T-LEVELS | IfATE Institute for Apprenticeships and Technical Education

# T Level Technical Qualification in

# Building Services Engineering for Construction

# EMPLOYER-SET PROJECT

## Project Brief

610/5780/0

eduqas Part of WJEC | eal Part of the Enginuity Group

## Version History

| Version | Author | Date | Change Description |
|---|---|---|---|
| 1.0 | JW | 12/05/25 | First introduction |
| | | | |
| | | | |

# Contents

Project Brief ..... 3

# Project Brief

## The employer

New Horizons Construction is an established building contractor with branches throughout the UK. Each branch works on different types of developments including new build residential and commercial retail.

## The project

New Horizons Construction is preparing a tender submission for an extension to an existing primary school to provide extra space. The tender specification includes the requirement to include new building methods and renewable technologies to showcase environmental and sustainable awareness in the construction industry.

You are part of the team who is working together to respond to the tender. You must research technologies including modular build methods, renewable energy and water saving products. You must contribute to planning in line with the end client requirements.

An extract of the tender specification, including the relevant sections relating to your part of the project, has been provided. This includes site plans, supplier details and budget details.

## Tender Specification

## Primary school extension project

## Supplier list

Purchasing technologies directly from manufacturers is preferred. This is to ensure value for money and inclusion in manufacturer servicing programmes. Potential suppliers include:

- www.gcscabins.co.uk/modular-builds
- www.jcpsa.co.uk/news/what-is-modular-construction/
- www.renewableenergyhub.co.uk/
- www.theheatpumpwarehouse.co.uk
- www.edfenergy.com/heating/heat-pumps/air-source-heat-pump-guide
- www.thetankshop.co.uk
- https://www.treehugger.com/beginners-guide-to-rainwater-harvesting-5089884
- www.rainharvesting.co.uk

## Building specification/technology requirements

| | |
|---|---|
| Orientation: | South facing |
| PV system requirements | 8kW System |
| Air source heat pump requirements | 12kW system |
| Rainwater harvesting tank requirements | 40,000 litres |

The extension will be constructed via a modular build system. This will be constructed off-site and installed on-site during the school summer holidays.

To ensure the efficient use of energy, the extension should have a building management system (BMS) that controls heating and lighting (for peak and off-peak times) throughout the building.

The extension should include low energy lighting options within the building.

The extension should, as far as possible, incorporate renewable technologies as part of the finished development, including:

- water conservation
- electricity producing technologies
- electrical energy conservation.

For land optimisation, underground rainwater tank(s) should be installed.

To prevent the wastage of water and to ensure water efficiency throughout the building, the extension should incorporate the following water conservation technologies:

- spray taps
- low volume flush WC
- flow reducing valves
- infrared taps/WC flushing.

## Systems budget

Projected system costs based on technology requirements:

Modular build budget:
- £125,000 - £150,000 for a 12-meter x 12.8-meter modular build
- £23,000 - £25,000 for delivery (includes crane hire, installations, police escort for sizes over 3.1 meters)
- £50,000 - £55,000 for groundworks (includes modular build base, water, waste, plumbing, electrical, data services).

Water conservation budget:
- Rainwater harvesting £20,000 - £25,000 (includes £2,000 labour costs).

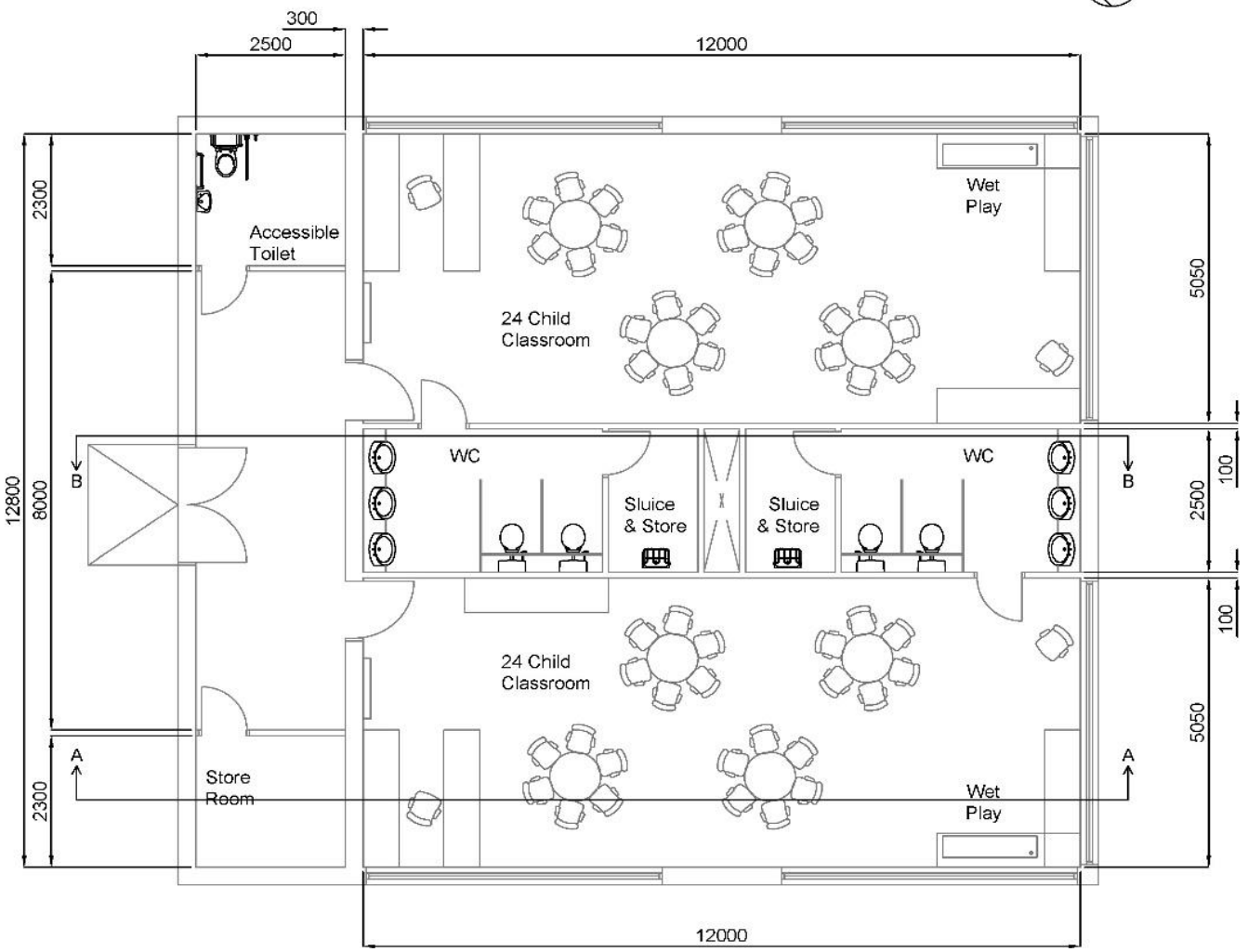
Electricity producing technology budget:
- Solar PV £12,000 - £13,500 (includes £3,000 labour costs).

Heat producing technology budget
- Air Source Heat pump £7,500 - £8,500 (that includes £2,000 labour costs).

## Duration

Installation of the modular building and renewable technologies, for the school extension, should take no more than 30 days. This needs to be completed within the 6-week summer holiday period.

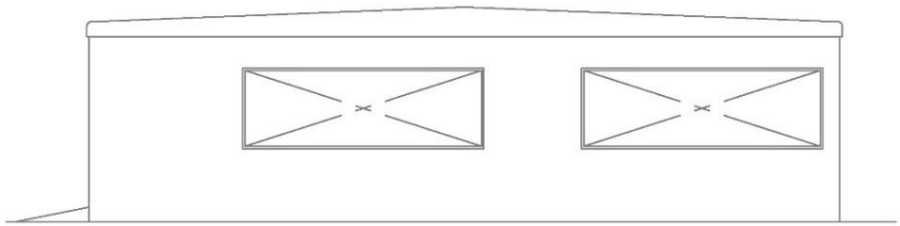
Systems will be commissioned by the manufacturers, therefore commissioning does not need to be taken into consideration within this 30 day duration.



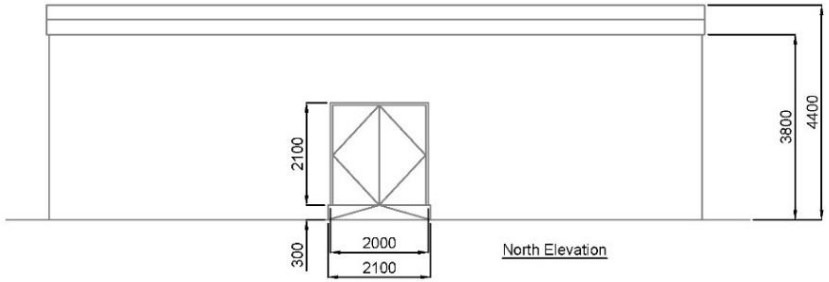

| Room | Length (m) | Width (m) | Height (m) | Temp (°C) | ACR/FAR |
|---|---|---|---|---|---|
| Classroom | 12m | 5.05m | 3.5m | | |
| WC | 4m | 2.5m | 3.5m | | |
| Store | 1.5m | 2.5m | 3.5m | | |

| | | | |
|---|---|---|---|
| Client: | Yurton Acadamy | Location: | Manchester |
| Drawn By: | PAE | Drawn Date: | 12/03/16 |
| Sheet Size: | A3 | Drawing Scale: | 1:75 |

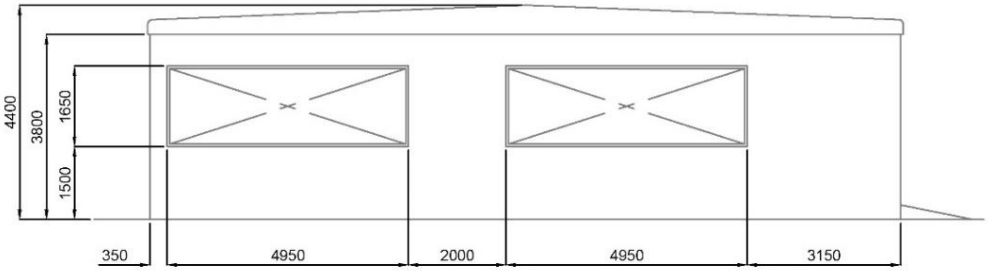
Drawing Title:
Two Classroom Extension
General Arrangement Plan



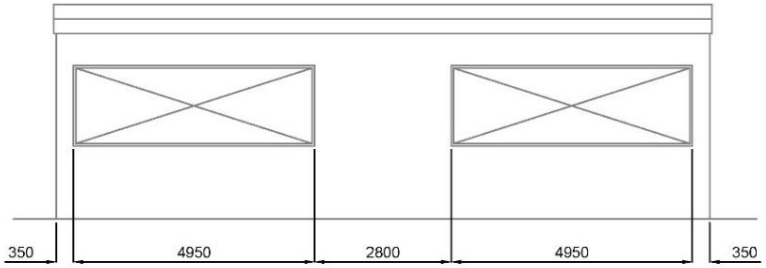
West Elevation




North Elevation




East Elevation




South Elevation

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|---|---|---|---|
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| Drawn By: | PAE | Drawn Date: | 12/03/16 |
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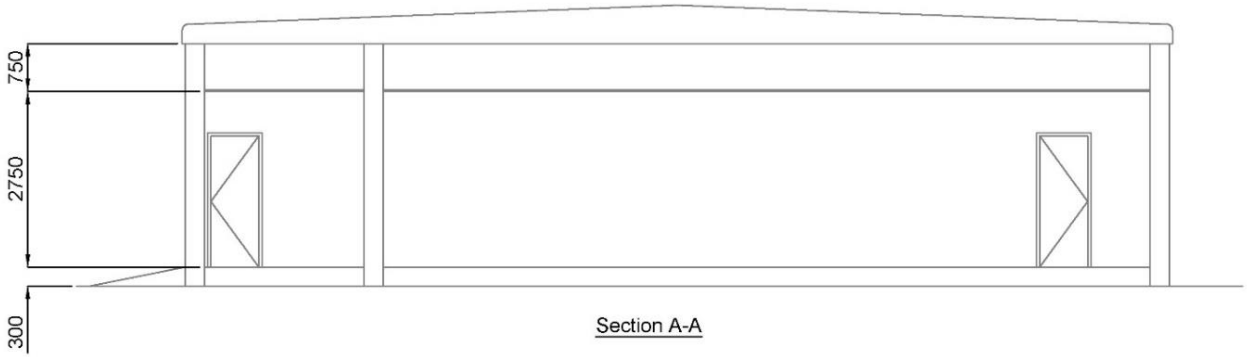
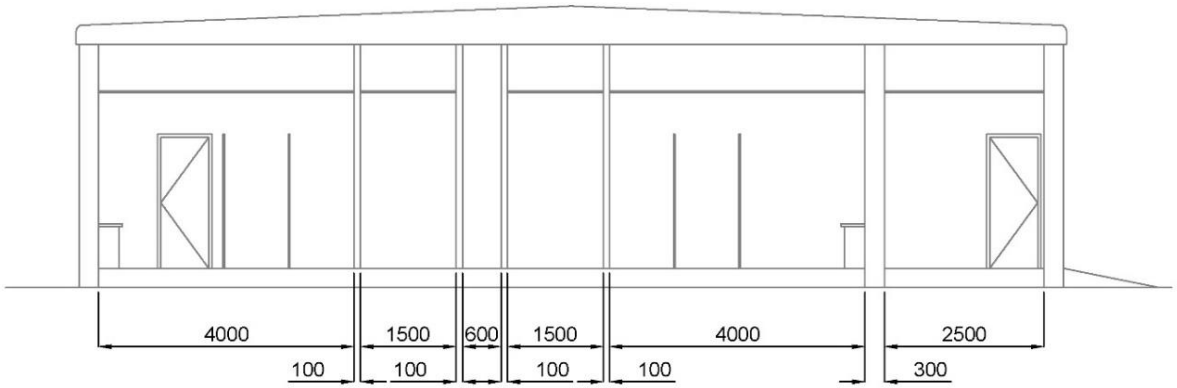
Drawing Title:
Two Classroom Extension
General Arrangement Elevations

Phil Eden 12/03/2016 19:27:20




Section A-A




Section B-B

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|---|---|---|---|
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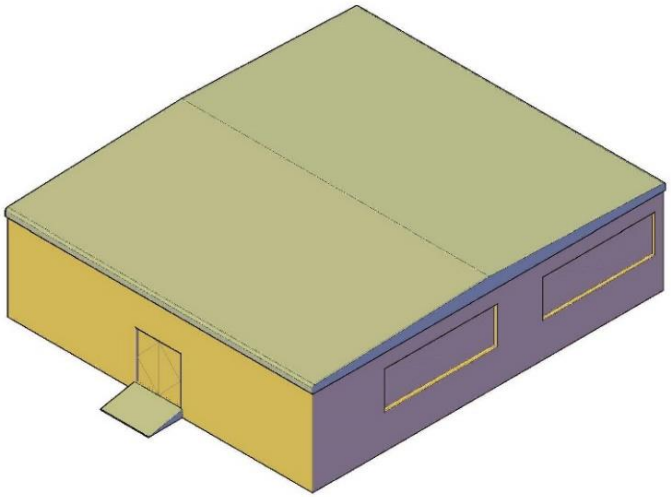
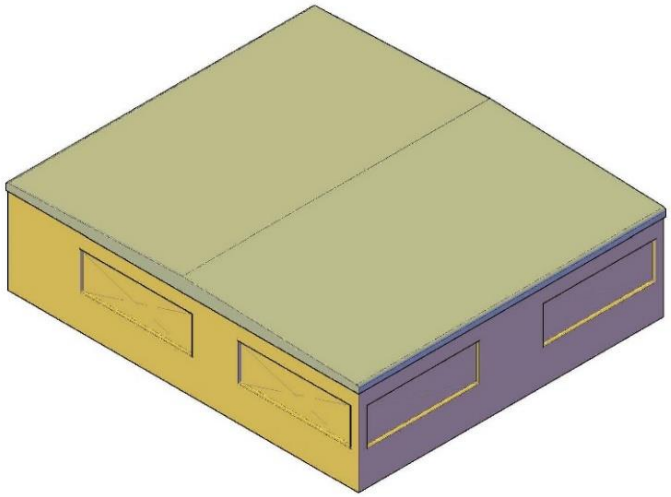
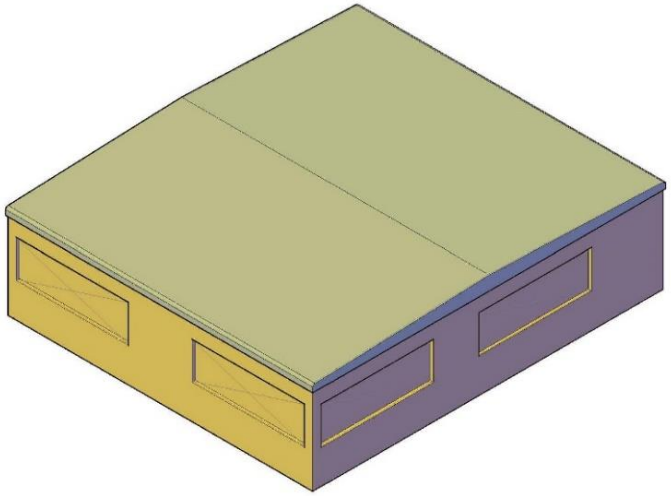
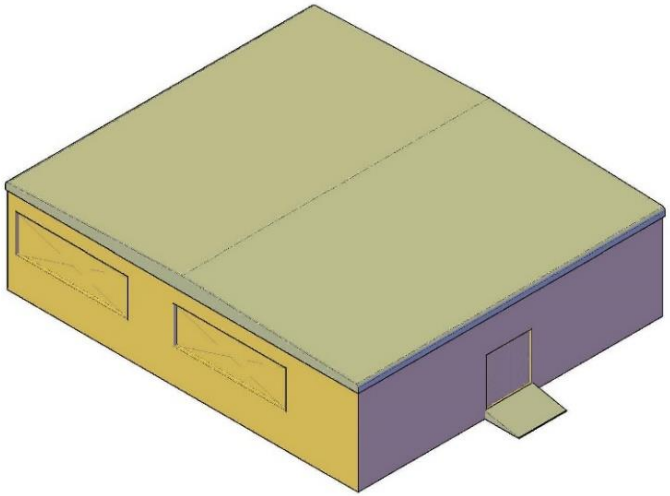
Drawing Title:
Two Classroom Extension
General Arrangement Sections

Phil Elke 12/03/2016 19:27:25









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| Drawn By: | PAE | Drawn Date: | 12/03/16 |
| Sheet Size: | A3 | Drawing Scale: | 1:150 |

Drawing Title:
Two Classroom Extension
Isometric Views

Phil Elsie 12/03/2016 19:27:30

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