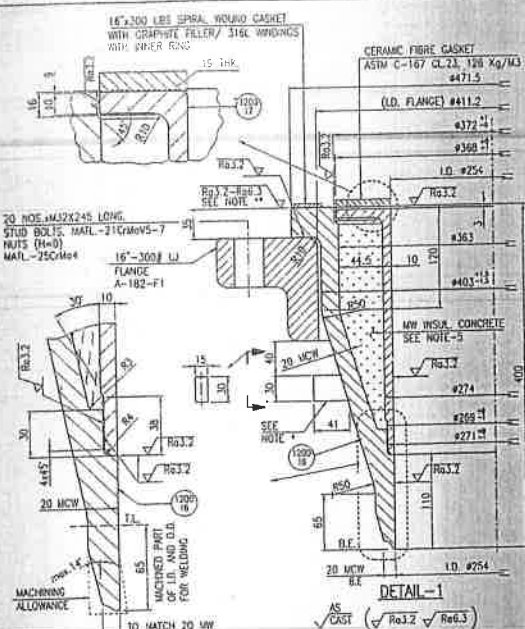


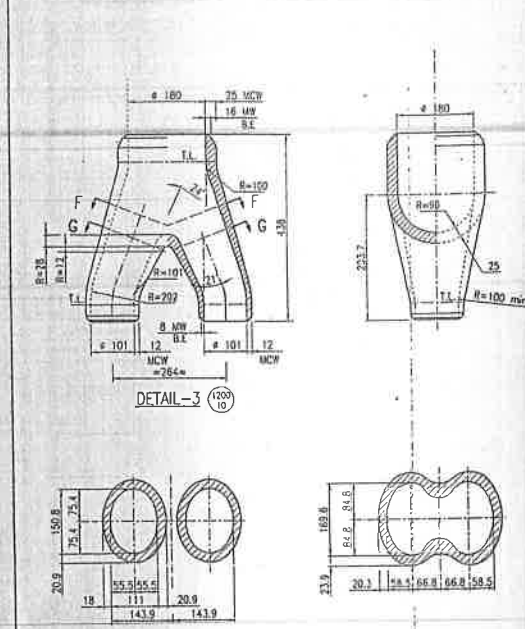
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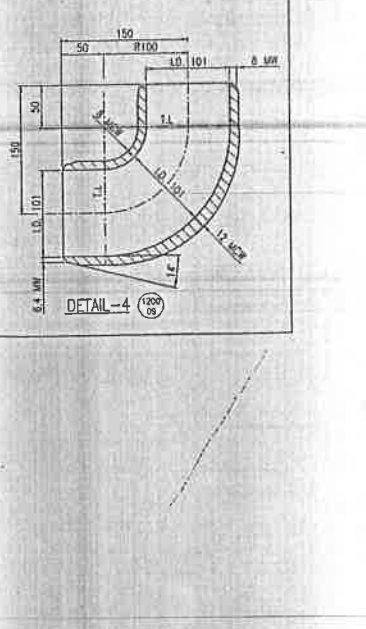
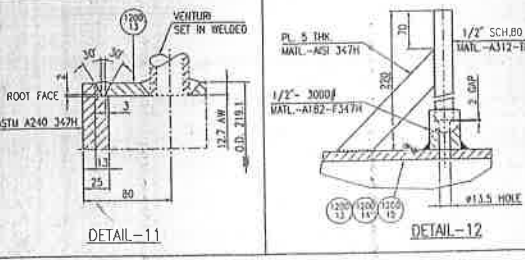
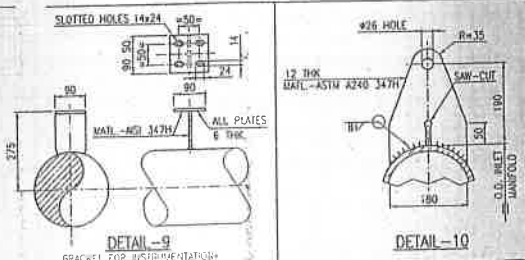
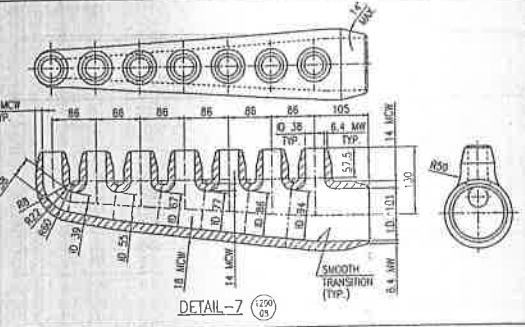
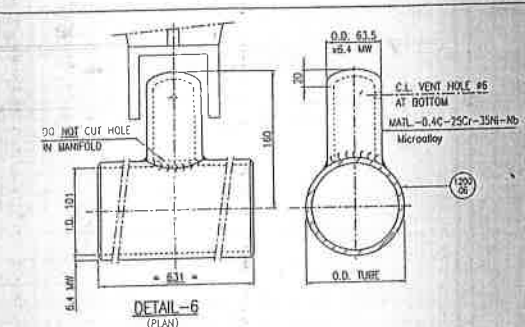
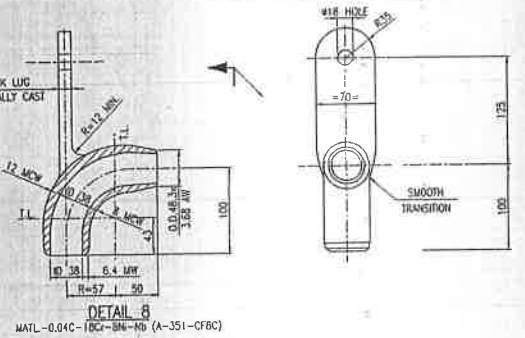
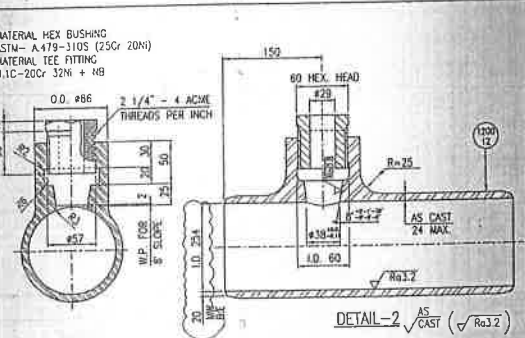
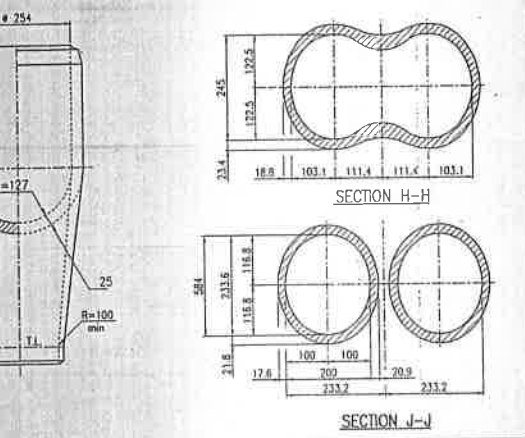
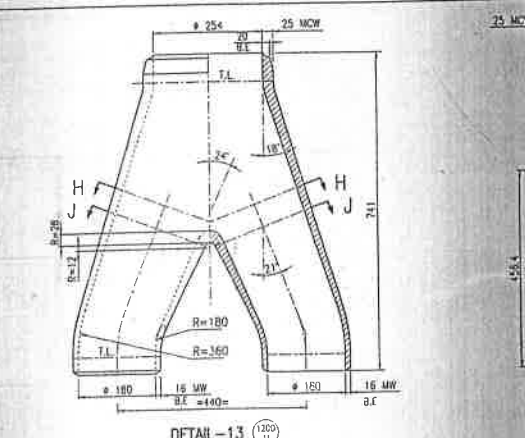
A4-SIZE



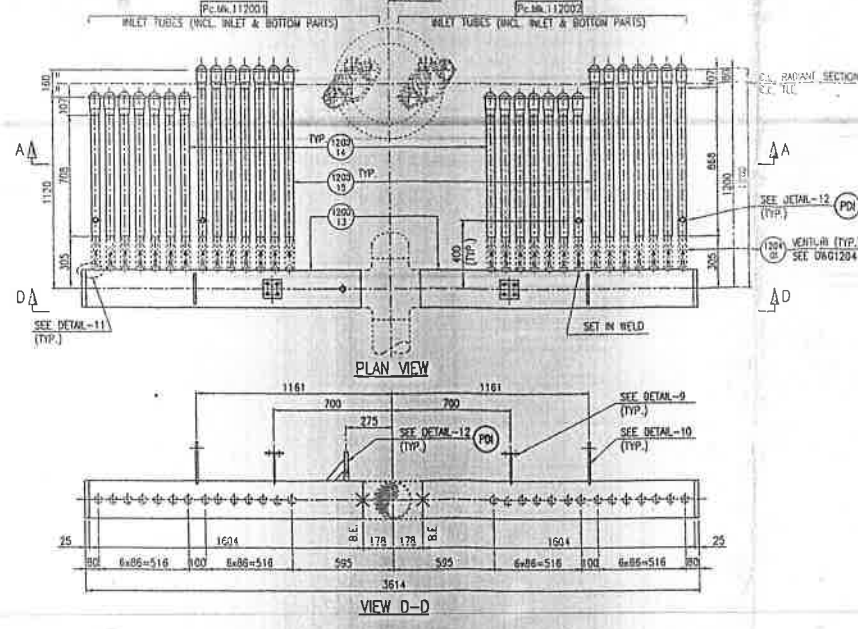
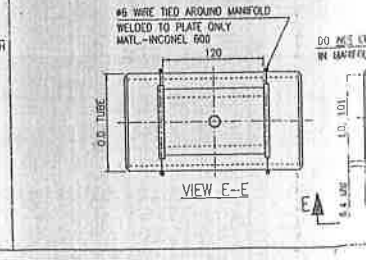
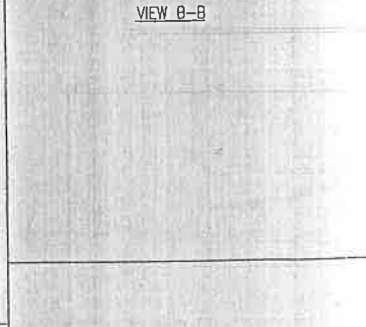
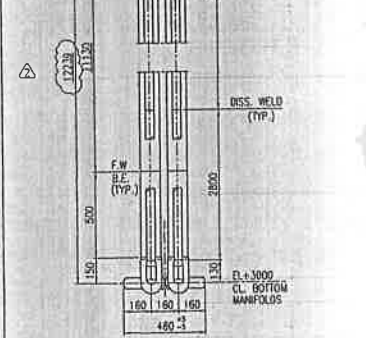
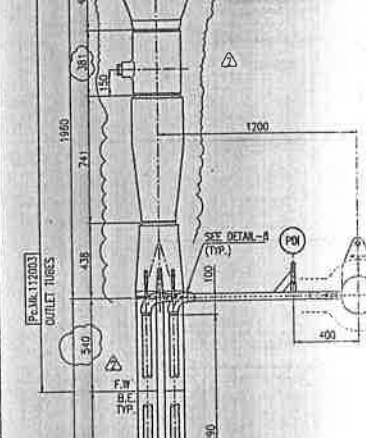
NOTES:
 1. J FLANGE SUPPORT BLOCKS TO BE WELDED AFTER INSTALLATION OF THE FLANGE. THE GASKET CONTACT SURFACE SHALL BE FORMED BY A CONTINUOUS SPIRAL GROOVE, GENERATED BY A 0.75 MM RADIUS ROUND NOSE TOOL AT A FEED RATE BETWEEN 0.35 MM AND 0.45 MM PER REVOLUTION. (R_a 3.2/6.3 μm)
 2. TOLERANCE ±0.5 MM U.D.O.



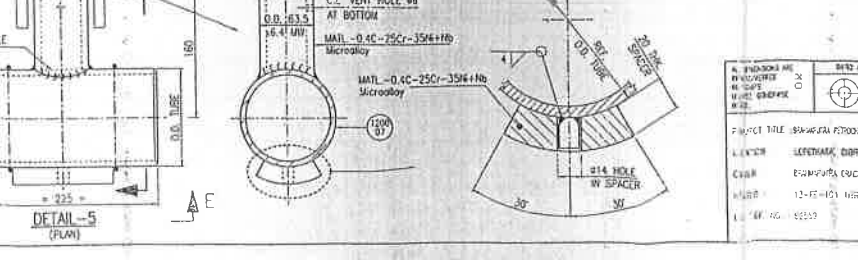
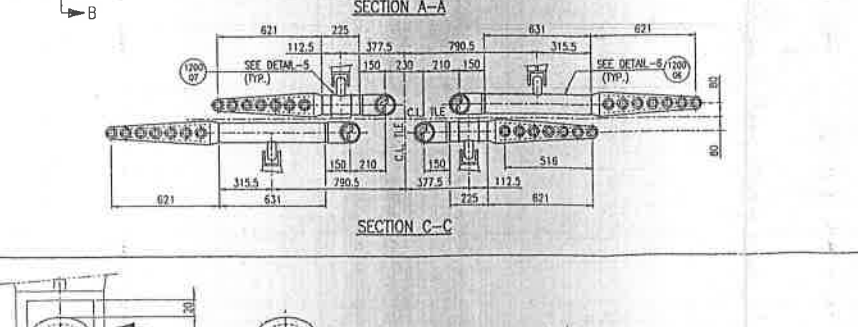
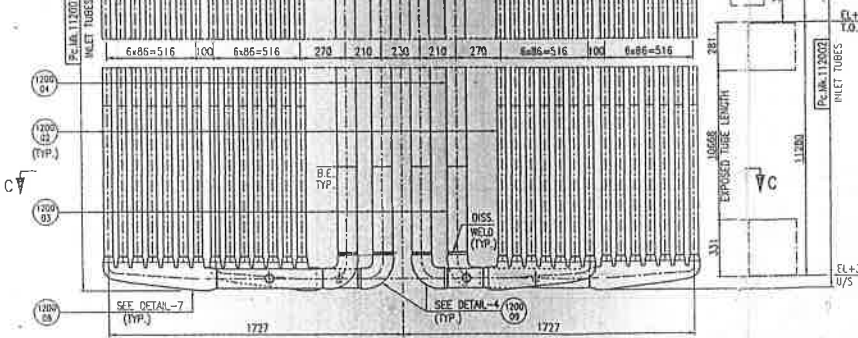
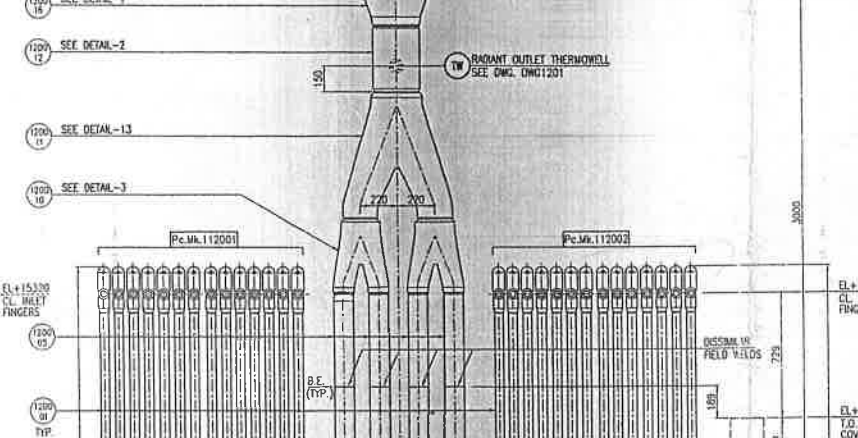
SECTION G-G
SECTION F-F



SECTION G-G
SECTION F-F



VIEW D-D



REFERENCE DRAWINGS:
 BE62559DWG100
 BE62559DWG120
 BE62559DWG125

GENERAL ARRANGEMENT
 DETAILS VENTUR
 CROSS-SECTIONS

GENERAL NOTES:
 1. ONE (1) RADIANT COIL ASSEMBLY IS DRAWN AS SHOWN IN PLAN VIEW.
 2. ALL COIL PARTS SHALL HAVE A PIECE MARK IDENTIFICATION NUMBER AS PER THIS DRAWING.
 3. WELD BEVEL PREPARATION AS PER MANUFACTURERS STANDARD (SUBJECT TO UNIT APPROVAL).
 4. LENGTH FOR ITEM NO. 120013 SHALL BE PROVIDED WITH 100 mm MAKE-UP LENGTH TO ALLOW SHOP HYDROTESTING, AFTER HYDROTEST PIPE SHALL BE CUT TO THE PROPER LENGTH BEFORE SHIPMENT.
 5. FOR 12007 C, DENSITY 12000/M³ (100 C DRED), CONDUCTIVITY 0.27 W/LK AT 400° C AND 0.35 W/LK AT 800° C.
 6. ALL HEATER COIL PREDEMARKS SHALL BE IDENTIFIED (LABELLED) WITH AN UNIQUE NUMBER AS FOLLOWS:

ABBREVIATIONS:
 1. MCW INDICATES: MINIMUM WALL THICKNESS AS CAST (WITHOUT MACHINING)
 2. MW INDICATES: MINIMUM WALL THICKNESS AFTER MACHINING (FOR TUBES IT INCLUDES 0.8 MM OUTSIDE SURFACE ROUGHNESS)
 3. AW INDICATES: AVERAGE WALL THICKNESS
 4. I.D. INDICATES: INSIDE DIAMETER
 5. O.D. INDICATES: OUTSIDE DIAMETER
 6. F.W. INDICATES: FIELD WELD
 7. B.E. INDICATES: BEVELLED END
 8. T.L. INDICATES: TANGENT LINE
 9. PC.MK. INDICATES: PIECE MARK NUMBER
 10. EL+ INDICATES: ELEVATION
 11. C.L. INDICATES: CENTER LINE
 12. PL INDICATES: PLATE
 13. U.S. INDICATES: UPSIDE
 14. T.O. INDICATES: TOP OF
 15. TYP. INDICATES: TYPICAL

DESIGN CONDITIONS COIL:

DESCRIPTION	DESIGN PRESSURE Kg/cm ² (a)	DESIGN TEMPERATURE °C	MATERIAL	TEST PRESSURE Kg/cm ² (a)	SHOP FIELD HYDROST. AIR
INLET FINGERS ITEM 120014/15 O.D. 48.3 x 3.68 MW	5.3	770 (3)	A312-TP347H	70	1.5
INLET MANFOLD ITEM 120013 O.D. 219.1 x 12.7 MW	5.3	770 (3)	A312-TP347H	70	1.5
INLET TUBES ITEM 120001 I.D. 38 x 6.4 MW	2.0 3.5	1115 (2) 1065 (1)(2)	04C-25Cr-35Ni-Nb Microalloy	70	1.5
INLET TUBES ITEM 120002 I.D. 38 x 6.4 MW	2.0 3.5	1115 (2) 1065 (1)(2)	04C-35Cr-15Ni-Nb Microalloy	70	1.5
BOTTOM PARTS ITEM 120006/07/08 & 09 I.D. 101 x 8.4 MW	2.0 3.5	1115 (2) 1065 (1)(2)	04C-25Cr-35Ni-Nb Microalloy	70	1.5
OUTLET TUBES ITEM 120003/04 I.D. 101 x 8.0 MW	1.7 3.5	1125 (2) 1065 (1)(2)	04C-35Cr-15Ni-Nb Microalloy	70	1.5
OUTLET TUBES ITEM 120005 I.D. 101 x 6.0 MW	3.56 5.56	900 (2) 950 (1)(2)	01C-20Cr-32Ni-Nb	70	1.5
WYE PIECE ITEM 120010 I.D. 101 x I.D. 180	3.56 5.56	900 (2) 950 (1)(2)	01C-20Cr-32Ni-Nb	70	1.5
WYE PIECE AND TEE PIECE, RES.P. ITEM 120011 & 12 I.D. 180 x I.D. 254 & I.D. 254	3.56 5.56	900 (2) 950 (1)(2)	01C-20Cr-32Ni-Nb	70	1.5
OUTLET CONE ITEM 120016 & 17	3.56 5.56	900 (2) 950 (1)(2)	01C-20Cr-32Ni-Nb	70	1.5

(1) SHORT TERM DESIGN CONDITIONS (1000 HOURS).
 (2) DESIGN CODE: LUMMUS STD.
 (3) DESIGN CODE: ASME B31.3

PC.MK. No.
EL+ INDICATES:
C.L. INDICATES:
PL INDICATES:
U.S. INDICATES:
T.O. INDICATES:
TYP. INDICATES:

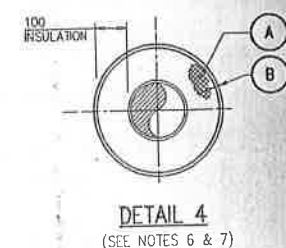
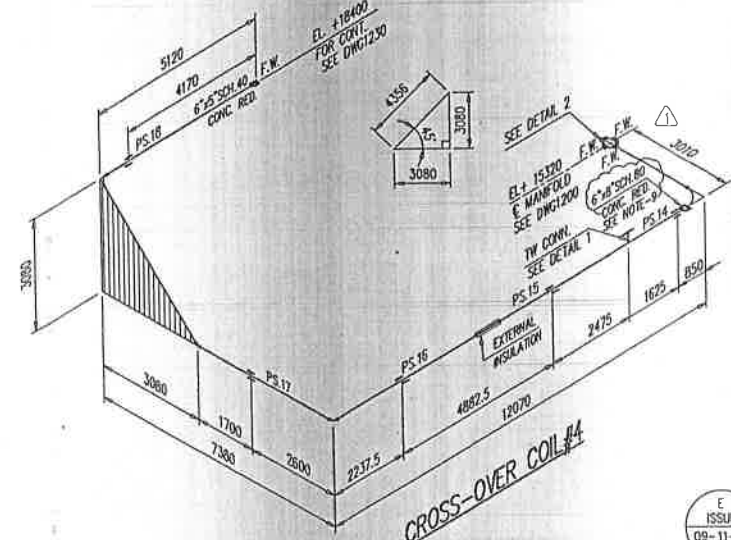
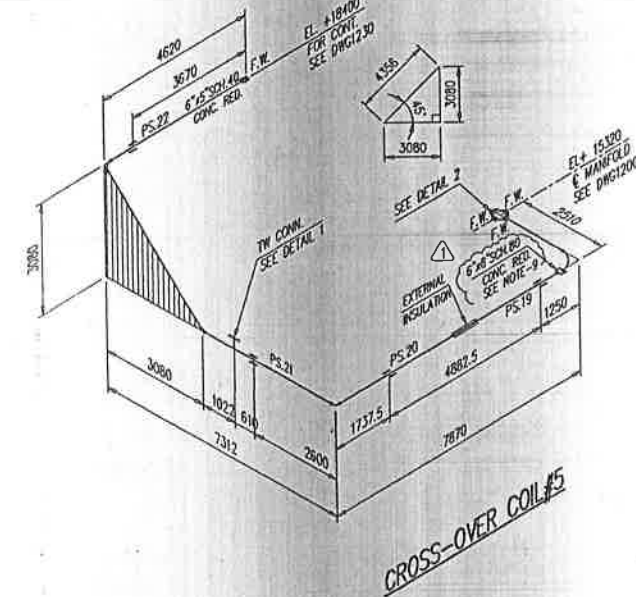
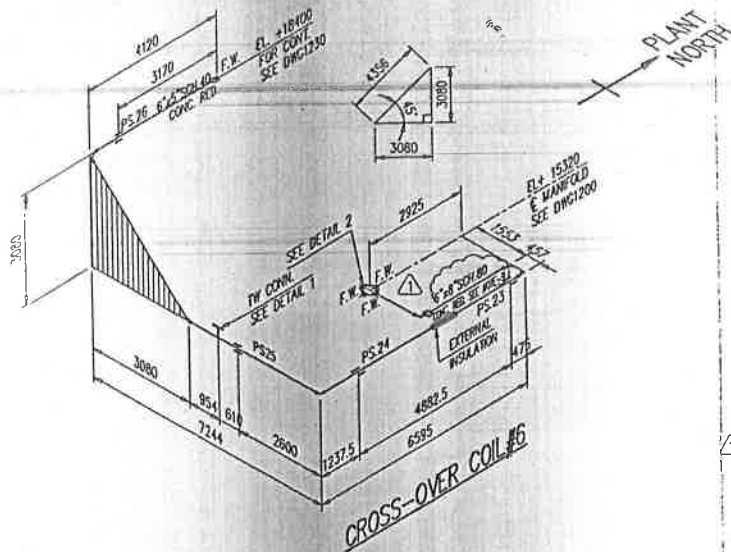
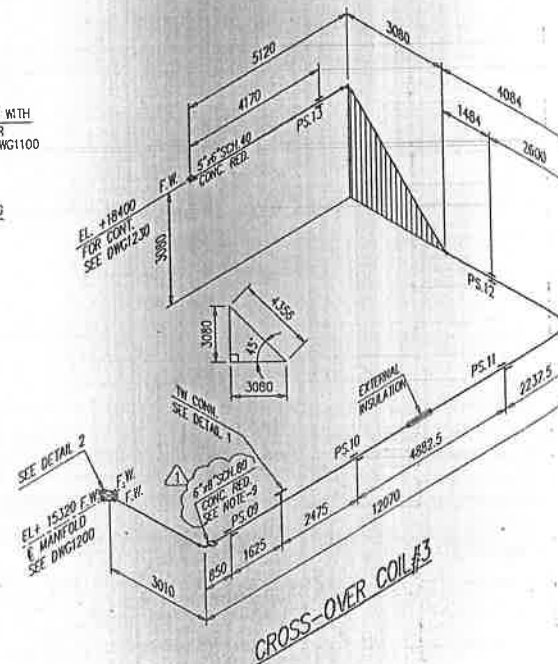
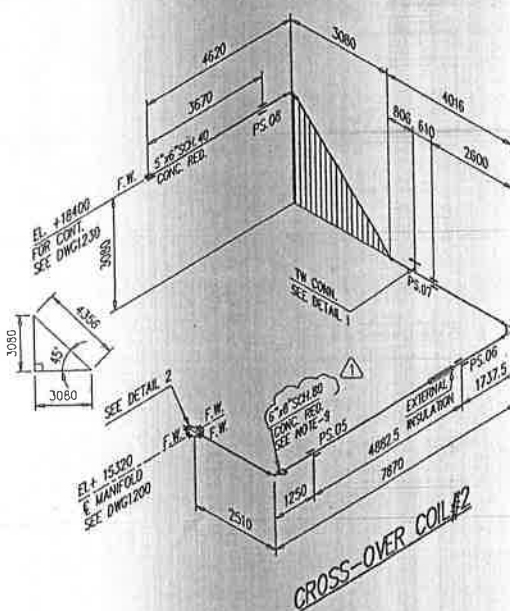
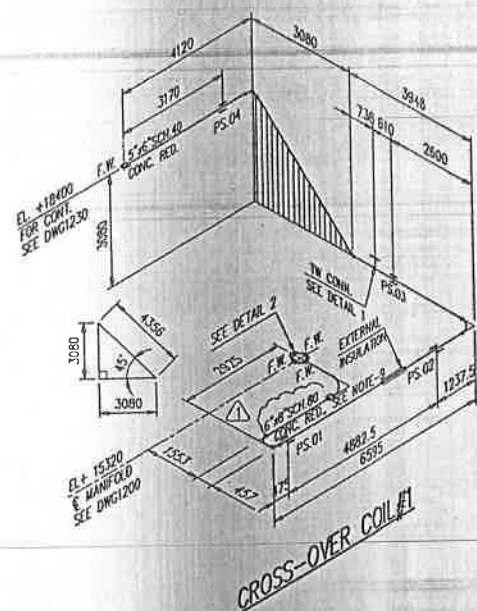
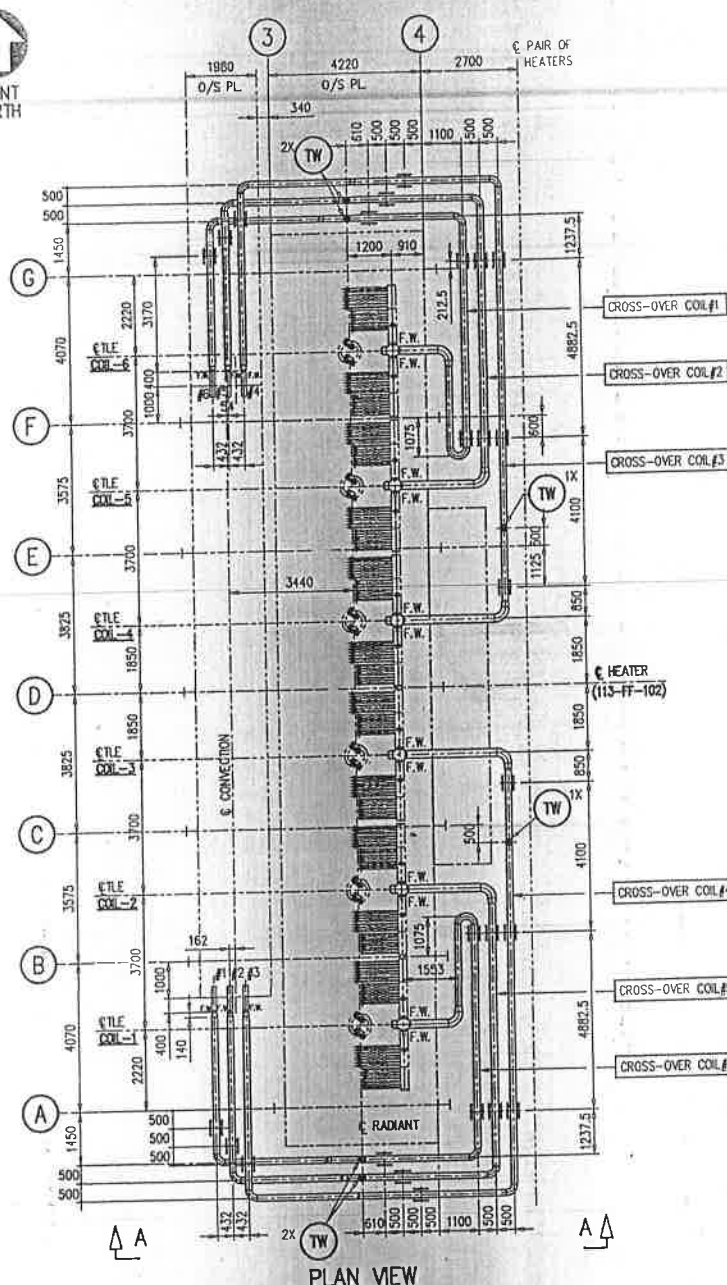
PLANT NORTH

KEY-PLAN

Lummus Technology Heat Transfer
 Bloomfield, N.J.

RADIANT COIL

DATE: 11/15 **BE62559DWG1200** **2** 18 Jan 10

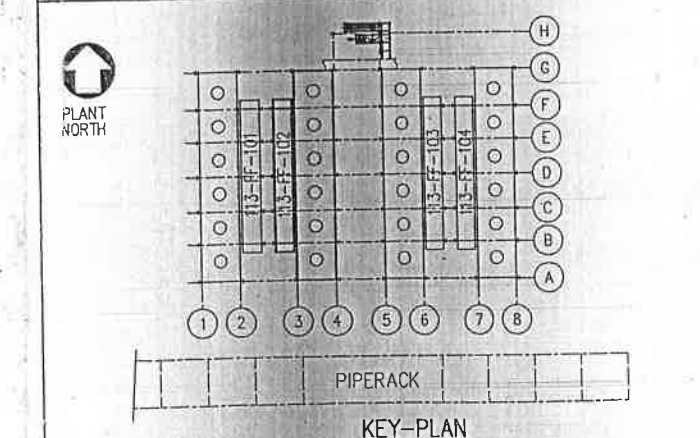


DESIGN CONDITIONS						
DESIGN CODE : ASME B31.3			FABRICATION CODE : ASME B31.3			
DESCRIPTION	MATERIAL	SIZE	DESIGN TEMP. °C	DESIGN PRESS kg/cm ² (g)	CORROSION ALLOWANCE MM	TEST PRESSURE kg/cm ² (g)
						SHD HYDRO-TEST
CROSS-OVERS	A-312-TP-347H	O.D. 168.3 x 7.11 AW THK O.D. 219.1	770	5.3	1.0	70 1.5

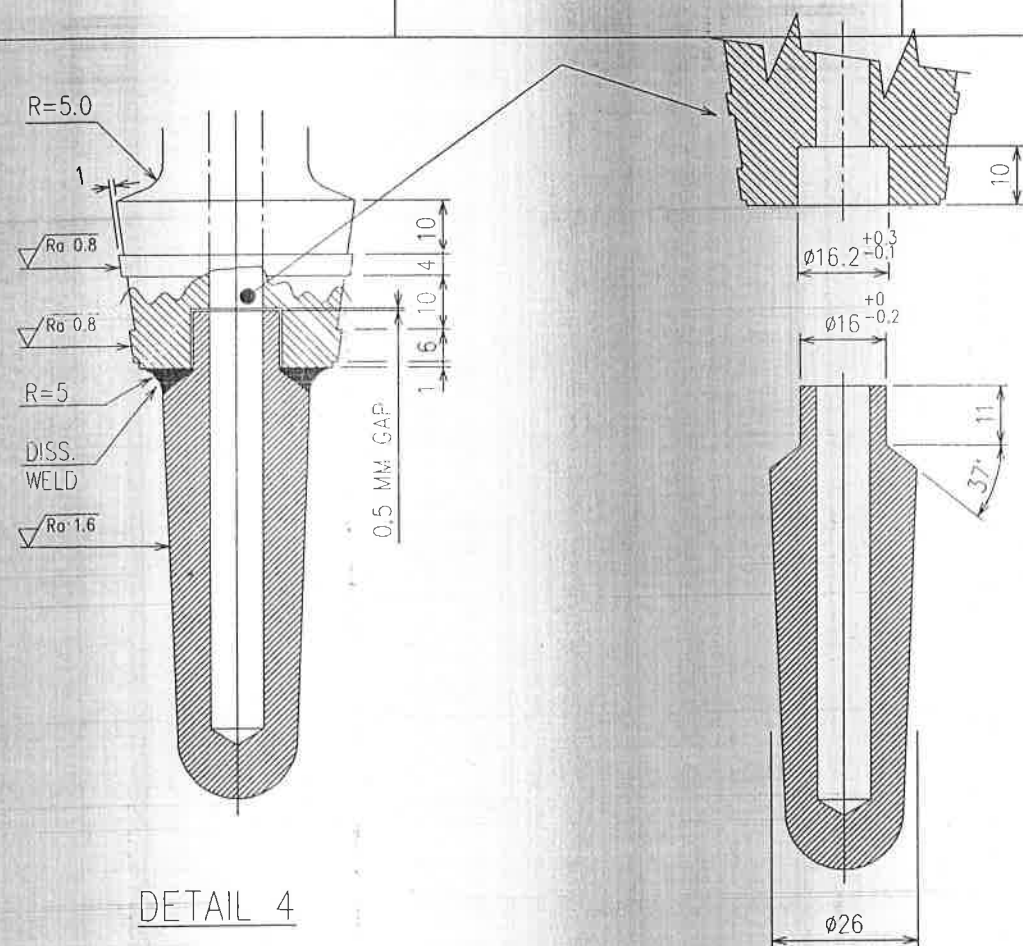
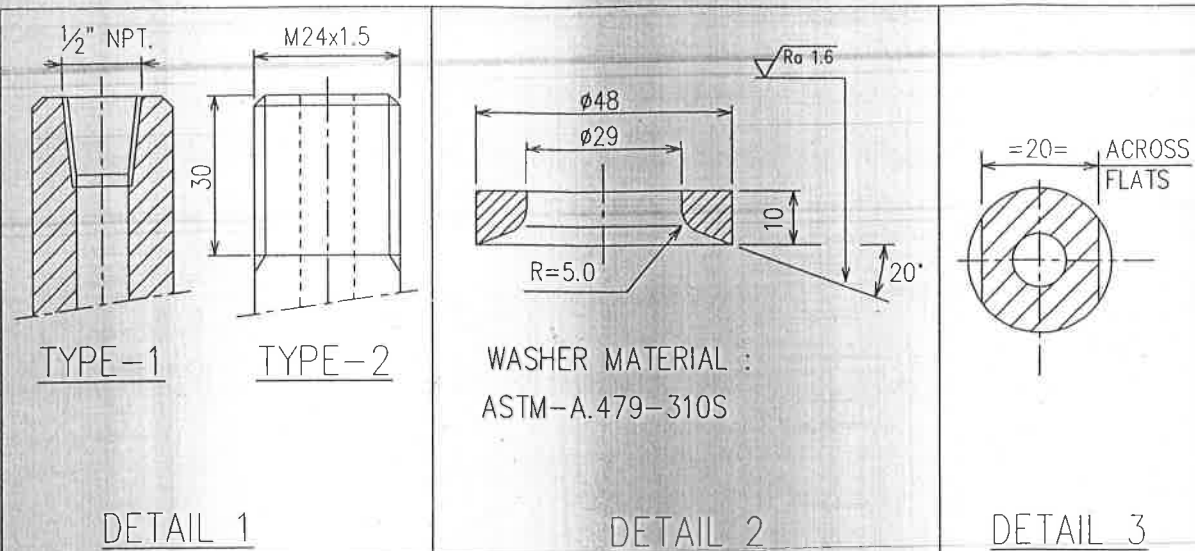
GENERAL NOTES:	NOTES FOR INSULATION VENDOR
1. ALL PIPE ENDS FOR FIELD WELDS SHALL HAVE 100 OVERLENGTH TO ALLOW CONNECTION OF HYDROTEST EQUIPMENT AT WORKSHOP. AFTER HYDROTESTING 50 mm TO BE CUT BEFORE SHIPMENT. THE REMAINING 50 mm TO BE USED AS MAKE-UP LENGTH FOR FIELD ADJUSTMENT, TO BE MARKED UP WITH A BRIGHT COLOUR. 2. I.M. (X) INDICATES FIELD LINE INDICATES ELEVATION (LEVEL) 3. CROSS OVERS SHOWN FOR ONE HEATER 113-FF-102. FOUR (4) HEATERS ARE REQUIRED CROSS OVERS FOR HEATERS 113-FF-102 & 104 ARE AS DRAWN. CROSS OVERS FOR HEATERS 113-FF-101 & 103 ARE OPPOSITE MAJOR. 4. ALL INDIVIDUAL PIECEMARKS TO BE MARKED WITH PIECE MARK NUMBER. PIECEMARK NUMBER FOR OPPOSITE HANG ARRANGEMENTS SHALL BE PREFIXED WITH A "M". 5. P.V. INDICATES CROSS-OVER PIPE SUPPORT AS SHOWN ON DWG1570 6. LOAD THE CROSS-OVER SYSTEM IS INCLUDING A THERMAL INSULATION THICKNESS OF (A)=100 mm WITH A DENSITY OF 125 KG/M³ AND (B)=0.7 mm STAINLESS STEEL SHEETING. 7. CROSS-OVERS TO BE SEPARATELY INSULATED TO ALLOW FREE INDIVIDUAL MOVEMENT. 8. ALL RETURN BENDS AND ELBOWS R=150 9. REDUCER END THICKNESS TO BE TAPERED TO MATCH WITH 6"X50L 40 PIPE.	CROSS-OVER INSULATION MATERIALS TO BE PROTECTED AGAINST RAINWATER BEFORE, DURING, AND AFTER INSTALLATION. THE PROTECTIVE SHEETING FOR THE HANG INSULATION SHALL BE ABSOLUTELY RAINWATER TIGHT. SEAMS SHALL NOT BE OPENED BY THE THERMAL EXPANSION OF THE X-OVER. SURFICENT EXPANSION JOINTS SHALL BE PROVIDED. THE LONGITUDINAL SEAMS SHALL BE LEANARDS AND THE BOTTOM SIDE, WITH OVERLAP DOWNWARDS. ALL SEAMS SHALL BE SEALED WITH SEALING TAPE OR MASTIC (CHLORIDE & SULPHUR FREE) WHERE LUGS PROTRUDE SHEETING, THE OPENING SHALL BE ABSOLUTELY SEALED INSULATION MATERIAL SHALL BE ABSOLUTELY CHLORIDE & SULPHUR FREE.

CALCULATED MOVEMENTS AT PIPE SUPPORT LOCATIONS [mm]										* MAXIMUM VERTICAL MOVEMENT BASED ON MAXIMUM ALLOWED CREEP DURING OPERATION = APPROX. -230 mm.	
	Dx	Dy	DZ	PIPE LOAD (N/m)	Dx	Dy	DZ	PIPE LOAD (N/m)		** SEE NOTE 6	
PS.01	+5	-65	-70	2118	PS.14	-20	-65	-75	2063		
PS.02	-65	-75	-85	1719	PS.15	+40	-60	-75	1521		
PS.03	-85	-65	-55	2436	PS.16	+100	-55	-75	1998		
PS.04	-80	-2	-10	2446	PS.17	+125	-50	-40	2666		
PS.05	-20	-70	-75	2302	PS.18	+100	+2	+15	2527		
PS.06	-85	-70	-80	1757	PS.19	-20	-70	-75	2302		
PS.07	-105	-60	-45	2560	PS.20	+85	-70	-80	1757		
PS.08	-100	-1	+5	2484	PS.21	+105	-60	+45	2560		
PS.09	+20	-65	-75	2063	PS.22	+100	-1	+5	2484		
PS.10	-40	-60	-75	1921	PS.23	-5	-65	-70	2118		
PS.11	+100	-55	-75	1998	PS.24	+65	-75	-85	1719		
PS.12	-125	-50	-40	2666	PS.25	+85	-65	-55	2436		
PS.13	-100	+2	+15	2527	PS.26	+90	-2	-10	2446		

REFERENCE DRAWINGS	
BCE25590WC1100	GENERAL ARRANGEMENT
BCE25590WC1200	RADIANT COIL
BCE25590WC1230	CONVECTION COIL
BCE25590WC1570	COUNTERWEIGHT SYSTEM WITH BM
BAI25530WC1580	COUNTERWEIGHT DETAILS



09-11-20	REVISED AS MARKED & ISSUED FOR BDEP	KSG	OPS		KHT	
09-09-25	FOR APPROVAL	MK	MEP		AT	KHT
REV.	DATE	DESIGNED BY	CHECK BY	DEC. DATE	LEAD DEC.	MOD. NAME
THIS DRAWING, INCLUDING ALL PATENTED AND PATENTABLE FEATURES AND OR CONFIDENTIAL INFORMATION, (DATA AND DESIGN) IS THE PROPERTY OF LUMMUS TECHNOLOGY HEAT TRANSFER. ITS USE IS CONDITIONED UPON THE USER'S AGREEMENT NOT TO DUPLICATE THE CONTENTS THEREOF NOR TO REPRODUCE THE DRAWINGS IN WHOLE OR IN PART, NOR THE MATERIAL DESCRIBED THEREON, NOR TO USE THE DRAWINGS FOR ANY PURPOSE OTHER THAN AS SPECIFICALLY PERMITTED IN WRITING BY LUMMUS TECHNOLOGY HEAT TRANSFER. Lummus Technology Heat Transfer Bloomfield, N.J.  Lummus Technology a Lummus Company CROSS-OVERS						
DATE:	1:100	BD62559DWG1235				1

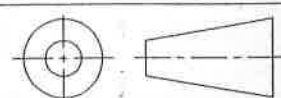


NOTES:

- FABRICATOR MUST ENSURE PROPER FIT OF ALL ITEMS.
- JACK NUT SHALL NOT BE TIGHTENED DURING HEATER OPERATION BUT SHALL BE IN UNSCREWED POSITION TO PREVENT SEIZING OF NUT AND THERMOWELL THREAD

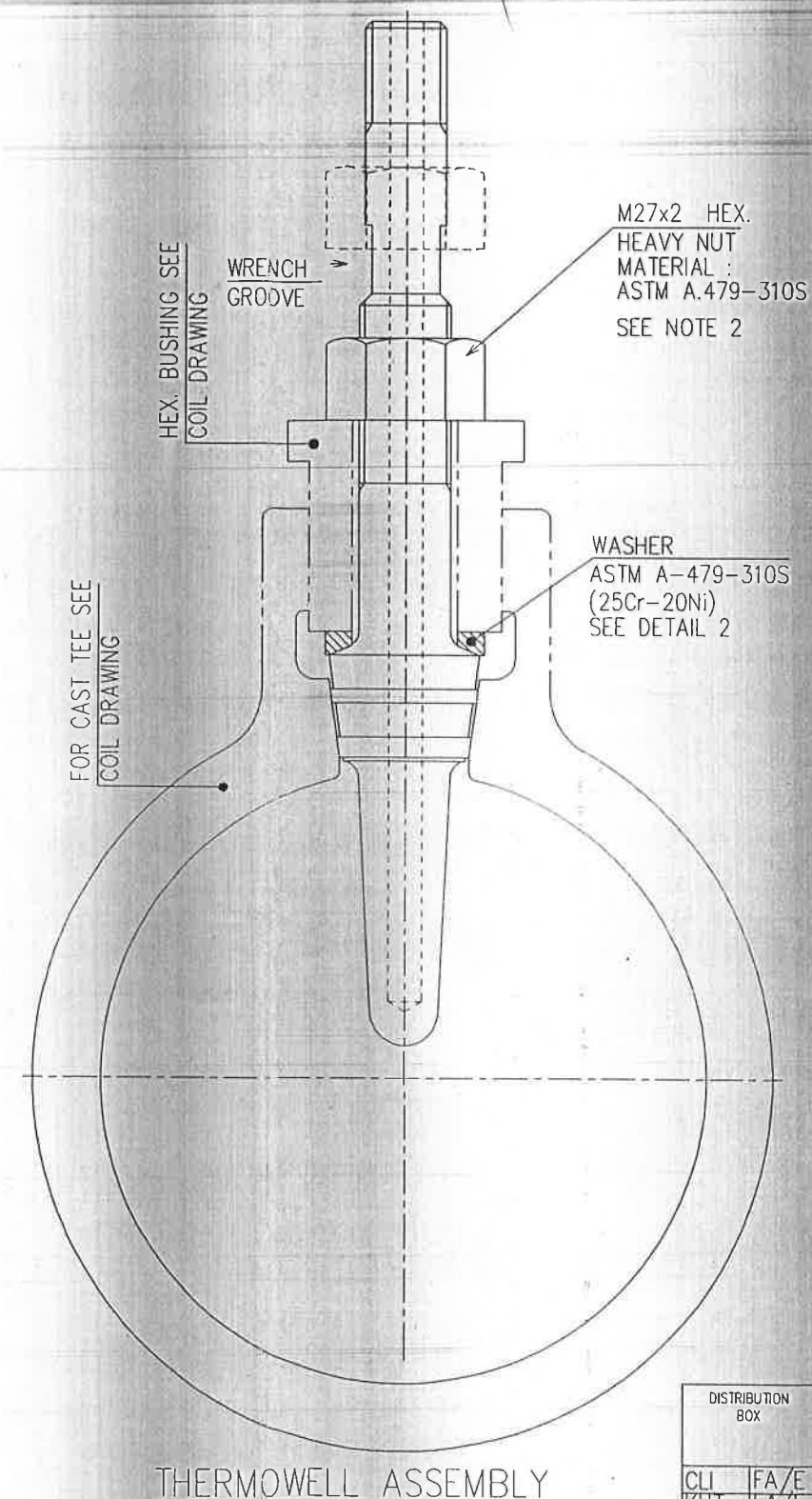
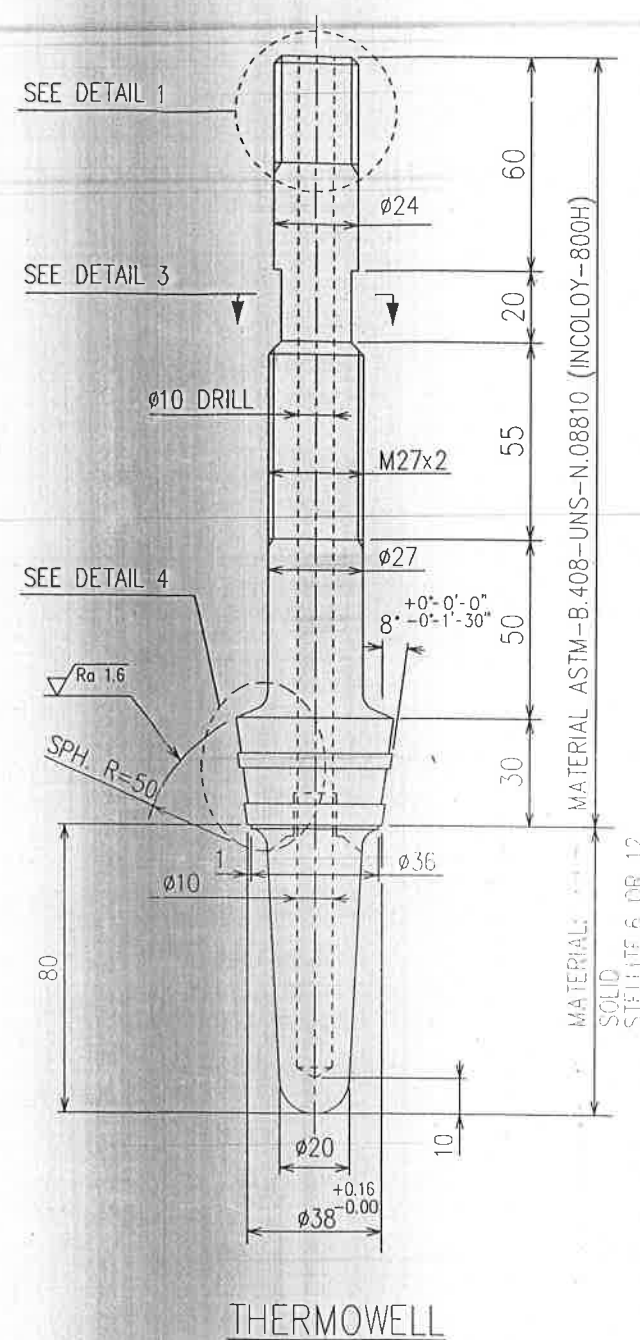
ALL DIMENSIONS ARE
IN MILLIMETRES
IN INCHES
UNLESS OTHERWISE
NOTED.

THIRD ANGLE PROJECTION



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REV.	DATE	DESCRIPTION	DRAWN BY	CHECK BY	ENG.	LEAD ENG.	THERM. ENG.	MECH. MANG.	PROJ. MANG.
0	09-11-20	ISSUED FOR BDEP	KSG	OPS	AT	KHT		PJHB	



√Ra 6.3 (√Ra 0.8 √Ra 1.6)



Lummus Technology Heat Transfer
Bloomfield, N.J.

RADIANT OUTLET THERMOWELL
FOR CRACKING HEATERS

SCALE: 1:2 BB62559DWG1201 0

DISTRIBUTION BOX	
CLI	FA/E
KHT	FA/E
PJHB	FI/E
AT	FI/h/A2
JP	FI/E
omprak	FI/E