



Io Engineers^{INC}

MECHANICAL | ELECTRICAL | PLUMBING | FIRE PROTECTION

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EDUCATIONAL

PROJECT EXPERIENCE

Education Facilities for K-12 – High Schools/ Middle Schools/ Elementary Schools Various Counties, Florida



Mechanical engineering services provided for various public schools with science classrooms, art, chorus, band/orchestra, gymnasiums, cafeterias/kitchens, cafeteriums, and administration areas:

- Seminole County Public Schools, Oviedo High School Renovation/Additions
- Volusia County Schools, T. Dewitt Taylor Middle/High School
- District School Board of Collier County, Marco Island Charter Middle School
- School District of Lee County, Veterans Park Academy for the Arts Middle School/Elementary School
- School District of Lee County, Mariner Middle School
- School District of Lee County, Tice Middle School
- School District of Lee County, Challenger Middle School
- School District of Palm Beach County, John F. Kennedy Middle School
- Broward County Public Schools, Orange Brooke Elementary School
- Broward County Public Schools, Dolphin Bay Elementary School
- School Board of Brevard County, Meadowlane Elementary School



Educational

PROJECT EXPERIENCE

Community Colleges
and School Districts –
Energy Conservation
Reports of Various
Education Facilities
Various Locations, Oregon
and Washington

Energy engineering services for comprehensive energy studies were performed on various buildings in compliance with the Institution Buildings Program for U.S. Department of Energy (NECPA program). Studies required; 1) conducting extensive site observations of the building envelope, mechanical systems and electrical systems, 2) interviewing maintenance personnel for equipment performance histories, 3) identifying energy conservation measures, 4) performing computer simulations of building operation, and 5) conducting extensive life-cycle cost analyses reporting on simple payback, internal rate of return. Responsibilities included the site observations, computer analysis and report preparation. Facilities included Lane Community College, Eugene, Oregon; Umpqua Community College, Roseburg, Oregon; Southwestern Oregon Community College, Coos Bay, Oregon; Clark Community College, Vancouver, Washington; Eugene School District, Eugene, Oregon; North Bend School District, North Bend, Oregon; and Tacoma School District, Tacoma, Washington.

Educational

Lake Washington
School District –
Redmond High School,
Commissioning
Redmond, Washington

Commissioning authority for new construction of a 211,000 s.f. facility. Project includes gas fired boilers, multi-coil and VAV air handling units with economizers, air to air heat recovery system, water source heat pumps, packaged direct expansion HVAC units, general exhaust, and emergency exhaust systems for lab classrooms, distributed direct digital control system, and water heating system.

PROJECT EXPERIENCE

Educational

Lake Washington School District – Audubon Elementary School, Commissioning Redmond, Washington

Commissioning authority for the addition and renovation of a one-story, 52,000 s.f. elementary school. The project features installation of new distributed direct digital control system and the replacement of an existing hot water hydronic unit ventilation system with new fire tube boilers serving multi-zone air handling unit fitted with heating coils, preheating coils, and economizers.



Lake Washington School District – Red- mond Junior High School, Commissioning Redmond, Washington

Mechanical and electrical systems commissioning authority for new construction of a 120,000 sf junior high school. Scope of commissioning involves providing assistance to the owner's project management on mechanical issues, site review and reporting of progress of HVAC installation as well as functional testing HVAC equipment, systems, and controls, including demand ventilation control, and authoring written reports on issues pertinent to the progress of commissioning. HVAC equipment includes both constant volume conventional air handling and multi-zone units, economizers, air to air heat recovery, dust collection systems, emergency exhaust for classroom laboratories, hydronic heating systems, ground source heat pumps, fire tube boilers, ground source heat pumps and various distributed DDC controls. Electrical systems commissioning includes fire detection, emergency generator, telephone/intercom, building switchgear/ distribution, interior and exterior lighting controls.

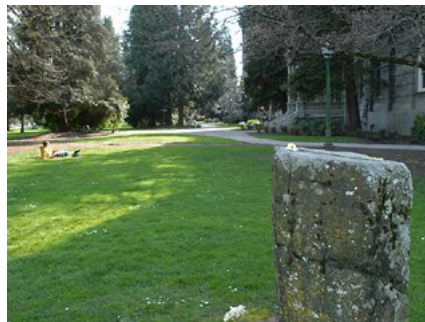


PROJECT EXPERIENCE

Educational

University of Oregon – Energy Improvement Designs at Various Facilities Eugene, Oregon

Retrofit design services at various campus facilities of energy conservation measures approved by the Bonneville Power Administration from the previous energy analyses. Designs consisted of various HVAC control modifications, two-motor drive installations, equipment upgrades, heat recovery systems, and revised maintenance procedures. Responsibilities included the retrofit designs for each of the following buildings: Johnson Hall (President and Vice-President administration offices, listed with the National Register of Historic Places); Erb Memorial Union (student union with a cafeteria, kitchens, gift shops, banquet rooms, offices, recreation rooms including bowling alleys, theater, and classrooms); Science II (science department classrooms, offices and laboratories); University Inn (dormitory with kitchen and dining facilities); Villard Hall (theater department classrooms, offices and performance hall; listed with the National Register of Historic Places); and Physical Plant (central steam plant using wood chip-fired boilers, central chilled water plant using mill race stream water for heat rejection and distribution network for each system).



PROJECT EXPERIENCE

University of Washington Health Science Center - RR Wing Piping Replacement Seattle, Washington

Mechanical engineering services for the replacement of the existing domestic and laboratory galvanized piping systems. Systems included cold water, hot water, and hot water circulation piping from the building backflow preventers and risers to approximately the fourth floor and existing copper pie risers. Scope of the mechanical work was expanded to include an evaluation and design to separate the domestic water systems from the laboratory water systems. Work included a survey of fixtures in the CHDD section of RR wing and new domestic water piping to exiting kitchen sinks.



Educational

PROJECT EXPERIENCE

Educational

Western Washington University - Ross Engineering Technology Building Bellingham, Washington

Mechanical engineering services for the upgrade and renovation of the ventilation and control systems for a vocational and technology building at the Western Washington University campus. Building is a three-story mixture of labs, shops, classrooms, and administrative offices. Indoor air quality type issues were discovered in the 20-year old building from occupant complaints of lab and shop odors migrating into the classrooms and office areas. Retrofit design consisted of simplifying the automatic control sequences of fans and dampers, adding exhaust fans to maintain a negative pressure in all labs and shop areas, re-working existing heating and ventilating units to provide full outside air to classrooms and administrative offices, adding transfer grilles for using air from offices and classrooms as makeup air for shops and labs, and combining the automatic start-up of shop exhaust fans with the operation of the heating and ventilating units for the respective area of the building. Project included the initial analysis by an Industrial Hygienist, review of existing air balancing reports, retrofitting the heating and ventilating units with larger steam heating coils, replacing existing pneumatic controls with direct digital controls for fans and damper operations, and converting sequences of operation for electronic controls of dampers, ventilating fans, exhaust fans, and variable frequency drives. Revised sequences of operation for the electronic controls were confirmed with the commissioning process at the completion of construction.

