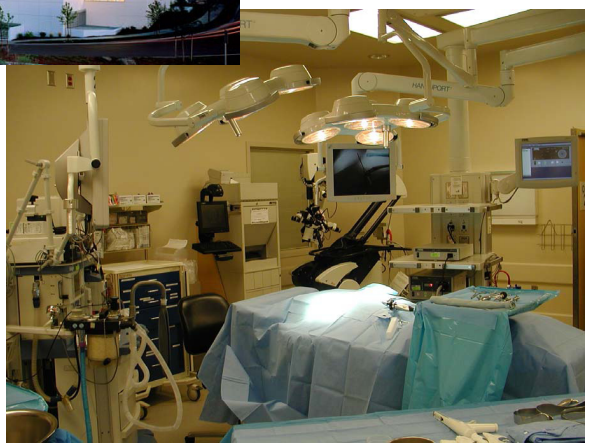
PROJECT EXPERIENCE

Healthcare

Sacred Heart Medical Center – Women's Services & Surgery Center, West Wing Addition

Spokane, Washington

Mechanical engineering services for a 235,000 s.f. eight-story addition and 88,500 s.f. remodel to an existing medical center located on a bluff above the downtown area of Spokane. The addition included 24 operating suites, central processing and sterilization department, birthing center, neonatal intensive care (NICU), laboratories, and physician clinics. New boiler plant and emergency generator plant were provided to support the new facility. Existing chiller plant was upgraded and replaced to provide the additional 1,500 tons of chiller capacity, additional medical vacuum plant equipment, and steam boiler plant accessory replacements. New medical gas manifolds were also provided to support the new facility. High-rise stairwell and elevator shaft pressurization systems and fire sprinkler systems were provided for life safety.



PROJECT EXPERIENCE

Healthcare

St. Mary's Regional Medical Center – Emergency Department Addition and Renovation

Lewiston, Maine

Mechanical engineering services for a one-story 20,000 s.f. addition to the existing Emergency Department. The addition included examination rooms, recovery areas, nurse stations, critical rooms, and offices. HVAC systems include a large packaged rooftop air conditioning unit, constant volume and variable air volume terminal units, large general exhaust fan, dedicated exhaust fans for critical areas, and gas-fired heating water boilers for reheat coils. Large air changes are provided with increased supply air with HEPA filtration provided for the entire addition.

Loma Linda University Medical Center – HVAC Masterplan

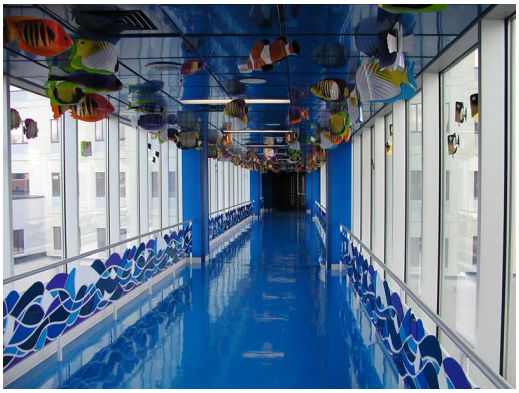
Loma Linda, California

Mechanical engineering services for the design, scheduling, coordination with regulatory agencies, and construction cost estimating to upgrade and renovate the existing HVAC systems in the facility to meet current codes as required by OSHPD. Project involved identifying all major system deficiencies from a code compliance perspective and establishing a logical sequence of corrective actions.

Sacred Heart Medical Center – Children's Hospital, East Wing Addition

Spokane, Washington

Mechanical engineering services for a 62,000 s.f. two-story pediatric services addition. The addition consisted of two floors constructed above an existing nine-story wing of the medical center and includes a pediatric oncology floor and an administrative and clinic floor. Mechanical design included rooftop custom-built air handling units that are provided chilled water and heating water from the existing boiler and chiller plants of the medical center. High-rise stairwell and elevator shaft pressurization systems and fire sprinkler systems were provided for life safety.



PROJECT EXPERIENCE

Healthcare

American Hospital Dubai – Outpatient Clinics Building

Dubai, United Arab Emirates

Mechanical engineering services for the new Outpatient Clinics and Administration Building located in Dubai. American Hospital is a 120-bed acute care, general medical/surgical hospital which aims to provide high quality American standard healthcare for Dubai and the UAE. It is the first hospital in the Middle East to be accredited by the Joint Commission International Accreditation (JCIA), a subsidiary of the U.S. based Joint Commission on Accreditation of Healthcare Organizations (JCAHO). The new outpatient clinics building is a four-story structure with a full basement covering 190,000 s.f. of floor area with a full-height, fully-enclosed, glass atrium. Due to an extremely high water table, the basement was designed as a "bath tub" to resist the hydrostatic forces thus requiring the utilities to enter the building above grade level. Mechanical systems include rooftop mounted air-cooled chillers, floor-by-floor air handling units, variable-air volume terminal units, dedicated outside air units for humidity control of ventilation air, domestic water treatment system, smoke removal system for atrium, and fire protection systems throughout the facility.

PROJECT EXPERIENCE

Healthcare

Eastern Maine Healthcare Systems – Maine Institute for Human Genetics and Health, Sylvan Road Laboratory

Bangor, Maine

Mechanical engineering services for a one-story 10,000 s.f. human genetics research facility. The laboratory includes genomics, histology, proteomics bio-safety labs, cell culture and large bench labs, scientist offices, equipment rooms, conference rooms, and break rooms. HVAC systems include a large packaged air conditioning unit located on grade in the parking areas, constant volume and variable air volume terminal units, large laboratory-type exhaust fans, and propane-fired heat exchangers with propane-fired heating water boilers for reheat coils. Large air changes are provided with increased supply air with HEPA filtration provided for the entire building. Bio-Safety Cabinets are provided in all critical labs requiring high ventilation rates and filtration systems.

Children's Hospital and Medical Center – A and B Wings Remodel & Expansion

Seattle, Washington

Mechanical engineering services for the remodel of A and B wings 31,300 s.f. on Level 1 and 10,200 s.f. of basement infill. Remodel consisted of converting Hospital Administration offices on Level 1 to patient care areas and patient rooms, isolation rooms, nurse stations, and treatment rooms; and providing Hospital Administration offices, conference rooms and work stations in new basement infill. Design included the upgrade of the existing supply air cooling system. The upgraded air system was converted to a full outside air supply system with heat recovery, constant volume terminal units for patient care areas and variable-air volume terminal units for administration and support areas. Design provided HVAC air flow controls for patient isolation rooms to allow for the manual selection of air pressure relationship (positive or negative) with the corridor and adjacent rooms. Medical gas and vacuum systems were extended to rooms throughout the patient care area. Elevator shaft pressurization fans were provided for two of the Hospital elevators for life safety operation.

PROJECT EXPERIENCE

Healthcare

Children's Hospital and Medical Center – Clinical Research Center

Seattle, Washington

Mechanical engineering services for the remodel of I wing on Level 7. Remodel consisted of providing exam rooms, procedures room, nurse station, and offices for the Clinical Research Center. Design included the redistribution of HVAC supply air with new reheat boxes, exhaust air ductwork revisions, extension of lab gas and vacuum systems, and HVAC upgrade for exit corridor fire/smoke requirements.

Stevens Memorial Hospital – Major Expansion

Edmonds, Washington

Mechanical engineering services for new four-story, 113,000 s.f. addition and 15,000 s.f. facility remodel. Addition included Women's Center, LDRP suites, nursery, 12 operating rooms, and central services space. Mechanical systems include gas-fired high pressure boilers, high efficiency water-cooled centrifugal chillers, three dedicated outside air HVAC units with high efficiency filters, central humidifiers, sound attenuators, and heat recovery coils. Medical gas systems include oxygen, nitrous oxide, nitrogen, medical air, and medical vacuum.

PROJECT EXPERIENCE

Healthcare

St. Joseph Medical Center – Outpatient Center

Tacoma, Washington

Mechanical engineering for a new 152,000 s.f. Outpatient Center. Project also included expansion of the central chiller plant and revisions to the piped utilities .

Sacred Heart Medical Center – Chiller Plant Controls Upgrade

Spokane, Washington

Mechanical engineering services to provide a solution to an erratic control of the two-year old chilled water plant for a large healthcare facility. Plant was enlarged in 2004 to accommodate the new construction of a Women's Health Facility and multi-story West Wing that were completed in 2006. Project included the research in the unstable operation of the plant under partial loads and the preparation of new sequences of operation for the chiller sequencing and pumping operations. The plant includes three large water-cooled chillers of unequal capacities with primary/secondary chilled water pumping arrangement. Existing software program of the Johnson Controls Metasys direct digital control system was modified to reflect the required changes in the sequence of operation. Work was performed prior to the cooling season of 2008 with very positive results observed during that summer.

Healthcare

Sacred Heart Medical Center – Chiller Plant Upgrade

Spokane, Washington

Mechanical engineering services for the upgrade and expansion of the existing chiller plant as a portion of the work for the West Wing Addition – Women's Services & Surgery Center project. One existing 400-ton water-cooled centrifugal chiller was replaced with a 1,480-ton centrifugal chiller and an existing 1,100-ton chiller was relocated and modified to increase the cooling capacity to 1,198 tons. An existing 1,100-ton water-cooled chiller remained. The new total capacity of the plant is 3,778 tons. The existing primary pumping/piping arrangement was replaced with a new secondary/primary arrangement. All chilled water and condenser water piping was replaced within the plant with welded piping. All chilled water, condenser water, and secondary pumps were replaced with new vertical in-line pumps with variable frequency drives provided for the three secondary chilled water pumps. Two existing cooling towers were replaced with one 1,480-ton tower and one 1,198-ton tower. The existing chilled water distribution system was analyzed for proper flow control that resulted in the change-out of existing 3-way control valves to 2-way valves and the installation of hydronic balancing valves at existing cooling coils throughout the healthcare facility.

Children's Hospital and Medical Center – Dialysis Treatment Center

Seattle, Washington

Mechanical engineering services for a complete remodel design of the dialysis areas on Level 2 of the A and B wings. Mechanical design included a dialysis piping loop with customized valve and drain wall boxes for five dialysis stations, Reverse Osmosis water generating equipment room, patient isolation room, medical gas and vacuum system extension, and HVAC revisions with new zone reheat boxes.

PROJECT EXPERIENCE

Healthcare

298 Michigan Street – MRI Installation
Melbourne, Florida

Mechanical and electrical engineering services for the complete replacement and upgrade of the HVAC, lighting, plumbing, and power systems in the existing one-story 7,000 sq. ft. medical office building located in Melbourne, Florida. The project included the installation of a new Hitachi Oasis MRI (Magnetic Resonance Imaging) within an existing area of the building. MRI required complex manufacturer's directions for mechanical and electrical systems that included non-magnetic ferrous products within twenty-foot diameter of MRI, Helium exhaust and emergency relief venting, dedicated air conditioning system for MRI equipment, and manufacturer-furnished industrial/medical-grade air-cooled water chiller for MRI.

Dr. Joshi Medical Office Building
Melbourne, Florida

Mechanical and electrical engineering services for the two-story 7,500 sq. ft. medical office building and residence located in Melbourne, Florida. Project has 4500 sq. ft. of first-floor medical office space with 3000 sq. ft. 3-bedroom, 3.5-bathroomresidence on second floor. The medical office portion of project included multiple Exam Rooms, Procedure Rooms, Lab, and medical office spaces. HVAC included three rooftop heat pump units with SEER of 15 or higher. Lighting included LED 2x2 fixtures. Residence area included natural gas appliances. All utilities and HVAC equipment designed with complete separation of office spaces and residence spaces.

315 East Nasa Boulevard – Medical Office Building
Melbourne, Florida

Mechanical and electrical engineering services for the complete replacement and upgrade of the HVAC, lighting, plumbing, and power systems in the existing one-story 7,000 sq. ft. medical office building located in Melbourne, Florida. The project included multiple Exam Rooms, Procedure Rooms and medical office spaces. HVAC included three rooftop heat pump units with SEER of 15 or higher. Lighting included LED 2x2 fixtures. Power upgrades included a full replacement of the existing electrical service panels.

Healthcare

Valley Medical Center – Kent Clinic

Kent, Washington

Mechanical engineering services for a 19,700 s.f., single floor medical clinic in Kent for Valley Medical Center's satellite clinic program. Clinic includes departments for Pediatrics, Internal Medicine, Family Practice, Obstetrics/ Gynecology, Radiology, and Pharmacy and laboratories for hearing, X-ray film processing and blood tests. Clinic consists of various treatment rooms, exam rooms, offices, laboratories, classroom, and staff lounge. Mechanical design included a variable air volume rooftop air conditioning unit with high efficiency air filtration, natural gas heating, fire sprinkler system, direct digital control (DDC) building automation system with remote monitoring at VMC's main hospital, and plumbing system with hospital quality plumbing fixtures. A separate rooftop air conditioning unit was provided for the classroom and staff lounge to allow for the night and weekend operation of the rooms without operating the main air conditioning unit.

PROJECT EXPERIENCE

Healthcare

Valley Medical Center – Covington Clinic

Covington, Washington

Mechanical engineering services for a 22,000 s.f., two-story medical clinic in Covington for Valley Medical Center's satellite clinic program. Clinic includes departments for Pediatrics, Internal Medicine, Family Practice, Obstetrics/Gynecology, Radiology, and Pharmacy and laboratories for hearing, X-ray film processing and blood tests. Clinic consists of various treatment rooms, exam rooms, offices, laboratories, classroom, and staff lounge. Mechanical design included a variable air volume rooftop air conditioning unit with high efficiency air filtration, natural gas heating, fire sprinkler system, direct digital control (DDC) building automation system with remote monitoring at VMC's main hospital, and plumbing system with hospital quality plumbing fixtures.