T-LEVELS | Institute for Apprenticeships & Technical Education

T Level Technical Qualification in Design and Development for Engineering and Manufacturing

Employer-Set Project (8730-035)

Task 2
Summer 2023

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Task 2 – Design

The technical design brief you created in Task 1 has been submitted to the client, Canal Heritage, who has accepted the brief. You have now been asked to develop your designs and prepare drawings and calculations for the new lock gate.

Part A

You are to prepare fully annotated sketches (3D, plan, elevation, section and detail) of at least **two potential designs** of the lock gate. The sketches and drawings must illustrate:

- gate hinges, seals and opening/closing mechanism
- materials from which the lock gate is to be constructed
- remote surveillance details
- gate shape, material finishes and aesthetic features
- full dimensions
- preventative measures to decrease the risk of a boat colliding
- the sustainable features of key lock gate components.

You must:

- annotate your lock gate sketches with hydrostatic pressure calculations for the gate
- prepare a supporting calculation determining the hydrostatic pressure the lock gate should be designed to resist
- include all your assumptions you made when carrying out the calculations.

When preparing your sketches and drawings, you will need to use the information provided in the project brief and design specification, as well as a copy of the technical brief that you prepared as part of Task 1.

You are also to prepare and include notes detailing how your designs meet the brief requirements, which will typically be 500 words.

Part B

Once you have developed the sketches of your lock gate designs you should then prepare a final fully dimensioned and scaled CAD drawing of your **one preferred** chosen lock gate design.

The submission for this task (Part A & B) will typically be four A3 drawings, two A4 sides of supporting calculations and notes (typically 500 words). You should submit your initial sketch design ideas (minimum of two) and one fully dimensioned and scaled CAD drawing of your final preferred chosen design.

Timing of assessment

- You will have **eight hours** to complete your sketches, calculations and dimensioned CAD drawing. You will have access to relevant software to complete your CAD drawing.

Conditions of assessment

- Your sketches, notes and calculations should be completed working alone under supervised conditions.

- You must not share or discuss your work with other candidates.
- You will have access to a copy of your response to the previous task (for review purposes only).
- You will **not** have access to the Internet for the completion of this task.
- Assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed.

What you must submit on completion of this task

- Sketches for **two** designs and a CAD drawing for your **one** preferred design (typically four A3 size drawings).
- Supporting calculations (typically two sides of A4) – hard copy or file saved securely (e.g., in a secure online location or on memory stick to be handed in).
- Notes detailing how your design meets the brief requirements (typically 500 words).

Additional evidence of your performance that will be captured for marking

- N/A

Marks available

- 24

Get in touch

City & Guilds Technicals Quality Team

We are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

T: 0300 303 53 52 (Monday - Friday | 08:30 - 17:00 GMT)

E: **technicals.quality@cityandguilds.com**

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