

ALSTOM ALSTOM Power Italia S.p.A.				LAVRION 5 - METKA - COMBINED CICLE N. 1 H.R.S.G. INSULATION LIST										Doc.n°: 11680MDV06600				Rev. 1			
														Data: 18/10/2005							
														CODICI E STD APPLICABILI: Applicable Standards & Codes:							
POS.		KKS tag		DESCRIZIONE Description		Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.
from	to	Design	Operating			MM	RB									MT					
001		REF. DWG. 11680-BTD-03300 - HRSG - WATER & STEAM LP SECTION - P&ID																			
002		5HAC10	-	BR001	10"	F.W. Line to Line 5HAC10-BR002	252	35	273	30	HC	6,0	3	9,88	1,0	10,18	X		MDD05313 & MDD05321		
003		5HAC10	-	BR002	10"	From F.W. Line 5HAC10-BR001 to FWECO3 Inlet	252	55	273	30	HC	15,0		16,47	1,0	16,96	X		MDD05313		
004		5HAC10	-	BR004	10"	From 5HAC10-AA201 to Line 5HAC11-BR001	252	35	273	30	HC	30,0		32,94	1,0	33,93	X		MDD05326		
005	006	5HAC10	-	BR008/009	1"	FWECO3 Drain Line	252	145	33,4	30	PP	4,0	2	1,54	0,8	1,70	X		MDD03806		
007		5HAC10	-	BR010	1/2"	Feed Water Sampling Line	252	35	21,3	30	PP	4,0	2	1,34	0,8	1,51	X		MDD05313 & MDD03800		
008		5HAC10	-	BR011	2"	Boiler chemical cleaning Line (LP sect.)	252	35	60,3	30	PP	1,0	1	0,59	0,8	0,64	X		MDD05313		
009																					
010		5HAC11	-	BR001	10"	F.W. from FWECO1 Outlet to control valve 5HAC11-AA201	252	145	273	40	HC	12,5	3	18,04	1,0	18,55	X		MDD05325		
011		5HAC11	-	BR002	6"	From FW Line 5HAC11-BR001 to control valve 5HAC11-AA202	252	145	168,3	30	HC	10,0	3	9,79	0,8	10,21	X		MDD05327		
012		5HAC11	-	BR003	8"	FW By-pass line for LP drum control valve station	252	145	219,1	30	HC	5,0	1	5,52	1,0	5,72	X		MDD05327		
013		5HAC11	-	BR004	10"	FW line from control valve outlet station to deaerator	184	145	273	40	HC	13,0		15,13	1,0	15,56	X		MDD05325		
014																					
015		5HAC12	-	BR001	6"	From Line 5HAC11-BR001 to FWECO Recirc. Pumps	252	145	168,3	30	HC	44,0		33,12	0,8	34,57	X		MDD05322 & MDD05355		
					10"				273	40		10,5		12,22	1,0	12,57	X				
					3"				88,9	30		55,0		27,00	0,8	28,81	X				
016		5HAC12	-	BR002	1 1/2"	5HAC12-BR001 Drain Line	252	145	48,3	30	PP	1,0	2	0,71	0,8	0,78	X		MDD05355		
017																					
018		5HAC13	-	BR001	6"	FWECO Recirc. Pumps Suction line	252	145	168,3	30	HC	5,5	2	5,65	0,8	5,89	X		MDD05356		
019		5HAC13	-	BR002	6"	FWECO Recirc. Pumps Discharge line	252	145	168,3	30	HC	7,0	2	6,77	0,8	7,07	X		MDD05357		
020		5HAC13	-	BR003	1 1/2"	5HAC13-BR002 Drain Line	252	145	48,3	30	PP	1,0	2	0,71	0,8	0,78	X		MDD05357		
021		5HAC13	-	BR004	1"	Warm-up line for FWECO stand-by recirc.pump	252	145	33,4	30	HC	2,5	2	1,08	0,8	1,19	X		MDD05357		
022																					
023		5HAC14	-	BR001	6"	FWECO Recirc. Pumps Suction line	252	145	168,3	30	HC	3,0	2	3,76	0,8	3,93	X		MDD05356		
024		5HAC14	-	BR002	6"	FWECO Recirc. Pumps Discharge line	252	145	168,3	30	HC	7,0	2	6,77	0,8	7,07	X		MDD05357		
025		5HAC14	-	BR003	1 1/2"	5HAC14-BR002 Drain Line	252	145	48,3	30	PP	1,0	2	0,71	0,8	0,78	X		MDD05357		
026		5HAC14	-	BR004	6"	From rec. pumps disch. line to valve 5HAC14-AA201	252	145	168,3	30	HC	18,0	1	14,30	0,8	14,93	X		MDD05358		
027		5HAC14	-	BR005	6"	From Valve 5HAC14-AA201 to line 5HAC10-BR002	252	145	168,3	30	HC	0,5		0,38	0,8	0,39	X		MDD05358		
028		5HAC14	-	BR006	1 1/2"	5HAC14-BR004 Drain Line	252	145	48,3	30	PP	1,0	2	0,71	0,8	0,78	X		MDD05358		
029																					
030	038	5HAC15	-	BR001 / BR010	1/2"	FWECO Vent line	252	145	21,3	30	PP	20,0	10	6,70	0,8	7,53	X		MDD03805		
039		5HAC15	-	BR011	1 1/2"	FWECO1/2/3 Vent line to valve 5HAC15-AA511	252	145	48,3	30	PP	1,0	1	0,54	0,8	0,59	X		MDD03805		

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POS.		KKS tag		DESCRIZIONE Description		Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.
from	to	Design	Operating			MM	RB									MT					
040																					
041	060	5HAC16	- BR001 / BR020	1"	FWECO Drain Line	252	145	33,4	30	PP	20,0	10	7,70	0,8	8,52	X			MDD03806		
061		5HAC16	- BR021	2"	FWECO1/2/3 Drain Line to Valve 5HAC16-AA511	252	145	60,3	30	PP	5,5	1	2,38	0,8	2,58	X			MDD03806		
062																					
063	065	5HAD10	- BR001 / BR003	6"	LP Downcomer Tube to LPEVA	195	150	168,3	30	HC	20,0		15,05	0,8	15,71	X			MDD02450		
066																					
067	096	5HAD11	- BR001 / BR030	3"	LPEVA Riser Tube (from harp 6 to harp 10) to LP Drum	195	150	88,9	30	HC	207,5		101,87	0,8	108,71	X			MDD02630		
097																					
098		5HAD12	- BR001	2"	LPEVA Intermittent Blowdown Line	195	150	60,3	30	PP	25,0	2	10,31	0,8	11,17	X			MDD03806		
099		5HAD12	- BR002	3"	LPEVA Drain Line to Drain Header	195	150	88,9	30	PP	3,5	2	2,70	0,8	2,88	X			MDD04407		
100		5HAD12	- BR003	1/2"	Portable Sample Connection	195	150	21,3	30	PP	1,0	2	0,54	0,8	0,60	X			MDD03806		
101	136	5HAD13	- BR001 / BR036	4"	LPEVA Raiser Tube (from harp 1 to harp 5) to LP Drum	195	150	114,3	30	HC	189,0		108,61	0,8	114,84	X					
137																					
138		5HAE10	- BR001	6"	From LP Drum to Battery Limit of the IP FW Pumps Suction	195	150	168,3	30	HC	36,5		27,47	0,8	28,68	X			MDD05350		
139		5HAE10	- BR002	10"	From LP Drum to Battery Limit of the HP FW Pumps Suction	195	150	273	40	HC	24,0		27,93	1,0	28,72	X			MDD05345		
140		5HAE10	- BR004	1/2"	Deaerator and LP Drum Water Sampling Line	195	150	21,3	30	PP	3,0	2	1,07	0,8	1,20	X			MDD05345		
141		5HAE10	- BR005	2"	Deaerator Vent Line	184	150	60,3	30	PP	2,0	2	1,19	0,8	1,29	X			MDD03800		
142		5HAE10	- BR006	6"	Steam line from continuous blow down tank	195	150	168,3	30	HC	7,0	2	6,77	0,8	7,07	X			MDD04347		
143		5HAE10	- BR007	1"	Hydraulic culumn drain line	195	150	33,4	30	PP	1,5	2	0,77	0,8	0,85	X			MDD02662		
144		5HAE10	- BR008	1/2"	Hydraulic culumn vent line	195	150	21,3	30	PP	1,5	2	0,67	0,8	0,75	X			MDD02662		
145																					
146		5HAE10	- BR010	3"	IP FW Pump minimum Flow recirc. line to LP Drum	195	150	88,9	30	HC	22,5		11,05	0,8	11,79	X			MDD05351		
147																					
148		5HAE10	- BR101	1"	Open drain line from safety valves 5HAE10 AA901-AA902	180	--	33,4		N / A											
149		5HAE10	- BR102	2"	Open drain line from LP drum level instruments	180	--	60,3		N / A											
150	153	5HAE10	- BR103 / BR106	1/2"	Open drain line from LP drum level instruments	180	--	21,3		N / A											
154		5HAE10	- BR107	1"	Hydraulic culumn drain line downstream valve 5HAE10 AA512	180	--	33,4		N / A											
155	156	5HAE10	- BR108 / BR109	2"	Open drain line from silencer 5HAE10 BS002 & BS001	180	--	60,3		N / A											
157																					
158		5HAE10	- BR111	2"	Open drain collector to gully	180	--	60,3		N / A											
159																					
160		5HAE10	- BR901	12"	From PSV 5HAE10-AA901 to Silencer BS001	170	128	323,8	40	PP	3,0		3,99	1,0	4,09		X	MDD02800			
				8"				219,1	30		1,0		0,92	1,0	0,95	X					

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POS.		KKS tag		DESCRIZIONE Description		Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.
from	to	Design	Operating			MM	RB									MT					
161		5HAE10	- BR902	12"	From PSV 5HAE10-AA902 to Silencer BS002	170	128	323,8	40	PP	2,0		2,66	1,0	2,73		X		MDD02801		
				8"					219,1		30		1,0		0,92	1,0	0,95	X			
162		5HAE10	- BR903	12"	From PSV 5HAE10-AA903 to Silencer BS002	170	128	323,8	40	PP	2,0		2,66	1,0	2,73		X		MDD02801		
				8"					219,1		30		1,0		0,92	1,0	0,95	X			
163																					
164		5HAE11	- BR001	1 1/2"	Nitrogen Line From Battery Limit to Valve 5HAE11-AA001	195	Amb.	48,3		N / A											
165		5HAE11	- BR002	1 1/2"	Nitrogen from Valve 5HAE11-AA001 to line 5HAE12-BR019	195	150	48,3	30	PP	1,0	2	0,71	0,8	0,78	X			MDD03802		
166																					
167	184	5HAE12	- BR001 / BR018	4"	Saturated Steam from LP Drum to LPSH	195	150	114,3	30	HC	230,0		132,17	0,8	139,76	X			MDD02645 & MDD02646		
185		5HAE12	- BR019	1 1/2"	Saturated Steam Vent Line	195	150	48,3	30	PP	2,0	2	1,07	0,8	1,17	X			MDD03802		
186		5HAE12	- BR020	1/2"	Saturated Steam Sampling Line	195	150	21,3	30	PP	3,0	2	1,07	0,8	1,20	X			MDD02645		
187																					
188		5HAE15	- BR001	12"	Pegging Steam from IP Drum Downstream Control Valve	195	149	323,8	40	HC	2,5		3,33	1,0	3,41		X		MDD05309		
189																					
190		5HAE20	- BR010	3"	IP FW Pump minimum Flow recirc. line to LP Drum	195	150	88,9	30	HC	25,5		12,52	0,8	13,36	X			MDD05352		
191																					
192		5HAE30	- BR010	6"	HP FW Pump minimum Flow recirc. line to LP Drum	195	150	168,3	30	HC	31,0		23,33	0,8	23,57	X			MDD05346		
193																					
194		5HAE40	- BR010	6"	HP FW Pump minimum Flow recirc. line to LP Drum	195	150	168,3	30	HC	30,0		22,58	0,8	23,57	X			MDD05347		
195																					
196		5LBD30	- BR001	20"	From LPSH to Valve 5LBD30-AA001	320	300	508	100	HC	23,0	1	58,36	1,0	59,18		X		MDD04340		
197		5LBD30	- BR002	2"	Valve 5LBD30-AA001 By-Pass Line	320	300	60,3	70	HC	5,5	1	3,96	0,8	4,16	X			MDD04340		
198		5LBD30	- BR003	1"	Start-up Vent Line upstream motorized valve 5LBD30-AA301	320	270	33,4	60	PP	2,0	2	1,52	0,8	1,62	X			MDD03801		
199		5LBD30	- BR004	1"	Start-up Vent Line to Silencer 5LBD30-BS001	313	270	33,4	60	PP	2,5		1,26	0,8	1,35	X			MDD03801		
200																					
201		5LBD30	- BR101	1"	Open drain line from safety valve 5LBD30-AA901	180	--	33,4		N / A											
202		5LBD30	- BR102	2"	Open drain line from silencer 5LBD30-BS001	180	--	60,3		N / A											
203	204																				
205		5LBD30	- BR901	12"	From PSV 5LBA11-AA901 to Silencer 5LBD30-BS001	313	297	323,8	100	PP	3,5		6,04	1,0	6,16		X		MDD04326		
				8"							219,1	90		1,0		1,32	1,0	1,35		X	
206																					
207		5LBD31	- BR001	10"	Condensate Pot From LPSH steam line	320	300	273	90	HC	1,0		1,49	1,0	1,53	X			MDD04340		
208		5LBD31	- BR002	2"	drain from Condensate Pot to LP drain header	320	300	60,3	70	PP	6,0	2	4,62	0,8	4,85	X			MDD03806		

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POS.		KKS tag		DESCRIZIONE Description		Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.
from	to	Design	Operating			MM	RB									MT					
209	211																				
212		5HNE11 - BR001	2"	Drain line from stack downstream damper 5HNE10 AA001	150	50	60,3		N / A												
213																					
214		5HNE12 - BR001	4"	Stack bottom Drain line	150	50	114,3		N / A												
215	225																				
		REF. DWG. 11680-BTD-03301 - HRSG - WATER & STEAM IP SECTION - P&ID																			
227		5HAC20 - BR001	4"	From F.W. Line to IP ECO	291	149	114,3	30	HC	15,0	3	10,34	0,8	10,94	X			MDD05308			
228		5HAC20 - BR002	1 1/2"	F.W. Line Drain Line	291	149	48,3	30	PP	6,0	2	2,50	0,8	2,73	X			MDD03806			
229		5HAC20 - BR003	1 1/2"	IPECO Links Drain Line	291	200	48,3	40	PP	3,0	2	1,69	0,8	1,82	X			MDD03806			
230		5HAC20 - BR004	1 1/2"	IPECO inlet manifold Drain Line	291	149	48,3	30	PP	3,0	2	1,43	0,8	1,56	X			MDD03806			
231		5HAC20 - BR005	2"	Boiler chemical cleaning Line (IP sect.)	291	149	60,3	30	PP	1,0	2	0,79	0,8	0,86	X			MDD05308			
232																					
233		5HAC22 - BR001	4"	F.W. from IPECO Outlet to control valve 5HAC22-AA201	291	215	114,3	60	HC	13,0	3	12,36	0,8	12,89	X			MDD05320			
234		5HAC22 - BR002	4"	From F.W. control valve 5HAC22-AA201 to IP Drum	243	215	114,3	60	HC	2,5		1,93	0,8	2,01	X			MDD05320			
235		5HAC22 - BR003	3"	F.W. line 5HAC22-BR001 to control valve 5HAC22-AA202	291	215	88,9	60	HC	5,0	3	5,51	0,8	5,77	X			MDD05323			
236		5HAC22 - BR004	3"	FW By-pass line for IP drum control valve station	291	215	88,9	60	HC	2,5	1	2,41	0,8	2,53	X			MDD05323			
237																					
238		5HAC23 - BR001	3"	F.W. to Fuel Gas Heater	291	215	88,9	60	HC	40,0	2	28,93	0,8	30,31	X			MDD05324			
239																					
240		5HAC24 - BR001	1"	IPECO Vent Line	291	215	33,4	50	PP	3,0	2	1,76	0,8	1,89	X			MDD03805			
241																					
242		5HAD20 - BR001	2"	IPEVA Intermittent Blowdown Line	253	228	60,3	50	PP	20,0	2	11,10	0,8	11,79	X			MDD03806			
243		5HAD20 - BR002	2"	IPEVA Links Drain Line	253	228	60,3	50	PP	3,0	2	2,11	0,8	2,25	X			MDD03806			
244		5HAD20 - BR003	1/2"	Portable Sample Connection	253	228	21,3	40	PP	1,0	2	0,67	0,8	0,73	X			MDD03806			
245	247	5HAD21 - BR001 / BR003	6"	Downcomer Tube to IPEVA	253	228	168,3	70	HC	21,0		21,35	0,8	22,04	X			MDD02434			
248																					
249	278	5HAD22 - BR001 / BR030	3"	IPEVA Raiser Tube to IP Drum (from Harps 1 to Harps 5)	253	228	88,9	60	HC	184,5		127,07	0,8	133,16	X			MDD02620 & MDD02625			
279																					
280		5HAE20 - BR007	1"	Hydraulic column drain line	253	228	33,4	50	PP	1,5	2	1,10	0,8	1,18	X			MDD02659			
281		5HAE20 - BR008	1/2"	Hydraulic column vent line	253	228	21,3	40	PP	1,5	2	0,83	0,8	0,92	X			MDD02659			
282																					
283		5HAE20 - BR201	1"	Open drain from Safety Valves 5HAE20 AA901-AA902	180	--	33,4		N / A												
284		5HAE20 - BR202	2"	Open Drain Collector to gully	180	--	60,3		N / A												

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285	288	5HAE20 - BR203 / BR206	1/2"	Open Drain From Level instrument				180	--	21,3		N / A											
289		5HAE20 - BR207	1"	Hydraulic column drain line downstream valve 5HAE20 AA512				180	--	33,4		N / A											
290	291	5HAE20 - BR209 / BR210	2"	Open drain line from silencer 5HAE20 BS001 & BS002				180	--	60,3		N / A											
292																							
293		5HAE20 - BR901	8"	From PSV 5HAE20-AA901 to Silencer 5HAE20-BS001				180	175	219,1	50	PP	2,0		2,10	1,0	2,17	X			MDD02805		
			6"							168,3	50			1,0		0,88	0,8	0,92	X				
294		5HAE20 - BR902	10"	From PSV 5HAE20-AA902 to Silencer 5HAE20-BS002				180	175	273	50	PP	2,0		2,46	1,0	2,53	X			MDD02806		
			6"							168,3	50			1,0		0,88	0,8	0,92	X				
295																							
296		5HAE21 - BR001	1 1/2"	Nitrogen Line From Battery Limit to Valve 5HAE21-AA001				253	Amb.	48,3		N / A											
297		5HAE21 - BR002	1 1/2"	Nitrogen from Valve 5HAE21-AA001 to ine 5HAE24-BR002				253	228	48,3	50	PP	1,0	2	0,98	0,8	1,04	X			MDD03802		
298																							
299		5HAE22 - BR001	1"	Chemical Feed Line from Valve 5HAE22-AA101 to IP Drum				253	228	33,4	50	PP	1,0	2	0,88	0,8	0,95	X			MDD03800		
300																							
301		5HAE23 - BR001	2"	Continuous Blowdown from IP Drum to valve 5HAE23-AA501				253	228	60,3	50	PP	8,0	2	4,76	0,8	5,05	X			MDD03800		
302		5HAE23 - BR002	1/2"	From Line 5HAE23-BR001 to Sample Cooler				253	228	21,3	40	PP	2,0	2	1,00	0,8	1,10	X			MDD03800		
303																							
304		5HAE24 - BR001	10"	Saturated Steam from IP Drum to IPSH				253	228	273	70	HC	55,0		74,89	1,0	76,70	X			MDD02640		
305		5HAE24 - BR002	1 1/2"	Saturated Steam Vent Line to valve 5HAE24-AA301				253	228	48,3	50	PP	2,0	2	1,47	0,8	1,57	X			MDD03802		
306																							
307		5HAE24 - BR004	1/2"	Saturated Steam Sampling Line to Valve 5HAE24-AA102				253	228	21,3	40	PP	3,0	2	1,34	0,8	1,47	X			MDD02640		
308																							
309		5HAE25 - BR001	8"	Saturated Steam Line condensate pot				253	228	219,1	70	HC	1,0		1,18	1,0	1,22	X			MDD02640		
310		5HAE25 - BR002	2"	Drain from Condensate Pot to IP drain header				253	228	60,3	50	PP	5,0	2	3,17	0,8	3,37	X			MDD03806		
311		5HAE25 - BR003	6"	Pegging Steam to LP Drum				253	223	168,3	70	HC	6,0	2	8,13	0,8	8,40	X			MDD05309		
312																							
313		5HAE27 - BR001	6"	Pegging Steam from Line 5HAE37-BR001 to IP Drum				253	192	168,3	50	HC	1,0		0,88	0,8	0,92	X			MDD05304		
314																							
315		5HAF10 - BR001	2"	Att. W. Line from battery limit to valve 5HAF10-AA201				197	149	60,3	30	HC	8,0	4	3,97	0,8	4,30	X			MDD03804		
316		5HAF10 - BR002	2"	DSH control valve 5HAF10-AA201 by-pass line				197	149	60,3	30	HC	3,0	1	1,39	0,8	1,50	X			MDD03804		
317		5HAF10 - BR003	2"	Att. W. Line from valve 5HAF10-AA201 to valve 5HAF11-AA001				197	149	60,3	30	HC	2,0	1	0,99	0,8	1,07	X			MDD03804		
318		5HAF10 - BR004	1/2"	Strainer 5HAF10-AT001 Drain Line				197	149	21,3	30	PP	1,0	2	0,54	0,8	0,60	X			MDD03804		
319		5HAF10 - BR005	1"	Att. W. Line 5HAF10-BR001 Drain Line				197	149	33,4	30	PP	1,0	2	0,62	0,8	0,68	X			MDD03804		

ALSTOM ALSTOM Power Italia S.p.A.			LAVRION 5 - METKA - COMBINED CICLE N. 1 H.R.S.G. INSULATION LIST									Doc.n°: 11680MDV06600				Rev.	1					
												Data: 18/10/2005										
												CODICI E STD APPLICABILI: Applicable Standards & Codes:										
POS.	KKS tag		DESCRIZIONE Description			Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.	
from	to	Design				Operating	MM									RB	MT					
320																						
321	5HAF11	- BR001	2"	Att. W. Line from valve 5HAF11-AA001 to DSH 5HAJ21-BD001			532	149	60,3	30	HC	4,0	2	1,98	0,8	2,15	X			MDD03804		
322																						
323	5HAH21	- BR001	10" 4"	IPSH Steam Line Upstream valve 5HAH21-AA201			320	303	273 114,3	120 100	HC	42,0 17,0	2	74,42 17,62	1,0 0,8	75,87 18,18	X X			MDD04330 & MDD02431		
324	5HAH21	- BR002	10"	IPSH Steam Line Downstream valve 5HAH21-AA201			320	303	273	120	HC	1,5	1	4,23	1,0	4,31	X			MDD04330		
325	5HAH21	- BR003	10"	IPSH Steam Line Downstream valve 5HAH21-AA302			375	303	273	120	HC	8,3		14,04	1,0	14,31	X			MDD04330		
326	5HAH21	- BR004	1"	IPSH Steam Start-up Vent Line upstream valve 5HAH21-AA301			320	315	33,4	70	HC	2,0	2	1,72	0,8	1,81	X			MDD03801		
327	5HAH21	- BR005	1"	IPSH Steam Start-up Vent Line to Silencer 5HAH21-BS001			320	315	33,4	70	PP	2,5		1,43	0,8	1,51	X			MDD03801		
328	5HAH21	- BR006	8"	From Line 5HAH21-BR001 to Valve 5HAH21-AA003			320	303	219,1	110	HC	1,0		1,45	1,0	1,48	X			MDD04330		
329	5HAH21	- BR007	2"	Valve 5HAH21-AA302 by-pass line			375	303	60,3	80	HC	3,0	1	2,54	0,8	2,66	X			MDD04330		
330	5HAH21	- BR008	8"	From Valve 5HAH21-AA003 to Batt. Lim.(By-pass to Condenser)			320	303	219,1	110	HC	30,0	1	44,88	1,0	45,90	X			MDD04353		
331																						
332	5HAH21	- BR201	1"	Open drain line from Safety Valve 5HAH21 AA901			180	--	33,4		N / A											
333	5HAH21	- BR202	2"	Open drain line from silencer 5HAH21 BS001			180	--	60,3		N / A											
334	335																					
336	5HAH21	- BR901	8" 4"	From PSV 5HAH21-AA901 to Silencer 5HAH21-BS001			290	280	219,1 114,3	90 80	PP	1,0 1,0		1,32 0,90	1,0 0,8	1,35 0,94	X X			MDD04337		
337																						
338	5HAH25	- BR001	24" 4"	Cold RH Steam Line to LTRH (IP steam included)			375	367	609,6 114,3	160 120	HC	55,0 200,0		168,57 233,63	1,0 0,8	170,38 240,22		X		MDD04352 & MDD04357		
339	5HAH25	- BR002	1"	Cold RH line 5HAH25-BR001 Vent Line			375	367	33,4	90	PP	2,0	2	2,11	0,8	2,21	X			MDD03802		
340																						
341	5HAH25	- BR201	1"	Open drain line from Safety Valve 5HAH25 AA901			180	--	33,4		N / A											
342	5HAH25	- BR202	1"	Open drain line from Safety Valve 5HAH25 AA902			180	--	33,4		N / A											
343	5HAH25	- BR203	2"	Open drain line from silencer 5HAH25 BS001			180	--	60,3		N / A											
344	5HAH25	- BR204	2"	Open drain line from silencer 5HAH25 BS002			180	--	60,3		N / A											
345																						
346	5HAH25	- BR901	16" 8"	From PSV 5HAH25-AA901 to Silencer 5HAH25-BS001			360	355	406,4 219,1	150 140	PP	1,0 1,0		2,33 1,65	1,0 1,0	2,36 1,68		X		MDD04363		
347	5HAH25	- BR902	16" 8"	From PSV 5HAH25-AA902 to Silencer 5HAH25-BS002			360	355	406,4 219,1	150 140	PP	1,0 1,0		2,33 1,65	1,0 1,0	2,36 1,68		X		MDD04363		
348																						

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											Data:				18/10/2005						
											CODICI E STD APPLICABILI: Applicable Standards & Codes:										
POS.	KKS tag	DESCRIZIONE Description			Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve	Insulation Surface	Cladding Thk. mm	Cladding Surface	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.	
from	to				Design	Operating	N.	Sq. m.	mm	Sq. m.	MM	RB	MT								
349	5HAJ21 - BR001	28"	RH Steam from LTRH to Desuperheater 5HAJ21-BD001			532	527	711,2	290	HC	13,0		55,34	1,0	55,77		X		MDD04505		
350	5HAJ21 - BR002	4"	Drain Pot from LTRH outlet Manifold			550	527	114,3	200	HC	1,0		1,70	0,8	1,73	X			MDD04321		
351	5HAJ21 - BR003	2"	From drain pot 5HAJ21-BR002 to Valve 5HAJ21-AA301			550	527	60,3	170	PP	10,0	2	14,52	0,8	16,23	X			MDD03806		
352																					
353	5HAJ23 - BR001	28"	RH Steam from Desuperheater 5HAJ21-BD001 to HTRH			532	527	711,2	290	HC	17,0		72,37	1,0	72,93		X		MDD04505		
354	5HAJ23 - BR002	4"	Drain Pot from HTRH inlet Manifold			550	527	114,3	200	HC	1,0		1,70	0,8	1,73	X			MDD04323		
355	5HAJ23 - BR003	2"	From Drain Pot 5HAJ23-BR002 to Valve 5HAJ23-AA301			550	527	60,3	170	PP	10,0	2	14,52	0,8	14,88	X			MDD03806		
356																					
357	5HAJ24 - BR001	10"	Drain Pot From Line 5HAJ23-BR001			532	527	273	250	HC	1,5		3,82	1,0	3,87	X			MDD04505		
358	5HAJ24 - BR002	2"	From Drain Pot 5HAJ24-BR001 to Valve 5HAJ24-AA301			532	527	60,3	170	PP	8,0	2	11,88	0,8	12,17	X			MDD04505		
359																					
360	5HAJ26 - BR001	28"	Hot RH Steam Line to Battery Limit			571	566	711.2	340	HC	46,5		#TIMH!	1,0	#TIMH!		X		MDD04324 & MDD04350	Microtherm da usare sul tratto vert. prima del B.L.	
								711.2	140		7,0		#TIMH!	1,0	#TIMH!			X			
		4"						114,3	230		178,0		337,04	0,8	342,91	X					
361	5HAJ26 - BR002	1/2"	RH Steam Sampling Line to Valve 5HAJ26-AA102			571	566	21,3	150	HC	3,0	2	4,24	0,8	4,37	X			MDD04323		
362	5HAJ26 - BR003	10"	Drain Pot From Line 5HAJ26-BR001			571	566	273	280	HC	1,0		2,75	1,0	2,78	X			MDD04350		
363	5HAJ26 - BR004	2"	From Drain Pot 5HAJ26-BR003 to Valve 5HAJ26-AA301			571	566	60,3	200	PP	16,0	2	25,80	0,8	26,36	X			MDD03806		
364																					
365	5HAJ26 - BR201	1"	Open drain line from Safety Valve 5HAJ26 AA901			180	--	33,4		N / A											
366	5HAJ26 - BR202	2"	Open drain line from silencer 5HAJ26 BS001			180	--	60,3		N / A											
367																					
368	5HAJ26 - BR901	18"	From PSV 5HAJ26-AA901 to Silencer 5HAJ26-BS001			550	545	457,2	270	PP	1,0		3,29	1,0	3,32		X		MDD04364	SILENCER SITE	
		10"						273	250		1,0		2,55	1,0	2,58	X					
		18"						457,2	100		4,0		8,67	1,0	8,80		X				
369																					
370	5HAH22 - BR001	8"	IPSH Steam Line drain pot			320	303	219,1	110	HC	1,0		1,45	1,0	1,48	X			MDD04330		
371	5HAH22 - BR002	2"	From Drain Pot 5HAH22-BR001 to Valve 5HAH22-AA301			320	303	60,3	80	PP	8,0		5,81	0,8	6,07	X			MDD03806		
372																					
373	5HAH26 - BR001	10"	LTRH Steam Line drain pot			375	367	273	140	HC	1,0		1,82	1,0	1,86	X					
374	5HAH26 - BR002	2"	From Drain Pot 5HAH26-BR001 to Valve 5HAH26-AA301			375	367	60,3	100	PP	16,0	2	14,59	0,8	15,15	X			MDD03806		
375																					
376	REF. DWG. 11680-BTD-03302 - HRSG - WATER & STEAM HP SECTION - P&ID																				
377	5HAC30 - BR001	8"	F.W. Line from battery limit to Valve 5HAC30-AA201			197	149	219,1	30	HC	6,0	2	7,36	1,0	7,63	X			MDD05303		

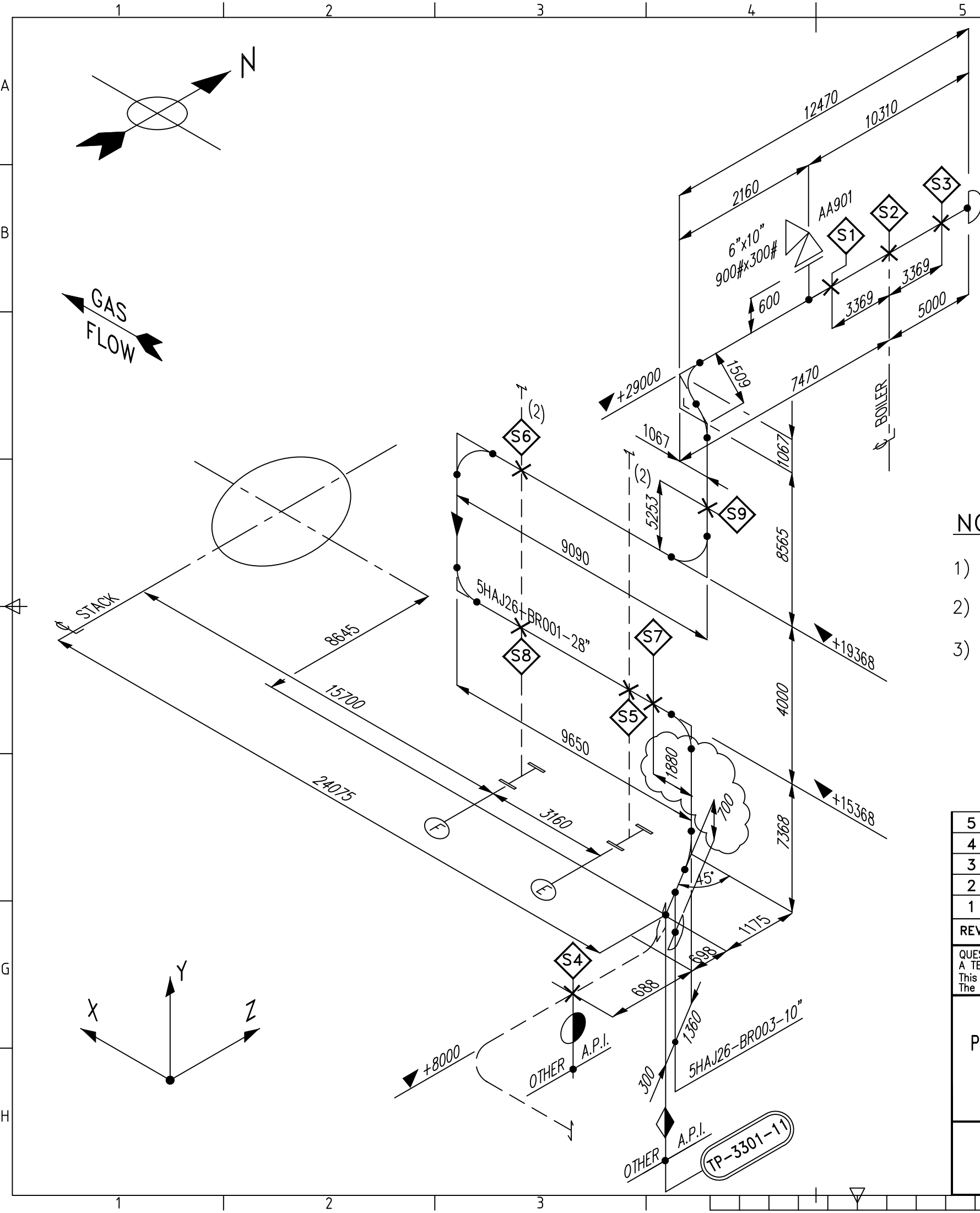
ALSTOM ALSTOM Power Italia S.p.A.		LAVRION 5 - METKA - COMBINED CICLE N. 1 H.R.S.G. INSULATION LIST										Doc.n°: 11680MDV06600				Rev.	1					
												Data:				18/10/2005						
												CODICI E STD APPLICABILI: Applicable Standards & Codes:										
POS.		KKS tag		DESCRIZIONE Description		Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.	
from	to	Design	Operating			MM	RB									MT						
378		5HAC30 - BR002		8"	FW from valve 5HAC30-AA201 to check valve 5HAC35-AA001		197	149	219,1	30	HC	3,0	1	3,68	1,0	3,81	X			MDD05303		
379		5HAC30 - BR003		4"	From FW Line 5HAC30-BR001 to control valve 5HAC30-AA202		197	149	114.3	30	HC	4,5	3	#TIMH!	0,8	#TIMH!	X			MDD05303		
380		5HAC30 - BR004		6"	FW By-pass line for HP drum control valve station		197	149	168,3	30	HC	6,5	1	5,65	0,8	5,89	X			MDD05303		
381																						
382	386	5HAC31 - BR001 / BR005		1"	HP ECO Drain Line		334	306	33,4	70	PP	10,0	10	8,58	0,8	9,07	X			MDD03806		
387		5HAC31 - BR006		2"	HP ECO Drain Line to Valve 5HAC31-AA506		334	306	60,3	80	PP	4,0	2	3,63	0,8	3,80	X			MDD03806		
388																						
389	392	5HAC34 - BR001 / BR004		1"	HP ECO Drain Line		334	306	33,4	70	PP	8,0	8	6,86	0,8	7,26	X			MDD03806		
393		5HAC34 - BR005		2"	HP ECO Drain Line to Valve 5HAC34-AA505		334	306	60,3	80	PP	4,0	2	3,63	0,8	3,80	X			MDD03806		
394		5HAC34 - BR006		1"	HP ECO Drain Line		334	306	33,4	70	PP	2,0	2	1,72	0,8	1,81	X			MDD03806		
395																						
396		5HAC35 - BR001		8"	FW from check valve 5HAC35-AA001 to valve 5HAC35-AA002		334	149	219,1	30	HC	2,0	2	3,68	1,0	3,81	X			MDD05303		
397		5HAC35 - BR002		2"	Drain from FW Line 5HAC31-BR001 to Valve 5HAC35-AA502		334	149	60,3	30	PP	8,0	2	3,57	0,8	3,87	X			MDD03806		
398		5HAC35 - BR003		8"	FW from valve 5HAC35-AA002 to HPECO4 inlet		334	149	219,1	30	HC	4,5		4,14	1,0	4,29	X			MDD05303 & MDD02442		
399																						
400	406	5HAC36 - BR001 / BR007		1/2"	HP ECO Vent Line		334	306	21,3	70	PP	14,0	7	9,31	0,8	9,88	X			MDD03805		
407		5HAC36 - BR008		1 1/2"	HP ECO Vent Line to Valve 1HAC36-AA508		334	306	48,3	80	PP	2,0	1	1,72	0,8	1,80	X			MDD03805		
408		5HAC36 - BR009		1/2"	HP ECO Vent Line		334	306	21,3	70	PP	1,0	1	0,80	0,8	0,85	X			MDD03805		
409																						
410		5HAC37 - BR001		10" 3"	FW from HPECO1 outlet to HP drum		334	306	273 88,9	120 90	HC	23,0 14,0		38,90 12,41	1,0 0,8	39,66 12,87	X X			MDD05305 & MDD05315		
411																						
412		5HAD30 - BR001		2"	Intermit. Blowdown Line from HPEVA to Valve 5HAD30-AA301		341	315	60,3	80	PP	15,0	2	11,62	0,8	12,15	X			MDD03806		
413		5HAD30 - BR002		2"	HP EVA Drain Line		341	315	60,3	80	PP	3,5	2	3,27	0,8	3,42	X			MDD03806		
414		5HAD30 - BR003		1/2"	Portable Sample Connection		341	228	21,3	40	PP	1,0	2	0,67	0,8	0,73	X			MDD03806		
415	417	5HAD31 - BR001 / BR003		10"	HP Downcomer Tube to HP EVA		341	315	273	120	HC	20,0		33,83	1,0	34,49	X			MDD02422		
418																						
419	487	5HAD32 - BR001 / BR069		3"	HP EVA Raiser Tube to HP Drum (From Harps 1 to Harps 13)		341	315	88,9	120	HC	422,0		457,61	0,8	471,52	X			MDD02610-11 & 02614 + 02619		
488																						
489		5HAE30 - BR007		1"	Hydraulic column drain line		341	315	33,4	70	PP	1,5	2	1,43	0,8	1,51	X			MDD02658		
490		5HAE30 - BR008		1/2"	Hydraulic column vent line		341	315	21,3	70	PP	1,5	2	1,33	0,8	1,41	X			MDD02658		
491																						
492		5HAE30 - BR301		1"	Open drain from safety valves 5HAE30 AA901-AA902		180	--	33,4		N / A											

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													Data: 18/10/2005									
													CODICI E STD APPLICABILI: Applicable Standards & Codes:									
POS.		KKS tag	DESCRIZIONE Description			Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.	
from	to	Design				Operating	MM									RB	MT					
493		5HAE30 - BR302	2"	Open Drain Collector to gully			180	--	60,3		N / A											
494	497	5HAE30 - BR303 / BR306	1/2"	Open Drain From Level instrument			180	--	21,3		N / A											
498		5HAE30 - BR307	1"	Hydraulic culumn drain line downstream valve 5HAE30 AA512			180	--	33,4		N / A											
499																						
500	501	5HAE30 - BR309 / BR310	2"	Open drain line from silencer 5HAE30 BS001 & BS002			180	--	60,3		N / A											
502																						
503		5HAE30 - BR901	10"	From PSV 5HAE30-AA901 to Silencer 5HAE30-BS001			200	192	273	50	PP	2,0		2,46	1,0	2,53	X			MDD02810		
			6"				168,3	50	1,0			0,88	0,8	0,92	X							
504		5HAE30 - BR902	10"	From PSV 5HAE30-AA902 to Silencer 5HAE30-BS002			200	192	273	50	PP	2,0		2,46	1,0	2,53	X			MDD02811		
			6"				168,3	50	1,0			0,88	0,8	0,92	X							
505																						
506		5HAE31 - BR001	1 1/2"	Nitrogen Line from battery limit to valve 5HAE31-AA001			341	Amb.	48,3		N / A											
507		5HAE31 - BR002	1 1/2"	Nitrogen Line from Valve 5HAE31-AA001 to HP Drum			341	315	48,3	80	PP	1,0	2	1,37	0,8	1,44	X		MDD03802			
508																						
509		5HAE32 - BR001	1"	Chemical Feed Line from Valve 5HAE32-AA101 to HP Drum			341	315	33,4	70	PP	3,0	2	2,29	0,8	2,42	X		MDD03800			
510																						
511		5HAE33 - BR001	2"	HP Continuous Blowdown Line to Valve 1HAE33-AA501			341	315	60,3	80	PP	8,0	2	6,54	0,8	6,83	X		MDD03800			
512		5HAE33 - BR002	1/2"	Water Sampling Line to Valve 1HAE33-AA102			341	315	21,3	70	PP	2,0	2	1,60	0,8	1,69	X		MDD03800			
513																						
514	531	5HAE34 - BR001 / BR018	4"	Saturated Steam from HP Drum to HPLTSH2			346	315	114,3	100	HC	167,0		173,05	0,8	178,56	X		MDD02642			
532		5HAE34 - BR019	1 1/2"	Saturated Steam Vent Line to valve 5HAE34 AA301			346	315	48,3	80	PP	2,0	2	2,06	0,8	2,16	X		MDD03802			
533																						
534		5HAE34 - BR021	1/2"	Saturated Steam Sampling Line to Valve 5HAE34-AA102			346	315	21,3	70	PP	3,0	2	2,13	0,8	2,26	X		MDD02642			
535																						
536		5HAE37 - BR001	6"	Pegging Steam from HP Drum to IP Drum			346	251	168,3	90	HC	4,5	2	7,46	0,8	7,68	X		MDD05304			
537																						
538		5HAG10 - BR001	2 1/2"	Att. W. Line from battery limit to Valve 5HAG10-AA201			197	149	73	30	HC	13,0	3	7,02	0,8	7,54	X		MDD04361			
539		5HAG10 - BR002	2 1/2"	DSH control valve 5HAG10-AA201 by-pass line			197	149	73	30	HC	3,5	1	1,97	0,8	2,12	X		MDD04361			
540		5HAG10 - BR003	2 1/2"	Att. W. from Valve 5HAG10-AA201 to Valve 5HAG11-AA001			197	149	73	30	HC	1,0	2	1,32	0,8	1,41	X		MDD04361			
541		5HAG10 - BR004	1/2"	Strainer 1HAG10-AT001 Drain Line			197	149	21,3		N / A											
542		5HAG10 - BR005	1"	Att. W. Line 5HAG10-BR001 Drain Line			197	149	33,4		N / A											
543																						
544		5HAG11 - BR001	2 1/2"	Att. W. from Valve 5HAG11-AA001 to DSH 5HAH34-BD001			548	149	73	30	HC	1,0	2	1,32	0,8	1,41	X		MDD04361			

ALSTOM ALSTOM Power Italia S.p.A.			LAVRION 5 - METKA - COMBINED CICLE N. 1 H.R.S.G. INSULATION LIST								Doc.n°: 11680MDV06600					Rev.		1		
																Data:		18/10/2005		
											CODICI E STD APPLICABILI: Applicable Standards & Codes:									
POS.		KKS tag	DESCRIZIONE Description		Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.
from	to	Design			Operating	MM									RB	MT				
545																				
546		5HAH31 - BR001	4"	HPLTSH1/2 Drain Pot to Line 5HAH31-BR002	435	413	114,3	140	HC	1,0		1,30	0,8	1,33	X			MDD04400		
547		5HAH31 - BR002	2"	From Drain Pot to Valve 5HAH31-AA301	435	413	60,3	120	PP	12,0	2	12,87	0,8	13,30	X			MDD03806		
548																				
549		5HAH33 - BR001	1 1/2"	HPLTSH1/ HPMTSH Vent Line	525	503	48,3	160	PP	3,0	2	4,86	0,8	4,99	X			MDD03805		
550																				
551		5HAH34 - BR001	16"	From HPMTSH outlet manifold to DSH 5HAH34-BD001	548	543	406,4	260	HC	8,5		25,96	1,0	26,24		X		MDD04500 & MDD04302		
			14"				355,6	250		1,2		3,39	1,0	3,42		X				
552		5HAH34 - BR002	16"	From DSH 5HAH34-BD001 to HPHTSH inlet manifold	548	543	406,4	260	HC	14,3		43,68	1,0	44,15		X		MDD04500 & MDD04304		
			14"				355,6	250		10,5		29,62	1,0	29,97		X				
553		5HAH34 - BR003	4"	Drain Pot From HPMTSH outlet manifold	548	543	114,3	200	HC	1,0		#TIMH!	0,8	#TIMH!	X			MDD04302		
554		5HAH34 - BR004	2"	From Drain Pot 5HAH34-BR003 to Valve 5HAH34-AA301	548	543	60,3	170	PP	10,0	2	14,52	0,8	14,88	X			MDD03806		
555																				
556		5HAH35 - BR001	10"	Drain Pot from Line 5HAH34-BR002	548	543	273	250	HC	1,0		2,55	1,0	2,58	X			MDD04500		
557		5HAH35 - BR002	2"	From Drain Pot to Valve 5HAH35-AA301	548	543	60,3	170	PP	10,0	2	14,52	0,8	14,88	X			MDD03806		
558		5HAH35 - BR003	4"	Drain Pot from HPHTSH inlet manifold to Line 5HAH35-BR004	548	543	114,3	200	HC	1,0		1,70	0,8	1,73	X			MDD04304		
559		5HAH35 - BR004	2"	From Drain Pot to Valve 5HAH35-AA302	548	543	60,3	170	PP	10,0	2	14,52	0,8	14,88	X			MDD03806		
560																				
561		5LBA30 - BR001	14"	Main Steam Line to Valve 5LBA30-AA001	571	566	355,6	290	HC	11,0	1	40,10	1,0	40,53		X		MDD04301		
			4"				114,3	230		188,0		355,97	0,8	362,17	X					
562		5LBA30 - BR002	1/2"	Main Steam Sampling Line to Valve 5LBA30-AA102	571	566	21,3	150	PP	3,0	2	4,24	0,8	4,37	X			MDD04301		
563		5LBA30 - BR003	2"	Main steam valve 5LBA30-AA001 By pass line	571	566	60,3	200	HC	4,0	1	6,83	0,8	6,98	X			MDD04320		
564		5LBA30 - BR004	1"	Start-up Vent Line to Valve 5LBA30-AA301	571	450	33,4	110	HC	1,5	2	2,09	0,8	2,17	X			MDD03801		
565		5LBA30 - BR005	1"	Start-up vent line from valve 5LBA30-AA301 to silencer BS001	535	450	33,4	110	PP	1,0		0,84	0,8	0,87	X			MDD03801		
566		5LBA30 - BR006	10"	Drain Pot from main steam line to Line 5LBA30-BR007	571	566	273	280	HC	1,0		2,75	1,0	2,78	X			MDD04301		
567		5LBA30 - BR007	2"	From Drain Pot to Valve 5LBA30-AA302	571	566	60,3	200	PP	4,0	2	7,59	0,8	7,75	X			MDD03800		
568																				
569		5LBA30 - BR301	1"	Open drain from safety valve 5LBA30 AA901	180	--	33,4		N / A											
570		5LBA30 - BR302	2"	Open drain line from silencer 5LBA30 BS001	180	--	60,3		N / A											
571	572																			
573		5LBA30 - BR901	10"	From PSV 5LBA30-AA901 to silencer 5LBA30-BS001	535	516	273	250	PP	1,0		2,55	1,0	2,58	X			MDD04327	SILENCER SITE	
			6"				168,3	220		1,0		2,01	0,8	2,04	X					
			10"				273	100		4,0		6,24	1,0	6,37	X					

ALSTOM ALSTOM Power Italia S.p.A.			LAVRION 5 - METKA - COMBINED CICLE N. 1 H.R.S.G. INSULATION LIST							Doc.n°: 11680MDV06600				Rev. 1							
										CODICI E STD APPLICABILI: Applicable Standards & Codes:				Data: 18/10/2005							
POS.		KKS tag	DESCRIZIONE Description		Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.	
from	to	Design			Operating	MM									RB	MT					
574																					
575		5LBA31 - BR001	14"	Main Steam Line from Valve 5LBA30-AA001 to battery limit		571	566	355,6	290	HC	29,0	1	95,62	1,0	96,65		X		MDD04320		
576	600																				
601		REF. DWG. 11680-BTD-03465 - HRSG - INSTRUMENT AND SERVICE AIR - P&ID																			
602		5QFH40 - BR001	1 1/2"	Service Air Collector from Valve 5QFH30-AA001		60	50	48,3		N / A											
603		5QFH40 - BR002	1"	Service Air Connecting Point		60	50	33,4		N / A											
604		5QFH40 - BR003	1"	Service Air Connecting Point		60	50	33,4		N / A											
605		5QFH40 - BR004	1"	Service Air Connecting Point		60	50	33,4		N / A											
606		5QFH40 - BR101	1/2"	Service Air Collector Local Drain		60	50	21,3		N / A											
607																					
608		5QFH30 - BR001	1 1/2"	Instrument Air Collector from Valve 5QFH40-AA001		60	50	48,3		N / A											
609		5QFH30 - BR002	1"	Instrument Air Connecting Point		60	50	33,4		N / A											
610		5QFH30 - BR003	1/2"	Instrument Air Connecting Point		60	50	21,3		N / A											
611		5QFH30 - BR101	1/2"	Instrument Air Collector Local Drain		60	50	21,3		N / A											
612	625																				
626		REF. DWG. 11680-BTD-03305 - HRSG - DRAINS AND VENT SYSTEM - P&ID																			
627		5HAN10 - BR001	24"	Intermittent Blow Down Tank steam stack		170	100	609,6		N / A											
628		5HAN10 - BR002	1 1/2"	Service water line for IBDT steam quenching		170	HOLD	48,3		N / A											
629		5HAN10 - BR003	3"	Intermittent blow down tank instrument column		170	100	88,9	30	PP	2,5		1,23	0,8	1,31	X		MDD04411			
630		5HAN10 - BR004	4"	LP drain header to intermittent blow down tank		-	150	114,3	30	PP	23,0		13,22	0,8	13,98	X		MDD04408			
631		5HAN10 - BR005	6"	IP drain header to intermittent blow down tank		-	230	168,3	70	PP	20,0		20,33	0,8	20,99	X		MDD04406			
632		5HAN10 - BR006	6"	HP drain header to intermittent blow down tank		-	315	168,3	110	PP	20,0		25,60	0,8	26,26	X		MDD04405			
633		5HAN10 - BR007	8"	Intermittent blow down tank overflow line		170	100	219,1	30	PP	6,0		5,52	1,0	5,72	X		SITE FABR. E.A.			
634		5HAN10 - BR008	8"	Intermittent blow down tank drain line to pump		170	100	219,1	30	PP	1,0		0,92	1,0	0,95	X		SITE FABR. E.A.			
635		5HAN10 - BR009	2"	Intermittent blow down tank bottom drain		170	100	60,3	30	PP	1,0	1	0,59	0,8	0,64	X		MDD03803			
636		5HAN10 - BR010	1"	LP drain header to intermittent blow down tank bottom drain		-	150	33,4	30	PP	1,0	1	0,46	0,8	0,51	X		MDD03803			
637		5HAN10 - BR011	1"	IP drain header to intermittent blow down tank bottom drain		-	230	33,4	50	PP	1,0	1	0,66	0,8	0,71	X		MDD03803			
638		5HAN10 - BR012	1"	HP drain header to intermittent blow down tank bottom drain		-	315	33,4	70	PP	1,0	1	0,86	0,8	0,91	X		MDD03803			
639																					
640		5HAN10 - BR901	6"	Discharge line from LP eco safety relief valve 5HAC10-AA901		215	185	168,3	50	PP	32,0		28,31	0,8	29,36	X		MDD04409			
641		5HAN10 - BR902	3"	Discharge line from IP eco safety relief valve 5HAC20-AA901		250	215	88,9	60	PP	3,0		2,07	0,8	2,17	X		MDD04410			
642																					
643		5HAN11 - BR001	6"	RH hot drain header to condenser		-	230	168,3	70	PP	2,2		2,24	0,8	2,31	X		MDD04412			

ALSTOM ALSTOM Power Italia S.p.A.			LAVRION 5 - METKA - COMBINED CICLE N. 1 H.R.S.G. INSULATION LIST										Doc.n°: 11680MDV06600					Rev.	1	
													Data:					18/10/2005		
													CODICI E STD APPLICABILI: Applicable Standards & Codes:							
POS.	KKS tag		DESCRIZIONE Description		Temperature °C Condition		Pipe OD	Insulation Thk. mm.	Insulation Type	Pipe Length MT.	Valve N.	Insulation Surface Sq. m.	Cladding Thk. mm	Cladding Surface Sq. m.	LAYERS COMPOSITION			DRAWING No.11680	NOTE	Rev.
from	to	Design			Operating	MM									RB	MT				
644	650																			
651		5HAN20 - BR001	6"	Continuous blow down tank steam stack to LP drum	185	150	168,3	30	HC	24,0		18,06	0,8	18,86	X			MDD04347		
652		5HAN20 - BR002	2"	Continuous blow down tank drain line to valve 5HAN20-AA201	185	150	60,3	30	PP	1,5	3	1,19	0,8	1,29	X			MDD03803		
653		5HAN20 - BR003	2"	Continuous blow down tank drain line to IBDT	185	120	60,3	30	PP	16,0		6,35	0,8	6,87	X			MDD03803		
654		5HAN20 - BR004	1 1/2"	Valve 5HAN20-AA201 by pass line	185	150	48,3	30	PP	3,0	1	1,25	0,8	1,37	X			MDD03803		
655		5HAN20 - BR005	2"	Continuous blow down tank bottom drain	185	150	60,3	30	PP	20,0		7,93	0,8	8,59	X			MDD03803		
656		5HAN20 - BR006	3"	Continuous blow down tank instrument column	185	150	88,9	30	PP	1,2		0,59	0,8	0,63	X			MDD04411		
657																				
658		5HAN20 - BR901	6" 4"	CBDT safety valve 5HAN20-AA901 discharge line to silencer	175	160	168,3 114,3	50 50	PP	10,0 1,0		8,85 0,71	0,8 0,8	9,18 0,74	X X			MDD04362		
659		5HAN20 - BR101	2"	Open drain line from silencer 5HAN20 BS001	175	--	60,3		N / A											
660		5HAN20 - BR102	1"	Open drain from safety valve 5HAN20 AA901	175	--	33,4		N / A											
661																				
662		STEAM DRUM - VESSEL AND STACK																		
663		5HAE10 - BB001	 6"	L.P. DRUM Hydraulic Column L.P. Drum	184	150	2779 168,3	40 30	HC	13,60 3,2		135,00 2,41	1,0 0,8	135,50 2,51	 X	X 		MDD02020 MDD02663		
664		5HAE20 - BB001	 6"	I.P. DRUM Hydraulic Column I.P. Drum	243	228	1572 168,3	90 70	HC	13,20 2,2		78,00 2,24	1,0 0,8	79,00 2,31	 X	X 		MDD02010 MDD02663		
665		5HAE30 - BB001	 6"	H.P. DRUM Hydraulic Column H.P. Drum	328	315	2041 168,3	160 110	HC	13,65 2,4		106,00 3,07	1,0 0,8	107,00 3,15	 X	X 		MDD02000 MDD02663		
666		5HAN10 - BB001		Intermittent blow down tank	170	100	2016	40	HC	4,512		35,00	1,0	36,00		X		MAD23000		
667		5HAN20 - BB001		Continuous blow down tank	184	151	1022	70	HC	2,054		9,50	1,0	10,00		X		MAD23010		
668		5HAE10 - BB002		Deaerator	184	150	2224	40	HC	5,224		44,50	1,0	45,00		X		MAD23100		
669		5HNE10		Stack (ACCESS DOOR PLTF. INCLUDED)	250	83	7030	50	PP	45,0		182,00	1,0	190,00		X		MAD09890		



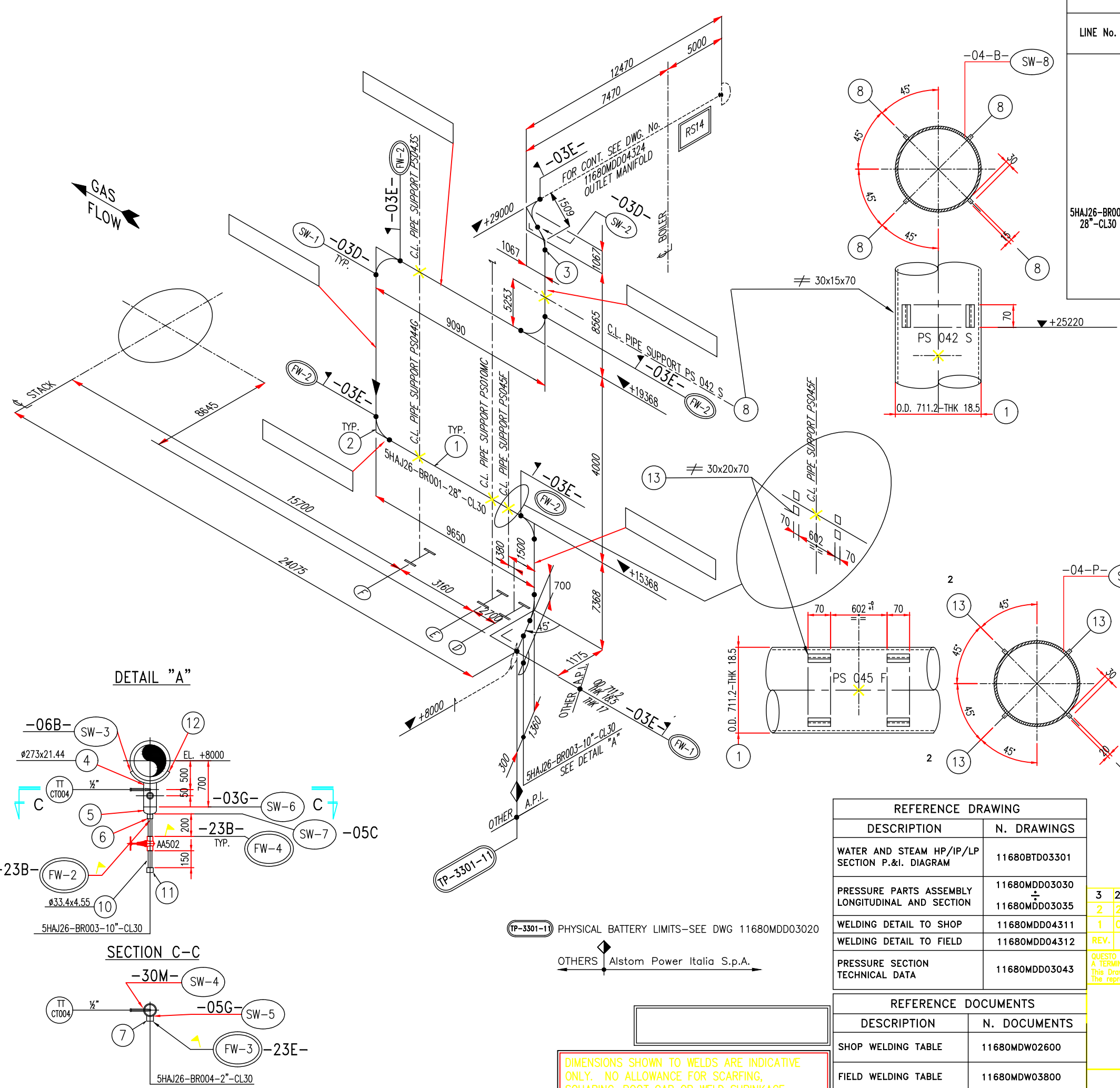
SUPPORT DESCRIPTION:

- S1 GUIDE X + SPRING HANGER
- S2 SPRING HANGER + AXIAL STOP
- S3 SPRING HANGER + GUIDE X
- S4 AXIAL STOP + SUPPORT + GUIDE X
- S5 SPRING HANGER
- S6 SUPPORT
- S7 AXIAL STOP
- S8 GUIDE Z
- S9 SUPPORT Y AT EL. +25220

NOTES :

- FOR GENERAL NOTES SEE DWG. 11680MDD03025 sh.1
- AVAILABLE STRUCTURE FOR SUPPORT LOCATION
- ROUTING AND SUPPORTS IN AREA NOT IN THE API SCOPE OF SUPPLY TO BE DEFINED BY OTHERS

5	14-12-04	REVISED AS SHOWN	A.S.	R.M.	A.N.
4	20-07-04	REVISED AS SHOWN	DSC	R.M.	A.N.
3	21-05-04	REVISED AS SHOWN	DSC	R.M.	A.N.
2	04-05-04	REVISED AS SHOWN	DSC	R.M.	A.N.
1	14-04-04	COMPLETED	DSC	R.M.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	DIS. Dwg.	CONTR. Checked	VISTO Approv.
QUESTO DISEGNO E' PROPRIETA' DELLA Alstom Power Italia SpA A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI This Drawing is the Property of Alstom Power Italia SpA The reproduction for any use by a third party is forbidden by law.			SCALA Scale	FIRME/Signature	DATA/Date
LAVRION - METKA PIPING ANCHOR-INTERF. POINT CHARACTERIZATION HOT REHEAT STEAM 5HAJ26-BR001-28"			/ 	DIS./Dwg. DSC	18-03-04
				CONTR./Check.R.M.	30-03-04
				VISTO/Approv.A.N.	30-03-04
ALSTOM ALSTOM POWER ITALIA S.p.A.			RIFERIMENTO N. Reference N.		
			N°. DISEGNO/Drawing No.		TAV. / DI Sh. / of
			11680MDD03025		216
			REV.	1	2
				3	4
				5	



SHOP FABRICATED MATERIAL									
LINE No.	SPOOL	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)
5HAJ26-BR001 28"-CL30	5HAJ26-4350/A	1	PIPE	1	ø711.2	18.5	5830	SA 335 Gr. P91	1841.8
		2	ELBOW 90°-LR	2	ø711.2	17	-	SA 234 Gr.WP91	1071
		4	PIPE	1	ø273	21.44 ±12.5%	365	SA 335 Gr. P91	50
		5	CAP	1	ø273	9.27 ±12.5%	-	SA 234 Gr.WP91	5.5
		6	HALF COUPLING-SW	1	ø1"	3000#	-	SA 182 F91	0.35
		7	HALF COUPLING-SW	1	ø2"	3000#	-	SA 182 F91	0.5
		13	PLATE 30x20	8	-	-	70	SA 387 Gr. 91 CL.2	1
	5HAJ26-4350/B	12	PLATE ø433	1	-	17	-	SA 387 Gr. 91 CL.2	2
		1	PIPE	1	ø711.2	18.5	7516	SA 335 Gr. P91	2371.5
	5HAJ26-4350/C	2	ELBOW 90°-LR	1	ø711.2	17	-	SA 234 Gr.WP91	535.5
		1	PIPE	1	ø711.2	18.5	1866	SA 335 Gr. P91	589.5
	5HAJ26-4350/D	2	ELBOW 90°-LR	1	ø711.2	17	-	SA 234 Gr.WP91	535.5
		1	PIPE	1	ø711.2	18.5	6957	SA 335 Gr. P91	2197.8
	5HAJ26-4350/E	2	ELBOW 90°-LR	1	ø711.2	17	-	SA 234 Gr.WP91	535.5
		1	PIPE	1	ø711.2	18.5	7056	SA 335 Gr. P91	2229.1
		2	ELBOW 90°-LR	1	ø711.2	17	-	SA 234 Gr.WP91	535.5
		3	ELBOW 45°-LR	1	ø711.2	17	-	SA 234 Gr.WP91	267.75
8		PLATE 30x15	4	-	-	70	SA 387 Gr. 91 CL.2	0.5	

SITE FABRICATED MATERIAL							
LINE No.	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL
5HAJ26-BR003 10"-CL30	10	PIPE	1	ø33.4	4.55 ±12.5%	350	SA 335 Gr. P91
	11	CAP SW	1	ø33.4	3000#	-	SA 182 F91
TOTAL WEIGHT							1.3

NOTES:

- 1) ASME B31.1, ED.2001 + ADD.2002 AND DIRECTIVE 97/23/EC (P.E.D.)
- 2) ALL DIMENSIONS ARE IN mm, UNLESS WHERE OTHERWISE INDICATED
- 4) ① DENOTE ITEM NUMBER
- 5) [XXXXXX-YYYY/Z] = SPOOL MK. No.
- 6) ▲ SHOWS FIELD WELDS
- 7) (SW...) DENOTES SHOP WELDING NUMBER
- 8) (FW...) DENOTES FIELD WELDING NUMBER
- 9) ALL TOLERANCES, EXCEPT WHERE OTHERWISE INDICATED, ARE ACCORDING TO UNI EN 22768.1/M
- 10) PIPE MATERIAL PROCUREMENT AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDR02600
- 11) -05- DENOTES DETAIL OF WELD ACCORDING DWG. 11680MDD04311 AND DWG. 11680MDD04312

REFERENCE DRAWING	
DESCRIPTION	N. DRAWINGS
WATER AND STEAM HP/IP/LP SECTION P.&I. DIAGRAM	11680BTD03301
PRESSURE PARTS ASSEMBLY LONGITUDINAL AND SECTION	11680MDD03030 ÷ 11680MDD03035
WELDING DETAIL TO SHOP	11680MDD04311
WELDING DETAIL TO FIELD	11680MDD04312
PRESSURE SECTION TECHNICAL DATA	11680MDD03043

REFERENCE DOCUMENTS	
DESCRIPTION	N. DOCUMENTS
SHOP WELDING TABLE	11680MDW02600
FIELD WELDING TABLE	11680MDW03800
ERECTION LIST	11680MDE02600

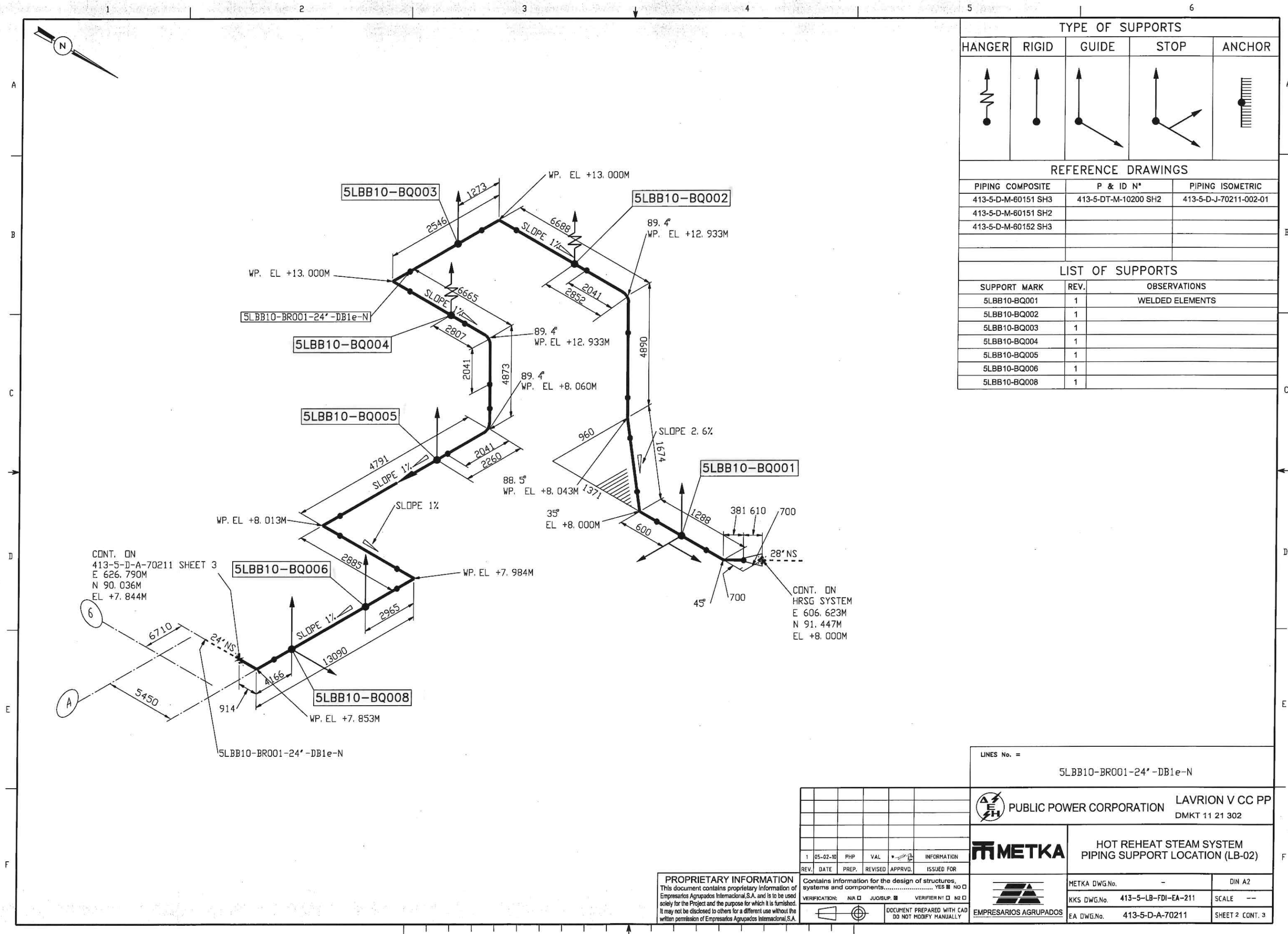
DIMENSIONS SHOWN TO WELDS ARE INDICATIVE ONLY. NO ALLOWANCE FOR SCARFING, SQUARING, ROOT GAP OR WELD SHRINKAGE HAS BEEN INCLUDED IN RUNNING LENGTHS.

Rev. 2 and above are RELEASED for ERECTION

KKS DWG.No. 5-HA-000-API-163

3	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.
2	22-10-04	REVISED WHERE INDICATED 2	M.B.	A.R.	A.N.
1	05-10-04	REVISED WHERE INDICATED 1	P.V.	A.R.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	DIS. Dwg.	CONTR. Checked	VISTO Approv.
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI. This Drawing is the Property of ALSTOM Power Italia S.p.A. The reproduction for any use by a third party is forbidden by law.			SCALA Scale	FIRME/Signature	DATA/Date
			//	DIS./Dwg.	T.S.I.
				CONTR./Check.	A.R.
				VISTO/Approv.	A.N.
LAVRION - METKA HOT RH STEAM LINE TO B.L. 5HAJ26-BR001-28"-CL30			11680MDD04350		
			ALSTOM Power Italia S.p.A.		
REV. 1/2/3					

413-5-D-A-70211-002-01



TYPE OF SUPPORTS				
HANGER	RIGID	GUIDE	STOP	ANCHOR

REFERENCE DRAWINGS		
PIPING COMPOSITE	P & ID N°	PIPING ISOMETRIC
413-5-D-M-60151 SH3	413-5-DT-M-10200 SH2	413-5-D-J-70211-002-01
413-5-D-M-60151 SH2		
413-5-D-M-60152 SH3		

LIST OF SUPPORTS		
SUPPORT MARK	REV.	OBSERVATIONS
5LBB10-BQ001	1	WELDED ELEMENTS
5LBB10-BQ002	1	
5LBB10-BQ003	1	
5LBB10-BQ004	1	
5LBB10-BQ005	1	
5LBB10-BQ006	1	
5LBB10-BQ008	1	

LINES No. = 5LBB10-BR001-24'-DB1e-N

PUBLIC POWER CORPORATION LAVRION V CC PP
DMKT 11 21 302

METKA HOT REHEAT STEAM SYSTEM
PIPING SUPPORT LOCATION (LB-02)

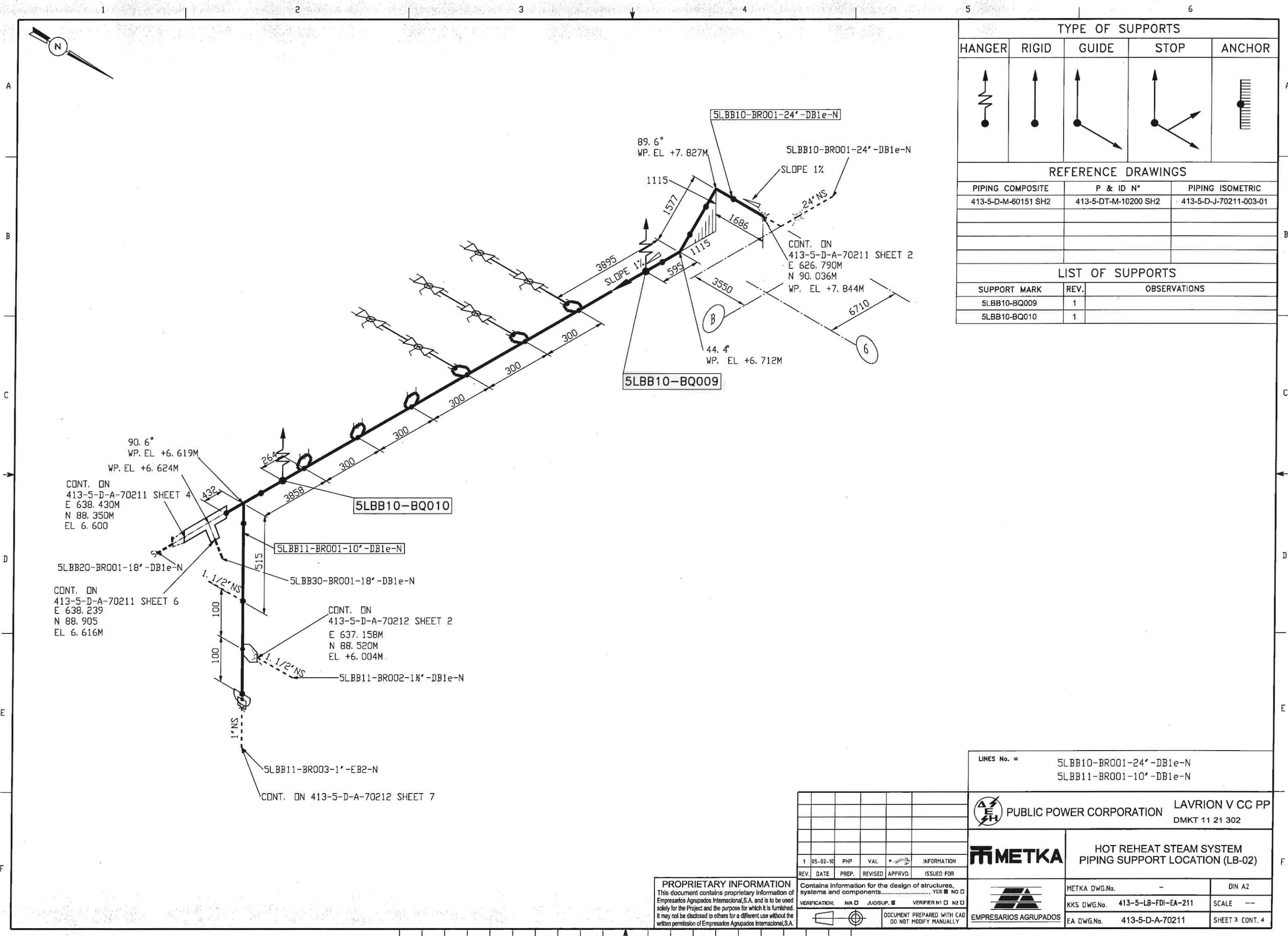
1	05-02-10	PHP	VAL	INFORMATION
REV.	DATE	PREP.	REVISED	APPROV.
VERIFICATION:	N/A	VERIFIER N1	N2	

PROPRIETARY INFORMATION
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Contains information for the design of structures, systems and components. YES ☐ NO ☐
DOCUMENT PREPARED WITH CAD
DO NOT MODIFY MANUALLY

METKA DWG.No.	-	DIN A2
KKS DWG.No.	413-5-LB-FDI-EA-211	SCALE --
EA DWG.No.	413-5-D-A-70211	SHEET 2 CONT. 3

413-5-D-A-70211-003-01



TYPE OF SUPPORTS				
HANGER	RIGID	GUIDE	STOP	ANCHOR

REFERENCE DRAWINGS		
PIPING COMPOSITE	P & ID N°	PIPING ISOMETRIC
413-5-D-M-60151 SH2	413-5-DT-M-10200 SH2	413-5-D-J-70211-003-01

LIST OF SUPPORTS		
SUPPORT MARK	REV.	OBSERVATIONS
5LBB10-BQ009	1	
5LBB10-BQ010	1	

LINES No. = 5LBB10-BR001-24'-DB1e-N
5LBB11-BR001-10'-DB1e-N

PUBLIC POWER CORPORATION LAVRION V CC PP
DMKT 11 21 302

METKA HOT REHEAT STEAM SYSTEM
PIPING SUPPORT LOCATION (LB-02)

1	05-02-10	PHP	VAL	INFORMATION
REV.	DATE	PREP.	REVISED	APPROV.
VERIFICATION:	N/A	YES	NO	VERIFIER N1 N2

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DOCUMENT PREPARED WITH CAD
DO NOT MODIFY MANUALLY

METKA DWG.No.	-	DIN A2
KKS DWG.No.	413-5-LB-FDI-EA-211	SCALE ---
EA DWG.No.	413-5-D-A-70211	SHEET 3 CONT. 4

1

2

3

4

5

6

TYPE OF SUPPORTS

HANGER	RIGID	GUIDE	STOP	ANCHOR

REFERENCE DRAWINGS

PIPING COMPOSITE	P & ID N°	PIPING ISOMETRIC
413-5-D-M-60151 SH2	413-5-DT-M-10200 SH2	413-5-D-J-70211-004-01

LIST OF SUPPORTS

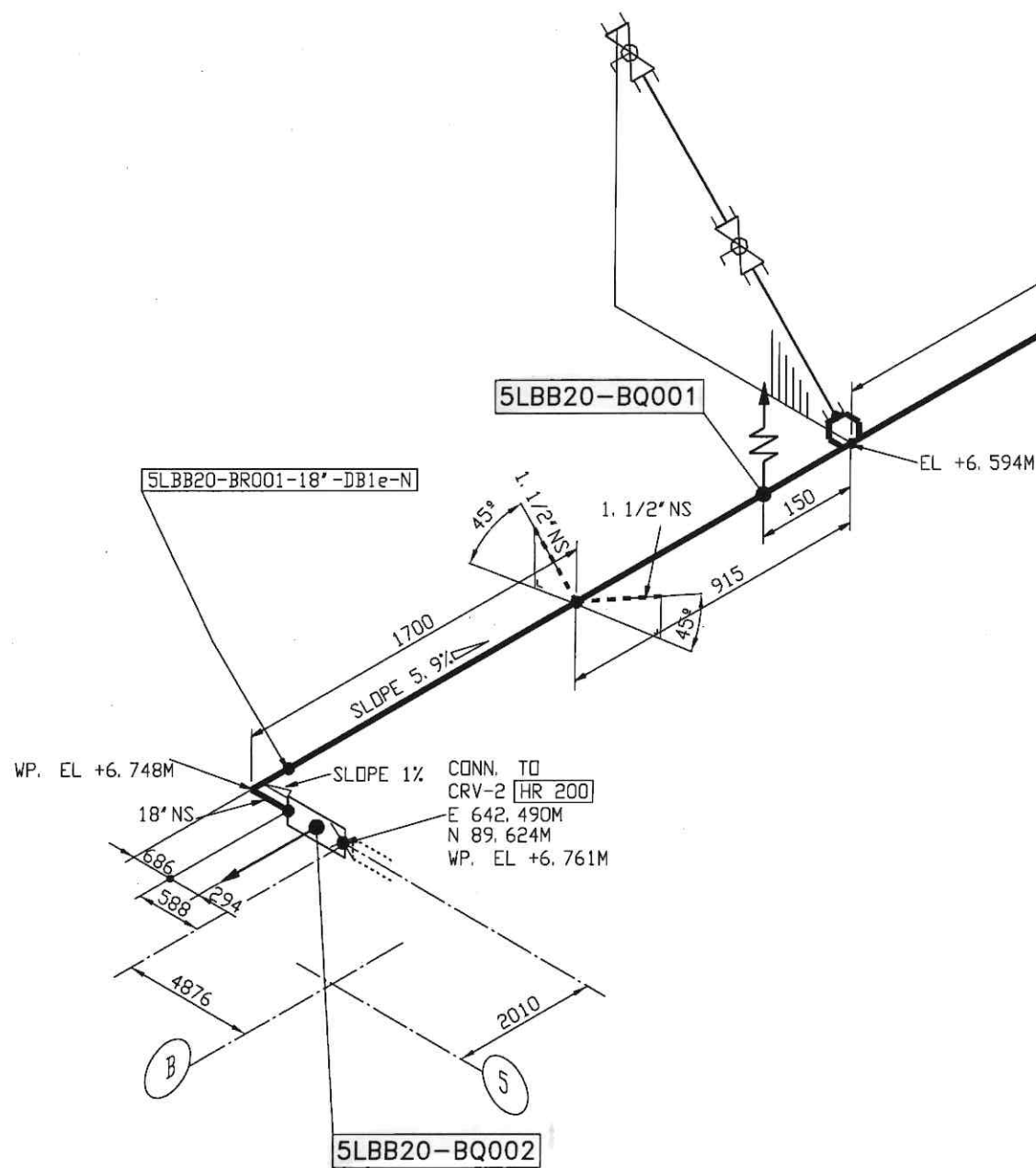
SUPPORT MARK	REV.	OBSERVATIONS
5LBB20-BQ001	1	
5LBB20-BQ002	1	

CONT. ON
413-5-D-A-70211 SHEET 3
E 638.430M
N 88.350M
EL. 6.600

5LBB10-BR001-24'-DB1e-N

CONT. ON
413-5-D-A-70211 SHEET 6

5LBB30-BR001-18'-DB1e-N



LINES No. =

5LBB20-BR001-18'-DB1e-N



PUBLIC POWER CORPORATION

LAVRION V CC PP
DMKT 11 21 302



HOT REHEAT STEAM SYSTEM
PIPING SUPPORT LOCATION (LB-02)



METKA DWG.No. --

DIN A2

KKS DWG.No. 413-5-LB-FDI-EA-211

SCALE --

EA DWG.No. 413-5-D-A-70211

SHEET 4 CONT. 5

PROPRIETARY INFORMATION

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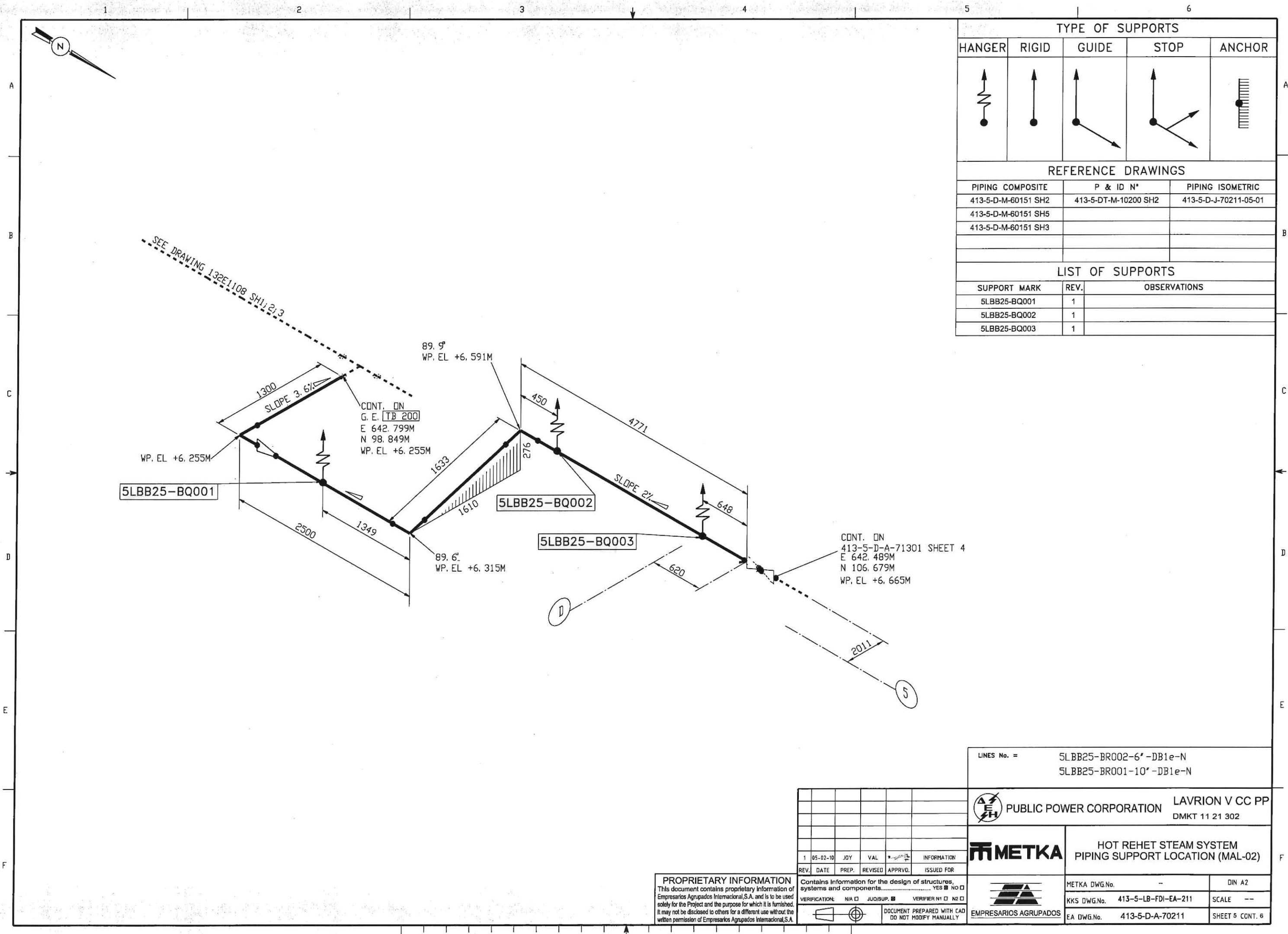
1 05-02-10 PHP VAL INFORMATION

REV. DATE PREP. REVISED APPRVD. ISSUED FOR

VERIFICATION: N/A ☐ JUC/SUP. ☒ VERIFIER N1 ☐ N2 ☐

DOCUMENT PREPARED WITH CAD
DO NOT MODIFY MANUALLY

413-5-D-A-70211-005-01



TYPE OF SUPPORTS				
HANGER	RIGID	GUIDE	STOP	ANCHOR
				
REFERENCE DRAWINGS				
PIPING COMPOSITE	P & ID N°		PIPING ISOMETRIC	
413-5-D-M-60151 SH2	413-5-DT-M-10200 SH2		413-5-D-J-70211-05-01	
413-5-D-M-60151 SH5				
413-5-D-M-60151 SH3				
LIST OF SUPPORTS				
SUPPORT MARK	REV.	OBSERVATIONS		
5LBB25-BQ001	1			
5LBB25-BQ002	1			
5LBB25-BQ003	1			

LINES No. =
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5LBB25-BR001-10'-DB1e-N

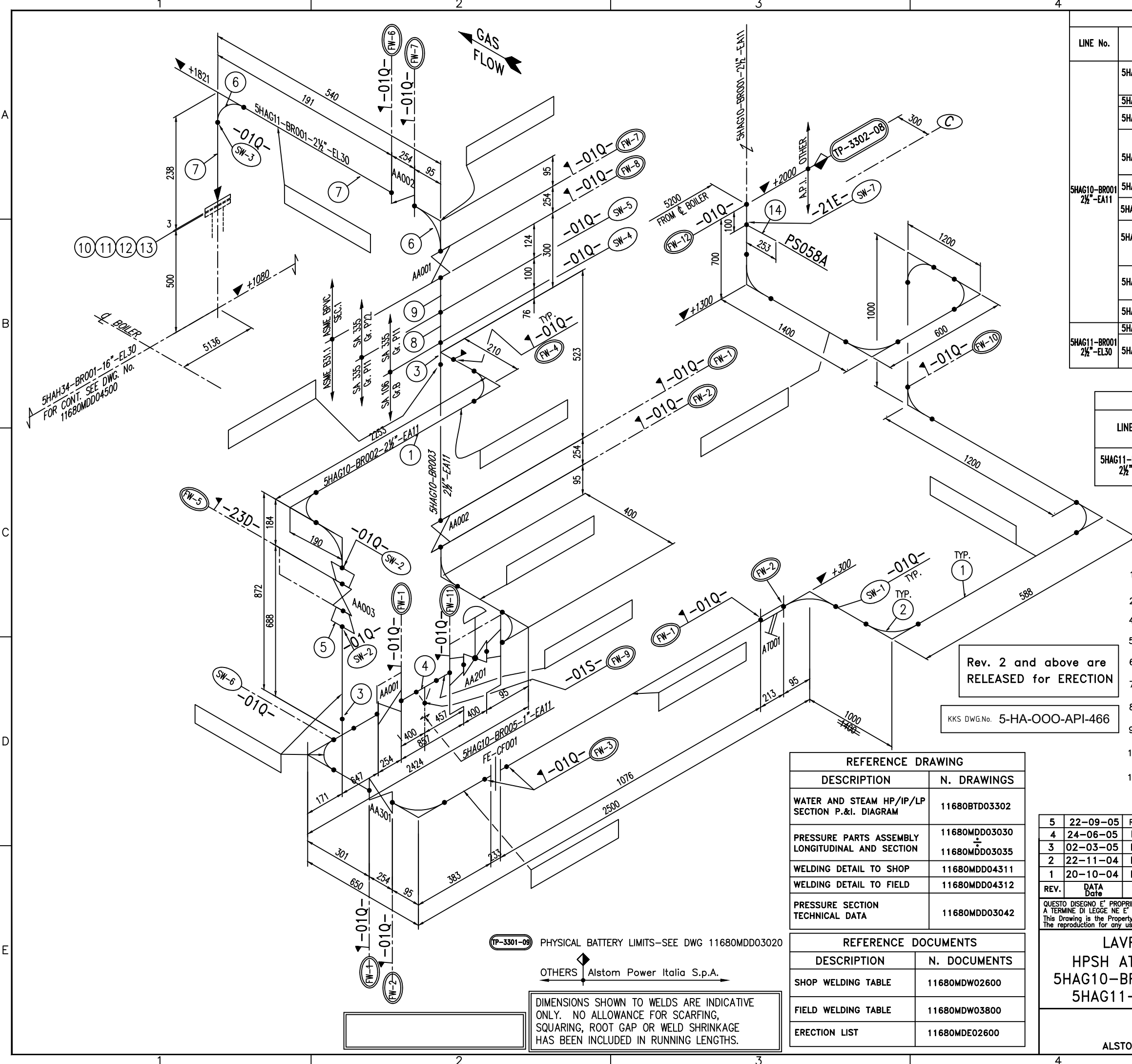
PUBLIC POWER CORPORATION
LAVRION V CC PP
DMKT 11 21 302

METKA
HOT REHET STEAM SYSTEM
PIPING SUPPORT LOCATION (MAL-02)

METKA DWG.No.	---	DIN A2
KKS DWG.No.	413-5-LB-FDI-EA-211	SCALE --
EA DWG.No.	413-5-D-A-70211	SHEET 5 CONT. 6

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1	05-02-10	JOY	VAL		INFORMATION
REV.	DATE	PREP.	REVISED	APPROVD.	ISSUED FOR
VERIFICATION:	N/A	JOISUP.		VERIFIER N1	N2
		DOCUMENT PREPARED WITH CAD DO NOT MODIFY MANUALLY			



SHOP FABRICATED MATERIAL									
LINE No.	SPOOL	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)
5HAG10-BR001 2½"-EA11	5HAG10-4361/A	1	PIPE	1	73	9.52 ±12.5%	4050	SA 106 Gr.B	61.4
		2	ELBOW 90°-LR	4	73	9.52 ±12.5%	-	SA 234 Gr. WPB	9.4
		14	PIPE	1	60.3	5.54 ±12.5%	253	SA 106 Gr.B	1.9
	5HAG10-4361/B	1	PIPE	1	73	9.52 ±12.5%	1650	SA 106 Gr.B	24.6
		5HAG10-4361/C	1	PIPE	1	73	9.52 ±12.5%	405	SA 106 Gr.B
	2		ELBOW 90°-LR	1	73	9.52 ±12.5%	-	SA 234 Gr. WPB	2.34
	5HAG10-4361/D	1	PIPE	1	73	9.52 ±12.5%	1080	SA 106 Gr.B	16.0
		2	ELBOW 90°-LR	1	73	9.52 ±12.5%	-	SA 234 Gr. WPB	2.34
		3	STRAIGHT TEE-BW	1	73	9.52 ±12.5%	-	SA 234 Gr. WPB	4
		5	SWAGE NIPPLE CONC.	1	2½"x2"	sch. 160	-	SA 106 Gr.B	1
	5HAG10-4361/E	1	PIPE	1	73	9.52 ±12.5%	650	SA 106 Gr.B	9.7
		4	REDUCING TEE-BW	1	2½"x2½"x1"	sch. 160	-	SA 234 Gr. WPB	3.5
	5HAG10-4361/F	2	ELBOW 90°-LR	1	73	9.52 ±12.5%	-	SA 234 Gr. WPB	2.34
		5HAG10-4361/G	1	PIPE	1	73	9.52 ±12.5%	210	SA 106 Gr.B
	1		PIPE	1	73	9.52 ±12.5%	406	SA 106 Gr.B	6.2
	8		PIPE	1	73	9.52 ±12.5%	100	SA 335 Gr. P11	1.4
	9		PIPE	1	73	9.52 ±12.5%	124	SA 335 Gr. P22	2
	5HAG10-4361/H	3	STRAIGHT TEE-BW	1	73	9.52 ±12.5%	-	SA 234 Gr. WPB	4
		1	PIPE	1	73	9.52 ±12.5%	2200	SA 106 Gr.B	32.7
		2	ELBOW 90°-LR	3	73	9.52 ±12.5%	-	SA 234 Gr. WPB	7
5		SWAGE NIPPLE CONC.	1	2½"x2"	sch. 160	-	SA 106 Gr.B	1	
5HAG10-4361/L	1	PIPE	1	73	9.52 ±12.5%	2250	SA 106 Gr.B	34	
	2	ELBOW 90°-LR	4	73	9.52 ±12.5%	-	SA 234 Gr. WPB	9.4	
5HAG11-BR001 2½"-EL30	5HAG11-4361/A	6	ELBOW 90°-LR	1	73	9.52 ±12.5%	-	SA 234 Gr. WP91	2.34
		6	ELBOW 90°-LR	1	73	9.52 ±12.5%	-	SA 234 Gr. WP91	2.34
	5HAG11-4361/B	7	PIPE	1	73	9.52 ±12.5%	200	SA 335 Gr. P91	3
		10	FLG W.N. 1500# RF	1	2½"	9.52 ±12.5%	-	SA 182 Gr. F91	16.5

ERECTION BOLTS LIST AND GASKETS								
LINE No.	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)
5HAG11-BR001 2½"-EL30	11	S. WOUND GASKET 1500# RF	1	2½"	-	-	SA 304 GRAPHITE	-
	12	STUD BOLTS	8	ø1"	-	170	SA 193 B16	6
	13	NUTS	16	ø1"	-	-	SA 194 4	3
TOTAL WEIGHT								9

- NOTES:
- 1) ASME B31.1 ED.2001 + ADD. 2002 AND DIRECTIVE 97/23/EC (P.E.D.)
 - 2) ALL DIMENSIONS ARE IN mm, UNLESS WHERE OTHERWISE INDICATED
 - 4) ① DENOTE ITEM NUMBER
 - 5) XXXXXX-YYYY/Z = SPOOL MK. No.
 - 6) ▲ SHOWS FIELD WELDS
 - 7) (SW...) DENOTES SHOP WELDING NUMBER
 - 8) (FW...) DENOTES FIELD WELDING NUMBER
 - 9) ALL TOLERANCES, EXCEPT WHERE OTHERWISE INDICATED, ARE ACCORDING TO UNI EN 22768.1/M
 - 10) PIPE MATERIAL PROCUREMENT AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDR02600
 - 11) -05- DENOTES DETAIL OF WELD ACCORDING DWG. 11680MDD04311 AND DWG. 11680MDD04312

REFERENCE DRAWING	
DESCRIPTION	N. DRAWINGS
WATER AND STEAM HP/IP/LP SECTION P.&I. DIAGRAM	11680BTD03302
PRESSURE PARTS ASSEMBLY LONGITUDINAL AND SECTION	11680MDD03030 11680MDD03035
WELDING DETAIL TO SHOP	11680MDD04311
WELDING DETAIL TO FIELD	11680MDD04312
PRESSURE SECTION TECHNICAL DATA	11680MDD03042

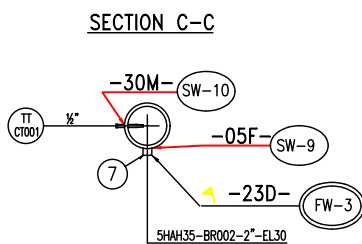
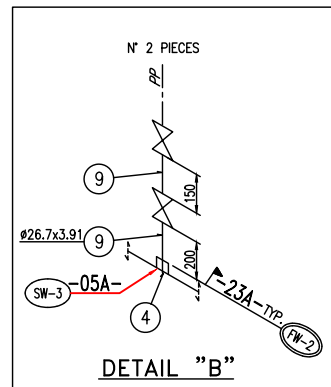
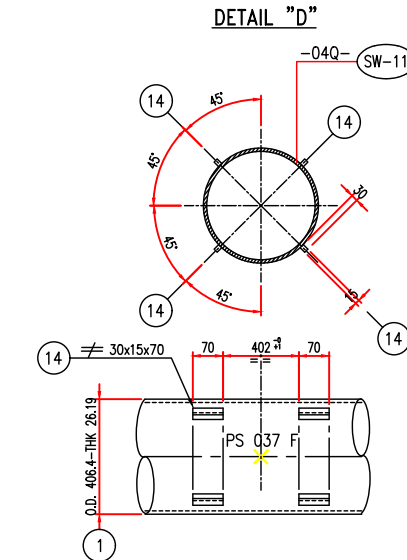
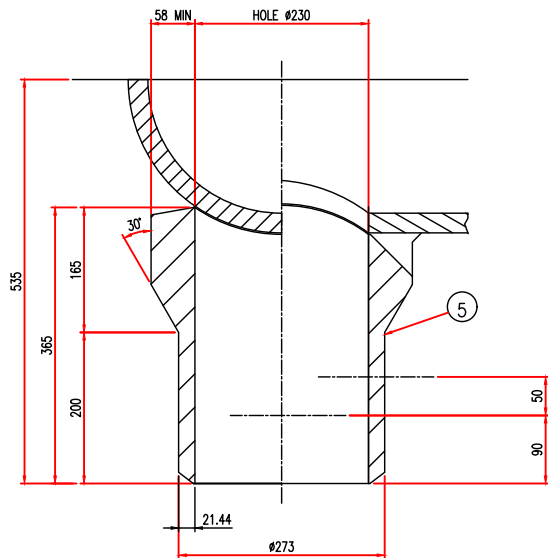
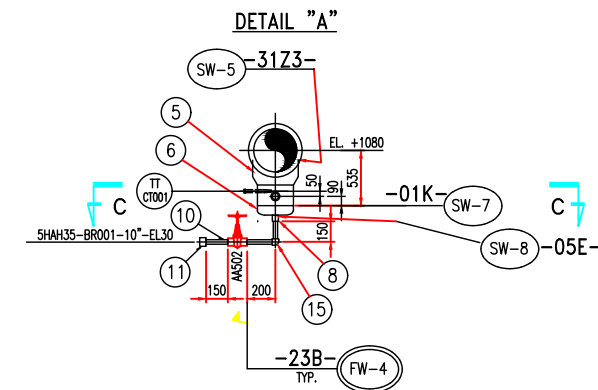
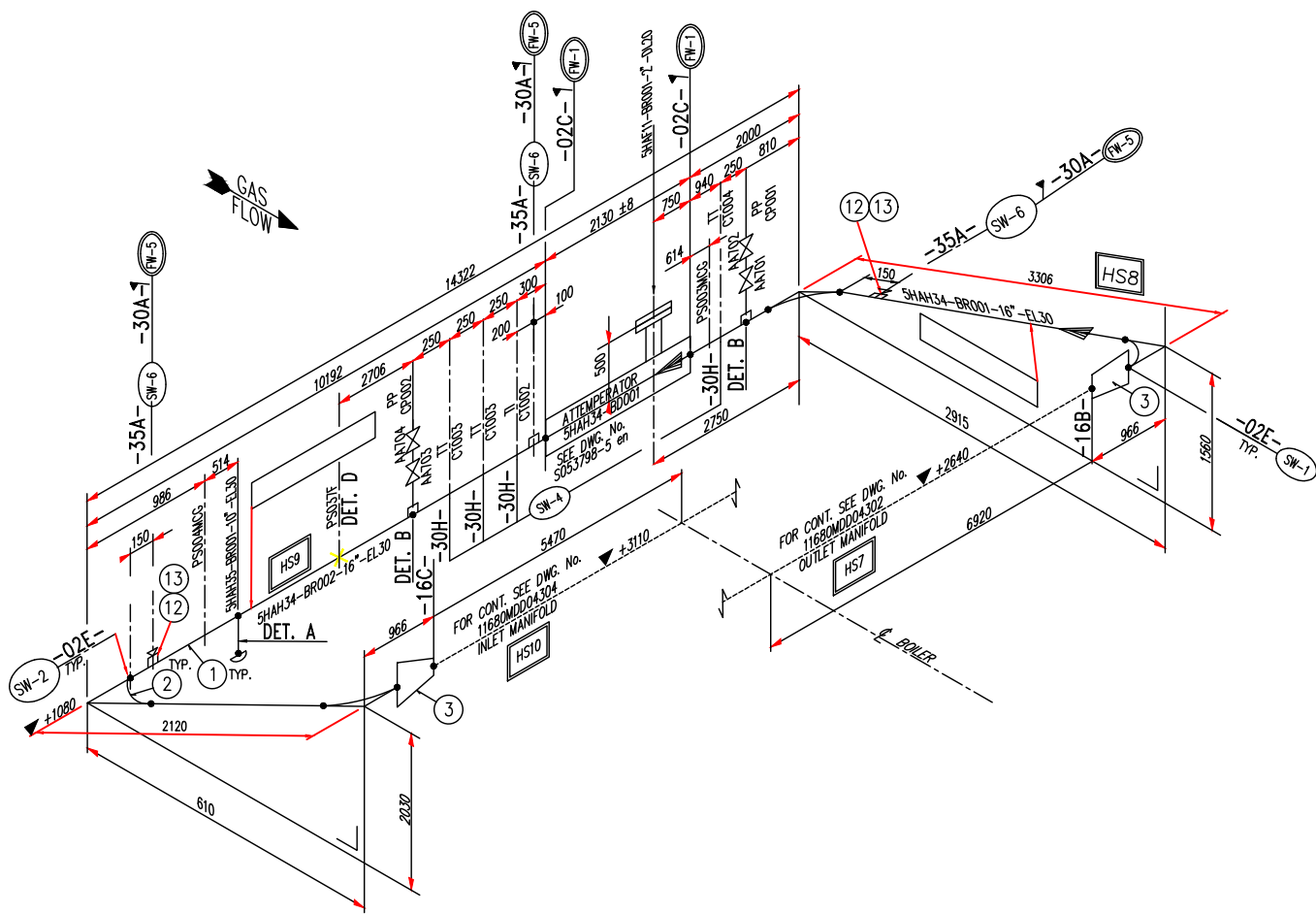
REFERENCE DOCUMENTS	
DESCRIPTION	N. DOCUMENTS
SHOP WELDING TABLE	11680MDW02600
FIELD WELDING TABLE	11680MDW03800
ERECTION LIST	11680MDE02600

5	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.
4	24-06-05	REVISED SEE CLOUD AS PER NCR 56	A.S.	A.R.	A.N.
3	02-03-05	REVISED WHERE INDICATED 3	M.B.	A.R.	A.N.
2	22-11-04	REVISED WHERE INDICATED 2	M.B.	A.R.	A.N.
1	20-10-04	REVISED UPDATED	M.B.	A.R.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	DIS. Dwg.	CONTR. Checked	VISTO Approv.
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI. This Drawing is the Property of ALSTOM Power Italia S.p.A. The reproduction for any use by a third party is forbidden by law.			SCALA Scale	FIRME/Signature	DATA/Date
LAVRION - METKA HPSH ATTEMPERING WATER 5HAG10-BR001/2/3-2 1/2\"-EA11 5HAG11-BR001-2 1/2\"-EL30			//	DIS./Dwg. T.S.I.	03/9/04
				CONTR./Check. A.R.	13/9/04
				VISTO/Approv. A.N.	22/9/04
ALSTOM ALSTOM Power Italia S.p.A.			RIFERIMENTO N. Reference N.		
			N°. DISEGNO/Drawing No.		
			11680MDD04361		
			REV.	1/2/3/4/5	

(TP-3301-09) PHYSICAL BATTERY LIMITS-SEE DWG 11680MDD03020

OTHERS Alstom Power Italia S.p.A.

DIMENSIONS SHOWN TO WELDS ARE INDICATIVE ONLY. NO ALLOWANCE FOR SCARFING, SQUARING, ROOT GAP OR WELD SHRINKAGE HAS BEEN INCLUDED IN RUNNING LENGTHS.



SHOP FABRICATED MATERIAL										
IDENTIF. COMPON. (NOTE 3)	LINE No.	SPOOL	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)
HS8	SHAH34-BR001 16"-EL30	5HAH34-4500/A	1	PIPE	1	406.4	26.19 ±12.5%	3494	SA 335 Gr. P91	857.7
			2	ELBOW 90°-LR	2	406.4	26.19 ±12.5%	-	SA 234 Gr. WP91	490.8
			3	CONCENTRIC REDUCING-BW	1	14"x16"	sch. 100	-	SA 234 Gr. WP91	90.8
			4	HALF COUPLING-SW	1	83/4"	6000#	-	SA 182 Gr. F91	0.5
			12	HALF COUPLING-NPT	1	811/2"	6000#	-	SA 182 Gr. F91	1.7
HS9	SHAH34-BR002 16"-EL30	5HAH34-4500/B	13	ROUND HEAD PLUG NPT	1	811/2"	6000#	-	SA 182 Gr. F91	1.2
			1	PIPE	1	406.4	26.19 ±12.5%	9321	SA 335 Gr. P91	2288.3
			2	ELBOW 90°-LR	2	406.4	26.19 ±12.5%	-	SA 234 Gr. WP91	490.8
			3	CONCENTRIC REDUCING-BW	1	14"x16"	sch. 100	-	SA 234 Gr. WP91	90.8
			4	HALF COUPLING-SW	1	83/4"	6000#	-	SA 182 Gr. F91	0.5
			5	FORGING	1	8346	58 MIN.	365	SA 182 Gr. F91	153
			6	CAP-BW	1	8273	21.44	-	SA 234 Gr. WP91	24.8
			7	HALF COUPLING-SW	1	82"	6000#	-	SA 182 Gr. F91	2.9
			8	HALF COUPLING-SW	1	81"	6000#	-	SA 182 Gr. F91	0.9
			12	HALF COUPLING-NPT	1	811/2"	6000#	-	SA 182 Gr. F91	1.7
			13	ROUND HEAD PLUG-NPT	1	811/2"	6000#	-	SA 182 Gr. F91	1.2
			14	PLATE 30x15	8	-	-	70	SA 387 Gr.91 CL2	1.0

SITE FABRICATED MATERIAL										
LINE No.	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)		
SHAH34-BR001 16"-EL30	9	PIPE	1	26.7	3.91 ±12.5%	400	SA 335 Gr. P91	0.8		
SHAH34-BR002 16"-EL30	9	PIPE	1	26.7	3.91 ±12.5%	400	SA 335 Gr. P91	0.8		
SHAH35-BR001 10"-EL30	10	PIPE	1	81"	4.55 ±12.5%	400	SA 335 Gr. P91	1.3		
	11	CAP-SW	1	33.4	6000#	-	SA 182 F91	1.3		
	15	ELBOW 90°-SW	1	33.4	6000#	-	SA 182 F91	1.3		
								TOTAL WEIGHT		

NOTES:

- ASME CODE SECTION I, ED.2001 + ADD.2003 AND DIRECTIVE 97/23/EC (P.E.D.)
- ALL DIMENSIONS ARE IN mm, UNLESS WHERE OTHERWISE INDICATED
- TO SHOW IDENTIFICATION COMPONENTS ACCORDING TO ANALYSIS LETTER N° 11680BTX16060
- DENOTE ITEM NUMBER
- = SPOOL MK. No.
- SHOWS FIELD WELDS
- DENOTES SHOP WELDING NUMBER
- DENOTES FIELD WELDING NUMBER
- ALL TOLERANCES, EXCEPT WHERE OTHERWISE INDICATED, ARE ACCORDING TO UNI EN 22768.1/M
- PIPE MATERIAL PROCUREMENT AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDR02600
- 05- DENOTES DETAIL OF WELD ACCORDING DWG. 11680MDD04311 AND DWG. 11680MDD04312

Rev. 5 and above are
RELEASED for ERECTION

KKS DWG.No. 5-HA-000-API-169

REFERENCE DOCUMENTS	
DESCRIPTION	N. DOCUMENTS
SHOP WELDING TABLE	11680MDW02600
FIELD WELDING TABLE	11680MDW03800
ERECTION LIST	11680MDE02600

REFERENCE DRAWING	
DESCRIPTION	N. DRAWINGS
WATER AND STEAM HP SECTION P.&I. DIAGRAM	11680BTD03302
PRESSURE PARTS ASSEMBLY LONGITUDINAL AND SECTION	11680MDD03030 11680MDD03035
WELDING DETAIL TO SHOP	11680MDD04311
WELDING DETAIL TO FIELD	11680MDD04312
PRESSURE SECTION TECHNICAL DATA	11680MDD03042

7	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.
6	23-12-04	REVISED WHERE INDICATED	A.S.	A.R.	A.N.
5	08-11-04	REVISED WHERE INDICATED	A.S.	A.R.	A.N.
4	30-10-04	REVISED WHERE INDICATED	A.S.	A.R.	A.N.
3	25-10-04	REVISED WHERE INDICATED	M.B.	A.R.	A.N.
2	20-10-04	REMOVED HOLD AND REVISED WHERE INDICATED	M.B.	A.R.	A.N.
1	05-10-04	REVISED WHERE INDICATED	P.V.	A.R.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	DIS. Drawg.	CONTR. Checked	VISTO/Approv.
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI. This drawing is the property of ALSTOM Power Italia S.p.A. The reproduction for any use by a third party is forbidden by law.					
LAVRION - METKA HPSH DESUPERHEATER 5HAH34-BR001/2-16"-EL30 5HAH35-BR001-10"-EL30			FIRME/Signature DIS./Drawg. T.S.I. 23/8/04 CONTR./Check. A.R. 25/8/04 VISTO/Approv. A.N. 25/8/04		
RIFERIMENTO N. Reference N.			N°. DISEGNO/Drawing No.		
11680MDD04500			TAV. / DI Sh. / of		
ALSTOM			25/8/04		
ALSTOM Power Italia S.p.A.			REV. 1/2/3/4/5/6/7		

DIMENSIONS SHOWN TO WELDS ARE INDICATIVE ONLY. NO ALLOWANCE FOR SCARFING, SQUARING, ROOT GAP OR WELD SHRINKAGE HAS BEEN INCLUDED IN RUNNING LENGTHS.

A

B

C

D

E

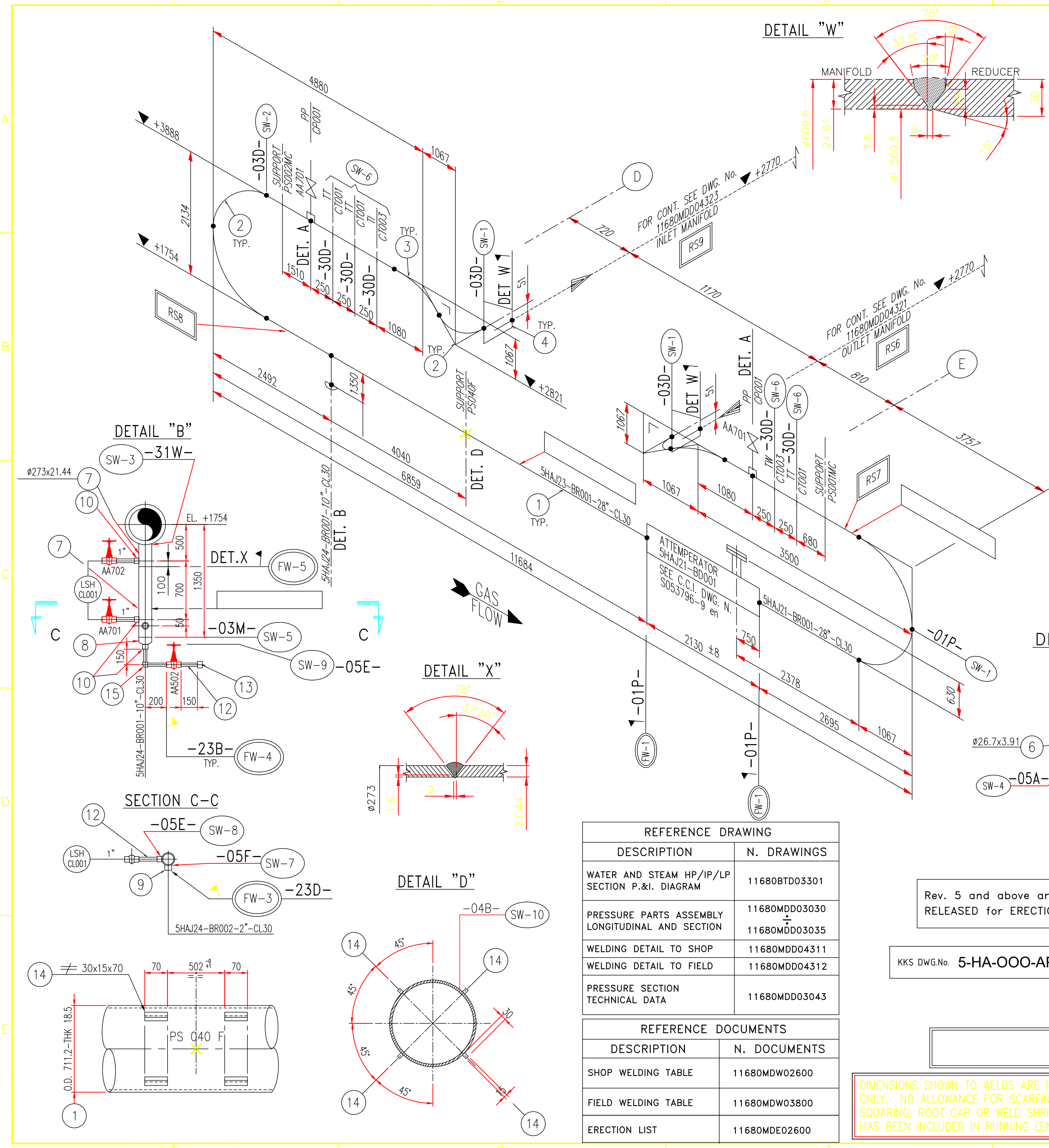
A

B

C

D

E



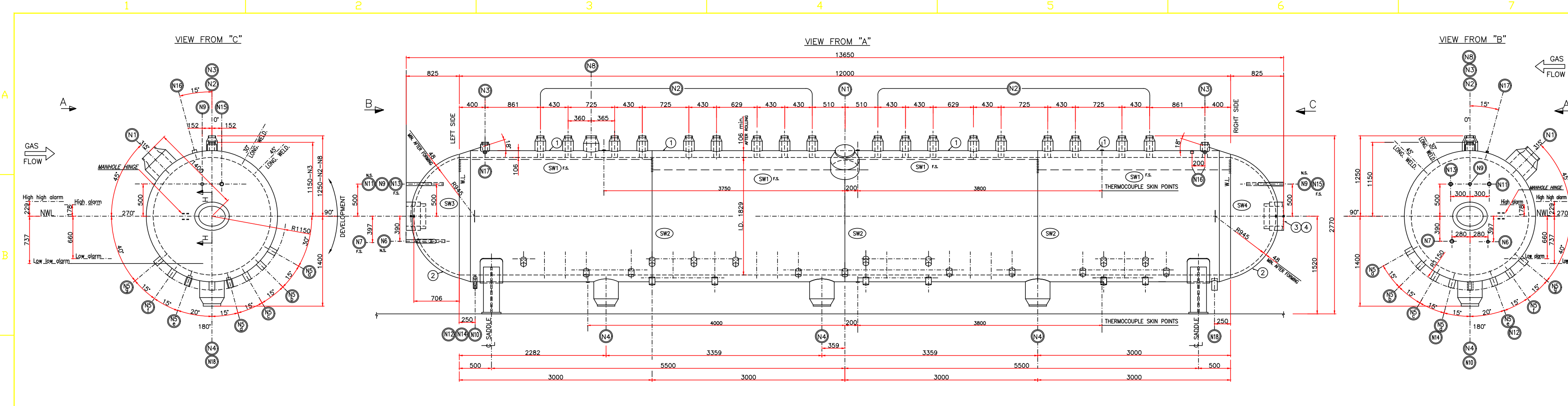
SHOP FABRICATED MATERIAL											
IDENTIF. COMPON. (NOTE 3)	LINE No.	SPOOL	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)	
RS 7	5HAJ21-BR001 28"-CL30	5HAJ21-4505/A	1	PIPE	1	711.2	18.5 Min.	3620	SA 335 Gr. P91	1143.6	
			2	ELBOW 90°-LR	3	711.2	17 ±12.5%	-	SA 234 Gr. WP91	1606.5	
			3	ELBOW 45°-LR	1	711.2	17 ±12.5%	-	SA 234 Gr. WP91	268.6	
			4	ECCENTRIC REDUCING-BW	1	28"x24"	18.5xsch. 60	-	SA 234 Gr. WP91	185	
			5	HALF COUPLING-SW	1	Ø3/4"	6000#	-	SA 182 Gr. F91	1.4	
RS 8	5HAJ23-BR001 28"-CL30	5HAJ23-4505/A	1	PIPE	1	711.2	18.5 Min.	8705	SA 335 Gr. P91	2750	
			2	ELBOW 90°-LR	3	711.2	17 ±12.5%	-	SA 234 Gr. WP91	1606.5	
			3	ELBOW 45°-LR	1	711.2	17 ±12.5%	-	SA 234 Gr. WP91	268.6	
			4	ECCENTRIC REDUCING-BW	1	28"x24"	18.5xsch. 60	-	SA 234 Gr. WP91	185	
			5	HALF COUPLING-SW	1	Ø3/4"	6000#	-	SA 182 Gr. F91	1.4	
			7	PIPE	1	273	21.44 ±12.5%	300	SA 335 Gr. P91	39.9	
			10	HALF COUPLING-SW	1	Ø1"	6000#	70	SA 387 Gr.91 CL.2	0.5	
	5HAJ24-BR001 10"-CL30	5HAJ24-4505/A	7	PIPE	1	273	21.44 ±12.5%	850	SA 335 Gr. P91	112.9	
			8	CAP	1	273	15.09 ±12.5%	-	SA 182 Gr. F91	2.9	
			9	HALF COUPLING-SW	1	Ø2"	6000#	-	SA 182 Gr. F91	1	
10			HALF COUPLING-SW	2	Ø1"	6000#	70	SA 387 Gr.91 CL.2	1		
14			PLATE 30x15x70	8	-	-	70	SA 387 Gr.91 CL.2	1		

SITE FABRICATED MATERIAL						
LINE No.	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	WEIGHT (Kg)
5HAJ21-BR001-28"-CL30	6	PIPE	1	26.7	3.91 ±12.5%	0.4
5HAJ24-BR001-10"-CL30	6	PIPE	1	26.7	3.91 ±12.5%	0.4
	12	PIPE	1	33.4	4.55 ±12.5%	3.5
	13	CAP-SW	1	Ø1"	6000#	0.5
	15	ELBOW 90°-SW	1	Ø1"	6000#	0.5
						TOTAL WEIGHT
						5.5

NOTES:

- ASME CODE SECTION I, ED.2001 + ADD.2003 AND DIRECTIVE 97/23/EC (P.E.D.)
- ALL DIMENSIONS ARE IN mm, UNLESS WHERE OTHERWISE INDICATED
- xx 10 TO SHOW IDENTIFICATION COMPONENTS ACCORDING TO ANALYSIS LETTER N° 11680BTX16060
- ① DENOTE ITEM NUMBER
- XXXXXX-YYYY/Z = SPOOL MK. No.
- ▲ SHOWS FIELD WELDS
- SW... DENOTES SHOP WELDING NUMBER
- FW... DENOTES FIELD WELDING NUMBER
- ALL TOLERANCES, EXCEPT WHERE OTHERWISE INDICATED, ARE ACCORDING TO UNI EN 22768.1/M
- PIPE MATERIAL PROCUREMENT AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDR02600
- 05- DENOTES DETAIL OF WELD ACCORDING DWG. 11680MDD04311 AND DWG. 11680MDD04312

8	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.
7	04-02-05	ADDED SPOOL MK. 5HAJ24-4505/A	A.S.	A.R.	A.N.
6	23-12-04	REVISED WHERE INDICATED	P.M.	A.R.	A.N.
5	23-11-04	REVISED WHERE INDICATED	P.M.	A.R.	A.N.
4	08-11-04	REVISED WHERE INDICATED	A.S.	A.R.	A.N.
3	25-10-04	REVISED WHERE INDICATED	M.B.	A.R.	A.N.
2	20-10-04	REMOVED HOLD AND REVISED WHERE INDICATED	M.B.	A.R.	A.N.
1	05-10-04	REVISED WHERE INDICATED	P.V.	A.R.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	DIS. Dwg.	CONTR. Checked	VISTO Approv.
LAVRION - METKA RH STEAM DESUPERHEATER 5HAJ21-BR001-28"-CL30 5HAJ23-BR001-28"-CL30 ALSTOM ALSTOM Power Italia S.p.A.			SCALA Scale	FIRME/Signature	DATA/Date
			//	DIS./Dwg. T.S.I.	3/9/04
				CONTR./Check. A.R.	24/9/04
				VISTO/Approv. A.N.	30/9/04
			RIFERIMENTO N. Reference N.		
			N°. DISEGNO/Drawing No.		TAV. / DI
			11680MDD04505		
			REV.	1 2 3 4 5 6 7 8	



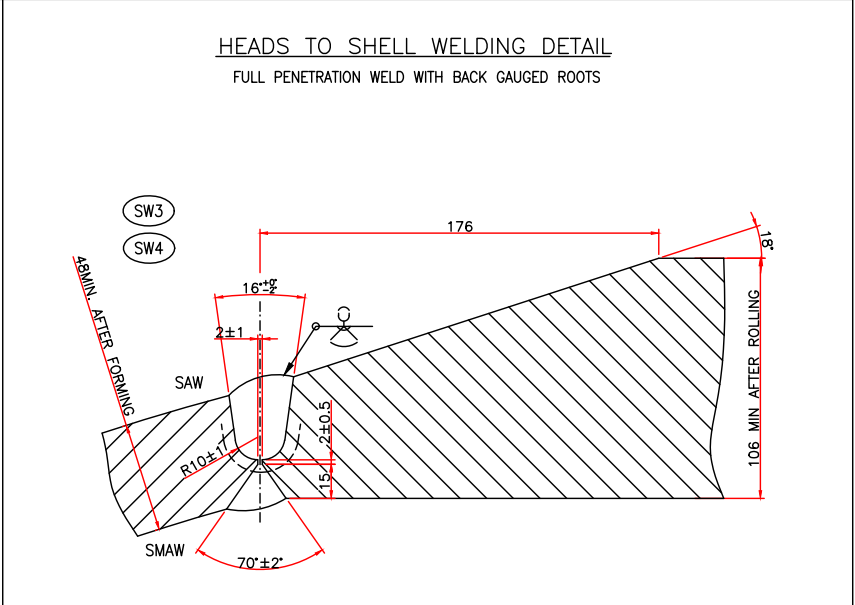
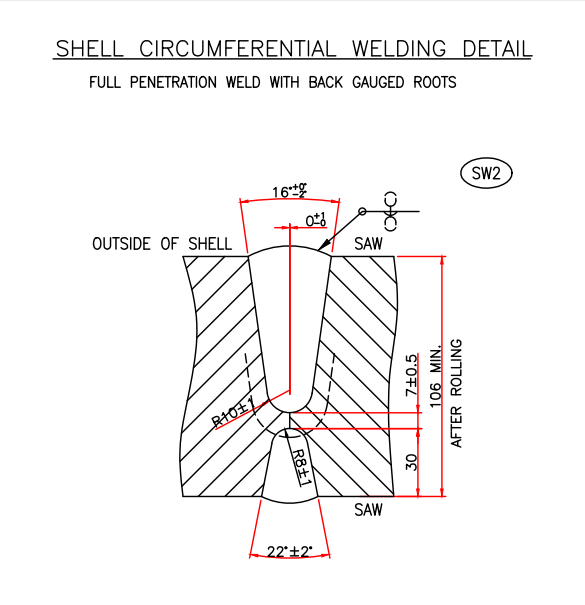
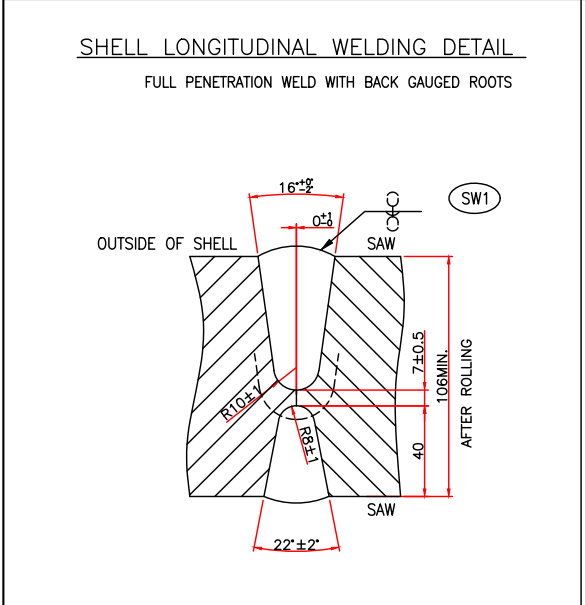
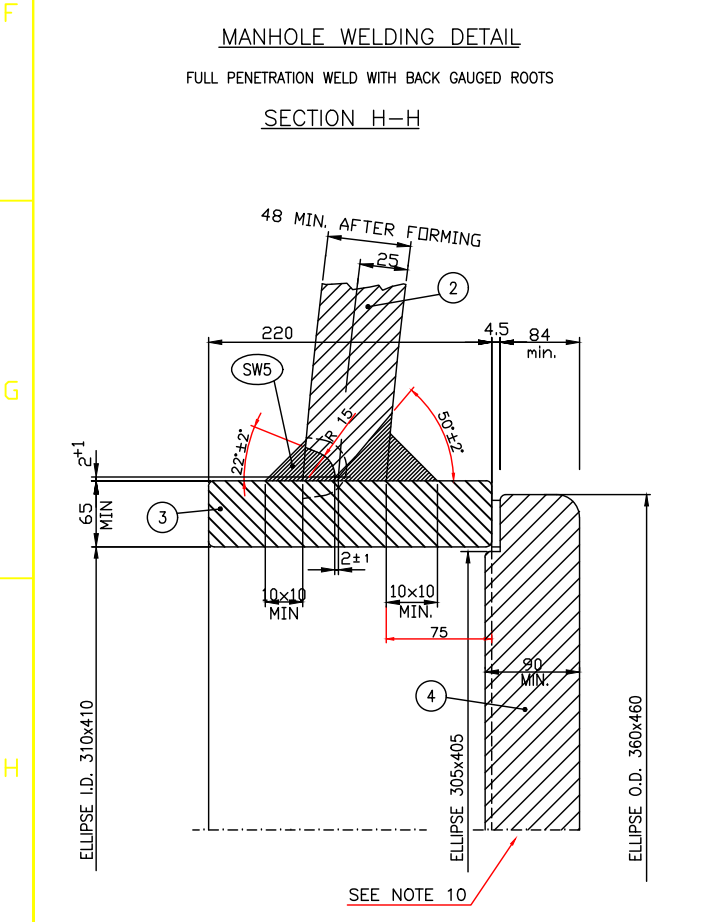
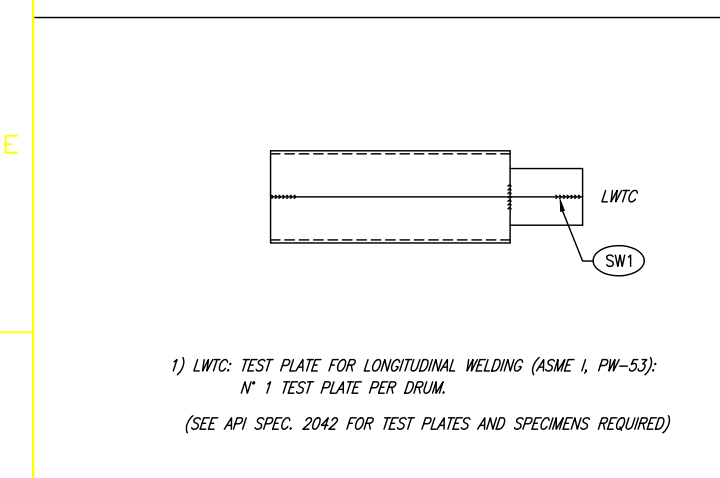
- NOTES**
- 1) DRUM TO BE BUILT IN ACCORDANCE WITH A.S.M.E. SECTION 1, PLUS THE SPECIFICATION (OF API AND/OR OF THE CLIENT) CALLED BY IN THE PURCHASE ORDER
 - 2) DESIGN PRESSURE IS 124 BAR G AT 328°C (1798 PSIG AT 622 °F)
 - 3) THE QUANTITIES SPECIFIED ARE FOR ONE (1) UNIT ; (1) UNIT ON CONTRACT
 - 4) ALL DIMENSIONS ARE IN MILLIMETRES , EXCEPT WHERE OTHERWISE INDICATED
 - 5) ALL NON-PRESSURE PARTS TO BE WELDED ON PRESSURE PARTS ARE MADE BY WELDABLE MATERIAL (SA 36, OR EQUIVALENT).
 - 6) THICKNESS OF PLATES AND FORGINGS IS THE MINIMUM FINISHED THICKNESS REQUIRED, UNLESS OTHERWISE NOTED; THE NOMINAL THICKNESS OF PIPES HAS A TOLERANCE $\pm 12.5\%$
 - 7) TOLERANCES AS PER UNI-2768 m, EXCEPT WHERE OTHERWISE NOTED
 - 8) DRILLING TOLERANCES :
 - ON LONGITUDINAL PITCHES, ± 1 MM (NOT CUMULATIVE)
 - ON CIRCUMFERENTIAL PITCHES, ± 2 MM ON THE LENGTH MEASURED ON THE ACTUAL O.D. FOR THE ANGULAR SPACING INDICATED
 - 9) ALL THE CIRCUMFERENTIAL DIMENSIONS ARE BASED ON THE O.D. OF THE SHELL DUE TO THE MINIMUM PLATE THICKNESS . THE SUPPLIER MUST DETERMINE THEM IN ACCORDANCE WITH THE ANGULAR SPACING INDICATED TAKING INTO ACCOUNT THE ACTUAL O.D.
 - 10) MANHOLE COVER PLATES MUST BE PLACED INSIDE THE DRUM BEFORE ATTACHING THE HEADS
 - 11) FOR THE NOZZLES, THE SUPPLIER SHALL PROVIDE THE EXTRA LENGTH NECESSARY TO ACCOMMODATE THE TEMPORARY PLUGS FOR THE SHOP TEST, AND THE CONNECTIONS NECESSARY
 - 12) SHARP EDGE MUST BE REMOVED ON ALL NOZZLE PENETRATIONS.
 - 13) DRUM PLATES SHALL BE SUPPLIED BY ONE AND THE SAME MANUFACTURER.
 - 14) DRUM MATERIALS PROCUREMENTS AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDR02000 .
- ITEM NUMBER
□ ERECTION ITEM NUMBER
● WELDING NUMBER

DESIGN AND TECHNICAL DATA			
DESIGN PRESSURE	124	bar g	
HYDROSTATIC TEST PRESSURE	186	bar g	
DESIGN TEMPERATURE	328	°C	
FLUID	WATER		
PHYSICAL STATE OF FLUID	WATER+STEAM		
CORROSION ALLOWANCE	2	mm	
CAPACITY	34,000	l	
VESSEL EMPTY (SHELL+HEADS+MANHOLE including SKID+INSTRUMENTS excluded)	67,000	Kg	
VESSEL FULL WATER	101,000	Kg	
REFERENCE CODE	ASME SECT. I, VIII-1+II+III 2003 & E.C. DIRECTIVE 97/23 (P.E.D.)		
AUTHORITY INSPECTION	BUREAU VERITAS		
BUILT YEAR	2004		
API SERIAL NUMBER	98/1		
HOLE LIGAMENT EFFICIENCY %	LONGITUDINAL 89.8		
CODE CASES USED	CIRCUMFERENTIAL 100		

COMPONENTS				COVER PLATE			
Item	N°	Denominaz.	L.D. mm	Thk. mm	Material	Item	N°
1	4	SHELL	1829	106 min.	SA 516-70	4	2
2	2	HEADS	N.A.	48 min.	SA 516-70		
3	2	MANHOLE RING	310x410	65 min.	SA 105		

NOZZLES					
Item	N°	Service	O.D. mm	Thk. mm	Material
N1	1	FEEDWATER INLET (10")	254	78 MIN	SA 105
N2	18	STEAM OUTLET (4")	101.6	40 MIN	SA 105
N3	2	SAFETY VALVE (3"-900#)	152.4	36.5 MIN	SA 105
N4	3	DOWNCOMERS (10")	254	70 MIN	SA 105
N5	69	RISERS (3")	76.2	11.13	SA 106 B
N6	1	CHEMICAL FEED (1")	25.4	10.16	SA 106 B
N7	1	CONTINUOUS BLOWDOWN (2")	50.8	8.89	SA 106 B
N8	1	PEGGING STEAM TO IP DRUM (6")	152.4	52 MIN	SA 105
N9	2	LEVEL GAGE UPPER TAPS	12.7	7.14	SA 106 B
N10	1	LEVEL GAGE LOWER TAPS	12.7	7.14	SA 106 B
N11	1	L.L. LEVEL SWITCH UPPER TAPS	12.7	7.14	SA 106 B
N12	1	L.L. LEVEL SWITCH LOWER TAPS	12.7	7.14	SA 106 B
N13	1	H.H. LEVEL SWITCH UPPER TAPS	12.7	7.14	SA 106 B
N14	1	H.H. LEVEL SWITCH LOWER TAPS	12.7	7.14	SA 106 B
N15	1	HYDRAULIC COLUMN UPPER TAPS	12.7	7.14	SA 106 B
N16	2	PRESSURE TRANSMITTER CONNECTIONS	12.7	12.5	SA 105
N17	1	PRESSURE INDICATOR CONNECTION	12.7	12.5	SA 105
N18	1	HYDRAULIC COLUMN LOWER TAPS	12.7	11.13	SA 106 B

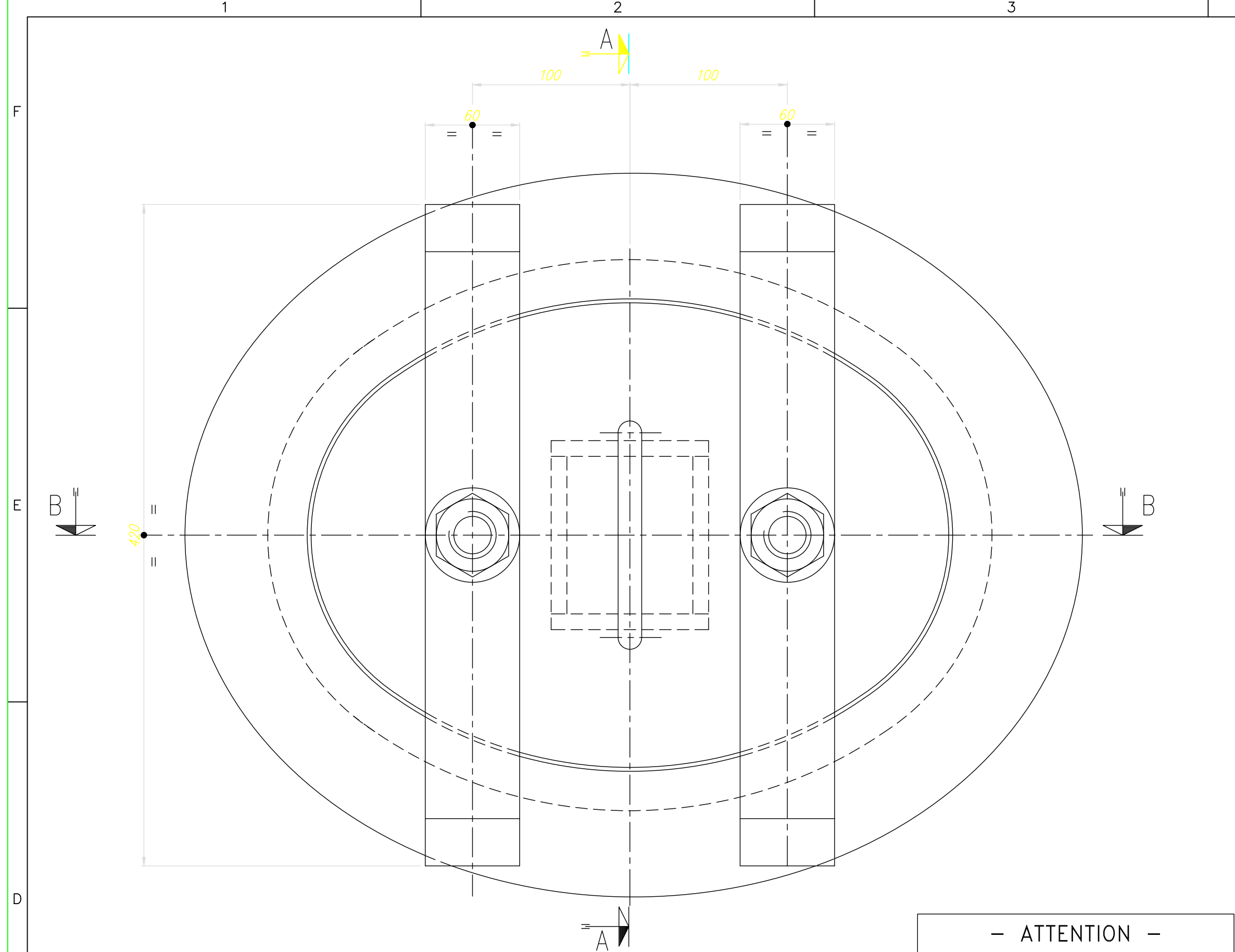
- DRAWINGS AND REFERENCE DOCUMENTS:**
- 11680MDR02000 H.P. STEAM DRUM-MATERIAL REQUISITION
 - 11680MDD02000 H.P. STEAM DRUM-SHIPING AND ERECTION LIST
 - 11680MDW02000 H.P. STEAM DRUM-WELDING TABLE
 - 11680MDD02005 H.P. STEAM DRUM-MANHOLE COVER DRAWING
 - 11680MDD02006 H.P. STEAM DRUM-MANHOLE COVER HANGER
 - 11680MDD02050 H.P. STEAM DRUM-NOZZLE DETAILS
 - 11680MDD02080 H.P. STEAM DRUM-EXTERNAL ATTACHMENT
 - 11680MDD02081 H.P. STEAM DRUM-NAME PLATES AND LEVEL PLATES
 - 11680MDD02082 H.P. STEAM DRUM-INTERNAL ATTACHMENT
 - 11680MDD02100 H.P. STEAM DRUM-INTERNAL ATTACHMENT
 - 11680MDD02101 H.P. STEAM DRUM-INTERNAL ATTACHMENT
 - 11680MDD02170 H.P. STEAM DRUM-SUPPORT ASSEMBLY
 - 11680MDD02171 H.P. STEAM DRUM-SLIDING PLATES ASSEMBLY



Rev. 4 and above are RELEASED FOR ERECTION

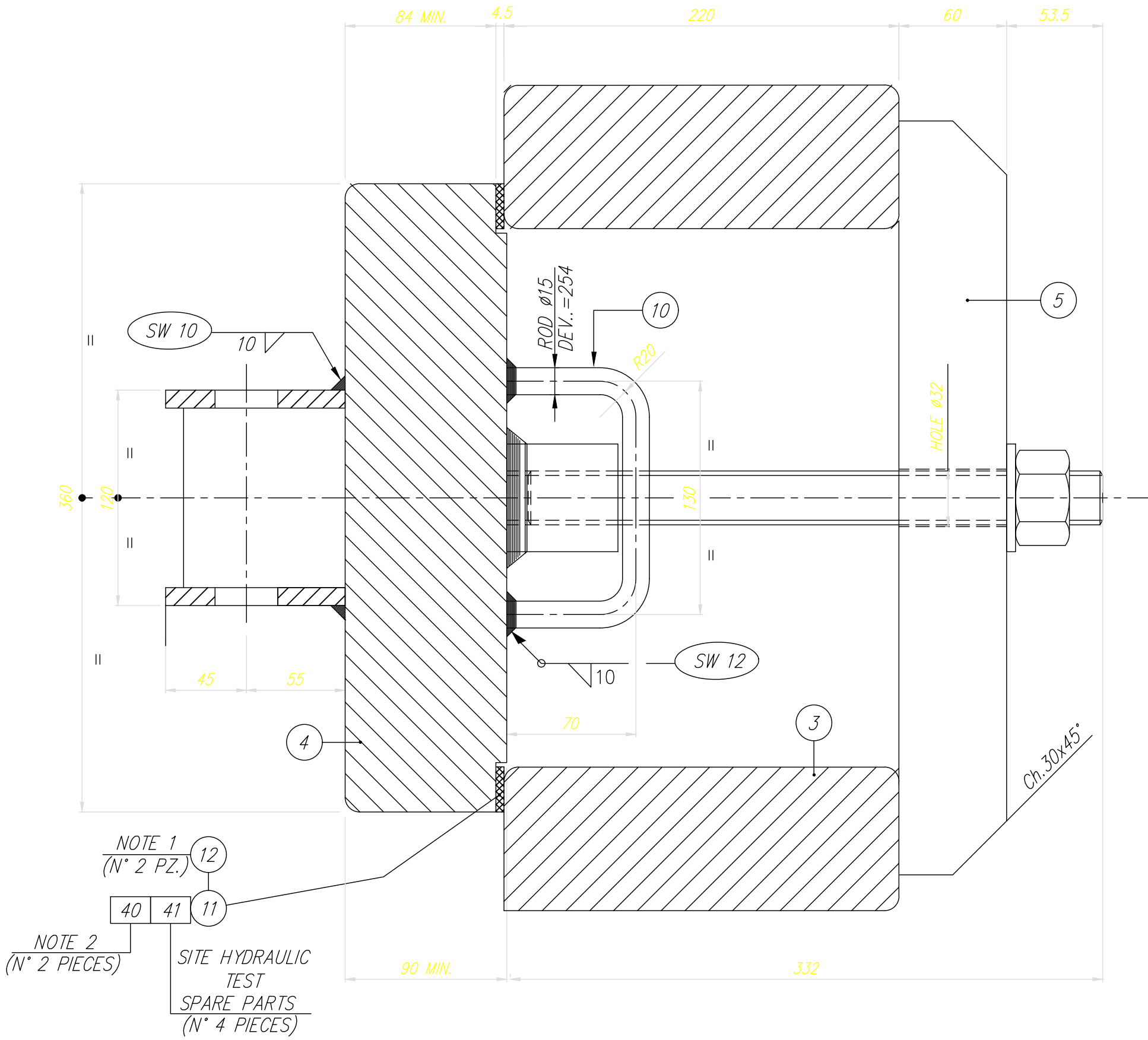
5	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY, NO OTHER CHANGES	A.S.	A.R.	A.N.
4	21-09-04	REVISED CLIENT DRAWING NUMBER	L.R.	A.R.	A.N.
3	28-05-04	REVISED WHERE INDICATED	L.R.	A.R.	A.N.
2	20-05-04	REVISED WHERE INDICATED	L.R.	A.R.	A.N.
1	07-05-04	REVISED WHERE INDICATED	L.R.	A.R.	A.N.

SCALE: 1:25
H.P. STEAM DRUM ASSEMBLY
ALSTOM Power Italia S.p.A.
PUBLIC POWER CORPORATION
LAVRIN V CC PP
DMKT 11 21 302

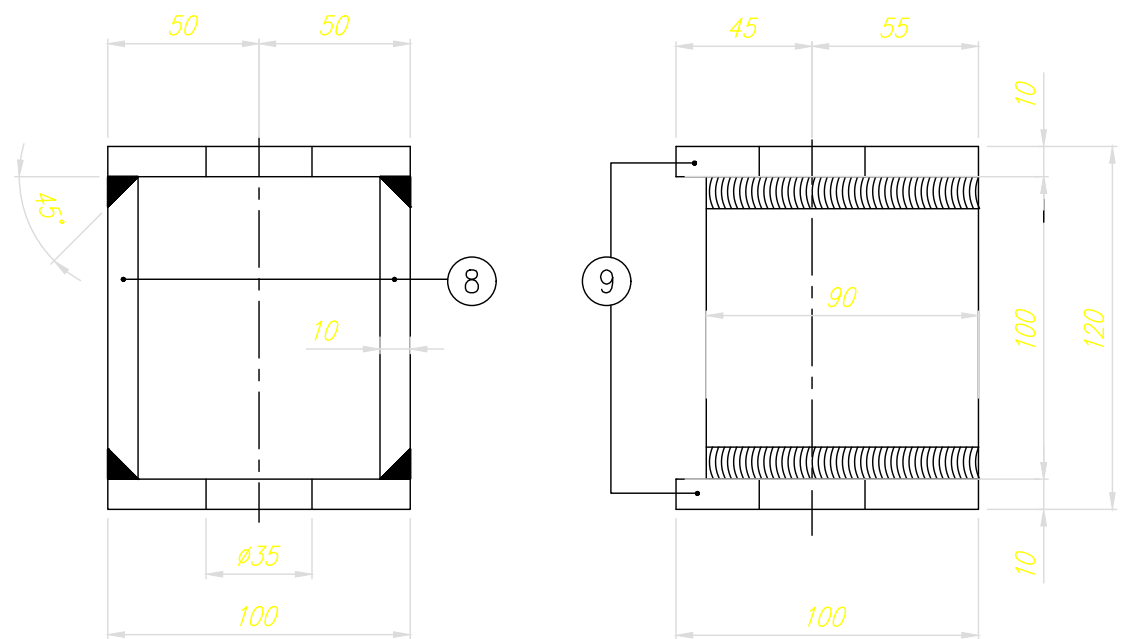


— ATTENTION —
MANHOLE COVER PLATES ④
PLACED INSIDE THE DRUM
BEFORE ATTACHING THE
HEADS

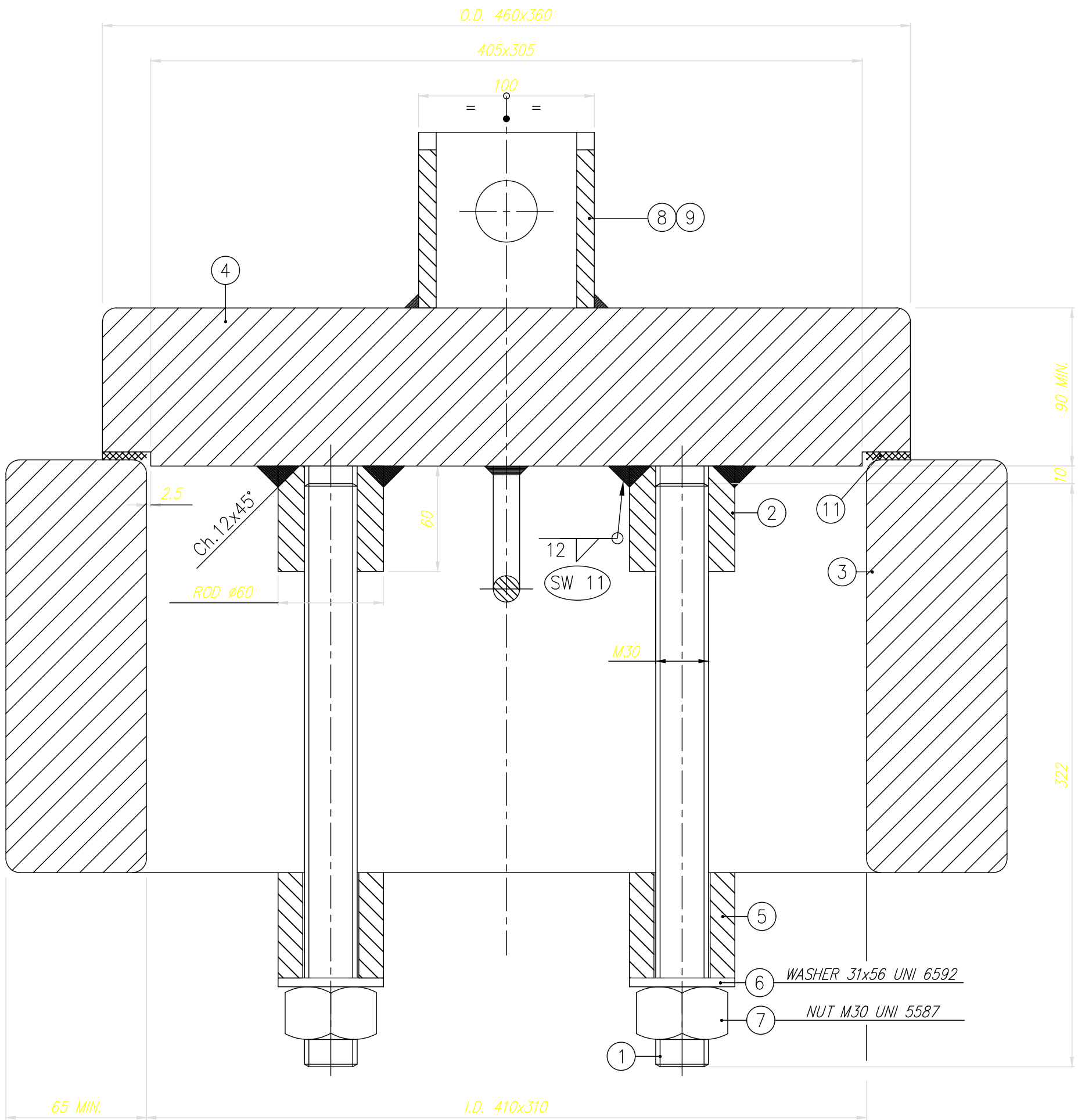
SECTION A-A



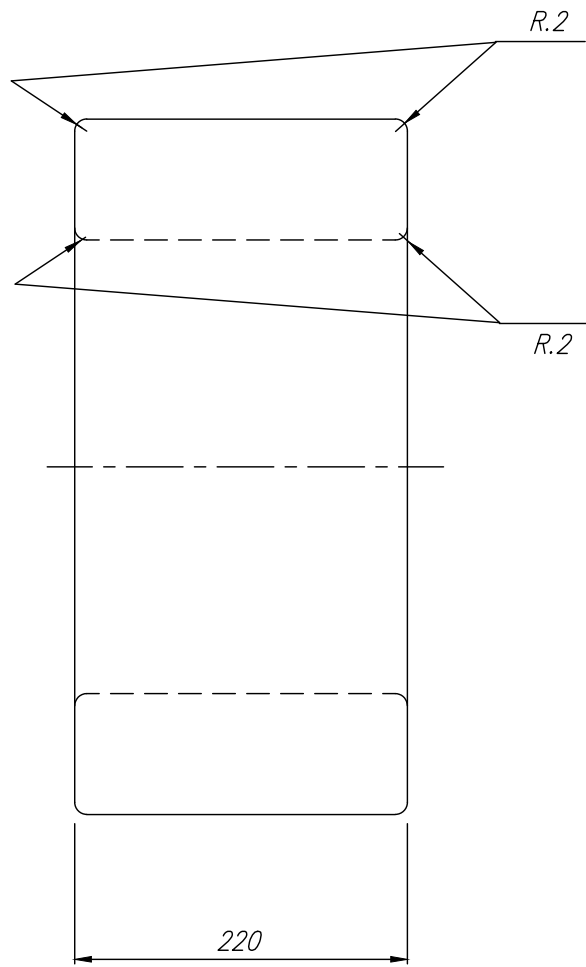
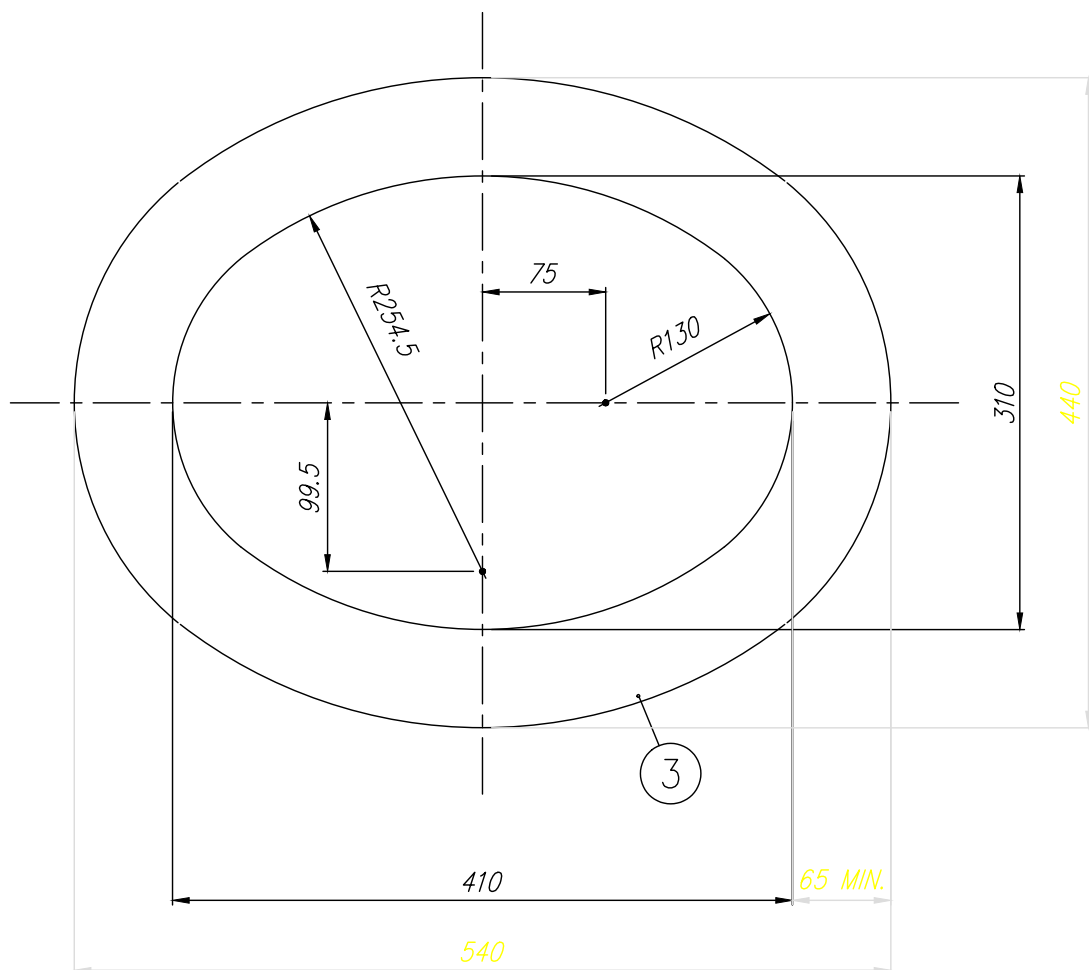
MANHOLE COVER SUPPORT DETAIL



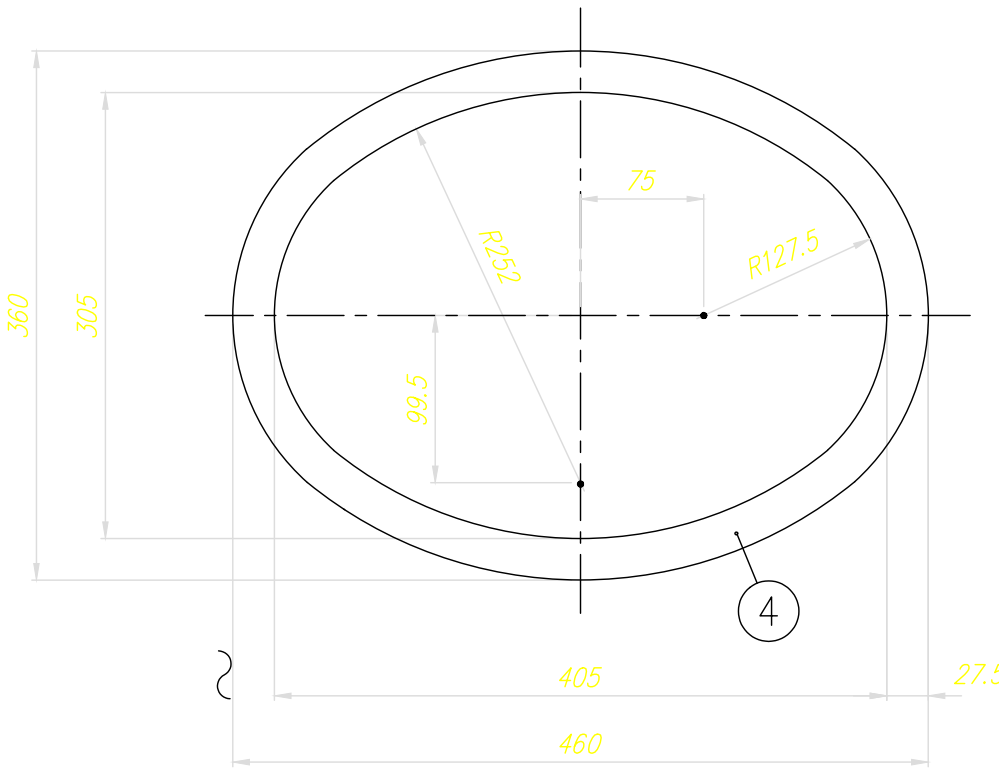
SECTION B-B



MANHOLE RING DETAIL

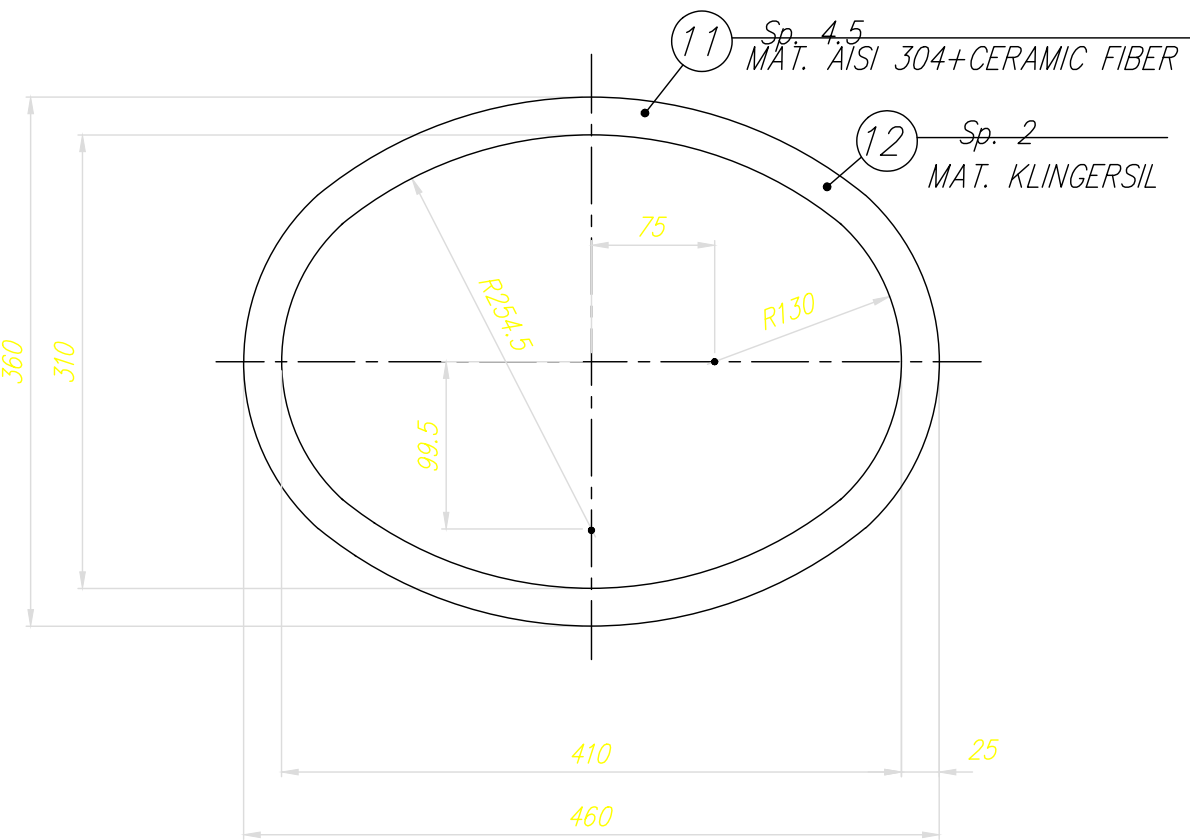


MANHOLE COVER DETAIL



GASKET DETAIL

TO BUILD N° 2 PIECES ITEM 40 (NOTA 2)
TO BUILD N° 4 PIECES ITEM 41 (SPARE PARTS)



SHOP INSTALL AND SHIPPING NOTES:

- 1 - TO SHIP THE DRUM WITH GASKET ITEM 12 (THK. 2 mm) ALREADY MOUNTED
- 2 - GASKET ITEM 11 (Thk.4.5mm) MUST BE SHIPPED WITH THE DRUM, AND WILL BE MOUNTED AT SITE AFTER HYDROSTATIC TEST IS DONE
- 3 - ALL LOOSE PIECES TO BE SHIPPED ON SITE MUST BE MARKED WITH THE ASSEMBLY SHIPPING NUMBER

NOTES:

SHOP TOLERANCES ACCORDING TO UNI ISO 2768-m (Ed.5/91) UNLESS OTHERWISE NOTED

- SHOP WELDING NUMBER
- ERECTION MARK NUMBER
- MATERIAL LIST NUMBER

DRAWINGS OR REFERENCE DOCUMENTS:

11680MDD02000	H.P. STEAM DRUM-ASSEMBLY
11680MDD02006	H.P. STEAM DRUM-MANHOLE COVER HANGER
11680MDW02000	H.P. STEAM DRUM-SHIP WELDING TABLE
11680MDE02000	H.P. STEAM DRUM-SHIPING AND ERECTION LIST

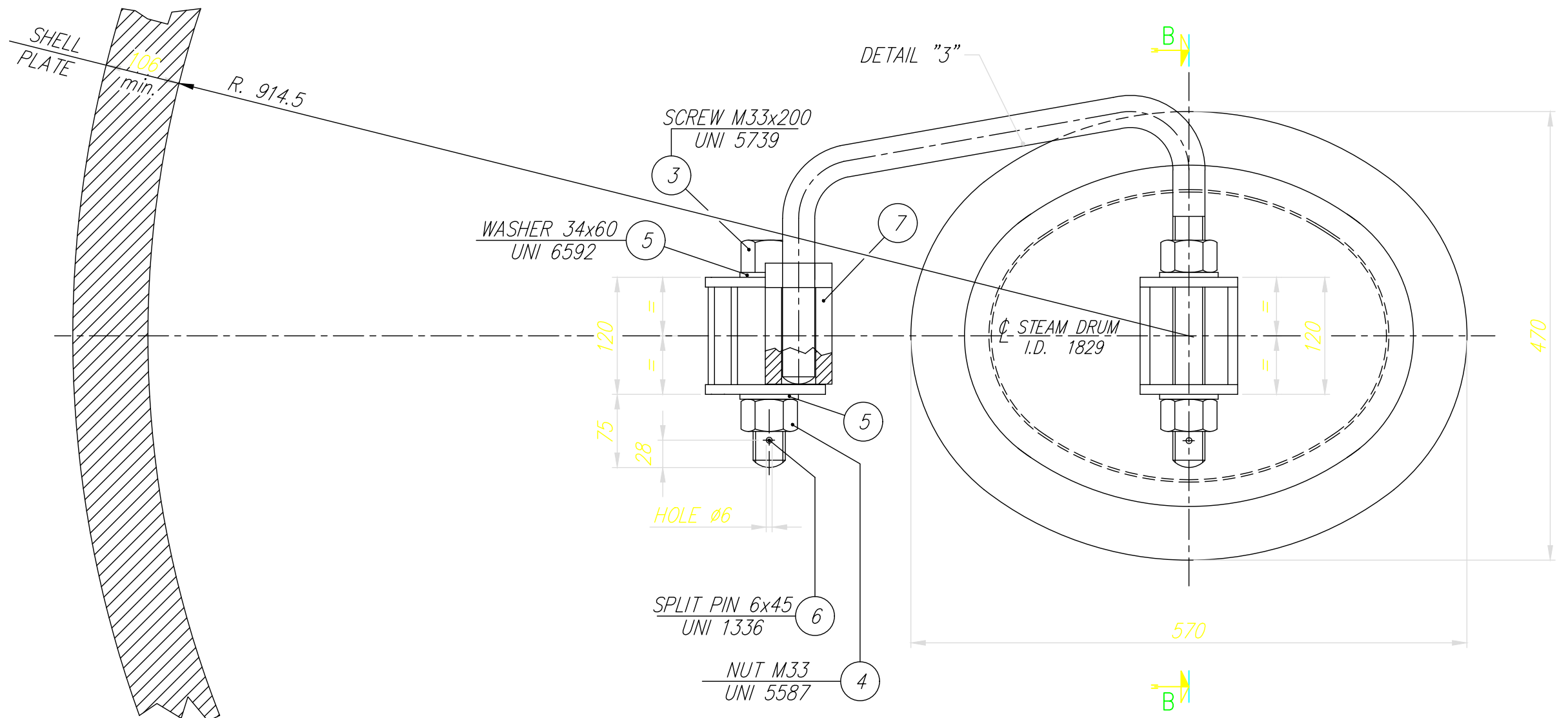
Rev. 1 and above are
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KKS DWG.No. 5-HA-000-API-082

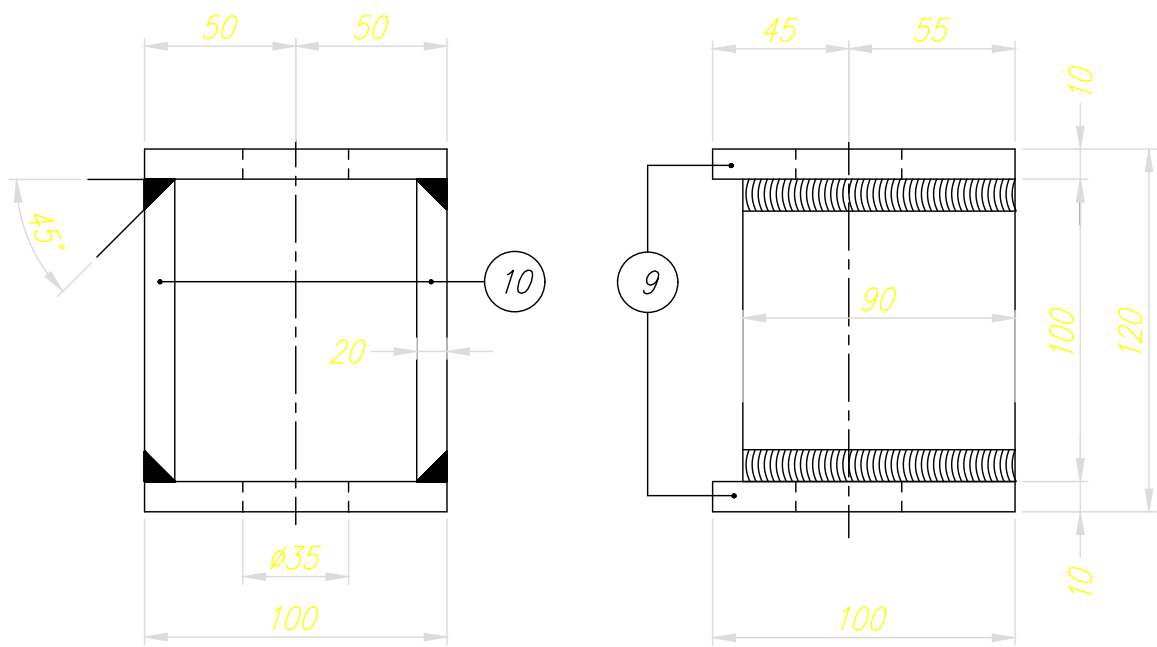
2	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.
1	21-06-04	MODIFIED WHERE INDICATED /1	L.R.	A.R.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	DIS. Dwg.	CONTR. Checked	VISTO Approv.
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI This Drawing is the Property of ALSTOM Power Italia S.p.A. The reproduction for any use by a third party is forbidden by law.			SCALA Scale	FIRME/Signature	DATA/Date
LAVRION - METKA N° 1 H.R.S.G. HP STEAM DRUM MANHOLE COVER ASSEMBLY			1:2.5	DIS./Dwg. M.A.	10-05-04
				CONTR./Check. A.R.	12-05-04
				VISTO/Approv. A.N.	12-05-04
RIFERIMENTO N. Reference N.			N°. DISEGNO/Drawing No.		
ALSTOM ALSTOM Power Italia S.p.A.			11680MDD02005		
			REV.	1	2

MATERIAL CHART	
ITEM	MATERIAL
1-2-7-8-9-10	SA36
3	C.S. Cl. 8.8 or A307 Gr.A
4	C.S. Cl. 6 or A563 Gr.A
5	C.S. Cl. R80 or A569 COMM. QUAL.
6	C.S. Cl. 3.6

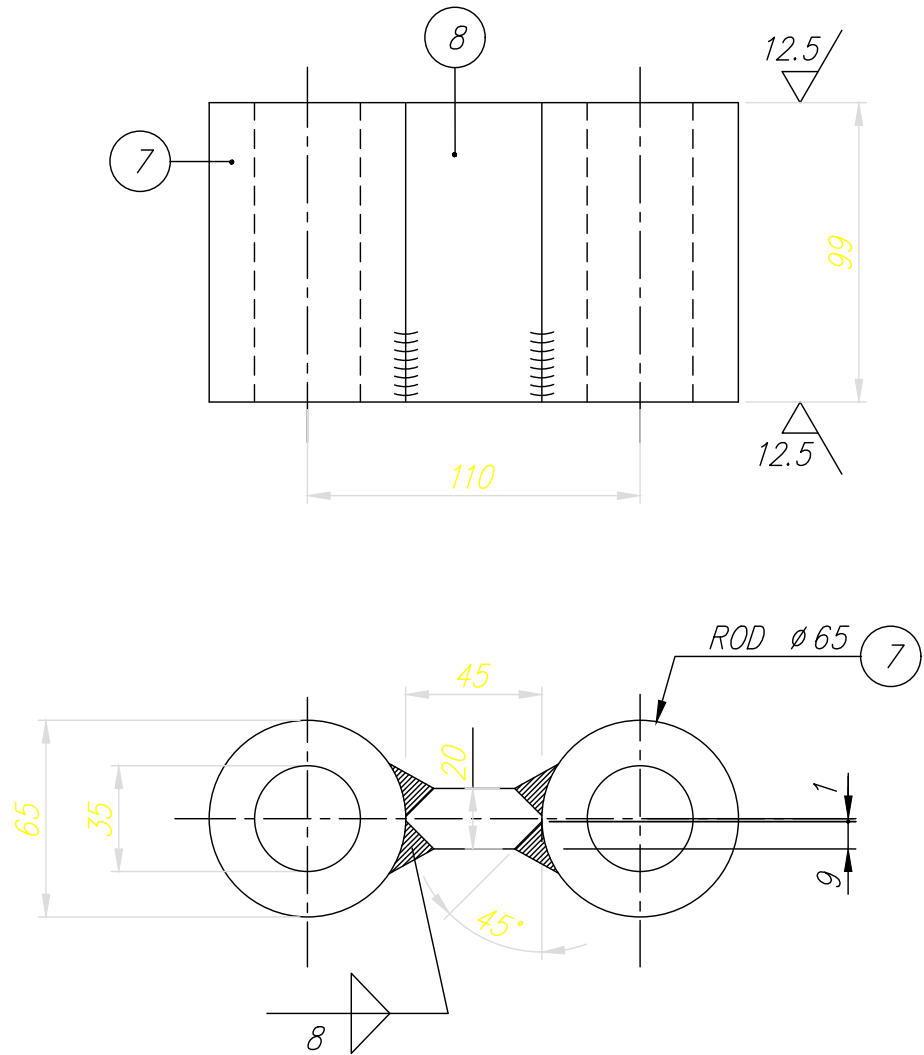
VIEW FROM "A"
(INTERNAL DRUM)



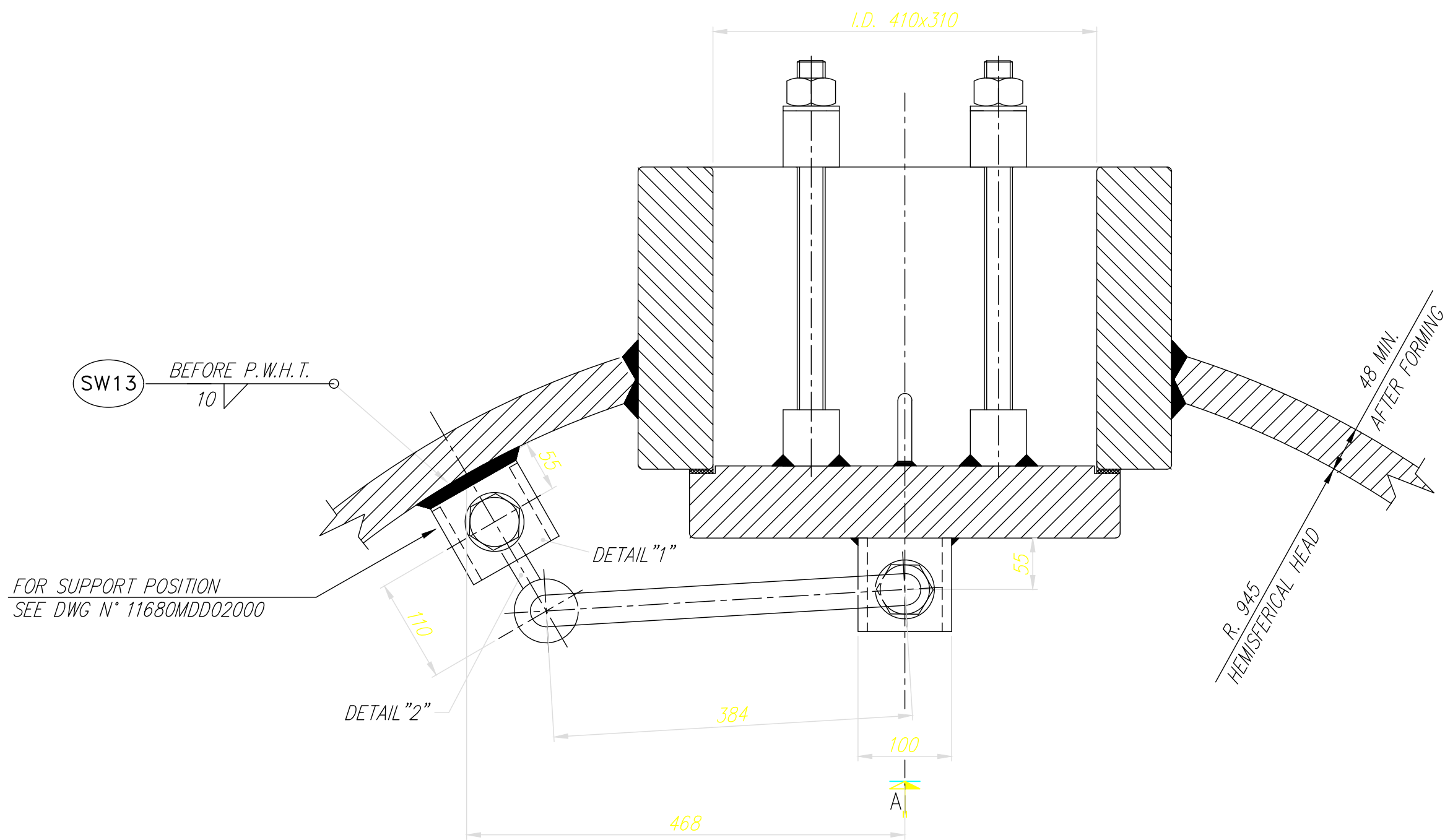
DETAIL "1" (SUPPORT)



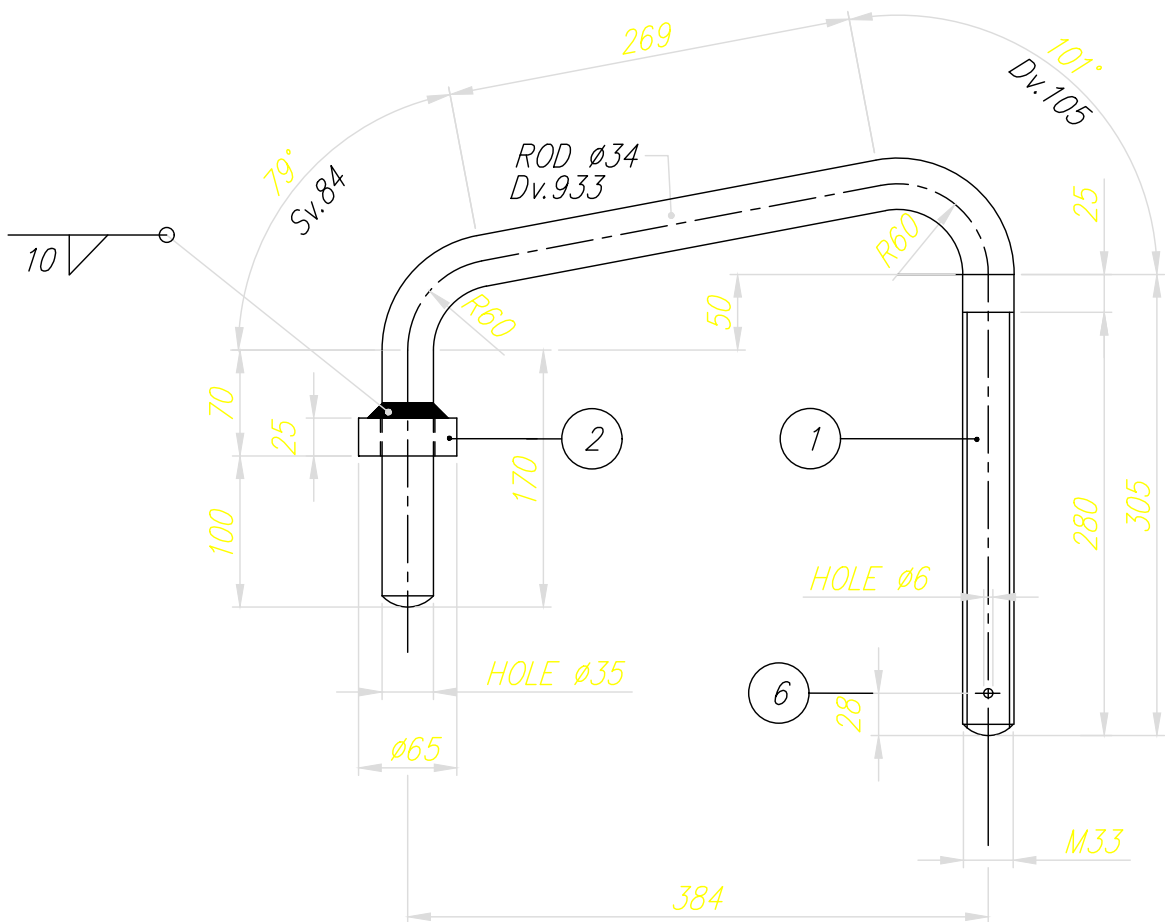
DETAIL "2" (JOINT)



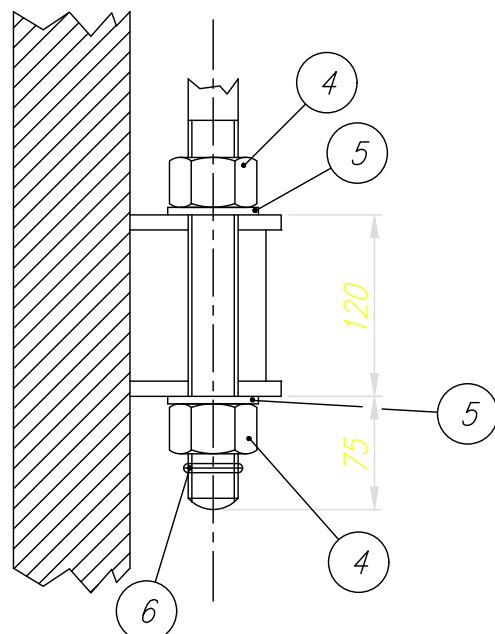
PLAN VIEW



DETAIL "3" (HINGE ROD)



SECTION "B-B"



DRAWINGS OR REFERENCE DOCUMENTS:

11680MDD02000	H.P. STEAM DRUM-ASSEMBLY
11680MDD02005	H.P. STEAM DRUM-MANHOLE COVER ASSEMBLY
11680MDW02000	H.P. STEAM DRUM-SHOP WELDING TABLE
11680MDE02000	H.P. STEAM DRUM-SHIPING AND ERECTION LIST

NOTES:

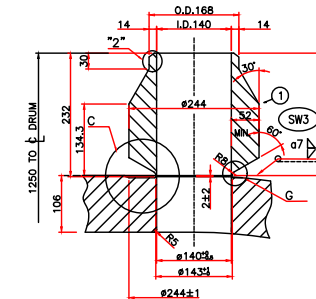
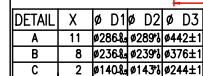
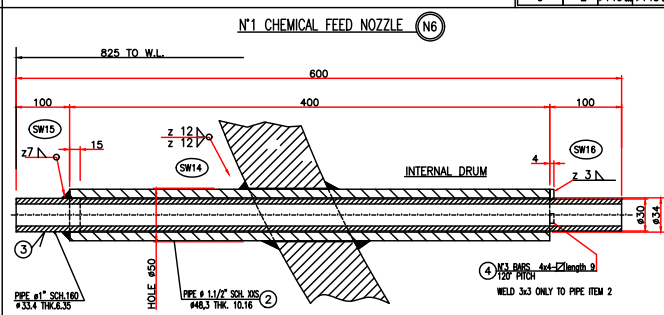
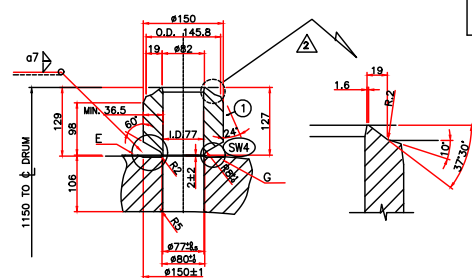
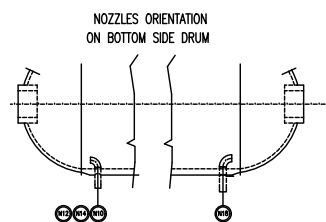
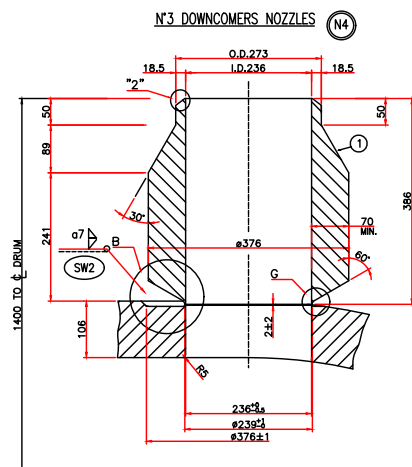
SHOP TOLERANCES ACCORDING TO UNI ISO 2768-m (Ed.5/91) UNLESS OTHERWISE NOTED

- SHOP WELDING NUMBER
- ERECTION MARK NUMBER
- MATERIAL LIST NUMBER

Rev. 1 and above are
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KKS DWG.No. 5-HA-000-API-083

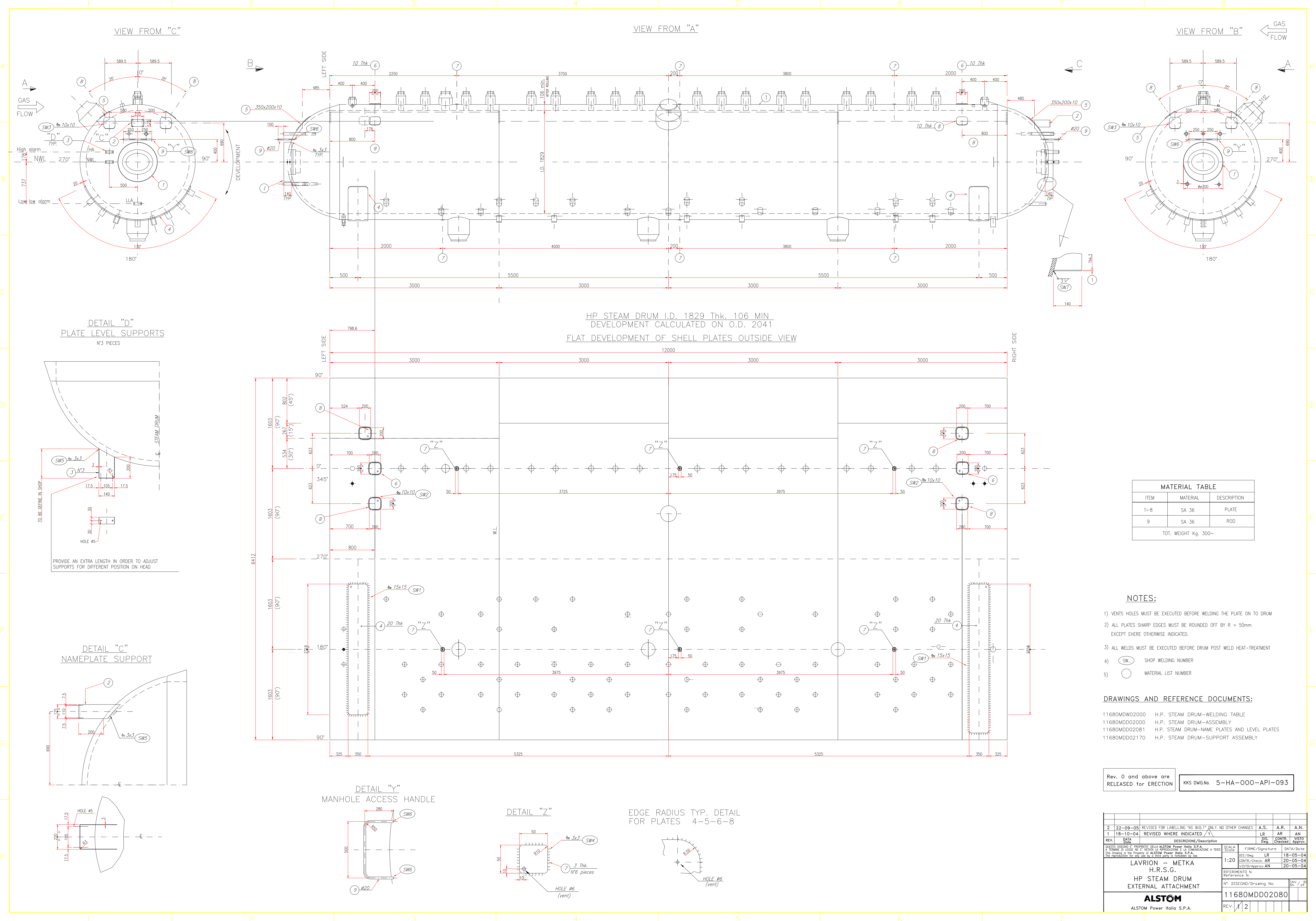
2	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY, NO OTHER CHANGES	A.S.	A.R.	A.N.
1	21-06-04	MODIFIED WHERE INDICATED /1	L.R.	A.R.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	DIS. Dwg.	CONTR. Checked	VISTO/ Approv.
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI This Drawing is the Property of ALSTOM Power Italia S.p.A. The reproduction for any use by a third party is forbidden by law.			SCALA Scale	FIRME/Signature	DATA/Date
			1:5	DIS./Dwg. M.A.	10-05-04
				CONTR./Check. A.R.	12-05-04
				VISTO/Approv. A.N.	12-05-04
LAVRION - METKA N° 1 H.R.S.G. HP STEAM DRUM MANHOLE COVER HANGER			RIFERIMENTO N. Reference N.		
			N°. DISEGNO/Drawing No.		
ALSTOM ALSTOM Power Italia S.p.A.			11680MDD02006		
			REV.	1	2

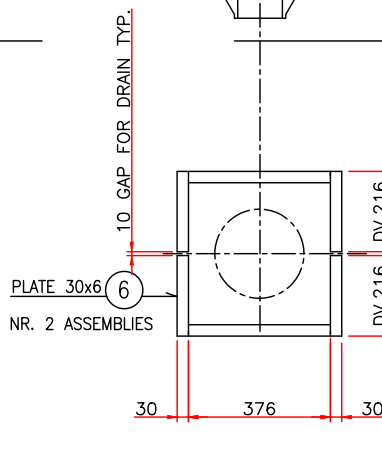
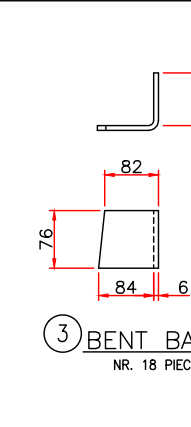
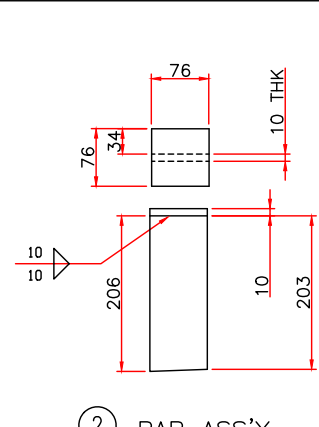
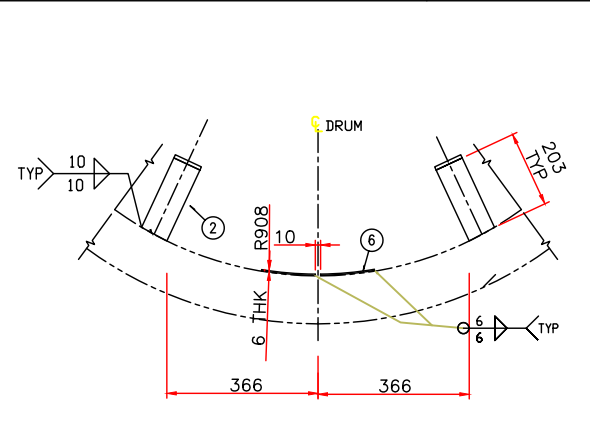
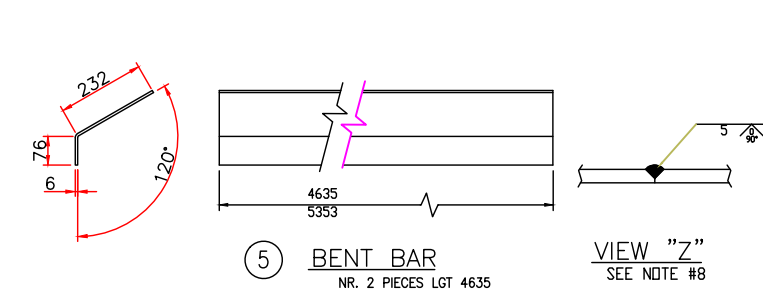
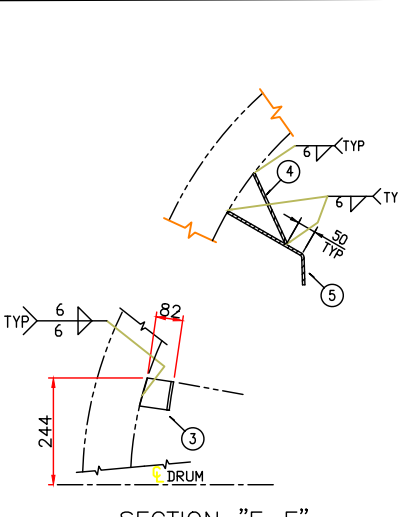
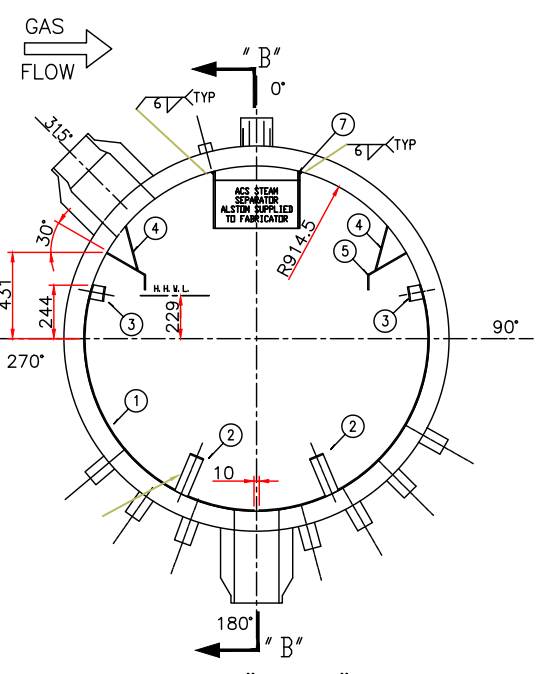
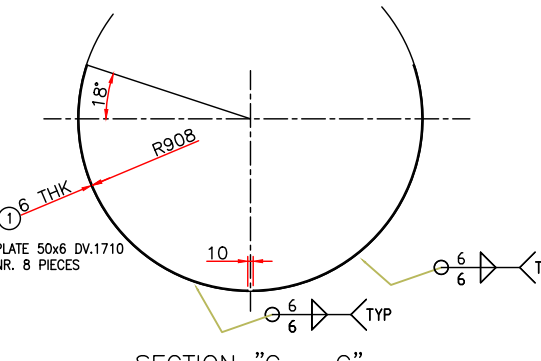
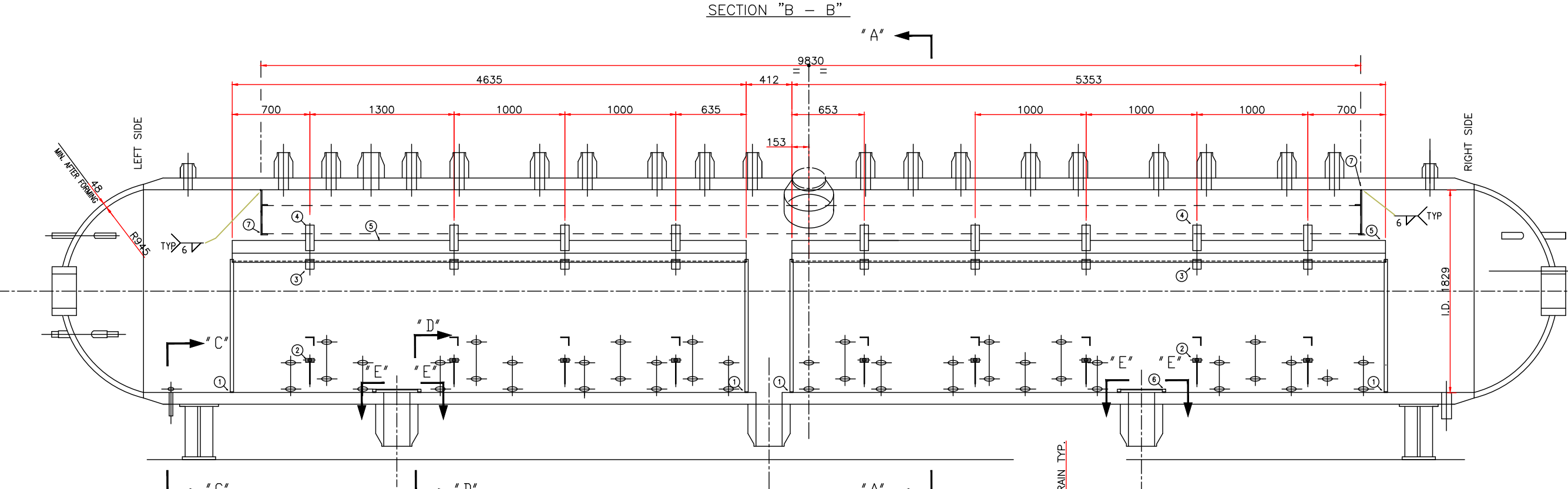


DRAWINGS AND REFERENCE DOCUMENTS:
11680MDD02000 - H.P. STEAM DRUM-ASSEMBLY

KKS DWG.No. **5-HA-000-API-090**

3	22-09-05	REVISED FOR LABELING "AS BUILT" ON OTHER CHANGES	A.S.	A.R.	A.N.
2	21-09-04	HOLD REMOVED ON NOZZLE "N3" 2	L.R.	A.R.	A.N.
1	7/06/04	BEVEL DETAILS UPDATED	LR	AR	AN
REV.	DATA	DESCRIPTION/Description	DES. Checked	CONTR. Checked	VERIF. Checked
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. This drawing is the property of ALSTOM Power Italia S.p.A. This drawing is the property of ALSTOM Power Italia S.p.A. The reproduction for any use is strictly prohibited.			SCALE 1:5		FIRME/Signature DES./Desp. LR CONTR./Check AR VERIF./Approv. AN
LAVRION - METKA H.R.S.G. HP STEAM DRUM NOZZLE DETAILS			DATA/Date 14/05/04 20/05/04 20/05/04		
ALSTOM ALSTOM Power Italia S.p.A.			RIFERIMENTO N. Reference N. N° DISGNO/Drawing No. 116800DD02050		
			TAV. 3/4 REV. 1/2/3		





- NOTES:**
1. QUANTITIES GIVEN ARE FOR ONE (1) STEAM DRUM.
 2. ALL WELDING TO BE DONE IN THE SHOP BEFORE HEAT TREATMENT OF DRUM.
 3. TOLERANCES $\pm 1.5\text{mm}$ NON-ACCUMULATIVE.
 4. ALL WELDED ATTACHMENT TO DRUM SHELL TO BE SHOP INSTALLED BEFORE PWHT OF DRUM.
 5. STEAM SEPARATOR MOUNTING HARDWARE & FRAME TO BE INSTALLED BEFORE P. W. H. T. OF DRUM. INSTALL STEAM SEPARATOR INTERNALS, MESH AND VANES, AFTER P. W. H. T. OF DRUM.
 6. EXCEPT WHERE OTHERWISE INDICATED ALL THE WELDINGS ON THE DRUM ARE $\frac{6}{16}$ AND $\frac{10}{16}$ INDICATED ON THE WELDING TABLE WITH SEE DOC. 11680MDW0200 (SW1)
 7. ALL PLATES ARE 5mm THK. UNLESS OTHERWISE INDICATED
 8. PART NO'S 8 ARE SHOWN IN FULL LENGTH. SHOP MAX. USE SHORTER PIECES AND WELD TOGETHER PER VIEW 'A'

DRAWINGS AND REFERENCE DOCUMENTS

11680MDW02000	H.P. STEAM DRUM—WELDING TABLE
11680MDD02000	H.P. STEAM DRUM—ASSEMBLY
11680MDD02100	H.P. STEAM DRUM—INTERNALS ASSEMBLY
11680MDD02101	H.P. STEAM DRUM—INTERNALS SECTIONS

Rev. 1 and above are RELEASED for ERECTION KKS DWG.No. 5-HA-000-API-095

MATERIAL TABLE		
ITEM	MATERIAL	DESCRIPTION
1÷11	SA 36	PLATE
TOT. WEIGHT kg. 315~		

3	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY, AND OTHER CHANGES	A.S.	A.R.	A.N.
2	11-10-04	MODIFIED WHERE INDICATED	L.R.	A.R.	A.N.
1	09-09-04	HOLD REMOVED WHERE INDICATED	L.R.	A.R.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	Dis. Desig.	CONTR. Checked	VISIT. Approved
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI This Drawing is the Property of ALSTOM Power Italia S.p.A. The reproduction for any use but for its stated party is strictly forbidden. LAVIRON - METKA H.R.S.G. HP STEAM DRUM INTERNAL ATTACHMENTS			SCALE Scale 1:V	FIRME/Signature DIS./Desig. LR CONTR./check: A.R. VISITD/Approv. A.N.	DATA/Date 20-05- 20-05- 20-05-
RIFERIMENTO N. Reference N.			N°. DISEGNO/Drawing No.		TAV. Sh.
			11680MDD02082		
ALSTOM Power Italia S.p.A.			REV.	1 2 3	

413-5-D-J-70221-001-02

COLD REHEAT STEAM SYSTEM (LBC) ISOMETRICS FOR PIPING > 2"

SHEET N°	LINE	ISSUE						
		26-10-04	11-03-05	23-11-05				
1	COVER	1	2	3				
2	5LBC11-BR001-14"-BA1b-J	1	1	2				
3	5LBC12-BR001-14"-BA1b-J	1	1	2				
4	5LBC10-BR001-24"-BA1b-J / 5LBC14-BR001-10"-BA1b-J	1	1	2				
5	5LBC10-BR001-24"-BA1b-J	1	1	2				
6	5LBC16-BR001-4"-BA1b-J	1	2	3				

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written permission of Empresarios Agrupados Internacional S.A.

3	23-11-05	NZAM	NZAM	NZAM	AS BUILT	
2	11-03-05	TAS	EMU	FBF	CONSTRUCTION	
1	26-10-04	FCF /	EMU/GFF	FBF	CONSTRUCTION	
REV.	DATE	PREP.	REVISED	APPRVD.	ISSUED FOR	

VERIFICATION:	N/A ☐	HOUSUP. ☒	VERIFIER L1 ☐ L2 ☐
DOCUMENT PREPARED WITH CAD DO NOT MODIFY MANUALLY			



PUBLIC POWER CORPORATION LAVRION V CC PP
DMKT 11 21 302

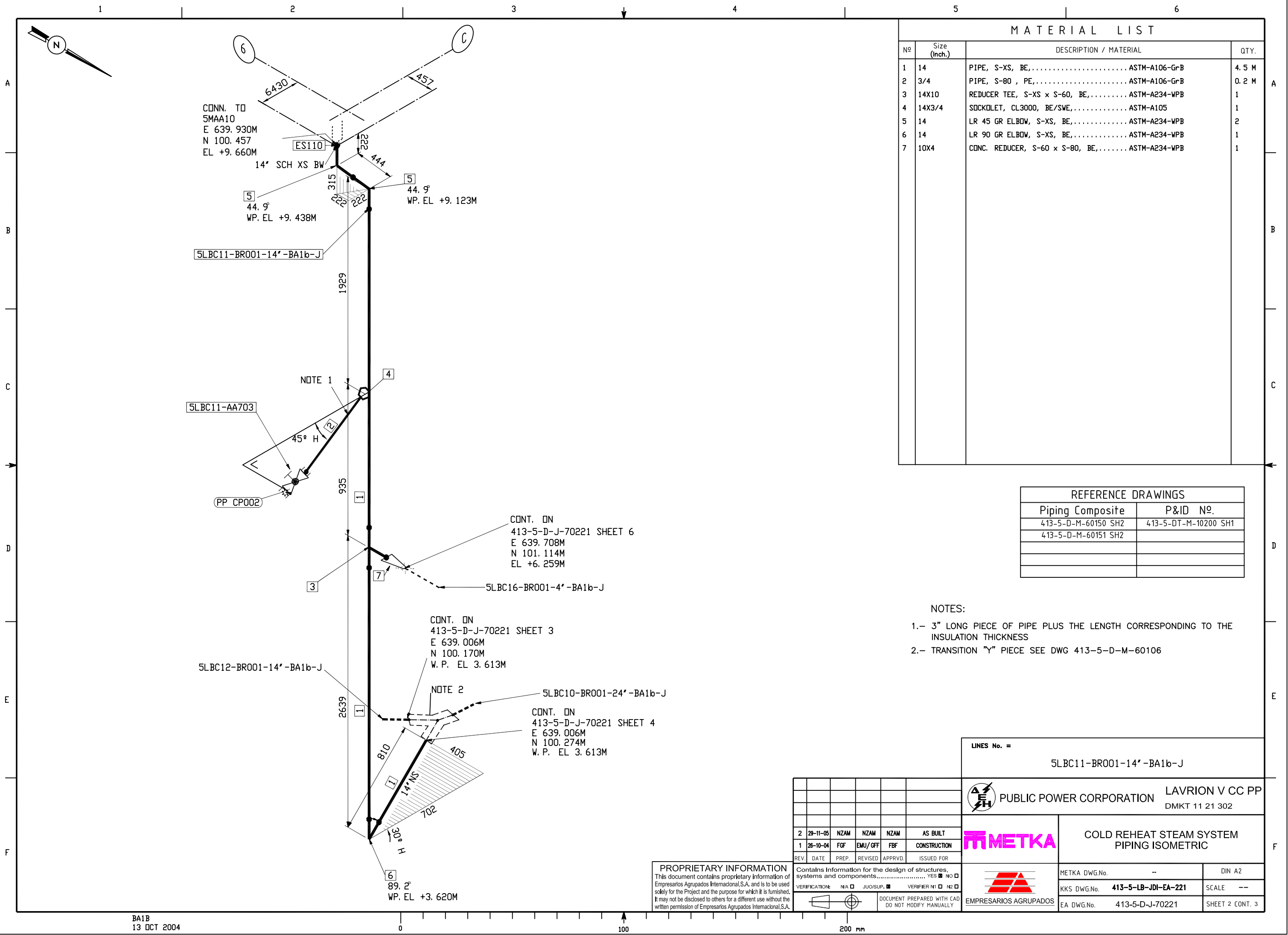


COLD REHEAT STEAM SYSTEM
PIPING ISOMETRIC



METKA DWG.No.	--	DIN A2
KKS DWG.No.	413-5-LB-JDI-EA-221	SCALE --
EA DWG.No.	413-5-D-J-70221	SHEET 1 CONT. 2

413-5-d-j-70221-002-01



MATERIAL LIST			
Nº	Size (Inch.)	DESCRIPTION / MATERIAL	QTY.
1	14	PIPE, S-XS, BE,..... ASTM-A106-GrB	4.5 M
2	3/4	PIPE, S-80 , PE,..... ASTM-A106-GrB	0.2 M
3	14X10	REDUCER TEE, S-XS x S-60, BE,..... ASTM-A234-WPB	1
4	14X3/4	SOCKET, CL3000, BE/SWE,..... ASTM-A105	1
5	14	LR 45 GR ELBOW, S-XS, BE,..... ASTM-A234-WPB	2
6	14	LR 90 GR ELBOW, S-XS, BE,..... ASTM-A234-WPB	1
7	10X4	CONC. REDUCER, S-60 x S-80, BE,..... ASTM-A234-WPB	1

REFERENCE DRAWINGS	
Piping Composite	P&ID Nº.
413-5-D-M-60150 SH2	413-5-DT-M-10200 SH1
413-5-D-M-60151 SH2	

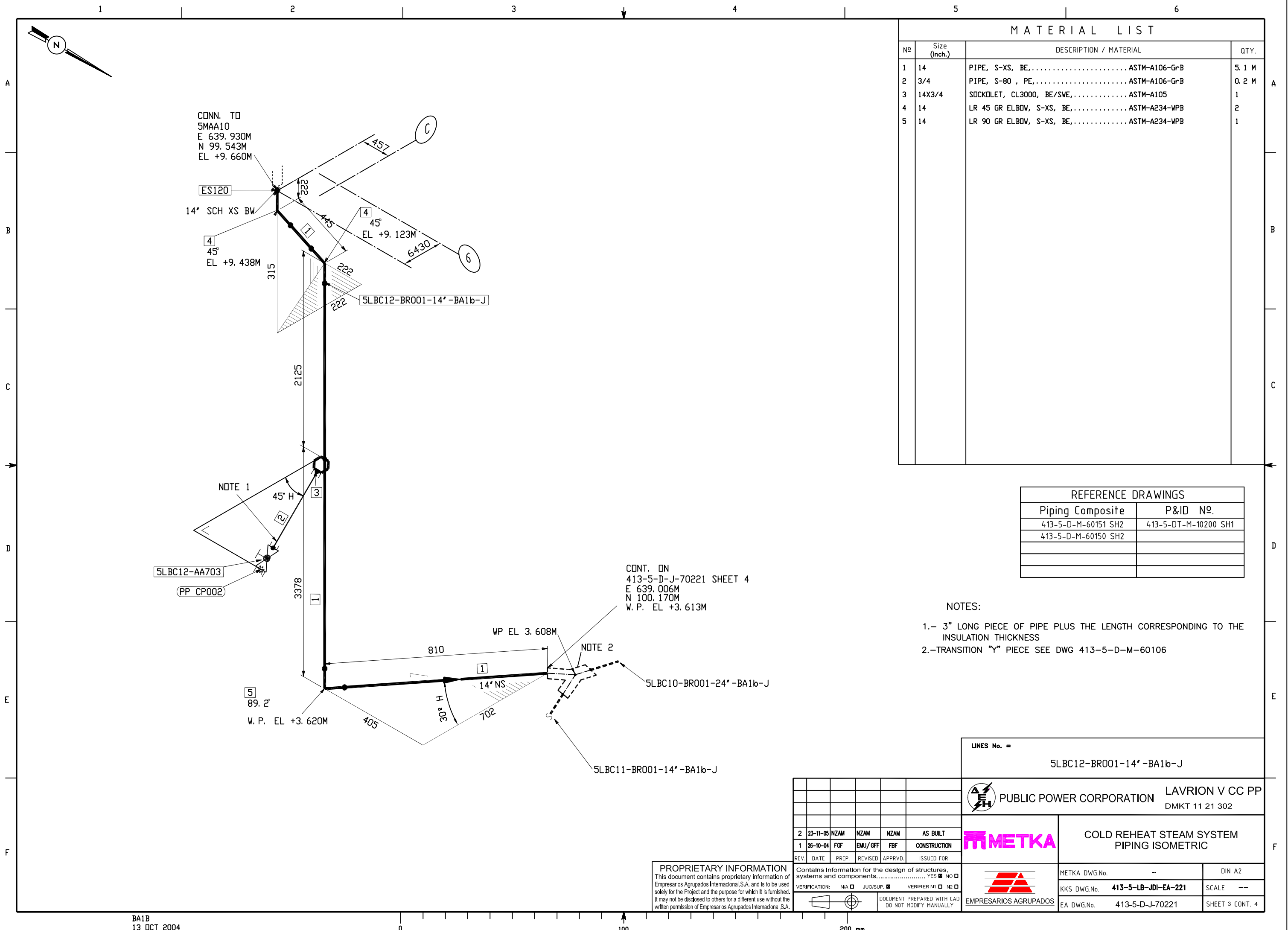
- NOTES:
- 3" LONG PIECE OF PIPE PLUS THE LENGTH CORRESPONDING TO THE INSULATION THICKNESS
 - TRANSITION "Y" PIECE SEE DWG 413-5-D-M-60106

LINES No. =					
5LBC11-BR001-14'-BA1b-J					
 PUBLIC POWER CORPORATION LAVRION V CC PP DMKT 11 21 302					
 METKA COLD REHEAT STEAM SYSTEM PIPING ISOMETRIC					
 EMPRESARIOS AGRUPADOS					
METKA DWG.No. --			DIN A2		
KKS DWG.No. 413-5-LB-JDI-EA-221			SCALE --		
EA DWG.No. 413-5-D-J-70221			SHEET 2 CONT. 3		

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2	29-11-05	NZAM	NZAM	NZAM	AS BUILT
1	26-10-04	FGF	EMU/GFF	FBF	CONSTRUCTION
REV.	DATE	PREP.	REVISED	APPRVD.	ISSUED FOR
VERIFICATION: N/A ☐ JUOISUP. ☒ VERIFIER N1 ☐ N2 ☐					
DOCUMENT PREPARED WITH CAD DO NOT MODIFY MANUALLY					

413-5-d-j-70221-003-01



MATERIAL LIST			
Nº	Size (Inch.)	DESCRIPTION / MATERIAL	QTY.
1	14	PIPE, S-XS, BE,..... ASTM-A106-GrB	5.1 M
2	3/4	PIPE, S-80 , PE,..... ASTM-A106-GrB	0.2 M
3	14X3/4	SOCKET, CL3000, BE/SWE,..... ASTM-A105	1
4	14	LR 45 GR ELBOW, S-XS, BE,..... ASTM-A234-WPB	2
5	14	LR 90 GR ELBOW, S-XS, BE,..... ASTM-A234-WPB	1

REFERENCE DRAWINGS	
Piping Composite	P&ID Nº.
413-5-D-M-60151 SH2	413-5-DT-M-10200 SH1
413-5-D-M-60150 SH2	

NOTES:

- 1.- 3" LONG PIECE OF PIPE PLUS THE LENGTH CORRESPONDING TO THE INSULATION THICKNESS
2.-TRANSITION "Y" PIECE SEE DWG 413-5-D-M-60106

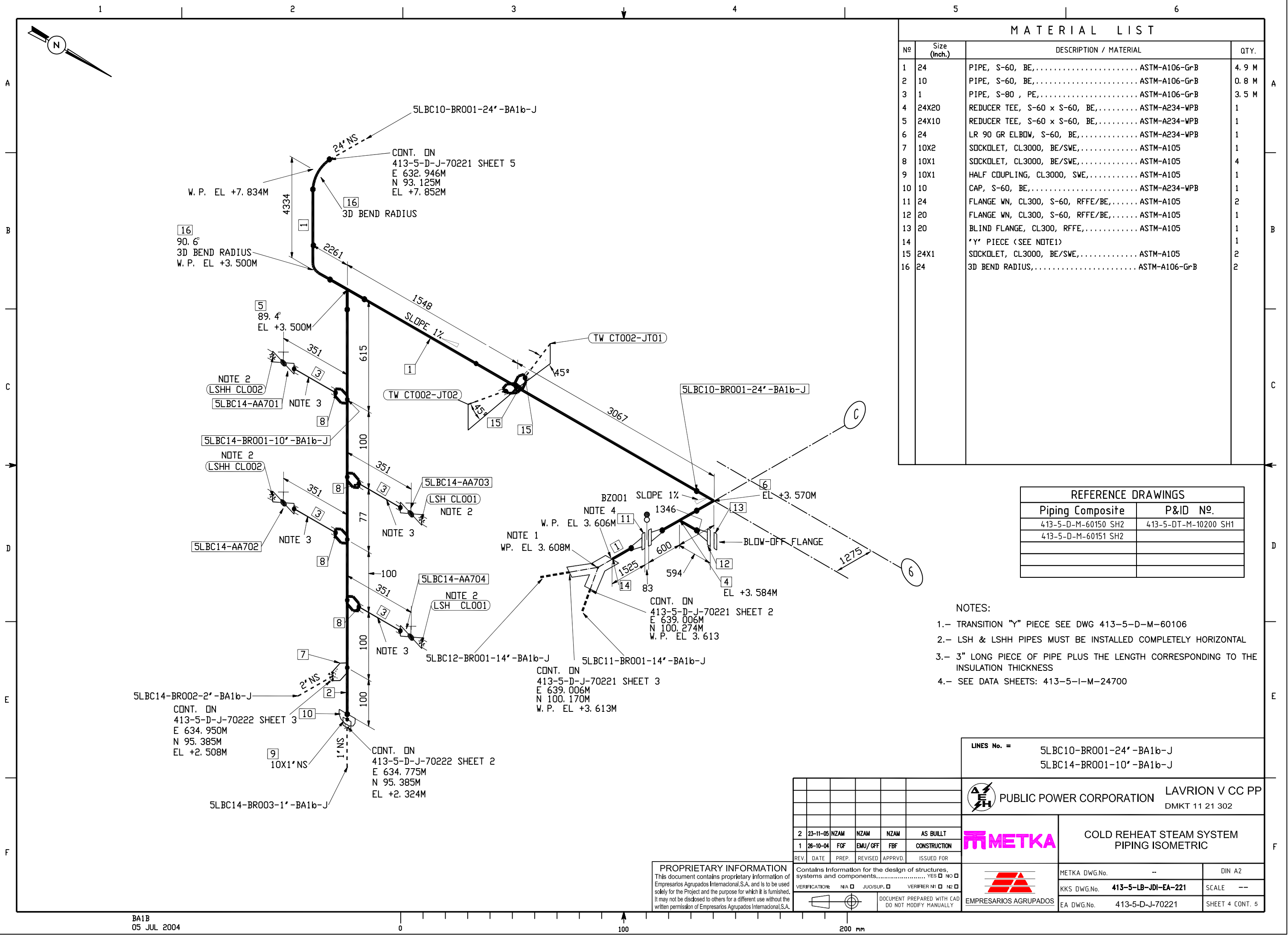
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2	23-11-05	NZAM	NZAM	NZAM	AS BUILT
1	26-10-04	FGF	EMU/GFF	FBF	CONSTRUCTION
REV.	DATE	PREP.	REVISED	APPRVD.	ISSUED FOR

VERIFICATION:	N/A	JUO/SUP.	VERIFIER N1	N2
DOCUMENT PREPARED WITH CAD		DO NOT MODIFY MANUALLY		

LINES No. =		5LBC12-BR001-14'-BA1b-J	
 PUBLIC POWER CORPORATION		LAVRION V CC PP DMKT 11 21 302	
		COLD REHEAT STEAM SYSTEM PIPING ISOMETRIC	
		METKA DWG.No. --	DIN A2
		KKS DWG.No. 413-5-LB-JDI-EA-221	SCALE --
		EA DWG.No. 413-5-D-J-70221	SHEET 3 CONT. 4

413-5-d-j-70221-004-01



MATERIAL LIST			
Nº	Size (Inch.)	DESCRIPTION / MATERIAL	QTY.
1	24	PIPE, S-60, BE,..... ASTM-A106-GrB	4.9 M
2	10	PIPE, S-60, BE,..... ASTM-A106-GrB	0.8 M
3	1	PIPE, S-80 , PE,..... ASTM-A106-GrB	3.5 M
4	24X20	REDUCER TEE, S-60 x S-60, BE,..... ASTM-A234-WPB	1
5	24X10	REDUCER TEE, S-60 x S-60, BE,..... ASTM-A234-WPB	1
6	24	LR 90 GR ELBOW, S-60, BE,..... ASTM-A234-WPB	1
7	10X2	SOCKOLET, CL3000, BE/SWE,..... ASTM-A105	1
8	10X1	SOCKOLET, CL3000, BE/SWE,..... ASTM-A105	4
9	10X1	HALF COUPLING, CL3000, SWE,..... ASTM-A105	1
10	10	CAP, S-60, BE,..... ASTM-A234-WPB	1
11	24	FLANGE WN, CL300, S-60, RFFE/BE,..... ASTM-A105	2
12	20	FLANGE WN, CL300, S-60, RFFE/BE,..... ASTM-A105	1
13	20	BLIND FLANGE, CL300, RFFE,..... ASTM-A105	1
14		*Y* PIECE (SEE NOTE1)	1
15	24X1	SOCKOLET, CL3000, BE/SWE,..... ASTM-A105	2
16	24	3D BEND RADIUS,..... ASTM-A106-GrB	2

REFERENCE DRAWINGS	
Piping Composite	P&ID Nº.
413-5-D-M-60150 SH2	413-5-DT-M-10200 SH1
413-5-D-M-60151 SH2	

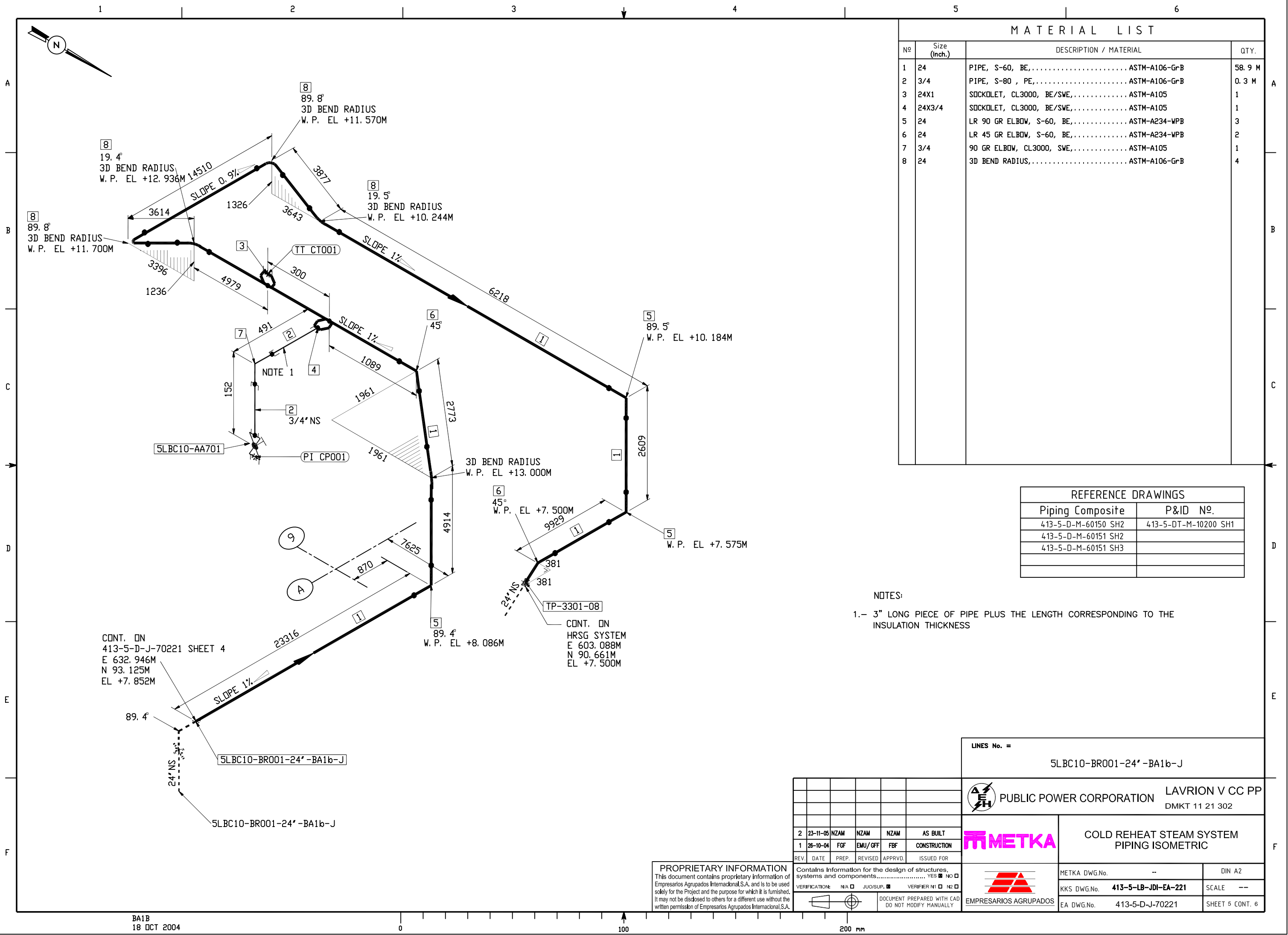
- NOTES:
- 1.- TRANSITION "Y" PIECE SEE DWG 413-5-D-M-60106
 - 2.- LSH & LSHH PIPES MUST BE INSTALLED COMPLETELY HORIZONTAL
 - 3.- 3" LONG PIECE OF PIPE PLUS THE LENGTH CORRESPONDING TO THE INSULATION THICKNESS
 - 4.- SEE DATA SHEETS: 413-5-I-M-24700

LINES No. = 5LBC10-BR001-24'-BA1b-J 5LBC14-BR001-10'-BA1b-J	
PUBLIC POWER CORPORATION LAVRION V CC PP DMKT 11 21 302	
METKA COLD REHEAT STEAM SYSTEM PIPING ISOMETRIC	
EMPRESARIOS AGRUPADOS	
METKA DWG.No. --	DIN A2
KKS DWG.No. 413-5-LB-JDI-EA-221	SCALE --
EA DWG.No. 413-5-D-J-70221	SHEET 4 CONT. 5

2	23-11-05	NZAM	NZAM	NZAM	AS BUILT
1	26-10-04	FGF	EMU/GFF	FBF	CONSTRUCTION
REV.	DATE	PREP.	REVISED	APPRVD.	ISSUED FOR

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VERIFICATION: N/A ☐ JUOSUP. ☐ VERIFIER N1 ☐ N2 ☐		DOCUMENT PREPARED WITH CAD DO NOT MODIFY MANUALLY	

413-5-d-j-70221-005-01



MATERIAL LIST			
Nº	Size (Inch.)	DESCRIPTION / MATERIAL	QTY.
1	24	PIPE, S-60, BE,..... ASTM-A106-GrB	58.9 M
2	3/4	PIPE, S-80 , PE,..... ASTM-A106-GrB	0.3 M
3	24X1	SOCKOLET, CL3000, BE/SWE,..... ASTM-A105	1
4	24X3/4	SOCKOLET, CL3000, BE/SWE,..... ASTM-A105	1
5	24	LR 90 GR ELBOW, S-60, BE,..... ASTM-A234-WPB	3
6	24	LR 45 GR ELBOW, S-60, BE,..... ASTM-A234-WPB	2
7	3/4	90 GR ELBOW, CL3000, SWE,..... ASTM-A105	1
8	24	3D BEND RADIUS,..... ASTM-A106-GrB	4

REFERENCE DRAWINGS	
Piping Composite	P&ID Nº.
413-5-D-M-60150 SH2	413-5-DT-M-10200 SH1
413-5-D-M-60151 SH2	
413-5-D-M-60151 SH3	

NOTES:
1.- 3" LONG PIECE OF PIPE PLUS THE LENGTH CORRESPONDING TO THE INSULATION THICKNESS

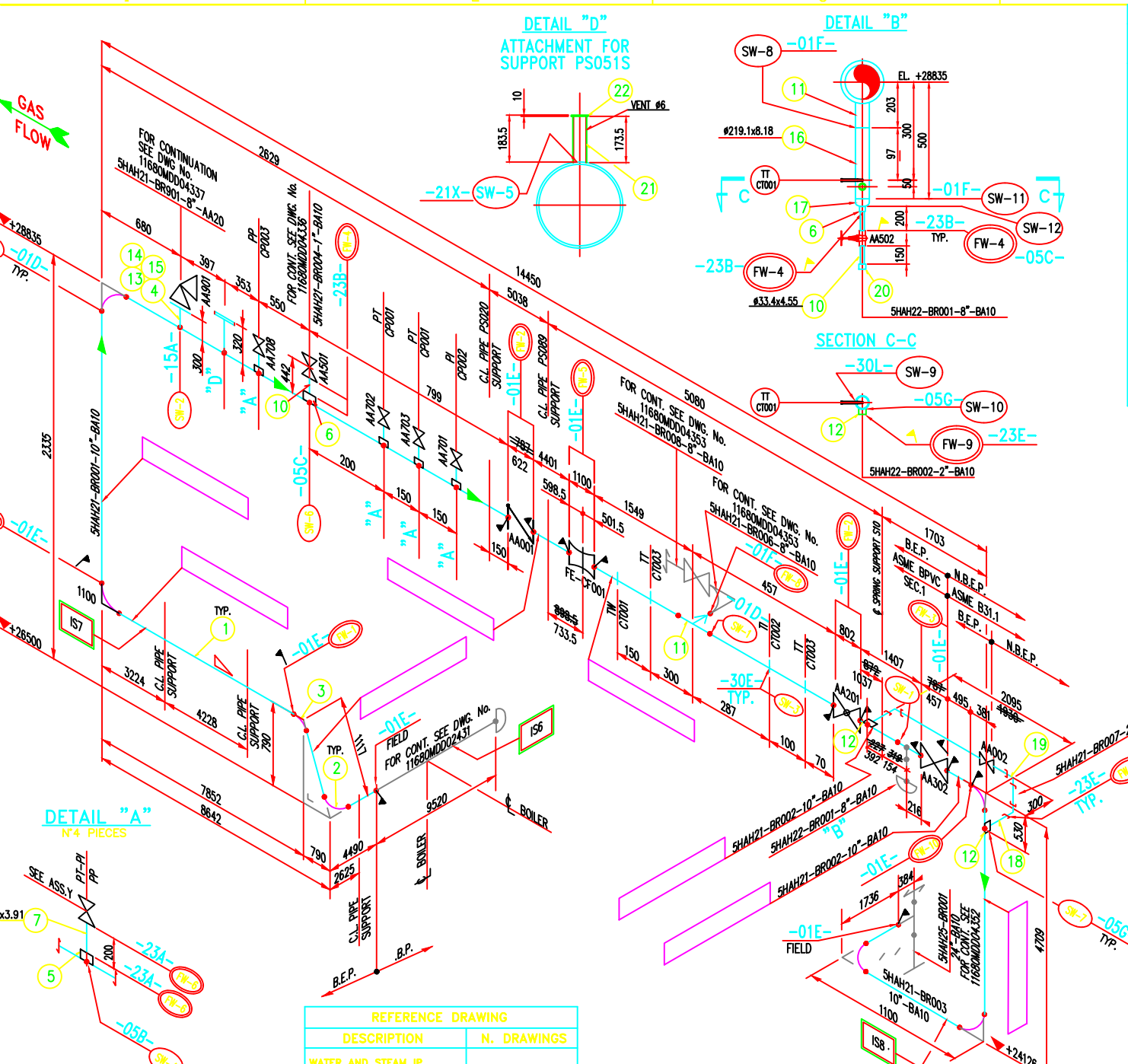
CONT. ON
413-5-D-J-70221 SHEET 4
E 632.946M
N 93.125M
EL +7.852M

CONT. ON
HRSG SYSTEM
E 603.088M
N 90.661M
EL +7.500M

LINES No. =	
5LBC10-BR001-24'-BA1b-J	
 PUBLIC POWER CORPORATION LAVRION V CC PP DMKT 11 21 302	
 COLD REHEAT STEAM SYSTEM PIPING ISOMETRIC	
	
METKA DWG.No.	--
KKS DWG.No.	413-5-LB-JDI-EA-221
EA DWG.No.	413-5-D-J-70221
DIN A2	SCALE --
SHEET 5 CONT. 6	

2	23-11-05	NZAM	NZAM	NZAM	AS BUILT
1	26-10-04	FGF	EMU/GFF	FBF	CONSTRUCTION
REV.	DATE	PREP.	REVISED	APPRVD.	ISSUED FOR

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Contains Information for the design of structures, systems and components..... YES ☐ NO ☐	
VERIFICATION: N/A ☐ JUOISUP. ☐ VERIFIER N1 ☐ N2 ☐	
DOCUMENT PREPARED WITH CAD DO NOT MODIFY MANUALLY	



SHOP FABRICATED MATERIAL											
IDENTIF. COMPON. (NOTE3)	LINE No.	SPOOL	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)	
IS7	5HAH21-BR001 10"-BA10	5HAH21-4330/A	1	PIPE	1	9273	9.27	112.58	SA 106 Gr. B	282.8	
			2	ELBOW L.R. AT 90°	1	9273	9.27	112.58	SA 234 Gr. WPB	37	
			3	ELBOW L.R. AT 45°	1	9273	9.27	112.58	SA 234 Gr. WPB	16.5	
		5HAH21-4330/B	1	PIPE	1	9273	9.27	112.58	7350	SA 106 Gr. B	440.8
			2	ELBOW L.R. AT 90°	1	9273	9.27	112.58	SA 234 Gr. WPB	37	
			3	ELBOW L.R. AT 90°	1	9273	9.27	112.58	SA 234 Gr. WPB	37	
		5HAH21-4330/C	1	PIPE	1	9273	9.27	112.58	3200	SA 106 Gr. B	193
			2	ELBOW L.R. AT 90°	1	9273	9.27	112.58	SA 234 Gr. WPB	37	
			4	FLG LIN 3" 600# RF	1	-	-	177	SA 105	17.2	
			5	HALF COUPLING-SW	4	83/4"	3000#	-	SA 105	1.4	
			6	HALF COUPLING-SW	1	81"	3000#	-	SA 105	0.35	
			21	PIPE	1	988.9	5.49	112.58	200	SA 106 Gr. B	2.3
		5HAH21-4330/D	22	PLATE	1	120	10	120	SA 36	1.5	
			1	PIPE	1	9273	9.27	112.58	5000	SA 106 Gr. B	301.5
			5HAH21-4330/E	1	PIPE	1	9273	9.27	112.58	2750	SA 106 Gr. B
		IS8	5HAH21-BR002 10"-BA10	11	TEE 10"x10"x6"	1	-	-	-	SA 234 Gr. WPB	40.97
1	PIPE			1	9273	9.27	112.58	1450	SA 106 Gr. B	87.4	
12	HALF COUPLING			1	82"	3000#	-	SA 105	0.5		
5HAH22-BR001 6"-BA10	5HAH21-4330/F		11	TEE 10"x10"x6"	1	-	-	-	SA 234 Gr. WPB	40.97	
			16	PIPE	1	9218.1	8.18	112.58	550	SA 106 Gr. B	23.8
			17	CAP	1	9218.1	8.18	112.58	-	SA 234 Gr. WPB	5.5
			12	HALF COUPLING-SW	1	82"	3000#	-	SA 105	0.5	
			8	HALF COUPLING-SW	1	81"	3000#	-	SA 105	0.35	
			1	PIPE	1	9273	9.27	112.58	5700	SA 106 Gr. B	343.7
			2	ELBOW L.R. AT 90°	3	9273	9.27	112.58	-	SA 234 Gr. WPB	111
			12	HALF COUPLING-SW	1	82"	3000#	-	SA 105	0.5	
			5HAH21-4330/H	1	PIPE	1	9273	9.27	112.58	495	SA 106 Gr. B

SITE FABRICATED MATERIAL								
LINE No.	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)
5HAH21-BR001 10"-BA10	7	PIPE	1	926.7	3.91 ±12.58	1000	SA 106 Gr. B	2
	10	PIPE	1	933.4	4.55 ±12.58	300	SA 106 Gr. B	1
5HAH21-BR007 2"-BA10	18	PIPE	1	980.3	5.54 ±12.58	2000	SA 106 Gr. B	19.8
	19	ELBOW SW AT 90°	3	82"	3000#	-	SA 234 Gr.WPB	2.9
5HAH22-BR001 8"-BA10	10	PIPE	1	933.4	4.55 ±12.58	350	SA 106 Gr. B	1.2
	20	CHP SW	1	933.4	3000#	-	SA 105	0.1
TOTAL WEIGHT								5
5HAH21-BR001 10"-BA10	13	SPRAL WOUND GASKET 85" RF 800#	1	-	-	-	AS1 304 + GRAPHITE	-
	14	STUD BOLT	8	83/4"	-	125	SA 193 B7	2.5
	15	NUTS	16	83/4"	-	-	SA 194 Gr.2H	1.3
TOTAL WEIGHT								4

NOTES:

- 1) ASME B31.1, ED.2001 + ADD. 2002 AND DIRECTIVE 97/23/EC (P.E.D.)
- 2) ALL DIMENSIONS ARE IN mm, UNLESS WHERE OTHERWISE INDICATED
- 3) () DENOTE ITEM NUMBER
- 4) XXXXXX-YYYYYZZ = SPOOL MK. No.
- 5) P SHOWS FIELD WELDS
- 6) SW DENOTES SHOP WELDING NUMBER
- 7) FW DENOTES FIELD WELDING NUMBER
- 8) ALL TOLERANCES, EXCEPT WHERE OTHERWISE INDICATED, ARE ACCORDING TO UNI EN 22768.1/M
- 9) PIPE MATERIAL PROCUREMENT AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDD02800
- 10) -05- DENOTE DETAIL OF WELD ACCORDING DWG. 11680MDD04312 AND DWG. 11680MDD04311

7	22-09-05	REVISED FOR LABELLING 'AS BUILT' ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.
6	25-05-05	REVISED (SEE CLOUD) AS PER SITE NCR39	D.S.	A.R.	A.N.
5	10-01-05	MODIFY INSTRUMENT TAG NO. WHERE INDICATED	M.B.	A.R.	A.N.
4	20-12-04	REVISED WHERE INDICATED 	M.B.	A.R.	A.N.
3	24-11-04	REVISED WHERE INDICATED 	M.B.	A.R.	A.N.
2	20-10-04	REVISED WHERE INDICATED	L.R.	A.R.	A.N.
1	01-10-04	REVISED WHERE INDICATED 	T.S.I.	A.R.	A.N.
REV.	DATE	DESCRIPTION/Description	DIS. Dwg. Checked	CONTR. VISTO Approv.	

SCALE	FIRME/Signature	DATA/Date
DIS/Dwg.	T.S.I.	03/09/04
CONTR/Check.	A.R.	07/09/04
VISTO/Approv.	A.N.	15/09/04

LAVRION - METKA IPSH STEAM OUTLET LINE		
5HAH21-BR001/2/3-10\"-BA10		
ALSTOM		
RIFERIMENTO N. Reference N.		
N°. DISEGNO/Drawing No.		
11680MDD04330		

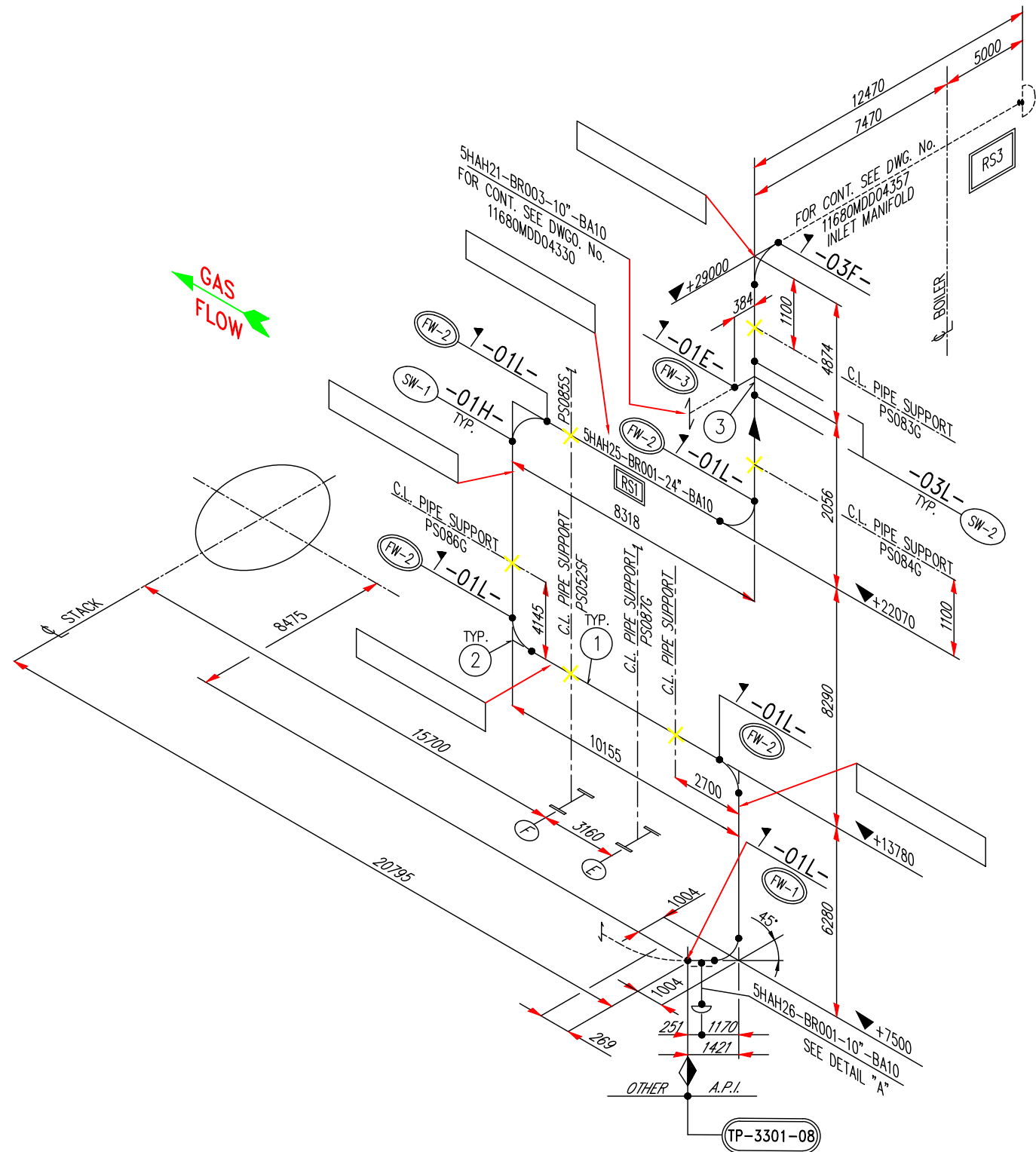
REFERENCE DRAWING	
DESCRIPTION	N. DRAWINGS
WATER AND STEAM IP SECTION P.&I. DIAGRAM	11680BD03301
PRESSURE PARTS ASSEMBLY LONGITUDINAL AND SECTION	11680MDD03030 11680MDD03035
WELDING DETAIL TO SHOP	11680MDD04311
WELDING DETAIL TO FIELD	11680MDD04312
PRESSURE SECTION	

REFERENCE DOCUMENTS	
DESCRIPTION	N. DOCUMENTS
SHOP WELDING TABLE	11680MDW02600
FIELD WELDING TABLE	11680MDW03800

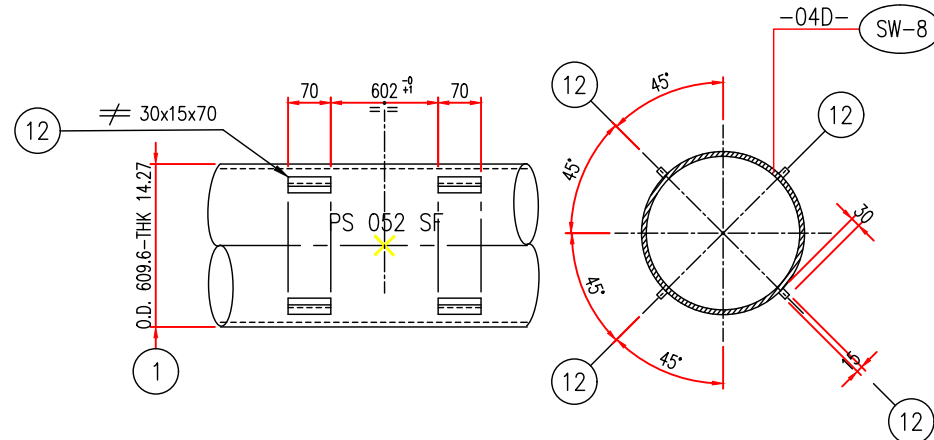
Rev. 2 and above are
RELEASED for ERECTION

KKS DWG.No. 5-HA-000-API-160

DIMENSIONS SHOWN TO WELDS ARE INDICATIVE ONLY. NO ALLOWANCE FOR SCARFING, SQUARING, ROOT GAP OR WELD SHRINKAGE



DETAIL FOR SUPPORT
-PS052SF-

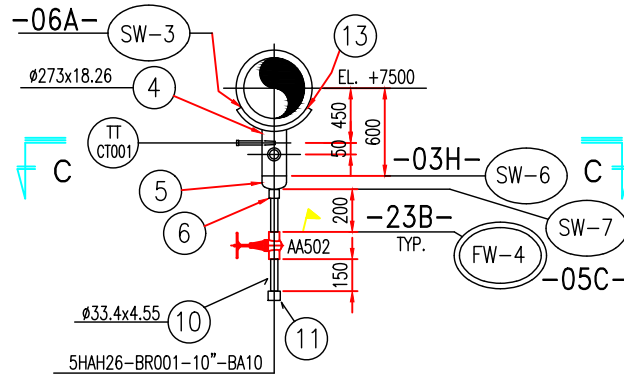


(TP-3301-08) PHYSICAL BATTERY LIMITS-SEE DWG 11680MDD03020

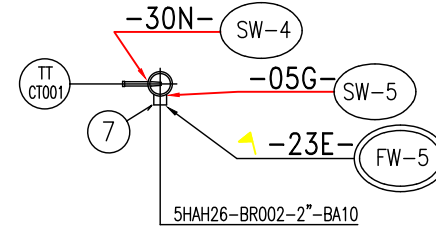
OTHERS Alstom Power Italia S.p.A.

DIMENSIONS SHOWN TO WELDS ARE INDICATIVE ONLY. NO ALLOWANCE FOR SCARFING, SQUARING, ROOT GAP OR WELD SHRINKAGE HAS BEEN INCLUDED IN RUNNING LENGTHS.

DETAIL "A"



SECTION C-C



SHOP FABRICATED MATERIAL										
IDENTIF. COMPON. (NOTE 3)	LINE No.	SPOOL	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)
RS 1	5HAH25-BR001 24"-BA10	5HAH25-4352/A	1	PIPE	1	ø609.6	14.27 ±12.5%	4960	SA 106 Gr. B	1039.3
			2	ELBOW 90°-LR	2	ø609.6	14.27 ±12.5%	—	SA 234 Gr.WPB	605
			4	PIPE	1	ø273	18.26 ±12.5%	500	SA 106 Gr.B	70
			5	CAP	1	ø273	9.27 ±12.5%	—	SA 234 Gr.WPB	37.5
			6	HALF COUPLING-SW	1	ø1"	3000#	—	SA 105	0.35
			7	HALF COUPLING-SW	1	ø2"	3000#	—	SA 105	1
			13	PLATE ø 450	1	—	12	—	SA 516 Gr.70	2
		5HAH25-4352/B	1	PIPE	1	ø609.6	14.27 ±12.5%	8327	SA 106 Gr. B	2121.2
			2	ELBOW 90°-LR	1	ø609.6	14.27 ±12.5%	—	SA 234 Gr.WPB	302.5
			12	PLATE 30x15	8	—	15	70	SA 516 Gr.70	1
		5HAH25-4352/C	1	PIPE	1	ø609.6	14.27 ±12.5%	6462	SA 106 Gr. B	1646.1
			2	ELBOW 90°-LR	1	ø609.6	14.27 ±12.5%	—	SA 234 Gr.WPB	302.5
		5HAH25-4352/D	1	PIPE	1	ø609.6	14.27 ±12.5%	6490	SA 106 Gr. B	1653.2
			2	ELBOW 90°-LR	1	ø609.6	14.27 ±12.5%	—	SA 234 Gr.WPB	302.5
		5HAH25-4352/E	1	PIPE	1	ø609.6	14.27 ±12.5%	4238	SA 106 Gr. B	1079.5
			2	ELBOW 90°-LR	1	ø609.6	14.27 ±12.5%	—	SA 234 Gr.WPB	302.5
			3	REDUCING TEE-BW	1	ø24"x24"x10"	sch.40	—	SA 234 Gr.WPB	374
TOTAL WEIGHT									9840	

SITE FABRICATED MATERIAL						
LINE No.	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)
5HAH26-BR001 10"-BA10	10	PIPE	1	Ø33.4	4.55 ±12.5%	400
	11	CAP SW	1	1"	3000#	-
TOTAL WEIGHT						2

NOTES:

- ASME 31.1, ED.2001 + ADD.2002 AND DIRECTIVE 97/23/EC (P.E.D.)
- ALL DIMENSIONS ARE IN mm, UNLESS WHERE OTHERWISE INDICATED
- xx 10 TO SHOW IDENTIFICATION COMPONENTS ACCORDING TO ANALYSIS LETTER N° 11680BTX16060
- ① DENOTES ITEM NUMBER
- XXXXXX-YYYY/Z = SPOOL MK. No.
- ▲ SHOWS FIELD WELDS
- SW... DENOTES SHOP WELDING NUMBER
- FW... DENOTES FIELD WELDING NUMBER
- ALL TOLERANCES, EXCEPT WHERE OTHERWISE INDICATED, ARE ACCORDING TO UNI EN 22768.1/M
- PIPE MATERIAL PROCUREMENT AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDR02600
- 05- DENOTES DETAIL OF WELD ACCORDING DWG. 11680MDD04311 AND DWG. 11680MDD04312

Rev. 2 and above are
RELEASED for ERECTION

KKS DWG.No. 5-HA-000-API-164

REFERENCE DRAWING	
DESCRIPTION	N. DRAWINGS
WATER AND STEAM IP SECTION P.&I. DIAGRAM	11680BTD03301
PRESSURE PARTS ASSEMBLY LONGITUDINAL AND SECTION	11680MDD03030 11680MDD030305
WELDING DETAIL TO SHOP	11680MDD04311
WELDING DETAIL TO FIELD	11680MDD04312
PRESSURE SECTION TECHNICAL DATA	11680MDD03043
REFERENCE DOCUMENTS	
DESCRIPTION	N. DOCUMENTS
SHOP WELDING TABLE	11680MDW02600
FIELD WELDING TABLE	11680MDW03800
ERECTION LIST	11680MDE02600

4	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.
3	10-01-05	MODIFY INSTRUMENT TAG NO. WHERE INDICATED	M.B.	A.R.	A.N.
2	10-11-04	REVISED WHERE INDICATED	M.B.	A.R.	A.N.
1	05-10-04	REVISED WHERE INDICATED	P.V.	A.R.	A.N.
REV.	DATA Date	DESCRIZIONE/Description	DIS. Dwg.	CONTR. Checked	VISTO Approv.
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI. This Drawing is the Property of ALSTOM Power Italia S.p.A. The reproduction for any use by a third party is forbidden by law.		SCALA Scale	FIRME/Signature	DATA/Date	
LAVRION - METKA COLD RH STEAM LINE TO B.L. 5HAH25-BR001-24"-BA10 ALSTOM ALSTOM Power Italia S.p.A.		//	DIS./Dwg.	T.S.I.	03-09-04
			CONTR./Check.	A.R.	23-09-04
			VISTO/Approv.	A.N.	28-09-04
RIFERIMENTO N. Reference N.		N°. DISEGNO/Drawing No.		TAV. / DI	
		11680MDD04352			
REV.		1	2	3	4

A

B

C

D

E

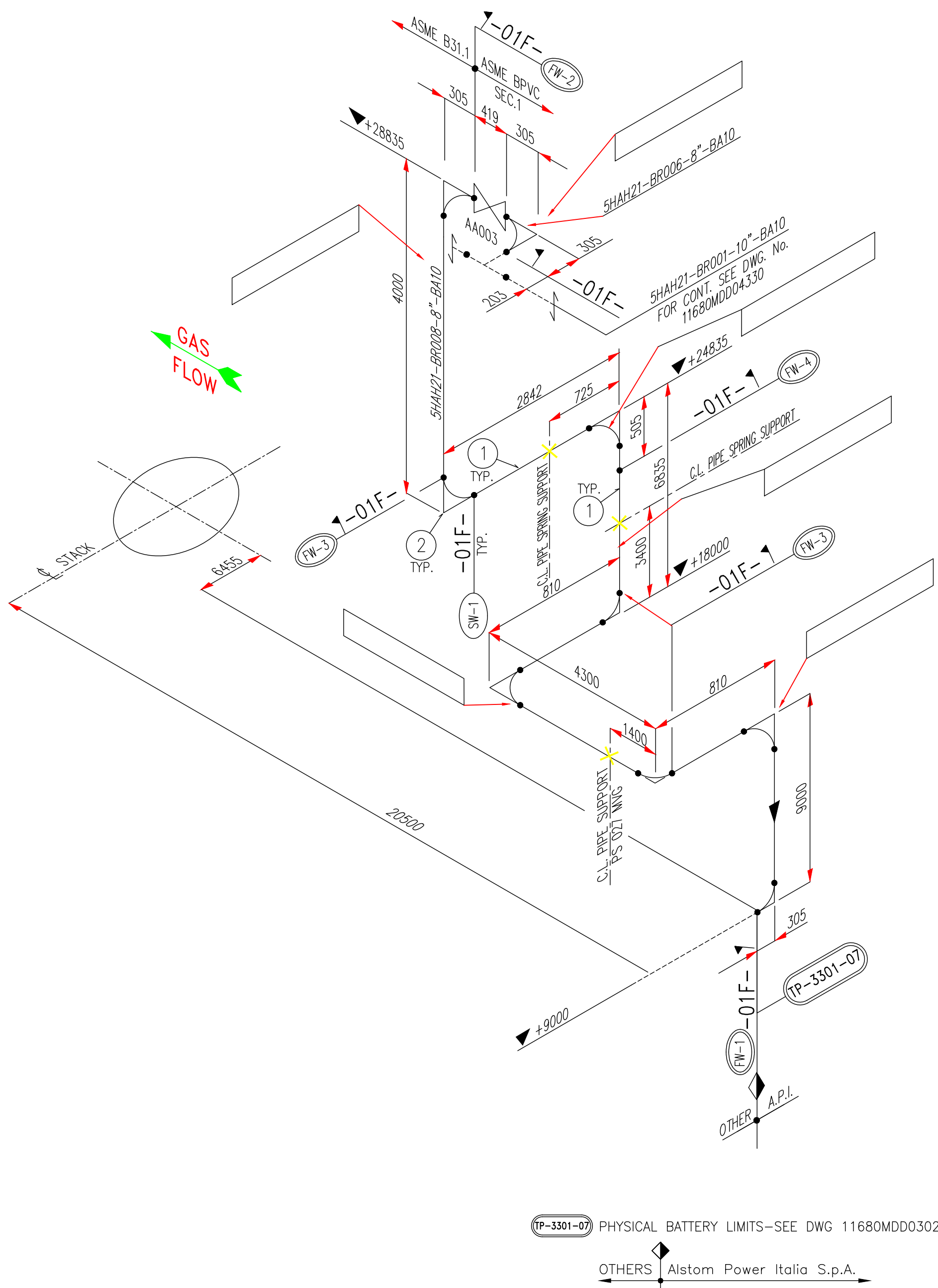
A

B

C

D

E



DIMENSIONS SHOWN TO WELDS ARE INDICATIVE ONLY. NO ALLOWANCE FOR SCARFING, SQUARING, ROOT GAP OR WELD SHRINKAGE HAS BEEN INCLUDED IN RUNNING LENGTHS.

SHOP FABRICATED MATERIAL									
LINE No.	SPOOL	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)
5HAH21-BR008 8"-BA10	5HAH21-4353/A	1	PIPE	1	ø219.1	8.18 ±12.5%	8590	SA 106 Gr. B	365.3
		2	ELBOW 90°-LR	2	ø219.1	8.18 ±12.5%	-	SA 234 Gr.WPB	40.8
	5HAH21-4353/B	1	PIPE	1	ø219.1	8.18 ±12.5%	3890	SA 106 Gr. B	165.4
		2	ELBOW 90°-LR	3	ø219.1	8.18 ±12.5%	-	SA 234 Gr.WPB	61.2
	5HAH21-4353/C	1	PIPE	1	ø219.1	8.18 ±12.5%	6025	SA 106 Gr. B	256.3
	5HAH21-4353/C1	1	PIPE	1	ø219.1	8.18 ±12.5%	2432	SA 106 Gr. B	103.4
		2	ELBOW 90°-LR	2	ø219.1	8.18 ±12.5%	-	SA 234 Gr.WPB	40.8
	5HAH21-4353/D	1	PIPE	1	ø219.1	8.18 ±12.5%	3390	SA 106 Gr. B	144.2
		2	ELBOW 90°-LR	1	ø219.1	8.18 ±12.5%	-	SA 234 Gr.WPB	20.4
5HAH21-BR006 8"-BA10	5HAH21-4353/E	2	ELBOW 90°-LR	1	ø219.1	8.18 ±12.5%	-	SA 234 Gr.WPB	20.4
								TOTAL WEIGHT	1218

NOTES:

- 1) ASME CODE SECTION I, ED.2001 + ADD.2003 OR ASME B31.1 ED2001 + ADD.2002 AND DIRECTIVE 97/23/EC (P.E.D.)
- 2) ALL DIMENSIONS ARE IN mm, UNLESS WHERE OTHERWISE INDICATED
- 4) ① DENOTE ITEM NUMBER
- 5) [XXXXXX-YYYY/Z] = SPOOL MK. No.
- 6) ⚡ SHOWS FIELD WELDS
- 7) (SW...) DENOTES SHOP WELDING NUMBER
- 8) (FW...) DENOTES FIELD WELDING NUMBER
- 9) ALL TOLERANCES, EXCEPT WHERE OTHERWISE INDICATED, ARE ACCORDING TO UNI EN 22768.1/M
- 10) PIPE MATERIAL PROCUREMENT AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDR02600
- 11) -05- DENOTES DETAIL OF WELD ACCORDING DWG. 11680MDD04311 AND DWG. 11680MDD04312

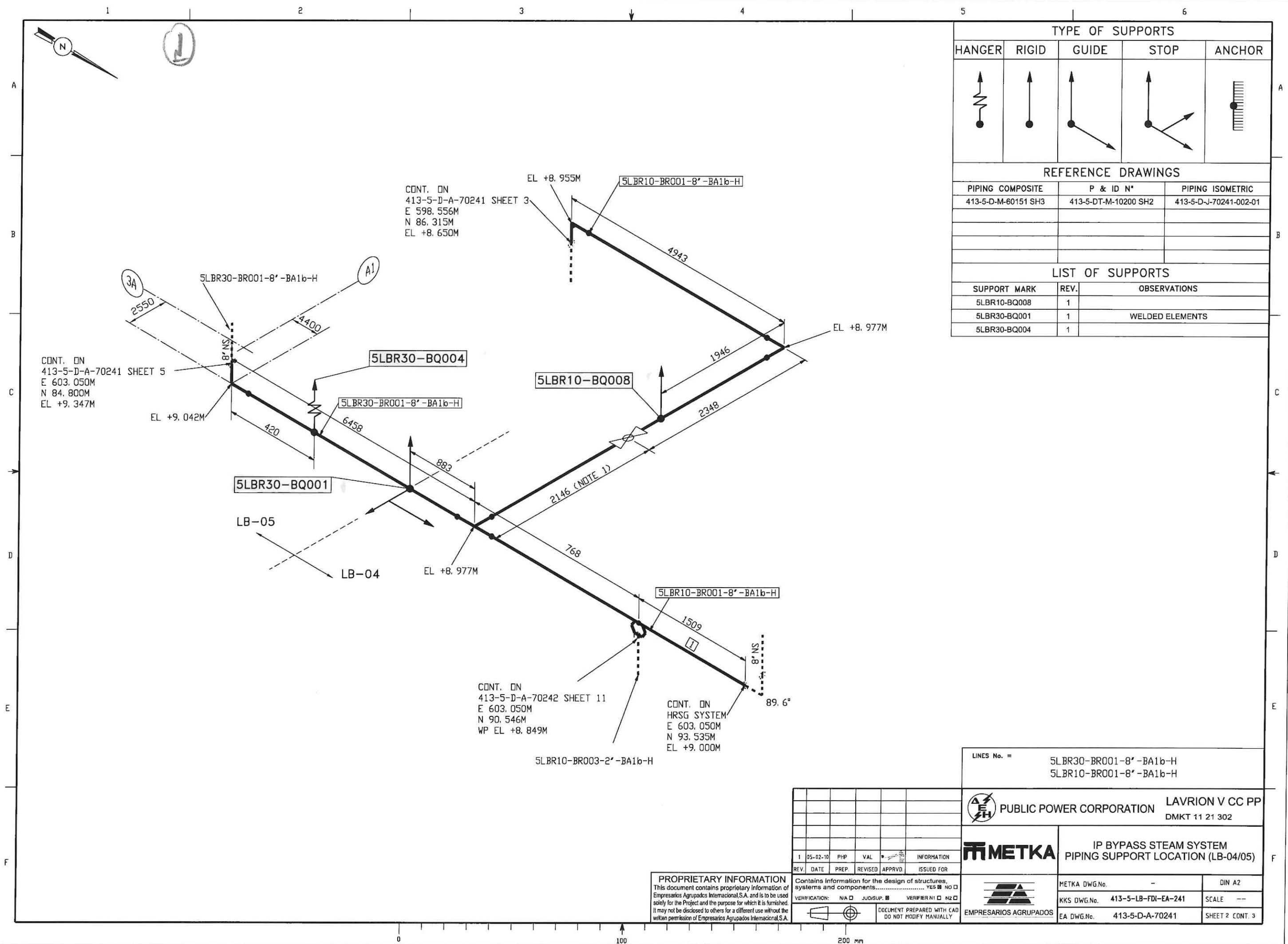
Rev. 1 and above are
RELEASED for ERECTION

KKS DWG.No. 5-HA-000-API-165

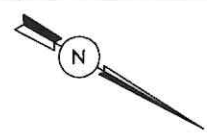
REFERENCE DRAWING	
DESCRIPTION	N. DRAWINGS
WATER AND STEAM HP/IP/LP SECTION P.&I. DIAGRAM	11680BTD03301
PRESSURE PARTS ASSEMBLY LONGITUDINAL AND SECTION	11680MDD03030 ÷ 11680MDD03035
WELDING DETAIL TO SHOP	11680MDD04311
WELDING DETAIL TO FIELD	11680MDD04312
PRESSURE SECTION TECHNICAL DATA	11680MDD03042

REFERENCE DOCUMENTS	
DESCRIPTION	N. DOCUMENTS
SHOP WELDING TABLE	11680MDW02600
FIELD WELDING TABLE	11680MDW03800
ERECTION LIST	11680MDE02600

3	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.					
2	04-02-05	ADDED SPOOL MK 5HAH21-4353/E △	A.S.	A.R.	A.N.					
1	05-10-04	REVISED WHERE INDICATED	P.V.	A.R.	A.N.					
REV.	DATA Date	DESCRIZIONE/Description	DIS. Dwg.	CONTR. Checked	VISTO Approv.					
QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI This Drawing is the Property of ALSTOM Power Italia S.p.A. The reproduction for any use by a third party is forbidden by law.			SCALA Scale	FIRME/Signature		DATA/Date				
			//	DIS./Dwg.		T.S.I.		3/9/04		
				CONTR./Check.		A.R.		13/9/04		
				VISTO/Approv.		A.N.		23/9/04		
LAVRION – METKA IPSH BY-PASS OUTLET LINE 5HAH21-BR006/8-8”-BA10			RIFERIMENTO N. Reference N.							
			N°. DISEGNO/Drawing No.				TAV. Sh.	D of		
			11680MDD04353							
ALSTOM ALSTOM Power Italia S.p.A.			REV.	1	2	3				



1 2 3 4 5 6



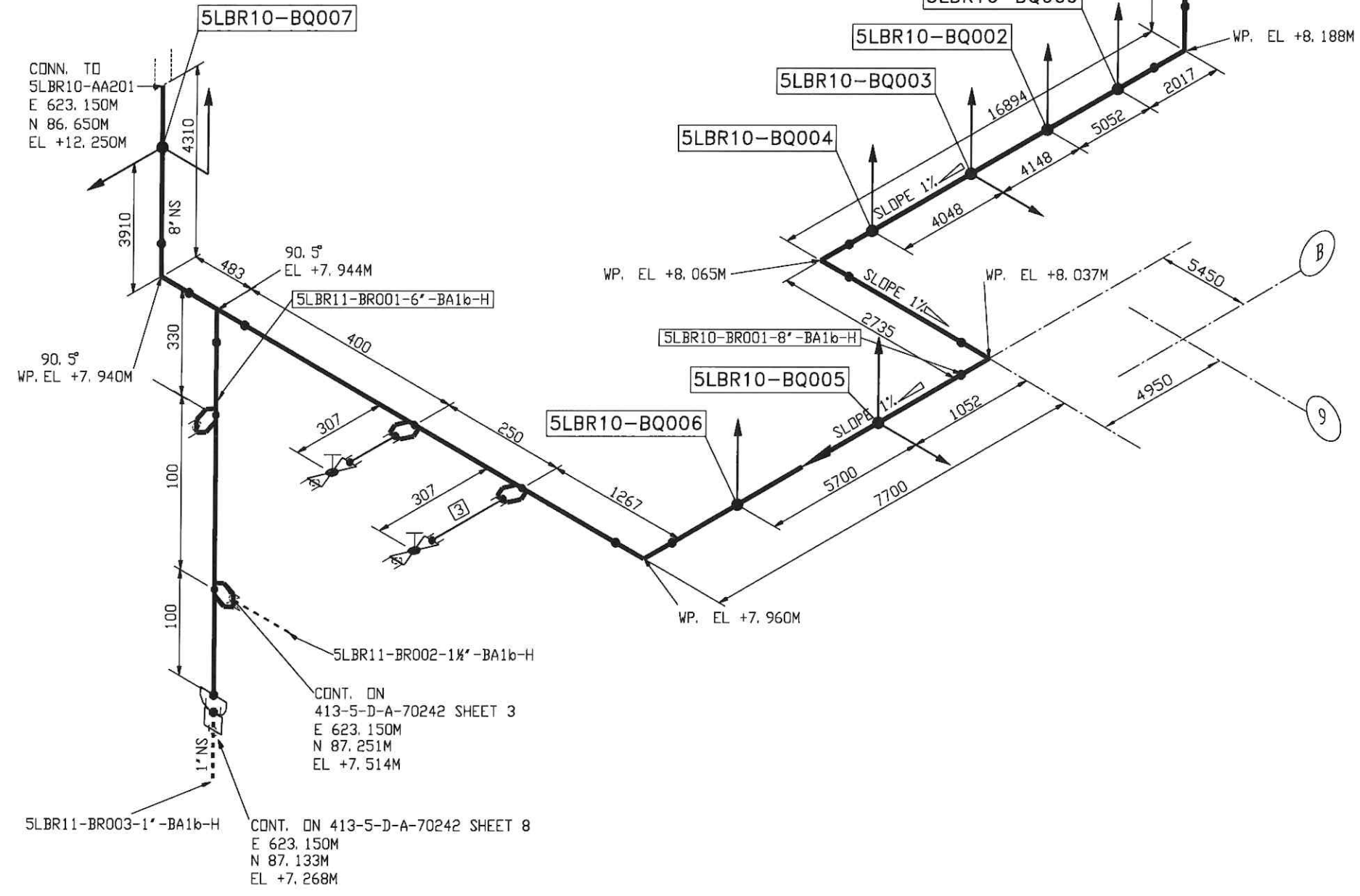
2

CONT. ON
413-5-D-A-70241 SHEET 2
E 598.556M
N 86.315M
EL +8.650M

TYPE OF SUPPORTS				
HANGER	RIGID	GUIDE	STOP	ANCHOR

REFERENCE DRAWINGS		
PIPING COMPOSITE	P & ID N°	PIPING ISOMETRIC
413-5-D-M-60151 SH2	413-5-DT-M-10200 SH2	413-5-D-J-70241-003-01
413-5-D-M-60151 SH3		
413-5-D-M-60152 SH2		

LIST OF SUPPORTS		
SUPPORT MARK	REV.	OBSERVATIONS
5LBR10-BQ002	1	
5LBR10-BQ003	1	WELDED ELEMENTS
5LBR10-BQ004	1	
5LBR10-BQ005	1	
5LBR10-BQ006	1	
5LBR10-BQ007	1	WELDED ELEMENTS
5LBR10-BQ009	1	



413-5-D-A-70241-003-01

PROPRIETARY INFORMATION
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REV.	DATE	PREP.	REVISED	APPROV.	ISSUED FOR
1	05-02-10	PHP	VAL		INFORMATION

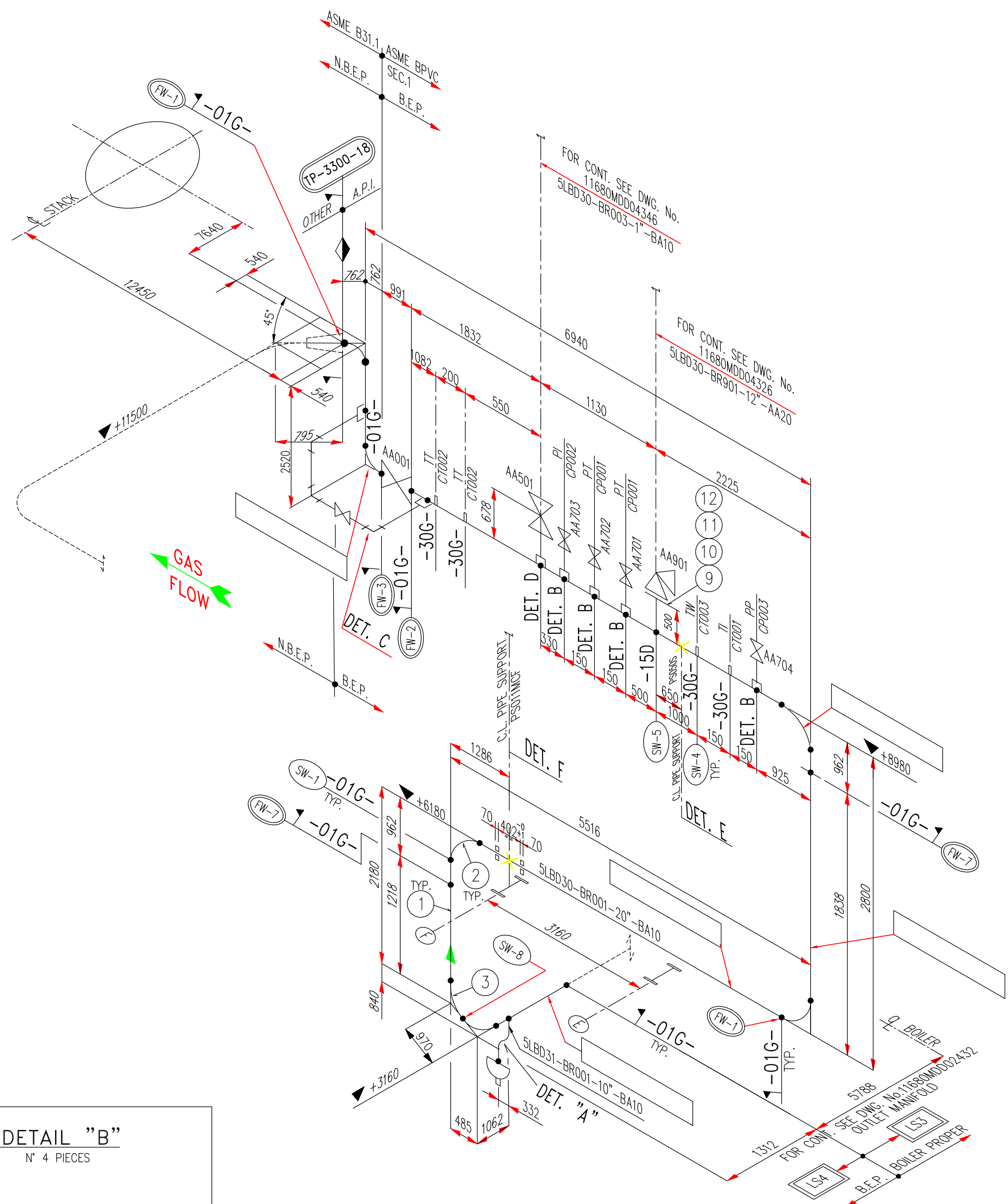
LINES No. =
5LBR10-BR001-8'-BA1b-H
5LBR11-BR001-6'-BA1b-H

PUBLIC POWER CORPORATION
LAVRION V CC PP
DMKT 11 21 302

METKA
IP BYPASS STEAM SYSTEM
PIPING SUPPORT LOCATION (LB-04)

METKA DWG.No.	-	DIN A2
KKS DWG.No.	413-5-LB-FDI-EA-241	SCALE ---
EA DWG.No.	413-5-D-A-70241	SHEET 3 CONT. 4

0 100 200 mm



SHOP FABRICATED MATERIAL										
IDENTIF. COMPON. (NOTE 3)	LINE No.	SPOOL ERECTION MARK	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	ASME MATERIAL	WEIGHT (Kg)
LS 4	5LBD30-BR001 20"-BA10	5LBD30-4340/A	1	PIPE	1	ø508	9.52 ±12.5%	2350	SA 106 Gr.B	275
			2	ELBOW 90°-LR	1	ø508	9.52 ±12.5%	-	SA 234 Gr.WPB	143.8
			3	ELBOW 30°-LR	1	ø508	9.52 ±12.5%	-	SA 234 Gr.WPB	47.5
			7	PIPE	1	ø273	9.27 ±12.5%	346	SA 106 Gr.B	21
			8	CAP	1	ø273	9.27 ±12.5%	-	SA 234 Gr.WPB	9
		5LBD30-4340/A1	15	HALF COUPLING-SW	1	ø2"	3000#	-	SA 105	1
			5	HALF COUPLING-SW	1	ø1"	3000#	-	SA 105	0.35
			1	PIPE	1	ø508	9.52 ±12.5%	4800	SA 106 Gr.B	562
			2	ELBOW 90°-LR	1	ø508	9.52 ±12.5%	-	SA 234 Gr.WPB	143.8
			16	PLATE 30x15	8	-	15	70	SA 516 Gr.70	1
		5LBD30-4340/B	1	PIPE	1	ø508	9.52 ±12.5%	5000	SA 106 Gr.B	585
			2	ELBOW 90°-LR	1	ø508	9.52 ±12.5%	-	SA 234 Gr.WPB	143.8
			4	HALF COUPLING-SW	4	ø1/2"	3000#	-	SA 105	0.6
			5	HALF COUPLING-SW	1	ø1"	3000#	-	SA 105	0.35
			9	FLANGE (WN RF 300#)	1	ø6	-	268	SA 105	49
		5LBD30-4340/B1	20	PIPE	1	ø114.3	6.02 ±12.5%	240	SA 106 Gr.B	4
			21	PLATE 140x10	1	-	10	140	SA 36	1
			1	PIPE	1	ø508	9.52 ±12.5%	1705	SA 106 Gr.B	200
			2	ELBOW 90°-LR	1	ø508	9.52 ±12.5%	-	SA 234 Gr.WPB	143.8
			1	PIPE	1	ø508	9.52 ±12.5%	2000	SA 106 Gr.B	785
		5LBD30-4340/C	2	ELBOW 90°-LR	2	ø508	9.52 ±12.5%	-	SA 234 Gr.WPB	286
			15	HALF COUPLING-SW	2	ø2"	3000#	-	SA 105	1
TOTAL WEIGHT									3400	

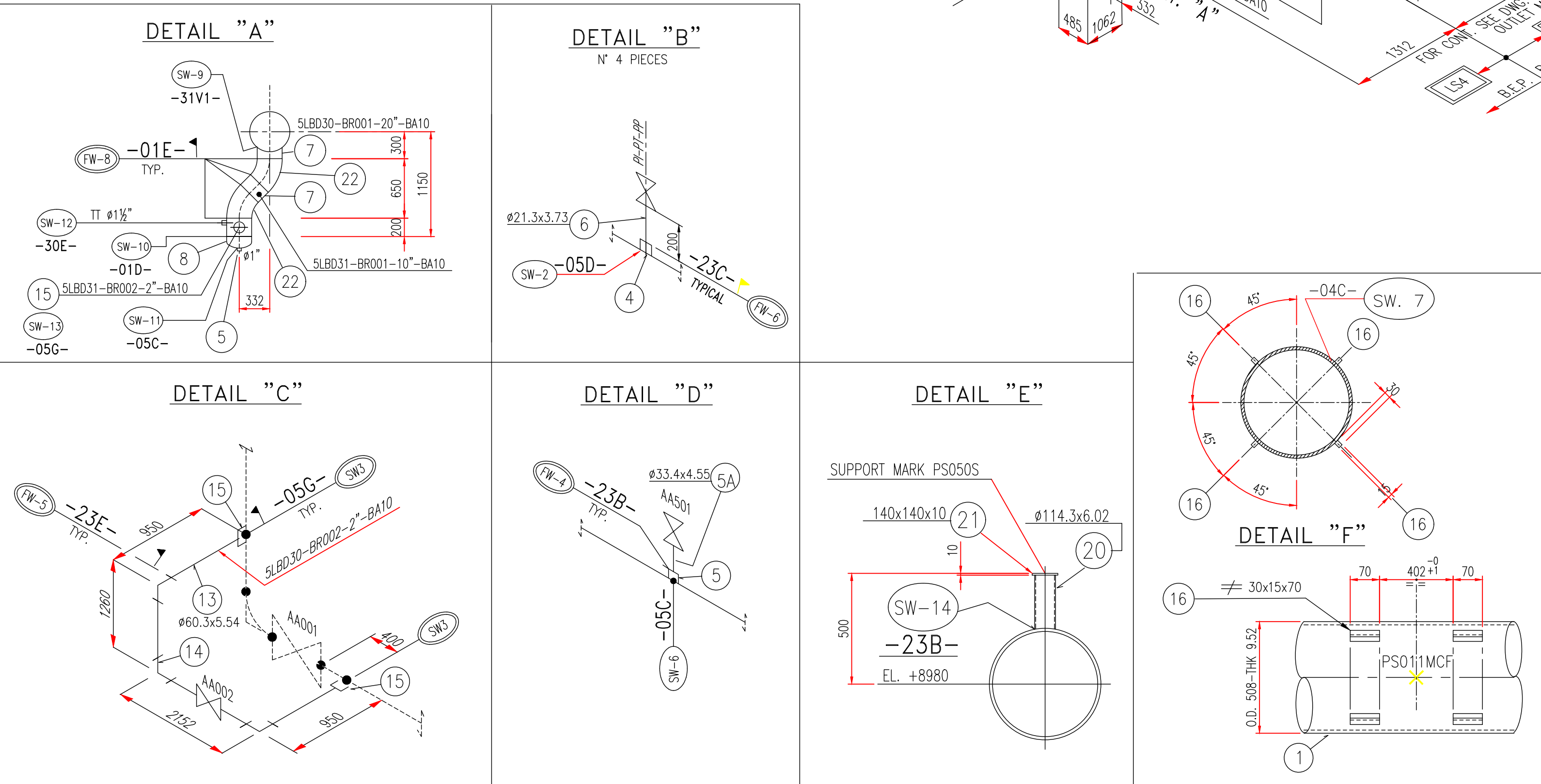
SITE FABRICATED MATERIAL							
LINE No.	ITEM	COMPONENT DESCRIPTION	Q.TY	O.D. DIM. (mm)	THK (mm)	LENGHT (mm)	WEIGHT (Kg)
5LBD30-BR002 2"-BA10	13	PIPE	1	ø60.3	5.54 ±12.5%	5320	SA 106 Gr.B
	14	ELBOW 90°-SW	3	ø2"	3000#	-	SA 105
5LBD30-BR001 20"-BA10	6	PIPE	5	ø21.3	3.73 ±12.5%	200	SA 106 Gr.B
	5A	PIPE	1	ø33.4	4.55 ±12.5%	350	SA 106 Gr.B
5LBD31-BR001 10"-BA10	7	PIPE	1	ø273	9.27 ±12.5%	151	SA 106 Gr.B
	22	ELBOW 45°-LR	2	ø273	9.27 ±12.5%	-	SA 234 Gr.WPB
TOTAL WEIGHT							94

ERECTION BOLTS LIST AND GASKETS							
5LBD30-BR001 20"-BA10	10	SPIRAL WOUND GASKET	1	-	-	-	SA 106 Gr.B
	11	STUD BOLT	12	ø3/4"	-	125	SA 193 B7H
	12	NUTS	24	ø3/4"	-	-	SA 194 Gr.2H
TOTAL WEIGHT							52

- NOTES:
- 1) ASME B31.1, ED.2001 + ADD. 2002 AND DIRECTIVE 97/23/EC (P.E.D.)
 - 2) ALL DIMENSIONS ARE IN mm, UNLESS WHERE OTHERWISE INDICATED
 - 3) ① DENOTE ITEM NUMBER
 - 4) [XXXXXX-YYYY/Z] = SPOOL MK. No.
 - 5) ⚡ SHOWS FIELD WELDS
 - 6) [SW...] DENOTES SHOP WELDING NUMBER
 - 7) [FW...] DENOTES FIELD WELDING NUMBER
 - 8) ALL TOLERANCES, EXCEPT WHERE OTHERWISE INDICATED, ARE ACCORDING TO UNI EN 22768.1/M
 - 9) PIPE MATERIAL PROCUREMENT AND FABRICATION SHALL BE IN FULL ACCORDANCE TO API M.R. 11680MDD02600
 - 10) -05- DENOTE DETAIL OF WELD ACCORDING DWG. 11680MDD04311 AND DWG. 11680MDD04312

Rev. 2 and above are RELEASED for ERECTION

KKS DWG.No. 5-HA-000-API-161



REFERENCE DRAWING		N. DRAWINGS	
WATER AND STEAM LP SECTION P.&I. DIAGRAM	11680BTD03300	6	22-09-05
PRESSURE PARTS ASSEMBLY LONGITUDINAL AND SECTION	11680MDD03030	4	04-02-05
WELDING DETAIL TO SHOP	11680MDD04311	2	25-10-04
WELDING DETAIL TO FIELD	11680MDD04312	1	20-10-04
PRESSURE SECTION TECHNICAL DATA	11680MDD03040		
REFERENCE DOCUMENTS		N. DOCUMENTS	
SHOP WELDING TABLE	11680MDW02600		
FIELD WELDING TABLE	11680MDW03800		
ERECTION LIST	11680MDE02600		

6	22-09-05	REVISED FOR LABELLING "AS BUILT" ONLY. NO OTHER CHANGES	A.S.	A.R.	A.N.
5	08-04-05	REVISED DETAIL "A" / S	A.S.	A.R.	A.N.
4	04-02-05	ADDED SPOOLS MK. 5LBD30-4340/A1 ; -4340/B1 / A	A.S.	A.R.	A.N.
3	10-11-04	REVISED WHERE INDICATED / S	M.B.	A.R.	A.N.
2	25-10-04	REVISED WHERE INDICATED / S	A.S.	A.R.	A.N.
1	20-10-04	REVISED WHERE INDICATED / S	L.R.	A.R.	A.N.

QUESTO DISEGNO E' PROPRIETA' DELLA ALSTOM Power Italia S.p.A. A TERMINE DI LEGGE NE E' VIETATA LA RIPRODUZIONE E LA COMUNICAZIONE A TERZI. This Drawing is the Property of ALSTOM Power Italia S.p.A. The reproduction for any use by a third party is forbidden by law.	SCALA Scale	FIRME/Signature	DATA/Date
	1:25	DIS./Dwg. T.S.I.	3/8/04
		CONTR./Check. A.R.	13/8/04
		VISTO/Approv. A.N.	28/8/04

LAVRION - METKA	
LPSH STEAM LINE	
5LBD30-BR001-20"-BA10	
ALSTOM	
ALSTOM Power Italia S.p.A.	

N°: DISEGNO/Drawing No.	TAV. / DI Sh. / of
11680MDD04340	
REV. 1 2 3 4 5 6	

DIMENSIONS SHOWN TO WELDS ARE INDICATIVE ONLY. NO ALLOWANCE FOR SCARFING, SQUARING, ROOT GAP OR WELD SHRINKAGE HAS BEEN INCLUDED IN RUNNING LENGTHS.