



Perspective Sketches
Sensisyusten House of Learning Building Renovations and Expansion
2016/2017 Concept

Structural

Similar to the architectural direction, the structural design has targeted blending the new structure with the existing to utilize existing walls, foundations and systems wherever possible. Special attention has been paid to the seismic design of the expansion to allow the new areas to be completely self sufficient in terms of structural seismic capacity to reduce the need for costly seismic upgrades to the existing structure. The structural design is a simple and cost efficient design utilizing structural wood framed walls, commercially produced manufactured wood roof joists and simple concrete foundations and slab on grade.



Mechanical

The new building heating system is currently being designed to operate at low heating temperatures which lends itself to a condensing boiler plant. Two natural gas fired condensing boilers will provide hot water that will circulate through heating water supply and return piping. Fan coils throughout the building will be connected to the new hydronic heating piping. The entire heating system will contain 30% glycol for freeze protection.

The existing classroom and office gas fired Lennox furnaces will be replaced with Classroom Unit Ventilators. Each Unit Ventilator would also have an AC condensing unit or Heat Pump located on the roof above. The unit ventilators will connect to the existing supply air ducting. Outside air can be connected to the wall louvers for ventilation requirements.

This 'modular' approach to heating and ventilation allows energy conserving measures to be implemented into future HVAC systems operation. 'Demand control' of amounts of outdoor air introduced for occupant health and individual room space temperatures can reflect occupancy conditions in specific classrooms. In addition, classroom unit ventilator outside air dampers can close if space temperature and carbon dioxide levels are satisfactory, whether rooms are occupied or not.

The new HVAC system will be controlled with an upgrade digital control system to provide precise temperature and ventilation control for increased energy efficient.

A new 95% efficiency condensing direct vent water heater is proposed to replace the existing which requires replacement.

A new wet sprinkler system is proposed which should require less maintenance and have a longer life expectancy.

Electrical

The main electrical upgrades are the upsizing of the main building service with a new transformer and a new main 800A breaker and the replacement of the current fluorescent lights with energy efficient LED lighting. The LED lights have an extended life expectancy greatly reducing any required maintenance. The intent is to keep as much of the existing outlets and data as possible and to run any new services in the new acoustic panel ceilings.