

# Altieri

## THE NATIONAL WWII MUSEUM

### ARCHITECT

Voorsanger Mathes LLC

### LOCATION

New Orleans, Louisiana

### SIZE

225,000 SF

### COMPLETED

2024



### AWARDS

2026 Award of Merit, Architectural Engineering Integration, Architectural Engineering Institute

The National WWII Museum in New Orleans is dedicated to the American experience in World War II. Affiliated with the Smithsonian Institution, the Museum features immersive exhibits, multimedia experiences, and an extensive collection of artifacts and firsthand testimonies. The Museum welcomes more than 800,000 visitors from all over the world to its six-acre, 10-building campus each year. In August 2024, it celebrated its 10 millionth visitor since opening in 2000.

Early success fueled ambitious growth. In 2004, Congress designated the institution as the nation's official WWII museum, prompting a national design competition for a major campus expansion. Voorsanger Architects' winning strategy shaped a 200,000 SF, \$300+ million expansion delivered over 20 years. Confronted with the dual challenges of scale and budget, the team proposed a multi-phased development plan that allowed the Museum to grow in deliberate, manageable stages. Executing a phased expansion over two decades, however, introduced significant technical and integration challenges, particularly regarding long-term MEPF coordination, future-proofing, and evolving program needs.

#### Seamless MEPF Integration Across a 20-Year Campus Build

Maintaining consistent quality, architectural continuity, and system performance across a 20-year build-out required exceptional discipline and collaboration.

- Cohesive systems across decades: The design vision called for the first pavilion (completed in 2007) to remain visually and technically aligned with the last pavilion (completed in 2023). Achieving this required careful documentation of decisions, strict adherence to design intent, and continuous coordination among architects, engineers, and the owner.
- A central plant designed for long-term growth: The central plant, completed in 2007, was initially designed with 900 tons of cooling capacity, considered sufficient based on early projections. When the 2010 master plan redefined the scale and number of future pavilions, an additional 300 tons of capacity was required. Because flexibility was engineered into the plant from the beginning, its size and configuration accommodated larger systems without architectural changes or costly rework.
- Incremental capacity without idle equipment: Chiller, boiler, and electrical rooms were sized for gradual expansion. Equipment could be added as new pavilions came online, ensuring the plant grew in step with campus needs rather than housing oversized, unused infrastructure for years.

- Coordination for clear architectural surfaces: The use of double precast walls throughout the campus required meticulous MEPF coordination to keep walls free of devices and maintain architectural consistency as each new building came online.

### **Strategically Future-Proofing Critical Systems**

Designing systems years before construction required forecasting technology shifts, anticipating operational needs, and embedding flexibility into every phase.

- Infrastructure planned a decade ahead: Conduit stub-outs for the parade ground Canopy of Peace had to be installed nearly 10 years before the canopy itself—requiring continual refinement as plans evolved. Footing locations were identified in 2004, poured in 2008, and the canopy was erected in 2023.
- Distribution pathways sized for future loads: Piping, conduits, and pathways extending from the central plant were sized for ultimate campus build-out, not individual phases. This allowed future pavilions to connect seamlessly without reopening walls or rerouting major systems.
- Resiliency lessons from Hurricane Katrina:
  - The central plant was elevated above the flood plain to ensure continuity of operations during future natural disasters.
  - Electrical systems incorporated hybrid ring and hub-and-spoke configurations, providing redundant pathways in case of outages or equipment failures.

### **Anticipating Technological Change and Evolving Infrastructure Needs**

With a multi-decade delivery timeline, the project required systems that could adapt to new technologies, evolving exhibits, and increased energy-efficiency expectations.

- Continuous improvement in energy efficiency: The design team enhanced systems with each successive phase, prioritizing the most efficient technologies that aligned with available budgets. Heat pump technology was incorporated into the plant as early as 2004 to reduce long-term utility costs.
- Upgraded air energy recovery systems: Phase 1 included a simple energy wheel for waste-energy recovery; by the final phase, state-of-the-art air energy recovery systems and advanced controls had been integrated.
- Evolving controls strategies: Central plant optimization and advanced controls such as temperature and airflow resets were incorporated over time as new solutions became available and cost-effective.
- IT infrastructure ready for next-generation exhibits: As exhibits grew more interactive and technologically sophisticated, the campus IT backbone was already prepared to support new digital and multimedia experiences.

### **SUMMARY**

The project required extraordinary foresight, long-term collaboration, and future-ready engineering. Remarkably, the design team remained largely intact throughout the 2004–2024 period, contributing to the overwhelming success of the project.

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