



KHULNA SHIPYARD LIMITED

BANGLADESH NAVY, KHULNA

PHONE NO: PABX 02-47772003

E-mail: oiccomf.ksy@gmail.com, Web: www.khulnashipyard.gov.bd

INVITATION FOR QUOTATION OF FIXED CO₂ SYSTEM WITH ALL NECESSARY ACCESSORIES

Khulna Shipyard Limited (KSY) will procure "**FIXED CO₂ SYSTEM WITH ALL NECESSARY ACCESSORIES**" as per attached specification (01 Pages) with following terms & conditions:

IMPORTANT POINT

1. **TENDER NO:** BABE(F)–632/LCT/Fixed CO₂ System/25-26 Date: 23/05/2026
2. **DUE FOR OPENING ON:** 22 June 2026.
3. **PRICE OF TENDER DOCUMENT:** 1,000.00 (Tk. One Thousand) Non-refundable.
4. **NAME OF THE COMMODITY:** Fixed CO₂ System with All Necessary Accessories as per Annex- B,
5. **SOURCE OF FINANCE:** Khulna Shipyard Limited
6. **TERMS OF SUPPLY:** CFR Chattogram Sea Port.
7. **PRICE:**
 - i) FOB and Ocean freight should be shown separately.
 - ii) Freight should be shown/endorsed on Bill of Lading.
 - iii) Freight will be paid at actual against Bill of Lading but not exceeding the amount shown in quotation/offer.
 - iv) Khulna Shipyard will process all customs formalities with related duties and taxes.
8. **DELIVERY/SHIPMENT:** 45 Days from the date of letter of credit (LC).
9. **TENDER SHOULD REMAIN VALID:** 45 Days from the opening date of Tender.
10. **THE TENDER DOCUMENTS MUST BE REQUIRED WITH SEAL AND SIGN THEREOF ON EACH PAGE:**

The Khulna Shipyard Ltd., Khulna invites quotation by **Single envelop** from Manufacturers / Principal Suppliers for supply of the item(s) described in the attached sheet schedule (Annex-B) on firm CFR Chattogram. Quotations will be received by this office up to **11-15 A.M.** and will be opened **11-30 A.M.** in public on the date specified above.
11. **AMENDMENTS TO TENDER DOCUMENTS:**
 - a. At any time prior to deadline for submission of bids the purchaser may, for any reason, whether of its own initiative or in response to a clarification requested by a prospective bidder, modify the Tender documents by the amendment(s).
 - b. The amendment(s) will be notified in writing by letter / email / **KSY website** or by cable to all prospective bidders who have received Tender documents and the same will be binding on them (**For updated information suppliers should follow the KSY Website**).
 - c. In order to allow the prospective bidders reasonable time to take the amendment into account in preparing their bids, the purchaser may at its sole discretion extend the deadline for submission of bids.

PREPARATION AND SUBMISSION OF TENDER

12. **GENERAL:**
 - a. Tenders are to be dropped in the tender box provided for the purpose at the office of Khulna Shipyard Ltd., Khulna. **Moreover email offer will not be accepted.**

b. Tender number and opening date as above should be written on the envelope. The envelope containing quotation should be sealed and addressed as follows:-

- i. CONSIGNEE : THE MANAGING DIRECTOR
KHULNA SHIPYARD LIMITED
BANGLADESH NAVY
KHULNA – 9201, BANGLADESH
BIN: 000400834-0801
- ii. NOTIFYING PARTY : COMMANDING OFFICER
NAVAL STORES DEPOT,
NEW MOORING, CHATTOGRAM, BANGLADESH.
BIN: 002349278-0503

Tender number and opening date as above should be written on the envelope.

c. Tender may be put into the Tender Box kept for this purpose at the above address, but care must be taken to ensure that it reaches this office on the date and time fixed. Late Tenders will not be considered. Suppliers may also post the tenders to the **MANAGING DIRECTOR, KHULNA SHIPYARD LIMITED, BANGLADESH NAVY, KHULNA-9201, BANGLADESH**, so, as to reach him on due date and time. No responsibility will be accepted by buyer for late receipt.

d. The Manufacturers / Principal Suppliers may quote in their own letter head, but it is essential that the tender schedule is also completed and returned, along with original money receipt to the buyer. If the schedule is not accordingly returned the quotation may not be considered

e. Tenderers may quote price Bangladesh Taka/ US Dollar / in any International trading currency.

f. Tenderers should be confirmed their credit report issued from Tenderers banks and this credit report should be enclosed in the original Tender / quotation otherwise LC opening bank should be arranged to collect this credit report and necessary cost in this respect will be realized from the supplier during LC opening.

g. Tenders should enclose with the quotation the Original Proforma Invoice of their Principal and the Proforma should be based on CFR.

h. Quotation should be strictly in accordance with the following:

- (1) Accounting unit prescribed in the Tender enquiry.
- (2) Terms of delivery and place of delivery as specified in the Tender enquiry.

i. The name of the manufacturers, principal suppliers and country/countries of origin with port of shipment proposed should invariably be indicated.

j. Tenderers must submit with the quotation the Original Proforma Invoice of their Principals and the Proforma Invoice shall clearly indicate detail technical specification, the percentage of commission, if any, included in Material Price for the local agent. Commission payable to the local agent by the foreign supplier will be deducted and paid to local agent in equivalent Local currency at the exchange rate on the purchase order date (bank BC selling rate).

k. No claims on the ground of typographical errors in calculating prices would be entertained later and the Tendering firms would be asked under points of penalty and disciplinary action to supply at price they have originally quoted.

l. Supplier must quote the offer as per schedule given in Annex A's list/table as package wise to this document and incomplete or partial offer of any package may be treated as non-complied/ non-responsive.

m. KSY reserve the right to purchase partially or full quantity of the quoted goods.

n. Local Agent/ supplier should also submit along with the tender valid Indenting agent registration certificate issued by the Bangladesh Indenting Agent Association (BIAA), Trade license, and TIN certificate. In absence of original certificate attested Photostat copy by first class officer may serve.

13. **CONTRACT**. The terms and conditions of the Tender document shall form an integral part of the contract/purchase order document. The Tenderer is requested to check this set of Tender documents in order to ensure proper compliance and the "Form of Acknowledgement" along with the "Certificate as to **Corporate Principal**", where applicable, duly filled in be returned along with the **Tender**.

14. **BID LANGUAGE**. The bid's, all correspondences and documents relating thereto exchanged between the bidders and the purchaser shall be written in English Language.

15. **TERMS OF PAYMENT:**

i. LC for full purchase amount will be opened by Khulna Shipyard Limited in favour of the principal supplier under the following payment terms where the **LC commission charge 0.30% (per quarter) of the total LC Value equivalent of BDT taka** including related VAT & others will be borne by foreign principal/ local agent (supplier) at LC opening that will be included of quotation.

a. **80%** of total CFR value will be paid on delivery of the items described under the scope of supply and on production of following clean shipping documents :

- (1) Complete set of original 'Clean on Board' Bill of Lading (Master Bill)/ mentioning the amount of freight on Bill of Lading,
- (2) Supplier's invoice signed in ink,
- (3) Certificate of standard test,
- (4) Fax/E-mail/Swift advice for insurance cover,
- (5) Certificate of origin,
- (6) Authorization certificate,
- (7) Certificate showing that the material has been shipped in a non-Israel vessel,
- (8) Undertaking regarding supply/ re-placement of short supplied and defective materials on free of cost demanded by the buyer.

b. Remaining **20%** of LC amount will be paid after receiving the material at KSY site with satisfactory acceptance that will be generated by user end & supplier representative or satisfactory Material Quality Inspection note that will be generated by KSY. Otherwise KSY shall have the right to forfeit the remaining 20% payment.

ii. Bank charges in Bangladesh for opening of LC shall be borne by the supplier. Any Bank charges for revalidation or amendment of the LC on the request of the supplier shall be exclusively borne by the beneficiaries and not by the Khulna Shipyard Ltd. Confirmation of letter of credit by foreign bank will not be entertained or if applicable that will be borne by the supplier.

iii. Bank charges for withdrawal against LC established by buyer will be borne by the beneficiary/ Supplier.

iv. The beneficiary/ Supplier will have to bear the following foreign bank charges: -

- (1) Negotiation commission.
- (2) Payment & Discrepancy commission.
- (3) Postage & Cable charges.
- (4) LC confirmation charges / additional (ADD) confirmation charges.
- (5) LC amendment commission/ LC extension commission.
- (6) LC cancellation charges.
- (7) LC confirmation charges (if any).

16. **PACKING AND MARKING:**

a. The seller shall be responsible for proper sea worthy packing and marking the goods for shipment by rail, road and sea. Goods shall be assembled to the maximum extent practical prior to shipment. Goods shall be packed so as to withstand usually rough handling and ensure delivery without loss or damage.

b. Each packet/ Bundle must have the following information printed in BOLD LETTERS on the outside

- (1) Name of the consignee and Destination,
- (2) Letter of credit number,
- (3) Gross and net weight,
- (4) Serial number of Bundle and,
- (5) Name and address of the seller,

N.B:- Non-negotiable copies of shipping documents will be sent in advance by email (oiocomf.ksy@gmail.com) before getting original and original shipping documents will be delivered in the LC opening Bank before 10 days arrival of ship at port. In the event of any delay in dispatch of the shipping documents or above state or their incorrect preparation or submission of wrong IGM, the supplier shall be responsible for any demurrage, extra handling charges or any other expense arising there from.

17. **QUANTITY:**

- a. Check of quality, quantity and condition of goods at the discharging port/ place i.e. chattogram will be carried out by the buyer if required, it will be at their cost.
- b. The quotation must be based on firm prices for individual items as per Annex-A. Average prices should not be quoted.
- c. The approximate weight of each Packet/ Bundle should be shown separately on quotation.
- d. The Khulna Shipyard Ltd., reserves the right of awarding contracts for individual technically acceptable items on the lowest acceptable prices. Firms quoting on an average basis for joint items do so at their own risk. The Khulna Shipyard Ltd., will not make any allowances for this action of the Tendering firms when awarding contracts for individual items which if and when refused by Tendering firms any lead to disciplinary action.

SPECIAL CLAUSES

18. **JOINT INSPECTION:** The Materials/items will be checked (quality, quantity, condition of goods) and mustered by supplier representative and KSY representative after arrival the items at KSY.

If any defective or 2nd hand item is found during the joint mustering at KSY, the defective or 2nd hand item will not be acceptable. Supplier shall undertake the full responsibility to supply and replace the defective or 2nd hand item by new one.

19. **LATE SHIPMENT/DELIVERY AND LIQUIDATED DAMAGES:** Late shipment/ delivery will not be accepted. However with reasonable cause, if KSY agrees for late Shipment/ Delivery, in that case followings will be imposed:

- a. On genuine reasons / grounds beyond the control of the suppliers / contractor, extension of delivery period may, however, be granted by the Purchase Approving Authority (KSY) without realization of any liquidated damage provided validity of their performance guarantee covers such extension.
- b. Liquidity damage equivalent to half percent per week or part thereof on the value of the undelivered goods will be realized from the supplier/contractor.
- c. In specific cases, where delay in shipment is likely to cause dislocation of work or financial loss, or related to the delivery of ships/ handed over of construction work, a higher rate of liquidity damage from 05% to 10% (as decided by KSY) per week or part thereof on the value of the undelivered goods will be charged.
- d. In case of delay in shipment beyond approved timeframe as stated in Clause no. 8, this schedule will be treated as cancelled and the full Performance Guarantee shall also be forfeited as a consequential effect.
- e. Minimum 14 days free time for container shipment at destination port must allow for each shipment.

20. **TERMINATION OF CONTRACT:**

- a. At any time during the period of this contract, the Purchaser shall have the right to cancel contract under following reasons:

- (1) If the supplier fails to supply the contracted item as per specification given in the purchase order/contract of the contracted item being rejected by the competent technical authority.
 - (2) If the supplier fails to deliver the contracted item within the date specified in the purchase order/contract or any extensions thereof.
 - (3) In the event of breach of any contractual obligations given in the terms and conditions of the purchase order/contract.
 - b. Moreover, in case of termination of contract as under this clause the Purchaser shall have the right to decide taking appropriate punitive action against the supplier as deemed suitable by the KSY authority.
 - c. Should the suppliers be adjudged insolvent, the buyer shall have the power to terminate the contract.
 - d. Decisions under this clause SHALL not be subject to arbitration.
21. **INSURANCE.** After shipment to the destination upto buyers premises (Khulna Shipyard Ltd.), marine insurance of the consignment will be arranged by buyer but considering **insurance charge 0.30% of the total LC Value equivalent of BDT** including VAT, Stamp & all related charge will be paid by foreign principal/ local agent (supplier) at LC opening. Quotation should, therefore, be included with the insurance charges.
22. **EARNEST MONEY.** All bidders must submit earnest money BDT 1,00,000.00 (One Lac) or equivalent US Dollar / in any International trading currency favoring Khulna Shipyard Ltd.(KSY). Khulna, in the form of Bank Draft / Pay Order / Bank Guarantee which will be issued by any scheduled bank of Bangladesh. In case bank guarantee is submitted, the same should remain valid for 180 days from the date of opening of the Tender. Neither any inland cheque for a cheque /guarantee issue by Bank of foreign countries will be entertained. Earnest money is liable to forfeiture if the bidder for any reason whatsoever withdraws or modifies its Tender; or violates the terms after opening of the Tender and before expiry of the validity of the Tender; or fails to furnish the required performance bond within the stipulated time after issuance of letter of intent. Bid bond/earnest money of unsuccessful Tenderer would be returned once a decision of the Tender is made. A Tender not accompanied by earnest money/bid bond would be rejected as non-responsive. Bid bond of the successful bidder shall be returned after furnishing performance bond. A specimen copy of bid bond is enclosed herewith as Annex-C.
23. **PERFORMANCE BOND.** The successful Tenderer will be required to furnish performance bond to the extent 5% of the total CFR value either in the form of pay order or bank guarantee from any scheduled bank of Bangladesh for the satisfactory execution of the order. The submitted bank guarantee must remain valid 06 (Six) months beyond the day of shipment. Performance bond must be furnished within 10 (Ten) day's from the date of letter of intent. It will be liable for forfeiture if the supplier fails to supply the goods within the specified time or commits any breach of contract. The Performance Guarantee will be released after satisfactory inspection (quantity, quality and weight), test-trail and acceptance by Khulna Shipyard Limited Quality Control committee and in presence of supplier's representative at Khulna Shipyard Premises. The buyer shall have the right to forfeit the performance guarantee for failure of the supplier in fulfilling the terms and conditions of this contract partially or wholly, besides taking any other action against the supplier that may be warranted. A specimen copy of performance bond is enclosed herewith as Annex-D.
24. **WARRANTY.** Supplier shall undertake the full responsibility to rectify any defect of supplied items free of charges under warranty period. To rectify/ replace any such defective item, provided that the defects are appeared / discovered during the period of 12 months after acceptance. Warranty repair/ replacement shall be accomplished within 03 months of notification of the relevant defect. Otherwise warranty will be extended by non-operational period of the item.

25. **GUARANTEE FOR WARRANTY.** Supplier shall furnish to KSY a guarantee for warranty for an amount equivalent to 05% (five percent) of the total contract price from any scheduled bank situated in Bangladesh. The buyer shall have the right to forfeit the performance guarantee for failure of the supplier in fulfilling the terms and conditions of this contract partially or wholly, besides taking any other action against the supplier that may be warranted. It will be released after completion of warranty period
26. **INDEMNITY.** The supplier has to indemnify the buyer against all claims which may be made in respect of the stores for infringement of any right protected by patent, registration of design etc and shall take all risk of accidents or damage which may cause or failure of the supply from whatever cause arising and take entire responsibility for the sufficiency of the means used by the supplier for the fulfillment of the contract.
27. **INCREASE OR DECREASE IN QUANTITY OF CONTRACT.** The buyer reserves the right at the time of award of contract, with no adjustment in unit price (bid), to increase or decrease the quantity Tendered. The buyer also reserves the right to accept or reject any or all the Tenders or to waive any informality, minor deviation or omission.
- Award would be made to the bidder whose responsive bid determined to be the lowest evaluated bid and who meets the specification and other terms and conditions of the Tender document.
28. **COMPLIANCE STATEMENT.** A compliance statement considering all clauses of Technical and Financial (as per ANNEX-A including relevant information a tabular format) fulfilling all the given requirement of the specifications is to be submitted for evaluation of the Tenders. Stating mere 'Yes', 'No' "Complied" will not suffice and detailed description/ information as required is to be given. An incomplete compliance statement may attribute to cancellation of the Tender. If any clause of this specification does not commensurate with tender, the deviation has to be spelt out clearly and reasonably. **Information/ document/ certificate/ data shared by the bidder must be genuine which can be cross-checked through authentic website information.** Before giving purchase order, KSY may ask any type of technical, financial, administrative queries to the tender. Tender will provide all information/ document/ data to comply KSY's requirement immediately.
29. **DISQUALIFICATION OF TENDER:**
- a. Any addition or alteration to the specification or rate quoted by a firm in the Tender after not only be ignored but should also render the firms liable to disqualification.
 - b. Any Tender received late and not strictly confirming to the terms and conditions prescribed in this Tender documents not accompanied with the requisite earnest money and the money receipt of Tender price and registration certificate may be liable for rejection.
30. **TAXES, DUTIES AND DELAY DOCUMENTS:**
- a) All Customs duties, taxes and other charges (C&F charge, port charge etc. except dumping charge (Cargo/ Barge/ Truck/ Trailer loaded from mother vessel)) levied on the goods by authorities in buyer's country shall be borne by the buyer and shall not be included in the bid price.
 - b) Charges of such nature in seller's country or in any country other than the buyer's country shall be borne by the sellers.
 - c) In the event of any delay in dispatch of the shipping documents or their incorrect preparation, the supplier shall be responsible for any demurrage, extra handling charges or any other expense arising there from.
31. **BREACH OF CONTRACT.** On any breach of contract by the seller, the buyer may recover the actual loss suffered and the amount may be realized by encashing the performance guarantee.

32. **APPLICABLE LAW.** The purchase order shall be interpreted in accordance with the law of the buyer's country.
33. **FORCE MAJEURE.** Should any circumstance arise preventing either contracting party from wholly or partly carrying its obligations under the present contract, namely Natural Calamity, Strike, Riots, firm acts and elements of War, Military Operation of any, Nature, Block ads and any unforeseen event which is beyond human control the period stipulated for the performance of this contract shall be extended or as long as the circumstances prevail. Provided that in the event of these circumstances continuing for more than thirty days, either party shall have to refuse to fulfill its obligations under this contract and in such case neither party shall be entitled to indemnification of any losses it may sustain.
- The party unable to carry out its obligation under this contract shall immediately advise the other party of the commencement and the termination of circumstances preventing the performance of the contract. A certificate issued by the Chamber of Commerce of the sellers of the buyers' country shall be sufficient proof of the existence and duration of such circumstances.
34. **ARBITRATION.** In the event of any dispute or difference arising out of the terms and conditions as specified above, the same shall be referred to the award of a sole. Arbitrator appointed by the parties on mutual agreement, failing which it shall be referred to the award of the two Arbitrators, from each side (buyer and seller), or in the case of disagreement between the two arbitrators to the award of an umpire to be appointed by the two arbitrator in writing before proceeded on the reference of the decision of the sole arbitrator or of the two arbitrator in the writing before proceeded on the reference of the decision of the sole arbitrator or of the two Arbitrators or the umpire as the case may be shall be final, conclusive and binding upon the parties. The provisions of the arbitration Act 2001 and rules there under and any statutory modification there of shall deem to apply to the said arbitration. The place of arbitration shall be Dhaka, Bangladesh any statutory modification enactment thereof for the time being in force in Bangladesh shall apply to the arbitration proceeding.

The above terms and conditions are not absolute, the Khulna Shipyard Ltd., Bangladesh Navy, reserves the right to incorporate additional terms and conditions, if necessary. The Khulna Shipyard Ltd., BN also is not bound to accept the lowest Tender and reserves the right to cancel the tender, reject any or all Tenders without assigning any reason whatsoever.

Yours faithfully



SK. SHAH MOSIUR RAHOMAN
Manager Purchase
For Managing Director

Enclosure:

- | | | |
|----|---|------------|
| A. | Format of Price Schedule (Annex - A) | - 01 Page |
| B. | Technical Specification of Fixed CO ₂ System (Annex – B) | - 12 Pages |
| C. | Format of Bank Guarantee in Lieu of Earnest Money (Annex-C) | - 01 Page |
| D. | Format of Performance Bank Guarantee (Annex-D) | - 01 Page |



KHULNA SHIPYARD LTD

BANGLADESH NAVY, KHULNA

PHONE NO: PABX 02-477720003

E-mail: oiocomf.ksy@gmail.com, Web: www.khulnashipyard.com

ANNEX-A

SCHEDULE TO TENDER ENQUIRY NO: BABE(F)–632/LCT/Fixed CO₂ System/25-26

Date: 23 May 2026

TENDER OPENING DATE: 22 June 2026 AT 1130 AM HOURS

The Complete Item:

Sr No	DESCRIPTION OF ITEM (As per Annex- B)	Quantity	Material Price	Freight (Itemize)	Total Price
1	Fixed CO ₂ System	03 (Three) Complete sets with All Necessary Accessories			

N.B:

- i. Supplier must quote the offer according to the above list/ table as package wise and incomplete or partial offer of any package may be treated as non-complied/ non-responsive.**
- ii. Supplier must follow commercial & Financial Terms that are integrated at schedule.**
- iii. As per schedule given in Annex A's list/ table as package wise, the financial offer must be quoted identically.**

Yours quotation No.

Signature, Name and address of the tenderer:

Date:

Terms of delivery:

Telephone No:

TECHNICAL SPECIFICATION OF FIXED CO₂ SYSTEM

1. Name: Fixed CO₂ Fire Extinguishing System (Marine Use) with all necessary accessories.
2. Purpose: The fixed CO₂ system will be used to extinguish fires in the engine room, emergency generator room, battery room and paint locker room of the vessel through total flooding.
3. Brand: To be mentioned
4. Country of origin: To be mentioned
5. Country and address with website of Manufacturer: To be mentioned
6. Scope of Supply:

Ser	Description	Quantity (Set)
(1)	<p>a. Codes and Standards: Fixed CO₂ system shall comply with following:</p> <ul style="list-style-type: none"> (a) SOLAS Chapter II-2, Regulation 10 (b) IMO Fire Safety Systems (FSS) Code, Chapter 5 (c) MSC/Circ.848 (d) Classification Society Rules (from any IACS member) <p>b. System type: High-pressure CO₂ system</p> <p>c. Nominal Pressure: To be mentioned</p> <p>d. Operation:</p> <ul style="list-style-type: none"> (a) Forward Engine Room & Aft Engine Room: Manual release (Local and Remote) (b) Emergency Genset Room: Manual release (Remote) (c) Paint locker Room: Manual release (Remote) (d) Battery Room: Manual release (Remote) (e) Arrangement Drawing of the CO₂ System (Drawing No. 534-555-03, Rev-0), and CO₂ Fire Extinguisher System (Drawing No. 534-400-04) are attached for references. <p>e. Distribution: Via fixed piping network to nozzles</p> <p>f. Gas Release time: 85% of the gas can be discharged into the space within 2 min (To be mentioned)</p> <p>g. CO₂ cylinder details are below:</p> <ul style="list-style-type: none"> (a) CO₂ cylinder Bank: 12 Cylinders x 45 Kg each cylinder (For Fwd & Aft Engine Room) (Individual price of each cylinder to be quoted) (b) CO₂ cylinder Bank: 1 Cylinder x 34 Kg (For Emergency Genset Room) (c) CO₂ cylinder Bank: 2 Cylinders x 20 Kg each cylinder (For battery & Paint locker room) <p>h. Motor operated valve: 5 in nos. for each ship set</p>	3 Sets

Ser	Description	Quantity (Set)
	<p>i. CO₂ Nozzle: 17 in nos. for each ship set (To be confirmed by vendor)</p> <p>j. Accessories: All accessories are to be supplied with item for smooth operation to the system. Details to be mentioned.</p> <p>k. Bill of quantity (BOQ) of all pipe (Size, material's type and grade) with all pipe fittings, valves, clamps, etc for smooth operation of the CO₂ system as per approved design.: To be provided. General Arrangement of ship (534-601-01 Rev4) has been attached for BoQ.</p> <p>l. All material as per given Bill of quantity (BOQ) for all pipe (Size, material's type and length) with all pipe fittings, valves, clamps, etc for operation of the CO₂ system.: To be supplied. Approximate length of pipe for each ship: 110 meter (Pipe Size, material's type and length to be confirmed by Supplier)</p>	
(2)	<p>a. Electrical Cable: Shipyard Supply (As per manufacturer recommendation)</p> <p>b. Control panel: As required including light signal, fire alarm, CO₂ Horn, Operating System etc. CO₂ fire extinguisher system (Drawing No. 534-400-04) for your references.</p> <p>c. Power Supply: 24V DC</p> <p>d. Release Mechanism</p> <p>(a) Electric actuation</p> <p>(b) Two-step release system:</p> <ul style="list-style-type: none"> • Alarm activation • CO₂ discharge <p>e. Control Stations</p> <p>(a) Located:</p> <ul style="list-style-type: none"> • Outside protected space • At a safe and accessible location <p>(b) Clearly marked and protected against accidental operation</p> <p>f. Pressure Switch with NO & NC contract point, Qty. 01 nos. for each ship set.</p> <p>g. CO₂ Terminal Box/ Main Control panel, IP 65, 24V DC, Qty. 01 nos for each ship set.</p> <p>h. CO₂ release Cabinet, IP 65, 24V DC, Qty. 05 nos. for each ship set.</p> <p>i. Alarm Siren, IS-mA1 T 37, Qty. 06 nos. for each ship set.</p> <p>j. Remote Control Panel, Qty. 04 nos. for each ship set.</p>	

Ser	Description	Quantity (Set)
	<p>k. Communication/ Signal: As per drawing no. 534-400-04, there should be signal sharing facilities between MCMS and Emergency Stop in case of Fire Control Cabinet from CO₂ Terminal Box.</p> <p>l. Safety Feature: For safety reason, a siren alarm shall be activated immediately upon opening the door of each release station and each remote control panel. This requirement is essential to ensure operational safety and immediate awareness during unauthorized or emergency access. Each remote control panel should have a key for authorization.</p> <p>m. Others (if required): To be mentioned</p>	
(3)	<p>Required Documents:</p> <p>a. Based on the Arrangement Drawing of the CO₂ System (Drawing No. 534-555-03, Rev-0), and CO₂ Fire Extinguisher System (Drawing No. 534-400-04), the supplier shall prepare the complete design of the Fixed CO₂ System.</p> <p>Furthermore, the supplier shall provide all necessary information, drawings (piping, electrical, etc) and documents required for approval of the Fixed CO₂ System (Drawing No. 534-555-03, Rev-0) by LRS. KSY will submit the said drawing to LRS for approval.</p> <p>b. Following information must be included in the provided drawing and documents.</p> <ul style="list-style-type: none"> (a) Type Approval Certificate for the complete system (b) Plan of the system, including the details on the means of control of the system and their location (c) Details of the alarm system (audible and visual), including pre-discharge warning arrangements (d) Topographical arrangement showing the positioning of discharge nozzles (e) Copies of certification for all nozzles (f) An installation, operation and maintenance manuals <p>c. Additionally, the supplier shall provide clarification and supporting details on the following:</p> <ul style="list-style-type: none"> (a) Provision of means for checking the quantity of CO₂ in the storage cylinders/containers (b) Confirmation and supporting calculations demonstrating that, for machinery spaces, the fixed piping system is capable of discharging at least 85% of the total CO₂ within 2 minutes, in compliance with IMO FSS Code requirements 	
(4)	Certificate: Type approved certificate for fixed CO ₂ system from any IACS member is to be provided with the offer and delivery.	
(5)	Test-Trial and commissioning: The installation, test-trial and commissions will be done by supplier representative.	
(6)	Warranty: Minimum 12 months from commissioning of each vessel.	

PRINCIPAL PARTICULARS:

LENGTH OVERALL: 74.50 m
LENGTH WATERLINE: 72.80 m
BREADTH (MAXIMUM): 13.00 m
BREADTH WATERLINE: 13.00 m
DESIGN DRAFT (PP): 1.00 m
DESIGN DRAFT (AP): 2.20 m

POWER:
PROPULSION: 2 x 2240 kW
AUXILIARY: 2 x 272 kW
EMERGENCY: 1 x 129 kW

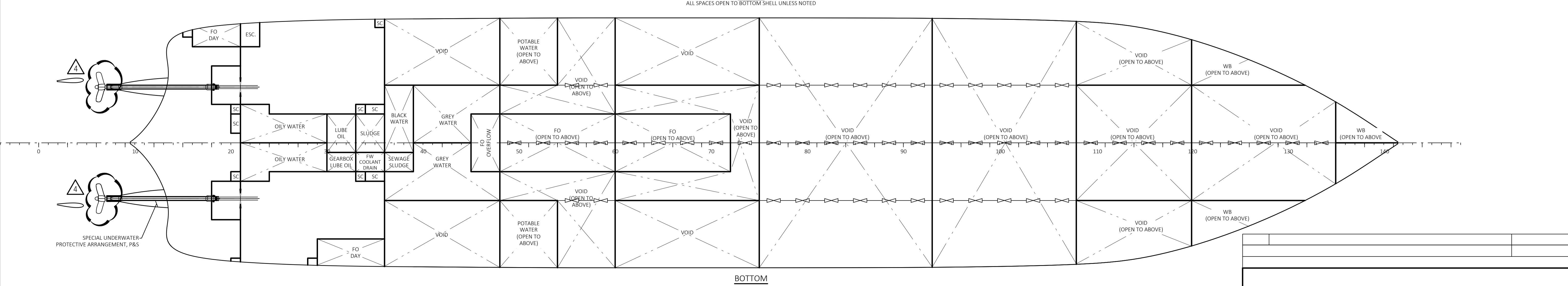
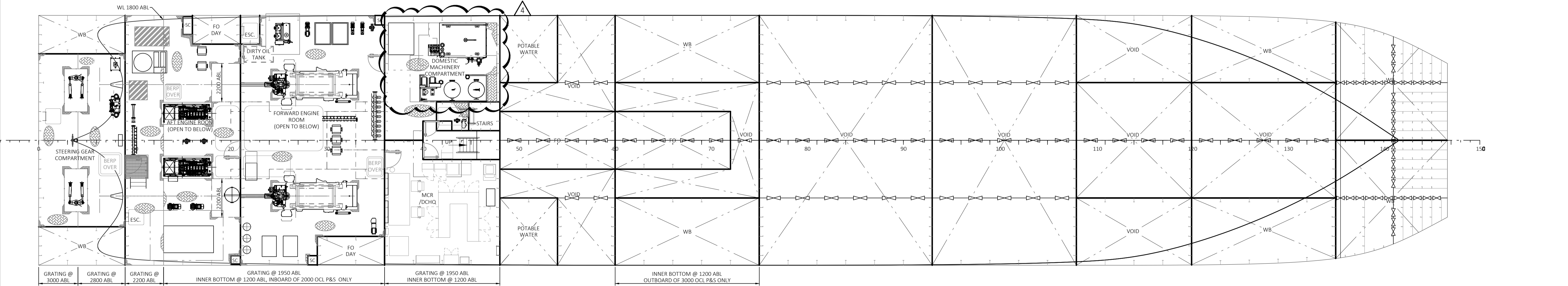
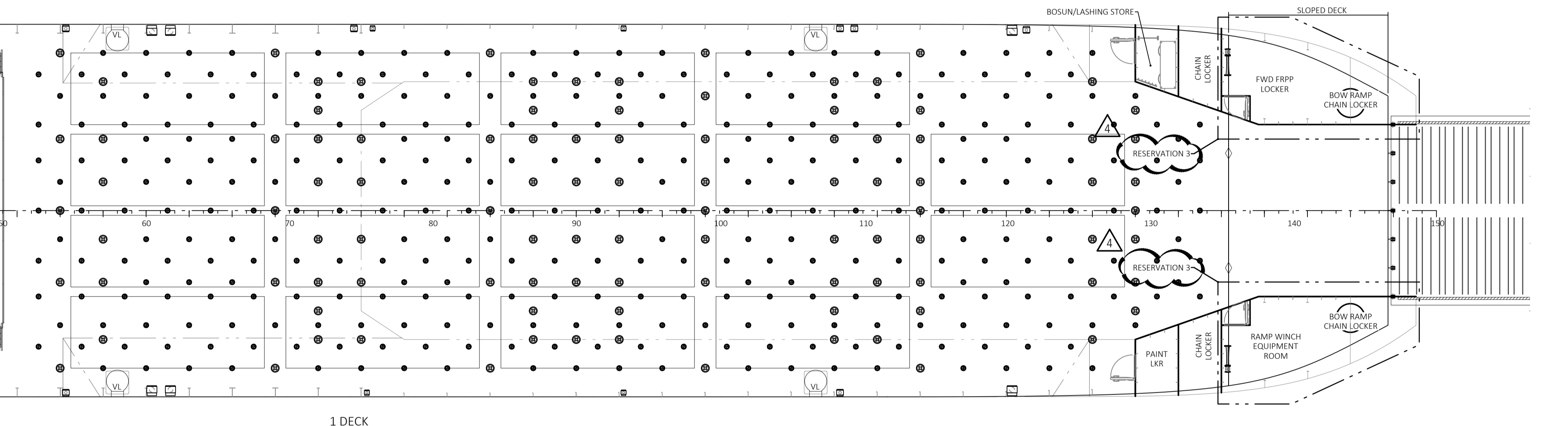
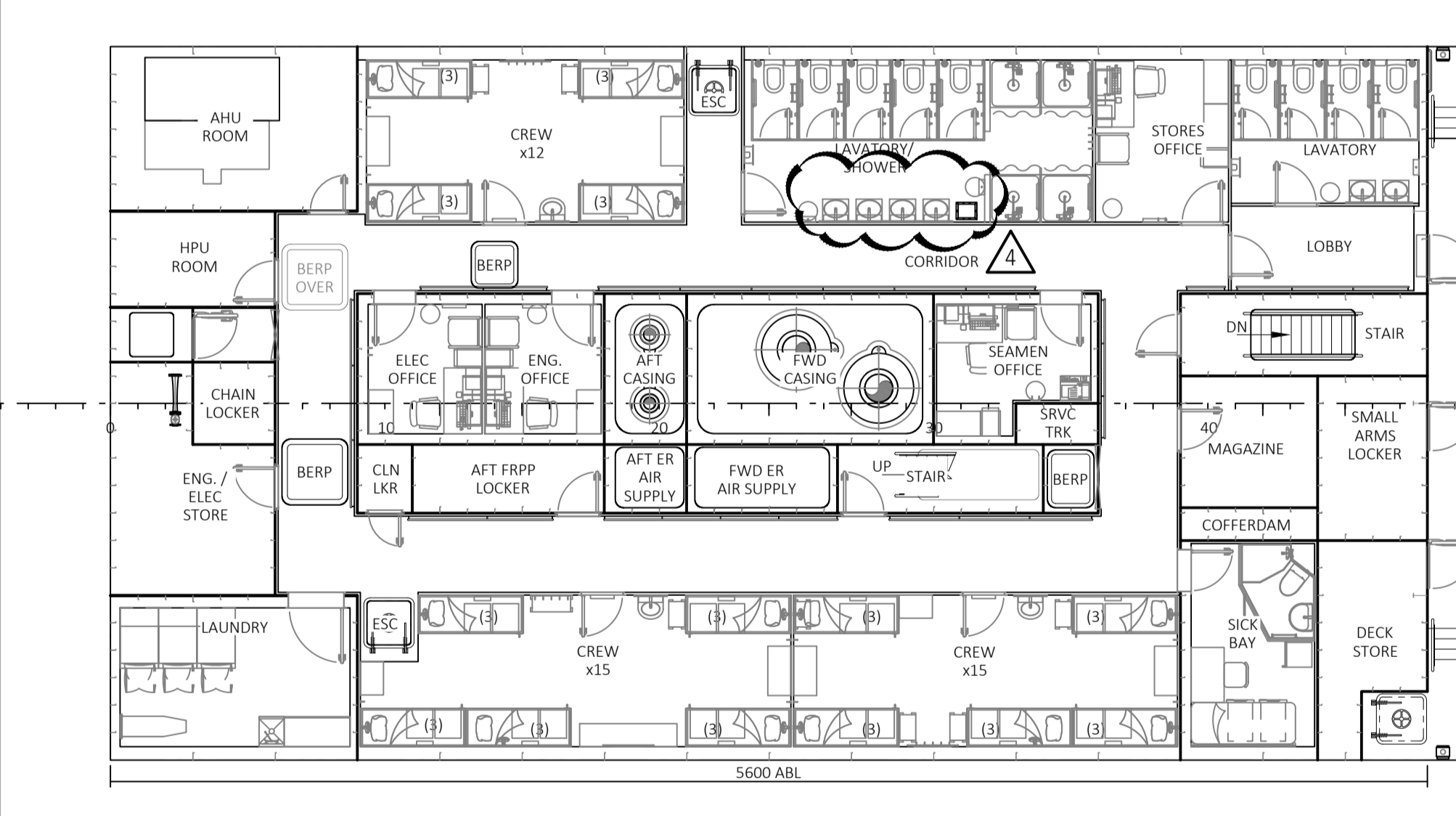
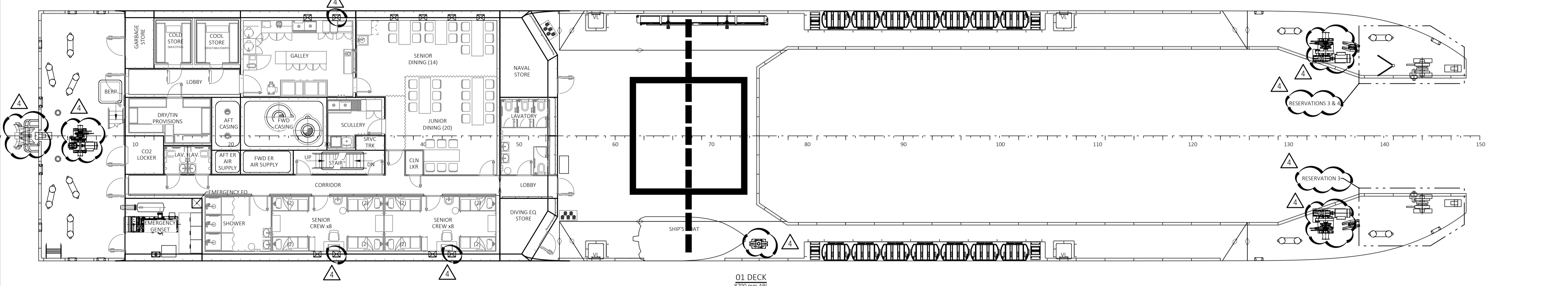
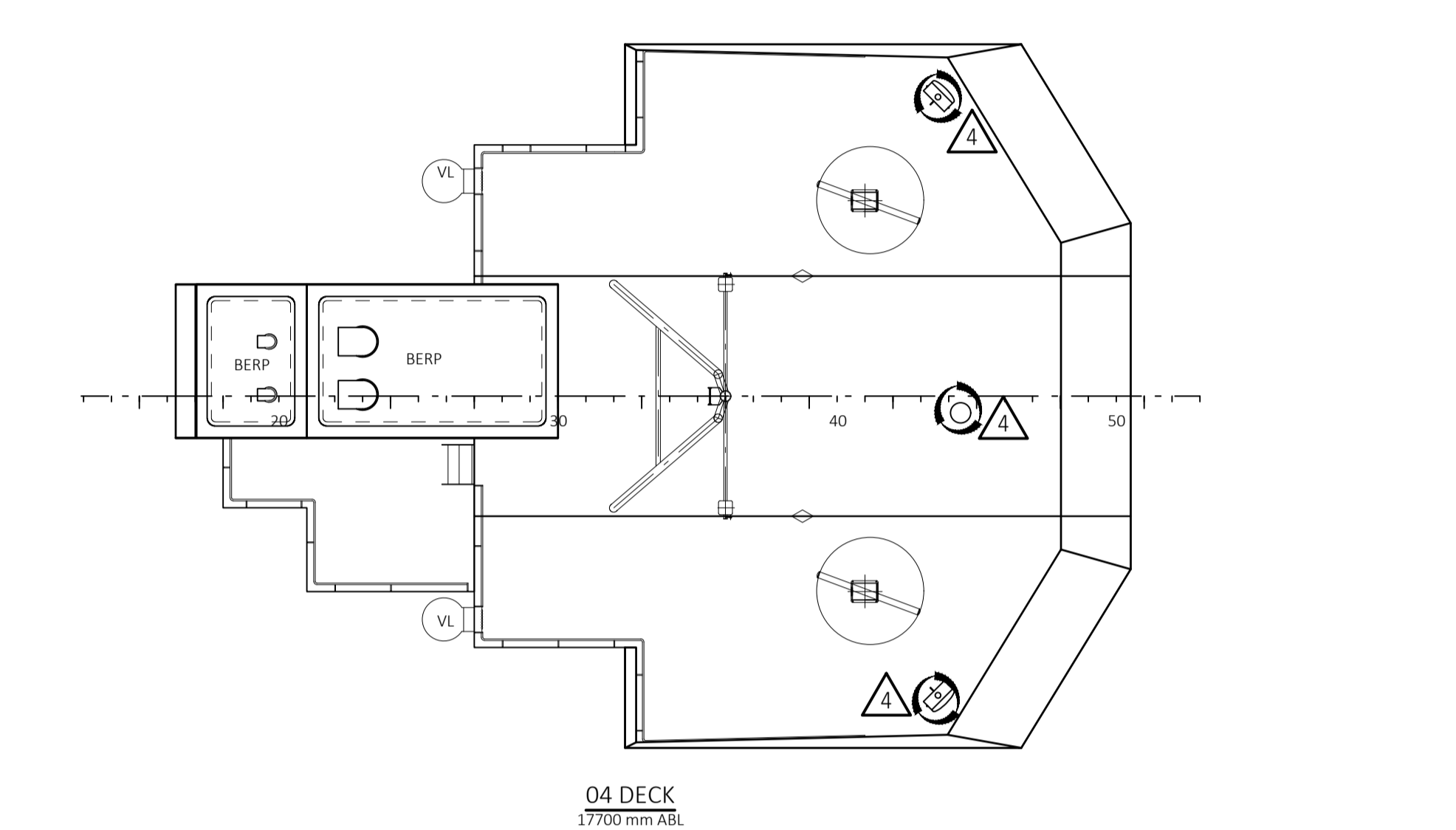
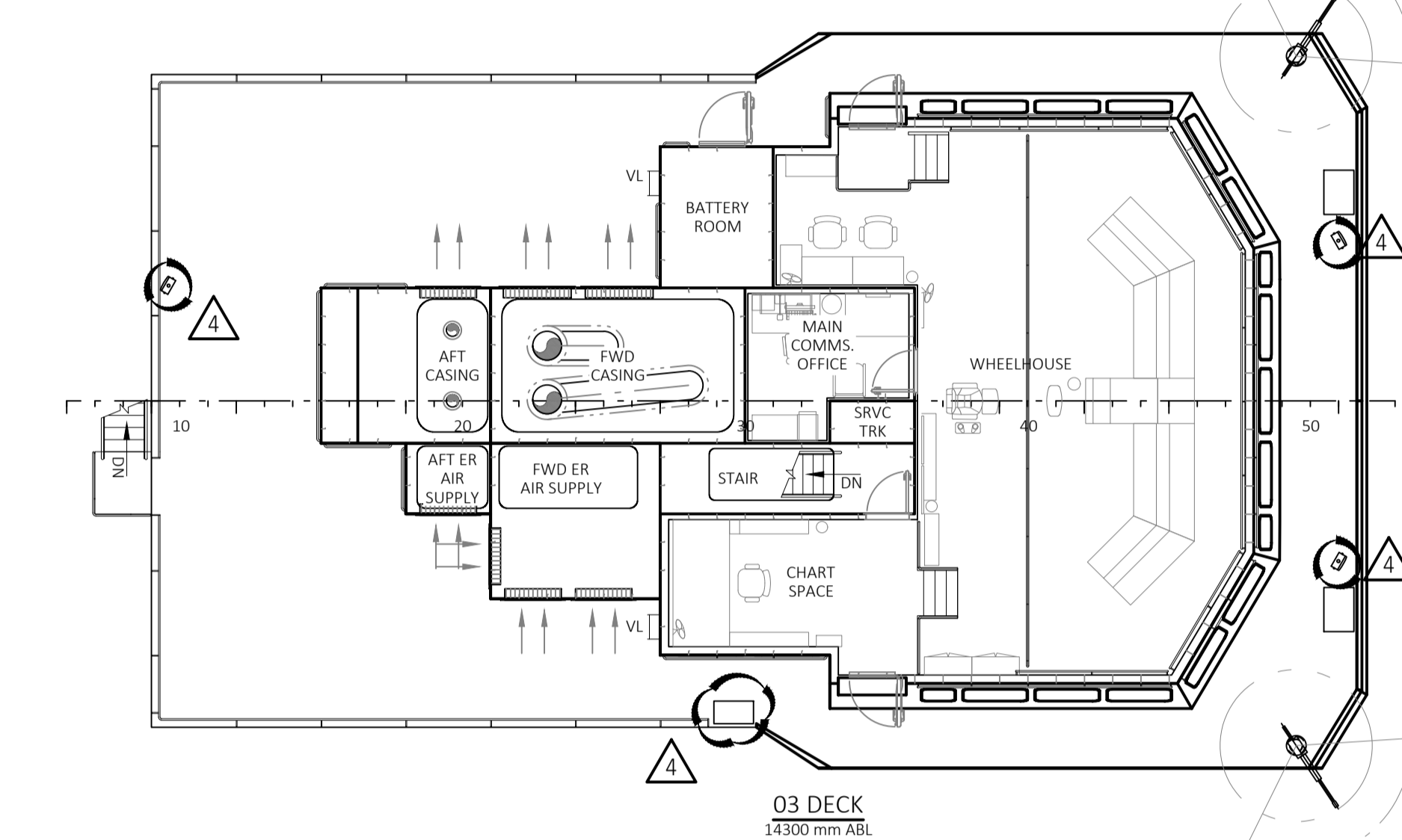
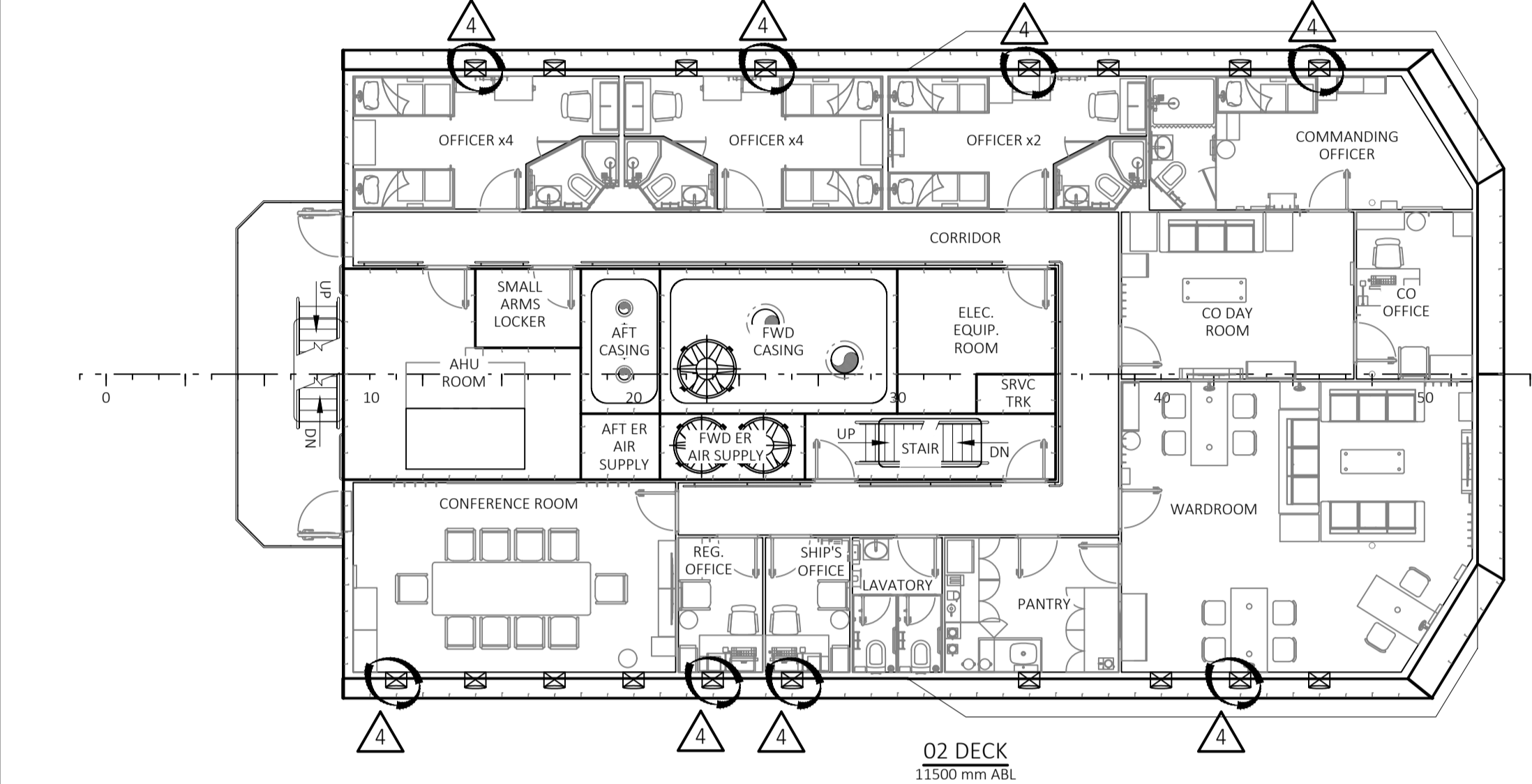
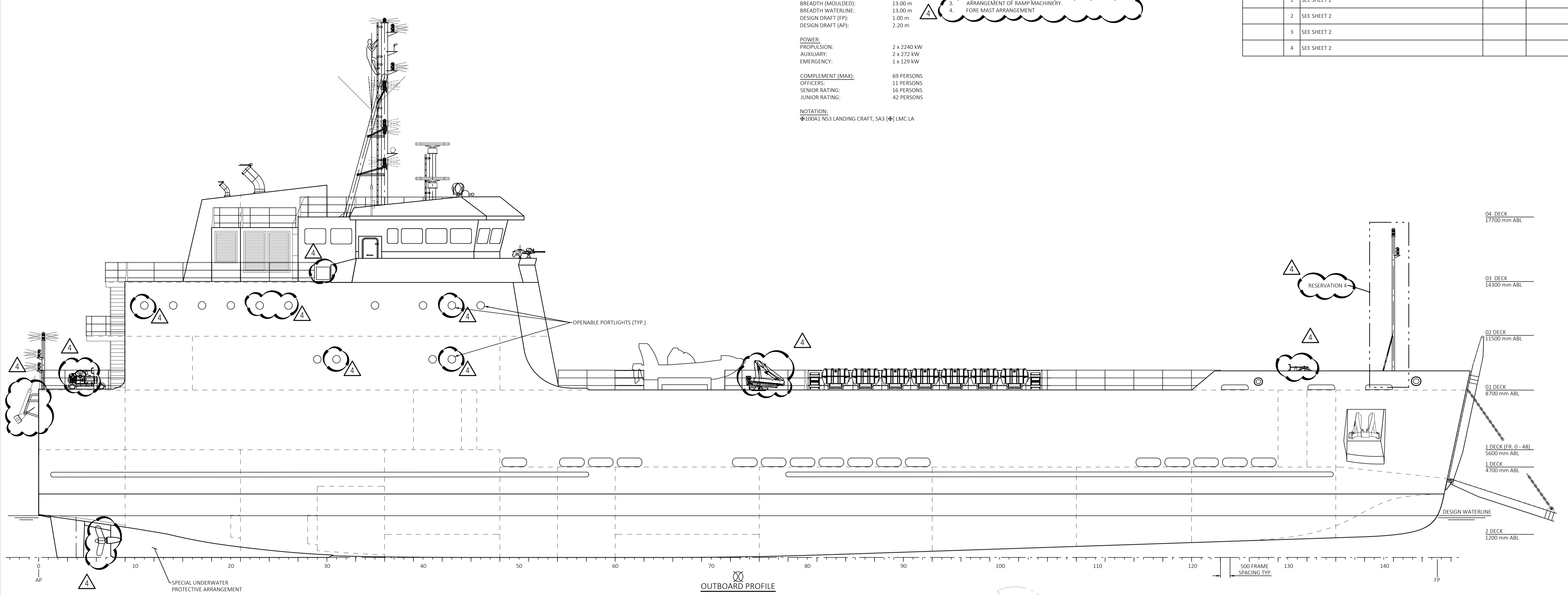
COMPLEMENT (MAX): 69 PERSONS
OFFICERS: 11 PERSONS
SENIOR RATING: 16 PERSONS
JUNIOR RATING: 42 PERSONS

NOTATION:
① 100A1 T63 LANDING CRAFT, SAJ ② LMC LA

RESERVATIONS:

1. PARTIAL SUBJECT TO CHANGE BASED ON DESIGN DEVELOPMENT
2. ARRANGEMENT OF BEAM MACHINERY
3. FORE MAST ARRANGEMENT

REVISIONS				
ZONE	REV	DESCRIPTION	DRAWN	CHECKED
	0	INITIAL ISSUE FOR CLIENT REVIEW	JRH	23 JUN 22
	1	SEE SHEET 2		
	2	SEE SHEET 2		
	3	SEE SHEET 2		
	4	SEE SHEET 2		



REVISONS		DESCRIPTION	DRAWN	CHECKED
		HULL FORM REVISED		
		FRAME SPACING CHANGED FROM 400 mm TO 500 mm		
		DECKS RENAMED PER BN 2170 STANDARD		
1	1-C1, 1-A6	MAIN MAST REVISED		
	1-B2, 1-C6	CASING ARRANGEMENT REVISED FOLLOWING ENGINE ROOM SUBDIVISION		
	1-A6, 1-C9	03 DECK LIFERAFTS REMOVED		
	1-C11	AFT BULWARKS REMOVED		
	1-A4, 1-A7, 1-A7	ARMAMENT RELOCATED FROM 01 DECK		
	1-E3	BRIDGE WINDOWS REVISED TO UTILIZE 500 WINDOW SIZES		
	1-H6, 1-H7	DECKHOUSE FRONT GEOMETRY REVISED		
	1-F4	REMOVABLE RAILINGS ADDED		
	1-C4, 1-C11	1 DECK AFT OF FRAME 48 RAISED TO 5600 ABL		
	1-B5	PROPELLERS/SEGS ARRANGEMENT REVISED		
	1-G1	PRINCIPAL PARTICULARS REVISED		
2	1-H4, 1-H8, 1-H9	01 DECK WALKWAY ADDED, LIFERAFTS CHANGED TO SINGLE STACK		
	1-I3, 1-I8	VERTICAL LADDERS ADDED		
	1-B6	FORWARD MAST REVISED		
	1-B6	AHU ROOM RELOCATED FROM 1 DECK		
	1-B6	CREW SMALL ARMS LOCKER ADDED		
	1-D6	ELECTRICAL EQUIPMENT ROOM ADDED		
	1-G6, 1-G6, 1-C9, 1-C11	MAIN STARTOWER MOVED FROM PORT TO STARBOARD		
	1-C7	REGULATING OFFICE ADDED		
	1-C7	SHIP'S OFFICE RELOCATED FROM 01 DECK		
	1-G6, 1-G6, 1-D8, 1-D11	SERVICE TRUNK ADDED		
	1-E6	CO DAY ROOM SUBDIVIDED INTO DAY ROOM AND OFFICE		
	1-G6	BATTERY ROOM ENLARGED AND RELOCATED		
	1-G8	MAIN COMMUNICATIONS OFFICE RELOCATED		
	1-H6	WHEELHOUSE FRONT GEOMETRY REVISED		
	1-G5, 1-G7	BRIDGE WINGS ADDED		
	1-K5, 1-K7	CAMBER ADDED TO 04 DECK		
	1-A8	AFT ANCHORING/MOORING/TOWING ARRANGEMENT REVISED		
	1-B8	GARBAGE STORE ADDED		
	1-B8	DRY/TIN PROVISIONS RELOCATED		
3	1-E11, 1-B9	DECK STORE ADDED; CO2 LOCKER RELOCATED TO 01 DECK	ACN 15 DEC 22	MAM 15 DEC 22
	1-B9	LAVATOIRES ADDED		
	1-C6	SCULLERY ADDED		
	1-D9	SENIOR CREW CABINS REARRANGED WITH DOUBLE BERTHS ONLY		
	1-D9	SENIOR/JUNIOR DINING REARRANGED WITH TEMPORARY PARTITIONS, PASSTHROUGH FROM GALLEY TO SENIOR DINING ADDED		
	1-E8	LAVATORY RELOCATED		
	1-B3, 1-B10	BROWN LAUNDRY STORE ADDED, MAVAL STORE RELOCATED TO 01 DECK		
	1-I11, 1-I49	PAINT LOCKER ADDED; DIVING EQUIPMENT STORE RELOCATED TO 01 DECK		
	1-F9, 1-F7	CAMBER ADDED TO 01 DECK		
4	1-K8, 1-A9	FORWARD ANCHORING/MOORING/BOW RAMP ARRANGEMENT REVISED		
	1-A10	HPF ROOM RELOCATED		
	1-B10	AFT CHAIN LOCKER ADDED		
	1-A11	ENGINEERING/ELECTRICAL STORE RELOCATED		
	1-A11	LAUNDRY RELOCATED TO REPLACE STARBOARD AHU ROOM		
	1-B11	AFT DAMAGE CONTROL LOCKER ADDED		
	1-B10	ELECTRICAL OFFICE AND ENGINEERING OFFICE RELOCATED		
	1-C10	LAVATORY RELOCATED AND CONSOLIDATED WITH SHOWER		
	1-D10	STORES OFFICE RELOCATED		
	1-D11	SICK BAY RELOCATED		
	1-D11	MAGAZINE RELOCATED, COFFERDAMS ADDED AS NECESSARY		
	1-D2, 1-D10	STARWAY FROM 1 DECK TO 2 DECK RELOCATED		
	1-E11	TROOP SMALL ARMS LOCKER ADDED; BAG STORE REMOVED		
	1-E10	ELEVATED WALKWAY ADDED		
	1-K10	FORWARD DAMAGE CONTROL LOCKER ADDED		
	1-L11	1 DECK FORWARD GEOMETRY MODIFIED TO ACCOMMODATE VEHICLE FLOW AND WIDENED BOW RAMP		
5	1-A12, 1-A13	RUDDER/STEERING GEAR POSITIONED 350 mm OFFSET FROM SHAFT		
	1-C12, 1-C14	ENGINE ROOM SUBDIVIDED INTO FORWARD AND AFT ENGINE ROOM		
	1-B12, 1-C13	FUEL OIL DAY TANKS ADDED		
	1-D13	MOR RELOCATED		
	1-D12	DOMESTIC MACHINERY COMPARTMENT ADDED		
	1-E12, 1-E13	POTABLE WATER TANKS REVISED		
	1-E14, 1-E16	FUEL OIL TANKS RELOCATED		
	1-F12, 1-F14	BALLAST TANK ARRANGEMENT REVISED		
	1-K13, 1-F16	AUXILIARY TANKS ADDED		
	1-D14	AFT NAVIGATION MAST ADDED		
	1-A10	ESCAPE HATCH REVISED TO TRUNK WITH DOOR		
	1-A8	AFT MOORING ARRANGEMENT REVISED		
	1-B10	BERP ADDED		
	1-B10	ESCAPE TRUNK REMOVED		
6	1-B11, 1-B12	BERP REVISED; CLEAN LOCKER RELOCATED		
	1-B11, 1-B13	ESCAPE TRUNK REMOVED		
	1-B12	DAY TANK AFT BOUNDARY MOVED FWD		
	1-B15	SHACKLES ARRANGEMENT UPDATED		
	1-C13	DAY TANK AFT BOUNDARY MOVED AFT		
	1-C15	FWD ER BOTTOM TANK ARRANGEMENT REVISED		
	1-D11	HATCH HEIGHT REVISED TO 4700 mm ABL, STAIR REMOVED		
	1-D15	DOUBLE BOTTOM TANK ARRANGEMENT REVISED		
	1-D2, 1-K6	MAIN MAST REVISED TO POLE MAST		
	1-F14, 1-F16	DOUBLE BOTTOM ADDED IN WING TANKS FR 60-75	ACN 20 MAR 23	ISA 21 MAR 23
	1-G1	PRINCIPAL PARTICULARS UPDATED		
	1-G4	HULL FORM LENGTHENED		
	1-G6	LOCKER REMOVED		
	1-G8, 1-G9	LIFERAFT CAPACITY REVISED TO SERVE CREW COMPLEMENT ONLY		
	1-H1	RESERVATIONS REMOVED		
	1-H6	BRIDGE FRONT WINDOWS REVISED		
	1-I4	SUBDIVISION BULKHEADS RELOCATED FOLLOWING HULL LENGTHENING		
	1-I6	BERPS FOR ER EQUIPMENT REMOVAL ADDED		
	1-K6, 1-C2	FORWARD ENGINE ROOM CASING FORWARD BULKHEAD MOVED FORWARD 500 mm		
	1-K10, 1-K11	BOW RAMP CHAIN LOCKERS ADDED		
	1-K8	FORWARD MAST RELOCATED TO PORT SIDE		
	1-L8, 1-I9	FORWARD ANCHORING/MOORING/BOW RAMP WINCH ARRANGEMENT REVISED		
	ALL	CLASS NOTATIONS UPDATED		
	3	LIFERAFT QUANTITIES UPDATED	ACN 16 OCT 23	M.M. 16 OCT 23
		CREENABLE PORT LIGHTS INDICATED		
		SPECIAL UNDERWATER PROTECTIVE SYSTEM INDICATED		
		WINDOR PROPELLER AND RUDDER ADDED		
		MACHINERY AND STRUCTURE BACKGROUNDS UPDATED		
8	ALL	UPDATED BOAT CRANE BASED ON FINAL EQUIPMENT SELECTION		
		UPDATED ANCHOR WINDASSES BASED ON FINAL EQUIPMENT SELECTION		
		UPDATED KEDGEING ANCHOR BASED ON FINAL EQUIPMENT SELECTION		
		UPDATED PROPELLERS BASED ON FINAL VENDOR DRAWINGS		
	4	UPDATED DOMESTIC MACHINERY COMPARTMENT ARRANGEMENT BASED ON FINAL EQUIPMENT SELECTION	ACN 19 APR 24	M.M. 19 APR 24
		ADDED GREASE TRAP PLAVATORY SHOWER, 1 DECK PS		
		ADDED PYROTECHNIC LOCKER, 03 DECK SB		
		ADDED SEARCHLIGHTS ON 03 AND 04 DECKS		
		ADDED PELORUS ON 04 DECK		
		INCREASED CREENABLE PORTLIGHTS TO 14 PER SIDE PER BN REVIEW COMMENTS		
		RESERVATIONS 3 AND 4 ADDED		



CABLES NOTATION		
POWER AND CONTROL CABLES		
3x1,5	0.6/1kV, +90°C	
3x1,5 SC	0.6/1kV, +90°C	SCREENED TYPE
3x1,5 F	0.6/1kV, +90°C	FIRE RESISTANT TYPE
3x1,5 y/g	0.6/1kV, +90°C	WITH YELLOW/GREEN WIRE
3x1,5 F SC y/g	0.6/1kV, +90°C	FIRE RESISTANT, SCREENED WITH YELLOW/GREEN WIRE
CONTROL AND TELECOMMUNICATION CABLES		
2x2x0,75	250V, +90°C	SCREENED TYPE
2x2x0,75 SC	250V, +90°C	SCREENED TYPE WITH SCREENED WIRES PAIR
2x2x0,75 F	250V, +90°C	FIRE RESISTANT TYPE
ALL CABLES TO BE SHIELDED ARMoured CABLE DULY TYPE APPROVED FOR MARINE USE		

REVISIONS				
ZONE	REV	DESCRIPTION	DRAWN	CHECKED
-	0	FIRST ISSUE	PSZ	LSU
-	1	GA CHANGED	MNO	LSU

EXAMINED
 This plan has been examined and given the status as shown in the Design Appraisal Document (DAD) number below:
 ATS/22-0679/P/001
 Date: 18 December 2023
 Initials: JAS
 Marine and Offshore Americas Technical Support Office
 Engineering Systems
 Lloyd's Register Canada Limited
 LR001 2022

FOR INFORMATION ONLY
 Retained as supporting documentation
 LR010 2022

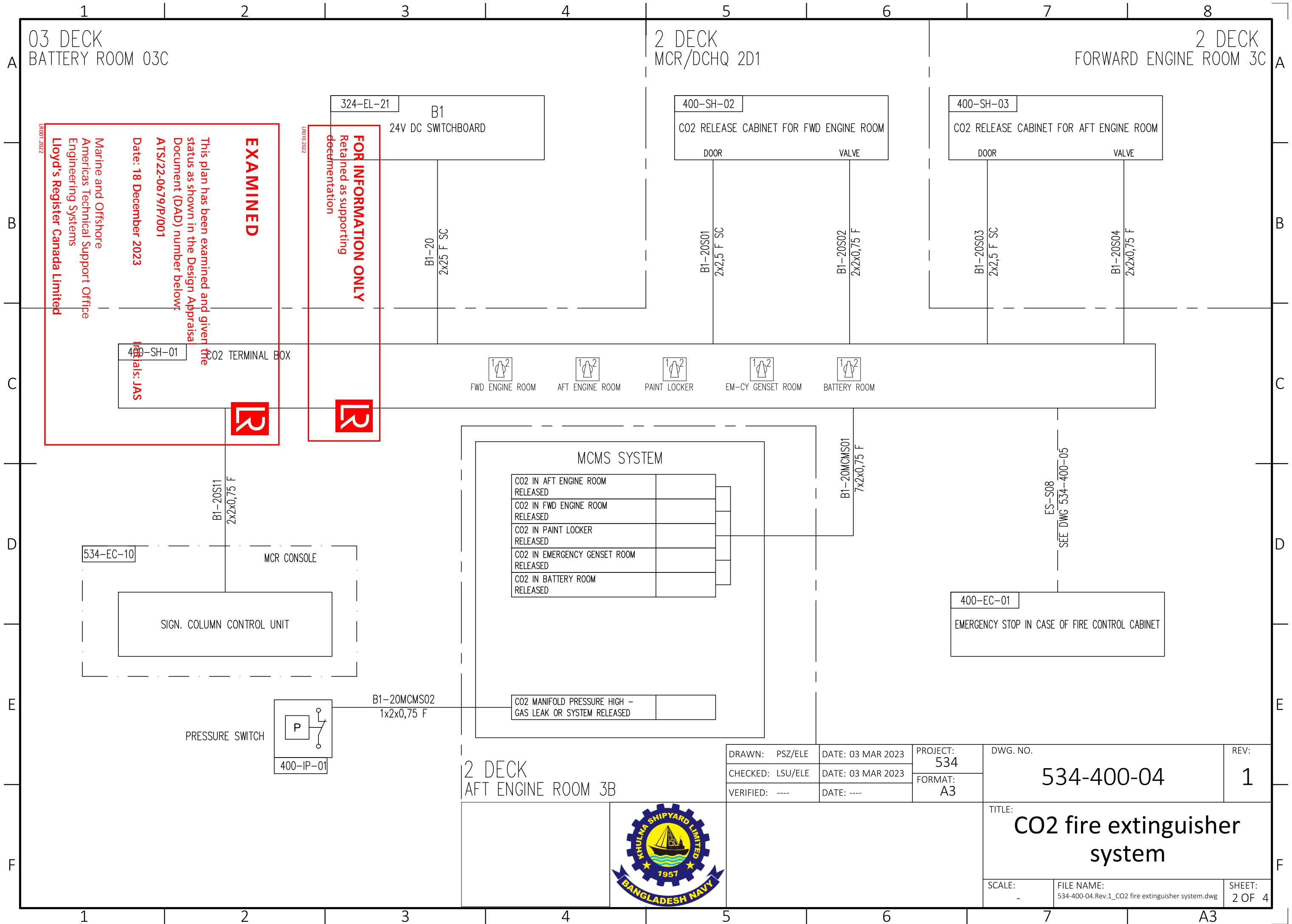
MACHINERY No.	NAME	TECH. DATA.	QUANTITY	WEIGHT [kg]	SUPPLIER
400-IP-01	PRESSURE SWITCH	4-20mA	1	0,3	YARD
400-SH-01	CO2 TERMINAL BOX	IP 65 24V DC	1	1,3	YARD
400-SH-02/06	CO2 RELEASE CABINET	IP 65 24V DC	5	1,3	YARD
400-SH-07/09	ALARM SIREN	IS-mA1 T 37	6	1	YARD

- NOTES:
- GENERALLY POWER SUPPLY AND DISTRIBUTION SYSTEMS ARE THREE-PHASE, THREE-WIRE AND SINGLE-PHASE, TWO-WIRE INSULATED SYSTEMS AND TWO-WIRE DC SYSTEM.
 - 415V 50Hz
 - 400V, 50Hz (SHORE CONNECTION ONLY)
 - 230V, 50Hz
 - 24V DC
 - ALL ELECTRIC LOW VOLTAGE CABLES TO BE FLAME RETARDANT AND HALOGEN FREE TYPE APPROVED BY CLASSIFICATION SOCIETY.
 - ALL ELECTRICAL MACHINE/EQUIPMENT WILL BE PROPERLY EARTHED (GROUNDED) AND EARTHING POINTS WILL BE PROVIDED FOR PORTABLE ELECTRICAL EQUIPMENT AS PER MANUFACTURER'S REQUIREMENT AND MIL-STANDARD 1310 AND MIL-STANDARD 461 TO REDUCE EMI.
 - CABLE'S SCREEN (WHERE EXIST) MUST BE EARTHED ACCORDING TO PRODUCER TECHNICAL DATA.
 - ALL CABLES WILL BE SHIELDED ARMoured CABLE DULY TYPE APPROVED FOR MARINE USE

1	ELECTRIC ENERGY DISTRIBUTION CIRCUITS LIST	534-300-04
NO.	TITLE	DWG NO.
REFERENCES		
APPROVED:----	DATE: ----	ACCORDING TO INTERNATIONAL LAWS, THIS DRAWING IS THE PROPERTY OF VARD Marine Inc. and VARD Marine US Inc. THE DRAWING CANNOT BE MADE PUBLIC, COPIED OR OTHERWISE USED, WITHOUT OUR WRITTEN CONSENT.
APPROVED:----	DATE: ----	
DRAWN: PSZ	DATE: 03 MAR 23	
CHECKED: LSU	DATE: 03 MAR 23	
VERIFIED: ----	DATE: ----	
PROJECT: 534	DWG. NO. 534-400-04	REV: 1
FORMAT: A3		



TITLE:
CO2 FIRE EXTINGUISHER SYSTEM
 SCALE: - FILE NAME: 534-400-04.Rev.1_CO2 fire extinguisher system.dwg SHEET: 1 OF 4



EXAMINED

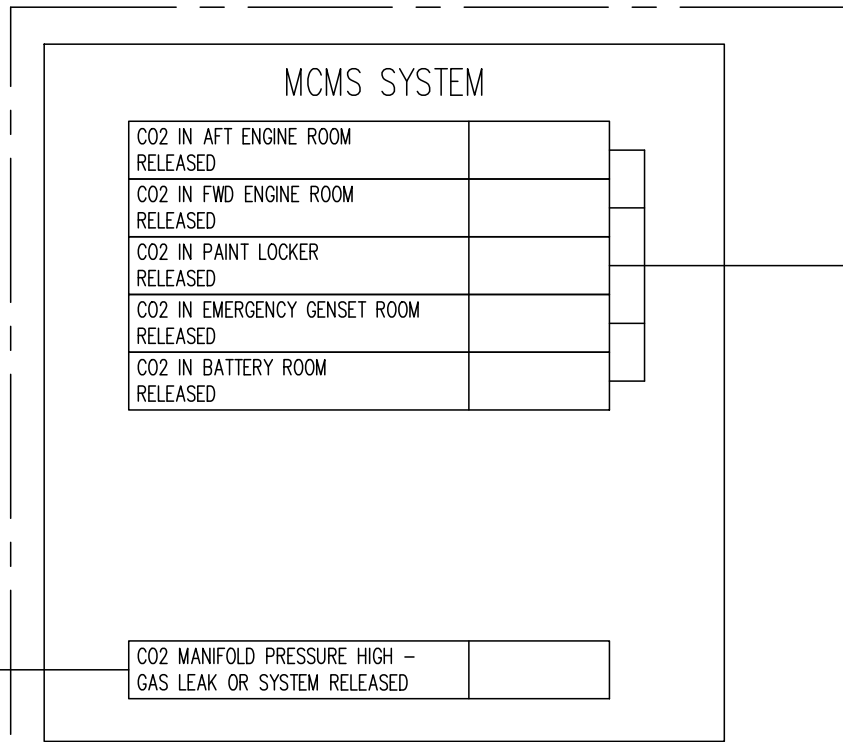
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 AT5/22-0679/P/001
 Date: 18 December 2023

Marine and Offshore
 Americas Technical Support Office
 Engineering Systems
 Lloyd's Register Canada Limited

Initials: JAS

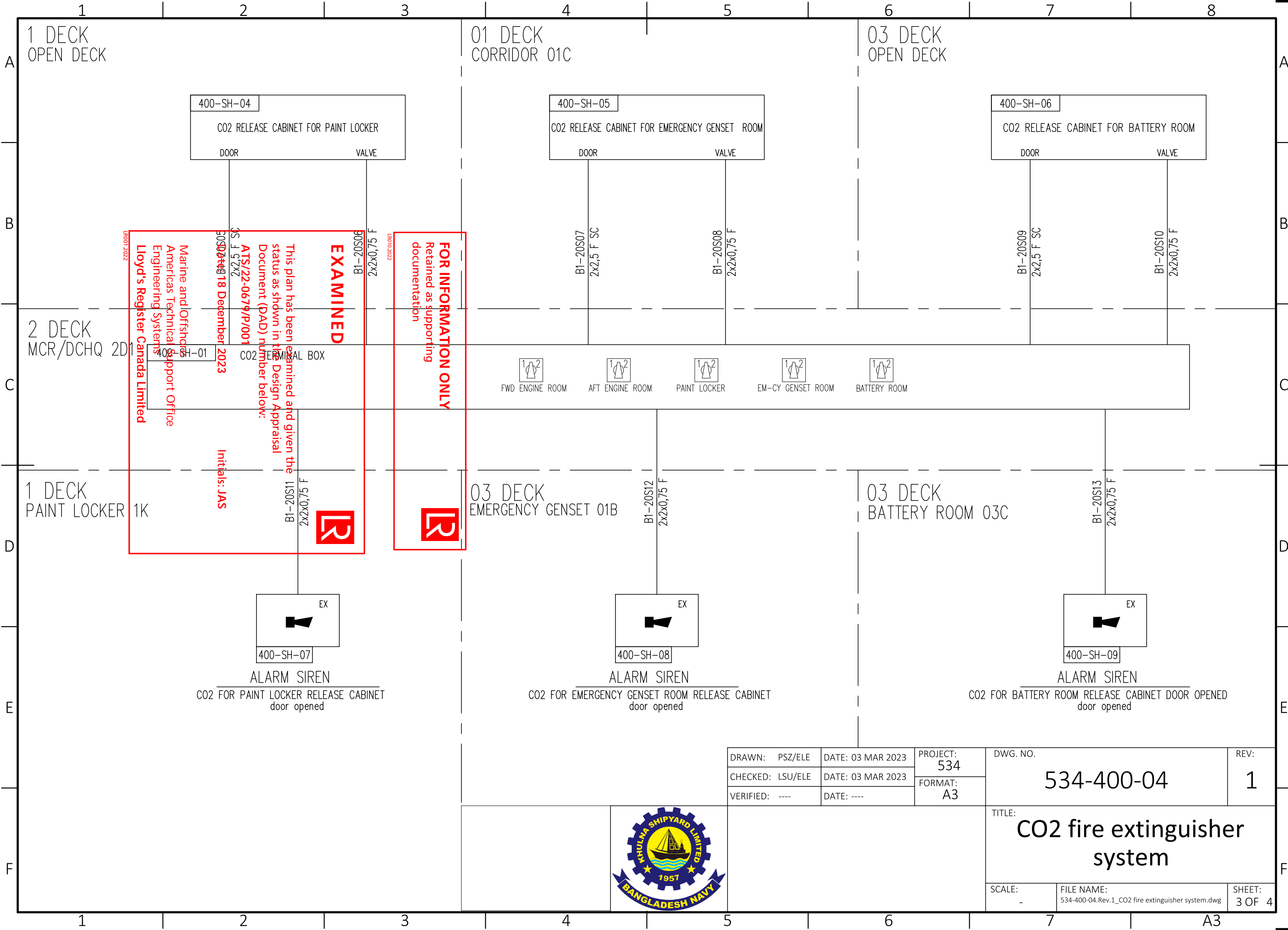
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DRAWN: PSZ/ELE	DATE: 03 MAR 2023	PROJECT: 534	DWG. NO.	REV: 1
CHECKED: LSU/ELE	DATE: 03 MAR 2023	FORMAT: A3	534-400-04	
VERIFIED: ----	DATE: ----			
TITLE:			CO2 fire extinguisher system	
SCALE: -	FILE NAME: 534-400-04.Rev.1_CO2 fire extinguisher system.dwg	SHEET: 2 OF 4		

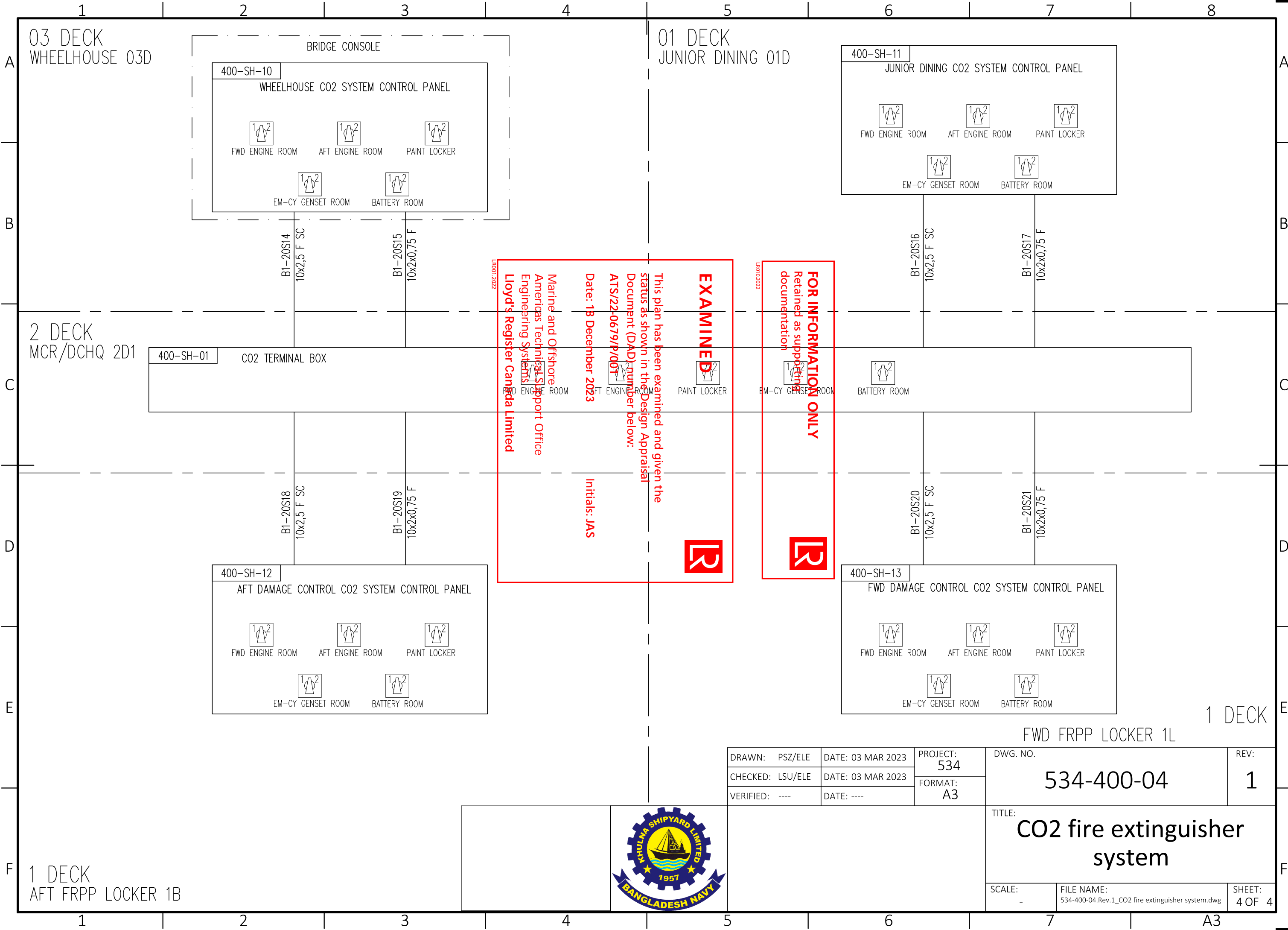




EXAMINED
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 Initials: JAS
 Marine and Offshore Americas Technical Support Office
 Lloyd's Register Canada Limited
LR001.2023

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LR001.2023

DRAWN: PSZ/ELE	DATE: 03 MAR 2023	PROJECT: 534	DWG. NO. 534-400-04	REV: 1
CHECKED: LSU/ELE	DATE: 03 MAR 2023	FORMAT: A3		
VERIFIED: ----	DATE: ----			
			TITLE: CO2 fire extinguisher system	
SCALE: -	FILE NAME: 534-400-04.Rev.1_CO2 fire extinguisher system.dwg	SHEET: 3 OF 4		



EXAMINED

This plan has been examined and given the status as shown in the Design Appraisal Document (DAD) number below:
 ATIS/22-0679/P/001
 Date: 18 December 2023
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DRAWN: PSZ/ELE	DATE: 03 MAR 2023	PROJECT: 534	DWG. NO.	REV: 1
CHECKED: LSU/ELE	DATE: 03 MAR 2023	FORMAT: A3	534-400-04	
VERIFIED: ----	DATE: ----			



TITLE: CO2 fire extinguisher system		
SCALE: -	FILE NAME: 534-400-04.Rev.1_CO2 fire extinguisher system.dwg	SHEET: 4 OF 4

1 DECK

1 DECK
AFT FRPP LOCKER 1B

FWD FRPP LOCKER 1L

2 DECK
MCR/DCHQ 2D1

03 DECK
WHEELHOUSE 03D

01 DECK
JUNIOR DINING 01D

EQUIPMENT LIST					
TAG No.	ITEM	QTY.	CAPACITY (EA)	SPECIFICATION	COMMENTS
555-SH-01	CO ₂ CYLINDER BANK - FORWARD AND AFT ENGINE ROOMS	1	45 kg PER CYLINDER	12 CYLINDERS	SEE NOTE 2
555-SH-02	CO ₂ CYLINDER BANK - EMERGENCY GENSET ROOM	1	34 kg PER CYLINDER	1 CYLINDER	SEE NOTE 2
555-SH-03	CO ₂ CYLINDER BANK - PAINT LOCKER	1	20 kg PER CYLINDER	1 CYLINDER	SEE NOTE 2
555-SH-04	CO ₂ CYLINDER BANK - BATTERY ROOM	1	20 kg PER CYLINDER	1 CYLINDER	SEE NOTE 2

CO ₂ SYSTEM LEGEND			
PROTECTED SPACE	SYMBOL	DESCRIPTION	REFERENCES
		CO ₂ SYSTEM PROTECTED SPACE	SOLAS REG.10 FSS CODE
	-	CO ₂ SYSTEM LOCKER	-

- NOTES**
- THE FABRICATION, LAYOUT, AND INSTALLATION OF THE SYSTEM WILL BE INSTALLED IN ACCORDANCE WITH THE LR RULES AND REGULATIONS FOR THE CLASSIFICATION OF NAVAL SHIPS JANUARY 2022, AND VESSEL'S CONSTRUCTION SPECIFICATIONS.
 - THE INTENT OF THIS DRAWING IS TO PROVIDE GUIDANCE TO VENDORS FOR THE SELECTION AND SPECIFICATION OF A FIXED GAS CO₂ FIRE FIGHTING SYSTEM. CALCULATIONS, CYLINDER SIZING AND CYLINDER LOCATION TO BE CONFIRMED BY VENDOR. PIPE SIZES, AND TYPE, LOCATION AND NUMBER OF NOZZLES TO BE CONFIRMED BY VENDOR.
 - ALL FIRE FIGHTING EQUIPMENT AND INSTALLATIONS SHALL BE COMPLIANT WITH THE REQUIREMENTS OF THE SOLAS, REGULATION 10 - FIRE FIGHTING AND FFS CODE CHAPTER 5.
 - FIXED GAS SYSTEM SHALL BE COMPLIANT WITH MSC/CIRC.848 - REVISED GUIDELINES FOR THE APPROVAL OF EQUIVALENT FIXED GAS FIRE-EXTINGUISHING SYSTEMS AS AMENDED BY MSC.1/CIRC.1267.
 - AREAS OF PROTECTED SPACES INDICATED ARE GROSS AREA ESTIMATES ONLY AND SHALL BE CONFIRMED BY THE SHIPYARD IN DETAIL DESIGN.
 - VOLUMES OF PROTECTED SPACES INDICATED ARE GROSS VOLUME ESTIMATES ONLY AND SHALL BE CONFIRMED BY THE SHIPYARD IN DETAIL DESIGN.
 - COMPRESSED AIR TANK PRESSURE RELIEF VALVE DISCHARGES ARE TO BE PIPED TO ATMOSPHERE AND ARE THEREFORE NOT CONSIDERED IN THE COMPARTMENT VOLUME CALCULATIONS, SEE REFERENCE 3.
 - GALLEY DUCTING CO₂ SYSTEMS ARE NOT COVERED WITHIN THE SCOPE OF THIS DRAWING.

REVISIONS				
ZONE	REV	DESCRIPTION	DRAWN	CHECKED
-	0	INITIAL ISSUE	AIM	KVN

SYMBOL LIST	
	CO ₂ BOTTLE (45 kg, 34 kg OR 20 kg)
	VALVE MOTOR OPERATED
	CO ₂ NOZZLE
	CO ₂ PIPING
	LIGHT SIGNAL FIRE ALARM
	CO ₂ REMOTE RELEASE STATION
	CO ₂ HORN

CALCULATIONS

CO ₂ PROTECTED SPACES				
COMPARTMENT NAME	PROTECTION	DECK AREA (m ²) (SEE NOTE 5)	DECK HEIGHT (m)	COMPARTMENT VOLUME (m ³) (SEE NOTE 6)
FORWARD ENGINE ROOM	CO ₂ FLOODING	-	-	473.0
FORWARD ENGINE ROOM EXHAUST CASING	CO ₂ FLOODING	12.4	13.0	161.2
AFT ENGINE ROOM	CO ₂ FLOODING	-	-	337.0
AFT ENGINE ROOM EXHAUST CASING	CO ₂ FLOODING	4.2	13.0	54.6
EMERGENCY GENSET ROOM	CO ₂ FLOODING	13.0	2.8	36.4
BATTERY ROOM	CO ₂ FLOODING	5.0	3.4	17.0
PAINT LOCKER	CO ₂ FLOODING	3.2	4.0	12.8

FORWARD ENGINE ROOM CO₂ FLOODING SYSTEM (FSS CODE - FIRE SAFETY SYSTEMS - RESOLUTION MSC.98(73) - ANNEX - INTERNATIONAL CODE FOR FIRE SAFETY SYSTEMS - CHAPTER 5 - FIXED GAS FIRE-EXTINGUISHING SYSTEMS):

MACHINERY SPACE = FORWARD ENGINE ROOM

FORWARD ENGINE ROOM GROSS VOLUME = 473.0 m³
 FORWARD ENGINE ROOM EXHAUST CASING GROSS VOLUME = 161.2 m³
 FORWARD ENGINE ROOM STARTING AIR RECEIVERS (FREE AIR VOLUME) = 0.0 m³

CASE 1 - 40% GROSS VOLUME EXCLUDING THE EXHAUST CASING
 TOTAL COMPARTMENT VOLUME CONSIDERED = 473.0 m³
 REQUIRED CO₂ SYSTEM VOLUME = 189.2 m³

CASE 2 - 35% GROSS VOLUME INCLUDING THE EXHAUST CASING
 TOTAL COMPARTMENT VOLUME CONSIDERED = 634.2 m³
 REQUIRED CO₂ SYSTEM VOLUME = 222.0 m³

LARGEST REQUIRED CO₂ VOLUME OF CASE 1 AND CASE 2 = 222.0 m³

CO₂ BOTTLE SIZE = 45 kg
 QUANTITY OF CO₂ BOTTLES REQUIRED = 8.8 Nos.
 QUANTITY OF CO₂ BOTTLES PROVIDED = 12 NOS.

AFT ENGINE ROOM CO₂ FLOODING SYSTEM (FSS CODE - FIRE SAFETY SYSTEMS - RESOLUTION MSC.98(73) - ANNEX - INTERNATIONAL CODE FOR FIRE SAFETY SYSTEMS - CHAPTER 5 - FIXED GAS FIRE-EXTINGUISHING SYSTEMS):

MACHINERY SPACE = AFT ENGINE ROOM

AFT ENGINE ROOM GROSS VOLUME = 337.0 m³
 AFT ENGINE ROOM EXHAUST CASING GROSS VOLUME = 54.6 m³
 AFT ENGINE ROOM STARTING AIR RECEIVERS (FREE AIR VOLUME) = 0.0 m³

CASE 1 - 40% GROSS VOLUME EXCLUDING THE EXHAUST CASING
 TOTAL COMPARTMENT VOLUME CONSIDERED = 337.0 m³
 REQUIRED CO₂ SYSTEM VOLUME = 134.8 m³

CASE 2 - 35% GROSS VOLUME INCLUDING THE EXHAUST CASING
 TOTAL COMPARTMENT VOLUME CONSIDERED = 391.6 m³
 REQUIRED CO₂ SYSTEM VOLUME = 137.1 m³

LARGEST REQUIRED CO₂ VOLUME OF CASE 1 AND CASE 2 = 137.1 m³

CO₂ BOTTLE SIZE = 45 kg
 QUANTITY OF CO₂ BOTTLES REQUIRED = 5.4 Nos.
 QUANTITY OF CO₂ BOTTLES PROVIDED = 12 NOS.

EMERGENCY GENSET ROOM CO₂ FLOODING SYSTEM (FSS CODE - FIRE SAFETY SYSTEMS - RESOLUTION MSC.98(73) - ANNEX - INTERNATIONAL CODE FOR FIRE SAFETY SYSTEMS - CHAPTER 5 - FIXED GAS FIRE-EXTINGUISHING SYSTEMS):

EMERGENCY GENSET ROOM GROSS VOLUME = 36.4 m³

CASE 1 - 40% GROSS VOLUME EXCLUDING THE EXHAUST CASING
 TOTAL COMPARTMENT VOLUME CONSIDERED = 36.4 m³
 REQUIRED CO₂ SYSTEM VOLUME = 14.6 m³

CASE 2 - 35% GROSS VOLUME INCLUDING THE EXHAUST CASING
 TOTAL COMPARTMENT VOLUME CONSIDERED = 36.4 m³
 REQUIRED CO₂ SYSTEM VOLUME = 12.7 m³

LARGEST REQUIRED CO₂ VOLUME OF CASE 1 AND CASE 2 = 14.6 m³

CO₂ BOTTLE SIZE = 34 kg
 QUANTITY OF CO₂ BOTTLES REQUIRED = 0.8 Nos.
 QUANTITY OF CO₂ BOTTLES PROVIDED = 1 Nos.

PAINT LOCKER CO₂ FLOODING SYSTEM (SOLAS CHAPTER II-2, PART C, REGULATION 10.6.3.1):

PAINT LOCKER GROSS VOLUME = 12.8 m³

40% OF COMPARTMENT GROSS VOLUME = 5.1 m³
 REQUIRED CO₂ SYSTEM VOLUME = 5.1 m³

CO₂ BOTTLE SIZE = 20 kg
 QUANTITY OF CO₂ BOTTLES REQUIRED = 0.5 Nos.
 QUANTITY OF CO₂ BOTTLES PROVIDED = 1 Nos.

BATTERY ROOM CO₂ FLOODING SYSTEM (SHIP SPECIFICATION - 0358):

BATTERY ROOM GROSS VOLUME = 17.0 m³

40% OF COMPARTMENT GROSS VOLUME = 6.8 m³
 REQUIRED CO₂ SYSTEM VOLUME = 6.8 m³

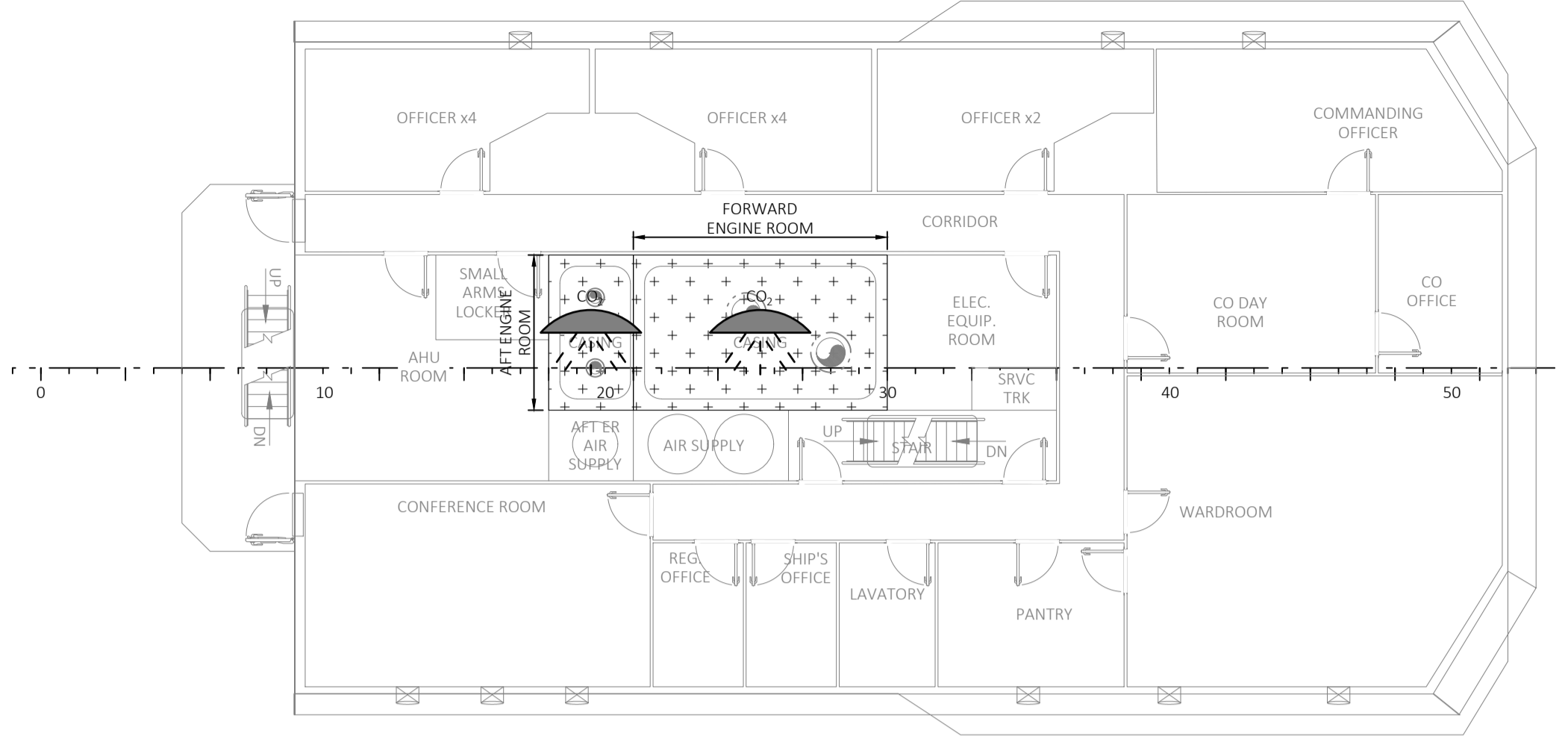
CO₂ BOTTLE SIZE = 20 kg
 QUANTITY OF CO₂ BOTTLES REQUIRED = 0.6 Nos.
 QUANTITY OF CO₂ BOTTLES PROVIDED = 1 Nos.

4	FIRE FIGHTING PLAN	534-077-02
3	COMPRESSED & CONTROL AIR SYSTEM DIAGRAM	534-551-01
2	SHIP SPECIFICATION - TECHNICAL SPECIFICATION FOR 03 X LCT FOR BN	-
1	GENERAL ARRANGEMENT	534-601-01
NO.	TITLE	DWG NO.

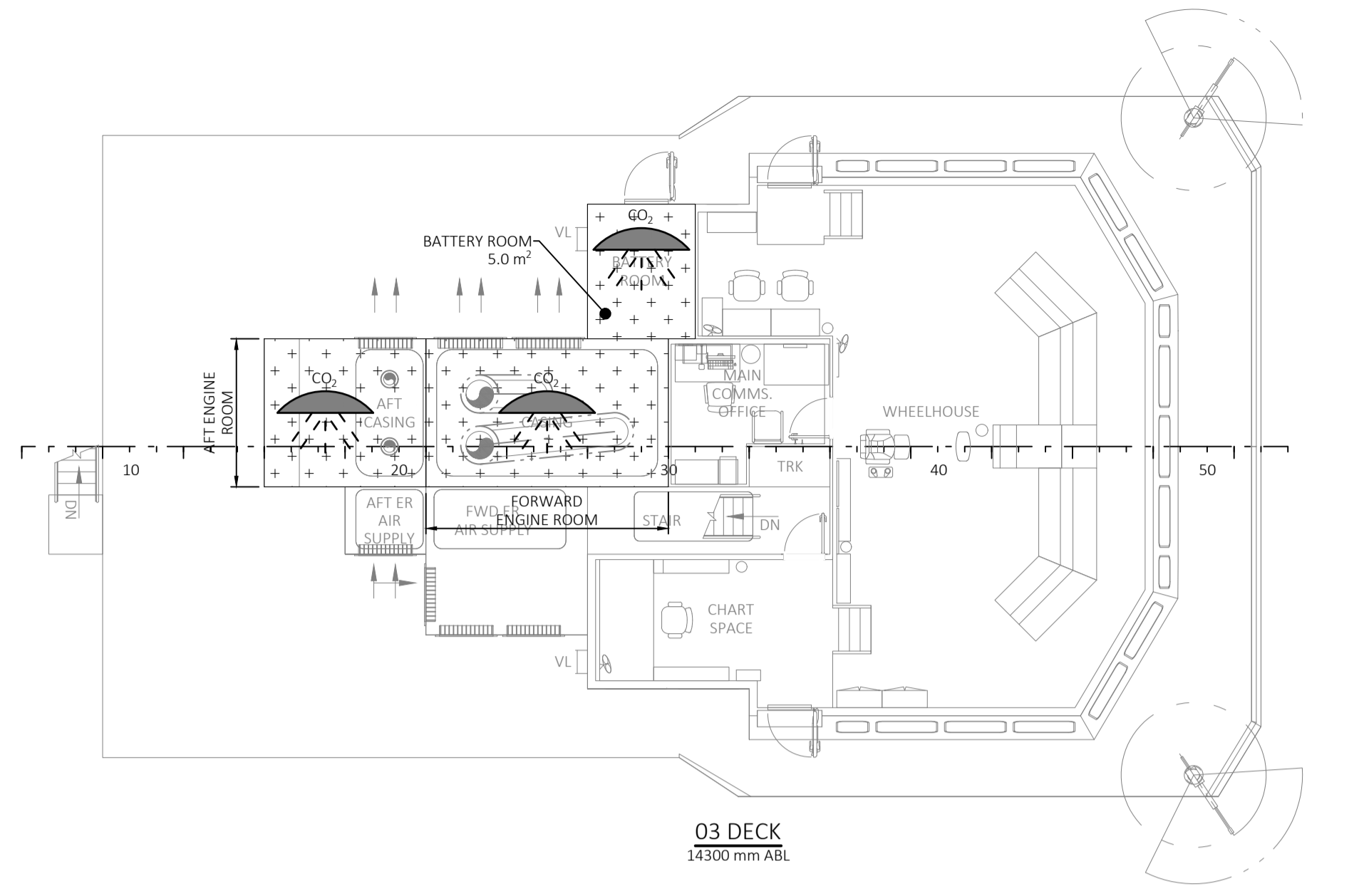
REFERENCES					
APPROVED: ----	DATE: ----	ACCORDING TO INTERNATIONAL LAWS, THIS DRAWING IS THE PROPERTY OF VARD Marine Inc. and VARD Marine US Inc. THE DRAWING CANNOT BE MADE PUBLIC, COPIED OR OTHERWISE USED, WITHOUT OUR WRITTEN CONSENT.			
DRAWN: AIM	DATE: 27 FEB 23	PROJECT: 534	DWG. NO.	REV: 0	
CHECKED: KVN	DATE: 13 MAR 23	FORMAT: A1	534-555-03		
VERIFIED: ----	DATE: ----				



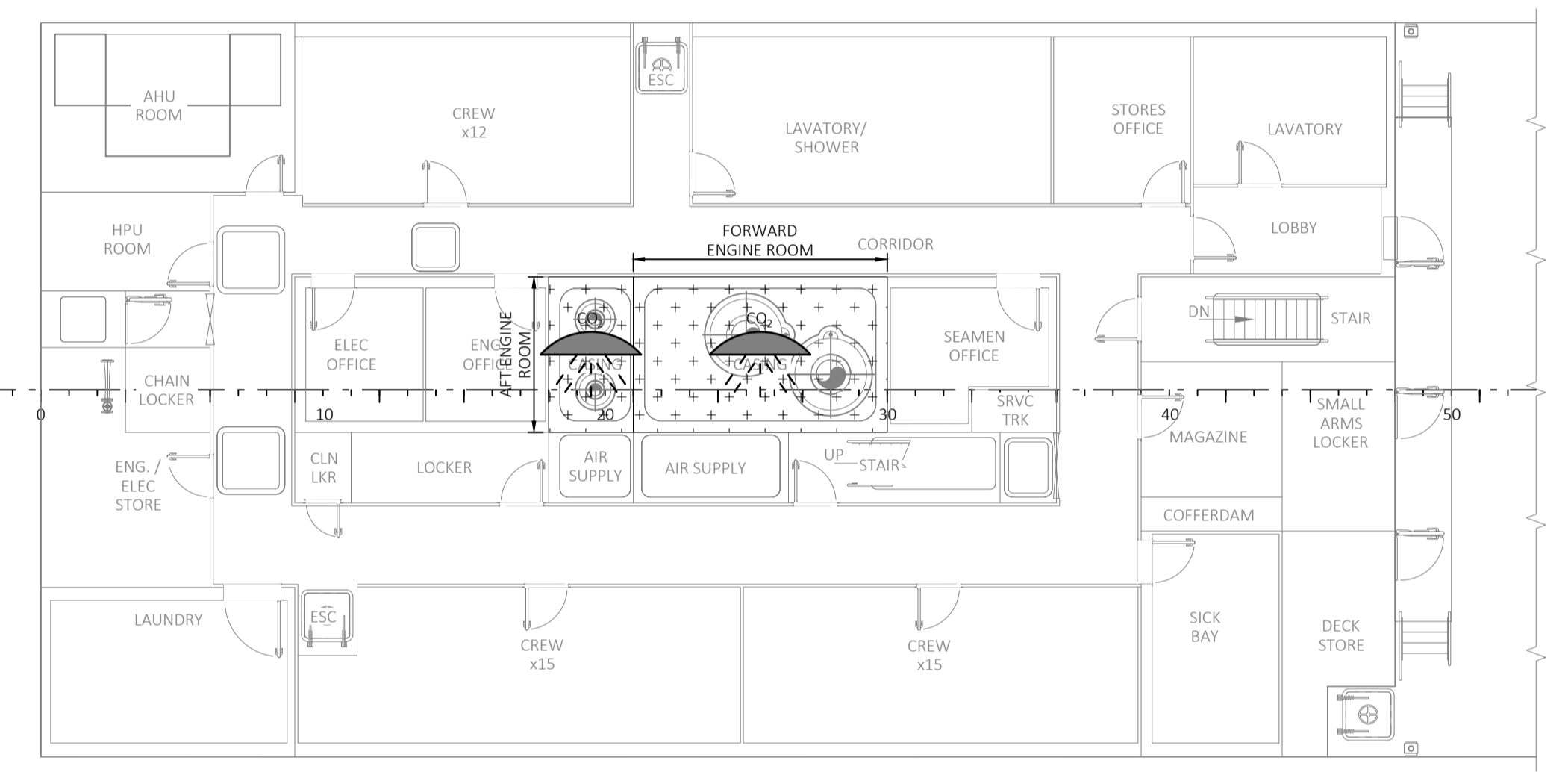
TITLE		
CO ₂ SYSTEM DIAGRAM		
SCALE: N.T.S.	FILE NAME: 534-555-03 CO2 SYSTEM DIAGRAM REV0.dwg	SHEET: 1 OF 3



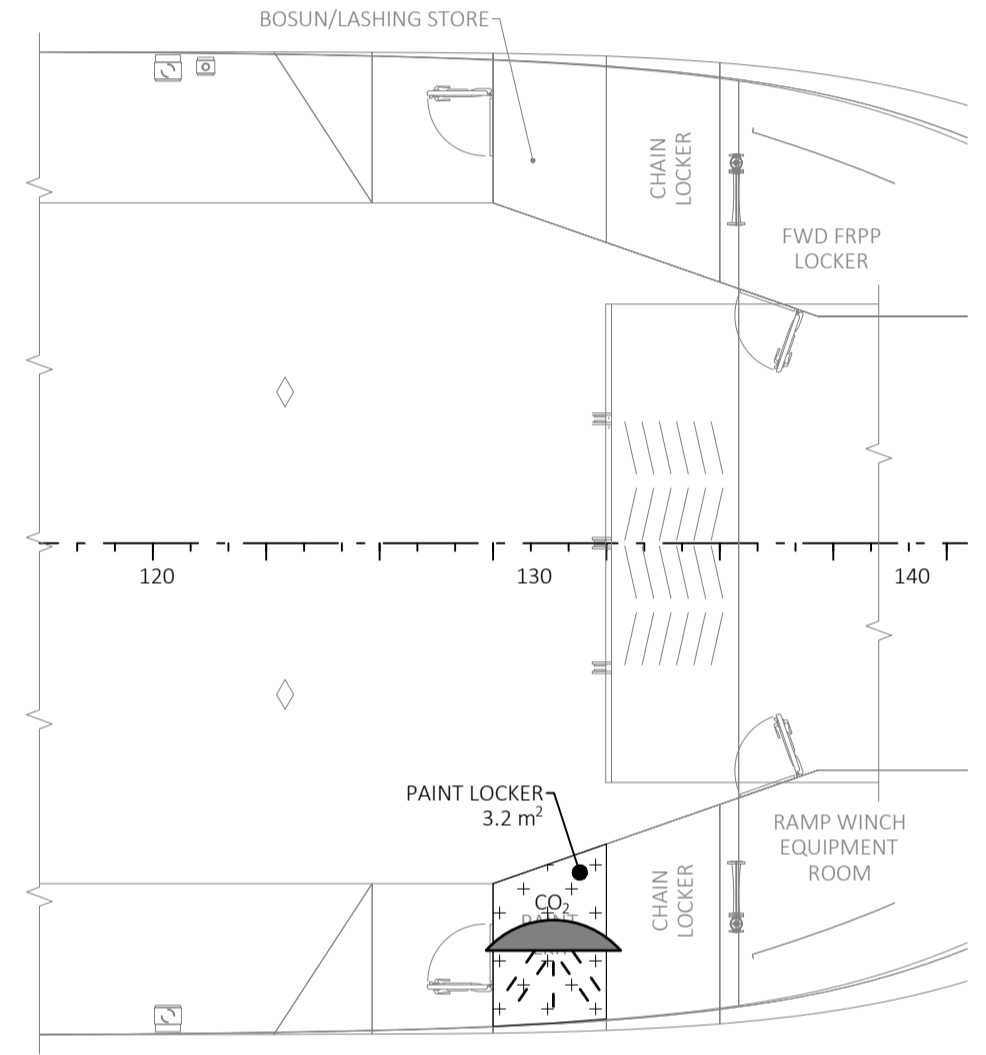
O2 DECK
11500 mm ABL



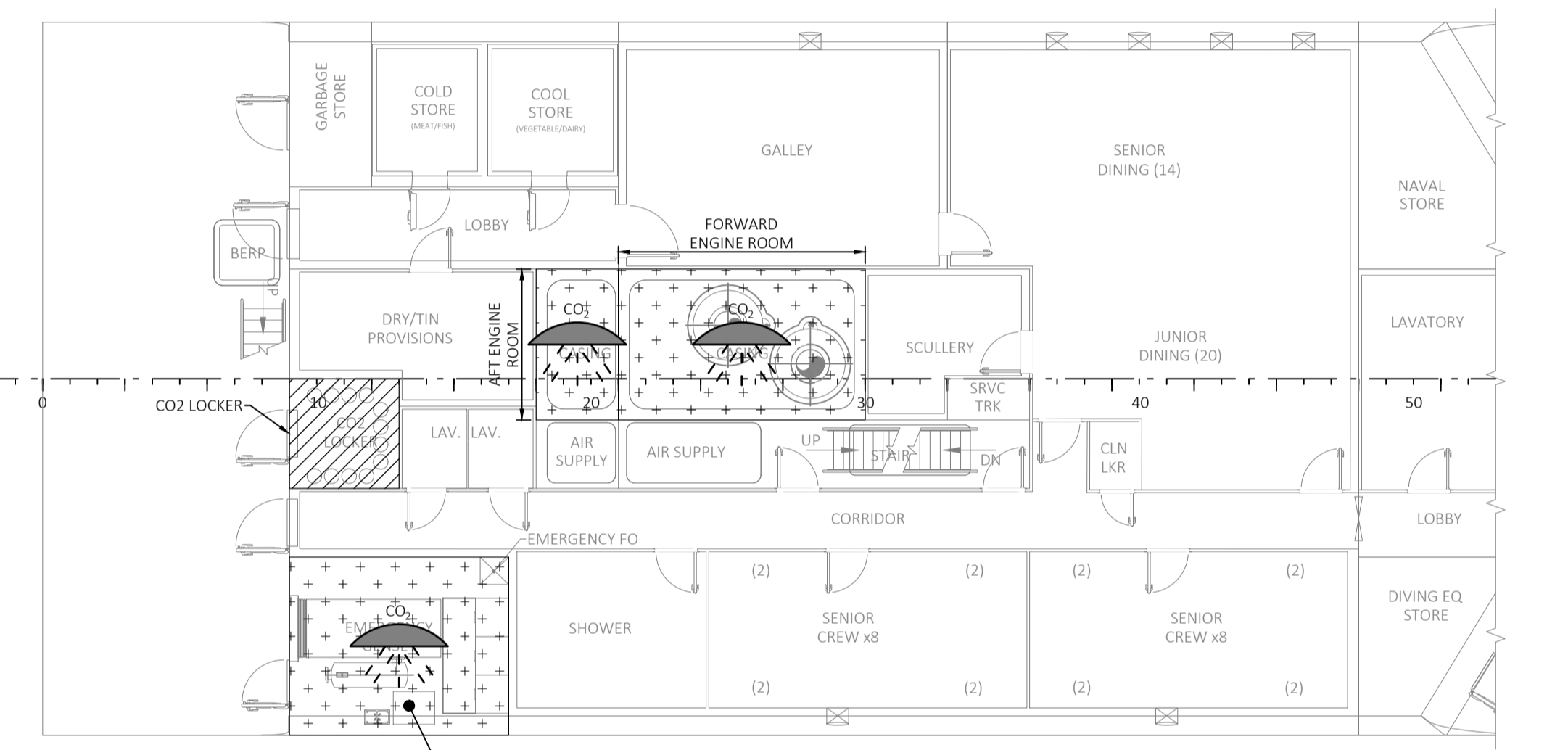
O3 DECK
14300 mm ABL



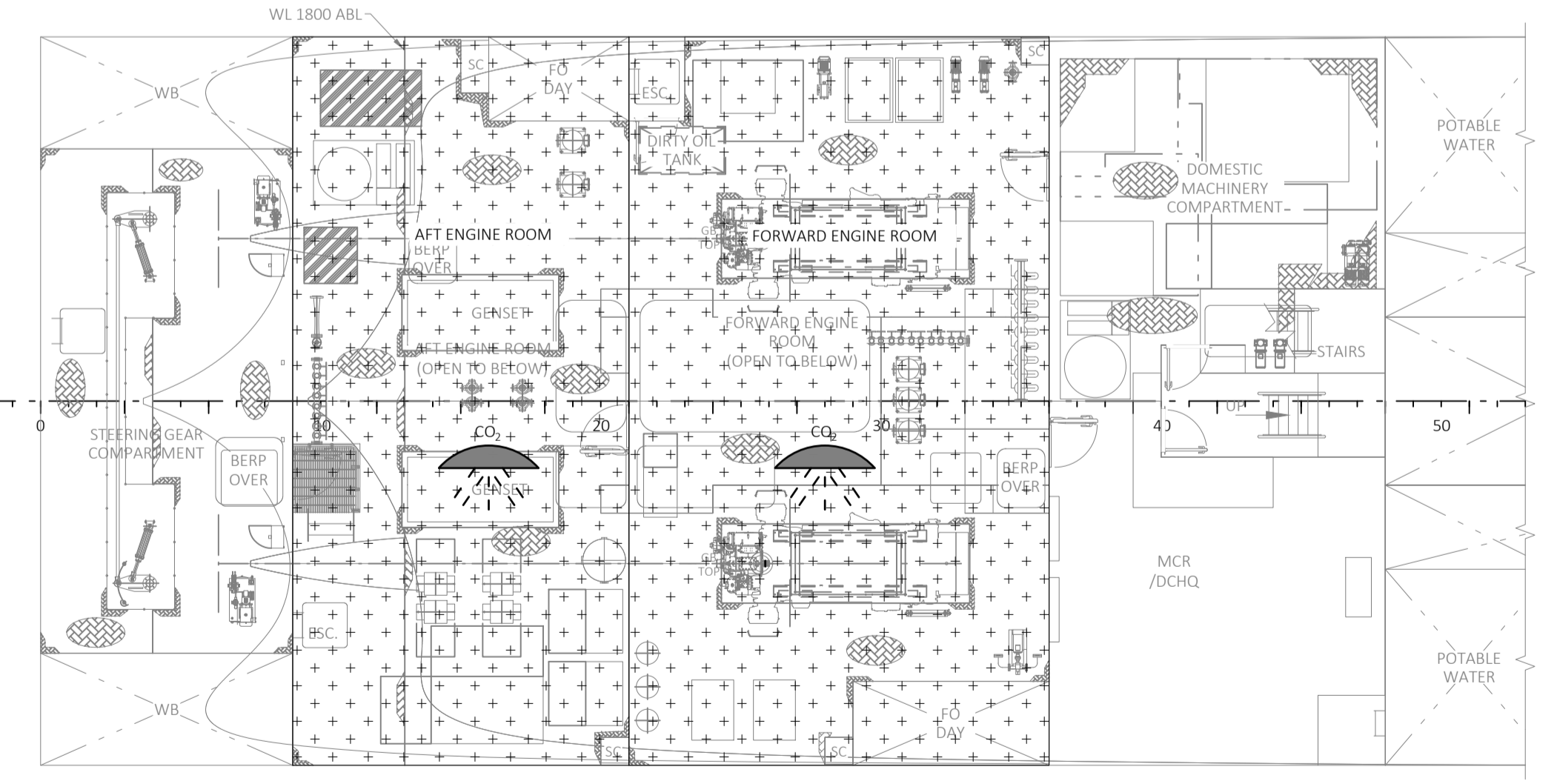
1 DECK
4700 mm ABL



1 DECK
4700 mm ABL



O1 DECK
8700 mm ABL



2 DECK
1200 mm ABL

DRAWN: AJM	DATE: 27 FEB 23	PROJECT: 534	DWG. NO.	REV:
CHECKED: KVV	DATE: 13 MAR 23	FORMAT: A1	534-555-03	0
VERIFIED: ---	DATE: ---			



TITLE:
CO2 SYSTEM DIAGRAM

SCALE: N.T.S.	FILE NAME: 534-555-03 CO2 SYSTEM DIAGRAM REV0.dwg	SHEET: 2 OF 3
---------------	---	---------------

12

11

10

9

8

7

6

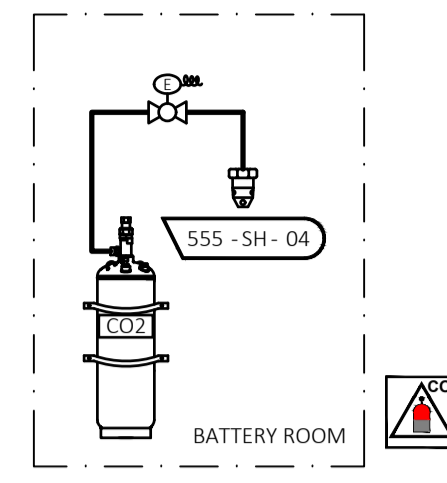
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4

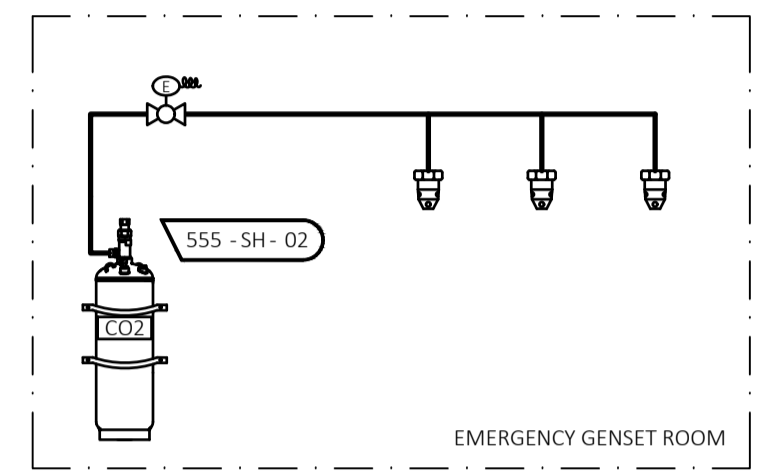
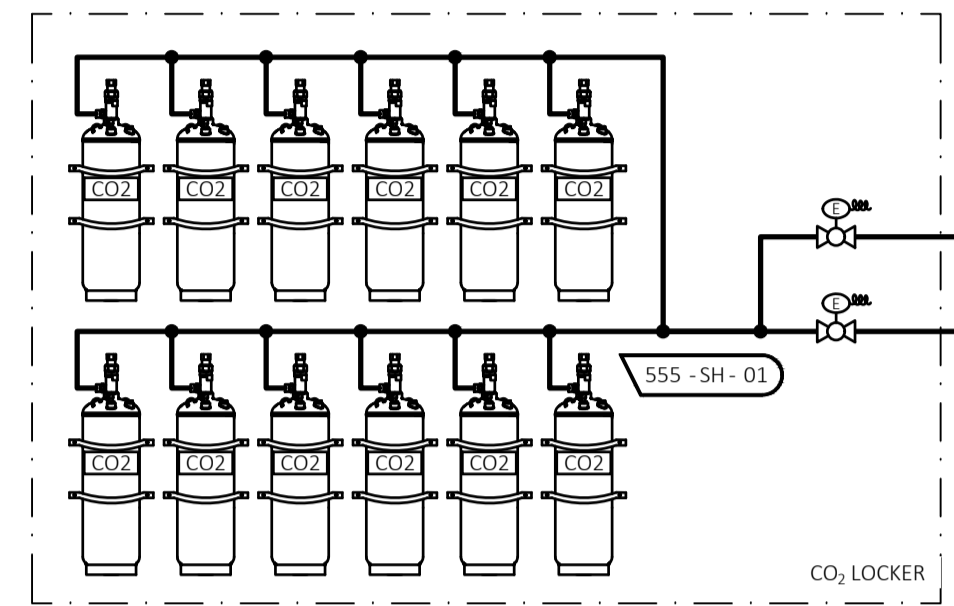
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2

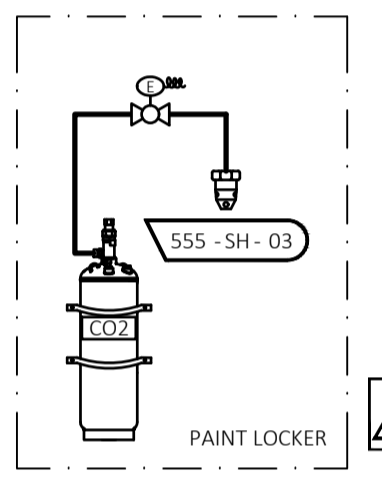
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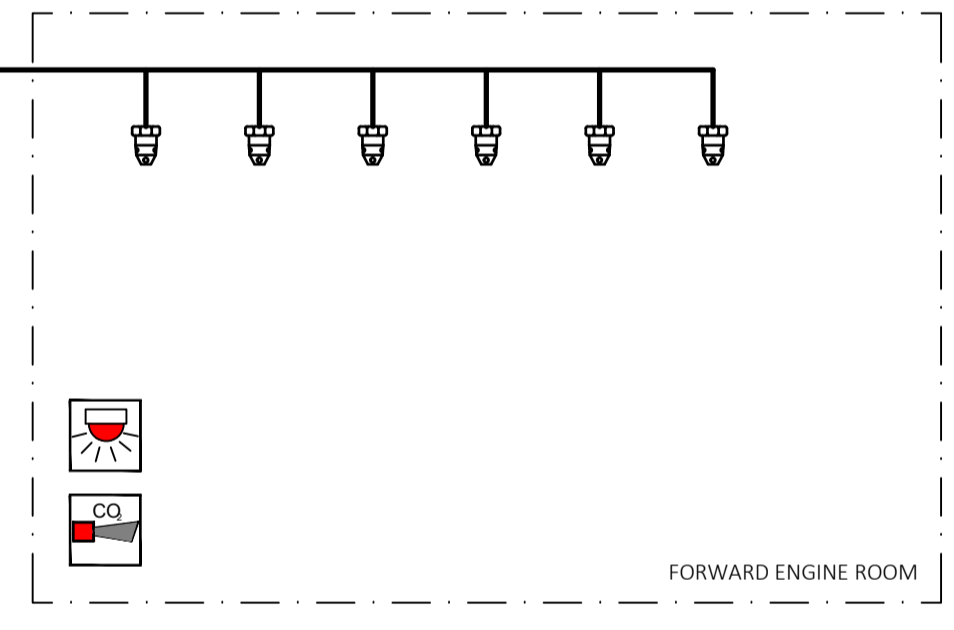
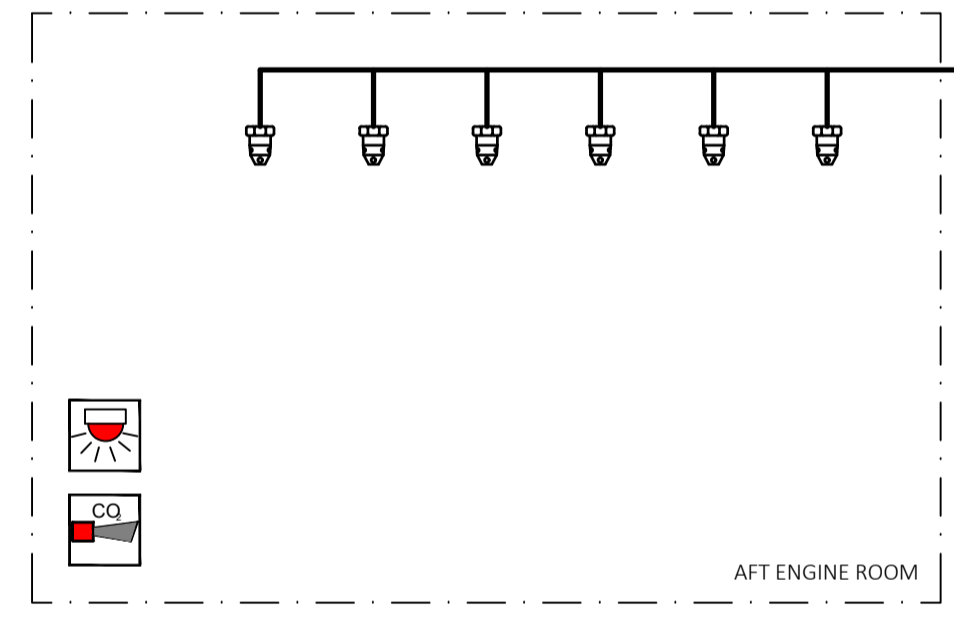
03 DECK
14300 mm ABL
02 DECK
11500 mm ABL



AFT ENGINE ROOM
FWD ENGINE ROOM
EMERGENCY GENSET ROOM



1 DECK (ER.0-48)
5600 mm ABL
1 DECK
4700 mm ABL



AFT ENGINE ROOM
FORWARD ENGINE ROOM

DRAWN: AJM	DATE: 27 FEB 23	PROJECT: 534	DWG. NO.	REV:
CHECKED: KVV	DATE: 13 MAR 23	FORMAT: A1	534-555-03	0
VERIFIED: ---	DATE: ---			



TITLE:
CO2 SYSTEM DIAGRAM

SCALE: N.T.S. FILE NAME: 534-555-03 CO2 SYSTEM DIAGRAM REV0.dwg SHEET: 3 OF 3

BANK GUARANTEE IN LIEU OF EARNEST MONEY

No.....
.....
.....
Guarantee
Dated:
For (mention amount).

Dear Sirs,

Whereas (Name of tender floating organization) under tender No.
..... dated inviting tenders for supplies of (described
supplies) has agreed to waive the requirement of Cash deposit / Call deposit of
Tk 2,00,000.00 (Tk. Two Lac) or equivalent US Dollar / in any International trading
currency as earnest money by the tenderer for making the supplies in accordance with the
terms and conditions of the tenderer and the tenderer shall provide a bank guarantee for
payment for the said amount.

And whereas the tenderer M/S.ofhas requested us
(name of bank) of to issue as guarantee for payment of the amount of
US\$/ Tk when called upon.

In consideration of the aforesaid, we (name of bank) of hereby
undertake and guarantee due performance of the tender by the tenderer M/S.
..... of and unconditionally and absolutely
bind ourselves:

1. To make payment without any question whatsoever of US\$/ Tk
..... to.....(Name of organization) or as directed by the
organization immediately on receipt of demand from the said, organization in writing, in
the event the tenderer fail to perform the tender. It is expressly understood that the
organization shall be the sole judge for-deciding whether the tenderer has performed the
tender and fulfilled the terms and conditions of the tender.

2. It is specially stipulated and understood by the bank that any grant of time or
indulgence to the tenderer without reference to the bank shall not in any manner tent to
absolve the bank from its liability to make the payment stipulated above under this
guarantee.

3. The Bank's commitment under this guarantee is limited to an amount of US/
Taka..... (.....) only.

4. The guarantee will remain valid upto

Yours faithfully

..... Bank

(Seal of the Bank)

PERFORMANCE BANK GUARANTEE

Managing Director
Khulna Shipyard Limited
Bangladesh Navy
Khulna, Bangladesh

Bank Guarantee No.....
Dated:
For (Mention amount)

Dear Sirs,

Whereas Khulna Shipyard Ltd., Bangladesh Navy, Khulna hereinafter referred to as the buyers proposed to enter into a contract through a Letter of Intent hereinafter called the contract with (name of the sellers) of hereinafter referred to as the sellers for the supply of (described supplies) in accordance with the terms and conditions of the contract. And whereas the sellers have requested us (name of bank) to issue a guarantee for an amount of US\$ / £ / EURO / TK..... being 5% of the CFR value of the supplies.

In consideration aforesaid (name of bank) hereby undertake and guarantee due observance and performance of the terms and conditions of the contract by the sellers and us unconditionally and absolutely bind ourselves.

To make payment on demand, without demur and without reference to the sellers, of US\$ / £ / EURO / TK..... to the buyers or as directed by the buyers in writing, if the sellers shall fail to perform the contract or fulfill the terms and conditions thereof.

To keep guarantee valid and in force for 06 (Six) months beyond the day of shipment but extendable if so required by the buyers.

The guarantee is unconditional and it is expressly understood that the buyers shall be sole judge for deciding whether the sellers have performed the contract and fulfilled the terms and conditions thereof.

It is specifically stipulated and understood by us (name of bank) that any grant of time or indulgence to the sellers without reference to us shall not in any manner tend to absolve us from our liability to make payment as stipulated above under this guarantee.

Our commitment under this guarantee is limited to an amount of US\$ / £ / EURO / TK..... only.

Yours faithfully

..... Bank

(Seal of the Bank)