SUBMISSION\04_CLIMATE_DATA_REPORT_ROUND_2

JINAH OH

PREVIOUS SUBMISSION

3 MOST IMPORTANT PASSIVE DESIGN STRATEGIES:

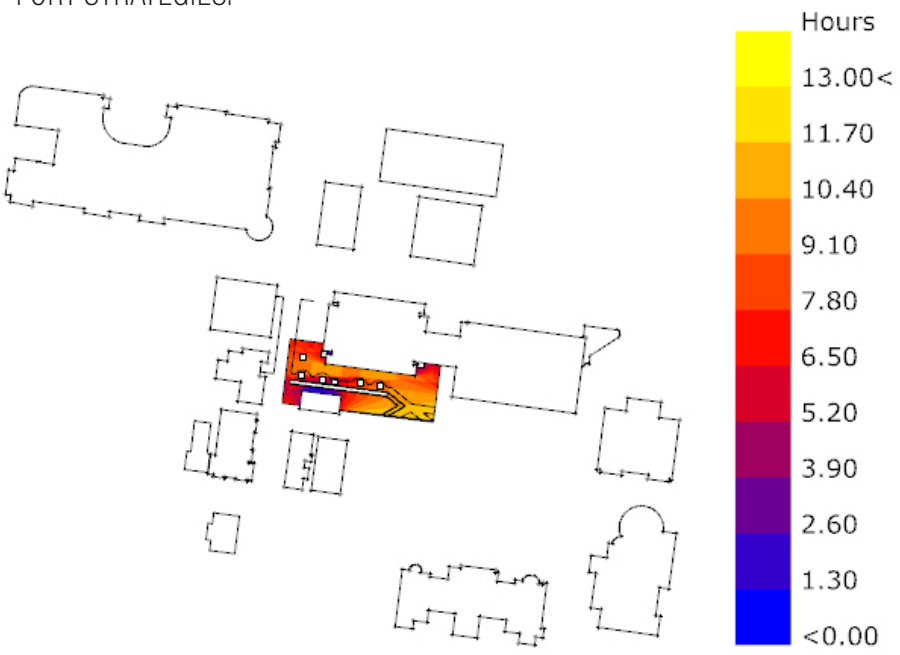
1) Philadelphia experiences lower hourly illumination in the Winter months, and higher hourly illumination in the Summer. This was most explicitly indicated by chart 5 "Illumination Range" of Climate Consultant. A passive design strategy would be to put the windows or glass of the building on the south side to maximize the exposure to the sun in the Winter. In contrast, some sort of shading device would have to be implemented for the Summer months. Additionally, implementing floors with high thermal mass such as stone or concrete could be a strategy for passive cooling and heating.

2) In warmer months, it is important to try mitigate excess heat by taking advantage of cooling breezes. As shown in chart 2, July in Philadelphia has a mean temperature of ~77 degrees which is above the indicated comfort zone. One passive design strategy is to use casement windows (that also have a shading device) so that breezes from various directions can be caught and redirected into the building. To maximize efficiency, windows should also be placed such that they take advantage of the prevailing winds.

3) Another passive design strategy to mitigate heat is to increase natural ventilation through use of a solar chimney because it boosts the temperature difference between the air that enters and exits the building.

SUBMISSION 2

CORRECTIONS: IN MY FIRST ATTEMPT AT THE CLIMATE DATA REPORT, I USED CLIMATE CONSULTANT TO GUIDE ME THROUGH STRATEGIES OF PASSIVE DESIGN. HOWEVER, THE ISSUES LIES IN THAT CLIMATE CONSULTANT IS BASED ON HELPING PEOPLE UNDERSTAND THEIR LOCAL CLIMATE THROUGH EASY TO UNDERSTAND GRAPHIC VISUALIZATIONS AND DIGETABLE DATA. CONSEQUENTLY, MANY OF THE CHARTS WOULD ONLY HELP INFORM DECISIONS OF OUTDOOR COMFORT, NOT NECESSARILY INDOOR. IN MY PREVIOUS ASSIGNMENT I WAS SUGGESTING WAYS OF PASSIVE HEATING AND COOLING INDOORS AND USING CLIMATE CONSULTANT GRAPHS TO SUPPORT IT.
NOW, I SEE THAT A BETTER METHOD WOULD BE TO BE CONSISTANT IN INDOOR VS. OUTDOOR DATA AND COMFORT STRATEGIES.



SunlightHours Analysis

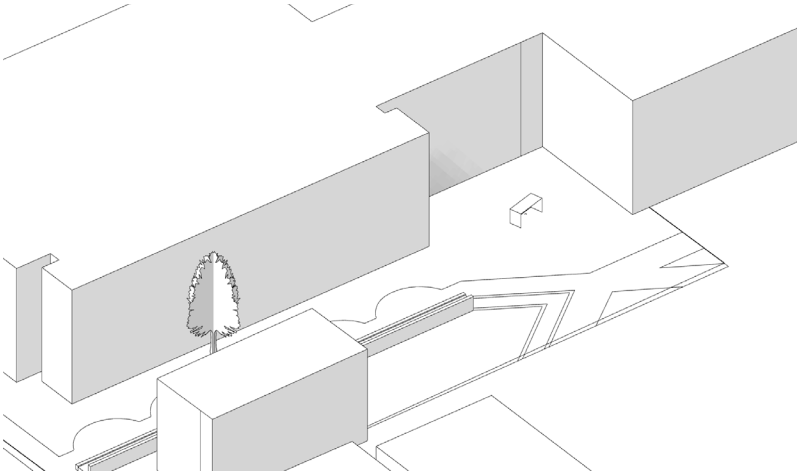
PASSIVE DESIGN STRATEGIES: FOCUSING ON OUTDOOR COMFORT

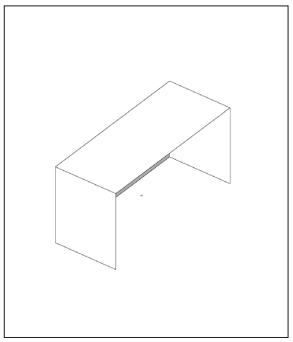
JINAH OH

STRATEGY 1

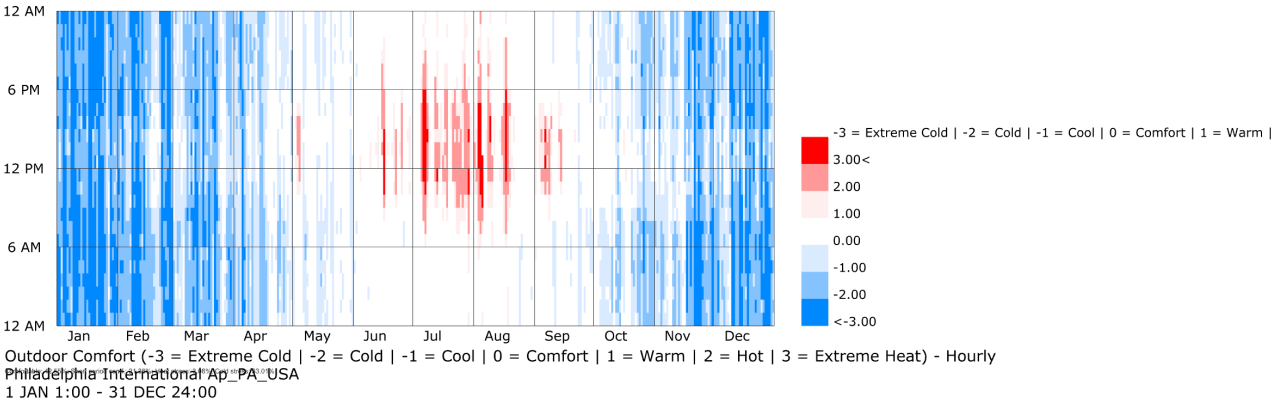
RESULTS FROM SUBMISSION_03

USING THE UTCI_CONTEXT SCRIPT, I ATTEMPTED TO DESIGN A SHADING SYSTEM THAT WOULD IMPROVE AN INDIVIDUAL'S COMFORT %. THE BEST RESULTS I FOUND WERE AS FOLLOWS:





12.3'x5'x6' 4 sided system

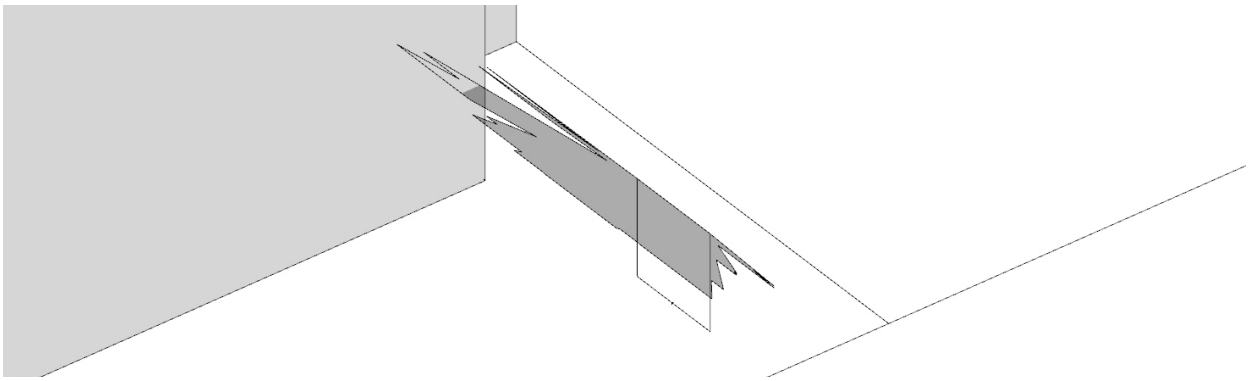


Comfortable: 42.55%; Short period comf: 21.36%; Heat stress: 3.08%; Cold stress 33.01%

2

RESULTS FROM SHADE GENERATOR USING LADY BUG

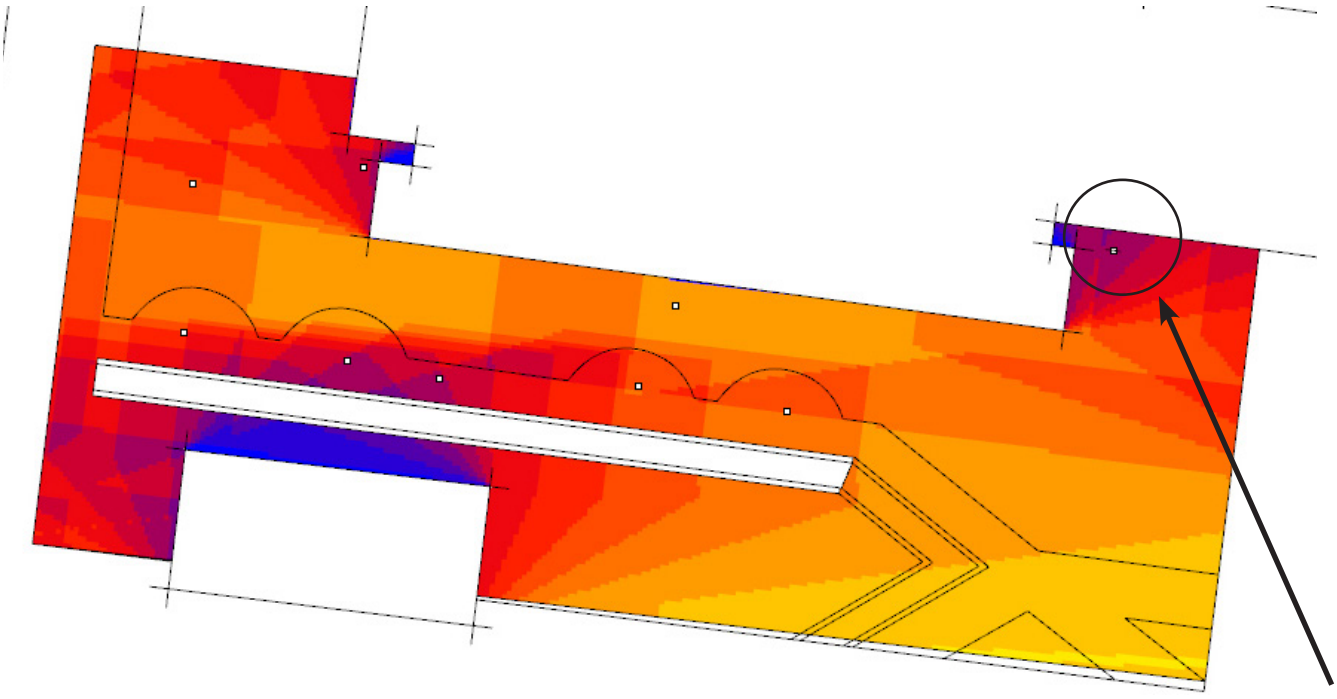
USING THE LADYBUG SHADE DESIGNER TO GENERATE SHADING BREPS FOR A GLAZED SURFACE. THE LOCATION OF THIS IS LOCATION 8 IN HOMEWORK SUBMISSION 5.



3

RESULTS FROM SUNLIGHT HOURS SCRIPT USING LADY BUG

USING THE LADYBUG SHADE DESIGNER TO GENERATE SHADING BREPS FOR A GLAZED SURFACE. THE LOCATION OF THIS IS LOCATION 8 IN HOMEWORK SUBMISSION 5.



BY MAPPING OUT THE SUNLIGHT HOURS IN THIS CONTEXT, I CAN BE BETTER INFORMED IN LOCATING WHERE MY PASSIVE DESIGN METHOD OF OUTDOOR SHADING WILL BE IMPLEMENTED. TO REITERATE ON MY FINDINGS, I WOULD LOCATE MY SHADING DEVICE FOR THE SUMMER MONTHS AT LOCATION 8.