

**Welcome to the T Level BSE & Onsite
Construction Core Component Network**

**Building Service Engineering (BSE)
& Onsite Construction**

**Access to the T Level Technical Qualification
in BSE (8710) & Onsite (8711) for
Construction Technical Qualification
Specification is required as part of the
workshop activities**

Rob Mallender
C&G Technical Advisor BSE

Bob Hassall
EAL TQA

Paul Brown
C&G Technical Advisor
Construction

Meeting format



Please send any questions in the chat area or raise your hand throughout, we want you to get involved



All attendees please mute when not speaking. This is a centre network, and we will try and have periods for you to talk to each other.



Does anyone have any issues if we record the session?

Agenda

1	Introduction to the workshop panel
2	Technical Qualification Specification core content activity
3	Overview of assessment of core content
4	Q&A



- The 14 knowledge outcomes of the BSE core
- The assessment requirements of these knowledge outcomes



- Occupational specialisms
- Progression
- Industry placements
- Reviewing content

Construction and BSE T Level Team



Paul Brown
Technical Advisor- Construction
M: 07872 463185
Paul.Brown@cityandguilds.com



Bob Hassall
TQA – BSE - EAL
M: 07718 366242
Bob.Hassall@eal.org.uk



Rob Mallender
Technical Advisor- BSE
M: 07789 926163
Robert.Mallender@cityandguilds.com



Alison Whittle
Technical Advisor- Post 16
M: 07808330385
Alison.Whittle@cityandguilds.com

Technical Qualification Specification core content workshop activity

An e-copy of the Specification is located

[here for BSE](#)

[Here for Construction](#)

Technical Qualification Specification

Underpinning knowledge outcomes

On completion of the BSE Core, learners will understand

1. Health and safety in construction
2. Construction science principles
3. Construction design principles
4. Construction and the built environment industry
5. Construction sustainability principles
6. Construction measurement principles
7. Building technology principles
8. Construction information and data principles
9. Relationship management in construction
10. Digital technology in construction
11. Construction commercial/business principles
12. Building Services Engineering (BSE) systems
13. Maintenance principles
14. Tools, equipment and materials

Completion of the Building Services Engineering core will give learners the opportunity to develop their maths, English and digital skills. Details are presented in the skills section of each criterion.

- Onsite Construction outcomes 1-11
- BSE outcomes 1-14

Technical Qualification Specification

Underpinning knowledge outcome

1. Health and safety in construction

- 1.1 legislation and regulations
- 1.2 public liability and employer's liability
- 1.3 approved construction codes of practice
- 1.4 development of safe systems of work
- 1.5 safety conscious procedures
- 1.6 safety inspection of a work environment
- 1.7 implications of not following H&S legislation
- 1.8 safe working practices for the safe isolation of systems

Technical Qualification Specification

Underpinning knowledge outcome

2. Construction science principles

- 2.1 international system of units
- 2.2 derived SI units
- 2.3 materials science principles
- 2.4 mechanical science principles
- 2.5 electricity principles
- 2.6 structural science principles
- 2.7 heat principles
- 2.8 light principles
- 2.9 acoustics principles
- 2.10 earth science principles

Technical Qualification Specification

Underpinning knowledge outcome

3. Construction design principles

- 3.1 benefits of good design
- 3.2 design principles
- 3.3 role of different disciplines involved in design
- 3.4 design process from conception to completion
- 3.5 the concept of the 'whole building', including life cycle assessment

Technical Qualification Specification

Underpinning knowledge outcome

4. Construction and the built environment industry

- 4.1 structure of the construction industry
- 4.2 how the construction industry serves the economy as a whole
- 4.3 integration of the supply chain through partnering and collaborative practices
- 4.4 procurement of projects within the construction sector
- 4.5 managing change requests from various parties
- 4.6 roles and responsibilities of the construction professions and operatives
- 4.7 the role of CPD in developing the knowledge and skills of those working in the sector
- 4.8 building information modelling (BIM)
- 4.9 PESTLE factors
- 4.10 documentation used in construction projects
- 4.11 procedures for handing over projects to clients

Technical Qualification Specification

Underpinning knowledge outcome

5. Construction sustainability principles

- 5.1 sustainability when planning and delivering a construction project
- 5.2 types of sustainable solutions
- 5.3 environmental legislation
- 5.4 environmental performance measures
- 5.5 principles of heritage and conservation
- 5.6 lean construction
- 5.7 waste management legislation
- 5.8 waste management
- 5.9 energy production and energy use
- 5.10 renewable energy and energy conservation
- 5.11 digital technologies

Technical Qualification Specification

Underpinning knowledge outcome

6. Construction measurement principles

- 6.1 accurate and appropriate measurement
- 6.2 standard units of measurement and measurement techniques
- 6.3 measurement standards, guidance and practice

Technical Qualification Specification

Underpinning knowledge outcome

7. Building technology principles

- 7.1 construction methods
- 7.2 forms of construction
- 7.3 key content and required notifications of UK Building Regulations and Approved Documents
- 7.4 building standards
- 7.5 trade Associations and Professional Engineering Bodies in relation the BSE sector
- 7.6 manufacturers' instructions
- 7.7 building structure and fabric
- 7.8 approved documents and guidance for penetrating building structure and fabric

Technical Qualification Specification

Underpinning knowledge outcome

8. Construction information and data principles

- 8.1 data
- 8.2 sources of information
- 8.3 data management and confidentiality
- 8.4 drawings, circuit diagrams and schematics
- 8.5 programming and set up of digital systems using various IT resources

Technical Qualification Specification

Underpinning knowledge outcome

9. Relationship management in construction

- 9.1 stakeholders
- 9.2 roles, expectations, and interrelationships
- 9.3 collaborative working to project delivery and reporting
- 9.4 customer service principles
- 9.5 team work to team and project performance
- 9.6 team dynamics
- 9.7 equality, diversity and representation
- 9.8 negotiation techniques
- 9.9 conflict management techniques
- 9.10 methods and styles of communication
- 9.11 employment rights and responsibilities
- 9.12 ethics and ethical behaviour
- 9.13 sources of information

Technical Qualification Specification

Underpinning knowledge outcome

10. Digital technology in construction

- 10.1 internet of things
- 10.2 digital engineering techniques
- 10.3 opportunities for the use of technology

Technical Qualification Specification

Underpinning knowledge outcome

11. Construction commercial/business principles

- 11.1 business structures
- 11.2 business objectives
- 11.3 business values
- 11.4 principles and examples of corporate social responsibility
- 11.5 principles of entrepreneurship and innovation
- 11.6 measuring success
- 11.7 project management
- 11.8 quality management

Technical Qualification Specification

Underpinning knowledge outcome

12. Building Service Engineering (BSE) systems

- 12.1 building Services Engineering systems
- 12.2 the potential effects on building performance during installation, commissioning and decommissioning of BSE systems
- 12.3 mechanical principles of components
- 12.4 electrical supply
- 12.5 earthing arrangements
- 12.6 cables, accessories and equipment used in older electrical installations
- 12.7 pipework and ductwork, components and systems

Technical Qualification Specification

Underpinning knowledge outcome

13. Maintenance principles

- 13.1 types of maintenance
- 13.2 maintenance plans
- 13.3 typical timeframes between maintenance tasks
- 13.4 documentation required for maintenance and verification of maintenance activities
- 13.5 actions required when faults cannot be rectified

Technical Qualification Specification

Underpinning knowledge outcome

14. Tools, equipment and materials

- 14.1 methods used to ensure tools, equipment and materials are fit for purpose
- 14.2 maintenance of tools, equipment and materials

Ensure core skills from the handbook are embedded in delivery:

- Core skill A (CSA) Problem solving
- Core skill B (CSB) Primary research
- Core skill C (CSC) Communication
- Core skill D (CSD) Working collaboratively
- Maths, English and digital skills

The skills column in the handbook identifies where these skills can be developed

2.6 Structural science principles

Range:

Structural science principles - forces, loads, materials, structural members.

What do learners need to learn?

Structural science principles its use and effects and how it informs the construction and design of buildings.

- The effects of forces on materials and building: compression and torsion stress, tension, bending, and shear
- The different types of loads acting on structures: vertical, horizontal and longitudinal
- Material properties: strength, malleability, hardness, elasticity
- Different types of structural members: footings, walls, beams, roof trusses, columns and beams.
- Compliance with document
- Calculations: permitted notching zones and maximum depths of holes and notches
- Drilling and notching conventions
- Importance of calculations being conducted in structural design: beam, load, column.
- Appreciate the effects of adjacent structures, trees, drains and sewers, ground conditions, on the design of foundations
- Where to find the Building Regulations that cover foundations

Skills

CSB
MC4
DC4

Paid for resources: supporting delivery with Hodder Education Building Services Engineering and Construction T Level: Core

Project practice

A principal contractor has been appointed by a client for a 'design and build' project. A rural greenfield site has already been acquired by the client, but it does not have planning permission.

An application has been made to the local planning department, with plans for six new 3- and 4-bedroom low-rise dwellings. However, the plans have been initially refused by Local Authority Building Control.

Discuss in a group the potential grounds for LABC to oppose the planning application.

Bearing in mind the possible reasons you have identified for rejecting the planning application, prepare a new application to address each of the issues. To achieve this, you may need to:

- ▶ research construction materials to ascertain their properties and suitability
- ▶ consider sustainable construction solutions
- ▶ research corporate social responsibility towards the community.

Research

Search online for 'PAS 2030:2019 Specification for the installation of energy efficiency measures in existing dwellings and insulation in residential park homes'.

Identify the standards of PAS 2030:2019 for retrofit installers and explain how they benefit the construction industry.

Key term

Superstructure: the part of a building above ground level, built on the basement or foundation



▲ Figure 3.1 Superstructure and substructure of a building

Industry tip

Never deviate from approved working drawings during the construction phase without written consent from either Local Authority Building Control or a government-approved private building inspector. Changes to the design without permission can be expensive to put right if the work fails to meet building regulations approval.

Improve your English

'Luminaire' is a word used to describe a source of artificial light. Write a paragraph to explain the use of different types of luminaire in a building, and explain why natural light is always a better source of energy.



▲ Figure 3.17 Retrofit installer fitting an energy-efficient boiler

Improve your maths

Research the average wages for five different trades in your area, then determine the annual median wage.

[Link](#) to Hodder Website also has the link to the mapping grids (bottom of the webpage) which can show how other books can deliver the Occupational Specialism ruth.murphy@hoddereducation.co.uk

Past and future support:

(31.01.2023 follow up from today, 12.15-14.00 GMT)

[Centre Support via MS Teams Preparing for Core Assessment Q&A](#)

Construction On-site and BSE preparing for core assessment (Core Theory Exams) Feb 21, 2023 9:30 AM:

<https://attendee.gotowebinar.com/register/6114458258028770137>

Future Networks how can we help

Please complete our short survey and tell us what you need for the future.

<https://forms.office.com/r/qkzfv6pML0>



14/04/2023

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Thank you

Any further questions or comments before we close?

About City & Guilds

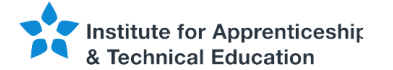
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