M² Structural Engineeri<u>ng</u>

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2010

 M^2 STRUCTURAL ENGINEERING, P.C. is a professional, consulting engineering firm licensed in Maine and surrounding states. The firm provides both traditional and specialty engineering services for a broad range of project types in both the public and private sectors

The firm utilizes state of the art analysis, design and drafting software enabling us to effectively evaluate different scenarios and options. By evaluating these different scenarios we are able to provide our clients with a well thought out, efficient design to suit their needs. We are committed to staying abreast of the latest technologies and project delivery systems so that we can serve our clients in the most effective manner possible.

Matthew J. Miller, P.E., the principal at M^2 Structural Engineering, P.C. has over a decade of progressive engineering experience from his work with engineering firms throughout the United States. Over the course of his career Matthew has developed the technical and management skills necessary to successfully lead the structural design of building projects of all types and sizes.

 M^2 Structural Engineering, P.C. is dedicated to providing quality engineering services which are well managed and thoughtfully designed. Our past work with owners, architects, and contractors has made us sensitive to all aspects of the design and construction process which enable us to balance the design, functionality and cost of a project.

Whether your project is a small residential addition or a multimillion dollar commercial building, M^2 Structural Engineering, P.C. has the experience to successfully complete your project in a timely, cost effective manner. Our use of the latest technologies allows us to provide innovative solutions to the most challenging engineering projects.

M^2 Structural Engineering, P.C.'s services include the design of:

- Structural Steel
- Light Gage Steel
- Cast in Place Concrete
- Pre-cast concrete
- Masonry
- Wood
- Heavy Timber and Heavy Timber Connection Design
- Aluminum
- Residential (Single and Multifamily)
- Commercial
- Industrial / Manufacturing
- ♦ Institutional
- Foundations and Retaining walls
- Historic Restoration
- Structural review / reinforcement for new loads or change of use
- Earthquake design and seismic reinforcing of existing buildings
- Special Inspections in accordance with the International Building Code

Matthew J. Miller, P.E.

2010	M ² Structural Engineering, P.C. – President / Principal Structural Engineer
2009	Matthew J. Miller, P.E <i>Structural Engineering Consultant</i> Responsible for business administration, marketing, structural design and detailing, specification development. Projects included commercial and residential buildings.
2006-2009	Becker Structural Engineers, Inc. - <i>Project Manager/Project Engineer</i> Responsible for the project management and structural design of building projects from schematic design through construction phase services. Worked with junior level engineers and technicians. Project types included private residences, multi-family housing, commercial projects, feasibility studies, and condition assessments.
2005-2006	Ryan Biggs Associates, PC - <i>Professional Engineer</i> Responsible for the structural design and detailing of educational, commercial, and correctional facilities.
2005	Miller Structural Engineering, PC - Owner / consulting engineer Responsible for business administration, marketing, structural design and detailing, specification development. Projects included commercial and residential buildings.
2000-2005	Engineering Ventures, Inc. - <i>Project Manager/Project Engineer</i> Responsible for the project management and structural design of building projects from inception through construction phase services. Supervised a team of junior level engineers and technicians. Project types included private residences, multi-family housing, schools, and commercial projects.
1999-2000	Klepper, Hahn and Hyatt - <i>Staff Engineer</i> Provided structural engineering services for educational projects.
1997-1999	Buildings Consulting Group, Inc. - <i>Structural Engineer</i> Performed structural engineering services for building projects, from schematic design to construction phase services.
Education	
1995-1997	University of Wisconsin – Madison, WI Completed advanced courses in structural engineering and design.
1995	Clarkson University – Potsdam, NY Bachelor of Science – Civil Engineering
Technical So	<u>ocieties</u>
	American Institute of Steel Construction Structural Engineers Association of Maine Timber Framers Guild

Special Training

- Practical Connection Design for Economical Steel Structures American Institute of Steel Construction
- Intelligent Design, Low-Rise and Mid-Rise Building American Institute of Steel Construction
- Seismic Braced Frames Design Concepts and Connections American Institute of Steel Construction
- Fascade Attachments to Steel Frames American Institute of Steel Construction
- AISC Seismic Design Updates and Resources for the 21st Century American Institute of Steel Construction
- Structural Masonry Design New England Concrete Masonry Association

Professional Registrations

Representative Design Experience

Commercial

- Lincoln Street, Inc. Springfield, Vermont 4500 square foot wood framed office building.
- **Planet Fitness** North Windham, Maine 11,000 square foot one story steel framed commercial building used as a health club. (Project completed while employed at Becker Structural Engineers, Inc.)
- **Northern Power Systems** Waitsfield, Vermont 26,000 square foot office and manufacturing facility. (Project completed while employed at Engineering Ventures, P.C.)
- **RK Miles Paint showroom** Manchester Center, Vermont Design of a second floor storage area built within an existing building. (Project completed while employed at Engineering Ventures, P.C.)

Educational

- **UNE Biomedical Research Facility** Biddeford, Maine 20,000 square foot three story office and laboratory building for the University of New England. (Project completed while employed at Becker Structural Engineers, Inc.)
- **Morrison Developmental Center** Scarborough, Maine 26,000 one story wood and steel framed building. (Project completed while employed at Becker Structural Engineers, Inc.)
- SMCC Art Studio South Portland, Maine Renovation of an existing structure for re-use as an art studio and classroom space at Southern Maine Community College. (Project completed while employed at Becker Structural Engineers, Inc.)
- Shenendehowa Middle School Addition Clifton Park, NY Design of 12,000 square foot classroom addition. (Project completed while employed at Ryan-Biggs Associates.)
- **Richmond Middle School** Hanover, New Hampshire Design of a 100,000 square foot school. (Project completed while employed at Engineering Ventures, P.C.)
- **Champlain College Business Center** Burlington, Vermont Design of a 23,500 square foot office and classroom building including site retaining walls for the courtyard. (Project completed while employed at Engineering Ventures, P.C.)
- **DeLasalle High School Additions** Minneapolis, Minnesota Design of a small infill structure surrounded on three sides by the existing structure for use as administrative offices. (Project completed while employed at Buildings Consulting Group.)

Holmen High School Addition - Holmen, Wisconsin -

Design of a one story classroom wing addition to an existing building. (Project completed while employed at Buildings Consulting Group.)

Representative Design Experience (Continued)

Public Safety / Municipal

- **Falmouth Police Station** Falmouth, Maine 8000 square foot one story wood framed building. (Project completed while employed at Becker Structural Engineers, Inc.)
- Falmouth Fire Station Falmouth, Maine 1700 square foot one story wood framed addition to an existing structure. (Project completed while employed at Becker Structural Engineers, Inc.)

Hospitality

- **Equinox Banquet Facility** Manchester, Vermont Structural design of a new 7,500 square foot wood framed building. (Project completed while employed at Engineering Ventures, P.C.)
- **Equinox Spa Facility** Manchester, Vermont Structural design of a 13,000 square foot spa facility including Heavy Timber trusses over the pool building. (Project completed while employed at Engineering Ventures, P.C.)

Health Care / Hospitals

- **Clover Manor Skilled Nursing** Auburn, Maine Structural design of a 4000 square foot renovation to an existing wood framed structure including a 300 square foot infill of an existing courtyard.
- Lakes Region Primary Care Windham, Maine Structural design of a wood framed superstructure for a 2800 square foot addition to an existing building. Design included provisions for a future expansion with a removable wall. (Project completed while employed at Becker Structural Engineers, Inc.)
- **St. Francis Hospital and Health Center** Poughkeepsie, New York Renovations to existing building for new cardiac catheterization laboratory and office space. (Project completed while employed at Becker Structural Engineers, Inc.)
- **Niskayuna Medical Office Building** Niskayuna, New York Structural design of a 3-story 60,000 square foot moment framed office building. (Project completed while employed at Ryan-Biggs Associates.)

Residential – Multi Family

- **Florence House** Portland, Maine. Three story plus basement building with apartments on the upper two floors, a safe haven for homeless women on the first floor, and office and storage space in the walk-out basement. (Project completed while employed at Becker Structural Engineers, Inc.)
- **Bayside Village Student Housing** Portland, Maine. Five story 200,000 square foot structure consisting of a four story multi unit housing complex for use as student housing serving a number colleges and universities in and around Portland, Maine built over a one story on-grade parking garage with commercial space and mechanical space. (Project completed while employed at Becker Structural Engineers, Inc.)
- Silver Bay Trinity House Silver Bay, New York Full structural design package for a new 6000 square foot staff house for the Silver Bay club. (Project completed while employed at Engineering Ventures, P.C.)

Representative Design Experience (Continued)

Residential – Single Family

- Standish, Maine Design of 2700 square foot addition and renovations to and existing structure. Renovations included design of new steel structure to support loads for the removal of existing columns.
- Raymond, Maine Design of 4700 square foot house.
- Wynantskill, New York Design of a 900 square foot, two car garage with workshop.
- **Boston, Massachusetts** Design of a 100 square foot addition and renovations to a row house. (Project completed while employed at Becker Structural Engineers, Inc.)
- Naples, Maine Design of a 1000 square foot addition and renovations to a seasonal residence. (Project completed while employed at Becker Structural Engineers, Inc.)
- **Pomfret, Vermont** Design of a 4000 square foot private residence including a detached three bay garage/barn. (Project completed while employed at Engineering Ventures, P.C.)
- **Stowe, Vermont** Design of a new timber frame structure for a private ballroom. (Project completed while employed at Engineering Ventures, P.C.)
- **Stowe, Vermont** Design of a small timber frame addition to an existing house. (Project completed while employed at Engineering Ventures, P.C.)

Lebanon, NH – Design of a small one room addition to an existing ranch house. (Project completed while employed at Engineering Ventures, P.C.)

- **Waitsfield, Vermont** Design of an 8000 square foot residence, including timber frames for the main entrance and great room. (Project completed while employed at Engineering Ventures, P.C.)
- **Shelburne, Vermont** Design of a multi-level barn / garage built into the side of a hill to provide access on two levels. (Project completed while employed at Engineering Ventures, P.C.)
- **Charlotte, Vermont** Design of a 4000 square foot residence and detached garage. (Project completed while employed at Engineering Ventures, P.C.)
- **Huntington, Vermont** Design of a new timber frame built on an existing foundation. (Project completed while employed at Engineering Ventures, P.C.)
- Eastman Village, New Hampshire Design of a 2500 square foot residence (Project completed while employed at Engineering Ventures, P.C.)
- **Stowe, Vermont** Structural design of site/retaining walls on a sloping site as part of a terrace renovation. (Project completed while employed at Engineering Ventures, P.C.)



- 400 bedroom, 4 story wood framed structure built over a one story concrete and steel framed deck.
- Wood framed floors consist of parallel chord trusses with wood stud bearing and shear walls.
- First floor consist of composite concrete and steel framing and a steel braced frame lateral system
- Elevated concrete deck designed for plaza and landscape loads.
- Concrete filled steel pipe pile foundation.



Project completed while on tenure at Becker Structural Engineers, Inc. Project Architect: CWS Architects Client: Pizzagalli Construction Company





- Structural Design of 23,500 square foot office and educational center.
- Composite steel floor framing
- Light Gage roof framing
- Curved Steel roof framing at eyebrow dormers, circular and semi-circular rooms.







Project completed while on tenure at Engineering Ventures, Inc. Client: Truex Cullins and Partners Architects



South Elevation



Framing during construction*

- 26,000 square foot office and manufacturing facility.
- Structural steel floor and roof framing.
- Structural Insulated Panel (SIP) roof.
- Steel moment frame lateral system.



East Elevation

*Photo Courtesy of Bast and Rood Architects Project completed while on tenure at Engineering Ventures Project Architect: Bast and Rood Architects



- 20,000 square foot three story building with laboratory and office spaces.
- Floor design at laboratory incorporated recommendations from a vibration consultant for sensitive equipment.
- Composite steel and concrete floor framing.
- Structural steel braced frame lateral system.
- Architecturally Exposed Structural Steel framing at main stair way.
- Designed for future expansion.



Project completed while on tenure at Becker Structural Engineers, Inc. Project Architect: Einhorn Yaffee Prescott



Photo Courtesy of Banwell Architects

- Structural design of 100,000 square foot school under the 2000 International Building Code
- Steel frame building with bar joist floor and roof framing.
- Lateral load resisting system is a combination of steel braces and CMU shear walls.



Project Completed while employed by Engineering Ventures, Inc. Project Architect: Banwell Architects



Police Station Elevation

- Wood roof trusses.
- Structural Insulated Panel (SIP) exterior bearing and shear walls.
- Wood stud interior bearing walls.
- Wood sheathed interior shear walls.



Police Station



Fire Station Addition

Project completed while on tenure at Becker Structural Engineers, Inc. Project Architect: Port City Architecture Contractor: Pizzagalli Construction Company



- 11,000 square foot commercial building.
- Structural steel and steel bar joist roof framing.
- Concentrically braced steel frame lateral system.
- Cantilever steel elements supporting tall parapets.



Project completed while on tenure at Becker Structural Engineers, Inc. Project Architect: CWS Architects



- Structural design of a 2700 square foot addition and renovations to an existing house.
- Design of the addition included dimensional lumber, engineering lumber, metal plate connected wood roof trusses and steel beams.
- Renovations required the addition of steel beams and new foundations to support loads where existing columns were removed to open up the living space.





Project Architect: Gawron Turgeon Architects Contractor: Risbara Brothers



- Structural design of custom private residence.
- Design of framing included both dimensional and engineered lumber.
- Three car garage includes workshop/loft on second floor.
- Cathedral ceiling combined with large window openings in living room required special design and detailing for gable end wall.



Architect: UK Architects Project completed while on tenure at Engineering Ventures

PRIVATE RESIDENCE



- Structural Design of a 1600 square foot cape style house
- Framing design included dimensional lumber roof, floor and walls.
- First Floor slab on grade with frost wall foundations.

