
Michael D. Matthews | Forensic Mechanical Engineer, M.S., P.E.

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Professional Summary:

Michael D. Matthews, P.E., has over 25 years of experience in the fields of residential, commercial and industrial mechanical and plumbing engineering. Mr. Matthews also has nearly a decade's worth of experience in the product engineering, product development, and technical service support of manufactured HVAC products. He obtained his Bachelor of Science Degree in Mechanical Engineering from the Ohio State University in 1989. He also obtained his Master of Science Degree in Mechanical Engineering from the University of Purdue in 2001. His responsibilities have included mechanical, plumbing, and refrigeration design for new construction, remodel, and renovation projects in several different development types, including retail, restaurant, grocery, big box, academic, institutional, and health care facilities. Mr. Matthews' experience included surveying existing buildings for adding new MEP components, construction progress field work, construction final "punch walks", and the coordination of commissioning work for MEP systems. His work required assessing compliance with applicable Mechanical and Plumbing building codes. Mr. Matthews experience in HVAC products includes the design, testing, and qualification of new and/or modified HVAC products, in addition to the support of the manufacturing process for these changes, and support of technical service functions to assist field personnel in the troubleshooting and resolution of installed products and system.

Areas of Expertise:

- Registered Professional Engineer in 22 U.S. States (ACTIVE, see list in next section), with another 20 U.S. States retired / inactive that can be readily re-activated
- LEED Accredited Professional since 2008
- Proficient in AutoCAD (2-D) and Revit (3-D)
- HVAC System Design and Troubleshooting Experience including Unitary/Packaged systems, geothermal systems, chilled water systems, boiler systems, furnaces, air handlers, hydronics, cooling towers, heat pump systems, ductless split systems, and other.
- Plumbing System Design and Troubleshooting experience, including hot water / cold water supply systems, DWV (drain, waste, and vent) systems, natural gas plumbing systems, sewer lift stations, grease interceptor / grease trap systems, water pressure boosting systems, water filtration systems, various water heating systems, siphonic roof drain systems, and other.
- Over 2 decade's experience working with the design requirements of the International Building Code (IBC) and it's discipline specific codes, including the International Mechanical Code (IMC), International Plumbing Code (IPC), International Fuel Gas Code (IFGC), and International Electric Code (IEC), and others.
- Experienced Refrigeration Design and troubleshooting experience (supermarket/grocery store)

Licenses and Certifications:

Professional Engineer, State of Arizona, License # 63358
Professional Engineer, State of Arkansas, License # 16698
Professional Engineer, State of California, License # 37169
Professional Engineer, State of Delaware, License # 20255
Professional Engineer, State of Florida, License # 78049
Professional Engineer, State of Georgia, License # PE039183
Professional Engineer, State of Hawaii, License # 19069
Professional Engineer, State of Illinois, License # 62.06543
Professional Engineer, State of Indiana, License # PE11300244
Professional Engineer, State of Iowa, License # 23785
Professional Engineer, State of Kansas, License # 23027
Professional Engineer, State of Kentucky, License # 29346
Professional Engineer, State of Louisiana, License # 38344
Professional Engineer, State of Maryland, License # 45897
Professional Engineer, State of Michigan, License # 6201060572
Professional Engineer, State of Mississippi, License # 25082
Professional Engineer, State of Missouri, License # 2013032920
Professional Engineer, State of Minnesota, License # 50706
Professional Engineer, State of Nevada, License # 23187
Professional Engineer, State of New Mexico, License # 26290
Professional Engineer, State of New York, License # 94440
Professional Engineer, State of North Carolina, License # 41755
Professional Engineer, State of Ohio, License # 62955
Professional Engineer, State of Oklahoma, License # 28187
Professional Engineer, State of Oregon, License # 95202PE
Professional Engineer, State of Pennsylvania, License # 082822
Professional Engineer, State of South Carolina, License # 30647
Professional Engineer, State of South Dakota, License # 12609
Professional Engineer, State of Texas, License # 117932
Professional Engineer, State of Utah, License # 9489287-2202
Professional Engineer, State of Virginia, License # 402054052
Professional Engineer, State of Washington, License # 51013
Professional Engineer, State of West Virginia, License # 024289
Professional Engineer, State of Wisconsin, License # 32957-6
Professional Engineer, State of Wyoming, License # 15254

Project Experience:

Confidential Client, OH

Plumbing Origin and Cause Investigation

Investigated numerous plumbing system leaks in a multi-story mixed used building. The leaks were determined to be directly caused by owner related activities and practices. The investigation led to the successful denial of claim.

Confidential Client, TX

Air-Cooled Water Chiller Origin and Cause Investigation

Investigated an air-cooled water chiller failure at a medical facility in Texas. The investigation determined deficient low temperature protection of the chilled water loop by the facility maintenance contractor resulting in successful subrogation of the claim.

Confidential Client, OH

HVAC and Plumbing Designer / Engineer of Record

NEW Corporate Headquarters, 50K sq. ft, 4 story, indoor heat pump zoned units with geothermal heat rejection (summer) and geothermal heat (winter) in well array complex adjacent to building. Plumbing design included sewage lift station and domestic water pressure boosting capabilities, hydronic design of the geothermal heat rejection system loop, and other.

Confidential Client, MN

HVAC and Plumbing Designer / Engineer of Record

NEW 200+K sq. ft. retail and grocery center. Project HVAC included self-contained RTU single zone systems, standard single zone split systems, two separate exhaust hood systems (type I and type II), natural gas heating for all. Project plumbing included gravity DWV system, extensive grease waste collection and interceptor design, oil/water collection system with oil intercepting system (for vehicle center), extensive condensate collection system (indoor grocery refrigeration cases, walk in coolers, and other), and domestic pressure boosting system. Project also included the design of a specialized SIPHONIC roof drainage system. Refrigeration design included heat rejection 'rack house' (located on ground level, building external) and refrigeration line design to all walk-in cooler / freezers, and refrigerated display cases (supply and return routing, to and from).

Confidential Client, AZ

HVAC and Plumbing Designer / Engineer of Record

Privately owned K-12 school located in Arizona. Standard HVAC single zone heat pump split system design. Kitchen HVAC design, including exhaust hood system. Plumbing design includes standard supply and DWV systems, including sewage lift station and domestic water pressure boosting system.

Professional Experience:

Optimus Technical LLC, Owner / Sole Proprietor, Mechanical Engineering Consulting Services, 2011 – 2020, concentrated on HVAC, Plumbing, Storm, and Refrigeration design projects of various complexity and locations. Varied industries and project types. Typical services included pre-design site survey work, construction documents (design sets, specifications, etc.), construction observation field visits, post-construction 'punch walks' (design verification visits), system commissioning, post-construction site troubleshooting, and other.

WD Partners, Inc., Senior Mechanical Engineer / Engineer of Record, 2006 – 2017, senior designer / engineer of record for HVAC, plumbing, and refrigeration design portions of construction document and specification sets for new build, remodel, and renovation projects. Varied industries included retail, restaurant, education, general commercial, and industrial projects.

The Trane Company, Principal Product Engineer, 1997 – 2004, product development, product testing/research, product engineering, technical service support, for manufactured HVAC equipment and systems.

Further experience granted on request.

Education:

M.S., Mechanical Engineering, University of Purdue, West Lafayette, IN, awarded 2001
B.S., Mechanical Engineering, The Ohio State University, Columbus, OH, awarded 1989

Affiliations:

United States Green Building Council (USGBC), LEED Accredited Professional (LEED AP)

Honors and Awards:

United States Patent # 6,459,276
United States Patent # 6,650,122
Certified Six Sigma Green Belt