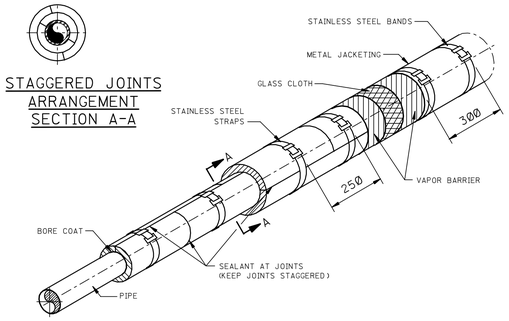
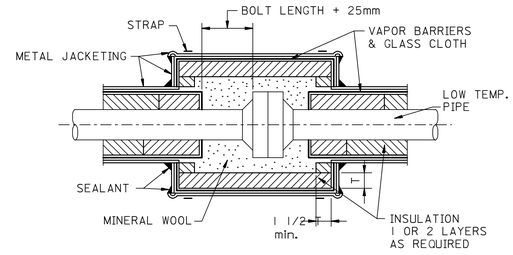
PLANT NO.	INDEX	DRAWING NUMBER	SHT. NO.	REV. NO.
990	N	AA-036913	1 OF 2	06

STAGGERED JOINTS ARRANGEMENT SECTION A-A



MULTI-LAYER PIPE INSULATION

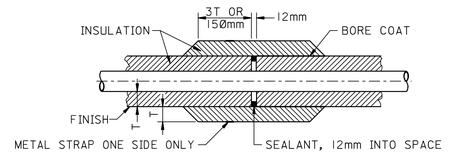
FIG. 1



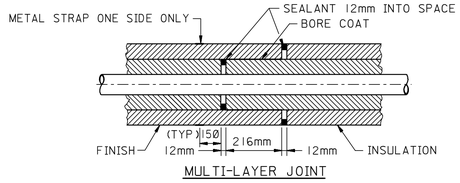
NOTE: SEE INSULATION PROCEDURE

FLANGE COVER

FIG. 2



SINGLE LAYER JOINT



MULTI-LAYER JOINT

HORIZONTAL CONTRACTION JOINT

FIG. 3

INSULATION MATERIALS			
MATERIAL	TYPE	DESIGN LIMITATIONS	SAMS STOCK NUMBER
CELLULAR GLASS	FOAM GLASS	TEMP LOWER LIMIT -268°C	32-196 SERIES 32-208 SERIES
MINERAL WOOL	LOOSE FILL		32-194 SERIES
ACCESSORIES			
STAINLESS STEEL; STRAP A167 TYPE 304	12mm x 0.4mm	< 36" NPS	08-898 SERIES
	20mm x 0.5mm	≥36" NPS	08-900 SERIES
ALUMINUM ASTM; ALLOY; STRAP		USE ONLY WHERE S.S NOT ACCEPTABLE	
LINER; GALV. STEEL	16 BWG		
GLASS WOOL	1.5 LB DENSITY		
WOOD BLOCKS	KILN DRIED		
BORE COAT	ANTI- ABRASIVE 2A OR HYDROCAL B-11		
SEALANT	PITTSEAL 444		
VAPOR BARRIER COATING	ACRYLIC LATEX		09-611-982
VAPOR BARRIER REINFORCEMENT	GLASS CLOTH		09-275-043
WEATHERPROOFING (METAL JACKET)			
ALUMINUM ASTM B209	0.5 THK.		12-123 SERIES
ALLOY 3003-14; SHEET	0.6 THK. 0.8 THK.		
WEATHERPROOFING (NON METALLIC)			
ALUMINUM TOPCOAT			09-611-750
NON-METALLIC SHEET	PITTWRAP CW		

GENERAL NOTES

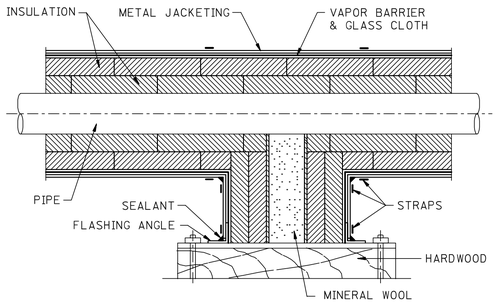
1. THE MATERIALS SPECIFIED FOR INSULATION, WEATHER-PROOFING, AND ACCESSORIES ARE MANDATORY. ALL ALTERNATIVE MATERIALS MUST MEET THE GENERIC DESCRIPTIONS SPECIFIED IN THE SAUDI ARAMCO MATERIAL STOCK (SAMS) SYSTEM.
2. THE SAUDI ARAMCO PAINTS & COATINGS STANDARDS (SAPCS) SPECIFIED ARE MANDATORY.
3. THE INSTALLATION DETAILS SHOWN ARE TYPICAL. ALTERNATIVE INSTALLATION DETAILS ARE ACCEPTABLE PROVIDED THEY COMPLY WITH THE SPECIFIC NOTES.
4. CONVENTIONAL UNITS OF MEASUREMENTS MAY BE USED IN LIEU OF THE METRIC MEASUREMENTS SHOWN.
5. INSULATION THICKNESSES ARE TO BE IN ACCORDANCE WITH SAES-N-001.

SPECIFIC NOTES

1. REFER TO SAES-N-001 FOR SPECIFIC SYSTEM REQUIREMENT FOR CELLULAR GLASS INSULATION.
2. STAINLESS STEEL SHALL NOT BE USED IN COASTAL AND MARINE APPLICATIONS. USE ALUMINUM STRAPS.
3. VAPOR BARRIER SHALL HAVE A MINIMUM DRY FILM THICKNESS OF 0.8mm WHEN USED WITH CELLULAR GLASS INSULATION.
4. ALL INSULATION JOINTS SHALL BE SEALED WITH SEALANT.
5. ALL JOINTS IN WEATHERPROOFING JACKETS SHALL BE OVERLAPPED 50mm, ARRANGED TO SHED WATER, AND SEALED WITH SEALANT.
6. ALUMINUM TOPCOAT IS TO REPLACE METAL JACKETING IN AREAS WHERE JACKETING COULD NOT BE INSTALLED (I.E. ELBOWS, ETC.) APPLY AT LEAST TWO COATS; USE CONTRASTING COLOR FOR FIRST COAT. APPLY FIRST COATS THREE DAYS AFTER VAPOR BARRIER IS APPLIED.
7. BURRIED PIPING DOES NOT REQUIRE METAL WEATHER-PROOF JACKETING. USE NON-METALLIC SHEETS.

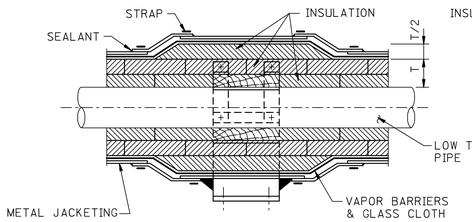
INSTALLATION PROCEDURE:

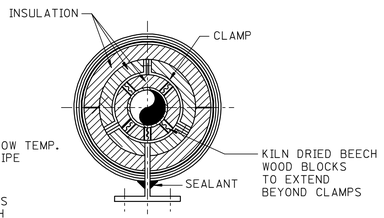
1. PREPARE AND COAT (SAPCS) PIPING IN ACCORDANCE WITH SAES-H-101.
2. APPLY BORE COAT IF REQUIRED PER SAES-N-001.
3. INSTALL PREFORMED CELLULAR GLASS WHILE THE BORE COATING IS STILL WET.
4. USE SEALANT TO JOIN INSULATION SECTIONS.
5. SECURE INSULATION PIECES AROUND PIPE USING METAL STRAPS.
6. APPLY VAPOR BARRIER LAYER.
7. APPLY ONE LAYER OF GLASS CLOTH.
8. APPLY ANOTHER TWO VAPOR BARRIER LAYERS.
9. INSTALL WEATHERPROOFING.



PEDESTAL SUPPORT

FIG. 4



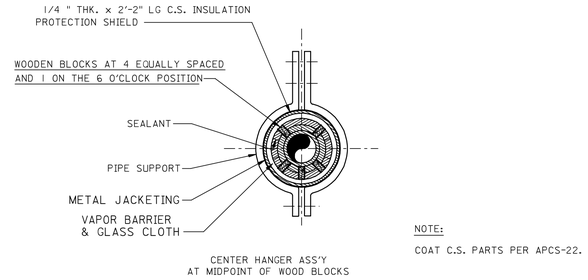


NOTES:

1. ADD WOOD BLOCKS AFTER BORE COATING AND CONTINUE WITH THE PROCEDURE.
2. SEE INSULATION PROCEDURE.
3. TWO SETS OF CLAMPS REQUIRED PER SUPPORT. CLAMP MAY BE 2 OR 3 PIECES.

PIPERACK SUPPORT DETAIL

FIG. 5



NOTE:

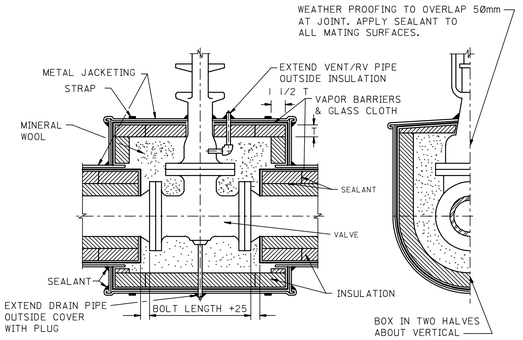
COAT C.S. PARTS PER APCS-22.

HANGER TYPE SUPPORTS FOR PIPE SIZES OVER 4"

FIG. 6

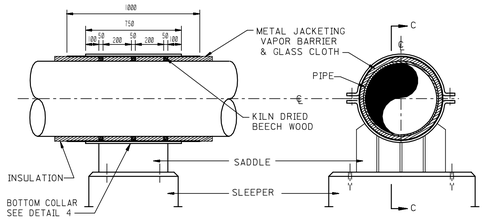
NOTE:

METAL JACKETING SHOULD BE EASY TO INSTALL AND REMOVE WITHOUT BEING DAMAGED.



VALVE INSULATION COVER

FIG. 7



SECTION C-C

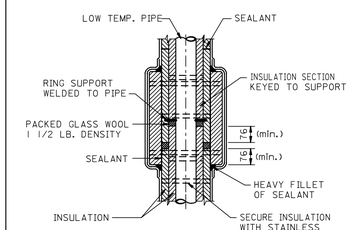
SECTION AL ELEVATION

NOTE:

1. FOLLOW THE SAME INSULATION DETAILS FOR PIPE SIZES 6" AND ABOVE AND THEIR RELATED SUPPORT DESIGN.

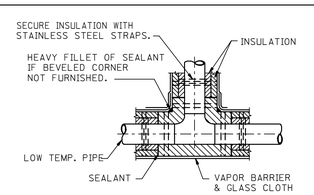
SADDLE & SLEEPER SUPPORT
(FOR PIPE SIZES 30" & ABOVE)

FIG. 8



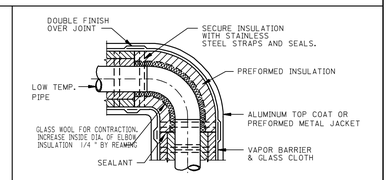
VERTICAL CONTRACTION JOINT

FIG. 9



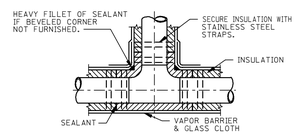
STANDARD WELD TEE
DOUBLE LAYER

FIG. 10A



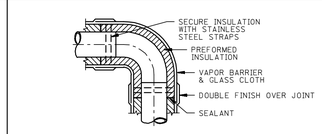
STANDARD WELD ELBOW
DOUBLE LAYER

FIG. 11A



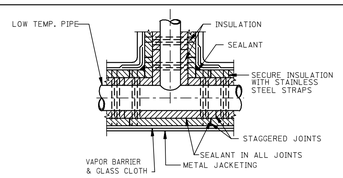
STANDARD WELD TEE
SINGLE LAYER

FIG. 10B



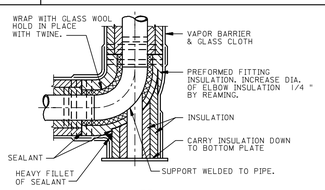
STANDARD WELD ELBOW
SINGLE LAYER

FIG. 11B



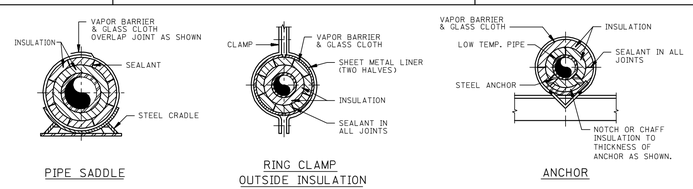
FIELD FABRICATED TEE

FIG. 12



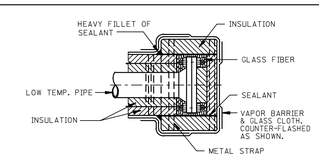
PEDESTAL SUPPORT AT ELBOW

FIG. 13



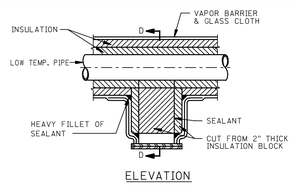
SUPPORTS FOR PIPE SIZES 4" AND SMALLER

FIG. 14

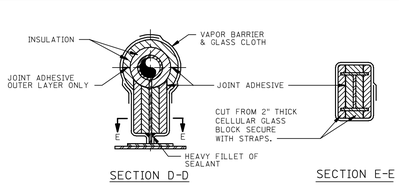


BLIND FLANGE

FIG. 15



ELEVATION

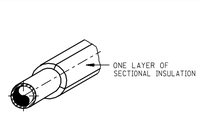


SECTION D-D

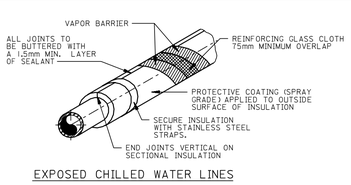
SECTION E-E

ANCHOR AT PUMPS AND GUIDES

FIG. 16



BURIED CHILLED WATER LINES



EXPOSED CHILLED WATER LINES

DETAILS OF CHILLED WATER LINES

FIG. 17

DRAWING RESPONSIBILITY : VESSEL STANDARDS COMMITTEE

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CERTIFIED BY ____ DATE ____

INSULATION DETAILS FOR COLD PIPING

STD. DWG. METRIC

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