The most sustainable building is the one that never gets built. While too many buildings get demolished because their use and design no longer match needs, adaptive reuse can act as a viable alternative to demolition and reconstruction.

The Edward Henry Kraus Natural Science Building a 100 year old existing historic building has been redesigned and repurposed to serve the current and future needs of the Kinesiology Department.

The redesign includes research labs, vivarium, classrooms, faculty offices and commons space. Only the three-story north addition, constructed over the existing courtyard, is new reducing the tremendous climate cost to using all-new building materials.

The existing historic building has been redesigned and re-purposed to provide superior thermal performance. Replacement windows and doors utilize insulated glazing with low-e coatings and thermally broken frames to ensure energy savings and reduce chance of condensation. Replacement assemblies have been tested in place to ensure minimal air infiltration.

STORMWATER MANAGEMENT

The existing courtyard area had a cistern connected to the sanitary sewer system. This was abandoned and replaced with four underground infiltration basins at the east, west, south, and southwest side of the building. The underground infiltration basins consist of bottomless arch chambers ranging in size from 30”x51” to 85”x100”. These storage and infiltration areas, along with surface permeable pavers and porous asphalt, store, infiltrate, and recharge the groundwater for rain events up to a 100-year storm event. In addition, during large rain events, the southwest infiltration basin infiltrates storm water that backs up from the Diag storm sewer system.

MATERIALS

Specifying environmentally-responsible materials has a positive impact on building occupants, the building industry, and earth’s natural resources.

- Sheet used in new addition structural frame is 80% recycled material
- Fly ash or slag in new concrete floor slabs is recycled material
- Rubber flooring manufacturer maintains a green purchasing program that supports managed natural rubber plantations and minimizes the impact of natural resources.
- New carpet, cushion and adhesive products have been tested for VOC (volatile organic compound) emission and are among the lowest emitting in the market.

LIGHTING REPLACEMENT

LED lighting with occupancy sensors throughout the building, and daylight controls help reduce the building’s electrical energy usage. Existing entrances will feature historic fixtures retrofitted with LED lamps. Existing fluorescent and incandescent fixtures will be replaced with new LED fixtures / lamps.

ENERGY SAVINGS

The building’s design and systems include energy-efficient features with a predicted 41% energy cost savings compared to a code compliant building per ASHRAE 90.1-2007 Appendix G.

The building’s design and systems include energy-efficient features with a predicted 41% energy cost savings compared to a code compliant building per ASHRAE 90.1-2007 Appendix G.

WINDOW REPLACEMENT

New replacement windows and doors are installed at all exterior locations to provide superior thermal performance. Replacement windows and doors utilize insulated glazing with low-e coatings and thermally broken frames to ensure energy savings and reduce chance of condensation. Replacement assemblies have been tested in place to ensure minimal air infiltration.

WATER USE REDUCTION

Low-flow plumbing fixtures and automatic sensor faucets installed with a predicted 34% water use reduction when compared to the Michigan Plumbing Code.

The building’s design and systems include energy-efficient features with a predicted 41% energy cost savings compared to a code compliant building per ASHRAE 90.1-2007 Appendix G.

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