

SassCo Engineering Inc.

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SassCo Engineering, Inc.

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SASSCO ENGINEERING INC. - Tim Sass has over 30 years experience in civil, structural and mechanical engineering, consulting and design. Projects include designing residential and commercial structures, evaluating structural damage to residential and commercial buildings and mediating construction claims. Services include providing design documents necessary for construction and structural remediation. Investigating causes of failures, documenting current conditions and provide expert testimony. Typical projects include evaluating collapsed commercial and residential structures, foundation and roof damage. Evaluate existing buildings conformance to building codes and normal design practices.

Experience includes designing containment structures to ensure worker safety handling hazardous materials. Recent projects include designing containment structures including ventilation and support structures to allow repairing and painting various bridges in Pennsylvania and New Jersey. Additional experience includes investigating causes of hazardous spills from large fiberglass and steel underground fuel storage tanks.

Recent accomplishments include presenting his “Cable Stayed Cathedral Ceiling” paper to the International Conference of Structural Engineers and Architects (ICSA 2010), attaining Leadership in Environmental and Energy Design (LEED) certification and undertaking an Adjunct Professorship at the Pennsylvania Institute of Technology.

Registered Professional Engineer in Pennsylvania, Massachusetts, Ohio, New Jersey and Idaho.

Education:

Purdue University, W. Lafayette, Indiana, Master of Science Civil Engineer 1984.
Attended Purdue on a Scholarship.

University of Idaho, Moscow, Idaho, Bachelor of Science CE 1982. Was a Research Assistant to the Structural Engineering Department in my senior year at Idaho.

Harvard University, Cambridge, Massachusetts, CSS in Administration and Management, 1985 - 1987.

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EMPLOYMENT HISTORY:

Engineering:

- Designed containment structures, debris shields and temporary work platforms to protect workers from hazardous materials during repairs to existing bridges. Projects include repairs to the Betsy Ross Bridge, the Blue Route Extension Overpass to Service Plaza, Hares Hill Road Truss Bridge, the I-95 Terminal Avenue Overpass among others. Work includes calculating ventilation requirements to ensure worker safety during handling of hazardous materials needed to complete bridge repairs and renovations.
- Responsible for overseeing underground tank repairs. Evaluated cause of damage to 20,000 – 30,000 gallon underground fuel storage tanks. Work included ground water testing to determine extent of hazardous contaminants leaking from the tank into the ground water, repairs and remediation including tank removal.
- Evaluated structural damage to various residential and commercial buildings. Determined cause of damage, documented current condition and provide expert testimony regarding nature of damage. Projects include evaluating collapsed commercial and residential structures, foundation and roof damage. Evaluate existing buildings for conformance to building codes and normal design practice. Provide expert structural engineering testimony regarding findings during arbitration and court cases.
- Provided Civil and Structural oversight of construction of a reinforced concrete bridge and box culvert accessing two residences in Lower Merion Township. Responsible for storm water runoff, drainage and structural calculations as well as design drawings for the Department of Environmental Protection and Lower Merion Township permits. Responsible for providing Engineering support during contractor selection and construction.
- Responsible for Structural calculations and drawings for South Brunswick Shopping Center renovation in South Brunswick, New Jersey. Provided Structural designs and details for new commercial retail spaces including new and reinforced existing steel bar joist roof structures, concrete block walls and poured concrete foundations.
- Responsible for Structural design and construction oversight of a new reinforced concrete box culvert to provide drainage for the new Lowes commercial retail center in Wilkes-Barre, Pennsylvania. New culvert provided a transition between an existing six foot diameter circular storm water drain to a square two foot by twelve foot opening in an existing retaining wall structure.

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- Provided Structural drawings and design calculations for nine new condominium units located at Terrace and Grape Streets in Manayunk, Pennsylvania. Provided foundation, and framing details in conformance with the International Building Code (IBC 2003) and sufficient to obtain building permits from the local Licensing and Inspections officials.
- Provided Structural assessment of commercial deck structures to verify deck structural integrity after flooding of the Schuylkill River. Performed Structural evaluation of piers and deck structures for the Manayunk Brewery and Grape Street restaurant and bar to confirm continued occupancy after flood waters inundated the deck structures.
- Provided mold and moisture abatement specifications for various residential and commercial clients. Familiar with testing and construction methods used to treat mold infested buildings.
- Designed, analyzed and provided Structural drawings for reinforced concrete retaining walls for various commercial and residential clients. Provided specifications for soil surveys and construction of reinforced concrete retaining wall. Familiar with surcharge, hydrostatic and soil load design requirements as well as local and national building code requirements.
- Provided Structural Engineering analysis of a failed 20,000 square foot concrete slab floor in a refrigerated warehouse in Edison, New Jersey. Provided engineering analysis of existing design to determine cause of buckling and provide remedial methods.
- Calculated residual strength of fire damaged steel beams, provided testing parameters and evaluated test results on damaged structural I-beams for a forty foot wide steel frame bays in a manufacturing based structure in Northern Pennsylvania. Designed replacement roof deck and steel frame reinforcement to insure the structural integrity of the two bays subjected to fire and explosion damage.
- Provided Structural Engineering analysis of bowed concrete block walls contained in a City of Philadelphia owned structure in North Philadelphia.. Designed and detailed structural drawings used to repair the thirty foot high damaged concrete block walls to insure the ongoing structural integrity of the building walls and roof.
- Designed and provided structural drawings for a 42,000 s.f. multi-story steel frame and concrete slab commercial building in E. Whiteland Township. Responsibilities included sizing structural steel beams and columns, concrete slabs, footers, steel roof framing, masonry elevator and stairwell cores.
- Provided structural engineering design services for various residential and commercial clients. Responsible for designing structural beams, columns and foundations for

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residential and commercial structures. Provide required size of foundations, columns and beams per State, IBC and BOCA design codes. Submit required (AutoCad) drawings and documents to local building authorities to obtain necessary permits for construction

- Documented current condition of commercial structures and provided design documents to assist in assessing cost of rebuilding damaged columns and deteriorated masonry walls within a 75,000 sf warehouse facility in Philadelphia. Also provided structural assessment of a 40,000 sf commercial building in Horsham, PA. The entire rear wall had racked after being struck by heavy equipment operating inside the building. Provided design documents to repair damage and methodology to follow during construction. Work included redesigning the wall foundation footer, column piers and realignment and reinforcement of racked wall.
- Provided structural engineering evaluations and provided remedial solutions for residential units in Wayne, Pennsylvania. The soil beneath the building's concrete slab settled, leaving the slab unsupported. The condition was discovered after the floor had collapsed. Supplied redesign of floor system and identified contractors capable of underpinning slab and installing necessary piers to properly support the floor and foundation system
- In charge of the design and manufacture of vacuum equipment systems for use in the semi-conductor, pharmaceutical and chemical industries. Have design and manufacture experience with dry and wet vacuum pumps, pressure vessels, condensers and freeze dryers. Familiar with ASME code and rotating equipment design requirements. Have designed components to meet thermal, stress, dynamic and acoustic requirements.
- Sized the reinforced concrete foundation and structural steel, created AutoCAD connection details and material specifications for a 10,000 sf commercial building expansion. Designed for wind, snow, seismic and mechanical loads. Provided engineering budgets and schedules to contractors and architects. Intimately familiar with AISC and ACI as well as State and Local Building Code usage.
- Sized reinforced concrete foundations and structural supports for two 12' diameter tanks used in a chemical plant. Designed for wind, snow, and seismic loads. Created AutoCAD drawings of structural connections and the concrete foundation with reinforcement details and spacing.
- Expert at ANSYS and Patran Finite Element modeling and CAD drawing creation using AutoCad, and Pro-Engineer. Have design experience in stationary and rotating structures. Familiar with dynamic and modal analysis as well as designing for fatigue and crack growth.
- Responsible for reviewing test results of various power plant hardware to ensure

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structural integrity of the component and its mounting system to withstand seismic loads. Supplemented vendor data with dynamic analysis when data was incomplete.

Mediation:

- After completion of a million dollar expansion to an existing home, the homeowner and general contractor began to dispute construction costs and defects. Rather than present their cases to a jury, counsel for the homeowner and general contractor identified the areas in dispute and submitted the list of disputed items to SassCo Engineering for mediation. As part of the mediation, SassCo Engineering reviewed construction documents and examined each disputed item during a site visit attended by both sides. After the site visit, research was carried out to quantify the alleged defect and substantiate the mediated decision. A summary of the mediated items was assembled along with the supporting information for the mediated decision. The entire process was completed in several days.

Mechanical Engineering:

- Designed the HVAC system for the Music Training Center's auditorium at the Airport Shopping Mall in Montgomery County, Pennsylvania.
- Designed the HVAC system for the 42,000 square foot headquarters for Carota Landscaping in King of Prussia, Pennsylvania.
- Project leader for GE's Dry Low Nox LM6000 and LM2500 Industrial Gas Turbine Combustion Frame. Supervised a six person team responsible for Pressure Vessel design and analysis. Responsible for a \$2 million analysis and design budget. Established design criteria and test programs necessary to substantiate the new Combustion Frame Design. Created program plans and scheduled design development from initial concept through manufacture.
- As Design Engineer for Military and Commercial structures, designed components for thermal and pressure loads, piping interfaces, turbine and aeromechanical considerations. Used the ASME Pressure Vessel Code Sect. VIII, GE specs, ANSI Y14.5 and Design Practices as well as finite element analysis and hand calculations to design structural components.
- Designed the High and Low speed gears for GE's propulsion system for the Sea Wolf submarine. Predicted stresses and deflections and set initial alignment requirements between the gear set and turbine set.

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- Designed replacement hydrogen handling structure for Cabot in Royersford, Pennsylvania. Responsible for creating design calculations and construction drawings to remove existing pad and mechanical equipment and replace the pad with a new mechanical equipment, concrete slab and steel framed building. Responsible for sizing the concrete foundation, columns and beams as well as designing the mechanical and structural components of the new hydrogen handling station.
- Created drawings, testing programs and project schedules for a new moisture detector at Ametek. Developed mechanical and structural design components needed to construct the new detector. Created necessary drawings, identified and selected contractors to fabricate various piping and mechanical components. Responsible for project management and design documents.
- Project Leader for GE's Dry Low Nox LM6000 and LM2500 Industrial Gas Turbine Combustion Frame. Supervised a six person team responsible for Pressure Vessel design and analysis. Responsible for a \$2 million analysis and design budget. Established Design criteria and test programs necessary to substantiate the new Combustion Frame Design. Created program plans and scheduled design development from initial concept through manufacture.
- As Design Engineer for Military and Commercial hot structures, designed components for thermal and pressure loads, piping interfaces, turbine and aeromechanical considerations. Used the ASME Pressure Vessel code Sect. VIII, GE specs, ANSI Y14.5 and Design Practices as well as Finite Element analysis and hand calculations to design gas turbine components. Received a Department level achievement award for my contributions.

Civil Engineering:

- Calculated grade line and cut and fill requirements for road construction. Inspector for a pipeline project. Established pipeline grade line and tank elevations. Also located property lines and mineral claims.