

# CONSTRUCTION ENGINEERING

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Photo Credit: Alistair Tutton Photography



**McLaren**  
ENGINEERING GROUP



**McLaren Engineering Group – Headquarters**  
530 Chestnut Ridge Road, Woodcliff Lake, NJ 07677  
Ph. 1-800-420-6401

49  
STATES  
LICENSED

20k+  
PROJECTS  
COMPLETED

45  
YEARS OF  
APPLIED INGENUITY

11  
OFFICES  
WORLDWIDE



## About Us

McLaren Engineering Group is a leading full-service engineering firm renowned for its trusted, high quality, and innovative approach to solving complex challenges. With industry experts in multiple technical disciplines, our team has provided customized solutions for over 20,000 projects through consultation, design, inspection, and construction management. With over four decades of experience, a staff of 200+, and 11 offices worldwide, McLaren addresses every project's specific needs with technical excellence and creative innovation.



**JON SKINNER, PE**  
Vice President – Construction  
[JSkinner@mngmclaren.com](mailto:JSkinner@mngmclaren.com)

## Core Technical Divisions

STRUCTURAL | CIVIL + SITE | MARINE + COASTAL | BRIDGE, HIGHWAY + RAIL  
ENTERTAINMENT | GEOTECHNICAL | FACADE + BUILDING ENVELOPE  
CONSTRUCTION ENGINEERING | FORENSICS | SURVEY + MAPPING



# CONSTRUCTION ENGINEERING

McLaren's construction engineering division is an industry leader providing innovative solutions that enable developers, contractors, fabricators, and erectors to successfully take projects from procurement to completion.

From large infrastructure projects to buildings and specialty structures, our engineers determine the most optimal and cost-effective engineering solutions by assisting with means and methods of construction, planning, logistics, and project management for building projects across the country. This ensures jobs stay on time and within budget while providing the best solutions from the ground up.

Supporting construction needs of every size, scope, and complexity, our expert staff provides a diverse line of custom services including crane plans, permitting, rigging solutions, designs of temporary supports, bracing, and construction sequencing for both new and renovation projects. Our company also offers the conventional design of steel structures and connections in addition to providing Specialty Structural Engineering Services (SSE) for delegated design elements.

CRANE ENGINEERING

RIGGING + HEAVY LIFTS

STEEL CONNECTION

MISCELLANEOUS METALS +  
DELEGATED DESIGN

SHORING

CONSTRUCTION LOGISTICS

TEMPORARY STRUCTURES +  
SITE SAFETY

[www.mgmclaren.com](http://www.mgmclaren.com)

MOBILE CRANES

HYDRAULIC + LATTICE BOOM  
CRAWLER CRANES

TOWER CRANES (FAVCO, POTAIN,  
LEIBHERR, WOLFKRAN + MORE)

DERRICKS (STIFF-LEG + GUY)

PEER REVIEWS

INSPECTIONS

PERMITTING WITH NYC DOB

IMPOSED LOAD ANALYSIS

# CRANE ENGINEERING

McLaren's construction engineering team offers full-service crane engineering services, from planning and plan/calculation preparation to in-house expediting to handle all filing and permitting needs (NYC CN Applications). Whether it be the need to develop a new crane plan or a peer review of a plan prepared by another firm, our team brings the requisite expertise needed to ensure your crane plans are complete, code compliant, and have considered all aspects of the intended pick. As such we take into account crane placement and configuration, pick loads and center of gravities, pick criteria and radius, geometry and clearances, outrigger reactions and track pressures and corresponding dunnage/cribbing design, rigging criteria/specs and design needs, and project schedule and constraints. In addition, our experience with plan requirements and permitting processes with governing agencies (i.e. NYCDob, NYSDOT, NYCDOT, NJDOT, MTA, MNR, AMTRAK, etc.) results in quicker reviews and approvals.



TIFFANY'S FLAGSHIP STORE LIFT OF LTM 1130 MOBILE CRANE ONTO  
THE ROOF UTILIZING A 500-TON LIEBHERR LTM 1500 CRANE

# APPLIED INGENUITY



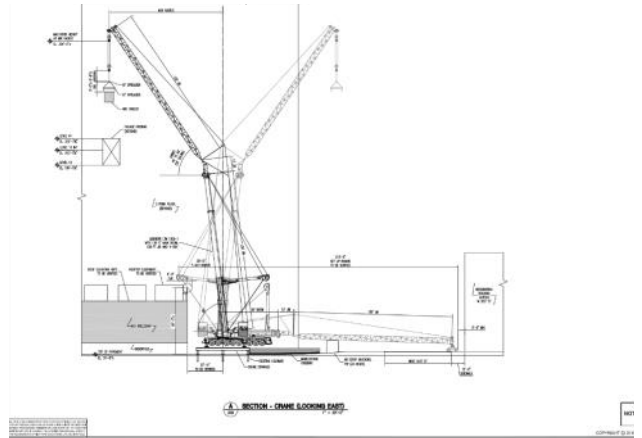
ROCKEFELLER UNIVERSITY OVER FDR  
CRANE & DAVIT ARM DESIGN



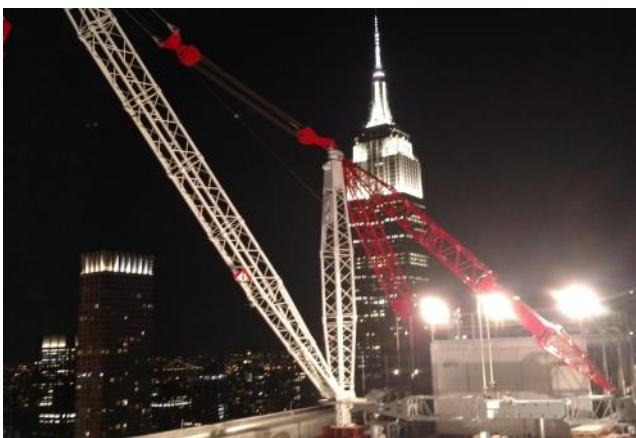
MANHATTAN WEST SOUTHEAST TOWER  
LTM-1350 CRANE PLANS



WITTPENN BRIDGE MOBILE CRANE PLANS



2 PENN PLAZA (CRANE PLAN DRAWINGS)  
FOR 80,000LB LIFT



BANK OF CHINA ROOFTOP DERRICK PLANS



LOUIS ARMSTRONG LTM-1100 CRANE PLANS

MECHANICAL + ROOFTOP  
EQUIPMENT RIGGING

LONG-SPAN + CURVED  
GIRDER RIGGING

CUSTOM + OFF-THE-SHELF  
SPREADER BEAM & LIFTING

SKATE + ROLLER SYSTEMS

LOAD TRANSFERS (I.E. CRANE  
HOOK TO INTERIOR GANTRY'S  
OR SLIDE SKATES)

INTERIOR/ENCLOSED SPACE  
RIGGING

HYDRAULIC GANTRY'S + SLIDE  
RAILS

COUNTERWEIGHTED PICKS TO  
HANDLE ECCENTRIC PICK/  
DROP POINTS

SELF-PROPELLED MODULAR  
TRAILER (SPMT) PLANS

## RIGGING + HEAVY LIFTS

Our team of construction experts offers complete rigging solutions to service material and equipment handling needs, from shop to field installation. Beyond the design and check of a sling or shackle, we can develop step-by-step sequential drawings to illustrate the movement and/or transfer of a load throughout the rigging and installation process. Each project takes into account piece geometry, field constraints, and all loading conditions.



WITTPENN BRIDGE REPLACEMENT MAIN SPAN LIFT

# APPLIED INGENUITY



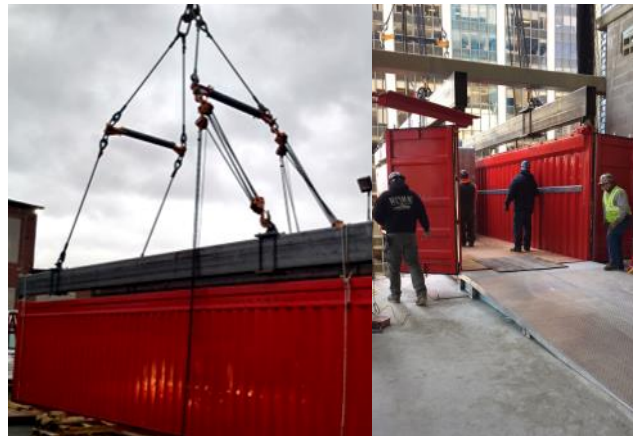
JAMAICA STATION COUNTERWEIGHT  
TRUSS RIGGING



GANTRY RIGGING PEER REVIEW



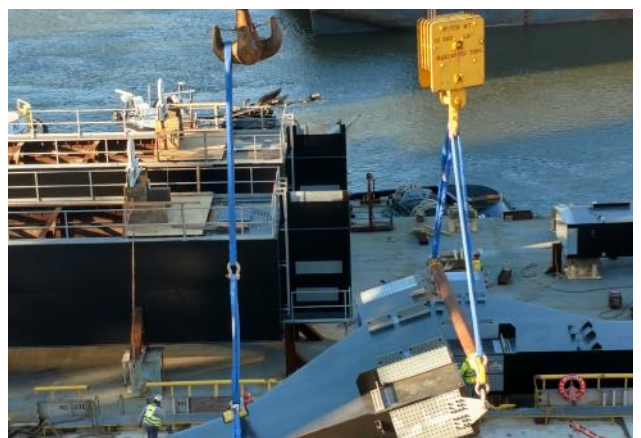
PULASKI SKYWAY EXODERMIC PANEL RIGGING



WTC LIFT CONTAINER  
CUSTOM CONTAINER RIGGING



BEEKMAN AVENUE RIGGING DESIGN



BRIDGE ERECTION RIGGING OF ASYMMETRICAL  
90K "KNUCKLE" COMPONENTS

STANDARD SHEAR

NON-STANDARD SHEAR

MOMENT

AXIAL

SPICES

HEAVY TRUSSES

BRACED FRAMES

RETROFITS + REINFORCING OF  
EXISTING

EXISTING BEAM  
RECONNECTION

HARDENED STRUCTURES +  
BLAST MITIGATION DESIGN  
CONNECTIONS

HIGH SEISMIC ( $R > 3$ )

SPECIALTY CONDITIONS

PRE-DETAILING ASSISTANCE

VALUE ENGINEERING

# STEEL CONNECTION

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Connections between structural members are a critical part of any steel structure and their proper treatment is an essential component of safety and cost. Our construction engineering division has intuitive knowledge of how a systems will transmit loads, loads paths, and a deep understanding of structural mechanics to provide both safe and economical designs.

Steel connection design for structural steel projects includes standard shear connections, non-standard connections, moment connections, bracing, trusses, high seismic, and custom specialty conditions. McLaren's unparalleled experience is the foundation for developing and delivering the most economical, safe, and structurally efficient connections.

STEVENS INSTITUTE OF TECHNOLOGY STEEL CONNECTION  
DESIGN OF TWO-TRUSS PEDESTRIAN BRIDGE

# APPLIED INGENUITY



IN-SITU TRUSS RETROFIT



REINFORCEMENT OF EXISTING CONNECTIONS



COMPLEX BRACED FRAME CONNECTIONS



FIELD BOLTED CONNECTIONS



UNOBTRUSIVE CONNECTION RETROFITS



STANDARD SHEAR CONNECTIONS

STANDARD STAIRS  
MONUMENTAL STAIRS  
LADDERS  
VANITIES  
GUARDRAILS  
SIGNS  
DAVITS  
ARCHITECTURAL METALS

## MISCELLANEOUS METALS + DELEGATED DESIGN

We provide Specialty Structural Engineering Services (SSE) for a wide array of standalone miscellaneous metals and delegated design items. With constant pressures on construction costs, schedules, and fees, Structural Engineers of Records (SEoR) are required to do more with less and look for ways to shed design scope. This has resulted in moving away from the more typical and straightforward design-bid-build environment of the past. As such, bringing on an SSE in the early stages of the project has never been more critical in project success.

Today, SEoR's are delegating more design items than ever before. This includes secondary structural elements (stairs, guardrail, davits, elevator rails, cladding, etc.) as well as primary structural elements. McLaren's construction engineering division has developed a sound reputation for producing quality, knowledgeable, and efficient end product in the design of delegated design items.



ACE HOTEL BROOKLYN MONUMENTAL STAIR

# APPLIED INGENUITY



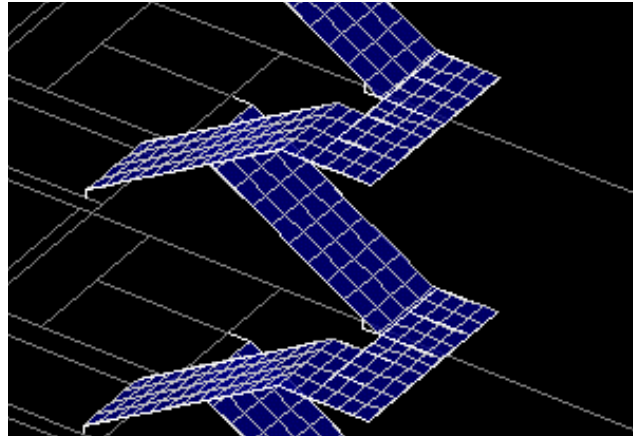
INMAR PREFABRICATED STAIRS



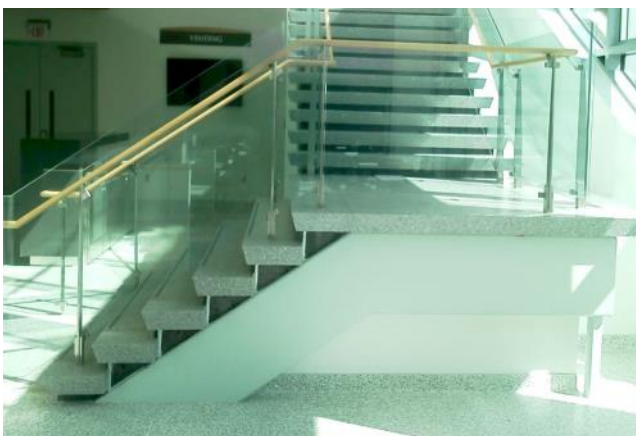
ZAHA HADID ARCHITECTURAL METALS



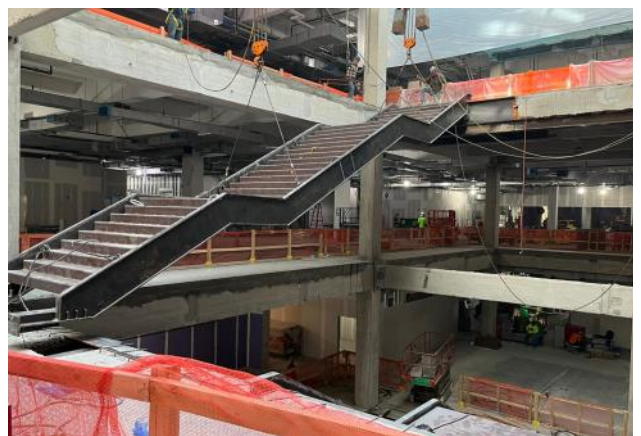
GUARDRAILS



MONUMENTAL STAIR VIBRATION ANALYSIS



SUNY UNIVERSITY ALBANY MONUMENTAL STAIRS



CORPORATE HQ MONUMENTAL STAIR



**McLaren**  
ENGINEERING GROUP

BRIDGE SHORING (ERECTION,  
DEMO, BEARING &+ SEAT  
REPAIRS/REPLACEMENTS)

SHORING OF EXCAVATION  
(SOE)

COLUMN TRANSFERS/  
REMOVALS

STRUCTURAL LIFTING + LOAD  
TRANSFERS

HYDRAULIC JACKING

SHORE, CUT + RECONNECTS  
(SCR)

UNDERPINNING

MASONRY SHORING, NEEDLE  
BEAMS & LINTELS

CONCRETE CONSTRUCTION  
SHORING + RESHORING

# SHORING SOLUTIONS

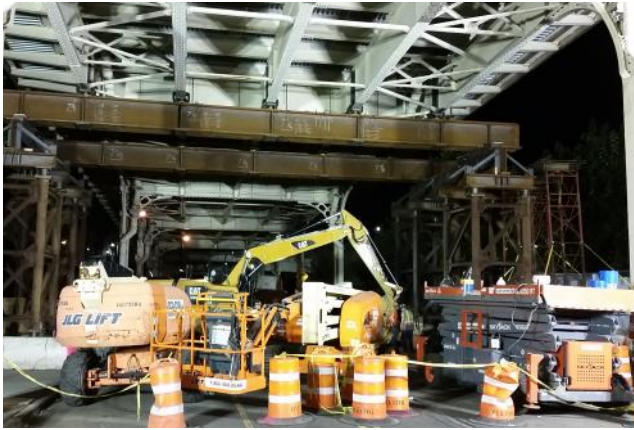
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From infrastructure, bridges, and buildings projects to renovation work, construction often requires the need for temporary shoring and support. Our team of construction engineers has experience in all facets of shoring and structural lifting. With a construction mindset and an understanding of best field practices, our team stands out in the industry for developing solutions that are practical, efficient, and cost-effective.



**ST. PETE PIER TEMPORARY SHORING OF PIERHEAD  
BUILDING CONSTRUCTION**

# APPLIED INGENUITY



MACOMBS DAM BRIDGE  
TEMPORARY SHORING & JACKING



AMERICAN DREAM MALL WATERPARK  
TEMPORARY SHORING & BRACING DESIGN



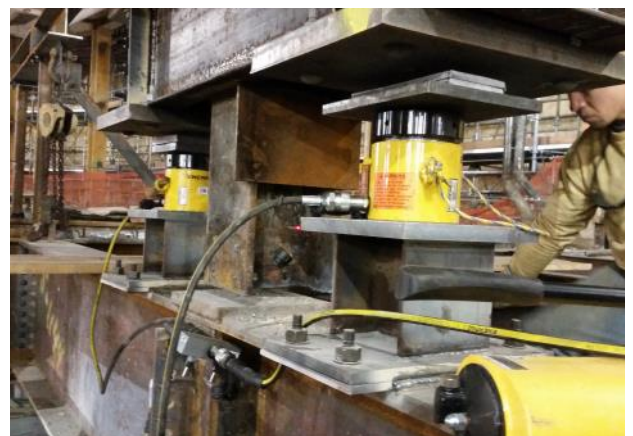
HRSG SEWAREN GENERATOR, ERECTION PLANS +  
TEMPORARY SHORING AND STABILITY BRACING



TSX HOTEL SUPER COLUMN JACKING



JACKING & REMOVAL OF COLUMN TRANSFER  
GIRDER FOR 1,000,000 LB LOAD



BOWTIE TEMPORARY SHORING, COLUMN LOAD  
TRANSFERS & CONSTRUCTION SEQUENCING

ERECTION ENGINEERING

TRUSS ERECTION SEQUENCING

SEQUENCING OF CONSTRUCTION

TEMPORARY STABILITY

MEANS + METHODS

DEMO PLANS (NYC DMO PLANS)

NYC PERMITTING + EXPEDITING

PRE-BID CONSULTING + VALUE  
ENGINEERING

# CONSTRUCTION LOGISTICS

As projects become more complex and challenging year after year, getting from point A to point Z is no longer a trivial task - even on the smallest of projects. McLaren can provide engineering support for a multitude of services to ensure projects are built in an efficient, safe, and stable manner across all phases.

SUTTON PLACE 3 STORY TRUSS  
ERECTION SEQUENCING



# APPLIED INGENUITY



METROPOLITAN OPERA HOUSE LOGISTICS  
AND HOIST SYSTEM



TIFFANY CRANE LIFT LOGISTICS



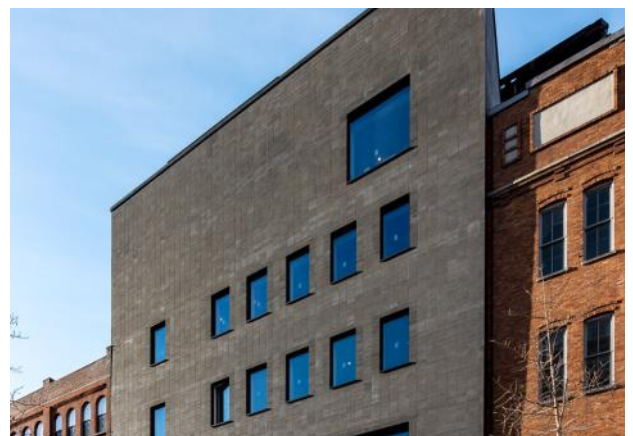
THE HALL AT LIVE! TRUSS ERECTION SEQUENCING  
AND LOGISTICS



STEVENS INSTITUTE OF TECHNOLOGY  
ERECTION MEANS + METHODS



SPENCE SCHOOL CONSTRUCTION SEQUENCING  
AND LOGISTICS



HAUSER + WIRTH NYC PERMITTING

SITE SAFETY PLANS

PROTECTION PLATFORMS

CRASH DECKS

DEBRIS NETTING (VERTICAL/  
HORIZONTAL)

HORIZONTAL LIFELINES

FALL PROTECTION

SCAFFOLDING

MEANS OF EGRESS

FENCES

TEMPORARY TRAFFIC CONTROL /  
MAINTENANCE & PROTECTION OF  
TRAFFIC (MPT)

# TEMPORARY STRUCTURES + SITE SAFETY

Keeping the public safe is the primary tenet of the engineering profession. Our construction division can provide a wide array of services to keep both the general public and site workers safe during the development of any project.



**2 MANHATTAN WEST  
CONSTRUCTION SAFETY COCOON**

ERECTION PLANS AND DETAILS

ANCHOR BOLT PLANS AND  
DETAILS

ASSEMBLY AND SINGLE PART PIECE  
DRAWINGS

MATERIAL LISTS FOLLOWING ASTM  
NOMENCLATURE (OR OTHER AS  
REQUIRED)

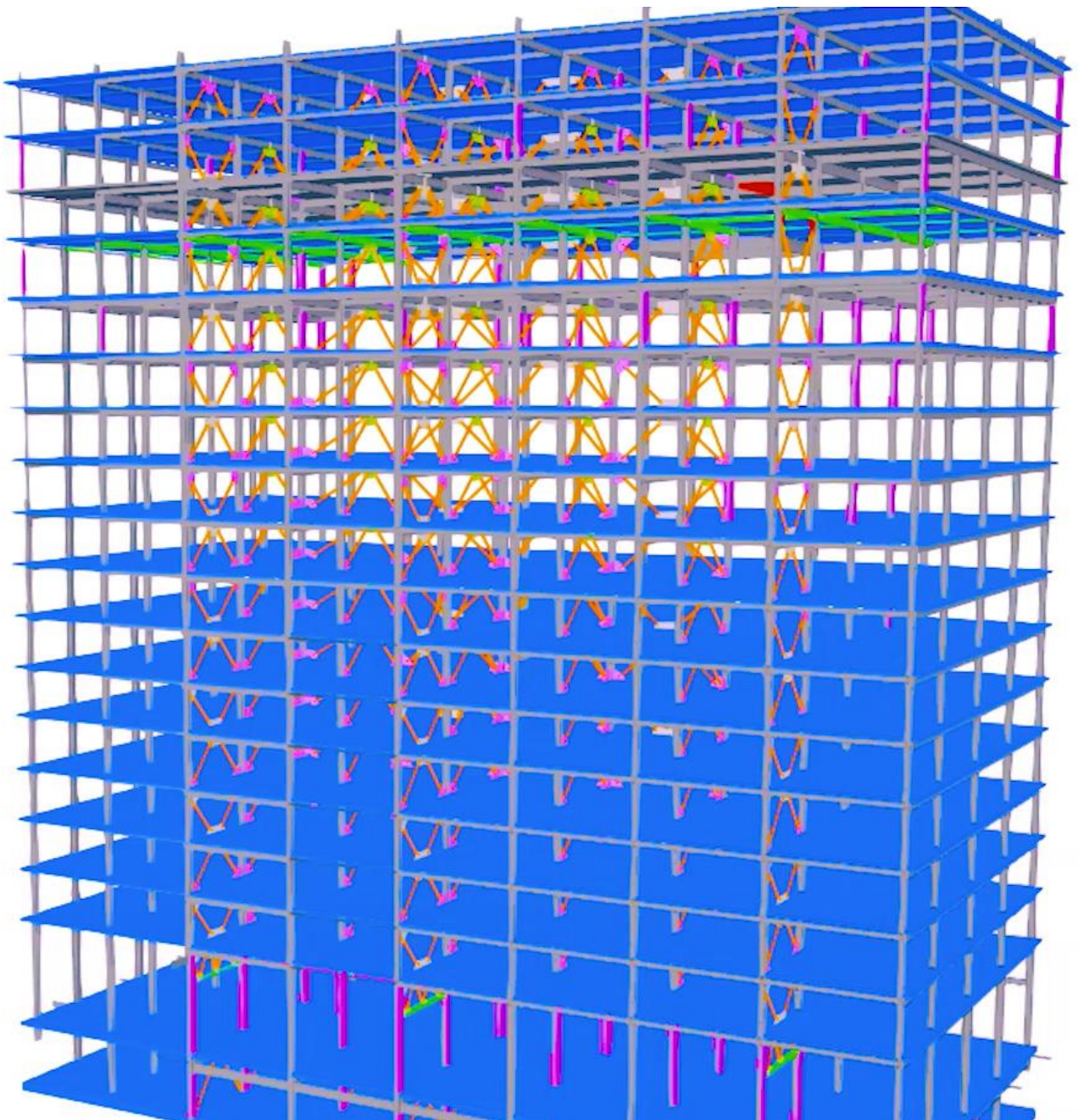
3D MODELING FILES (CNC, DXF,  
ETC.)

CONNECTIVE 3D MODELING  
SERVICES

# STEEL DETAILING

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Working with fabricators, contractors, and erectors nationwide, we deliver clear and concise shop drawings illustrating member sizes and dimensions, material specifications, and all connective elements. By combining our construction engineering expertise with our detailing capabilities our team offers a one-stop shop aimed at reducing coordination, eliminating headaches in the field, lowering project costs, and expediting project schedules. Regardless of size or scope, our top priority is to ensure each project flows smoothly from start to finish. From the detailing of smaller steel elements like columns, trusses, and stairs, to larger structures like buildings, bridges, and stadiums, we provide:





### **NEW JERSEY (HEADQUARTERS)**

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212.324.6300

### **NY CAPITAL DISTRICT**

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Albany, NY 12207  
518.992.4830

### **MARYLAND**

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Baltimore, MD 21202  
410.243.8787

### **FLORIDA**

201 North Magnolia Avenue  
Suite 101  
Orlando, FL 32801  
407.354.5411

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Philadelphia, PA 19106  
215.310.3765

### **LEHIGH VALLEY**

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610.571.3240

### **GEORGIA**

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Marietta, GA 30062  
404.891.6412

### **CALIFORNIA**

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San Luis Obispo, CA 93401  
818.652.9157

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[www.mgmclaren.com](http://www.mgmclaren.com)