



1996 MERIT BRIDGE AWARD: MOVABLE SPAN THE NEW BRICKELL BRIDGE



THE NEW BRICKELL BRIDGE REPLACES A DOUBLE LEAF BASCULE SPAN, which was constructed in 1929 and was the first vehicular drawbridge constructed across the Miami River in the heart of downtown Miami.

The six-lane bridge, with an overall width of 100', consists of an 183' movable span flanked by 118' approach spans, arch facades and deep wall abutments. The movable span consists of two bascule piers housing twin, double leaf, trunnion bascule spans, each with a span length of 137'-6" centerline to centerline of the trunnions. Actuation of the leaves is accomplished through the use of hydraulic cylinders.

Framing design for the four bascule leaves is a two girder, floorbeam, stringer system with open grid flooring. Each leaf rotates about four spherical roller bearings, the inboard bearing being supported by a steel cantilevered bracket, a unique arrangement dictated by dimensional restraints. Another unique aspect is the use of a combination plate girder-box girder arrangement with the transition being just forward of the live load shoes. The box girder section was introduced to increase torsional stiffness for resistance and distribution of eccentric loads in the vicinity of the leaf trunnions.

Fabrication and erection were unusually challenging due to stringent assembly, alignment and erection tolerance requirements. With detailed and innovative shop procedures and techniques, the fabricator performed machining on the completed girders, inserted trunnion shaft assemblies, and maintained alignment within a positional tolerance requirement of 0.010" for the duration of full shop assembly and reaming operations. Likewise, the erector with carefully planned procedures and techniques, piece erected the bascule leaves while maintaining the trunnion shaft alignment within a positional tolerance requirement of 0.020".

The traditional architectural design

ProjectData

Steel wt./sq. ft. of deck:
75 lbs./sq. ft. of bascule

Cost: \$21 million

Steel tonnage: 1,010

Judges Comments:

*"An excellent
application of
state-of-the-art
technology"*

intervention for the bridge was the refinement of the winning entry into the Brickell Bridge Gateway Design Competition, an international architectural open design competition that produced more than 150 entries. The traditional form is a symbol to the commemoration of the City's first centennial. In keeping with this traditional form, elements of the structural steel, such as stiffeners, connections, and bracing, were purposely expressed, as was the intricately detailed pedestrian handrails. Another unique aspect of the intervention was the incorporation of platforms and niches for the accommodation of artwork of bronze sculptures which were commissioned and installed for the dedication of the bridge.

**Please note that red text denotes an AISC member*

Project Team

Designer:
**Kunde, Sprecher &
Associates, Inc.**
Miami

Architectural Consultant:
**Portuondo Perotti
Architects, Inc.**
Coral Gables, FL

General Contractor:
**Misener Marine
Construction, Inc.**
Tampa

Fabricator:
Sheffield Steel Products
A Division of Vincennes
Steel Corp.
Palatka, FL*

Erector :
Gimrock Const., Inc.
Hialeah Gardens, FL

Owner:
**Florida Department of
Transportation**