



**Photo 5-70. William H. Marshall Memorial Bridge, Broward County (No. 864072)**

**William H. Marshall Memorial Bridge**

Broward County

FDOT # 864072, 8BD4771

This Scherzer type, double-leaf rolling lift bascule bridge carries SW 7<sup>th</sup> Avenue over the New River and 5<sup>th</sup> Place in Ft. Lauderdale. The William H. Marshall Memorial Bridge was designed by the J.E. Greiner Company and built in 1964 by Powell Brothers, Inc. The 366-foot long bridge is composed of six concrete beam and girder approach spans and a 93-foot main bascule span.

This bridge is newly recommended NRHP-eligible under Criterion A in the area of Community Planning and Development for its significant associations to the historical development of Ft. Lauderdale, and under

Criterion C in the area of Engineering, as it embodies the distinguishing engineering characteristics of a mid-twentieth century rolling lift bascule design. It is one of only nine remaining rolling-lift bascule bridges in Florida, of which three are located in Broward County.

**SE 3rd Avenue over New River & S.**

**New River Drive**

Broward County

FDOT #864071, 8BD4770

This 1960, seven span, four-lane, double-leaf Scherzer type rolling-lift bascule bridge carries SE 3rd Avenue over the New River in downtown Fort Lauderdale. It is one of only nine remaining rolling-lift bascule bridges in Florida. It was designed by the J.E. Greiner Company of Tampa and constructed by general contractor Powell Brothers, Inc.



**Photo 5-71. SE 3<sup>rd</sup> Avenue Bridge, Broward County (No. 864071)**

The SE 3<sup>rd</sup> Avenue Bridge is 366 feet long and features a cast-in-place concrete deck. The bridge is composed of a 93-foot long main movable steel span and six prestressed, precast concrete girder approach spans. The double-leaf bascule span has two main girders, three floor beams, 18 stringers, two counterweight trusses, and lateral bracing. Two solid reinforced concrete breast walls rest on reinforced concrete footers and are flanked by retaining walls. The two-story tender station is mounted to the west side of the north pier. The tender station walls feature decorative tile work, and the hipped roof features red barrel tiles and exposed rafter tails. It also retains its original commemorative plaques, and a stylized wall with circular voids abuts its entrance.

The SE 3rd Avenue Bridge is newly recommended NRHP-eligible under Criterion A, in the area of Community Planning and Development, for its significant associations to the historical development of Ft. Lauderdale, and under Criterion C in the area of Engineering, as it embodies the distinguishing engineering characteristics of a mid-twentieth century rolling lift bascule design. It is one of only nine remaining rolling-lift bascule bridges in Florida, of which three are located in Broward County.



**Photo 5-72. Boca Inlet Bridge, Palm Beach County (No. 930060)**

leaf, trunnion-style bascule main span operated by an electric motor. Hardesty & Hanover consulting engineers of New York designed the structure in 1958. The design enables the bridge to cross the Boca Inlet at its sharp, 45-degree skew. Cleary Brothers Construction Company built the structure in 1963. The tender station is a flat-roofed two-story structure located above the direction counterweight.

The significance of the Hanover Skew is to overcome the physical constraints posed by skewed crossings. Prior to the Hanover Skew design, skewed bridge crossings resulted in uneven load distributions, awkwardly placed girders, restricted space for counterweights and their machinery which resulted in a lack of rigidity in the entire structure. A few of the objectives of the Hanover Skew design were to “provide a skew bascule bridge with the shortest feasible span for a given skewed crossing, having simple and rigid framing; and to provide a skew bascule bridge such that a satisfactory single-leaf skew bascule bridge can be used where otherwise much more expensive double-leaf bascule bridge without skew, swing bridge, or retractable drawbridge, would be necessary.”<sup>132</sup> Upon operation, the angle of the single-leaf is apparent and the jagged pivot joint on the deck is noticeable when walking across the bridge.

The Boca Inlet Bridge is one of only four bridges of its type built in the U.S. using the Hanover skew design, also known as a knee-girder bascule. The first, and only one constructed outside of Florida, is the 1942 Hamilton Avenue Bridge in Brooklyn, New York. The Hamilton Avenue Bridge was replaced in 2007-2008. The span and approach superstructure of each span was demolished and replaced with a new

### **Haven Ashe/Boca Inlet Bridge**

Palm Beach County

FDOT #930060, 8PB14789

This 1963, single-leaf bascule bridge carries A1A over the Boca Inlet in Boca Raton, Palm Beach County. It was selected by the FDOT District 4 bridge engineers as a notable bridge for its Hanover skew bascule design which incorporates a unique counterweight designed in 1943 by Clinton D. Hanover, Jr. of Little Neck, New York. Clinton Hanover is a founding member of the renowned engineering firm Hardesty & Hanover, LLP.

The Boca Inlet Bridge extends 540 feet in length and consists of 11 prestressed concrete girder spans joined to a single-

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<sup>132</sup> Hanover, Clinton D. “United States Patent Office 2,337,994 - Skew Bascule Bridge.” United States Patent Office. Application May 3, 1943, Serial No. 485,505. Accessed at: <http://patft.uspto.gov/netahtml/PTO/srchnum.htm>.