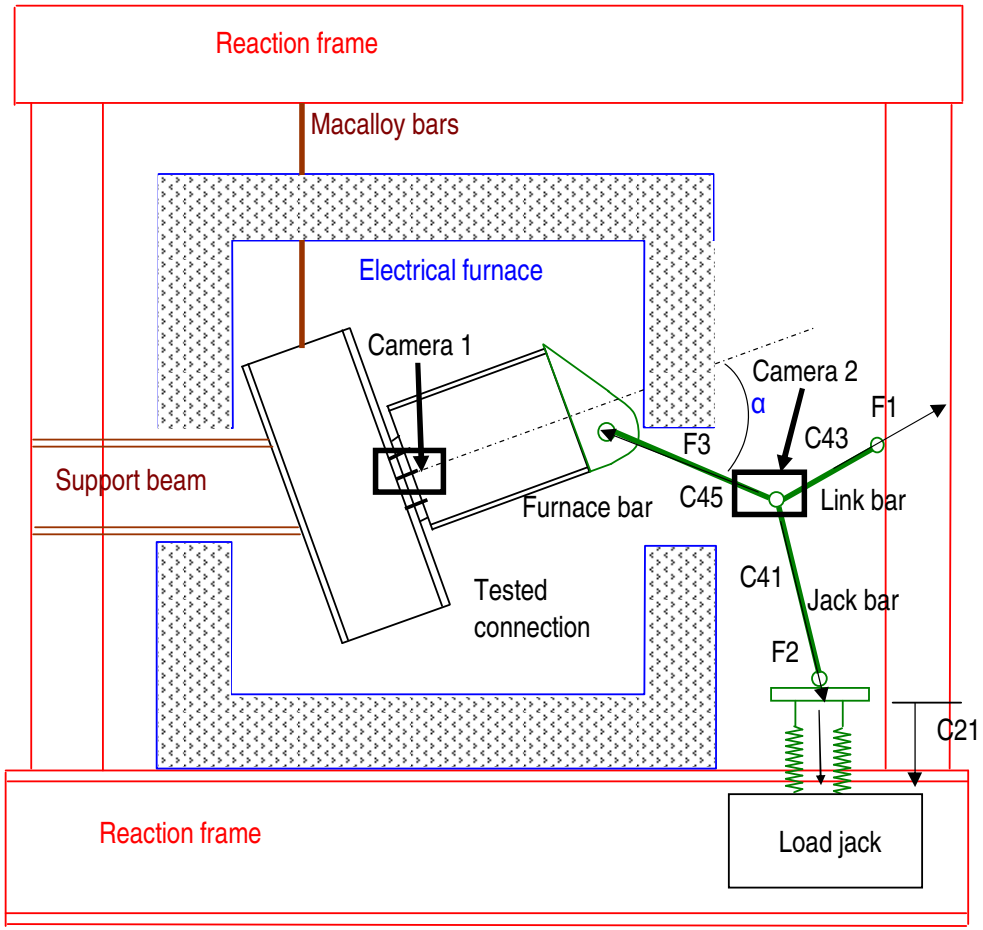
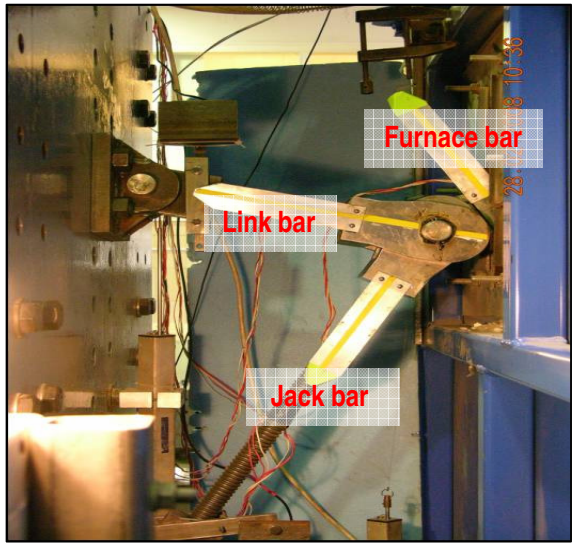
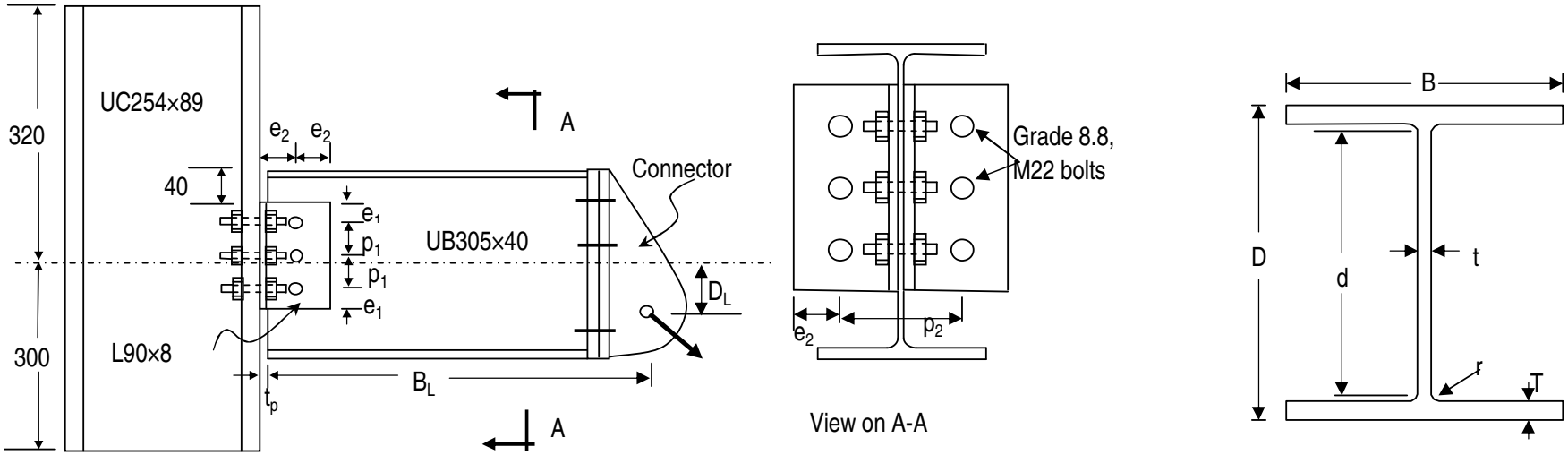

Reaction frame
Macalloy bars
Electrical furnace
Camera 1
Camera 2
α
F1
F3
C43
Support beam
Furnace bar
C45
Link bar
C41
Jack bar
Tested
connection
F2
C21
Reaction frame
Load jack


Camera 1


Furnace bar
Link bar
Jack bar




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) | 50 |
| Spacing between centres of bolts in the direction of load transfer | $p_1$ (mm) | 60 |
| Spacing between rows of bolts | $p_2$ (mm) | 103 |
| 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** | | UB305×165×40 | UC254×254×89 |
| 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 |

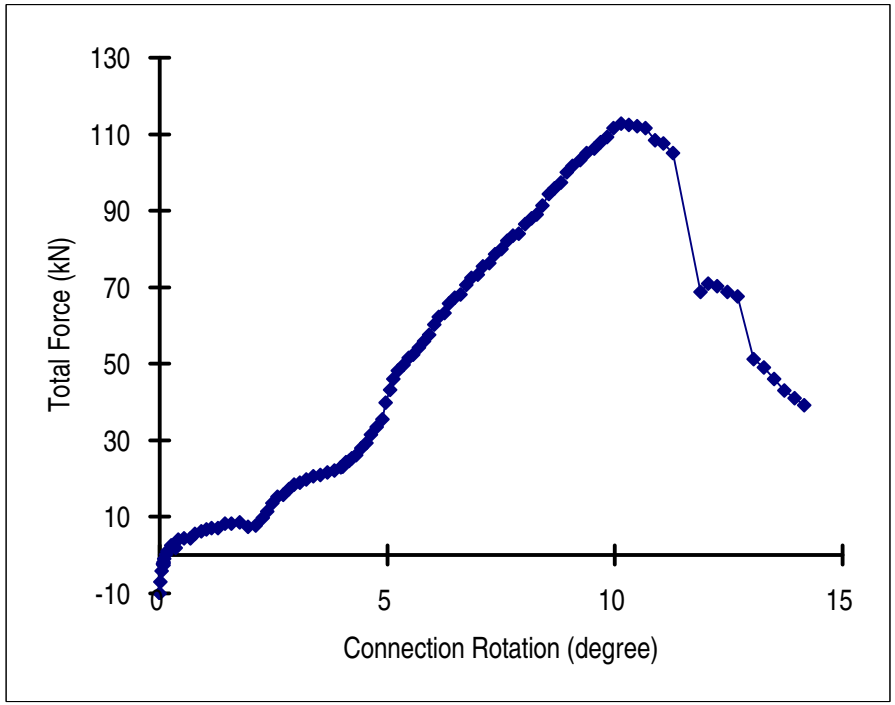
**Nominal Temperature** **450°C**

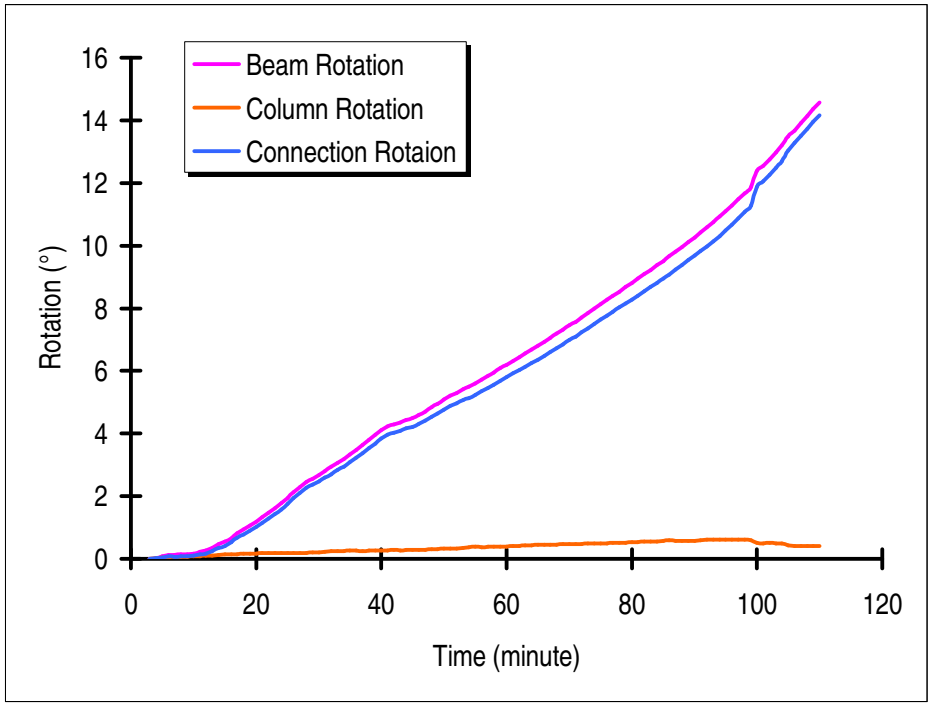
| Time | Thermocouple | Jack Displacement | Load Angle | Beam Rotation | Column Rotation | Connection Rotation | Force Rotation | F3 from F1 | F3 from F2 | F3 Average | Tension | Shear | Moment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (minute) | Average(°C) | (mm) | α(°) | (°) | (°) | (°) | (°) | (kN) | (kN) | (kN) | (kN) | (kN) | (kN*m) |
| 0 | 448.791 | 1.890 | | | | | | | | | | | |
| 1 | 448.922 | 1.888 | | | | | | | | | | | |
| 2 | 448.983 | 1.887 | | | | | | | | | | | |
| 3 | 449.051 | 1.931 | 41.08 | 0.000 | 0.000 | 0.000 | 73.820 | -10.80 | -9.12 | -9.96 | -7.51 | -6.55 | -3722.45 |
| 4 | 449.016 | 3.083 | 41.06 | 0.029 | 0.014 | 0.015 | 73.815 | -7.74 | -6.34 | -7.04 | -5.31 | -4.62 | -2629.89 |
| 5 | 449.010 | 4.505 | 41.02 | 0.078 | 0.033 | 0.045 | 73.807 | -4.60 | -3.66 | -4.13 | -3.12 | -2.71 | -1543.16 |
| 6 | 449.054 | 6.045 | 41.03 | 0.124 | 0.043 | 0.081 | 73.748 | -2.43 | -2.88 | -2.66 | -2.01 | -1.75 | -992.84 |
| 7 | 449.070 | 7.631 | 40.87 | 0.127 | 0.061 | 0.066 | 73.900 | -2.07 | -2.60 | -2.34 | -1.77 | -1.53 | -870.46 |
| 8 | 449.179 | 9.191 | 40.75 | 0.148 | 0.058 | 0.090 | 74.005 | -1.93 | -1.78 | -1.85 | -1.40 | -1.21 | -689.01 |
| 9 | 449.276 | 10.788 | 41.41 | 0.151 | 0.061 | 0.090 | 73.343 | -1.95 | -2.18 | -2.06 | -1.55 | -1.36 | -775.14 |
| 10 | 449.314 | 12.260 | 41.41 | 0.172 | 0.076 | 0.096 | 73.316 | -1.02 | -0.87 | -0.94 | -0.71 | -0.62 | -353.82 |
| 11 | 449.344 | 13.726 | 41.36 | 0.223 | 0.086 | 0.137 | 73.316 | 0.43 | 0.03 | 0.23 | 0.17 | 0.15 | 86.98 |
| 12 | 449.328 | 15.043 | 41.36 | 0.272 | 0.110 | 0.162 | 73.267 | 1.23 | 0.99 | 1.11 | 0.83 | 0.73 | 415.55 |
| 13 | 449.320 | 16.517 | 41.32 | 0.354 | 0.107 | 0.247 | 73.226 | 2.35 | 2.62 | 2.48 | 1.87 | 1.64 | 931.81 |
| 14 | 449.370 | 17.952 | 41.31 | 0.466 | 0.116 | 0.350 | 73.129 | 2.03 | 1.71 | 1.87 | 1.41 | 1.24 | 702.71 |
| 15 | 449.441 | 19.364 | 41.29 | 0.548 | 0.143 | 0.405 | 73.060 | 3.96 | 4.15 | 4.06 | 3.05 | 2.68 | 1522.25 |
| 16 | 449.583 | 20.848 | 41.17 | 0.663 | 0.135 | 0.528 | 73.072 | 4.55 | 4.36 | 4.46 | 3.35 | 2.93 | 1667.25 |
| 17 | 449.577 | 22.395 | 41.09 | 0.816 | 0.140 | 0.676 | 72.996 | 4.45 | 4.32 | 4.38 | 3.30 | 2.88 | 1638.24 |
| 18 | 449.594 | 24.009 | 40.93 | 0.935 | 0.157 | 0.778 | 73.032 | 5.32 | 5.91 | 5.62 | 4.24 | 3.68 | 2093.28 |
| 19 | 449.595 | 25.471 | 40.89 | 1.071 | 0.163 | 0.908 | 72.942 | 5.92 | 6.43 | 6.17 | 4.67 | 4.04 | 2299.75 |
| 20 | 449.626 | 27.000 | 40.87 | 1.189 | 0.168 | 1.021 | 72.843 | 6.81 | 6.71 | 6.76 | 5.11 | 4.42 | 2516.82 |
| 21 | 449.660 | 28.407 | 40.84 | 1.319 | 0.174 | 1.144 | 72.743 | 6.82 | 7.33 | 7.08 | 5.36 | 4.63 | 2634.09 |
| 22 | 449.691 | 29.886 | 40.70 | 1.467 | 0.183 | 1.283 | 72.732 | 7.20 | 6.93 | 7.06 | 5.35 | 4.61 | 2621.98 |

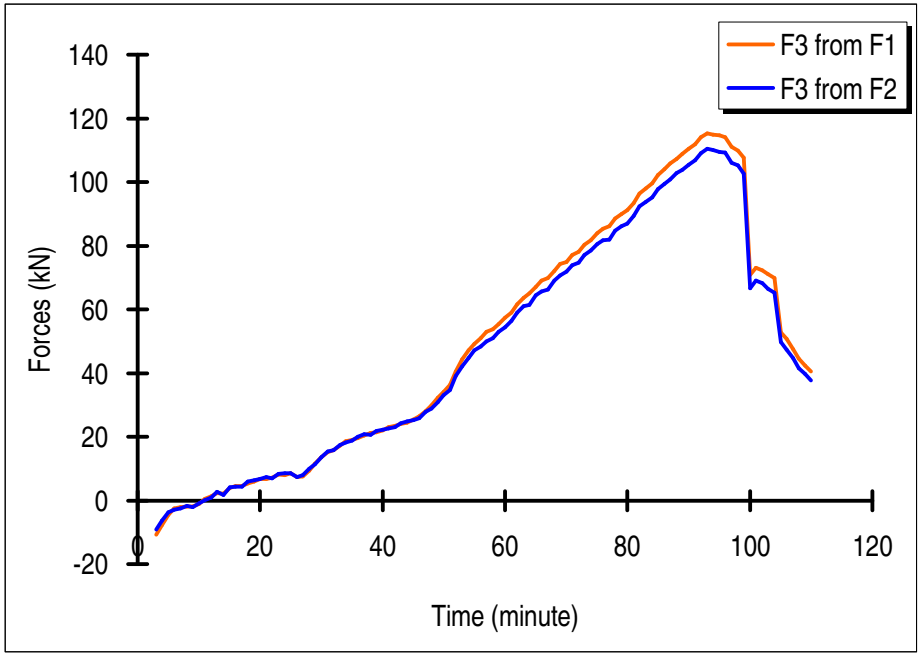
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 449.835 | 31.377 | 40.57 | 1.623 | 0.184 | 1.439 | 72.706 | 8.09 | 8.30 | 8.19 | 6.22 | 5.33 | 3034.50 |
| 24 | 449.864 | 32.892 | 40.54 | 1.768 | 0.187 | 1.581 | 72.595 | 7.88 | 8.54 | 8.21 | 6.24 | 5.34 | 3039.96 |
| 25 | 449.833 | 34.359 | 40.41 | 1.937 | 0.178 | 1.758 | 72.549 | 8.55 | 8.63 | 8.59 | 6.54 | 5.57 | 3173.98 |
| 26 | 449.863 | 35.842 | 40.32 | 2.119 | 0.178 | 1.941 | 72.463 | 7.32 | 7.33 | 7.33 | 5.59 | 4.74 | 2701.26 |
| 27 | 449.859 | 37.350 | 40.17 | 2.289 | 0.184 | 2.105 | 72.445 | 7.58 | 7.88 | 7.73 | 5.91 | 4.99 | 2843.28 |
| 28 | 449.882 | 38.848 | 40.04 | 2.447 | 0.188 | 2.259 | 72.409 | 9.40 | 9.99 | 9.70 | 7.42 | 6.24 | 3557.70 |
| 29 | 449.979 | 40.371 | 39.93 | 2.563 | 0.197 | 2.366 | 72.404 | 11.55 | 11.43 | 11.49 | 8.81 | 7.37 | 4207.27 |
| 30 | 450.039 | 41.878 | 39.87 | 2.684 | 0.209 | 2.475 | 72.349 | 13.52 | 13.53 | 13.53 | 10.38 | 8.67 | 4947.77 |
| 31 | 450.061 | 43.409 | 39.84 | 2.806 | 0.219 | 2.587 | 72.257 | 15.13 | 15.47 | 15.30 | 11.75 | 9.80 | 5594.13 |
| 32 | 450.054 | 44.868 | 39.69 | 2.943 | 0.236 | 2.707 | 72.270 | 15.87 | 15.73 | 15.80 | 12.16 | 10.09 | 5761.45 |
| 33 | 450.037 | 46.287 | 39.61 | 3.068 | 0.235 | 2.833 | 72.223 | 17.18 | 17.44 | 17.31 | 13.34 | 11.04 | 6303.55 |
| 34 | 450.114 | 47.762 | 39.45 | 3.198 | 0.250 | 2.948 | 72.255 | 18.51 | 18.22 | 18.37 | 14.18 | 11.67 | 6667.97 |
| 35 | 450.126 | 49.172 | 39.39 | 3.336 | 0.256 | 3.080 | 72.173 | 18.97 | 18.76 | 18.87 | 14.58 | 11.97 | 6841.60 |
| 36 | 450.210 | 50.663 | 39.20 | 3.482 | 0.259 | 3.223 | 72.214 | 19.63 | 19.94 | 19.78 | 15.33 | 12.50 | 7150.20 |
| 37 | 449.831 | 52.154 | 39.09 | 3.631 | 0.251 | 3.380 | 72.181 | 20.42 | 20.71 | 20.56 | 15.96 | 12.97 | 7416.73 |
| 38 | 449.419 | 53.510 | 38.91 | 3.799 | 0.265 | 3.534 | 72.188 | 21.16 | 20.63 | 20.89 | 16.26 | 13.12 | 7511.15 |
| 39 | 449.395 | 54.912 | 38.75 | 3.955 | 0.267 | 3.688 | 72.191 | 21.48 | 21.79 | 21.63 | 16.87 | 13.54 | 7754.16 |
| 40 | 449.187 | 56.299 | 38.61 | 4.106 | 0.264 | 3.842 | 72.184 | 21.96 | 22.26 | 22.11 | 17.28 | 13.80 | 7903.61 |
| 41 | 449.256 | 57.646 | 38.50 | 4.239 | 0.267 | 3.972 | 72.161 | 23.07 | 22.68 | 22.88 | 17.90 | 14.24 | 8160.58 |
| 42 | 449.178 | 58.840 | 38.45 | 4.296 | 0.276 | 4.020 | 72.155 | 23.44 | 22.92 | 23.18 | 18.15 | 14.41 | 8261.60 |
| 43 | 449.508 | 60.050 | 38.34 | 4.363 | 0.272 | 4.090 | 72.194 | 24.10 | 24.32 | 24.21 | 18.99 | 15.02 | 8611.92 |
| 44 | 449.596 | 61.276 | 38.31 | 4.441 | 0.277 | 4.164 | 72.153 | 24.39 | 24.75 | 24.57 | 19.28 | 15.23 | 8732.79 |
| 45 | 449.637 | 62.446 | 38.19 | 4.506 | 0.292 | 4.214 | 72.201 | 25.37 | 25.26 | 25.31 | 19.90 | 15.65 | 8978.41 |
| 46 | 449.645 | 63.642 | 38.09 | 4.595 | 0.283 | 4.312 | 72.216 | 26.52 | 25.76 | 26.14 | 20.57 | 16.12 | 9252.58 |
| 47 | 449.754 | 65.076 | 38.03 | 4.706 | 0.282 | 4.424 | 72.168 | 27.95 | 27.94 | 27.95 | 22.01 | 17.21 | 9879.93 |
| 48 | 449.613 | 66.462 | 37.91 | 4.838 | 0.302 | 4.536 | 72.152 | 29.90 | 28.78 | 29.34 | 23.15 | 18.03 | 10351.13 |
| 49 | 449.588 | 67.971 | 37.85 | 4.951 | 0.308 | 4.642 | 72.095 | 32.26 | 30.85 | 31.55 | 24.91 | 19.36 | 11119.39 |
| 50 | 449.627 | 69.413 | 37.62 | 5.088 | 0.320 | 4.768 | 72.192 | 34.04 | 32.98 | 33.51 | 26.54 | 20.46 | 11756.43 |
| 51 | 449.716 | 70.968 | 37.54 | 5.209 | 0.320 | 4.888 | 72.153 | 36.28 | 34.70 | 35.49 | 28.14 | 21.62 | 12430.88 |
| 52 | 449.927 | 72.435 | 37.48 | 5.301 | 0.337 | 4.964 | 72.124 | 40.57 | 39.19 | 39.88 | 31.65 | 24.26 | 13950.91 |

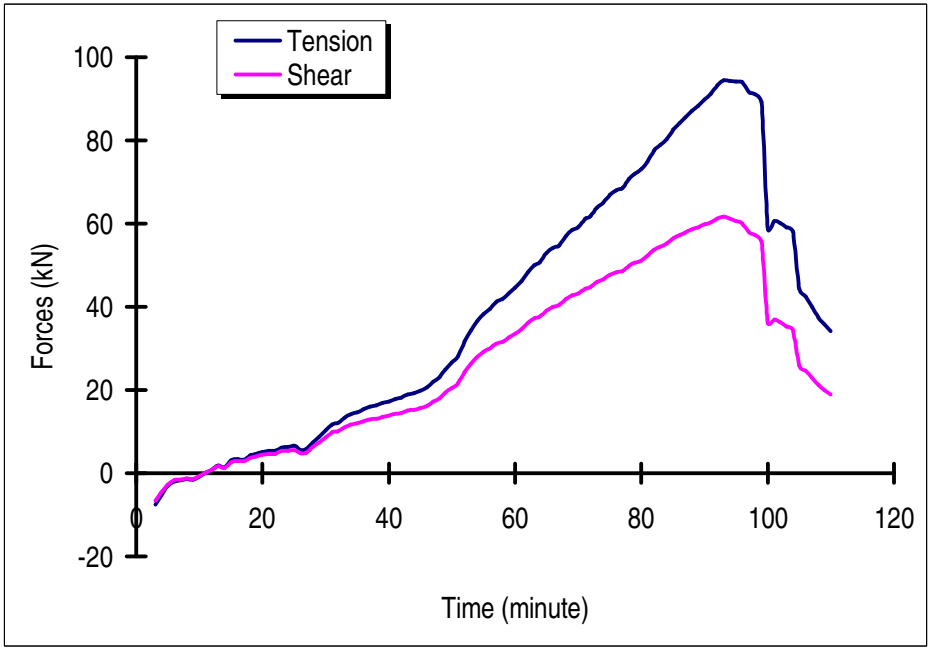
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 53 | 450.007 | 73.830 | 37.39 | 5.413 | 0.346 | 5.067 | 72.097 | 44.33 | 42.09 | 43.21 | 34.33 | 26.24 | 15090.22 |
| 54 | 450.018 | 75.344 | 37.40 | 5.488 | 0.363 | 5.125 | 72.009 | 47.21 | 44.82 | 46.02 | 36.56 | 27.95 | 16075.74 |
| 55 | 450.096 | 76.763 | 37.32 | 5.603 | 0.379 | 5.223 | 71.980 | 49.22 | 47.15 | 48.18 | 38.32 | 29.21 | 16804.35 |
| 56 | 450.128 | 78.070 | 37.18 | 5.729 | 0.378 | 5.351 | 71.990 | 51.00 | 48.35 | 49.67 | 39.58 | 30.02 | 17278.10 |
| 57 | 450.218 | 79.538 | 37.14 | 5.844 | 0.379 | 5.465 | 71.919 | 52.95 | 49.99 | 51.47 | 41.03 | 31.07 | 17887.16 |
| 58 | 450.334 | 81.084 | 37.05 | 5.955 | 0.387 | 5.568 | 71.899 | 53.79 | 50.92 | 52.36 | 41.79 | 31.54 | 18162.84 |
| 59 | 450.360 | 82.551 | 37.01 | 6.081 | 0.391 | 5.690 | 71.806 | 55.29 | 53.02 | 54.16 | 43.24 | 32.60 | 18774.48 |
| 60 | 450.517 | 84.218 | 36.93 | 6.197 | 0.394 | 5.802 | 71.771 | 57.47 | 54.34 | 55.91 | 44.69 | 33.59 | 19350.93 |
| 61 | 450.568 | 85.597 | 36.89 | 6.321 | 0.405 | 5.916 | 71.694 | 59.00 | 56.32 | 57.66 | 46.12 | 34.61 | 19938.18 |
| 62 | 450.578 | 87.112 | 36.82 | 6.445 | 0.417 | 6.028 | 71.640 | 61.52 | 58.99 | 60.25 | 48.24 | 36.11 | 20807.07 |
| 63 | 450.602 | 88.699 | 36.69 | 6.553 | 0.422 | 6.130 | 71.660 | 63.68 | 60.97 | 62.33 | 49.98 | 37.24 | 21468.05 |
| 64 | 450.627 | 90.222 | 36.68 | 6.683 | 0.427 | 6.256 | 71.535 | 64.95 | 61.48 | 63.22 | 50.70 | 37.76 | 21772.31 |
| 65 | 450.666 | 91.737 | 36.52 | 6.800 | 0.441 | 6.359 | 71.578 | 67.13 | 64.40 | 65.76 | 52.85 | 39.14 | 22576.99 |
| 66 | 450.886 | 93.155 | 36.50 | 6.921 | 0.445 | 6.476 | 71.480 | 69.13 | 65.54 | 67.33 | 54.13 | 40.05 | 23105.28 |
| 67 | 450.847 | 94.719 | 36.45 | 7.048 | 0.447 | 6.601 | 71.404 | 69.82 | 66.32 | 68.07 | 54.76 | 40.44 | 23334.60 |
| 68 | 450.944 | 96.290 | 36.29 | 7.189 | 0.459 | 6.730 | 71.419 | 72.15 | 69.11 | 70.63 | 56.93 | 41.80 | 24134.96 |
| 69 | 450.906 | 97.638 | 36.15 | 7.312 | 0.462 | 6.850 | 71.440 | 74.30 | 70.58 | 72.44 | 58.49 | 42.73 | 24682.86 |
| 70 | 450.901 | 99.232 | 36.08 | 7.451 | 0.465 | 6.985 | 71.365 | 74.87 | 71.88 | 73.38 | 59.30 | 43.22 | 24969.81 |
| 71 | 450.987 | 100.708 | 35.97 | 7.568 | 0.469 | 7.099 | 71.358 | 77.04 | 73.85 | 75.44 | 61.06 | 44.32 | 25615.71 |
| 72 | 450.942 | 102.215 | 35.92 | 7.707 | 0.472 | 7.234 | 71.273 | 78.03 | 74.71 | 76.37 | 61.85 | 44.80 | 25901.69 |
| 73 | 450.957 | 103.656 | 35.74 | 7.846 | 0.481 | 7.365 | 71.310 | 80.32 | 77.05 | 78.69 | 63.87 | 45.97 | 26591.68 |
| 74 | 450.984 | 105.141 | 35.66 | 7.988 | 0.483 | 7.504 | 71.255 | 81.68 | 78.40 | 80.04 | 65.03 | 46.66 | 27000.09 |
| 75 | 451.045 | 106.486 | 35.46 | 8.125 | 0.490 | 7.634 | 71.320 | 83.92 | 80.46 | 82.19 | 66.95 | 47.68 | 27610.18 |
| 76 | 451.175 | 107.978 | 35.39 | 8.267 | 0.500 | 7.767 | 71.246 | 85.28 | 81.70 | 83.49 | 68.07 | 48.35 | 28008.06 |
| 77 | 451.274 | 109.381 | 35.30 | 8.398 | 0.508 | 7.889 | 71.201 | 86.08 | 81.94 | 84.01 | 68.56 | 48.55 | 28131.99 |
| 78 | 451.249 | 110.832 | 35.17 | 8.531 | 0.509 | 8.022 | 71.202 | 88.52 | 84.65 | 86.59 | 70.78 | 49.87 | 28912.54 |
| 79 | 451.145 | 112.193 | 35.10 | 8.680 | 0.519 | 8.161 | 71.119 | 89.97 | 86.15 | 88.06 | 72.05 | 50.64 | 29364.45 |
| 80 | 451.094 | 113.748 | 34.96 | 8.809 | 0.529 | 8.279 | 71.130 | 91.17 | 87.02 | 89.10 | 73.02 | 51.05 | 29622.80 |
| 81 | 451.035 | 115.223 | 34.88 | 8.950 | 0.541 | 8.408 | 71.067 | 93.28 | 89.38 | 91.33 | 74.92 | 52.23 | 30315.54 |
| 82 | 451.125 | 116.651 | 34.71 | 9.087 | 0.542 | 8.545 | 71.105 | 96.43 | 92.31 | 94.37 | 77.58 | 53.73 | 31207.27 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 83 | 451.254 | 117.999 | 34.64 | 9.222 | 0.544 | 8.678 | 71.039 | 97.97 | 93.83 | 95.90 | 78.90 | 54.51 | 31667.94 |
| 84 | 451.364 | 119.441 | 34.50 | 9.375 | 0.560 | 8.815 | 71.029 | 99.66 | 95.17 | 97.42 | 80.29 | 55.17 | 32070.79 |
| 85 | 451.402 | 121.011 | 34.37 | 9.508 | 0.564 | 8.944 | 71.020 | 102.29 | 97.87 | 100.08 | 82.61 | 56.50 | 32860.61 |
| 86 | 451.352 | 122.390 | 34.19 | 9.660 | 0.587 | 9.072 | 71.048 | 104.12 | 99.34 | 101.73 | 84.15 | 57.17 | 33272.23 |
| 87 | 451.142 | 123.905 | 34.07 | 9.806 | 0.567 | 9.238 | 71.027 | 105.73 | 100.85 | 103.29 | 85.56 | 57.86 | 33691.58 |
| 88 | 451.141 | 125.381 | 33.93 | 9.962 | 0.578 | 9.383 | 71.006 | 107.25 | 102.80 | 105.03 | 87.14 | 58.63 | 34156.72 |
| 89 | 451.107 | 126.735 | 33.77 | 10.118 | 0.577 | 9.540 | 71.010 | 108.81 | 103.81 | 106.31 | 88.37 | 59.10 | 34454.13 |
| 90 | 451.249 | 128.345 | 33.66 | 10.263 | 0.578 | 9.685 | 70.973 | 110.52 | 105.34 | 107.93 | 89.83 | 59.83 | 34895.21 |
| 91 | 451.463 | 129.700 | 33.48 | 10.427 | 0.598 | 9.829 | 70.994 | 111.90 | 106.75 | 109.32 | 91.18 | 60.31 | 35201.62 |
| 92 | 451.444 | 131.231 | 33.31 | 10.587 | 0.615 | 9.972 | 71.000 | 114.11 | 109.00 | 111.55 | 93.22 | 61.27 | 35788.00 |
| 93 | 451.428 | 132.859 | 33.17 | 10.747 | 0.616 | 10.131 | 70.985 | 115.27 | 110.43 | 112.85 | 94.47 | 61.74 | 36087.77 |
| 94 | 451.221 | 134.431 | 32.99 | 10.929 | 0.620 | 10.309 | 70.986 | 114.90 | 110.10 | 112.50 | 94.37 | 61.25 | 35828.23 |
| 95 | 451.234 | 135.865 | 32.78 | 11.100 | 0.616 | 10.484 | 71.016 | 114.66 | 109.51 | 112.08 | 94.23 | 60.69 | 35532.51 |
| 96 | 451.297 | 137.493 | 32.55 | 11.285 | 0.608 | 10.677 | 71.062 | 114.01 | 109.17 | 111.59 | 94.06 | 60.04 | 35190.64 |
| 97 | 451.330 | 139.072 | 32.34 | 11.492 | 0.611 | 10.881 | 71.073 | 110.96 | 105.99 | 108.47 | 91.65 | 58.02 | 34036.84 |
| 98 | 451.428 | 140.562 | 32.12 | 11.677 | 0.609 | 11.068 | 71.108 | 109.88 | 105.22 | 107.55 | 91.10 | 57.18 | 33577.13 |
| 99 | 451.479 | 142.052 | 31.96 | 11.875 | 0.599 | 11.276 | 71.063 | 107.63 | 102.57 | 105.10 | 89.17 | 55.64 | 32695.20 |
| 100 | 451.453 | 144.065 | 31.49 | 12.375 | 0.501 | 11.874 | 71.039 | 70.92 | 66.67 | 68.79 | 58.67 | 35.93 | 21162.52 |
| 101 | 451.305 | 145.484 | 31.31 | 12.547 | 0.499 | 12.048 | 71.043 | 73.04 | 68.96 | 71.00 | 60.66 | 36.90 | 21749.98 |
| 102 | 451.145 | 147.071 | 31.07 | 12.757 | 0.505 | 12.252 | 71.071 | 72.25 | 68.29 | 70.27 | 60.19 | 36.27 | 21404.69 |
| 103 | 451.189 | 148.467 | 30.82 | 12.970 | 0.494 | 12.476 | 71.106 | 71.09 | 66.44 | 68.76 | 59.05 | 35.23 | 20819.59 |
| 104 | 451.056 | 150.190 | 30.60 | 13.192 | 0.495 | 12.697 | 71.107 | 69.89 | 65.24 | 67.56 | 58.16 | 34.39 | 20346.23 |
| 105 | 451.176 | 151.953 | 30.35 | 13.478 | 0.435 | 13.043 | 71.070 | 52.81 | 49.70 | 51.26 | 44.23 | 25.90 | 15340.99 |
| 106 | 451.212 | 153.460 | 30.11 | 13.680 | 0.403 | 13.277 | 71.107 | 50.83 | 47.41 | 49.12 | 42.49 | 24.65 | 14615.90 |
| 107 | 451.285 | 155.120 | 29.80 | 13.907 | 0.408 | 13.499 | 71.193 | 47.44 | 44.70 | 46.07 | 39.98 | 22.90 | 13600.35 |
| 108 | 451.180 | 156.715 | 29.56 | 14.138 | 0.412 | 13.726 | 71.203 | 44.44 | 41.56 | 43.00 | 37.40 | 21.21 | 12617.37 |
| 109 | 450.995 | 158.221 | 29.28 | 14.356 | 0.404 | 13.952 | 71.262 | 42.31 | 39.78 | 41.04 | 35.80 | 20.07 | 11957.82 |
| 110 | 450.908 | 159.704 | 29.06 | 14.572 | 0.411 | 14.161 | 71.268 | 40.51 | 37.72 | 39.11 | 34.19 | 19.00 | 11331.47 |


130
110
90
70
50
30
10
-10
Total Force (kN)
0
5
10
15
Connection Rotation (degree)


Beam Rotation
Column Rotation
Connection Rotaion
16
14
12
10
8
6
4
2
0
Rotation (°)
0
20
40
60
80
100
120
Time (minute)


F3 from F1
F3 from F2
Forces (kN)
Time (minute)
140
120
100
80
60
40
20
0
-20
0
20
40
60
80
100
120


Tension
Shear
Forces (kN)
Time (minute)
100
80
60
40
20
0
-20
0
20
40
60
80
100
120

**Photographs after Test**