

**MATERIAL SCHEDULE**

SERVICE	PIPING		TAKEDOWN JOINTS		VALVES		FITTINGS	FLEX CONNECTIONS	REMARKS	
	SIZE	MATERIAL	MATERIAL	GASKETS	BOLTING	TRIM				
HOT & COLD POTABLE WATER SUPPLY MAWP: 80 PSIG MAX TEMP: 170°F	ALL	COPPER, SEAMLESS HARD DRAWN, ASTM B88, TYPE K	UNION ANSI B16.22, MSS-SP104  FLANGE, 150#, ANSI B16.24, SOLDER JOINT, COPPER	ARAMID FIBERS WITH A NEOPRENE BINDER	BOLTS: STAINLESS STEEL ASTM A193 GRADE B8M ANSI B18.2.1  NUTS: STAINLESS STEEL ASTM A194 GRADE 8M ANSI B18.2.2	BALL: BRONZE 150# THREADED OR SOLDER ENDS, ASTM B62 MSS-SP-72  (AT TANK 150# FLANGED, ANSI B16.24)	CHROME PLATED BALL, PTFE SEATS	WROT COPPER, ANSI B16.22, ASTM B75	-	

**SYMBOLS LIST**

	PIPE - COLD WATER
	PIPE - HOT WATER
	REDUCER
	BHD PENETRATION
	FLANGE
	BALL VALVE
	SWING CHECK VALVE
	CENTRIFUGAL PUMP
	SIMPLEX STRAINER
	RELIEF VALVE
	PRESSURE GAUGE
	MATERIAL TRANSITION
	HOSE BIB
	WINDOW SPRAY NOZZLE
	SOLENOID VALVE
	TEMPERING / ANTI-SCALD VALVE

**EQUIPMENT LIST**

QTY.	DESCRIPTION	TYPE	MODEL	CAPACITY	DRIVE	REMARKS
2	POTABLE WATER SUPPLY PUMP SYSTEM	MULTI-STAGE CENTRIFUGAL	-	8 GPM @ 50 PSIG	1 HP 115V/1P/60Hz	SEE NOTES 8 & 9
1	POTABLE WATER PRESSURE TANK	ASME RATED	-	68 GAL 125 PSI	-	-
1	WATER HEATER	ELECTRIC	-	20 GALLONS	208V/1P/60Hz 2 kW	-
1	THERMAL EXPANSION TANK	ASME RATED	-	2 GAL	-	150 PSI MAX 200°F MAX
1	STRAINER 1 1/2" NPS	SIMPLEX BASKET TYPE	-	-	-	BRONZE BODY

**GENERAL NOTES (CONT)**

- WATER HAMMER ARRESTORS SHALL BE PROVIDED AND INSTALLED IN SUPPLY LINES TO ANY UNIT WHERE SLOW-CLOSING VALVES ARE NOT USED.
- ISOLATION VALVES LOCATED BEHIND LININGS SHALL BE PROVIDED WITH LABELED ACCESS OPENINGS.
- ISOLATION VALVES AND DRAINS SHALL BE PROVIDED FOR ALL PIPING EXPOSED TO WEATHER OR ROUTED THROUGH UNHEATED SPACES. SERVICE SINK FAUCETS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKER AND SPIGOT WITH 1/2" THREADED HOSE END.
- INTEGRATE TANK LEVEL ALARMS WITH SHIP'S ALARM AND MONITORING SYSTEM.
- THE POTABLE WATER PRESSURE TANK SHALL BE FITTED WITH AN 80 PSIG SAFETY RELIEF VALVE. THE HOT WATER HEATER SHALL BE FITTED WITH TEMPERATURE/PRESSURE RELIEF VALVE.
- WHERE COPPER PIPING PENETRATES BULKHEADS OR DECKS, STEEL PENETRATION SLEEVES WITH USCG APPROVED SEALANT AND CRUSHING SLEEVES SHALL BE USED. SEALANT AND SLEEVES SHALL BE RATED FOR WATERTIGHT AND A60 APPLICATIONS. INSTALL PIPING TRANSITS IN ACCORDANCE WITH MANUFACTURER'S APPROVED INSTALLATION DETAILS.
- MECHANICAL FITTINGS MAY BE SUBSTITUTED FOR WELDED FITTINGS. FITTINGS SHALL BE USCG APPROVED, AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- TOILETS SHALL BE 1.28 GPF AND SHALL BE EQUIPPED WITH FLUSH-O-METER VALVE WITH INTEGRAL VACUUM BREAKER AND CONTROL STOP VALVE. SEE REF 1.
- LEVEL INDICATOR TO PROVIDE INDICATION THROUGH GREATEST RANGE OF TANK LEVEL POSSIBLE.
- MATERIAL TRANSITIONS FROM STEEL TO COPPER PIPE SHALL BE ACCOMPLISHED VIA FLANGED JOINTS. THE JOINTS SHALL BE FITTED WITH GALVANIC ISOLATION KITS TO PREVENT DIRECT METAL TO METAL CONTACT.
- EXTERIOR HOSE BIBS SHALL BE FROST FREE. ALL HOSE BIBS SHALL HAVE VACUUM BREAKERS.
- FIT ALL SINK FAUCETS WITH SUPPLY HOSES AND STOP VALVES AT BULKHEAD.
- PROVIDE MOMENTARY BUTTON IN PILOT HOUSE CONSOLE TO ACTIVATE WINDOW WASHING SPRAY. COLOCATE PUSH BUTTON WITH WIPER CONTROLS FOR SAME WINDOW.
- ALL POTABLE WATER VALVES SHALL BE LOCATED FOR EASY ACCESS.

**REVISION HISTORY**

REV	ZONE	DESCRIPTION	DWN	DATE	APVD

**GENERAL NOTES**

- VESSEL TO BE CONSTRUCTED IN ACCORDANCE WITH 46 CFR SUBCHAPTER H 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.
- PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT TAKE DOWN JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING AND REPLACEMENT OF PIPING, VALVES, FITTINGS AND EQUIPMENT.
- AVOID POCKETS IN THE PIPE LINES. BOSSES AND VALVES OR SCREWED PLUGS SHALL BE FITTED TO ENABLE COMPLETE DRAINING OF PIPES WHERE POCKETS DO OCCUR.
- PIPING SHALL BE ADEQUATELY SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708. HANGERS SHALL BE ATTACHED TO THE PIPE WITH BOLTED CLAMPS AND WELDED TO THE BASIC SHIP STRUCTURE. CARE SHALL BE EXERCISED TO PLACE PIPE HANGERS SO THAT THE STRAIN IS AVOIDED WHERE PIPING IS CONNECTED TO MACHINERY. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
- HOT & COLD WATER PIPING TO BE INSULATED ACCORDING TO REF 1.
- SET HOT WATER HEATER THERMOSTAT TO 140° F.
- THE POTABLE WATER PRESSURE PUMP SYSTEM SHALL BE SUPPLIED WITH INTEGRAL PRESSURE SWITCHES TO CONTROL THE PUMP OPERATION. THE PRESSURE SWITCHES SHALL BE SET TO START THE PUMP AT 40 PSI AND STOP IT AT 60 PSI. THE PUMP SHALL HAVE AN INTEGRAL CHECK VALVE.
- THE POTABLE WATER SYSTEM SHALL BE SUPPLIED WITH TWO PRESSURE PUMPS. NORMAL OPERATION IS ONE PUMP PRESSURIZING THE SYSTEM AND THE SECOND PUMP ON STANDBY.
- TEMPERATURE TRANSDUCERS AND OTHER TEMPERATURE SENSING DEVICES SHALL BE INSTALLED IN THERMOWELLS.
- AFTER INSTALLATION & TESTING THE SYSTEM SHALL BE CLEANED, SANITIZED & FLUSHED IN ACCORDANCE WITH USPHS REQUIREMENTS. SEE REF 1.

**REFERENCES**

- 18026-200-832-1 TECHNICAL SPECIFICATION
- 18026-200-506-1 FILLS, VENTS, AND SOUNDS
- 18026-200-201-1 MACHINERY ARRANGEMENT

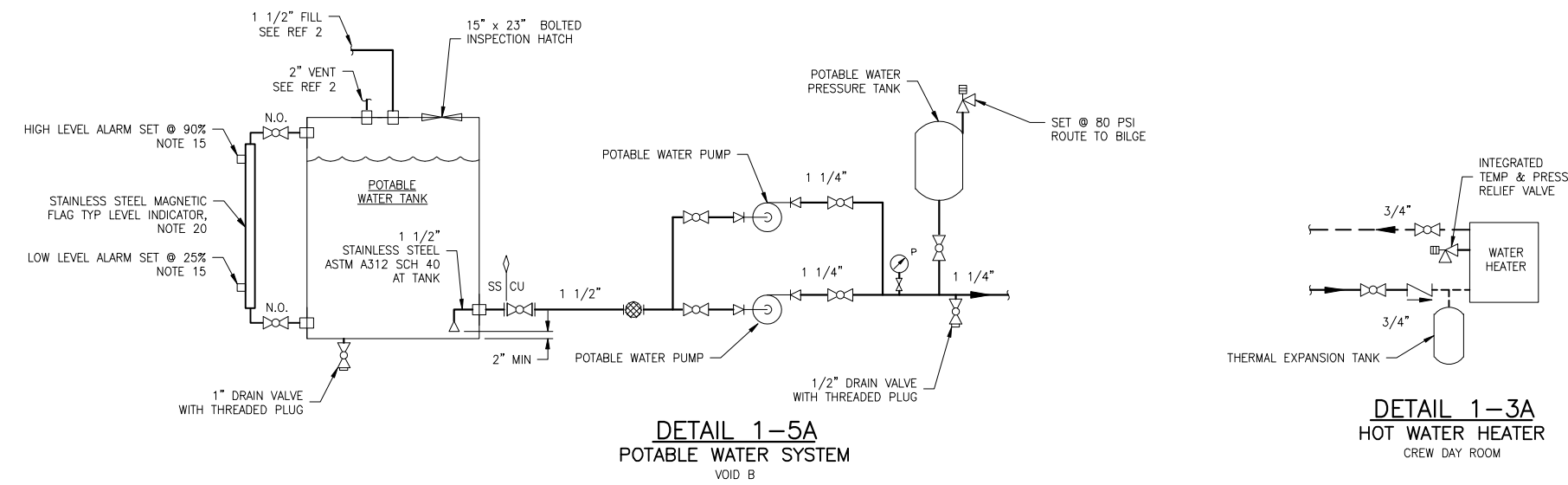


**Elliott Bay Design Group**  
North Carolina, PLLC

CLIENT: NORTH CAROLINA D.O.T.  
RALEIGH, NORTH CAROLINA  
PROJECT: DOUBLE-ENDED AZIMUTH DRIVE FERRY

**POTABLE AND SANITARY WATER PIPING SCHEMATIC**

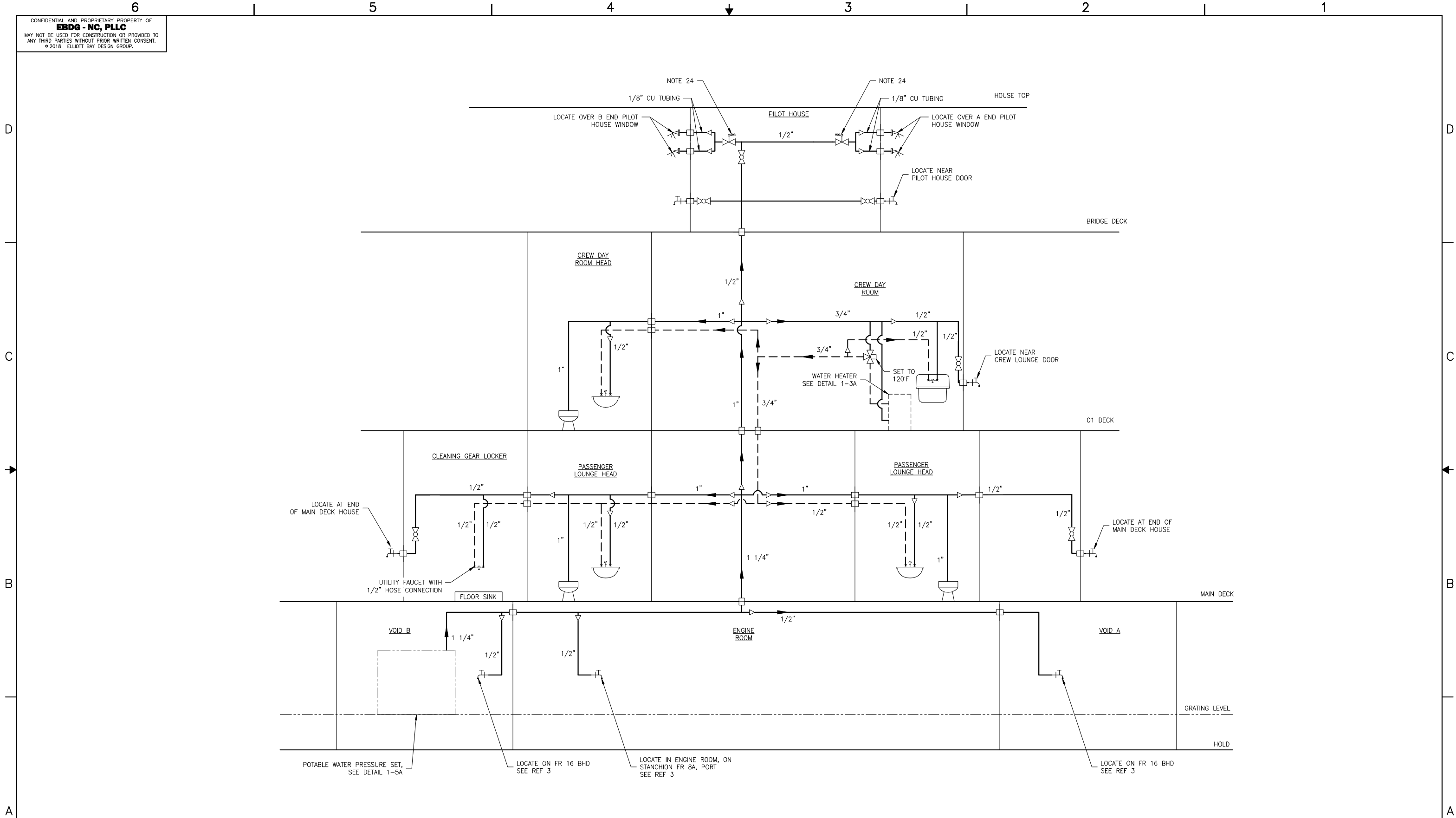
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**DETAIL 1-5A**  
POTABLE WATER SYSTEM  
VOID B

**DETAIL 1-3A**  
HOT WATER HEATER  
CREW DAY ROOM





**DIAGRAM 2-3A**  
 POTABLE & SANITARY WATER SYSTEM



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