



Convertible Stadium Air flotation technology used in NASA's Apollo program has found an interesting application in Hawaii's Aloha Stadium near Honolulu. The stadium's configuration can be changed, by moving entire 7,000-seat sections on a cushion of air, for best accommodation of spectators and participants at different types of events.

In most stadiums, only a few hundred seats can be moved, by rolling sections on wheels or rails. At Aloha Stadium, 28,000 of the 50,000 seats can be repositioned for better spectator viewing and, additionally, for improved playing conditions. For example, a stadium designed primarily for football may compromise the baseball diamond by providing only a shallow outfield. Aloha's convertibility allows a full-size baseball field as well as optimum configurations for many other types of sports and special events. The photos show examples.

The stadium owes its versatility to air flotation technology developed by General Motors. Its first large-scale application was movement of huge segments of the mammoth Saturn V moonbooster during assembly operations at Marshall Space Flight Center.

The air movement contractor for Aloha Stadium is Rolair Systems, Inc., Santa Barbara, California, a company formed by former General Motors employees familiar with the technology. Rolair was licensed by GM to produce and market the air flotation system for moving heavy objects. It is widely used in industrial applications and is also employed in movement of heavy components of NASA's Space Shuttle and the Boeing 747.

Aloha Stadium's design includes two permanently-fixed sections and four movable sections, each of the latter weighing three million



pounds. Located under each section are 26 Rolair transporters, into which streams of compressed air are directed to inflate a series of elastic, doughnut-like diaphragms. Inflation of the diaphragms lifts the entire massive steel structure about an inch off the ground. Compressed air bleeds out of the diaphragms creating a film of air on which the grandstand floats, nudged into its new position by the transporter. With this lubricating air film, a force of only one pound is needed to move a thousand pounds. Compressed air blowing and transporter operation is directed from four control consoles, one for each movable section; a single operator can reposition a section in just half an hour.