

**ENGINEERING GRAPHICS & DESIGN
PRACTICAL ASSESSMENT TASK (PAT)**

1. INTRODUCTION

Each learner will attempt a PAT that provides evidence of having achieved the outcomes in this subject. This means that learners will have to design a product using the design process. Learners will consider the social and environmental implications, process information, identify possible problems with the design, and find a solution. They will use freehand, instrument drawing and computer-aided design (CAD) drawing skills to communicate their ideas. This PAT involves organising and managing the various aspects effectively within the context of a community and not in isolation. The PAT counts 25% towards the year assessment. It is assigned at the start of the academic year and must be submitted during the third term. Each learner must complete the PAT individually, and all of the presentations must be his/her own work. All the presentation requirements of the PAT must be completed at school under the supervision of the Engineering Graphics and Design (EGD) educator. Two PATs are included in this document:

- PAT 1 is a design task in the context of civil technology; and
- PAT 2 is a design task in the context of mechanical technology.

Each learner must, with the guidance of their EGD educator, select ONE of the PATs contained in this document.

2. ADMINISTRATION OF THE PAT

The Grade 12 PAT must be completed during the first three terms and handed in during the third term for final formative assessment. The PAT must be completed under controlled conditions. A pace setter for the learners is supplied as Appendices F and G for a four-term school. However, educators are expected to draw up a pace setter for the learners at the beginning of the year and attach target dates for the completion of the different stages of the PAT according to the instructions. This needs to be done as not all schools run on the same term system, and it will enable learners to manage their time more effectively and complete the various stages of the PAT by the due dates.

3. RESEARCH AND EVALUATION REQUIREMENTS

Research on its own does not suffice. Simply downloading many web pages or including random magazine excerpts is not constructive research. Evaluation of all research is critical. **Find ideas, communicate them, and then evaluate the pros and cons of each in your own words. After comparing your ideas, indicate which of the ideas you would choose. A comparison is taking various similar items, comparing the pros and cons of the items, and then making an informed choice about which one to choose.** Usually, the comparison is between three choices. Only research relevant to the final design should be included in the PAT along with evidence of the evaluation and how it is applicable to the final design. All research must be presented on A3 sheets in landscape format.

4. CAD DRAWING PROGRAMS

There are many CAD programs currently available. To alleviate the temptation to do all of the work on a CAD program that generates various views automatically, each section has been divided to allow the use of all types of CAD programs. Where given, the instruction that **no generated image** may be used indicates that a particular drawing must be drawn graphically and not created automatically by a 3D CAD program. **Freehand drawings must be neat**, and instrument drawings must be drawn using drawing instruments. You have the choice to use all types of CAD programs for your design purposes.

5. WORKING DRAWINGS

Working drawings are drawings that would enable the architect/builder or engineer to construct, erect, or build your design. **Dimensions, annotations, scale, and notes** are integral parts of all working drawings in both the civil and mechanical PATs.

PRACTICAL ASSESSMENT TASK – OPTION ONE

CIVIL DESIGN PROJECT

SCENARIO

The Governing Body of a private school has completed upgrades to the current infrastructure of their school. Due to the age of the school, general renovations and repairs had to be conducted to the school buildings in order to allow current and future learners to continue enjoying the privileges at the school. With the successful completion of Phase 1, the Governing Body has decided to undertake Phase 2.

Phase 2 will focus on the construction of a **SECURITY CONTROL CENTRE** at the school's main entrance. The goal is to enhance campus safety and security by streamlining unnecessary visitor access. A roof structure (i.e. a free-standing awning) needs to be incorporated into the design so that security staff does not have to be exposed to the different weather conditions when attending to visitors.

As part of a community engagement initiative, EGD students from surrounding schools have been invited to submit design proposals. The winning student(s) will work with professional architects to bring their vision to life.

The new security control centre will forthwith simply be referred to as the '**BUILDING**'.

Basic specifications of the **BUILDING**

The new **BUILDING** must contain the following:

Observation room

- A 180° panoramic window for good visibility
- Enough built-in desks for administration purposes
- Enough space for three people to sit and move comfortably
- Built-in cupboard(s) for storage

Monitoring room

- Countertop space for security monitors
- 4 × switched socket outlets
- Built-in cupboards for storage

Kitchenette

- A built-in cupboard fitted with a single sink unit
- Countertop space for the preparation of refreshments and food
- Space for a small fridge and microwave
- 2 × switched socket outlets

Bathroom

- 1 × water closet
- 1 × wash basin
- 4 × small lockers for staff to store belongings

Motion-censor floodlights in the front of the **BUILDING**.

A roof structure (roof awning) for incoming and outgoing traffic so that staff are protected from the different weather conditions. This roof structure does not have to form part of the **BUILDING** and **ONLY** needs to be shown on the site plan and perspective drawings.

PHASE ONE – PRESENTATION REQUIREMENTS

(i) DESIGN BRIEF

- A brief statement of the project and your role in the project
- At least four (4) specifications
- At least four (4) constraints

(ii) RESEARCH

The research is of utmost importance in completing this PAT successfully. The presentation of the research in your submission must be limited to eight A3 pages. Specific research is required and divided as follows:

- 1 × A3 sheet – Energy-saving features
- 1 × A3 sheet – Solar-powered motion-censor security floodlights
- 1 × A3 sheet – Gas water geyser
- 1 × A3 sheet – 180° panoramic window
- 4 × A3 sheets – Other relevant research topics of your choice that are necessary to complete your design

Show proof of all resource material on design features for the specific requirements of the **BUILDING**. All research included in the file must be directly linked to the design, and a thorough evaluation must be clearly evident for each item.

(iii) FREEHAND CONCEPT DRAWINGS

A freehand floor plan and a 3D drawing must be produced for each of the three concept designs of the **BUILDING**. Floor plans are to be drawn freehand, and 3D drawings may be computer/AI generated during the design process. **3D drawings should include rendering, texture, and colour.**

Show proof of a thorough evaluation process to determine a concept design that will be used to produce working drawings.

PHASE TWO – PRESENTATION REQUIREMENTS

(iv) WORKING DRAWINGS

A set of detailed *working drawings* of the **BUILDING** drawn to scale that show the following (**2D or 3D CAD drawings should be used**).

- **A floor plan** that shows the following clearly:
 - The position of all **windows** and the **door**
 - **Room designations** and **floor finishes**
 - Set-out **dimensions** and the **cutting plane(s)**
 - **Fixtures** and **fixture codes**
 - **Electrical components** and **wiring**. Add two solar-powered motion-censor security floodlights at the front of the **BUILDING** to light up the entrance of the school
 - **Scale(s), labels, and notes**

- All **hatching** detail (colour can be used in accordance with standard drawing practice)
- **Plumbing** fixtures and **North Point**
- All **rooms and areas** as set out in the specifications
- Positioning for gas geysers and safety features should be incorporated into the design
- **Elevations** that show the following clearly:
 - The **four elevations** of the **BUILDING**
 - Height **dimensions** and **labels** (FFL and NGL)
 - **Window** and **door openings**
 - **Roof** and **wall** detail
 - **Gas geyser** and **gas safety features** (if visible)
- A detailed **sectional elevation** that shows the following:
 - The section from the **foundation** to the **roof**
 - Either a **sectional door** or **sectional window** or **both**
 - All outside and inside information **behind the cutting plane**
 - Labels (FFL, NGL, DPC, drawing title)
- (v) A complete detailed **site plan (2D CAD drawing)** drawn to scale that shows the following:
 - The **position** and **layout** of the **BUILDING**
 - All **sewerage and drainage** for the new **BUILDING**, which connects to the **existing sewer system**
 - The site plan may contain **artistic features**, or it may be **rendered**
 - **Notes, scale, and North Point**
 - Position of the **gas geyser** and **gas safety features**
 - Roof covering
- (vi) A **perspective drawing (instrument drawing or 2D CAD; no 3D-generated image may be used)** of **only the new BUILDING** that shows the following:
 - The correct perspective layout that includes all of the views used to produce the perspective drawing
 - The vanishing points that are labelled clearly
 - The perspective details according to the plan, **including the awning roof**

NOTE: All of the drawings must be presented on **A3 drawing sheets**, correctly set up with **borders, name, notes, and SANS 10143-compliant civil title blocks**.

DRAWING METHODS

The PAT must provide clear evidence that a Grade 12 level of competency has been attained by the learners in all the required drawing methods, namely:

- **Concept drawings:** This should include all of the preliminary sketch drawings and diagrams that are produced during the design process.
- **Instrument drawing (perspective):** 2D CAD may be used.
- **CAD system:** All of the working drawings **must** be done on a CAD program. 2D and 3D CAD drawing programs may be used.

PHASE THREE – PRESENTATION REQUIREMENTS FOR THE PAT

Create a PAT file/portfolio that contains the following in this prescribed order:

1. A complete **COVER PAGE**
2. An **INDEX/CONTENT PAGE**
3. The 2026 assessment sheet – **APPENDIX A**
4. The completed and signed **DECLARATION OF AUTHENTICITY – APPENDIX D** (to be signed after the completion of the PAT)
5. The completed and signed **AI-DECLARATION – APPENDIX E**
6. The **DESIGN BRIEF**
7. **RESEARCH**, as specified above
8. The **THREE DESIGN CONCEPTS** with evaluation, as specified above
9. The minimum required **WORKING DRAWINGS** as stipulated on Pages 4 and 5
10. The detailed **SITE PLAN**
11. The **TWO-POINT PERSPECTIVE DRAWING**
12. Clear evidence of **EVALUATION** for the **SITE PLAN** and the entire **PAT** process
13. A **BIBLIOGRAPHY** of all reference material

The following table should be used as a **guide** in terms of the number of A3 sheets required for the compilation of the PAT.

Feature	Maximum Sheets	Medium
Design Brief	1 × A3 sheet	Typed text.
Research	8 × A3 sheets	Photographs, text, and pictures.
Concept Drawings	6 × A3 sheets	3 × freehand floor plans. 3 × 3D drawings (may be 3D/ AI-generated).
Working Drawings	3 × A3 sheets	2D CAD or 3D CAD. These may not be generated views from an AI program.
Site Plan	1 × A3 sheet	2D CAD (.dwg supplied).
Perspective Drawing	1 × A3 sheet	Instruments or 2D CAD. This may not be a generated perspective view from a 3D/AI program.
Final Evaluation and Bibliography	1 × A3 sheet	Typed text.

Please note the following:

- Penalties will be accrued for **untidy** and **messy work**, as well as for the **late submission** of the PAT. This will be at the educator's discretion.
- All drawings must comply with the guidelines contained in the **SANS 10143 Code of Practice for Building Drawings**.
- For research to be credited, the **relevance** must be described, and it must be used in one of the concept ideas and the final design.
- The PAT will be marked according to the mark scheme in **APPENDIX A**.
- The site plan is shown in **APPENDIX C**.

PRACTICAL ASSESSMENT TASK – OPTION TWO

MECHANICAL DESIGN PROJECT

Scenario

Before the recent upgrades to the school, the pre-primary section faced a serious safety concern due to the deteriorating condition of the access gate, which had been neglected for several months. To address this issue and enhance child safety, a new gate and gate latch system is required. You are tasked with designing a **TAMPER-PROOF LATCH** that must be **spring loaded** in some form and that can be securely installed onto any existing gate structure using a temporary fastener.

The latch must be **tamper-proof**, thus ensuring that toddlers are unable to operate the latch on their own. The latch must be designed in such a way that it **cannot be opened from the outside**, thereby preventing unauthorised access by unwelcome visitors. The latch should be adaptable for installation on **any standard gate**, using a temporary fastener for ease of mounting and durability.

The **TAMPER-PROOF LATCH** will forthwith simply be referred to as the '**LATCH**'.

Your design must include the following:

- A spring-loaded mechanism as part of the **LATCH**
- The methods used to join the components and to attach the **LATCH** to any gate (e.g. welding, nuts, bolts, clamps, etc.)
- Safety fixtures or features
- Mechanical advantage
- Tamper-proof housing

PHASE ONE – PRESENTATION REQUIREMENTS

(i) DESIGN BRIEF

- A brief statement of the project and your role in the project
- At least four (4) specifications
- At least four (4) constraints

(ii) RESEARCH

The research is of utmost importance in completing this PAT successfully. The presentation of the research in your submission must be limited to eight A3 pages. Specific research is required and divided as follows:

1 × A3 sheet – Types of **LATCHES**

1 × A3 sheet – Joining methods for the **LATCH** components

1 × A3 sheet – Material with a longer life span

1 × A3 sheet – **Spring-loaded** mechanisms

4 × A3 sheets – Other research of your choice that is necessary to complete your design

Show proof of all resource material on design features for the specific requirements of the **LATCH**. All research included in the file must be directly linked to the design, and a thorough evaluation must be clearly evident for each item.

(iii) FREEHAND CONCEPT DRAWINGS

Detailed freehand orthographic and isometric pictorial drawings that illustrate the three concept designs must be produced. **The 3D drawing of the LATCH, which can be AI-generated, should include rendering and colour.**

Show proof of a thorough evaluation process to determine a concept design that will be used to produce working drawings.

PHASE TWO – PRESENTATION REQUIREMENTS**(iv) WORKING DRAWINGS**

A set of detailed *working drawings* of the **LATCH** drawn to scale that show the following (**2D or 3D CAD drawings should be used**):

- An **orthographic drawing** that shows a minimum of **three** appropriately scaled views in **third-angle orthographic projection**, which successfully indicates the positions of all of the parts that make the **LATCH** and shows the following:
 - All **individual components**
 - All **hidden detail** and **centre lines**
 - All **dimensions and scales**
 - **Labels, scale, and notes**
 - **Detailed dimensioning**
 - **Cutting plane(s)**
 - **Drawing accuracy**
- (v) A detailed scaled **sectional view** that shows a minimum of TWO appropriately scaled views in **third-angle orthographic projection** of the **LATCH** that shows the following:
 - Drawing **accuracy**
 - Correct **hatching**
 - **Cutting plane**
 - All **components assembled** correctly (i.e. outside view that shows the hidden detail of all of the components)
 - Multiple blow-up sections of features may be used instead of a complete section of the entire **LATCH**; an isometric section is not necessary.
- (vi) An **exploded isometric view** of the components of the **LATCH** that show the following:
 - All of the components
 - Flow lines
 - Use leaders to indicate components and add a component list to the drawing
- (vii) A **detailed diagram** of the **LATCH** used that shows the following:
 - Mechanism movement/rotation
 - Labels and notes

NOTE: All of the drawings must be presented on **A3 drawing sheets**, correctly set up with **mechanical borders, name, and title blocks, as well as labels and scales.**

DRAWING METHODS

The PAT must provide clear evidence that a Grade 12 level of competency has been attained by the learners in all three (3) required drawing methods, namely:

- **Concept drawings:** This should include all of the preliminary sketch drawings and diagrams that are produced during the design process.
- **Instrument drawing** (exploded isometric drawing): 2D CAD may be used.
- **CAD system:** All of the working drawings **must** be done on a CAD program. 2D and 3D CAD programs may be used.

PHASE THREE – PRESENTATION REQUIREMENTS FOR THE PAT

Create a PAT file/portfolio that contains the following in this prescribed order:

1. A complete **COVER PAGE**
2. An **INDEX/CONTENT PAGE**
3. The 2026 assessment sheet – **APPENDIX B**
4. The completed **DECLARATION OF AUTHENTICITY – APPENDIX D** (to be signed after the completion of the PAT)
5. The completed and signed **AI-DECLARATION – APPENDIX E**
6. The **DESIGN BRIEF**
7. **RESEARCH**, as specified above
8. The **THREE DESIGN CONCEPTS** with evaluation, as specified above
9. The minimum required **WORKING DRAWINGS**, as stipulated on Page 9
10. An **EXPLODED ISOMETRIC** drawing
11. A **SECTIONAL VIEW** drawing
12. A diagram that shows the movement of the **LATCH**
13. A **BIBLIOGRAPHY** of all reference material

The following table should be used as a guide in terms of the number of A3 sheets required for the compilation of the **PAT**.

Feature	Max Sheets	Medium
Design Brief	1 × A3 sheet	Typed text.
Research	8 × A3 sheets	Photographs, text, and pictures.
Possible Solutions	6 × A3 sheets	3 × freehand orthographic drawings 3 × isometric drawings (may be 3D/ AI-generated).
Working Drawings	4 × A3 sheets (Where a 3D program is used, more sheets will be permitted)	2D CAD or 3D CAD. These may not be generated views from an AI program.
Exploded Isometric	1 × A3 sheet	Instruments or CAD. 3D generations are allowed. These may not be generated views from an AI program.
Sectional View	1 × A3 sheet	2D CAD or 3D CAD. These may not be generated views from an AI program.
Diagram Showing Mechanism	1 × A3 sheet	2D CAD.
Final Evaluation and Bibliography	1 × A3 Sheet	Typed text.

Please note the following:

- Penalties will be accrued for **untidy** and **messy work**, as well as for the **late submission** of the PAT. This will be at the educator's discretion.
- For research to be credited, the **relevance** must be described, and it must be used in one of the concept ideas and the final design.
- All drawings must comply with the guidelines contained in the **SANS 10111 Code of Practice for Mechanical Drawings**.
- The PAT will be marked according to the mark scheme in **APPENDIX B**.

APPENDIX A CIVIL PAT

Name and surname		Max mark		Actual	Comments
Exam number		200			
Design Brief	Brief	2	2		Brief statement of task at hand
	Constraints	2	2		At least four constraints – One can be own generated
	Specifications	2	2		At least four specifications – One can be own generated
Research	Required research	4	1		Energy-saving features
	Focus not on pages but aspects		1		Solar-powered motion-censor security floodlights
	Four aspects rather than four pages		1		Gas water geysers
	Keep personal preferences out of it		1		180° panoramic window
	Required comparative evaluations	4	1		Energy-saving features (at least two done with pros and cons + picture)
			1		Solar-powered motion-censor security floodlights (at least two done with pros and cons + picture)
			1		Gas water geysers comparison (at least two done with pros and cons + picture)
			1		180° panoramic window (at least two done with pros and cons + picture)
	Required personal evaluation choices	4	1		Energy-saving features – choice clearly visible/stated
			1		Solar-powered motion-censor security floodlights – choice clearly visible/stated
			1		Gas water geysers – choice clearly visible/stated
			1		180° panoramic window – choice clearly visible/stated
	Additional research	4	4		Four aspects (windows, doors, bathroom, roof, floor, tiles – any four)
	Additional comparative evaluations	4	1		Aspect 1 – comparison (at least two)
			1		Aspect 2 – comparison (at least two)
			1		Aspect 3 – comparison (at least two)
			1		Aspect 4 – comparison (at least two)

	Additional personal evaluation choices	4	1	Aspect 1 – choice clearly visible/stated
			1	Aspect 2 – choice clearly visible/stated
			1	Aspect 3 – choice clearly visible/stated
			1	Aspect 4 – choice clearly visible/stated
	Relevance to design	2	2	2 – ALL research is relevant to the brief OR 1 – Some is relevant OR 0 – None is relevant
	Application in final design	2	½	180° panoramic window is visible in the floor plan
			½	Gas water geyser chosen is visible in sectional elevation or any other elevation
			½	Security flood lights are visible in the floor plan
			½	At least two aspects of additional research visible in drawings
Solutions	Floor plans	7	1	Freehand drawing (no feathering/no ruled lines)/line quality
			½	Internal walls are half the size of the external walls
			½	Windows (no sill, two lines)
			½	Doors (single door with swing, no frame or thickness needed)
			½	Civil hatching of walls
			1	Observation room and fixtures – labelled
			1	Monitoring room and fixtures – labelled
			1	Kitchenette and fixtures – labelled
			1	Bathroom and fixtures – labelled

	3D Drawing – FREEHAND	4	1	Freehand drawing (no feathering/no ruled lines)
			1	Walls, roof, windows, doors (relevant to floor plan)
			1	Textures (roof detail, window detail, door detail)
			1	Colour and rendering
	Evaluation	2	1	At least one positive aspect of the design
			1	At least one negative aspect of the design
Solutions	Floor plans	7	1	Freehand drawing (no feathering/no ruled lines)/line quality
			½	Internal walls are half the size of the external walls
			½	Windows (no sill, two lines)
			½	Doors (single door with swing, no frame or thickness needed)
			½	Civil hatching of walls
			1	Observation room and fixtures – labelled
			1	Monitoring room and fixtures – labelled
			1	Kitchenette and fixtures – labelled
			1	Bathroom and fixtures – labelled
	3D Drawing – FREEHAND	4	1	Freehand drawing (no feathering/no ruled lines)
			1	Walls, roof, windows, doors (relevant to floor plan)
			1	Textures (roof detail, window detail, door detail)
			1	Colour and rendering
	Evaluation	2	1	At least one positive aspect of the design
			1	At least one negative aspect of the design

Solutions	Floor plans	7	1		Freehand drawing (no feathering/no ruled lines)/line quality
			$\frac{1}{2}$		Internal walls are half the size of the external walls
			$\frac{1}{2}$		Windows (no sill, two lines)
			$\frac{1}{2}$		Doors (single door with swing, no frame or thickness needed)
			$\frac{1}{2}$		Civil hatching of walls
			1		Observation room and fixtures – labelled
			1		Monitoring room and fixtures – labelled
			1		Kitchenette and fixtures – labelled
			1		Bathroom and fixtures – labelled
	3D Drawing – FREEHAND	4	1		Freehand drawing (no feathering/no ruled lines)
			1		Walls, roof, windows, doors (relevant to floor plan)
			1		Textures (roof detail, window detail, door detail)
			1		Colour and rendering
	Evaluation	2	1		At least one positive aspect of the design
			1		At least one negative aspect of the design
	Personal evaluation choice on design	1	1		State the design that you will use for working drawings and give a comprehensive reason for the choice
Chosen Solution – MUST BE CAD	Floor plan – walls and hatching	4	1		External walls
			1		Internal walls (if not half the size of outside walls = $-\frac{1}{2}$)
			1		All walls hatched (if some hatching missing = $-\frac{1}{2}$)
			1		Civil hatching of walls

	Floor plan – doors and windows	6	1	Doors
			1	Door swings
			1	Door frames
			1	External door line
			1	Window details (sill or window space)
			1	Window – 2/3 lines
	Floor plan – fixtures	8	2	Observation room and fixtures – labelled
			2	Monitoring room and fixtures – labelled
			2	Kitchenette and fixtures – labelled
			2	Bathroom and fixtures – labelled
	Floor plan – dimensions	4	1	Two perimeter dimensions
			1	½ window reference, ½ door reference
			1	Correct scale measurements used
			1	Civil dimension arrow – architectural tick

	Electrical layouts – switches, plugs, lights	6	1	Lights
			1	Switches
			1	Switched socket outlets
			1	Wiring
			1	Correct SANS symbols
			1	Positioning
	Motion-censor lights	2	2	At least two external motion-censor lights visible
	Security control centre – floorplan layout	4	1	Observation room and fixtures – labelled
			1	Monitoring room and fixtures – labelled
			1	Kitchenette and fixtures – labelled
			1	Bathroom and fixtures – labelled
	Floor plan notes	4	3	Notes / symbols / scale / details (no legends), including details not shown on drawing
			1	North Point
	Elevations – doors	3	1	Door details
			1	Door frames
			1	Doorknobs
	Elevations – windows	3	2	Window details – frames and sills (if applicable)
			1	Window openings (dashed, chain, solid)
	Elevations – walls	3	2	All wall details
			1	Gas water geyser is visible
	Elevations – roof details	3	2	Tiles/sheeting
			1	Fascia boards/barge boards
	Elevations – dimensions	3	1	Overall height dimensions
			1	Window/door heights from ground level
			1	Civil dimension arrow – architectural tick or datum levels
	Elevations – FFL, FFL line, NGL, and view labels	8	½	North / East / South / West elevation FFL label
			½	North / East / South / West elevation FFL chain line
			½	North / East / South / West elevation NGL label
			½	North / East / South / West elevation label
			½	North / East / South / West elevation FFL label

			$\frac{1}{2}$		North / East / South / West elevation FFL chain line
			$\frac{1}{2}$		North / East / South / West elevation NGL label
			$\frac{1}{2}$		North / East / South / West elevation label
			$\frac{1}{2}$		North / East / South / West elevation FFL label
			$\frac{1}{2}$		North / East / South / West elevation FFL chain line
			$\frac{1}{2}$		North / East / South / West elevation NGL label
			$\frac{1}{2}$		North / East / South / West elevation label
			$\frac{1}{2}$		North / East / South / West elevation FFL label
			$\frac{1}{2}$		North / East / South / West elevation FFL chain line
			$\frac{1}{2}$		North / East / South / West elevation NGL label
			$\frac{1}{2}$		North / East / South / West elevation label
	Sectional elevation – walls	2	1		Wall
			1		Civil hatching of walls
	Sectional elevation – foundation and floor	3	$\frac{1}{2}$		Foundation and hatching
			$\frac{1}{2}$		Hardcore and hatching
			$\frac{1}{2}$		Concrete slab and hatching
			$\frac{1}{2}$		Earth hatching
			$\frac{1}{2}$		DPC lines
			$\frac{1}{2}$		NGL line
	Sectional elevation – door / window / roof	3	1		Window or door (can have both)
			$\frac{1}{2}$		Ceiling battens
			$\frac{1}{2}$		Wall plate
			$\frac{1}{2}$		Roof truss
			$\frac{1}{2}$		Truss plates

	Sectional elevation – labels	3	$\frac{1}{2}$	DPC – floor
			$\frac{1}{2}$	DPC – window/door
			$\frac{1}{2}$	NGL
			$\frac{1}{2}$	FFL label
			$\frac{1}{2}$	FFL chain line
			$\frac{1}{2}$	Sectional elevation label
	Title block and borders	4	1	Border
			1	Title block
			1	Drawing name
			1	Name of client or some other information
	Evaluation of chosen solution	4	1	Comment on the floorplan
			1	Comment on the elevations
			1	Comment on the sectional elevation
			1	Comment on the overall design
Site Plan	Site plan layout correct	2	1	Used the correct given layout
			1	North Point
	Notes	2	2	At least two notes/information
	Plumbing	4	1	Sewer system
			1	Plumbing lines
			1	Labels (IE, RE, IC, MH)
			1	Correctness
	Security control centre – layout	5	1	New security control room is visible
			1	New security control room is labelled
			2	Roof
			1	Correct scale used
	Title block and borders	2	$\frac{1}{2}$	Border
			$\frac{1}{2}$	Title block
			$\frac{1}{2}$	Drawing name
			$\frac{1}{2}$	Name of client or some other information

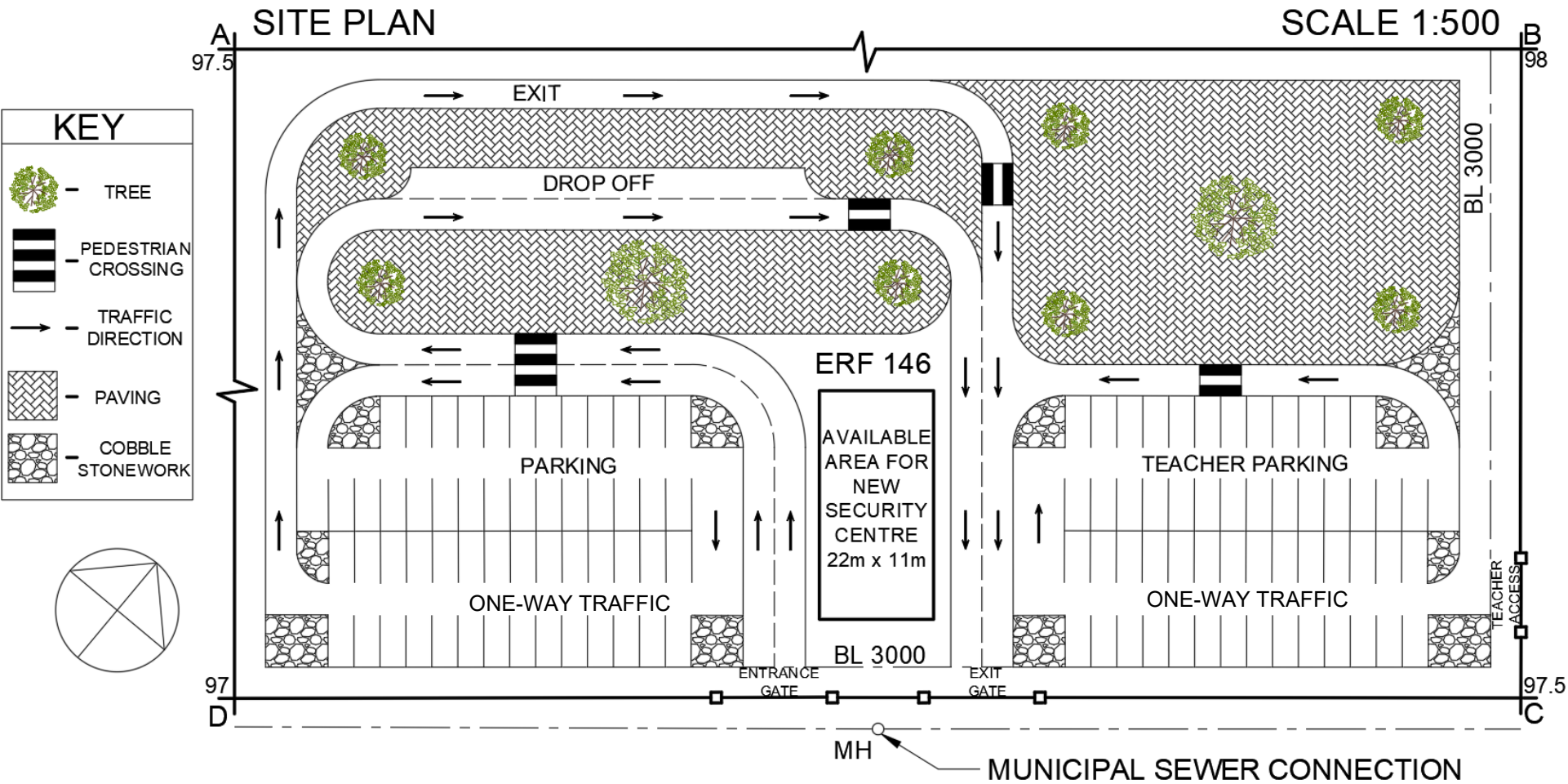
	Evaluation	4	1		Comment on new security control centre placement
			1		Comment on the effect that the renovations will have on the functionality of the site
			1		Comment on the roof
			1		Comment on the motion-censor lights
Perspective	Correct perspective layout	2	1		Views
			1		PP, SP, HL, GL
	Appropriate vanishing points	2	2		LVP, RVP – correct
	Perspective details according to plan	4	1		Walls
			1		Doors
			1		Windows
			1		Roof
	Perspective drawing accuracy	8	3		Accuracy (3 = No mistakes OR 2 = Good with a few mistakes OR 1 = Poor with mistakes)
			2		Pictorial representation of the design (2 = Accurate to the design OR 1 = mostly accurate)
			3		Difficulty level (3 = Difficult OR 2 = Average OR 1 = Very simple)
Final Evaluation		4	1		Positives of design
			1		Negatives of design
			1		Improvement suggestions
			1		Personal self-introspection
Bibliography		3	3		At least six aspects using the Harvard Reference Method
Presentation		4	1		A3 flip file or bound
			1		Headings of the major aspects of the project
			1		All pages face the same way and are in the correct order
			1		Overall impression and presentation
		TOTAL			0%

APPENDIX B MECHANICAL PAT

Name and surname		Max mark		Actual	Comments
Exam number		200			
Design Brief	Brief	2	2		
	Constraints	2	2		
	Specifications	2	2		
Research	Required research	28	4		
	Required comparative evaluations		4		
	Required personal evaluation choices		4		
	Additional research		4		
	Additional comparative evaluations		4		
	Additional personal evaluation choices		4		
	Application in final design (all applicable)		2		
	Relevance (all relevant)		2		
Solution 1	Orthographic	15	6		
	Pictorial		5		
	Evaluation		4		
Solution 2	Orthographic	15	6		
	Pictorial		5		
	Evaluation		4		
Solution 3	Orthographic	15	6		
	Pictorial		5		
	Evaluation		4		
	Personal evaluation choice on design	1	1		

Chosen Solution – MUST BE CAD	Orthographic View	Orthographic – all individual components	38	8		
		Orthographic – hidden detail and centre lines for all components		8		
		Orthographic – all dimensions		8		
		Orthographic – components assembled correctly		8		
		Orthographic – accuracy of drawings		6		
	Section Assembly View	Section assembly view – drawing accuracy	22	10		
		Section assembly view – correct hatching		6		
		Section assembly view – components assembled correctly		6		
	Exploded Isometric	Exploded isometric – isometric accuracy; no hidden detail	28	18		
		Exploded isometric – flow lines		5		
		Exploded isometric – all components shown		5		
	General	Tamper-proof features	21	6		
		Diagram that shows how the latch works		7		
		Title block and borders		4		
		Evaluation of chosen solution		4		
Presenta- tion	Final Evaluation	4	4			
	Bibliography	3	3			
	Presentation Layout	4	4			
			TOTAL		0%	

APPENDIX C



APPENDIX D DECLARATION OF AUTHENTICITY

Centre Number

Candidate's Examination Number

DECLARATION BY THE CANDIDATE:

I, _____, (print full name)
declare that all external sources used in my portfolio have been referenced properly and
that the remaining work contained in this portfolio is my own original work. I understand that
if this is found to be untrue, I am liable for disqualification from the National Senior Certificate
Examination.

Signed: _____ Date: _____
Candidate

DECLARATION BY THE CANDIDATE'S EDUCATOR:

I, _____, (print name and title of educator)
at _____ (print name of school)
declare that the work provided by this candidate has been monitored and checked for
plagiarism.

Signed: _____ Date: _____
Educator

**This declaration must be completed and filed immediately after the 2026 assessment
sheet (Appendix A/Appendix B) in the Learner's PAT.**

APPENDIX E AI DECLARATION

Candidate name	
Subject	
Assessment title	
Educator	
Assessment due date	

I, _____, (print full name) hereby confirm that:

- I have read and understood my school's policy relating to academic dishonesty;
- The task submitted has been completed in full by me;
- I have clearly indicated in the task any sections work that were generated or assisted by AI, giving credit where it is due;
- I have adhered to the school policy regarding academic dishonesty; specifically, identifying where AI has been used and citing all sources of information; and
- I acknowledge that I may have to verbally explain my answers/solutions presented in this task if asked by my educator.

Candidate signature: _____

Date: _____

The candidate must complete the table below to declare any use of AI tools in their assessment tasks.

Section of Task	AI Tool Used	Purpose of Use	Extent of AI Use	Candidate's Own Contribution
e.g. Research, drafting, editing	e.g. ChatGPT, Grammarly	e.g. Idea generation, grammar check	e.g. Light, moderate, extensive	e.g. Wrote all the content, AI checked grammar

APPENDIX F 2026 PAT PACE SETTERS**CIVIL DESIGN PROJECT****Term 1**

Week 1 – Get PAT and decide which scenario you are going to do.

Week 2 – Research two compulsory research topics.

Week 3 – Research last two compulsory research topics.

Week 4 – Research two optional topics.

Week 5 – Research last two optional topics.

Week 6 – Compile all research into eight complete pages and the bibliography.

Week 7 – Start freehand solution 1 (floor plan).

Term 2

Week 1 – Complete freehand solution 1 (3D).

Week 2 – Start freehand solution 2 (floor plan).

Week 3 – Complete freehand solution 2 (3D).

Week 4 – Start freehand solution 3 (floor plan).

Week 5 – Complete freehand solution 3 (3D).

Week 6 – Complete freehand evaluations and choose a final design for CAD drawings.

Week 7 – Start floor plan.

Week 8 – Continue with floor plan.

Week 9 – Start elevations.

Term 3

Week 1 – Complete elevations.

Week 2 – Start and complete sectional elevation.

Week 3 – Start two-point perspective.

Week 4 – Complete two-point perspective.

Week 5 – Start and complete site plan.

Week 6 – Complete all evaluations.

Week 7 – Ensure all work is complete. Print the project. Submit the project in the correct presentation order.

Week 8 – PAT complete for marking.

APPENDIX G 2026 PAT PACE SETTERS**MECHANICAL DESIGN PROJECT****Term 1**

- Week 1 – Get PAT and decide which scenario you are going to do.
- Week 2 – Research two compulsory research topics.
- Week 3 – Research last two compulsory research topics.
- Week 4 – Research two optional topics.
- Week 5 – Research last two optional topics.
- Week 6 – Compile all research into eight complete pages and bibliography.
- Week 7 – Start freehand solution 1 (orthographic drawing).

Term 2

- Week 1 – Complete freehand solution 1 (isometric).
- Week 2 – Start freehand solution 2 (orthographic drawing).
- Week 3 – Complete freehand solution 2 (isometric).
- Week 4 – Start freehand solution 3 (orthographic drawing).
- Week 5 – Complete freehand solution 3 (isometric).
- Week 6 – Complete freehand evaluations and choose final design for CAD drawings.
- Week 7 – Start assembly parts drawings.
- Week 8 – Continue with parts drawings.
- Week 9 – Continue with parts drawings.

Term 3

- Week 1 – Complete parts drawings.
- Week 2 – Start assembly drawing.
- Week 3 – Complete assembly drawing.
- Week 4 – Start and complete sectioned view.
- Week 5 – Start and complete diagram of mechanical advantage.
- Week 6 – Start exploded isometric drawings.
- Week 7 – Complete exploded isometric drawings.
- Week 8 – Complete all evaluations.
- Week 9 – Ensure all work is complete. Print the project. Submit the project in the correct presentation order.
- Week 10 – PAT complete for marking.