Pipes	-	-	-	-	-	3	-	-	-	-	-	-

Sr. No.	Material of pipe	Union Couplings									
		10	20	25	32	40	50	65	80		
1	Copper Pipes	20	6	-	-	-	-	-	-	-	-

Sr. No.	Material of pipe	Flanges												
		10	16	20	25	32	40	50	65	80	100	125	150	
1	C.S. Pipes	-	-	-	-	-	4	-	-	-	-	-	-	-

Sr. No.	Valves	Valve			
		10	16	20	40
1	SDSL V/V (GM)	-	-	2	-
2	Ball V/V (GM)	2	-	-	-

Sr. No.	Bulkhead fittings	Bulkhead fittings				
		10	16	20	40	50
1	Screwed	-	-	2	-	-

Sr. No.	Pipe fittings	Reducer					
		100 x 80	50 x 40	65 x 40	65 x 50	20 x 10	25 x 10
1	Copper Pipes	-	-	-	-	2	-

Sr. No.	Material of pipe	T' Piece											
		20X10X20	10X10X10										
1	Copper Pipes	4	12	-	-	-	-	-	-	-	-	-	-

Notes: - All above mentioned quantities are estimated based SHIPYARDS design. Quantities may vary as per supplier design



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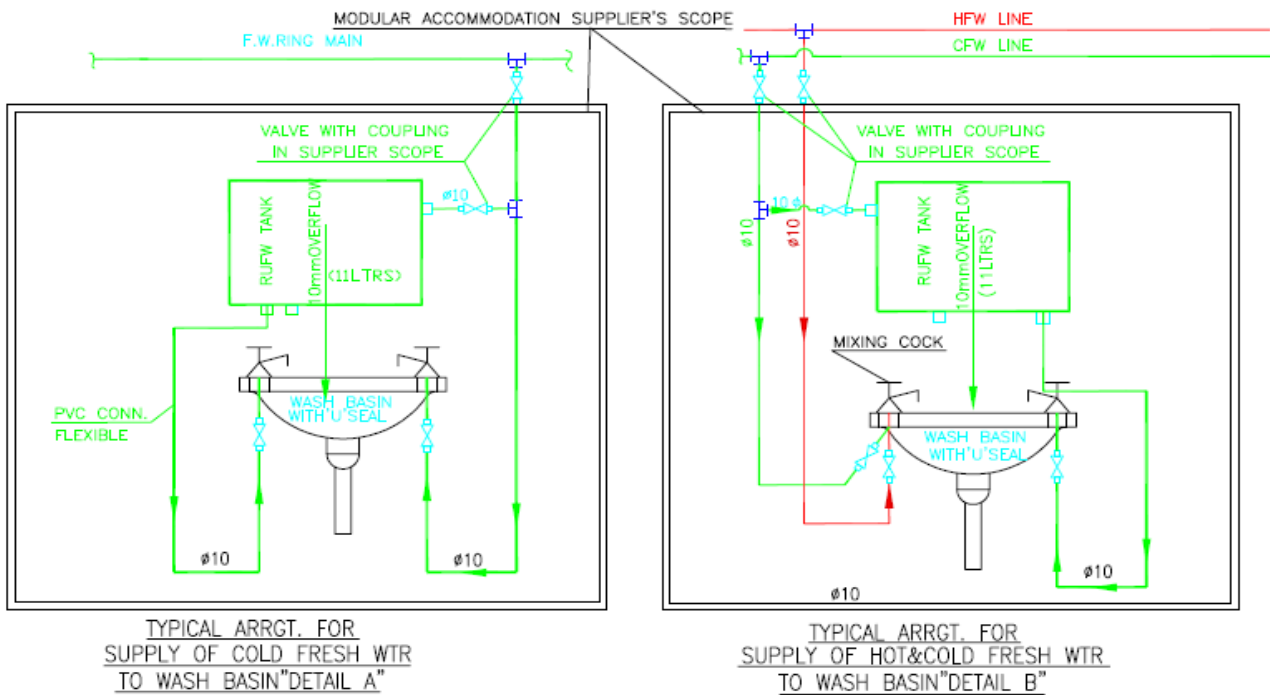
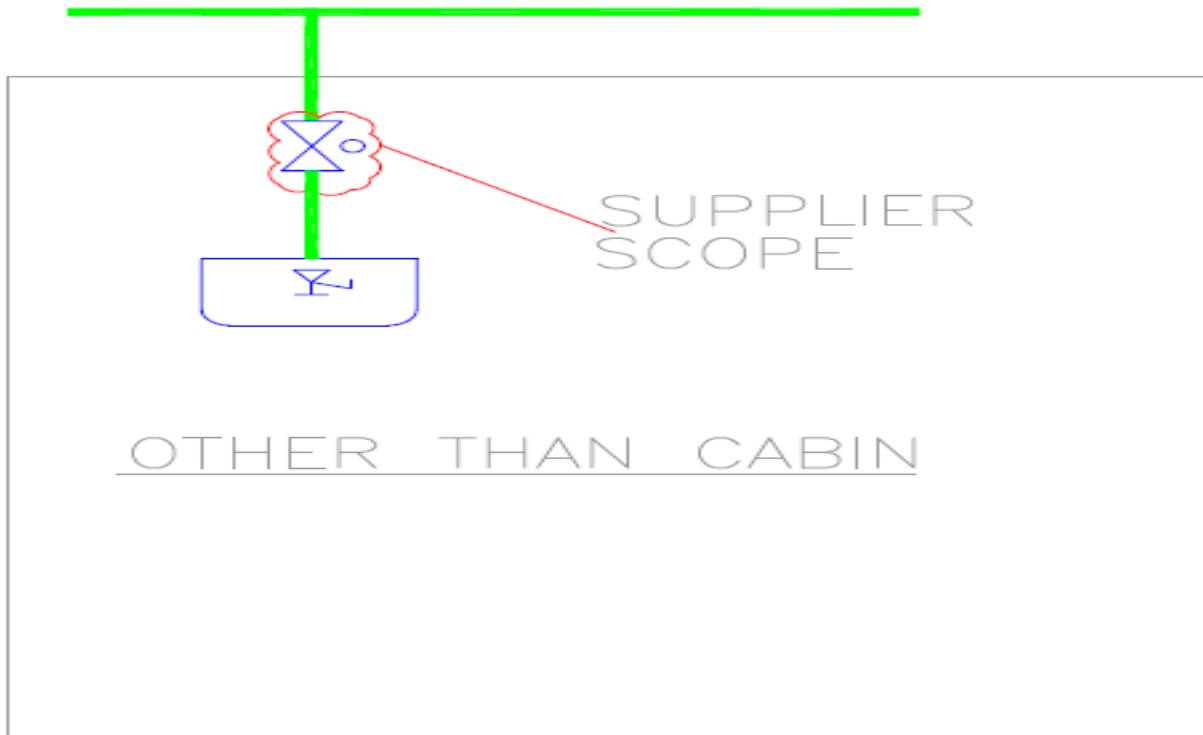
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NOTE:
1) ISOLATING VALVES WITH COUPLING IS IN SUPPLIER SCOPE 
2) WASH BASIN SHALL BE PROVIDED WITH "U" SEAL.



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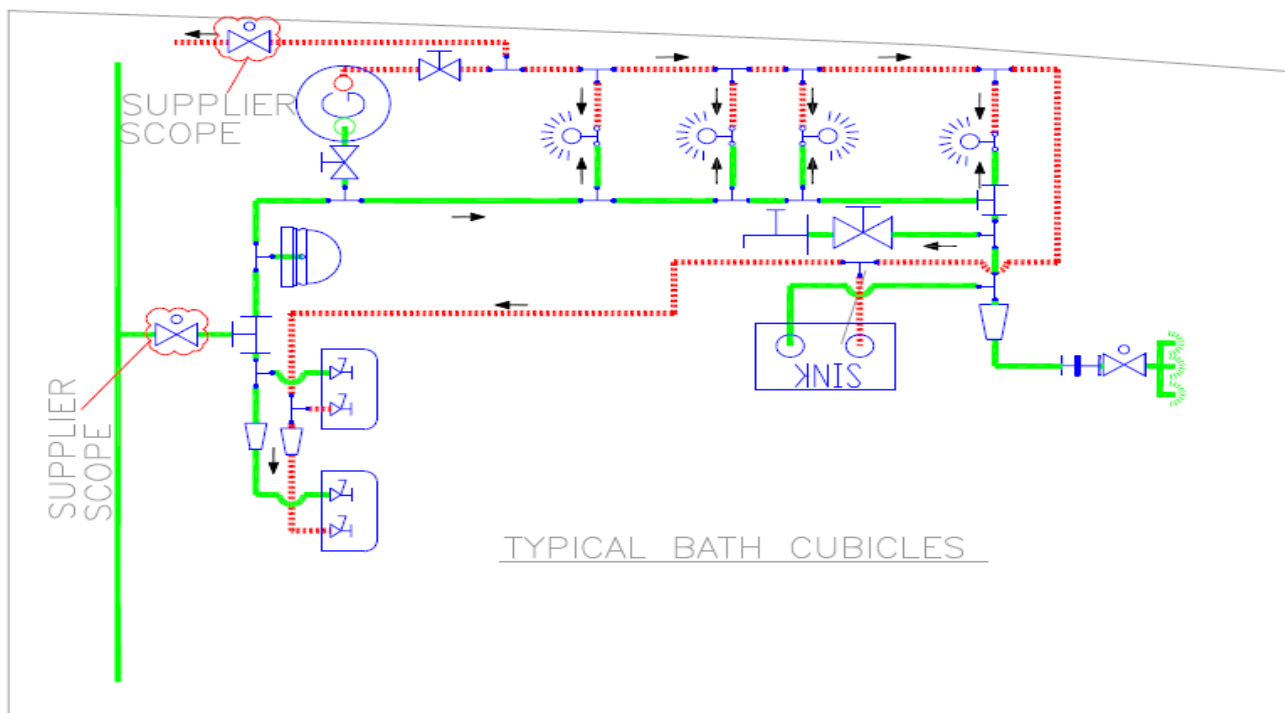
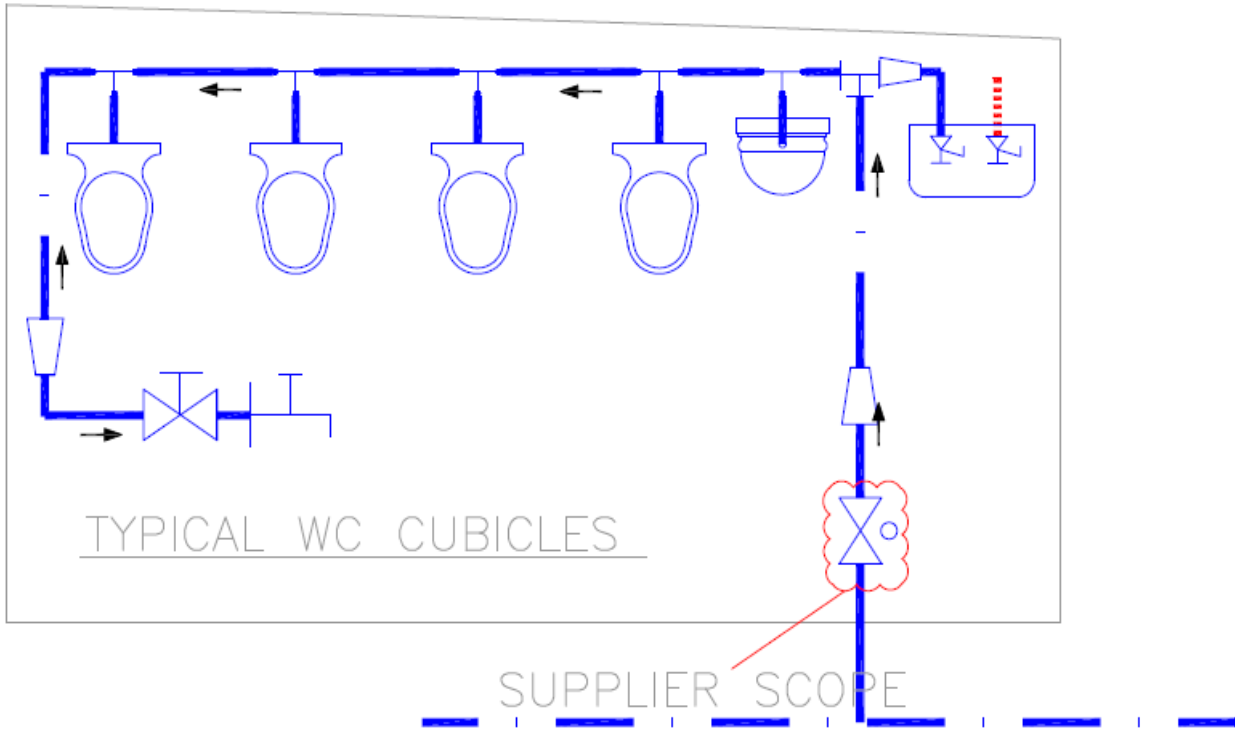
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Appendix-16

STRUCTURAL INSULATION FOR VIP COMPARTMENTS

Scope of work: - Supply of A 60 grade FAT insulation Material, all installation material, fasteners etc. & application / installation work strictly as per NCD 1430 Issue 1, Jul 20 is in supplier scope as part of turnkey contract.

Total area of VIP Modular Compartments including plain area and stiffener area is 500 m²

(i) A 60 grade FAT insulation material (rolls/ slabs) is to be supplied under certification by member of International Association of Classification Society (IACS) as per IMO Resolution MSC. 307(88), 2010 in accordance with NCD 1430.

(ii) The associated ancillaries such as glass cloth, adhesives, pins, fasteners, self-locking washers and caps are required to be type tested and certified as per IMO FTP code along with the insulation material.

(iii) The firm supplying the insulation is to submit the test certificates in respect of the tests specified in NCD. In case of Fire class testing the validity of the test certificate will be as per class approval. Validity of type test certificates will be minimum three years. The firm shall be in possession of valid type test certificate during tendering with a validity of at least six months.

(iv) Specification of A 60 material and all associated ancillaries, Test certificates / Class approval certificates, QAP, inspection and tests shall be as stipulated in NCD 1430

(v) Installation of FAT insulation is to be undertaken as per insulation installation procedure provided by insulation OEM in accordance with NCD 1430. Considering the installation plan of FAT insulation on plain as well as on stiffener areas, vendors to supply and apply all the requisite materials.

(vi) The supplier to submit following reference documents along with the offer as per NCD 1430

- (a) Material specification, properties and Test Reports / certificate etc. Vendor to furnish Technical specification of FAT insulation as per Table A1 of NCD 1430.
- (b) Details of installation plan of insulation / application procedure.
- (c) Any other relevant information required.

Note –

Area may vary due to variation in structural components.

MDL will provide TSP / NCD / fixing details at the appropriate time. All the latest drawings to be followed.

TECHNICAL SPECIFICATION / NCD / DOCUMENT–

1. NCD 1430 Issue 1 Jul 20 - specifications of Fire, Acoustic and Thermal (FAT) insulation for Indian naval ships.
2. PAINTING SCHEME DWG NO. 1902-01, REV 4 (All latest revision of DWG/NCD/TSP drawing to be followed)

ALL ITEMS AS PER APPENDIX 15 TO BE SUPPLIED IN LOT 2.

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APPENDIX-17

TENTATIVE DELIVERY SCHEDULE
Tentative Delivery Schedule for Modular Accommodation - VIP

For MDL Ships –

Sr.	Yard	Y-12651	Y-12652	Y-12653	Y-12654
1	SUPPLY OF EQUIPMENTS, LOT-1 (Supply of door / panelling items)	4 months from QAP approval	4 months from QAP approval	8 months from QAP approval	13 months from QAP approval
2	SUPPLY OF EQUIPMENTS, LOT-2 (Supply of furniture / outfitting items required to be installed in compts)	6 months from QAP approval	6 months from QAP approval	13 months from QAP approval	19 months from QAP approval
3	SUPPLY OF EQUIPMENTS, LOT-3 (Supply of Misc / Loose items/brought out items)	13 months from QAP approval	16 months from QAP approval	22 months from QAP approval	28 months from QAP approval
4	DOCUMENTS FOR VIP MODULAR ACCOMMODATION P17A	22 months from QAP approval	25 months from QAP approval	31 months from QAP approval	37 months from QAP approval
5	OBS FOR VIP MODULAR ACCOMMODATION 1 Year & 2 Year	22 months from QAP approval	25 months from QAP approval	31 months from QAP approval	37 months from QAP approval
6	TRAINING FOR VIP ACCOMMODATION	22 months from QAP approval	25 months from QAP approval	31 months from QAP approval	37 months from QAP approval
7	SERVICES FOR INSTALLATION & SHIPYARDS/FIRM SUPPLIES ITEMS (Installation of eqpt / furn / compt. Outfitting)	10 months from QAP approval	13 months from QAP approval	19 months from QAP approval	25 months from QAP approval
8	SERVICES FOR COMPARTMENT INSPECTIONS (Compartment Inspections - PI, PPI)	13 months from QAP approval	16 months from QAP approval	22 months from QAP approval	28 months from QAP approval
9	SERVICES FOR FI, 0 DEF & HAND OVER (FI, Zero defect and handing over compartments)	22 months from QAP approval	25 months from QAP approval	31 months from QAP approval	37 months from QAP approval

Note –

- For line item "Design Updation & Modification of 3D CAD Model", the activities will commence from 1 week from PO and will carry on till the commissioning of all the Modular Accommodation compartments of the last ship as elaborated in TSP.
- Hot work of seating/support for installation of equipment/furniture/panels shall commence after obtaining permission from MDL.

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For GRSE Ships –

Sr.	Yard	C-3022	C-3023	C-3024
1	SUPPLY OF EQUIPMENTS, LOT-1 (Supply of door / panelling items)	7 months from QAP approval	7 months from QAP approval	22 months from QAP approval
2	SUPPLY OF EQUIPMENTS, LOT-2 (Supply of furniture / outfitting items required to be installed in compts)	7 months from QAP approval	13 months from QAP approval	26 months from QAP approval
3	SUPPLY OF EQUIPMENTS, LOT-3 (Supply of Misc / Loose items/brought out items)	13 months from QAP approval	26 months from QAP approval	43 months from QAP approval
4	DOCUMENTS FOR VIP MODULAR ACCOMMODATION P17A	23 months from QAP approval	33 months from QAP approval	45 months from QAP approval
5	OBS FOR VIP MODULAR ACCOMMODATION 1 Year & 2 Year	32 months from QAP approval	38 months from QAP approval	50 months from QAP approval
6	TRAINING FOR VIP ACCOMMODATION	32 months from QAP approval	38 months from QAP approval	50 months from QAP approval
7	SERVICES FOR INSTALLATION & SHIPYARDS/FIRM SUPPLIES ITEMS (Installation of eqpt / furn / compt. Outfitting)	8 months from QAP approval	14 months from QAP approval	32 months from QAP approval
8	SERVICES FOR COMPARTMENT INSPECTIONS (Compartment Inspections - PI, PPI)	20 months from QAP approval	24 months from QAP approval	42 months from QAP approval
9	SERVICES FOR FI, 0 DEF & HAND OVER (FI, Zero defect and handing over compartments)	24 months from QAP approval	34 months from QAP approval	46 months from QAP approval

Note –

- Hot work of seating/support for installation of equipment/furniture/panels shall commence after obtaining permission from GRSE.
- For line item "Design Updation & Modification of 3D CAD Model", the activities will commence from 1 week from PO and will carry on till the commissioning of all the Modular Accommodation compartments of the last ship (Y-3024) as elaborated in TSP.

The delivery of equipment / items is to be made in stages as per the time span mentioned above. The equipment / items are to be delivered three months prior to the Compartment Inspection schedule (PI/FI). The compartment inspection schedule will be given after placement of order.

LOT -1:- Door, Panel, etc., APPENDIX-10,11

LOT -2 :- Bunk ,Wardrobe, Computer Table, Wash Basin, Cap & Coat Hook, Key Board, Book Shelf, Cupboard ,Safe, Lighting with Fixture, Side Table, Boards, Ironing Table, Projector, etc. Refer APPENDIX-9, 13,14,15 & 16

LOT -3:- Ash Tray, Chairs, Mirror, Towel Rail, Sofa, Wall Clock, Waste Paper Bin, Fan, Anti rodent device, LED TV, Wall Painting, Gymnasium equipment, Coffee Machine etc. APPENDIX-9.



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Appendix-18

1. Refer NCD 3717 Issue- 4 Rev-1 dated Oct 17 regarding Specifications for Epoxy Deck Covering.



NCD SPECIFICATION

**NCD 3717 ISSUE-4 REV 1
OCT 2017**

**SPECIFICATIONS FOR
DECK COVERING SCHEMES FOR
INDIAN NAVAL SHIPS**

Issuing Authority

**Integrated Headquarters,
Ministry of Defence (Navy)
Directorate of Naval Architecture
Room No. 200, II Floor
Naval Headquarters Annex
Talkatora Stadium
New Delhi-110 001**



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RECORD OF AMENDMENTS

Sl.	Amendment	Authority	Date	Signature
1.				
2.				
3.				
4.				
5.				
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NCD SPECIFICATION

NCD 3717

ISSUE 4, REV. 1

OCT 2017

SPECIFICATIONS FOR DECK COVERING SCHEMES FOR INDIAN NAVAL SHIPS

The issue and use of this specification is authorized
on behalf of the Indian Navy by

(एमएन मेनन)/(MN Menon)

कमोडोर/Commodore

प्रधान निदेशक नौसेना पोतशिल्प/
Principal Director Naval Architecture

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नौसेना पोत शिल्प निदेशालय/Directorate of Naval Architecture
नौसेना मुख्यालय/Naval Headquarters Annex,
तालकटोरा स्टेडियम/ Talkatora Stadium
नई दिल्ली/New Delhi-110 001
दूरभाष/Telephone: 011-21410483
Fax: 011-21410483
E-Mail: dna.ihqmod@navy.gov.in



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INTRODUCTION

1. This NCD Specification is sponsored by the Indian Navy, Integrated Headquarters, Ministry of Defence (Navy), Principal Director, Directorate of Naval Architecture, Integrated Headquarters, Ministry of Defence (Navy), Naval Headquarters Annex, Talkatora Stadium, New Delhi-110001.
2. NCD 3717/Issue 4/Rev. 1/Oct 2017 has been agreed by the authorities concerned with its use and is intended to be used whenever relevant in all future designs, contracts, orders etc. It is to be applied as required by any Ministry of Defence contract for procurement and application of deck covering schemes onboard Indian Naval ships.
3. If it is found to be technically unsuitable for any particular requirement the sponsor is to be informed in writing of the circumstances with a copy to Principal Director, Directorate of Naval Architecture, Integrated Headquarters, Ministry of Defence (Navy), Naval Headquarters Annex, Talkatora Stadium, New Delhi-110001.
4. Any user to this Specification may propose an amendment to it which are:-
 - (a) Not directly applicable to a particular contract are to be made to the sponsor of the NCD.
 - (b) Directly applicable to a particular contract are to be dealt with using existing procedures or as specified in the contract.
5. No alteration is to be made to this NCD specification except by the issue of formal amendment.
6. Unless otherwise stated, reference in this NCD specification to approval, approved, authorised or similar terms are by the Integrated Headquarters, Ministry of Defence(Navy)/DNA.
7. This NCD specification supersedes NCD 3717 Issue 4 of Apr 2017 and all its amendments and revisions and policy directives issued in respect of deck covering schemes prior to issue of this edition of NCD.



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RELATED DOCUMENTS

S.No.	Document No.	Title
01.	NCD 1471 Part I	Requirements for Deck Underlay Materials
02.	NCD 1471 Part II	Requirements of Deck Underlay and Light deck covering Materials
03.	ASTM D-257	Standard Test Method for DC Resistance or Conductance of Insulating Materials
04.	IS 9162	Methods of Test for Epoxy Resins, Hardeners and Epoxy Resin Compositions for Floor Topping
05.	IS 9490	Methods for Determination of Thermal Conductivity of Thermal Insulation Materials
06.	NCD 1409	Determination of Toxicity Index
07.	NCD 1410	Determination of Oxygen Index
08.	NCD 1411	Determination of Smoke Index
09.	IS 101	Methods for Test for Ready Mixed Paints and Enamels



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**SPECIFICATIONS FOR DECK COVERING SCHEMES FOR INDIAN
NAVAL SHIPS**

Scope

1. This specification relates to Deck Covering Schemes for Indian Naval Ships (dry and wet compartments) for both refit and new construction ships, acceptability criteria of the material, its application procedure and performance guarantee rendered by approved vendors.

Role of Deck Covering Scheme

2. Deck covering schemes onboard ships are applied on internal decks to provide an impermeable barrier against onset of corrosion and also to impart aesthetics for improved habitability onboard ships.

Deck Covering Scheme

3. The Deck Covering schemes indicated in this NCD in general comprise of the following:-

(a) **Surface/Deck.** Proper surface preparation of the deck being applied with deck covering scheme is vital towards the performance of the scheme as it ensures sound adhesion. Disbonding of the underlay can occur if applied on an insufficiently prepared surface. The deck covering schemes indicated in this NCD are to be applied on the decks of steel and aluminium prepared to ST-3 grade finish. On new construction ships, the entire internal deck structure is to be prepared to SA 2.5 finish and applied with primer for preservation during outfitting. As the deck covering application is undertaken towards the end of construction phase the overcoat interval of the applied primer is generally exceeded. Therefore, it is essential that the decks are again prepared to ST3 grade prior application of deck covering. Prior application of the scheme, degreasing of the surface, solvent cleaning, removal of oily matter, thick paint and adhesive etc., is to be ensured. For surface cleaning, the method of wire brushing mechanical diskings/buffing and thorough cleaning with suitable cleaning thinner/solvent may be used to achieve a surface free of dirt, dust, grease etc. to ST3 grade finish. In case of aluminium decks, clean the deck with any cleaning solvent to remove rust, grease and other dirt, followed by washing with water. Wire brushing/disk sander may be used to remove any oxide deposits.



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(b) **Primer.** Post ST-3 grade of surface preparation, the deck is to be applied with specified primer.

(c) **Underlay.** The underlay is a compound laid on properly cleaned/primed decks to cover the deck undulations in dry spaces and to additionally provide necessary slope in wet spaces for drainage. It provides protection against corrosion and a hard and even surface for laying subsequent top coat. The recommended thickness of underlay is 03 mm. This underlay can be pure epoxy, mastic, polymeric resins, hard setting combination of plastics, etc.

(d) **Top Coat/Sealer Coat.** The top/sealer coat is used to cover the deck underlay material and to impart necessary aesthetic appearance, gloss finish, and anti skid properties. These can be pure epoxy or combination of epoxy, polyurethane, and vinyl compounds.

(i) **Dry Compartments.** This coat when applied over the underlay as per the scheme specifications forms a seamless top covering upon drying/curing.

(ii) **Wet Compartments.** In wet compartments, the top coat is required to be non-skid type. Necessary slope towards the compartment drain is to be provided by varying thickness of underlay in such compartments.

Approval Process for Firms

4. The firms who are desirous of seeking approval to supply deck covering scheme under this specification, shall approach IHQ-MoD(N)/DNA. The approval process will require examination of the Company profile, manufacturing capability, technical parameters of the deck covering material, test parameters, trial application, and periodical assessment of the applied deck covering during trials.

Approved Firms for Deck Covering Scheme

5. Based on the approval process at Para 4 above, new generation deck covering schemes of Four firms post successful completion of trials have been approved by Integrated Headquarters, Ministry of Defence (Navy). The contact details of firms approved at this stage for deck covering scheme as per this NCD are placed at **Appendix 'L'**. The list of approved deck covering schemes of the respective firms on '**Supply and Apply**' basis is tabulated at Table 1.

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Table 1. Approved Deck Covering Schemes

Sl.	Firm	Scheme	Appendix
(a)	M/s JD Jones & Co. (Bombay) Pvt. Ltd.	OxyDeck	A
(b)	M/s GTF Marine Technology India Pvt. Ltd., Mumbai	SUTEF	B
(c)	M/s Ocean Marine Environment Coatings Pvt. Ltd. (OMECPL)	OFPM	C
(d)	M/s Quaker Chemical India Pvt.Ltd.,	SynDeck	D
(e)	M/s Excel India Protective Paints Pvt. Ltd. (EIPPL)	Excel	E

Technical Specifications

6. The salient features of primer, underlay and top coat/sealer coat/ dado coat used in respect of approved schemes are given at **Appendices A, B, C, D** and **E**. These parameters have been drawn based on latest Product Data Sheets (PDS) of the coatings. It is recommended that latest PDS may also be consulted during application of deck covering schemes. The technical specifications of the materials viz primer, underlay and top/sealer coat specified in the respective schemes will conform to the requirements indicated at **Appendix F**.

Colour Shades

7. The approved colour shades for the top/sealer coat of the deck covering schemes in dry and wet compartments onboard *IN* ships along with internationally recognised colour codes are indicated at **Table 2**.

Table 2. Colour Shades

Sl.	Colour Shade	Colour Specification
(a)	Sapphire Blue (for dry compartments)	Internationally recognized colour code RAL 5003
(b)	Sky Blue (for wet compartments)	Internationally recognized colour code RAL 5015

Thickness of Deck Covering Scheme

8. The application of deck covering schemes indicated at Table 1 is to be undertaken such that the total thickness of scheme on a flat plate is not to exceed 3-4 mm depending upon the nature of the scheme as indicated below for the respective location:-



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(a) Dry Compartments. Maximum recommended average thickness of the schemes in dry compartments is 3-4mm on a flat plate/ peak of undulation.

(b) Wet Compartments. Maximum height of scheme above the scupper edge is to be restricted to 3-4mm. Sloping of the deck for drainage of water is to be restricted to 1% (1cm height in a length of 100cm) and not exceeding a maximum of 2%.

(c) Casting of Dados. Height of dados in wet compartments is to be restricted to 230mm with a total thickness not exceeding 4mm.

9. Undulations of the order of 5mm (measured from depth of valley to the peak) may be corrected using underlay. Higher degree of undulations is to be corrected strictly by repair & renewal and not through use of deck covering schemes. Scupper rings/ fittings etc. are to be made flush to the deck level to the maximum extent feasible prior application of deck underlay. Application of deck covering scheme is to be undertaken at the ship's design list/ trim to the extent feasible to ensure proper sloping in wet compartments. Areas under application of deck covering schemes are to be completely isolated till the curing of the entire scheme.

Ordering and Application of Deck Covering Scheme

10. The deck covering works will be contracted as a '**Single Order**' i.e. for both '**Supply and Application**' of deck covering material. The procurement will be undertaken on LTE basis from the approved firms at Para 5 above. The contracts are to clearly indicate the area (in sqm) for dry compartments and wet compartments. For application in dado areas the running length (in metres) is to be indicated. OEM of the scheme shall be responsible for supply of deck covering material in sufficient quantity as per the indicated areas in the contract. Further, the OEM shall be responsible for undertaking the application of deck covering schemes in the indicated areas. The OEM has to provide the technical details of the deck covering applied onboard *IN* ship to the repair agency/concerned ship staff. In addition, the firm has to furnish the valid type and routine test certificates for the applied scheme. The firms are to submit the following documents during tendering:-

(a) During submission of bids/TNC the firm has to submit valid Type test certificates for the specified product as a part of T-bid.

(b) At the time of delivery of the material, the firm has to submit the valid routine test certificates for the material under supply along with the certificate of density.



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Quality Assurance

11. The deck covering material will be supplied by the OEMs under *Self-Certification*, which is valid along with *Performance Guarantee*.

12. The firm executing the contract for the deck covering activity is to furnish test certificates listed at **Appendix 'G'** in respect of the schemes mentioned at Para 5 above. The technical parameters of the material will conform to requirements as per Para 6 above. The tests have been categorised as Type tests and Routine tests which will be conducted at National Accreditation Bureau of Laboratories (NABL) accredited laboratory (like National Test House).

Performance Guarantee

13. The firms shall stand guarantee for a period of 05 years for the deck covering scheme from the date of application of the scheme and submit a performance guarantee contract as per the format placed at **Appendix 'H'**. The material and application details are to be rendered in the 'Working Protocol' format (placed at **Appendix 'J'**) and attached with performance guarantee document. QC agency of respective yard or WOT for new construction ships is responsible for undertaking stage and final inspections. The inspecting agency is to monitor and record the thickness, density and weight addition of each coat of the scheme being applied on the structure on the working protocol. The working protocol **Appendix 'J'** will be rendered on satisfactory inspections at various stages and on completion of deck covering works. A record of Working Protocols is to be maintained by construction agency/repair agency/ship staff/Command Headquarters along with Performance Guarantee contract for future reference.

14. The signatories of performance guarantee shall be the respective Naval Contracting Agency and the OEM of the deck covering scheme.

Areas of Application

15. All internal compartments on *IN* ships for the purpose of application of deck covering schemes have been classified as follows:-

- (a) Essential.
- (b) Non essential.

16. The usage of deck covering schemes is to be restricted to compartments categorized as 'Essential' only. The list of compartments (Essential and Non-essential) is placed at **Appendix 'K'**. Deck preservation of compartments classified as 'Non-essential' is to be undertaken by use of suitable paint schemes as indicated vide Enclosure 2 of IHQ-MoD(N)/DNA Policy letter NC/Policy/H-129/Material dated 04 Oct 17. For weight sensitive ships & ships with displacement less than 600 tons, the application of deck covering schemes is



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to be restricted to wet compartments only. For new construction ships, the deck covering plan is to include compartments classified as 'Essential'.

Maintenance of Deck Covering Scheme

17. Deck covering scheme is functionally capable of withstanding movement of heavy traffic and considered to have adequate abrasion resistant properties against day to day wear. However, due precaution is to be taken during movement of equipment/machinery and dragging of items/stores on this surface is strictly prohibited.

18. The scope of maintenance works proposed under Performance Guarantee during the service period of deck covering scheme should be worked out through joint inspection/survey of areas with participation of ship staff, inspection agency, respective yard and OEM of the deck covering scheme. Maintenance manual is to be handed over by the OEM to the respective ship on work completion containing the following:-

- (a) Recommended solvents for cleaning.
- (b) Cleaning methodology & frequency.
- (c) 'Do's & Don'ts' for effective maintenance.

Packing

19. The material shall be supplied in new clean, dry, rust free drums/containers. The lid shall be tightly secured in position so as to give the drum/container tight closure. Drums/containers shall be in sound condition capable of rough handling during transit. Each drum/container of particular capacity shall consist of same/net quantity of the material within $\pm 5\%$.

Marking

20. Each drum/container shall be legibly and indelibly marked with paint as follows:-

- (a) Nomenclature of the stores indicating name of contents
- (b) Product name
- (c) Manufacturer's/suppliers name
- (d) Mixing ratio in case of two pack system
- (e) Net and gross weight of drum/container
- (f) Density of the material inside the drum.
- (g) Batch no., month and year of manufacture
- (h) Name and address of the consignee
- (j) Shelf life and expiry date along with relevant storage temperature
- (k) Handling instructions
- (l) Safety precautions



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Validity of Certificates

21. IHQ-MoD(N)/DNA nominated firms are to undertake the renewal of Type Test certificates for their product on expiry of validity. The fresh test certificates are to be forwarded to IHQ-MoD(N)/DNA for revalidation of Type Test certificates. In case the firms fail to undertake the renewal of test certificates, their nomination would be held in abeyance. The validity of Type Test would be **three years**.

Deviations

22. A waiver be sought by the concerned agency from IHQ-MoD(N)/DNA, if any deviation from the specified norms brought out in this NCD for deck covering scheme are proposed.



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Appendix A
(Refers to Para 5)**DECK COVERING SCHEME OF M/s JD JONES - "OXY DECK"****'OXY DECK 515B' PRIMER**

- Description.** Oxy Deck 515B primer is a two pack epoxy system with excellent bonding with steel plate. It is flexible and anticorrosive in nature.
- Characteristics.**

(a) Pot Life	:	20 to 30 min. @ 30°C
(b) Mixing Ratio	:	Part A : Part B - 2.5:1 (By Weight)
(c) Touch Dry	:	03hrs @ 30°C
(d) Coating Interval	:	06 to 08 hrs @ 30°C
(e) Shelf Life	:	12 months in Sealed Container
(f) Coverage	:	0.150 kg/m ²
(g) Density	:	1.02 gm/cc

'OXY DECK FF' UNDERLAY

- Description.** Oxy Deck CP Underlay is free flow, a high build two pack, solvent free epoxy based system. It can be laid directly on primer coated surface.
- Characteristics.**

(a) Pot Life	:	20 to 30 min. @ 30°C
(b) Mixing Ratio	:	Part A : Part B - 6:1 (By Weight)
(c) Drying Time	:	12hrs @ 30°C
(d) Coverage	:	1.2 kg/m ² for a thickness of 01 mm
(e) Shelf Life	:	12 months in Sealed Container
(f) Density	:	1.03 gm/cc

'OXY DECK TP' TOP COAT

- Description.** Oxy Deck TP Top Coat is an epoxy based, two pack, solvent free, self levelling system forms a seamless coloured glossy top covering which can be laid directly over underlay. It has excellent adhesion. This can be applied directly to steel deck or as a topping for Oxy Deck CP Underlay.
- Characteristics.**

(a) Pot Life	:	20 to 30 min. @ 30°C
(b) Mixing Ratio	:	Part A : Part B - 6:1 (By Weight)
(c) Drying Time	:	24hrs @ 30°C
(d) Coverage	:	1 kg/m ² for a thickness of 01mm
(e) Shelf Life	:	12 months in Sealed Container



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Scheme for Steel Decks

7. **Dry and Wet Compartments.** The scheme for dry and wet compartments of steel decks is as mentioned below:-

(a) **Surface Preparation.** To be undertaken as per the procedure indicated at Para 3(a) of this NCD.

(b) **Application of Primer – Oxy Deck 515B.** On a completely dry surface, apply a coat of Oxy Deck 515B primer to a DFT of 50-100 microns, by means of brush/trowel/ roller. Primer is to be prepared by mixing Part A and Part B in ratio 2:1 by weight (approx 0.150 kg/m²). While the surface is tacky sprinkle fine Quartz Grains. Allow to set for 06hrs. In wet compartments and for Dado / skirting same procedure should be followed.

(c) **Laying of Underlay – Oxy Deck FF.**

(i) Blend contents of Pack A and Pack B in a clean container/tray in the ratio 6:1 by weight. A mechanical blender is recommended. However, manual mixing can also be adopted. Care should be taken to ensure that the mixing becomes a homogeneous mass. Mixed material is to be used within thirty minutes.

(ii) Spread the mixed Underlay over primed surface by trowel/wooden baton to achieve required thickness. Spread and Level the underlay with the help of the trowel. In Wet compartments, it is required to cover the Scupper with the Greased lid to avoid the flow of material inside the Scupper. Ensure that necessary slope is given towards Scupper. It is necessary to cast Dado / Skirting for a height of 150 to 230 mm. Allow the coating to dry for 12 hrs.

(d) **Laying of Top Coat – Oxy Deck TP.** Blend contents of Pack A with Pack B of OxyDeck TP top coat by mixing in a clean container in the ratio 6:1 by weight. A mechanical blender is recommended. However, it can be mixed manually also. Pour the mixture over the dried Oxy Deck FF underlay. This is a self-levelling, free flow material, which can be spread evenly by masonry/ notched trowel. Use a spiked roller to release any entrapped air. Allow to dry for 24 hours. Same procedure is to be followed for the application in wet compartments, Dado / skirting. Colour of Top Coat should be as per approved shades mentioned in Para 7 of this NCD.



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8. Scheme for Aluminium Decks

(a) Surface Preparation.

(i) To be undertaken as per the procedure indicated at Para 3(a) of this NCD.

(ii) On the clean surface apply a coat of suitable etch primer allow drying for minimum 02 hrs.

(b) Application of Primer – Oxy Deck 515B. On a completely dry surface apply a coat of Oxy Deck 515B primer to a DFT of 50-100 microns, by means of brush/trowel/roller. Primer is to be prepared by mixing Part A and Part B in ratio 2:1 by weight. While the surface is tacky, sprinkle fine Quartz Grains (approx 0.150 kg/m²). Allow to dry for 06hrs.

(c) Laying of Underlay – Oxy Deck FF.

(i) Blend contents of Pack A and Pack B in a clean container/tray in the ratio 5:1 by weight. A mechanical blender is recommended. However, manual mixing can also be adopted. Care should be taken to ensure that the mixing becomes a homogeneous mass. Mixed material is to be used within thirty minutes.

(ii) Spread the mixed Underlay over primed surface by trowel/wooden baton to achieve required thickness. Spread and Level the underlay with the help of the trowel. In Wet compartments, it is required to cover the Scupper with the Greased lid to avoid the flow of material inside the Scupper. Ensure that necessary slope is given towards Scupper. It is necessary to cast Dado / Skirting for a height of 150 to 230 mm. Allow the coating to dry for 12 hrs.

(d) Laying of Top Coat – Oxy Deck TP. Application procedure is as indicated at Para 7(d) above. Colour of top coat should be as per approved shades mentioned in Para 7 of this NCD.

Dado Casting Procedure

9. The application scheme for dado is same as for other areas. Oxydeck being a thixotropic material does not require any shuttering for fixing the same on vertical surfaces. Care should be taken, however, while applying the underlay to press the material so as to obtain a firm bond with the substrate. Allow to dry for 24hrs. Apply Oxy Deck TP top coat as per scheme given above.

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Appendix B
(Refers to Para 5)

DECK COVERING SCHEME OF M/s GTF - "SUTEF"**'SUTEF 42' PRIMER**

1. **Description.** SUTEF 42 is a two part 100% solid epoxy resin priming system. It has low viscosity with max penetration soaking into the capillary pores. It also strengthens the top layer of substrate. It has excellent adhesion to any substrate. It is compatible with subsequent epoxy and polyurethane top coat. Spread Quartz within 20 minutes of SUTEF 42 application.

2. **Characteristics.**

- | | | | |
|-----|------------------|---|-----------------------------------|
| (a) | Mixing Ratio | : | Base and Hardener 2:1 (By Weight) |
| (b) | Pot Life | : | 04 hrs at 25°C in 01kg mix |
| (c) | Coverage | : | 0.2-0.3 kg/m ² |
| (d) | Shelf Life | : | 12 months in Sealed Container |
| (e) | Touch Dry | : | 04 hrs at 25-30°C |
| (f) | Coating Interval | : | 08-10 hrs at 30°C |

'SUTEF 44 LT' UNDERLAY

3. **Description.** SUTEF 44 LT is a solvent free three pack system. Pack A is an Epoxy resin based compound containing mineral filler, fire resistant chemical, plasticizer, stabilizer etc. Pack B is a hardener which on mixing with Pack A produces a polymeric thermo-setting network after curing. The end product is a tough matrix which is anti-corrosive in nature and produces an impervious barrier to water and moisture to protect the deck from corrosion. It is also resistant to fire and provides electrical and thermal insulation properties.

4. **Characteristics.**

- | | | | |
|-----|--------------|---|--|
| (a) | Mixing Ratio | : | Pack A(Resin):Pack B(Hardener):Part C(Agg.)-
2:1:1(By weight) |
| (b) | Pot Life | : | 04 hrs at 25 °C in 01 kg mix |
| (c) | Coverage | : | 2.5 - 3.5 kg/ m ² for a thickness of 3 - 4 mm |
| (d) | Shelf Life | : | 12 months in Sealed Container |
| (e) | Drying Time | : | 06 to 08hrs @ 30°C |

'SUTEF 46' TOP COAT

5. **Description.** SUTEF 46 is an epoxy based three pack system. It does not contain any volatile matter and is cured at room temperature to produce seamless surface which is non-skid in nature since it does not contain any solvent, it is user friendly, non-toxic and smoke index is very low.



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6. Characteristics.

- (a) Pot Life : 30 minutes at 30 °C
(b) Mixing Ratio : Pack A(Resin): Pack B(Hardener):Part C(Agg.)-
2:1.25:4 (By Weight)
(c) Drying Time : 24hrs @ 30°C
(d) Coverage : 1.85 – 2.45 kg/m² for a thickness of 1.5-2
mm
(e) Shelf Life : 12 months in Sealed Container

Scheme for Steel Decks

7. Dry Compartments. The scheme for dry compartments of steel decks is as mentioned below:-

(a) Surface Preparation. To be undertaken as per the procedure indicated at Para 3(a) of this NCD.

(b) Application of Primer – SUTEF 42. SUTEF 42 primer is to be applied as given below: -

(i) Mix Base 'SUTEF 42 Resin' and 'SUTEF 42 Hardener' in 2:1 ratio by weight. Method of mixing is preferably mechanical stirring; however manual stirring can also be adopted for small quantity.

(ii) Apply the mix on previously prepared steel surface by means of roll-on brush to DFT of 150 to 200 microns.

(iii) Spread Silica Aggregate 24 within 20 minutes of SUTEF 42 application at a spread rate of approx. 0.2 - 0.3 kg/m² by manual broadcasting.

(iv) Allow setting for approx. 30-40 minutes. Manual brushing is to be undertaken to remove excess non-adherent particles.

(c) Application of Epoxy Lightweight Underlay – SUTEF 44 LT. After 8-10 hours of application of primer SUTEF 42, lightweight underlay SUTEF 44 LT is to be applied in the following manner:-

(i) Mix Base 'SUTEF 44 LT Resin', 'SUTEF 44 LT Hardener' and Aggregate in the ratio 2:1:1 by weight. Mix using machine stirrer to produce lightweight epoxy underlay SUTEF 44 LT.

(ii) SUTEF 44 LT is to be applied to a thickness 3 - 4 mm above the flat plate/peak of undulations.



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(d) Application of Epoxy Top coat – SUTEF 46. After 6-8 hours of application of underlay the top coat is to be applied in the following manner:-

(i) Mix Base 'SUTEF 46 Resin', Hardener 'SUTEF Top 46 hardener' and Silica Aggregate 46 in the ratio 2:1.25:4 by weight. Mix manually or using machine stirrer to produce SUTEF 46.

(ii) Pour above self-levelling mix and spread evenly with the notched trowel to a thickness of 1.5 - 2 mm. Deaerate continuously by means of spike roller. Allow to hard dry and air cure for 24 hrs before resuming foot traffic.

(e) Application of Scaler Coat – SUTEF 46. After 6-8 hours of application of underlay the top coat is to be applied in the following manner: -

(i) Mix Base 'SUTEF 46 Resin', 'SUTEF 46 hardener', Silica Aggregate 46 and colour pigments in the ratio 2:1.25:4 by weight. Mix manually or using machine stirrer to produce SUTEF 46.

(ii) Pour above self-levelling mix and spread evenly with the notched trowel to a thickness of 1.5 - 2 mm. Deaerate continuously by means of spike roller. Allow to hard dry and air cure for 24 hrs before resuming foot traffic.

8. **Wet Compartments.** Thickness of SUTEF 44 LT Underlay is not to exceed 3 mm above the scupper edge. Minimum sloping of the compartment for facilitating drainage of water to the scuppers is to be provided. The scheme is same as mentioned above for steel decks in dry compartments.

9. **Scheme for Aluminium Decks.**

(a) Surface Preparation.

(i) To be undertaken as per the procedure indicated at Para 3(a) of this NCD.

(ii) Conventional etch primer (one coat) is to be applied by brush or Spray on the cleaned deck.

(b) Balance Scheme. Beyond step 7(a) & (b) above, the balance scheme is same as that for steel decks, and should be followed accordingly for dry and wet compartments, as applicable.



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Dado Casting Procedure

10. In dado area (100mm height) only (Granite type/Mosaic type as applicable) of thickness not exceeding 4 mm is to be applied. Skirting of 100mm height on bulkhead is to be protected with topcoat wooden shuttering. Maximum height of dado is not to exceed 230mm. To get a decorative and smooth finish, plywood may preferably be used. White grease or any other releasing agent is to be applied on top surface of plywood. Shuttering pieces are placed and secured such that 4 mm gap is uniformly maintained between bulkhead and shuttering. Pour inside the gap between bulkhead and plywood shuttering (coverage of approx. 3.0 - 3.5 kg/running Meter). Care is to be taken during pouring of material to avoid formation of any air gap. Shuttering should be removed after 24hours. Apply balance SUTEF scheme as given above.





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Appendix C
(Refers to Para 5)

DECK COVERING SCHEME OF M/s OMECPL - "OFPM"

'OFPM 4' PRIMER

- Description.** OFPM 4 Primer is a two pack, epoxy red oxide primer.
- Characteristics.**

(a) Pot Life	:	20 to 30 min. @ 30°C
(b) Mixing Ratio	:	Part A : Part B - 3:1 (By Weight)
(c) Touch Dry	:	02hrs @ 30°C
(d) Coating Interval	:	06 to 08 hrs @ 30°C
(e) Shelf Life	:	12 months in Sealed Container
(f) Coverage	:	08 m ² /ltr

'OFPM 33L' UNDERLAY

3. **Description.** OFPM 33L is a solvent free epoxy based resin two pack system. Being a epoxy based resin, it gives good bonding with the metal and is flexible to withstand vibration during marine use. Product is anticorrosive in nature and produces an impervious barrier to water and moisture. It is also fire resistant and non-toxic & has low smoke index with electrical and thermal insulation properties.

- Characteristics.**

(a) Pot Life	:	45 to 50 min. @ 30°C
(b) Mixing Ratio	:	Part A : Part B - 2.25:1 (By Weight)
(c) Drying Time	:	12hrs @ 30°C
(d) Coverage	:	1.10 kg/m ² for a thickness of 01 mm
(e) Shelf Life	:	12 months in Sealed Container
(f) Density	:	0.87 to 1.10 gm/cc

'OFPM 103' SEALER COAT

5. **Description.** OFPM 103 Sealer Coat is an epoxy based resin three pack system. Product is solvent free and other chemical constituents are non-toxic, fire resistant and generate low smoke. A thin coat of 0.5mm thickness per coat produces a glossy monolithic surface.

- Characteristics.**

(a) Pot Life	:	45 to 50 min. @ 30°C
(b) Mixing Ratio	:	Part A: Part B: Part C - 5.6:2:0.4 (By Weight)
(c) Drying Time	:	20 -24hrs @ 30°C



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- (d) Coverage : 0.65 to 01 kg/m² for a thickness of 0.5mm
(e) Shelf Life : 12 months in Sealed Container

OFRP - MW^o DADO COAT

7. **Description.** OFRP - MW, is high build Epoxy based paint available in matching colour & finish with the final aesthetics of OFPM deck covering finish coat. High viscous dilatant high build coating, suitable for application on vertical surface by brush, roller brush or by using rubber mopper, particularly to in difficult to access areas, like the interspaces between the modular panel & ship bulkhead.

8. **Characteristics.**

- (a) Pot Life : 40 to 50 min. @ 30°C
(b) Mixing Ratio : PACK A : PACK B : - 10:4 (By Weight)
(c) Drying Time : Touch dry 6 to 8 hrs (depending on ambient)
Hard dry 12 - 24hrs (depending on ambient)
(d) Coverage : 500 gm per running meter for a thickness of 0.5mm total.
(e) Shelf Life : 12 months in Sealed Container

Scheme for Steel Decks

9. **Dry Compartments.** The scheme for dry compartments of steel decks is as mentioned below:-

(a) **Surface Preparation.** To be undertaken as per the procedure indicated at Para 3(a) of this NCD.

(b) **Application of Primer - OFPM 4.** Epoxy red oxide Primer OFPM-4 is supplied in two pack system in the mixing ratio of 3:1 by volume (Pack-A to Pack-B). After mixing of Pack-A and Pack-B in prescribed ratio, application of primer is to be done by brush, roller or spray. After 8 to 12 hours of drying the primed surface is ready for Underlay application.

(c) **Application of Underlay - OFPM-33L.** Underlay OFPM-33L, is supplied in two pack system, in the ratio of 2.25:1, by weight (Pack-A to Pack-B). After addition of Pack-B to Pack-A, the mixing needs to be done for 10 to 12 minutes minimum (depending on ambient temperature) before application. By & Large the local undulations are to be filled one by one on primed surface, thereafter a uniform thickness of minimum, 02 mm. Layer to be uniformly spread, all over the surface of the compartment. Local filling of undulation & application of underlay is simultaneous operation, no time



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gap needs to be given in between. Solidification time 12 to 24 hours depending on ambient temperature.

(d) Laying of Top coat OFPM -103, as Finish Coat. After 12 to 24 hours of application of Underlay, the Sealer coat, OFPM-103, is to be applied in a thin glossy layer of dry film thickness of 0.5 mm (0.65 to 01kg max. per sq.mtr. spread rate). OFPM- 103, is a three pack system. After opening lid of Pack - A, thorough stirring by mechanical stirrer is recommended to get uniformity. Pack - B and Pack - C to be added into Pack A gradually one after another, and mixed slowly and uniformly for 10 to 20 mins depending on ambient temperature. Application can be done by brush, roller, spike roller or trowel.

10. **Wet Compartments.** The scheme is same as that for steel decks in dry compartments as indicated at Para 9(a) to 9(d) above and should follow accordingly for wet compartments also. Necessary slope is to be given with underlay, to facilitate proper drainage to scuppers, considering minimum 02 mm underlay thickness on scupper head.

Scheme for Aluminium Decks

11. For Aluminium deck it is necessary to apply one coat of suitable / approved etch Primer to DFT of 15-20 microns by brush and allow drying for minimum 2 hours. Balance application scheme is same as Steel Deck.

Dado Casting Procedure

12. Dado casting is to be done by using OFRP- MW . It is a high build epoxy based paint available in matching colour & finish with the final aesthetics of OFPM deck covering finish coat. High viscous dilatant high build coating , suitable for application on vertical surface by brush, roller brush or by using rubber mopper, particularly to the difficult to access areas, like the interspaces between the modular panel & ship bulkhead. Two pack system, ratio of pack A to pack B is 10 : 04 (by weight). Dado height upto 230 mm is to be coated on primed surface of bulk head. Coverage 500 gms per running meter, per 2 coat application of each layer of approx. thickness 250 to 300 micron.

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Appendix D
(Refers to Para 5)

DECK COVERING SCHEME OF M/s QUAKER CHEMICALS - SYNDECK**SYNDECK BOND COAT SS1222 - PRIMER**

1. **Description.** Syndeck bond coat SS1222 is a low-viscosity, water-clear, 100% solids epoxy. It is specially designed as a primer material to be used in conjunction with installation of underlayer material.

2. **Characteristics.**

- | | | |
|----------------------|---|--|
| (a) Pot Life | : | 01hr @ 21°C |
| (b) Mixing Ratio | : | Part A : Part B - 2:1 (By Volume) |
| (c) Touch Dry | : | 24 hrs @ 21°C |
| (d) Coating Interval | : | 24 hrs @ 21°C |
| (e) Shelf Life | : | 24 months in Sealed Container |
| (f) Coverage | : | 18.6 m ² /ltr for DFT 100µm |

**SYNDECK ULTRA LIGHTWEIGHT UNDERLAYMENT
SS1290FC-UNDERLAY**

3. **Description.** Syndeck Ultra Lightweight Underlayment SS1290FC is a three component, aggregate filled 100% solids, amine cured epoxy flooring product that is zero VOC content, has excellent adhesion and is ultra light weight that can be applied all over approved prime coats and without primer over properly prepared surfaces.

4. **Characteristics.**

- | | | |
|----------------------|---|---|
| (a) Pot Life | : | 30 min@ 21°C |
| (b) Drying Time | : | 8 Hrs@ 21°C |
| (c) Coating Interval | : | 24 hrs @ 21°C |
| (d) Shelf Life | : | 24 months in Sealed Container |
| (e) Beads | : | Single colored (for Deco system- dry spaces) |
| | : | White or colored (for Terrazzo system - wet spaces) |

SYNDECK IMO EPOXY SS5000 TOP COAT

5. **Description.** Epoxy SS5000 top coat is an abrasion-resistant, amine cured epoxy top coat. It is low odour, has excellent adhesion and is user- friendly. It cures to a resilient and high-gloss film. It is self-levelling coating with superior clarity and can be applied at lower temperatures.

6. **Characteristics.**

- | | | |
|--------------|---|--------------|
| (a) Pot Life | : | 30 min@ 21°C |
|--------------|---|--------------|



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- (b) **Mixing Ratio** : Part A:Part B – 2:1 (By Weight)
(c) **Drying Time** : 20hrs @ 21°C
(d) **Coverage** : 11m² at 250µm
(e) **Shelf Life** : 24 months in Sealed Container

Scheme for Steel Decks

7. **Dry Compartments.** The scheme for dry compartments of steel decks is as mentioned below:-

(a) **Surface Preparation.** To be undertaken as per the procedure indicated at Para 3(a) of this NCD.

(b) **Application of Primer –Syndeck SS-1222 Bond coat.** Apply SS-1222 primer on the above prepared surface. Surface must be free from oil, grease, sludge and other contaminants. The paint can be applied over bare metal or appropriately primed surfaces. It is a two component primer. Part A and Part B are mixed in the ratio of 2:1 (Base: Hardener) by volume. Individual components are to be stirred separately before mixing and always add hardener to the base under low speed. The stirring should continue till the homogeneous mixture is achieved. The primer can be applied by means of brush or roller to obtain dry film thickness. It is recommended that the bond coat may be applied slightly in a tacky condition. Trowel selected underlayment on the wet bond coat. The application has to be under taken between 10 to 38°C and 3°C above dew point temperature.

(c) **Application of Underlay – SS-1290FC.** After 24 hours of primer application, check the surface for any contamination and clean the surface to ensure that it is dry and free from any dust or other contamination. SS1290FC Deco coat is a three pack underlay compound. After opening lid of Pack - A resin thorough stirring by mechanical stirrer is recommended to get uniformity. Pack - B hardener be added into Pack A gradually and mixed slowly and uniformly for at least 20 minutes. Immediately add the blended epoxy component into the aggregate while mixing with a mechanical stirrer or by manual means. Mixing of aggregates is not to be undertaken beyond 2 minutes. Material to be homogenous with no dry materials left. Use hand trowel for application of the mixture to the desired thickness. Colour of Sealer Coat should be as per approved shades mentioned in Para 7 of NCD.

(d) **Laying of Top Coat – SS5000.** After 24 hours of application of underlay, the top coat SS5000 to be applied. SS5000 is a two component epoxy overlay suitable for dry/wet compartments. Mix SS5000 Part A and Part B in the ratio of 2:1 (Base:Hardener) by weight by using mechanical stirrer/blender. The prepared top coat is self levelling, free flow material which is to be spread evenly by masonry/notched trowel. Use spiked roller



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to release any entrapped air. Allow to dry for 24 hours. Pot life of mixed material is 30 minutes @ 21°C. Colour of Top Coat should be as per approved shades mentioned in Para 7 of NCD.

8. **Wet Compartments.** The scheme is same as that for steel decks in dry compartments as indicated at Para 7(a) to 7(d) above and should be followed accordingly for wet compartments also. The underlay of the scheme is Terrazzo SS1290FCT coat system with aggregates of white or colored. Necessary slope is given with Underlay, SS-1222, to facilitate proper drainage to scuppers.

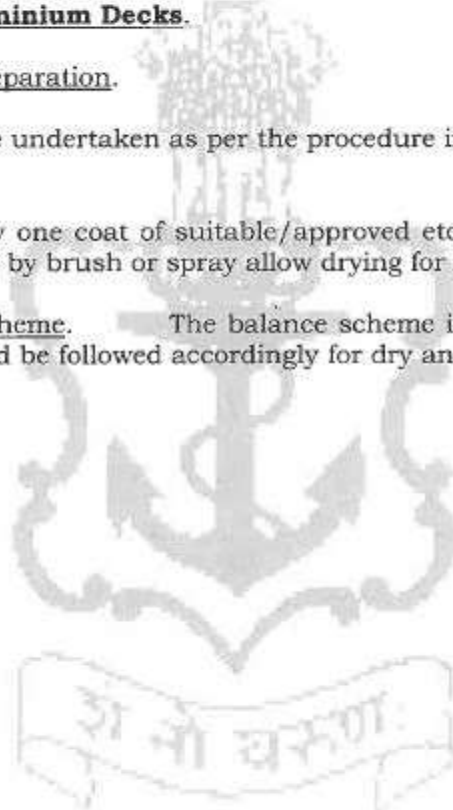
9. **Scheme for Aluminium Decks.**

(a) **Surface Preparation.**

(i) To be undertaken as per the procedure indicated at Para 3(a) of this NCD.

(ii) Apply one coat of suitable/approved etch primer to DFT of 15-20 microns by brush or spray allow drying for minimum of 02 hrs.

(b) **Balance Scheme.** The balance scheme is same as that for steel decks, and should be followed accordingly for dry and wet compartments, as applicable.





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Appendix E
(Refers to Para 5)

'EXLEP 111PR' PRIMER

1. **Description.** EXLEP 111PR Primer is two component epoxy resin based anticorrosive primer. It has excellent adhesion to any substrate and good flexibility.

2. **Characteristics.**

- | | | |
|----------------------|---|---------------------------------------|
| (a) Pot Life | : | 06hrs @ 25°C |
| (b) Mixing Ratio | : | Part A : Part B - 4:1 (By Volume) |
| (c) Touch Dry | : | 30mins @ 30°C |
| (d) Coating Interval | : | 08 hrs @ 30°C |
| (e) Shelf Life | : | 12 months in Sealed Container |
| (f) Coverage | : | 11.25 m ² /ltr for DFT 40μ |

'EXLEP ULW115UL' UNDERLAY

1. **Description.** EXLEP ULW 115UL is an ultra weight; self levelling solvent free, three component epoxy resin based underlay with excellent anticorrosive and adhesion properties. Being epoxy based, it is having excellent adhesion to metal substrate.

2. **Characteristics.**

- | | | |
|------------------|---|---|
| (a) Pot Life | : | 01hr @ 30°C |
| (b) Mixing Ratio | : | Part (A+C) : Part B - 2.87:1 (By Weight) |
| (c) Drying Time | : | 12 to 14hrs @ 30°C |
| (d) Coverage | : | 0.82 kg/m ² for a thickness of 01 mm |
| (e) Shelf Life | : | 12 months in Sealed Container |

'EXLEP ULW331TC' TOP COAT

1. **Description.** EXLEP ULW331TC Top Coat is a 100% solids, zero VOC's, trowel applied, modified epoxy resin based light weight colored deck covering. It provides a seamless and light weight finish coating over an underlay.

2. **Characteristics.**

- | | | |
|------------------|---|---|
| (a) Pot Life | : | 02hrs @ 30°C |
| (b) Mixing Ratio | : | Part A:Part B - 3.44:1 (By Weight) |
| (c) Drying Time | : | 24hrs @ 30°C |
| (d) Coverage | : | 0.93 kg/m ² for a thickness of 01 mm |
| (e) Shelf Life | : | 12 months in Sealed Container |



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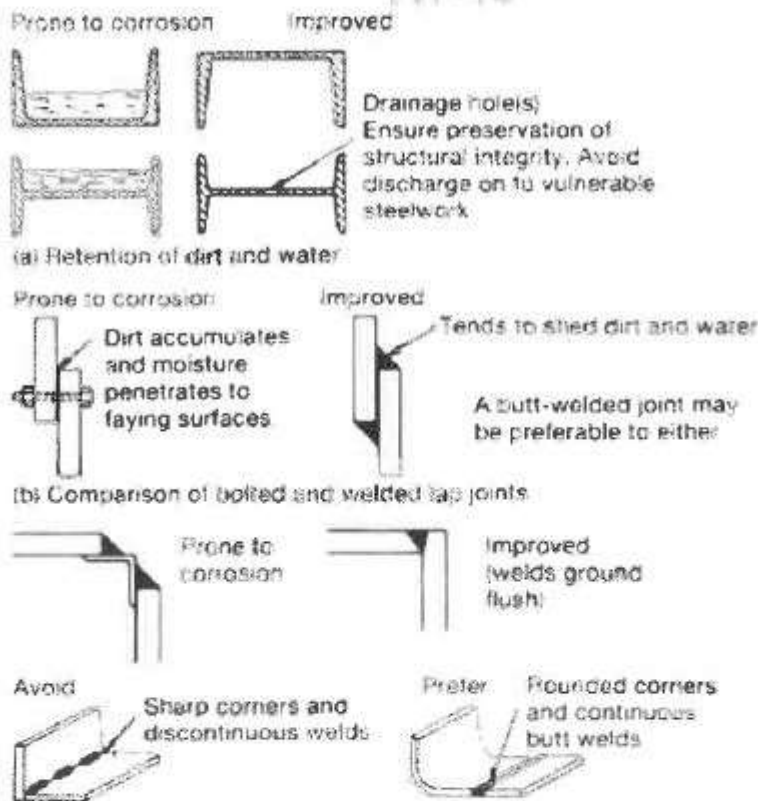
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DECK COVERING SCHEME OF M/s EIPPPL – “Excel”

Scheme for Steel Decks

1. **Dry Compartments.** The scheme for dry compartments of steel decks is as mentioned below:-

(a) **Surface Preparation.** Removal of grease, oily matter, thick paint and adhesive etc., is to be achieved by scrubbing and mopping with a cloth soaked in a suitable cleaning thinner. For surface cleaning, the method of wire brushing mechanical disking/buffing and thorough cleaning with suitable cleaning thinner may be used to achieve a surface free of dirt, dust, grease etc. to ST3 grade finish.



(b) Once the steel is prepared and all the irregularities are removed then clean the surface to remove grease, oil and other contaminants with suitable cleaning solvent / thinner as per SSPC – SP – 1. To remove heavy rust



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scales, loose rust, mill scale, old primer etc. use mechanical tools. i.e. power brushing or mechanical disk machines. Surface should be prepared to St 3 standard of ISO 8501-1 of 1988 or SSPC-SP3 standard. Surface should be dry and clean before application of primer. The surface should be thoroughly abrasive blasted to Sa2.5 standard of surface cleanliness as per ISO 8501-1 of 1988 OR SSPC- SP-10 if the surface is heavily pitted and corroded. It is also recommended that if the pitting is active and too deep then the same is filled with welding. The passive shallow pitting can be filled using approved / suitable epoxy filler compound after thorough blasting.

(b) Application of Primer -EXLEP 111PR. It is necessary to apply primer immediately after surface preparation. EXLEP 111 PR is a two component epoxy primer for application on metal surfaces before application of the Underlay. Mix EXLEP 111 PR Base (Part-A) and EXLEP 111 PR Hardener (Part-B) in the ratio of 4 : 1 by volume. Method of mixing is preferably mechanical stirring at low speed. It is recommended to stir the individual components in their respective separately before mixing the two components. Always add the Hardener to the Base under low speed stirring and continue till a homogeneous mixture is achieved. Manual stirring should be adopted for small quantities of less than 5 litres only. Use of "flat" bar should be made for mixing the two components in case of manual mixing. Apply the mixed primer on prepared surface by means of a brush or spray to obtain approx. dry film thickness of 35 microns minimum. Allow primer to dry for minimum 6-8 hours before application of the Underlay.

(c) Laying of Epoxy Underlay - EXLEP ULW 115UL. After allowing the Primer to dry for minimum 8 hours check the surface for any contamination and clean / dust off if necessary. Ensure that the surface is dry and free from any dust or other contaminants. Then proceed with the laying of Underlay EXLEP ULW 115 UL. EXLEP ULW 115 UL is a three pack Epoxy Underlay compound suitable for application in Dry / Wet Compartments of ship's decks. Mix the three components of EXLEP ULW 115 UL in the specified mixing ratio by weight, using ZIFFY variable speed mixer at moderate speed under low shear. Ensure that the mixture becomes a homogenous mass. Spread the mixed Underlay material over primed surface by Trowel / Wooden Baton to the required thickness. Allow the laid material to dry for 12-14 hours. Consume the mixed material within 45 minutes if ambient temperature is above 30°C.

(d) Laying of Epoxy Top Coat - EXLEP 331 TC. After 12-14 hours of drying of Underlay, Topcoat EXLEP ULW 331 TC shall be laid. EXLEP ULW 331 TC is a two component Epoxy Self Levelling Top Coat suitable for Dry and Wet Compartments of Ship's decks. Mix EXLEP ULW 331 TC Base (Part -A) and EXLEP ULW 331 TC Hardener (Part-B) in the specified mixing ratio, by weight. EXLEP ULW 331 TC is a self levelling, free



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flow material, which can be spread evenly by a masonry / notched trowel to achieve the required thickness. Use spiked roller to release any entrapped air. Allow it to dry for 24 hours. Pot life of mixed material is 1 hour at 30°C.

2. **Wet Compartments.** The procedure of steel preparation, surface preparation, application of Primer, laying of Underlay and Top Coat is the same as that for Dry Compartments as given at para 1 (a), (b), (c) and (d) above. As the material is self levelling Trowel / Wooden Baton shall be used to achieve required thickness and slope for proper drainage to the scuppers.

3. **Scheme for Aluminium Decks.**

(a) **Surface Preparation.**

(i) Clean the deck with any proprietary / approved cleaning solvent to remove rust, grease, dirt / dust and other contaminants. Use wire brush / disk sander to remove Aluminium Oxide or other oxide deposition and create profile for the coatings to adhere properly.

(ii) On clean surface apply one coat of suitable / approved etch primer or EXLWASH 117 at 8 to 10 μ DFT using means of brush / spray.

(b) **Application of Epoxy Red Primer (EXLEP 111 PR).** It is necessary to apply epoxy primer within the specified / recommended period after the surface is prepared. EXLEP 111 PR is a two component epoxy primer for application on metal surfaces before application of the Underlay. Mix EXLEP 111 PR Base (Part-A) and EXLEP 111 PR Hardener (Part-B) in the ratio of 4 : 1 by volume. Method of mixing is preferably mechanical stirring at low RPM. It is recommended to stir the individual components separately before mixing the two. Always add the hardener to the base under low speed stirring and continue to do so till a homogeneous mixture is achieved. Manual stirring should be adopted for small quantities of less than 5 litres only. Use of "flat" bar should be made for mixing the two components in case of manual mixing. Apply the mixed primer on prepared surface by means of a brush or spray to obtain approx. dry film thickness of 35 microns minimum. Allow primer to dry for 6-8 hours minimum before application of the Underlay.

(c) Beyond step (c) above the scheme is same as that for steel decks and should be followed accordingly for dry and wet compartments, as applicable.

Dado Casting Procedure

4. The following procedure is to be adopted for dado areas:-



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(a) In Dado area (150 to 230 mm height on the side bulkheads), surface preparation and primer application is same as for dry and wet compartments. For underlay, EXLEP ULW 115 UL Mix EXLEP ULW 115 UL Base (Part A), EXLEP ULW 115 UL Hardener (Part B) and Filler (Part C) in the specified ratio. Apply Underlay material over primed surface by Trowel / Putty Knife to achieve required thickness. Allow the underlay to dry for 12-14 hours.

(b) For top coat mix EXLEP ULW 331 TC Base (Part A), EXLEP ULW 331 TC Hardener (Part-B) and Filler (Part C) in the specified ratio, by weight. Apply this mixed material by Trowel / Putty Knife / Brush over the Underlay. Allow to dry for 24 hours.





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Appendix F
(Refers to Para 6)

TECHNICAL SPECIFICATIONS - 'PRIMER'

1. Following primers have been recommended for use by the OEMs for respective deck covering schemes:-

- (a) OxyDeck 515B
- (b) SUTEF 42
- (c) OFPM 4
- (d) Syndeck Bond Coat SS1222
- (e) EXLEP 111PR Primer

2. **Technical Specifications.** The technical specifications and standards of acceptance of above primers are as per Para 6.

Table 1F. Standards of Acceptance- PRIMER

S.No.	Property	Test method	Specified Value
(a)	Density (gm/cc)	IS 101	<1.2 gm/cc
(b)	% Volatile Matter	IS 101	≤ 45%
(c)	Moisture Absorption	As per Appendix-II of NCD 1471 Issue 1, Part 2	≤0.5%
(d)	Accelerated Corrosion Test	As per Appendix-IV of NCD 1471 Issue 1, Part 2	No signs of rusting or corrosion on steel plate
(e)	Flexibility	As per section 5.6 of NCD 1471 Issue 1, Part 2	Should not crack or detach

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TECHNICAL SPECIFICATIONS - 'UNDERLAY'

3. Following underlay materials have been recommended for use by the OEMs for respective deck covering schemes:-

- (a) OxyDeck FF
- (b) SUTEF 44 LT
- (c) OFPM 33L
- (d) Syndeck Ultra Lightweight Underlayment SS1290FC
- (e) EXLEP ULW 115UL

4. **Technical Specifications.** The parameters of above mentioned underlay materials will conform to the technical specifications and the standards of acceptance are as per Para 6.

Table 2F. Standards of Acceptance - UNDERLAY

S. No.	Property	Test Method	Specified Value
(a)	Density	Appendix-I of NCD 1471 Issue 1, Part 1	≤ 1.2 gm/cc
(b)	Moisture Absorption	Appendix-II of NCD 1471 Issue 1, Part 1	$\leq 2\%$
(c)	Electrical Conductivity	ASTM D-257	≥ 100 mega ohm-cm
(d)	Thermal Conductivity	IS 9490	≤ 0.32 Kcal/m/hr °C
(e)	Flexural Strength	IS 9162	≥ 10 N/mm ²
(f)	Compressive Strength	IS 9162	≥ 20 N/mm ²
(g)	Toxicity Index	NCD 1409	≤ 1.50
(h)	Smoke Index	NCD 1411	≤ 100
(j)	Limiting Oxygen Index	NCD 1410	> 35
(k)	Adhesion Test	Appendix-III of NCD 1471 Issue 1, Part 1	≥ 1.05 N/mm ²
(l)	Accelerated Corrosion test	Appendix-IV of NCD 1471 Issue 1, Part 1	No sign of rusting or corrosion of the steel plate



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Table 2F. Standards of Acceptance - UNDERLAY

S. No.	Property	Test Method	Specified Value
(m)	Fire Resistance test	Appendix-V of NCD 1471 Issue 1 of 1999, Part 1	Self extinguishing on removal of heating source



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TECHNICAL SPECIFICATIONS - 'TOP/SEALER COAT'

5. Following top/sealer coat materials have been recommended for use by the OEMs for respective deck covering schemes:-

- (a) OxyDeck TP
- (b) SUTEF 46
- (c) OFPM 103
- (d) Syndeck IMO Epoxy SS5000
- (e) EXLEP ULW331TC

6. **Technical Specifications.** The parameters of above mentioned top/sealer coat materials will conform to the technical specifications and the standards of acceptance are as per Para 6.

Table 3F. Standards of Acceptance - TOP/SEALER COAT

S. No.	Property	Test Method	Specified Value
(a)	Density	Appendix-I of NCD 1471 Issue 1, Part 2	≤ 1.4 gm/cc
(b)	Moisture Absorption	Appendix-II of NCD 1471 Issue 1, Part 2	$\leq 0.5\%$
(c)	Electrical Conductivity	ASTM D-257	≥ 100 mega ohm-cm
(d)	Thermal Conductivity	IS 9490	≤ 0.32 Kcal/m/hr °C
(e)	Flexibility	Para 5.6 of NCD 1471 Issue 1, Part 2	Should not crack or detach
(f)	Compressive Strength	IS 9162	≥ 35 N/mm ²
(g)	Toxicity Index	NCD 1409	≤ 1.50
(h)	Smoke Index	NCD 1411	≤ 100
(i)	Limiting Oxygen Index	NCD 1410	> 35
(k)	Adhesion Test	Appendix-III of NCD 1471 Issue 1 of 1999, Part 2	≥ 1.75 N/mm ²
(l)	Accelerated Corrosion test	Appendix-IV of NCD 1471 Issue 1 of 1999, Part 2	No sign of rusting or corrosion of the steel plate



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(m)	Fire Resistance test	Appendix-V of NCD 1471 Issue 1 of 1999, Part 2	Self extinguishing on removal of heating source
(n)	Impact Resistance	Appendix-VI of NCD 1471 Issue 1 of 1999, Part 2	Not more than 1.5mm permanent indentation





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Appendix G
(Refers to Para 12)

TEST CERTIFICATES TO BE FURNISHED BY FIRMS

S. No.	Tests	Details
1.	Type Tests (Certificate to be revalidated once in 03 years)	(a) Toxicity Index (b) Smoke Index (c) Limiting Oxygen Index (d) Thermal Conductivity (e) Electrical Conductivity
2.	Routine Tests (To be conducted for every batch)	(a) Density Test (b) Drying Test (c) Moisture Absorption (d) Flexural Strength/Flexibility (e) Fire Resistance Test (f) Adhesion Test (g) Compressive Strength (h) Accelerated Corrosion Test (j) Impact Resistance



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Appendix H
(Refers to Para 13)

PERFORMANCE GUARANTEE CONTRACT FOR
DECK COVERING SCHEMES
ON IN SHIPS

NAVAL DOCKYARD / NAVAL SHIP REPAIR YARD, INDIAN NAVY, INDIA

CONTRACT No. _____, Date - _____

BETWEEN

THE PRESIDENT OF INDIA

AND

M/s _____

FOR

DECK COVERING SCHEMES ON IN SHIPS

1. Preamble This CONTRACT is made and entered into this _____ day of _____, year two thousand and _____ by and between the President of India, represented by the NAVAL DOCKYARD / NAVAL SHIP REPAIR YARD, Indian Navy, India (hereinafter referred to as the CUSTOMER, which expression shall mean and include his permitted successors and assignees), the Party on one part, and M/s _____, having its registered office at _____ hereinafter referred to as the SUPPLIER which expression shall mean and include the firm's executors, administrators, successors and permitted assignees), the Party on the other part. And whereas, the SUPPLIER has agreed to supply and apply high performance DECK COVERING SCHEMES for application on specified Vessels and Craft of the Indian Navy.



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2. Scope of the CONTRACT

2.1 The SUPPLIER undertakes to 'Supply and Apply' the deck covering scheme.

2.2 The types and quantities of deck covering scheme required to be supplied under this contract are as indicated in the CUSTOMER's Purchase Order No _____ dated _____

2.3 The complete details of the deck covering scheme are placed at Appendix-__ to this Contract.

2.4 The CUSTOMER would utilize the deck covering scheme for specified areas of the designated vessels. In doing so, the rest of the coats in the specified deck covering scheme of the SUPPLIER concurred to by the CUSTOMER, would also be those received from the SUPPLIER as part of this supply in this CONTRACT or which are already held in stock. If the materials are drawn from stock, it should be ensured by the Customer that they are within the shelf life given in the Suppliers Product Data Sheet.

2.5 The SUPPLIER would ensure that the requisite conditions are adhered to during the surface preparation and application of the deck covering scheme and that it is undertaken in the presence and under the documented supervision of a suitable representative of the SUPPLIER. In this context the supplier undertakes to guide and advice the SUPPLIER'S applicator in surface preparation and deck covering scheme application, with regard to the technical and safety requirements of the schemes concerned as per the SUPPLIER's Product and Material Safety Data Sheets.

2.6 The SUPPLIER should satisfy that the requisite application conditions and is responsible to achieve coatings standards including spread rate and DFT and jointly sign a working protocol along with the CUSTOMER to this effect for each and every vessel where the application is undertaken with the deck covering schemes under this CONTRACT. The guarantee documentation will necessarily include the following "vessel specific" documents in three copies, one for the CUSTOMER, one for the SUPPLIER and one for the vessel:

2.6.1 The deck covering scheme specification, along with recommended surface preparation standards.

2.6.2 The agreed upon defects evaluation which shall be either of corrosion, blistering, delamination, cracks, discolouration, loss of gloss, black marks, softening.



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2.6.3 Notice from CUSTOMER to SUPPLIER informing of vessel name, dates and venue of planned deck covering application, with 7 days notice.

2.6.4 The working protocol signed by the SUPPLIER and the CUSTOMER.

2.6.5 The daily weather/ambient conditions monitoring data.

2.6.6 In case of non-adherence to the SUPPLIER's advice, "exception reports" shall be issued and attached, and shall form part of the guarantee. The areas covered under the "exception report" will be not be covered under the guarantee.

2.6.7 The Surface Preparation and DFT and density report, which will contain all data on the surface preparation achieved and final DFTs and density of material of various layers, by demarcated vessel area.

2.6.8 The final consumption report, along with products, quantities, batch numbers, and densities etc.

2.6.9 It is also recommended that photographs of the in pre- and post-coating conditions are taken, and filed along with guarantee document with the CUSTOMER and the vessel.

3. Performance Guarantee

3.1 The following will be considered as deck covering failure/defect -

- 3.1.1 Corrosion
- 3.1.2 Blistering
- 3.1.3 Delamination
- 3.1.4 Cracks
- 3.1.5 Discolouration
- 3.1.6 Loss of Gloss
- 3.1.7 Black marks
- 3.1.8 Softening

3.2 The SUPPLIER will stand guarantee for the deck covering schemes supplied and applied hereby and also for the balance coats applied, if any received from the SUPPLIER, which are drawn from stock and undertake restoration of the deck covering scheme over the entire areas of the vessel where the deck covering schemes under this CONTRACT are applied, inclusive of supply, surface preparation and application, under the circumstances of occurrence of above mentioned failure/defects.



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3.3 In case, of requirement of touch-ups, the SUPPLIER agrees to undertake supply and apply of relevant coats required for touch up / maintenance on payment basis at the rates specified in the contract & undertakes to complete job in stipulated time.

3.4 In case of maintenance of deck covering scheme beyond the performance guarantee period the SUPPLIER agrees to supply and apply the deck covering schemes required for touch up / maintenance at the rates specified in the contract & undertakes to complete job in stipulated time.

3.5 Areas if any, as identified under clause 3.2 above and touched up would also be cumulatively added during assessment of areas of failure during further inspections within the duration of the CONTRACT. The touch up will be done by the supplier as per this contract and a joint report will be filed within 7 days of completion of the job.

3.6 Failure caused due to hot work or any mechanical damage to the deck covering due to physical effects would not be considered as deck covering failure.

4. Commencement and duration of Performance Guarantee

4.1 The performance guarantee under this CONTRACT will be valid for a period of 60 months for the entire deck covering scheme which shall be considered applicable from the date of application of the scheme. The deck covering schemes will be the applied in sequence as recommended by the Supplier and the intervals between layers/coatings and other technical requirements as per Product Data Sheet will have to be adhered too. If not, firm's exception report will be considered for final claim.

4.2 This guarantee will expire and the SUPPLIER's obligations, except in respect of claims already validly notified under this guarantee, shall terminate 60 months from the effective date.

5. Touch ups during routine examination

5.1 Since this is an extended performance scheme, the CUSTOMER may apply deck covering schemes from other sources. However in case of evidence of such application, any failure over the touched up areas will not be the liability of the SUPPLIER as per the terms of this CONTRACT.

5.2 The balance areas however, coated with the SUPPLIER's deck covering schemes would continue to be covered by the provisions of this CONTRACT for the full duration.



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5.3 The CUSTOMER shall inform the SUPPLIER and jointly record areas requiring touch ups on CUSTOMER's liability and also about use of deck covering schemes from other firms, if actually applied.

5.4 The CUSTOMER may apply request for supply and apply of deck covering schemes from the SUPPLIER over areas requiring touch ups, which are not the liability of the SUPPLIER as per Para 3 and reserves the right to use deck covering schemes of other firms for this purpose. However in the event of touch ups using deck covering schemes from other sources, any further failure over the touched up areas would not be the liability of the SUPPLIER as per the terms of this CONTRACT, except for assessing cumulative areas of failure explained in Para 3 within the duration of this CONTRACT.

6. Claims

6.1 The CUSTOMER shall notify the SUPPLIER of claim by letter or facsimile transmission giving brief details of the nature of defects and the circumstances in which it was discovered, including the date of detection.

6.2 If the SUPPLIER wishes to inspect the area upon which a claim is being made, the vessel will be made available for inspection as soon as possible considering the operational requirement of the vessel.

6.3 The SUPPLIER shall depute his representative to inspect the vessel within three days on receipt of written or facsimile communication of availability of the vessel for inspection at any port in India.

6.4 On acceptance of liability, the SUPPLIER undertakes to carry out rectification of the required areas at any Indian port where the vessel is, within three weeks of joint inspection.

6.5 The CUSTOMER shall inform the SUPPLIER in writing of any scheduled refit period/dry docking of the vessels covered under this CONTRACT during the guarantee period. The SUPPLIER may depute a representative for undertaking inspection of the areas coated with deck covering schemes covered under this CONTRACT.

6.6 Under no circumstances shall the CUSTOMER be responsible for arrangements for travel, boarding and lodging of representatives and personnel for undertaking inspection, supervision and repairs.

7. Arbitration

7.1 In the event of a dispute arising out of the terms of this CONTRACT, the Parties undertake to make every effort to reach an amicable settlement.



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The arbitrations in this regard will be held at place of deck covering application yard i.e. either Mumbai / Visakhapatnam / Kochi / Goa / Kolkata / Port Blair , India.

7.2 Notwithstanding anything elsewhere provided in this CONTRACT, dispute, disagreement or any question arising of or relating to this CONTRACT, or relating to its construction or performance which cannot be settled amicably within sixty (60) days or longer period as may be mutually agreed upon, from the date of which either Party informs the other in writing by a notice that such a dispute, disagreement or question exists be referred to the Naval Administrative Authority (AA).

7.3 The arbitration Tribunal shall have its seat at place of deck covering application yard i.e. Mumbai / Visakhapatnam / Kochi / Goa / Kolkata / Port Blair, India.

8. Signatures and Witnessing by Parties. In witness whereof the parties hereto have hereunder set their respective hands the day, the month and the year first above written.

For and on behalf of
M/s

For and on behalf of
The President of India

In the presence of witnesses

In the presence of witnesses

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Appendix J
(Refers to Para 13)

WORKING PROTOCOL**Part 1**

	Date and time of application	Name of Compartment, deck -Frstn & area of application (Sqm)	Inspection format	Date of completion	Density & thickness of scheme applied	Weight added post application	Remarks (Date/ Time Signature)
Surface Preparation							
Priming							
Underlay							
Top Coat							

Part 2

S. No.	Job type	Time gap between each succeeding activity	Joint inspection (Date, time and Signatures)	Remarks (Date, time and signatures)	Weight added post application	DFT and Density of applied Scheme
1.	Hot Work					
2.	Surface Preparation					
3.	Priming					
4.	Underlay Application					
5.	Topcoat Application					



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Appendix K
(Refers to Para 16)

**LIST OF COMPARTMENTS CONSIDERED ESSENTIAL FOR APPLICATION OF
DECK COVERING SCHEMES**

S No	Nature of compartments	Indicative list of compartments
(a)	Wet compartments	WCs
		Bathrooms
		Wash places
		Galleys
		Scullery
		Pantries
		Laundry
		ATUs/AHUs
		Stripping areas
		STP compartments
(b)	Living spaces	Medical spaces
		Messes
		Dining halls/ Wardroom
(c)	Command & control compartments	Main alleyways
		Bridge
		Flag Bridge
		Ops Room

**LIST OF NON ESSENTIAL COMPARTMENTS WHEREIN DECK COVERING
SCHEMES ARE NOT TO BE APPLIED**

S No	Nature of compartments	Indicative list of compartments
(a)	Office spaces	Ship's office
		Tech office
		Regulating office
		Shipwright office/ Hull office
		WT office
		Gunnery office
		Engineering office
		Electrical office
		AIR briefing room
		Store office
		Radar office

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(b)	Stores	Diving store
		Provision store/ Wine store/ Clothing store
		NBCD store
		Bosun store
		Paint store/ Naval store
		Baggage spaces
		SPTA stores
		Electronic stores
		(c)
		Shipwright workshop
		Engineering workshop
		Battery charging room
(d)	Magazine spaces/ rooms	
(e)	Power rooms/ Switchboard rooms	
(f)	Equipment rooms	
(g)	Pump rooms	
(h)	Electrical compartments (not requiring acoustic baffling), weapon compartments & stations	
(j)	Miscellaneous compartments/ areas	CO ₂ compartment
		Telephone exchange
		Barber shop
		Gymnasium
		Ship's canteen
		Halon compartment
		Tank tops (including decks of messes as tank tops)
		Fan Rooms
		Lobbies
		Passageways
Companions		
Cabins		
(k)	Compartments wherein acoustic baffling is necessary	Electrical & Communication rooms - Alternate paint schemes with rubber mat

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Appendix L
(Refers to Para 5)

CONTACT DETAILS OF APPROVED SOURCES

S.No.	Name of Manufacturer	Contact Details
OEM/Approved Firms		
1.	M/s JD Jones & Company (Bombay) Private Limited	Contact Person: Mr. R N Shetty, CEO Address: AMA House Bhaskarrao Kargutkar Marg Colaba Mumbai – 400 005 Mob: 9930922970 Tele. 022 – 22871081/82/83 Fax. 022 – 22046362 Email: rnshetty@jonesindia.com Website. www.jonesindia.com
2.	M/s GTF Marine Technology India Pvt. Ltd., Mumbai	Contact Person: Abhijeet Jayavant, Director. Address: Unit No. 68/47, Swastik Plaza, V L Mehta Road, JVPD, Mumbai-400049 Mob: 09820417533 Tele. 022-26114248, Fax: 022-2611200433, Email: abhijeet@gtfindia.in
3.	M/s Ocean Marine Environment Coatings Private Limited	Contact Person: Dr S K Mukhopadhyay, CMD. Address: Nandanik Apartment Flat No. 114 19A, Deodar Street Kolkata – 700 019 Mob: 8007330533 Tele. 033-24418164 Fax. 033-40630519 Email. info@omecpl.co.in

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4.	M/s Quaker Chemical India Private Limited	Contact Person: Dr. Indrajit Banerjee, Product Manager. Address: 11/3, Acropolis, 1858/1, Rajdanga Main Road, Kolkata -700107 Tel: 033-40464500 Mob:- 9051207333, 08879114040 Email : banerjei@quakerchem.com majumder@quakerchem.com Website: quakerchemindia.com
5.	M/s Excel India Protective Paints Private Limited (EIPPL)	Contact Person: O C Rajkumar 6/24, Sankalp Niketan, Ground Floor, 2 nd Carpenter Street, Dockyard Road Mazagaon, Mumbai-400 010 Tele. 022-2374 2147 Fax. 022-6610 6863 Email. info@excelpaints.in Website. www.excelpaints.in



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Enclosure 2 to IHQ-Mod(N) Policy Letter
NC/Policy/H-129/Material Dated 04 Oct 17

ALTERNATE PAINT SCHEMES FOR DECKS NOT COVERED WITH DECK COVERING SCHEMES

General Surfaces in Dry Compartments - Decks and Dadoes of Dry Compartment not covered with epoxy deck covering:				
Jotun Sigma PPG Akzo Nobel	Primer <ul style="list-style-type: none"> • Penguard Primer/ • Interguard 269/ • Sigma cover 280 Intermediate Coat <ul style="list-style-type: none"> • Interguard 5600 coat grey/ • Jotamastic 80 Grey/ • Sigmacover 630 Top Coat <ul style="list-style-type: none"> • Middle brown finishing paint colour no.411 of IS-5 or • Middle Burnswick Green finishing paint colour no.266 of IS-5 JSS -8010-6	N 8010-P061994	1 x 50µ	<ul style="list-style-type: none"> • New Building. Conforming to Swedish Standards SA2½. • During Service, ST 3 conforming to Swedish Standards/ SSPC-SP 3.
OTE	<ul style="list-style-type: none"> • Interguard 5600 coat grey/ • Jotamastic 80 Grey/ • Sigmacover 630 	N8010-007509	1 x 150 µ	
	<ul style="list-style-type: none"> • Jotamastic 80 Grey/ • Sigmacover 630 	N8010-007509		
	<ul style="list-style-type: none"> • Sigmacover 630 	N8010-P061944		
	<ul style="list-style-type: none"> • Middle brown finishing paint colour no.411 of IS-5 or • Middle Burnswick Green finishing paint colour no.266 of IS-5 JSS -8010-6	N8010-000298	1x100 µ	
		N8010-000299		
General Surfaces in Dry Compartments - Decks of Low Power Room, Battery Charging Room (except Battery pit) and Acid Store:				
Jotun	Tankguard HB Light Grey and Greyish Green	N8010-007656	2x150 µ	<ul style="list-style-type: none"> • New Building. conforming to Swedish Standards SA2½.
PPG	Sigma Penguard 930	N8010-007656	1x125 µ	<ul style="list-style-type: none"> • During Service, ST 3 conforming to Swedish Standards/ SSPC-SP 3.
	Sigmaguard 790	N8010-007656	1x250 µ	
Akzo Nobel	Interline 704	N8010-007656	3x125 µ	



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General Surfaces in Dry Compartments -Decks of Compartments containing water cooled Electronic Cabinets (Underneath electronic cabinets containing water cooled heat exchanger and inaccessible parts of the compartments between banks of cabinets and shipside or Bulkheads) & Decks under false floors:

Brand	Product Name	Code	Thickness	Notes
Akzo Nobel	Intergard 269 Primer (Red)	N8010-P009678	1 x 50 µ	• New Building. conforming to Swedish Standards SA2 1/2.
	Intershield 300	N8010-P061944	2 x 150 µ	
Jotun	Penguard Primer (Red)	N8010-P009678	1 x 50 µ	• During Service, ST 3 conforming to Swedish Standards/ SSPC-SP 3.
	Jokacote Universal	N8010-P061944	2 x 150 µ	
PPG	Sigmacover 280 (Redbrown) primer	N8010-P009678	1 x 50 µ	
	Sigmacover 630	N8010-P061944	2 x 150 µ	

General Surfaces in Dry Compartments -Magazine Deck Non Conducting:

NMRL ToT	Product Name	Code	Thickness	Notes
Partners	Epoxy red oxide primer (NCD 1435)	N8010-000987	1x60 µ	• New Building. Conforming to Swedish Standards SA2 1/2.
	Intumescent FR Paint (NCD 1478)	N 8010-P009745	2x250 µ	

General Surfaces in Dry Compartments - Magazine Deck Conducting:

Not to be painted



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APPENDIX-19 GUIDELINE SPECIFICATIONS, ISSUE2



DIRECTORATE OF NAVAL ARCHITECTURE

**INTEGRATED HEADQUARTERS
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NAVAL CONSTRUCTION DOCUMENT

ISSUE 2

FEB 13

**GUIDELINE SPECIFICATION FOR HABITABILITY UPGRADATION
AND MODULAR ACCOMMODATION WORKS ONBOARD INDIAN
NAVAL SHIPS**

ISSUING AUTHORITY

**INTEGRATED HEADQUARTERS – MINISTRY OF DEFENCE (NAVY)
DIRECTORATE OF NAVAL ARCHITECTURE
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D-II WING, SENA BHAWAN
NEW DELHI –110 011
Tele 011-23011580/23010047/23010937
Fax 011-23010126
Email: dna-arch@nic.in



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REVISION NOTE

1. This guideline specifications have been revised to bring the specifications and procedures into line with up-to-date requirements.
2. This revision incorporates all the amendments indicated in the historical record of amendments.
3. Changes have been incorporated in the "Conditions of Release"

HISTORICAL RECORD

4. This Guideline Specification supersedes the following:
 - (a) Guideline Specifications for implementation of habitability upgradation onboard IN ships, Issue 1, May 09.



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Introduction

1. This specification provides guidelines for implementation of Habitability Upgradation on IN Ships. The guidelines are generic in nature and covers accommodation spaces of a warship. The guidelines are applicable for both retrofit and for new construction ships.

2. Modular accommodation concept has been introduced on IN Ships with an aim to improve living conditions, habitability standards ergonomics and aesthetics. Towards this use of sandwiched panels, ergonomically designed bunks and lockers and quality furniture have been included under the scope of modular accommodation concept. Materials used for modular accommodation on IN Ships are required to meet standards specified in this specification.

3. The habitability upgradation on ships already in service is to be largely limited to sailors' accommodation, dining spaces, sailors sanitary spaces, Officers' accommodation and sanitary spaces. The aim of the upgradation is to enhance crew comfort and ergonomics by providing quality, modern furniture and fittings in living spaces. In particular, bunks, lockers, tables, chairs and bathroom fittings are to be given importance during the upgradation.

4. Commands are to constitute Feasibility Boards to develop habitability upgradation work package. This package should be finalized Class of Ship wise to ensure uniformity of the upgrade package amongst ships of same Class. The upgrade package comprising of complete list of deliverables should be based on the guidelines stipulated in this specification. The upgrade package should be staggered over the long duration refits. The Board is to also indicate the mechanism of implementation of the upgradation to enable completion of the total upgradation package over 8-10 year period.

5. During retrofitment on ships already in service, which have not been originally designed with modular panels, fitment of the same is likely to cause loss of useful space within the compartment. Also, considering that there would be increase in weight and the requirement of extensive hot work, fitment of panels is not recommended where use of such panels have not been considered at design stage. However during MR cum mid life update refits, feasibility of fitment of modular panels may be examined taking into account loss of space, increase in weight and extend of hot work and associated degutting and regutting in the adjoining compartments. Suitable consideration and justification for the above may be included in the BPs.

6. In case modular panels already exist in the accommodation spaces then the same may be replaced with new modular panels when habitability upgradation is undertaken.

7. Considering damage control requirements, the compartments below the waterline are not to be paneled. Paneling is also not envisaged on passageways



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(for ships not designed with modular concept), as this will adversely affect the space for movement of personnel during normal and emergency stations of the ship.

Responsibility of Ordering Authority

8. The ordering authority would provide the vendors with the guideline drawings (layout drawing indicating views of each of the bulkheads, flooring and the ceiling) of the compartments where the modular panels are required to be implemented. The drawings should indicate the various services that are to be provided in the compartment and those that pass through the compartment to adjacent spaces, along with any access windows if any. As far as possible, system designer should ensure that such access windows are minimal/ avoided.

9. The following drawings will be provided by ordering authority (as applicable), based on the approved upgrade work package:-

- (a) The General Arrangement drawing indicating compartments where the modular accommodation system are required to be implemented.
- (b) The composite drawing of systems and cabling in way of these areas including junction boxes.
- (c) Arrangement of each compartment indicating the tentative location of various items/fittings within the compartment and specific requirement of access windows.
- (d) List of compartments with approximate areas of bulkhead panels, ceiling panels, fittings, furniture etc.

10. The technical specifications for tendering will be derived from this document and any other relevant information is required to be included with the tender/RFP.

Responsibility of Vendor

11. On receipt of the order, the vendor would be required to produce a 3-D virtual model in any appropriate software (the 3D model should be software independent or a viewer software should be submitted along with the virtual model) for each of the compartments within 6 weeks. This drawing would be approved by the ordering authority. The model must indicate all items being fitted in the compartments to enable assessment of space, aesthetics and movement of personnel. The format for technical/commercial offer is placed at **Appendix A**. The proposal of the firm should contain the scope of work for each compartment and the rates would be quoted item wise. The firm will also render a compliance matrix as per **Appendix B** to confirm compliance to all clauses of the tender specification. Deviations, if any, are to be clearly brought out. The technical offer shall not be cleared without the firm submitting the compliance matrix along with type test certificates and names of OEMs from which each item/material is being sourced.



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12. Materials used in the accommodation areas are to conform to the requirements of the relevant clauses stated in the specification. Special attention is to be paid to its fire retardancy characteristics.

13. If Modular Panels are included in the scope of work, an installation specification shall be provided to the ship by the firm executing the order. The installation specifications shall include instructions for removal/fitment of panels, ceiling and furniture in each compartment. Care is to be taken during supply and installation of panels, furniture and fittings to ensure that the painted/powder coated surfaces are well protected and no damage occurs to these surfaces, whilst handing over to Ship staff.

General Requirements of Modular Accommodation & Furniture

14. The modular panels and furniture are to be suitable for onboard use and should perform satisfactorily without deterioration under the following ship conditions:-

- (a) Roll : upto 35°
- (b) Pitch : upto 10°

15. Environmental constraints and ambient condition requirements:-

(a) **Ship Motion**. To afford protection to personnel in accommodation spaces in rough sea conditions:-

- (i) Handrails with rounded corners and edges shall be provided in stairways and where necessary in passageways and shall be of robust construction and firmly secured to bulkheads;
- (ii) Fixed furniture shall be firmly secured and rattle-free;
- (iii) Means shall be provided to stow and secure portable furniture for sea and action;
- (iv) Doors, including those to cupboards and other items of furniture, shall be so retained as not to open accidentally;
- (v) Drawers shall be so designed such that they do not slide open / fall out accidentally or impact on noise husbandry;
- (vi) Tables, shelves, stowage racks and other similar fittings shall be fitted with retaining lips or bars or with non-slip surfaces so that objects placed on them will not slide off and may be secured for sea, action and noise husbandry.



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(b) Excessive noise/vibration levels shall be prevented in sleeping compartments and other accommodation spaces. Noise/Vibration levels, if previously specified, shall be maintained. Recommended values for maximum noise/vibration levels are specified below. To ensure that the values specified below are always achieved, the firm should select the panels for a particular compartment/cabin after taking into account the noise emanating from the adjoining compartments

(i) Noise**

Space / Category	At Anchor (with own electrical supply)	Normal Cruising
	dB (A)	dB (A)
Medical Spaces (Sick Bay)	50	60
Berthing Areas	50	60
Mess rooms	50	65
Offices, Libraries	65	65
Wash Rooms	70	75

(ii) Vibration**

Location	1 to 5 Hz	5 to 100 Hz
	Peak acceleration mm/Sec ²	Peak velocity mm/ Sec
	Acceptance numeral	
Sleeping cabins, sick bays	126	4
Day cabins, offices, conference rooms, mess rooms	157	6
W.C & Bathrooms	157	5

**In case any particular compartment/cabin is not likely to meet these criteria, the same should be clearly brought out in the board proceedings with valid justification.

(c) **Air-conditioning and Ventilation.** Shipyard/Design authority to ensure air conditioning and ventilation system is designed and installed in accordance with IHQ(N) approved specifications. For ship's in service the refitting yards are to ensure that no modifications to existing air conditioning and ventilation system is undertaken without approval of IHQ(N).

(d) The requirements for ships red and white lighting including accommodation spaces are to be consistent with the requirements for



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lighting for the overall ship. Minimum white light requirements for specified accommodation spaces are listed in below.

Minimum white light requirements for accommodation spaces

Accommodation space	Point of measurement (see Note 1)	Illumination level (Note 2)
Sleeping cabins and day rooms	(1) At general measurement points.	100 lux
	(2) At every mirror.	200 lux
	(3) At every seat at a writing desk or table.	300 lux
	(4) At not less than half the seats (other than those mentioned in (3) above) in a sleeping cabin provided for use of more than one person.	300 lux
Dining rooms	(1) At general measurement points.	150 lux
	(2) At every table position.	300 lux
Ward rooms, Anterooms, Mess rooms, Recreation rooms (including rooms for watching films, TV, hobbies and games), exercise areas	(1) At general measurement points.	100 lux
	(2) At every recreational table.	150 lux
	(3) At every seat at a writing desk or table.	300 lux
	(4) At not less than half the seats (other than those mentioned in (3) above).	300 lux
	(5) In recreation spaces, 50% of lighting shall be incandescent and separately controllable to any fluorescent lighting.	
Schoolrooms, quiet rooms, libraries, places of worship	(1) At general measurement points.	150 lux
Sanitary spaces	(1) At general measurement points.	100 lux
	(2) At every mirror.	200 lux



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Accommodation space	Point of measurement (see Note 1)	Illumination level (Note 2)
Passageways, companionways, lobbies and corridors	(1) At general measurement points. (2) At the head of each stairway, ladder and hatchway (3) At or near the doors of lockers provided for foul weather gear or soiled working clothes. (4) At general notice boards.	100 lux

NOTE 1 In this Guideline Specifications, "general measurement points" for white light requirements, mean, in relation to any space, those points which, measured at a height of 1m above the floor deck level, fall on an imaginary line drawn vertically through the following points:-

- Every point mid-way between every 2 adjacent lamps in that space;
- Every point mid-way between any lamp and any position on the boundary of that space to which that lamp is nearer than any other lamp; and
- Where any part of the space available for free movement is shielded from the direct rays of a lamp by a re-entrant angle formed in the boundary of that space, the central point of the space so shielded.

NOTE 2 The illumination levels quoted above are the minimum levels required under the following conditions:

- The illumination levels specified are to be measured on acceptance with new lamps fitted, and after they have had approximately 100 hours of use.
- When the lamps, paintwork and other surface finishes are new, the luminance in the horizontal plane when measured at the points specified above shall be steady and maintained.

16. The following features are to be considered within the overall design of the accommodation spaces:-

- All parts of accommodation spaces shall have clear headroom at every point where full and free movement is necessary for occupants. 1900 mm is considered a minimum requirement for headroom to ensure ease of standing. Reduction in headroom, where the same is inescapable, needs specific approval of the ordering authority after ensuring that such reduction will not result in discomfort to the occupants.



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- (b) Good ship's husbandry practices are to be followed while fitting cabins, dining areas and recreation spaces.
- (c) A curtain or blind shall be fitted for each side scuttle in every sleeping/dining/recreation room.
- (d) Sleeping berths shall normally be oriented along the fore and aft line of the ship.
- (e) Furniture and fittings shall be of modular construction. The surface of Modular furniture should be scratch resistant and towards this the firm should indicate the standards to which the surface complies.
- (f) Where 'carcass' furniture e.g., cupboards, drawers, lockers etc is fitted, a clearance equal to the overall depth of the carcass plus a clearance allowance in front of that furniture to allow easy removal of each furniture item without interference or dismantling of adjacent furniture items is necessary.
- (g) A clear space is required in front of desks and Cabinets fitted in sleeping cabins to allow adequate space for chair movement.
- (h) Furniture, fixtures and fittings in sleeping compartments shall be installed such that transmitted vibrations are minimized.
- (j) Safety measures against rough sea conditions shall be incorporated in the overall design of accommodation spaces and the associated fixed and portable fittings, in particular,
- (k) All sleeping cabins shall include provision of one telephone, one desk, IT terminal connection point (the board proceeding should indicate the type of IT connections required/available on the ships), one switched power socket and a full length mirror. Stowage for personal protective clothing (life-jacket, survival suit etc) for each occupant shall be provided within the cabin.
- (l) All accommodation spaces shall be provided with facilities to secure/stow all moveable objects for sea.
- (m) All accommodation spaces shall be provided with facilities to secure the space for action stations. This will include securing of loose objects to prevent damage under extreme angles of heel and trim, the safe stowage of soft materials (paper, upholstery etc) to prevent clogging of damage control pumps, and the utilization of appropriate materials to prevent damage caused by shattering under shock conditions.



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(p) Furniture, fixtures and equipment are to have smooth edges with no sharp corners (Where unavoidable the same needs to be capped to avoid injury to personnel).

(q) All soft furnishings are to meet the IMO specifications and ensure compliance to toxicity and fire hazard regulations.

(r) Stowage capacities of Lockable personal stowage spaces for each member of the ship's complement shall be as follows:-

(i) **Officers and Midshipmen.** Wardrobe with hanging space for eight uniforms/suits. In addition, there shall be a stowage capacity of approximately 1.5m³ for personal kit, including boot locker and drawer space.

(ii) **Senior Sailors.** Wardrobe with hanging space for six uniforms/suits. In addition, there shall be a stowage capacity of approximately 0.75 m³ for personal kit, including boot locker and drawer space.

(iii) **Junior Sailors.** Wardrobe with hanging space for four uniforms/suits. In addition, there shall be a stowage capacity of approximately 0.60 m³ for personal kit, including boot locker and drawer space.

(s) All lockers provided in officers' cabins shall be fitted with a security container for safe keeping of valuables. The safe should have electronic numeric touch pad locking system with a manual override.

(t) All personal drawers and cupboard units shall be provided with a secure locking arrangement. (Lock with 3 keys to be provided). Care must be taken to avoid damage to the paint coating of the base during the installation of the lockers, as damaged paint film may cause accelerated corrosion of the base.

(u) Sleeping cabins, dining rooms and recreation spaces shall be provided with furniture and fittings that readily available off the shelf. The scope of provision of furniture and standard shall be as per **Appendix C & D** respectively.

(v) Stowage for six pairs of shoes including at least one pair of boots and shoe cleaning kit is to be provided in the vicinity of each bunk. If space permits, separate shoe rack/cabinet is to be provided in the vicinity of bunk.

(w) Cap and coat hooks shall be provided outside dining and recreation areas for at least 25% of the occupants. Where it is necessary to fit two-tier hooks, the lower tier hooks are to be arranged in a staggered manner with



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respect to the ones on the upper tier in such way that the caps should not overlap each other.

(x) The horizontal separation between multi-tier bunks facing each other shall be sufficient to allow free and unrestricted movement of the occupants. This is recommended to be 800mm minimum. In exceptional cases it can be upto 600mm, however the justifications has to be provided in the BPs.

(y) Vertical clearance is to be provided above each 2 tier bunk to allow sitting-up position. The recommended vertical separation above lower bunk is 850mm after folding middle bunk. In exceptional cases it can be upto 600mm, however the justifications has to be provided in the BPs

(z) The horizontal distance between multi-tier bunk and any facing carcass furniture is to be sufficient to allow free and unrestricted movement of the occupants with the facing furniture in use. If a multi-tier bunk is facing a bulkhead or other permanent obstruction, the distance between these is to be sufficient to allow free and unrestricted movement of the occupants.

(aa) The horizontal distance between facing rows of carcass furniture and any permanent obstruction is to be sufficient to allow free and unrestricted movement of the person requiring access to the furniture.

(ab) Sideboard units and other similar items are to have a clear space in front of them of at least the depth of the unit to allow for ease of access.

(ac) All dining tables are to have adequate clearances to allow seats at dining tables to be accessible for steward service in Officers dining areas, mess men assisted self- service in Senior Sailors dining areas, and self service in Junior Sailors dining areas. Widths of gangways between groups of tables shall be sufficient to allow free and unrestricted movement when seats are occupied. The distance between the long edge of tables and parallel bulkheads or other permanent obstructions shall be sufficient to allow easy access to all table seating positions when adjacent seating is in use. This clearance shall also allow access for waiter-service and/or self-service use.

(ad) The minimum acceptable dimensions (as far as possible) for dining room table placement with chairs are as follows:-

(i) Where tables are sited in rows, the distance between the near edges of tables in adjacent rows shall be preferably of 1900 mm for Officers, 1650mm for Senior Sailors and 1500mm for Junior Sailors.

(ii) The distance between the long near edge of tables and parallel bulkheads or other permanent obstructions shall be preferably of



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1250mm for Officers, 1000mm for Senior Sailors and 900mm for Junior Sailors.

(iii) Width of gangways between groups of tables shall be preferably at least 900mm.

(ae) Dining tables are to be provided with raised folding edges to avoid cutlery falling off during sailing. The corners are to be kept open for cleaning purpose.

17. **Hygiene and Cleanliness.** Accommodation compartments shall be designed to promote personal hygiene and ship cleanliness in accordance with good ship husbandry practice. The design shall include the following features:

(a) Accommodation spaces, fixtures and fittings shall be designed for ease of maintenance and upkeep in a safe, clean and habitable condition.

(b) Sanitation facilities (toilets, shower rooms and bathrooms) shall be located near to and/or integrated with sleeping cabins, other accommodation areas and watch-keeping areas.

(c) A sealable laundry bag facility shall be provided for each occupant of a sleeping cabin for the hygienic stowage of soiled linen and clothing.

(d) Shared stowage facilities shall be provided for the stowage of dirty boots and overalls and soiled outer clothing in each accommodation flat, external to the sleeping cabins.

(e) The design of accommodation spaces shall aim to eliminate access, breeding and habitation areas for vermin.

Wall/Bulkhead/Ceiling Panels

18. On existing ships, where the outfit design did not cater for Sandwiched panels and Decorative laminates (MPL sheets) have been installed, the same may be replaced on the existing framework with MPL sheets/ 0.9mm thick. Powder coated GP sheets / 1.2mm thk. Aluminium sheets with decorative profiles. The ships where sandwiched Modular Panels have been fitted during construction, Modular panels are to be used for replacement (refer para 5). The renewal of paneling work may be undertaken as a regular Defect List item in case of MPL panels. The specification for paneling material is given at Appendix E.

Colour Scheme

19. The firm executing the order for the habitability upgradation of the first of the ship of a class should work out three different master decor schemes and submit to the Ops Authority for approval. A Master Decor Scheme may thereafter be evolved



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or developed by Ops Authority along with designer, Shipyard, Overseeing Team, Naval Dockyard (as applicable) for each Class of Ship. As far as possible, similar colour schemes across all classes of ship is preferable from ease of identification of compartments and maintainability point of view. In general, pastel colours are to be used onboard to provide a soothing and comfortable ambience.

Doors

20. Doors within accommodation spaces are non-watertight/non-gastight partition type, unless specified otherwise.

21. Where Modular panels are being fitted, the basic specifications for material and fire insulation would be the same as that of the bulkhead panels. This would be B15 class or better. However, reinforcements in way of hinges, locks, handles etc are to be provided. Doors must have features such as kick-off fire escape, adjustable A/c ventilation re-circulation louvers, handles, locks and door closer. The doors are to be provided with heavy duty type mortise locks with duplicate keys and master keys. Door closers should be chrome plated brass or SS 316 material and should ensure trouble free operation for 80,000 cycles. Similar specifications are applicable to hinges also. Doors to Admiral's cabins, CO's cabins, Wardroom, Anteroom should have very high aesthetics. Doors adjoining Admiral/Captain lobby are also required to be provided with similar finish. The doors are to have a provision for tally plate indicating the designation of occupant. Sliding door may also be considered to maximize the efficient use of the accommodation compartment area.

Furniture & Fittings

22. The scale of fittings recommended for being provisioned in each compartment is placed at **Appendix C**. All furniture to be fitted on IN ships is to be suitable for marine use and comply with IMO regulations on the subject. The type of bunks, lockers to be fitted in various compartments is given in **Appendix D**.

23. Though chairs with castors may be provided for fitment onboard in cabins, it is preferable to use revolving chairs with a firm base. Suitable provision for anchoring the chairs to the deck is to be provided for safe use at sea. In Dining Halls, chairs are to be provided for seating personnel. Use of Benches is to be avoided.

24. To afford protection to personnel in accommodation spaces in rough sea conditions, the following are required to be considered:-

- (a) Fixed furniture shall be firmly secured and rattle free.
- (b) Means shall be provided to stow and secure portable furniture for sea and action.



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(c) Doors, including those to cupboards and other items of furniture, shall be so retained as not to open accidentally. Snap shut locks fitted with positive mechanical catch to be provided. Magnetic catch to be avoided as it fails over a period of time.

(d) Drawers shall be so designed such that they do not slide open/fall out accidentally or impact on noise husbandry. Self locking telescopic ball slides & Snapshut locks with positive mechanical catch to be provided. Magnetic catch to be avoided as it fails over a period of time.

(e) Tables, shelves, stowage racks and other similar fittings shall be fitted with retaining lips or bars or with non-slip surfaces so that objects placed on them will not slide off and may be secured for sea, action and noise husbandry.

25. All furniture and fittings in accommodation compartments and any structures necessary for supporting them shall be so arranged as to ensure safety, cleaning, preservation, servicing and maintenance in accordance with good ship husbandry practice.

26. Metric fasteners shall be used for securing equipment and fittings. Bulkhead-mounted fittings shall be adequately supported by lugs or brackets secured to the bulkhead structure. Keyhole type lugs shall not be used.

Low Flame Spread and Adherence to IMO FTP Code

27. A low flame spread means the surface thus described will adequately restrict the spread of flame, in accordance with the Fire Test procedures Code", as adopted by the Maritime Safety Committee of the IMO by Resolution MSC.61(67). Non-combustible materials are considered as low flame spread. A type testing certificate for all major components, where applicable, is required to be provided by the supplier and a confirmation is to be provided that the material being used is in conformance with the Type Approved Certificate.

28. All Material being used for modular accommodation works shall adhere to FTP code, MSC.61(67)-"International Code for Application of Fire Test Procedures" or DefStan 07-747, Part 1-"Selection of materials on the Basis of their Fire Characteristics". Relevant test certificates from authorised laboratories are to be submitted by the firms along with the technical offers.

Electrical

29. All cabling and system lines/ducts are to be concealed behind paneling. Appropriate conduit panels with ducts built into the core of the panels are to be used where required to meet this requirement.



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30. General lighting, operating on 230V, 50Hz, 1Ph, 2 wire(both live) supply system, including red/blue safety lights, dark adaptation lights, bunk lights, desk lights, lights and mirror lights shall be provided as per requirement. Details of the electric supply available onboard are to be provided in the tender document.

31. Decorative commercial lightings may be fitted in spaces like Wardroom, Anteroom, Recreation spaces, etc. Fluorescent tubes/ incandescent lamps/CFL type of luminaries may be considered in the design.

32. 230V AC switched power sockets (15A/5A) meant for private/domestic equipment shall be fitted in all sleeping cabins, dining rooms and recreation spaces. To this end, use of 4 wire system is to be made. The nos of switch sockets will be specified. Each socket outlet is to be provided with a label to indicate the maximum electric load to be connected to the socket. Flush mounted sockets are to be used in lined compartments. For fixed equipment, earthing arrangement shall be provided as per existing norms.

Upholstery

33. All upholstery like Mattress covers, sofa covers, curtains etc are to be made of Fire Retardant grade material and resistant to the ignition and propagation of flame as determined by fire Test Procedures Code as adopted by the Maritime Safety Committee of the IMO by Resolution MSC.61 (67).

Wet Spaces

34. Wet spaces include shower spaces, WCs, wash basins etc of the Bathroom complex. The Bathroom Complex is required to be provided with SS faced sandwiched panels and ceilings. Material for the facing on the wet side (exposed to interiors) would be SS304. Facing of the panels on the passageway / non-wet areas may be manufactured of powder or PVC coated CRCA steel, if risk to accelerated corrosion is not envisaged. All fasteners and fittings in the bathroom complex should be of non-corrosive material preferably SS304. All gaps in the panels/ceilings are required to be suitably closed to ensure no entrapment of moisture to prevent any onset of corrosion.

The shower units, WC units, sink units may be supplied as cubicles. However it must be ensured that during the fitment of cubicles, suitable design of the flooring and drainage is used, by which the deck plating does not collect water and prevent the possibility of accelerated deterioration of the plating. It is preferable to have the base of such cubicles at a height of 6" above the deck plating. Where the panels rest on channels, suitable filling with white cement or equivalent material is required to be undertaken to ensure that there is no ingress of water causing onset of corrosion.

35. The WCs are to be provided by SS. However ISI certified taps, showers etc may be sourced from commercial sources. Where the WCs use the seawater for



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flushing, the flushing valves are to be compatible for use with sea water. The sinks are to be of SS 304. No glass/ stone bases for sink units are to be used. All fittings should have rounded edges to prevent injury to personnel. Rough weather Grab Bars should be provided in each unit.

Inspection, Tests and Acceptance

36. Shipyard/Design authority and Command/ Ordering agency shall be responsible for identifying the requirements for inspection, testing and presentation for acceptance of accommodation spaces, furniture, equipment and associated fittings. It is recommended that the vendor undertaking the work submit, his internal QA procedure along with the technical offer.

37. **Acceptance.** The acceptance authority (WOT/DND/DSP in case of new construction ships and Refitting Yards/Commands/Ship Staff for ships in commission) shall be responsible for acceptance of the accommodation spaces, furniture, equipment and associated fittings. Acceptance criteria to be applied and shall include as a minimum:-

- (a) Easy-to-clean-and-maintain surfaces, coatings and items.
- (b) Easy-to-repair surfaces, coatings and all items.
- (c) Finish of construction and furniture to be smooth with no sharp edges or corners.
- (d) Robustness of furniture, fittings and equipment for use on ships.
- (e) All compartments, equipment, furniture and fittings are safe to use in normal conditions and can be easily 'securely stowed for sea and action' conditions.
- (f) The capacity of accommodation spaces is sufficient to accommodate the ship's complement and margins as specified in the contract and the guideline specifications.
- (g) Personal kit stowage space is provided that meets the requirements of this guideline specifications and relevant design standards.
- (h) Accommodation spaces are planned and equipped to ensure compartments are optimised for functionality and the occupants' comfort, movement and to facilitate tidiness.
- (j) Levels of comfort are provided that are commensurate with the functions and rank of the occupants.



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(k) Sleeping cabins, dining areas and recreation spaces are provided, installed and equipped that meets the requirements of this guideline specifications.

(l) Materials used conform to the fire and toxicity standards mandated in these guideline specifications.

(m) Relevant type test certificates for ceiling/wall panels, furniture material, upholstery, mattress material etc have been submitted by the firm.

(n) Installation done as per approved drawings.

(p) Documentation and drawings have been submitted as specified in this guideline specifications and contract documents.

(q) The firm has supplied all the items from the sources approved while nomination and as indicated in the technical offer.

Designs, Drawings and Documentation

38. **CPL/PIL.** A comprehensive Part List/Part Identification List is to be provided by the OEM as per format at **Appendix F** to enable ease of sourcing of the items in the future.

39. Documentation containing details for installation and removal need to be provided as indicated at Para 13.

40. Scale layout drawings shall be prepared in electronic format for all accommodation compartments, lobbies and passageways as per the contract. The drawings shall include layouts with full allowance of furniture for each compartment, and the positions of the following facilities/features:-

- (a) Access arrangements
- (b) Escape routes
- (c) Fire fighting equipment
- (d) All permanent fittings
- (e) Securing arrangements for portable furniture and equipment
- (f) Compartment linings
- (g) Lightings
- (h) Electrical power supplies
- (j) Communications including telephones, computer LAN connections.
- (k) Ventilation trunking
- (l) Hot and cold FW pipe work.
- (m) Soil pipes
- (n) Drainage
- (p) Maintenance access to all accommodation fittings, equipment and the structure behind furniture and cabins.



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(q) Where applicable operator/maintainer access to non-accommodation related ship systems and equipment.

41. Drawings shall be available in electronic form for use with simulation based design. Shipyard/Refitting authority shall compile these drawings and forward the same to IHQ (N) for record.

Report

42. A detailed report on the Habitability Upgradation undertaken in a particular refit is to be prepared by Refitting Authority and Ships Staff and forwarded to IHQ-MOD (N)/DNA and Command Headquarters. A nil return is to be endorsed on Hull Survey report, if no such upgradation has been undertaken.

Tools

43. Any special tools that would be required for installation and removal need to be provided as part of the contract, and the same should be indicated by the firm in the overall list of deliverable.

References

44. The following documents are to be referred to understand, appreciate and implement this specification and during the design, choice of materials and installation of modular accommodation system onboard IN Ships:-

- (a) DefStan 02-107 Issue 2 - 2002 – Requirements of Accommodation in HM Surface Warships and Submarines.
- (b) DefStan 02-120 – Issue 2 – 2002 – Requirements for Water Closets, Urinals, Bathrooms & Washing Facilities in HM Surface Ships and Submarines.
- (c) DefStan 07-247, Issue3, 2009, Part 1 – The Selection of Materials on the Basis of their Fire Characteristics.
- (d) IMO/SOLAS resolution MSC.61(67) – Adoption of International Code for Application of Fire Test Procedures.
- (e) IMO Assembly Resolution A.471(XII) – Recommendation on test method for determining the resistance to flame of vertically supported textiles and films.
- (f) IMO Assembly Resolution A.563(14) – Amendments to the recommendation on test method for determining the resistance to flame of vertically supported textiles and films.



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- (g) IMO Assembly Resolution A.652 (16) – Recommendation on fire test procedures for upholstered furniture.
- (h) IMO Assembly Resolution A.653 (16) – Recommendation on improved fire test procedures for surface flammability of bulkhead, ceiling and deck finish materials.
- (j) IMO Assembly Resolution A.688(17) – Fire test procedures for ignitability of bedding components.
- (k) IMO Assembly Resolution A.754(18) – Recommendation on fire resistance tests for "A", "B" and "F" class divisions.
- (l) DefStan 02-128, Issue 2, 2008 – Furniture and Associated Equipment for HM Ships.



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Appendix A

**FORMAT FOR TECHNICAL/COMMERCIAL OFFER TO SUBMITTED BY THE
FIRMS**

Compartment:-

S. No	Item	Specification	Den	Qty	Unit Rate*	Total*	Remarks

* to be entered only for Commercial offer. To be left blank for Technical Offer



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Appendix B

**GUIDELINES FOR TECHNICAL EVALUATION OF THE OFFERS SUBMITTED
BY THE FIRMS**

1. The firm has to submit a compliance matrix indicating compliance to all paras of this Guideline Specifications as follows

Clause/Para No of the IHQ(N) guidelines Specifications	Remarks		

NOTE: TECHNICAL OFFER NOT TO BE ACCEPTED WITHOUT THE PARA WISE COMPLIANCE MATRIX ALONG WITH TYPE TEST CERTIFICATES AND OEMs NAME.



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Appendix C

SCALE OF ENTITLEMENT OF FURNITURE

1. The scale of fittings and furniture in various accommodation spaces is given in succeeding paragraphs (In addition to the items mentioned in Para 15 (k)). The information provided is to be used as guidance information for designers and suppliers and for better understanding of the aspirations of the user.

Flag Officer's Suite

2. The accommodation for Flag Officers is to be fitted out with modular furniture items of high quality with material having natural wood effect. The accommodation is to provide the occupant with facilities to carry out the business of Task Force management, official entertaining and a high standard of personal comfort appropriate to the rank of the occupant.

3. Furniture items are to be fitted in sleeping cabins to provide a sleeping berth and hanging and stowage space for clothing and kit.

4. The day/dining area is to be fitted out to provide office, dining and relaxation facilities. The furniture is to include a table with chairs, sideboard, servery /pantry.

5. The relaxation area is to be furnished with a combination of easy chairs and settee modules, general purpose storage cupboards with polished sideboard tops and spaces for entertainment devices.

6. The office area is to comprise desk unit with computer terminal facility, executive chair, security combination safe, bookshelves. Communication equipment shall be located within easy reach of the desk chair position.

HOD Cabins

7. Typical inventory of furniture for outfitting HoD sleeping cabin are as follows:-

- (a) Two cap/coat hooks
- (b) One Two tier bunk with provision to use the upper bunk as back rest during normal usage.
- (c) One cupboard unit with facility for hanging Suits.
- (d) One desk unit/computer stowage with pull out keyboard tray having swiveling mechanism & tilt adjustment. Desk light is also to be provided
- (e) Filing unit with drawer



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- (f) One executive chair
- (g) One money Safe(for LOGO only)
- (h) Shoe Rack
- (j) Book Rack
- (k) Single/two seater sofa or two visitors chair
- (l) Towel rack/rail
- (m) Commercial Digital clock
- (n) Bottle holder in the vicinity of bunk/working table for stowing min. 1 ltr water bottle.
- (p) Cabin fans 12-16 inch dia.
- (q) Keyboard for stowing keys/duplicate keys
- (r) Wash basin unit made of S.S. 304 with water storage tank approx. 5 ltr capacity, pillar cock/hot & cold water mixer, mirror with toilet item locker, mirror light with on/off switch, napkin rail, soap dish, tumbler holder, bottle trap & storage below wash basin.
- (s) Rack for TV , music system
- (t) Telephone & Communication socket (LAN, TV)

Officer's cabin

8. Typical inventory of furniture for outfitting officer's cabins (double berth) are as follows:-

- (a) One two-tier bunk cum sofa with provision to use the upper bunk as back rest during normal usage.
- (b) Two cupboard unit with facility for hanging Suits.
- (c) One desk unit/computer stowage with pull out keyboard tray having swiveling mechanism & tilt adjustment. Desk light also to be provided.
- (d) Two towel rails
- (e) Privacy screen for each bunk



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- (f) Filing unit with drawer
- (g) One executive revolving chair with securing arrangement
- (h) One money Safe (for LOGO only)
- (j) Shoe Rack
- (k) Book Rack
- (l) Single/two seater sofa or two visitors chair
- (m) Towel rack/rail
- (n) Commercial Digital clock
- (o) Bottle holder in the vicinity of bunk/working table for stowing minimum 1 ltr mineral water bottle
- (p) Cabin fans 12-16 inch dia.
- (q) Keyboard for stowing keys/duplicate keys
- (r) Wash basin unit made of S.S. 304 with water storage tank approx. 5 ltr capacity, pillar cock/hot & cold water mixer, mirror with toilet item locker, mirror light with on/off switch, napkin rail, soap dish, tumbler holder, bottle trap & storage below wash basin. All the fittings should of high quality.
- (s) Rack for TV, music system.
- (t) Telephone & Communication socket (LAN, TV)

Senior Rating Mess

9. Typical inventory of furniture for outfitting Senior Rating are as follows:-
- (a) Two-tier bunk per 2 men
 - (b) One cupboard unit per man
 - (c) A full mirror
 - (d) One desk unit with pull out keyboard tray having swiveling mechanism & tilt adjustment. Desk light also to be provided.
 - (e) Privacy screen for each bunk



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- (f) One Shoe locker per man
- (g) Two Folding Chairs
- (h) Two Folding Stools
- (j) Book Rack
- (k) Cabin fans 12-16 inch dia
- (l) Commercial Digital clock
- (m) Rack for TV , music system
- (n) Telephone & Communication socket (LAN, TV)

Junior Rating Mess

10. Typical inventory of furniture for outfitting Junior Sailors Messes are as follows:-

- (a) Bunks (Two-tier/Three tier) as per personnel allocated
- (b) One cupboard unit per man
- (c) Full length mirror
- (d) Privacy screen for each bunk
- (e) One Shoe locker per man
- (f) Two Folding Arm chairs
- (g) Two folding Stools

Wardroom/Anteroom

11. Typical inventory of furniture for outfitting Officers Dining Areas(Wardroom)

- (a) Dining tables seating 100%officers
- (b) Dining Chairs for 100%Officers
- (c) Buffet/sideboard Units
- (d) Wine Cupboard
- (e) Hot & Cold drinks dispenser unit



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(f) Napkin Rack

12. Typical Inventory of furniture for outfitting Officers' recreation areas (Wardroom/Anteroom)

Seating Leisure Area

(a) Upholstered fitted Seating to be provided for 90% of complemented officers

(b) Upholstered armchairs/chairs

(c) Cupboard and drawer units

(d) Notice board

(e) TV/Home Theatre Centre

(f) Coffee/Occasional tables

(g) Magazine/paper Racks

(h) Mail Rack

(i) Wall Painting with lights

(j) Spot lights with dimmer control

(k) Up lights

Fitted Bar Facility

(a) Domestic Refrigerator

(b) Cold shelf and cold cupboard

(c) Ice Making Machine

(d) Cupboard for glassware

(e) Cupboard for Bar Accessories

(f) Spirits cupboard(lockable)

(g) Wine locker(lockable)



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- (h) Tinned Beer Cupboard/Dispenser
- (j) Soft drinks Cupboard
- (k) Lockable security grill
- (l) Bar Stools

Senior Sailors Dining/Recreation Room

13. Typical inventory of furniture for outfitting Senior Sailors Dining Room

- (a) Dining tables seating 80% SS
- (b) Dining Chairs for 80% SS
- (c) Buffet/Sideboard Unit
- (d) Clean cutlery collection point
- (e) Hot and Cold drinks dispenser unit
- (f) Dirty crockery/cutlery return point
- (g) Refrigerator for Jams, sauce etc
- (h) Ice-making Machine

14. Typical inventory of furniture for outfitting Senior Sailors' Recreation Area

- (a) Upholstered fitted seating for 80% SS
- (b) Upholstered armchairs/chairs
- (c) Cupboard and drawer units
- (d) Notice board
- (e) TV/Radio/Music Centre
- (f) Coffee/Occasional tables
- (g) Magazine/paper Racks
- (h) Mail Racks



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Junior Sailors Dining/Recreation Room

15. Typical inventory of furniture for outfitting Junior Sailors' Dining Room

- (a) Dining Tables seating 50% JS
- (b) Dining chair for 50% JS
- (c) Buffet/Sideboard Units
- (d) Clean cutlery collection point
- (e) Hot and Cold drinks dispenser units
- (f) Dirty crockery/cutlery return point
- (g) Refrigerator for jams, sauces etc.
- (h) Ice Making Machine

16. Typical inventory of furniture for outfitting Junior Sailors recreation area

- (a) Upholstered fitted seating for 70% JS
- (b) Upholstered armchairs/chairs
- (c) Cupboard and drawer units
- (d) TV/Radio/Music Centre
- (e) Occasional tables
- (f) Magazine/Paper Racks
- (g) Notice Board

(Note: On most ships, a separate dining/recreation spaces for sailors may not exist. The inventory may suitably adjusted into other spaces designated for these purposes)



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Appendix D

Specifications for Fittings & Furniture

1. **Bunks**. The requirements for the bunks are as follows:-
 - (a) Shall be manufactured of CRCA Steel with powder coating. (Shall be manufactured in Modular construction with combination of M.S Pipe and CRCA sheet and powder coated).
 - (b) In Two-Tier Bunks, the top bunk would be foldable, folding down to double as a sofa when not in use.
 - (c) Three-Tier Bunks should be installed only where sufficient deck head height is available. The Modular design is to allow height adjustment between upper bunk- middle bunk and middle- lower bunk during installation onboard.
 - (d) Each bunk to be able to withstand 150 kgs uniformly distributed load and a concentrated load of 100 kgs each load being taken separately per bunk. In case of multi-tier bunks, the load is to be applied on each bunk to confirm the strength of the Bunk frame.
 - (e) Each bunk is to be provided with a reading light and facility to use personal audio equipment. A 230 V Power socket to be provided to each bunk and the same to be flushed inside the side panel.
 - (f) In multi bunk configurations, privacy screens are to be provided.
 - (g) Bunks shall normally be sited in the fore and aft direction with the head end forward. Where bunks are fitted athwart ships the head-end of the bunk shall be inboard.
 - (h) The minimum inside dimension of bunks shall be at least 1900mm. Mattresses should be of appropriate dimension. (Mattresses size should be 1830x600 mm minimum for sailors and 1830/1905 x750/600 for officers).
 - (j) In double tier bunk, the vertical space between the bunks and above the top bunk shall be sufficient to allow a sitting position in comfort for the individual.
 - (k) In multi-berth sleeping cabins, where bunks abut each other, rigid screens made of wood or other suitable opaque material shall separate them. In addition, privacy screens or other arrangements are to be fitted to all bunks in multi-berth sleeping cabins. Privacy curtains are to be in the colour specified in the Master Décor Scheme (MDS).



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(l) Where double/three tier bunk is fitted, a suitable facility shall be provided to enable easy access to the upper berth. Where jumping bars are provided to facilitate access to and egress from bunks, the jumping bars are to be sited approximately 700mm from the bunk head and 230mm outside the bunk edge to provide a natural point of assistance when entering or exiting top bunks.

(m) The framework of each bunk, and its leeboards or lee rails, shall be constructed of metal or some other material, which is hard, smooth and unlikely to be corroded. If the bunk is constructed of tubular frames, the frames shall be completely sealed with rounded corners.

(n) A bunk light shall be fitted and sited at the head-end of all bunks at a height that allows reading and writing in the sitting up position.

(p) The grouting for bunks to be made of M.S with red oxide painted to prevent corrosion. The grouting angle is to be welded on the deck and then painted with Epoxy paint, whereas on the deck head, design to be used to absorb the vibration of the deck during rolling and pitching.

(q) The bunk to be provided with maximum three drawers below. High quality telescopic ball sides with a load carrying capacity of 20 kg. Provision for life jacket stowage is to be designed in the drawer. The drawers should have snap shut arrangement for locking.

(r) Mattresses to be made of 32-40 kg/m³ upholstered with removable FR treated fabric/leatherlite.

(s) Individual curtains to be provided for each bunk. The fabric to be FR treated. Suitable arrangement to be provided for securing the curtain while folding the middle bunk.

(t) Individual name tag plate to be provided on each bunk.

2. **Desk Unit.** The Desk unit incorporating office table and computer workstation are to be provided in officers' cabins. The unit is to be firmly anchored to the deck of the ship. The table is to be provided with drawer units (With configuration of Box-Box-File/ Box-Box-Box-Box. The sliding mechanism should be of high quality telescopic self locking ball slides. It should withstand 1.2 Lakh test cycle for a UDL of 20 Kg. They must have smooth movement at the same time ensuring that the drawers do not fall off (A positive mechanical catch to be provided). The computer table with keyboard tray (with swiveling mechanism and tilt adjustment), mouse pad should have suitable provisions for securing the CPU and Monitor. In case of cabins, where laptops in lieu of PCs are provisioned, suitable mechanism for securing and locking the laptop on the tables is to be provided. The desk unit is to be provided with desk light, switch socket for CPU,



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monitor, printer & scanner. Communication LAN socket is to be provided below the table.

The Desk Unit will be made of MS/CRCA with Marine Ply top with FR laminate. The table will be powder coated. The approx table size would be 950mm/(1200 mm) (W) x 700mm (D) x 750mm(H).

3. **Cupboard Unit(Officers).** The Cupboard units are to be made of CRCA steel (confirming to IS 513)/ Aluminum alloy (as per DEF STAN 02-128) /equivalent material of appropriate thickness to suit marine application. The steel components are required to be pre-treated and powder coated. These cabinets are to be firmly anchored to deck and require to be tested for performance. Sufficient space should be provided for safe and convenient utilization of these cabinets. The approximate size of the cupboard would be 550mm (W) x 550mm (D) x 1800 mm (H), with provision for hanging facility for uniforms, shelf for caps and lockable drawer. The cupboard shall be fitted with a safe for keeping of valuables. The safe should have electronic numeric touch pad locking system with a manual override

4. **Kit Locker(Sailors).** The Kit Lockers are to be made of CRCA steel (confirming to IS 513)/ Aluminum alloy (as per DEF STAN 02-128) /equivalent material of appropriate thickness to suit marine application. The steel components are required to be pre-treated and powder coated. These cabinets are to be firmly anchored to deck and require to be tested for performance. Sufficient space should be provided for safe and convenient utilization of these cabinets. The approximate size of the cupboard would be 550mm (W) x 550mm(D) x 900 mm (H), with provision for hanging facility for uniforms, shelf for caps and lockable drawer. The lockers should be stowable one on top of another.

5. **Book Rack.** Book Racks are to be made of CRCA steel confirming to IS 513/ Aluminum alloy (As per DefStan 02-128/equivalent material of appropriate thickness with approx dimensions 600mm(W) x 300mm(D) x 500mm (H). A sliding/hinged glass door to be provided and a steel batten are to be provided to avoid falling of books during rolling and pitching



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Appendix E

Specifications for Paneling Material

1. Paneling of ships earlier where provided have been undertaken using MPL sheets in living spaces, whilst in wet spaces and galley, a combination of Stainless steel and MPL sheets have been used. On new construction ships, Modular Sandwiched panels are being used.
2. **MPL Sheets.** On existing ships, where the outfit design did not cater for Sandwiched panels, Decorative laminates iaw NCD 1406/IS, that are fire retardant, may be used. The fire test certificates and source of these items needs to be submitted by the firms along with the technical offer. MPL sheets of light teak finish shade/design or colour shade indicated in Master Décor Scheme are recommended to be used in living spaces. Single skin 0.9mm thk G.I sheet/ 1.2 mm thk Aluminum sheets with decorative joinery profile to be used as wall/ceiling panel in the living spaces where there is no provision for modular sandwich panels. No screws to be visible inside the decor cabins. Use of pop rivets is to be avoided.
3. **Sandwiched Modular Panels.**
 - (a) On ships where Modular Sandwiched Panels have been fitted, the wall/bulkhead panels of accommodation spaces should be made of Galvanised CRCA/Galvanised Steel of 0.6mm or higher confirming to IS 513-D/IS 277 or equivalent international standards. The panels should be powder coated as per IS 101 to achieve a finish of 40µ thickness of phosphate & powder coating or a 150µ PVC film with protective foil. Standard panels of width of 600mm would make the wall/bulkhead. The thickness of the panel would be 25 or 50mm. The Panels would normally be 25mm B0 on ship's side. The panels on the alleyway and between the cabins would be either 25mm or 50mm B15 type. Where required, cable duct for domestic electrical wiring within the panel are required to be provided and the panels for such bulkheads/walls would be 50mm thick. The panels for walls and ceilings need to have Class/Type approval certificate.
 - (b) The Panels would be pre-insulated panels to achieve a Heat Transmission of 1.5kcal/m²h°C or less. A minimum sound reduction of 29dB would be required to be achieved by the panels. For areas/compartments, where higher sound reduction is warranted, requirements are to be separately indicated.
 - (c) Fire class of the panels would be as per Fire Boundary plan of the Ship. Every ship is required to be provided with this plan (for all new construction projects). In ships where such plans are not held, the minimum standard of B0 and B15 class panels are to be used. Reference may also



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be made to the IRS Rules for Naval Ships (non-combatants). In general, the fire certification of the panels should be as per IMO resolution MSC 61(67) – “International Code for Application of Fire Test Procedures”.

(d) Valid type test certificates and the OEM from which these items are being sourced are to be submitted along with the technical offer.

4. Ceiling Panels.

(a) Layout of ceiling has to be undertaken in consultation with the Navy/Yard taking into consideration symmetrical layout in all, cabins, as far as feasible for location of light fittings, ventilation units, communication units etc. As far as possible a clear head room of 1.9m is desirable after the fitment of ceiling panels. The design of the ceiling panel joint should be such that installation is easy and fast and allows each individual ceiling to be easily removed.

(b) White MPL sheets may be used for the ceiling for existing ships where MPL sheets form the wall panels. In case of Sandwiched panel system, only “no gap” type ceiling panels are to be used to ensure no gaps occur in the thermal insulation at deck head. Where there are excessive piping, trunking, cabling, fittings etc on deck head and providing a ceiling to cover all these items will lead to excessive reduction of headroom(to below 1.85m), such compartments are not be provided with the sandwiched panels and ceilings.

(c) Valid type test certificates and the OEM from which the sandwich panels are being sourced are to be submitted along with the technical offer.

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Appendix F**DATA TO BE FILLED FOR INTRODUCTION OF ITEMS INTO ILMS**

SNo	Data Field Description	Remarks
	Equipment & Vendor Details	
1	Equipment Model & Description	
2	OEM Name	OEM details to be given and not that of the Firm/Shipyard supplying equipment
3	OEM Address	To include Tele Numbers and Email IDs
	Item Details (Main Data Fields)	
1	OEM Part No	
2	Description	
3	Denomination	Use standard SI nomenclature e.g. no, Kg, m etc
4	CRP category	Consumable, Returnable, permanent
5	VED Category	Vital (Under 10%), Essential (Under 20%) Desirable (80%)
6	EASK Type	E – Complete Equipment A- Assembly S- Sub- Assembly K- Spare Part
7	EASK Book Ref/PIL/Drawing Ref	Document No of PIL & Details of Item
8	Quantity Constituent	Numbers in each equipment – applicable for Assembly & below
9	Quantity OBS	As per Range & Scale
10	Quantity B&D	As per Range & Scale



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APPENDIX-20

Specification of Fire, acoustic and Thermal Insulation



NCD SPECIFICATION

NCD 1430

ISSUE 1

JUL 20

**SPECIFICATIONS OF FIRE, ACOUSTIC
AND THERMAL (FAT) INSULATION FOR
INDIAN NAVAL SHIPS**

Issuing Authority

**Integrated Headquarters,
Ministry of Defence (Navy)
Directorate of Naval Architecture
Room No. 200, II Floor
Naval Headquarters Annex
Talkatora Stadium
New Delhi-110 001**



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NCD SPECIFICATION

NCD 1430

ISSUE 1

JUL 20

SPECIFICATIONS OF FIRE, ACOUSTIC AND THERMAL (FAT) INSULATION FOR INDIAN NAVAL SHIPS

The issue and use of this specification is authorized
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(दिवाकर तोमर /Diwakar Tomar)

कोमोडोर/ Commodore

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नौसेना पोत शिल्प निदेशालय/Directorate of Naval Architecture

नौसेना मुख्यालय/Naval Headquarters Annex,

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नई दिल्ली/New Delhi-110 001

दूरभाष/Telephonic: 011-21410483

Fax: 011-21410483

E-Mail: dna.ihqmod@navy.gov.in

Specifications of FAT insulation onboard IN Ships



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7. This NCD specification supersedes NCD 1412 and NCD 1427 Issue 1 of Feb 2012 and all their amendments and revisions and policy directives issued in respect of Thermal and Acoustic insulation prior to issue of this edition of NCD.



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**SPECIFICATIONS FOR FIRE, ACOUSTIC AND THERMAL
(FAT) INSULATION FOR INDIAN NAVAL SHIPS**

Scope

1. This document pertains to the specifications of Fire, Acoustic and Thermal (FAT) a single insulation material to be used onboard new construction and in-service Indian Naval Ships, Auxiliary Vessels and Yard Crafts as per the approved insulation plans.

Role of Insulation

2. Acoustic and Thermal insulation are required onboard *IN* ships to ensure conducive conditions for habitability, optimal performance of equipment, crew comfort as well as energy efficiency. Fire insulation is vital to provide adequate fire safety, prevention and containment features to the fire boundary of the ship. FAT insulation shall cover all aspects of acoustic, thermal and fire.

Material

3. FAT insulation material in the form of slabs/ rolls shall be used onboard *IN* ships. The material to be used for FAT insulation can be of fibrous or foam based type or any other material certified as per IMO Fire Test Protocol (FTP).

Areas of Application

4. FAT insulation is to be applied on structural boundaries such as bulkheads, deckheads, shipside etc in all compartments necessitating acoustic discipline, HVAC or fire requirements (as per approved insulation plan).

Freedom from Defects

5. The back face of the finished rolls/ slabs shall be flat (or with a regular surface pattern) to facilitate firm contact with the structural surface through mechanical installation only. The rolls/ slabs shall be cleanly cut and must fit-in snugly without leaving any gaps.



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6. The top surface shall be smooth and free from any irregularities and defects. The glass cloth facing shall be even with a regular texture and shall not have any wrinkles/creases. The glass cloth shall also be free from fraying.

Dimensions and Tolerances

7. The thickness and width of FAT insulation roll/slab is to have the dimensional tolerances indicated in Table 1. The finished rolls/ slabs are to have glass cloth facing tested as per IMO resolution MSC.307(88), 2010.

Table 1. Dimensions and Tolerances		
S. No.	Dimension (mm)	Tolerance (mm)
Thickness (for rolls/ slabs)		
(a)	25 (for stiffener)	±5.0
(b)	50 (for plate/ stiffener)	
Width (for slab only)		
(c)	600	±15.0
Note:- Whilst measuring thickness, care must be taken to avoid compression of insulation during transportation/ storage		

Technical Specifications of Insulation Material

8. Technical specifications of FAT insulation are indicated at **Appendix 'A'**. The FAT insulation material to be used onboard *IN* ships is to be supplied in the form of finished slabs/boards or rolls. One face of the insulation is to be covered with glass cloth. The glass cloth surface is not to be painted.

Compartments requiring FAT Insulation

9. FAT insulation possesses fire resistance, acoustic absorption and thermal insulating properties. On installation, FAT insulation shall cater for all fire plan, HVAC and habitability requirements. Painting on insulation is not to be undertaken. The details of installation plan of insulation shall be sought from the vendor supplying the insulation. In ships that have already been fitted with Thermal and Acoustic insulation, part renewal of FAT insulation is to be undertaken with insulation rolls/ slabs of same thickness only. In new construction ships as well as during maintenance and repair on in-service ships, FAT insulation rolls/ slabs are to be used for fitment.



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10. In case of Composite hull ships, FAT insulation rolls/slabs in stacked layers with thicknesses as indicated in Table 1 above are to be used to meet the requirements of IMO Fire Test Protocol (FTP) for A- 60 insulation with suitable mechanical means.

Installation Guidelines for FAT Insulation

11. Installation of FAT insulation is to be undertaken as per insulation installation procedure provided by insulation OEM. The installation guidelines for FAT insulation are as follows:-

(a) **Deckheads and Bulkheads.** All surfaces to be insulated, shall be thoroughly cleaned free from rust, scale, dirt, grease etc., and preserved as per extant specifications (NO or NCD as relevant). All FAT insulation rolls/slabs are to be installed using mechanical means viz. pins and self-locking washers type tested as per class/ IMO regulations. The specifications of the fittings for installation of slabs by mechanical means are indicated at **Appendix 'B'**. Installation of insulation rolls/ slabs by mechanical means is to be undertaken as per following procedure:-

(i) **Welding of Pins.** Fitment of pins is to be carried out by pin-arc welding using a portable welding gun. Post welding of pins, the touch-up painting of the substrate must be undertaken and adequate time for curing of the paint is to be ensured. The roll/ slab is to be pressed against the surface with uniform pressure applied through hands such that the pins pierce the insulation roll/ slab and can be then secured using self-locking washers with caps. The insulation rolls should be installed such that joints of rolls don't coincide with the corners of the compartment. The rolls should extend atleast 230mm on to the next surface such that joint is formed on a flat surface. Self-locking washers and caps are onetime use only.

(b) **Stiffeners.** In case of stiffeners, the thickness of the insulation being applied should meet the requirements of IMO FTP protocol. The installation is to be undertaken by means of welding of pins. Pins are to be welded onto the web of the stiffener to the maximum extent possible. The same should be included in the initial insulation plan of the ship.



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(c) **Installation of FAT Insulation in Hangars and Critical Areas.** In order to address the issue of Foreign Object Damage (FOD) in Hangar, fitment of perforated GI/Aluminum sheets/ suitable metal nets are to be undertaken through a suitable method over the insulation slab/roll installed by welding pins as indicated at Para 11(a) above. Further, the these sheets are to be installed without affecting the consistency of the insulation whilst adequately holding locking pins and washers in place. Towards this, the installation plan with details shall be sought from the vendor supplying insulation. GI / Aluminum sheets/ metal nets are not to be painted.

Quality Assurance

12. The material being supplied in accordance with this NCD shall be subjected to Quality Assurance as per the Quality Assurance Plan (QAP) for FAT insulation placed at **Appendix 'C'**. For in-service ships, and for new construction ships the quality assurance inspection would be undertaken at delivery end only by Directorate of Quality Assurance (Navy).

Test Certificates/Class Approval

13. The firm supplying the insulation is to submit the test certificates in respect of the tests specified in QAP. In case of Fire class testing the validity of the test certificate will be as per class approval. Validity of type test certificates will be minimum three years. The firm shall be in possession of valid type test certificate during tendering with a validity of atleast six months.

Deliverables

14. The deliverables to be supplied by the vendor as per this NCD for FAT insulation shall include ancillaries as indicated below:-

- (a) FAT insulation slabs or rolls with glass cloth.
- (b) Glass tape (fire type tested).
- (c) Pins and self-locking washers (fire type tested).
- (d) Insulation installation procedure manual.
- (e) Valid class and type test certificates as per NCD 1430.



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Packaging

15. The insulation material, as per this NCD, are to be supplied in clean & dry containers/boxes suitable for preservation during the transportation of the material. The cartons and the packaging material for rolls/ slabs are to be made of recyclable material with atleast two years of life. Between two slabs, an interleaving sheet of paper is to be provided to prevent abrasion between the rolls/slabs.

Marking

16. The packaging of the insulation material is to bear the following:-

- (a) Contents with description indicating fire class notation.
- (b) Pattern Number.
- (c) Month and Year of Manufacture.
- (d) Manufacturer's Name.
- (e) Contract/Supply Order Number.
- (f) Name and address of the consignee.
- (g) Handling and Storage instructions.
- (h) Safety Precautions.
- (j) Shelf Life.

Deviations

17. No deviations would be permissible. However, in the event of any deviations from the specifications or other relevant contents of this NCD in the procurement of insulation material, the same is to be addressed to IHQ-MoD(N)/DNA.

Nomination of Vendors

18. Procurement of FAT insulation is to be on OTE basis.

Pattern Numbers

19. NATO Stock Numbers (NSN)/ ILMS pattern numbers of A-60 fire class, acoustic and thermal insulation material for various thicknesses are indicated at Appendix 'D'.



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Appendix 'A'
(Refers to Para 8)

TECHNICAL SPECIFICATIONS OF FAT INSULATION

1. FAT insulation material shall conform to the specifications indicated in the Table A1:-

Table A1. Technical specifications of FAT Insulation Material

Ser	Property	Requirement	Test method	Certifying agency
(a)	Fire class	A-60	SOLAS/ IMO Fire Test Protocol (FTP) Code or Part - 3 of IMO Resolution MSC. 307(88), 2010	Class approval from member of International Association of Classification Societies (IACS) or IMO approved agencies
(b)	Non combustibility for insulation	As per acceptance criteria of Part -1 of IMO Resolution MSC. 307(88), 2010	As per Part -1 of IMO Resolution MSC. 307(88), 2010	
(c)	Smoke index for insulation	Average optical density of smoke (D_m) \leq 200	As per Part -2 of IMO Resolution MSC. 307 (88), 2010	
(d)	Toxicity test for insulation	As per acceptance criteria of Part -2 of IMO Resolution MSC. 307(88), 2010		
(e)	Surface flammability of insulation and glass cloth	Table -1, flammability criteria for bulkhead, wall and ceiling linings Part - 5 of IMO Resolution MSC. 307(88), 2010	As per Part - 5 of IMO Resolution MSC.307(88), 2010	

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Table A1. Technical specifications of FAT Insulation Material

Ser	Property	Requirement	Test method	Certifying agency
(f)	Non combustibility for glass cloth*	As per acceptance criteria of Part -1 of IMO Resolution MSC. 307(88), 2010	As per Part -1 of IMO Resolution MSC. 307(88), 2010	Member of IACS or IMO approved agencies or International accredited laboratory or NABL accredited laboratory
(g)	Smoke index for glass cloth*	Average optical density of smoke (D_m) \leq 200	As per Part -2 of IMO Resolution MSC. 307 (88), 2010	
(h)	Toxicity test for glass cloth*	As per acceptance criteria of Part -2 of IMO Resolution MSC. 307(88), 2010		
(j)	Acoustic absorption	Weighted acoustic absorption coefficient \geq 0.85 (for 50mm thickness insulation only)	ISO 354:2003 (and revisions thereafter) or ASTM C 423-09A or any other relevant international standard	Member of IACS or IMO approved agencies or International accredited laboratory or NABL accredited laboratory
(k)	Thermal Conductivity	\leq 0.035 W/m $^{\circ}$ C at 20 $^{\circ}$ C	BS 874/ BS 12667 / ASTM C177-10 or any other relevant international standard	
(l)	Density	$<$ 80 Kg/m 3 (Allowance + 10%)	Standard density measurement	

Note: * - Glass cloth can be tested with or without insulation as per IMO resolution

2. **Ancillaries.** The associated ancillaries such as glass cloth, adhesives, pins, fasteners, self-locking washers and caps are required to be type tested and certified as per IMO FTP code along with the insulation material. Adhesives are to be tested for non-combustibility as per Part -1 of IMO Resolution MSC. 307(88), 2010.

3. **Standards.** Revisions/addendums/amendments thereof issued for the standards referred above will be considered for the subject specifications.



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Appendix 'B'
(Refers to Para 11)

**DRAWINGS OF FITTINGS FOR INSTALLATION
OF FAT INSULATION ROLLS/ SLABS**

1. The installation and securing of FAT insulation rolls/slabs to be undertaken using Mechanical securing arrangement i.e by means of pins and washers with caps. The fitment of pins can be undertaken by Pin Arc Welding.
2. **Specifications of Pins, Washers and Caps.** The pins and fasteners will be fire tested as per IMO FTP resolution MSC 307(88). The fasteners can be tested as part of A-60 insulation testing. The pin shall have base plate for installation on substrate. The length of pins is to be of such that the protrusion length of the pin after fitment of the insulation slab should not exceed 8mm. The specifications of the fittings are as follows:-

Table B1. Specifications of Fasteners

Ser	Fitting	Material	Coating	Yield strength	Diameter (mm)
(a)	Pins	MS conforming to IS 2062 any other equivalent standard,		250 MPa for steel	3-5
(b)	Washer (Self locking type)	SS Confirming to AISI 302/304/305 or any other equivalent standard for steel structures,	GI or copper coating on MS	and 120 MPa for Al	38-50, Thickness 0.3
(c)	Caps	Aluminium conforming to IS 52000 any other equivalent standard for Al substrates or as per OEM supplied material type tested as per IMO FTP		-	≤ 38-50

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3. The pictorial representation of the fittings is indicated below.



Pins

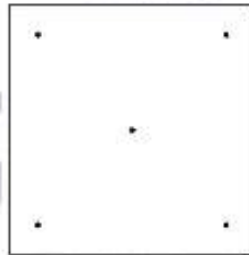


Self-locking washer



Closing caps

4. The minimum number of pins for installation of slab should be 5 pins per sqm as shown in the diagram below (Installation plan to be provided by OEM).





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Appendix 'C'
(Refers to Para 12)

QUALITY ASSURANCE PLAN (QAP) FORMAT

Table C1. Quality Assurance Plan

Ser	Parameter to be Inspected	Para Ref. of NCD 1430	Pre-Inspection by Firm	Final Inspection by QA agency	Rejection Criteria	
1.	Visual Examination for freedom from defects	5	Firm check report to be submitted	Random checking of 10% of delivered lot	Rejection if more than 30% non-compliance of inspected lot	
2.	Dimensions	7				
3.	A-60 insulation suitability for marine use	8	Class Approval from Member of International association of Classification societies (IACS) or IMO approved agencies	Verify Class certificate or IMO approved agency certificates *.	Rejection if certificate not valid/ certificate not in accordance with NCD 1430*	
4.	Non combustibility, Smoke Index Toxicity and Surface flammability for insulation	8		Verify Class certificate or IMO approved agency certificates *. Acceptance criteria as per IMO resolution MSC 307(88)		
5.	Acoustic absorption	8		Type Test certificate		Verify type test certificate#
6.	Thermal conductivity	8				
7.	Density	8				
8.	Packing	15	Firm check report to be submitted	Random checking of 5% of delivered lot	Rejection if 30 % non-compliance of inspected lot	
9.	Marking	16				

Specifications of FAT Insulation onboard IN Ships



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Table C1. Quality Assurance Plan

Ser	Parameter to be Inspected	Para Ref. of NCD 1430	Pre-Inspection by Firm	Final Inspection by QA agency	Rejection Criteria
10.	Non combustibility, Smoke Index, Toxicity and Surface flammability for Glass cloth (with or without Insulation)	7	Member of IACS or IMO approved agencies or International accredited laboratory or NABL accredited laboratory	Verify Class certificate or IMO approved agency certificates *. Acceptance criteria as per IMO resolution MSC 307(88). The certificate can be part of A-60 certification for insulation	Rejection if certificate not valid/ not in accordance with NCD 1430*
11.	Ancillaries such as glass cloth, adhesives, pins, fasteners, self-locking washers and caps (if supplied)	8	Member of IACS or IMO approved agencies		Rejection if certificate not valid/ not in accordance with NCD 1430*
12.	Non-combustibility of adhesive for glass cloth	8	Member of IACS or IMO approved agencies or International accredited laboratory or NABL accredited laboratory	Verify certificate. The certificate can be part of A-60 certification for insulation	Rejection if certificate not valid/ not in accordance with NCD 1430*

* Validity of Class certification - **As specified**

Validity of Type test certificate - **Minimum Three years**

Note: Test certificates for glass cloth, ancillaries such as pins, fasteners, adhesives etc., can form part of A-60 insulation test certificates.

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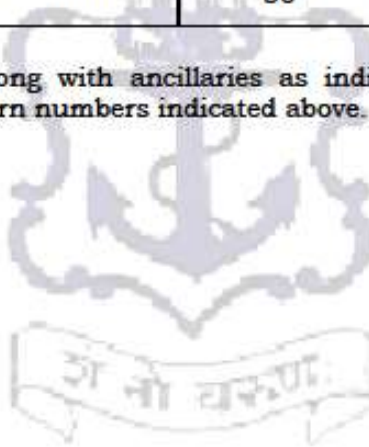
Appendix 'D'
(Refers to Para 19)

LIST OF NSNs FOR PROCUREMENT OF FIRE INSULATION

1. Following NSNs for various thicknesses of A-60 grade FAT insulation have been updated into ILMS:-

Ser	Details	Thickness (mm)	NSN
(a)	A-60 FAT insulation roll/ slab	25	NSN5640-720494766
(b)	A-60 FAT insulation roll/ slab	50	NSN5640-720494767

Note- FAT insulation along with ancillaries as indicated at Para 14 will be supplied under the pattern numbers indicated above.



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(Encl 2 to IHQ-MoD(N)/DNA Policy letter
NC/Policy/H-145 /Material dated 13 Jul 20)

LIST OF SUGGESTED FIRMS FOR SUPPLY OF FAT INSULATION

<u>Sl.</u>	<u>Name of the Firm</u>	<u>Contact Details</u>
1.	M/s U P Twiga Fiberglass Limited	<p><u>Contact Person:</u> Mr Gulab Singh</p> <p><u>Address:</u> Twiga House, 3 Community Centre, East of Kailash, New Delhi - 110065</p> <p><u>Tele:</u> 011 2646 0860</p> <p><u>Fax:</u> 011-2643 1588/ 2622 6474</p> <p><u>Mob:</u> +91 9873438527</p> <p><u>Email:</u> marketing@twigafiber.com</p> <p><u>Website:</u> www.twigafiber.com</p>
2.	M/s Roxul- Rockwool Technical Insulation India Pvt Ltd	<p><u>Contact Person:</u> Mr Vinay Singh</p> <p><u>Address:</u> Wing B-2, 2nd Floor, Unit No.206 Boomerang Building, Main Chandivali Farm Road, Near Power, Andheri E, Mumbai-400072</p> <p><u>Tele:</u> 022-6715 7700</p> <p><u>Fax:</u> 022-6715 7710</p> <p><u>Mob:</u> + 91 99677 12400</p> <p><u>Email:</u> vinay.singh@rockwool.com</p> <p><u>Website:</u> www.rockwool.in</p> <p><u>Or</u></p> <p><u>Contact person:</u> Mr Srinivas</p> <p><u>Address:</u> M/s E Krishna Rao Marine and Offshore Equipment. Plot No 32, Road No 4, CBM Compound, VIP road, Visakhapatnam- 03</p> <p><u>Tele:</u> 0891-2566 6739</p> <p><u>Fax:</u> : 0891-256 3777</p> <p><u>Mob:</u> +91 98481 98535</p> <p><u>Email:</u> adm1n@krishnarao.com</p>



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3.	M/s Murugappa Morgan Thermal Ceramics Ltd	<p><u>Contact Person:</u> Mr Shammi Mohammad. Sr. Manager</p> <p><u>Address:</u> Post Box 1570, Dare House Complex, No 2, NSC Bose Road, Chennai- 600 001</p> <p><u>Tele:</u> 044 2530 6789</p> <p><u>Fax:</u> 044 3000 8090</p> <p><u>Mob:</u> +91 7397239893</p> <p><u>Email:</u> mmtcl.india@morganplc.com</p> <p><u>Website:</u> www.murugappamorgan.com</p>
4.	Unifrax India Private Limited	<p><u>Contact Person:</u> Mr. Yogeshwar Hadpe, Sr. Sales Engineer</p> <p><u>Address:</u> C-102, Business square, Andheri Kurla Road, Andheri East, Mumbai- 400093, Maharashtra.</p> <p><u>Tele:</u> 022 29212221</p> <p><u>Mob:</u> +91 8329357036</p> <p><u>Email:</u> yhadpe@unifrax.com</p> <p><u>Website:</u> www.unifrax.com</p>
5.	M/s Bells Electrotech Private Limited	<p><u>Contact Person:</u> Mr. Nitin Shama, Director</p> <p><u>Address:</u> P-36, India Exchange Place. Room No. 27, (Ground Floor), Kolkata - 700001</p> <p><u>Tele:</u> 033-22250389</p> <p><u>Mob:</u> +91 9831278370</p> <p><u>Email:</u> bepl@bellsindia.com</p>
6.	M/s Lloyd Insulations (India) Limited	<p><u>Contact Person:</u> Mr. KK Mitra, Director</p> <p><u>Address:</u> 2, Kalkaji Industrial Area, New Delhi- 110019</p> <p><u>Tele:</u> 011-30882900</p> <p><u>Mob:</u> +91 9313217709</p> <p><u>Email:</u> kk.mitra@lloydinsulation.com</p> <p><u>Website:</u> www.lloydinsulation.com</p>

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APPENDIX-21 HABITABILITY UP GRADATION WORK ON IN SHIPS - APRIL 2017

Tele. 011-23011580

Integrated Headquarters
Ministry of Defence (Navy)
New Delhi -110 011

NC/Policy /H-121/Equipment

05 Apr 17

The Flag Officer Commanding-in-Chief (for CSO (Tech))
Headquarters, Western Naval Command
Mumbai-400023

The Flag Officer Commanding-in-Chief (for CSO (Tech))
Headquarters, Eastern Naval Command Visakhapatnam-530014

The Commander-in-Chief (for CSO (Tech))
Headquarters, Andaman & Nicobar Command
Port Blair-744102

The Flag Officer Commanding-in-Chief (for CSO (Tech))
Headquarters, Southern Naval Command Kochi-682004

HABITABILITY UPGRADATION WORK ON IN SHIPS

1. Refer to the following:-

(a) IHQ-MoD (N)/DNA letter NC/Policy/H-03/Equipment dated 22 Aug 12.

(b)'Guideline Specifications for Habitability Upgradation and Modular Accommodation works on board IN Ships, Issue 2, Feb 2013'.

2. The concept of modular accommodation concept was introduced on board IN ships in 2006 and Subsequently policies and guidelines on its implementation have been issued vide IHQ-MoD (N)/DNA letter referred at Para 1 above. The primary aim of the habitability upgradation through modular accommodation was to improve aesthetics and ergonomics for crew without compromising the ship's functional role, safety and hygiene.

3.'Guideline Specifications for Habitability Upgradation and Modular Accommodation works on board IN Ships, Issue 2, Feb 2013' is a comprehensive document encompassing the general technical requirements of habitability upgradation, scale of furniture, specifications of fittings, upholstery, panels, hygiene & cleanliness and responsibilities of ordering authority and vendors among its other provision.

4. Over the years there have been certain issues related to incorrect implementation of the habitability upgradation work. These issues primarily pertain to:-

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(a) Reduction in the availability of functional space due to extensive paneling and likely safety hazard during damage control evolutions.

(b) Use of non-approved materials like non-FR fittings, glass, ceramic, wood, upholstery, etc.

(c) Restricted accessibility behind panels for maintenance and hygiene.

(d) Dado casting in habitability upgraded compartments not being undertaken as per NCD 3717, Issue 4, rev1 on 'Deck Covering Schemes for IN ships'.

5. 'Guideline Specifications for Habitability Upgradation and Modular Accommodation works onboard IN Ships, Issue 2, Feb 2013' referred at Para 1(b) shall continue to be the primary document for undertaking habitability upgradation. The broad approach for habitability upgradation along with areas for use of modular paneling has been amplified and is placed at Enclosure.

6. The provisions of this policy are to be implemented as follows:-

(a) New Construction Ships:-

(i) Where orders for accommodation spaces have not been placed or tenders have not been issued - with immediate effect.

(ii) All other cases where orders for modular accommodation have been placed and work commenced, a one-time waiver for deviation from policy guidelines is to be sought by Production Directorate if unavoidable.

b) **Commissioned Ships** - For ships in commission, work package for removal of paneling and securing of cable/ system line/fittings etc. is to be projected in refit work package to the Yard. If feasible, efforts are to be made to undertake this work in SR/AMP etc.

7. It is requested that contents of this policy letter be disseminated to all concerned units for implementation.

(MN Menon)
Commodore
Principal Director Naval Architecture

Encl to IHO/DNA letter NC/Policy/H-I21/Equipment
Dated 05 Apr 17
(Refers to Para 5)

	MAZAGON DOCK SHIPBUILDERS LTD. (A Govt. Of India Undertaking)	DESIGN-OUTFIT	T.S.P. NO.	MT64400002M
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AMPLIFICATION TO THE EXTANT GUIDELINES

1. **Areas to be fitted with Paneling.** Paneling is to be restricted to **Admiral's cabin, CO's cabin, Wardroom a. Wet spaces** (55 panels forming the boundaries in **WCs, Bathroom cubicles a. Galley**) only and is to be undertaken preferably using sandwich CRCA panels. Paneling from all other areas, is to be removed during NR/MR. In this regard, Commands are to identify the scope of work for removal of paneling from other compartments, class of ship wise and issue directives for the same. Panels, if used for erecting partition bulkheads in compartments, may be retained, however the same are to be of single skin type.

2. **Space Requirements for Habitability Areas.** The design of compartments designated as accommodation spaces, washrooms & WCs are to be undertaken strictly iaw the specifications of DEFSTAN 02- 107 & 120. for new construction ships, the space requirements for erection of sandwich paneling in the Compartments indicated at Para 1 of this Enclosure are to be factored in the compartment layout so as to ensure the resultant space is as per the governing specifications. For in-service ships being retro-fitted, feasibility of fitment of such panels is to be examined taking into consideration the issues related to availability of adequate functional space, resultant increase in weight, extent of hot-work and associated degutting/ re-gutting requirements in the adjoining compartments.

3. **Mode of Execution of Habitability Upgradation Work.** In accordance with extant policy, the identification of vendors for execution of habitability upgradation work on board in-service ships has been delegated to Commands. However, no changes to the technical specifications of the material indicated in the guideline specifications promulgated in Feb 2013 is to be undertaken without approval of IHQ MoD(N)/DNA. In case of any requirement to review the technical specifications, firm recommendations are to be forwarded to IHQ for consideration. Firms considered capable of undertaking habitability upgradation work are to be identified based on their past experience of undertaking similar work.

4. **Specifications of Paneling Material.** Specifications of paneling material to be used in compartments indicated at Para 1 of this Enclosure are as follows:-

(a) **Sandwich Panels.** Specifications indicated at Appendix E of 'Guideline Specifications for Habitability Upgradation and Modular Accommodation works on board IN Ships, Issue 2, Feb 2013' to be retained.

(b) MPL Panels. Use of MPL sheets as panels is to be discontinued in habitability upgradation works at all locations.

(c) Single Skin Panels. In the event of space constraints precluding the use of sandwich panels in bulkheads, 0.9mm thick Single skin CRCA steel powder coated panels/ SS sheets (in wet areas) are to be used. These panels can also be used as partition bulkheads within compartments.

(d) Ceiling Panels. 0.9mm CRCA panels may be used in the ceiling areas of habitability compartments for better aesthetics and for securing lighting arrangements. In such cases, they are to be mounted on a galvanised steel framework with rubber padding and means of easy removal provided.

5. **Erection of Panels.**

(a) For dry compartments (paneled). Suitable mechanism for removal and re- fitment of panels is to be provided for ensuring easy removal of paneling by even non-trained manpower. A guidance drawing for erection of panels is shown at Appendix A depicting the panel being erected on the inside coaming of a deck mounted plate with a dadoe height of 230 mm.

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(b) For wet compartments (paneled). panels are to be erected in a fashion such that the wash-down water runs within the confines of the wet spaces. Guidance arrangements shown at Appendices B & C stipulate erection of all the boundary panels on channel frame welded on a bulkhead/shipside mounted plate (with perforations) or angle attached to shipside/bulkhead supported by brackets. This arrangement would enable ease in laying of deck covering underlay with single sloping to compartment drain, easy casting of dado and also preclude water accumulation in inaccessible areas between panel and shipside/bulkhead. The inter-cubicle/intermediate panels can however be erected on deck mounted skirtings. Alternately, the inter-cubicle panels can also be erected on the inside coaming of a deck mounted plate (Appendix A). This arrangement is to be implemented henceforth in all modular wet compartments. The construction of dados in wet compartments on the compartment boundary and the inter-cubicle boundary i.a.w. the extant deck covering specifications is mandatory. Alternately, if construction of dadoe is not feasible, application of an anti-corrosive coat of 2501J thickness can be undertaken. The channel/bulkhead mounted plate/angle supports are all to be preserved through anti-corrosive paint (Details of paints placed at Appendix D). For ships which presently do not have dados cast at the boundary of compartments are also to be preserved by application of anticorrosive paint (post St3 surface preparation) and maintained thereafter by Ship Staff till such time the dados are constructed.

6. **Panelling below Waterline (WL).** The compartments below the WL are not to be panelled. However, in case of wet compartments (WC/Bath) located below WL, the panelling can be undertaken meeting the requirements specified at Para S (b) above.

7. **Inspection Windows.** As a minimum measure, inspection windows are to be provided on every third continuous panel at a height not exceeding 1.0 m from the deck level to aid easy access of areas behind the panels. However, the exact requirement of number of inspection windows is to be finalised whilst execution of the work based on the actual requirement in a particular compartment.

8. **Furniture/ Outfit items.** The following aspects are to be mandatorily factored in the specifications of furniture and miscellaneous outfit items:-

(a) **Material of Construction.** Fittings/ furniture are to be made of CRCA steel (conforming to IS 513) to suit usage in marine applications including in areas not presently under the ambit of habitability upgradation such as office spaces, workshops etc. The usage of wood/ plywood is to be avoided on board.

(b) **Fire Resistant Properties.** The materials used for habitability upgradation(including upholstery) shall adhere to Fire Test Protocol Code (FTP), MSC.61(67) - International code for Fire Test procedures' or DEFSTAN 07-747, Part 1-'Selection of materials on the basis of their Fire Characteristics' and as indicated in the guidelines for habitability upgradation. In case the usage of wood/ plywood is inescapable based on functional/ design requirements, the same is required to be fire retardant iaw the following specifications:

(a) HPL sheets -Type F (Patt No. N5530 - P062208): IS 2046

(b) FR Plywood- IS 5509.

(c) **Wooden Flooring.** The usage of wooden flooring on ships is to be discontinued forthwith. Approved deck covering schemes/ alternate paint schemes are to be used in lieu. The areas of application of deck covering schemes have already been indicated vide this Headquarters letter NC/Policy/H- 114/ Material dated 16 Sep 16.

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(d) Usage of Glass & Ceramics. The usage of glass and ceramic (except for we bowls in Officers Sanitary spaces) fittings are to be discontinued as they pose significant risks to personnel safety. SS 304 mirrors (0.9mm thick) are to be used in lieu of glass mirrors in accommodation and wet spaces, as necessary.

9. Quality Control. The scope of work of habitability upgradation is to be implemented on board with strict quality control to ensure compliance to extant guidelines. The above guidelines are to be duly covered in the detailed drawing of the vendor and submitted to the inspection authority. The bill of material prepared by the vendor shall also be submitted to the inspection authority along with relevant test certificates for FR properties of the materials (wherever relevant). These drawings/documents are to be verified for compliance to the extant guidelines prior according clearance to the vendor for commencement of work on board. These drawings/documents are to be used for inspections thereafter. For new construction ships, respective WOTs shall be responsible for QA/ QC. The Pre-Panelling Inspection (PPI) shall cover all aspects of the extant guidelines. For commissioned ships, respective Naval Dockyards/ Ship Repair Yards/Overseeing team are to ensure QA/QC. The following aspects are to be checked as part of the QA/QC process:

(a) Gaps in panel joints in bathroom complexes that is likely to allow ingress of water onto the shipside/ bulkhead. Application of white cement or an equivalent sealant at the joint of panel and base-channel would ensure no ingress/egress of water. The same needs to be verified during inspections. The vendor must be directed to indicate sealing arrangements for inter-panel and panel-base channel sealing in the drawing.

(b) Ease of removal/ refit of panels by ship's staff.

(c) Adequate number of inspection windows.

(d) Access to escape hatches/ scuttles, inclination of ladders for ease of movement of personnel, modular furniture clear off underwater tanks/ cofferdam manholes, valves of pipes, light fittings and ventilation openings.

(e) Issues likely to affect through life maintenance and pose safety and fire hazards.

7. Maintenance. The items included in the habitability upgradation package are COTS in nature and hence B&D spares are not applicable. Suitable AMCs/ RRCs are to be concluded at Commands with the respective OEMs for through life maintenance of the habitability upgrade items in service. The contract for habitability upgradation shall include the provision for ordering items which are frequently defect-prone like locks, latches, hinges, stoppers, rubber beadings, door knobs



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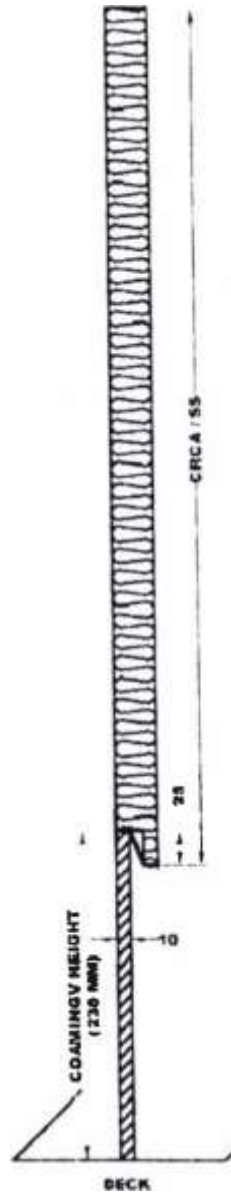
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Appendix A
(Refers to Para 5 of Encl.)



Note:

Coaming/Skirting (Steel) height of 230mm to be welded on deck (All dimensions in mm)



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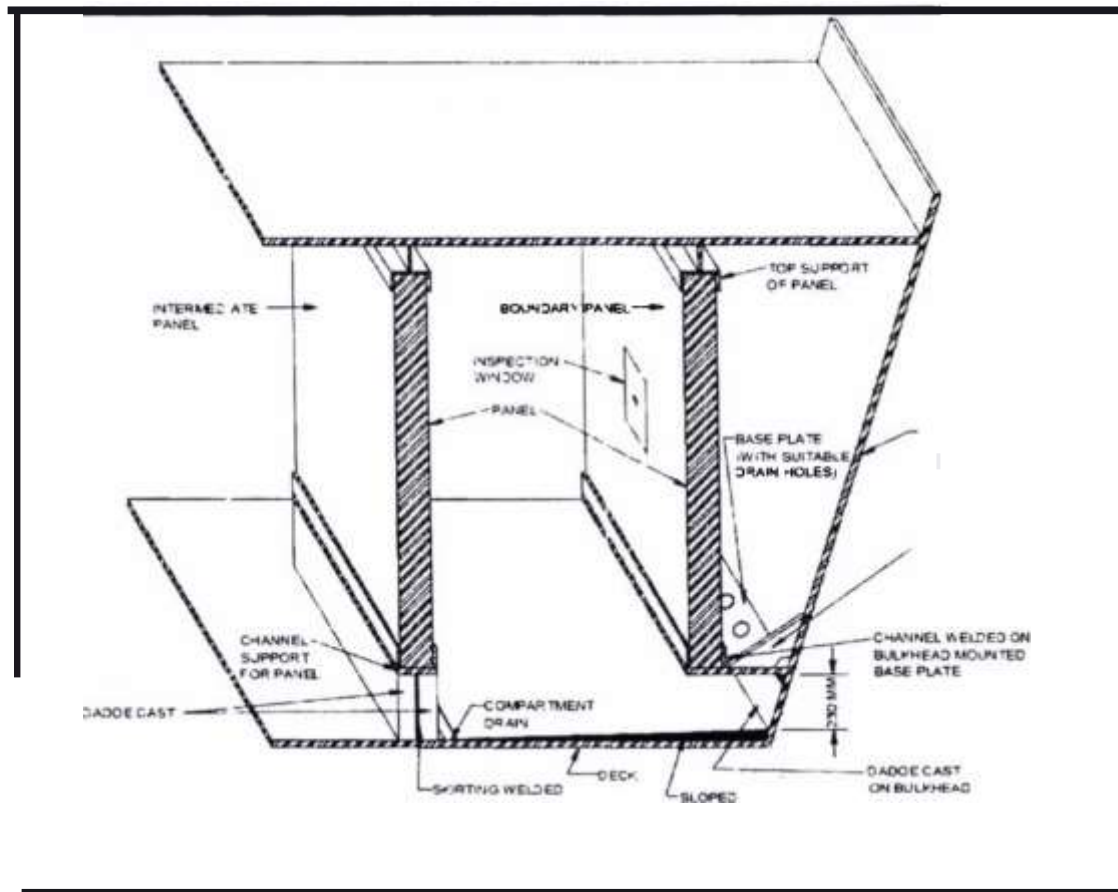
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ERECTION OF SANDWICH/SINGLE SKIN PANELS ON DECKS OF INTERNAL COMPARTMENTS

Appendix B
(Refers to Para 5 of Encl.)





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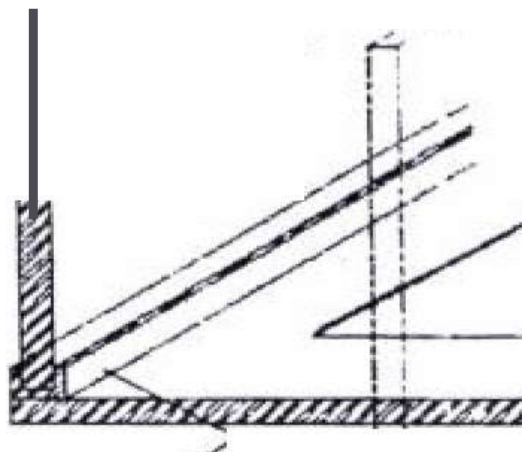
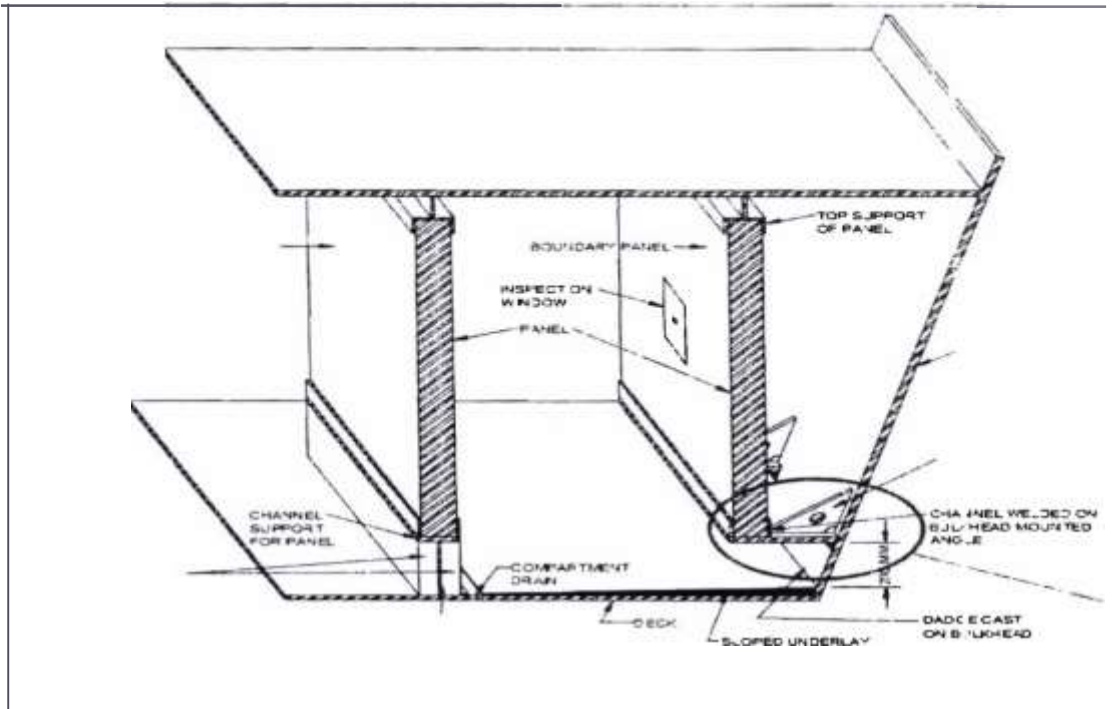
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ERECTION OF PANELS ON DECKS OF WET COMPARTMENTS CBATH/WCI WITH BULKHEAD/SHIPSIDE MOUNTED BOUNDARY PANELS AND DECK MOUNTED INTER-CUBICLE PANELS

Appendix C
(Refers to Para 5 of Encl.)



ERECTION OF PANELS ON DECKS OF WET COMPARTMENTS CBATH/WCI WITH BULKHEAD/SHIPSIDE MOUNTED BOUNDARY PANELS AND DECK MOUNTED INTER-CUBICLE PANELS

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Appendix D
(Refers to para 5 of Encl.)

Recommended Paint Schemes for Application on the Panel Supporting Structures (Post ST3 Surface Preparation)

Paint OEM	Paint nomenclature	Patt.No.	CQSI x DFT
Akzo Noble	Integrated 269 primer (Red)	N8010 –P009678	1X50
	Integrated 5600	N8010-007509 (Grey)	2x125
	Anti-corrosive / intermediate coat grey / Red	N8010 – 007510 (Red)	
Jotun	Penguard Primer (Red)	N8010-P009678	1X50
	Jotamastic 80 (Grey/ Red) anti corrosive / intermediate coat	N8010-007509 (Grey) N8010-007510 (Red)	2X125
PPG	Sigmacover 280 (Red brown) Primer	N8010-P009678	1x50
	Sigmacover 630	T8010-P061944	2X125



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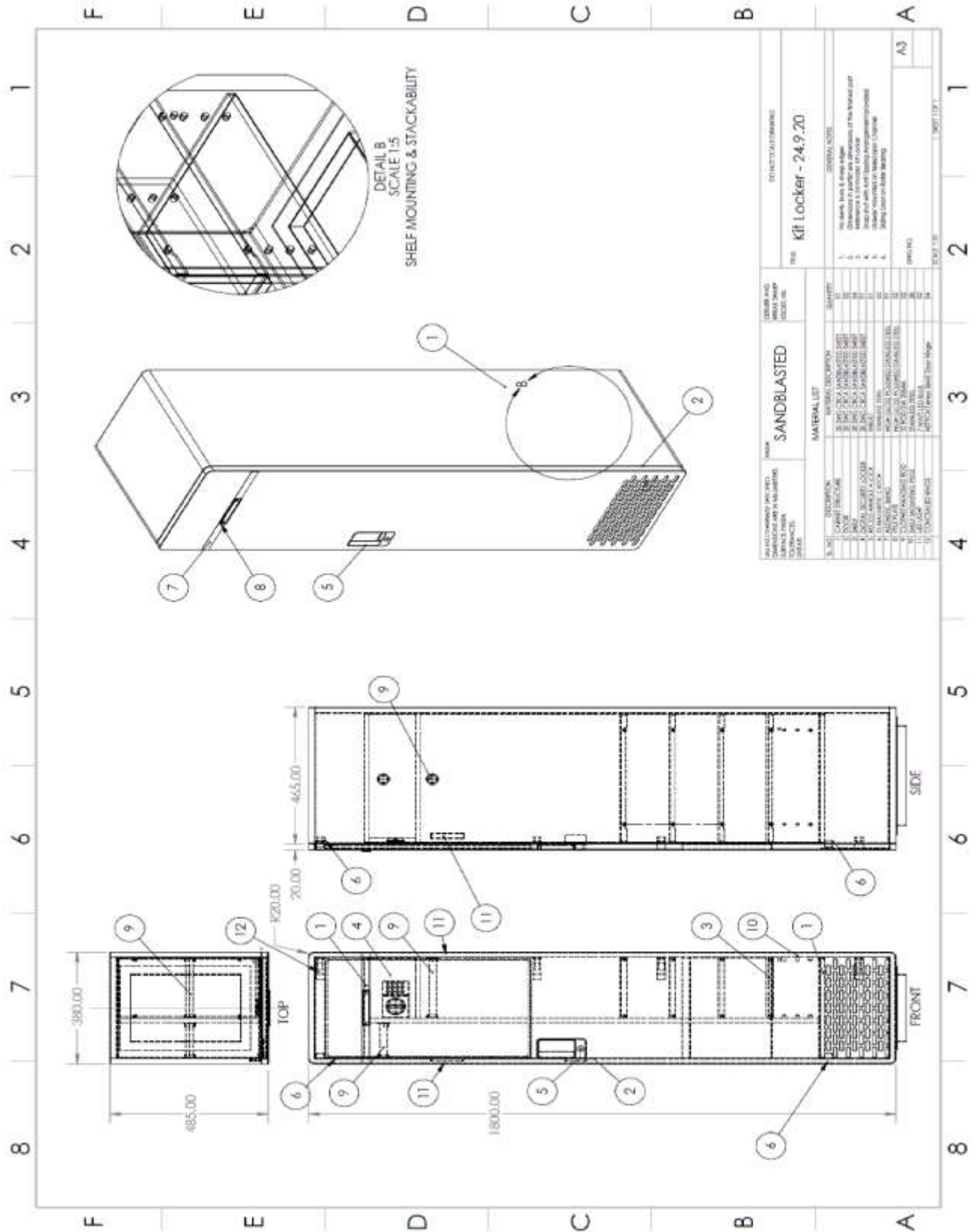
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APPENDIX-22 –NID RECOMMENDED FURNITURE DRAWINGS

(i) KIT LOCKER



GENERAL INFORMATION TITLE: Kit Locker - 24.9.20 DRAWN BY: [Blank] CHECKED BY: [Blank]		SCALE 1:1
DESIGN AND CONSTRUCTION NAME: SANDBLASTED MATERIAL LIST: [Blank]		DATE 25/09/2023
DESCRIPTION Kit Locker - 24.9.20 1. KIT LOCKER 2. KIT LOCKER 3. KIT LOCKER 4. KIT LOCKER 5. KIT LOCKER 6. KIT LOCKER 7. KIT LOCKER 8. KIT LOCKER 9. KIT LOCKER 10. KIT LOCKER 11. KIT LOCKER 12. KIT LOCKER		QUANTITY 1 1 1 1 1 1 1 1 1 1 1 1 1
REVISIONS NO. REV. DATE BY 1 1 25/09/2023 [Blank]		APPROVED BY [Blank]
GENERAL NOTES No. items, sizes & units as per drawing. Dimensions in parts are approximate of the material part. All dimensions are to be taken as per drawing unless otherwise specified. Make necessary for material purchase. Refer drawing for material purchase.		PROJECT NO. A3



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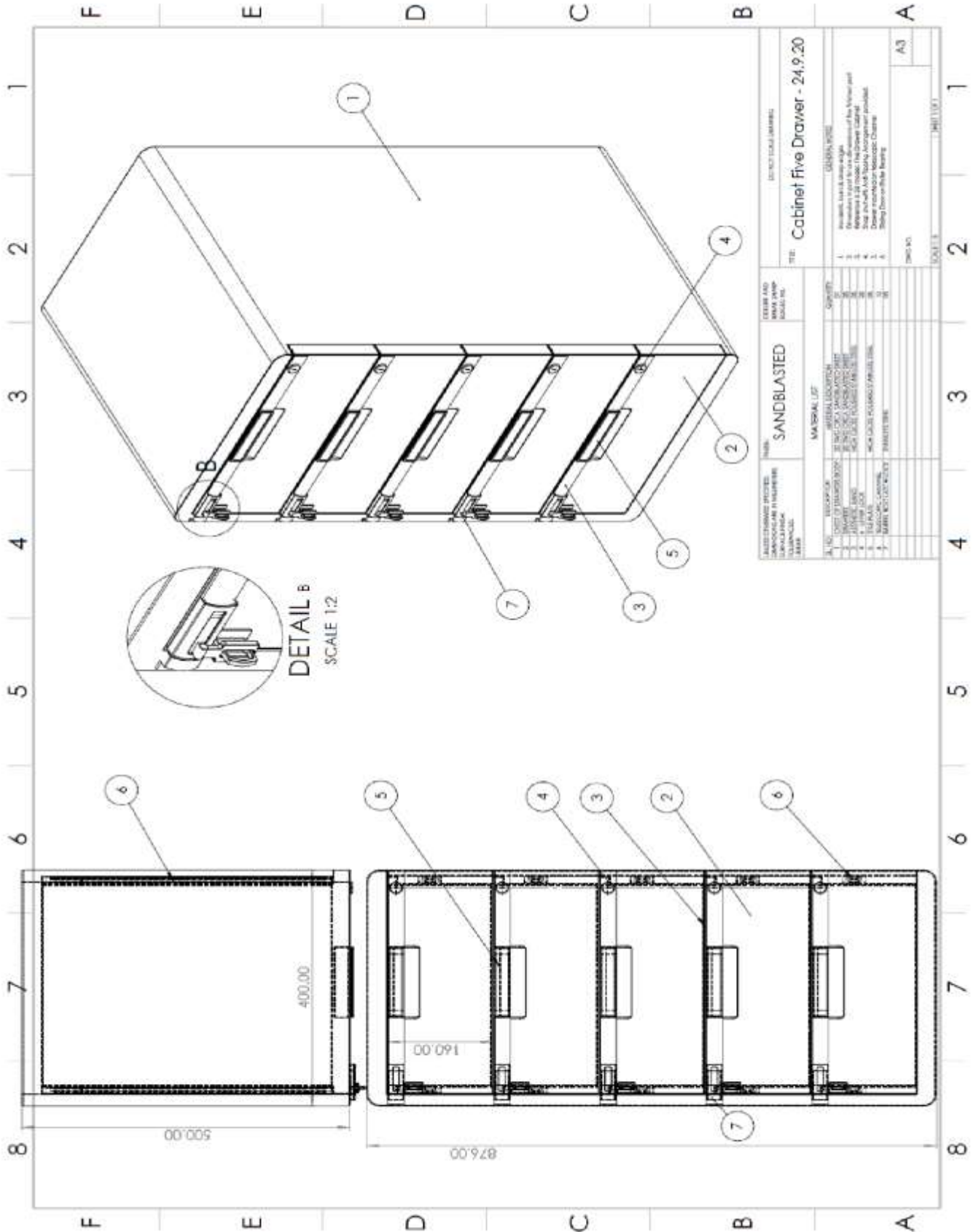
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(ii) **CABINET 5 DRAWER**



ITEMS AND QUANTITIES ITEM: SANDBLASTED QUANTITY: 1		ITEMS AND QUANTITIES ITEM: MATERIAL LIST QUANTITY: 1	
REVISIONS NO. DESCRIPTION 1. Initial design 2. Revision to add 5 drawers 3. Revision to add 5 drawers 4. Revision to add 5 drawers 5. Revision to add 5 drawers 6. Revision to add 5 drawers 7. Revision to add 5 drawers		REVISIONS NO. DESCRIPTION 1. Initial design 2. Revision to add 5 drawers 3. Revision to add 5 drawers 4. Revision to add 5 drawers 5. Revision to add 5 drawers 6. Revision to add 5 drawers 7. Revision to add 5 drawers	
APPROVED BY: DESIGNER: [Signature] CHECKED: [Signature] DRAWN: [Signature]		APPROVED BY: DESIGNER: [Signature] CHECKED: [Signature] DRAWN: [Signature]	
DATE: 24.9.20		DATE: 24.9.20	
PROJECT: Cabinet Five Drawer - 24.9.20		PROJECT: Cabinet Five Drawer - 24.9.20	
SCALE: 1:2		SCALE: 1:2	
NO. OF SHEETS: 1		NO. OF SHEETS: 1	
TOTAL SHEETS: 1		TOTAL SHEETS: 1	



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(iii) **TABLE OFFICE**

