

















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MATERIAL SCHEDULE 									
SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			VALVES		FITTINGS	FLEXIBLE CONNECTIONS
			MATERIAL	GASKETS	BOLTING	BODY	TRIM		
FUEL OIL SERVICE MAWP: 10 PSIG MAX TEMP: 115°F	1-1/2" & BELOW	SS TUBING ASTM A269, GR 316L SEAMLESS 0.065" WT	COMPRESSION UNIONS SS ASTM A269, GR 316L	-	-	BALL/IN-LINE CHECK: STAINLESS STEEL ASTM A351, GR CF8M MSS-SP-110 150 PSIG THREADED ENDS	BALL: 316 SS BALL PTFE SEATS AND SEALS IN-LINE CHECK: PTFE BALL CHECK	COMPRESSION FITTINGS SS ASTM A269, GR 316L	SAE J1942 COMPLIANT SEE NOTE 6
FUEL OIL VENTS AND FILLS MAWP: 75 PSIG MAX TEMP: 115°F	ALL	ALUMINUM ASTM B241 6061 T6 ANSI 36.1 SCH 80	FLANGE ALUMINUM 6061 T6 ANSI B16.5 150#	APPROPRIATE FOR SYSTEM	BOLTS: STAINLESS STEEL ASTM A193 GRADE 88M ANSI B18.2.1 NUTS: STAINLESS STEEL ASTM A194 GRADE 8M ANSI B18.2.2	BUTTERFLY: 316 STAINLESS STEEL WAFFER TYPE, 150#	BUTTERFLY: 316 SS DISC BUNA-N SEATS	ALUMINUM 6061 T6 ANSI B16.9	-

EQUIPMENT & PUMP LIST					
QTY	SERVICE	TYPE	MODEL	CAPACITY	DRIVE
4	MAIN ENGINE FUEL OIL PUMP	SUPPLIED WITH ENGINE	-	-	-
2	SSDG FUEL OIL PUMP	SUPPLIED WITH GENERATOR	-	-	-
4	ME FUEL OIL FILTER	3 ELEMENT TURBINE MANIFOLDED WITH METAL BOWLS	-	9 GPM 10 MICRON	-
2	SSDG FUEL OIL FILTER	1 ELEMENT TURBINE WITH METAL BOWL	-	3 GPM 10 MICRON	-

SYMBOLS LIST	
	SUPPLY PIPE
	RETURN PIPE
	BULKHEAD/TANK PENETRATION
	REDUCER
	ACTUATED BALL VALVE
	BALL VALVE
	BALL CHECK VALVE
	FLEXIBLE CONNECTION
	TRIPLEX FILTER
	SIMPLEX FILTER
	SPILL CONTAINMENT/DRIP PAN
	PIPE CAP
	HIGH LEVEL ALARM
	LOW LEVEL ALARM
	CONTINUOUS LEVEL INDICATION

GENERAL NOTES CONT.

15. EACH VENT PIPE SHALL BE SLOPED CONTINUOUSLY TO PROVIDE EFFECTIVE DRAINAGE BACK TO THE TANK.

16. VENT TERMINALS SHALL BE VERTICAL BALL CHECK TYPE, WINTEB WIN2000 HIAS, OR EQUAL. VENT TERMINALS SHALL BE FITTED WITH STAINLESS STEEL FLAME SCREEN.

17. MATERIAL TRANSITIONS BETWEEN ALUMINUM PIPING AND STAINLESS STEEL VALVES SHALL BE ACCOMPLISHED WITH FLANGED JOINTS. FLANGES AT THE JUNCTIONS SHALL BE FITTED WITH GALVANIC ISOLATION KITS TO PREVENT METAL TO METAL CONTACT.

REVISION HISTORY					
REV	ZONE	DESCRIPTION	DWN	DATE	APVD
A	1-4D	1. REMOVED MANUFACTURER NAME FROM THE MATERIAL SCHEDULE	JHP	3/24/17	LGB

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.
- DO NOT ROUTE PIPING CONTAINING FUEL OIL NEAR ANY ELECTRICAL DEVICES OR EQUIPMENT. DO NOT LOCATE TAKEDOWN JOINTS AROUND, NEAR, OR OVER ELECTRICAL EQUIPMENT. ROUTE ALL FUEL OIL PIPING AT LEAST 18 INCHES AWAY FROM ANY SURFACE THAT NORMALLY HAS AN OPERATING TEMPERATURE OF 450° OR GREATER.
- PIPING SHALL BE RUN AS DIRECTLY AS PRACTICABLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS AND WITH SUFFICIENT JOINTS TO PROVIDE FOR REMOVAL, INSPECTION, SERVICING, AND REPLACEMENT OF EQUIPMENT. PIPING SHALL BE RUN TO MINIMIZE CUTTING OF THE SHIP'S STRUCTURE.
- FUEL OIL SUPPLY SUCTION BELLMOUTH AREA SHALL BE AT LEAST 1 1/2 TIMES THE SUCTION PIPE INTERNAL AREA.
- FLEXIBLE HOSE SECTIONS BETWEEN THE ENGINE ATTACHED CONNECTIONS AND VESSEL PIPING SHALL BE 37 SAE FLARE SWIVEL ON BOTH ENDS. FLEXIBLE HOSE SHALL BE FLAME RESISTANT IN ACCORDANCE WITH 46 CFR 182.720. HOSE ASSEMBLIES SHALL NOT BE LESS THAN 9" IN LENGTH NOR MORE THAN 30" IN LENGTH.
- INTEGRATE TANK LEVEL SENSORS WITH SHIP'S ALARM AND MONITORING SYSTEM. CONFIGURE FOR CONTINUOUS INDICATION, LOW LEVEL ALARM AT 25% OF TANK CAPACITY, AND HIGH LEVEL ALARM AT 95% OF TANK CAPACITY. A CONTINUOUS READING TANK LEVEL INDICATION SYSTEM SHALL BE PROVIDED FOR EACH TANK. REMOTE TANK LEVEL INDICATION SHALL BE PROVIDED AT THE FILLING STATION AND IN THE PILOTHOUSE. HIGH LEVEL ALARM SHALL BE AUDIBLE AT THE FILLING STATION.
- DRIP PANS WITH UP-TURNED, SEALED, FLANGED EDGES SHALL BE PROVIDED BENEATH ALL FILTERS, PUMPS, STRAINERS, AND ANY OTHER EQUIPMENT THAT CONTAINS OIL AND REQUIRES PERIODIC MAINTENANCE. EACH DRIP PAN SHALL BE FITTED WITH A LOW POINT DRAIN VALVE.
- FUEL OIL PIPING SHALL BE HYDROSTATICALLY TESTED AT 1.5 TIMES THE MAWP AFTER ASSEMBLY.
- TANK ISOLATION VALVES SHALL BE FITTED WITH A MANUALLY OPERATED REMOTE ACTUATION SYSTEM. CONTRACTOR SHALL PROVIDE CABLE PULL TYPE OPERATOR TO ALLOW FOR EMERGENCY VALVE CLOSURE FROM THE FOOD SERVICES AREA.
- PIPING SHALL BE SUPPORTED BY HANGERS IN ACCORDANCE WITH ASTM F708.
- TANK SHUT OFF VALVES SHALL HAVE FIRE SAFE METALLIC SEATS.
- PIPE BENDS SHALL BE USED IN LIEU OF ELBOWS WHERE PRACTICABLE.
- USE USCG COMPLIANT BULKHEAD PENETRATION FOR STAINLESS STEEL TUBING.

REFERENCES

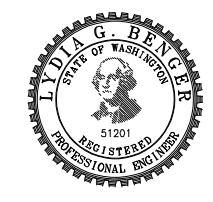
- 16109-003-802-0 CONTRACT SPECIFICATIONS



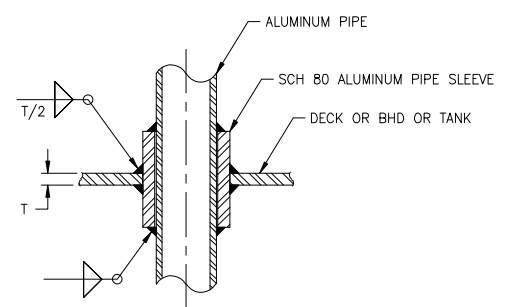
Elliott Bay Design Group North Carolina, PLLC

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

PROJECT: PEDESTRIAN FERRY



TITLE		FUEL OIL DIAGRAM			
SIZE	DWG NO.	16109-003-261-1		REV	A
SCALE	AS NOTED	FILE NAME	16109-003-261-1A	SHEET	1 OF 2
DWN	JHP	MOD	CKD LGB	APVD	LGB
				APVD DATE	3/3/2017



DETAIL 1-6A
 TYP DECK/BHD/TANK PENETRATION
 FOR ALUMINUM PIPE
 NO SCALE

3/24/2017 11:45:27 AM

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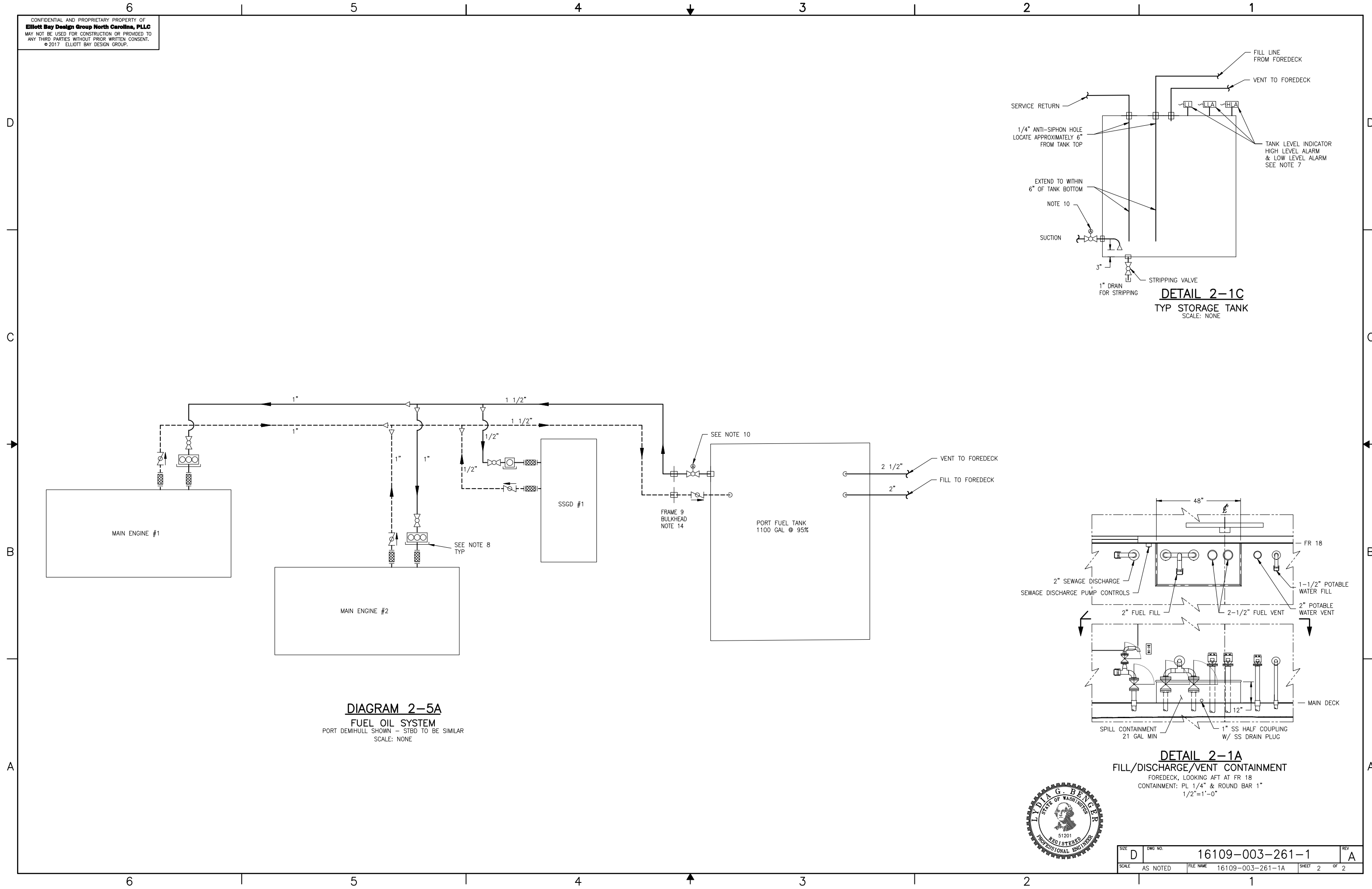
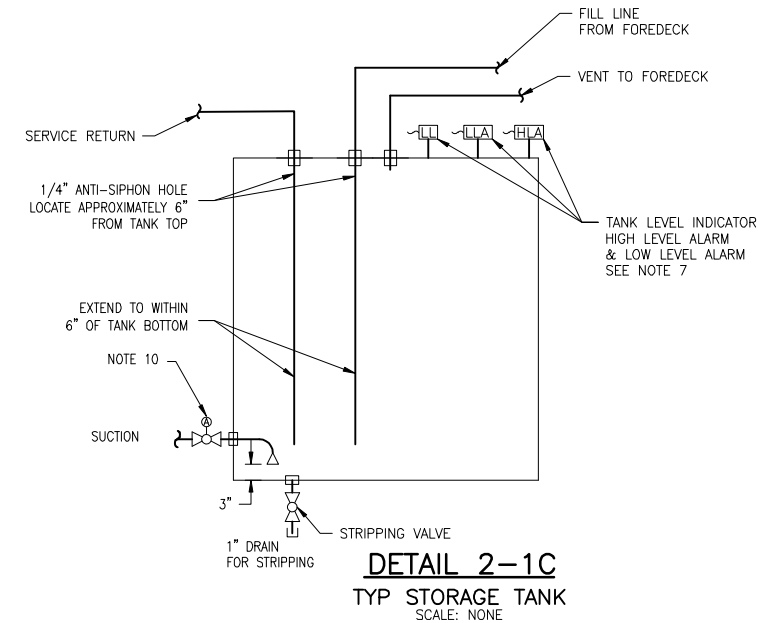
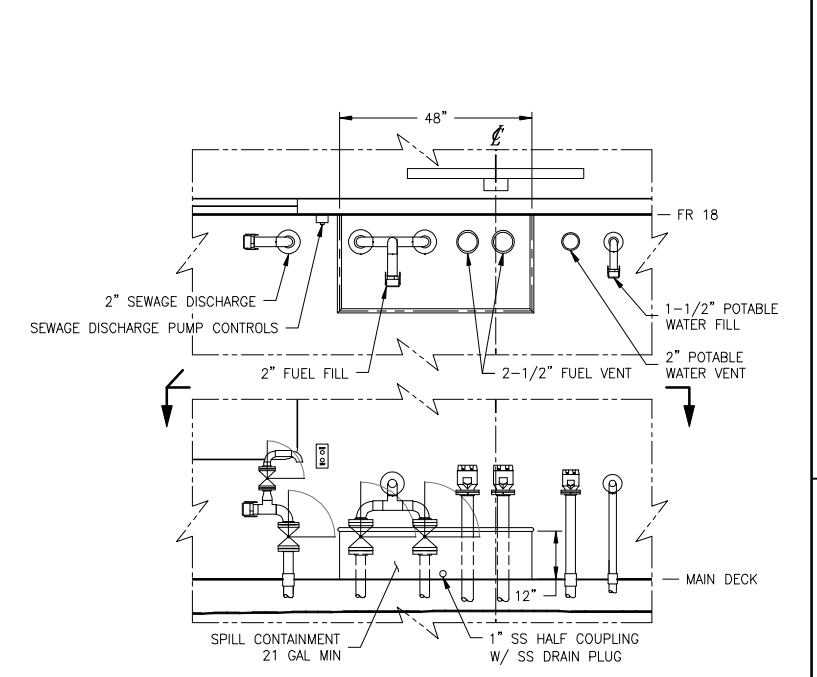


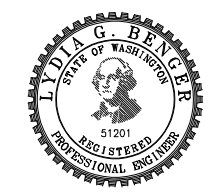
DIAGRAM 2-5A
FUEL OIL SYSTEM
 PORT DEMIHULL SHOWN - STBD TO BE SIMILAR
 SCALE: NONE



DETAIL 2-1C
TYP STORAGE TANK
 SCALE: NONE



DETAIL 2-1A
FILL/DISCHARGE/VENT CONTAINMENT
 FOREDECK, LOOKING AFT AT FR 18
 CONTAINMENT: PL 1/4" & ROUND BAR 1"
 1/2"=1'-0"



SIZE	D	DWG NO.	16109-003-261-1	REV	A
SCALE	AS NOTED	FILE NAME	16109-003-261-1A	SHEET	2 OF 2

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