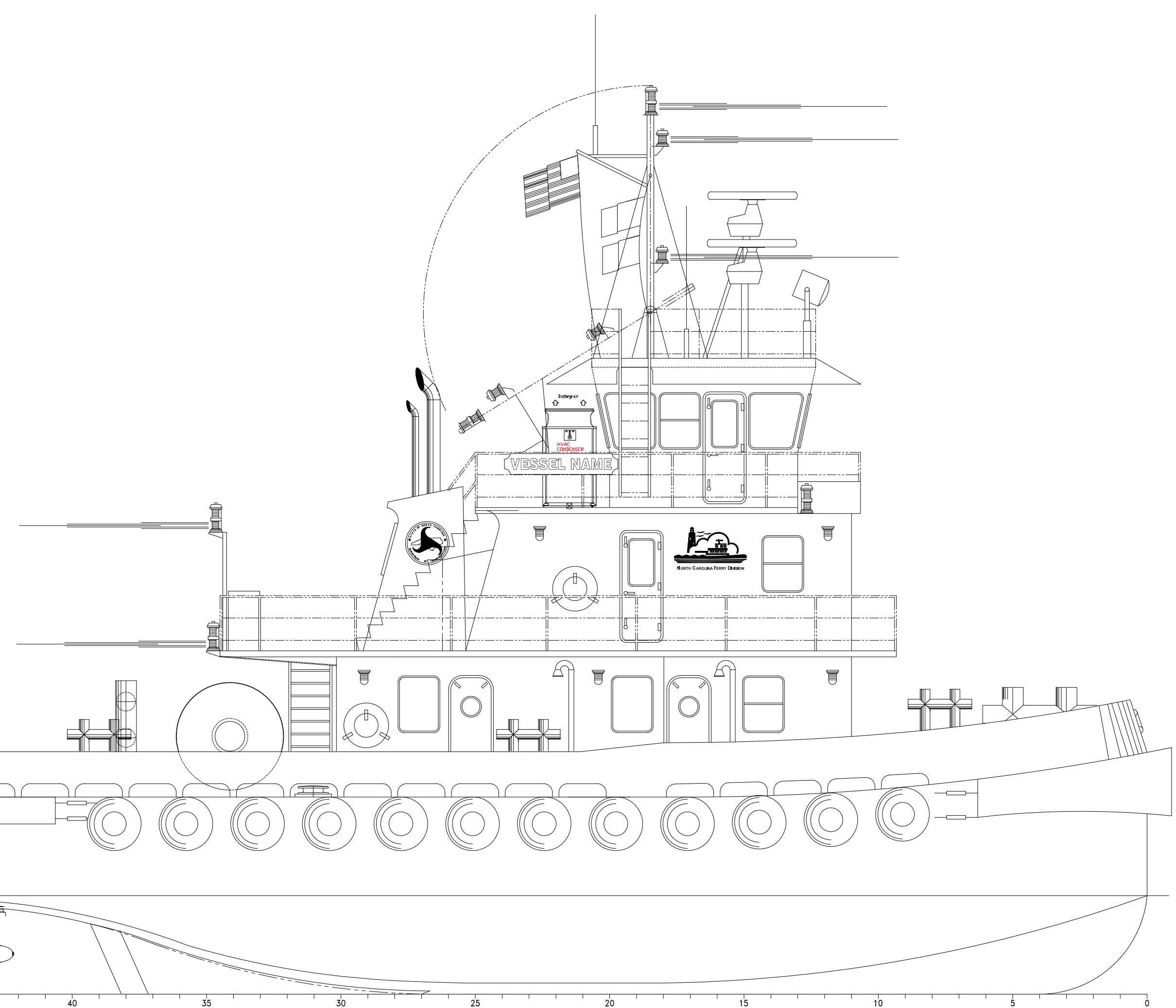


MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	COMPONENTS				VALVES		BOLTING		REMARKS
			TAKEDOWN JOINTS	FITTINGS	FLEX CONNECT	GASKETS	BODY	TRIM	BOLTS/STUDS	NUTS	
COOLING WATER PIPING MAWP: 30 PSIG MAWT: 120°F	2" & BELOW	COPPER TUBE, SEAMLESS, TYPE K OR L, ASTM B88	UNIONS: BRAZED, BRONZE, ASME SB88, TYPE K OR L, ANSI B16.24 FLANGES: SILBRAZE, BRONZE, ASME SB862, ANSI B16.24	SILBRAZE: COPPER, ASME SB88, TYPE K OR L, ANSI B16.22		GASKET: GARLOCK STYLE BG3000 OR EQUAL	BALL: BRONZE, FLANGED OR THREADED, ASTM B61 OR B62, MSS-SP-72 CHECK VALVE: THREADED OR BRAZED, BRONZE, ASME SB61 OR SB62, MSS-SP-80 GATE: DUCTILE IRON ASTM A395 FLANGED, 150#	BALL: BRONZE OR CHROME PLATED BALL PTFE SEATS SEAT INTEGRAL: MATERIAL SAME AS VALVE BODY STAINLESS STEEL TRIM	CARBON STEEL ASTM A307 GR B ANSI B18.21	CARBON STEEL ASTM A563 GR A ANSI B18.22	

EQUIPMENT LIST

QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE	REMARKS
1	CONDENSER UNIT	SPLIT HEAT PUMP CONDENSER		72,000 BTU/h COOLING (NOMINAL)	208V/3Ø/60HZ 4.57 KW	MULTI-ZONE VARIABLE REFRIGERANT FLOW HEAT PUMP
3	WALL MOUNTED INDOOR UNIT	SPLIT HEAT PUMP INDOOR UNIT		6,000 BTU/h COOLING (NOMINAL)	208V/3Ø/60HZ 0.03 KW	SERVED BY CONDENSER UNIT
1	WALL MOUNTED INDOOR UNIT	SPLIT HEAT PUMP INDOOR UNIT		12,000 BTU/h COOLING (NOMINAL)	208V/3Ø/60HZ 0.03 KW	SERVED BY CONDENSER UNIT
2	CEILING CONCEALED INDOOR UNIT	SPLIT HEAT PUMP INDOOR UNIT		12,000 BTU/h COOLING (NOMINAL)	208V/3Ø/60HZ 0.09 KW	SERVED BY CONDENSER UNIT
1	WALL MOUNTED INDOOR UNIT	SPLIT HEAT PUMP INDOOR UNIT		18,000 BTU/h COOLING (NOMINAL)	208V/3Ø/60HZ 0.03 KW	SERVED BY CONDENSER UNIT
1	BC CONTROLLER SINGLE				208V/3Ø/60HZ 0.112 KW	
7	SIMPLE MA CONTROLLER				-	
1	SYSTEM REMOTE CONTROLLER				-	



MATERIAL LIST

ITEM	QUANTITY	SYMBOL	DESCRIPTION	MATERIAL SPEC.	REMARKS
PG-¾"		———	¾" GALVANIZED STEEL PIPE	SCH 40 ASTM A106 GR B ANSI B36.10	
PG-⅝"		---	⅝" GALVANIZED STEEL PIPE	SCH 40 ASTM A106 GR B ANSI B36.10	
PG-½"		———	½" GALVANIZED STEEL PIPE	SCH 40 ASTM A106 GR B ANSI B36.10	
PG-¼"		---	¼" GALVANIZED STEEL PIPE	SCH 40 ASTM A106 GR B ANSI B36.10	

- GENERAL NOTES -		- GENERAL NOTES -	
NO.	DESCRIPTION	NO.	DESCRIPTION
1.	MATERIAL AND WORKMANSHIP SHALL CONFORM TO U.S. COAST GUARD REQUIREMENTS FOR SUBCHAPTER M VESSELS.	10.	PROVIDE A COMPLETE CONTROL SYSTEM FOR THE HVAC EQUIPMENT. EACH SPACE SHALL BE A SEPARATE ZONE, WITH INDEPENDENT THERMOSTATIC CONTROL, PROVIDE CENTRALIZED HVAC CONTROL AND SHUTDOWN IN THE PILOT HOUSE.
2.	THIS DRAWING IS A CONTRACT GUIDANCE DRAWING IN DIAGRAMMATIC FORM. SYSTEMS SHALL BE DEVELOPED BY THE CONTRACTOR AS NECESSARY TO EFFECT A COMPLETE AND FUNCTIONAL INSTALLATION WITH REGULATORY AND OWNER APPROVAL.	11.	INSTALL AND COMMISSION HVAC EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
3.	DUCTS SHALL BE CONSTRUCTED OF HOT-DIPPED GALVANIZED STEEL SHEET METAL THICKNESS AND REINFORCEMENT SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS OR APPLICABLE CFR AND ABS REGULATIONS, WHICHEVER IS GREATER. BURNED OFF OR DAMAGED GALVANIZING SHALL BE REPLACED WITH A SPRAY-ON TYPE GALVANIZING COATING.	12.	PUMP INTERLOCKS AND FLOW SWITCHES SHALL BE PROVIDED TO PREVENT HEAT PUMP CONDENSERS FROM OPERATING WITH INSUFFICIENT COOLING WATER FLOW.
4.	PRELIMINARY DUCT DIMENSIONS SHOWN ARE FOR ROUND DUCTS EXCEPT AS NOTED. RECTANGULAR DUCT OF EQUAL FRICTION LOSS MAY BE SUBSTITUTED AS REQUIRED FOR INSTALLATION.	13.	THE CONTRACTOR SHALL VERIFY KEEL COOLER SIZING BASED ON FINAL HVAC EQUIPMENT SELECTION PRIOR TO ORDERING.
5.	FAN SELECTIONS AND MOTOR RATINGS ARE BASED ON ESTIMATED DUCT ROUTING, FITTING SELECTION, AND CONSTRUCTION. DUCT ROUTING MAY NOT ACCOUNT FOR ALL INTERFERENCES. THE CONTRACTOR SHALL FINALIZE DUCT ROUTING AND SIZING BASED ON HIS OWN CALCULATIONS AND SELECT FANS TO SUIT THE INSTALLED DUCTING SYSTEM.	14.	INSTALL A KEEL COOLER GUARD TO PROTECT THE KEEL COOLER FROM FLOATING DEBRIS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
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7.	WEATHER TERMINALS SHALL BE FITTED WITH REMOVABLE INSECT SCREENS AND WEATHER TIGHT CLOSURES.		
8.	PROVIDE A CONDENSATE DRAIN FOR EACH INDOOR UNIT. CONTINUOUSLY SLOPE AC SYSTEM CONDENSATE DRAIN PIPING WITH NO HIGH OR LOW POINTS TO A DECK DRAIN OR OTHER SAFE EXTERIOR LOCATION. CONDENSATE DRAINS SHALL NOT DISCHARGE ONTO PASSENGER DECKS.		
9.	PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.		

PROFESSIONAL ENGINEER

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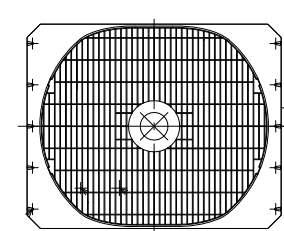
Title: 70.5'x30'x11' NCDOT TOWBOAT

HVAC SYSTEM

Dwg. No. 17-1372-514 Alt. No. 0
Sh. 1 of 3

Drawn By: JACOB CONNALLY Date: JUNE 05, 2018
Checked By: _____ Date: _____
App'd By: _____ Scale: 1/2" = 1'-0"
ABS App'l: _____ USCG App'l: _____

69,191 BTU/h COOLING
79,135 BTU/h HEATING



CONTROL BOX

PG-3/4
PG-3/8

PG-1/2
PG-1/4 5,766 BTU/h (3345 BTU/h) COOLING
6,578 BTU/h
1/1 PILOT HOUSE / FCU-1

EST. COOLING DISCHARGE AIR TEMP 59.9
EST. HEATING DISCHARGE AIR TEMP 99.9

PG-1/2
PG-1/4 11,532 BTU/h (6,869 BTU/h) COOLING
13,255 BTU/h
2/2 PASSAGEWAY / FCU-2

EST. COOLING DISCHARGE AIR TEMP 59.9
EST. HEATING DISCHARGE AIR TEMP 99.9

PG-1/2
PG-1/4 5,766 BTU/h (3345 BTU/h) COOLING
6,578 BTU/h
3/3 CAPTAINS QUARTERS / FCU-4

EST. COOLING DISCHARGE AIR TEMP 59.9
EST. HEATING DISCHARGE AIR TEMP 99.9

PG-1/2
PG-1/4 5,766 BTU/h (3345 BTU/h) COOLING
6,578 BTU/h
4/4 CERW QUARTERS / FCU-4

EST. COOLING DISCHARGE AIR TEMP 59.9
EST. HEATING DISCHARGE AIR TEMP 99.9

PG-1/2
PG-1/4 11,532 BTU/h (6,869 BTU/h) COOLING
13,255 BTU/h
5/5 SHOWERS / FCU-5

EST. COOLING DISCHARGE AIR TEMP 58.4
EST. HEATING DISCHARGE AIR TEMP 103.1

PG-1/2
PG-1/4 17,298 BTU/h (6,599 BTU/h) COOLING
19,637 BTU/h
6/6 GALLEY / FCU-6

EST. COOLING DISCHARGE AIR TEMP 53.9
EST. HEATING DISCHARGE AIR TEMP 112.9

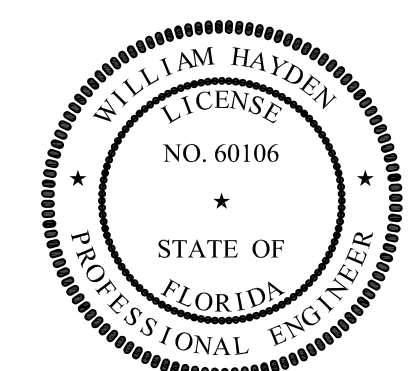
PG-1/2
PG-1/4 11,532 BTU/h (6,869 BTU/h) COOLING
13,255 BTU/h
7/7 HEADS / FCU-7

EST. COOLING DISCHARGE AIR TEMP 58.4
EST. HEATING DISCHARGE AIR TEMP 103.1

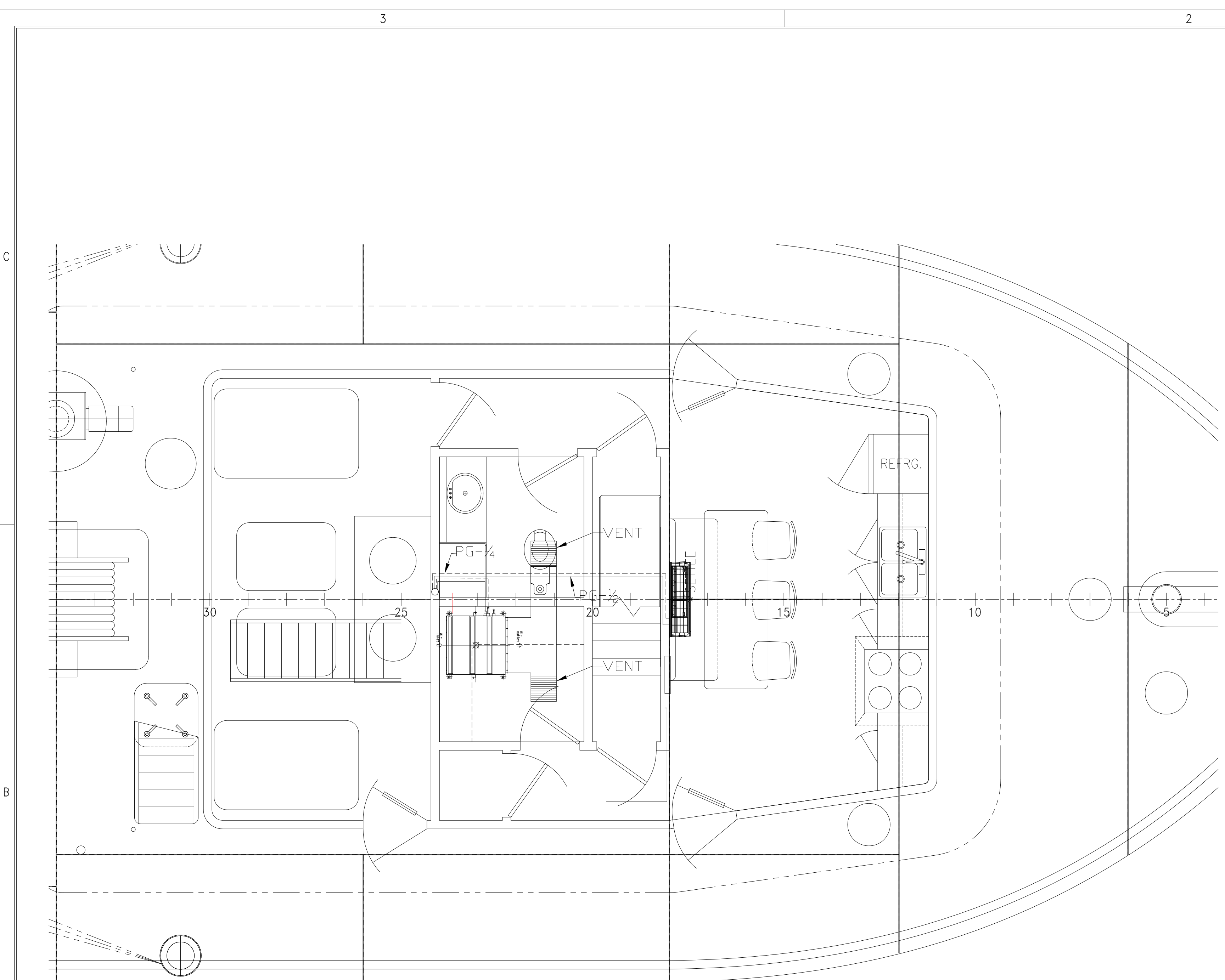
GENERAL NOTES

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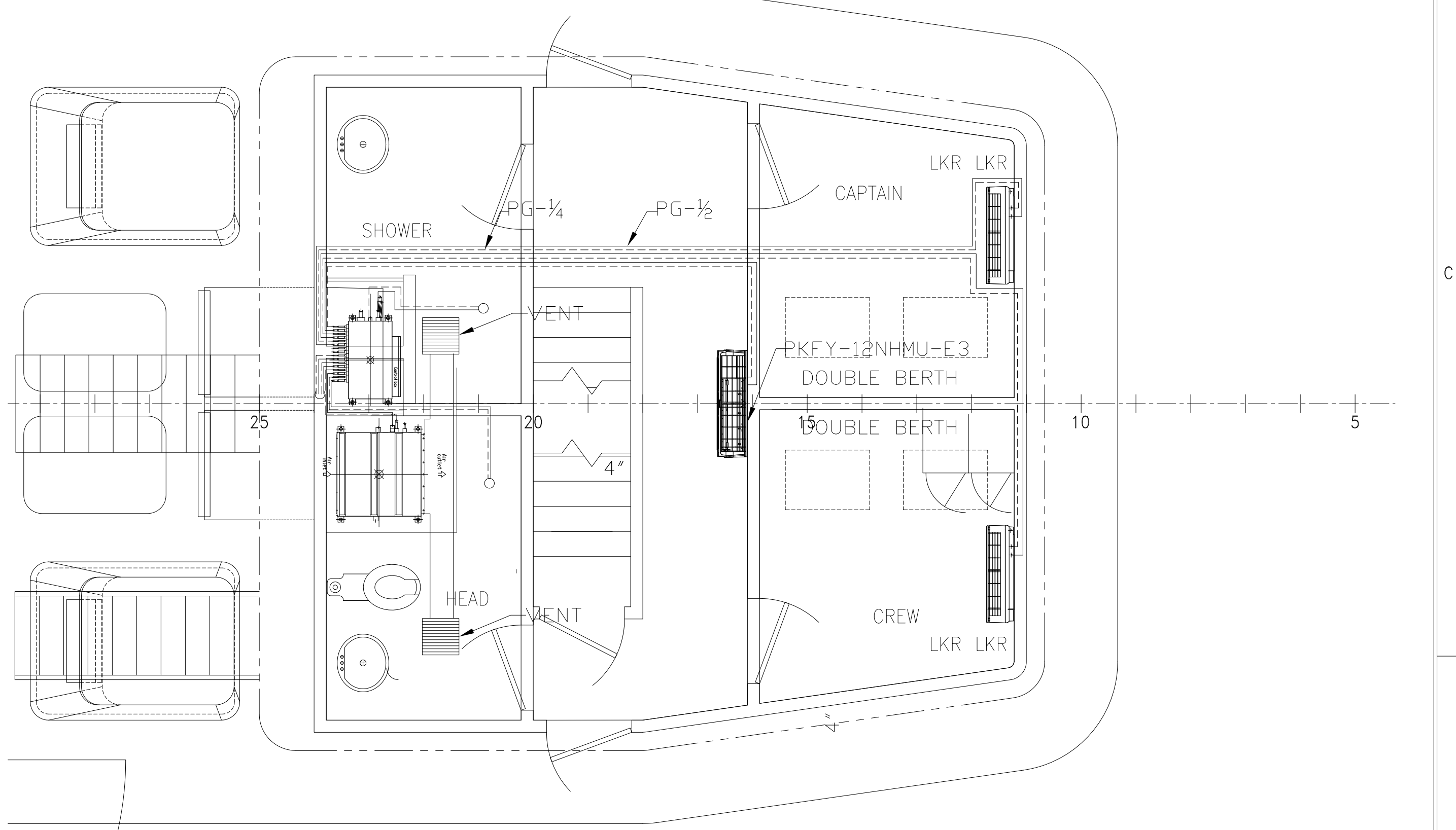
Table with 2 columns: NO. and DESCRIPTION. Contains 15 numbered notes regarding material standards, duct construction, fan selection, and control system requirements.



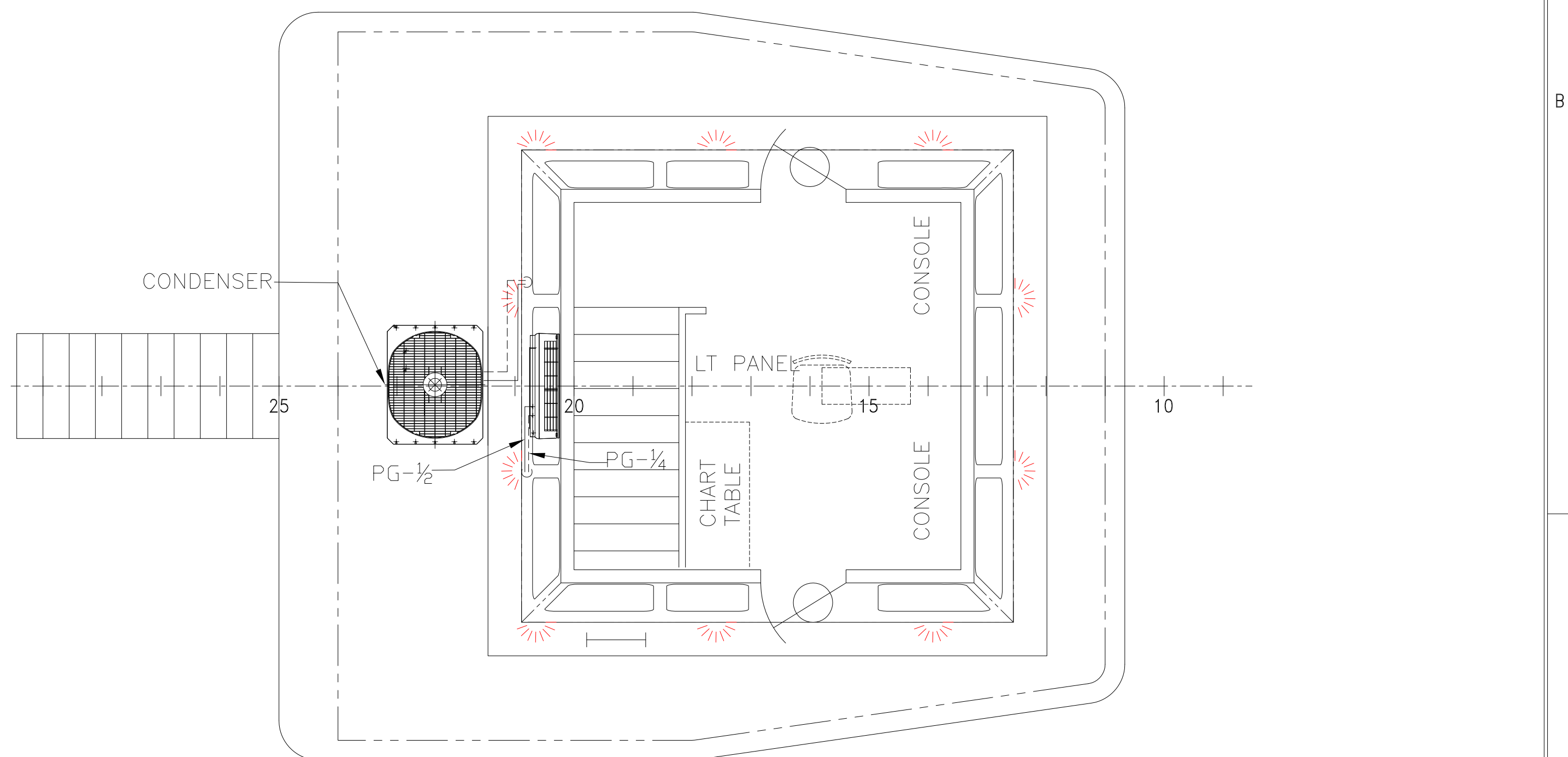
Project information block including: DeJong & Lebet, Inc. logo and contact info; Project title '70.5'x30'x11' NCDOT TOWBOAT'; HVAC SYSTEM title; Drawing No. 17-1372-514; Date: JUNE 05, 2018; Scale: 1/2" = 1'-0"; and various approval fields.



MAIN DECK

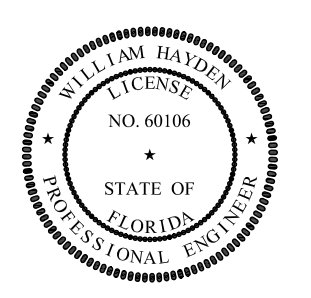


2ND DECK



PILOTHOUSE

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