



Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)

Piping Centre , 80, G. N. Chetty Road, CHENNAI – 600 017
Phone : 91 (044) 28161245, e-mail: prs@bhelmpc.co.in

REF: ENQ NO:PC:9019

DT: 02.03.2010

Sub: Procurement of butt welded fittings through annual rate contract.

Ref: Enquiry No:PC:9019 dt 01.03.10

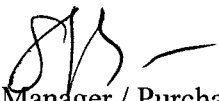
Please find the following tender documents for reference.

1. List of items
2. Tech. delivery condition TDG: 102:04

Pre qualification is the criteria for consideration for other than BHEL approved vendors. After qualifying for registration, the new vendors may be considered for future requirements, in line with BHEL system and policy. Such vendors will not be considered for this enquiry.

This is a limited tender and only vendors who are contacted through e-mail/courier may submit their offers.

The New vendors may download vendor registration forms from BHEL web site www.bhel.com and relevant data for formal registration.


Dy. Manager / Purchase
BHEL / Piping Centre
80,GN Road, T.Nagar
Chennai-600017
Ph:044-28161243

LIST OF ITEMS FOR RATE CONTRACT ENQUIRY NO:PC9019

SL NO	Material	Descri	RC QTY
1	921040410000	BW SR 90DEG ELL 406.4 X 9.53 SA234WPB	50
2	921042670000	BW LR 90DEG ELL 323.9 X 40 SA234WPC	75
3	921042960000	BW SR 90DEG ELL 508 X 6.35 SA234WPB	75
4	921043370000	BW LR 90DEG ELL 219.1 X 28 SA234WPC	50
5	921043610000	BW LR 90DEG ELL 219.1 X 8.18 SA234WPB	300
6	921043630000	BW LR 90DEG ELL 219.1 X 25 SA234WPC	100
7	921044290200	BWLR90DEGELL88.9X5.49(WITHMPI) SA234WPB	6000
8	921044310200	BWLR90DEGELL168.3X7.11(WITHMPI) SA234WPB	5000
9	921044540200	BWLR90DEGELL73X5.16(WITHMPI) SA234WPB	50
10	921044570000	BW LR 90DEG ELL 88.9X15.24SA234WPB	20
11	921044600000	ELBOW 90 DEG OD 219.1 x8.18 SA234WPB	20
12	921044610000	BW LR 90DEG ELL 273 X 9.27 SA234WPB	175
13	921044620000	BW LR 90DEG ELL 323.9 X 9.53 SA234WPB	900
14	921044660000	LR 90DEG ELL 323.9X9.53SA234WP22CL1	100
15	921044670000	LR 90DEG ELL 355.6 X 9.53SA234WP22CL1	75
16	921044750200	BWLR45DEGELL168.3X7.11(WITHMPI) SA234WPB	450
17	921044760000	BW LR 45DEG ELL 219.1 X 8.18 SA234WPB	10
18	921044770000	BW LR 45DEG ELL 273 X 9.27 SA234WPB	20
19	921044830000	BW LR 90DEG ELL 457.2 X 12.7 SA234WPB	20
20	921044840000	BW LR 90DEG ELL 508 X 12.7 SA234WPB	125
21	921044870000	LR 90DEG ELL 219.1 X 6.35SA234WP22CL1	75
22	921044930000	BW LR 45DEG ELL 355.6 X 7.92 SA234WPB	100
23	921044970000	BW SR 90DEG ELL 273 X 9.27 SA234WPB	75
24	921045020000	BW LR 90DEG ELL 323.9X9.53SA234WP22CL1	50
25	921046280000	90DEG BW LR ELL 88.9X 21 EPSTY:PWP22CL1	20
26	921050870000	BW UEQT 323.9X6.35 219.1X6.35 SA234WPB	30
27	921051370000	BW EQT 219.1 X 6.35 SA234WPB	125
28	921051830000	BW EQT 323.9 X 8.8 SA234WPB	5
29	921053560000	BW EQT 508 X 6.35 SA234WPB	10
30	921053890000	BW EQT 88.9 X 12.5 SA234WPC	10
31	921054790000	BW EQT 114.3 X 6.02SA234WPB	250
32	921054810000	BW EQT 219.1 X 8.18SA234WPB	50
33	921054830000	BW EQT 323.9 X 9.53 SA234WPB	75
34	921054840000	BW EQT 406.4 X 9.53 SA234WPB	20
35	921055000000	BW EQT 273 X 9.27 SA234WPB	30
36	921055010000	BW EQT 60.3 X 12.5 - SA234WP22CL1	200
37	921055020000	BW EQT 60.3 X 5.54SA234WP22CL1	50
38	921055030000	BW UEQT 273X9.27 219.1X8.18 SA234WPB	30
39	921055060000	BW EQT 406.4 X 12.7 SA234WPB	100
40	921171040200	BW CON RED 88.9X7.62/48.3X5.08 SA234WPB	5
41	921171060200	BW CON RED 88.9X5.49 73X5.16 SA234WPB	10
42	921171080000	BWCONRED114.3X6.02/60.3X5.54 SA234WPB	100
43	921171150000	BW CON RED273.1X9.27/114.3X6.02 SA234WPB	75
44	921171170200	BW CON RED 273X9.27/219.1X8.18 SA234WPB	20
45	921171190000	BWCONRED323.9X9.53/219.1X8.18 SA234WPB	15

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SL NO	Material	Descri	RC QTY
46	921171200200	BW CON RED 323.9X9.53/273X9.27 SA234WPB	5
47	921171210000	BW CON RED 355.6X9.53/273X9.27 SA234WPB	15
48	921171250000	BW CON RED 508X9.53/355.6X9.53 SA234WPB	10
49	921171270000	BW CON RED 508X12.7/457.2X12.7 SA234WPB	10
50	921171300200	BWCONRED114.3X8.56/88.9X7.62 SA234WPB	5
51	921171310200	BW CON RED 88.9X7.62/60.3X5.54 SA234WPB	10
52	921171320200	BW CON RED 73X7.01 60.3X5.54 SA234WPB	5
53	921174190000	ECCREDOD762X40/558.8X28.58SA234WP22CL1	2
54	921174210000	CONRED OD 813X 56/ 762 X 40 SA234WP22CL1	2
55	921174630000	BWCONRED813X10/711X10SA234WPB(WELDED)	10
56	921174640000	BWCONRED 558.8X9.53/ 323.9X9.53SA234WPB	5
57	921175190000	CON RED 114.3X20/88.9X15.24 SA234WP22CL1	5
58	925032110000	BW CAP 273 X 9.27 SA234WPB	10
59	925032120000	BW CAP 219.1 X 8.18 SA234WPB	10
60	925032140000	BW CAP 114.3 X 6.02 SA234WPB	100
61	925032280000	BW CAP 168.3 X 7.11SA234WP22CL1	15
62	925032420000	BW CAP 355.6 X 9.53 SA234WPB	5
63	925032721000	BW CAP 323.9 X 20 SA234WP22CL1	5
64	925032750000	BW CAP 323.9 X 6.35 SA234WPB	20
65	925033080000	BW CAP 219.1 X 6.35 SA234WPB	20
66	925033200000	BW CAP 273 X 6.35 SA234WPB	20
67	925033240000	BW CAP 219.1 X 8.18SA234WP22CL1	10
68	925033300000	BW CAP 73 X 5.16 SA234WPB	10
69	925033310000	BW CAP 323.9 X 9.53 SA234WPB	10
70	925041120000	LR 90 DEG ELL 88.9X7.62SA234WP22CL1	100
71	925042010000	BW LR 45DEG ELL 457.2 X 12.7 SA234WPB	20
72	925042100000	BW LR 90DEG ELL88.9X7.62SA234WP22CL1	75
73	925042110000	BW LR 90DEG ELL 219.1X36SA234WP22CL1	75
74	925042120000	BW LR 90DEG ELL 114.3 X 11.13 SA234WPB	5
75	925042170000	BW LR 90DEG ELL 406.4 X 7.92 SA234WPB	125
76	925042190000	BW LR 90DEG ELL 508 X 9.53 SA234WPB	175
77	925042210000	BW LR 90DEG ELL 559 X 9.53 SA234WPB	10
78	925042240000	BW SR 90DEG ELL 219.1 X 6.35 SA234WPB	100
79	925042250000	BW SR 90DEG ELL 273 X 6.35 SA234WPB	300
80	925042310000	BW LR 90DEG ELL273 X 6.35SA234WP22CL1	75
81	925042350000	BW SR 90DEG ELL 323.9 X 6.35 SA234WPB	75
82	925042470000	BW LR 90DEG ELL 323.9 X 36 SA234WPC	20
83	925042500000	BW LR 45DEG ELL 273 X 6.35 SA234WP22	10
84	925042580000	BW SR 90DEG ELL 219.1 X 8.18 SA234WPB	20
85	925042600000	BW SR 90DEG ELL 114.3 X 6.02 SA234WPB	10
86	925042640000	BW LR 45DEG ELL 88.9 X 5.49 SA234WPB	100
87	925042650000	BW SR 90DEG ELL 406.4 X 12.7 SA234WPB	75
88	925042860200	BW LR 90DEG ELL 219.1 X 6.35 SA234WPB	500
89	925042870200	BW LR 90DEG ELL 273 X 6.35 SA234WPB	500
90	925042880200	BW LR 90DEG ELL 323.9 X 6.35 SA234WPB	200

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SL NO	Material	Descri	RC QTY
91	925042890200	BW LR 45DEG ELL 219.1 X 6.35 SA234WPB	300
92	925042900200	BW LR 45DEG ELL 273 X 6.35 SA234WPB	150
93	925042910200	BW LR 45DEG ELL 323.9 X 6.35 SA234WPB	10
94	925042930000	BW SR 90DEG ELL 457.2 X 9.53 SA234WPB	10
95	925042960000	BW SR 90DEG ELL 609.6 X 9.53 SA234WPB	20
96	925043420000	BW LR 90DEG ELL 323.9 X 10.31 SA234WPC	100
97	925043430000	BW LR 90DEG ELL 219.1 X 8.18 SA234WPC	350
98	925043440000	BW LR 90DEG ELL 168.3 X 7.11 SA234WPC	20
99	925043530400	BW LR 90DEG ELL 457.2 X 9.53 SA234WPB	20
100	925044250000	BW LR 90DEG ELL 114.3 X 6.02 SA234WPC	100
101	925044290000	BW LR 90DEG ELL 323.9 X 12.7 SA234WPC	5
102	925044550000	BW LR 90DEG ELL 273 X 9.27 SA234WPC	300
103	925045370000	BW LR 90DEG ELL 609.6 X 9.53 SA234WPB	30
104	925045380000	BW LR 45DEG ELL 609.6 X 9.53 SA234WPB	20
105	925045480000	BW LR 90DEG ELL 60.3 X 5.54 SA234WPB	500
106	925045500000	BW LR 90DEG ELL73X14.02SA234WP22CL1	15
107	925045700200	BWLR90DEGELL114.3X6.02(WITHMPI) SA234WPB	5000
108	925045710200	BWLR45DEGELL114.3X6.02(WITHMPI) SA234WPB	200
109	925045720000	BW LR 45DEG ELL 508 X 9.53 SA234WPB	100
110	925045930000	BW LR 90DEG ELL 813 X 9.53 SA234WPB	10
111	925046040000	BW SR 90DEG ELL 355.6 X 7.92 SA234WPB	20
112	925046680000	BW SR 90DEG ELL 168.3 X 7.11 SA234WPB	75
113	925046800000	BW LR90DEG ELL168.3X27.5SA234WP22CL1	75
114	925046840000	BW 90 DEG ELBOW 273X45SA234WP22CL1	20
115	925046880000	BW LR 90DEG ELL 368 X 59SA234WP22CL1	20
116	925046930000	BW LR 90DEG ELL 73 X 9.53 SA234WPC	100
117	925049980000	BW LR 45 DEG ELL 88.9X11.13SA234WPC	75
118	925052020000	BW UEQT 273X6.35 168.3X7.11 SA234WPB	30
119	925052090000	BW EQT 168.3 X 7.11 SA234WPB	200
120	925052120000	BW EQT 508 X 9.53 SA234WPB	10
121	925052240000	BW UEQT 323.9X6.35 114.3X6.02 SA234WPB	10
122	925052320000	BW UEQT 114.3X6.02 88.9X5.49 SA234WPB	30
123	925052390000	BW UEQT 168.3X7.11 114.3X6.02 SA234WPB	75
124	925052400000	BW UEQT 219.1X8.18 168.3X7.11 SA234WPB	20
125	925052410000	BW EQT 355.6 X 7.92 SA234WPB	20
126	925052420000	BW UEQT 219.1X6.35 114.3X6.02 SA234WPB	30
127	925052590000	BW EQT 273 X 6.35 SA234WPB	175
128	925052640000	UEQT 273X6.35/114.3X6.02SA234WP22CL1	5
129	925052650000	BW UEQT 168.3X7.11 88.9X5.49 SA234WPB	75
130	925052660000	BW UEQT 114.3X6.02 60.3X5.54 SA234WPB	20
131	925052810000	BW UEQT 355.6X7.92 273X6.35 SA234WPB	10
132	925052860000	BW UEQT 323.9X6.35 168.3X7.11 SA234WPB	50
133	925052900000	BW UEQT 273X6.35 114.3X6.02 SA234WPB	75
134	925053030000	BW EQT 323.9 X 40 SA234WPC	20
135	925053040000	BW UEQT 355.6X7.92 219.1X6.35 SA234WPB	10

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SL NO	Material	Descri	RC QTY
136	925053050000	BW UEQT 88.9X5.49/ 60.3X5.54 SA234WPB	75
137	925053160000	BW UEQT 323.9X6.35 273X6.35 SA234WPB	75
138	925053250000	BW EQT 355.6 X 9.53 SA234WPB	20
139	925053330000	BW EQT 219.1 X 6.35 SA234WP22	5
140	925053400000	BW EQT 273 X 6.35 SA234WP22	15
141	925053650000	BW EQT 406.4 X 6.35 SA234WPB	5
142	925053690000	BW UEQT 273.1X9.27 168.3X7.11 SA234WPB	10
143	925053730000	BW UEQT 406.4X9.53 273X9.27 SA234WPB	5
144	925053740000	BW EQT 219.1 X 36 SA234WP22CL 1	15
145	925053780000	BW UEQT 355.6X9.53 273X9.27 SA234WPB	10
146	925053920000	BW UEQT 355.6X9.53 168.3X7.11 SA234WPB	10
147	925053930000	BW UEQT 219.1X8.18 114.3X6.02 SA234WPB	10
148	925053960000	BW EQT 219.1X40SA234WP22CL1	10
149	925054000000	BW UEQT 273X9.27 114.3X6.02 SA234WPB	30
150	925054060000	EQ TEE219.1X8.18SA234WPC	20
151	925054100000	BW EQT 610 X 9.53 SA234WPB	10
152	925054540000	BW UEQT 355.6X9.53 323.9X9.53 SA234WPB	10
153	925054900000	BW EQT 711.2 X 10 SA234WPB	15
154	925055370000	BWUEQT88.9X7.62/ 60.3X 5.54SA234WP22CL1	20
155	925055670000	BW EQT 273 X 9.27 SA234WPC	20
156	925057040000	BW EQT 219.1 X 28 SA234WPC	5
157	925057060000	BW EQT 323.9 X 36 SA234WPC	5
158	925057190000	BW UET368X48/219.1X28SA234WPC	5
159	925057230000	BW EQT 168.3 X 27.5 SA234WP22CL1	20
160	925057370000	BW U.EQT 323.9X40/219.1X28SA234WPC	10
161	925057380000	UEQT 508X25/457.2X22SA234WP22CL1	10
162	925057410000	BWUEQT 88.9X15.24/73X14.02SA234WPC	10
163	925057420000	BWUEQT 368X59/273.1X45SA234WP22CL1	20
164	925057430000	BWUEQT558.8X28.58/457.2X25SA234WP22CL1	20
165	925057440000	BWUEQT558.8X28.58/508X28SA234WP22CL1	20
166	925057450000	BW U.EQT 368X48/273X36SA234WPC	10
167	925057470000	BW U.EQT 168.3X7.11/114.3X6.02SA234WPC	10
168	925057480000	BW EQT 168.3X7.11SA234WPC	10
169	925057500000	BW UET 273X9.27/114.3X6.02SA234WPC	10
170	925057510000	BW UEQT 273X9.27/88.9X5.49 SA234WPC	5
171	925057590000	BW UET 88.9 X3.05/60.3X2.77 SA403WP304H	10
172	925057600000	BW UET 88.9 X3.05/33.4X2.77 SA403WP304H	10
173	925057610000	BW UEQT 609.6X17.48/323.9X12.7SA234WPC	5
174	925057620000	BW UEQT 609.6X20/323.9X10.31 SA234WPC	10
175	925057650000	BW UEQT 356X52 168.3X27.5 SA234WP22CL1	5
176	925057660000	BW UEQTEE114.3X17.12/88.9X11.13/SA234WPC	5
177	925057670000	BW UEQTEE 508X12.7/273X9.27/SA234WPB	5
178	925057680000	BW UEQTEE 508X25/457.2X22/SA234WP22CL1	5
179	925057690000	BW UEQTEE 219.1X25/114.3X17.12/SA234WPC	5
180	925057700000	BW EQTEE 355.6X7.92/SA234WP22CL1	10

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SL NO	Material	Descri	RC QTY
181	925057790000	EQ TEE OD 508 X 64 SA234 WPC	30
182	925170940000	BW CON RED 355.6X7.92/273X6.35 SA234WPB	100
183	925170970000	BWCONRED355.6X7.92/323.9X6.35 SA234WPB	10
184	925171040000	BWCONRED406.4X9.53/219.1X8.18 SA234WPB	20
185	925171160000	BWCONRED457.2X12.7/406.4X12.7 SA234WPB	10
186	925172510000	BWCONRED457.2X9.53/219.1X8.18 SA234WPB	10
187	925173160000	BWCONRED508X15.09/219.1X8.18 SA234WPB	5
188	925173220000	BWCONRED73X14.02/60.3X12.5 SA234WP22cl1	15
189	925174050000	BW CON RED 88.9X4.85/48.3X4.05 SA234WPB	15
190	925174120000	BW CON RED 273X6.35/168.3X7.11 SA234WPB	75
191	925174180000	BW CON RED 508X9.53/406.4X9.53 SA234WPB	10
192	925174250000	BW CON RED 406.4X50 323.9X40 SA234WPC	5
193	925174300000	BW CON RED 273X6.35/219.1X6.35 SA234WPB	200
194	925174330000	BW CON RED 88.9X5.49/33.4X4.55 SA234WPB	75
195	925174380000	BWCONRED219.1X6.35/114.3X5.4 SA234WPB	20
196	925174400000	BWCONRED323.9X6.35/219.1X6.35 SA234WPB	30
197	925174410000	BW CON RED 323.9X6.35/273X6.35 SA234WPB	75
198	925174420000	BWCONRED355.6X6.35/323.9X6.35 SA234WPB	20
199	925174770000	BWCONRED168.3X7.11/141.3X7.11 SA234WPB	20
200	925174870000	BW CON RED 559X9.53/406.4X9.53 SA234WPB	10
201	925175030000	BW CON RED 508X12.7/406.4X9.53 SA234WPB	20
202	925175330000	BWCONRED168.3X7.11/73.0X5.16 SA234WPB	5
203	925175360000	BWCONRED406.4X9.53/355.6X9.53 SA234WPB	20
204	925175440000	C.RED 88.9X15.24/73X14.02SA234WP22CL1	10
205	925175460000	BW CON RED 88.9X5.49/60.3X5.54 SA234WPB	400
206	925175500000	BW CON RED 406.4X9.53/273X9.27 SA234WPB	15
207	925175710000	BWCONRED323.9X6.35/168.3X7.11 SA234WPB	10
208	925175830000	C.RED 273X6.35/219.1X6.35SA234WP22CL1	10
209	925176030000	BWCONRED323.9X9.53/273.1X9.27 SA234WP22	5
210	925176170500	BW CON RED 508X9.53 273X9.27 SA234WPB	10
211	925176590000	BW CON RED 508X9.53/323.9X9.53 SA234WPB	20
212	925176610000	BW ECC RED 610X9.53 508X9.53 SA234WPB	10
213	925176620000	BWCONRED60.3X11.07/48.3X10.15 SA234WPC	10
214	925176640000	BWCONRED114.3X8.56/88.9X7.62 SA234WPC	5
215	925176900000	BWCONRED323.9X9.53/168.3X7.11 SA234WPB	30
216	925177020000	BWCO.RED219.1X40/168.3X34SA234WP22CL1	20
217	925177120000	BW CORED 168.3X7.11/88.9X5.49 SA234WPC	5
218	925177130000	BWCONRED457.2X9.53/355.6X9.53 SA234WPB	20
219	925177340000	BWCONRED114.3X6.02/48.3X5.08 SA234WPB	10
220	925177400000	BW C.RE.406.4X25/323.9X25SA234WP22CL1	5
221	925178150000	BWCONRED406.4X12.7/323.9X9.53 SA234WPB	100
222	925178680000	BWCONRED114.3X3.05/60.3X2.77 SA403WP304H	20
223	925178690000	BW RED323.9X4.57/219.1X3.76 SA403WP304H	5
224	925178700000	BW CON RED 273X4.19/168.3X5 SA403WP304H	10
225	925178780000	C.RED219.1X8.18/168.3X7.11SA234WP22CL1	10

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SL NO	Material	Descri	RC QTY
226	925178790000	BW CON RED 508X12.7/323.9X9.53 SA234WPB	10
227	925178810000	BWCONRED457.2X9.53/323.9X6.35 SA234WPB	10
228	925178830000	C.RED.273X9.27/168.3X7.11SA234WP22CL1	10
229	925178860000	BWCONRED406.4X12.7/355.6X9.53 SA234WPB	20
230	925178870000	BW CON RED 273X6.35/219.1X8.18 SA234WPB	15
231	925178880000	BW CON RED 508X9.53 273X6.35 SA234WPB	10
232	925178910000	BW CON.RED.219.1X30/168.3X26SA234WPC	10
233	925178960000	BWCON.RED 368 X 48/323.9 X 42SA234WPC	30
234	925179010000	BWECCRED168.3X3.4/141.3X3.4 SA403WP304H	20
235	925179030000	BWCON.RED 219.1X6.35/168.3X7.11SA234WPB	10
236	925179120000	ECC.RED 965X57/711.2X40SA234WP22CL1	10
237	925179180000	BW C.RED 457.2X7.92/406.4X7.92 SA234WPB	5
238	925179270000	BWC.RED219.1X3.76/168.3X5.4SA403WP304H	10
239	925179300000	BW RED 114.3x17.12/88.9x11.13/SA234WPC	10
240	925179310000	BW RED 88.9x11.13/73x14.02/SA234WPC	10
241	925179540000	C.RED 219.1X36/114.3X20SA234WP22CL1	10
242	925179570000	BW CON RED 457.2X12.7/273X9.27 SA234WPB	10
243	925179650000	BWCONRED406.4X9.53/323.9X6.35 SA234WPB	20
244	925179700000	BWCONRED114.3X3.05/73X3.05 SA403WP304H	20
245	925179780000	C.RED. 60.3X11.07/33.4X6.35SA234WP22CL1	75
246	925179790000	C.RED. 114.3X20/60.3X12.5SA234WP22CL1	15
247	925194450000	BW CAP 168.3 X 27.5 SA234WP22 CL1	20
248	925194990000	BW CAP 88.9 X 7.62SA234WP22CL1	10
249	925195200000	BW END CAP 508X12.7 SA234WPB	10
250	925195330400	BW END CAP 323.9 X 9.53SA234WP22CL1	75
251	925195650000	BW PIPE CAP 323.9 X 10.31 SA234WPC	5
252	925195660000	BW PIPE CAP 323.9 X 9.53SA234WP22CL1	10
253	925195780000	BW ENDCAP OD 323.9 X 10.31 SA 234WP22CL1	5
254	925240040000	BW SR 90DEG ELL 457.2X25SA234WP22CL1	10
255	925240170000	BW LR 90DEG ELL 88.9 X 15.24 SA234WPC	100
256	925240820000	BW LR 90DEG ELL 273 X 45SA234WP22CL1	20
257	925240840000	BW LR90DEG ELL406.4X22.2SA234WP22CL1	100
258	925240870000	BW LR45DEG ELL 219.1X8.18SA234WP22CL1	5
259	925241190000	BW LR 90DEG ELL 88.9 X 5.49 SA234WPC	50
260	925241490000	BW LR 90DEG ELL 273 X 40 SA234WPC	5
261	925241520000	BW LR 90 DEG ELBOW OD355.6 X 50-SA234WPC	50
262	925241550000	LR 45DEG ELL 168.3X27.5SA234WPC	20
263	925241570000	BW LR 90DEG ELL 219.1X40SA234WP22CL1	100
264	925241580000	BW LR 90DEG ELL 355.6X62SA234WP22CL1	10
265	925242020000	BW LR 45DEG ELL 457.2 X 9.53 SA234WPB	20
266	925242040000	BW LR 90DEG ELL 88.9 X 7.62 SA234WPB	5
267	925242270000	BW LR 90DEG ELL 914 X 9.53 SA234WPB	5
268	925242400000	BW LR 90DEG ELL 508 X 15.09 SA234WPB	10
269	925242430000	BW LR 90DEG ELL 219.1 X 12.7 SA234WPB	5
270	925242570000	BW SR 90DEG ELL 88.9 X 5.49 SA234WPB	10

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SL NO	Material	Descri	RC QTY
271	925242630000	BW LR 90DEG ELL 711 X 6.35 SA234WPB	15
272	925242640000	BW LR 45DEG ELL 711 X 6.35 SA234WPB	5
273	925242670000	BW SR 90DEG ELL 323.9 X 9.53 SA234WPB	75
274	925242690000	BW LR 90DEG ELL 508 X 10 SA234WPB	10
275	925242710000	BW LR 90DEG ELL 48.3 X 5.08 SA234WPB	75
276	925242720000	BW LR 90DEG ELL 21.3 X 3.73 SA234WPB	30
277	925242760000	BW LR 45DEG ELL 610 X 10 SA234WPB	75
278	925242770000	BW LR 90DEG ELL 610 X 10 SA234WPB	75
279	925242800000	BW SR 90DEG ELL 610 X 10 SA234WPB	20
280	925242810000	BW SR 90DEG ELL 406.4 X 7.92 SA234WPB	10
281	925242830000	BW LR 90DEG ELL 813 X 10 SA234WPB	50
282	925242860000	BW SR 90DEG ELL 508 X 9.53 SA234WPB	20
283	925242960000	BW LR 90DEG ELL 457 X 7.92 SA234WPB	5
284	925243000000	BW LR 45DEG ELL 355.6 X 9.53 SA234WPB	150
285	925243010000	BW LR 90DEG ELL 73.0 X 14.02 SA234WPC	20
286	925243090000	BW LR 90DEG ELL 273 X 36 SA234WPC	50
287	925243170000	BW LR 90DEG ELL 219.1 X 30 SA234WPC	250
288	925243180000	BW LR 90DEG ELL 368 X 48 SA234WPC	100
289	925243200000	BW LR 90DEG ELL 33.4 X 9.09 SA234WPC	175
290	925243340000	BW LR 90DEG ELL 114.3 X 20 SA234WPC	20
291	925243520000	BW SR 90DEG ELL 219.1 X 8.18 SA234WPC	50
292	925243530000	BW LR 45DEG ELL 323.9 X 10.31 SA234WPC	20
293	925244040000	BW LR 90DEG ELL 114.3X6.02 SA403WP304H	5
294	925244300000	BW LR90DEG ELL48.3X10.14SA234WP22CL1	100
295	925244310000	BW LR 90DEG ELL 168.3X7.11 SA403WP304H	100
296	925244430000	BW LR 90DEG ELL 114.3X4.5SA403WP304H	100
297	925244500000	BW LR 90DEG ELL 60.3 X 5.54 SA403WP304H	5
298	925244520000	BW LR 90DEG ELL 33.4 X 4.55 SA403WP304H	125
299	925244630000	BW LR 90DEG ELL 48.3X5.08SA234WP22CL1	50
300	925244660000	BW LR 90DEG ELL 114.3X3.05 SA403WP304H	600
301	925244740000	BW LR 90DEG ELL 114.3 X 3.05 SA403WP321	10
302	925244850000	BW LR 90DEG ELL 168.3 X 3.4 SA403WP304H	200
303	925246110100	BW LR 90DEG ELL 73 X 3.05 SA403WP304H	75
304	925246120000	BW LR 90DEG ELL 60.3 X 3.91 SA403WP304H	350
305	925246120100	BW LR 90DEG ELL 60.3 X 2.77 SA403WP304H	5
306	925246130000	BW LR 90DEG ELL 48.3 X 3.68 SA403WP304H	400
307	925246140000	BW LR 90DEG ELL 33.4 X 3.38 SA403WP304H	800
308	925246180000	BW LR 90DEG ELL 219.1X6.35 SA403WP304H	50
309	925246220000	BW LR 90DEG ELL 273 X 4.19 SA403WP304H	100
310	925246230000	BW LR 90DEG ELL 219.1X3.76 SA403WP304H	200
311	925246260000	BW LR 45DEG ELL 114.3X3.05 SA403WP304H	30
312	925246360000	BW LR90DEG ELL457.2X22.2SA234WP22CL1	20
313	925246670000	BW LR 90DEG ELL 168.3 X 27.5 SA234WPC	150
314	925246700000	BW LR 90DEG ELL 219.1 X 32 SA234WPC	50
315	925246790000	BW LR45DEG ELL355.6X9.53SA234WP22CL1	30

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SL NO	Material	Descri	RC QTY
316	925246840000	BW LR 90DEG ELL 559 X 28SA234WP22CL1	20
317	925247000000	BW LR 45DEG ELL 73 X 5.16 SA234WPB	20
318	925247340000	BW LR 90DEG ELL 168.3 X 5 SA403WP304H	75
319	925247350000	BW SR 90DEG ELL 168.3 X 3.4 SA403WP304H	10
320	925247430000	BW LR 45DEG ELL 323.9 X 36 SA234WPC	5
321	925248420000	BW LR 90DEG ELL 88.9 X 5.49 SA403WP304H	25
322	925248430000	BW LR 45DEG ELL 73 X 5.16SA234WP22CL1	75
323	925248440000	BW LR 90DEG ELL 406.4 X 12.7 SA234WPB	550
324	925248560000	BW LR 45DEG ELL 114.3X13.49 SA234WPC	30
325	925248600000	BW LR 90DEG ELL 457 X 9.53 SA234WPB	10
326	925249020000	BW LR45DEGELL 323.9X40 SA234WPC	10
327	925249040000	BW SR 90 DEG ELL 355.6 X 50 SA234WPC	2
328	925249080000	BW LR 45DEG ELL 368X59 SA234WP22CL1	5
329	925249180000	BW LR 45DEG ELL711.2X20SA234WPC	5
330	925251450000	BW UEQT 114.3X20 88.9X15.24 SA234WPC	20
331	925251460000	BW UEQT 168.3X27.5 114.3X20 SA234WPC	20
332	925251480000	BW UEQT 323.9X10.31/114.3X6.02 SA234WPC	10
333	925251500000	BW UEQT 219.1X8.18 114.3X6.02 SA234WPC	30
334	925251510000	UEQT 355.6X7.92/168.3X7.11SA234WP22CL1	15
335	925251520000	UEQT 355.6X7.92/273X6.35SA234WP22CL1	10
336	925251530000	BW UEQT 323.9X10.31/219.1X8.18 SA234WPC	20
337	925251540000	BW UEQT 355.6X7.92 168.3X7.11 SA234WPB	5
338	925251570000	BW UEQT 219.1X6.35/168.3X7.11 SA234WPB	75
339	925251610000	BW UEQT 273.1X6.35 168.3X7.11 SA234WPB	50
340	925251620000	BW EQT 813 X 10 SA234WPB	20
341	925252030000	BW UEQT 558.8X9.53 406.4X9.53 SA234WPB	10
342	925252060000	BW EQT 457.2 X 9.53 SA234WPB	10
343	925252150000	BW UEQT 406.4X9.53 168.3X7.11 SA234WPB	10
344	925252160000	BW UEQT 406.4X12.7 273X9.27 SA234WPB	5
345	925252260000	BW UEQT 168.3X7.11 73X5.16 SA234WPB	20
346	925252290000	BW UEQT 323.9X11.13/168.3X7.11 SA234WPB	10
347	925252300000	BW UEQT 323.9X9.53 273X9.27 SA234WPB	50
348	925252390000	BW UEQT 609.6X9.53 508X9.53 SA234WPB	10
349	925252410000	BW EQT 813 X 9.53 SA234WPB(Welded)	10
350	925252430000	BW UEQT 273X6.35 88.9X5.49 SA234WPB	5
351	925252480000	BW UEQT 355.6X7.92 323.9X6.35 SA234WPB	5
352	925252580000	BW EQT 33.4 X 4.55 SA234WPB	125
353	925252690000	BW UEQT 406.4X9.53 219.1X6.35 SA234WPB	10
354	925252720000	BW UEQT406.4X9.53/355.6 X 9.53SA234WPB	10
355	925252810000	BW UEQT 406.4X12.7 323.9X9.53 SA234WPB	75
356	925252840000	BW UEQT 406.4 X 12.7/273 X 9.27 SA234WPB	10
357	925252910000	BW UEQT 609.6X9.53 273X9.27 SA234WPB	10
358	925252980000	UEQT 406.4 X 12.7 / 168.3 X 7.11SA234WPB	30
359	925252980300	BW UEQT 406.4X12.7 168.3X7.11 SA234WPB	10
360	925253010000	BW EQT 114.3 X 17.12 SA234WPC	10

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SL NO	Material	Descri	RC QTY
361	925253020000	BW EQT 60.3 X 11.07 SA234WPC	15
362	925253030000	BW EQT 114.3 X 13.49 SA234WPC	15
363	925253100000	BW UEQT 219.1X28 114.3X17.12 SA234WPC	10
364	925253200000	BW UEQT 114.3X13.49/88.9X11.13 SA234WPC	20
365	925253210000	BW UEQT 219.1X8.18 168.3X7.11 SA234WPC	15
366	925253240000	BW UEQT 457.2X12.7 219.1X8.18 SA234WPC	10
367	925253270000	BW UEQT 219.1X28 168.3X21.95 SA234WPC	10
368	925253300000	BW UEQT 168.3X21.95/88.9X15.24 SA234WPC	5
369	925253400000	BW EQT 114.3 X 6.02 SA234WPC	10
370	925253440000	BW EQT 368 X 48 SA234WPC	15
371	925253530000	BW UEQT 273X36 114.3X17.12 SA234WPC	20
372	925253760000	BW EQT 609.6 X 14.27 SA234WPC	5
373	925253770000	BW UEQT 609.6X14.27 273X9.27 SA234WPC	10
374	925253860000	BW EQT 323.9 X 10.31 SA234WPC	20
375	925253930300	BW EQT 114.3 X 20 SA234WPC	20
376	925253970000	BW UEQT 323.9X40 114.3X17.12 SA234WPC	5
377	925253980000	BW UEQT 323.9X40 168.3X21.95 SA234WPC	10
378	925254010000	UEQT 168.3X27.5/114.3X20SA234WP22CL1	10
379	925254090000	BW EQT 114.3 X 6.02 SA403WP304	5
380	925254160000	BW UEQT 273X45/219.1X36SA234WP22CL1	5
381	925254220000	BW EQT 323.9 X 11.13SA234WP22CL1	10
382	925254430000	BW EQT 88.9 X 5.49 SA403WP304H	15
383	925254440000	BW UEQT 88.9X5.49/60.3X5.54 SA403WP304H	10
384	925254450000	BW UEQT 88.9X5.49/33.4X4.55 SA403WP304H	75
385	925254480000	BW EQT 168.3 X 7.11 SA403WP304H	10
386	925254530100	BWUEQT114.3X3.05/88.9X3.05 SA403WP304H	20
387	925254690300	BW UEQT 114.3X4.5 60.3X5.54 SA403WP316	10
388	925255520000	BW UEQT 610 X 10 / 508 X 9.53 SA234WPB	75
389	925255560000	UNEQTEE 355.6 X7.92 /219.1X6.35 SA234WPB	10
390	925255610000	BW UEQT 368 X 59 / 273X45SA234WP22CL1	10
391	925255790000	BW UEQT 323.9X9.53 219.1X8.18 SA234WPB	30
392	925255830000	UNEQTEE 323.9X9.53/219.1X6.35 SA234WPB	10
393	925255930000	BWUNEQT323.9X9.53/219.1X12.7SA234WP22CL1	10
394	925255940000	BWUNEQTEE273X9.27/219.1X6.35SA234WPC	10
395	925255950000	BWUNEQTEE 273X 9.27 /114.3X 6.02SA234WPC	5
396	925255960000	BWUNEQTEE 508X12.7/ 355.6X9.53 SA234WPB	5
397	925256180000	BW EQT 114.3 X 3.05 SA403WP304H	50
398	925256350000	BW EQT 114.3 X 3.05 SA403WP321	5
399	925256360000	BW EQT 88.9 X 3.05 SA403WP321	10
400	925256510000	BWUEQT168.3X3.4/114.3X3.05 SA403WP304H	20
401	925256820000	BW EQT 168.3 X 3.4 SA403WP304H	50
402	925256850000	BW EQT 355.6 X 9.53 SA234WP22	15
403	925256970000	EQT 60.3X12.75SA234WP22CL1	10
404	925257050000	BW UEQT 508X9.53 323.9X9.53 SA234WPB	20
405	925257080000	BW UEQT 355.6X7.92 114.3X6.02 SA234WPB	5

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SL NO	Material	Descri	RC QTY
406	925257160100	BW EQT 73 X 3.05 SA403WP304H	15
407	925257170000	BW EQT 60.3 X 3.91 SA403WP304H	30
408	925257220000	BWUEQT168.3X7.11/88.9X5.49 SA403WP304H	10
409	925257220100	BW UEQT 168.3X3.4/88.9X3.05 SA403WP304H	10
410	925257270000	BW UEQT 88.9X5.49/21.3X2.77 SA403WP304H	50
411	925257270100	BW UEQT 88.9X3.05/21.3X2.77 SA403WP304H	5
412	925257280100	BW UEQT 73X3.05 33.4X2.77 SA403WP304H	20
413	925257290100	BW UEQT 73X3.05 21.3X2.77 SA403WP304H	50
414	925257310100	BW UEQT 168.3X3.4 73X3.05 SA403WP304H	10
415	925257340000	BW EQT 273 X 6.35 SA403WP304H	10
416	925257350000	BW UEQT 273X6.35/219.1X6.35 SA403WP304H	5
417	925257360000	BW UEQT 273X6.35/168.3X7.11 SA403WP304H	10
418	925257440000	BWUEQT273.1X4.19/219.1X3.76 SA403WP304H	20
419	925257450000	BWUEQT273.1X4.19/168.3X3.4 SA403WP304H	5
420	925257500000	UEQT 508 X 28 / 457.2 X 22.2SA234WP22CL1	2
421	925257610000	BW UEQT 508X9.53 406.4X9.53 SA234WPB	10
422	925257650000	BW UEQT 711X6.35 508X6.35 SA234WPB	10
423	925257770000	BW EQT 406.4 X 7.92 SA234WPB	10
424	925257970000	BW EQT 368 X 59SA234WP22CL1	5
425	925258670100	UEQT 60.3X3.91/48.3X3.68SA403WP321	10
426	925258690000	BW UEQT 88.9X3.05 48.3X2.77 SA403WP321	10
427	925258890000	BWUEQT508X25 / 406.4 X 22.2SA234WP22CL1	5
428	925259270000	BW EQT 168.3 X 5.0 SA403WP304H	20
429	925259340000	BW EQT 88.9 X 3.05 SA403WP304H	75
430	925259360000	BW UEQT323.9X4.57/273X4.18SA403WP304H	10
431	925259430000	BW UEQT 219.1X6.35 168.3X5 SA403WP304H	10
432	925259440500	BWUEQT219.1X6.35/114.3X3.05 SA403WP304H	10
433	925259550000	BWUEQT219.1X3.76/168.3X3.4 SA403WP304H	15
434	925259570000	BW EQT 323.9 X 4.57 SA403WP304H	10
435	925259630000	BW UEQT 368 X 48 / 219.1 X 30 SA234WPC	10
436	925259750000	BW UEQT 457.2X9.53 219.1X6.35 SA234WPB	5
437	925259930000	UET60.3X11.07/33.4X6.35SA234WP22CL1	10
438	925259940000	BWUEQT168.3X7.11/114.3X6.02SA403WP304H	10
439	925270700000	BW CON RED 368X48 219.1X30 SA234WPC	10
440	925271390000	BWCON RED 660 X 20 / 558.8 X 23 SA234WPC	20
441	925271480000	RED 168.3X27.5/114.3X20SA234WPC	4
442	925271520000	C.RED 355.6X7.92/273X6.35SA234WP22CL1	20
443	925271620000	BW CON RED 813X10 508X9.53 SA234WPB	20
444	925271650000	BWCONRED406.4X7.92/355.6X7.92 SA234WPB	10
445	925271720000	BWCONRED558.8X9.53/323.9X6.35 SA234WPB	10
446	925272030000	BW CON RED 457.2X10/323.9X9.53 SA234WPB	10
447	925272060000	BW CON RED 508X9.53/457.2X9.53 SA234WPB	5
448	925272070000	BWCONRED457.2X9.53/406.4X9.53 SA234WPB	10
449	925272180000	BWCONRED406.4X9.53/168.3X7.11 SA234WPB	10
450	925272250300	BWCONRED406.4X9.53/323.9X9.53 SA234WPB	75

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SL NO	Material	Descri	RC QTY
451	925272320000	BWCONRED406.4X9.53/355.6X7.92 SA234WPB	10
452	925272400000	BW CON RED 609.6X9.53/508X9.53 SA234WPB	15
453	925272420000	BWCONRED508X14.2/355.6X11.13 SA234WPB	10
454	925272430000	BW CON RED 457.2X9.53/273X9.27 SA234WPB	10
455	925272460000	BW CON RED 508X12.7/355.6X12.7 SA234WPB	10
456	925272470000	BWCONRED609.6X9.53/558.8X9.53 SA234WPB	10
457	925272480000	RED660.4X 9.53/ 609.6 X 9.53SA234WPB	10
458	925272480500	BWCONRED660.4X9.53/609.6X9.53 SA234WPB	10
459	925272590000	BWECCRED323.9X6.35/273.0X6.35 SA234WPB	5
460	925272790000	BWCONRED355.6X9.53/323.9X9.53 SA234WPB	10
461	925272830000	BWCONRED88.9X11.13/48.3X7.14 SA234WPB	10
462	925272980000	BW CON RED 610X10 323.9X6.35 SA234WPB	5
463	925273000000	BWCONRED355.6X7.92/219.1X6.35 SA234WPB	20
464	925273190000	BW CON RED 88.9X15.24/73X14.02 SA234WPC	75
465	925273240000	BW CON RED 114.3X13.49/73X9.53 SA234WPC	20
466	925273250000	BWCONRED114.3X13.49/60.3X8.74 SA234WPC	5
467	925273280000	BWCONRED355.6X50.0/323.9X40.0 SA234WPC	10
468	925273320000	BWCONRED114.3X13.49/88.9X11.13 SA234WPC	30
469	925273410000	BW CON RED 406.4X53 368X48 SA234WPC	20
470	925273590000	BWCONRED88.9X15.24/48.3X7.14 SA234WPC	10
471	925273600000	BWCONRED323.9X40/168.3X21.95 SA234WPC	5
472	925273610000	BW CON RED 73X9.53 48.3X7.14 SA234WPC	5
473	925273630000	BWCONRED609.6X14.27/457.2X14.27 SA234WPC	10
474	925273640000	BW CON RED 168.3X21.95/73X9.53 SA234WPC	10
475	925273690000	BW CON RED 368X48 219.1X32 SA234WPC	5
476	925273710000	BWCONRED88.9X11.13/48.3X11.13 SA234WPC	10
477	925273880000	BWCONRED323.9X10.31/273X9.27 SA234WPC	20
478	925273900000	BW CON RED 368 X 48 / 273 X 36 SA234WPC	20
479	925273920000	BWCONRED457.2X12.7/406.4X14.6 SA234WPC	10
480	925274100000	BWCONRED168.3X7.11/114.3X6.02SA403WP304H	30
481	925274110000	BWCONRED114.3X6.02/88.9X5.49 SA403WP304H	10
482	925274140000	C.RED.114.3X6.02/60.3X5.54SA403WP304H	15
483	925274180000	C. RED 168.3X7.11/88.9X5.49SA234WP22CL1	5
484	925274190400	BWCONRED355.6X9.53/273X9.27 SA234WP22CL1	20
485	925274490100	BWCONRED88.9X3.05/60.3X2.77 SA403WP304H	10
486	925274520000	C.RED 219.1X36/168.3X27.5SA234WP22CL1	20
487	925274570000	BWCONRED609.6X20/508X20SA234WP22CL1	10
488	925274690000	C.RED219.1X8.18/114.3X6.02SA234WP22CL1	10
489	925274760000	BW CON RED 88.9X4/60.3X3.91 SA403WP304H	20
490	925275350000	C.RED 114.3X20/76.1X9.53SA234WP22CL1	10
491	925275650000	C. RE 323.9X9.53/219.1X8.18SA234WP22CL1	10
492	925276140000	BWCONRED114.3X3.05/88.9X3.05 SA403WP321	10
493	925276270000	C. RED 114.3 X3.05/88.9X3.05SA403WP304H	75
494	925276860000	BWCONRED168.3X5.4/114.3X3.05SA403WP304H	20
495	925276890000	BWCONRED88.9X5.49/73X5.16 SA403WP304H	5

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SL NO	Material	Descri	RC QTY
496	925276890100	BWCONRED88.9X3.05/73X3.05 SA403WP304H	10
497	925276900100	BWCONRED88.9X3.05/33.4X2.77 SA403WP304H	10
498	925276960000	BWCONRED168.3X3.4/114.3X3.05 SA403WP304H	50
499	925276980000	BW RED273.1X4.19/219.1X3.76 SA403WP304H	20
500	925277020000	BW CON RED 559X9.53 508X9.53 SA234WPB	10
501	925277120000	C.RED 609.6X30/457.2X30SA234WP22CL1	5
502	925277170000	BWCONRED457.2X12.7/323.9X9.53 SA234WPB	10
503	925277260000	BWCONRED219.1X8.18/88.9X5.49 SA234WPB	10
504	925277290000	BW CON RED 711X6.35 508X6.35 SA234WPB	10
505	925277300000	BW CON RED 711X6.35 610X6.35 SA234WPB	10
506	925277420000	BW CONRED 273.1X6.35/114.3X6.02 SA234WPB	50
507	925277520000	BW CON RED 508X12.7/406.4X12.7 SA234WPB	20
508	925278140000	BW CON RED 73X5.16 60.3X5.54 SA234WPB	30
509	925278290000	BWCONRED273.1X6.35/141.3X3.96 SA234WPB	5
510	925278810000	BW CON RED 88.9X5.49/48.3X5.08 SA234WPB	30
511	925278830000	BW CON RED 60.3X5.54/33.4X5.54 SA234WPB	10
512	925278840000	BW CON RED 60.3X5.54/48.3X5.54 SA234WPB	20
513	925278850000	BWCONRED114.3X6.02/88.9X6.02 SA234WPB	20
514	925278930300	BW CON RED 813 X 10 / 610 X 10 SA234WPB	10
515	925279000000	BW CON RED 508X9.53/406.4X7.92 SA234WPB	10
516	925279010000	BW CON RED 610X10 508X9.53 SA234WPB	20
517	925279160000	BW CON RED 60.3X5.54/33.4X4.55 SA234WPB	75
518	925279170000	BWCONRED323.9X9.53/219.1X6.35 SA234WP22	20
519	925279180000	C.RED 168.3X7.11/114.3X6.02SA234WP22CL1	10
520	925279300000	BWCONRED355.6X7.92/168.3X7.11 SA234WPB	5
521	925279380000	CR.457.2X22.2/406.4X22.2L381SA234WP22CL1	15
522	925279400000	C.RED 457.2 X 32/406.4 X 32SA234WP22CL1	2
523	925279500000	BWCONRED457.2X14.27/406.4X9.53 SA234WPB	100
524	925279510000	CONCRED355.6X9.53 / 168.3 X 7.11SA234WPB	10
525	925279520000	BW CON RED 508X9.53/219.1X8.18 SA234WPB	10
526	925279590000	BW CON RED 508X15.08/323.9X10.31SA234WPC	10
527	925279670000	BW RED 219.1X3.76/168.3X3.4 SA234WP304H	10
528	925279920000	BWECCRED406.4X9.53/355.6X9.53 SA234WPB	20
529	925279980000	BWCONRED219.1X6.35/168.3X5 SA403WP304H	10
530	925057520000	UEQT219.1X6.35/168.3X6.35SA234WP22CL1	5
531	925177110000	C.RED 355.6X55/168.3X27.5SA234WP22CL1	5
532	925277450000	RED406.4X7.92/219.1X6.35SA234WPB	10



1.0 CODES:-

The fittings shall meet Indian Boiler Regulations (IBR) and the following requirements in addition to the standards specified in the Purchase Order (PO).

2.0 RAW MATERIALS:-

- a) All pipes used for fittings shall meet the respective specification. The test certificate shall be furnished.
- b) All mother pipes used for fittings shall be subjected to a hydraulic test as per SA 530 or UT as per ASTM E 213 at the mill
- c) All plates used for fittings shall be UT tested as per S1 of SA578 and acceptance norms shall be as per Level B of SA578
- d) The raw material forging shall be ultrasonically tested as per SA 388 and the acceptance norm shall be as per 3.3.4 of ASME Sec VIII Div 2.
- e) Steel for SA182 F11, F12 & F22 if indigenously procured, to be from following manufacturers approved under IBR for creep resistant steels: i) Alloy Steel Plant Durgapur, ii) Tata Iron & Steel company, Jamshedpur & iii) Mahindra Ugine Steel Company, Mumbai.
- f) Carbon content of SA 234 WPB, WPC, SA 105 fittings shall be restricted to 0.25% max

3.0 PROCESS:-

- a) Process of manufacture shall conform to applicable standards.
- b) All fittings shall be of seamless unless otherwise specified in the purchase order.
- c) In case of welded fittings, WPS, PQR & welder qualification shall be approved by BHEL - PC, prior to start of welding.
- d) All fittings shall have smooth surfaces, workman like finish and free from loose scales and defects like laps, seams, folds, cracks, pitting etc.. Repair by welding is NOT permitted.
- e) Dimensions shall be as per ASME B16.9 or B16.28, Butt Weld edges shall be as given in Purchase Order. The ends of reducers shall have a straight portion of Minimum 13mm.
- f) Unless otherwise specified in the P.O SA 234 WP 11/12/22 fittings shall be supplied as per class 1, SA 182 F11/12 shall be supplied as class 2, SA 182 F22 shall be of class 3 only .

4.0 HEAT TREATMENT:-

4.1 All fittings shall be heat treated as below.

SA 234 WP B	- As per specification
SA 105, SA234 WP C	- Normalised
SA234 WP11/ WP12/ WP22	- Normalised & Tempered
SA182 F11/ F12/ F22	- Normalised & Tempered
Stainless Steel :-	
SA 182 F304/ 316/ 321/ 347	- Solution annealed
SA 403 WP304/ 316/ 321/ 347	- Solution annealed

4.2 Fittings conforming to SA 234 WP91 and SA182 F91 shall be normalised at 1040 to 1070 deg C (for wall thickness larger than 75 mm, accelerated cooling may be done to obtain a fully martensitic structure) and tempered at 760 $\pm$ 10 deg C

5.0 TESTING :-

- (a) All ferrous fittings shall be tested by MPI as per ASTM E-709 and SS fittings shall be LPI tested as per ASTM E 165.

S. Jayakumar, Engg

P. Elangovan, QA

Approved by

K. Vedaprasad, QC

K. Ganeshan, MPL



- (b) One fitting of each specification, heat, heat treatment lot and size shall be subjected to Tension Test as per applicable standard.
- (c) All fittings of wall thickness above 6mm or NB 200mm and above shall be Ultrasonically Tested as per SA 388; acceptance norms shall be 3.3.4 of ASME section VIII Div.2.
- (d) Hardness test shall be carried out on each fittings of WP91 / F91. For other fittings hardness shall be checked on 10% of the fittings.
- (e) In case of welded fittings; all the welds shall be 100% RT tested and acceptance norms shall be UW 51 of ASME Sec VIII DIV-1
- (f) The following supplementary tests shall be carried out for specifications namely SA105, SA 182 F11 / F12 / F22 / F91, SA 234 WPC / WP11 / WP12 / WP22 / WP91 (No supplementary test applicable for SA 234 WPB)
 - a) Product analysis – one / heat / size.
 - b) Tension test – one / heat / heat treatment lot / size.
- (g) Metallography:- Metallography shall be carried out on one per heat, per size, per heat treatment lot of WP91 / F91 fittings. Acceptance norms - The Material shall be free from any micro fissures. Microstructure shall show tempered martensite and also to be examined for any grain growth. Photomicrograph with 500x (Min) magnification along with Metallography report to be provided. The actual magnification shall be indicated.

6.0 POSITIVE MATERIAL IDENTIFICATION (PMI) FOR ALLOY STEEL FITTINGS.

Each alloy steel fitting shall be checked for the correctness of the material during manufacturing and final inspection using X-ray fluorescence principle or spark emission spectrography.

7.0 PAINTING , COLOUR CODING, MARKING, PACKING & END PROTECTION

7.1 **PAINTING** : All fittings (except stainless steel and galvanised) shall be **painted** on the external surface as given below

- a) surface preparation : Blast cleaning
- b) Primer coat : 50 microns of Red oxide zinc phosphate confirming to IS 12744
- c) Final coat : 70 microns of Synthetic enamel paint confirming to IS2934 .
- d) Shade : (i) smoke grey – shade no 692 of IS5 for all carbon steel fittings
(ii) Sea green -- shade no 217 of IS5 for all Alloy steel fittings

The internal surface shall be protected with rust preventive coating or rust inhibitor. Stainless steel and Galvanised fittings need not be painted.

7.2 **COLOUR CODING** : All fittings shall be colour coded circumferentially at ends as given below

SA 234 WPB / WPBW	=	Red
WPC / SA105	=	Blue

S. Jayakumar, Engg

P. Elangovan, QA

Approved by

K. Vedaprasad, QC

K. Ganeshan, MPL



WP11 / SA182 F11	=	Green & White
WP12 / SA182 F12	=	Black & Red
WP22 / SA182 F22	=	Blue & Red
WP91 / SA182 F91	=	Brown & Red
SA182 / SA 403 F / WP 304	=	Blue & Yellow
316	=	Black & Green
321	=	Blue & Brown
347	=	Yellow & Black

7.3 MARKING :

7.3.1 The fittings dispatched to **BHEL Stores** shall be punched / etched with Material code, Heat number, material specification, maker's emblem, Inspectors seal and Statutory authorities seal (as applicable) .

In addition, the above details along with size shall be paint stenciled on the fittings.

If the thickness of the fitting is less than 6 mm, punching is not permitted and the above details shall be paint stenciled only . Fittings of size up to 2" (50mm) shall be tied together and the above details shall be punched / etched in a separate tag and tied to it.

7.3.2 The fittings dispatched directly to project site as **DTS** shall be punched and paint stenciled with DU code (14 digit work order du detail) as given by purchase in addition to marking done as per para 7.3.1.

7.4 **PACKING AND END PROTECTION :** Machined ends of the fittings shall be well protected using end caps and fittings shall be suitably packed in box / crate to avoid transit & other damages.

8.0 INSPECTION & CERTIFICATION :-

All fittings are to be Inspected at the manufacturer's works by the Inspection agencies / authorities as per IBR and as indicated in the P.O. Inspection certificate in IBR Form III C shall be submitted along with the Work Test Certificate countersigned by the above authorities and shall include the following.

1. Test Certificate Number & date.
2. BHEL P.O Number & Amendment Number
3. BHEL P.O. Serial Number
4. BHEL TDC Number
5. Size-wise Quantity
6. Specification, Grade & Year of code.
7. Heat/Melt Number
8. Starting material details.
9. Steel making process
10. Laddle Analysis of Raw Material and product analysis of fitting.
- *11. Positive Material Identification (PMI) report for Alloy steel fittings.
- *12. Supplementary Test(Product analysis, Tension test..) results.
- *13. Heat Treatment Chart.
- *14. NDE report. (VISUAL.MPI, LPI,UT)
- *15. Tensile Test Report
- *16. Hardness Test Report

S. Jayakumar, Engg

P. Elangovan, QA

Approved by

K. Vedaprasad, QC

K. Ganeshan, MPL



17. Metallography Report along with photomicrograph with 500x (min) magnification.
- *18. Dimensional conformance.
- *19. RT test report / Results (for welded fittings)
- *20. Guarantee of HTP shall be given as follows:- "Fittings are capable of withstanding without failure, leakage or impairment of their serviceability a hydrostatic test pressure equal to that prescribed for the specified matching pipe of equivalent material".

*Details furnished in the Tests certificate in lieu of chart/report is acceptable.

9.0 RECORDS OF REVISION :-

Rev 01 : a) Fully revised for better clarity.

: b) Para 2.0 e added.

Rev 02 : a) Para 2.0 (c): UT acceptance norms revised from level A to B.

Rev 03 : a) Fully revised for better clarity.

: b) Para 4.2, 6.0, 8.0 (11) added.

c) Para 2 (d) , 4.1, 5 (d) are revised.

Rev 04 : a) Para 5.0 (g), 7.0 and 8.0 (17) are revised.

S. Jayakumar, Engg

P. Elangovan, QA

Approved by

K. Vedaprasad, QC

K. Ganeshan, MPL

DRAWING No.

01. APPLICABLE FOR P91 MATERIAL

- NESS
- $\times$
- 30 mm



FIGURE - X

DIAMETRICALLY GREATER THAN 8 mm

- NOTES: —

- U.S. $\alpha = 10$ FOR WALL THICKNESS > 50 mm

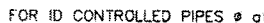
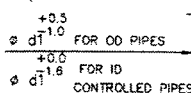


FIGURE - Xa

DIAMETRICALLY GREATER THAN 8 mm

- 10

- WHERE THE OR CONN.PIPE(S)RAIGHT)



STYLE - Pa

DIAMETRICALLY GREATER THAN 8 mm

- ELBOWS OTHER THAN P91 MATERIALS

01. OD = OUTSIDE DIA OF CONNECTING PIPE

02. 1 = INK OF CONN. PIPE (SIRAIGHT)

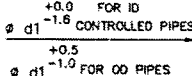
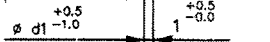


FIGURE - 2

STYLE - D

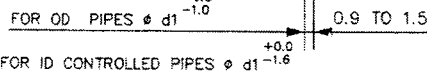
01. USE WHEN
- $t < 14.2$
- mm



KEY	DATE	APPROVED	REMOVED
01	11-05-04	APPROVED	R. S. Smith A. Smith
ZONE	PROJECT NAME REMOVED AND STANDARDS RECAPTURED IN TITLE BLOCK.		

01. USE WHEN $t \geq 14.2$ mm

- ## STYLE — P



STYLE — P

01. THE MINIMUM THICKNESS AT WELD END SHALL NOT BE LESS THAN

- U.L. 1 NUM & 1 MIN SHALL BE AS PER SPECIFIED PIPE SIZE

01. WELD REINFORCEMENT TO BE FLUSH GROUND AND MERGED WITH PARENT METAL. WITHOUT ANY UNEVENNESS

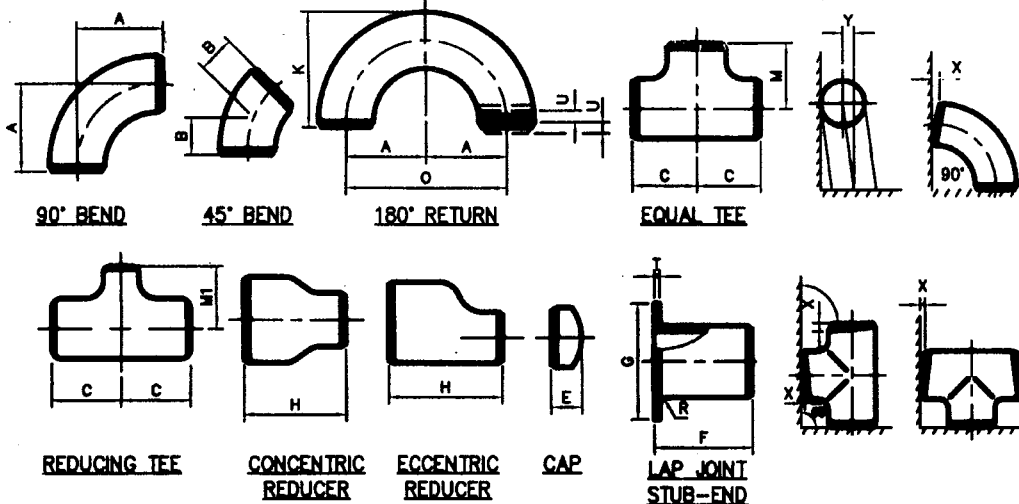
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		STANDARD		60	
BHARAT HEAVY ELECTRICALS LTD.					
PIPING CENTRE, CHENNAI					
DET.	GRADE OF UN TOL. DIM	C/M/F		SCALE	
CODE					
TITLE	EDGE PREPARATION DETAILS				
CADD CODE	U 01	WEIGHT (Kg.)		/	
DRAWING No.	3-80-300-19825				
REV	01	NAME		SIGN	DATE
		K. B. RAGINATH			11.10.01
		M. C. SEKARAN			11.10.01
		A. VEALATHAN			11.10.01
ITEM No.		NAME OF ORIGINAL ORGANISATION			

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REV	DATE	ALTERED
01	05.02.05	APPROVED <i>[Signature]</i> APMK

TITLE BLOCK AND DRAWING ALTERED

(REFERENCE : ISIRI REG.NO 361(A) INCLUDED IN AMENDMENT)



ALL FITTINGS				90° & 45° ELBOWS AND TEES	REDUCER	180° RETURNS			CAPS	LAP-JOINT		STUB END	
DN.	O.D AT BEVEL	I.D AT END	WALL THICKNESS	CENTER TO END A,B,C,M,M1	OVERALL LENGTH H	CENTER TO CENTER O	BACK TO FACE K	ALIGNMENT OF END U	OVER ALL LENGTH E	END TO END F	RADIUS R	DIA OF LAP G	THICKNESS OF LAP
15 TO 85	+1.6 -0.8	±0.8	NOT LESS THAN 87 1/2% OF NOMINAL THICKNESS	±1.6	±1.6	±6.4	±6.4	±0.8	±3.2	±1.6	+0 -0.8	+0 -0.8	+1.6 -0
90 TO 90	±1.6	±1.6		±1.6	±1.6	±6.4	±6.4	±0.8	±3.2	±1.6	+0 -0.8	+0 -0.8	+1.6 -0
100	±1.6	±1.6		±1.6	±1.6	±6.4	±6.4	±0.8	±3.2	±1.6	+0 -0.8	+0 -0.8	+1.6 -0
125 TO 200	+2.4 -1.6	±1.6		±1.6	±1.6	±6.4	±6.4	±0.8	±6.4	±1.6	+0 -0.8	+0 -0.8	+1.6 -0
250 TO 400	+4.0 -3.2	±3.2		±2.4	±2.4	±9.5	±6.4	±1.6	±6.4	±2.4	+0 -1.6	+0 -1.6	+1.6 -0
500 & ABOVE	+6.4 -4.8	±4.8		±2.4	±2.4	±9.5	±6.4	±1.6	±6.4	±2.4	+0 -1.6	+0 -1.6	+1.6 -0

OFF-SQUARE TOLERANCES		
NOMINAL SIZE OF FITTING	OFF SQUARE TOLERANCE, X	OFF SQUARE TOLERANCE, Y
UP TO AND INCLUDING 100	0.8	1.6
125 TO 150	1.2	2.4
200 TO 550	1.6	3.2
600 & ABOVE	3.2	6.4

NOTES : 1. ALL DIMENSIONS ARE IN MILLIMETRES

STANDARD

BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	NAME	SIGN	DATE	NO. OF VAR	
		CHD	ENGG. ENTERPRISES	Sd	15.10.1986		
		APPD	R. ANANTH	Sd	15.10.1986		
DEPT	GRADE OF UNTO. DIM	SCALE N.T.S	WEIGHT (KG).	REF. TO ASSY./OLD DRG.		FORM NO.	NO. OF ITEMS
CODE	C / M / F		-	-		-	
TITLE			CARD CODE	DRAWING NO.		REV	
TOLERANCES ON FITTINGS			U 01	4-80-301-26192		01	