

**MATERIAL SCHEDULE**

SERVICE	SIZE	PIPE	TAKEDOWN JOINTS			FITTINGS	VALVES		REMARKS
			MATERIAL	GASKETS	BOLTING		BODY	TRIM	
DIESEL ENGINE EXHAUST MAX TEMP: 800°F	6" & BELOW	CARBON STEEL, ASTM A53 OR A106, GR B, SEAMLESS OR ERW SCH 40 ANSI B36.10	3/4" PLATE FLANGE, CARBON STEEL ASTM A105, 150# ANSI B16.5, FFSO	304L SS SPIRAL WOUND METALLIC W/ FLEXIBLE GRAPHITE FILLER	BOLTS OR STUDS: ASTM A193, GR B7 ANSI B18.2.1  NUTS: ASTM A194 GR 2H ANSI B18.2.2	CARBON STEEL ASTM A234, SCH 40 BUTT WELD ANSI B16.9	DRAIN VALVES (GATE): FORGED STEEL ASTM A105 800# THREADED OR SOCKET WELD	DRAIN VALVES: STAINLESS STEEL	
	8" TO 12"	CARBON STEEL, ASTM A53 OR A106, GR B, SEAMLESS OR ERW SCH 40 ANSI B36.10							
EXHAUST EXPOSED TO WEATHER	ALL	STAINLESS STEEL ASTM A312, GR TP316L ANSI B36.10  SCH 40 6" & BELOW SCH 20 8"-12"							

**SYMBOLS LIST**

	GATE VALVE W/ SCREWED PLUG
	MATERIAL TRANSITION

**EQUIPMENT SCHEDULE**

QTY	SERVICE	SIZE	CAPACITY/REMARKS
2	MAIN ENGINE SILENCER	8" END IN/END OUT	CRITICAL GRADE SPARK ARRESTING
2	SHIP SERVICE DIESEL GENERATOR SILENCER	5" END IN/END OUT	CRITICAL GRADE SPARK ARRESTING
1	EMERGENCY GENSET SILENCER	4" SIDE IN/SIDE OUT	CRITICAL GRADE
1	EMERGENCY GENSET SPARK ARRESTOR	4"	316 SS
2	MAIN ENGINE TURBO OUTLET EXPANSION JOINT	ENGINE VENDOR SUPPLY	SEE NOTE 6
4	ANSI FLANGED EXPANSION JOINT (MAIN ENGINE EXHAUST)	8"	SEE NOTE 6
2	GENSET TURBO OUTLET EXPANSION JOINT	ENGINE VENDOR SUPPLY	SEE NOTE 6
6	ANSI FLANGED EXPANSION JOINT (GENSET EXHAUST)	5"	SEE NOTE 6

**REVISION HISTORY**

REV	ZONE	DESCRIPTION	DWN	DATE	APVD

**GENERAL NOTES**

1. VESSEL TO BE CONSTRUCTED IN ACCORDANCE WITH 46 CFR SUBCHAPTER H REGULATIONS.
2. FRAME SPACING IS 24" UNLESS NOTED OTHERWISE.
3. PIPING SHALL BE ROUTED AS DIRECTLY AS POSSIBLE WITH A MINIMUM NUMBER OF BENDS AND FITTINGS.
2. PRIOR TO FABRICATION OF MATING PIPE ASSEMBLIES, VERIFY EQUIPMENT CONNECTIONS FOR SIZE, LOCATION AND TYPE IN ACCORDANCE WITH MANUFACTURER CERTIFIED DRAWINGS, OR DIRECTLY FROM THE EQUIPMENT. TEMPLATE BOLTING PATTERNS AND CONNECTIONS AS REQUIRED.
3. ALL BOLTED FLANGES ARE TO BE MATED UP FREE OF STRAIN.
4. WEIGHT TRANSMITTED TO THE ENGINE CONNECTION IS NOT TO EXCEED THE MANUFACTURERS' RECOMMENDATIONS IN HOT AND COLD CONDITIONS.
5. EXHAUST PIPING AND SILENCERS SHALL BE RESILIENTLY SUPPORTED TO REDUCE NOISE TRANSMISSION.
6. EACH EXPANSION JOINT SHALL BE MULTI-PLY TY321 CONVOLUTED STAINLESS STEEL, WITH A FIXED FLANGE AT ONE END AND A FLOATING FLANGE AT THE OTHER. A FLOW DIRECTION ARROW SHALL BE PERMANENTLY MARKED ON EACH EXPANSION JOINT.
7. EXHAUST PIPING, SILENCERS, AND COMPONENTS SHALL BE INSULATED WITH REMOVABLE INSULATION BLANKETS THROUGHOUT THE MACHINERY SPACES AND STACKS. EXHAUST BLANKETS SHALL BE FABRICATED FROM NEEDLED OR WOVEN GLASS MAT WITH A STAINLESS STEEL MESH INTERIOR LINER, SILICONE IMPREGNATED GLASS CLOTH EXTERIOR LINER, AND FASTENED USING STAINLESS STEEL HOOKS AND LACING.
8. DRAIN VALVES SHALL BE PROVIDED NEAR THE BOTTOM OF VERTICAL EXHAUST RUNS AND AT LOW POINTS WHERE MOISTURE MAY ACCUMULATE.
9. 1/4" PIPE TAPS SHALL BE INSTALLED ON ENGINE EXHAUST OUTLET PIPING FOR BACK PRESSURE MEASUREMENT.
10. PIPE, RAIN HAT, HEAT SHIELD, FASTENERS & HANGERS EXPOSED TO WEATHER SHALL BE TYPE 316L STAINLESS STEEL. PIPE MATERIAL TRANSITIONS TO SS SHALL OCCUR 12" BELOW THE DECK PENETRATION.
11. FINAL DIMENSIONING AND HANGER DETAILS SHALL BE COMPLETED BY CONTRACTOR AND ARE SUBJECT TO OWNER APPROVAL.
12. FINAL EXPANSION JOINT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR DEPENDING ON THE EXHAUST HANGER LOCATIONS.
13. EXHAUST PIPE SHALL BE ROUTED AS HIGH IN THE OVERHEAD AS PRACTICABLE. MAINTAIN OVERHEAD HEIGHT OF 6'-8" WHEREVER POSSIBLE.

**REFERENCES**

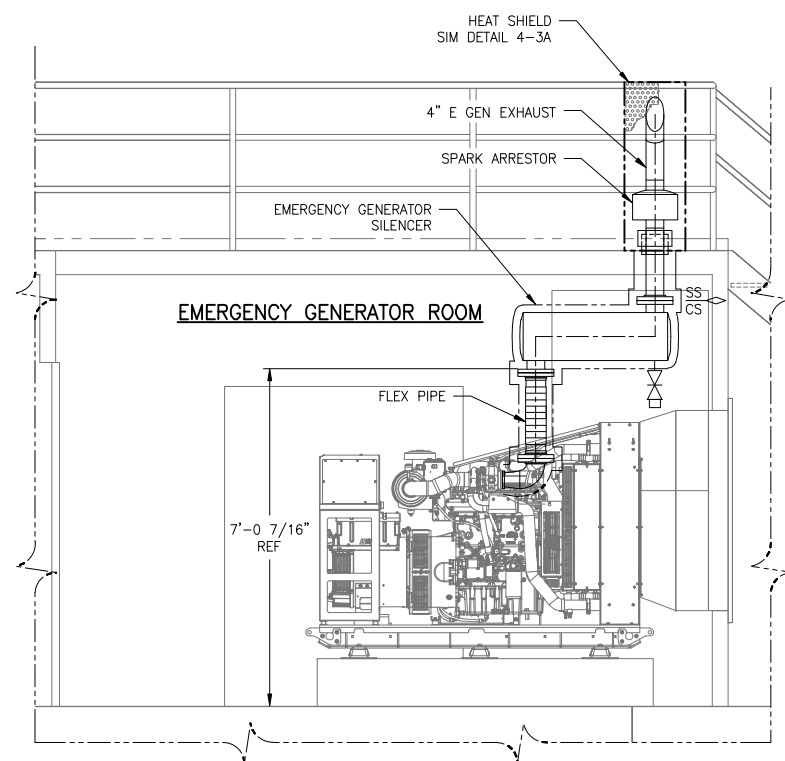
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2. 16101-200-101-1 PROFILES AND DECK ARRANGEMENTS
3. 16101-200-201-1 MACHINERY ARRANGEMENT
4. 16101-200-513-1 MACHINERY VENTILATION ARRANGEMENT



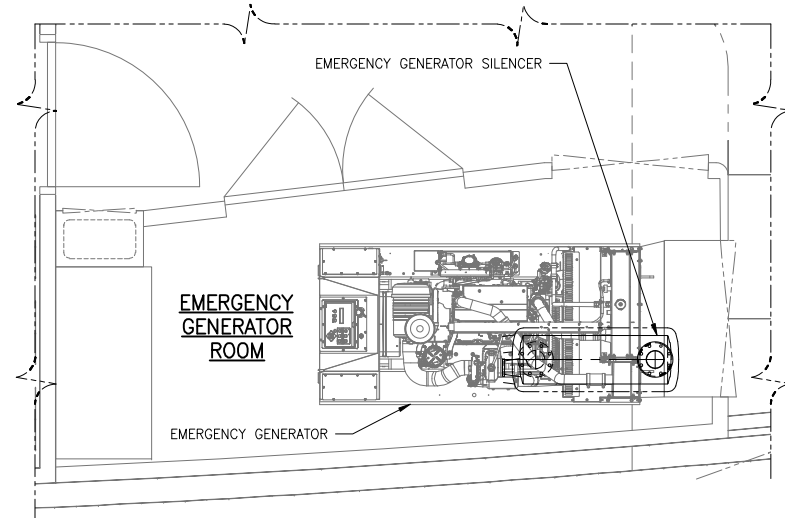
**Elliott Bay Design Group**  
North Carolina, PLLC

CLIENT: NORTH CAROLINA D.O.T.  
RALEIGH, NORTH CAROLINA  
PROJECT: NEW RIVER CLASS FERRY

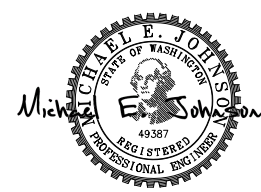
**EXHAUST ARRANGEMENT**



**ELEVATION 1-2B**  
EMERGENCY GENERATOR EXHAUST  
LOOKING INBOARD  
SCALE: 1/2"=1'-0"

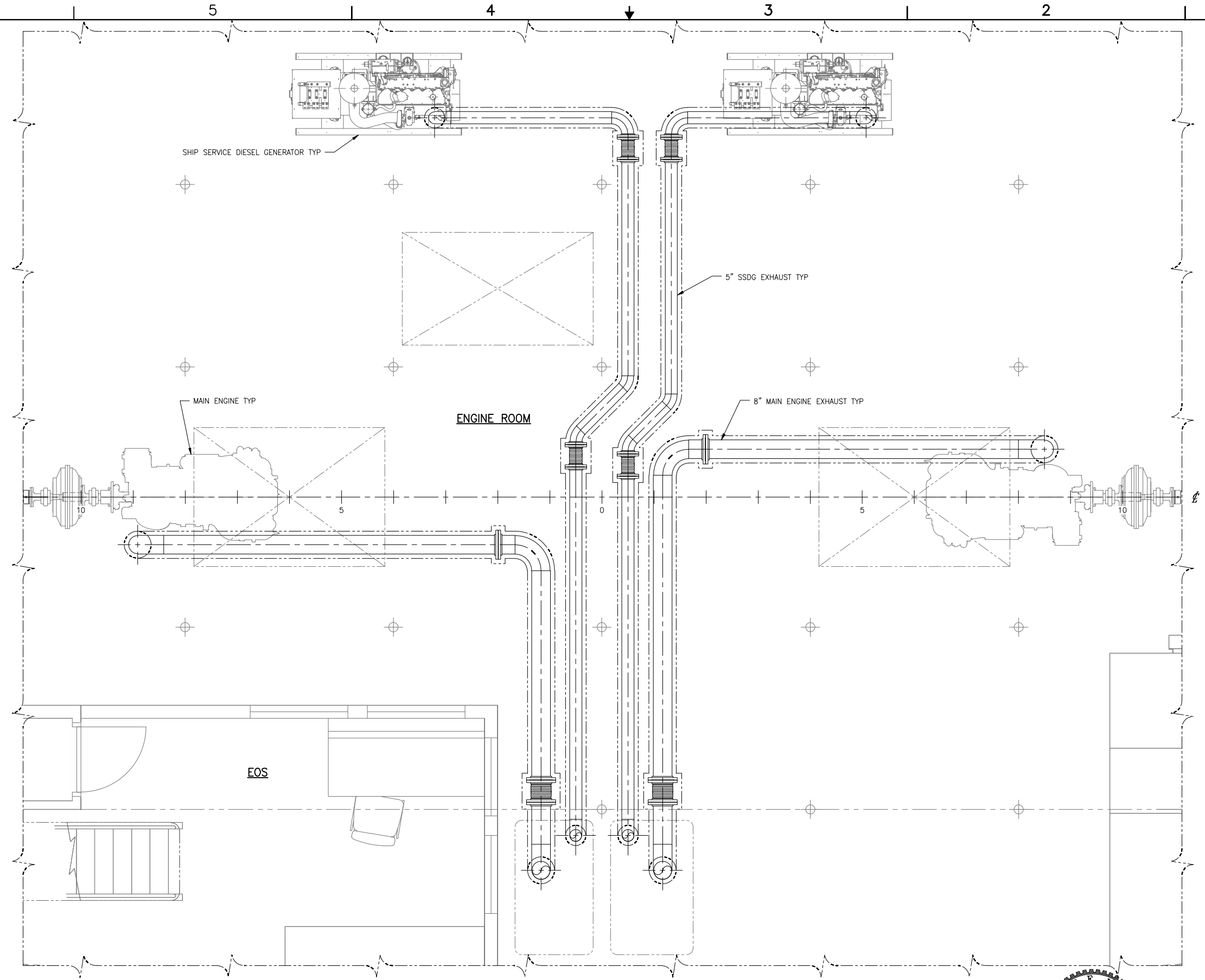


**PLAN 1-2A**  
EMERGENCY GENERATOR EXHAUST  
SCALE: 1/2"=1'-0"

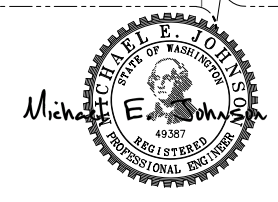


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DWN	JEH	MOD		APVD DATE	7/28/17

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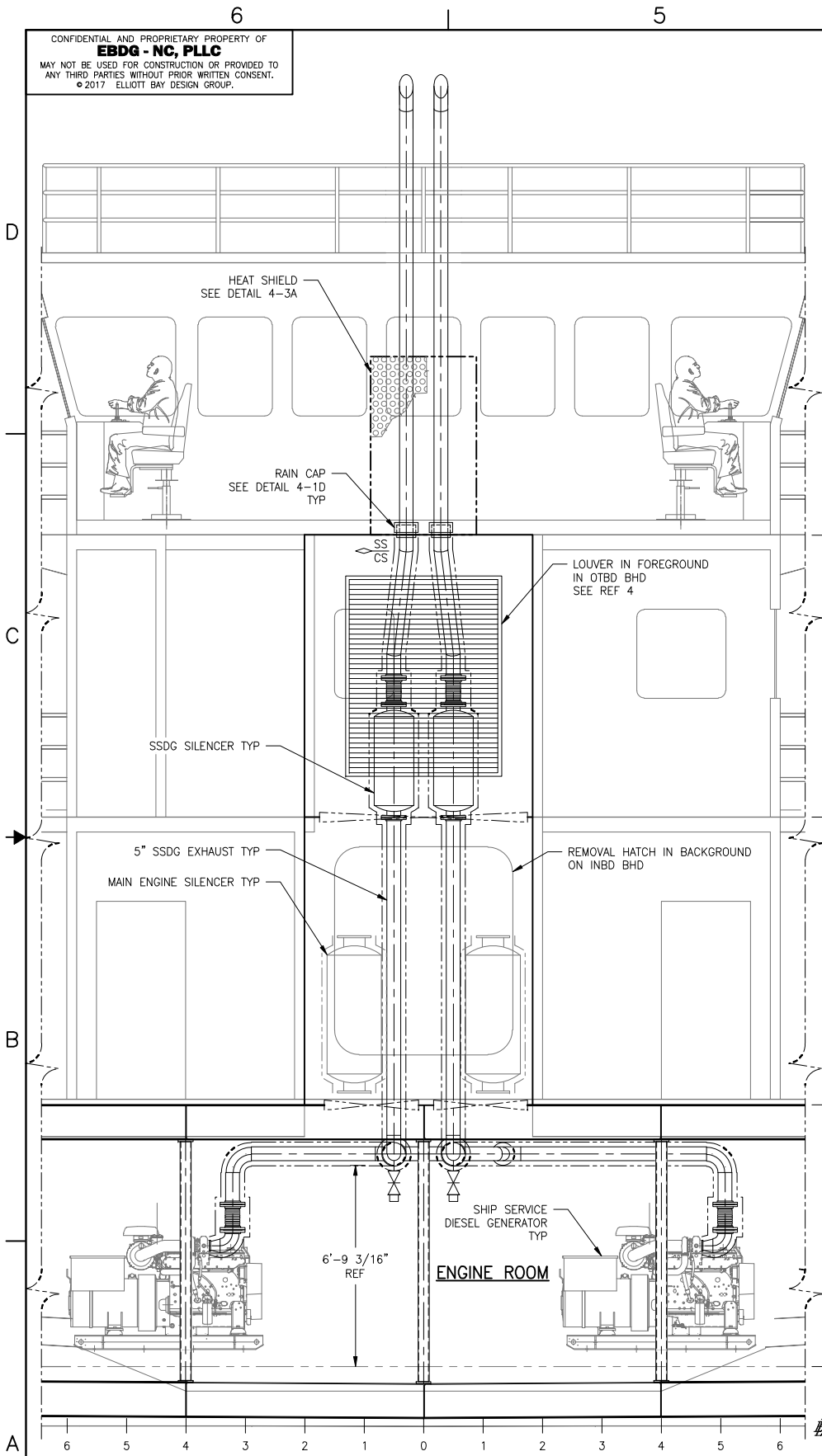
**PLAN 2-4A**  
 MAIN ENGINE AND SSDG EXHAUST  
 SCALE: 1/2"=1'-0"



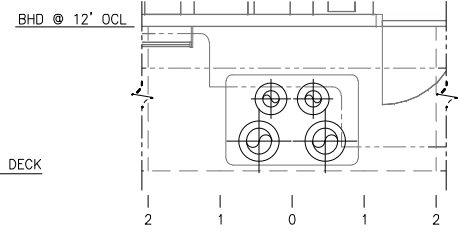
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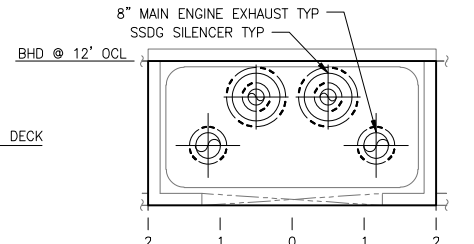
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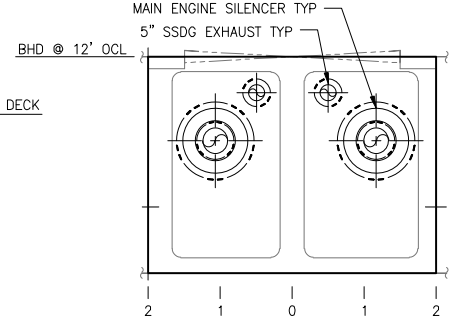
**ELEVATION 3-6A**  
 SHIP SERVICE GENERATOR EXHAUST  
 12' OCL SHOWN WITH BACKGROUND  
 LOOKING PORT  
 SCALE: 3/8"=1'-0"



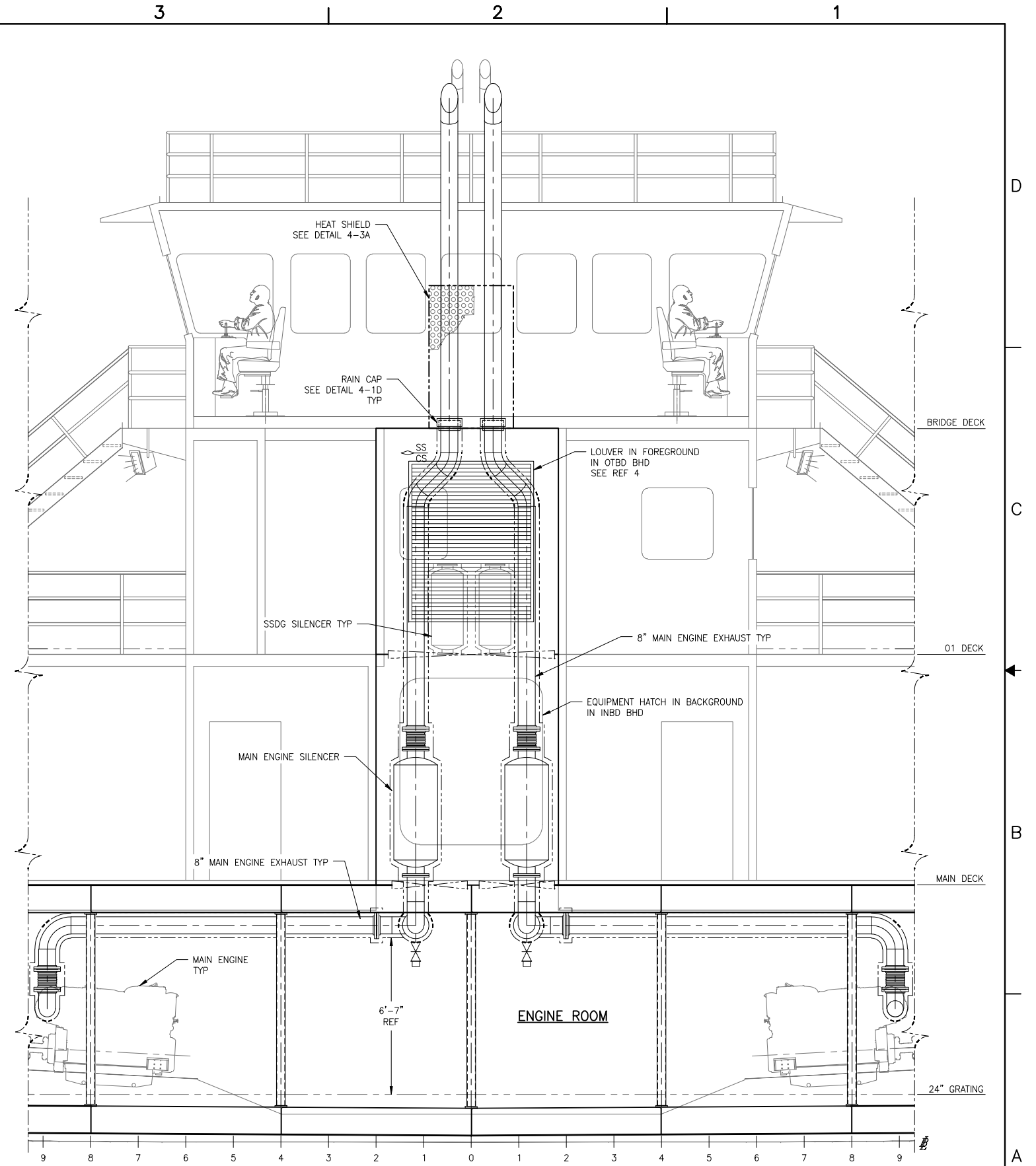
**PLAN 3-4C**  
 EXHAUST PIPING AT BRIDGE DECK  
 SCALE: 3/8"=1'-0"



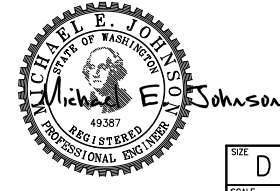
**PLAN 3-4B**  
 EXHAUST PIPING AT 01 DECK  
 SCALE: 3/8"=1'-0"



**PLAN 3-4A**  
 EXHAUST PIPING AT MAIN DECK  
 SCALE: 3/8"=1'-0"



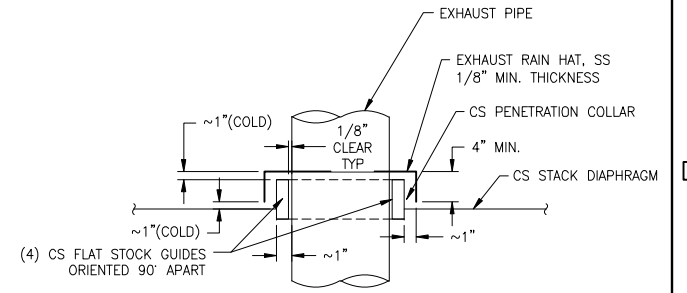
**ELEVATION 3-2A**  
 MAIN ENGINE EXHAUST  
 12' OCL SHOWN WITH BACKGROUND  
 LOOKING PORT  
 SCALE: 3/8"=1'-0"



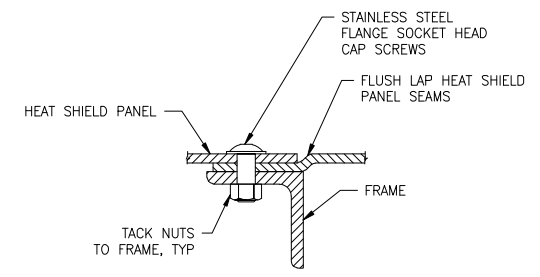
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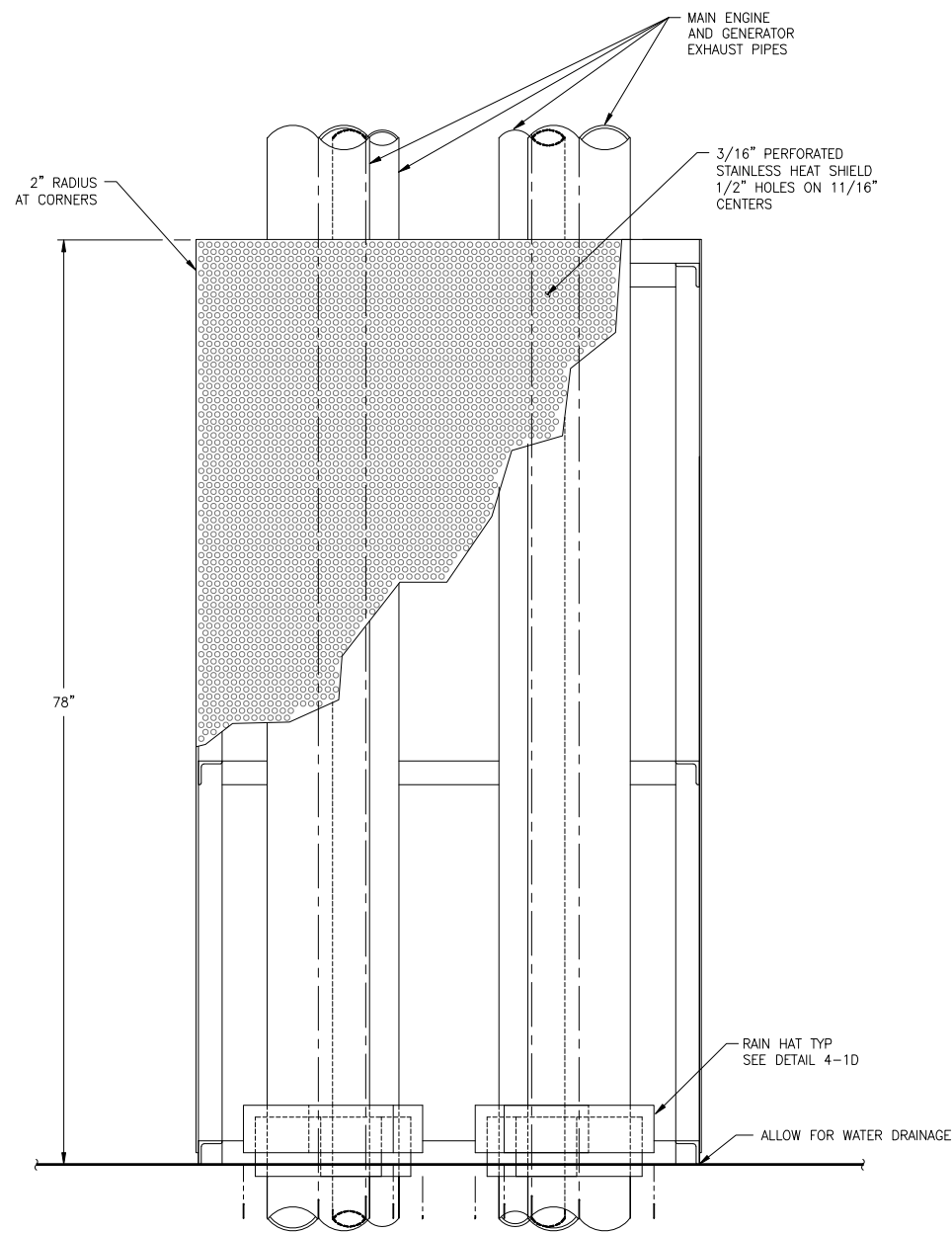
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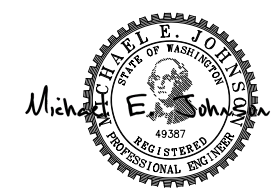
**DETAIL 4-1D**  
 TYP RAIN CAP  
 NO SCALE



**DETAIL 4-1C**  
 HEAT SHIELD PANEL SEAM  
 SCALE: 6"=1'-0"



**DETAIL 4-3A**  
 HEAT SHIELD  
 SCALE: 1-1/2"=1'-0"



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