

Proposed Breadth Topics:

The breadth topics were selected with the intent to integrate the various building systems and the knowledge that, if one of the systems is modified, the other systems are sure to reflect that change. Both of the proposed redesigns that follow depict this principle.

Proposed Breadth Redesign – Electrical:

The electrical portion of the redesign follows naturally as a result of the inclusion of the new dehumidification equipment. Upon specification of the liquid spray-tower, the various components will need to be connected to the electrical service. The conditioner removes moisture from the air to be supplied to the spaces; the regenerator rejects the moisture in the desiccant to the ambient air; and the desiccant cooler and heater ensure that the vapor pressure of the solution is conducive to either absorption or desorption of moisture, respectively. The electrical connection to each of these devices will be specified, and the corresponding panel boards will be examined to determine if they are sufficient to safely serve the added load. If they are undersized, the panel boards will be reselected to accommodate the new equipment. Finally, the same process will be repeated with the main distribution panel and utility feeders to ensure that no adjustment is needed in the electrical supply to the building.

Proposed Breadth Redesign – Structural:

As with the electrical redesign, the structural breadth topic is a product of the mechanical proposal. The liquid spray-tower to be specified will be located in the Mechanical Mezzanine Level. At this time, the size of the components and their exact positions is unclear. Some pieces of equipment such as the conditioner may need to be mounted in line with the outdoor air intake louver, which is elevated several feet above the mezzanine floor. Other components will most likely be placed on equipment pads atop the concrete slab of the mezzanine floor. In all cases, the bearing capability of the structural element, be it beam or slab, will be evaluated in regard to the additional weight. Similar to the electrical equipment, if the existing elements cannot tolerate the new load, they will be resized. This process will be repeated with joists and columns that support those elements providing the initial bearing.