

# SOUTH LANARKSHIRE COLLEGE LOW CARBON TEACHING BUILDING

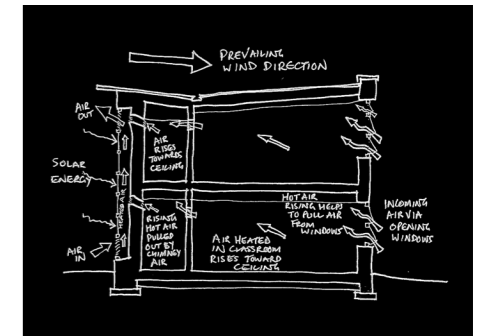
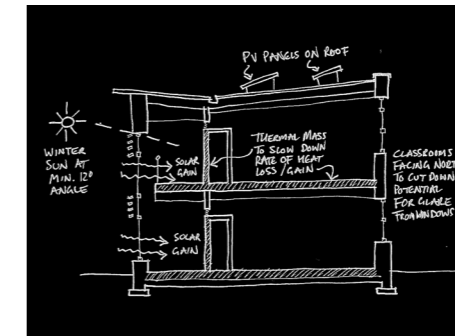
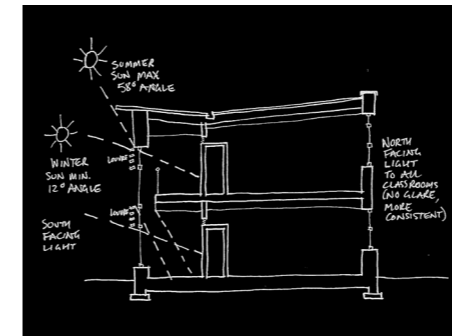


<b>LOCATION:</b> EAST KILBRIDE
<b>CLIENT:</b> SOUTH LANARKSHIRE COLLEGE
<b>VALUE:</b> £1.4M
<b>SIZE:</b> 565M <sup>2</sup>
<b>COMPLETION:</b> (JANUARY 2016)
<b>STRUCTURAL ENGINEER:</b> WILL RUDD DAVIDSON
<b>SERVICES ENGINEER:</b> CUNDALL
<b>AWARDS:</b> BREEAM OUTSTANDING (RATING: 90.4%)

The new £1.4m Low Carbon Teaching Building for the South Lanarkshire College is located on their main East Kilbride campus. The brief was to provide a new eight classroom building that provides multi-purpose learning facilities for a range of purposes, from daily teaching of the three main college departments, Business, Care and Construction, to providing facilities and hosting workshops for the local and business communities.

From the outset our Client emphasised that the building was to be an exemplar of sustainable construction. The construction process on site was fully documented and this will be incorporated into the Construction curriculum. Students will also be involved in monitoring how the building performs and comparing it to the other two buildings on the campus.

Following a series of stakeholder workshops, we developed a design with two-storey classroom wings grouped around a south facing courtyard. This space will be developed by the horticulture students at the College and form part of a series of outdoor teaching spaces. The building makes use of a ground source heat pump to provide the heating and energy is provided by a series of photovoltaic panels on the roof. Alongside the passive design principles, this ensures that the building has a nett zero energy use i.e. it generates as much energy as it uses. The project has achieved the first Outstanding award in the UK under the 2014 New Construction version of BREEAM.



## PASSIVE DESIGN

Our aim has been to provide a very simple passive design in which the main building construction elements will carry out most of the work in keeping the building comfortable to work in and easy to maintain. Our passive design strategy uses the following:

- Having all classrooms located on the north and north east sides of the building to minimise glare
- Maximising solar gain in corridor spaces from the south and east elevations
- Natural ventilation via openable windows on all elevations
- Thermal chimneys are used on the south facing elevation, to provide additional movement of air in corridor spaces as the external temperature gets warmer
- Stack ventilation pulls air from the classrooms to corridor spaces via transfer grilles at ceiling level
- Open diffusive vapour control membranes in external walls, to allow any moisture within these constructions to migrate back into the building during certain climatic conditions, along with vapour permeable natural fibre insulations in the external walls to allow them to "breathe"
- Thermal mass provided by concrete floors and masonry inside classroom walls at south facing corridors
- Good practice air tightness design details to seal construction junctions around the building
- Low VOC finishes throughout the building
- All materials used are provided by suppliers with ISO 14001 or better environmental management process.

## ACTIVE DESIGN

The active design strategy uses the following:

- All heating is provided by a ground source heat pump that supplies an underfloor heating system
- Daylight and movement sensors on all lights
- A separate BMS system to control and monitor the rest of the building services
- The BMS provides information to the College website, to allow students to monitor temperature, heating and energy use in the building
- User operated blinds to control glare from windows
- Photovoltaic panels on the roof to provide electricity.

Throughout the design process we introduced many ideas about the nature of education spaces and sustainable design, which were discussed in detail with the project stakeholders.

This process allowed the design to evolve and be refined so that the final design was as efficient as possible yet still retained the essence of the original concepts that were proposed at the start of the project.