

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		UB305×16 5×40	UC254×25 4×89
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

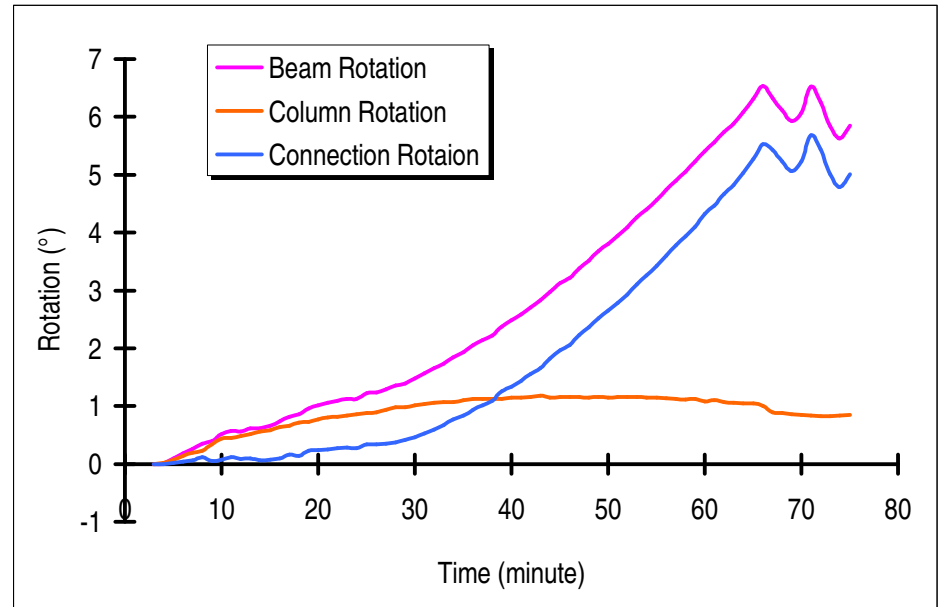
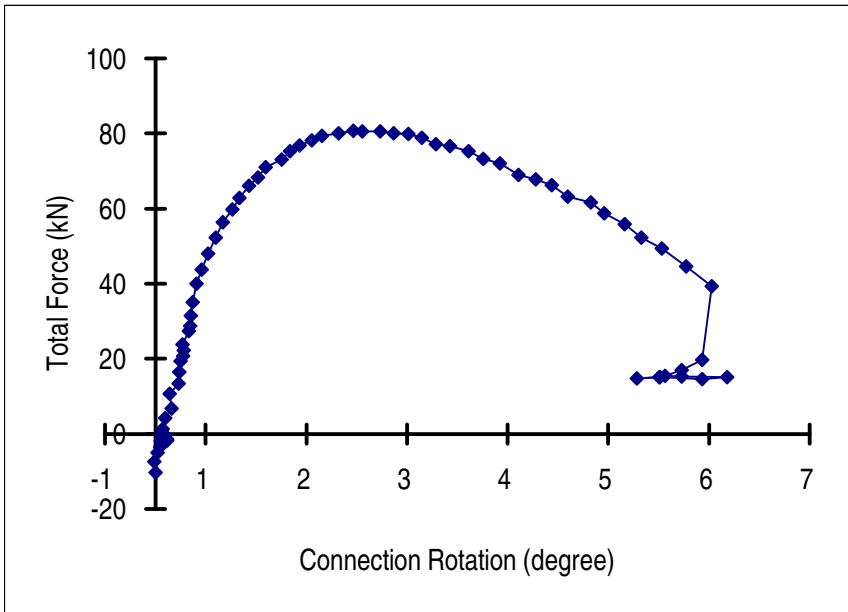
Time (minute)	Thermocouple Average(°C)	Jack Displacement (mm)	Load Angle α (°)	Beam Rotation (°)	Column Rotation (°)	Connection Rotation (°)	Force Rotation (°)	F3 from F1 (kN)	F3 from F2 (kN)	F3 Average (kN)	Tension (kN)	Shear (kN)	Moment (kN*m)
0	546.318	2.469											
1	546.386	2.486											
2	546.389	2.486											
3	546.504	2.486	41.65	0.000	0.000	0.000	72.316	-10.60	-9.91	-10.25	-7.66	-6.82	-3869.65
4	546.577	3.884	42.10	0.011	0.018	-0.008	71.862	-7.49	-7.25	-7.37	-5.47	-4.94	-2801.90
5	546.645	5.536	42.25	0.096	0.075	0.021	71.624	-4.94	-5.21	-5.08	-3.76	-3.41	-1934.79
6	546.740	7.155	42.07	0.185	0.141	0.044	71.718	-3.06	-3.80	-3.43	-2.55	-2.30	-1303.08
7	546.835	8.788	42.34	0.264	0.200	0.064	71.367	-2.08	-3.27	-2.67	-1.98	-1.80	-1020.90
8	546.977	10.448	42.33	0.349	0.232	0.117	71.293	-1.64	-2.00	-1.82	-1.34	-1.22	-694.07
9	547.021	11.965	42.38	0.396	0.342	0.054	71.190	-1.42	-2.42	-1.92	-1.42	-1.30	-734.23
10	547.104	13.469	42.18	0.517	0.442	0.075	71.276	-1.05	-1.02	-1.04	-0.77	-0.70	-394.27
11	547.174	14.977	42.06	0.570	0.451	0.119	71.337	-0.83	-1.90	-1.36	-1.01	-0.91	-518.13
12	547.236	16.558	42.20	0.564	0.484	0.081	71.209	-0.46	-1.28	-0.87	-0.64	-0.58	-330.52
13	547.342	18.137	42.13	0.611	0.511	0.101	71.225	0.06	-0.84	-0.39	-0.29	-0.26	-147.10
14	547.402	19.618	42.50	0.616	0.556	0.060	70.855	0.62	-0.29	0.17	0.12	0.11	64.66
15	547.461	20.734	42.74	0.655	0.584	0.071	70.576	1.86	0.82	1.34	0.99	0.91	515.55
16	547.539	22.103	42.80	0.738	0.641	0.098	70.430	4.57	3.69	4.13	3.03	2.81	1588.26
17	547.530	23.529	42.68	0.817	0.656	0.161	70.471	7.94	5.55	6.75	4.96	4.57	2589.58
18	547.501	24.930	42.72	0.859	0.717	0.142	70.390	11.10	10.17	10.64	7.81	7.22	4085.98
19	547.564	26.331	42.67	0.960	0.730	0.230	70.343	14.18	12.65	13.41	9.86	9.09	5147.94
20	547.630	27.764	42.80	1.009	0.774	0.235	70.160	17.18	15.64	16.41	12.04	11.15	6312.64
21	547.695	29.246	42.73	1.058	0.806	0.252	70.185	19.98	18.63	19.30	14.18	13.10	7415.87
22	547.726	30.448	42.78	1.089	0.811	0.278	70.104	21.63	19.99	20.81	15.27	14.13	7999.79

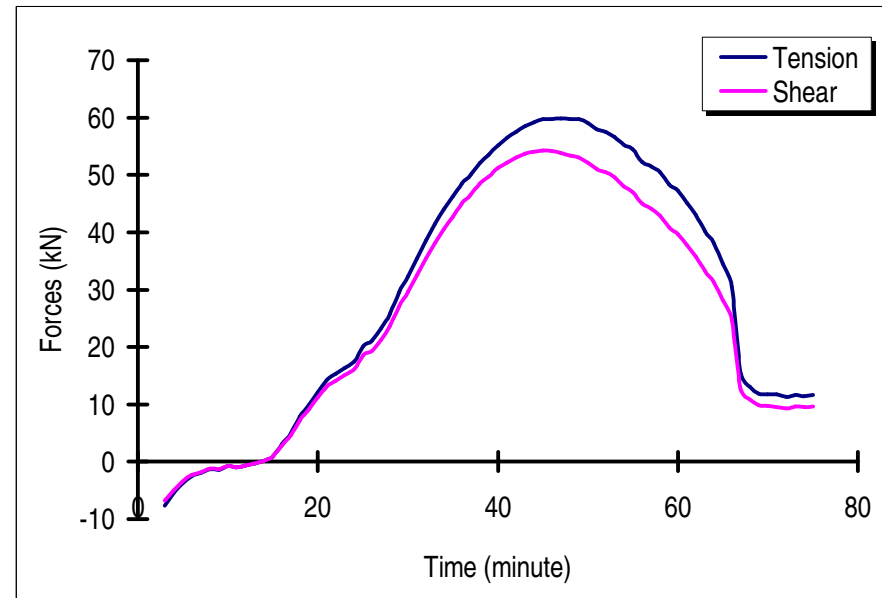
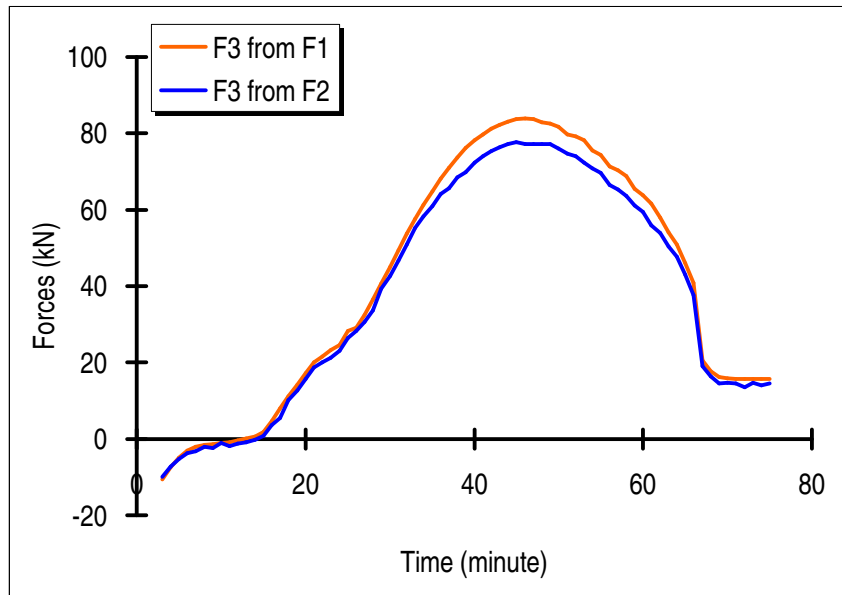
07 January 2008 End-plate Test Result

23	547.742	31.545	42.73	1.123	0.839	0.284	70.121	23.17	21.29	22.23	16.33	15.08	8539.35
24	547.808	32.691	42.70	1.130	0.858	0.272	70.144	24.58	22.99	23.79	17.48	16.13	9132.81
25	547.844	34.028	42.72	1.222	0.886	0.336	70.023	28.31	26.37	27.34	20.08	18.55	10501.74
26	547.923	35.173	42.55	1.231	0.887	0.344	70.194	29.16	28.19	28.68	21.13	19.39	10984.55
27	547.957	36.469	42.41	1.285	0.931	0.354	70.278	32.41	30.69	31.55	23.29	21.28	12055.75
28	548.040	37.912	42.50	1.353	0.981	0.372	70.112	36.47	33.71	35.09	25.87	23.71	13432.32
29	548.143	39.465	42.50	1.390	0.978	0.412	70.079	40.63	39.29	39.96	29.46	26.99	15292.78
30	548.153	40.932	42.58	1.475	1.015	0.460	69.919	45.00	42.64	43.82	32.27	29.65	16792.10
31	548.197	42.413	42.59	1.563	1.040	0.523	69.818	49.32	46.74	48.03	35.36	32.50	18409.65
32	548.261	43.934	42.55	1.658	1.060	0.598	69.761	53.67	50.95	52.31	38.54	35.38	20038.79
33	548.313	45.560	42.59	1.733	1.065	0.668	69.649	57.53	55.18	56.35	41.49	38.13	21598.98
34	548.413	47.114	42.63	1.839	1.072	0.767	69.504	61.36	58.26	59.81	44.01	40.51	22940.16
35	548.403	48.579	42.71	1.934	1.099	0.834	69.324	64.87	60.88	62.88	46.20	42.65	24148.63
36	548.439	50.189	42.87	2.059	1.127	0.932	69.044	68.18	64.07	66.13	48.47	44.99	25460.90
37	548.475	51.639	42.94	2.142	1.124	1.018	68.891	70.99	65.65	68.32	50.02	46.54	26337.15
38	548.475	53.270	42.93	2.216	1.122	1.094	68.821	73.65	68.54	71.10	52.05	48.43	27403.83
39	548.616	54.808	42.92	2.375	1.120	1.255	68.676	76.14	69.88	73.01	53.46	49.72	28134.34
40	548.638	56.363	42.86	2.484	1.148	1.336	68.622	78.23	72.32	75.27	55.17	51.21	28982.14
41	548.744	58.076	42.72	2.585	1.151	1.434	68.668	79.70	73.99	76.84	56.46	52.13	29515.35
42	548.838	59.661	42.66	2.706	1.153	1.553	68.607	81.15	75.35	78.25	57.55	53.02	30025.85
43	548.837	61.240	42.54	2.834	1.180	1.654	68.595	82.30	76.43	79.37	58.48	53.66	30396.40
44	548.887	62.847	42.40	2.971	1.150	1.821	68.597	83.04	77.18	80.11	59.16	54.02	30610.91
45	548.925	64.363	42.23	3.125	1.156	1.969	68.615	83.66	77.70	80.68	59.74	54.23	30741.17
46	549.074	65.861	42.19	3.221	1.163	2.058	68.556	83.94	77.21	80.57	59.70	54.12	30681.54
47	549.093	67.444	41.95	3.386	1.154	2.232	68.636	83.76	77.29	80.52	59.89	53.83	30537.42
48	549.125	69.031	41.78	3.518	1.151	2.367	68.674	82.85	77.27	80.06	59.70	53.34	30274.38
49	549.213	70.625	41.60	3.677	1.162	2.515	68.689	82.60	77.16	79.88	59.73	53.04	30116.66
50	549.185	72.298	41.47	3.797	1.148	2.649	68.704	81.65	75.99	78.82	59.06	52.19	29649.44
51	549.270	73.907	41.34	3.950	1.162	2.788	68.680	79.75	74.61	77.18	57.95	50.98	28969.29
52	549.317	75.582	41.28	4.088	1.163	2.925	68.599	79.15	74.02	76.58	57.55	50.53	28716.87

07 January 2008 End-plate Test Result

53	549.367	77.207	41.20	4.267	1.157	3.110	68.502	78.18	72.28	75.23	56.60	49.55	28170.39
54	549.480	78.801	40.98	4.402	1.143	3.259	68.587	75.51	70.90	73.20	55.26	48.01	27307.05
55	549.525	80.491	40.79	4.566	1.143	3.423	68.610	74.43	69.61	72.02	54.52	47.05	26776.92
56	549.589	82.172	40.70	4.738	1.134	3.604	68.527	71.39	66.49	68.94	52.26	44.96	25594.08
57	549.637	83.726	40.59	4.896	1.120	3.776	68.485	70.28	65.35	67.82	51.50	44.12	25125.54
58	549.703	85.407	40.42	5.054	1.118	3.936	68.494	68.79	63.66	66.23	50.42	42.94	24464.97
59	549.725	87.010	40.21	5.227	1.128	4.099	68.534	65.39	61.12	63.25	48.31	40.84	23279.07
60	549.726	88.658	40.03	5.402	1.079	4.323	68.540	63.87	59.49	61.68	47.23	39.67	22627.34
61	549.818	90.340	39.92	5.563	1.102	4.461	68.488	61.59	55.98	58.79	45.09	37.72	21523.51
62	549.856	91.965	39.76	5.738	1.072	4.666	68.468	57.89	53.86	55.87	42.95	35.74	20400.05
63	549.890	93.632	39.60	5.883	1.058	4.825	68.484	54.10	50.33	52.21	40.23	33.28	19008.37
64	550.021	95.299	39.46	6.079	1.047	5.032	68.426	50.94	47.65	49.30	38.06	31.33	17900.78
65	550.052	97.019	39.23	6.317	1.045	5.272	68.426	46.08	43.09	44.59	34.54	28.20	16120.52
66	550.107	98.532	39.01	6.534	1.006	5.528	68.426	40.79	37.71	39.25	30.50	24.71	14134.72
67	550.167	100.590	39.19	6.324	0.890	5.434	68.458	20.57	18.98	19.78	15.33	12.50	7145.53
68	550.214	102.360	39.44	6.110	0.880	5.230	68.420	17.63	16.41	17.02	13.14	10.81	6177.84
69	550.299	103.931	39.66	5.923	0.857	5.066	68.385	16.20	14.57	15.39	11.84	9.82	5607.34
70	550.327	105.701	39.48	6.075	0.844	5.231	68.413	15.80	14.72	15.26	11.78	9.70	5541.88
71	550.385	107.366	39.02	6.522	0.842	5.680	68.426	15.76	14.49	15.12	11.75	9.52	5448.03
72	550.467	109.071	39.30	6.257	0.822	5.435	68.410	15.73	13.52	14.63	11.32	9.27	5296.07
73	550.548	110.657	39.63	5.840	0.828	5.012	68.499	15.72	14.63	15.18	11.69	9.68	5527.69
74	550.629	112.139	39.83	5.624	0.839	4.785	68.518	15.65	14.05	14.85	11.40	9.51	5427.54
75	550.655	113.845	39.53	5.848	0.843	5.005	68.594	15.67	14.59	15.13	11.67	9.63	5500.88





Photographs after Test

