Fall 2015

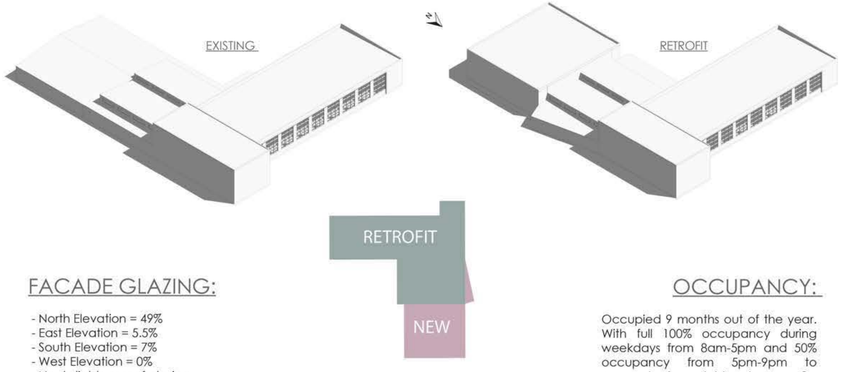
Existing Retrofit for Enhanced Performance

Portland State University. School of Architecture

EXISTING RETROFIT FOR ENHANCED PERFORMANCE

Hacker is renovating Cruess Hall on the University of California, Davis campus. It is a 22,000 sf structure built in 1959. Over the years it has had many uses included being a meat processing plant and is to become a multi-use space which will include an auditorium and wood shop to name a few.

UC DAVIS CRUESS HALL ENVELOPE ANALYSIS



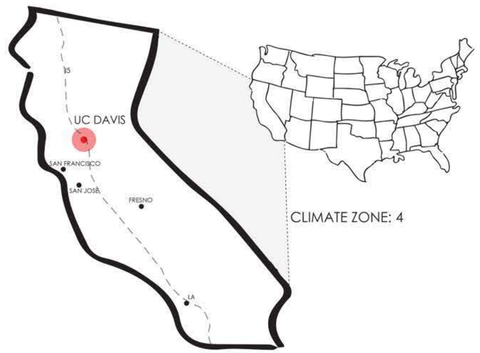
FACADE GLAZING:

- North Elevation = 49%
- East Elevation = 5.5%
- South Elevation = 7%
- West Elevation = 0%
- No skylights or roof glazing

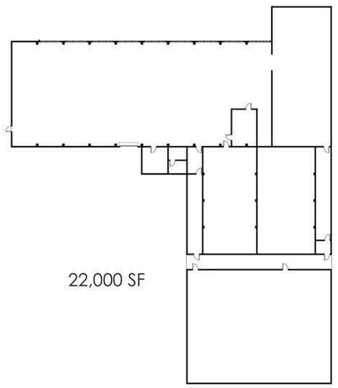
OCCUPANCY:

Occupied 9 months out of the year. With full 100% occupancy during weekdays from 8am-5pm and 50% occupancy from 5pm-9pm to account for night classes. On weekends light occupancy ranging from 10-25% is assumed for shop use.

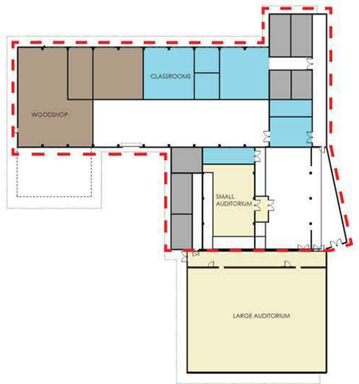
LOCATION: California



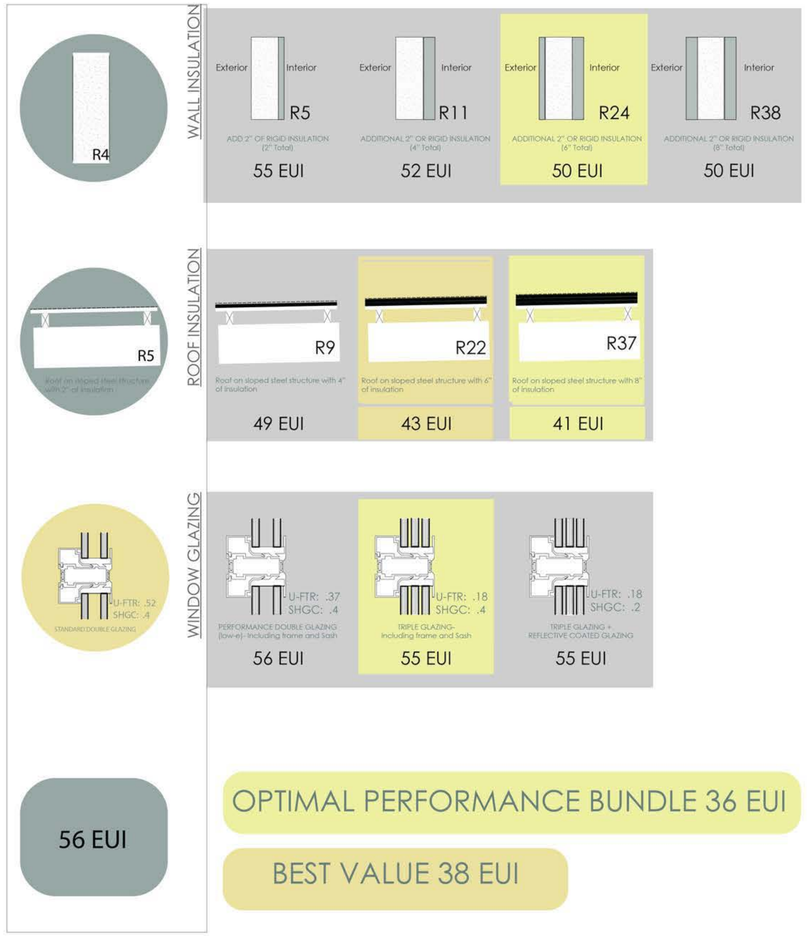
EXISTING CONDITIONS:



RETROFIT WITH NEW CONSTRUCTION:



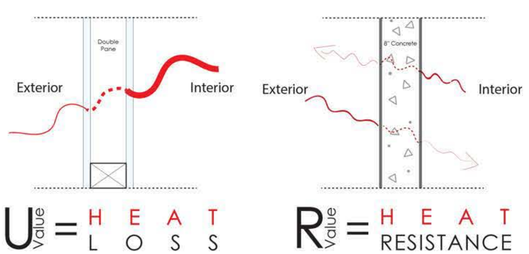
TESTING RETROFIT OPTIONS



WHAT IS BEING MEASURED?

EUI = Energy Use Intensity (kBTU/sf/yr)

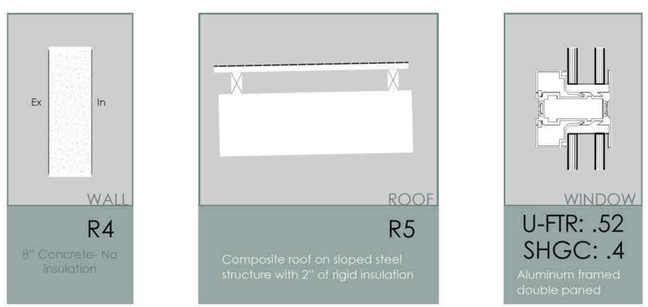
ANNUAL ENERGY USE ÷ TOTAL SF = EUI



U_{Value} = HEAT LOSS

R_{Value} = HEAT RESISTANCE

EXISTING ASSEMBLY



Annual Energy Consumption: 1,171,069 kBTU

EUI: 56

OPTIMAL ASSEMBLY

Annual Energy Consumption: 948,598 kBTU

EUI: 36

UC DAVIS UNIVERSITY OF CALIFORNIA

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