

# Robson Forensic

Engineers, Architects, Scientists & Fire Investigators

## JOSEPH J. McHUGH, P.E., C.E.T. Civil Engineer

### **CONSTRUCTION and CONSTRUCTION SAFETY EXPERIENCE**

- Over 35 years of highway, bridge and building construction experience, including commercial construction, high-rise building construction, and public housing projects.
- Safety Engineer on a \$333M major bridge project involving 60 engineers and over 400 construction workers of all building trades.
- Performed safety audits of construction site safety, including coordination of inspections by OSHA and the Federal Highway Administration.
- Conducted “Tool Box Safety” meetings.
- Supervised selection, installation and maintenance of construction site security measures, including fencing, gates and closed circuit television surveillance.

### **STREETS and HIGHWAYS EXPERIENCE**

- Designed and implemented the construction of streets and highways, including vertical and horizontal alignments, appropriate traffic signage, traffic signals.
- Performed vehicular and pedestrian traffic capacity analysis and level of service for highways, streets and intersections, including accident verification.
- Specified and implemented pedestrian traffic controls and crosswalk locations.

### **TRAFFIC and TRANSPORTATION ENGINEERING EXPERIENCE**

- Designed and implemented work zone traffic safety controls, including advanced warning signs; placement of cones, barrels and reinforced concrete barriers; and flagmen training.
- Designed and implemented both pedestrian and vehicular traffic detours for the traffic movement in and around construction work zones.
- Orchestrated traffic detours to reroute 250,000 commuters daily in and out of Manhattan.
- Designed and implemented pedestrian detours for sidewalk closures and pedestrian walkways.
- Designed and implemented sidewalk sheds for pedestrian protection and safety.
- Trained by both the New York State and Florida Departments of Transportation in Maintenance and Protection of Traffic in construction work zones.

### **ROADSIDE HAZARDS and STRUCTURES EXPERIENCE**

- Identified roadside hazards and structures protection.
- Specified appropriate warnings, including signage and delineation.
- Designed and implemented the installation of protective devices

### **HIGHWAY MAINTENANCE EXPERIENCE**

- Provided quality control review of the work of highway maintenance contractors.
- Identified items that required repair or replacement and/or upgrades

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### CONCRETE EXPERIENCE

- Designed reinforced concrete foundations and retaining walls.
- Supervised the installation of pre-cast concrete structural members.
- Performed concrete testing including slump, air-entrainment, strength and other tests for compliance with project specifications.
- Worked with concrete throughout 35 years of construction including horizontal and vertical applications and various placement methods, transit mixer truck direct, crane and bucket, pumping and conveyor.
- Performed various concrete condition inspections, including weekly inspections of a mile long concrete bridge deck to monitor potential failure.

### FAILURE ANALYSIS EXPERIENCE

- Documentation and analysis of structural steel damage and deterioration, including stringer webs, flanges and truss members.
- Analysis of the failure of steel beam and masonry bearing wall construction.
- Investigation of concrete failures in bridge decks, piers and abutments related to bonding of the concrete to the reinforcing steel.
- Investigation and analysis of the cause of chemical damage in concrete.
- Maintained a database for on-going monitoring of concrete failures.
- Analysis of high strength bolt and rivet deterioration and failures.

### TRENCH EXPERIENCE

- Performed safety audits of contractors' trenching activities including utility and foundation work.
- Inspected shoring systems for all types of excavation related activities.

### DEMOLITION EXPERIENCE

- Construction management of demolition operations, including the demolition of highways, bridges, buildings and other structures.
- Reviewed and approved engineering plans for bridge demolition for the United States Coast Guard.

### WELDING/FLAME CUTTING EXPERIENCE

- Supervised steel cutting operations in bridge demolition and selective removal of building components.
- Inspected welds in bridge steel construction.
- Supervised surface preparation prior to welding operations.
- Supervised welding safety precautions in eye-protection and clothing and fall protection.
- Directed precautions to take in slag catchment of welding operations over public and commercial activities.

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### **BLASTING and CONSTRUCTION VIBRATION EXPERIENCE**

- Supervised and managed the transfer and handling of explosives, drill site movement and drill crews. Managed the set up of drill holes and supervised the blaster's loading and blasting operations.
- Supervised placement of drill rigs from barges to bridge piers and abutments.
- Performed seismic monitoring.
- Conducted pre-blast and post-blast inspections and interviews.
- Utilized 12NYCRR23 and the Rules and Regulations of the State of Jersey.
- Provided videographic documentation of drilling, loading and blasting operations.

### **DREDGING EXPERIENCE**

- Following the controlled implosion and demolition of the Central New Jersey Railroad Bridge over Newark Bay, dredging operations removed the rubble from the bay floor to specified elevations from baseline sea level. Rubble was taken by barge to specified area for construction of a fish sanctuary.
- Utilized divers to verify the proper removal of the rubble.
- Supervised the hydrologic surveying of the shipping channel.

### **CRANE and RIGGING EXPERIENCE**

- Worked with cranes of various sizes in New York and New Jersey including a 500-ton barge crane used to remove steel from the Central New Jersey Railroad Bridge across Newark Bay.
- Reviewed and approved crane use, placement and rigging plans for construction activities.

### **LADDER and SCAFFOLD EXPERIENCE**

- Over 35 years of construction management and inspection experience. Proper equipment and utilization of that equipment is an important part of the inspection process.
- Performed safety audits for compliance with OSHA standards and applicable codes including 12NYCRR23 and Part 1926, Subpart X; New Jersey and Connecticut codes.

### **CONFINED SPACE EXPERIENCE**

- Supervised operation in confined spaces for the NY City Department of Transportation including manhole access, ventilation and safety procedures related to confined space activity.
- Supervised the pumping of concrete through confined spaces.

### **AGRICULTURAL ENGINEERING EXPERIENCE**

- Owns and has operated farms in New York and Georgia for more than 25 years.
- 30 years of experience in the care of horses: nutrition, housing, equine behavior.
- Hands-on knowledge of the ownership, management, and containment of horses: enclosure, fencing design materials, construction.

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- Operated various agricultural machines and implements, including but not limited to tractors, trucks, hay balers, elevators, augers, harvesters, manure scrapers and spreaders, no-till seeders, wood splitters, and various spraying units.
- Supervised safe agricultural operations, including agricultural machine guarding to prevent entrapment, safety interlocks, barn ventilation to prevent the build-up of poisonous gases, trip and fall hazards, crane tipovers, tractor tipovers and hitch failures.
- Supervision and analysis of proper grain and hay storage for fire hazard reduction.
- Proper selection and replacement of bearings and various parts in tractors, conveyors, hay elevators, pecan harvesters, and tree shakers.
- Past member of the American Society of Equine Appraisers.

### PROFESSIONAL EXPERIENCE

2003 to **Robson Forensic, Inc.**  
present

*Area Manager for Upstate/Western New York*  
Provide technical investigations, analysis, reports, and testimony towards the resolution of litigation involving construction injuries, motor vehicle collisions, property damage, agricultural machinery and heavy equipment and failure analysis.

1984 & **Jackson & Tull**

1987 to *Project Manager, New York Area Operations* 1997-2003  
2003

Managed civil engineering projects for clients including the New York State Department of Transportation, the New York Thruway Authority and the Port Authority of New York and New Jersey. Selected projects:

- Manhattan Bridge roadway and structural steel rehabilitation project.
- Six-mile upgrade of Route 17 in West Windsor, NY.
- Bridge and Highway Design for the City of Norwich, New York Bypass project.
- Record drawing reviews for the Port Authority of New York and New Jersey for projects such as major airports, tunnels and other facilities.

*Assistant Resident Engineer* 1991-1997

As project safety coordinator, developed and enforced project safety plans; also designed and managed new traffic patterns for the Williamsburg Bridge project involving the rehabilitation of the cable suspension system. Ensured compliance with civil engineering design specifications for the demolition and reconstruction of cable anchorage decks, new columns, floor beams and stringers, bridge decks, curbs, gutters and railings, as well as installation of new cable inspection access platform; removal, replacement and labeling of granite blocks. Prepared calculation for placement of bridge cranes, including lift capabilities. Prepared and reviewed daily reports.

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*Assistant Resident Engineer* 1988-1991

Assumed full fieldwork responsibility for the Manhattan Signal Computerization Project involving the replacement of the existing traffic sonic detection system with a loop style vehicle detection system for 2,700 traffic intersections in the Borough of Manhattan. Designed new traffic patterns; coordinated with agencies and utilities throughout project duration concerning traffic logistics, safety, and compliance; communicated with managers of bridge and tunnel systems regarding work schedules. Ensured compliance to specification, as well as safety, electrical, city and code regulations. Project encompassed extensive excavating, conduit and cable installations including the Queens-Midtown Tunnel, George Washington Bridge, Holland and Lincoln Tunnels and the Brooklyn Battery Tunnel.

*Resident Engineer* 1987-1988

Performed project planning and management for the removal of a 1.75 mile twin lift span superstructure railroad bridge and piers located in the Newark Bay for the US Coast Guard. Coordinated the transfer of explosives, as well as underwater blasting and dredging. Developed calculations and managed logistics of placing a 500-ton barge crane and a smaller crane. Conferred with the blasting engineer in the planning and execution of over 100 controlled blasts involving the strategic placement of workers and equipment. Ensured compliance with specifications and safety regulations.

*Senior Construction Engineer* 1984

Provided inspection and engineering support for the rehabilitation of the Manhattan Bridge. Oversaw the removal and replacement of the under bridge maintenance platform traveler system, underwater repair and regrouting of tower piers, erection of new structural steel, concrete repairs, abutment joint repair, installation of cable anchorage drainage system, repair to eight anchorage chambers and replacement of upper roadway bearings.

1986 to **Greenman Pederson, Inc.**, Babylon, L.I., NY

1987 *Senior Construction Engineer*

Performed design reviews and assigned and trained field personnel on the Manhattan Bridge rehabilitation project. Project involved removal of bridge rails, existing bridge deck, structural steel, deteriorated rivets, and an existing bridge drainage system; installed a new drainage system, stringers, grid deck, steel stud-shear connectors, high strength bolts and a latex modified bridge overlay, also replaced armored joints and 3,000 feet of structural steel and concrete approach spans on the upper roadway. Coordinated maintenance and protection of traffic operations, as well as nightly lane changeovers to accommodate rush hour. Conducted field supervision and devised traffic control logistics and safety plans. Responsibilities also included the engineering support and supervision of the installations of suspended span end frames, side stiffening, truss hangers, new upper lateral system, and drainage system.

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- 1986 **Sarkisian Brothers Construction, Inc.**  
*Project Manager*  
Commercial building construction of a hotel and parking facility.
- 1984 to 1986 **Clough, Harbour & Associates**  
*Assistant Resident Engineer/Office Engineer*  
Project management for the New York State Department of Transportation reconstruction project on Route 57, Liverpool, New York. Supervised and inspected the reconstruction of the New York State Thruway overpass including deck removal and replacement, structural steel repairs, wing wall and abutment repairs and headwall replacement.

### TEACHING EXPERIENCE

- 2010 **New Jersey Institute of Technology**  
*Adjunct Professor, Civil and Environmental Engineering*  
Instruct a non-textbook course in problem solving the preparation and presentation of a response to an RFP/EIS.

### PROFESSIONAL CREDENTIALS

Registered Professional Engineer: Connecticut, New Jersey, Vermont, Minnesota  
Certified Transportation Engineering Technician, Level 4 by NICET (National Institute for Certification in Engineering Technologies)  
Certified by the International Municipal Signal Association (IMSA) in Work Zone Safety.  
Certified by Troxler in Nuclear Gauge Density Measurement  
Certified by New York City Transit Authority in Live Track Safety

### EDUCATION

Bachelor of Science in Civil Engineering, Fairleigh Dickinson University, Teaneck, NJ, 1995  
Associate of Applied Science in Civil Engineering, Broome County Community College, Binghamton, NY, 1975  
Certificate, Highway/Land Surveying, Sullivan County Community College, Loch Sheldrake, NY, 1972

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### *Continuing Education:*

Sight Distance, American Society of Civil Engineers webinar, October 30, 2009  
Maintenance and Protection of Traffic (Vehicular & Pedestrian), New York State Department of Transportation  
Maintenance and Protection of Traffic, Florida State Department of Transportation  
Roadside Delineation and Safety Systems, American Society of Civil Engineers webinar, August 1, 2006  
Three Point Airborne Analysis and Pole Impacts, New York Statewide Traffic Accident Reconstruction Society, 2004  
New York Association of Consulting Engineers, Winter Conference, February 3-5, 2002  
Seminar-Construction Inspection, New York State Thruway Authority, January 28, 2002  
How to Do Business with the New York State Thruway Authority, New York Association of Consulting Engineers, Inc. in cooperation with the New York State Thruway Authority, January 17, 2002  
Today's Coatings Inspection, Greenman-Pedersen, Inc., 1997  
Ambient Air Monitoring, Greenman-Pedersen, Inc., 1997  
Inspection of Lightweight Concrete, Greenman-Pedersen, Inc., 1997  
Nuclear Testing Equipment (required by 49CFR172, Subpart H), Troxler Electronic Laboratories, Inc., 1996  
Traffic Safety in the Work Area, Florida Department of Transportation, 1996  
Certified Work Zone Safety Specialist, International Municipal Signal Association, September 19, 1996

### MILITARY

1966 to **United States Army**  
1969 *Motor Pool Sergeant/Medic/Engineering Assistant*  
Supervised 10 medical battalion soldiers responsible for the maintenance and repair of trucks and ambulances. Worked with engineers on roadway and facility layout and reconstruction.

### PROFESSIONAL MEMBERSHIPS

National Society of Professional Engineers  
New York State Society of Professional Engineers  
American Society of Civil Engineers  
American Society of Safety Engineers  
American Engineering Alliance

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National Academy of Forensic Engineers, Correspondent  
Fairleigh Dickinson University, School of Engineering, Advisory Committee  
New York Statewide Traffic Accident Reconstruction Society  
American Association of Agricultural Engineers

### PUBLICATIONS

*Single Vehicle Run Off the Road Incidents: Is the Highway the Cause?* Joseph J. McHugh, P.E., C.E.T., Lance E. Robson, P.E. **Subrogator, Spring/Summer 2006** (National Association of Subrogation Professionals), page 87.

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