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

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### Professional Summary:

Michael D. Matthews, P.E., has over 30 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 includes the 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. Since 2019, Mr. Matthews has successfully completed over 300 forensic projects for EFI Global.

### Areas of Expertise:

- Registered Professional Engineer in all 48 'contiguous' U.S. States plus Washington D.C. and Hawaii (ACTIVE, see list in next section)
- 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 decades of 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)
- Multiple investigations in exercise equipment and leisure chair failures.

### Licenses and Certifications:

Professional Engineer, State of Alabama, License # 50397  
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 Colorado, License # 0049185  
Professional Engineer, State of Connecticut, License # 0030980  
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 Idaho, License # 20726  
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 Maine, License # 17352  
Professional Engineer, State of Maryland, License # 45897  
Professional Engineer, State of Massachusetts, License # 57081  
Professional Engineer, State of Michigan, License # 6201060572  
Professional Engineer, State of Minnesota, License # 50706  
Professional Engineer, State of Mississippi, License # 25082  
Professional Engineer, State of Missouri, License # 2013032920  
Professional Engineer, State of Montana, License # PEL-PE-LIC-86494  
Professional Engineer, State of Nebraska, License # E-15689  
Professional Engineer, State of Nevada, License # 23187  
Professional Engineer, State of New Hampshire, License # 14728  
Professional Engineer, State of New Jersey, License # 24GE05760400  
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 North Dakota, License # PE-10161  
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 Rhode Island, License # 14286

Professional Engineer, State of South Carolina, License # 30647  
Professional Engineer, State of South Dakota, License # 12609  
Professional Engineer, State of Tennessee, License # 116547  
Professional Engineer, State of Texas, License # 117932  
Professional Engineer, State of Utah, License # 9489287-2202  
Professional Engineer, State of Vermont, License # 018.0135197  
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  
Professional Engineer, Washington DC (District of Columbia), License # 907370

### 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