

Art, Design, and Shotcrete— Miami Beach's New World Symphony Concert Hall

By Paul F. Ampey

Miami Beach, Florida's Art Deco District, is internationally known for the largest concentration of 1920s and 1930s resort architecture in the world. It is also the home of

the newly constructed New World Symphony (NWS) Concert Hall, designed by Pritzker Prize-winning architect Frank Gehry. South Beach, the area's affectionate nickname, has been fused together by several design periods.

Its first major construction boom period began in the early 1900s, which ushered in a style known as "Mediterranean Resort" architecture. Commercial structures were characterized by stucco scrolled capped walls and terra cotta-tiled roofs that combined Italian, Moorish, and southern Spanish themes.

There was a brief transitional period during the 1920s—"Med-Deco"—in which several celebrated architects introduced a short-lived style of smooth stucco exteriors with raised or incised details. Featured stucco areas were often patterned or scored. Keystone, either natural or filled and colored, was frequently used to define special elements.

The 1930s art deco synthesis of clean zigurat roof lines and crisp geometric detailing replaced the scrolled parapets and other classical features in South Beach. The Art Deco District was one of the earliest National Register listings to recognize the importance of the architecture of this period, and dozens of structures are listed with a historical preservation society. This was followed by the 1950s and 1960s "Miami Modernist" architecture, known as MiMo, combining glamour, fun, and material excess with otherwise stark, minimalist, and efficient styles that were being used in other parts of post-world war architecture.

Gehry's portfolio of exploding compositions is always recognizable from its collage-like, deconstructed-style exterior façades and tends to be more reminiscent of functional pieces of sculpture. Not typical of his usual designs for an important purpose, the NWS's founder and artistic director, Michael Tilson Thomas, wanted a concert hall and educational facility that would invite the world inside. Gehry talked about the idea of "the building putting on a performance." The 100,000 ft² (9300 m²) white-plastered, box-shaped structure adapts many art deco elements of the surrounding city. The invitation is even more apparent at night, however, when through a glass curtain wall, the building's composition



Photo courtesy Claudia Uribe

changes and the energy within the walls is on display for everyone to see. The interior's curved pliable surfaces appear to spill out of the rigid structure onto the adjacent 2.5 acre (10,100 m²) plaza.

On the exterior's north face of the concert hall, the "Scoop," a 2800 ft² (260 m²) curved plane sculpture, hangs 35 ft (10.67 m) above the walkway. The iron-framed sculpture appears to protrude from inside the building and is constructed with steel reinforcement and wire lathe and is coated with 5 in. (127 mm) of shotcrete. The 3500 psi (24 MPa) dry-mix shotcrete material was batch-delivered and pneumatically placed using a rotary gun and 2 in. (50 mm) hoses. Extensive safety measures were implemented using lanyards and a high reach to aid the nozzlemen and finishers. The five-man crew rod-cut and hand-troweled the plane's surface to produce a smooth plaster finish.

The interior of the concert hall gives way to traditional Gehryesque shapes—big billowing convex sail acoustical panels lined with lightweight dry-mix shotcrete finished with white plaster cover the walls and ceiling and double as projection surfaces. The shotcrete material supplier, SpecMix, provided an on-site portable gravity-fed silo, and the material was funneled into an air-operated shallow-bowl rotary gun using the low production method to reduce the dust factor,

as the panels were shot in place inside the building. The specifications for the acoustic panel design required that the 2 in. (50 mm) placement not weigh more than 15 lb/ft² (74 kg/m²) and that the 3 in. (75 mm) placement not weigh more than 25 lb/ft² (122 kg/m²), resulting in an overall weight reduction of 25%. This was accomplished with a prebagged shotcrete mixture delivered in super sacks using fine aggregates, fly ash, and cement.

Frank Gehry's NWS composition is just one of many recent examples of how shotcrete can be incorporated to meet and exceed the creativity and design expectations of architects and engineers in the construction industry. The flexibility of shotcrete's wet- and dry-mix design capability gives virtually unlimited freedom of design where conventional concrete placement cannot. Skilled crews can place and finish true radii and consistent vertical and horizontal lines, allowing nearly any shape and surface texture to be created. The NWS Concert Hall is the quintessential model that embodies art, design, and shotcrete.

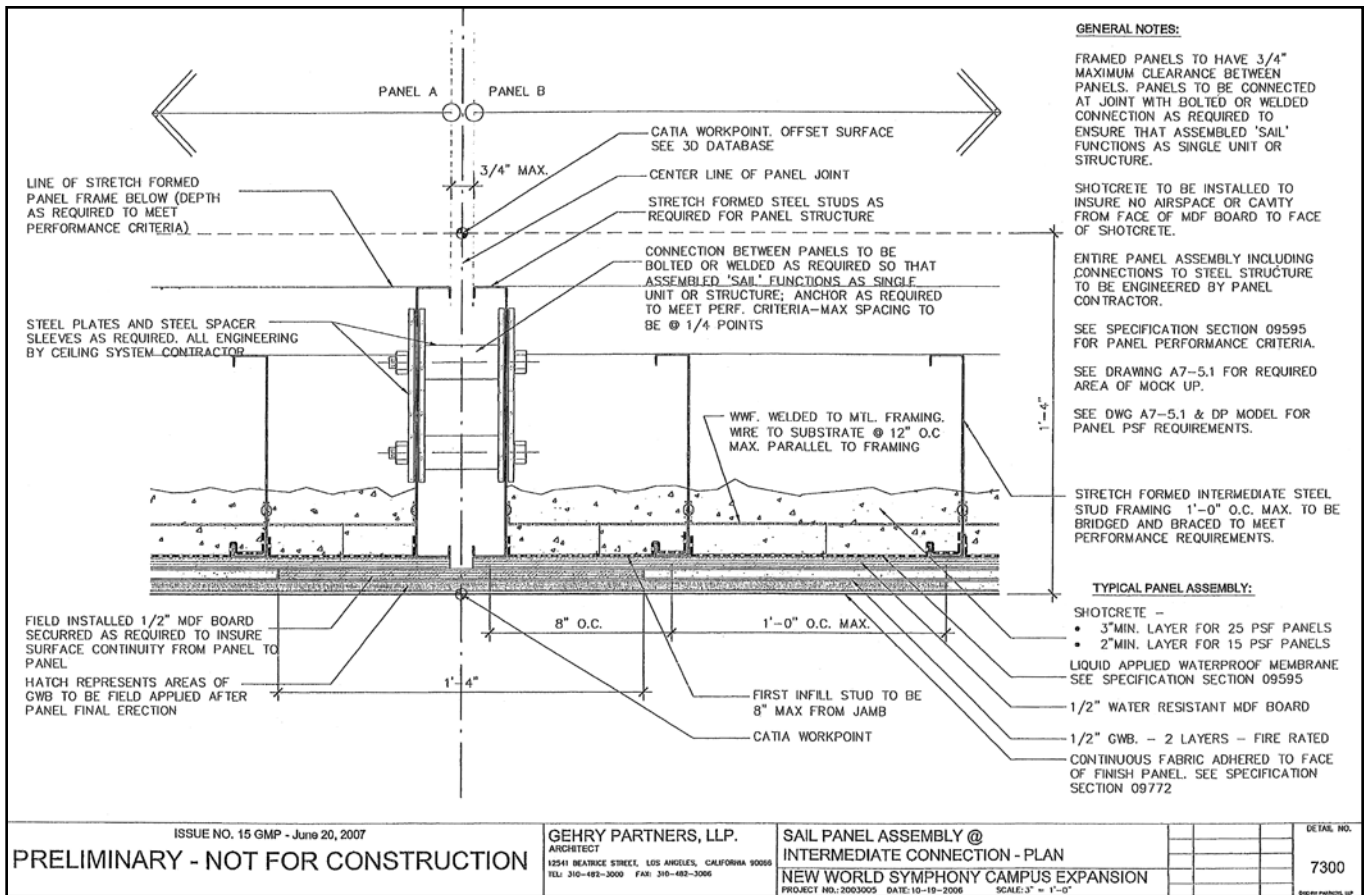
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New World Symphony Concert Hall

Owner
New World Symphony

General Contractor
Facchina Construction of Florida, LLC

Architect
Gehry Partners, LLP

Shotcrete Division
Prestige Concrete Products

Drywall and Plaster
The Lotspeich Group



Paul F. Ampey is a current ASA member and Business Development Manager for Prestige Concrete Products-Shotcrete Division in South Florida. His current focus is in aquatic and structural repair applications. He has spent more than 20 years in several areas of civil construction including six years with the U.S. Air Force as a Staff Sergeant with the Civil Engineering Prime BEEF detachment as a heavy equipment operator and draftsman.