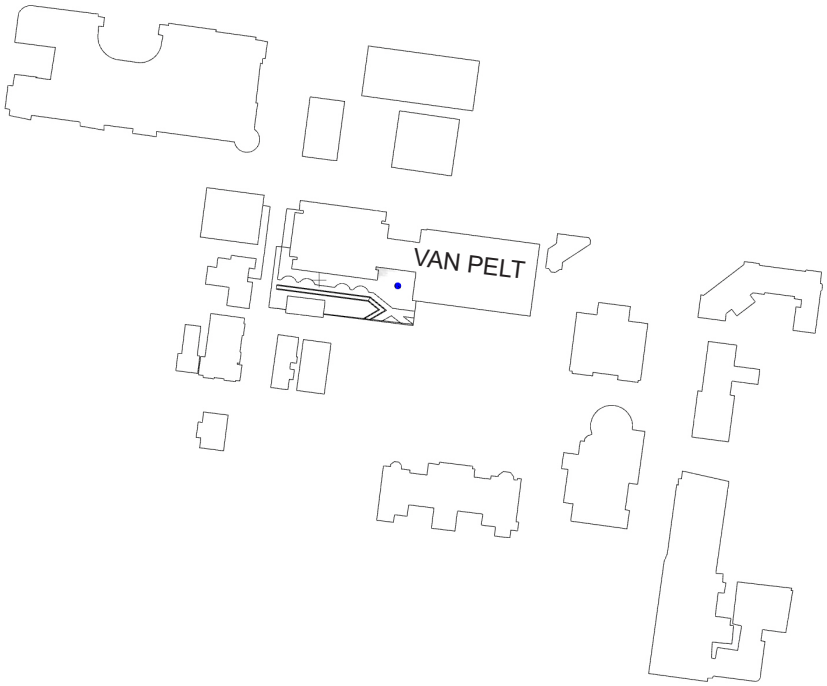
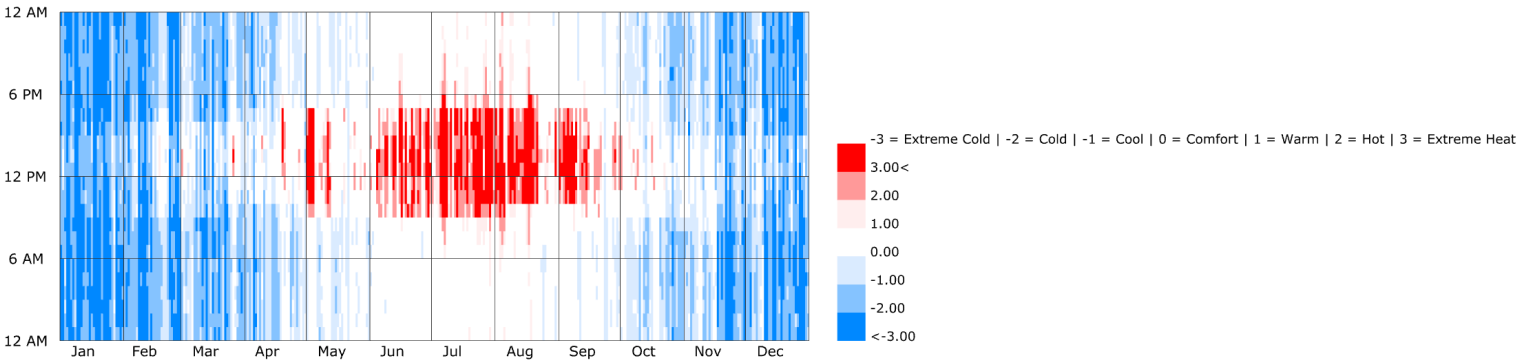
PICK A LOCATION IN YOUR MEASUREMENT FIELD



CALCULATE PERCENTAGE COMFORTABLE HOURS DURING THE YEAR

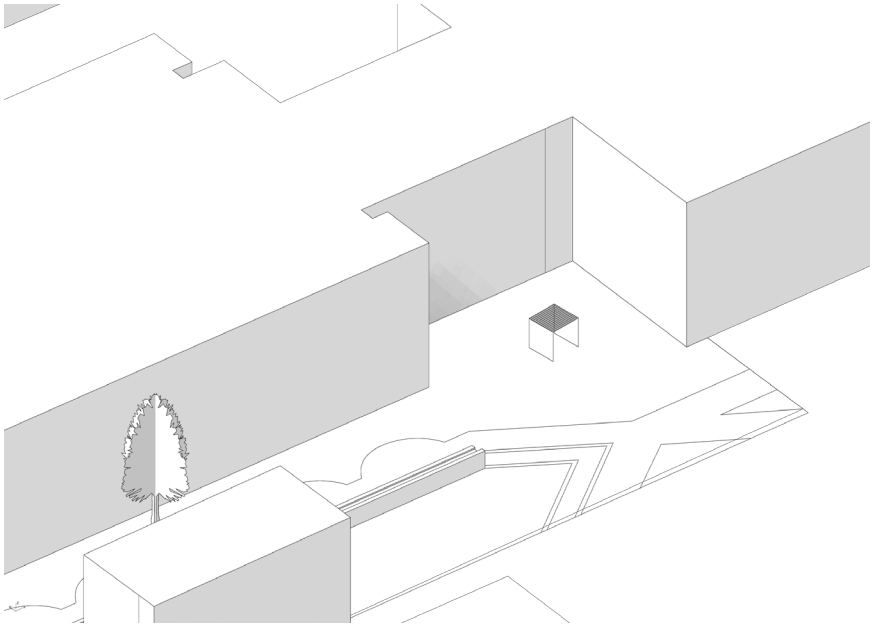
Comfortable: 39.33%; Short period comf.: 19.73%; Heat stress: 8.34%; Cold stress: 32.6%

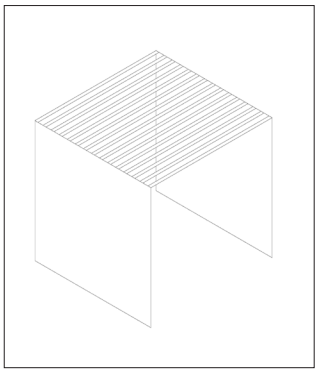


Outdoor Comfort (-3 = Extreme Cold | -2 = Cold | -1 = Cool | 0 = Comfort | 1 = Warm | 2 = Hot | 3 = Extreme Heat) - Hourly
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00

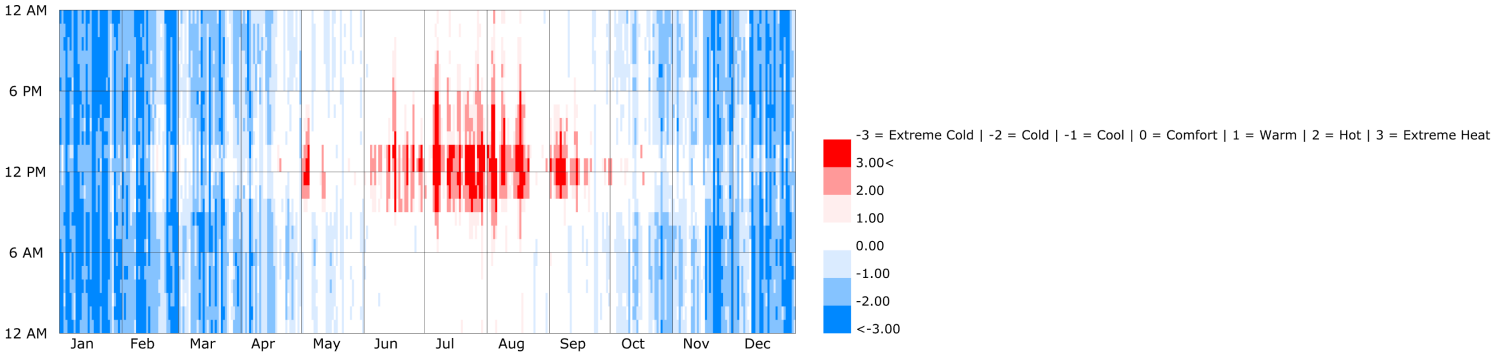
TEST 3 DIFFERENT DESIGN IDEAS AND TRY TO MAXIMIZE THE ANNALY OUTDOOR COMFORT. DOCUMENT YOUR SIMULATION FOR EACH CASE.

1





10’x10’x10’ 3 sided system
(grated roof)

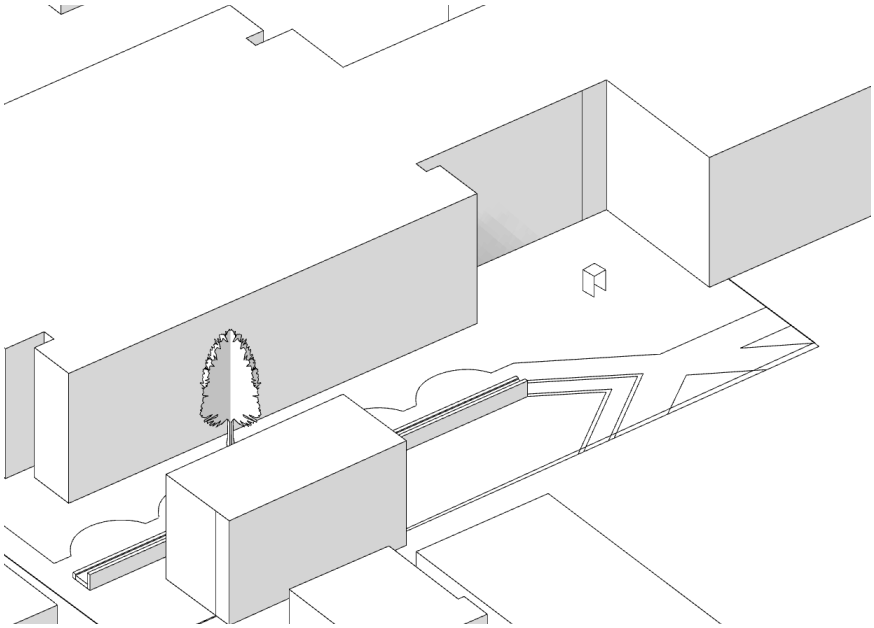


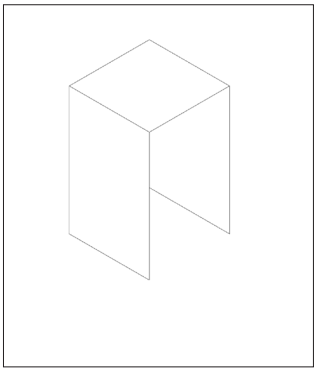
Outdoor Comfort (-3 = Extreme Cold | -2 = Cold | -1 = Cool | 0 = Comfort | 1 = Warm | 2 = Hot | 3 = Extreme Heat) - Hourly
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00

Comfortable: 40.07%; Short period comf: 20.76%; Heat stress: 5.13%; Cold stress 33.14%

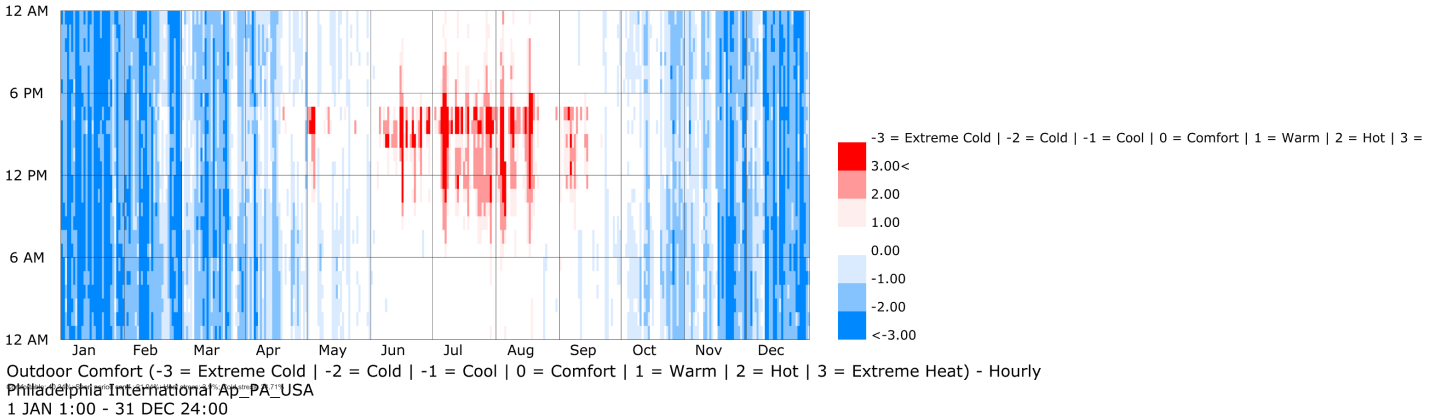
TEST 3 DIFFERENT DESIGN IDEAS AND TRY TO MAXIMIZE THE ANNALY OUTDOOR COMFORT. DOCUMENT YOUR SIMULATION FOR EACH CASE.

2





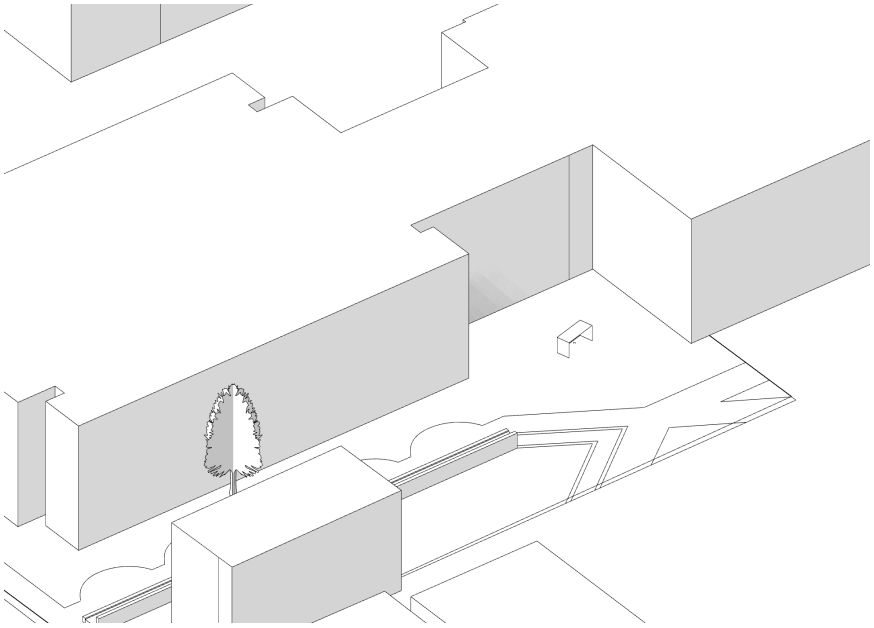
5’x5’x8’ 4 sided system

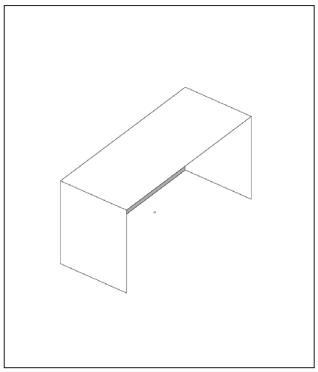


Outdoor Comfort (-3 = Extreme Cold | -2 = Cold | -1 = Cool | 0 = Comfort | 1 = Warm | 2 = Hot | 3 = Extreme Heat) - Hourly
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00

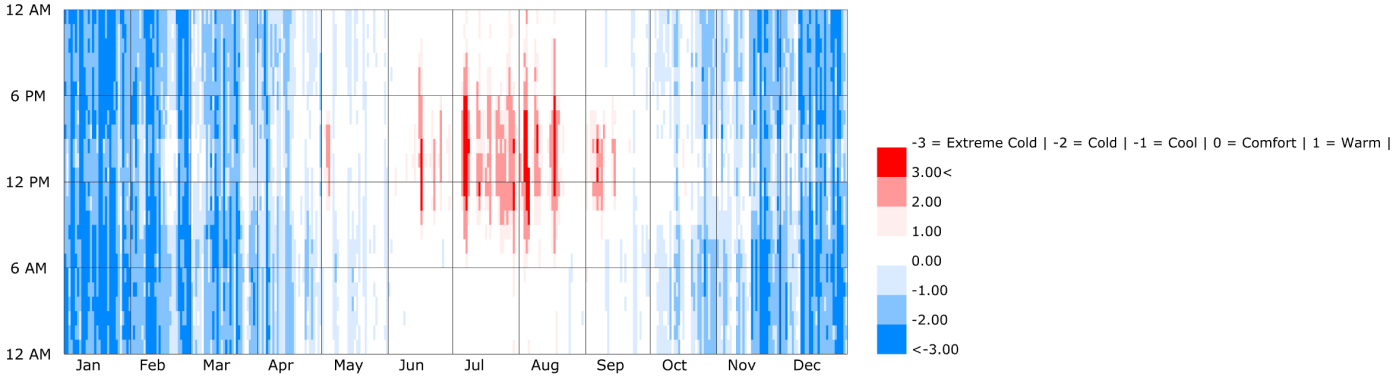
Comfortable: 40.34%; Short period comf: 21.04%; Heat stress: 3.9%; Cold stress 34.71%

3





12.3’x5’x6’ 4 sided system



Outdoor Comfort (-3 = Extreme Cold | -2 = Cold | -1 = Cool | 0 = Comfort | 1 = Warm | 2 = Hot | 3 = Extreme Heat) - Hourly
Philadelphia International Ap_PA_USA
1 JAN 1:00 - 31 DEC 24:00

Comfortable: 42.55%; Short period comf: 21.36%; Heat stress: 3.08%; Cold stress 33.01%

CAN YOU ACHIEVE COMFORT FOR 100% OF THE TIME?

No, you cannot.

IF NOT, WHAT IS THE HIGHEST POSSIBLE PERCENTAGE OF COMFORTABLE HOURS THAT YOU CAN ACHIEVE WITH PASSIVE DESIGN STRATEGIES?

The highest possible percentage I could achieve was 42.55% comfort. This design was a 4 sided rectangular space that was longer in width than height. I also angled the shading slightly as when i ran the shading parallel to Van pelt, it was 1% lower in comfort. I do think, however, that the influence is more so of how deep into the space the individual is, and perhaps not at what angle the shading is oriented.

I speculate that by creating a shading system, we are only able to impact the heat stress percentage. There was less difference in the cold stress percentages. Morever, the heat stress is only a part of the overall comfort of the individual. That is why I beleive it is impossible to achieve 100%.