ENGINEERING SERVICES

Established in 2010, *Engineering Services of Vermont* provides engineering and design services in the disciplines of mechanical and electrical building systems. We are experts in HVAC, plumbing, fire protection, lighting, power distribution, communication and alarm systems. We have the capabilities to provide complete engineering, design and support services for any size project from concepts through construction. Our most commonly utilized services include:

Consultation Services:

- Consultation for code and permit requirements.
- Consultation for system requirements to suit the proposed occupancy.
- Engineering Consultation Services for claims remediation or for legal disputes.
- Expert witness and Expert opinions.

Field Investigation Services:

- Site Investigations and Special Testing to determine existing conditions and equipment.
- Investigate problems with existing MEP systems.

Studies and Reports:

- Studies and Reports for system alternatives, life cycle costs, code compliance, alternative energy systems, etc.
- Energy Audits.
- Feasibility studies for buildings.
- Energy Conservation Reports.

Engineering and Design Services:

- Conceptual Design: Define the Basis of Design, Define Code Issues, Conceptual system load estimating Conceptual level estimating, Develop Concept Drawings
- Preliminary Design: Finalize basis of Design, Develop Preliminary System Loads, Develop Preliminary Design Layout, Develop Preliminary Level Estimates
- Final Design: Final Design to prepare complete Construction Documents for the mechanical and electrical systems, Develop Project Specifications, Finalize estimates of the probable construction costs of the mechanical and electrical systems.

Permit Applications:

- Relative to the mechanical and electrical systems including ACT 250, energy conservation, equipment efficiency, underground fuel tanks, exterior lighting and utilities' ability to serve the proposed project.

Bidding Services:

- Preparation of Addenda, review of bids, review of Bidders' qualifications and recommendations for award of the Contract.

Construction Administration Services:

- Field Inspection Services
- Full Commissioning Services
- Preparation of Change Orders or Field Orders,
- Review of Change Proposals,
- Review of Payment Requests,
- Punch lists, final inspection and assistance during project close-out.

Energy Efficiency and Sustainable Design: Engineering Services of Vermont is committed to efficiency and sustainability. Sustainable to the Owner, considering energy efficiency, first cost, cost to operate and maintain as well as ease of Ownership over the life of the systems. Engineering Services of Vermont has been involved with many efficiency projects, working closely with Efficiency Vermont and other energy partners.

- Mechanical/Electrical Engineering member of the Design Team on the Vermont Public Radio addition and renovation project awarded **Efficiency Vermont's Best of the Best Commercial Construction Project, 2017**
- Engineering Services of Vermont is **Efficiency Vermont's Commercial Construction Energy Partner of the Year, 2016**
- Mechanical/Electrical Engineering member of the Design Team on the Essex Police Station project awarded **Efficiency Vermont's Best of the Best Commercial Construction Project, 2015**
- Design Team member on several projects with Net-Zero goal
  - Vermont Public Radio, Colchester, Vermont
  - Middletown Springs Municipal Offices, Middletown Springs, Vermont
  - Bethany Birches Pavilion, Plymouth, Vermont
- Mechanical/Electrical Engineering member of the Design Team on the first multi-family Passive House project in Climate Zone 6 in U.S.; Elm Place, Milton, Vermont

In addition to our traditional engineering services, Engineering Services of Vermont has LEED accredited personnel and has provided LEED services for many LEED projects. :

LEED Services:

- Building modeling
- Commissioning Services
- LEED submissions

DANIEL W. DUPRAS, P.E.

Mechanical Engineer
Principal

EDUCATION:

Associate, Architectural Engineering Technology, with Honors: 1984 Vermont Technical College, Randolph, VT

REGISTRATIONS:

Registered Professional Engineer:
Vermont,
Massachusetts,
Maine,
New Hampshire

PROFESSIONAL ASSOCIATIONS:

American Society of Plumbing Engineers, Vermont Society of Engineers, American Society of Heating, Refrigeration and Air Conditioning Engineers, Past Vice Chairmen of the Board of Vermont Professional Engineers

CAREER EXPERIENCE

2010 - Present	Partner of Engineering Services of Vermont, LLC
1996 – 2010:	President of Lane Associates Consulting Engineers, P.C.
1989 – 1996:	DuBois & King, Inc. Mechanical Engineer - Project Manager
1984 – 1989:	Lane Engineering, Inc. - Vice President and Mechanical Designer

CLAUS P. BARTENSTEIN, P.E., LEED-AP

Electrical Engineer
Principal

EDUCATION:

Associate, AE Mechanical Technology: 1986 Vermont Technical College, Randolph, VT

REGISTRATIONS:

Vermont, New Hampshire, New York, North Carolina, Massachusetts, Pennsylvania, Washington, California, Nevada and Arizona

PROFESSIONAL ASSOCIATIONS:

National Fire Protection Association (NFPA); Vermont Society of Engineers, National Council of Examiners for Engineering and Surveying (NCEES); U.S. Green Building Council (USGBC), LEED-AP certified; Emerge Alliance; Efficiency Vermont Design Professionals Advisory Board; State of Vermont Board of Professional Engineering, Vice Chairman (Governor appointment)

CAREER EXPERIENCE

2010-Present	Partner of Engineering Services of Vermont, LLC
2003- 2010:	Department Manager - Electrical Engineering, Stahlman Group
2001 to 2003:	Electrical Engineer, Stahlman Group, Concord, New Hampshire
1999 to 2001:	Electrical Engineer; Project Engineer, DuBois & King, Inc.
1994 to 2001:	Senior Electrical Designer, DuBois & King, Inc.
1989 to 1994:	Electrical Designer, DuBois & King, Inc.
1987 to 1989:	Electrical Draftsman; Electrical Designer, Lane Engineering, Inc.

JERRY L. MARSHALL, P.E.

Senior Mechanical Engineer

EDUCATION:

Bachelor of Science in Mechanical Engineering; 1994 University of Vermont, Burlington, Vermont

REGISTRATIONS:

Vermont

PROFESSIONAL ASSOCIATIONS:

American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE)

CAREER EXPERIENCE

2019 – Present:	Mechanical Engineer, Waterbury Center Branch Manager, Engineering Services of Vermont, LLC
2018 - 2018:	Mechanical Engineer, DuBois & King, Inc.
2017 - 2018:	Mechanical Engineer, Director of Engineering, Pearson & Associates, Inc.
2003 - 2017:	Mechanical Engineer, Pearson & Associates, Inc.
1995 - 2003:	Mechanical Designer, Hallam Associates, Inc.

Bellows Free Academy, St. Albans, Vermont

Engineering Services of Vermont worked with the Architect and School Building Committee to develop a facilities assessment report for the middle/senior high school buildings. The facility is comprised of two separate buildings; an original school building constructed in the 1930's with several additions from the 1960's and 70's, and the neighboring former hospital building to the north which is a nineteenth century mansion with a 1950's addition. Total area of the buildings is approximately 221,500 square feet. ESVT's work included inspecting the existing heating, ventilation, air conditioning systems (of which there are two or more systems, each), plumbing systems, electrical services and distribution, lighting, life safety lighting and fire alarm and telecommunications systems. Part of the inspection work was to meet with the Building Committee and facility personnel to identify deficiencies, what had been ongoing maintenance struggles and what worked for the School. Upon development of a draft report, additional meetings with the Building Committee occurred to discuss their review and comment on the report. Final report included assessment of the existing systems along with prioritized recommendations for repair, upgrade and replacement of systems, citing Code and safety deficiencies as the top priorities. With each recommendation, an order of magnitude cost estimate was provided.

Owner : Franklin Central Supervisory Union
Architect : Arnold & Scangas, Architects
Completed : October 2015

Westminster Public Safety Facility, Westminster, Vermont

The Westminster Public Safety Facility is a Vermont State Police barracks facility with a PSAP (public-safety answering point) for Vermont E-911 and offices for other Vermont law enforcement such as Fish & Wildlife. The building contains the PSAP, offices, locker rooms, Troopers room, processing, lock-up and meeting rooms within 20,500 square feet on one floor. The building is heated with two pellet-fired bio-mass boilers and hot water is generated with solar panels. The building has unique design requirements in that it was the first building of its kind in the State of Vermont required to conform to the requirements of NFPA 1221-2012, "Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems. Conformance with this Standard required close coordination and collaboration with State of Vermont Department of Fire Safety to apply in a reasonable manner for the use of the building. Engineering Services of Vermont was proud to engineer the mechanical, plumbing, electrical and fire protection systems as part of the Design Team led by Arnold & Scangas, Architects.

High Efficiency Design:

- Heating system is a pellet boiler heating system without fossil fuel back up;
- Dedicated outdoor air ventilation system;
- Lighting power density is 65% less than max allowed by VT Energy Code

Client References:

Ms. Rebecca Arnold, Arnold & Scangas, Architects 802-782-8241
(rarnold@arnoldandscangas.com)
Mr. Merle Miller, State of Vermont Dept. Building & General Services 802-828-5695
(merle.miller@vermont.gov)

Essex Police Station, Essex, Vermont

The Essex Police Station is a new construction project to provide the Town of Essex a 21,000 square foot facility which contains dispatching, squad rooms, areas for detectives and offices, locker spaces, evidence storage spaces, a fitness room, locker rooms and sally port. Engineering Services of Vermont performed all design engineering efforts to develop the mechanical, plumbing and electrical systems for the building. Engineering Services of Vermont was proud to be part of the Design Team and proud that the project received a 2015 Efficiency Vermont, Best of the Best, Commercial Building Design and Construction award.

High Efficiency Design:

- High efficiency water source heat pump heating/cooling systems;
- Dedicated outdoor air ventilation system;
- Solar domestic water heating
- Lighting power density is 45% less than max allowed by VT Energy Code

Client References:
Mr. David Roy, Wiemann Lamphere Architects 802-655-5020 (droy@weimannlamphere.com)

Weeks & Hanks Building Renovations, State office Complex, Waterbury, Vermont

Engineering Services of Vermont is providing engineering services for the complete renovations of two historical buildings in the heart of the State office Complex. These buildings have been generally unused since hurricane Irene and are being fully renovated into modern office space. Total of 41,800 square feet between the two buildings. The Design Team is led by Maclay Architects and John Ostrum (BGS). Construction is presently ongoing.

Client References:

Mr. Andrew Metayer, State of Vermont, BGS 802-793-8613 (andrew.metayer@partner.vermont.gov)
Mr. Bill Maclay, Maclay Architects 802-496-4004 (bill@maclayarchitects.com)

Blood Analyis Lab, Forensics Laboratory, Public Safety Building, State office Complex, Waterbury, VT

Engineering Services of Vermont is engineering services for the renovation of a portion of the Forensics Lab to create a new Blood Analysis Lab. Efforts included coordination with the Lab Personnel and BGS, design of medical exhaust systems mated to the lab hoods, including modifications to existing air systems in the area to ensure balanced systems and coordinating the routing of the ductwork through the existing building to get from the Lab on the second floor to out through the roof. Project completed October 2017

Client References:

Mr. Andrew Metayer, State of Vermont, BGS 802-793-8613 (andrew.metayer@partner.vermont.gov)

Vermont Public Radio - Colchester, Vermont

Engineering Services of Vermont provided mechanical, plumbing and electrical engineering as part of the Design Team to construct an approximately 14,500 square foot addition to the existing Vermont Public Radio 10,000 square foot office building in Colchester, Vermont. This project was an Efficiency Vermont "Net-Zero Pilot Project". The design of the building was focused on the usability and comfort of the building for the occupants while keeping energy use to a minimum. The energy use of the building is expected to be balanced with the rooftop PV solar collection system to ultimately make the buildings energy use "Net-Zero". Web based controls and monitoring systems have been installed to allow for proving out of the design and to allow fine-tuning of systems to keep the building on the Net-Zero track. Air-to-air heat pump systems were applied throughout the building to provide heating and cooling and heat recovery units monitoring carbon dioxide levels to provide demand control ventilation of the systems. Lighting is LED light source, throughout, utilizing occupancy sensors and daylight sensors with web-based lighting controls in the performance studio.

The facility is served with two generators utilizing differing fuels to allow the radio station continuous operation in the event of failure of normal utility power. The broadcast and recording studios as well as the performance studio posed challenges for mechanical and lighting systems. The performance studio is a key component to the building but is structurally separated for sound/noise purposes. Similarly, the design of the mechanical systems had to take into consideration mechanical vibrations and noise from air movement and design systems to eliminate or restrict the noise. Lighting design had to take into consideration the electronic noise that is created by the LED lighting that might be picked up during recordings; luminaires were carefully selected to provide minimal electronic noise and harmonic distortion.

High Efficiency Design:

- Low ambient, high efficiency heat pump heating/cooling systems without backup heating system;
- 90% efficient dedicated outdoor air ventilation system;
- Lighting power density is 45% less than max allowed by VT Energy Code

Client References:

Mr. David Roy, Wiemann Lamphere Architects	802-655-5020	(droy@weimannlamphere.com)
Ms. Laurie Kigonya, Vermont Public Radio	802-655-9451	(lkigonya@vpr.net)

University of Vermont – Alumni House - Burlington, Vermont

The Alumni House is the renovation of a historic mansion at 61 Summit Street in Burlington, Vermont. The project includes the renovation of the historic mansion and the construction of a large pavilion, attached to the mansion, as event space for Alumni and the School. The project team is working towards LEED for New Construction (LEED-NC) Gold certification for the project. All mechanical, plumbing and electrical systems within the building have been completely replaced. Mechanical systems are based upon air source heat pumps with back up hydronic heat and dedicated outdoor air supply systems utilizing heat recovery. Lighting systems will utilize LED luminaires throughout with automatic lighting controls exceeding the requirements of the Vermont Energy Standard.

High Efficiency Design:

- Low ambient, high efficiency heat pump heating/cooling systems;
- 90% efficient dedicated outdoor air ventilation system;
- Displacement ventilation utilized in Pavilion
- Lighting power density is 60% less than max allowed by VT Energy Code

Owner : University of Vermont; Cara Hanson
Cost : $2.8M
Architect : Bread Loaf Construction Corp.; John Dale
Completed : August 2016

Project Approach

Engineering Services of Vermont approaches every project in a similar way. Meet and review project goals and expectations, specifically for mechanical and electrical systems with the Owner and Design Team. From this meeting we would expect to have narrowed down the logical approaches/systems for the building to two or three options. We would high level schematic design the options, estimate cost and run through a Building Life Cycle Cost (BLCC) program to allow evaluation of the economics of the systems, looking at the first costs, maintenance costs, life expectancy of the systems and similar information to come up with a return on investment for each option. We would then review the results with the Owner to identify which options are the best fit for the project. Once systems are selected, we prepare a Basis of Design document for the mechanical, plumbing and electrical systems to outline what we are expecting to design and submit for review, evaluation and comment back from the Owner and rest of the Design Team. Once all is agreed upon and approved, we move forward into the development of Construction Documents with the confidence that we are designing systems that have been bought into by all stakeholders.

Project Team Members

- Jerry L. Marshall, P.E. will be the primary project team member for this Project.
- Daniel Dupras, P.E. will also be involved with this Project.
- We would be teaming up with Steve Schenker at S2 Architecture to provide the existing condition drawing documentation in AutoCAD format and any required proposed changes to the architecture of the building based on the proposed Mechanical HVAC Project.
- We would be teaming up with Shaun Patenaude at Alliance Mechanical, Alliance Group Inc., to function as the Mechanical Prime Contractor for this Project along with the Construction Manager for the Mechanical HVAC Project.