

The specimen details

Diameter of bolt	d (mm)	20
Diameter of bolt hole	$d_0$ (mm)	22
End distance	$e_1$ (mm)	60
Edge distance	$e_2$ (mm)	55
Spacing between centres of bolts in the direction of load transfer	$p_1$ (mm)	70
	$p_2$ (mm)	133.4
Spacing between rows of bolts	$p_3$ (mm)	90
Thickness of end plate	$t_p$ (mm)	10
Horizontal distance of lever arm	$B_L$ (mm)	490
Vertical distance of lever arm	$D_L$ (mm)	51.7

Steel Grade		S275	S355
Dimension of Members		UB305x165 x40	UC254x25 4x89
Depth of Section	D (mm)	303.4	260.3
Width of Section	B (mm)	165	256.3
Thickness of Web	t (mm)	6	10.3
Thickness of Flange	T (mm)	10.2	17.3
Root Radius	r (mm)	8.9	12.7
Depth between Fillets	d (mm)	265.2	200.3

Nominal Temperature

550°C

Time (minute)	Thermocouple Average(°C)	Jack Displacement (mm)	Load Angle $\alpha(^{\circ})$	Beam Rotation ( $^{\circ}$ )	Column Rotation ( $^{\circ}$ )	Connection Rotation ( $^{\circ}$ )	Force Rotation ( $^{\circ}$ )	F3 from F1 (kN)	F3 from F2 (kN)	F3 Average (kN)	Tension (kN)	Shear (kN)	Moment (kN*m)
0													
1	543.354	2.573											
2	543.745	2.578											
3	543.882	2.577	44.73	0.000	0.000	0.000	69.071	-19.57	-6.71	-13.14	-9.34	-9.25	-5211.60
4	544.285	4.006	44.83	0.002	0.046	-0.044	68.972	-16.77	-4.53	-10.65	-7.55	-7.51	-4230.06
5	544.449	5.606	44.94	-0.012	0.062	-0.074	68.880	-13.73	-2.18	-7.95	-5.63	-5.62	-3164.37
6	544.683	7.476	45.00	0.033	0.086	-0.053	68.774	-10.82	0.79	-5.01	-3.54	-3.54	-1996.00
7	544.993	9.143	45.00	0.165	0.122	0.043	68.635	-8.33	3.09	-2.62	-1.85	-1.85	-1043.56
8	545.087	10.842	45.02	0.183	0.155	0.028	68.597	-5.89	4.73	-0.58	-0.41	-0.41	-230.70
9	545.374	12.528	45.02	0.277	0.170	0.107	68.505	-4.76	6.54	0.89	0.63	0.63	355.28
10	545.501	14.130	45.04	0.241	0.172	0.069	68.528	-4.69	7.39	1.35	0.95	0.95	536.93
11	545.671	15.667	45.04	0.260	0.154	0.106	68.507	-4.16	7.01	1.42	1.01	1.01	567.52
12	545.890	16.933	45.23	0.199	0.206	-0.007	68.378	-3.53	8.79	2.63	1.85	1.87	1050.45
13	546.046	18.558	45.24	0.306	0.201	0.105	68.256	-1.69	10.19	4.25	2.99	3.02	1698.66
14	546.360	20.146	45.32	0.326	0.226	0.100	68.157	0.27	11.63	5.95	4.18	4.23	2381.42
15	546.473	21.694	45.41	0.337	0.252	0.085	68.056	2.08	13.22	7.65	5.37	5.45	3065.18
16	546.600	23.158	45.56	0.317	0.272	0.045	67.929	3.82	14.82	9.32	6.53	6.65	3742.77
17	546.718	24.663	45.64	0.326	0.294	0.032	67.837	5.79	16.22	11.00	7.69	7.87	4424.17
18	546.765	26.193	45.60	0.418	0.330	0.088	67.786	7.44	17.66	12.55	8.78	8.97	5042.19
19	547.018	27.658	45.59	0.395	0.377	0.018	67.819	9.20	19.52	14.36	10.05	10.26	5768.85
20	547.160	29.204	45.73	0.491	0.399	0.092	67.588	11.65	21.59	16.62	11.60	11.90	6688.74
21	547.297	30.749	45.82	0.504	0.450	0.054	67.479	13.75	24.58	19.16	13.36	13.74	7724.99
22	547.480	32.263	45.85	0.566	0.476	0.090	67.391	16.58	27.21	21.89	15.25	15.71	8829.37

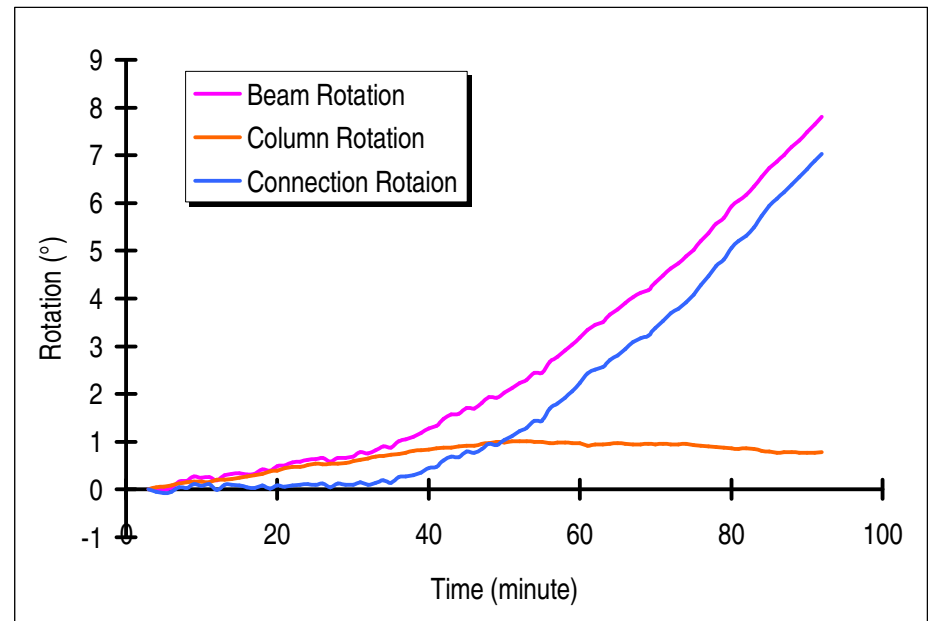
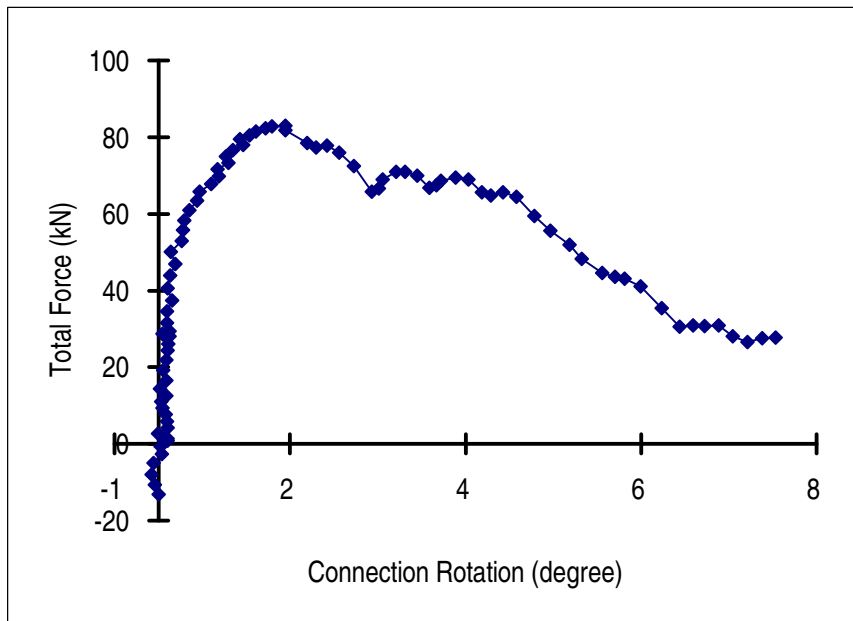
## 16 October 2007 End-plate Test Result

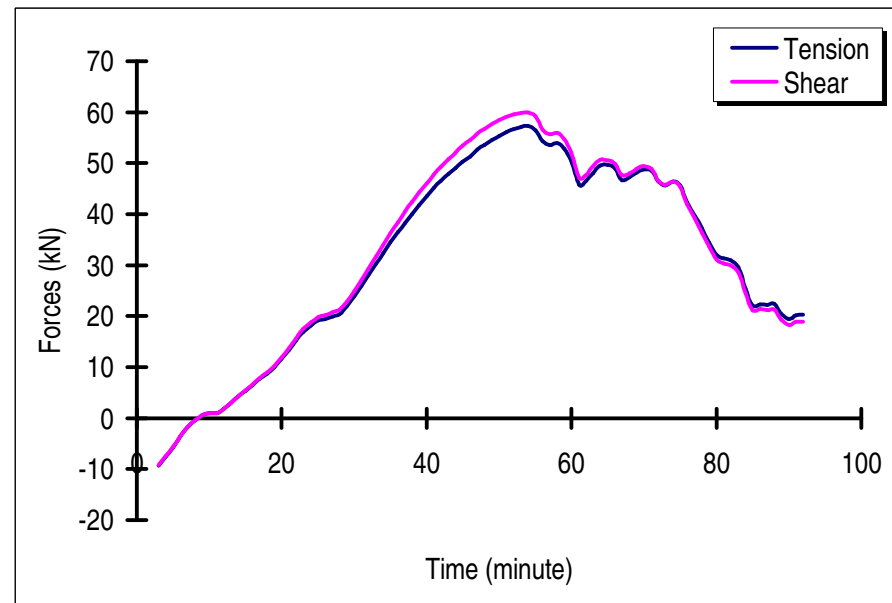
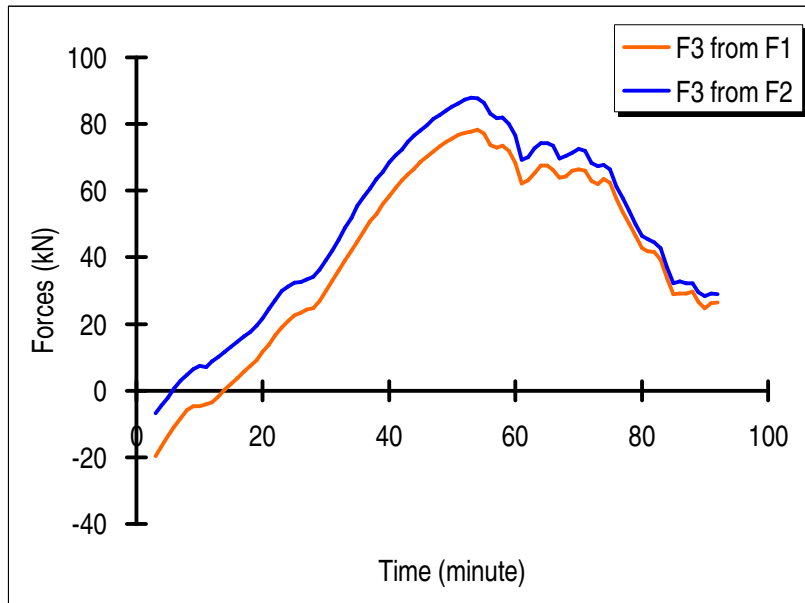
23	547.524	33.800	45.86	0.582	0.480	0.102	67.362	18.90	29.82	24.36	16.97	17.48	9826.03
24	547.721	35.241	45.93	0.625	0.516	0.109	67.254	20.95	31.32	26.13	18.18	18.77	10549.70
25	547.858	36.570	46.00	0.640	0.540	0.100	67.168	22.57	32.48	27.53	19.12	19.80	11124.78
26	547.951	37.851	46.11	0.657	0.532	0.125	67.042	23.37	32.68	28.02	19.43	20.19	11343.84
27	548.117	39.036	46.18	0.586	0.536	0.050	67.040	24.26	33.32	28.79	19.94	20.77	11666.80
28	548.165	40.173	46.11	0.666	0.539	0.127	67.033	24.73	34.22	29.47	20.43	21.24	11929.62
29	548.337	41.567	46.19	0.659	0.559	0.100	66.959	26.88	36.28	31.58	21.86	22.79	12799.53
30	548.429	43.089	46.21	0.694	0.594	0.100	66.900	29.92	39.13	34.53	23.90	24.93	13998.95
31	548.474	44.586	46.15	0.785	0.626	0.159	66.874	32.99	41.97	37.48	25.97	27.03	15181.96
32	548.727	46.122	46.25	0.755	0.652	0.103	66.804	35.96	45.23	40.60	28.08	29.32	16467.31
33	548.739	47.676	46.29	0.819	0.685	0.134	66.696	39.03	48.86	43.94	30.37	31.76	17836.28
34	548.890	49.262	46.37	0.900	0.707	0.193	66.533	42.07	51.84	46.95	32.40	33.99	19080.10
35	548.922	50.824	46.43	0.870	0.725	0.145	66.505	44.63	55.44	50.03	34.49	36.25	20349.58
36	548.922	52.417	46.44	1.009	0.744	0.265	66.351	47.77	58.20	52.99	36.51	38.40	21554.93
37	549.175	53.977	46.65	1.047	0.770	0.277	66.103	50.92	60.57	55.75	38.26	40.54	22746.03
38	549.255	55.604	46.61	1.103	0.807	0.296	66.088	53.01	63.53	58.27	40.03	42.35	23762.27
39	549.345	57.229	46.61	1.183	0.829	0.354	66.011	56.06	65.67	60.87	41.81	44.23	24819.79
40	549.454	58.790	46.61	1.278	0.836	0.442	65.916	58.29	68.55	63.42	43.57	46.09	25860.23
41	549.486	60.432	46.63	1.331	0.863	0.468	65.844	60.78	70.64	65.71	45.12	47.77	26802.27
42	549.635	62.050	46.62	1.479	0.875	0.604	65.707	63.10	72.42	67.76	46.54	49.25	27634.60
43	549.691	63.636	46.64	1.569	0.883	0.686	65.597	64.91	74.71	69.81	47.93	50.75	28478.34
44	549.827	65.237	46.70	1.582	0.906	0.676	65.518	66.66	76.50	71.58	49.09	52.10	29229.25
45	550.033	66.783	46.72	1.713	0.914	0.799	65.370	68.70	78.01	73.36	50.29	53.41	29961.99
46	550.049	68.359	46.80	1.695	0.923	0.772	65.309	70.21	79.63	74.92	51.29	54.61	30633.66
47	550.157	69.945	46.67	1.811	0.959	0.852	65.320	71.86	81.52	76.69	52.62	55.79	31299.72
48	550.116	71.506	46.62	1.930	0.967	0.963	65.258	73.25	82.69	77.97	53.56	56.66	31795.99
49	550.147	73.108	46.62	1.925	0.996	0.929	65.255	74.71	84.15	79.43	54.55	57.73	32395.38
50	550.357	74.757	46.62	2.025	0.988	1.037	65.159	75.62	85.30	80.46	55.26	58.48	32814.37
51	550.372	76.423	46.51	2.122	1.009	1.113	65.174	76.69	86.19	81.44	56.05	59.08	33161.23
52	550.534	78.063	46.40	2.233	1.010	1.223	65.167	77.30	87.29	82.29	56.75	59.60	33457.10

16 October 2007 End-plate Test Result

53	550.669	79.682	46.36	2.298	1.006	1.292	65.142	77.68	87.82	82.75	57.10	59.89	33624.02
54	550.650	81.252	46.31	2.448	1.004	1.444	65.050	78.26	87.64	82.95	57.30	59.98	33677.17
55	550.843	82.949	46.38	2.445	0.999	1.446	64.978	77.10	86.44	81.77	56.41	59.19	33231.86
56	550.863	84.702	46.15	2.669	0.974	1.695	64.990	73.72	83.12	78.42	54.33	56.55	31762.24
57	550.955	86.342	46.14	2.778	0.981	1.797	64.882	72.91	81.67	77.29	53.55	55.73	31303.51
58	551.003	88.018	46.05	2.913	0.989	1.924	64.844	73.57	81.94	77.75	53.97	55.97	31446.79
59	551.041	89.689	45.97	3.036	0.973	2.063	64.800	71.93	80.07	76.00	52.83	54.64	30703.48
60	551.240	91.365	45.90	3.188	0.964	2.224	64.713	68.24	76.62	72.43	50.40	52.02	29232.12
61	551.222	93.093	45.85	3.346	0.915	2.431	64.611	62.16	69.28	65.72	45.78	47.15	26501.61
62	551.309	94.664	45.73	3.454	0.942	2.512	64.618	63.19	70.05	66.62	46.50	47.71	26819.38
63	551.394	96.263	45.81	3.508	0.949	2.559	64.489	65.24	72.72	68.98	48.08	49.46	27800.34
64	551.319	97.859	45.65	3.664	0.955	2.709	64.488	67.48	74.32	70.90	49.56	50.70	28508.42
65	551.515	99.474	45.55	3.772	0.964	2.808	64.484	67.46	74.32	70.89	49.65	50.60	28460.82
66	551.560	101.117	45.48	3.901	0.955	2.946	64.423	66.28	73.57	69.93	49.03	49.86	28046.05
67	551.649	102.742	45.59	4.028	0.941	3.087	64.189	63.89	69.60	66.75	46.71	47.68	26812.64
68	551.760	104.449	45.52	4.119	0.950	3.169	64.165	64.31	70.49	67.40	47.22	48.09	27047.11
69	551.704	106.016	45.47	4.171	0.951	3.220	64.159	65.95	71.35	68.65	48.14	48.94	27531.21
70	551.802	107.707	45.36	4.335	0.950	3.385	64.114	66.35	72.53	69.44	48.80	49.40	27797.90
71	551.840	109.419	45.24	4.484	0.954	3.530	64.076	65.93	71.98	68.96	48.55	48.97	27558.23
72	551.938	111.175	45.08	4.630	0.945	3.685	64.094	62.97	68.36	65.66	46.37	46.50	26177.38
73	552.050	112.839	45.06	4.735	0.945	3.790	64.013	62.04	67.37	64.70	45.71	45.80	25784.86
74	551.916	114.456	44.96	4.881	0.956	3.925	63.962	63.45	67.73	65.59	46.41	46.35	26099.62
75	552.094	116.019	44.88	5.017	0.936	4.081	63.910	62.36	66.42	64.39	45.63	45.43	25591.40
76	552.260	117.717	44.75	5.203	0.920	4.283	63.853	57.55	61.29	59.42	42.20	41.83	23569.73
77	552.379	119.453	44.61	5.366	0.898	4.468	63.825	53.46	57.77	55.62	39.59	39.06	22014.94
78	552.569	121.111	44.29	5.571	0.886	4.685	63.946	50.16	53.86	52.01	37.23	36.32	20483.96
79	552.517	122.816	44.29	5.694	0.872	4.822	63.816	46.47	49.96	48.21	34.51	33.67	18990.33
80	552.609	124.482	44.19	5.924	0.864	5.060	63.690	42.69	46.36	44.53	31.93	31.04	17510.16
81	552.650	126.100	44.11	6.055	0.852	5.203	63.642	41.85	45.46	43.66	31.35	30.39	17146.31
82	552.561	127.692	44.09	6.169	0.859	5.310	63.549	41.67	44.57	43.12	30.97	30.00	16929.74

83	552.681	129.342	44.03	6.343	0.849	5.494	63.436	39.35	42.79	41.07	29.53	28.54	16108.79
84	552.805	131.184	43.90	6.547	0.812	5.735	63.358	33.80	36.92	35.36	25.48	24.52	13841.38
85	553.007	132.954	43.79	6.731	0.791	5.940	63.288	28.93	32.13	30.53	22.04	21.13	11930.45
86	553.023	134.604	43.77	6.865	0.772	6.093	63.168	29.10	32.77	30.94	22.34	21.40	12086.61
87	553.008	136.238	43.65	7.009	0.782	6.227	63.144	29.18	32.27	30.73	22.23	21.21	11981.10
88	553.024	137.919	43.53	7.172	0.786	6.386	63.102	29.66	32.28	30.97	22.45	21.33	12052.30
89	552.968	139.640	43.49	7.317	0.775	6.542	62.993	26.63	29.54	28.09	20.38	19.33	10924.69
90	553.122	141.353	43.32	7.483	0.772	6.711	62.999	24.79	28.43	26.61	19.36	18.26	10322.53
91	553.194	142.987	43.20	7.652	0.769	6.883	62.950	26.17	29.09	27.63	20.14	18.92	10697.07
92	553.279	144.636	43.14	7.811	0.777	7.034	62.851	26.46	29.03	27.74	20.24	18.97	10730.23





Photographs after Test

