

Level 3 Construction and The Built Environment – Example Assignment

Construction Technology

Scenario

A Client organisation has approached your company, they have been granted outline planning permission for the development of a mixed use sport complex, and they have acquired an old industrial site in an urban location that is approximately half an acre in size. The budget for the development is approximately £25million.

The site is adjacent to playing fields used by local sports teams, and there are residential properties opposite and alongside the proposed development.

The client's vision for the development is 'An inspirational centre of excellence, providing opportunities for all to succeed' they have also indicated that they want 'a modern eye catching development'.

The development will consist of a multi-use sports hall that has an open floor area of 40m by 20m. In a separate building attached to the hall, there will be changing facilities and showers. There will also be a gym and fitness suite. This will be open to the general public, so there would be an inviting reception area, with room for vending machines and for customers to sit down and relax. The client also wants to have teaching/meeting rooms that can be used by schools, local sports teams and businesses so the complex can be hired out. There will need to be parking for a minimum of 20 cars.

The site for the proposed multi-use sports development, has previously been used as an industrial/manufacturing unit, this was a framed structured building with solid concrete ground floor constructed in the 1950's, it was used to manufacture and store paints and other unknown chemicals. Before this the land contained Victorian terraced housing with basements.

The location of the development is in an area of higher than average rainfall with over 1250mm per/year and an average annual wind speed of 15 knots.

Task

You are required to produce a report examining the design and construction of new buildings

This report will need to cover:

1. Foundation design and construction.
2. Superstructure design and construction.

You will need to consider:

- The procedures used in subsoil investigation and how this information is used in the choice of foundations.
- Methods of ground improvement including their benefits and drawbacks.
- The principles foundation design and their impact on foundation choice
- The different types of foundation, including the advantages and disadvantages with regards to the scenario.
- The design, construction and appropriate detailing of walls, floors and roofs with regards to the project scenario.
- The use of internal finishes with regards to the project scenario.

You will need to include advantages and disadvantages of the different methods and techniques to arrive at a justified conclusion of method and techniques appropriate to the scenario.

Sources of information

- Pearson BTEC National Construction Student Book Authors: Simon Topliss, Mike Hurst, Simon Cummings. Sohrab Donyavi
- www.planningportal.co.uk
- Arthur Lyons, Materials for Architects and Builders, 5th Edition,(Routledge 2014) ISBN 978-0-415-70497-7
- Billington M J, Simons M W and Waters J R – *The Building Regulations Explained and Illustrated, 13th Edition*(Blackwell, 2007) ISBN 978-1-4051-5922-7
- Chudley R and Greeno R – Building Construction Handbook, 11th Edition (Butterworth-Heinemann, 2016) ISBN 9781138907096
- Further Resources may be found at www.edexcel.com/resources/Pages/default.aspx.