

Statement of Qualifications



 **GARRISON ENGINEERING**

Integrity in Engineering

Welcome to **Garrison Engineering**. We are proud to offer an array of professional services

➤ Heating, Ventilation and Air Conditioning (HVAC)	➤ Industrial Processes, Boilers, and Controls
➤ Plumbing Design	➤ Pumpstations, Controls, Tanks, & Processes
➤ Fire Protection Planning and Specifications	➤ Energy Code Compliance
➤ Energy Analysis and Mechanical System Evaluation Services	➤ Water Systems and Water Treatment

Our Mission

- ◆ Provide the highest quality professional engineering services.
- ◆ Bring innovation and value to every project.
- ◆ Be mindful of budgets; both our own and finished construction costs.
- ◆ Foster positive working relationships with the reviewing agencies, subconsultants, contractors, and the community.

About Us

Garrison Engineering Corporation has been in business since 1994. We have completed over 2,000 consulting jobs in the Pacific Northwest and beyond. We are active in the community as members of ASHRAE, AWWA, WSGWA, Rotary, and Toastmasters.

Carl Garrison, PE, is the owner of Garrison Engineering. Carl is a licensed mechanical engineer in Washington, Oregon, California, Idaho, Nevada, Arizona and is approved by NCEES for licensure in other States.

Team Building

Garrison Engineering is committed to teamwork with you and any other consultants or governmental agencies your project requires.

Call on the Garrison Engineering team to help solve your challenging project.



GARRISON ENGINEERING

1997 Park Lane, Burlington, WA 98233 • Ph (360) 707-5656 Fax (360) 707-5858 • www.gecorp.net

REPRESENTATIVE PROJECTS

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Projects: Mechanical Engineering - Government Facilities

- **Whidbey Naval Air Station, Whidbey Island, WA. 2007-2008**, Hanger 6, 7, & 8 heating system change out. Garrison Engineering and SF Wright Group combined to provide the design to replace the existing steam/forced air heating system with radiant tube heat for energy conservation. Over one mile of radiant gas tube heaters were specified and installed.



- **Chugach Industries, NAS Whidbey, Whidbey Is., WA, 2007.** Garrison Engineering teamed with SF Wright Group to provide mechanical consulting for NAS Whidbey Island boiler room system changes.

- **Whatcom County Courthouse, Bellingham, WA. 2007.** Garrison Engineering and SF Wright Group combined to provide mechanical engineering assistance for LEED Certification of the existing Whatcom County Courthouse building.



- **Whatcom County Jail, Bellingham, WA. 2003 & 2007.** Gar-



rison Engineering designed two boiler feed pumps and piping changes to control the existing boilers to operate from a series, to a parallel operation. Isometric boiler room drawings with specifications were prepared to delineate the scope of work between the mechanical contractor, and the electrical contractor.



- **Anacortes Library, Anacortes, WA. 2005-2006.** Garrison Engineering consulted along with Seimens Controls to reduce energy and consumption of the newly constructed building by 30 percent.

- **Anacortes City Hall , Anacortes, WA. 2002-2005.** This two phase project consisted of an inspection and report to determine the most cost effective way to improve the energy efficiency of the existing building. Then provided plans and specifications to replace one boiler and modernize the boiler room and control system.



- **Work source Offices, Mount Vernon, WA. 2005.** HVAC design for two story 30,000-sf building using 5 mechanical units. Four of the units used Honeywell zone controls for room by room temperature control.

- **DSHS Building, 2002.** Mechanical HVAC design for the DSHS building in Bellingham, WA. This single story tenant improvement project re-used eight zone air handlers with new duct layouts, and seven complete new constant volume systems for a total of fifteen zones.

Projects: Mechanical Engineering - Educational Facilities

- **Whatcom Community College, Bellingham WA. 2007.** Converted two classrooms to office space. Rerouted duct and controls and removed laboratory sink with office sink.
- **St. Paul's Episcopal Upper School, Bellingham WA. 2007– 2008.** Garrison Engineering and SF Wright Group combined to provide HVAC plumbing design for a major expansion of the existing high school. The design includes a water source heat pump system with two boilers and a two cell fluid cooler.
- **Western Washington University - Library 3rd and 4th Floor Renovation, Bellingham, WA. 2006-2007.** Garrison Engineering was the mechanical sub consultant to James Williams Architect for the renovation of the 3rd and 4th floor HVAC system.
- **Western Washington University - Boiler Room Feed water Pump Project, Bellingham, WA. 2006-2007.** Garrison Engineering was the primary consultant for this mechanical, structural, and electrical engineering project. The scope included relocating two existing boiler feed water pumps and the design for two new pumps. Design elements include NPSH calculations, structural supports for earthquake protection, electrical load calculations, plans and specifications. Project costs: approx. \$140,000.
- **Western Washington University - Carver Gym Remodel, Bellingham, WA. 2005-2006.** Garrison Engineering was the mechanical sub consultant to RMC Architects for the renovation of the men's locker room and pool ventilation study.
- **Western Washington University - Humanities Ventilation Cooling, Bellingham, WA. 2003.** Garrison Engineering was the primary consultant for this mechanical, architectural, structural, and electrical engineering project. The scope included rerouting and improving the outside air into the Humanities building. Tasks included use of x-rays to locate structural members in concrete, design of plenum for return and outside air, and sizing a cooling fan for an existing generator. Project costs: approx. \$100,000.
- **Immaculate Conception School, St. Joseph Center, HVAC. Mount Vernon, WA. 1998.** Garrison Engineering provided the HVAC design for this private school project. The design includes three classrooms, a multi-purpose room/gymnasium, stage, offices, and kitchen.
- **Skagit Valley College, Campus Center and Bookstore, Mechanical and Structural Design. Mount Vernon, WA. 1997-1998.** Provided civil, structural, mechanical, and electrical plans and specifications for the remodeling and expansion of existing buildings.



Projects: Mechanical Engineering - Multi-family

- **Chandler's Square, Anacortes, WA. 2009-2010.** Garrison Engineering provided plumbing and mechanical HVAC design for this three story adult independent living complex. The plumbing systems included two boilers for domestic hot water and two boilers for radiant/hot water heating. The common areas were conditioned with forced air split systems using radiant coils for heat and refrigerant for AC. The building controls were designed and installed by ATS of Burlington, WA.



- **Whatcom Opportunities Regional Center, Lynden, WA. 2010-2011.** Garrison Engineering provided HVAC and plumbing design for this three story condominium located at Homestead Golf and Country Club. Unique features of this building include: forced air heat with split system heat pumps to each unit; separate gas, water, and electric meters; and individual garage spaces for each condo owner.



- **Harris Square Condos, Bellingham, WA. 2004-2005.** Garrison Engineering prepared plumbing plans and specifications for three condominium buildings, 4 and 5 stories in height. The buildings included 92 residential units, ground floor retail, and underground parking. Basic plumbing was designed for future tenant improvements to the ground floor. A 3,000-gallon grease interceptor was specified for a future ground level restaurant. Our work was for Right-Way Plumbing and Heating submitted as a design-build package.



- **Gladstone Apartment Parking, Bellingham, WA. 2004.** Garage ventilation design for a multi-story apartment building. Our design work was for Bel-Aire Heating and Air condition as part of a design-build package.

- **Where the Heart Is - Assisted Living, Burlington, WA. 1999 - 1998.** Provide complete mechanical plans and specifications for 60-unit assisted living facility. Eight units are for residents with dementia. Resident rooms have heating and cooling with packaged terminal heat pumps, the common areas have split-system gas fired heat pumps and natural gas fire places. The design included plumbing fixtures and fire sprinkler specifications.



Projects: Mechanical Engineering - Commercial and Industrial Facilities

- **Community Foods COOP, LEED Project, Bellingham, WA. 2007.** Garrison Engineering and SF Wright Group combined to provide complete mechanical and plumbing design for LEED certified supermarket.
- **Schnitzelz Restaurant, Bellingham, WA. 2005.** HVAC and Plumbing design for the conversion from American Turkey Restaurant to Schnitzelz Restaurant. Work included site visits to verify the condition and as-built the existing of plumbing and mechanical equipment. The designed HVAC equipment included condition make up air with a modulating gas furnace and 2-stage air conditioning. The plumbing plans included all new fixtures. Our plans and specifications were prepared in accordance with the owner and Bellis Fair Mall requirements.



- **Frontier Bank, Mechanical Design. Bellingham, WA. 2003.** Provided mechanical design for 1,800-sf bank remodel. tasks included zoning spaces to accommodate existing HVAC units
- **NW Honda Dealership, Mechanical Design. Bellingham, WA. 2003.** Supplied HVAC and plumbing design for 32,000 square foot auto dealership, including 3,500 square foot auto show room, auto shop, and support offices. The heating and cooling system consisted of split system gas furnaces for offices, a rooftop air conditioner for the showroom and radiant gas heat for the repair shop. An underfloor ventilation system was used in the shop area for automotive exhaust.



- **NW Pathologist Lab, Bellingham WA. 2003.** Extensive remodel of building to accommodate medial clinic and labs. Garrison Engineering provided energy calculations and design for the exiting facility. The project included a 15-ton make up air unit and re-zone of spaces to use several existing air conditioning units.
- **Kaloko Water Turbine, Kaloko HI. 2010.** Garrison Engineering assisted Soar Technologies to design a regenerative blower for the purpose of pressurizing the turbine cavity of two electrical generating water turbines. Each turbine uses waste head pressure to generate approximately 30 hp of electrical energy.
- **MagnaDrive, Bellevue, WA. 2010.** Corrosion control and make up water treatment for various magnetic variable speed drive units. Drives range in size from 300-4,500 hp. The technology presented in our project report will be utilized in future and retrofitted drive units. This project presented unique challenges such as treating uncertain source water for cooling, researching and recommending the proper mix of corrosion control chemicals for an open-loop recirculating cooling system, operations in extreme cold weather conditions, and the various dissimilar metals used in the drive units.

Projects: Mechanical Engineering - Industrial Facilities

- **Wesweld Fabrication Shop and Office, Stanwood, WA, 2005.** HVAC design for 10,000-sf welding and paint shop with two-story office area. The design included a pre-manufactured paint booth, welding ventilation, and heated make-up air for the shop area. Office area included a high efficiency split system AC with gas furnace and an economizer capable of 100 per cent outside air.
- **Janicki Building 4 office HVAC and industrial control room ventilation, Sedro-Woolley, WA, 2005.** HVAC design for the two floors of offices within Building 4. The design included 4 HVAC units each with Honeywell zone controls for room by room temperature control. The control room design provided a positive pressure inside the space at all times using 100% conditioned and HEPA filtered outside air.
- **Marquez & Marquez, South Gate, CA, 2002.** Tortilla factory. The project consisted of mechanical HVAC, plumbing and industrial ventilation design for the proposed office, production and warehouse in South Gate, CA. The design includes a large roof-mounted electrostatic precipitator, several large make-up air fans, stainless steel hoods, and 10 psi gas piping. The industrial waste system includes floor trenches, a Sweco vibratory screen, and concrete vault style clarifier.
- **Dairygold Creamery, Issaquah, WA, 2006-2007.** Garrison Engineering designed a pH neutralization system to treat the waste water leaving the plant. The project included continuous pH monitoring and control, underground concrete storage vaults, a motorized mixer, and preparation of a project report that was approved by King County.\
- **Arctic Ice Cream, 2006-2007.** Garrison Engineering designed a pH neutralization system to treat the waste water leaving the plant. The project included diversion and storage of waste water, continuous pH monitoring and control, underground concrete manhole and a “cutter” type macerating pump, along with the preparation of a report that was approved by King County
- **Vitamilk Dairy, Greenlake, WA, 2006-2007.** Garrison Engineering designed a pH neutralization system to treat the plant waste water. The project included evaluation of the proposal from the site contractor, recommendations to change the proposal to a less expensive solution, preparation of plans and specifications along with a project report that was approved by King County.
- **Safeway Bread Plant, Richmond, CA. 2010.** Garrison Engineering teamed with Tim Garrison, PE to provide structural calculations and construction drawings for the addition of a bread manufacturing process into the existing plant. Work included analysis and design changes to the roof and equipment foundations.



Vitamilk Dairy pH equalization tanks

Projects: Mechanical Engineering - Industrial Facilities

- **Lucerne Foods Preserve Plant, Merced, CA 2009.** Mechanical and Structural design for the addition of cooling and ventilating equipment for food processing plant. The project includes a whole factory air balance, mechanical and structural consulting, and preparation of plans and specifications. The project includes 4-20,000 CFM evaporative coolers, exhaust fans, water supply and drainage piping, and structural analysis of the existing building to accommodate the specified equipment.



- **Safeway Beverage Plant, 2008, Bellevue, WA 2008.** Mechanical and structural design to capture all of the existing plant effluent and treat it for pH adjustment. The project included a sanitary sewer manhole with duplex pumps and controls, two plastic storage tanks with pH adjustment using caustic soda and motorized mixing, continuous pH monitoring and control, structural analysis and design of the platform for a 3,650 gallon tank and mixer.

- **Safeway Bread Plants, 2008. Bellevue, WA, and Richmond, CA.** Provided structural engineering and design services for three separate projects. Projects included large equipment foundation design, tank foundation design, and secondary containment structural design.



- **Tesoro, Anacortes, WA, 2008.** Oil refinery mechanical control room. Project included demolition of antiquated mechanical cooling equipment, followed by design of two 15 and 12 ton water cooled, steam heated air handling units and associated ducting.



Tesoro water cooled, steam heated air handler

- **Impco, Kent, WA 2001.** Engine room test lab. The project consisted of two phases: Phase 1 - Mechanical HVAC design for the proposed Tenant Improvement to an office testing/warehouse building in Kent, WA. Phase II - Energy balancing calculations and design of a 4-cell engine test facility for all cooling and ventilation systems. The test cells were capable of testing up to 600 hp engines. Ventilation rates for the engine test rooms were 150 air changes per hour. The cooling water design included pumps, heat exchangers, valves and controls.

Carl Garrison, P.E.
Principal Engineer
Garrison Engineering

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Professional Registrations

Mechanical Engineer - Washington, Oregon, California, Idaho, Nevada, Arizona and NCEES certified for registration in other States.

Affiliations

ASHRAE
American Water Works Association (AWWA)
Sedro-Woolley Rotary
Burlington Toastmasters

Experience

Carl Garrison is the owner of Garrison Engineering and is responsible for the company. He has worked on residential, commercial, institutional, and industrial projects. Carl's experience includes: HVAC, plumbing, and fire protection; food process engineering, water and wastewater engineering; supervision of multi-disciplined engineering projects and business management.

Listed below is a partial list of relevant projects.

Government

- Whatcom County Public Safety Building, Bellingham, WA
- City of Anacortes, Energy Study & Boiler Improvements, Anacortes, WA
- USDA Forest Service, Darrington & Concrete, WA
- East County Multi-Service Building, Concrete, WA
- Public Utility District #1 of Skagit County
- USFS 2-story Office Complex in Sedro-Woolley, WA
- Bio Solids Building, City of Mount Vernon
- North Cascades Gateway Center, multiple utility and HVAC projects, Sedro-Woolley, WA

Commercial

- CJ's Beach House, Birch Bay, WA
- Work Source Office, Mount Vernon, WA
- Schnitzels Bellis Fair Mall, Bellingham, WA
- Hawthorne Funeral Home, Mount Vernon, WA
- Lincoln Theater, Mount Vernon, WA

Health Care Projects

- Chandlers Square Senior Living, Anacortes, WA
- Chateau Valley Assisted Living, Woodinville, WA
- United General Hospital Transitional Care Unit, Sedro-Woolley, WA
- Homeplace Assisted Living, Oak Harbor, WA
- Homeplace Respite Care Center, Burlington, WA

Schools

- St. Paul's Upper Middle School, Bellingham, WA
- Western Washington University, Multiple Projects, Bellingham, WA
- Sedro-Woolley School District, multiple projects
- Immaculate Conception Elem., Mt Vernon, WA
- Skagit Valley College, Bookstore & Campus Center, Mount Vernon, WA

Residential and Multi-Family

- Chestnut Park, 14 Story Condos, Bellingham WA
- Harris Square 5 & 6 Story Condos, Bellingham, WA
- Military Housing - 200+ units, Grand Forks ND
- Military Housing - 200+ units, Fort Lewis, WA
- Mitchell Place Apartments, Federal Way, WA
- Vintage Apartments, Mount Vernon, WA
- Maddox Crest Condominiums, Mount Vernon, WA
- Lincoln School Senior Apts, Stanwood, WA
- Snowater Condominiums, Whatcom Co. WA

Hotels

- Holiday Inn Express, Marysville, WA
- Hampton Inn and Suites, Burlington, WA
- Hillside Motel, Mount Vernon, WA

Supermarkets

- Community Foods Coop, Bellingham, WA
- Scotts Marketfresh, Blaine, WA
- World Market, Mount Vernon, WA

Industrial

- Safeway, Bellevue, WA, Richmond CA, Los Angeles, CA
- Pacific Mariner, LaConner, WA
- Dairygold Dairy, Issaquah, WA
- Janicki Industries, Bldgs 1&4, Sedro-Woolley, WA
- Arctic Ice Cream, Seattle, WA
- Marquez/Marquez Foods, South Gate, CA
- Tesoro
- Texaco
- Tri Valley Growers, 10 food processing factories in CA

Public Water Systems

- Hemmi Road, Whatcom Co.
- Glacier Springs, Whatcom Co.
- Juniper Beach Water, Island Co.

Sébastien Boucher
Garrison Engineering
Project Engineer

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Education

M.S in Mechanical & Industrial Engineering
ARTS ET METIERS Paris Tech (National Graduate Engineering School)
Paris, France

Affiliations

French American Chamber of Commerce, Toastmasters

Experience

- Management
- HVAC and plumbing design
- Piping and fitting design
- AutoCAD
- Budgeting, cost tracking, and planning
- Sign design, construction, and installation

Job History

- Garrison Engineering (February 2011-Present) HVAC and Plumbing design project engineer. Duties include energy analysis, conceptual design for HVAC and plumbing, municipal pump station design, equipment selection, preparation of plans and specifications. Skills and specific training in AutoCAD, DOE2/Equest energy analysis software, Elite CHVAC, and Washington State Energy Code analysis.
- Signtech (March 2009-September 2010) - Project Engineer: Responsible for the design & manufacture stages of many different customized sign projects. Management of sign designers according to customer requirements, location, visibility & local sign codes & standards. In charge of estimating & contracts writing
- CEGECOM (2009-2010) - Project Engineer: Management of the initial phase of renovation of an occupied office building. Specifications, call for bids & contractors prequalification. Coordination of the temporary relocation of employees
- AXIMA SEITHA GDF SUEZ (2004-2008) HVAC/Plumbing Manager: Successful completion of commercial & healthcare projects in accordance with the required specifications, on-time, on-budget (between \$150,000 & \$350,000) and to the satisfaction of the clients. Management of the project team: Designers & AUTOCAD operators, Field Foremen, Subcontractors & other internal departments (BMS-Automation, Purchasing, Accounting. Assistance in the design of HVAC & Plumbing systems, review of technical documents & equipment selection Participation in the weekly Project Managers and Construction meetings / Daily contacts with clients. Responsible for budget, cost tracking, planning, scheduling, change order quotes and monthly billings.

Mechanical Engineering Project Experience

- Skagit Valley Hospital, Founders Building and MLJ Building. Prepared as-built plan sets for both buildings, plus HVAC and plumbing design modifications for tenant improvements to both buildings.
 - Eight Story office building and 4 floors underground parking, Paris, France. Project included a ground floor restaurant, cafeteria, kitchen and archive rooms. Building had 7 floors with a total of 260,000 sq feet of open space offices and a roof top with HVAC systems. Budget of \$5 millions for HVAC
 - Theatre Renovation, Nimes, France: Creation of a new theater in an existing building and temperature control of an existing conference room. Budget of \$350,000 for HVAC & Plumbing. Temperatures of both rooms controlled by 2 new CIAT multi-bloc air handlers, Trane chillers, and Siemens controls.
 - Cytotoxic Department of the Public Hospital, Montpellier, France: Transformation of an existing office to a clean room. Budget of \$200,000 for HVAC & Plumbing.
-

Brandon Peters
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Project Engineer

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Education

B.S. in Mechanical Engineering Technologies
Central Washington University 2009

Affiliations

Burlington Toastmasters, President, 2008-Present

Experience

Group A and Group B Drinking Water Systems
Pumps, Valves, and Piping
AutoCAD Level I and II
Woodworking– Apprentice Cabinet Maker

Water Treatment Design
Water System Controls
Solidworks 3-D Modeling

Job History

- Garrison Engineering (June 2008-Present) – Project Engineer: Draft existing layouts, design distribution pipelines, calculate flow rates, size pumps, treatment design, coordinate for approval from Washington State DOH, work with WSDOE and WSDOT, and overall water system design.
- Chelan County PUD Internship (June 2006-September 2006) - Water and Waste Water Division: Uni-directional flushing for hydrants, GPS locates for underground septic tanks, calculations of storage reservoir tank fluctuations.
- Vic Peters Cabinets (July 2003-June 2008) - Apprentice Cabinet Maker: Construction and installation of kitchens, bathrooms, vanities, bedroom closets and countertops. Experience includes: milling, sanding, edge-banding, routing, boring, cutting, staining and finishing.

Water Systems

- Lake Meridian Estates Group A Water System, Kent, WA. Design of Arsenic treatment system.
- Juniper Beach Water District, Group A Water System, Island County, WA: Design of pump-house and pipeline for tie in to existing water system, creation of Water System Plan.
- McHaven Inc, Group A Water System, Skagit County, WA: As-built drawings for existing surface water treatment.
- Township 29, Group A Water System, Island County, WA: Pump house design for arsenic treatment and drainage pipeline design.
- Prairie Estates, Group B Water system, Island County, WA: Arsenic treatment design for existing water system.
- Hillside Motel, Group A Water System, Skagit County, WA: Storage tank design and pump sizing for expanding existing system.
- Residential treatment systems to remove arsenic and fluoride.
- Buzzie Lane, Group B Water System, Skagit County, WA: Pump house and pipeline design for 4 lot water system.
- Bertelsen Winery, Group A TNC Water System, Skagit County, WA: Treatment system to remove hardness, manganese, and iron from the well water. Creation of a Water System Plan for a Group B system.
- South Blakely Maintenance Association, San Juan County, WA: Distribution pipe design and treatment for surface water.
- Eagle Valley, Group A Water System, Skagit County, WA: Design disinfection for 51 connection system.
- Fisherman Bay, Group A Water System, San Juan County, WA: Design pump station for pressure increase.

Mechanical and Plumbing Design

- Chateau at Bothell Landing II, Bothell, WA: Review of 5-story building plumbing riser diagrams.
 - Chandler's Square, Drafting and design of the HVAC and plumbing for 3 story 25 unit apartment bldg.
 - Skagit Valley Hospital, Mt Vernon, WA: Review and analyze existing air flows and design filtration equipment.
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