



Mark	Size	Description	Quantity/Length(m)
1	2 1/2"	PIPE, ANSI B36.10, BEVELED ENDS, SCH 40, SMLS, API 5L GR.B	34
2	2"	PIPE, ANSI B36.10, BEVELED ENDS, SCH 40, SMLS, API 5L GR.B	68
3	3"	PIPE, ANSI B36.10, BEVELED ENDS, SCH 40, SMLS, API 5L GR.B	51
4	4"	PIPE, ANSI B36.10, BEVELED ENDS, SCH 40, SMLS, API 5L GR.B	42
5	1 1/2"	PIPE, ANSI B36.10, PLAIN ENDS, SCH 80, SMLS, API 5L GR.B	9
6	1"	PIPE, ANSI B36.10, PLAIN ENDS, SCH 80, SMLS, API 5L GR.B	135
7	1/2"	PIPE, ANSI B36.10, PLAIN ENDS, SCH 80, SMLS, API 5L GR.B	219
8	3/4"	PIPE, ANSI B36.10, PLAIN ENDS, SCH 80, SMLS, API 5L GR.B	9
9	2"	PIPE, ANSI B36.19, BEVELED ENDS, SCH 10S, SMLS, A312 TP304	68
10	3"	PIPE, ANSI B36.19, BEVELED ENDS, SCH 10S, SMLS, A312 TP304	51
11	4"	PIPE, ANSI B36.19, BEVELED ENDS, SCH 10S, SMLS, A312 TP304	17
12	6"	PIPE, ANSI B36.19, BEVELED ENDS, SCH 10S, SMLS, A312 TP304	17
13	2"	PIPE, ANSI B36.19, BEVELED ENDS, SCH 40S, SMLS, A312 TP304	152
14	4"	PIPE, ANSI B36.19, BEVELED ENDS, SCH 40S, SMLS, A312 TP304	9
15	6"	PIPE, ANSI B36.19, BEVELED ENDS, SCH 40S, SMLS, A312 TP304	34
16	8"	PIPE, ANSI B36.19, BEVELED ENDS, SCH 40S, SMLS, A312 TP304	34
17	1 1/2"	PIPE, ANSI B36.19, PLAIN ENDS, SCH 40S, SMLS, A312 TP304	34
18	1"	PIPE, ANSI B36.19, PLAIN ENDS, SCH 40S, SMLS, A312 TP304	118
19	1/2"	PIPE, ANSI B36.19, PLAIN ENDS, SCH 40S, SMLS, A312 TP304	261
20	3/4"	PIPE, ANSI B36.19, PLAIN ENDS, SCH 40S, SMLS, A312 TP304	42



21	1 1/2"	PIPE, ANSI B36.19, PLAIN ENDS, SCH 80S, SMLS, A312 TP304	9
22	1"	PIPE, ANSI B36.19, PLAIN ENDS, SCH 80S, SMLS, A312 TP304	168
23	1/2"	PIPE, ANSI B36.19, PLAIN ENDS, SCH 80S, SMLS, A312 TP304	227
24	1"	FLANGE, BLIND, ANSI B16.5, 300#, RF(125Ra-250Ra), A182 F304	2
25	1/2"	FLANGE, BLIND, ANSI B16.5, 300#, RF(125Ra-250Ra), A182 F304	2
26	1/2"	FLANGE, BLIND, ANSI B16.5, 600#, RF(125Ra-250Ra), A182 F304	2
27	3/4"	FLANGE, BLIND, ANSI B16.5, 600#, RF(125Ra-250Ra), A182 F304	3
28	1 1/2"	FLANGE, SOCKET WELDING, ANSI B16.5, 300#, RF(125Ra-250Ra), A105	10
29	1"	FLANGE, SOCKET WELDING, ANSI B16.5, 300#, RF(125Ra-250Ra), A105	33
30	1/2"	FLANGE, SOCKET WELDING, ANSI B16.5, 300#, RF(125Ra-250Ra), A105	79
31	3/4"	FLANGE, SOCKET WELDING, ANSI B16.5, 300#, RF(125Ra-250Ra), A105	5
32	1 1/2"	FLANGE, SOCKET WELDING, ANSI B16.5, 300#, RF(125Ra-250Ra), A182 F304	16
33	1"	FLANGE, SOCKET WELDING, ANSI B16.5, 300#, RF(125Ra-250Ra), A182 F304	129
34	1/2"	FLANGE, SOCKET WELDING, ANSI B16.5, 300#, RF(125Ra-250Ra), A182 F304	244
35	3/4"	FLANGE, SOCKET WELDING, ANSI B16.5, 300#, RF(125Ra-250Ra), A182 F304	16
36	1 1/2"	FLANGE, SOCKET WELDING, ANSI B16.5, 600#, RF(125Ra-250Ra), A182 F304	5
37	1"	FLANGE, SOCKET WELDING, ANSI B16.5, 600#, RF(125Ra-250Ra), A182 F304	45
38	1/2"	FLANGE, SOCKET WELDING, ANSI B16.5, 600#, RF(125Ra-250Ra), A182 F304	576
39	3/4"	FLANGE, SOCKET WELDING, ANSI B16.5, 600#, RF(125Ra-250Ra), A182 F304	3
40	2"	FLANGE, WELDING NECK, ANSI B16.5, 150#, RF(125Ra-250Ra), SCH10S, A182 F304	19
41	3"	FLANGE, WELDING NECK, ANSI B16.5, 150#, RF(125Ra-250Ra), SCH10S, A182 F304	13



PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Title: MATERIAL TAKE OFF FOR PIPING SYSTEM

Page: 5 of 16

42	21/2"	FLANGE, WELDING NECK, ANSI B16.5, 150#, RF(125Ra-250Ra), SCH40, A105	12
43	2"	FLANGE, WELDING NECK, ANSI B16.5, 150#, RF(125Ra-250Ra), SCH40, A105	16
44	3"	FLANGE, WELDING NECK, ANSI B16.5, 150#, RF(125Ra-250Ra), SCH40, A105	12
45	4"	FLANGE, WELDING NECK, ANSI B16.5, 150#, RF(125Ra-250Ra), SCH40, A105	9
46	6"	FLANGE, WELDING NECK, ANSI B16.5, 150#, RF(125Ra-250Ra), SCH40, A105	3
47	10"	FLANGE, WELDING NECK, ANSI B16.5, 300#, RF(125Ra-250Ra), SCH40S, A182 F304	2
48	2"	FLANGE, WELDING NECK, ANSI B16.5, 300#, RF(125Ra-250Ra), SCH40S, A182 F304	45
49	4"	FLANGE, WELDING NECK, ANSI B16.5, 300#, RF(125Ra-250Ra), SCH40S, A182 F304	6
50	5"	FLANGE, WELDING NECK, ANSI B16.5, 300#, RF(125Ra-250Ra), SCH40S, A182 F304	2
51	6"	FLANGE, WELDING NECK, ANSI B16.5, 300#, RF(125Ra-250Ra), SCH40S, A182 F304	7
52	8"	FLANGE, WELDING NECK, ANSI B16.5, 300#, RF(125Ra-250Ra), SCH40S, A182 F304	6
53	2"	ORIFICE FLANGE, WELDING NECK, ANSI B16.36, 300#, RF(125Ra- 250Ra), SCH40, A105	3
54	3"	ORIFICE FLANGE, WELDING NECK, ANSI B16.36, 300#, RF(125Ra- 250Ra), SCH40, A105	3
55	4"	ORIFICE FLANGE, WELDING NECK, ANSI B16.36, 300#, RF(125Ra- 250Ra), SCH40, A105	3
56	3"	45 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 10S, A403 304, SMLS	6
57	2 1/2"	45 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	2
58	2"	45 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	3
59	4"	45 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	2
60	1/2"	45 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A105	2
61	1"	45 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A182 F304	2
62	1/2"	45 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A182 F304	14

63	2"	45 LATERAL EQUAL ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 10S, A403 304, SMLS	2
64	1"	45 LATERAL EQUAL ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	3
65	2"	45 LATERAL EQUAL ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	2
66	6"x3"	45 LATERAL, REDUCING, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 10S, A403 304, SMLS	3
67	2"x1"	45 LATERAL, REDUCING, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 10Sx40S, A403 304, SMLS	3
68	2"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 10S, A403 304, SMLS	10
69	3"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 10S, A403 304, SMLS	19
70	2 1/2"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	14
71	2"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	31
72	3"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	16
73	4"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	17
74	2"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	19
75	4"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	3
76	6"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	14
77	8"	90 ELBOW LR, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	16
78	1 1/2"	90 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A105	6
79	1"	90 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A105	45
80	1/2"	90 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A105	168
81	3/4"	90 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A105	9
82	1 1/2"	90 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A182 F304	10
83	1"	90 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A182 F304	101



PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Title: MATERIAL TAKE OFF FOR PIPING SYSTEM

84	1/2"	90 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A182 F304	303
85	3/4"	90 FORGED ELBOW, ANSI B16.11, SOCKET WELDING ENDS,3000#, A182 F304	17
86	3"	CAP, ANSI B16.9/ANSI B16.25, BUTT WELDING END, SCH 10S, A403 304, SMLS	3
87	4"	CAP, ANSI B16.9/ANSI B16.25, BUTT WELDING END, SCH 40, A234 WPB, SMLS	12
88	4"	CAP, ANSI B16.9/ANSI B16.25, BUTT WELDING END, SCH 40S, A403 304, SMLS	12
89	1 1/2"	DRIP RING, 300#, 125Ra-250Ra, A182 F304	3
90	1"	DRIP RING, 300#, 125Ra-250Ra, A182 F304	3
91	2 1/2"x1"	ELBOW OLET, SOCKET WELDING, ANSI B16.11, 3000#, A105	2
92	1/2"	FORGED CAP, ANSI B16.11, THRD END, 3000#, A105	31
93	3/4"	FORGED CAP, ANSI B16.11, THRD END, 3000#, A105	6
94	1/2"	FORGED CAP, ANSI B16.11, THRD END, 3000#, A182 F304	38
95	1"	FORGED EQUAL TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A105	5
96	1/2"	FORGED EQUAL TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A105	68
97	3/4"	FORGED EQUAL TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A105	3
98	1"	FORGED EQUAL TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A182 F304	34
99	1/2"	FORGED EQUAL TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A182 F304	121
100	1 1/2"x1/2"	FORGED REDUCING TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A105	2
101	1"x1/2"	FORGED REDUCING TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A105	16
102	1 1/2"x1"	FORGED REDUCING TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A182 F304	2
103	1 1/2"x1/2"	FORGED REDUCING TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A182 F304	31
104	1"x1/2"	FORGED REDUCING TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A182 F304	49



PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Title: MATERIAL TAKE OFF FOR PIPING SYSTEM

105	1"x3/4"	FORGED REDUCING TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A182 F304	2
106	3/4"x1/2"	FORGED REDUCING TEE, ANSI B16.11, SOCKET WELDING ENDS, 3000#, A182 F304	7
107	1 1/2"	HALF COUPLING, ANSI B16.11, SOCKET WELDING END, 3000#, A105	5
108	1"	HALF COUPLING, ANSI B16.11, SOCKET WELDING END, 3000#, A105	28
109	1/2"	HALF COUPLING, ANSI B16.11, SOCKET WELDING END, 3000#, A105	10
110	3/4"	HALF COUPLING, ANSI B16.11, SOCKET WELDING END, 3000#, A105	6
111	1"	HALF COUPLING, ANSI B16.11, SOCKET WELDING END, 3000#, A182 F304	38
112	1/2"	HALF COUPLING, ANSI B16.11, SOCKET WELDING END, 3000#, A182 F304	31
113	3/4"	HALF COUPLING, ANSI B16.11, SOCKET WELDING END, 3000#, A182 F304	3
114	1"x1/2"	JACKET ENDING & BREAKING RING, A105	2
115	1 1/2"x1/2"	JACKET ENDING & BREAKING RING, A182 F304	12
116	1 1/2"x3/4"	JACKET ENDING & BREAKING RING, A182 F304	6
117	1"x1/2"	JACKET ENDING & BREAKING RING, A182 F304	13
118	2"x1"	JACKET ENDING & BREAKING RING, A182 F304	27
119	3"x2"	JACKET ENDING & BREAKING RING, A182 F304	6
120	4"x2 1/2"	JACKET ENDING & BREAKING RING, A182 F304	3
121	4"x3"	JACKET ENDING & BREAKING RING, A182 F304	3
122	6"x4"	JACKET ENDING & BREAKING RING, A182 F304	6
123	1"	NIPPLE, SCH 40S, SMLS, A312 TP304 PBE	6
124	1/2"	NIPPLE, SCH 40S, SMLS, A312 TP304 PBE	16
125	1/2"	NIPPLE, SCH 40S, SMLS, A312 TP304 POE-TOE	26



PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Title: MATERIAL TAKE OFF FOR PIPING SYSTEM

Page: 9 of 16

126	1"	NIPPLE, SCH 80, SMLS, API 5L GR.B PBE	9
127	1/2"	NIPPLE, SCH 80, SMLS, API 5L GR.B PBE	14
128	3/4"	NIPPLE, SCH 80, SMLS, API 5L GR.B PBE	6
129	1/2"	NIPPLE, SCH 80, SMLS, API 5L GR.B POE-TOE	10
130	3/4"	NIPPLE, SCH 80, SMLS, API 5L GR.B POE-TOE	6
131	1"	NIPPLE, SCH 80S, SMLS, A312 TP304 PBE	3
132	1/2"	NIPPLE, SCH 80S, SMLS, A312 TP304 PBE	3
133	3/4"	NIPPLE, SCH 80S, SMLS, A312 TP304 PBE	2
134	1/2"	NIPPLE, SCH 80S, SMLS, A312 TP304 POE-TOE	7
135	3"x2"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 10S, A403 304, SMLS	3
136	3"x2 1/2"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	5
137	4"x2 1/2"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	2
138	4"x3"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	5
139	6"x4"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	3
140	10"x8"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	2
141	2"x1 1/2"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	3
142	2"x1"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	5
143	4"x2"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	5
144	6"x4"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	2
145	6"x5"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	2
146	8"x6"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	2



147	2"x1 1/2"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40x80, A234 WPB, SMLS	2
148	2"x1"	REDUCER, CONCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40x80, A234 WPB, SMLS	2
149	4"x2 1/2"	REDUCER, ECCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	3
150	4"x2"	REDUCER, ECCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	6
151	2"x1"	REDUCER, ECCENTRIC, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40x80, A234 WPB, SMLS	3
152	3"x1"	SOCKOLET, ANSI B16.11, 3000#, A105	10
153	3"x1/2"	SOCKOLET, ANSI B16.11, 3000#, A105	10
154	2"x1/2"	SOCKOLET, ANSI B16.11, 3000#, A182 F304	27
155	3"x1/2"	SOCKOLET, ANSI B16.11, 3000#, A182 F304	2
156	4"x1/2"	SOCKOLET, ANSI B16.11, 3000#, A182 F304	10
157	6"x1/2"	SOCKOLET, ANSI B16.11, 3000#, A182 F304	5
158	6"x3/4"	SOCKOLET, ANSI B16.11, 3000#, A182 F304	2
159	1"	SPECTACLE BLIND, 600#, 125Ra-250Ra, A240 304	2
160	1"x1/2"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80, A106 B PLE-PSE	16
161	1"x3/4"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80, A106 B PLE-PSE	2
162	1 1/2"x3/4"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80S, A312 TP304	2
163	1"x1/2"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80S, A312 TP304	10
164	1"x3/4"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80S, A312 TP304	2
165	2"x1"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80S, A312 TP304	2
166	3/4"x1/2"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80S, A312 TP304	2
167	1 1/2"x1"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80S, A312 TP304 PLE- PSE	3



PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Title: MATERIAL TAKE OFF FOR PIPING SYSTEM

168	2"x1 1/2"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80S, A312 TP304 PLE- PSE	2
169	2"x1"	SWAGE, CONCENTRIC, MSS SP-95, SCH 80S, A312 TP304 PLE- PSE	2
170	1"x3/4"	SWAGE, ECCENTRIC, MSS SP-95, SCH 80S, A312 TP304 PLE- PSE	2
171	3"	TEE EQUAL ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 10S, A403 304, SMLS	3
172	2"	TEE EQUAL ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	6
173	2"	TEE EQUAL ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	2
174	3"x2"	TEE, REDUCING, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	2
175	4"x2"	TEE, REDUCING, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40, A234 WPB, SMLS	3
176	2"x1"	TEE, REDUCING, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40S, A403 304, SMLS	3
177	2"x1"	TEE, REDUCING, ANSI B16.9/ANSI B16.25, BUTT WELDING ENDS, SCH 40x80, A234 WPB, SMLS	2
178	1 1/2"	'3-WAY BALL VALVE 120, BS 5351, FLANGED ENDS, 300#, RF(125Ra-250Ra), FULL PORT, A351 CF8	2
179	1"	3-WAY BALL VALVE, BS 5351, FLANGED ENDS, 300#, RF(125Ra-250Ra), FULL PORT, A351 CF8	2
180	1/2"	BALL VALVE, BS 5351, FLANGED ENDS, 300#, RF(125Ra- 250Ra), FULL PORT, A351 CF8M	13
181	1 1/2"	BALL VALVE, BS 5351, FLANGED ENDS, 600#, RF(125Ra- 250Ra), FULL PORT, A351 CF8M	2
182	1"	BALL VALVE, BS 5351, FLANGED ENDS, 600#, RF(125Ra- 250Ra), FULL PORT, A351 CF8M	5
183	1/2"	BALL VALVE, BS 5351, FLANGED ENDS, 600#, RF(125Ra- 250Ra), FULL PORT, A351 CF8M	210
184	3/4"	BALL VALVE, BS 5351, FLANGED ENDS, 600#, RF(125Ra- 250Ra), FULL PORT, A351 CF8M	3
185	2 1/2"	BALL VALVE, BS 5351, FLANGED ENDS, SHORT PATTERN, 150#, RF(125Ra-250Ra), REDUCED PORT, A216WCB	3
186	2"	BALL VALVE, BS 5351, FLANGED ENDS, SHORT PATTERN, 150#, RF(125Ra-250Ra), REDUCED PORT, A216WCB	5
187	3"	BALL VALVE, BS 5351, FLANGED ENDS, SHORTPATTERN, 150#, RF(125Ra-250Ra), REDUCED PORT, A216 WCB	3
188	4"	BALL VALVE, BS 5351, FLANGED ENDS, SHORT PATTERN, 150#, RF(125Ra-250Ra), REDUCED PORT, A216WCB	3



189	2"	BALL VALVE, BS 5351, FLANGED ENDS, SHORT PATTERN, 150#, RF(125Ra-250Ra), REDUCED PORT, A351CF8M	2
190	3"	BALL VALVE, BS 5351, FLANGED ENDS, SHORT PATTERN, 150#, RF(125Ra-250Ra), REDUCED PORT, A351CF8M	3
191	1"	BALL VALVE, BS 5351, FLANGED ENDS, SHORT PATTERN, 300#, RF(125Ra-250Ra), FULL PORT, A351CF8M	31
192	1/2"	BALL VALVE, BS 5351, FLANGED ENDS, SHORTPATTERN, 300#, RF(125Ra-250Ra), FULL PORT, A351 CF8M	42
193	3/4"	BALL VALVE, BS 5351, FLANGED ENDS, SHORTPATTERN, 300#, RF(125Ra-250Ra), FULL PORT, A351 CF8M	5
194	2"	BALL VALVE, BS 5351, FLANGED ENDS, SHORT PATTERN, 300#, RF(125Ra-250Ra), REDUCED PORT, A351CF8M	2
195	2"	BALL VALVE, BS 5351, FLANGED ENDS, SHORT PATTERN, 300#, RF(125Ra-250Ra), REDUCED PORT, A351CF8M	10
196	1 1/2"	BALL VALVE, BS 5351, SOCKET WELDING ENDS, 800#, A105	2
197	1"	BALL VALVE, BS 5351, SOCKET WELDING ENDS, 800#, A105	6
198	1/2"	BALL VALVE, BS 5351, SOCKET WELDING ENDS, 800#, A105	16
199	1"	BALL VALVE, SANDWICH TYPE, BS 5351, FLANGED ENDS, 300#, RF(125Ra-250Ra), FULL PORT, A351 CF8	3
200	1"	CHECK VALVE, BALL TYPE, HORIZONTAL INSTALLATION, ANSI B16.10/ANSI B16.5, FLANGED ENDS, 600#, RF(125Ra-250Ra), A182 F304	3
201	1/2"	CHECK VALVE, BALL TYPE, HORIZONTAL INSTALLATION, ANSI B16.10/ANSI B16.5, FLANGED ENDS, 600#, RF(125Ra-250Ra), A182 F304	70
202	1"	CHECK VALVE, BALL TYPE, VERTICAL INSTALLATION, ANSI B16.10/ANSI B16.5, FLANGED ENDS, 600#, RF(125Ra-250Ra), A182 F304	3
203	2 1/2"	CHECK VALVE, SWING TYPE, BS 1868/ANSI B16.5, FLANGED ENDS, 150#, RF(125Ra-250Ra), A216 WCB	3
204	2"	CHECK VALVE, SWING TYPE, BS 1868/ANSI B16.5, FLANGED ENDS, 150#, RF(125Ra-250Ra), A216 WCB	3
205	3"	CHECK VALVE, SWING TYPE, BS 1868/ANSI B16.5, FLANGED ENDS, 150#, RF(125Ra-250Ra), A216 WCB	3
206	4"	CHECK VALVE, SWING TYPE, BS 1868/ANSI B16.5, FLANGED ENDS, 150#, RF(125Ra-250Ra), A216 WCB	3
207	1"	CHECK VALVE, SWING TYPE, BS 1868/ANSI B16.5, FLANGED ENDS, 300#, RF(125Ra-250Ra), A351 CF8	2
208	1/2"	CHECK VALVE, SWING TYPE, BS 1868/ANSI B16.5, FLANGED ENDS, 300#, RF(125Ra-250Ra), A351 CF8	13
209	1/2"	CHECK VALVE, SWING TYPE, BS 5352/ANSI B16.11, SOCKET WELDING ENDS, 800#, A105	20



PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Title: MATERIAL TAKE OFF FOR PIPING SYSTEM

Page: 13 of 16

210	1/2"	GATE VALVE, API 602, SOCKET WELDING ENDS, 800#, A105	72
211	3/4"	GATE VALVE, API 602, SOCKET WELDING ENDS, 800#, A105	6
212	1/2"	GATE VALVE, API 602, SOCKET WELDING ENDS, 800#, A182 F304	5
213	1/2"	GATE VALVE, API 602, THRD ENDS, 800#, A105	10
214	1/2"	GLOBE VALVE, BS 5352/ANSI B16.11, SOCKET WELDING ENDS, 800#, A105	41
215	3/4"	GLOBE VALVE, BS 5352/ANSI B16.11, SOCKET WELDING ENDS, 800#, A105	6
216	1"	GLOBE VALVE, BS 5352/ANSI B16.11, SOCKET WELDING ENDS, 800#, A182 F304	2
217	1/2"	GLOBE VALVE, BS 5352/ANSI B16.11, SOCKET WELDING ENDS, 800#, A182 F304	2
218	2"	GASKET, ANSI B16.21/ANSI B16.5, 150#, 2MM THK, AsbestosFree, Carbon Fiber, DONIT TESNIT CF or Equiv.	12
219	3"	GASKET, ANSI B16.21/ANSI B16.5, 150#, 2MM THK, AsbestosFree, Carbon Fiber, DONIT TESNIT CF or Equiv.	12
220	2 1/2"	GASKET, ANSI B16.21/ANSI B16.5, 150#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	17
221	2"	GASKET, ANSI B16.21/ANSI B16.5, 150#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	23
222	3"	GASKET, ANSI B16.21/ANSI B16.5, 150#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	17
223	4"	GASKET, ANSI B16.21/ANSI B16.5, 150#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	14
224	6"	GASKET, ANSI B16.21/ANSI B16.5, 150#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	3
225	1/2"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, AsbestosFree, Carbon Fiber, DONIT TESNIT BA or Equiv.	7
226	1 1/2"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, AsbestosFree, Carbon Fiber, DONIT TESNIT CF or Equiv.	6
227	1"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, AsbestosFree, Carbon Fiber, DONIT TESNIT CF or Equiv.	47
228	1/2"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, AsbestosFree, Carbon Fiber, DONIT TESNIT CF or Equiv.	37
229	1 1/2"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	7
230	1"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	37

231	1/2"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	30
232	2"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	3
233	3"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	3
234	4"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Asbestos Free, DONIT TESNIT BA UNIT or Equiv.	3
235	1"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Carbon FiberGasket For Hydrocarbon-Flat Type (TESNIT CF or Similar)	2
236	1/2"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Graphite, DONIT TESNIT BAF or Equiv.	93
237	3/4"	GASKET, ANSI B16.21/ANSI B16.5, 300#, 2MM THK, Graphite, DONIT TESNIT BAF or Equiv.	6
238	1 1/2"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	33
239	1"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	147
240	1/2"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	170
241	10"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	2
242	2"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	73
243	3/4"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	14
244	4"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	7
245	5"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	2
246	6"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	12
247	8"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 300#, 4.5mm THK	10
248	1"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 600#, 4.5mm THK	65
249	1/2"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 600#, 4.5mm THK	852
250	3/4"	GASKET, SPIRAL WOUND 304/GRAPHITE/C.S. EXT. CENT. RING, ANSI B16.20b/ANSI B16.5, 600#, 4.5mm THK	7
251	1/2"	STEAM TRAP WITH STRAINER, SOCKET WELDING ENDS, 800#, A105	14



PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Title: MATERIAL TAKE OFF FOR PIPING SYSTEM

252	1"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=160	27
253	1/2"	STUD BOLTS + 2NUTS, A 193- B8 cl 1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	3015
254	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	104
255	1/2"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=70	748
256	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H Cl1 ASME B1.13M/B18.2.4.6M, L=70	240
257	3/4"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=100	27
258	3/4"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	27
259	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=115	40
260	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=130	97
261	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=190	20
262	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=95	52
263	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=115	14
264	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=120	14
265	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=140	7
266	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=210	7
267	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=95	47
268	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	233
269	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=90	65
270	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	188
271	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=130	7
272	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=75	47



PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Title: MATERIAL TAKE OFF FOR PIPING SYSTEM

Page: 16 of 16

273	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	426
274	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	542
275	5/8"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=85	33
276	5/8"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=95	149
277	5/8"	STUD BOLTS + 2NUTS, A193-B7/A194 2H Cl1 ASME B1.13M/B18.2.4.6M, L=75	20
278	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B 18.2.4.6M, L=85	20
279	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=130	20
280	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=75	7
281	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=85	52
282	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=90	40
283	7/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=140	79
284	7/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=215	20



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 3 of 16

Mark	Line No.	Size	Description	Quantity
1	1 1/2"-CY251-P3-1DS4	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=140	6
2	"	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=95	12
3	1 1/2"-CY261-P3-1DS4	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=210	6
4	"	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=95	6
5	1 1/2"-CY412-P3-1DS4	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=95	17
6	1 1/2"-JLS-4101-3CS6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B8 Cl1/A194-8A ASME B1.13M ASME B18.2.4.6M, L=70	6
7	1 1/2"-JLS-4201-3CS6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B8 Cl1/A194-8A ASME B1.13M ASME B18.2.4.6M, L=70	6
8	1 1/2"-PRO-2502-1DS4	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=95	12
9	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	6
10	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=130	6
11	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=85	6
12	1 1/2"-PRO-2602-1DS4	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=95	6
13	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	17
14	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=130	6
15	1 1/2"-RCW-0317-4CC2	3/4"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	23
16	1"-BDG-2602-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
17	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	23



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 4 of 16

18	1"-BDG-4105-1CS1	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
19	1"-BDG-4205-1CS1	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
20	1"-BDG-4217-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
21	1"-BDG-7103-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	17
22	1"-BDL-7104-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	28
23	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	12
24	1"-HCL-0101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	12
25	"	5/8"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=90	23
26	"	5/8"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=95	45
27	1"-HCM-4103-1FS4(J)	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
28	"	5/8"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=95	28
29	1"-HCM-4203-1FS4(J)	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	23
30	"	5/8"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=95	28
31	1"-JLS-2101-3CS6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B8 Cl1/A194-8A ASME B1.13M ASME B18.2.4.6M, L=70	12
32	1"-JLS-2201-3CS6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B8 Cl1/A194-8A ASME B1.13M ASME B18.2.4.6M, L=70	6
33	1"-PRO-4107-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	23
34	1"-PRO-4205-1DS4(P)	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
35	1"-PRO-4211-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 5 of 16

36	1"-PRO-4215-1DS4(P)	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
37	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	23
38	1"-PRO-4217-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	23
39	1"-RWS-0207-4CC2(IF)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	23
40	1"-RWS-0211-4CC2(IF)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	23
41	1"-VEA-0301-1CC1(ET)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
42	1/2"-BDG-2502-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
43	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	23
44	1/2"-BDG-4102-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	45
45	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	23
46	1/2"-BDG-4103-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
47	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	17
48	1/2"-BDG-4104-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
49	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	6
50	1/2"-BDG-4204-1CS1	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
51	1/2"-BDG-4207-1CS1	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	6
52	"	1/2"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=70	12
53	1/2"-BDG-4208-1CS1	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 6 of 16

54	1/2"-BDG-4210-1CS1	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
55	1/2"-BDG-4211-1CS1	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
56	1/2"-BDG-4212-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	28
57	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	6
58	1/2"-BDG-4216-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	45
59	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
60	1/2"-BDL-2501-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	17
61	1/2"-BDL-2601-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
62	1/2"-BUT-2601-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
63	1/2"-BUT-4101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
64	1/2"-BUT-4102-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
65	1/2"-BUT-4103-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
66	1/2"-BUT-4201-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
67	1/2"-BUT-4202-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
68	1/2"-BUT-4203-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
69	1/2"-ETH-2501-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
70	1/2"-ETH-2601-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
71	1/2"-ETH-4101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 7 of 16

72	1/2"-ETH-4102-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
73	1/2"-ETH-4201-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
74	1/2"-ETH-4202-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
75	1/2"-HCL-4101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
76	1/2"-HCL-4201-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
77	1/2"-HCM-2102-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	51
78	1/2"-HCM-2103-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	51
79	1/2"-HCM-2201-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	51
80	1/2"-HCM-2202-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	51
81	1/2"-HCM-2501-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
82	1/2"-HCM-2502-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
83	1/2"-HCM-4101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	124
84	1/2"-HCM-4102-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	140
85	1/2"-HCM-4201-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	101
86	1/2"-HCM-4202-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	118
87	1/2"-HYD-2501-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
88	1/2"-HYD-2601-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
89	1/2"-HYD-4101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 8 of 16

90	1/2"-HYD-4102-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
91	1/2"-HYD-4201-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
92	1/2"-HYD-4202-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
93	1/2"-LPC-0201-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
94	1/2"-LPC-0202-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
95	1/2"-LPC-0303-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
96	1/2"-LPC-0304-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
97	1/2"-LPC-2101-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
98	1/2"-LPC-2201-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
99	1/2"-LPC-4101-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
100	1/2"-LPC-4102-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
101	1/2"-LPC-4201-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
102	1/2"-LPC-4202-3CC6(P)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	6
103	1/2"-LPS-0201-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	17
104	1/2"-LPS-0202-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	17
105	1/2"-LPS-0303-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	17
106	1/2"-LPS-2101-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	17
107	1/2"-LPS-2201-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H CI1 ASME B1.13M/B18.2.4.6M, L=70	17



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 9 of 16

108	1/2"-LPS-4101-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H Cl1 ASME B1.13M/B18.2.4.6M, L=70	17
109	1/2"-LPS-4102-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H Cl1 ASME B1.13M/B18.2.4.6M, L=70	17
110	1/2"-LPS-4201-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H Cl1 ASME B1.13M/B18.2.4.6M, L=70	17
111	1/2"-LPS-4202-3CC6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B7/A194 2H Cl1 ASME B1.13M/B18.2.4.6M, L=70	17
112	1/2"-NIT-2502-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
113	1/2"-NIT-2503-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	28
114	1/2"-NIT-2601-1CS2	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
115	1/2"-NIT-2602-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
116	1/2"-NIT-2603-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
117	1/2"-NIT-4101-1CS2	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
118	1/2"-NIT-4103-1CS2	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
119	"	1/2"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=70	6
120	1/2"-NIT-4201-1CS2	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
121	1/2"-NIT-4202-1CS2	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	17
122	1/2"-NIT-4203-1CS2	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
123	1/2"-NIT-4204-1CS2	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	23
124	1/2"-PAL-2101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	23
125	1/2"-PAL-2501-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8cl1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 10 of 16

126	1/2"-PAL-2601-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
127	1/2"-PAL-2603-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
128	1/2"-PAL-2605-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	51
129	1/2"-PAL-2607-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	51
130	1/2"-PAL-4101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
131	1/2"-PAL-4102-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
132	1/2"-PAL-4103-1FS4(J)	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	28
133	"	5/8"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=95	12
134	1/2"-PAL-4104-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
135	1/2"-PAL-4201-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
136	1/2"-PAL-4202-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
137	1/2"-PAL-4203-1FS4(P)	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	28
138	"	5/8"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=95	6
139	1/2"-PAL-4204-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
140	1/2"-PNL-2101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	51
141	1/2"-PNL-2501-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
142	1/2"-PNL-2601-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
143	1/2"-PNL-4101-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 11 of 16

144	1/2"-PNL-4102-1FS4	1/2"	STUD BOLTS + 2NUTS, A 193-B8c1/A194- 8A ASME B1.13M/ B18.2.4.6M, L=85	45
145	1/2"-RWR-0225-4CC2(IF)	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	6
146	1/2"-RWR-0227-4CC2(IF)	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	6
147	1/2"-RWR-2102-4CC2(IF)	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	6
148	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
149	1/2"-RWR-2202-4CC2(IF)	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	6
150	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
151	1/2"-RWS-0201-4CC2(J)	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	28
152	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
153	1/2"-RWS-0203-4CC2(J)	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	28
154	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
155	1/2"-RWS-0224-4CC2(IF)	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	6
156	1/2"-RWS-0226-4CC2(IF)	1/2"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=70	6
157	2 1/2"-RWR-0214-4CC2(IF)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
158	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=90	23
159	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	6
160	2 1/2"-RWS-0213-4CC2(J)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
161	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=90	23



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 12 of 16

162	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	6
163	2"-BDG-2504-1CS1	3/4"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=95	6
164	"	5/8"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=85	6
165	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B 18.2.4.6M, L=85	6
166	2"-BDG-2601-1CS1	3/4"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=95	12
167	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B 18.2.4.6M, L=85	12
168	2"-BDG-4202-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	56
169	2"-JLS-4102-3CS6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B8 Cl1/A194-8A ASME B1.13M ASME B18.2.4.6M, L=70	17
170	2"-JLS-4202-3CS6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B8 Cl1/A194-8A ASME B1.13M ASME B18.2.4.6M, L=70	23
171	2"-PRO-3502-1DS4(P)	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	90
172	2"-PRO-4101-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
173	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	12
174	2"-PRO-4106-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
175	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	23
176	2"-PRO-4201-1DS4(P)	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	45
177	2"-PRO-4206-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	12
178	2"-PRO-4207-1DS4	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=95	6
179	"	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=95	6



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 13 of 16

180	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=90	12
181	2"-PRO-4208-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	45
182	2"-PRO-4209-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
183	"	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=115	12
184	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	34
185	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=90	12
186	2"-PRO-4210-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	34
187	2"-PRO-4212-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	45
188	2"-PRO-4213-1DS4	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
189	"	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=115	12
190	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	12
191	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=90	12
192	2"-PRO-4214-1DS4	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=90	34
193	2"-RCW-0321-4CC2	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	28
194	2"-RWR-0210-4CC2(IF)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	34
195	2"-RWS-0209-4CC2(J)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	34
196	3"-BDG-4101-1CS1	5/8"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=85	6
197	"	5/8"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=95	6



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 14 of 16

198	3"-BDG-4201-1CS1	5/8"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=85	6
199	"	5/8"	STUD BOLTS + 2NUTS, A193- B8 Cl 1/A 194-8A AMSE B1.13M/B 18.2.4.6M, L=95	6
200	3"-JLS-0201-3CS6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B8 Cl1/A194-8A ASME B1.13M ASME B18.2.4.6M, L=70	6
201	3"-RCW-0318-4CC2(P)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
202	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=90	6
203	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	34
204	3"-RCW-0319-4CC2(P)	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
205	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	34
206	3/4"-BDG-4215-1DS4	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=95	6
207	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=75	12
208	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=75	6
209	3/4"-HCM-2505-1DS4(J)	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	23
210	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=75	17
211	3/4"-HCM-2602-1DS4(J)	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	23
212	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=75	12
213	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	6
214	3/4"-LPS-0304-3CC6(IA)	5/8"	STUD BOLTS + 2NUTS, A193-B7/A194 2H Cl1 ASME B1.13M/B18.2.4.6M, L=75	17
215	4"-PRO-4216-1DS4	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=115	12



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.

Arak Center

Page: 15 of 16

216	4"-RCW-0322-4CC2(P)	3/4"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=100	12
217	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
218	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=90	6
219	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	45
220	4"-RCW-0323-4CC2(P)	3/4"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=100	12
221	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=85	6
222	"	5/8"	STUD BOLTS + 2NUTS, A193 - B7/A 194-2H ASME B1.13M/ B 18.2.4.6M, L=95	40
223	6"-JLS-0322-3CS6(IA)	1/2"	STUD BOLTS + 2NUTS, A193-B8 Cl1/A194-8A ASME B1.13M ASME B18.2.4.6M, L=70	6
224	6"-PRO-4102-1DS4(P)	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
225	"	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=130	34
226	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	6
227	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=85	12
228	6"-PRO-4103-1DS4(P)	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
229	"	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=130	34
230	"	3/4"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=120	12
231	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=130	6
232	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=85	6
233	6"-PRO-4104-1DS4(P)	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12



Title: STUD BOLT BOM FOR EACH LINE NO.

PETROCHEMICAL RESEARCH & TECHNOLOGY CO.
Arak Center

Page: 16 of 16

234	"	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=115	12
235	"	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=190	17
236	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	6
237	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=85	12
238	8"-PRO-4202-1DS4(P)	1"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=160	23
239	"	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	17
240	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	12
241	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=85	6
242	"	7/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=140	17
243	8"-PRO-4203-1DS4(P)	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
244	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=130	6
245	"	5/8"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=85	6
246	"	7/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=140	51
247	8"-PRO-4204-1DS4(P)	1/2"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=70	12
248	"	3/4"	STUD BOLTS + 2NUTS, A193 – B8 cl 1/A 194-8A ASME B1.13M/B18.2.4.6M, L=130	17
249	"	5/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=85	6
250	"	7/8"	STUD BOLTS + 2NUTS, GALV. B7-2H ASME B1.13M/ASME B18.2.4.6M, L=215	17