

Dance to the Miami Rhythm

AESTHETIC VOLUME 2

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2.28.17

APPROVED SIGNATURE BRIDGE PACKAGE, APTEs, AND SIGNATURE BRIDGE RELATED ATCs

SR 836/I-395/I-95 Project
Florida Department of Transportation
District 6
& Miami-Dade Expressway Authority
Miami-Dade County

Financial Project Numbers:

251688-1-52-01, 429300-2-52-01,
423126-2-52-01, 423126-1-52-01,
251688-1-56-02

Federal Aid Project Number: 3951-501-I, 0951-685-I
MDX Work Program Number: 83611
Contract Number: E-6J53

FLUOR-ASTALDI-MCM in assoc. w / FIGG-WGI

FINAL AESTHETIC SIGNATURE BRIDGE PROPOSAL

Option A

SR 836/I-395/I-95 Project

**Florida Department of Transportation District 6 &
Miami-Dade Expressway Authority
Miami-Dade County**

Financial Project Numbers: 251688-1-52-01, 429300-2-52-01, 423126-2-52-01, 423126-1-52-01, 251688-1-56-02
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6.20.16

Signature Bridge **OPTION A**

Dance to the Miami Rhythm

A SIGNATURE ICONIC BRIDGE

FOR MIAMI INSPIRED BY THE

PERFORMING ARTS

This Signature Bridge design is a functional bridge sculpture inspired by dance as a contemporary form. The bridge is art performing outside the Adrienne Arsht Center for the Performing Arts (Arsht Center). There are two gateway pylons, one for the eastbound bridge and one for the westbound bridge. The dramatic pylons of the cable-stayed bridges are positioned as reflective pairs at the boundaries of NE 2nd Ave. and Biscayne Blvd., creating openness and light for expansive urban green space. The orientation and positioning of the signature pylons complement the surrounding built environment. With the westbound bridge pylon closer to NE 2nd Ave., the bridge cable stays draw visitors in to the entrance of the Arsht Center - a focal point.

The one-of-a-kind cable-stayed pylons are 350 ft. tall sculptures of inward-arching sweeping curves. The arms intersect the deck and provide a special driver's gateway. Below the deck, the sweeping curves extend to the ground for a gateway inviting pedestrians to the Arsht Center on one side and the Frost and Perez Museums on the other side. These gateways offer unique pathways for the urban landscape experience. There are many exciting views from multiple vantage points that creates a vibrant interest and movement.

As the slender arm of the pylon extends upward to receive the cable-stays, a dynamic 3-dimensional cable arrangement unfolds enhancing the energy connection to the sculptural

design. The fan arrangement of eleven stays on each side of the pylon create an exciting pass through experience for drivers.

Elegant and slender structural elements are made possible through the use of an innovative cable-stayed system that carries the cable-stay bundles continuously through each pylon where they are symmetrically anchored to the deck. This design supports a 980 ft. suspended superstructure that floats across Biscayne Blvd. and NE 2nd Ave. where it connects with slender singular curved piers.

At the top of the pylon is an angled and elongated diamond shaped glass feature that houses an aviation beacon and LED lighting for an array of color. There is a rotating translucent ring at the top of the shorter pylon leg. The ring tells a story to those watching as the movement is correlated to the rhythm of music, wind, traffic volumes, weather or other patterns of interest.

The pylon is made of smooth white concrete with white stays emphasizing the contemporary shape by day and the spirited colorful aesthetics created by lighting at night.

The white concrete superstructure is a custom made closed box section of curved flat planes and uniform depth. This shape by its nature and concrete material will provide the quietest space possible below. The curved and tapered superstructure provides an organic shape that enhances the light under each bridge. A vertical clearance exceeding the RFP requirements

makes up a majority of the alignment. There is a symbiotic relationship between the sweeping curves of the organically shaped pylon and the sweeping curves of the superstructure shape and bridge roadway layout.

The transition spans of the superstructure continue with the same concrete cross section as the cable-stayed spans allowing it to blend into the box girder shape of the expanding roadway. The horizontal and vertical transitions from the approach spans to the signature bridge occur entirely within the transition spans with smooth and gradual transition of the superstructure shape.

The slender concrete piers blossom from the ground with layered sweeping curves and openings at the top. The visual aesthetic ties both the urban garden space and the vertical arches of the pylon together

in contemporary shaping. The white smooth texture continues the rhythm of color and style in a family of design elements.

At night, light seeks to reveal the supple nature of the pylon's form by balancing soft surface illumination with a more dramatic revelation of the upwardly thrust, cable engaged arm. The internally lighted ring is a dynamic center point, evocative of the movement of dance. When lighted actively with changing color, the cables take on a gossamer feel and can flutter with movement in the night.

This one-of-a-kind, Signature Iconic Bridge will be recognized worldwide as the symbol of Miami's vibrant energy and international culture. It will be the symbol of Miami's magical charm that stirs our souls in the colorful rhythm of life. Miami is a place of celebration and in the joy of celebration, we dance.

SIGNATURE BRIDGE OPTION A ENHANCEMENTS BEYOND RFP REQUIREMENTS		
SIGNATURE BRIDGE FEATURES	RFP REQUIREMENTS	SIGNATURE BRIDGE ENHANCEMENTS
Pylon Height	250' min.	350'
Signature Bridge Suspended Length Total	500' min.	980'
Signature Bridge Vertical Clearance	23'-6" at Biscayne	Biscayne Blvd.: 23'-6" NE 1st Ave.: 37'-1" NE 2nd Ave.: 34'-7"
Separation of Signature Structures- NE 2nd Ave.	45' min.	133'
Cable-Stay Height of Top Cable	190' min.	329'-5" top cable
Distance from Arsht Center to Edge of Westbound Bridge at NE 2nd Ave.	200' min.	200' to edge of bridge 220' to edge of roadway
Number of Piers East of NE 1st Ave.	23	10 piers for maximum openness

ENHANCEMENTS

Deviations from the Contract Documents and Alternate Technical Concepts (ATCs) submitted/in process.

Many enhancements were designed into this Signature Bridge for Miami including greater height, longer suspended span length, fewer piers and expansive open green spaces. The Signature Bridge enhancements table highlights these enhancements next to the required criteria for comparison. The following is a description of the ATCs that are submitted or in the process for these enhancements.

SIGNATURE BRIDGE ALIGNMENT GEOMETRY

The alignment geometry for this Signature Bridge is part of ATC-FAM-001 395 ATC 1: EB and WB Alignment Greatest Spread at the Arsht Center. This achieves the required 200 ft. distance of the

bridge from the Arsht Center along NE 2nd Ave. while also creating the greatest openness between the eastbound and westbound bridges. The eastbound bridge is further away from the Arsht Center than in the RFP concept plans. This 310% increase in open green space will be part of a transformative urban design that invites the community to celebrate the performing and visual arts. This layout has been shared with the Arsht Center and Miami-Dade County including our design-build team's commitment to develop a plan that achieves their desired parking.

As part of this alignment, Ramp D-1 and G have been combined and relocated within the existing alignment of Ramp D. This provides for safer pedestrian mobility between Museum Park and the Arsht Center and opens up three acres of green space to the local community. Additional information is being prepared to address FDOT comments on this ATC.

SIGNATURE PIER SHAPE

The thematic sculptural pier shapes shown for this Signature Bridge will be submitted as an ATC. The organic curved shaping was designed to complement the sweeping vertical arches of the pylons. The contemporary styling follows the philosophy outlined in the Aesthetics Manual Guidelines.

PIER LOCATIONS

The pier layout shown for this Signature Bridge will be submitted as an ATC. In the three block area in front of the Arsht Center, the bridge features 10 piers. This is a reduction of 13 piers (56% fewer piers) from the RFP concept plans. Directly in front of the Arsht Center are two pylons which suspend the bridge superstructure over the full block without any piers between NE 2nd Ave. and Biscayne Blvd. By touching lightly on the land with fewer piers, the open space and light maximizes creative urban design for community events, parking and pedestrian connectivity.



Signature Bridge

Commitment Statements

I certify that the Signature Bridge and Transition Span depicted in the renderings are dimensionally accurate to +/- 3 ft. for the cable layout, apex height, minimum height of highest cable attachment to pylon, suspended span length, total signature bridge span length, bridge pier/pylon locations and to within 10% difference on rendered member sizes.

I certify that sufficient preliminary engineering has been performed to ensure the viability of this Signature Bridge Option being proposed.

W. Denney Pate

W. Denney Pate, P.E.
Design Structures Engineer of Record (Signature Bridge), FIGG

Linda Jigg

Signature Bridge architect, FIGG

I certify that all levels of illumination shown on the lighting sheets for the Signature Bridge Option being proposed are viable. I certify that all nighttime renderings illumination levels are shown accurately. For the color lighting shown on the Team Templates I certify that the renderings are shown accurately consistent with the fixtures being provided.

W. Denney Pate

W. Denney Pate, P.E.
Design Structures Engineer of Record (Signature Bridge), FIGG

Randy Burkett

Randy Burkett, FIALD, IESNA, LC
Lighting Designer
Randy Burkett Lighting Design, Inc.

The Signature Bridge design meets all of the Department's design objectives including the provisions for additional I-395 mainline capacity for improved mobility, a Signature Bridge span over Biscayne Blvd., satisfy all Department commitments, and implementation of the philosophy on bridge aesthetics per the Aesthetics Manual.

Aesthetic Signature Bridge

Renderings



































