STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

ADDENDUM NO. 3

October 27, 2026

Contract No.	DA00708
TIP No.:	N/A
Federal Aid No.:	State Funded
WBS Element:	16.401
County:	Dare
Description:	M/V Carteret Credit Dry Dock (CDD)
Letting Date:	November 4, 2026 **(Revised)**

To Whom It May Concern:

This Addendum is issued to modify or clarify the bid documents previously furnished for the above-referenced project. The following changes shall be incorporated into the contract documents:

Proposal Revisions:

1. **Pages FD-36 and FD-37 "Section 9 – Zinc Anode Replacements":** Section 9 of the Ferry Division Special Provisions has been updated to revise the quantity and size of the Zinc Anodes required for the rudders. Please replace the original pages FD-36 and FD-37 with the attached revised pages.

2. **Pages 133 - 135 – "Itemized Proposal (Bid Form)":** Updated the item list to revise the quantity and size of the Zinc Anodes shown in section 9 of the Ferry Division Special Provisions**.** Please replace the original Pages 133 & 135 with the attached revised pages.

Plan Revisions:

1. **Sheet 17 through 23 "HVAC Modifications, Sheets 1 through 7":** Updated HVAC plan sheets incorporating the revisions detailed on Sheet 1. Replace the original "HVAC Modifications, Sheets 1 through 7, **Revision A**" in their entirety with the attached **Revision B** sheets.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS – DIVISION 1
113 AIRPORT DIVE, SUITE 100
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Website: www.ncdot.gov

Location:
113 AIRPORT DRIVE, SUITE 100
EDENTON, NC 27932

All other terms and conditions of the original bidding documents remain unchanged.

Sincerely,

DocuSigned by:
Mark S. Winslow
37ED002D8DDF4B4...

Mark S. Winslow
Division Contract Engineer

Cc: R. K. Sawyer, PE
M. B. Gill, PE
G. J. Liverman, PE
B. N. Braswell, PE
D. B. Otts, PE
J. E. Dixon
J. J. Remme

9.0 ZINC ANODE REPLACEMENTS :

9.1 Description

This section describes the requirements to remove and replace with new identified zinc anodes on the hull and rudders.

9.2 References

9.2.1 *DWG NC-250-0001-R0 - Lines & Offsets*

9.3 Owner Furnished Equipment

None

9.4 Requirements

The Contractor shall renew all anodes on the vessel. Vessel is equipped with an ***estimated*** total of:

- Sixty (60) 12 lb. rectangular shape weld on zincs, ZSS-12 or equal on the keel cooler guards.
- ~~Twelve (12) 6 lb teardrop shape anodes on each rudder~~
- Two (2) 23-24 lb. zinc anodes on each rudder (Total of 4)
- Four (4) 5.3 lb. teardrop shape weld on ZHC-23 or equal (inside the sea chest)
- One hundred (100) 23-24 lb. zincs

All welding on the hull is to be accomplished prior to cleaning, prepping, and painting in the bilge areas. Repaint disturbed areas with anti-corrosive and anti-fouling paint in way of the zinc strap welds. Painting shall be as specified in the "Painting & Blasting Hull Below DLWL" section of these Special Provisions. All anodes shall be properly masked off when the surrounding areas are being painted. Compensation for the renewal of all anodes shall be paid under this work item.

NOTE: Keel cooler bolt on zinc anodes (specific to protecting the keel coolers themselves) shall be replaced in accordance with this work item and in accordance with the requirements of Section 21. "ENGINE WATER COOLING, INSPECTION, AND MAINTENANCE."

9.5 Tests, Trials, and Documentation

None

9.6 Payment

The unit contract bid price per each and shall include labor and materials to remove and then install (1) zinc anode. Separate unit pricing shall be provided for each zinc size. Quantities indicated on the bid proposal are estimated and arbitrarily assigned for the purpose of developing a common proposal for all bidders and for that purpose only. The NCDOT will count installed zincs and pay only for the number of installed zincs, based on the quoted unit price.

Pay Items:

Generic Miscellaneous Items (Zinc Anode Replacements - Keel Cooler Guards / 12 LB.)
Generic Miscellaneous Items (Zinc Anode Replacements - Rudders / ~~6 LB~~. 23-24 LB.)
Generic Miscellaneous Items (Zinc Anode Replacements - Sea Chests & Bow Thruster /5.3 LB.)
Generic Miscellaneous Items (Zinc Anode Replacements - Vessel Hull / 23-24 LB.)

REVISED 10/27/2026

ITEMIZED PROPOSAL FOR CONTRACT NO. DA00708

County: DARE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			FERRY ITEMS			
0001	0000820000-N	SP	GENERIC MISCELLANEOUS ITEM (BERTHING DAYS)	5 DAY		
0002	0000820000-N	SP	GENERIC MISCELLANEOUS ITEM (LAY DAYS)	5 DAY		
0003	0000950000-E	SP	GENERIC MISCELLANEOUS ITEM (CROP AND RENEW STEEL - BULKHEAD PLATE)	75 SF		
0004	0000950000-E	SP	GENERIC MISCELLANEOUS ITEM (CROP AND RENEW STEEL - DECK PLATE)	25 SF		
0005	0000950000-E	SP	GENERIC MISCELLANEOUS ITEM (CROP AND RENEW STEEL - HULL PLATE)	150 SF		
0006	0000950000-E	SP	GENERIC MISCELLANEOUS ITEM (SPOT PREP & PAINT VOIDS, TANK RMS., STEERING COMPARTMENT AND ENGINE RM. BILGES)	2,000 SF		
0007	0001020000-N	SP	GENERIC MISCELLANEOUS ITEM (ZINC ANODE REPLACEMENTS - KEEL COOLER GUARDS / 12 LB.)	60 EA		
0008	0001020000-N	SP	GENERIC MISCELLANEOUS ITEM (ZINC ANODE REPLACEMENTS - RUDDERS / 23-24 LB.)	4 EA		
0009	0001020000-N	SP	GENERIC MISCELLANEOUS ITEM (ZINC ANODE REPLACEMENTS - SEA CHESTS & BOW THRUSTER / 5.3 LB.)	4 EA		
0010	0001020000-N	SP	GENERIC MISCELLANEOUS ITEM (ZINC ANODE REPLACEMENTS - VESSEL HULL / 23-24 LB.)	100 EA		
0011	0005000000-N	SP	GENERIC FERRY ITEM (BLAST & PAINT - ALL DECKS)	Lump Sum	L.S.	
0012	0005000000-N	SP	GENERIC FERRY ITEM (BLAST & PAINT - HULL ABOVE DLWL)	Lump Sum	L.S.	
0013	0005000000-N	SP	GENERIC FERRY ITEM (BLAST & PAINT - HULL BELOW DLWL)	Lump Sum	L.S.	
0014	0005000000-N	SP	GENERIC FERRY ITEM (BLAST & PAINT - SUPERSTRUCTURE)	Lump Sum	L.S.	
0015	0005000000-N	SP	GENERIC FERRY ITEM (CLEAN AND CLEAR ALL DECK DRAINS)	Lump Sum	L.S.	

County: DARE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0016	0005000000-N	SP	GENERIC FERRY ITEM (ENGINE WATER COOLING SYSTEM INSPECTION AND MAINTENANCE)	Lump Sum	L.S.	
0017	0005000000-N	SP	GENERIC FERRY ITEM (GLOBAL DAVIT - INSPECTION AND MAINTENANCE REPAIR)	Lump Sum	L.S.	
0018	0005000000-N	SP	GENERIC FERRY ITEM (HIGH - PRESSURE WATER WASH - HULL ABOVE DLWL)	Lump Sum	L.S.	
0019	0005000000-N	SP	GENERIC FERRY ITEM (HIGH - PRESSURE WATER WASH - HULL BELOW DLWL)	Lump Sum	L.S.	
0020	0005000000-N	SP	GENERIC FERRY ITEM (HIGH-PRESSURE WATER WASH - SUPERSTRUCTURE)	Lump Sum	L.S.	
0021	0005000000-N	SP	GENERIC FERRY ITEM (HVAC MODIFICATION)	Lump Sum	L.S.	
0022	0005000000-N	SP	GENERIC FERRY ITEM (MAIN DECK HATCH MAINTENANCE AND REPAIR)	Lump Sum	L.S.	
0023	0005000000-N	SP	GENERIC FERRY ITEM (MAIN ENGINES MAJOR OVERHAUL)	Lump Sum	L.S.	
0024	0005000000-N	SP	GENERIC FERRY ITEM (OPEN, CLEAN AND CERTIFY GAS FREE: BILGES, HOLDS AND ENCLOSED AREAS)	Lump Sum	L.S.	
0025	0005000000-N	SP	GENERIC FERRY ITEM (PROPELLER AND TAILSHAFT INSPECTIONS)	Lump Sum	L.S.	
0026	0005000000-N	SP	GENERIC FERRY ITEM (REMOVE ALL MAIN DECK WTD, MAINTENANCE, REPAIR AND REINSTALL)	Lump Sum	L.S.	
0027	0005000000-N	SP	GENERIC FERRY ITEM (RENEW WINDOW GASKETS)	Lump Sum	L.S.	
0028	0005000000-N	SP	GENERIC FERRY ITEM (RUDDER REMOVALS AND INSPECTIONS)	Lump Sum	L.S.	
0029	0005000000-N	SP	GENERIC FERRY ITEM (SEA CHEST, STRAINER AND VALVE INSPECTIONS)	Lump Sum	L.S.	

ITEMIZED PROPOSAL FOR CONTRACT NO. DA00708

REVISED 10/27/2026

County: DARE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0030	0005000000-N	SP	GENERIC FERRY ITEM (SEWAGE SYSTEM - CLEAN, INSPECT, AND PERFORM MAINTENACE)	Lump Sum	L.S.	
0031	0005000000-N	SP	GENERIC FERRY ITEM (SHIPYARD SERVICES)	Lump Sum	L.S.	
0032	0005000000-N	SP	GENERIC FERRY ITEM (STARTUP, DOCK TRAILS, AND SEA TRIALS)	Lump Sum	L.S.	
0033	0005000000-N	SP	GENERIC FERRY ITEM (TAKE CONTROL AND DRY DOCK THE M/V CARTERET)	Lump Sum	L.S.	

0954/Oct27/Q2451/D124520000/E33

Total Amount Of Bid For Entire Project :

EQUIPMENT LIST

ZONE	EQUIP ID	DESCRIPTION	CAPACITY/RATING	MFR	MODEL	SERVING
ZONE 1	511-E100	HEAT PUMP OUTDOOR UNIT #1	60,000 BTU/HR	MITSUBISHI	MXZ-SM60NL	ZONE 1
	511-E110	BRANCH BOX #1	3 PORT	MITSUBISHI	PAC-LMA30BC	ZONE 1
	511-E101	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX24NL	LOWER LOUNGE, AFT
	511-E102	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX24NL	LOWER LOUNGE, AFT
	511-E130	CIRCUIT BREAKER	50A	SQUARE D	QO250GFI	ZONE 1
ZONE 2	511-E200	HEAT PUMP OUTDOOR UNIT #2	60,000 BTU/HR	MITSUBISHI	MXZ-SM60NL	ZONE 2
	511-E210	BRANCH BOX #2	3 PORT	MITSUBISHI	PAC-LMA30BC	ZONE 2
	511-E201	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX24NL	LOWER LOUNGE, FORWARD
	511-E202	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX24NL	LOWER LOUNGE, FORWARD
	511-E230	CIRCUIT BREAKER	50A	SQUARE D	QO250GFI	ZONE 2
ZONE 3	511-E300	HEAT PUMP OUTDOOR UNIT #3	60,000 BTU/HR	MITSUBISHI	MXZ-SM60NL	ZONE 3
	511-E310	BRANCH BOX #3	3 PORT	MITSUBISHI	PAC-LMA30BC	ZONE 3
	511-E301	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX24NL	UPPER LOUNGE
	511-E302	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX24NL	UPPER LOUNGE
	511-E330	CIRCUIT BREAKER	50A	SQUARE D	QO250GFI	ZONE 3
ZONE 4	511-E400	HEAT PUMP OUTDOOR UNIT #4	30,000 BTU/HR	MITSUBISHI	MUZ-GX30NL	ZONE 4
	511-E401	INDOOR UNIT, WALL MOUNT	30,000 BTU/HR	MITSUBISHI	MSZ-GX30NL	WHEELHOUSE
	511-E430	CIRCUIT BREAKER	25A	SQUARE D	QO225GFI	ZONE 4
ZONE 5	511-E500	HEAT PUMP OUTDOOR UNIT #5	15,000 BTU/HR	MITSUBISHI	MUZ-GX15NL	AUXILIARY MACHINERY ROOM
	511-E501	INDOOR UNIT, WALL MOUNT	15,000 BTU/HR	MITSUBISHI	MLZ-GX15NL	EOS
	511-E520	CONDENSATE PUMP	1/9 HP	LIBERTY PUMPS	LCU-15S	AUXILIARY MACHINERY ROOM
	511-E521	SAFETY DISCONNECT SWITCH	30A	LEVITON	LDS30-AX	CONDENSATE PUMP
	511-E530	CIRCUIT BREAKER	20A	SQUARE D	QO220GFI	ZONE 5
	511-E531	CIRCUIT BREAKER	15A	SQUARE D	QO115	CONDENSATE PUMP BREAKER

B 1

B 1

B 1

GENERAL NOTES

1. THIS DRAWING IS A DIAGRAMMATIC ILLUSTRATION OF HVAC SYSTEM INSTALLATIONS, AND DOES NOT REPRESENT THE FULL EXTENT OF THE WORK. EXACT ARRANGEMENTS AND PIPE/CABLE ROUTING SHALL BE DEVELOPED BY THE CONTRACTOR IN ACCORDANCE WITH EQUIPMENT MANUFACTURER INSTALLATION GUIDANCE.
2. SYSTEM DESIGN, MATERIAL, INSTALLATION, TESTING, AND QUALITY OF WORK SHALL BE IN ACCORDANCE WITH THE REGULATORY REQUIREMENTS OF THE U.S. COAST GUARD (USCG).
3. SYSTEM INSTALLATION SHALL PERMIT CLEAR PASSAGE ALONG WALKWAYS AND LADDERWAYS; CLEAR ACCESS FOR OPERATION AND ROUTINE MAINTENANCE; CLEAR ACCESS TO ALL DOORS, HATCHES, AND OPENINGS.
4. BULKHEAD MOUNTED INDOOR UNITS SHALL BE LOCATED AS HIGH AS PRACTICAL.

SHEET LIST

SHT	TITLE
1	COVER SHEET
2	MATERIAL SCHEDULE
3	PIPING SCHEMATIC
4	EOS PIPING SCHEMATIC & DETAILS
5	WHEELHOUSE AND UPPER LOUNGE ARRANGEMENTS
6	LOWER LOUNGE AND EOS ARRANGEMENTS
7	ELECTRICAL

REFERENCES

1. MITSUBISHI ELECTRIC, DOCUMENT NO. JG79N716H03, *INSTALLATION MANUAL MSZ-GX18/24/30/36NL, MSY-GX18/24/30/36NL*, 2025.
2. MITSUBISHI ELECTRIC, DOCUMENT NO. M-P0956A, *DATA BOOK MODEL MXZ-SM 36/48/60NL-U1, MXZ-SM36/42/48NLHZ-U1*, FEBRUARY 2025.
3. MITSUBISHI ELECTRIC, DOCUMENT NO. OBD950, *TECHNICAL AND SERVICE MANUAL MSZ-GX06/09/12/15/18/24/30/36NL, MSY-GX09/12/15/18/24/30/36NL*, 2025.
5. MITSUBISHI ELECTRIC, *MSZ-GX15NL & MUZ-GX15NL*, 2025.
6. MITSUBISHI ELECTRIC, *MSZ-GX30NL & MUZ-GX30NL*, 2025.
7. MITSUBISHI ELECTRIC, *MXZ-SM60NL*, 2025.

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPD
	-	INITIAL RELEASE	2026/02/27	MSM
SHT 7 SHT 1, 7	A	1. UPDATED ELECTRICAL FEEDER CIRCUITS 2. UPDATED CONDENSATE PUMP CIRCUIT BREAKER	2026/07/29	MSM
SHT 1, 3	B	1. CHANGED MSZ-GX30NL INDOOR UNIT MODELS TO MSZ-GX24NL IN PAX LOUNGES	10/15/2026	MSM

NORTH CAROLINA PROFESSIONAL SEAL 059805 ENGINEER MATTHEW S. MILLER
Digitally Signed 19-Oct-2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MANNS HARBOR, NC

M/V CARTERET
HVAC MODIFICATIONS
COVER SHEET

Glosten More than DESIGN.
1201 WESTERN AVENUE, SUITE 200
SEATTLE, WASHINGTON 98101
T +1 206.624.7850 GLOSTEN.COM

Drawn	Checked	Approved	Size	Issue Date
AHN	CJF	MSM	B	2026/10/15

Scale	Drawing Number	Sheet	of	Revision
AS NOTED	25057.01-511-01	1	7	B

PIPING MATERIAL SCHEDULE

PIPING SYSTEM	ITEM	SIZE	TYPE	MATERIAL		DESIGN SPECIFICATION	NOTES
REFRIGERATION MAX WORKING CONDITIONS PRESSURE 601 PSIG, TEMP 150 °F USCG CLASS I	PIPE	ALL	TUBE, SEAMLESS	COPPER ASTM B280 HARD DRAWN ACR		ASTM B280 TYPE L	
	FITTINGS	ALL	SOLDER JOINT	WROUGHT COPPER ASTM B75 C12200		ASME B16.22 SOLDER JOINT	D
CONDENSATE DRAINS MAX WORKING CONDITIONS PRESSURE 15PSIG, TEMP 100°F USCG CLASS II	PIPE	ALL	PIPE, CPVC DRAINAGE	CPVC TYPE IV, ASTM D1784		ASTM F2618 SCH 40 OR ASTM F441 SCH 40 OR 80	E
	TAKEDOWN JOINTS	1-1/4" AND BELOW	UNION	CPVC TYPE IV, ASTM D1784		ASTM F441, ASTM F439	
	BOLTING	ALL	BOLTS	CARBON STEEL ASTM A307 GR B OR SS ASTM A193 GR 8M		ASME B18.2.1	C
			NUTS/WASHERS	CARBON STEEL ASTM A563 GR A OR SS A194 GR 8M		ASME B18.2.2	C
	FITTINGS	1-1/4" AND BELOW	CPVC SCH 80	CPVC TYPE IV, ASTM D1784		ASTM F441, ASTM F439	E
	VALVES			BODY	TRIM		
		ALL	BALL	BRASS OR BRONZE	BRASS OR BRONZE OR SS	MSS SP-110 CLASS 150, NPT OR FLANGE	
OVERBOARDS MAX WORKING CONDITIONS PRESSURE 15PSIG, TEMP 100°F USCG CLASS II	PIPE	ALL	SEAMLESS OR ERW	CARBON STEEL ASTM A106 GR B OR A53 GR B TYPE E		ASME B36.10, SCH XS, SEAMLESS OR ERW	
	TAKEDOWN JOINTS	2" AND BELOW	UNION	CARBON STEEL ASTM A105		MSS-SP-83, CLASS 3000, SW	
	BOLTING	ALL	BOLTS	CARBON STEEL ASTM A307 GR B OR SS ASTM A193 GR 8M		ASME B18.2.1	C
			NUTS/WASHERS	CARBON STEEL ASTM A563 GR A OR SS A194 GR 8M		ASME B18.2.2	C
	FITTINGS		SOCKET WELD	CARBON STEEL ASTM A105 OR A234 GR WPB		ASME B16.11, CLASS 3000, SW	
				BODY	TRIM		
	VALVES	2" AND BELOW	GATE, GLOBE, CHECK, BALL	CARBON STEEL ASTM A105 OR A216, GR WCB	NCA OR BRONZE	ASME B16.34 OR MSS SP-110, CLASS 150 MIN, SW	A
ABBREVIATIONS:	SW - SOCKET WELD, SO - SLIP-ON, WN - WELDNECK, SCH - SCHEDULE, FLG - FLANGED, BW - BUTT WELD, GR - GRADE, SS - STAINLESS STEEL, NCA - NICKEL COPPER ALLOY, FLG - FLANGED						
NOTES:	A. RESILIENT SEATED VALVES SHALL BE USCG CATEGORY A FOR MANIFOLDS, SYSTEM CROSS-CONNECTIONS, AND SHELL VALVES B. MSS SP-80 VALVES LIMITED TO 75% OF VALVE DESIGN PRESSURE C. BOLTING IN WEATHER OR WET LOCATIONS SHALL BE STAINLESS STEEL D. COPPER PRESS-FIT MECHANICALLY ATTACHED FITTINGS APPROVED FOR THE INTENDED SERVICE AND MEETING USCG REQUIREMENTS ARE ALSO ACCEPTABLE E. PLASTIC PIPING AND FITTINGS SHALL MEET THE LOW FLAME SPREAD REQUIREMENTS AND SMOKE AND TOXICITY REQUIREMENTS OF THE IMO 2010 FTP CODE ANNEX 1. PARTS 2 AND 5.						

NORTH CAROLINA PROFESSIONAL SEAL 059805 ENGINEER MATTHEW S. MILLER
Digitally signed by Matthew S. Miller 10-22-2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MANNS HARBOR, NC

M/V CARTERET
HVAC MODIFICATIONS
MATERIAL SCHEDULE

Glosten More than DESIGN. 1201 WESTERN AVENUE, SUITE 200 SEATTLE, WASHINGTON 98101 T +1 206.624.7850 GLOSTEN.COM

Drawn	Checked	Approved	Size	Issue Date
AHN	CJF	MSM	B	2026/10/15

Scale	Drawing Number	Sheet	of	Revision
AS NOTED	25057.01-511-01	2	7	B

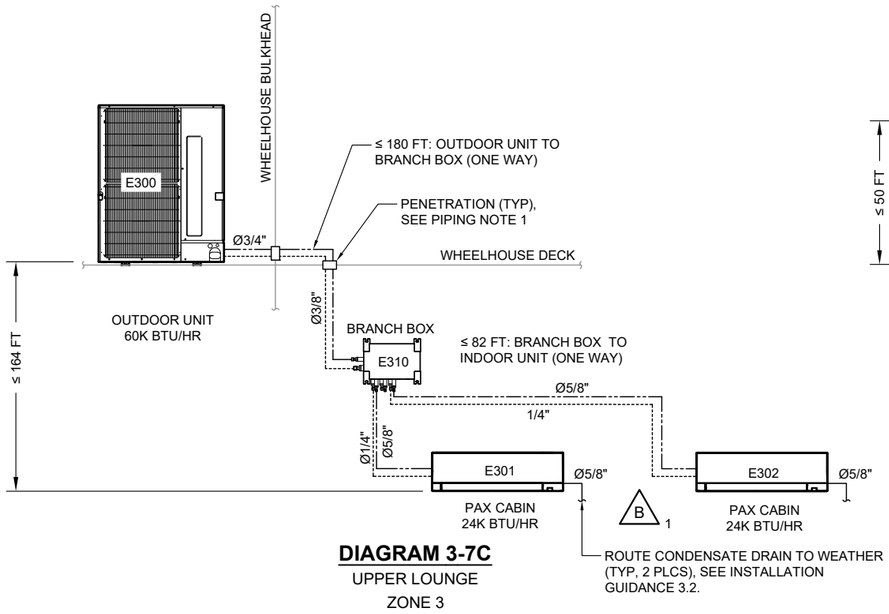


DIAGRAM 3-7C
UPPER LOUNGE
ZONE 3

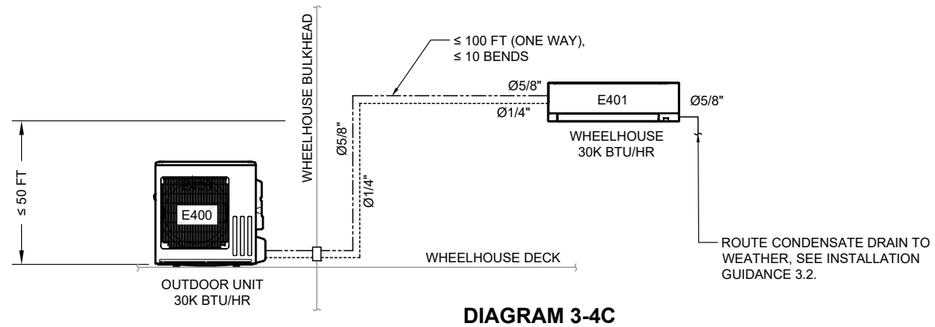


DIAGRAM 3-4C
WHEELHOUSE
ZONE 4

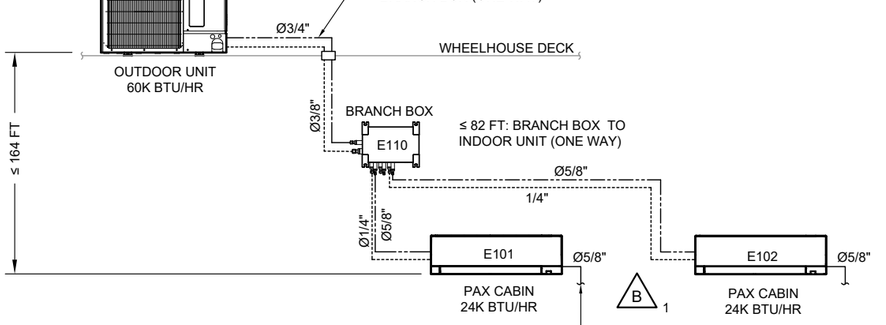


DIAGRAM 3-7B
AFT LOWER LOUNGE
ZONE 1

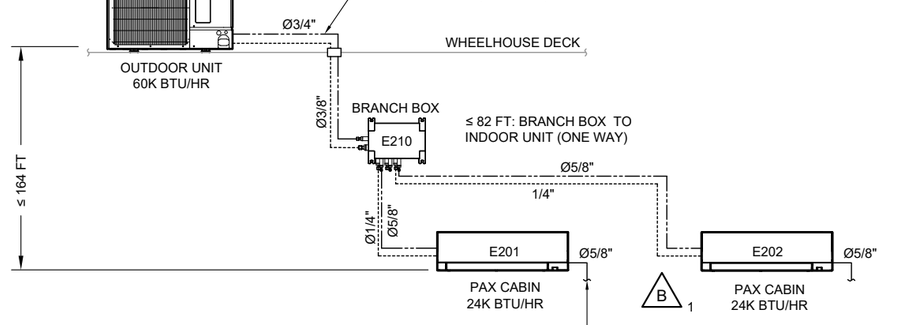


DIAGRAM 3-4B
FWD LOWER LOUNGE
ZONE 2

PIPING NOTES

1. WHERE COPPER OR PLASTIC PIPING PENETRATES BULKHEADS OR DECKS, STEEL PENETRATION SLEEVES WITH SLIPSIL SEALING PLUGS OR RISE/NOFIRNO SEALING SHALL BE USED TO MAINTAIN THE WATERTIGHT, FUMETIGHT, AND FIRE RATING OF THE BOUNDARY PER REGULATORY BODY REQUIREMENTS. INSTALL PIPING TRANSITS IN ACCORDANCE WITH MANUFACTURER'S APPROVED INSTALLATION DETAILS.
2. SYSTEM INSTALLATION SHALL COMPLY WITH THE FOLLOWING ASTM SHIPBUILDING AND MARINE TECHNOLOGY STANDARDS:
   - 2.1. RIGID PIPE HANGERS SHALL BE IN ACCORDANCE WITH ASTM F708. EXCEPTION: PARAGRAPH 1.3 IS NOT APPLICABLE.
   - 2.2. GAGE BOARD ASSEMBLIES SHALL BE IN ACCORDANCE WITH ASTM F707. INSTALL TYPE 1 (3-1/2 SIZE), GRADE A.
   - 2.3. INSTRUMENTATION PIPING ASSEMBLIES SHALL BE IN ACCORDANCE WITH ASTM F721. EXCEPTION: INSTALL 1/2-INCH ROOT VALVE WITH ≤ 4 INCH STAND OFF. FINAL BRANCH SIZING WILL BE DEPENDENT ON INSTRUMENTATION SELECTED.
   - 2.4. PIPE WELDING SHALL BE IN ACCORDANCE WITH ASTM F722. EXCEPTION: NON-CONSUMABLE BACKING RINGS AND MITERED JOINTS NOT PERMITTED.
   - 2.5. VALVE LABEL PLATES SHALL BE IN ACCORDANCE WITH ASTM F992. INSTALL TYPE 1, GRADE E, CLASS 2, LETTER SIZE 2, PLATE SIZE TO SUIT.
   - 2.6. SPRAY SHIELDS FOR MECHANICAL JOINTS SHALL BE IN ACCORDANCE WITH ASTM F1138. EXCEPTION: REGULATORY BODY APPROVED ALTERNATIVES MAY BE SUBSTITUTED.
3. PIPE RUNS BETWEEN WATERTIGHT BULKHEADS SHALL HAVE AT LEAST ONE EXPANSION BEND.
4. GALVANIC ISOLATION KITS SHALL BE PROVIDED FOR FLANGED PIPING JOINTS OF DISSIMILAR METALS.

SYMBOL LIST

SYMBOL	DESCRIPTION
	GATE VALVE
	BALL VALVE
	CHECK VALVE
	UNION ADAPTER
	DRAIN CONNECTION
	DECK/BULKHEAD PENETRATION (SEE PIPING NOTE 1)
	OVERBOARD DISCHARGE
M1 M2	CHANGE IN MATERIAL STL = CARBON STEEL CPVC = MARINE GRADE CPVC PLASTIC
----------	REFRIGERATION, LIQUID, COPPER
—·—·—	REFRIGERATION, GAS, COPPER
———	CONDENSATE DRAIN, CPVC

INSTALLATION GUIDANCE (SEE REF. 2)

1. EQUIPMENT INSTALLATION (ONE-WAY) PIPING LENGTHS PER MXZ-SM60NL OUTDOOR UNIT SHALL BE IN ACCORDANCE WITH MITSUBISHI REQUIREMENTS FOR A BRANCH BOX METHOD APPLICATION, INCLUDING:
   - 1.1. TOTAL PIPING LENGTH SHALL BE ≤ 492 FT.
   - 1.2. FARTHEST PIPING LENGTH SHALL BE ≤ 262 FT.
   - 1.3. TOTAL PIPING LENGTH BETWEEN OUTDOOR UNIT AND BRANCH BOXES SHALL BE ≤ 180FT.
   - 1.4. PIPING LENGTH BETWEEN THE FIRST BRANCH JOINT AND FARTHEST BRANCH BOX SHALL BE ≤ 98 FT.
   - 1.5. FARTHEST PIPING LENGTH AFTER BRANCH BOX SHALL BE ≤ 82 FT.
   - 1.6. TOTAL PIPING LENGTH BETWEEN BRANCH BOXES AND INDOOR UNITS SHALL BE ≤ 312 FT.
2. EQUIPMENT INSTALLATION (ONE-WAY) PERMISSIBLE HEIGHT DIFFERENCE PER OUTDOOR UNIT SHALL BE IN ACCORDANCE WITH MITSUBISHI REQUIREMENTS FOR A BRANCH BOX METHOD APPLICATION, INCLUDING:
   - 2.1. MAXIMUM HEIGHT DIFFERENCE BETWEEN OUTDOOR UNIT AND INDOOR UNIT
     - 2.1.1. WHEN THE OUTDOOR UNIT IS SET HIGHER THAN THE INDOOR UNIT: 164 FT.
     - 2.1.2. WHEN THE OUTDOOR UNIT IS SET LOWER THAN THE INDOOR UNIT: 131 FT.
   - 2.2. MAXIMUM HEIGHT DIFFERENCE BETWEEN OUTDOOR UNIT AND BRANCH BOX
     - 2.2.1. WHEN THE OUTDOOR UNIT IS SET HIGHER THAN THE BRANCH BOX: 164 FT.
     - 2.2.2. WHEN THE OUTDOOR UNIT IS SET LOWER THAN THE BRANCH BOX: 131 FT.
   - 2.3. MAXIMUM HEIGHT DIFFERENCE BETWEEN BRANCH BOX AND INDOOR UNIT: 49 FT.
   - 2.4. MAXIMUM HEIGHT DIFFERENCE BETWEEN INDOOR UNITS: 39 FT.
   - 2.5. NUMBER OF BENDS SHALL BE ≤ 15.
3. PIPING
   - 3.1. REFRIGERANT PIPING SHALL BE COPPER TUBING PER MATERIALS SCHEDULE ON SHEET 1.
   - 3.2. CONDENSATE DRAIN PIPING SHALL SLOPE AT A MINIMUM OF 1/4 IN PER FOOT.
   - 3.3. SPARE BRANCH BOX CIRCUITS SHALL BE CAPPED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MANNS HARBOR, NC

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HVAC MODIFICATIONS
PIPING SCHEMATIC

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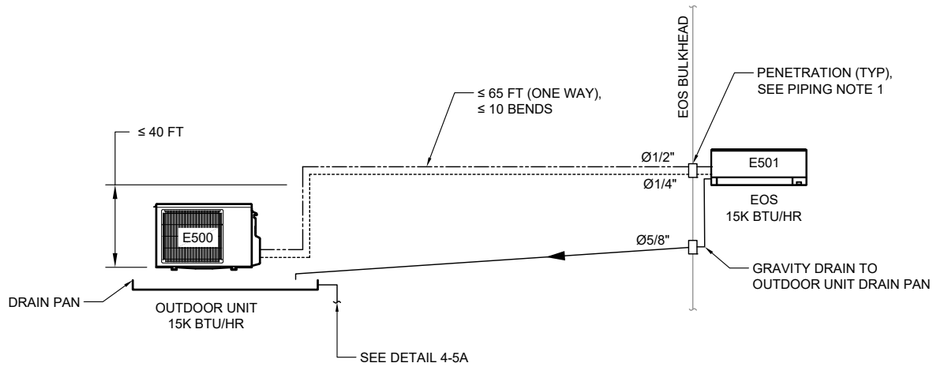
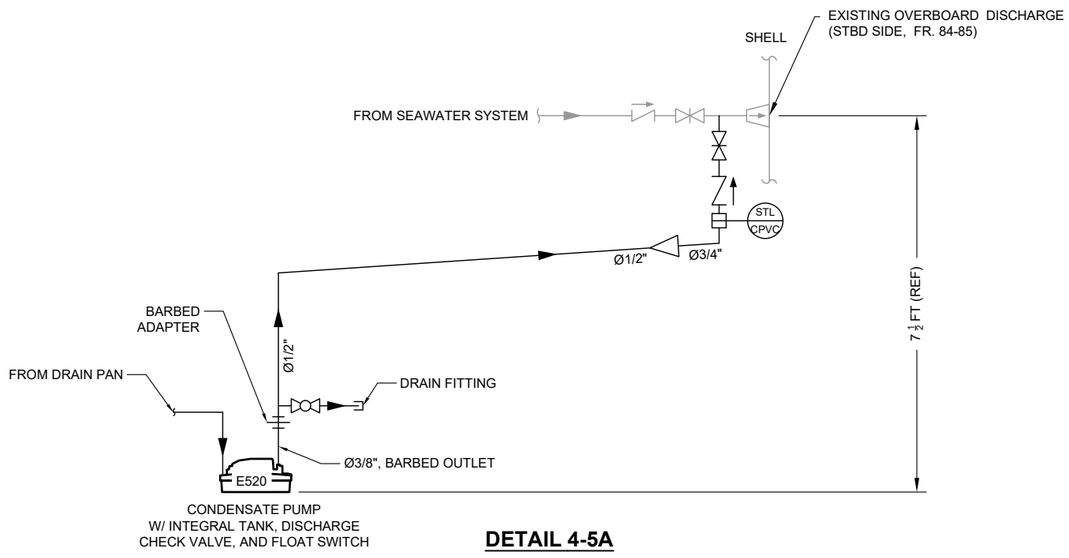


DIAGRAM 4-5C

EOS
ZONE 5



DETAIL 4-5A

CONDENSATE DRAIN

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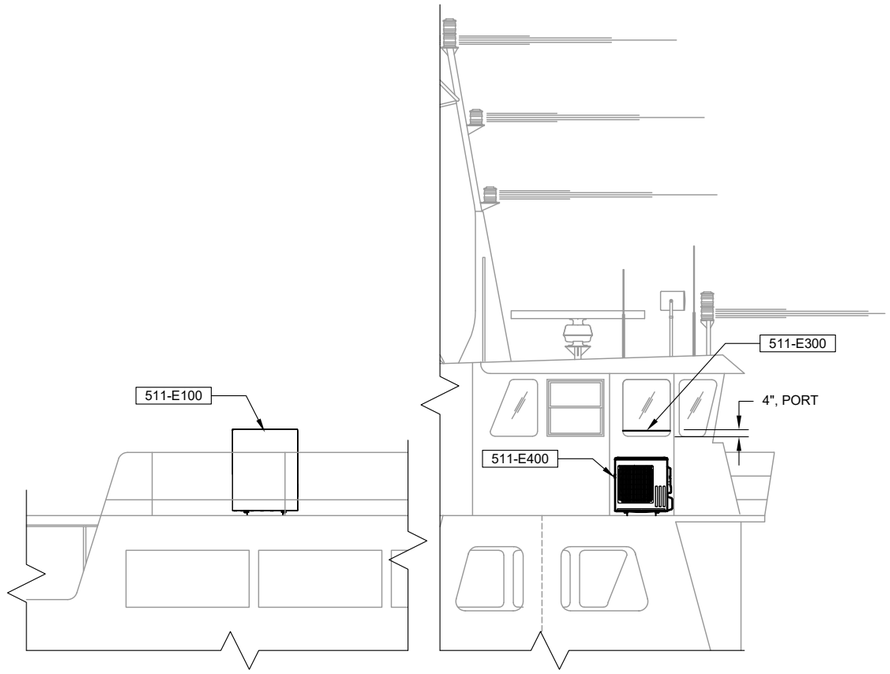
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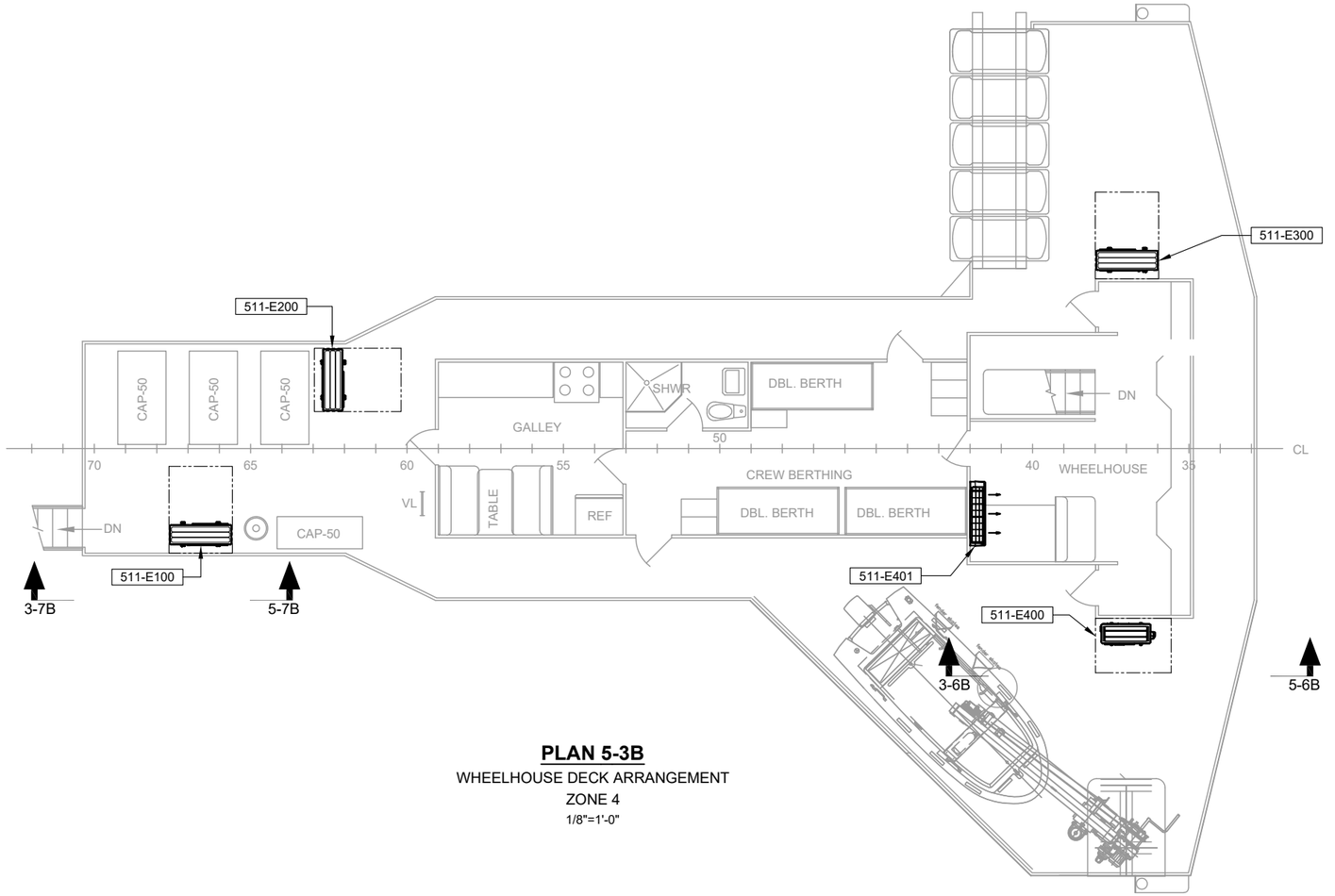
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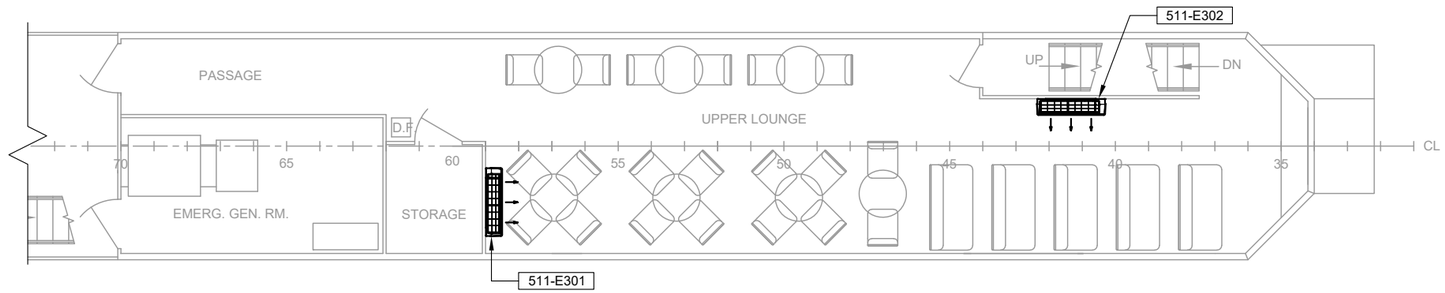


ELEVATION 5-7B
AFT DECK
1/8"=1'-0"

ELEVATION 5-6B
WHEELHOUSE
1/8"=1'-0"



PLAN 5-3B
WHEELHOUSE DECK ARRANGEMENT
ZONE 4
1/8"=1'-0"



PLAN 5-3A
UPPER LOUNGE ARRANGEMENT
ZONE 3
1/8"=1'-0"

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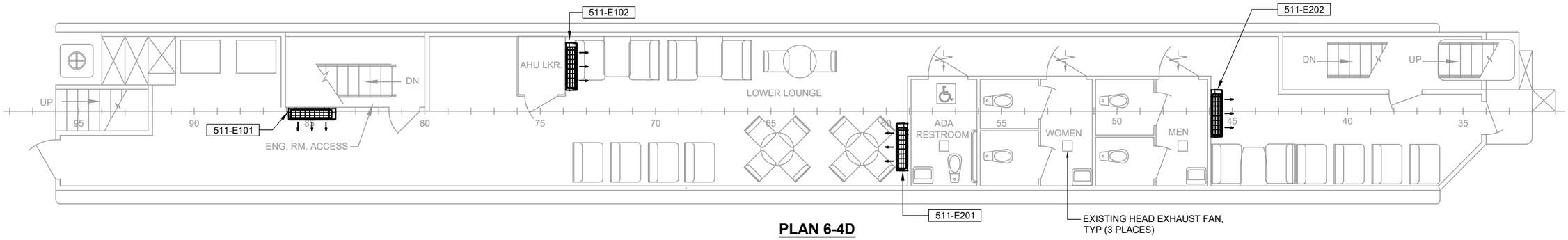
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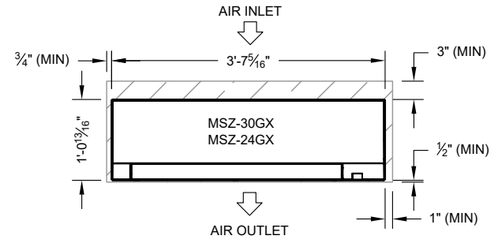
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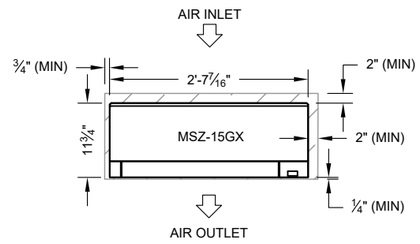
PLAN 6-4D

LOWER LOUNGE ARRANGEMENT
ZONE 1 & ZONE 2
1/8"=1'-0"



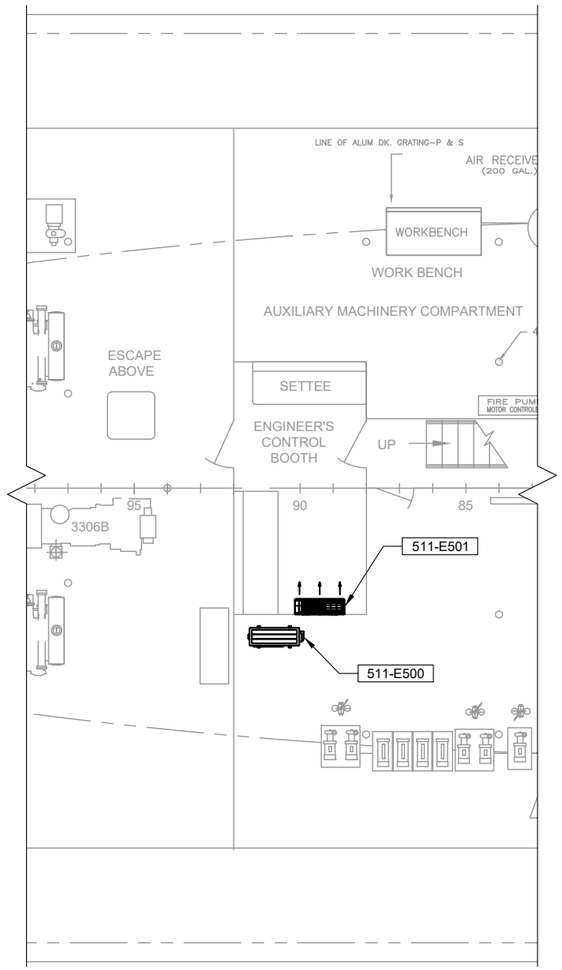
DETAIL 6-4C

BULKHEAD MOUNTED - LARGE
FRONT VIEW
1/2"=1'-0"



DETAIL 6-2C

BULKHEAD MOUNTED - SMALL
FRONT VIEW
1/2"=1'-0"



PLAN 6-7A

EOS ARRANGEMENT
ZONE 5
1/8"=1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 059805 ENGINEER MATTHEW S. MILLER
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HVAC MODIFICATIONS
LOWER LOUNGE AND EOS ARRANGEMENTS

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PANEL LOAD SUMMARY

PANEL	TRIP (A)	CIRCUIT ID	REMOVE								INSTALL								LOAD CHANGE	PANEL
			PH	VOLTS	TRIP (A)	DESCRIPTION	kVA	EQUIPMENT	CABLE	BREAKER	PH	VOLTS	TRIP (A)	DESCRIPTION	kVA	EQUIPMENT	CABLE	BREAKER	kVA	
MAIN SWITCHBOARD	450	21	3	208	80	HVAC PANEL	-21.6	YES	YES	NO	-	-	-	-	-	-	-	-	-57.6	MAIN SWITCHBOARD
		23	3	208	80	CIRCULATION HEATER 1	-18.0	YES	YES	NO	-	-	-	-	-	-	-	-		
		25	3	208	80	CIRCULATION HEATER 2	-18.0	YES	YES	NO	-	-	-	-	-	-	-	-		
P-2 (LOWER LOUNGE)	225	20	1	120	20	LOWER LOUNGE HVAC	-1.3	YES	YES	NO	-	-	-	-	-	-	-	-	-2.6	P-2 (LOWER LOUNGE)
		21	1	120	20	LOWER LOUNGE HVAC	-1.3	YES	YES	NO	-	-	-	-	-	-	-	-		
P-5 (CREW SPACE)	100	5, 7	1	120	20	WHEELHOUSE HVAC	-2.6	YES	YES	YES	1	208	25	ZONE 4	+3.5	YES	YES	YES	+0.9	P-5 (CREW SPACE)
P-6 (UPPER LOUNGE)	100	3	1	120	20	UPPER LOUNGE HVAC	-1.3	YES	YES	NO	-	-	-	-	-	-	-	-	+10.5	P-6 (UPPER LOUNGE)
		5, 7	1	208	20	UPPER LOUNGE HVAC	-2.3	YES	YES	YES	1	208	50	ZONE 3	+4.7	YES	YES	YES		
		11, 13	-	-	-	-	-	-	-	-	1	208	50	ZONE 2	+4.7	YES	YES	YES		
		12, 14	-	-	-	-	-	-	-	-	1	208	50	ZONE 1	+4.7	YES	YES	YES		
P-7 (EOS)	100	17, 19	-	-	-	-	-	-	-	-	1	208	20	ZONE 5	+1.1	YES	YES	YES	+1.3	P-7 (EOS)
		16	-	-	-	-	-	-	-	-	1	120	15	CONDENSATE PUMP	+0.2	YES	YES	YES		

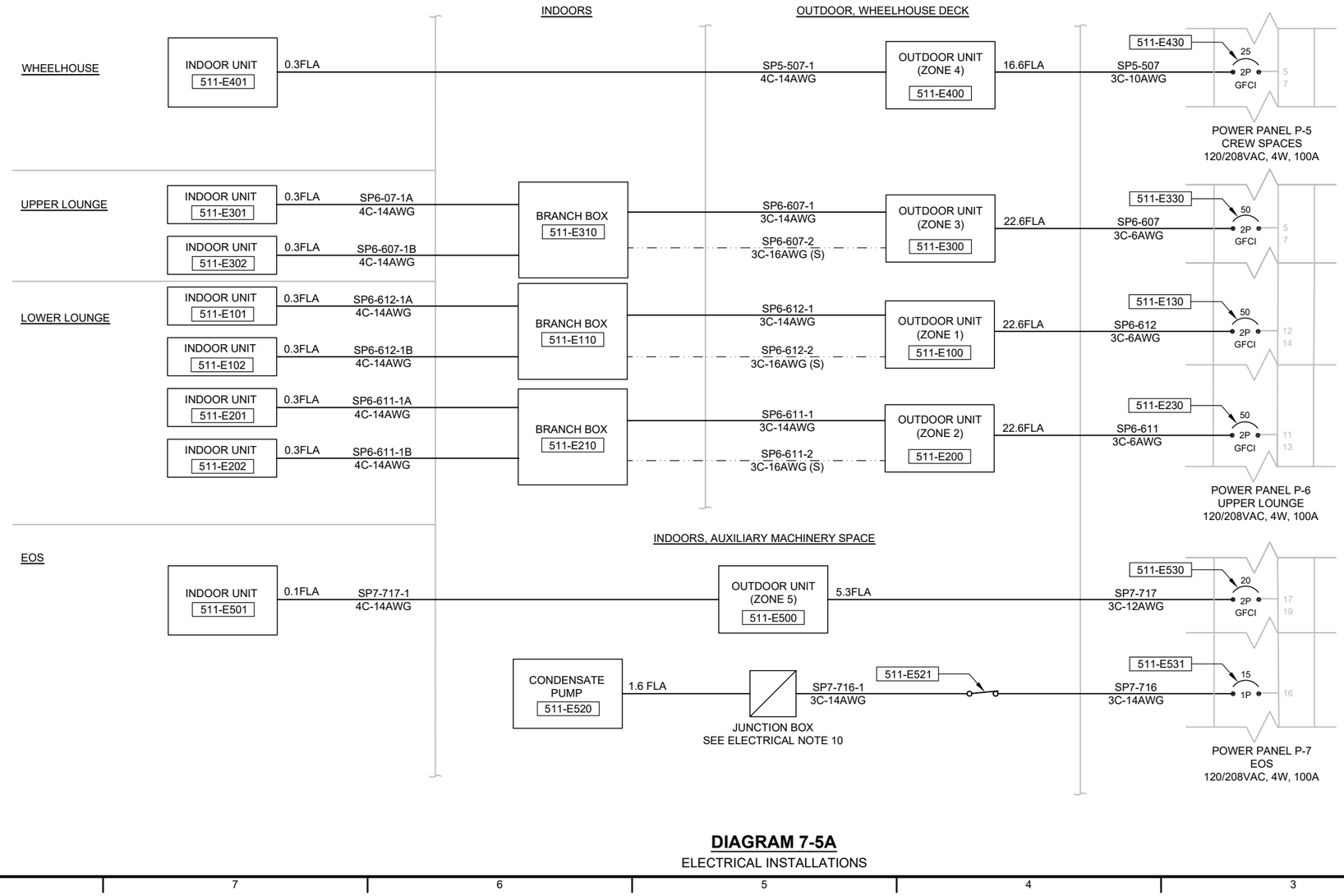


DIAGRAM 7-5A
ELECTRICAL INSTALLATIONS

ELECTRICAL NOTES

1. CABLE AND PIPING INSTALLATIONS IN ACCOMMODATIONS AND COMMON SPACES SHALL BE OBSCURED BEHIND BULKHEAD LININGS AND SUSPENDED CEILINGS.
2. NYLON OR BRASS CABLE STUFFING TUBES OR MULTI-CABLE TRANSITS SHALL BE USED WHEN PENETRATING ELECTRICAL ENCLOSURES OR JUNCTION BOXES. STEEL KICKPIPES WITH BRASS STUFFING GLANDS OR MULTI-CABLE TRANSITS SHALL BE INSTALLED AT ALL DECK AND BULKHEAD PENETRATIONS. WATERTIGHT AND STRUCTURAL FIRE BOUNDARY RATINGS SHALL BE MAINTAINED.
3. ALL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH IEEE-45, IEEE-142, AND IEEE-518 (INSOFAR AS IT MAY APPLY). EQUIPMENT GROUNDS SHALL BE CARRIED BACK TO THE RESPECTIVE POWER PANEL.
4. ALL CABLES SHALL BE TESTED FOR INSULATION RESISTANCE (MEGGERED). CABLES MUST MEET IEEE-45.6, CLAUSE 5.1. TEST RESULTS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE. NO CABLE SPLICING IS ALLOWED.
5. CABLES SHALL BE SIZED IN ACCORDANCE WITH IEEE-45 AND THE APPLICABLE REGULATORY BODY. CABLE SIZES SHALL BE INCREASED TO COMPENSATE FOR VOLTAGE DROP AND/OR CABLE BANKING, AS NECESSARY, TO MEET REGULATORY REQUIREMENTS. CABLE SIZES SHOWN ARE FOR 50C AMBIENT TEMPERATURE AND ALL CABLES 1AWG AND SMALLER ARE DOUBLE BANKED. MOTOR CIRCUIT CABLES UPSTREAM OF AN OVERLOAD RELAY ARE SIZED BASED ON THE OVERLOAD SETTING, ASSUMING 125% OF THE MOTOR'S FULL LOAD CURRENT.
6. ALL EQUIPMENT SHOWN SHALL BE NEW.
7. ELECTRICAL EQUIPMENT SHALL ADHERE TO THE FOLLOWING CONSTRUCTION STANDARDS/REGULATIONS, WITH MARINE SUPPLEMENTS AS APPLICABLE:
   - 7.1. CIRCUIT BREAKERS - UL489SA
   - 7.2. ENCLOSURES - NEMA 250
   - 7.3. CABLES - IEEE-45 OR IEC 60092-35313.
8. LOADS ON DISTRIBUTION POWER AND LIGHTING PANELS SHALL BE BALANCED TO WITHIN 15 PERCENT WHEREVER POSSIBLE.
9. NEW EQUIPMENT UTILIZES INVERTERS AND GFCI CIRCUIT BREAKERS SHALL BE SUITABLE FOR THE ASSOCIATED HIGHER HARMONICS.
10. STRIPPED WIRE CONDENSATE PUMP INSTALLATION SHALL BE IN ACCORDANCE WITH LIBERTY PUMPS INSTALLATION REQUIREMENTS, UTILIZE AN APPROPRIATE ENCLOSURE OR JUNCTION BOX, AND COMPLY WITH THE NEC AND APPLICABLE CODES. PUMP WIRING IS AS FOLLOWS:
    - 10.0.1. GREEN IS GROUND
    - 10.0.2. BLACK IS LINE
    - 10.0.3. WHITE IS NEUTRAL (115V)

CABLE TYPE KEY

CABLE DESIGNATION: 3C-6AWG (FR+S)
BASE CABLE
MODIFIER(S)

BASE CABLE	
SYMBOL	DESCRIPTION
XC-YYAWG (S)	MULTI-CONDUCTOR POWER/CONTROL CABLE X = NUMBER OF CONDUCTORS C = INDICATES INDIVIDUAL CONDUCTORS YY = CONDUCTOR SIZE AWG = AMERICAN WIRE GAUGE (S) = SHIELDED
- - - - -	SIGNAL CABLE (IEEE-45 OR IEC 60092-35313)
———	POWER CABLE (IEEE-45 OR IEC 60092-35313)

ELECTRICAL SYMBOLS LIST

SYMBOL	DESCRIPTION
XX / YP	CIRCUIT BREAKER (UL 489SA) (XX = TRIP RATING, Y = POLE NUMBER) GFCI = GROUND FAULT CIRCUIT INTERRUPT
	SAFETY DISCONNECT SWITCH (NORMALLY CLOSED)
P1-1 / 3C-6AWG	CABLE ID NUMBER CABLE TYPE
511-E100	EQUIPMENT ID NUMBER

NORTH CAROLINA PROFESSIONAL SEAL 059805 ENGINEER MATTHEW S. MILLER
Digitally Signed 11-Oct-2026

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