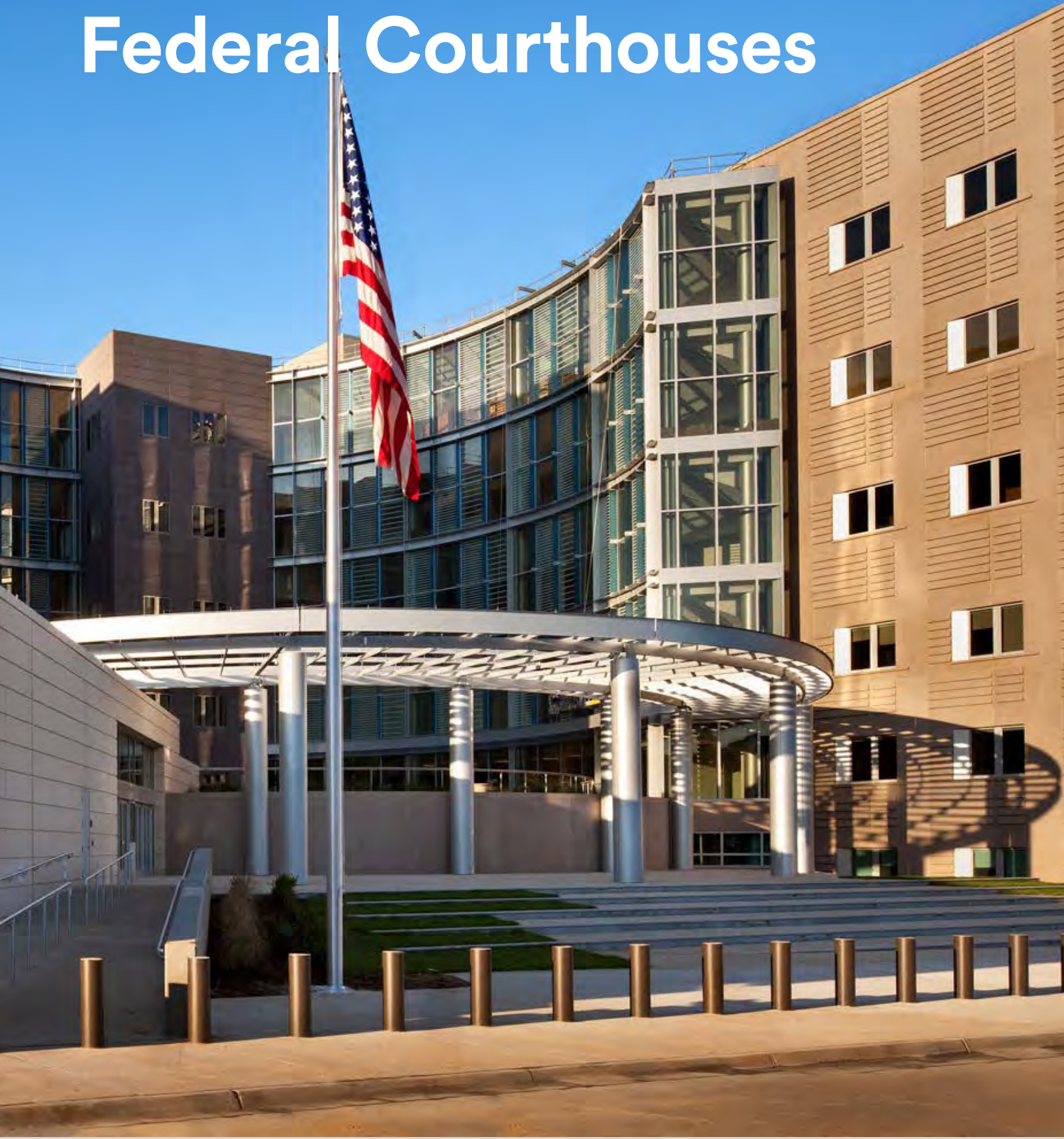




Federal Courthouses



Federal Courthouses

To meet growing justice system needs, courts facilities are being renovated, expanded, and replaced throughout the country. Walter P Moore has over 40 years of experience with the design of justice buildings including federal courts facilities. We work closely with architects and the courts to develop buildings which are flexible, functional and economical. The firm has designed several federal courthouses across the United States.



Current Projects

Fred D. Thompson
U.S. Courthouse and Federal Building, Nashville, TN
Delegated Blast Design of Architectural Precast Panel Systems

Charlotte U.S. Courthouse Annex and Charles R. Jonas Federal Building Renovation, Charlotte, NC
Delegated Blast Design of Architectural Precast Panel Systems

Greenville U.S. Courthouse, Greenville, MS
Structural and Blast Resistant Design as Part of Design Team

Carroll A. Campbell Jr. U.S. Courthouse, Greenville, SC
Delegated Blast Design of Architectural Precast Panel Systems

Savannah U.S. Courthouse Annex and Tomochichi Federal Building, Savannah, GA
Structural Design as Part of Design Team

Harrisburg Federal Courthouse, Harrisburg, PA
Delegated Blast and Conventional Design of Exterior Window Systems and Delegated Blast Design of GFRC and CFMF Enclosure Systems

Additional Projects

Sam Gibbons United States Courthouse, Tampa, FL

Christopher S. Bond United States Courthouse, Jefferson City, MO

United States Courthouse Wichita, Wichita, KS

Robert V. Denney Federal Building and United States Courthouse, Lincoln, NE

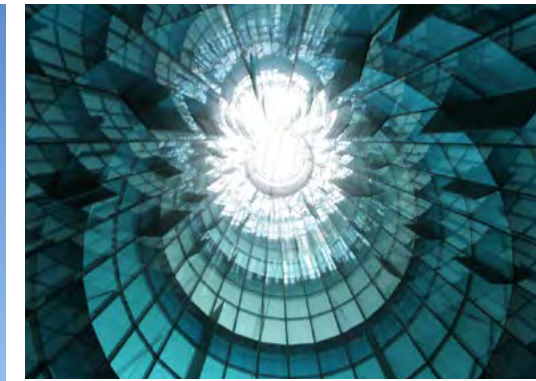
United States District Court of Montana, Great Falls, MT



Christopher S. Bond United States Courthouse, Jefferson City, MO

Wilkie D. Ferguson, Jr. Federal Courthouse

Miami, Florida



Services Provided

Structural Engineering

Walter P Moore provided structural engineering design services for this Federal Courthouse. This project required significantly enhanced security design due to its importance within the judicial system.

Owner

U.S. General Services
Administration

The courthouse provides 16 courtrooms, court clerk's office, and offices for U.S. Marshal's Service including a firing range. A secure underground tunnel connects to the existing courthouse and jail. Construction of the \$163 million facility began in July 2002.

Project Details

Construction Cost: \$163 million

Completion Date: 2005

Project Size: 578,000 SF
15 levels

Significant blast resistance was required for the building design. The criteria included hardening of the building exterior and the design of the primary structure for progressive collapse as specified by the GSA Security Criteria. Blast-affected beams, slabs and columns were designed to withstand the loss of critical structural members and selected concrete columns were provided with steel jackets to resist blast loads.

The selection of the appropriate structural system to meet all of these critical blast requirements, as well as the usual courthouse design constraints including clear span, high ceiling courtrooms, secure holdings areas, depressed floor system. Extensive studies were performed of the structural frame concluding with a post-tensioned clear span beam system as the most durable, adaptable and economical structure. To further complicate the structural design, the building exterior and structure were designed to meet a Category 5 hurricane.

Greenville U.S. Courthouse

Greenville, Mississippi



Services Provided

Structural Engineering
Secure Design

Owner

U.S. General Services
Administration

Project Details

Construction Cost: \$40 million
Completion Date: 2022

Walter P Moore is providing structural engineering and secure design/blast engineering services for this new U.S. Courthouse, a GSA Design Excellence Project.

The design for the new U.S. Courthouse in Greenville, Mississippi is founded in the spatial and sequence traditions established by Thomas Jefferson in early American court and institutional architecture.

The project composition has two parts: a long, three-story office building to the south and the courtroom structure, pulled out of the center of the building and set in a civic garden to the north. The office building is characterized by repetitive natural light lenses that invite reflected and indirect light into the interior while limiting the heat and glare of the hot southern sun. The courtroom structure is an inviting figure. Its stacked, shapely, wood-clad courtrooms are visible and veiled by a faceted glass outer skin that is alive in the ever-changing light and weather of each day. The courts become part of the community and open to an ongoing public conversation on the nature and workings of justice.

Christopher S. Bond United States Courthouse

Jefferson City, Missouri



Services Provided

Structural Engineering
Secure Design

Owner

U.S. General
Services Administration

Project Details

Construction Cost: \$48 million
Completion Date: October 2011
Project Size: 118,000 SF

Sustainability

LEED Gold®

Walter P Moore provided structural engineering services for the new United States Courthouse in Jefferson City, Missouri. The \$48 million facility consists of courts and administrative function.

The project was designed in metric, including progressive collapse criteria, blast considerations and is located on a site with a Seismic Classification of "D". The facility is now the home of the U.S. Courts family in Jefferson City, which is part of the 8th Circuit Court in the Western District of Missouri.

This new courthouse provides space for two district courtrooms and two magistrate courtrooms. In addition to the courtrooms and chambers, there is now space for a bankruptcy chamber, the U.S. Marshals Service, U.S. Attorney, Probation, and Pretrial Services, as well as space for GSA and local congressional offices.

United States Courthouse

Jackson, Mississippi



Services Provided

Structural Engineering

Owner

U.S. General
Services Administration

Project Details

Construction Cost: \$122 million

Completion Date: 2010

Project Size: 410,000 SF

6 District Courtrooms

3 Magistrate Courtrooms

3 Bankruptcy Courtrooms

14 chambers

79 secure parking spaces

Sustainability

LEED®

Walter P Moore provided structural engineering services for the U.S. General Services Administration's new eight-story United States Courthouse in Jackson, Mississippi. The building was designed in accordance with the GSA security guidelines to prevent progressive collapse and also in accordance with the GSA's blast design criteria.

Preceding the design of this project, Walter P Moore participated with the GSA and the project architect in benchmarking the 3D systems of the era in an effort to identify the one best suited for use on GSA projects. In 2005, after taking the project through Design Development using traditional 2D methods, the General Services Administration implemented a new protocol for its building projects. As part of a pilot program GSA required that the entire design team use Building Information Modeling (BIM) in delivering this project. Since Walter P Moore had been studying 3-D design techniques for some time, we were well prepared to implement this new process. Walter P Moore was able to use all the tools available at the time to provide the design documentation, perform clash detection with the other disciplines and extract material quantities for comparison to traditional methods.

As a result of these efforts Walter P Moore has well over a decade of industry leading experience in BIM delivery methods and technologies and are now focusing on how to best leverage BIM during the facility management phase of projects and is expanding its digital practice capabilities.

United States Courthouse

Plano, Texas



Services Provided

Structural Engineering
Secure Design

Owner

U.S. General
Services Administration

Project Details

Construction Cost: \$13 million

Completion Date: 2008

Project Size: 40,000 SF

The United States Courthouse in Plano, TX is a one-story structure set back a minimum of 50 feet from a secure perimeter. The structural system was designed to meet medium protection level requirements for blast resistance as specified in the "ISC Security Design Criteria for New Federal Office Buildings and Major Modernization Projects" (ISC, 2001/2004), and the "Interagency Security Committee Security Standards for Leased Space" criteria (ISC, 2004). These criteria restrict blast induced response to moderate repairable damage with reusable structural framing. The structural frame was designed to mitigate progressive collapse potential using methods specified in the GSA "Progressive Collapse Analysis and Design Guidelines for New Federal Office Building and Major Modernization Projects".

A steel framed superstructure with bay spacing ranging from approximately 25'-0" to 40'-0" on center steel columns was used. Reinforced concrete tilt-up panels provide the gravity load bearing around the perimeter of the structure. The roofs were constructed of 1 1/2" galvanized roof deck primarily supported on open web steel joists and steel wide flange beams and girders.

The resistance to lateral loads imposed on the structure was provided by the overturning resistance of the tilt-up panels. The perimeter of the structure was designed to resist forces imposed upon the perimeter enclosure due to blast.

United States Courthouse

Alpine, Texas



Services Provided

Structural Engineering
Secure Design

Owner

Amelang Partners, Inc

Project Details

Construction Cost: \$14 million

Completion Date: 2007

Project Size: 35,000 SF
2 stories

Awards

2008 GSA Design Award

The United States Courthouse in Alpine, TX is set back a minimum of 50 feet from a secure perimeter. The project is structured as a design-build and the owner leases the facility to the General Services Administration.

The facility meets ISC "Medium" Level criteria and has a Department of Justice Vulnerability Assessment Level of IV. The project was designed in steel and integrates progressive collapse requirements as well as structural hardening to resist blast and ballistic threats.

Firm Information

WHO WE ARE

Founded in 1931, Walter P Moore has grown into an international company of engineers, innovators, and creative people who solve some of the world's most complex engineering challenges. More than 700 employees across 22 U.S. offices and six international locations provide structural engineering, building enclosure, and diagnostics services. We also offer civil, traffic, transportation, and parking consulting.

Our holistic corporate model has no regional profit centers, which means no internal competition between offices. This enables Walter P Moore to assign subject matter experts to the most complex projects no matter the location. By combining these experts with local staff experienced in regional conditions and regulations we deliver the most innovative work.

Our clients benefit from having the best minds sharing experience and expertise. We use our shared knowledge platform to engineer projects that add value by being cost- and resource-efficient, innovative, and are easier and faster to build. We take pains to support and shape our communities in meaningful and unparalleled ways. We are proud that clients see Walter P Moore as the good hands consultant: reliable, efficient and committed to client goals.

INTERNATIONAL LOCATIONS

- Pune, India
- Panama City, Panama
- Mexico City, Mexico
- Vancouver, Canada
- Calgary, Canada
- Toronto, Canada

FOUNDED

1931

TOTAL STAFF COUNT

700+

LICENSED ENGINEERS

284



Our Multidisciplinary Integrated Platform

Our offering has expanded services beyond structural engineering to include building enclosure, construction engineering, secure design, building waterproofing, parking, and diagnostics/forensics consultancy services. We believe this discipline overlap adds meaningful value when performed by the same firm. Communication and coordination between these disciplines can be a major challenge on projects, as planning and design coordination frequently goes wrong. Our multidisciplinary project teams transcend discipline silos and deliver value-add integrated design solutions essential for the delivery of complex projects. The approach is critical, for example, when considering a set of waterproofing details and their coordination with structure; or in design coordination of the façade backup structure with primary structure; or when a parking layout could result in inefficient structural layouts and numerous structural transfers.

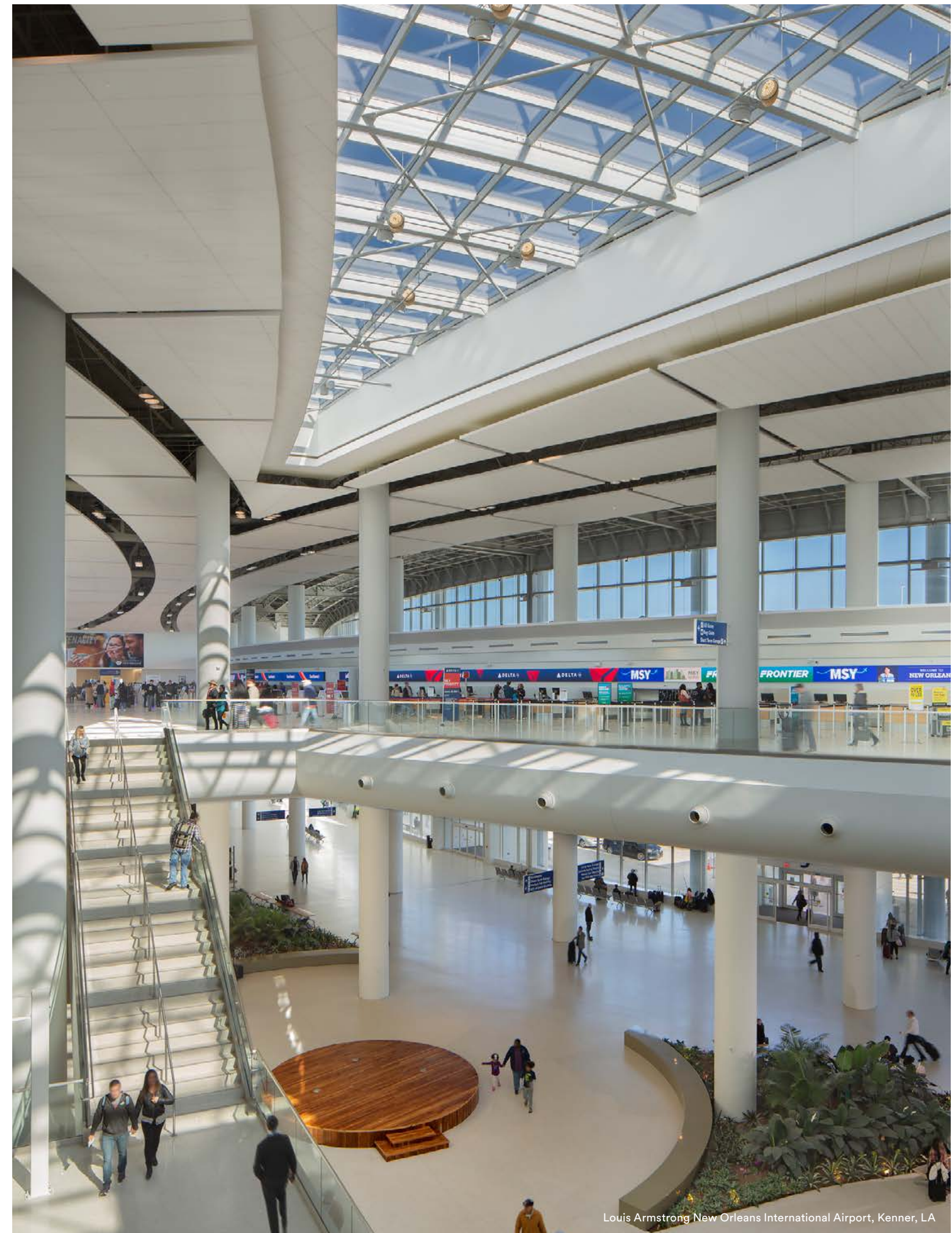
When the engineering of the façade is integrated into the structural design, the result is a comprehensive and cohesive system that optimizes primary, secondary and tertiary support systems. Coordination and detailing of cladding materials

integrated with the supporting structure are resolved early in the design phase, leading to clarity of scope and sequencing between subcontractors, better early pricing and lower budget contingencies. Early façade engineering and design coordination also allows the owner and design team to protect the original design intent and avoid compromising façade design integrity due to subcontractors forcing off-the-shelf solutions.

Walter P Moore provides a highly-specialized, multi-disciplinary team that fully integrates the façade with the structure. Our integrated design approach and digital process rationalizes complex geometries to deliver customized designs with standardized components. Our knowledge and experience with membranes, fabrics, metals and glass allow us to provide timely and objective input regarding material and system selection, system interface definition, performance objectives, holistic waterproofing and water maintenance strategies. We advise on procurement strategies and can guide the design process through performance based design (performance specification) or full prescriptive assignment methodologies for procurement.



Louis Armstrong New Orleans International Airport, Kenner, LA



Louis Armstrong New Orleans International Airport, Kenner, LA

Structural Engineering

New Building Design

- Secure design
- Sustainable design
- Parametric modeling
- Performance based design
- BIM capabilities
- Long span structures
- Kinetic structures
- Membrane structures

Building Expansions

- Foundation & column strengthening
- Vertical expansions
- Sequencing & phasing design
- Evaluation of undocumented structures

Adaptive Reuse

- Feasibility studies & conceptual design
- Review for conformance with changing codes
- Increases in load capacity for heavier occupancy
- Improvement of performance under vibration loads
- Installation of new functional elements

Seismic Design and Retrofits

- Complete seismic evaluation
- Performance based design
- Seismic retrofit
- Site evaluation
- Special strengthening materials & techniques

Structural Peer Review

- Progressive multi-stage review of design criteria
- Independent review of representative elements & specifications
- Evaluate constructibility & cost efficiency

Walter P Moore's Structures Group offers an integrated suite of engineering services that provide value-based solutions for clients worldwide. We collaborate with architects, owners, and builders to develop elegant, cost-efficient, and constructible structural systems for buildings of all types, focusing on those with the most interesting and challenging opportunities.

Our complementary services include enclosure engineering, parking consulting, construction engineering, secure design, sustainability, and structural diagnostics, providing a holistic design approach that brings value at every step in a structure's life cycle. Our passion drives us to find better solutions for our client's challenges across a broad spectrum of project types and locations. Sports venues, airports, hospitals, convention centers, performance venues, and tall buildings are among our most active sectors. We leverage teamwork and expertise across our entire platform of resources to provide an extraordinary client experience. For us, innovation is a design imperative, not optional. Finally, we strive to be engineering leaders at every stage of each project, bringing ideas and stewardship to our client's visions and our world's resources.



Mickey Leland Federal Building Renovations, Houston, TX



Benjamin P. Grogan and Jerry L. Dove Federal Building, Miramar, FL

Secure Design

Services

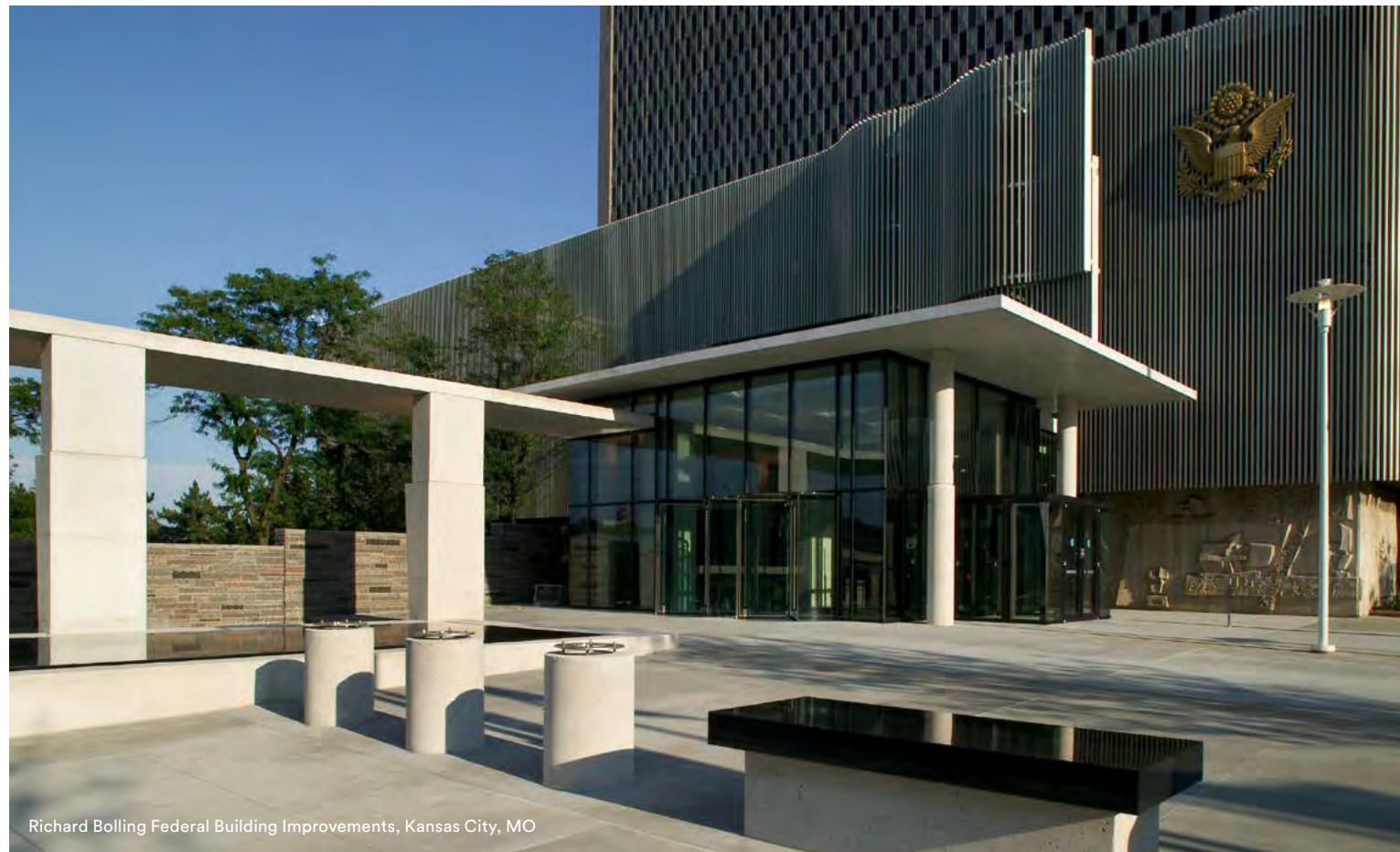
Threat and Protection Criteria
Blast Design
Bullet and Forced Entry
Resistant Design
Glass Hazard Mitigation
Progressive Collapse Design & Analysis
Ram Resistant Construction
Structural Retrofits & Hardening

Walter P Moore provides a full range of secure design services that create practical, technologically-advanced solutions for physical security and structural protection against threats from natural disasters and terrorism.

Fully integrated with our structural design capabilities, our secure design services include preliminary security planning and site layout, threat and risk assessment and mitigation, designs to resist extreme loadings, protection from blast, progressive collapse, forced entry, ballistics, and vehicle ramming.

Our specialty team of secure design engineers also provides blast load prediction, vehicle ramming threat analysis, secure design of glazing and framing, and structural component response prediction for elements subjected to blast loading. Single and multiple degree-of-freedom tools and finite element analysis help us determine structural response to complex dynamic loadings.

Walter P Moore's designs fully incorporate various General Services Administration (GSA), Department of Defense (DOD), Interagency Security Committee (ISC), and Department of Veterans Affairs design criteria documents. Our team is active in the physical security community, including participation in further development of these documents and design methods for use throughout the industry.



Richard Bolling Federal Building Improvements, Kansas City, MO



Mickey Leland Federal Building Renovations, Houston, TX

Enclosure Engineering

Performance Specification and Design Criteria Development

- Load Criteria
- Materials Performance
- Testing Regimen
- Environmental Performance
- Coordination & Review of Façade Related Specifications

Façade Structural Design

- Façade Systems Conceptualization & Optimization
- Materials Research, Selection, & Specification
- Integrated Design of Façade/Structure
- Detailed Membrane & ETFE
- BIM Modeling of Complex Façades
- Façade Assembly Detailing
- Seismic Engineering of Façades
- Secure Design Including Blast Analysis
- Building Physics Modeling
- Thermodynamic Modeling
- Waterproofing Services

Procurement Guidance

- Optimum Procurement Methodology
- Identification/Prequalification of Vendors
- Design Criteria and Bid Documents
- Evaluation of Bids and Proposals
- Evaluation of Proposed Alternates

Performance Validation

- Performance & Visual Mock Up Assessment
- Shop Drawing & Engineering Report Review
- Peer Review Services
- Quality Assurance & Installation Oversight
- Oversight of Façade Site Testing
- Installation Punch List

More so than any other building component, the enclosure – including its facades, roofing and subsystems – influences the aesthetics and life-cycle performance of a building. A fine balance of design aesthetics, system performance and cost are critical to a successful project. The ever increasing complexity in enclosure design including both aesthetics and performance concerns, coupled with rising costs and compressed schedules can challenge even the most skilled design teams to delivery comprehensive enclosure solutions. The resulting need for a highly specialized expertise in this area led to the creation of our building enclosure practice.

Our multi-disciplinary team collaborates across the entire project team – touching nearly every discipline at some point to address the ‘gap’ – to supply timely and objective input regarding material and system selection; system interface definition; performance objectives and coordination; holistic waterproofing strategies; and design detailing and coordination. Our specialists bring expertise across all enclosure design and performance criteria including thermal behavior, acoustics, structure, air and water management, hygrothermal performance, solar reflectivity, heat gain, shadowing, glare, daylighting and tuning of enclosure systems for optimal HVAC performance. We advise on procurement strategies and can guide the design process through performance-based-design (performance specification) or full prescriptive assignment methodologies for procurement.



Parking Services

Planning

Mobility Master Planning (Pedestrian, traffic, parking and transportation)
Parking and Transportation Planning
Parking Supply and Demand Studies
Parking Shared Use Analysis
Feasibility Studies
Traffic Engineering and Impact Analysis

Design

Design Team Project Management
Architectural Design
Structural Engineering
Functional Design
Parking Access and Revenue Control (PARCS)
Parking Count and Guidance Systems (PCGS)
Parking Wayfinding
Sustainable Parking Consulting (Parksmart)
Owner's Representative

Operations Consulting

Financial Audits
Operations consulting
Operator Selection
Parking Technology Selection

By integrating our structural, civil, diagnostic, and traffic engineering services with our parking consulting expertise, we offer a wide range of services: concept and feasibility studies, master planning, full design services, operational consulting, and condition assessment of existing facilities. We leverage our experience with the design of over 1,000 parking structures to bring you a design that is highly functional, efficient and provides maximum return on your investment.

Master Planning Campuses

All developments, big and small, urban or suburban, share a fundamental need to provide adequate parking to promote growth. Walter P Moore understands that code-required parking does not always equate to adequate parking. Taking a holistic approach to parking, we know that parking space location, allocation, traffic patterns and transportation options require alignment with the vision and goals of the overall master plan. Our team has developed parking master plans for a variety of clients including municipalities, healthcare, commercial and higher education institutions across the country. We work with Architects and Owners to develop a parking master plan that will project the future parking needs and provide solutions that will enhance the future development.

Functional Design

Functional Design is the art of creating the best parking solution for each specific project. Walter P Moore provides innovative designs that are tailored for each client and end user. Our experience in parking design includes complex mixed-use developments, medical centers, international airports, universities, tall buildings, and more. Our in-depth understanding of your unique needs allows us to create facilities that are appealing, functional, and safe. We establish long-standing client relationships based on our ability to listen, develop creative solutions, and consistently deliver quality services.

Parking Technology

With the ever changing technology, PARCS requires a substantial investment in equipment, software, and time. Walter P Moore's in-depth experience with a wide range of parking facilities allows us to guide each client toward the best PARCS solution. We provide consulting for "Smart Garage" technology, which is designed to increase the utilization and efficiency of a parking facility. This technology reduces the search time for spaces and improves the level of service for all customers. The use of appropriate technologies will improve operations, increase revenues, and support current and future needs.

Design Team Project Management

Walter P Moore possesses a proven ability to orchestrate a diverse team of architects, engineers, and consultants. We systematically coordinate all design aspects of the project to ensure that our clients receive a parking facility that provides the highest level of service along with the efficiencies required to meet budgets and space count requirements. We understand the importance of design elements which minimize long-term maintenance and maximize return on investment. Our designs blend form and function to provide an exceptional parking experience that is a true asset of any development both operationally and financially.



BLVD Place, Houston, TX

Construction Engineering

Steel Connection Design

- Fabricator Collaboration
- Connection Strategies
- Conceptual Detailing
- Fabrication Documentation
- 3D Evaluation

Erection Engineering

- Erection Strategy & Sequencing

Structural Analysis for Erection Loads

- Sequential Stability Analysis
- Storm Loading Evaluation on Partially Erected Structures
- Critical Lift Engineering

Design of Temporary Works

- Excavation Support Systems
- Soil/Structures Interaction Analysis
- Shoring and Retention Structures
- Construction Bracing
- Fabrication Modeling and Detailing

Integrated Structural Steel Detailing

- 3D Steel Reinforcing Detailing
- 3D Cold-Formed Steel Detailing
- Sequence, Splicing, Grouping & Connection Optimization
- Conflict and Clash Resolution
- Refined Quantity Estimates
- Mill Order Modeling
- Placing Aids for Congested Areas

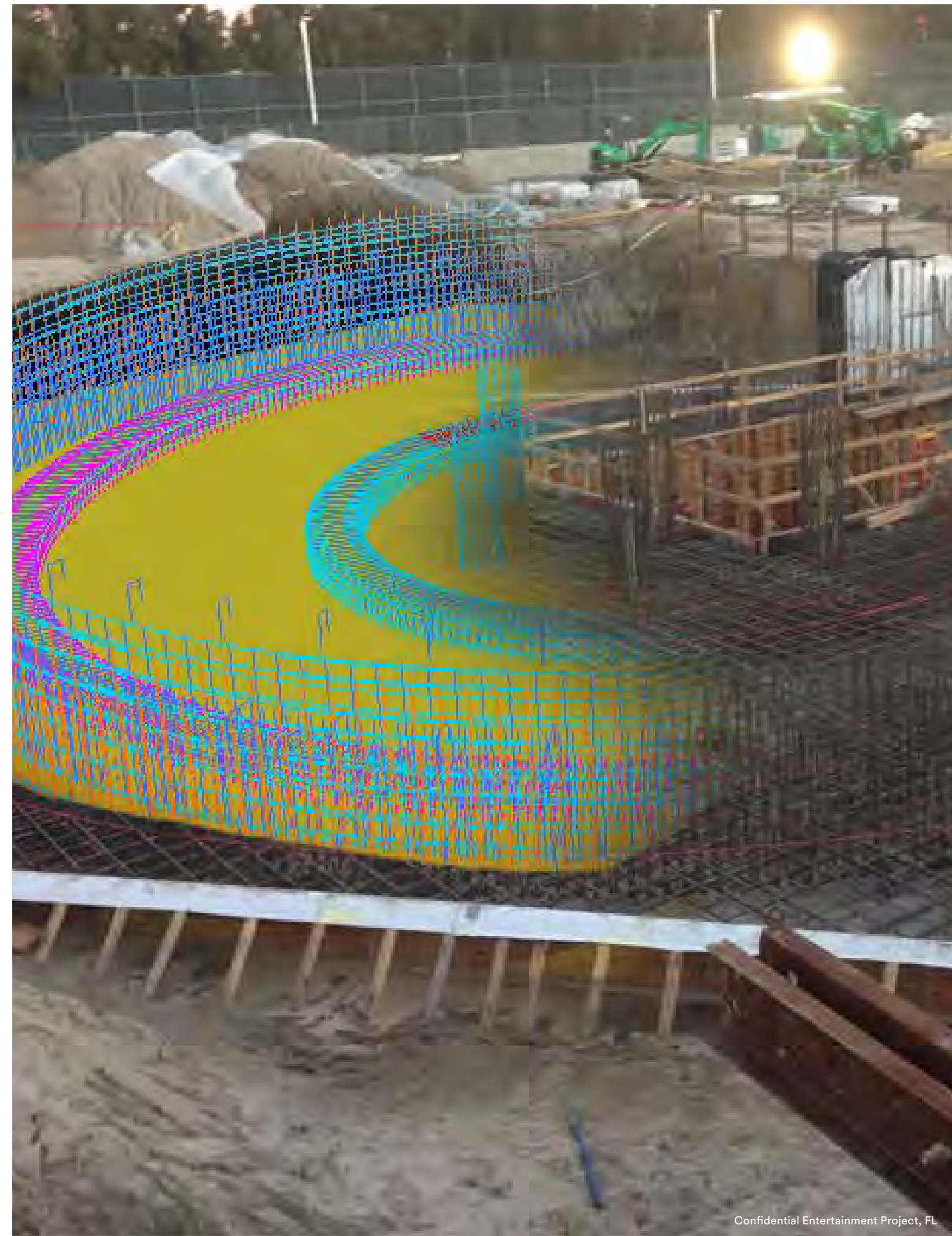
The construction of complex structures presents a range of challenges to builders, fabricators, and erectors. Long span structures require careful attention to a variety of concerns, including crane and lift locations, erection stability, temporary stresses, and movement compatibilities. Complex connections demand careful coordination of clearances, attention to overall weight and fabrication complexity, and constructability. Temporary excavation support systems demand reliable and affordable solutions for uncertain subsurface loadings. Structures involving multiple trades without a single source of modeling and detailing information are often subject to field conflicts and schedule delays.

These challenges are commonly delegated by the design team to the builder, leaving a gap that must be filled with a qualified construction engineer who intimately understands the design behavior of modern structures and brings a practical understanding of how they are built.

Walter P Moore fills the gap between design and construction with a team of specialty consultants who provide a range of services needed to safely and economically build these structures. Each team member brings individual experience with structural design as well as construction sensibility. We bring a holistic approach to our work that considers the desired aesthetic of the finished product while seeking construction speed, simplicity, and economy. We use digital tools to accelerate our work and produce highly reliable deliverables.



University of Florida New Baseball Stadium, Gainesville, FL



Confidential Entertainment Project, FL

Walter P Moore's Digital Approach

Using data-rich models to dramatically improve project outcomes

To effectively integrate the skills and services of our Practice Areas into a team of experts capable of solving our client's most complex challenges, Walter P Moore has adopted a wholly-digital approach to projects. We use high-fidelity models created and updated by our teams who have broad parametric capabilities and BIM skills. From early concepts to fabrication models, our goal is to deliver highly accurate and data-rich models that can be used by everyone on the project team.

This approach has been incorporated across all our offices and is used on all our projects. Individual offices have local expertise and the ability to tap into a firm-wide pool of subject matter experts to bring technical expertise to every project. This integrated and data-centric approach enables us to test design options from several perspectives and validate both performance and value across multiple services.

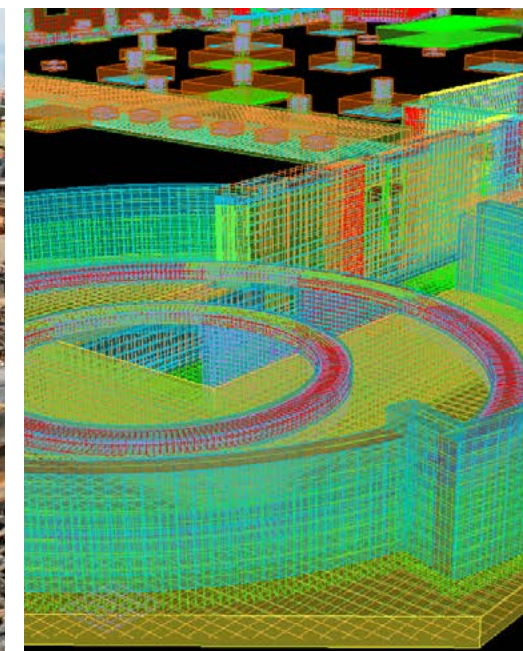
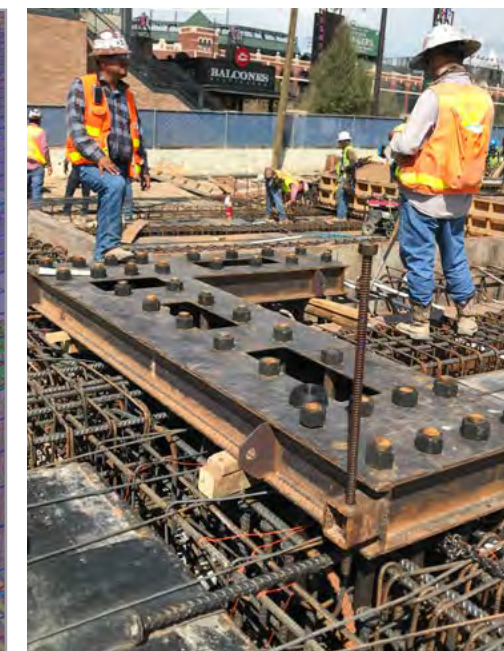
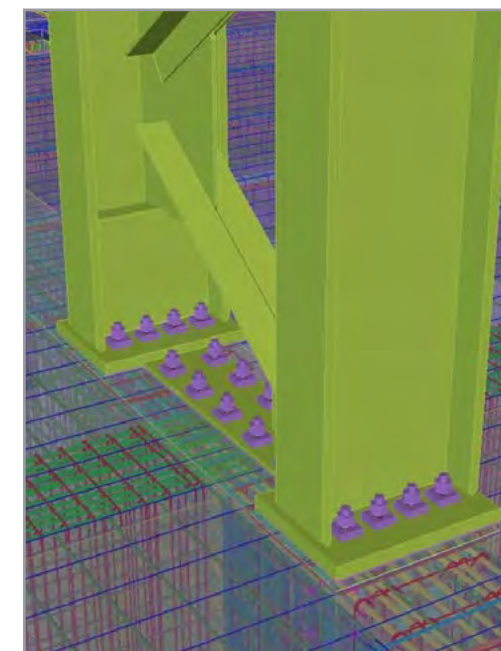
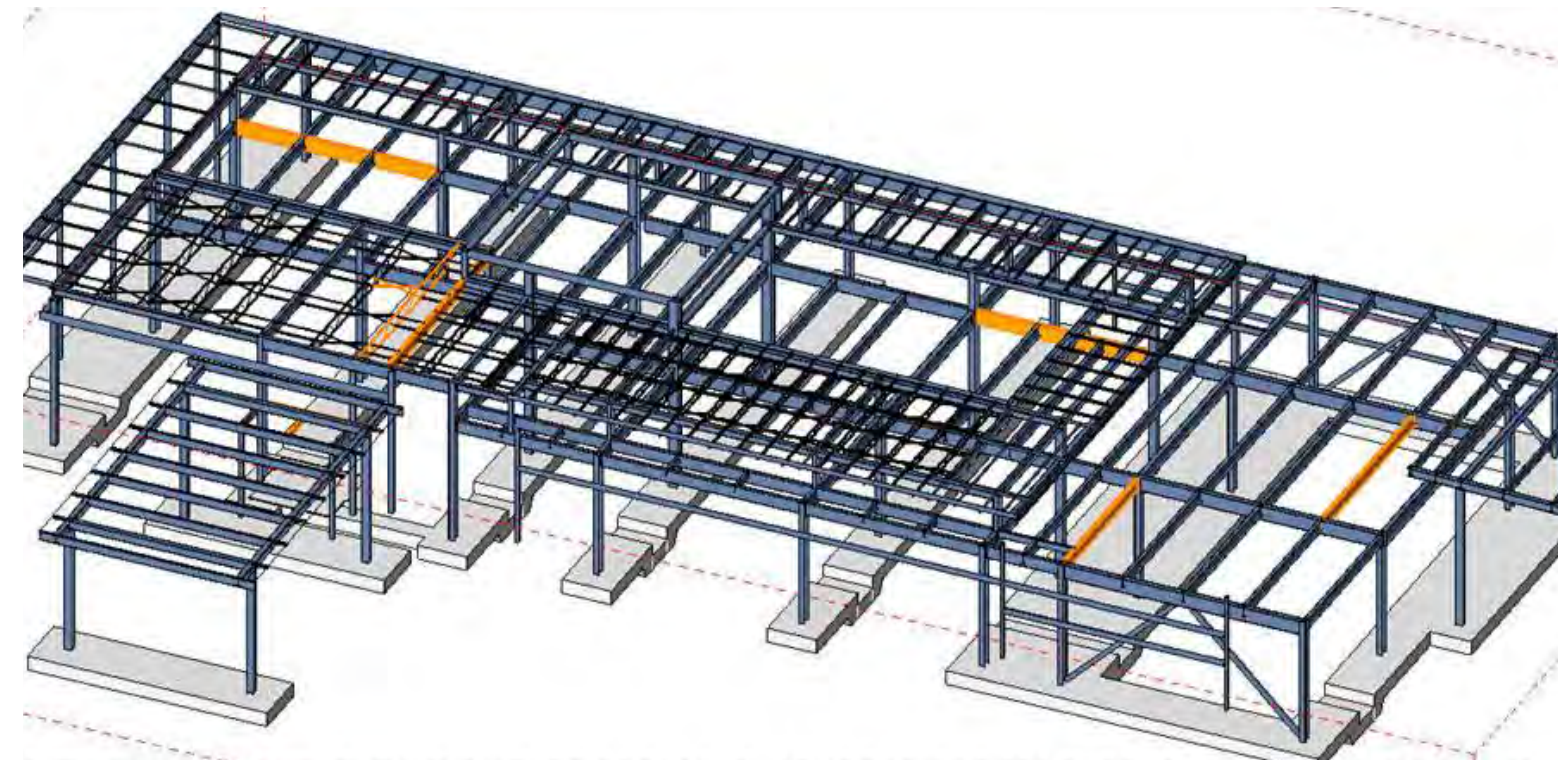
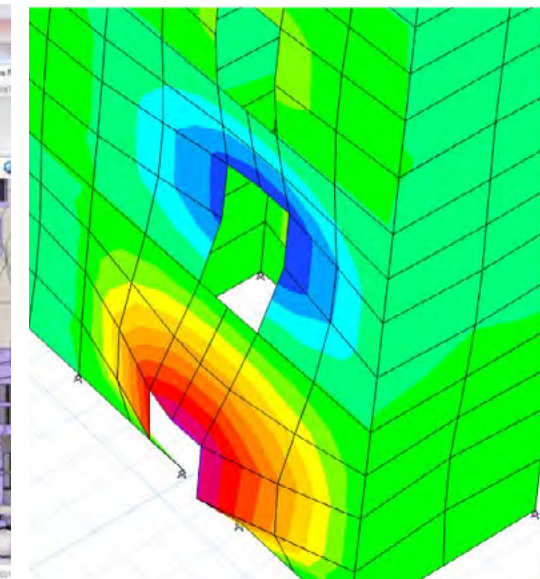
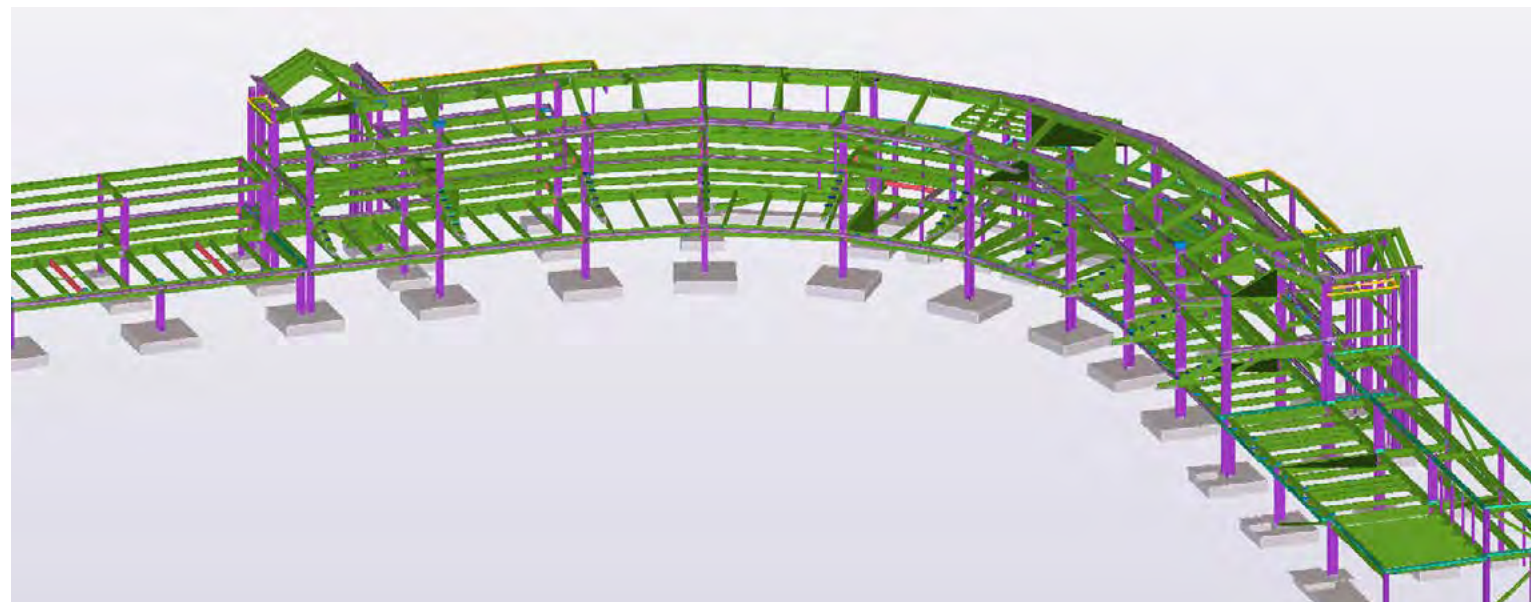
Models are shared between our different practice areas by using a common data platform we created from the ground up. Known in-house as the CID (short for 'Central Information Database'), the company-wide platform lets us move data between various software platforms easily. This capability frees our teams to create, modify, and coordinate building information in whatever software is appropriate anywhere in the project lifecycle.

Early in projects, our parametric capabilities help inform design exploration by providing quick and detailed feedback so that

clients can create and evaluate multiple design options. A digital approach allows our project leaders to estimate quantities and convey complexity so that design teams can quickly and transparently establish budgets and schedules. The entire team is then clear on precisely what will be designed and constructed.

As the project progresses, the focus shifts to optimizing and finalizing the design. Additional digital workflows accelerate our teams' ability to coordinate and validate elements of the design. By expediting the mundane through workflows, we can concentrate on providing clarity on complex conditions and material interfaces.

This focus on accuracy and clarity pays off at the critical juncture between design and construction. Rather than experiencing the usual loss of information as contracting teams rebuild models based on imprecise drawings, our models can be relied upon as the basis for construction models. Our in-house experts can create LOD 300 "stick" models that can serve as the starting point for detailed fabrication models. We also have the ability to create fabrication-ready LOD 400 "fully connected" models that can be used to produce fabrication files and shop drawings. These advanced models can be used as the basis for bids resulting in more bid certainty. Even more impressively, they can be used to produce shop drawings shaving weeks or even months off typical construction schedules.





Who We Are

Walter P Moore is an international company of engineers, architects, innovators, and creative people who solve some of the world's most complex structural, technological, and infrastructure challenges. Providing structural, diagnostics, civil, traffic, parking, transportation, enclosure, technology consulting, and construction engineering services, we design solutions that are cost- and resource-efficient, forward-thinking, and help support and shape communities worldwide. Founded in 1931 and headquartered in Houston, Texas, our 700+ professionals work across 22 U.S. offices and six international locations.