

CONFIDENTIAL AND PROPRIETARY PROPERTY OF
Elliott Bay Design Group North Carolina, PLLC
 MAY NOT BE USED FOR CONSTRUCTION OR PROVIDED TO
 ANY THIRD PARTIES WITHOUT PRIOR WRITTEN CONSENT.
 © 2017 ELLIOTT BAY DESIGN GROUP.

MATERIAL SCHEDULE

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			VALVES		FITTINGS	FLEXIBLE HOSE
			MATERIAL	GASKETS	BOLTING	BODY	TRIM		
BILGE MAWP: 20 PSIG MAX TEMP: AMBIENT	ALL	ALUMINUM ASTM B221 5086, 5083, 5456 H111 OR H112 SCH 80	-	-	-	-	-	ALUMINUM ASTM B221 5086, 5083, 5456 H111 OR H112 SCH 80	VACUUM EXTRA HEAVY DUTY, INDUSTRIAL GRADE

EQUIPMENT LIST

QTY.	SERVICE	TYPE	MODEL	CAPACITY	DRIVE	REMARKS
10	BILGE PUMP	SUBMERSIBLE SELF-PRIMING	-	35 GPM @ 11' TDH	24 VDC 6.9 AMP	-
1	EMERGENCY BILGE PUMP	SUBMERSIBLE SELF-PRIMING PORTABLE	-	35 GPM @ 11' TDH	24 VDC 6.9 AMP	NOTE 6
1	FOREPEAK / VOID1 HAND PUMP	MANUAL	-	11 GPM	-	NOTE 5

SYMBOLS LIST

	BILGE PIPE / HOSE
	OVERBOARD DISCHARGE
	PUMP
	MATERIAL TRANSITION

CALCULATIONS

BILGE SYSTEM (PER LLOYD'S RULES FOR SPECIAL CRAFT, P15/C2/S12)

DATA:

LENGTH OF DEMI HULL, L	92 FT	28.04 M
BREADTH OF DEMI HULL, B	9 FT	2.74 M
DEPTH TO WT DECK, D	11.5 FT	3.51 M

BILGE MAIN
 $dm = 1.68 \sqrt{L(B+D)} + 25mm = 47.24mm$

BRANCH SUCTION
 $d = 2.15 + \sqrt{C(B+D)} + 12.5mm$

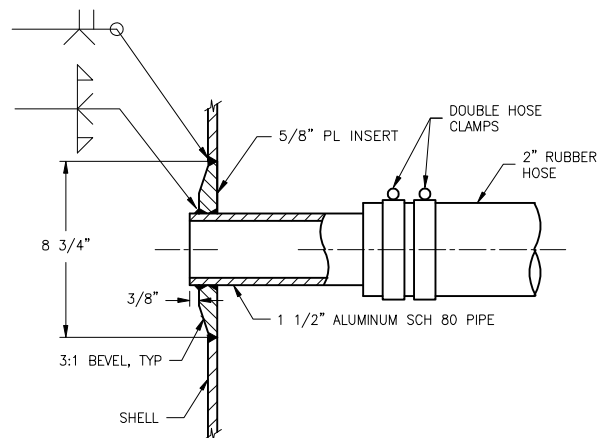
COMPARTMENT	LENGTH, C (FT)	(M)	PIPE SIZE, d (mm)	(IN)
JET ROOM	10.0	3.05	29.5	1.16
ENGINE ROOM	22.0	6.71	37.7	1.48
TANK ROOM	32.0	9.75	42.9	1.69
VOID 2	12.0	3.66	31.1	1.23

TOTAL PUMP CAPACITY
 $Qt = \frac{13.8}{1000} * dm^2 = 30.8 \text{ m}^3/\text{hr} = 136 \text{ gpm}$

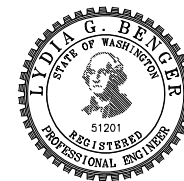
INDIVIDUAL PUMP CAPACITY
 $Qn = \frac{Qt}{N-1} = \frac{30.8}{5-1} \text{ m}^3/\text{hr} = 34 \text{ gpm}$

*IN NO CASE TO BE LESS THAN 8 m3/hr

N = 5 PUMPS, Qn = 7.7 m3/hr = 34 gpm
DEFAULT TO 8 m3/hr, 35 gpm



DETAIL 1-2A
 OVERBOARD DISCHARGE
 SCALE: NONE



REVISION HISTORY

REV	ZONE	DESCRIPTION	DWN	DATE	APVD

GENERAL NOTES

- ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH 46 CFR SUBCHAPTER T REGULATIONS.
- THIS DRAWING IS DIAGRAMMATIC AND DOES NOT REPRESENT A COMPLETE DETAILED DESIGN. EQUIPMENT LAYOUT IN A GIVEN AREA IS APPROXIMATE. THE CONTRACTOR SHALL DEVELOP A DETAILED DESIGN THAT PROVIDES A FULLY FUNCTIONAL ARRANGEMENT SUITABLE FOR INSTALLATION, TAKING INTO ACCOUNT ALL NECESSARY SYSTEM INTERFACES AND INTERFERENCES. DIMENSIONS SHALL BE VERIFIED FROM THE SHIP AND MANUFACTURERS' CERTIFIED DRAWINGS AS APPROPRIATE.
- HIGH BILGE ALARMS SHALL BE PROVIDED FOR ALL SPACES. ALARM PANEL SHALL BE COLLOCATED WITH THE PUMP CONTROLS IN THE PILOTHOUSE. SEE REF 1.
- ALL NEW PIPING SHALL BE HYDROSTATICALLY TESTED AT 150% OF THE SYSTEM PRESSURE, BUT NOT LESS THAN 50 PSI.
- VESSEL SHALL BE EQUIPPED WITH A HAND PUMP AND HOSE OF SUITABLE LENGTH TO DEWATER THE FOREPEAK VOID (VOID 1) OF EACH DEMI HULL TO COMPLY WITH USCG 46 CFR 182.510(o).
- VESSEL SHALL BE EQUIPPED WITH A PORTABLE EMERGENCY BILGE PUMP AND HOSE WITH THE SAME CAPACITY AS THE INSTALLED BILGE PUMPS.
- SYSTEM SHALL BE IN ACCORDANCE WITH LLOYD'S REGISTER RULES AND REGULATIONS FOR THE CLASSIFICATION OF SPECIAL SERVICE CRAFT CHAPTER 15, SECTION 12. A WAIVER SHALL BE OBTAINED FROM USCG FOR ALTERNATE BILGE SYSTEM.

REFERENCES

- 16109-003-802-0 CONTRACT SPECIFICATIONS



Elliott Bay Design Group
 North Carolina, PLLC

CLIENT
NORTH CAROLINA D.O.T.
 RALEIGH, NORTH CAROLINA

PROJECT
PEDESTRIAN FERRY

TITLE
BILGE SYSTEM

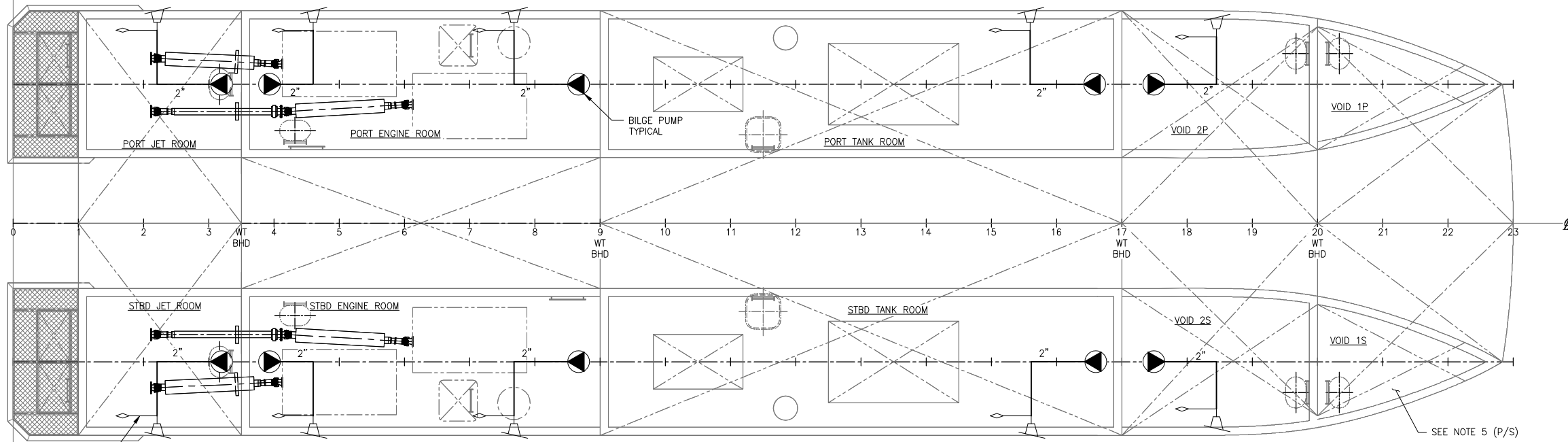
SYSTEM OPERATION INTENT

- BILGE SYSTEM IS DESIGNED IN ACCORDANCE WITH LLOYD'S REGISTER'S RULES AND REGULATIONS FOR SPECIAL SERVICE CRAFT, PART 15, CHAPTER 2, SECTION 12.
- EACH ENGINE ROOM IS EQUIPPED WITH TWO SUBMERSIBLE PUMPS. VOID 1 IS SERVED BY A HAND OPERATED PUMP AND HOSE. ALL OTHER WATERTIGHT SPACES ARE EQUIPPED WITH ONE SUBMERSIBLE PUMP.

SIZE D	DWG NO. 16109-003-529-1	REV -
SCALE AS NOTED	FILE NAME 16109-003-529-1-	SHEET 1 OF 2
DWN MWR	MOD	APVD LGB
CKD JHP	APVD LGB	APVD DATE 3/3/2017

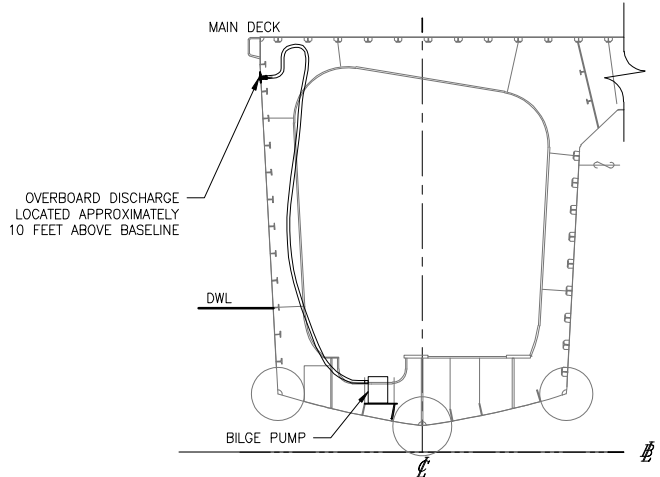
3/2/2017 2:06:55 PM

CONFIDENTIAL AND PROPRIETARY PROPERTY OF
Elliott Bay Design Group North Carolina, PLLC
 MAY NOT BE USED FOR CONSTRUCTION OR PROVIDED TO
 ANY THIRD PARTIES WITHOUT PRIOR WRITTEN CONSENT.
 © 2017 ELLIOTT BAY DESIGN GROUP.



TRANSITION TO 1 1/2" SCH 80
 ALUMINUM OVERBOARD
 SEE DETAIL 1-2A,
 TYPICAL

DETAIL 2-3C
BILGE SYSTEM LAYOUT
 1/4"=1'-0"



DETAIL 2-6A
BILGE PUMP DETAIL
 LKG AFT, PORT HULL
 STBD HULL SIM
 3/8"=1'-0"



SIZE	D	DWG NO.	16109-003-529-1	REV	-
SCALE	AS NOTED	FILE NAME	16109-003-529-1-	SHEET	2 OF 2

3/2/2017 2:07:10 PM