



SPECIALIZED ANALYSIS ENGINEERING INC.
THE STRUCTURAL ANALYSIS, SYSTEMS DYNAMICS AND TESTING EXPERTS

STRUCTURAL ANALYSIS OF THE
24 FT. 4 PERSON DAR AND 3 PERSON CND
MOBILE TOWER

PREPARED FOR:

SPECTRUM SPORTS, INC.
87 EAST 200 NORTH
HYRUM, UTAH 84319



PREPARED BY:

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DECEMBER 30, 2002

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INTRODUCTION

The structural integrity of the 24 ft Drop A Rock (DAR - 4 person) / Climb N' Dangle (CND- 3 person) mobile climbing structure has been evaluated by SAE engineers. Operational loads, composed of a 30mph wind and four 200lb climbers were evaluated. Stresses induced by lifting and lowering the tower were determined. Specific loading is detailed in this report. The climbing surface geometry or surface area associated with a 4 person wall (DAR) was used. A common steel super-structure is used in the framework for both towers. The superstructure is continuously bonded to the E-Glass woven-roving wall surface panels and the panels are required to carry some structural load.

Models were generated for the mobile trailer(s). The loads placed on the trailer are the resulting forces produced by the tower models at connecting points. These loads include the lifting mode, and both the 30 mph front and side winds with climbers.

A detailed review of the design, analysis procedure and results are presented in the document. Appendix A contains drawings, Appendix B contains finite element contour plots, Appendix C contains load calculations and material specifications.

Finite element analysis was performed using MSC VisualNastran for Windows version 2001.

This report is inclusive for both the DAR and CND. It should be noted that both towers have identical base structures with primary differences in the number of climbers and auto-belay systems. The DAR is a 4 person climbing tower while the CND is a 3 person climbing tower. The composite wall structure varies between the two towers but are structurally comparable. Therefore, wind loads are essentially identical for the two towers. Live loads (climbers) are greater for the DAR than the CND. Likewise stresses in the DAR are greater than those of the CND. The live load analysis section is base on the 4 person DAR.