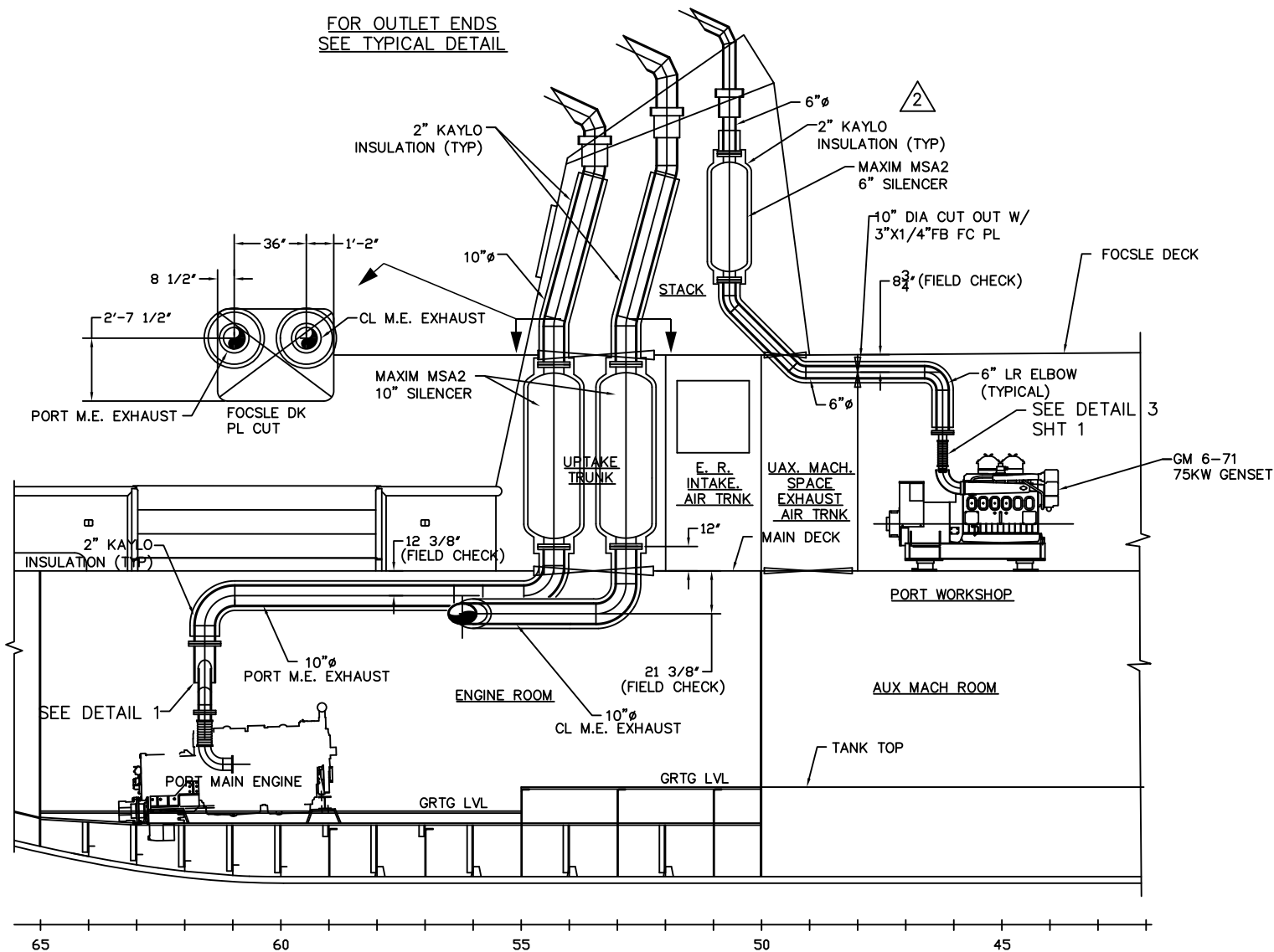


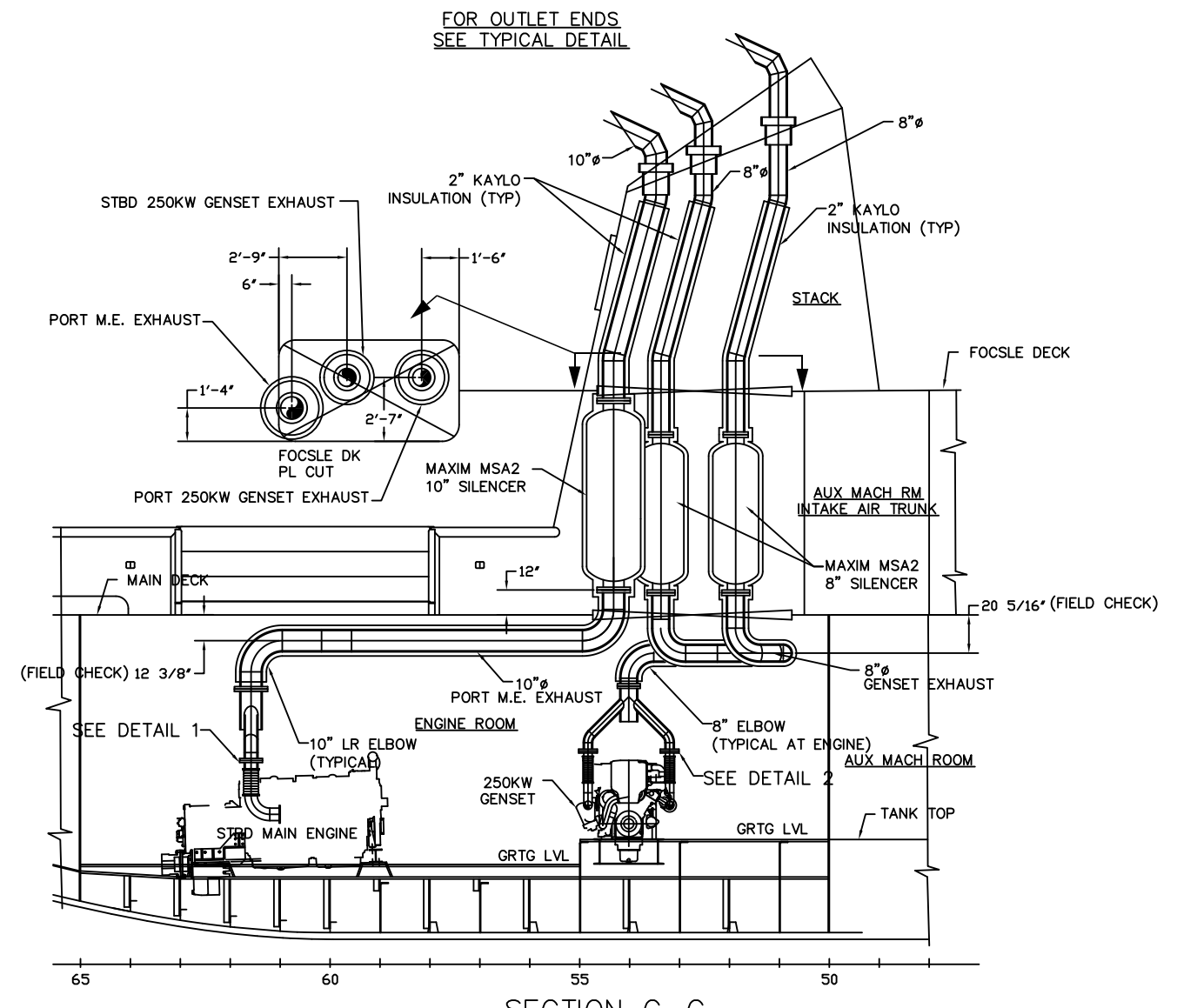
6 5 4 3 2 1

D

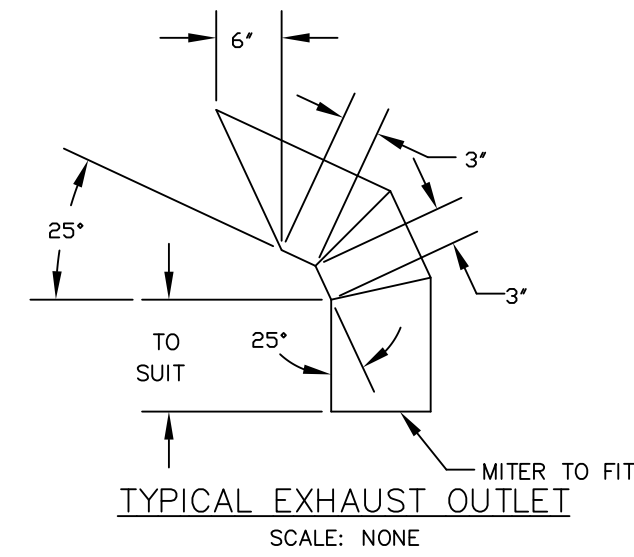
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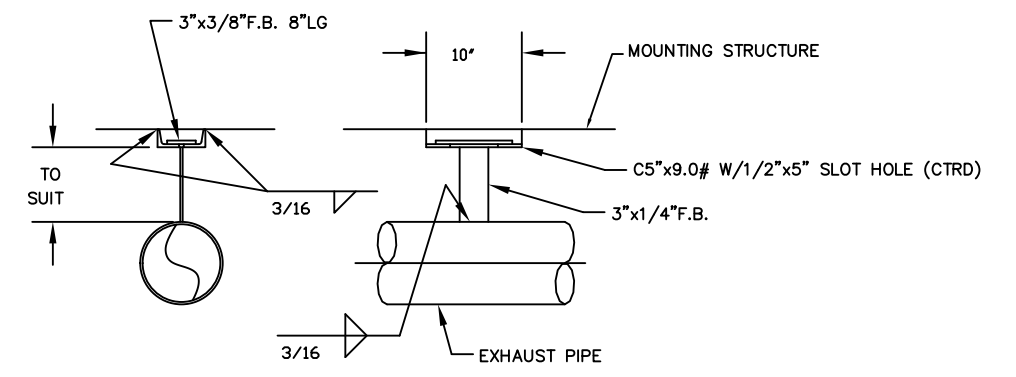
SECTION E-E
LKG OUTBD FROM CENTERLINE
SCALE: 1/4"=1'-0"



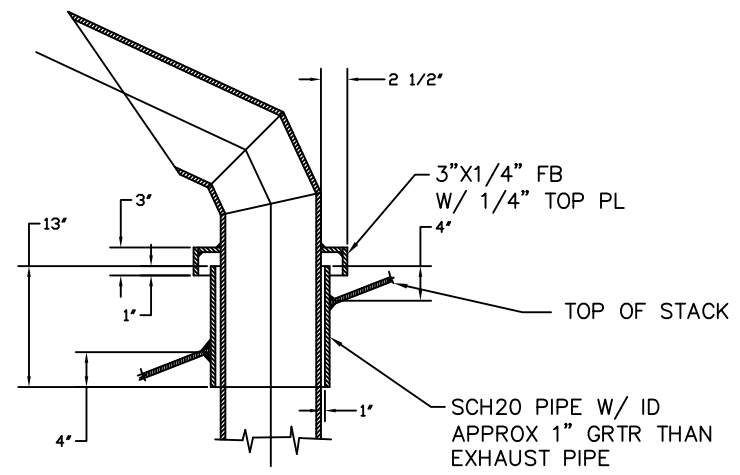
SECTION C-C
LOOKING INBOARD
SCALE: 1/4"=1'-0"



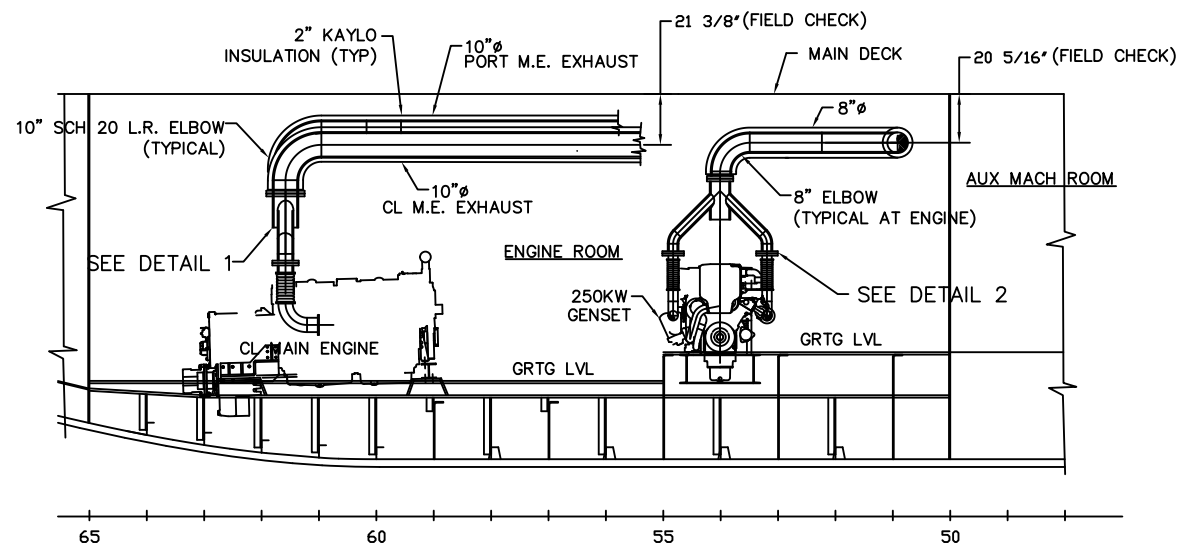
TYPICAL EXHAUST OUTLET
SCALE: NONE



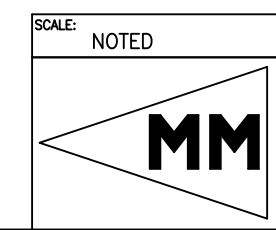
PIPE HANGER (TYP)
NOT TO SCALE



TERMINATION OF EXHAUST
PIPES AT TOP OF STACK
SCALE: NONE



SECTION D-D
LOOKING TO PORT



TITLE: 160'-0" x 40'-0" x 13'-0" RESEARCH VESSEL	
ENGINE EXHAUST PIPING ARRANGEMENT & DETAILS	
MARINE MANAGEMENT INC.	
MARINE DESIGNERS and SURVEYORS	
P.O. Box: 1803 Ocean Springs, MS 39566-1803	SH: 2
Ph: 601-872-2846 Fax: 601-872-0606 Online: rpayne@mmmsurvey.com	OF: 2
	ALT NO: 1

6 5 4 3 2 1

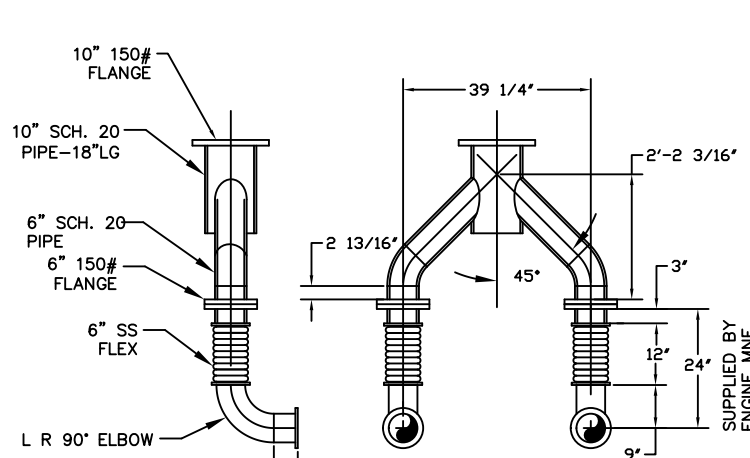
A

A

S-185-P10 SH 2 ALT. 2

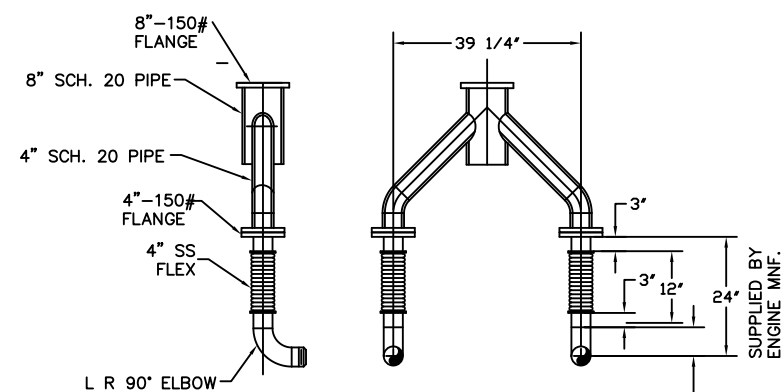
MATERIAL SCHEDULE						EQUIPMENT LIST										
NO.	SYSTEMS	SIZES	PIPE	VALVES		FITTINGS	TAKE-DOWN JOINTS	ASTM SPEC		GASKETS	EQUIPMENT	QTY	DESCRIPTION	MATERIAL	MFR	REMARKS
				BODIES	TRIM			BOLTS	NUTS							
1	75KW GENSET EXHAUST SYSTEM	6"	BLK STL SMLS ASTM A-53 SCH 40			SCH40 BLK STL BW ASTM A-234 GRADE WPB ANSI B16.25	125LB LIGHT-WEIGHT SLIP-ON FLANGE CARBON STEEL ASTM A-105 ANSI B16.5	SEE BELOW			75KW GENSET MUFFLER	1	6"		MAXIM	MSA-2
2	250KW GENSET EXHAUST SYSTEM	8"	BLK STL SMLS ASTM A-53 SCH 20			SCH20 BLK STL BW ASTM A-234 GRADE WPB ANSI B16.25	150LB LIGHT-WEIGHT SLIP-ON FLANGE CARBON STEEL ASTM A-105 ANSI B16.5	SEE BELOW			250KW GENSET MUFFLER	2	8"		MAXIM	MSA-2
3	MAIN ENGINE EXHAUST SYSTEM	10"	BLK STL SMLS ASTM A-53 SCH 20			SCH20 BLK STL BW ASTM A-234 GRADE WPB ANSI B16.25	150LB LIGHT-WEIGHT SLIP-ON FLANGE CARBON STEEL ASTM A-105 ANSI B16.5	SEE BELOW			MAIN ENGINE MUFFLER	3	10"		MAXIM	MSA-2
											EXPANSION JOINT	4	10"			1 3/4" EXP.
											EXPANSION JOINT	8	8"			1 3/4" EXP.

NUTS TO BE ASTM A-194, GRADE 1 HEAVY HEX CARBON STEEL, ANSI B18.2.1.
BOLTS TO BE ASTM A-197, B7 ALLOY STEEL, ANSI B18.2.1.



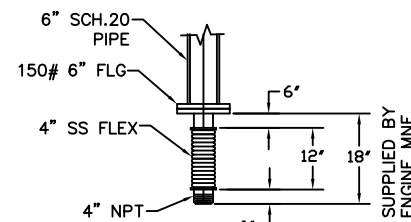
DETAIL 1
MAIN ENGINE RISER
1/2"=1'-0"

FOR OUTLET ENDS
SEE TYPICAL DETAIL



DETAIL 2
250KW GENSET RISER
1/2"=1'-0"

FOR OUTLET ENDS
SEE TYPICAL DETAIL



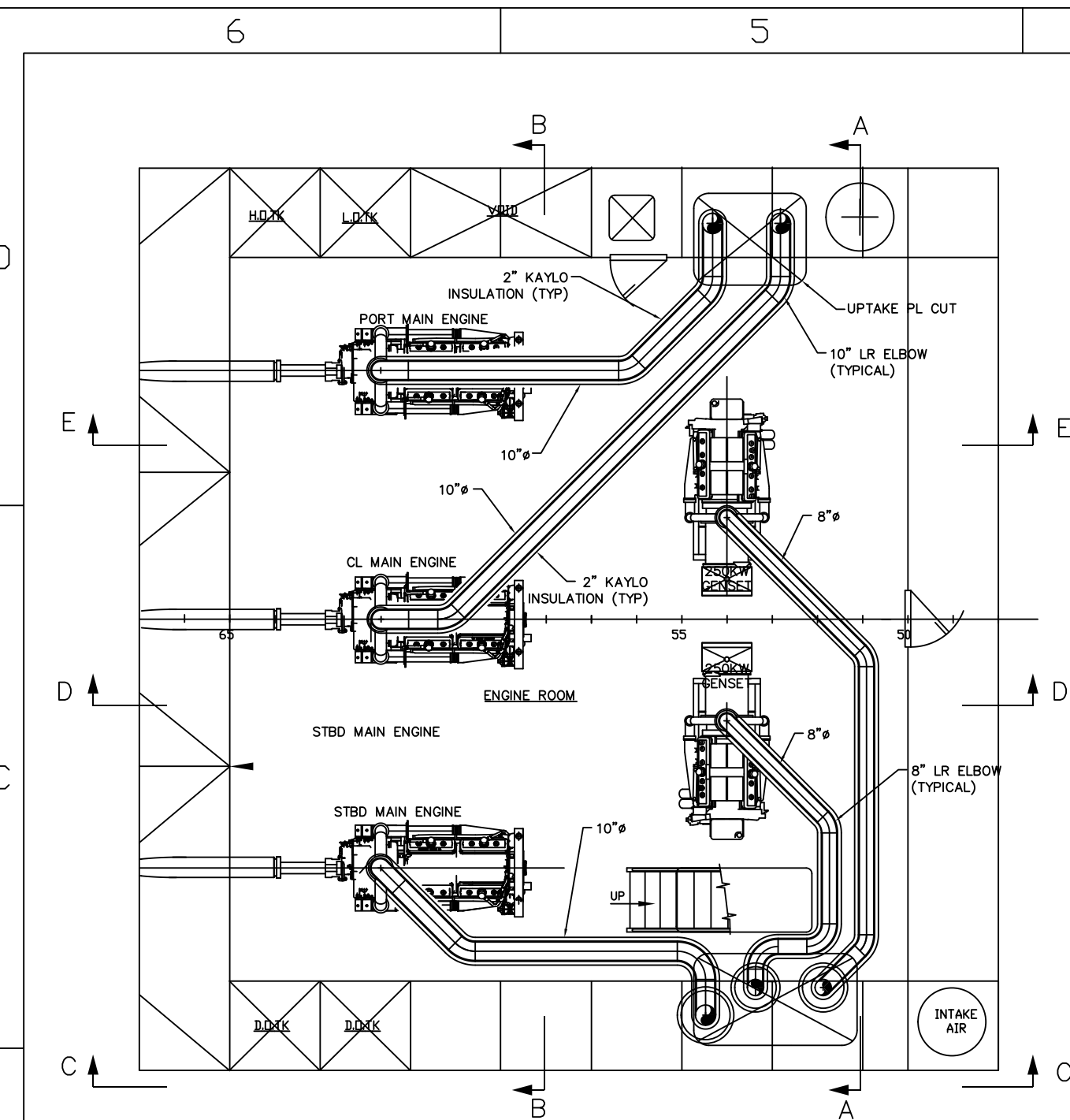
DETAIL 3
75KW GENSET RISER
1/2"=1'-0"

MODIFICATIONS

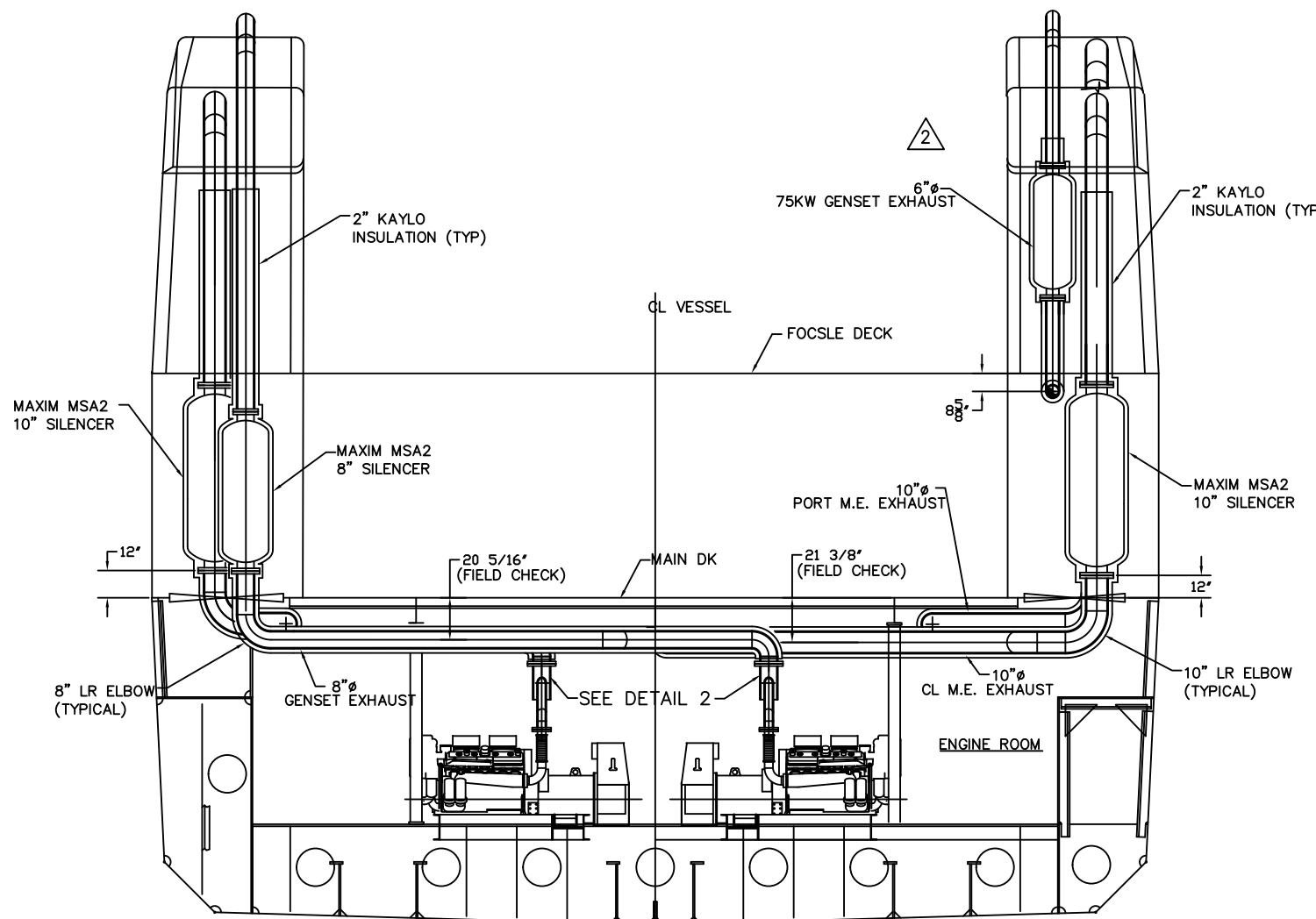
THIS DRAWING SHOWS THE STARBOARD EXHAUST UPTAKE PLATE CUT OUT LARGER THAN THE EXISTING CUT OUT ON THE VESSEL. THIS CUT OUT CAN BE ENLARGED AS REQUIRED WITHIN THE UPTAKE BOUDARY BULKHEADS.

GENERAL NOTES

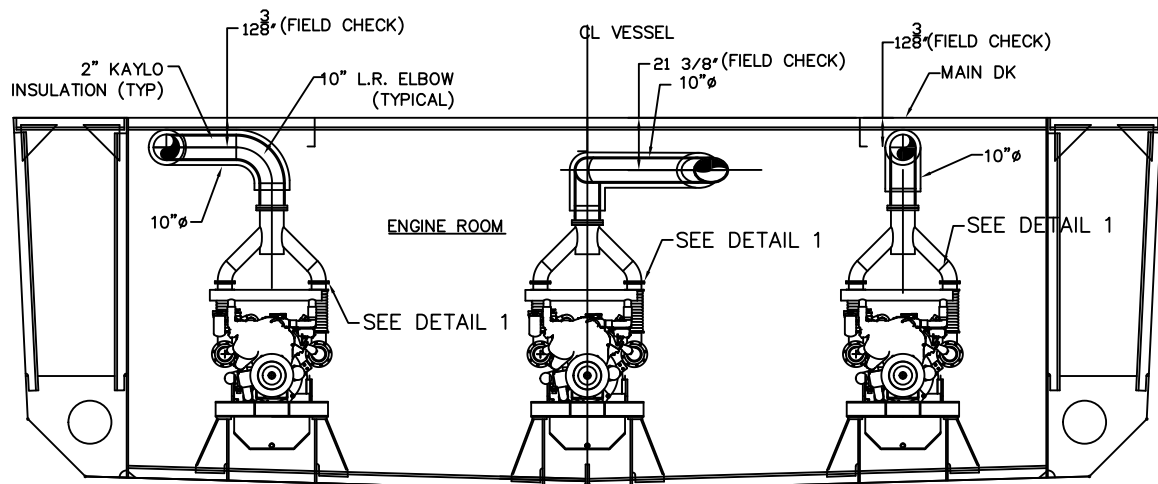
- ALL EXHAUST PIPES SHALL BE FITTED WITH 2" OF KAYLO INSULATION WRAPPED WITH FIBERGLASS.
- ALL HORIZONTAL PORTIONS OF EXHAUST PIPES LEADING FROM ENGINES TO SILENCERS SHALL DROP APPROXIMATELY 3/8" PER FOOT FROM ELBOW TO ELBOW TOWARDS SILENCERS FOR DRAINING PURPOSES.
- DRAIN FITTINGS TO BE INSTALLED AT EACH ELBOW BELOW MUFFLERS.
- ALL EXPANSION JOINTS SHALL BE FITTED WITH BLANKET TYPE INSULATION.
- PROVIDE SUITABLE ANCHORS FOR SILENCERS AND USE HANGER BRACKETS AND PIPE SLIDES AS NEEDED TO PROVIDE ADEQUATE SUPPORT.
- PIPE SLIDES TO BE SPACED AT A MAX. OF 10'-0" APART.
- ALL WELDING, MATERIALS AND COMPONENTS TO CONFORM TO USCG 46 CFR, SUBCHAPTER F PIPING SYSTEM REGULATIONS AND ABS LOAD LINE ONLY) RULES.
- PIPING FOR ENGINE EXHAUSTS TO BE INSTALLED TO ALLOW FOR THERMAL EXPANSION.



PLAN VIEW - ENGINE ROOM
SCALE: 1/4"=1'-0"



SECTION A-A
SHOWN LOOKING AFT
SCALE: 1/4"=1'-0"

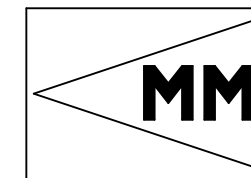


SECTION B-B
SHOWN LOOKING AFT
SCALE: 1/4"=1'-0"

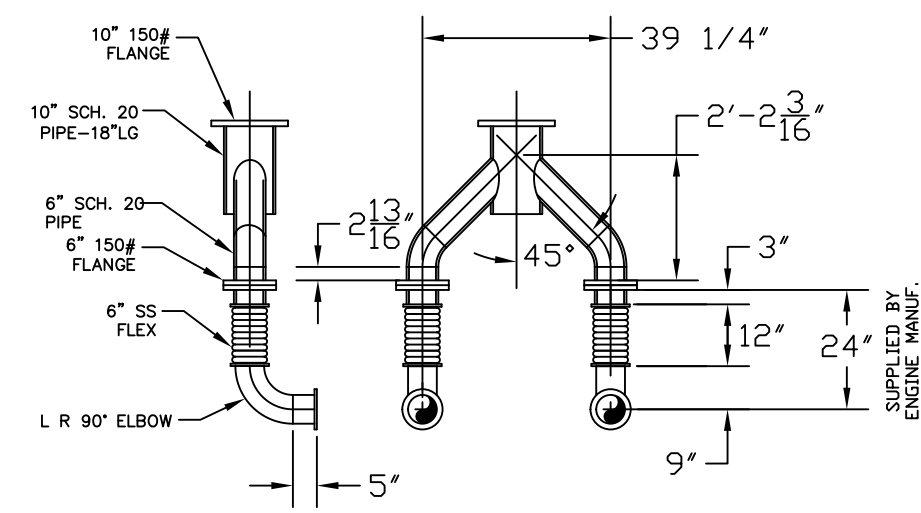
2	MODIFIED 75KW GENSET EXHAUST TO SHOW AS INSTALLED.	RLP 1/15/00
1	1) ISSUED FOR CONSTRUCTION.	RLP 5/21/98
NO.	ALTERATIONS	BY/DATE

DRAWN BY:	ROBERT PAYNE	DATE:	7-20-99
CHECKED BY:		DATE:	
APPROVED BY:		DATE:	
APPROVED BY:		DATE:	
SCALE:	NOTED	CONTRACT NO.:	S-185-32
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DWG. NO.:	S-185-P10		

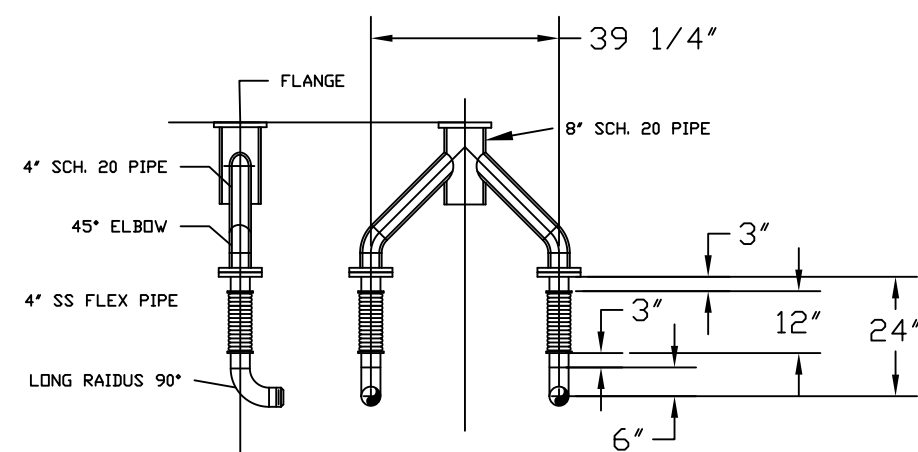
TITLE:		160'-0" x 40'-0" x 13'-0" RESEARCH VESSEL	
ENGINE EXHAUST PIPING ARRANGEMENT & DETAILS			
PREPARED FOR:		CAMERON OFFSHORE BOATS, INC. CAMERON, LOUISIANA	
MARINE MANAGEMENT INC.		SHT: 1	
MARINE DESIGNERS and SURVEYORS		OF: 2	
P.O. Box: 1803 Ocean Springs, MS 39566-1803		ALT NO: 2	
Ph: 601-872-2846 Fax: 601-872-0606 Online: rpayne@atlasyn.com			



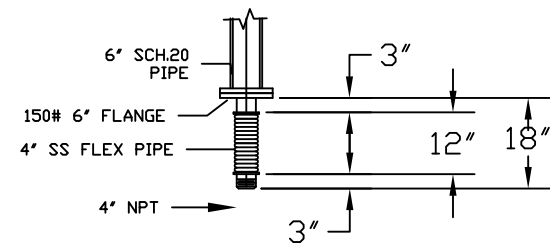
S-185-P10 SHT 1 ALT. 2



DETAIL 2
MAIN ENGINE MANIFOLD



DETAIL 1
GENSET MANIFOLD
GOOD



DETAIL 3
MAIN DECK GENERATOR MANIFOLD

EXHAUST SYSTEM BACK PRESSURE

DESIGN CRITERIA

3508 MAIN	4,838CFM/665 DEG C.=18.2"H2O
3406 GEN	2,144CFM/757 DEG C.=8.0"H2O

NOTE: MAXIMUM ALLOWABLE BACK PRESSURE ON ALL ENGINES IS 27"H2O.