

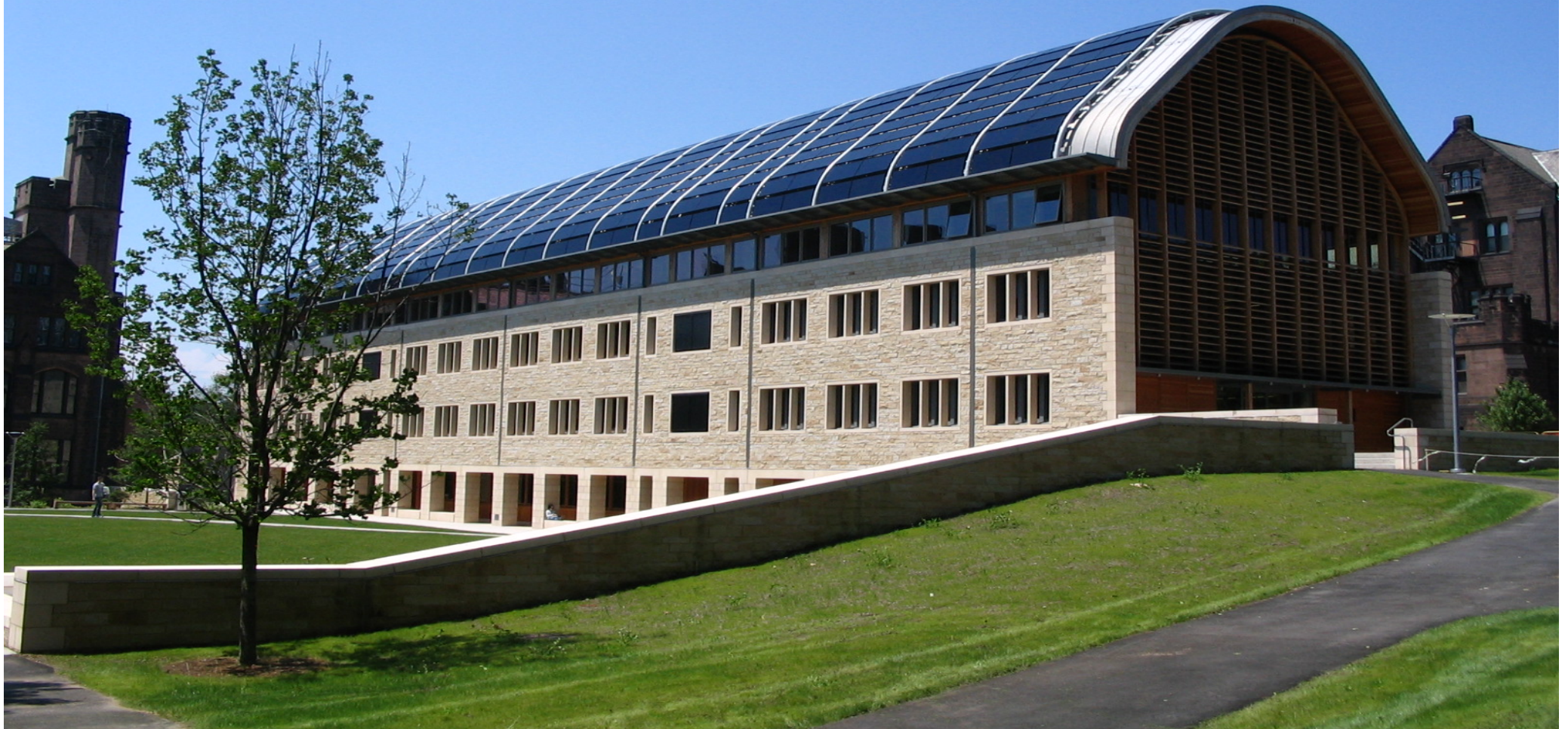
Silenceair® CASE STUDY

KROON HALL – FACULTY OF
ENVIRONMENT

YALE UNIVERSITY



CASE STUDY : KROON HALL, YALE UNIVERSITY



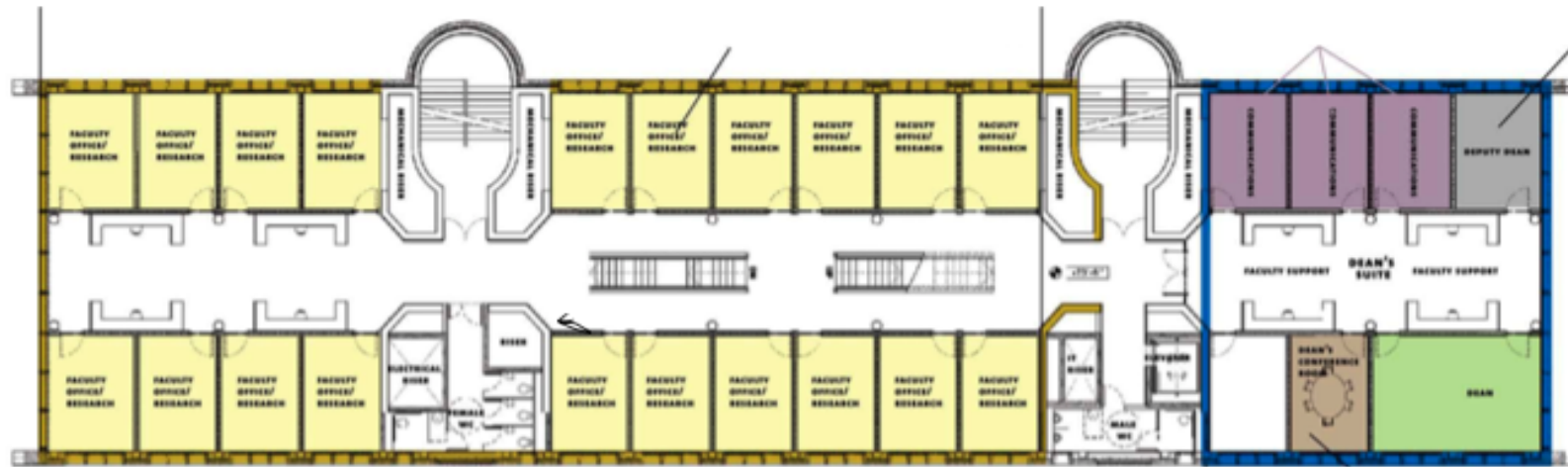
- Kroon Hall is the first LEED Platinum rated building at YALE University.
- Winner of 14 international 'green building' awards.
- Voted 'TOP 10' Green Building in 2009 by the American Institute of Architects.
- Voted 'Building of the Year' by the British Architects Journal.

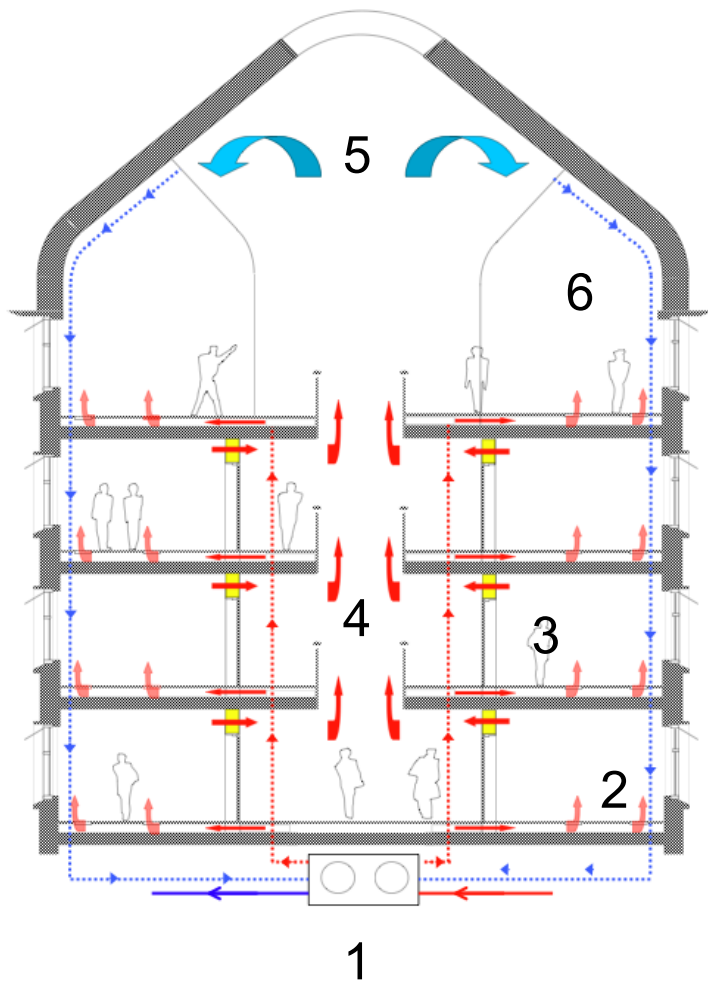
• Silenceair has a crucial role in the noise control of the natural ventilation system.



NOISE PROBLEMS IN THE BUILDING

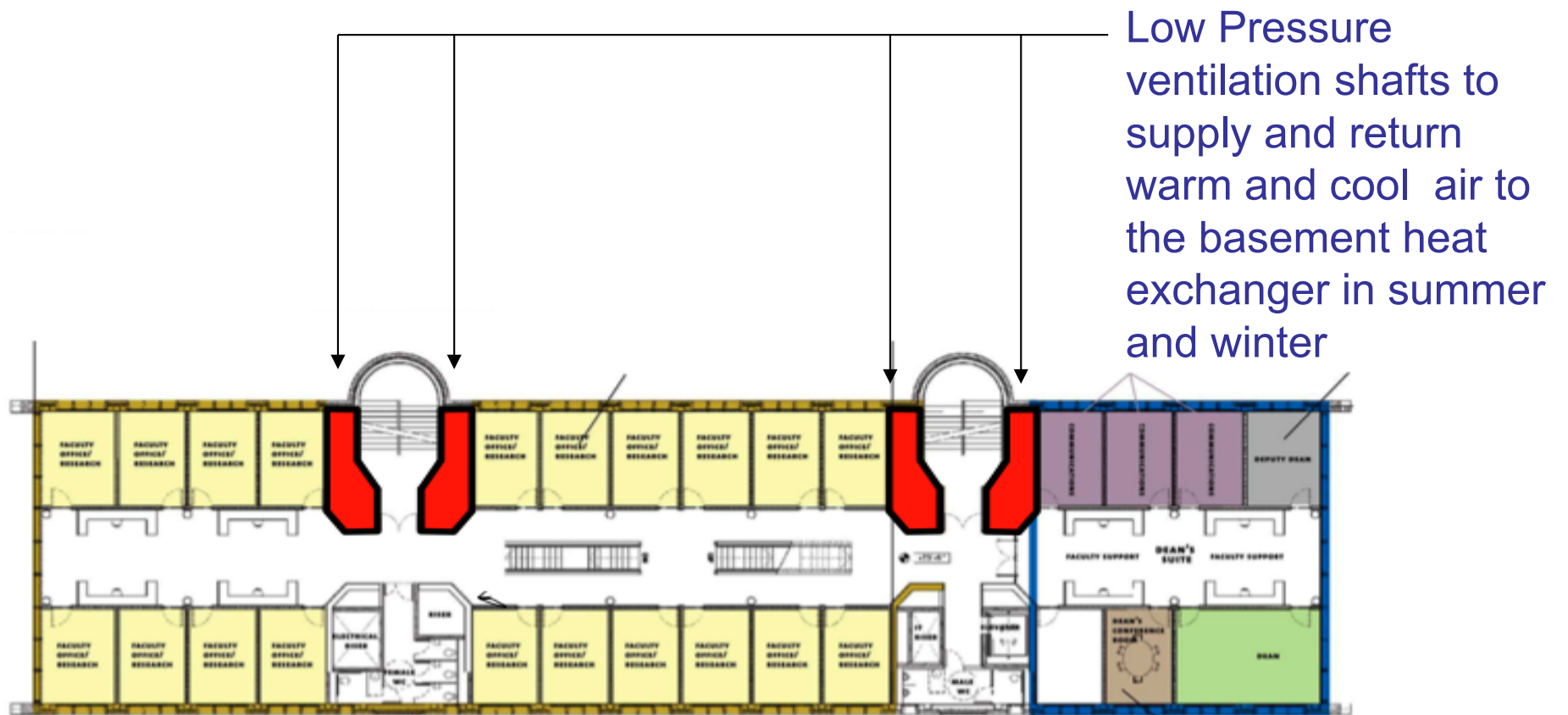
The conflict between Quiet offices and Noisy common spaces



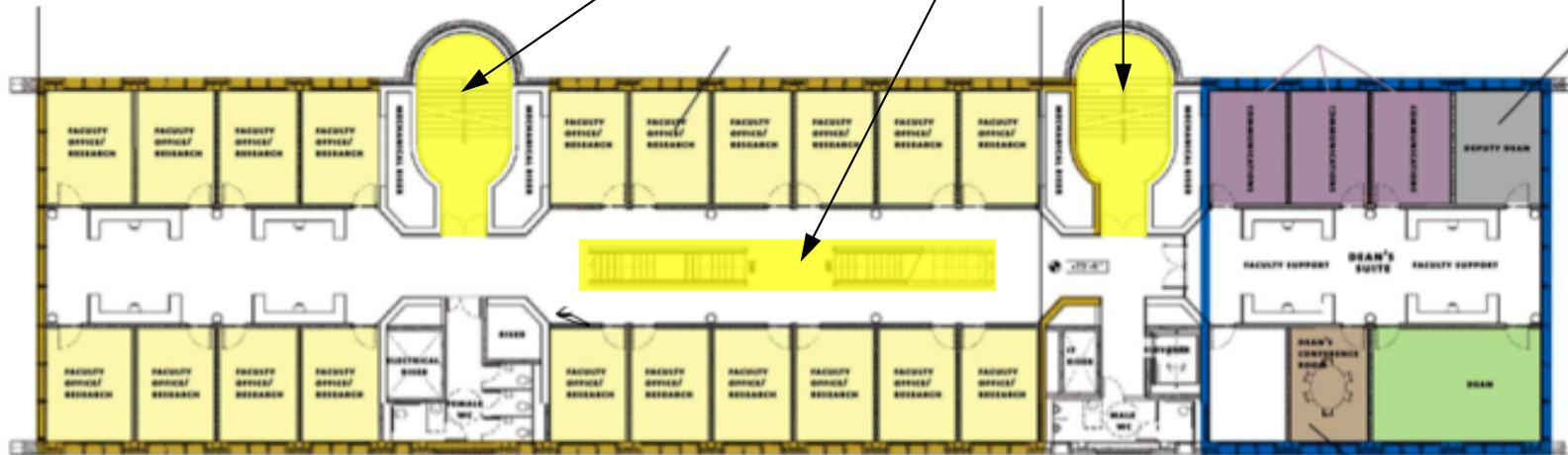


WINTER VENTILATION

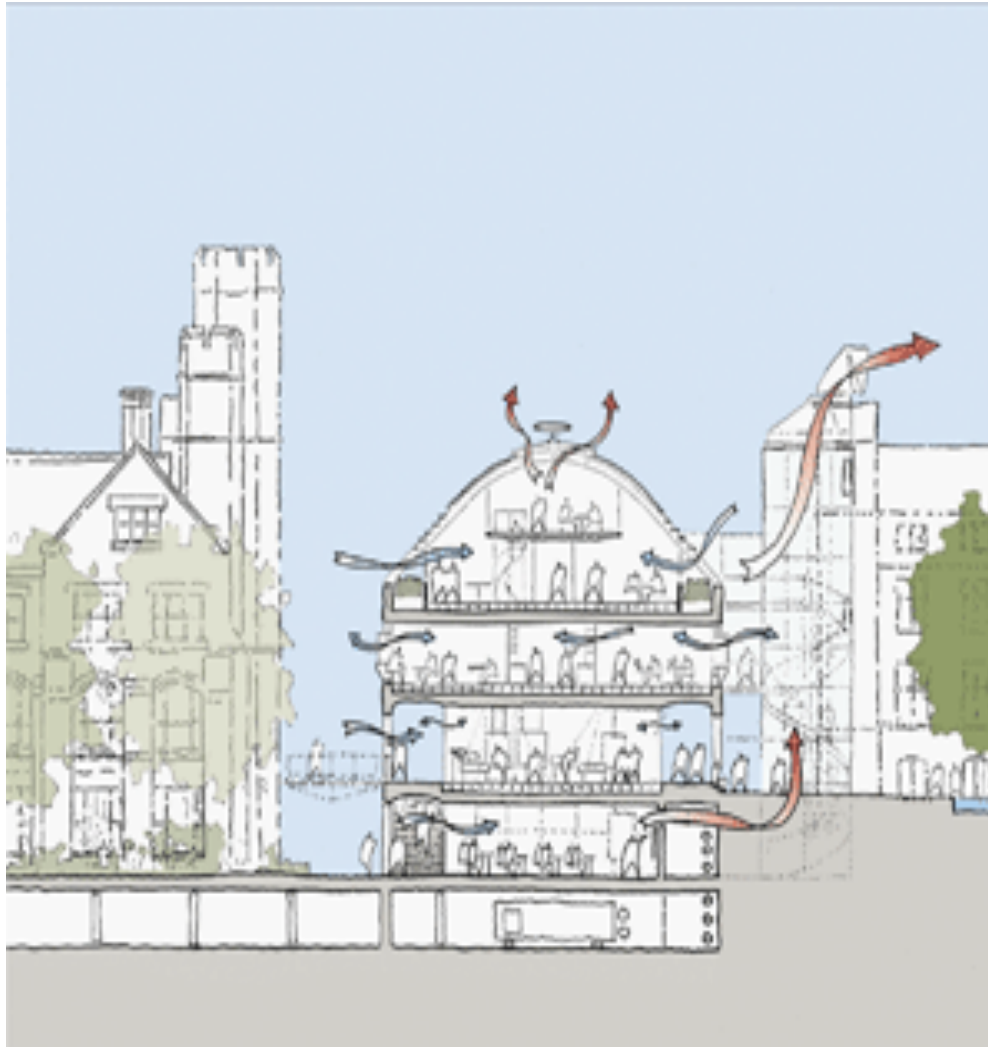
1. Air is warmed in the basement using ground sourced heat exchanger. Air is distributed in low pressure risers and ducts.
2. Air enters offices from floor plenum via floor mounted helical air diffusers. Fan assisted to individual offices.
3. Air leaves office via Silenceair units over door.
4. Warm air rises through central stairwells.
5. Air is cooled in loft area to gravity assist return to basement.
6. Air is returned to basement via low pressure ventilation shafts.



Stairwells act as thermal stacks using displacement ventilation in spring and autumn to draw air out of the building.

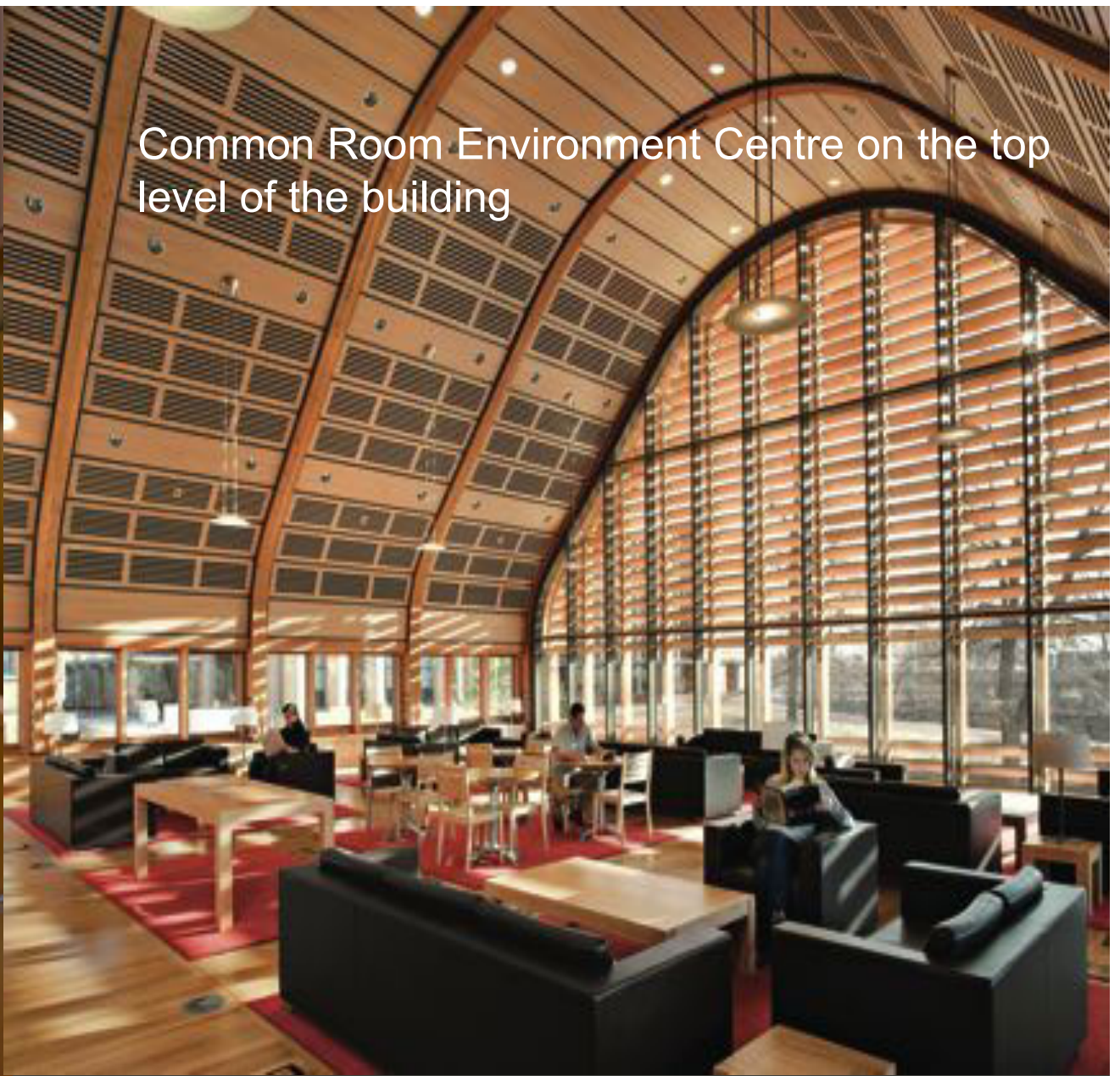


Natural cross venting and thermal stack venting





Central stairwell

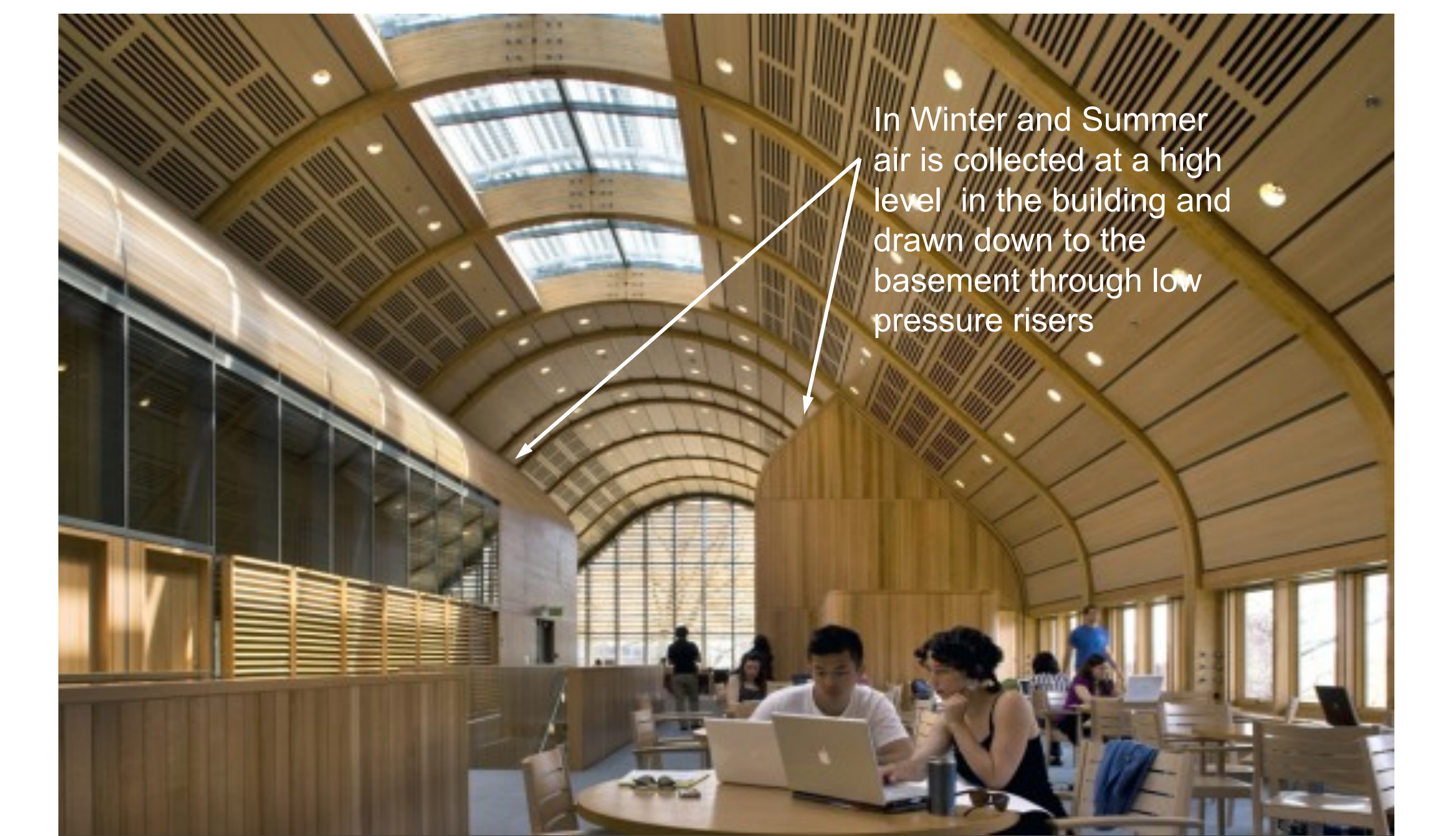


Common Room Environment Centre on the top level of the building



The Central stairways act as air risers for thermal displacement ventilation to take away stale air for recycling or purging

The slot vents for Silenceair soundproof ventilators are visible above faculty office doors and are concealed behind timber joinery.

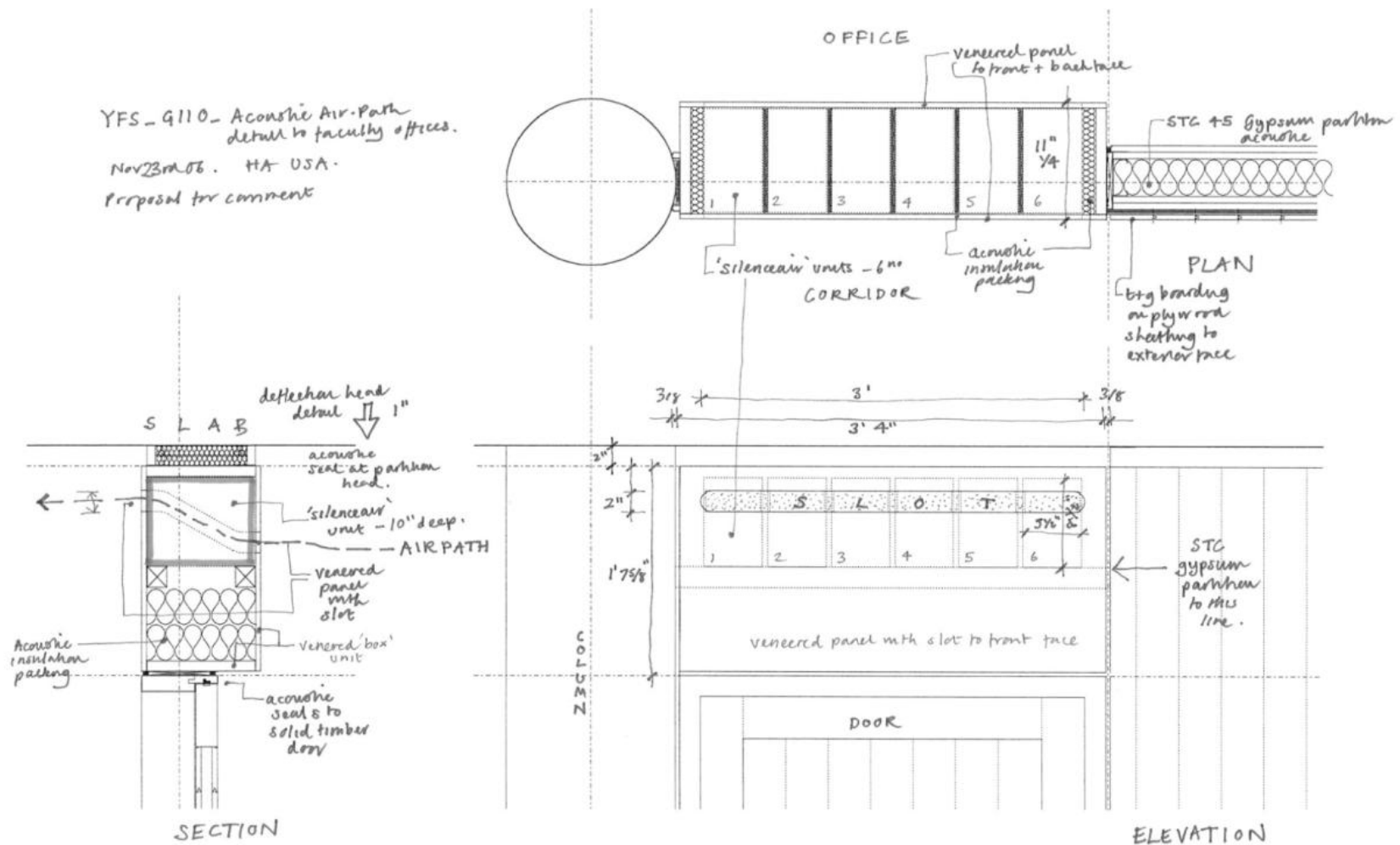


In Winter and Summer
air is collected at a high
level in the building and
drawn down to the
basement through low
pressure risers

Low pressure air enters each office through floor mounted helical grilles. The shape of the grille makes the air move in a corkscrew pattern up into the room. This helps the air move and mix at low pressure.



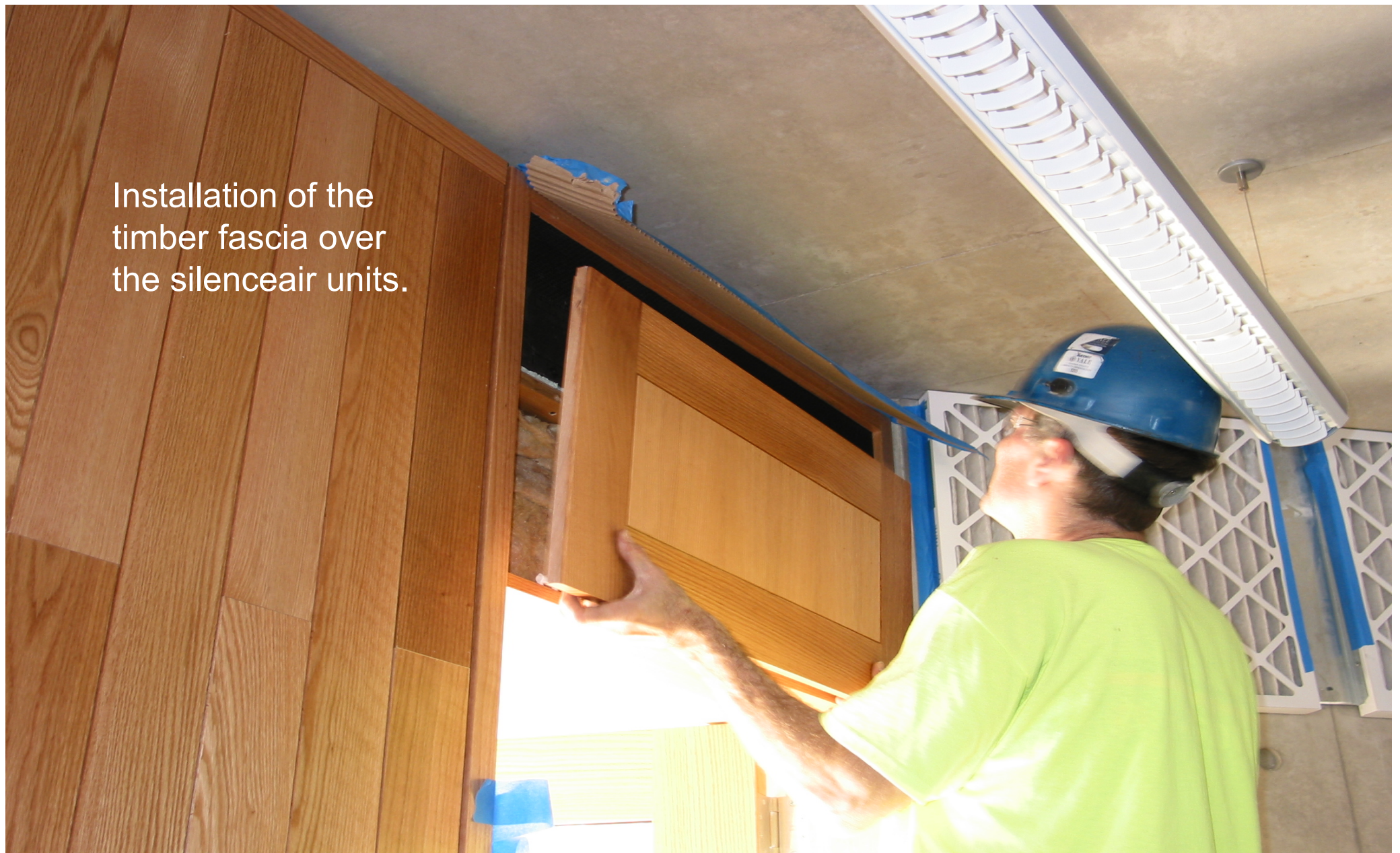
Detail of acoustic vents over doors




The silenceair modules were installed in the door head joinery at the factory prior to delivery to site. This photo shows them in position prior to the installation of the timber face fascia.



Installation of the
timber fascia over
the silenceair units.



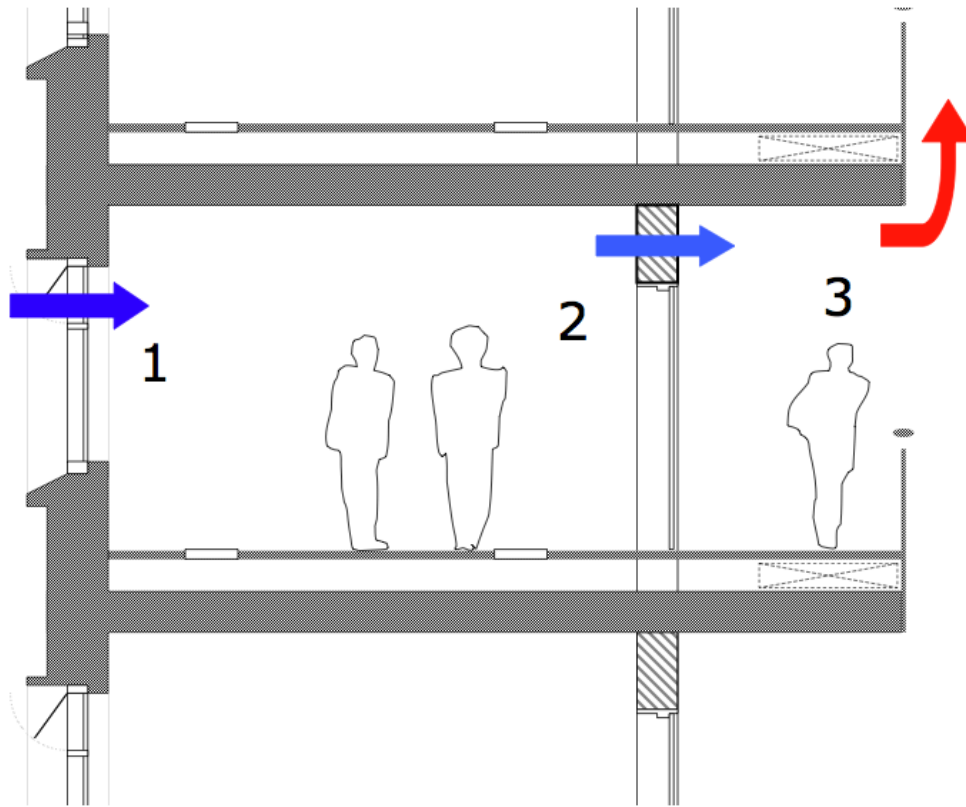


Silenceair modules are located in the door head joinery to each office.

The open air vent is hidden behind a metal grille.

SILENCEair
silent sounds, fresh air

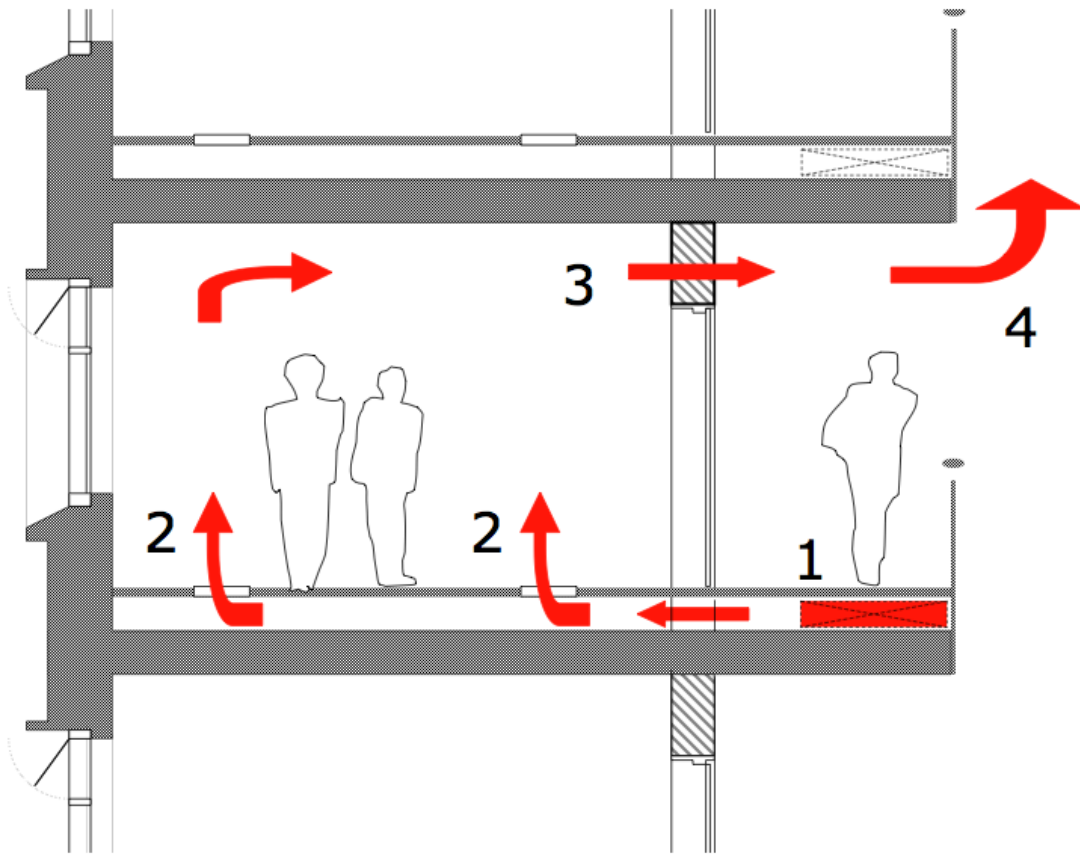




1. Low pressure air from outside enters rooms via operable windows at each floor level.
2. Air leaves room through Silenceair units in door head joinery.
3. Air enters common stairwell areas where gravity displacement ventilation takes air to upper level of the building where it is allowed to escape through skylight vents.

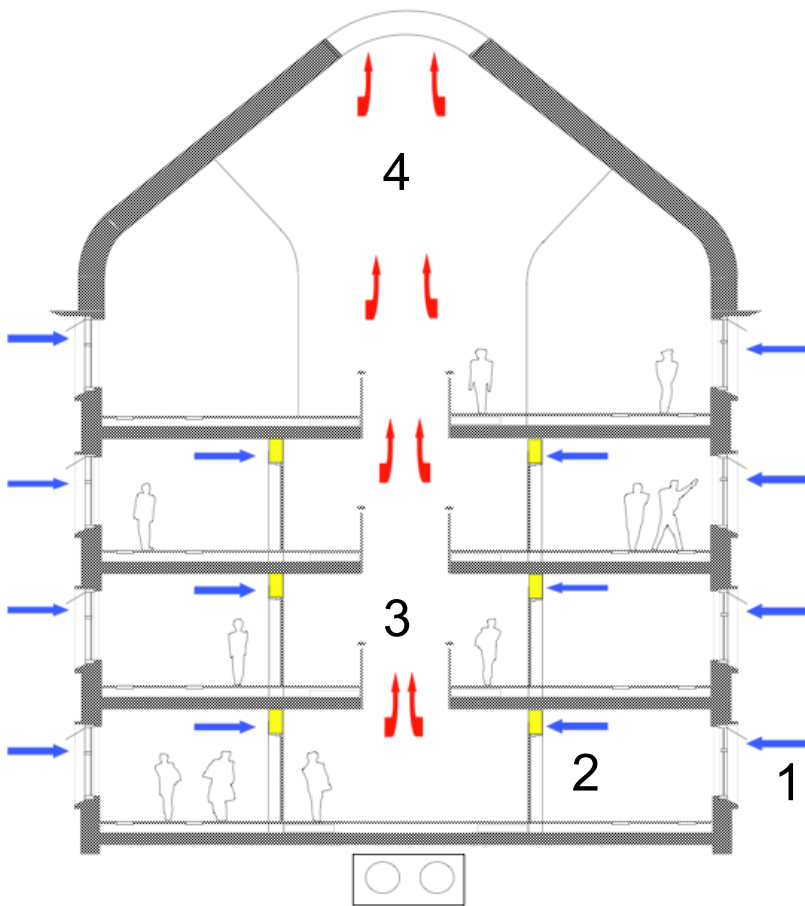
SPRING / AUTUMN VENTILATION FOR INDIVIDUAL OFFICES





SUMMER / WINTER VENTILATION FOR INDIVIDUAL OFFICES

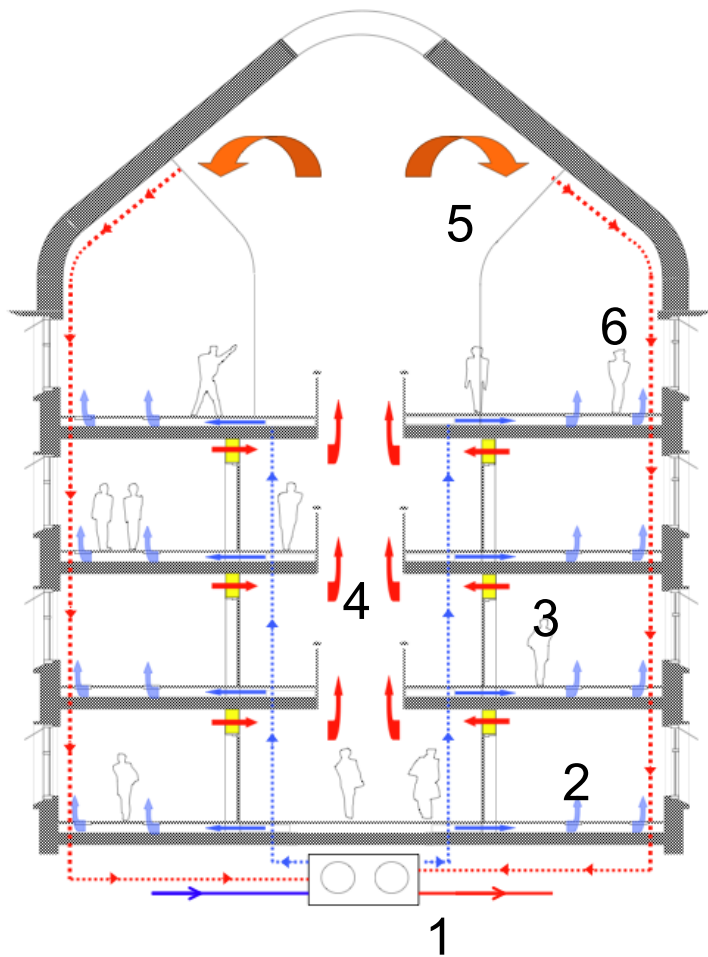
1. Low pressure air from risers is distributed by sub-floor ducts and discharged into sub-floor plenum at each floor level.
2. Floor mounted helical diffusers allow low pressure air to enter rooms and mix.
3. Air leaves room through Silenceair units in door head joinery.
4. Air enters common stairwell areas where gravity displacement ventilation takes air to upper level of the building where it is collected and re-circulated to the basement.



1. Cool air is drawn into the building through operable windows in the offices.
2. Air is drawn out of the offices via the Silenceair units.
3. Warm air rises through the building via the stairwells.
4. Air is released to the outside by vents in the roof and stairwells.

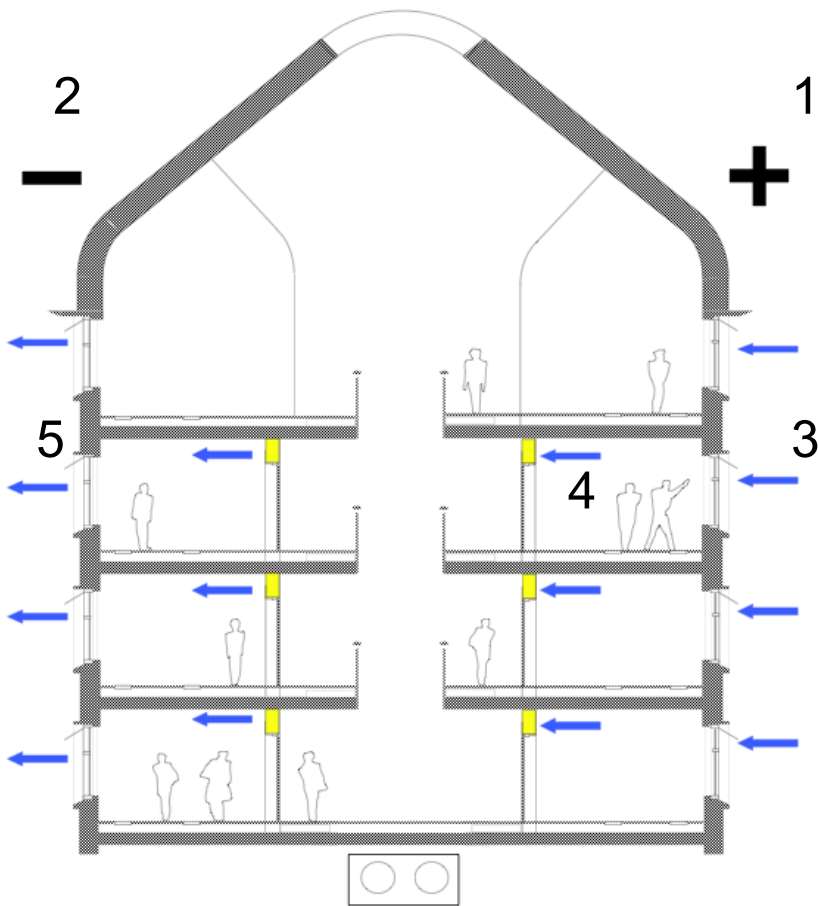
SPRING AND AUTUMN VENTILATION

- thermal displacement



SUMMER VENTILATION

1. Air is cooled in the basement using ground sourced heat exchanger. Air is distributed in low pressure risers and ducts.
2. Air enters offices from floor plenum via floor mounted helical air diffusers. Fan assisted to individual offices.
3. Air leaves office via Silenceair units over door.
4. Warm air rises through central stairwells.
5. Air is collected in loft area.
6. Air is returned to basement via low pressure shafts.



SPRING AND AUTUMN VENTILATION - Cross ventilation

1. Wind causes positive air pressure on one side of the building and negative air pressure on the other side of the building.
2. The difference in pressure between the sides forces air to flow through the building from the positive side to the negative side
3. Air is drawn into individual offices through operable windows.
4. Air leaves the office via Silenceair units over the doors.
5. Air is drawn out of the building through operable windows.

Thank You

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