

NOTES:

1. IN LINE SPARK ARRESTING 32 dB INSERTION LOSS AT 125 Hz OCTAVE BAND, SILEX SUPPLIED, MODEL JB-8 OR EQUIVALENT.
ABSORPTIVE SILENCER – COWL SPIRAL CHAMBER TYPE OR EQUAL, 28 dB INSERTION LOSS IN 125 Hz OCTAVE BAND, TYPE TS80 OR EQUIVALENT.
2. PRIMARY GENERATOR SET SILENCER:
REACTIVE SILENCER – INLINE SPARK ARRESTING 32 dB INSERTION LOSS IN 125 Hz OCTAVE BAND SILENCER, SILEX TYPE, MODEL
JB-5 ABSORPTIVE SILENCER – COWL SPIRAL CHAMBER TYPE OR EQUAL, 28 dB INSERTION LOSS IN 125 Hz OCTAVE BAND, TYPE TS50 OR EQUIVALENT.
3. EMERGENCY GENERATOR SET SILENCER:
REACTIVE SILENCER – INLINE SPARK ARRESTING 32 dB INSERTION LOSS IN 125 Hz OCTAVE BAND SILENCER, SILEX TYPE, MODEL
JB-3 ABSORPTIVE SILENCER – COWL SPIRAL CHAMBER TYPE OR EQUAL, 28 dB INSERTION LOSS IN 125 Hz OCTAVE BAND, TYPE TS30 OR EQUIVALENT.
4. ELBOWS:
SHORT RADIUS DEFINED AS: BEND RADIUS = PIPE DIAMETER
LONG RADIUS DEFINED AS: BEND RADIUS = PIPE DIAMETER x 1.5
5. INSULATION:
INSULATE ALL PIPE AND SILENCERS IN THE ENGINE ROOM AND FUNNEL WITH A MINIMUM 25mm (1") THICK REMOVABLE PRE-SEWN BLANKET TYPE HIGH TEMPERATURE EXHAUST INSULATION. PROVIDE 75mm (3") OF OVERLAP BETWEEN INSULATION SECTIONS. SECURE INSULATION WITH STAINLESS STEEL HOOKS AND WIRE.
6. MOUNTS:
RESILIENTLY MOUNT ENTIRE EXHAUST SYSTEM TO ENSURE THERE IS NO METAL TO METAL CONTACT BETWEEN THE EXHAUST SYSTEM AND THE VESSEL STRUCTURE. USE CAPTIVE VIBRATION ISOLATORS IN ACCORDANCE WITH VESSEL SPECIFICATIONS. SELECT MOUNTS FOR MINIMUM 2mm ($\frac{5}{64}$ ") STATIC DEFLECTION. LOCATE MOUNTS AS FAR FROM EXHAUST PIPES (HEAT SOURCE) AS POSSIBLE AND ATTACH TO SHIP'S MAIN FRAMING WITHOUT INDUCING BENDING MOMENTS.
DO NOT ATTACH MOUNTS TO UNSUPPORTED PLATE OR MINOR STIFFENERS.
7. EXPANSION JOINTS (BELLOWS):
MULTI-PLY BELLOWS TYPE IN ACCORDANCE WITH VESSEL SPECIFICATION. INSTALL EXPANSION JOINTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND UNDER A NOMINAL 12mm ($\frac{1}{2}$ ") TENSION WHEN COLD. VERIFY THAT THE EXPECTED LATERAL AND AXIAL DEFLECTION DUE TO THERMAL EXPANSION AND MOVEMENT OF ENGINE BETWEEN NO LOAD AND FULL LOAD ARE WITHIN THE MANUFACTURER'S OPERATING LIMITS AND THE ENGINE TURBOCHARGER LOAD LIMITS.
8. PROVIDE WATER DRAINS AT LOW POINTS.
9. ALL STAINLESS STEEL PIPE AND FLANGES EXPOSED TO WEATHER ARE TO BE MECHANICALLY AND/OR ELECTRO-POLISHED.
10. ARRANGEMENT FOR GUIDANCE ONLY. MODIFY TO SUIT FABRICATED FITTINGS.

SYMBOLS LEGEND/LÉGENDE DE SYMBOLES

X	INDICATES "ANCHOR POINT" ARRANGE ANCHOR POINTS WITH VIBRATION ISOLATORS (SEE SPECIFICATION) TO SECURE PIPING AGAINST MOVEMENT IN ALL DIRECTIONS.							INDIQUE UN "POINT D'ANCRAGE" FIXER LES POINTS D'ANCRAGE À L'AIDE DE SUPPORTS RÉSILIENTS AFIN D'EMPÊCHER LE MOUVEMENT MULTI-DIRECTIONNEL DES CONDUITES. (CONSULTER LES SPÉCIFICATIONS DU NAVIRES).								
	II	INDICATES "RADIAL GUIDE" ARRANGE GUIDES WITH VIBRATION ISOLATORS (SEE SPECIFICATION) & ENSURE GUIDES ALLOW FOR AXIAL THERMAL EXPANSION & PREVENT RADIAL MOVEMENT.							INDIQUE UN "GUIDE RADIAL" DISPOSER LES GUIDES AVEC LES SUPPORTS RÉSILIENTS (CONSULTER LES SPÉCIFICATIONS) ET ASSURER QUE LES GUIDES PERMETTENT UNE EXPANSION THERMIQUE AXIALE ET EMPÊCHENT UN MOUVEMENT RADIAL.							
SERVICE: MACHINERY EXHAUST							CLASS 150			MATERIAL: CARBON STEEL BELOW FUNNEL ELECTRO-POLISHED 316L S.S. ABOVE FUNNEL						
RATED TEMPERATURE		775 °F (413 °C) MAX														
PRESSURE		MAXIMUM WORKING PRESSURE 15psi (1 bar)														
SIZE		2 ½"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	
		DN65	DN80	DN100	DN125	DN150	DN200	DN250	DN300	DN350	DN400	DN450	DN500	DN550	DN600	
PIPE		SCH. 40			SCH. 10: ASTM A106 GR. B OR A53 GR. B CARBON STEEL											
		ASTM A-106 GR. B SMLS			SCH. 10S: ASTM A312 SMLS AUSTENITIC STAINLESS STEEL											
FITTINGS		ASTM A 216/A GR WCB FLANGED, ANSI B16.5														
		ASTM A 234/A 234M GR WPB BUTTWELD, ANSI B16.9 OR B16.28														
FLANGE		½" PLATE FLANGE FOR PIPE SIZES 1" TO 14", AND ¾" FOR PIPE SIZES 14" AND GREATER														
		DRILL BOLT PATTERN TO ANSI B16.5 FLANGES														

NOTES:

1. SILENCIEUX DU MOTEUR PRINCIPAL:
PARE-ÉTINCELLES EN LIGNE, AFFAIBLISSEMENT D'INSERTION 32dB À BANDE D'OCTAVE 125Hz, MODÈLE SILEX JB-8 OU ÉQUIVALENT.
SILENCIEUX À ABSORPTION - TYPE À CHAMBRE EN SPIRALE "COWL" OU ÉQUIVALENT, AFFAIBLISSEMENT D'INSERTION 32dB À BANDE D'OCTAVE 125Hz, TYPE TS80 OU ÉQUIVALENT.
2. SILENCIEUX DU GROUPE ÉLECTROGÈNE PRIMAIRE:
SILENCIEUX RÉACTIF - PARE-ÉTINCELLES EN LIGNE, AFFAIBLISSEMENT D'INSERTION 32dB À BANDE D'OCTAVE 125Hz, MODÈLE SILEX JB-5 OU ÉQUIVALENT.
SILENCIEUX À ABSORPTION - TYPE À CHAMBRE EN SPIRALE "COWL" OU ÉQUIVALENT, AFFAIBLISSEMENT D'INSERTION 32dB À BANDE D'OCTAVE 125Hz, TYPE TS50 OU ÉQUIVALENT.
3. SILENCIEUX DU GROUPE ÉLECTROGÈNE DE SCOURS:
SILENCIEUX RÉACTIF - PARE-ÉTINCELLES EN LIGNE, AFFAIBLISSEMENT D'INSERTION 32dB À BANDE D'OCTAVE 125Hz, SILEX FOURNIE, MODÈLE JB-3 OU ÉQUIVALENT.
SILENCIEUX À ABSORPTION - CAPOT À CHAMBRE EN SPIRALE OU ÉQUIVALENT, AFFAIBLISSEMENT D'INSERTION 32dB À BANDE D'OCTAVE 125Hz, TYPE TS30 OU ÉQUIVALENT.
4. COUDES:
FAIBLE RAYON DE COURBURE = DIAMÈTRE DE LA CONDUITE
LONG RAYON DE COURBURE = DIAMÈTRE DE LA CONDUITE X 1.5
5. ISOLATION:
ISOLER LA CONDUITE ET LES SILENCIEUX DANS LA SALLE DES MACHINES ET LES CHEMINÉES AVEC UN ISOLANT RÉSISTANT AUX TEMPÉRATURES D'ÉCHAPPEMENT ÉLEVÉES, AMOVIBLE, D'UNE ÉPAISSEUR MINIMALE DE 25mm (1"), ET DE TYPE COUVERTURE PRÉ-COUSUE. PERMETTRE UN RECOUVREMENT DE 75mm (3") ENTRE SECTIONS. FIXER L'ISOLANT AVEC DES CROCHETS ET DES FILS EN ACIER INOXYDABLE.
6. SUPPORTS:
ISOLER LE SYSTÈME D'ÉCHAPPEMENT AU COMPLET DE LA STRUCTURE DU NAVIRE AU MOYEN DE SUPPORTS RÉSILIENTS DE FAÇON À CE QU'IL N'Y AIT AUCUN CONTACT MÉTAL/MÉTAL. UTILISER DES SUPPORTS RÉSILIENTS CAPTIFS CONFORMÉMENT AUX SPÉCIFICATIONS DU NAVIRE. SÉLECTIONNER LES SUPPORTS STATIQUES EN VUE DE PERMETTRE UNE DÉFLECTION STATIQUE MINIMALE DE 2mm (5/64"). PLACER LES SUPPORTS AUSSI LOIN QUE POSSIBLE DES CONDUITES D'ÉCHAPPEMENT (SOURCE DE CHALEUR) QUE POSSIBLE, ET LES FIXER À LA STRUCTURE DU NAVIRE SANS INTRODUIRE UN MOMENT DE FLEXION. NE PAS FIXER LES SUPPORTS RÉSILIENTS AUX BORDS OU AUX RAIDISSEURS NON-RENFORCÉS.
7. JOINTS D'EXPANSION:
JOINTS D'EXPANSION DE TYPE À SOUFFLET ET À MULTICOUCHES CONFORMÉMENT AUX SPÉCIFICATIONS DES NAVIRES. INSTALLER LES JOINTS D'EXPANSION CONFORMÉMENT AUX RECOMMANDATIONS DU FABRICANT ET À UNE TENSION NOMINALE INFÉRIEUR À 12mm LORSQUE FROID. VÉRIFIER QUE LA DÉFLECTION LATÉRALE ET AXIALE DÙ À L'EXPANSION THERMIQUE ET LE MOUVEMENT DU MOTEUR LORSQU'IL PASSE DE VIDE À PLEINE CHARGE SE RETROUVE À L'INTÉRIEUR DES LIMITES OPÉRATIONNELLES DU FABRICANT ET LES LIMITES DE CHARGES DU TURBOCOMPRESSEUR DU MOTEUR.
8. INSTALLER DES DRAINS AUX SECTIONS LES PLUS BASSES DES CONDUITES.
9. LES CONDUITES ET LES BRIDES EXPOSÉES AUX ÉLÉMENTS MÉTÉOROLOGIQUES DOIVENT ÊTRE POLIES DE FAÇON MÉCANIQUE OU ÉLECTROLYTIQUE.
10. TRAITER LE PRÉSENT PLAN EN TANT QUE RÉFÉRENCE SEULEMENT. MODIFIER LE PLAN D'APRÈS LES RACCORDS FABRIQUÉS.

CLIENT ACCEPTANCE

REVISION	PHASE	DATE	INITIALS

APPROVAL STATUS

REVISION	APPROVAL AGENCY	DATE	INITIALS

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VESSEL

22m INSHORE SCIENCE VESSEL

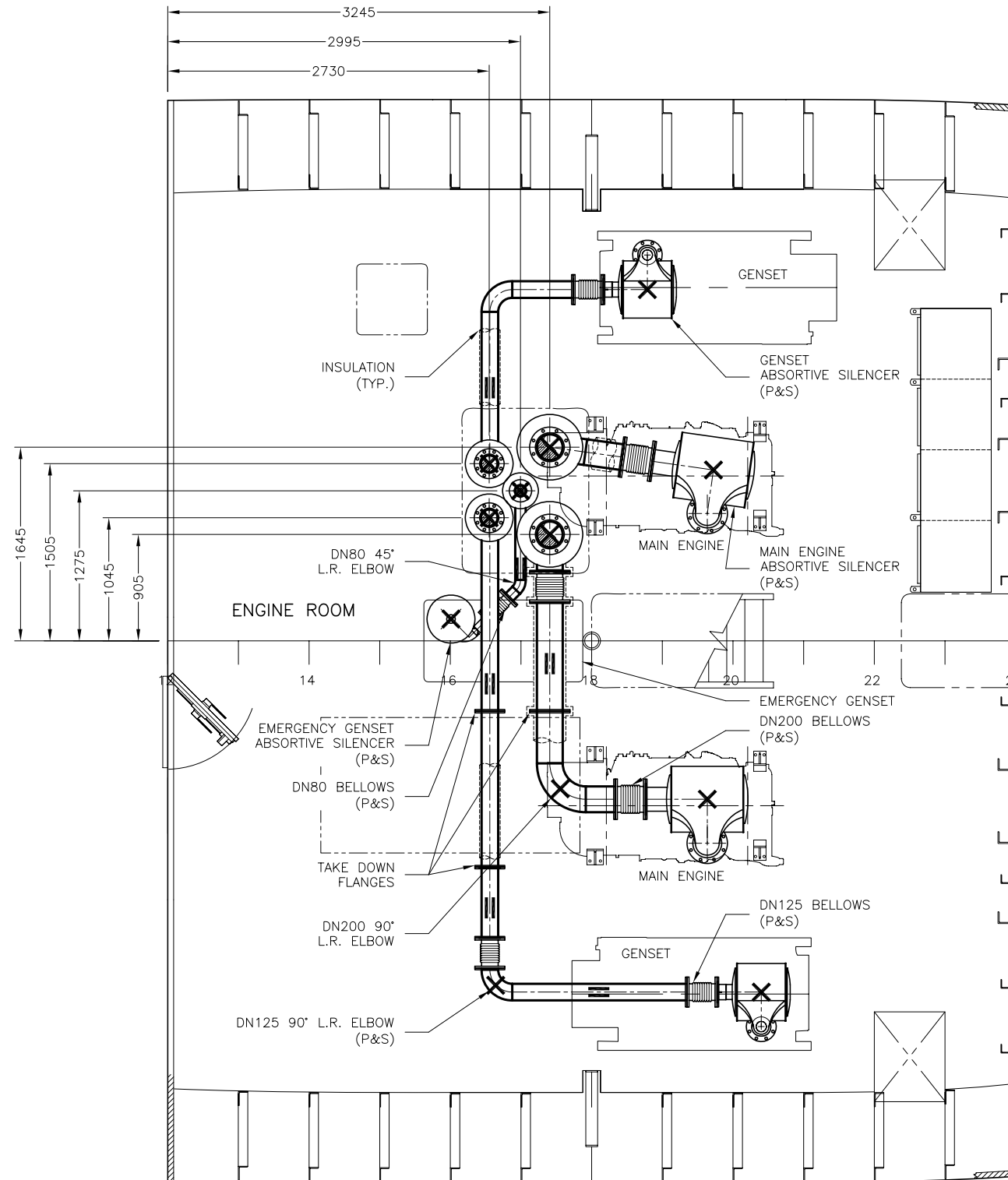
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CANADIAN COAST GUARD

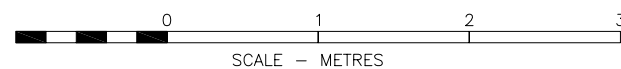
TITLE

MACHINERY EXHAUST ARRANGEMENT


DRAWN BY ME	CHECKED EMJ	PROJECT No. 209-028	
DATE SEP. 22/09	SHEET 1 OF 7	DWG. No. 76000	REV. 3

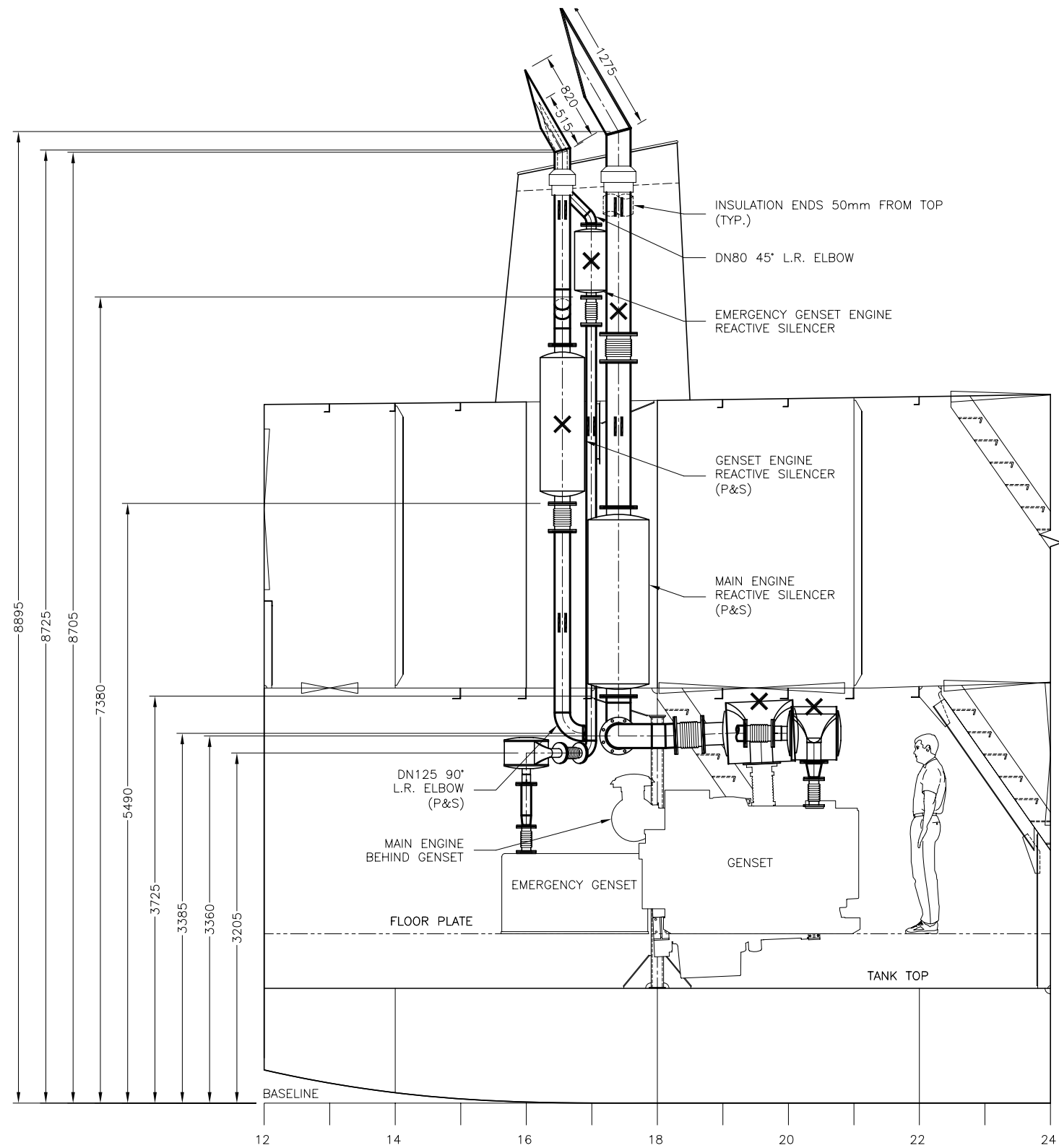


PLAN VIEW

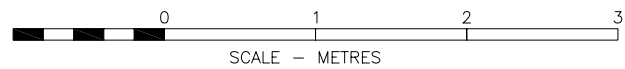


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TITLE MACHINERY EXHAUST ARRANGEMENT			
SCALE 1:50	PROJECT No. 209-028	DWG. No. 76000	SHEET 2 OF 7
 ROBERT ALLAN LTD.			REV. 3



LONGITUDINAL SECTION VIEW
3500mm STARBOARD OFF C.L. LOOKING PORT

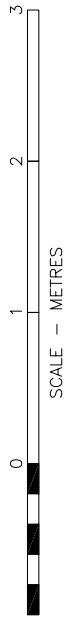
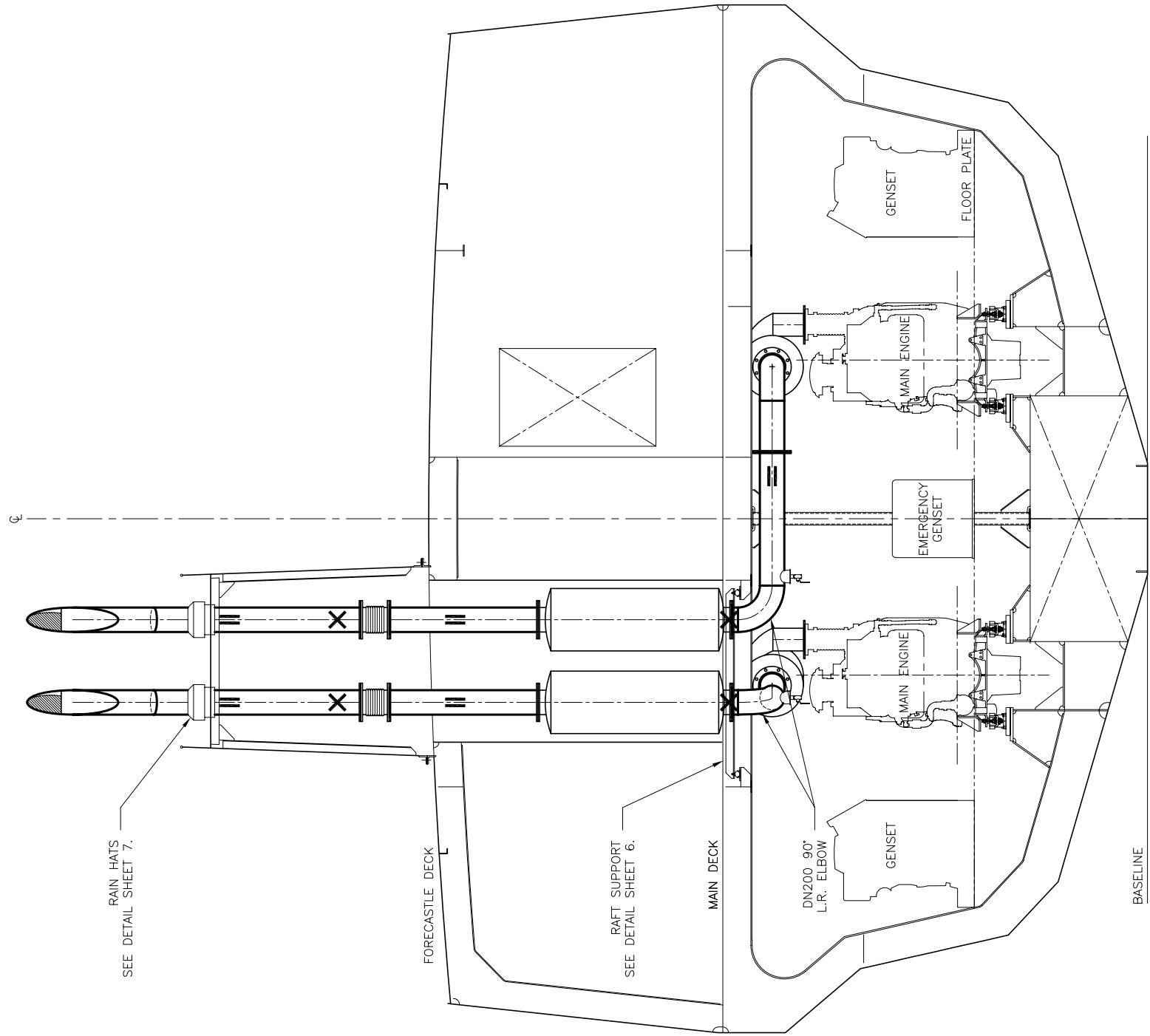
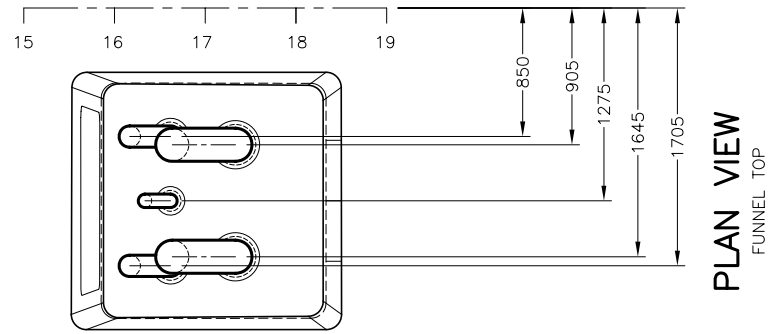


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REV.			3

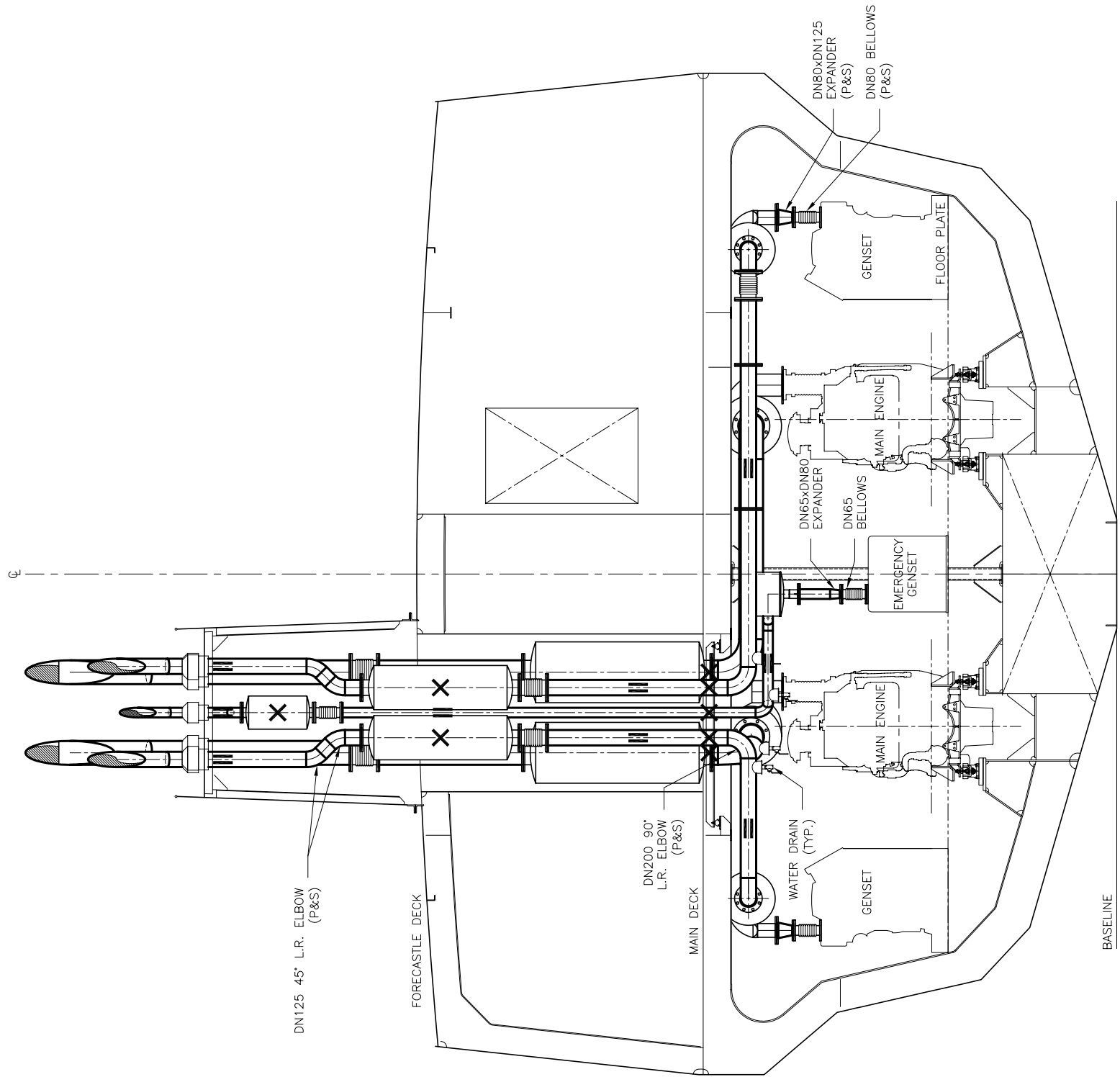


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TITLE MACHINERY EXHAUST ARRANGEMENT SUPPORT DETAILS			
SCALE 1:50	PROJECT No. 209-028	DWG. No. 76000	SHEET 4 OF 7
REV. 3			ROBERT ALLAN LTD.

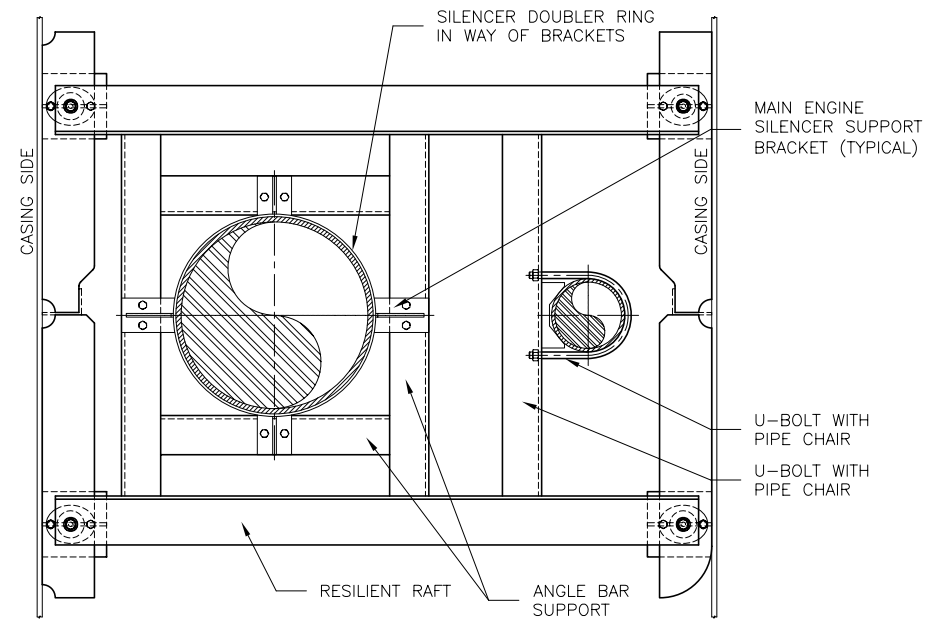


SECTION VIEW FR. 16
FR. 18 STRUCTURE SHOWN

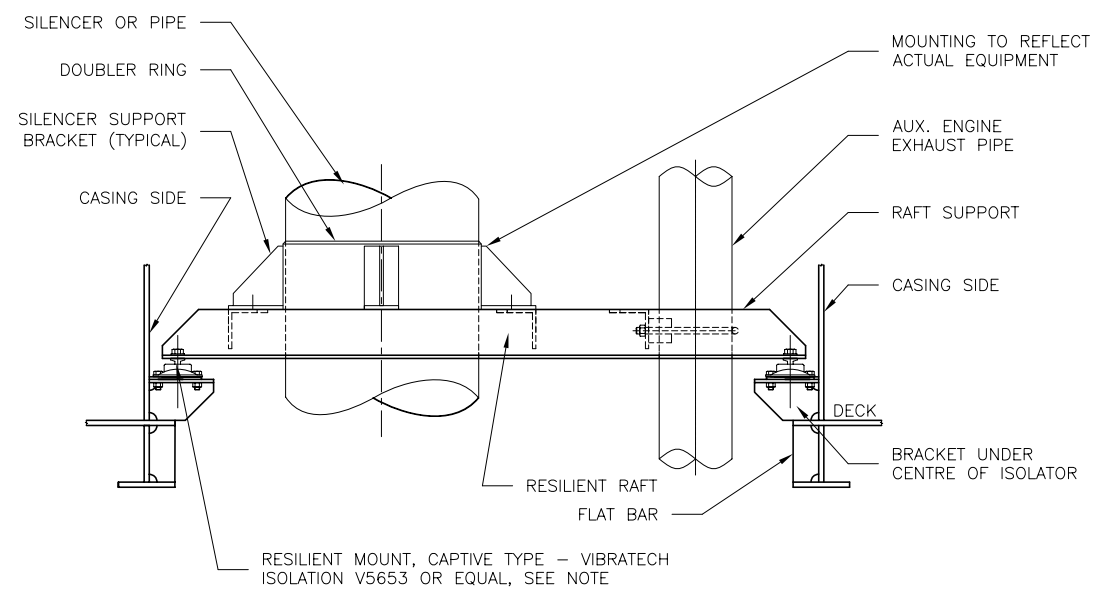


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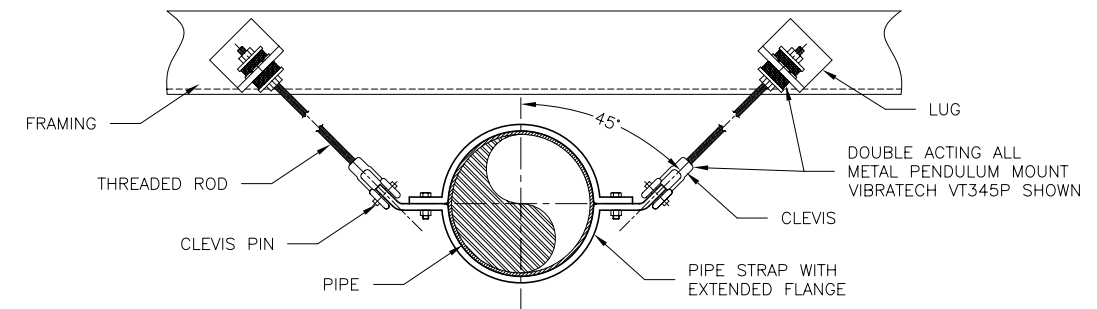
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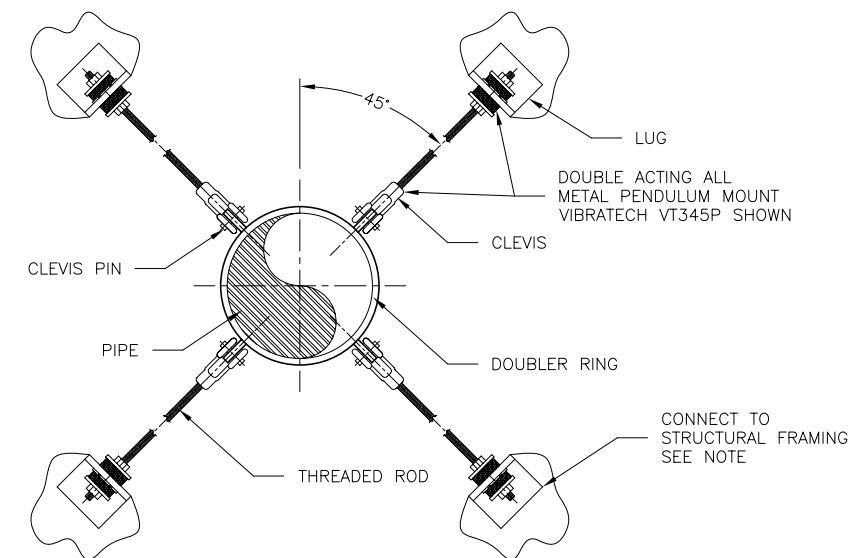
PLAN VIEW
N.T.S.



ELEVATION
TYPICAL RAFT ANCHOR SUPPORT DETAIL
N.T.S.




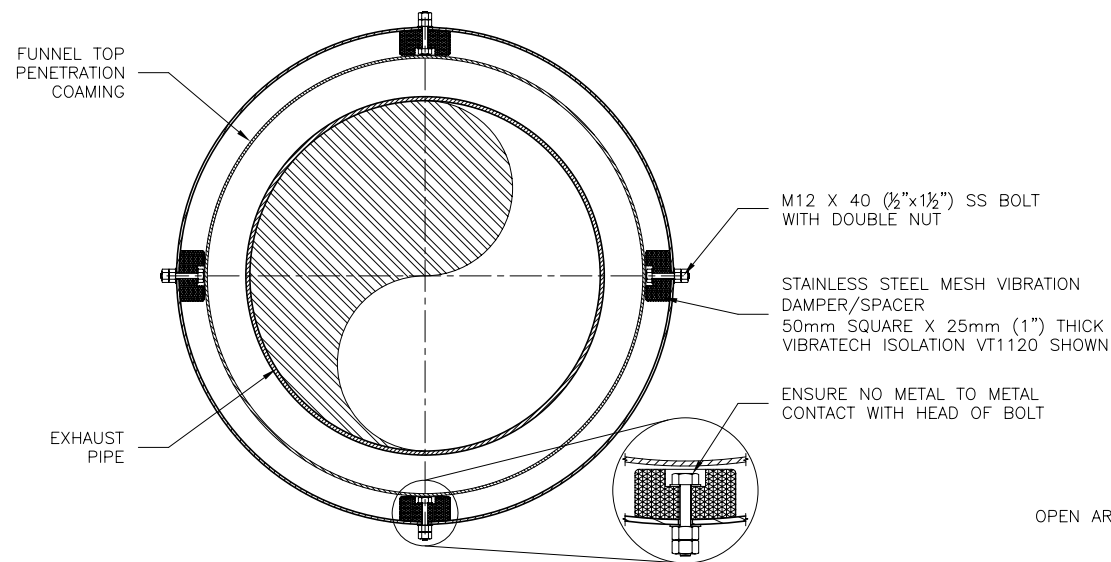
TYPICAL RADIAL GUIDE
HORIZONTAL PIPE RUN
N.T.S.



TYPICAL RADIAL GUIDE
AT CASING TOP
VERTICAL PIPE RUN
N.T.S.

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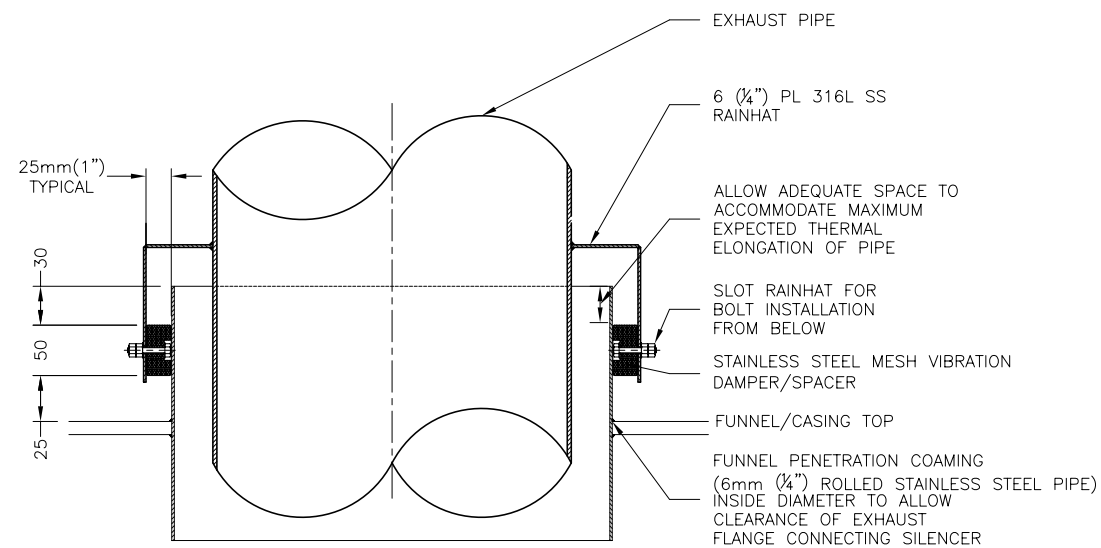
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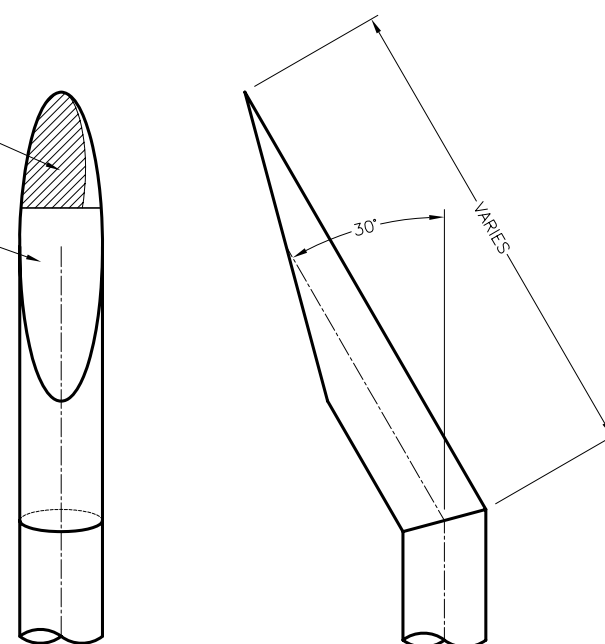
TYPICAL SLEEVE & PAD ASSEMBLY
N.T.S.

OPEN AREA TO EQUAL I.D OF PIPE

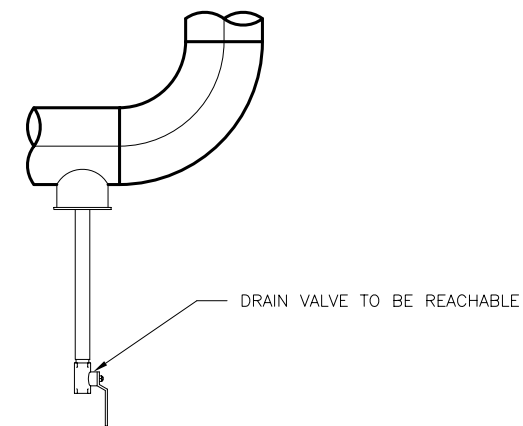
6mm STACK RESTRICTION PLATE RESTRICTION PLATE TO BE EVALUATED ON TRIALS BACKPRESSURE NOT TO EXCEED ENGINE MANUFACTURES ALLOWABLE MAXIMUM (P&S)



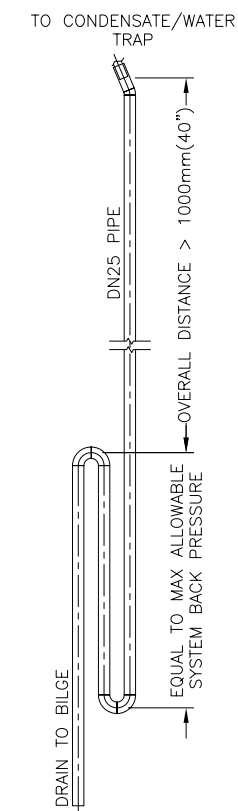
TYPICAL SECTION OF FUNNEL TOP PENETRATION
N.T.S.



TYPICAL TAILPIPE DETAIL
N.T.S.




TYPICAL WATER DRAIN DETAIL
DRAIN AT LOW POINT
N.T.S.



AUTOMATIC CONDENSATE DRAIN
DRAIN PIPING MUST HAVE HIGHER WATER COLUMN THAN SYSTEM ALLOWABLE BACK PRESSURE

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