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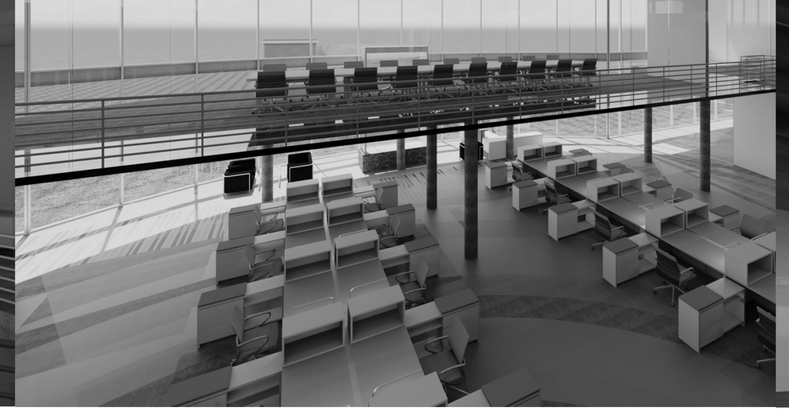
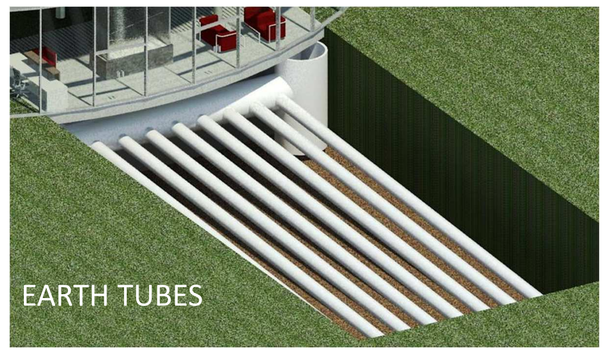
SPORTS RESEARCH FACILITY

PASSIVE SYSTEMS

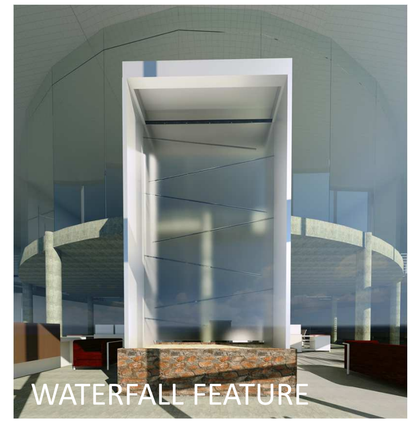


Fragrant native plants in greenhouse pre-filter outdoor air eliminating significant amounts of noxious compounds and providing pleasant scent. Passive design features to pre-treat air include deciduous trees, thermal storage and natural ventilation.

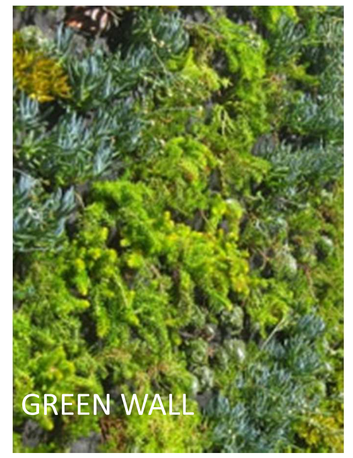


Simple design and function - Earth tubes work as fresh air intake, pre-conditioning the fresh air entering the mechanical room. They account for approximately six tonnes of cooling annually. The also provide year-round passive cooling (two tonnes) for the server room, located in the basement. Sloped design and drainage system remedy potential for condensation problems.

Draws fresh pre-conditioned air from the earth tubes. Central location of chimney creates open air access to all spaces and reduces kitchen fan loads. Double façade design creates a heat box. Heat pipe technology recovers heat without use of any mechanical system.



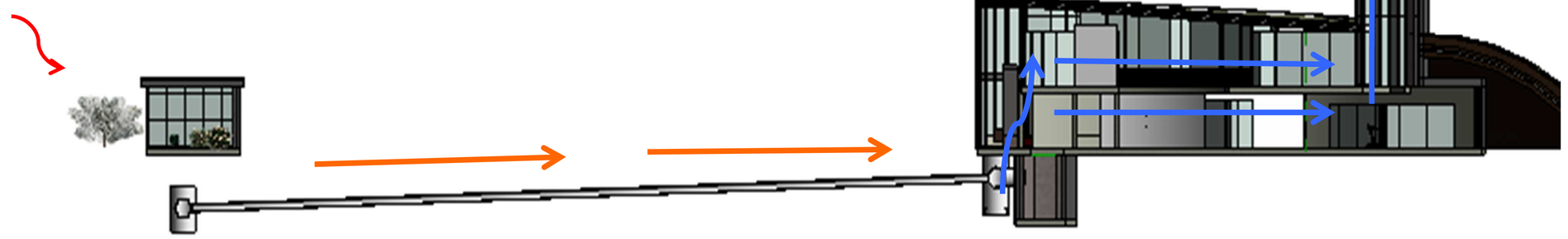
Waterfall controls humidity level of the indoor air throughout the year.



Filters the indoor air, absorbing and cleaning pollutants resulting in the improvement of the indoor air quality.

PASSIVE WINTER VENTILATION

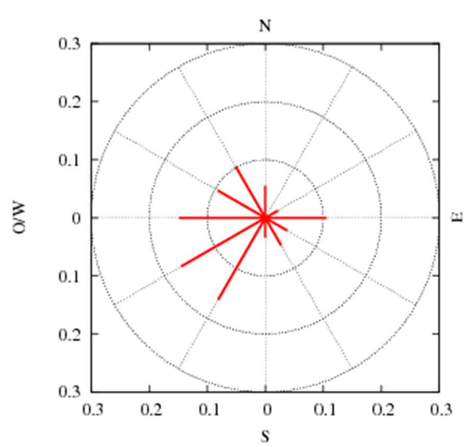
Cool winter air enters greenhouse for pre-treatment via plant respiration and solar gain. Air then enters earth tubes, which use pressure differential to pull air from greenhouse and through the ground further heating the air and delivering it to the central HVAC room. A grate in the floor allows for stack effect to pull heated air throughout the building to the solar chimney where a blow-down fan forces the heated air back into the space.



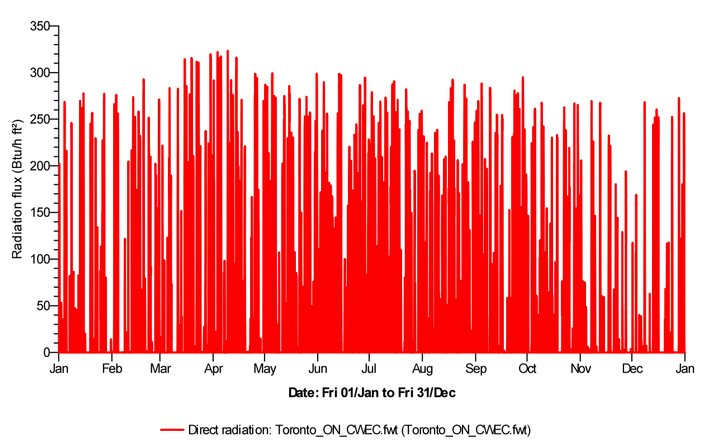
PASSIVE SUMMER VENTILATION

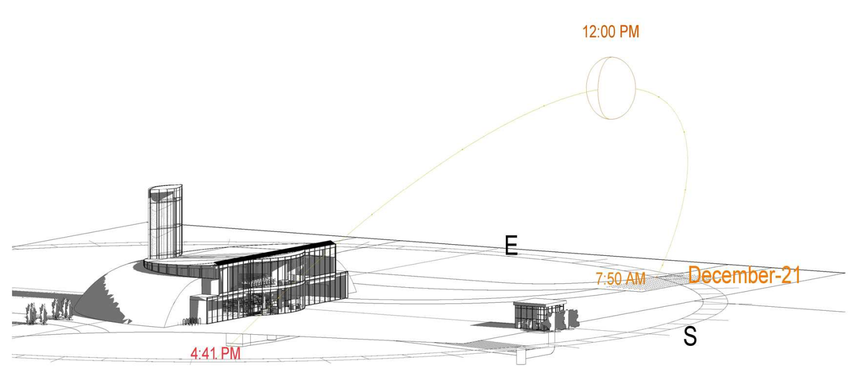
Deciduous trees strategically placed to help prevent greenhouse from overheating. Native greenhouse plants pre-filter the air which then enters the earth tube system for pre-treatment. The stack effect and negative pressure pull the air through the earth tubes, cooling it before it enters the building. The solar chimney pulls the cooled air through the building and exhausts it out of the top, automated exhaust grills.

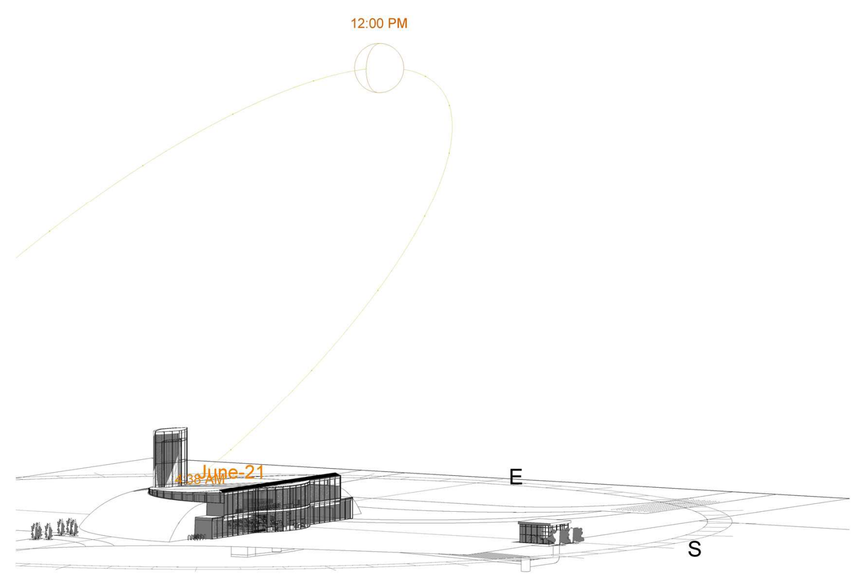
ANNUAL WIND ROSE



SOLARRADIATION







SOLAR SHADE ANALYSIS