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**GENERAL NOTES (CONT.)**

- FLEXIBLE HOSE ASSEMBLIES SHALL BE SUITABLE FOR LUBE OIL AND WASTE OIL SERVICE. SUCTION HOSES SHALL BE NON-COLLAPSING.
- ARRANGE HOSE AND HOSE REEL FOR COMPLETE DRAINAGE TO WASTE OIL TANK. HOSE TO BE STORED DRAINED AND DISCONNECTED.
- ARRANGE LEVEL INDICATOR TO PROVIDE INDICATION THROUGH THE GREATEST RANGE OF TANK LEVEL AS PRACTICABLE.

**REVISION HISTORY**

REV	ZONE	DESCRIPTION	DWN	DATE	APVD
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**MATERIAL SCHEDULE**

SERVICE	PIPING		TAKEDOWN JOINTS		VALVES		FITTINGS	FLEX CONNECTIONS	REMARKS	
	SIZE	MATERIAL	MATERIAL	GASKETS	BOLTING	BODY				TRIM
LUBE OIL & WASTE OIL MAWP: 40 PSIG MAX TEMP: 120°F	2" & UNDER	CARBON STEEL ASTM A53 OR A106, GRADE B SEAMLESS ANSI B36.10 SCH 40	UNION GROUND JOINT CARBON STEEL ASTM A105 ANSI B16.11 SOCKET WELD	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 THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB  CHECK THREADED, CARBON STEEL, ASTM A105, ASTM A181, OR ASTM A216 GR WCB	BALL CHROME PLATED BALL, RPTFE OR VITON SEATS  CHECK GRES DISC	CARBON STEEL ASTM A105 OR ASTM A234 ANSI B16.11 3000# SOCKET WELD	SAE J1942 COMPLIANT HOSE  SEE NOTE 11	

**SYMBOLS LIST**

	PIPE
	REDUCER
	CHECK VALVE
	BALL VALVE
	BALL VALVE, LOCKING
	GEAR PUMP
	CAMLOCK
	DRIP PAN
	HOSE REEL
	BULKHEAD PIPE PENETRATION
	PRESSURE GAUGE
	GOOSENECK VENT
	UNION JOINT
	SIMPLEX STRAINER

**EQUIPMENT & PUMPLIST**

QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
1	WASTE OIL TRANSFER PUMP	GEAR PUMP W/ INTERNAL RELIEF	-	16 GPM @ 30 PSI	2 HP TEFC 208 VAC 3Ø 60 Hz 1800 RPM
1	WASTE OIL STRAINER	SIMPLEX BASKET TYPE	-	-	-

**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.
- PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS. PIPE SPOOLS SHALL BE SIZED AND ARRANGED TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF PIPING, VALVES, FITTINGS, AND EQUIPMENT WITHOUT CUTTING STRUCTURE OR PIPING.
- PROVIDE GAUGE PIPING ASSEMBLIES AND MATERIALS FOR GAUGES AND INSTRUMENTS CONFIGURED IN ACCORDANCE WITH ASTM F721. VALVES, TUBING, AND FITTINGS SHALL BE 316 STAINLESS STEEL.
- WHERE PIPES PENETRATE TANK BOUNDARIES, BULKHEADS, OR DECKS, HEAVY WEIGHT SPOOL PIECES OR REINFORCING PENETRATION FITTINGS SHALL BE USED. SEE DETAIL 1-4A.
- 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 BASIC SHIP STRUCTURE. HANGERS SHALL NOT BE ATTACHED BY WELDING DIRECTLY TO PIPES.
- LUBE OIL PIPING SHALL NOT BE ROUTED NEAR ELECTRICAL DEVICES OR EQUIPMENT. LUBE OIL PIPING SHALL BE AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450°F OR GREATER.
- GALVANIZED PIPE, FITTINGS, COMPONENTS, ETC. SHALL NOT BE USED.
- DRIP PANS WITH UP-TURNED, SEALED, FLANGED EDGES SHALL BE PROVIDED BENEATH ALL FILTERS, PUMPS, STRAINERS, HOSE REELS AND ANY OTHER EQUIPMENT THAT CONTAINS OIL AND REQUIRES PERIODIC MAINTENANCE. DRIP PANS SHALL BE PROVIDED WITH DRAIN VALVES.
- FIT EACH MAIN GENERATOR SUMP WITH A LOCKING DRAIN VALVE, 1" FEMALE CAMLOCK, AND DUST PLUG. TETHER DUST PLUG TO DRAIN LINE WITH A STAINLESS STEEL CHAIN OR CABLE.

**REFERENCES**

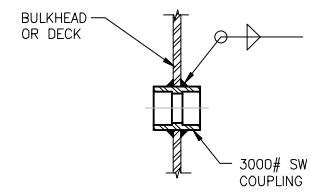
- 18026-200-832-1 TECHNICAL SPECIFICATION
- 18026-200-506-1 FILLS, VENTS, AND SOUNDS



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

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

PROJECT: DOUBLE-ENDED AZIMUTH DRIVE FERRY



**DETAIL 1-4A**  
 TYP DECK/BHD PENETRATION

TITLE		LUBE OIL AND WASTE OIL PIPING SCHEMATIC	
SIZE	DWG NO.	REV	
D	18026-200-529-2	-	
SCALE	FILE NAME	SHEET	OF
NTS	18026-200-529-2-	1	2
DWN	MOD	CKD	APVD
NJB	JEH	CKD	MEJ
		APVD DATE	7/31/18

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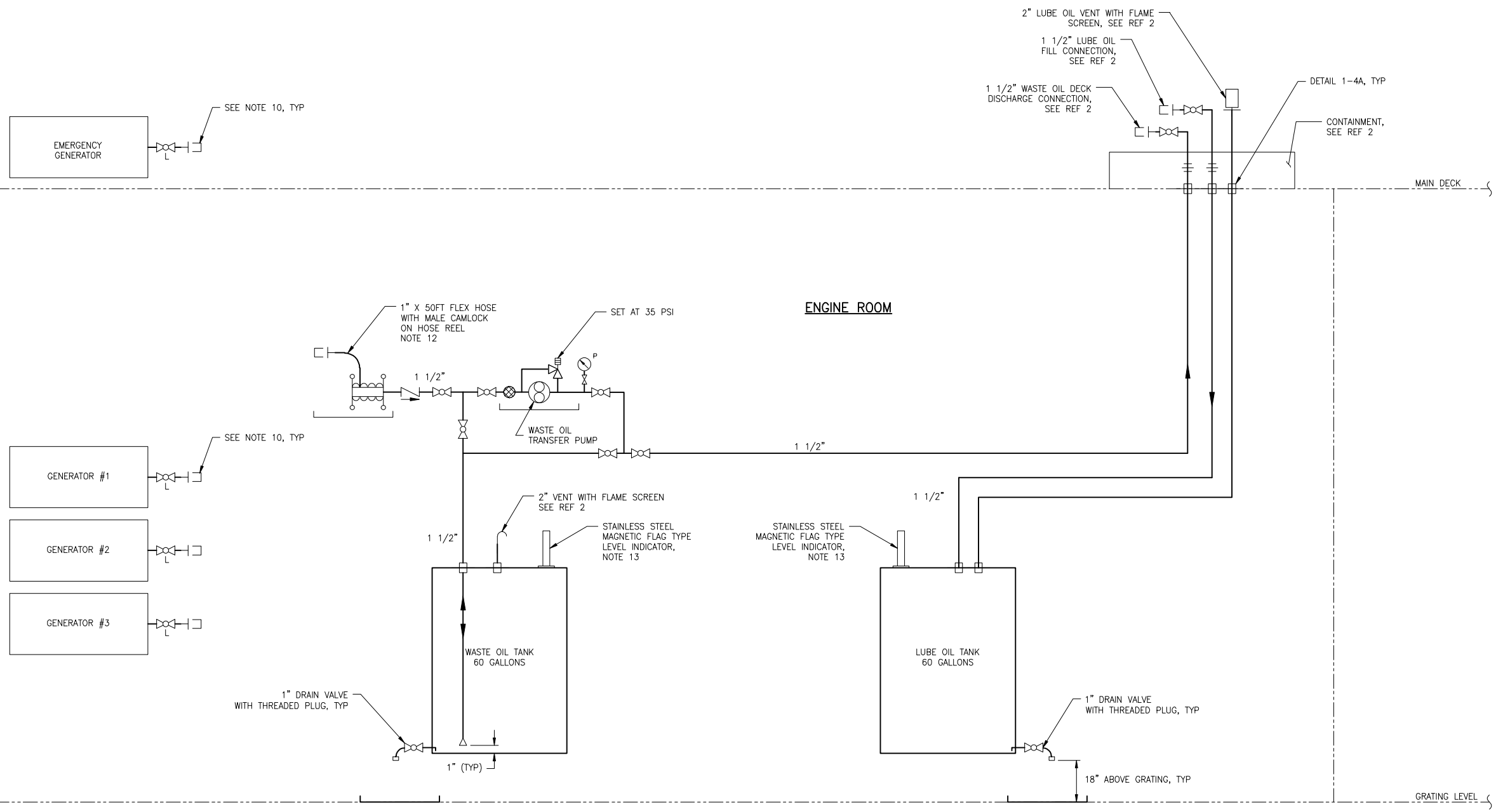
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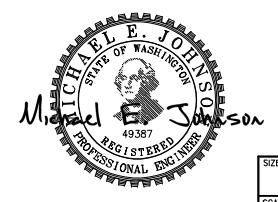
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B

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**DIAGRAM 2-4A**  
 LUBE OIL AND WASTE OIL SYSTEM



SIZE	D	DWG NO.	18026-200-529-2	REV	-
SCALE	NTS	FILE NAME	18026-200-529-2-	SHEET	2 OF 2

6

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