

## **Robert C. McCue, P.E., EUR ING, CEng MIEI, MCI Arb. Consulting Engineer**

### **Education**

- Pennsylvania State University, Masters Program Environmental Engineering (36 Credit Hours)
- Pennsylvania State University, B.S., Mechanical Engineering, 1973
- Pennsylvania State University, Associate Degree in Engineering, 1966

### **Registrations**

- Professional Engineer: CA (33509), DE (20565), MI (6201052996), ND (PE29820), NJ (24GE04265300), NY (083267-01), NC (49886), PA (PE026688E), TX (122630) and VA (402065695)
- Chartered Institute of Arbitrators, United Kingdom (MCI Arb. 020679) – Member
- Chartered Engineer, Institution of Engineers of Ireland (CEng MIEI 051109) – Member
- European Federation of National Engineering Assoc. (EUR ING 28349) – Member
- National Council of Examiners for Engineering and Surveying (26300)

### **Professional Affiliations**

- American Bar Association – Associate Member
- ABA Forum Committee on Construction – Member

### **General Experience**

Mr. McCue has more than 40 years of engineering experience on both domestic and international projects in the areas of project/construction management, consulting engineering, design, contract administration and construction claims analysis and resolution. He has provided expert testimony in mediation, arbitration, U.S. State and Federal Courts, and international venues on issues of engineering, scheduling, estimating, construction delay, lost productivity, design deficiencies, construction defects, errors and omissions, Forensic Project Management and related technical issues. As an arbitrator for the American Arbitration Association he has served on many construction arbitration panels.

His professional experience includes the design of commercial and institutional facilities, technical review and inspection of nuclear power plants, project and construction management of petrochemical facilities, pharmaceutical facilities and commercial/industrial facilities for public and private owners. Mr. McCue developed his expertise through education and practice of mechanical and environmental engineering, HVAC, electrical, fire protection, nuclear power, instrumentation and controls, civil, structural engineering, and architectural systems.

Mr. McCue is a recognized expert in commercial and industrial construction project management systems, engineering standards and codes including BOCA, NFPA, ASHRAE, ANSI, ASTM, ASME, IEEE, NEC, and the NRC general design criteria, regulatory guides and EPA Regulations. Mr. McCue has taught courses and seminars on project and construction management at the Great Valley campus of Pennsylvania State University and at the University of Pennsylvania. He has also taught the thermodynamics review course for engineers preparing to take their professional engineering examinations. He presents seminars and courses to industry interest groups and is a frequent speaker at national and international conferences.

## Expert Consulting Testimony

### **Archer Western Contractors, LLC v. The State of North Carolina 2020**

North Carolina State Court

Subject: Design and Construction defects in a new hospital. Architectural and Engineering Standard of Care. MDC® was retained by Archer Western to assist in determining the defects in the design documents prepared for the State of North Carolina. Case settled in favor of the client following the mediation presentation given by MDC® and the Architectural experts.

### **Pacific International, Inc. v. The Federated States of Micronesia 2019**

International Arbitration hearing in Honolulu, HI

Subject: This project involved a road building construction claim for a new highway in Micronesia. MDC® was retained by the Federated States of Micronesia to review the design and construction of the highway. The contractor's claims alleged that defective design, poor weather conditions and labor and equipment issues impacted the construction efforts. The Arbitration panel awarded damages on certain of the contractors' claims.

### **Liberty International Underwriters, Canada v. Scottsdale Insurance Company 2017**

Superior Court of New Jersey

Insurance coverage required by Contract Flow-down Clause/Additional Insured coverage. MDC® provided deposition testimony concerning the construction sequence of the project.

### **NJ Turnpike Authority – Driscoll Bridge Delay Claim, Woodbridge Township, NJ**

MDC® was asked to review the Driscoll Bridge Project records and prepare a report concerning design errors and omissions with regard to the design of the structural steel for the project. MDC® undertook a detailed review of the project records for the design of the project and the relevant change orders. As part of this effort MDC® was required to review the as-planned and as-built schedules, meeting minutes, design drawings and steel order and delivery records. Cost escalation for the stainless-steel reinforcing was a key timing issue due to the timing and placement of the bulk steel order and the subsequent delay in ordering the additional steel. MDC® provided a detailed analysis and briefing to the NJTP Authority.

**Ethylene Plant Arbitration, Port Arthur, TX** - Arbitration Testimony and Expert Report. Qualified and accepted as an expert for engineering, project and construction management, scheduling, estimating and Forensic Project Management. Arbitration testimony addressed the issues of Engineering errors and omissions, the Standard of Care for Process Plant engineering documents, Code requirements for the Safety Instrument System and process up-grades to piping, vessels and instrumentation. The plant was rebuilt following a fire and explosion and the Insurers asserted that the engineering was late and defective, and the Construction Management Team allowed the facility to remain out of service due to defective scheduling and expediting for the work. MDC® produced a comprehensive expert report refuting the allegations of design errors and omissions and a full detailed critical path method schedule analysis justifying the work activity durations and the procurement timeframes for pipe spool fabrication, delivery and erection. MDC® also provided an analysis of the start-up testing and commissioning activities with regard to the requirements to commission all plant systems and the time frame necessary to accomplish the return to production of the rebuilt facility.

**NJDOT and State of New Jersey AG, Bloomsburg, NJ** – MDC® was retained by the New Jersey DOT to analyze a \$50 Million claim being brought against them by Railroad Construction Company (RCC) regarding the construction of Route I-78 East and West Interchange and Truck Inspection Station's in Bloomsburg, New Jersey. This project consisted of grading, drainage, paving, bridge and weigh and inspection station construction along a five-mile section of the highway. Due to traffic congestion in the area, the project was planned and scheduled in nine stages. The project's schedule was the responsibility of the contractor and was to be updated on a bi-monthly basis, conforming to the Critical Path Method (CPM).

RCC's complaint alleged that it was delayed due to encountering an additional 100,000 cubic meters of rock that was not shown on the plans and specifications. NJDOT believes that all rock excavation was included under the definition of "unclassified" excavation and was appropriately shown on the cross-section drawings.

MDC® prepared and submitted a comprehensive analysis of the planned and actual rock quantities, weather conditions, change orders and contractor caused delays to the NJDOT and New Jersey AG and subsequently provided expert witness presentations of the analysis at the Mediation. The case was settled at Mediation favorable to the NJDOT and NJ AG.

**BWI Airport, Baltimore, MD** - Mediation Testimony. Presentation and cross examination concerning the engineering, cost and schedule for the installation of the baggage handling system for Terminal C at BWI Airport. Represented Siemens and provided a power point presentation of the site conditions, design and construction delays of the lead contractor and subsequent delays related to the installation and testing of the latest generation of bomb detection equipment installed in the conveyor lines by others. Provided detailed analysis of the inefficiencies resulting from delays to the structural steel, building enclosure and electrical work which delayed and caused inefficiencies to Siemens installation and testing work for the baggage handling system.

**Cairo Egypt – Main Sewer System - Federal Court Testimony.** Direct and Cross examination concerning the cost and schedule for the construction of portions of the Cairo Sewer Systems completed as part of the U.S. Aid program. MDC® produced a comprehensive expert report concerning the design, estimating and scheduling for the construction of a significant portion of the Cairo Egypt sewer system. Significant issues were contested about the government and contractor estimates for the construction of the system with regard to collateral damage from trenching, dewatering and construction traffic in the narrow and congested streets of Cairo. Qualified as an expert for engineering design and construction management including estimating, scheduling and the utilization of the specialized Krings trenching system.

**Automated Highway Control System, Boston MA. (Big Dig) -** On behalf of Honeywell MDC® investigated and analyzed the cost and schedule overruns for the computer monitoring and control system for this highway complex. In addition to normal construction issues MDC® determined that the most significant cost and schedule driver for this project was the poorly defined architecture for the central computer system, a failure to understand the significant technology changes that had occurred while the project was underway and the rising expectations of the MTA, for State-of-the Art systems which could not function in the obsolete base design configuration provided by MTA. During an extended mediation proceeding Honeywell agreed to a termination of its contract in exchange for a lump-sum payment.

**Power Plant Up-Grade, NJ - Arbitration Testimony.** Testified in deposition and Arbitration concerning the schedule for the up-grade work to the coal fired plant SO2 pollution control system and the additional costs resulting from the work. Represented CDI Engineering and refuted allegations of defective design work resulting in delays to the project completion.

**Refinery Construction, Saudi Arabia - Mediation Testimony.** Presented the results of investigations and analysis of the cost and schedule overruns resulting from the Lump Sum Turnkey work performed on the Ras Tanura refinery upgrade on behalf of the Stone and Webster Corporation. The investigation showed that design defects and unknown underground obstructions were the root cause of the problems experienced by Bugshan Stone and Webster Limited in performing this work. In preparation for the mediation MDC® inspected the work on site, reviewed key documents and interviewed the key participants in Saudi Arabia.

**Coke Manufacturing Plant – Indiana Harbor, Indiana - Deposition Testimony.** Investigated and analyzed the thermodynamic exhaust stack problems experienced by this facility on behalf of Sun Oil Company. Additional issues concerned an overall schedule delay and associated cost claim by Raytheon for the dewatering, work inefficiencies and changes alleged to have occurred during the construction. Following construction significant geotechnical issues arose concerning the use of improper steel slag fill that resulted in differential movement of large foundations on the site. Following the deposition, the case settled on terms favorable to the client.

**Baggage-Handling System, Newark International Airport, Newark, NJ.** - Arbitration Testimony. Provided baggage-handling installer assistance evaluating claim from electrical contractor. Successfully developed counterclaim against contractor to recover damages. Testified at arbitration proceedings and arbitrators decided in favor of our client.

**Pharmaceutical Plant, Singapore** - Arbitration Testimony, Singapore Arbitration Center. Technical review and evaluation of A/E design services involving piling, structural steel and computer 3D modeling (CADD) of piping for a bulk manufacturing plant in Singapore. Presented findings, analysis, and opinions to an international arbitration panel.

**Petrochemical Plant, Saudi Arabia** - Arbitration Testimony, Riyadh Chamber of Commerce. Claim review and analysis of subcontractor delay, disruption and inefficiency claims resulting from the upgrade of a petrochemical facility. Provided technical testimony at the arbitration proceedings in Riyadh, Saudi Arabia.

**Rail Maintenance Facility, Newark, NJ.** - Deposition Testimony. Assisted in the prosecution of claims against the architectural and engineering firms. Issues involved the lack of coordination of the sprinkler, mechanical and electrical systems.

**Educational Facilities, Camden County, NJ.** - Arbitration Testimony. Provided expert testimony in an arbitration case concerning the cost and schedule effects of delayed material deliveries on the installation of fire alarm and lighting systems in four buildings.

**Journal Square Computer Center, Jersey City, NJ.** - Deposition Testimony. Investigated piping system failure. Reviewed project documents and prepared an expert report determining material specifications and requirements that were to be met in the original construction. Provided expert assistance in negotiations and litigation with the developer.

**Natural Gas Compressor Stations, Greensburg and Harrisburg, PA.** - Trial Testimony and Deposition. Served as an Expert Witness for a gas transmission company regarding a major delay, disruption and inefficiency claim. Provided in-depth analysis and evaluation of the effects of change orders and material deliveries on the construction schedule of two natural gas compressor stations.

**Naval Research Laboratory, China Lake, CA.** - Testimony. Testified in Federal Claims Court representing the U.S. Justice Department involving technical and management issues over the design and construction of a Naval Research Laboratory. Qualified as an expert in the areas of project management, building mechanical and control systems.

**Steel Manufacturing, Pittsburgh, PA.** - Testimony. Provided expert testimony concerning the causes and effects of an electrical blackout for a steel-manufacturing complex. Evaluated emergency power system failures, maintenance operations and the actions of operators to mitigate the effects of the system failures.

**Office Building, Hazardous Materials, Pittsburgh, PA.** - Testimony, Administrative Appeals Board. Evaluated claims and provided expert assistance on a case involving disruption to construction work resulting from hazardous waste constituents removed from a renovated government office building project.

**Air Bag Manufacturing Facility, Phoenix, AZ.** - Deposition Testimony. Testified concerning the causes and effects of an explosion in an air bag manufacturing facility. Evaluated the overall design and construction of the facility and provided an opinion concerning the appropriate utilization of military construction standards for commercial manufacturing processes.

**French Embassy, Washington, D.C.** - Arbitration Testimony. Problems investigated included defective ductwork installation work and the failure to test and balance the mechanical systems. Provided testimony concerning each of the technical issues in dispute and assisted in the negotiations that resulted in a favorable settlement for client.

## Consulting Experience

**Combined Cycle Gas Turbine Power Plant, Saih Rawl, Oman.** Reviewed and analyzed cost overruns, schedule delays and the impact of change orders on a gas turbine power plant EPC project in Oman. The client utilized the analysis to negotiate a favorable resolution to this project's cost and schedule issues.

**Combined Cycle Power Plant, New Jersey.** Provided expert support for a dispute related to the construction of a combined cycle power plant. Tasks included schedule analysis, contractual review, and technical issues related to delays and damages experienced as a result of the untimely delivery of improperly fabricated components magnified by constraints in the site's physical layout.

**Nuclear Generating Station, Salem, NJ.** Provided review and analysis of Prime Contractors' delay and acceleration claim for the replacement of steam generators. The analysis and subsequent negotiations resulted in the contractor's withdrawal of the claim.

**Combined Cycle Power Plant, Pakistan.** Provided expert analysis relating to delays associated with the design and construction of a combined cycle power plant. Worked closely with outside counsel in the UK to address technical issues related to delay claim in multi-party insurance litigation. Issues included work sequence and the impact of *force majeure* events including work interruptions and project acceleration.

**Fiber Optic Communications System, MD to NJ.** Provided detailed cost and schedule analyses concerning a dispute involving the construction and testing of a 200-mile fiber optic communications system. Key issues included environmental infringements, land acquisition, work sequence and cost overruns related to defective installation and testing.



**Baggage-Handling System, Newark International Airport, Newark, NJ.** Provided baggage-handling installer expert assistance in preparing and presenting its claim for additional costs to major airline. Expert report successfully initiated a negotiation and achieved a successful result for our client.

**Pipeline Rupture, Washington, and Oregon.** Retained by the operator of a 400-mile interstate pipeline system that transports gasoline, diesel, and jet fuel. Developed defenses to the actions brought against our client regarding a pipeline rupture that resulted in significant personal and property injury. A favorable settlement was reached.

**Sewage Treatment Plants, Los Angeles, CA and Boston, MA.** Evaluated the cost and schedule impacts and overall construction cost of the electrical instrumentation and controls systems at the Hyperion and Deer Island Sewage plants. Analysis performed at the request of the contractor's bank during negotiations to restructure the company and the contracts.

**Automobile Assembly Plant, Wilmington, DE.** Investigated and analyzed claims concerning delays and cost overruns on this design-build project. The client was successful in recovering the cost overruns it incurred in performing its work scope.

**Outokumpu Metals, Alberta, Canada.** For a prominent mining/power firm, evaluated mechanical and control systems design for a power-generating plant that fires using waste wood byproducts from a sawmill. Issues involved the integration of the plant components, fuel separation, storage and preparation systems, combustion systems, turbine/generator performance, controls systems, commissioning sequencing and scheduling.

**U.S. Embassy, Cairo, Egypt.** Investigated and analyzed a contractor's claims against the U.S. Government stemming from the construction of the embassy. Issues included defective design and specifications, substandard materials and workmanship.

**Ethylene Plant, Baton Rouge, LA.** Assisted a contractor in recovering losses for labor disruption during the work on this turnaround project. The major issues included late and defective engineering, scope additions, labor strikes, aromatic and hazardous releases, owner interference, schedule revisions and multiple changes. Validated the contractor's estimate, developed an as-built schedule depicting disruptions and quantified impact on labor productivity. Matter settled with significant addition to contractor's contract.

**Federal Prisons, Beckley, WV and Butner, NC.** As part of an assignment for a contractor and its bank, performed project evaluations for two federal prison projects. Both projects were experiencing delays caused by the general contractor's workforce, which then caused delays and disruptions to the contractor's work.

**Hotel Vila Olimpica, Barcelona, Spain.** Evaluated the status of the project for the developer and developed a plan to complete the project on an accelerated completion schedule. The \$400M resort hotel was experiencing delays and cost overruns. After receiving the approval of the development partners, MDC® assumed control of the construction management team. Reorganized the project and personally supervised the commissioning of the project's mechanical, electrical, fire alarm and protection and building control systems. The hotel opened its doors to guests in time for the 1992 Summer Olympics, as originally planned.

**Office Building Construction, Chattanooga, TN.** Evaluated \$28M claim by general contractor against a federal agency concerning a \$100M office building construction project. Claim involved analysis of design revisions and delays and disruption to structural, electrical and mechanical trade work. Performed an expedited analysis of the claim's merits resulting in a negotiated settlement favorable to the TVA.

**Aircraft Conversion Analysis, Multiple States.** Oversaw the investigation and analysis of a \$200M subcontractor's claim resulting from the conversion of civilian airliners to military specifications for surveillance aircraft. Analysis resulted in a negotiated settlement that was very favorable to MDC®'s client.

**Highgate Assisted Living, Paoli, PA.** Conducted a review to dispute an employee injury claim alleged to have occurred while employee attempted to lock an automatic sliding door. Reviewed all documents and manufacturer's data and found that the manufacturer was in compliance with required code, had no responsibility for the faulty operation of the originally installed locking mechanism and was not responsible for the alleged injury.

## Project Management Experience

**Financial Institution's Computer & Operations Center, Wilmington, DE.** Project manager for the engineering design, testing and startup of this \$46M, 300,000 sq. ft. facility. Facility included 100,000 sq. ft. of raised floor computer space; computer room A/C and power, 60 and 415 Hz UPS systems; emergency power systems; building automation system; fire alarm, security and closed circuit TV system and integrated voice/data communications network.

**University Science and Technology Center, Syracuse, NY.** Managed the engineering design of a \$27M, 250,000 sq. ft. facility with computer and chemistry laboratories. This facility included microelectronics laboratories with associated clean rooms; emergency power, security, fire alarm and fire protection and building automation systems. Oversaw engineering design from development of preliminary design criteria through completion of all design documentation.



**Arabian American Oil Co., Saudi Arabia.** Directed the detailed engineering design, contracting, construction and start-up testing of a computer/control building. Directed the installation and testing of a \$16M computer/SCADA system, including 18 remote terminal units, on offshore platforms in the Arabian Gulf. Served as ARAMCO's inspection engineer for the construction of both the Shedgum and Uthamaniyah Natural Gas Liquefaction Plants and the Faras Gas Turbine Electrical Generating Station.

**U.S. Nuclear Regulatory Commission, Bethesda, MD.** Performed design safety reviews for the construction/operation of commercial nuclear plants. NRC representative before the public and utilities at safety hearings. Following the Brown's Ferry Nuclear Plant fire, directed teams in the investigation of fire hazards. In-house consultant for design and implementation of a fire-testing program to investigate electrical cable fires and develop prevention and protection.

**Engineering Laboratory, Philadelphia, PA.** Managed preliminary engineering design work for a 100,000 sq. ft. facility that included engineering and animal research labs.

**Nuclear Plant, Schenectady, NY.** As a General Electric test engineer, organized and directed prototype nuclear plant mechanical and electrical systems testing at a naval nuclear facility. This position required extensive training in the areas of health physics, radiation protection and nuclear plant operations.

## Military Service

Served on active duty with the U.S. Army from 1966-1970, including a year in Vietnam as a Platoon Leader, Executive Officer and Troop Commander with the 11th ACR (Blackhorse Regiment). Later served as a Troop Commander with the 3rd ACR (Brave Rifles), Ft. Lewis, Washington. Decorations for military service include Bronze Star for valor and service and the Purple Heart. Presently holds rank of Major with the U.S. Army Reserves (Retired).

## Professional Seminars and Training

- *Key Attributes of Successful Projects*, Edmonton, 2007
- *Forensic Project Management*, University of Pennsylvania, 2007
- *Time Impact Analysis® for Complex Projects*, Construction Super Conference, San Francisco, 2006
- *Risk Avoidance and Management for Infrastructure Projects*, International Construction Super Conference, London, 2006
- *Rule #1: Nothing Is as Simple as It Looks. The Use of Technical Experts as Neutrals in Complex Construction Cases*, American Bar Association Section of Dispute Resolution Annual Conference, Los Angeles, 2005.
- *The Standard of Care – Expectations of Performance & Promise to Deliver*, Construction Super Conference, San Francisco, 2004

- *Project Management Seminar*, Camp Dresser McKee, Cambridge, 2004
- *Project Management in the Real World*, University of Pennsylvania, 2004
- *Successful School Design & Construction: Mission Impossible or Impossible Mission?*, Duane Morris, Walter T. Wolf, Philadelphia, PA, 2004
- *Legal/Contracts/Claims Management*, Siemens Dematic, Dallas, TX, 2004
- *Utilization of the Expert*, Saul Ewing, Philadelphia, PA, 2004
- *Challenges & Solutions of Modern Project Delivery*, Duane Morris, London, 2004
- *The Owner's International Superconference*, Forbes/Andrews, London, 2004
- *Contract Management*, Parsons E & C, London, 2004
- *De-Mystifying Schedule Compression*, 2003 Construction Super Conference, San Francisco, 2003
- *Design-Build/Construction Management*, Lorman, Houston, TX, 2003
- *Successful Construction Projects*, Nelson, Kinder, Mosseau & Sатурley, Boston, 2003
- *International Infrastructure Projects*, Forbes/Andrews, London, 2003
- *Troubled Construction Projects*, Dechert Price & Rhoads, London, 2003
- *The Changing Face of Claims, The International Perspective*, Trowers Hamlins, London, 2003
- *Construction Projects in Default*, American Bar Association, New York, 2003
- *Salvaging the Troubled Project*, Buchanan Ingersoll, New York, Pittsburgh and Washington D.C., 2003
- *Construction Failures 2003*, Pepper Hamilton, Philadelphia, PA, 2003
- *Utilization of the Expert Witness in Construction Litigation*, International Construction Law, CO, 2003
- *Super Dispute! Hotly Contested Construction Litigation from the Contractor's Perspective*, 2002 Super Conference, San Francisco, 2002
- *Construction 2002*, Dechert Price & Rhoads, Philadelphia and London, 2002
- *Construction 2002*, Two Temple Gardens, London, 2002
- *Key Disciplines for a Successful Power Project*, Energy Conference, San Francisco, 2002
- *Change Conditions, Change Orders and Cardinal Changes*, Public Construction SuperConference, 2001
- *Project Advocates®*, Yale Club of New York, 2001
- *Design/Build: What Every Underwriter Should Know*, IRMI, 2001
- *The Page Cannot Be Displayed*, E-Business in Construction, 2001
- *Preventing Project Investment Disasters*, Middle East Economic Digest, 2000
- *Engineering Arbitration*, GCC Commercial Arbitration Center Conference, 2000 (attendee)
- *Problems With Design-Build Projects*, 1998 SuperConference, San Francisco, 1998
- *American Arbitration Association*, Arbitrator Training, 2000 and Arbitrator and Mediator Training, 1997 (attendee)
- *Predicting Construction Claims Potential*, 1994 SuperConference, San Francisco, 1994
- *Selection and Use of Construction Experts*, American Bar Association, 1988

- (attendee)
- *Construction Delay Claims Analysis*, R.S. Means Co. Seminar, 1987 (attendee)
  - *Data Communications*, Institute for Advanced Technology, 1987 (attendee)