

REFERENCE DRAWINGS		
NO.	DRAWING TITLE	DRAWING NUMBER
1	GENERAL ARRANGEMENT PLAN	6094-8994-01
2	TANK ARRANGEMENT, CAPACITY PLAN	6094-8994-02
3	SANITARY FRESH WATER SYSTEM	6094-5300-02
4	BULGE DRAINAGE AND DEWATERING SYSTEM	6094-5200-01
5	COOLING WATER SYSTEM	6094-5200-01
6	COMPRESSED AIR SYSTEM	6094-4510-01
7	WATER FIRE EXTINGUISHING SYSTEM	6094-5500-03
8	AIR PIPES AND CONTROLING DIAGRAM	6094-5000-02
9	ALARM MONITORING & SOUND SYSTEM DESCRIPTION & LIST	6094-5200-01

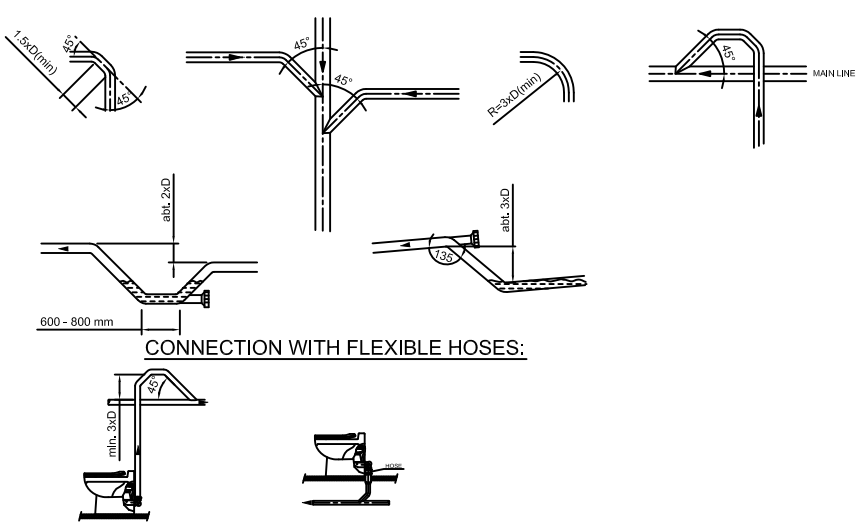
PIPE DIMENSIONS					
PIPE CODE	PIPE SIZE	STANDARD	MATERIAL	REMARKS	JOINTS
15	21.3 X 4.0	DIN2448	CARBON STEEL	GALVANIZED	FLANGED
15	25.4 X 6.3	DIN2448	CARBON STEEL	GALVANIZED/CLASS II LR	
20	26.9 X 2.3	DIN2448	CARBON STEEL	GALVANIZED	
25	33.7 X 2.3	DIN2448	CARBON STEEL	GALVANIZED	
32S8	42.4 X 1.6	DIN2462	STAINLESS STEEL	-	WELDED SLEEVE OR AN LOCK
32	42.4 X 2.6	DIN2448	CARBON STEEL	GALVANIZED	
40	48.3 X 3.6	DIN2448	CARBON STEEL	GALVANIZED	
50	60.3 X 3.6	DIN2448	CARBON STEEL	GALVANIZED	
50	60.3 X 6.3	DIN2448	CARBON STEEL	-	FLANGE OR AN LOCK PIPE COUPLING
50	60.3 X 6.3	DIN2448	CARBON STEEL	GALVANIZED/CLASS II LR	
25S8	33.7 X 1.6	DIN2462	AISS 316L	-	
50S5	60.3 X 1.6	DIN2462	AISS 316L	-	
40S5	48.3 X 1.6	DIN2462	AISS 316L	-	
50S5	50 X 1.0	BLOCHER	AISS 316L	-	

VALVE MATERIALS						
NO	NP	TEMP	VALVE TYPE	MATERIAL		L/R CERT
				BODY	TRIM	
15	10	40	BALL VALVE	ST STEEL	ST STEEL BALL, STEM & LEVER, PTFE SEAT	NO
20	10	40	FULL BORE BALL VALVE	CAST STEEL	ST STEEL BALL, STEM & LEVER, PTFE SEAT	NO
20	10	40	SWING CHECK VALVE	CAST IRON	STEEL DISC, BRASS HINGE PIN, NBR O-RING	NO
25	10	40	FULL BORE BALL VALVE	CAST IRON	ST STEEL BALL, STEM & LEVER, PTFE SEAT	NO
32	10	40	SWING CHECK VALVE	CAST IRON	STEEL DISC, BRASS HINGE PIN, NBR O-RING	NO
40	10	40	FULL BORE BALL VALVE	CAST STEEL	ST STEEL BALL, STEM & LEVER, PTFE SEAT	NO
40	10	40	SWING CHECK VALVE	CAST IRON	STEEL DISC, BRASS HINGE PIN, NBR O-RING	NO
50	10	40	FULL BORE BALL VALVE	CAST IRON	ST STEEL BALL, STEM & LEVER, PTFE SEAT	NO
50	10	40	SWING CHECK VALVE	CAST IRON	STEEL DISC, BRASS HINGE PIN, NBR O-RING	NO
50	10	40	SWING CHECK VALVE	CAST IRON	BRONZE SEAT, DISC, CAST IRON HINGE	NO
50	10	40	STORM VALVE	CAST STEEL	BRONZE DISC & BRASS STEM	YES



EQUIPMENT TABLE			
ITEM	DESCRIPTION	CHARACTERISTICS	REMARKS
E993001 E993006	VACUUM INTERFACE VALVE		HAMANN SUPPLY
E993028	SEWAGE TREATMENT PLANT 230V, 60Hz	CAPACITY: FOR 14 PERSONS (120 kg/day x 14persons = 1680kg/2100 l/day)	HAMANN SUPPLY
E993029	0.7 Metacolor pump 230VAC, 0.75kW, H=11bar		
E993030	CONTROL CABINET		
E993037	Unit assembly 30MBD vacuum generating	P=2.50kVeach; 600V/ 60Hz	JET VAC SUPPLY
E993039	SPIN WASTE PUMP	H=1bar; 230VAC/ 0.56kW	HAMANN SUPPLY
E993050	TRASH WASTE STRAINER	Stainless Steel for Grey Sludge	
E993052	INDUSTRIAL GRADE GARGASORATOR	Feed waste capacity: Moist 40 for Slag (100%)	
E993054	GREASE TRAP	Capacity - 7.3 Gall.	
E993055	GREY WATER TRANSFER PUMP	Q=1m ³ /hr; H=2bar	HAMANN SUPPLY
E993056	CHLORINE TANK	10 litres	HAMANN SUPPLY
E993057	DORSING PUMP	Q=2.4 l/min; H=0.3 bar; 24 VDC	HAMANN SUPPLY
E993058	PROCESS WATER PUMP	Q=19 l/min; 24 VDC	HAMANN SUPPLY
E993059	STRAINER	Econosto - kg 1097	
E993060	SLUDGE PUMP	2=60 l/min; 230VAC; H=15 m; 2Q	HAMANN SUPPLY
E993061	BLACK WATER ACCUMULATOR	V = abt. 100 lres	JET VAC SUPPLY

TESTS TABLE			
ITEM	DESIGN PRESSURE (bar)	ON WORKSHOP (bar)	ON BOARD (bar)
PIPES	1.5	-	-
VALVES	1.5	-	TIGHTNESS TEST FOR LEAKAGE ¹⁾
SUMP SIDE VACUUM TEST ²⁾	x ³⁾	5	-

1) TEST MADE BY THE VALVE SUPPLIER.
 2) TEST TO BE TESTED BY HYDRAULIC PRESSURE TO 1.5 TIMES THE NOMINAL PRESSURE RATING OF THE VALVE AT AMBIENT TEMPERATURE.
 3) A LEAKAGE TEST OF COMPLETE VACUUM PIPES, WITHOUT ANY COMPONENTS-TOILETS, GREY WATER INTERFACE TANKS,VACUUMATORS, ETC-CONNECTED, ALL PIPES NEED TO BE BURIED.
 4) NOMINAL ACCEPTED LEAKAGE: VACUUM DROP FROM -0.5 BAR TO -0.5 BAR DURING ONE HOUR.
 5) A LEAKAGE TEST OF COMPLETE VACUUM SYSTEM, WITH ALL COMPONENTS- TOILETS, GREY WATER TANKS, VACUUMATORS ETC-CONNECTED, MAXIMUM ACCEPTED LEAKAGE: VACUUM DROP FROM -0.55 BAR TO -0.5 BAR DURING 20 MIN.



SEWAGE TREATMENT PLANT - CONNECTIONS	
ITEM	DESCRIPTION
A-1-R-051	OUTLET, R 3/4"
A-1-R-052	SEA WATER INLET, R 1 1/2"
A-1-R-053	VENT SUPER MINI PLUS, R 1 1/2"
A-1-R-054	CHLORINE INJECTION
A-1-R-055	CONNECTION CHLORINE VENT
A-1-R-056	VENT CLEARING CHAMBER
A-1-R-057	INLET, R 1 1/2"
A-1-R-058	FLUSHING, ONLY FRESH WATER, R 3/4"
A-1-R-059	OUTLET (INTERNAL), R 1"
A-1-R-060	VENT CHLORINE TANK
A-1-R-061	OUTLET (INTERNAL) TO CLOSING PUMP D=400x=3/8"
A-1-R-062	OUTLET, SLOUGE, R3/4"

CCGS PRIVATE ROBERTSON V.8.C						
AF	29/04/12	AS FITTED		TK	FP	BF
Rev	Date	Description		Perform	Check	Appr.
Client: CANADIAN COAST GUARD				Title: BLACK, GREY WATER AND SANITARY FLUSHING SYSTEM		
 international contract engineering				MID-SHORE PATROL VESSEL No. 6094 Date: 06/07/2011 Checked by: S.Huangang Drawn by: V.Letter Date: 06/07/2011 AF		
LIVING IRVING SHIPBUILDING INC. P.O. Box 9110, 3099 Sarnberton Street, Halifax NS, Canada B3H 2Y6 (NS) 902.423.6371 Fax 902.423.4510				AF6094-59300-02 © IRVING SHIPBUILDING INC.		
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