

Chapter 12 Future Considerations

Although an initial validation of the methodology was done, further validation and is required. Since all readily available data was used in this study, the methods should be checked against more thorough analysis done by industry on actual new products, such as the new Boeing 747 derivative, as they appear. In addition, several areas where refinements could be made have been identified as a result of the experience to date. However, we are not able to quantify the benefits that these extensions in the methodology would produce.

Refinement of the landing gear analysis package should include the improvement of the pavement thickness and landing gear weight predictions. A method to calculate the rigid pavement bearing stress that includes location and direction of maximum moment considerations [36] would improve the reliability of the estimated rigid pavement thickness and the corresponding ACN. The experimental test program being conducted by the FAA and Boeing to determine the exact flotation requirements for the B777 may provide useful information for this extension. The accuracy of the landing gear structural weight can be improved by extending the analysis to include intermediate column buckling analysis [48] for structural members with large slenderness ratio, *e.g.*, drag and side struts, and St. Venant's theory for torsion and flexure of thick-walled bars [50] for structural members with low machinability factors, *e.g.*, axle and truck beam.

Finally, the full potential of the analysis package would emerge if a graphical front-end and the Dynamic Integration System (DIS)-based wrapping technique [58] were incorporated. The former would enable the user to interactively prepare input for the analysis and interpret the output, while the latter would provide a common interface such that coordinated execution of disciplinary analyses as found in ACSYNT can be achieved.