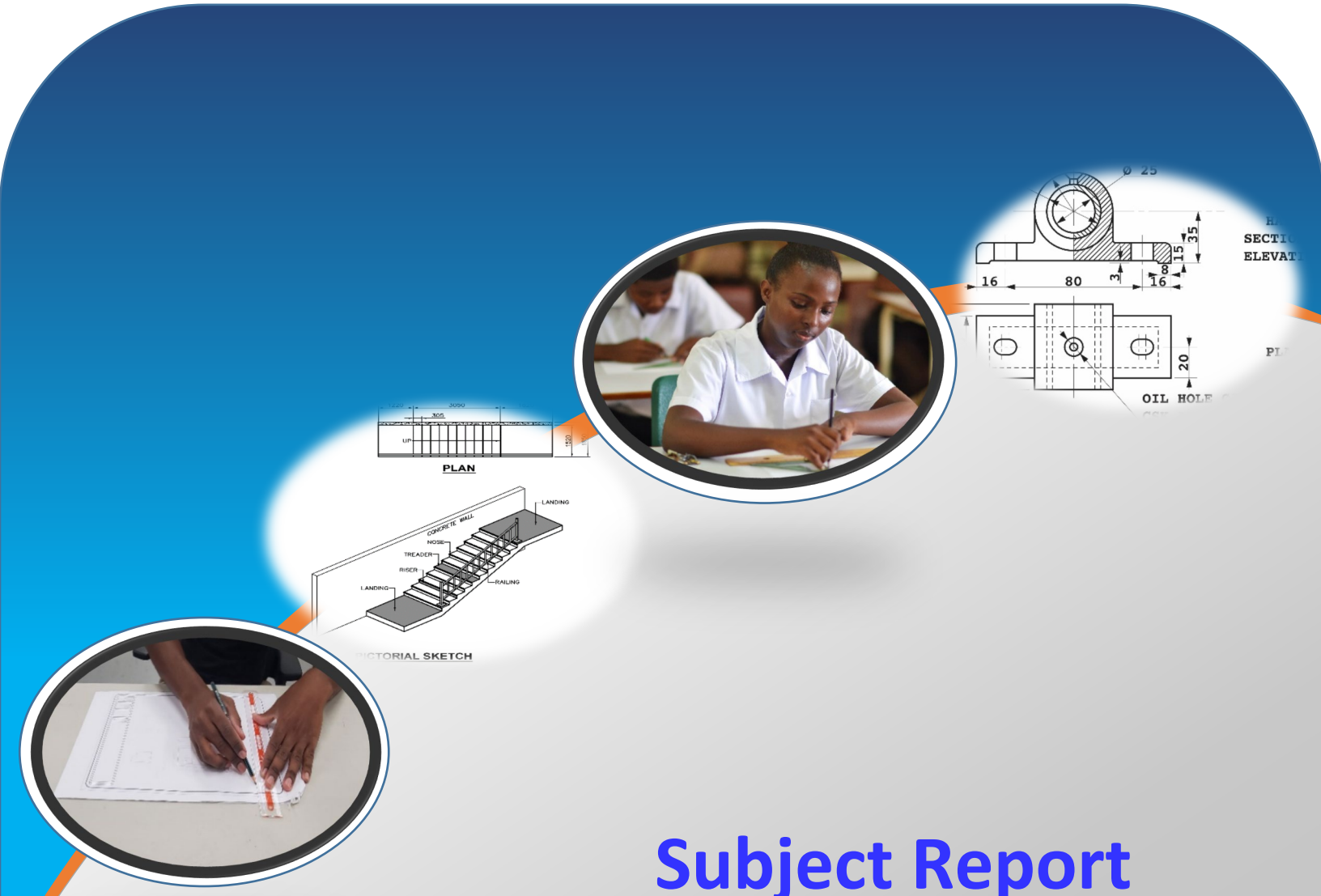
CARIBBEAN EXAMINATIONS COUNCIL

CSEC® TECHNICAL DRAWING



Subject Report

May/June 2025

CARIBBEAN EXAMINATIONS COUNCIL

REPORT ON CANDIDATES' WORK IN THE
CARIBBEAN SECONDARY EDUCATION CERTIFICATE®
EXAMINATION

MAY/JUNE 2025

TECHNICAL DRAWING
GENERAL PROFICIENCY

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INTRODUCTION

This guide has been compiled using examiner's comments on candidates' performance on the May/June 2025 CSEC Technical Drawing examination.

The number of candidates entered for this subject was 10 283, compared with 10 230 in 2024 and 9425 in 2023. An analysis of candidates' performance on the 2025 exam showed that the number of candidates achieving Grade I is below that of previous years. There was a marginal decrease in the number of candidates achieving Grades I–III when compared with 2024. Overall, the percentage of candidates achieving acceptable grades (Grades I–III) was 76.89 per cent, compared with 78.79 per cent in 2024 and 81.34 per cent in 2023.

The decline in performance was evident based on candidates' performance on Paper 02 for both options, especially for Question 2. An analysis of the performance showed that for Paper 021, 28.27 per cent of candidates scored zero on Question 1 and 31.46 per cent of candidates scored zero on Question 2. For Paper 022, 6.90 per cent scored zero on Question 1 and 60.00 per cent of candidates scored zero on Question 2.

PAPER 01 — MULTIPLE CHOICE

Paper 01 consisted of 60 multiple-choice items which tested the profile dimensions of Knowledge (Profile 1), Application (Profile 2) and Practical Ability (Profile 3). The mean score was 37.85 and the standard deviation 12.42.

PAPER 02 OPTION A — BUILDING DRAWING

Section I — Working Drawing

Question 1

Candidates were required to produce a partial sectional-elevation at scale 1:20, based on a given line drawing of a floor plan. The section was to be taken at cut line A–A, showing 12 components. Instructions prohibited candidates from redrawing the floor plan and required that the following components be included.

- Correct use of sectional conventions
- Accurate labelling of all 12 components
- Inclusion of three vertical dimensions
- A title and indicated scale

Part (a)

Many candidates responded to this part. The responses were submitted in both traditional drawing and CAD formats. Candidates' performance was comparable across both formats. Most candidates demonstrated a clear understanding of sectional elevation principles, successfully illustrating and labelling most or all the required elements. Vertical dimensions were accurately applied. Some candidates misinterpreted the instructions and drew plans or elevations rather than the sectional view mandated.

Candidates who performed well demonstrated specific competencies, including

- accurate interpretation of the sectional cut through the roof, wall, window, concrete floor slab and foundation of the building as well as the patio floor and handrail
- the handrail and column beyond the sectional cutting plane were also appropriately interpreted as an elevation view
- applicable drawing conventions for the required components were used, including
    - — reinforced concrete footings
    - — foundation walls
    - — concrete floor slab on hardcore
    - — suspended timber patio joists
    - — walls, columns, windows, and handrails
    - — rafters, laths/purlins, roofing material, fascia boards, and overhangs
- Clear and precise linework, and graphical representation

Despite many candidates grasping and interpreting the question well, there were some candidates who had the following issues.

- Misinterpretation of the question, resulting in
    - — redrawn floor plans, roof plans or unrelated building elevations
    - — incorrect sectional orientation or mirrored components

- Roof type inaccuracies for both the main building and the patio
- Scaling errors, including
    - drawings not printed to the required 1:20 scale
    - omission of printed scale indicators
- Graphical, conventional and presentation deficiencies, including
    - incorrect or missing hatching for cut materials
    - inappropriate or inconsistent line weights
    - inadequate CAD settings, resulting in non-black-and-white and therefore hard to read line quality.

Many candidates clearly labelled most of the required components, including

- reinforced concrete footings
- foundation walls
- concrete floor slab on hardcore
- suspended timber patio joists
- walls, columns, windows, and handrails
- rafters, laths/purlins, roofing material, fascia boards and overhangs.

However, some candidates missed or gave incomplete annotations, for example, omitting drawing titles and missing the labels for components.

Many candidates were able to effectively apply dimensioning techniques with legible and appropriately placed vertical dimensions, as this appeared to be one of their strengths. However, some challenges or weaknesses were also identified, including incorrect dimensioning conventions and not following instructions and providing horizontal dimensions.

Candidates who performed well demonstrated specific competencies. Such candidates gave proper titles and printed their scales properly on the drawings.

Part (b)

Candidates were required to produce a foundation plan to a scale of 1:50, indicating the strip footing and foundation wall. They were expected to use appropriate architectural drawing conventions. Candidates were also required to include a suitable title and scale on the drawing.

Candidates who responded demonstrated that they had a correct understanding of the relationship between the strip footing and the foundation wall. Candidates also showed that they had the ability to apply labelling conventions in most cases, even if they were inconsistently executed.

Several recurring issues were noted in candidates' submissions. These included the following.

- Some candidates misinterpreted the question. Such candidates submitted a floor plan instead of a foundation plan.
- Several candidates failed to
    - use the correct conventions, such as centring the foundation wall within the strip footing or showing the footing as a dashed line
    - draw the correct dimensions for the foundation wall and footing based on the given specifications
    - use proper labelling techniques, including clear leader lines and arrows
    - label the footing and foundation wall accurately
    - include a title or scale, which are essential requirements for technical drawings.

Recommendations

While it was evident that candidates possessed an acceptable level of understanding of drawing sectional-elevations, the quality, accuracy and presentation of responses were often inconsistent. Greater emphasis should be placed on the following.

- Reading and interpreting the question accurately
- Strengthening students' ability to distinguish between sections and elevations
- Reinforcing correct technical drawing standards and conventions, including line types and drawing clarity
- Encouraging neatness and accuracy as important technical drawing skills

For CAD responses, the practical skill of converting the CAD drawing file into a readable PDF format needs significant reinforcement so that students can meet the syllabus expectations.

While many candidates displayed an acceptable understanding of the layout of foundation elements, their execution, drafting technique and adherence to conventions require improvement. Specifically, greater emphasis should be placed on

- strengthening students' ability to distinguish between plan types (for example, foundation vs. floor plans)
- graphical standards, including line types and drawing clarity

To improve performance in future assessments, students should be given more guided practice sessions in drawing the distinct types of plans given in the syllabus, including foundation plans. They should also focus on conventions, technical accuracy and presentation quality.

Section II — Sketch and Design

Question 2

Candidates were presented with a figure and instructed to produce neat, well-proportioned orthographic sketches illustrating the roof plan and elevation for each of the following roof types.

- Gable
- Hip
- Butterfly
- Lean-to /Shed/Mono-pitched

Marks were allocated for proportion, line weight and adherence to drawing conventions. This question was compulsory. Approximately 69 per cent of candidates attempted to provide a response.

In Part (a) (i)–(a) (iv), candidates were assessed on their ability to produce orthographic sketches. Candidates who attempted this question generally demonstrated the ability to accurately differentiate between the four roof types in both plan and elevation.

Despite the overall adequate responses provided by candidates, several common errors were observed. These were

- submitting floor plans instead of the required roof outlines in plan view
- incorrectly redrawing the roof outline of the figure from Question 1, rather than using the correct figure
- sketching combinations of the same roof type, repeatedly on the same drawing
- correctly drawing a roof form, but then misidentifying or mislabelling it
- failure to properly align roof plans with corresponding elevations in accordance with orthographic projection standards
- lack of proportionality, leading to distorted or unclear roof representations.

Part (b) — Labelling

Candidates who attempted this question generally demonstrated varying degrees of competency in labelling. Overall, candidates provided adequate responses; however, several common errors were observed among the submissions. For instance, some candidates correctly drew roof forms but they misidentified or mislabelled them.

Part (c) — Direction of Slope

Candidates who provided a response generally demonstrated a working knowledge of drawing conventions, including the ability to correctly indicate the direction of slope on the roof plans.

Overall, candidates' responses were adequate; however, some candidates gave an inaccurate indication of the direction of the slope due to incorrect orientation or omission of slope indicators.

Recommendations

Candidates demonstrated moderate competency in roof sketching but their skills in orthographic technique, identification and adherence to drawing conventions were weak. While many candidates displayed a knowledge of roof typologies and drawing conventions, a notable proportion struggled with key technical aspects such as orthographic alignment, identification and proportional sketching.

Based on the performance of candidates, it is suggested that there be additional instruction in basic technical drawing sketches, particularly in interpreting instructions, applying drawing conventions and improving visual clarity in manual sketching exercises.

PAPER 02 OPTION B — MECHANICAL ENGINEERING DRAWING

Section I — Assembly Drawing

Question 1

Candidates were presented with enclosed sheets containing orthographic details of parts, which made up a plummer block assembly. Candidates were required to draw full size in either first-angle or third-angle orthographic projection, the following views of the plummer block assembly when fully assembled.

- A plan of the assembled plummer block assembly showing all hidden details
- A sectional front elevation of the assembled plummer block assembly taken on cutting plane D-D

In Part (b), candidates had to present a parts list for the drawing and indicate eight key dimensions, including length, diameter, radius and at least one metric dimension.

In Part (c), candidates had to print the title “Plummer Block Assembly”, the scale used and show the projection method used by symbol.

This question was attempted by 2527 candidates. Some candidates who attempted to provide a response were unsure of what was required and they redrew the parts sheet or drew the requested items on different pages instead of aligning the orthographic views on the same page.

Candidates who performed better demonstrated a fair level of competency in assembling the given parts of the plummer block assembly to maximize its intended functionality.

In Part (a (i), several strengths were noted. Most candidates who completed this part displayed an excellent grasp of knowledge of the assembly of parts and so produced an accurate response in which they did the following.

- The position of views and alignment of views were appropriately drawn as required by orthographic standards.
- The plan showing all hidden details was well depicted.
- Hidden details, conventional symbols and dimensions were all displayed accurately.
- The line types, line weights and line scales were precisely applied.
- CAD usage was prevalent for most responses.

In addition, it was evident that such candidates possessed a clear understanding of aligning and identifying different parts and views.

Several weaknesses and challenges were identified in some candidates’ responses. Some of these issues are as follows.

- Reproducing the given parts sheet.

- Not displaying the drawing and positioning of views in orthographic projection accurately. In many instances, the plan drawing was separate from the sectional drawing as some candidates placed them on separate pages.
- Incorrectly interpreting what was required for the plan.
- Omitting or poorly representing hidden detail lines, which made internal parts and spaces unclear.
- Not identifying and drawing fasteners in the correct places.
- Providing a limited display of the correct conventional symbols and linetype/linework.

While it was evident that candidates had general knowledge of drawing the plan, the quality, accuracy, presentation and interpretation of responses were often inconsistent. Practical drawing skills, attention to graphical standards and printing protocols need significant reinforcement in order for candidates to meet syllabus expectations.

Candidates who completed this question displayed an excellent grasp of the assembly of parts and so produced accurate responses in which they did the following.

- The position of views and alignment of views were well depicted.
- The assembly of the given parts was well depicted.
- A clear understanding of sectioning using hatch lines to identify different parts was evident.
- Conventional symbols and dimensions were well placed.
- Linetypes, line weights and line scales were correctly applied.
- CAD was used in most responses

However, many candidates encountered difficulties in several areas. The following are some of the common errors.

- Many candidates reproduced the given parts sheet.
- Many candidates were unsure of how to assemble all the parts to complete the plummer block assembly.
- In some instances, candidates interpreted what was required for the sectional front incorrectly.
- Some candidates did not display the drawing and positioning of views in orthographic projection accurately. The sectional front drawing was drawn separately from the plan (on a different page).
- Some candidates misinterpreted what was required for the front sectional elevation.
- Some candidates were unable to indicate clear hatching lines to show different parts.
- Some candidates did not identify and draw fasteners in the correct places.
- There was a limited display of the correct conventional symbols and linetype/linework in some responses.

While it was evident that candidates had knowledge of sectional elevation drawings, the quality, accuracy, presentation and interpretation of some responses were often inconsistent. Practical drawing skills, attention to graphical standards and printing protocols need significant reinforcement in order for candidates to meet syllabus expectations.

For Part (b), candidates were required to provide a parts list for the drawing and indicate eight key dimensions, including length, diameter, radius and at least one metric measurement. Candidates were generally able to show the eight required dimensions. However, only a few candidates were able to complete a parts list correctly. It was evident that many candidates were unsure about how to present the parts list. Common errors included not using the standard layout, not identifying the parts and not giving the number of parts.

In Part (c), candidates were required to include the title, “Plummer Block Assembly,” indicate the scale used and display the projection method using the appropriate symbol. Most candidates who provided a response were able to print the title and indicate the projection by symbol. Additionally correct labelling, scale and projection symbols were accurately placed.

Recommendations

Teachers should do the following with their students.

- Develop students’ ability to read and understand questions.
- Explain how assembling parts leads to a component being created.
- Emphasize proper assembly and projection of plans from elevations and sectional elevations from plans, drawing conventions and CAD drawings
- Teach students the correct saving and printing procedures.
- Teach students to display orthographic views in relation to each other on one page so that the projections of views are related and visible.
- Explain how sectional views are derived.

Teachers are reminded that this is the working drawing section of the examination. As such, standard practices and conventions for completing working drawings are to be rigorously followed. Emphasis should be placed on the following.

- Placement and alignment of views based on orthographic projection
- Developing students’ ability to read, interpret and apply knowledge of how parts are assembled
- Using conventions such as cutting planes, metric threading and screw fasteners
- Application of line conventions and thickness
- Drawing/printing to scale
- Printing the title, scale and projection symbol
- Dimensioning techniques
- Details required for sectional drawings, including the treatment of hatching lines to show different components assembled

Section II — Sketch and Design

Question 2

Candidates were presented with an enclosed sheet containing orthographic views of a vice block drawn in first-angle orthographic projection. This question tested candidates' ability to make a neat proportional cavalier oblique drawing of the vice block. Marks were awarded for

- Interpretating the orthographic views
- producing a cavalier oblique drawing
- proportional sketching
- neatness/CAD presentation.

Even though many candidates attempted this question a large number of candidates did not provide a response. Less than half the number of candidates who responded provided a satisfactory response. Most candidates reproduced the orthographic views or attempted to give a response in isometric. It was observed that most candidates showed limited knowledge and understanding of cavalier oblique drawing. The responses clearly indicated that many candidates struggled to understand oblique drawings. A few candidates were able to provide an answer that met the criteria for each part.

The candidates who completed this question displayed an excellent grasp of making a neat, proportional cavalier oblique drawing of the vice block. These candidates were able to accurately interpret the question and were able to show

- knowledge and understanding of orthographic concepts
- a clear understanding of cavalier drawings
- receding lines and drawings of circles in oblique projection
- proper proportional sketching
- neat drawings in CAD presentations.

It must be noted that candidates used CAD in most responses.

Many candidates demonstrated weaknesses and challenges in their responses. Common issues included the following.

- Reproduction of the given orthographic views.
- Misinterpretation of the required 3D drawing, for example some candidates submitted isometric drawings instead of oblique drawings.
- Freehand pencil sketches were not neatly drawn.

Although candidates demonstrated knowledge of the content tested in Question 2, the quality, accuracy, presentation and interpretation of their responses were often inconsistent. Practical drawing skills, adherence to graphical standards and proper printing protocols require substantial improvement to align with syllabus expectations.

Recommendations

Teachers need to do the following.

- Practice with students the fundamentals of pictorial drawing.
- Identify to students the differences between oblique and isometric drawings.
- Teach students how to interpret orthographic views correctly.
- Emphasize to students the need for proper linework and linetypes.
- Practice reading and understanding questions with students.

GENERAL RECOMMENDATIONS

Students should be advised not to exceed the allotted time for Question 1. They should ensure that they reserve sufficient time to complete Question 2. Many candidates did not provide a response for Question 2, which is worth 30 marks. Teachers are encouraged to allocate more time to teaching students about the concept tested (sketch and design) as these marks can be easily achieved. Teachers should incorporate more proportional sketching in their instruction so that students can understand how to approach this section of the examination more effectively.

Many candidates thought that they were required to create separate drawings for each part of Question 1 (a), which was incorrect. Students need to be taught how to adhere to the scale required when printing what they have drawn.

It can be interpreted that the number of reproduced drawings which did not meet the requirements of questions indicated that candidates did not interpret questions accurately or they lacked knowledge of the relevant topics. While theoretical knowledge is acceptable, many candidates lacked the technical precision and presentation skills required for drafting standards. Practical execution — especially in linework, scale accuracy and neatness — requires improvement.

Candidates may benefit from greater emphasis being placed on teaching them how to read and interpret instructions and key components of questions. Additionally, focus on drawing conventions as well as locking devices, including the use of bolts and nuts for joining parts, is critical to assembly drawing.