

The Beau Rivage Casino Substructure: Why the Design Survived Katrina

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ABSTRACT

Hurricane Katrina, one of the most catastrophic natural disasters in American history, severely tested the design of all structures in the USA Gulf Coast area, particularly waterfront structures. Despite its misfortune to be located in the worst part of the storm, the Beau Rivage Casino was the only floating beachfront structure in Mississippi to survive. Among the factors limiting damage to the facility was its durable mooring arrangement, the ductility of the material in its construction and the attention paid to joint details. The resort reopened for business on the one year anniversary of Katrina.

KEY WORDS: Waterfront structures; Hurricane Katrina; floating casino; barge; Beau Rivage.

INTRODUCTION

MGM Mirage's Beau Rivage Resort (Fig. 1) was completed in 1999 at a cost of \$800 million USD and restored after Hurricane Katrina for an additional \$550 million USD. The resort is the largest employer in Biloxi, Mississippi, with more than 3,800 personnel; at 300,000 square meters, the 32-story hotel tower is the largest building in the state.

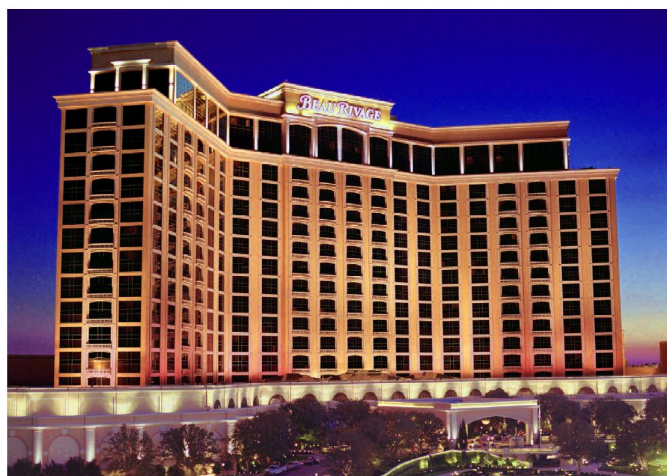


Fig. 1 Beau Rivage Resort

THE FLOATING CASINO

The resort's 28,000 square meter casino complex floats next to the landside hotel tower on a dredged area of the Gulf Coast beach (Fig. 2). It was constructed with five restaurants, a large swimming pool, the nation's only floating micro-brewery, a 132,000 liter saltwater aquarium and almost an acre of open-air event space. The casino was built as a floating vessel to satisfy the Mississippi Gaming Commission requirements in effect at the time of construction. Even so, despite wind, waves, and tides, it is almost as stationary as a land-based facility.

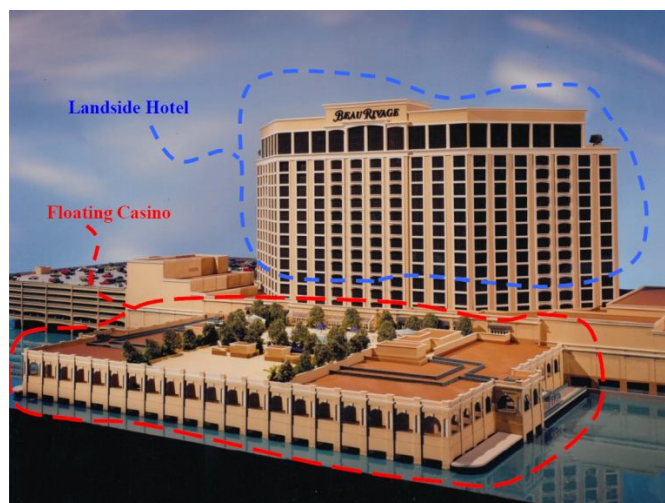


Fig. 2 Beau Rivage Casino

Substructure Design

The casino rests atop a unique massive floating "substructure." Supporting seven acres of floor space, the substructure was designed to survive a Category IV hurricane. Its unusual mooring arrangement is the result of a mandate from Mirage's then CEO, Steve Wynn. He insisted that patrons stepping into the casino from the hotel should not perceive that they had ever left the building. That meant no ramps and no significant motions between the floating casino and the landside hotel.