

Name: James Harrison
Matric Number: 17/ENG03/024
Course Code: CVE 312

ENGINEERING DRAWING ASSIGNMENT

PRACTICAL A SOLUTIONS

Staircases are constructions designed to bridge a large vertical distance by dividing it into smaller vertical distances, called steps.

Types of Staircases include:

1. **Straight Stairs:**

Straight stairs are stairs without any changes in direction.

2. **U Shaped Stairs:**

U shaped stairs are essentially two parallel flights of straight stairs joined by a landing that creates a 180-degree turn in the walk line.

Spiral Stairs:

Spiral stairs follow a helical arc. They usually have a very compact design and the treads radiate around a central pole.

3. **L Shaped Stairs:**

The L shaped stair is a variation of the straight stair with a bend in some portion of the stair. This bend is usually achieved by adding a landing at the transition point.

4. **Curved Stairs:**

Like spiral stairs, curved stairs follow a helical arc. However, they tend to have a much larger radius and typically do not make a full circle.

Some other types of stairs include:

5. Winder stairs
6. Ladder
7. Spiral stairs
8. Split stairs
9. Floating stairs

Types of Paper Size:

"A" size papers are the most widely used, and easily distinguishable paper sizes. The height/width ratio remains constant (1:1.41) for all sizes. This means you get the A1 size by folding an A0 paper in two along its shortest side. Then fold the A1 size in two to get an A2 size paper, and so on.

Paper Size	Width x Height (mm)	Width x height (inches)
A1	594 x 841 mm	23.4 x 33.1 in
A2	420 x 594 mm	16.5 x 23.4 in

A3	297 x 420 mm	11.7 x 16.5 in
A4	210 x 297 mm	8.3 x 11.7 in
A5	148 x 210 mm	5.8 x 8.3 in

NOTE: All paper sizes have specific uses

Site Planning:

Site planning is the allocation of functions in a piece of land to derive efficient utilization of resources at disposal. Useful spaces with respect to functions are being created in the process and the character of the site is accentuated.

Site planning is learnt and practiced to

1. Be able to make a logical method of fitting design programs and sites together harmoniously.
2. To understand the interaction of the following factors in the design process:
 - i. Natural factors (landscape),
 - ii. Socio-economic forces (planning),
 - iii. Technological functions (architecture & engineering)
3. To Understand the site development process by observing natural and human factors affecting the form and appearance of the environment.
4. To collect information and data concerning planning or design issues to classify and analyze the data.
5. To make recommendations for issues at hand. To draw up guidelines for planning, architecture and landscape disciplines.

Note: The site planning process is divided into three phases which are Research, Analysis and Synthesis.

TEST A

Responsibilities of the civil engineer in the project should be:

1. Firstly the plot of land Mr Lawrence has available will be looked into taking note of its location and the most suitable position of the building construction process is also acquired
2. Site planning considering all factors affecting it like the bearing capacity of the soil, the amount of water reserved under the earth's surface and many others. It is the most important step in building construction.
3. After the first 2 processes have been completed in assumption that Mr Lawrence hasn't hired an architect personally to create building designs then it should be done by you. Prepare all the plans and building requirements based on what will be required by Mr Lawrence then after this determine the structural details of the reinforcements to be used
4. After planning and structural detailing is completed these details are transferred to the building estimator. The building estimator will estimate the material quantity,

quantity of different items of work, and prepare an abstract sheet that shows the cost of building construction. Of course, after getting appropriate permissions from building and construction authorities.

5. Builders or contractors for construction are chosen carefully as it is a major factor for securing building construction quality and timely construction of work. The work of the builders though the building development should be supervised by the civil engineer.
6. The construction site must be cleaned before the work is executed. This work involves the removal of roots of trees, debris and leveling ground area. Then the foundation of building ground is excavated with the help of excavating machines as per the building dimension specified in drawings. After the foundation work is done ground beam formwork preparation is started and poured with concrete. Over the plinth beam, masonry work is started and space between foundation and plinth beam is filled with soil. The columns are built up to slab level and the frame for further construction is prepared.
7. As column and beam framework is completed, masonry work is started with different materials such as bricks, concrete blocks, fly ash bricks, etc. according to building drawing. The lintel is constructed on the door and window to support the masonry work over it.
8. Then the formwork is started to construct a slab resting on the column and beam. Over slab formwork, slab reinforcement is placed as per slab detailed drawing, after that door window frames are fixed at their specified position given in drawing
9. When all the walls and slabs for the building are completed, the roofing is then done.
10. After the roofing is completed the interior of the building is now ready for finishing. The colouring of the building to be selected by Mr Lawrence with respect to how he wants the building to look. Also the environmental design and tiling of the surrounding should be done

Difference between an Architect and a Civil Engineer:

An Architectural drawing is a technical drawing of a building or building project. Architectural drawings are used by architects and others for a number of purposes, to develop a design idea into a proposal, to communicate ideas and concepts, to convince clients of the merits of a design, to assist a building contractor to construct it based on design intent, as a record of the design and planned development, or to make a record of a building that already exists, WHILE A Building or Construction drawing is the general term used for drawings that form part of the production information that is incorporated into tender documentation and then the contract documents for the construction works. This means they have legal significance and form part of the agreement between the employer and the contractor.

Difference between a working drawing and presentation drawing:

A Working drawing is a drawing or blueprint based on explanations. It is completed with a thorough plan and views (details, notes, and dimensions) to ensure the product construction or replication without any additional information. It is a scale drawing of an object to be made or structure to be built intended for direct use by the workman, WHILE A Presentation drawing is any of a set of design drawings made to articulate and communicate a design concept or proposal such as for an exhibition, review, or publication intended to explain a scheme and to promote its merits.

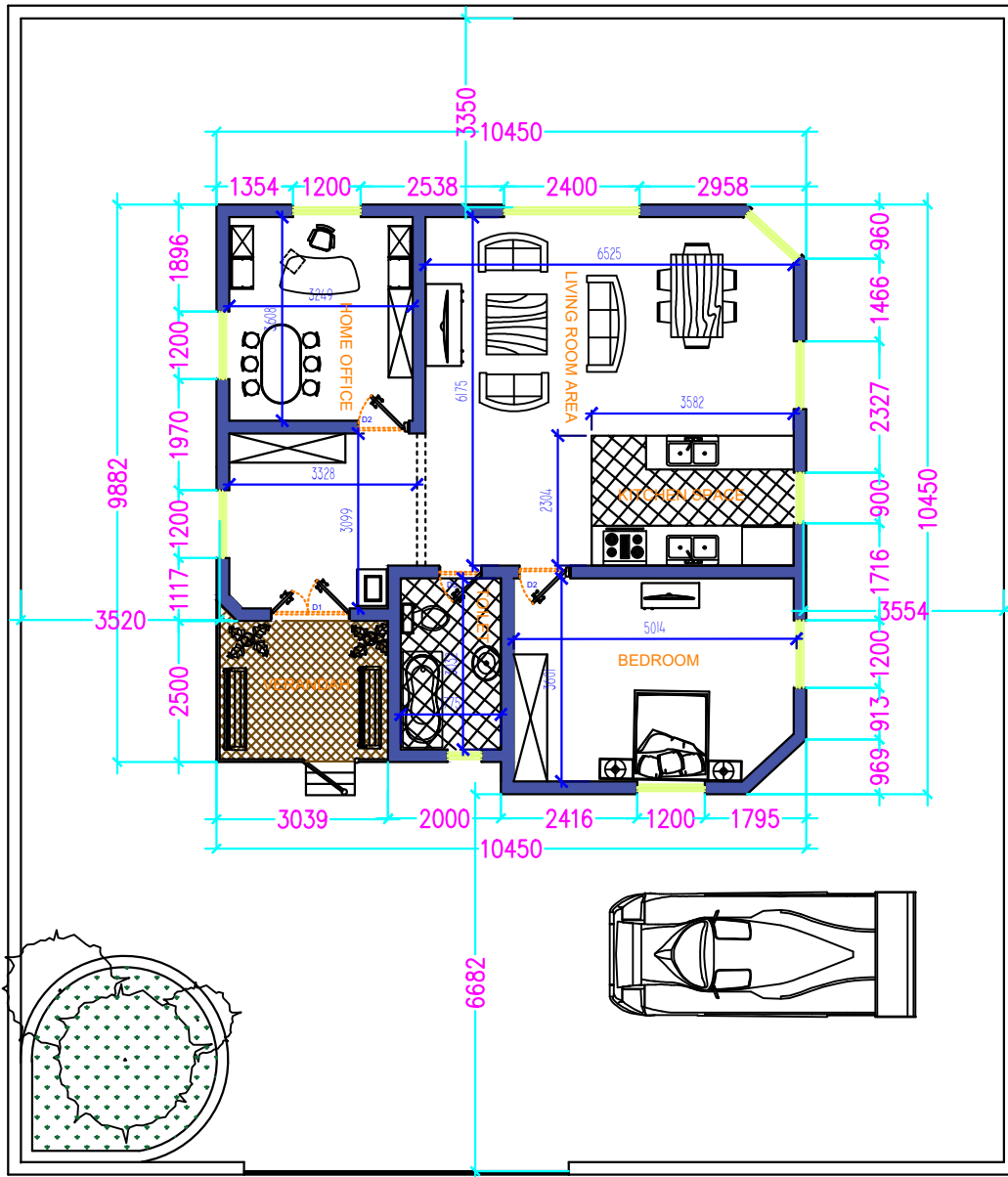
Difference between a section and elevation:

A Section of an element or a structure is cut through that shows the interior details of how an element/structure/material is made in the inside which reveals more details whereas the elevation is the exterior appearance of the same, WHILE the term 'Elevation' refers to an orthographic projection of the exterior (or sometimes the interior) faces of a building, that is a two-dimensional drawing of the building's façades.

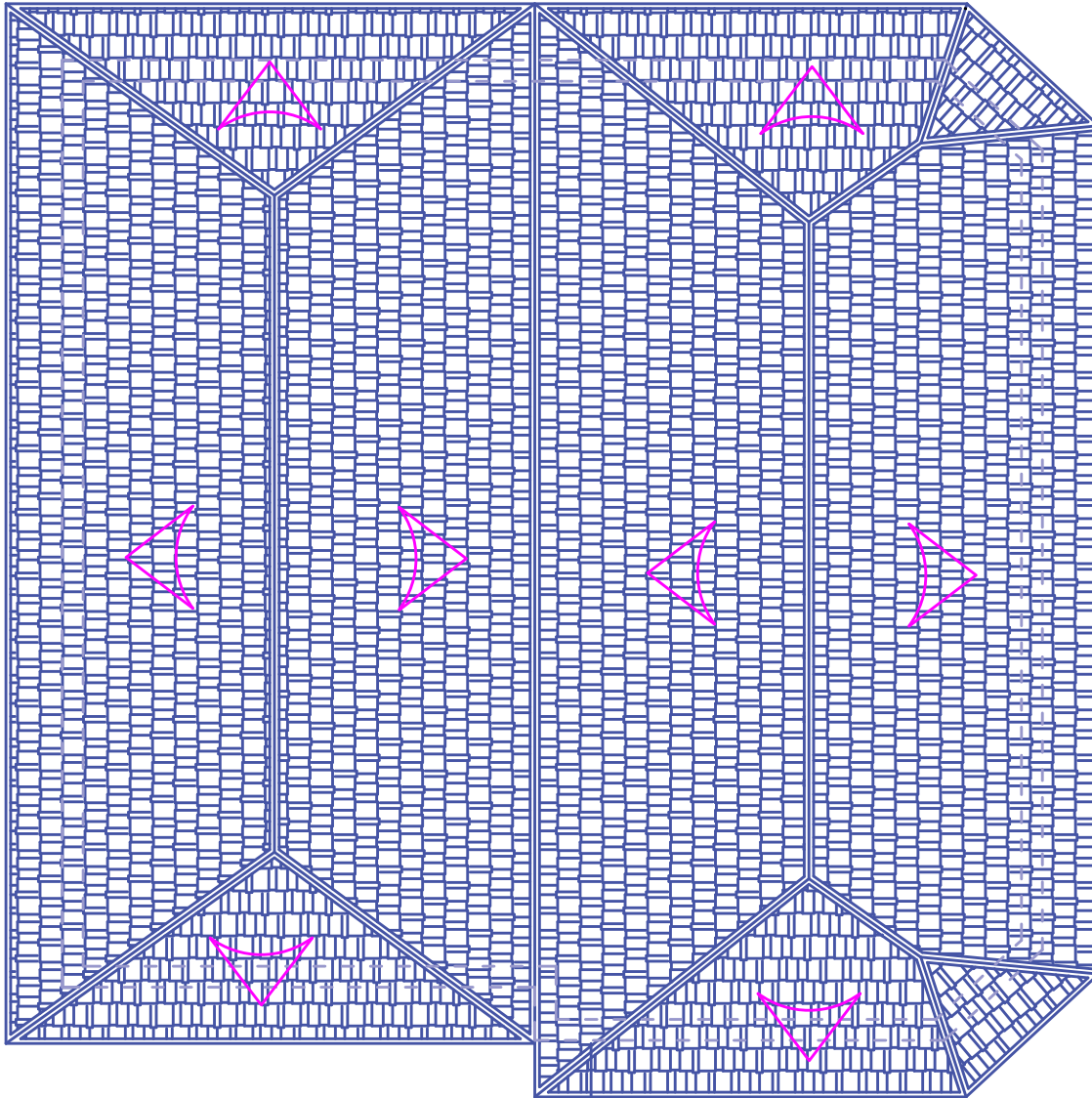
Difference between a septic tank and soak away:

A Septic tank is an underground chamber made of concrete, fiberglass, or plastic through which domestic wastewater flows for basic treatment. Settling and anaerobic processes reduce solids and organics, but the treatment efficiency is only moderate. Septic tank systems are a type of simple onsite sewage facility, WHILE A Soakaway is simply a hole dug into the ground, filled with rubble and coarse stone which allows surface water to percolate back into the earth close to where it falls. Soakaway construction is a low environmental impact solution to drainage because it uses few materials.

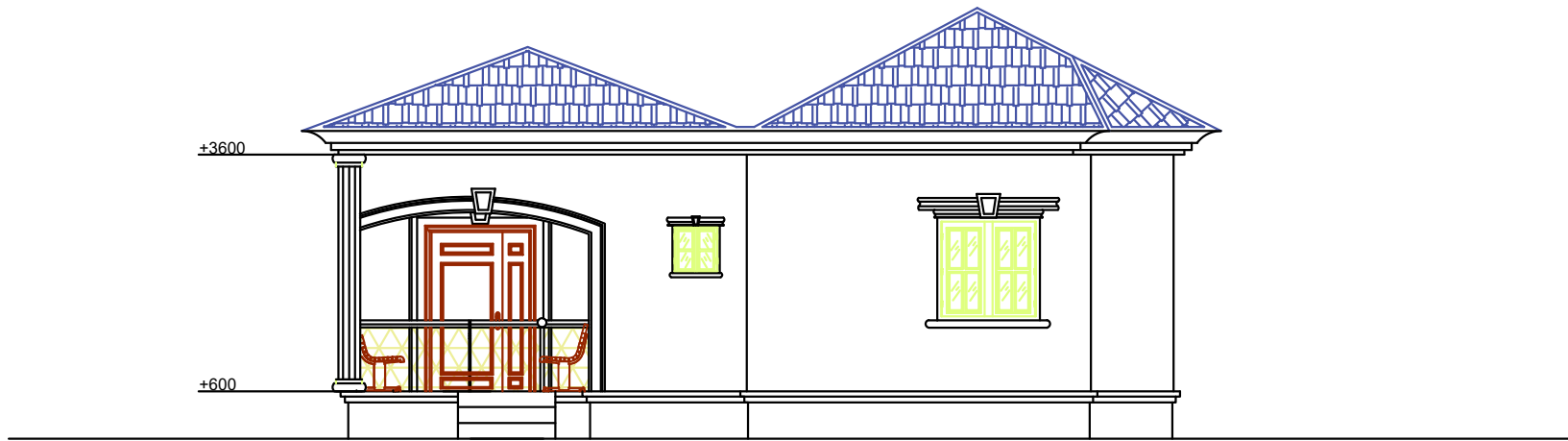
PRACTICAL B SOLUTIONS



PLAN



ROOF



FRONT ELEVATION