

STEM Laboratory

Large Projects

Welcome to STEM



University of Bradford

Matt Wrate – Couch Perry Wilkes

wipe
OUT ACCIDENTS

UK PASSIVHAUS AWARDS 2015

07 July – Residence of the Austrian Ambassador

PROJECT OVERVIEW

STEM Laboratory

University of Bradford



Building Location: University of Bradford (City Centre)

Building Type: STEM Laboratory Example Facility for A-Level Students

TFA: 346 m²
378 m²

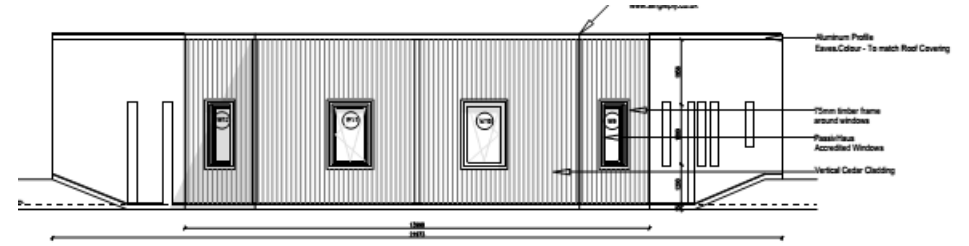
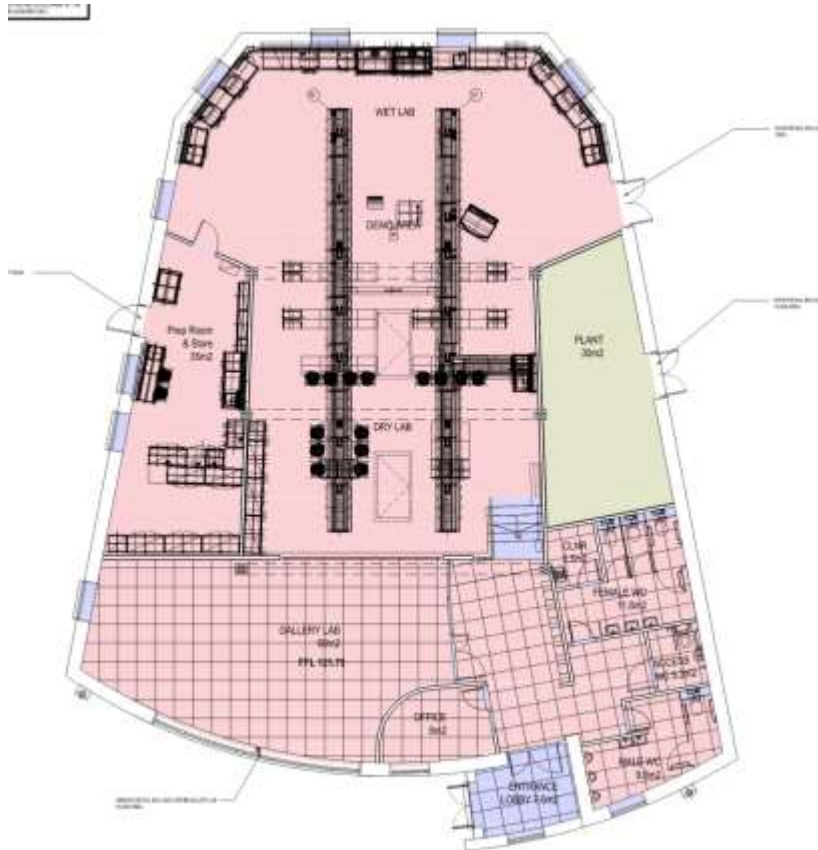
Construction: Lightweight Timber Panel

Completion Date: September 2013

Budget: £1,500,000

Key Team:
Architect – Watson Batty
PH Consultant – Couch Perry Wilkes
M&E Consultant – Couch Perry Wilkes
Main Contractor – GB Building Solution
BREEAM - GWP

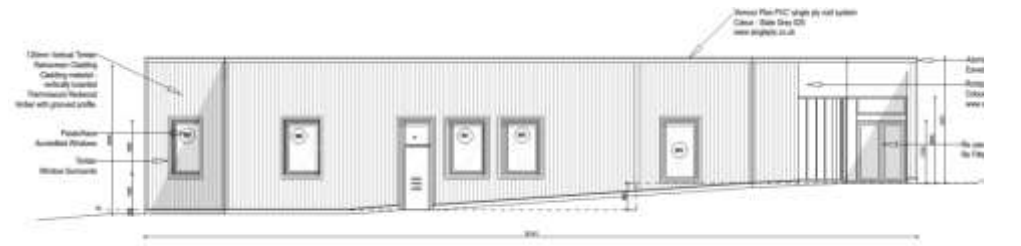




NORTH FACING ELEVATION



SOUTH FACING ELEVATION

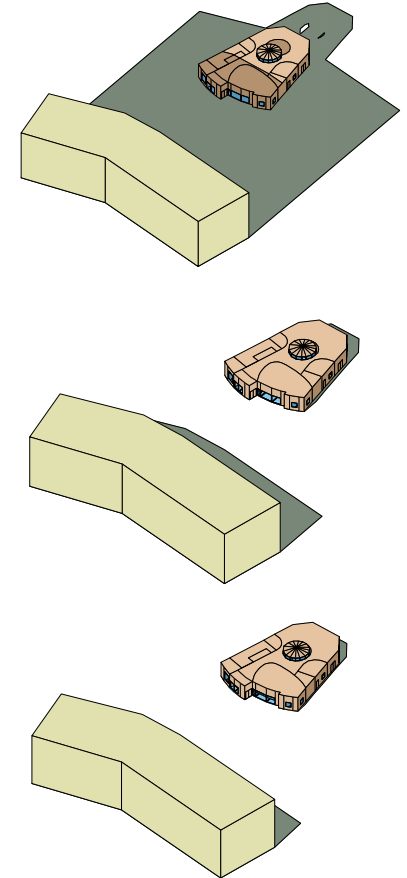


EAST FACING ELEVATION

REDUCED BENEFICIAL SOLAR GAIN

STEM Laboratory

University of Bradford



REDUCED BENEFICIAL SOLAR GAIN

STEM Laboratory

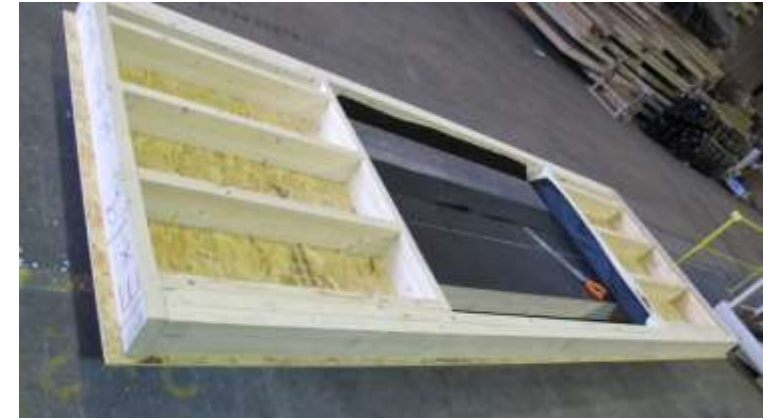
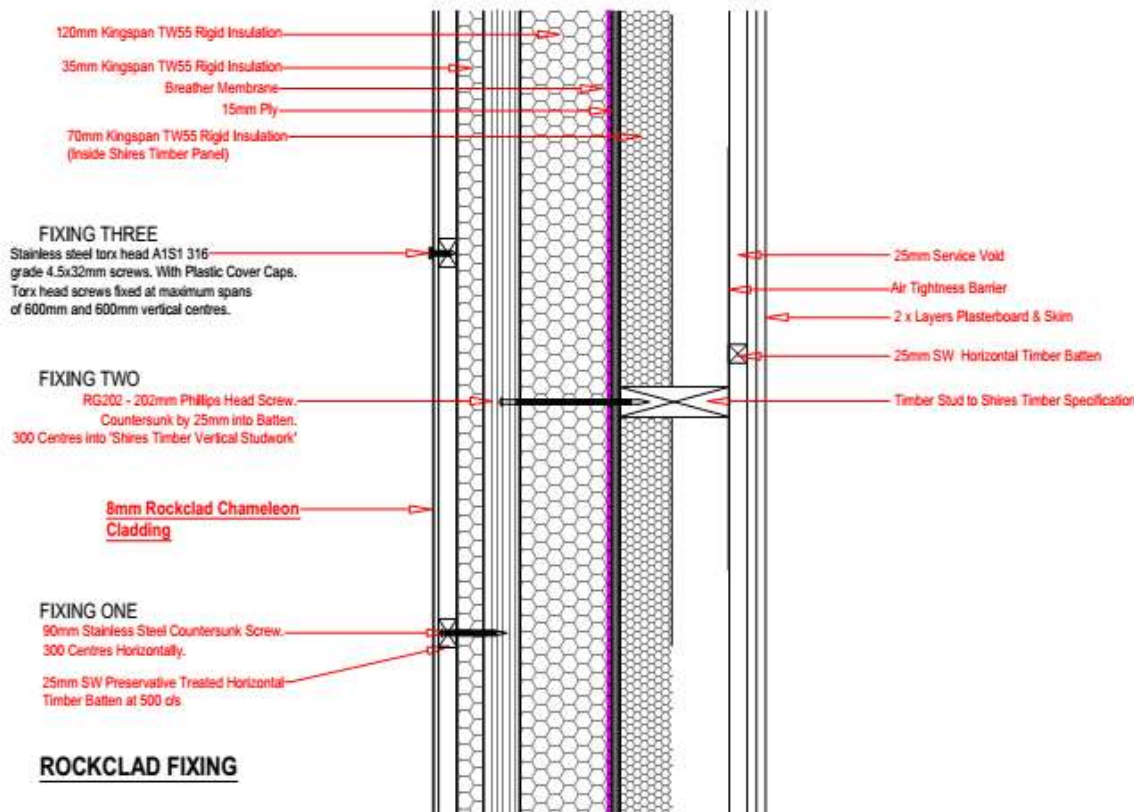
University of Bradford



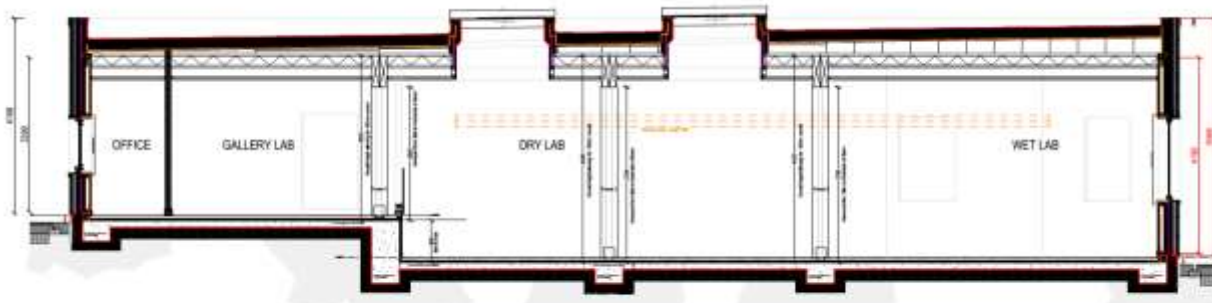
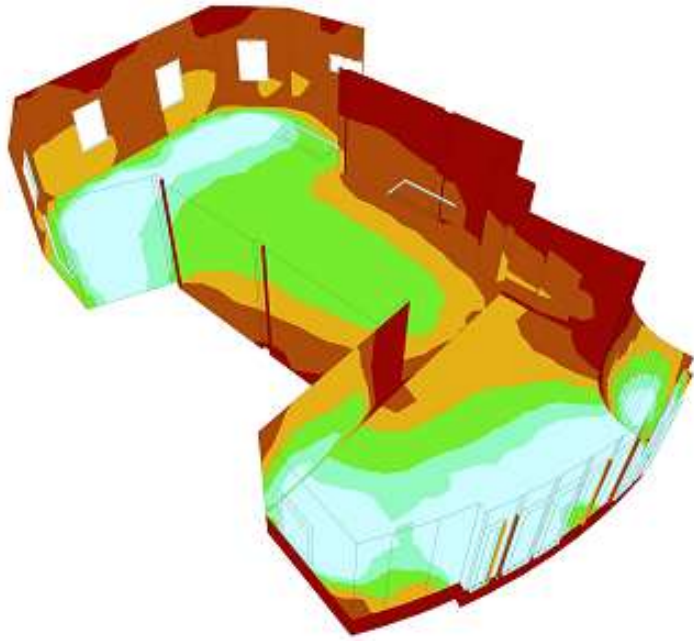
Element	Roof U-value (W/m ² K)	Wall U-value (W/m ² K)	Floor U-value (W/m ² K)	Glazing (W/m ² K)	Permeability (m ³ /h/m ²)
2010 Notional Building	0.18	0.26	0.22	1.8	5
PassivHaus standards	0.15	0.15	0.15	0.8	<1
CLG approach for Zero-carbon	0.1	0.15	0.1	0.7	3
University of Bradford Sustainability Guide	To meet CIBSE TM23	To meet CIBSE TM23	To meet CIBSE TM23	To meet CIBSE TM23	1.5
STEM - Proposed	0.11	0.11	0.11	0.92	0.6

Element	Roof U-value (W/m ² K)	Wall U-value (W/m ² K)	Floor U-value (W/m ² K)	Glazing (W/m ² K)	Permeability (m ³ /h/m ²)
STEM - Actual	0.093	0.099	0.126	0.92	1.0

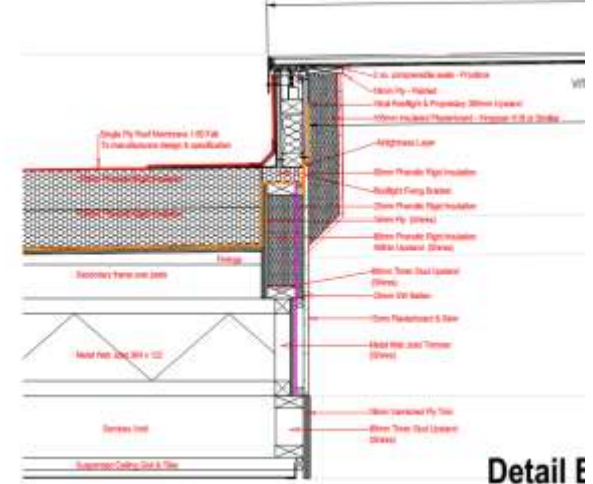
CONSTRUCTION APPROACH



CONSTRUCTION APPROACH

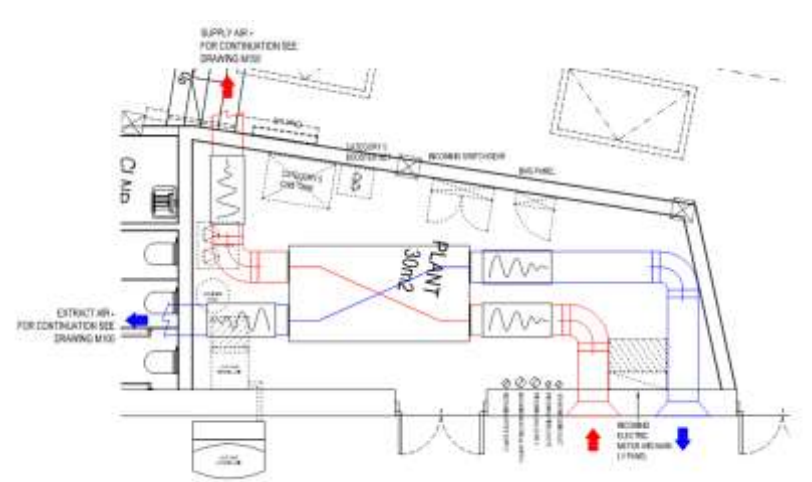
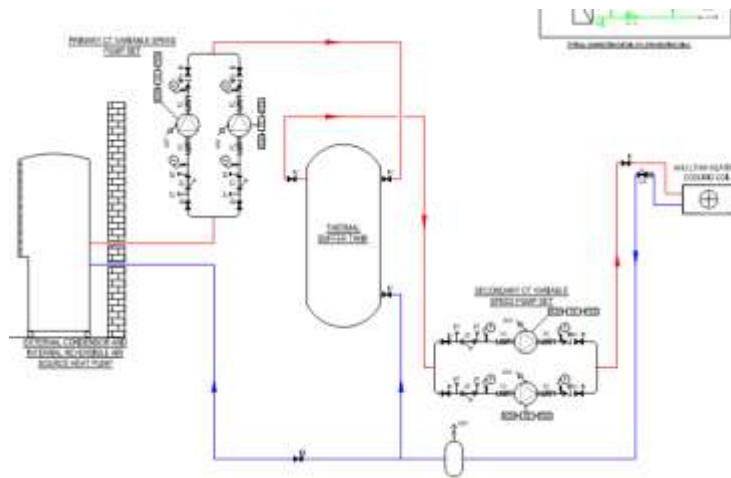
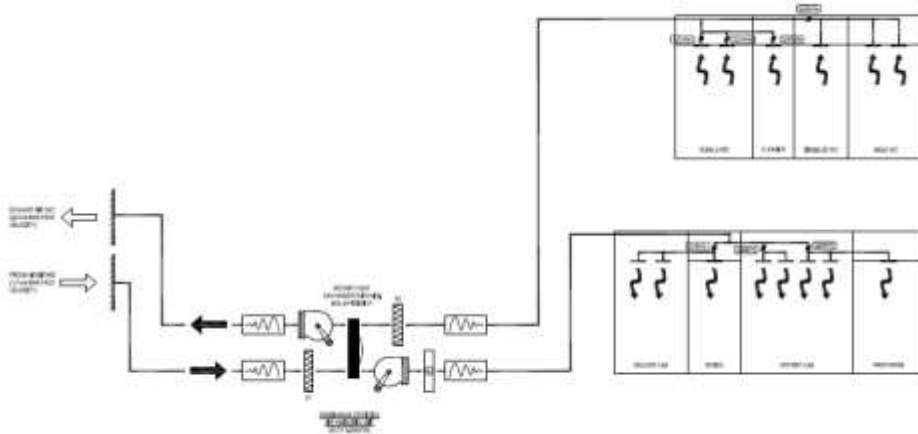


SECTION AA 1:50 Scale



Detail E

CONSTRUCTION APPROACH



ENERGY PERFORMANCE

Primary Energy Demand = 83 kWh/m²/yr

Space Heating Demand = 15 kWh/m²/yr

Air Tightness = 0.6 ACH⁻¹

Heating Load = 11 W/m²

Building: **STEM at Bradford**
 Street: **Bradford University Campus**
 Postcode/City: **BD7 1DP Bradford**
 Country: **UK**
 Building Type: **Demonstration Lab for A-level Students**
 Climate: **East Pennines (Waddington)**

Specific building demands with reference to the treated floor area		use: Monthly method		
	Treated floor area		Requirements	Fulfilled?*
Space heating	Annual heating demand	345.3 m ² 15 kWh/(m²a)	15 kWh/(m ² a)	yes
	Heating load	11 W/m²	10 W/m ²	-
Primary Energy	Space heating and dehumidification, cooling, household electricity.	83 kWh/(m²a)	120 kWh/(m ² a)	yes
	DHW, space heating and auxiliary electricity	47 kWh/(m ² a)	-	-
	Specific primary energy reduction through solar electricity	kWh/(m ² a)	-	-
Airtightness	Pressurization test result n ₅₀	0.6 1/h	0.6 1/h	yes
Passive House?				yes

* empty field; data missing; *: no requirement

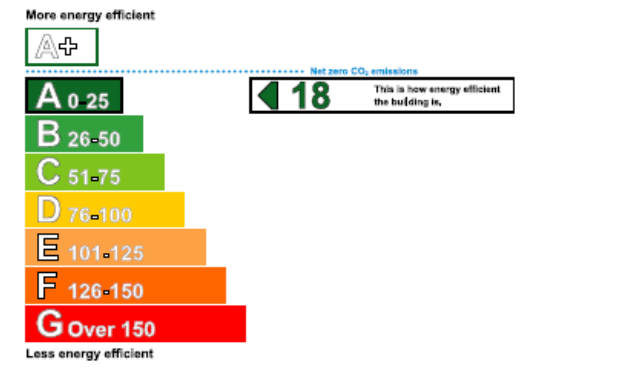


Energy Performance Certificate HM Government
 Non-Domestic Building

UNIVERSITY OF BRADFORD STEM BUILDING
 University of Bradford
 Richmond Road
 BRADFORD
 BD7 1DP
 Certificate Reference Number:
 9100-3004-0540-5006-7125

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Asset Rating



Technical Information

Main heating fuel: Grid Supplied Electricity
 Building environment: Air Conditioning
 Total useful floor area (m²): 385
 Building complexity (NOS level): 5
 Building emission rate (kgCO₂/m²): 15.68

Benchmarks

Buildings similar to this one could have ratings as follows:

26 If newly built
 68 If typical of the existing stock

Green Deal Information

The Green Deal will be available from later this year. To find out more about how the Green Deal can make your property cheaper to run, please call 0300 123 1234.