

# *List of Tables*

Table 1.1	Semicircular I-section frame specimens. ....	6
Table 1.2	Average measured dimensions of selected semicircular frames. ....	7
Table 2.1	AS4/XXXX graphite-epoxy tape material properties. ....	21
Table 2.2	Analytical results for the original and redesigned frames. ....	24
Table 2.3	Failure sequence and locations for frame 2I-1 predicted using PROFAIL.....	39
Table 3.1	Material properties of the 2x2 2D triaxially braided composite $[0^{\circ}_{12k}/\pm 60^{\circ}_{6k}]$ 33.3% axial (Lockheed).....	43
Table 3.2	Material properties of the 2x2 2D triaxially braided composite $[0^{\circ}_{24k}/\pm 60^{\circ}_{6k}]$ 50.0% axial (Lockheed).....	44
Table 3.3	Triaxial braid configurations from Masters and Ifju (1996).....	44
Table 3.4	Material fiber and resin content (Masters and Ifju, 1996). ....	45
Table 3.5	Tensile moduli and Poisson's ratio test results (Masters and Ifju, 1996). .	46
Table 3.6	Fiber volume fraction measured by the density method for the $[0^{\circ}_{18k}/\pm 64^{\circ}_{6k}]$ 39.7% axial braided composite material.....	48
Table 3.7	Dimensions of the tensile specimens for the $[0^{\circ}_{18k}/\pm 64^{\circ}_{6k}]$ 39.7% axial braided composite material.....	49

Table 3.8	Tensile test series results.....	54
Table 3.9	Tensile test failure codes from ASTM D3039.....	55
Table 3.10	Average measurements of the flexural test specimens. ....	60
Table 3.11	Flexure tests results for the $[0^{\circ}_{18k}/\pm 64^{\circ}_{6k}]$ 39.7% axial braided composite material.....	65
Table 3.12	Material properties used in TEXCAD (Naik, 1994c). ....	73
Table 3.13	TEXCAD predictions for $[0^{\circ}_{18k}/\pm 64^{\circ}_{6k}]$ 39.7 % axial braided composite material under longitudinal tensile loading.....	75
Table 3.14	Properties predicted by TEXCAD for the $[0^{\circ}_{18k}/\pm 64^{\circ}_{6k}]$ 39.7 % axial braided composite material.....	75
Table 4.1	Braided composite frame measurements and weights. ....	78
Table 4.2	Braided frame material properties used in PROFAIL. ....	81
Table 4.3	Circumferential, out-of-plane, and radial locations of strain gages on braided composite frame B.....	88
Table 4.4	Circumferential, out-of-plane, and radial locations of strain gages on braided composite frame C.....	91
Table A1.1	Material properties of sample problem. ....	129