COMPUTER AIDED ENGINEERING DESIGN (BFF2612)

ENGINEERING DRAWING (DRAFTING)

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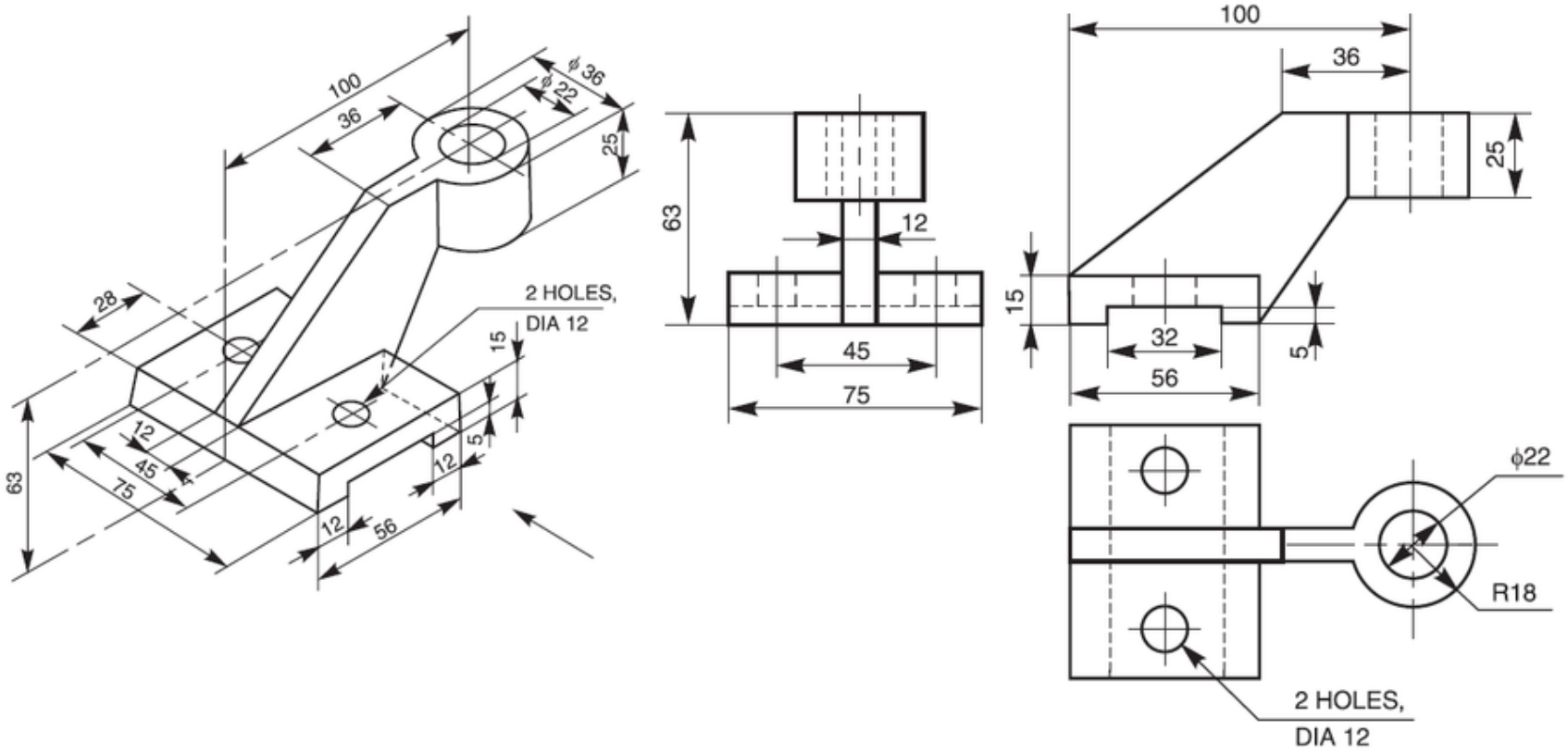
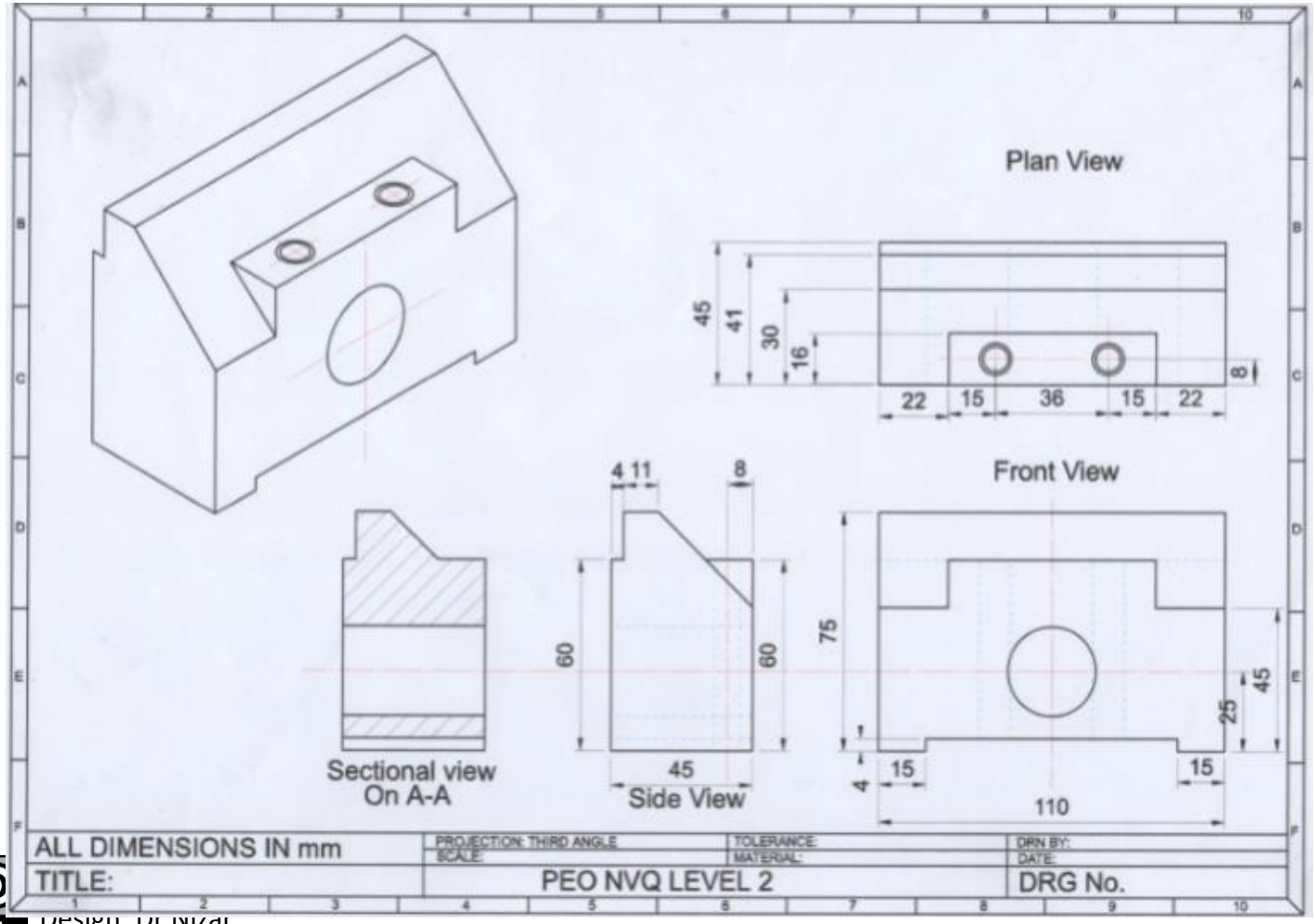
ENGINEERING DRAWING (DRAFTING) CONTENTS

- Model views.
- Dimension.
- Assembly of instruction.
- Machining instructions.
- Annotations: to add information to a drawing above and beyond dimensions and tolerances (adding notes and labels).
- Title block (normally located in the bottom right corner of the drawing: Company name, Part number, Drawing number, Revision number, Sheet number, Materials and finish, General tolerances, Drawing scale, Sheet size, Revision block, and Drawn by/checked by).
- Bill of material (BOM) located in the top right corner of the drawing: Item number, Quantity, Part number, and Description.

EXAMPLE 1



EXAMPLE 2



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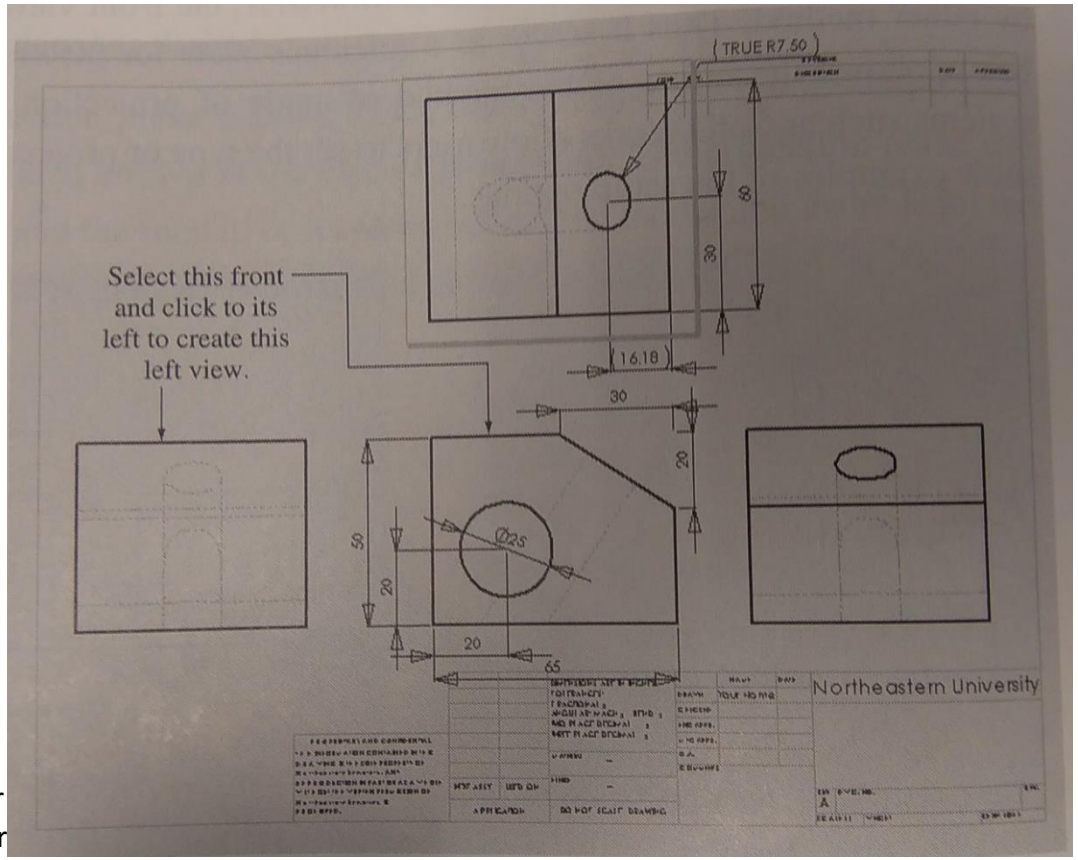
TYPES OF VIEWS

- Projected view
- Named view
- Auxiliary view
- Sectional view
- Detailed view

PROJECTED VIEW

A view that results from projecting an existing view in a given direction.



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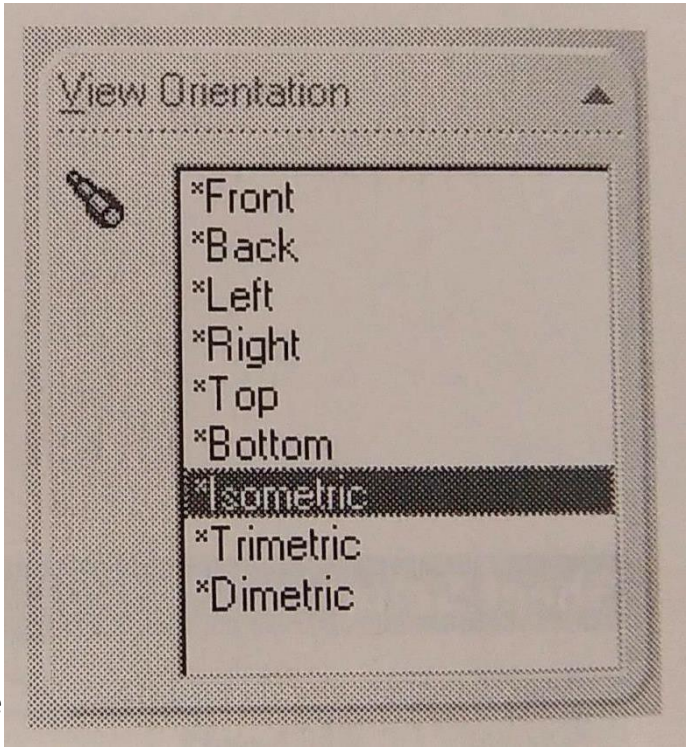
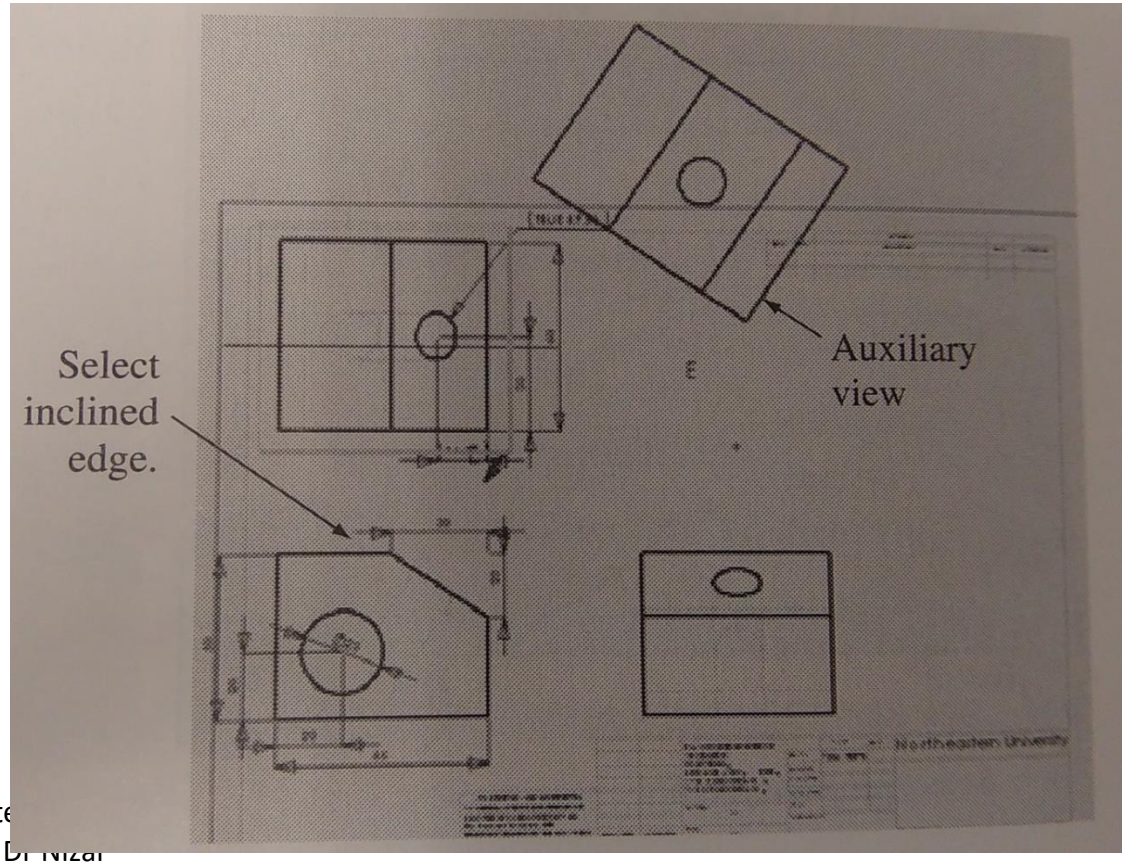
NAMED VIEW

- Standard predefined view.
- We can place these views anywhere in the drawing sheet.



AUXILIARY VIEW

Is a custom view created using a custom viewing angle.



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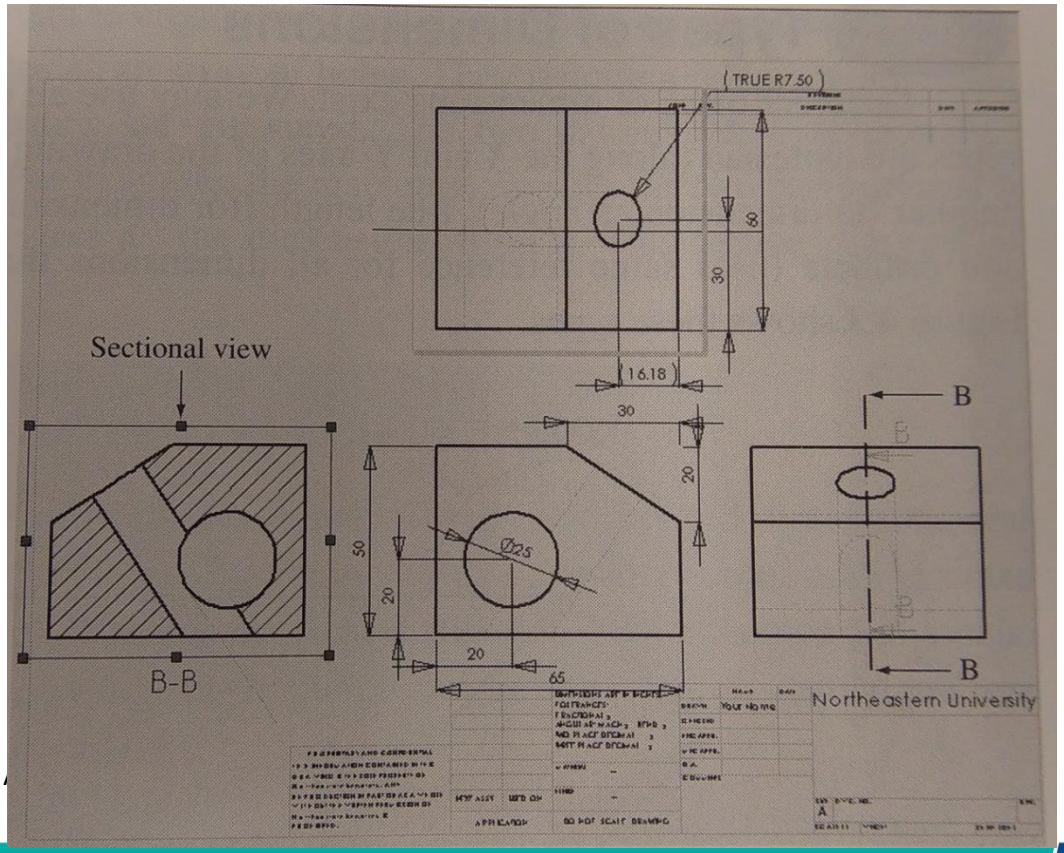
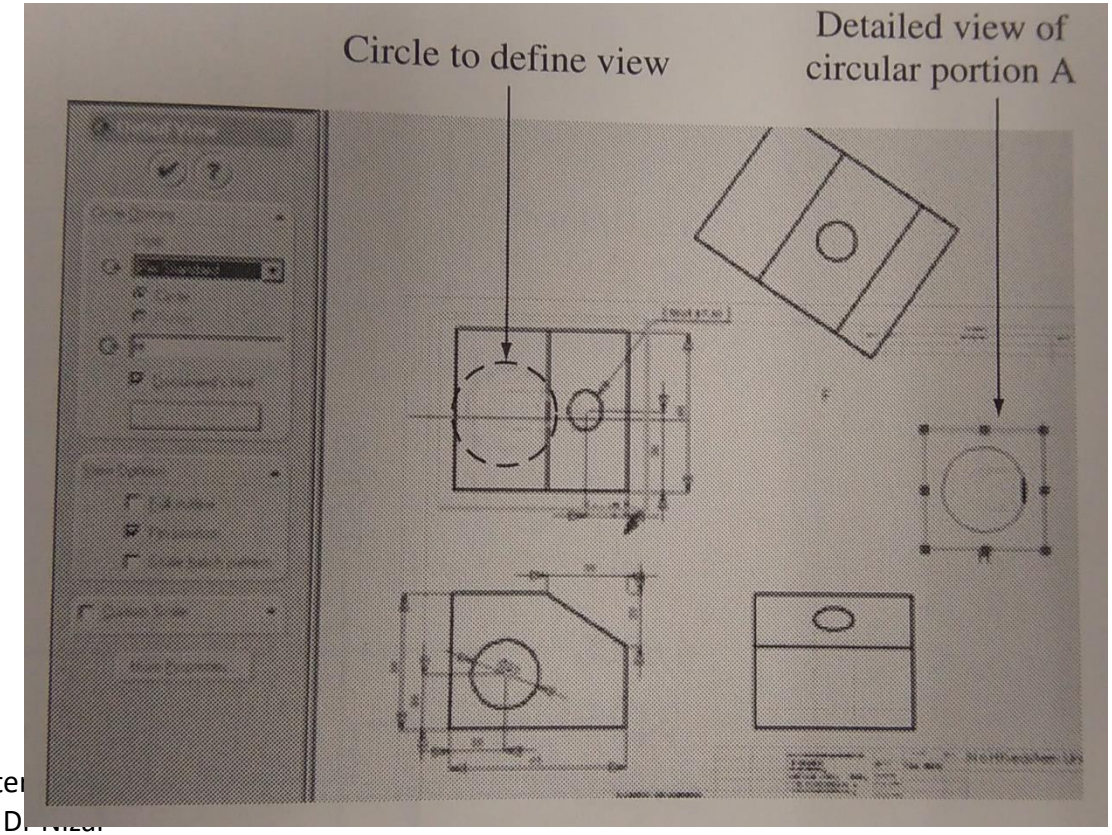
SECTIONAL VIEW

Can be obtained after cut open the model to reveal important hidden details of its geometry.



DETAILED VIEW

Use to magnify a small portion of a given view to show the details of the small portion only.



DIMENSIONS

According to American National Standard Institute (ANSI) standards, the basic rules that should be observed in dimensioning any drawing:

1. Show enough dimensions.
2. State each dimension clearly.
3. Show the dimensions between points, lines, or surfaces that have a necessary and specific relation to each other.
4. Select and arrange dimensions to avoid accumulations of tolerances.
5. Show each dimension only once.
6. Dimension each feature in the view in which it appears in profile and in which its true shape appears.
7. Specify dimensions so that those examining the drawing can make use of readily available materials, parts, tools, and gauges.

DIMENSIONS

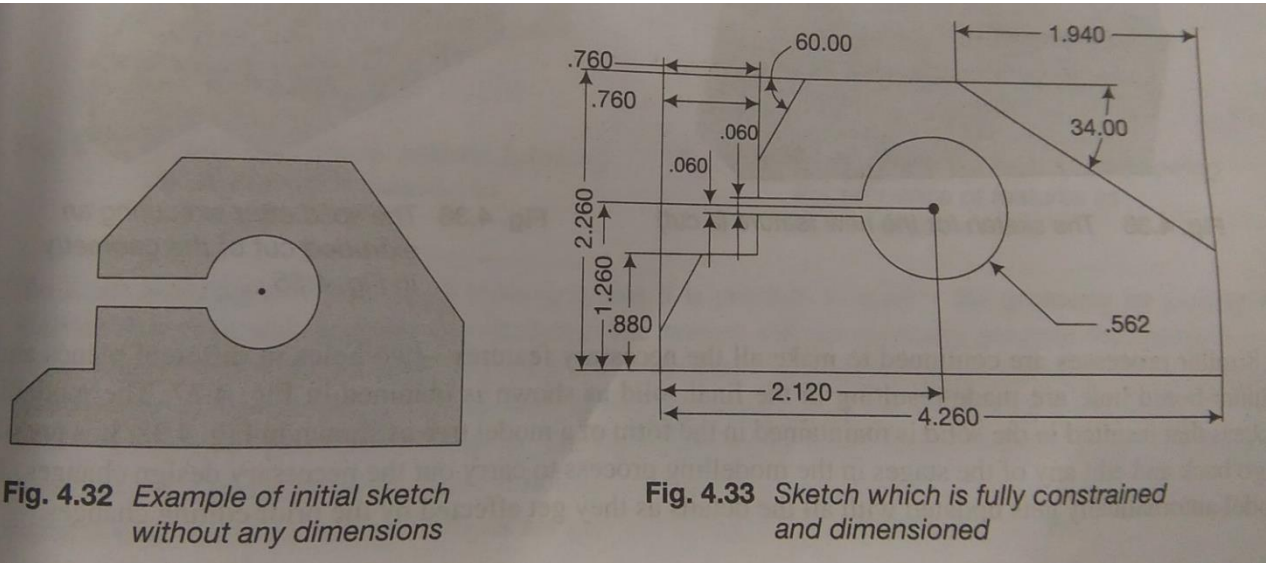


Fig. 4.32 *Example of initial sketch without any dimensions*

Fig. 4.33 *Sketch which is fully constrained and dimensioned*

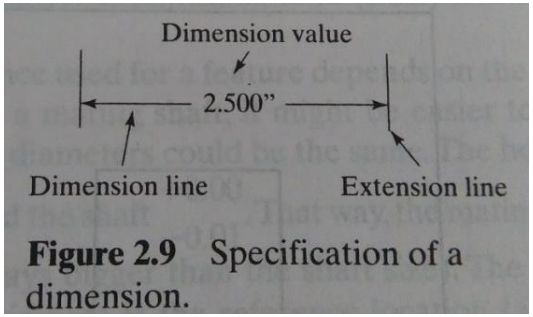
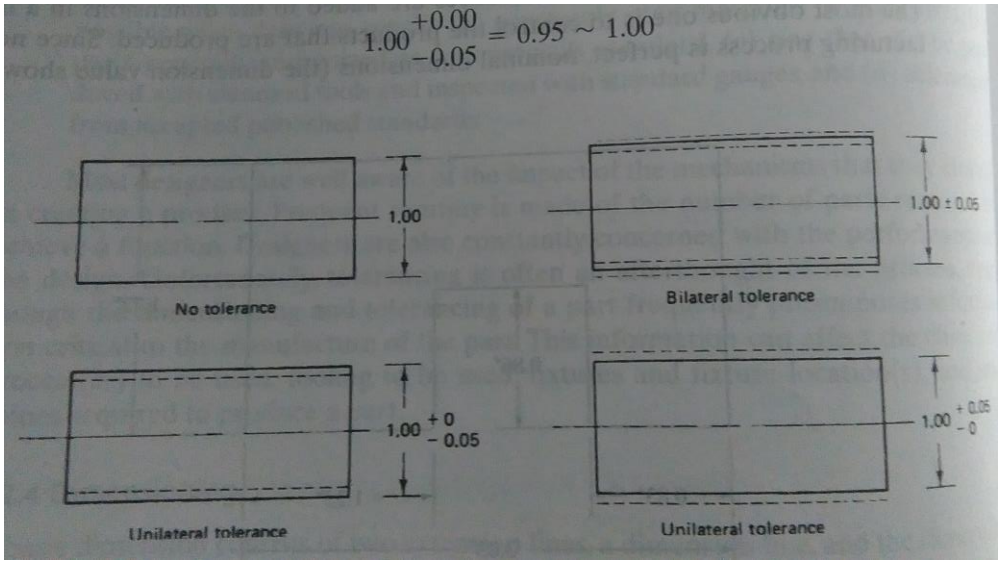


Figure 2.9 Specification of a dimension.

1. Dimensions should be unambiguous, clearly and uniquely interpretable.
2. Dimensions should be complete, with none missing.
3. There should be no redundancy; each dimension should be shown only once.

TOLERANCES

BILATERAL AND UNILATERAL



- Tolerances allow for variability during manufacturing because there is no perfection in all manufacturing conditions.
- Only assign tolerances to important dimensions that directly affect the design functionality.
- The higher the tolerances, the more expensive it is to make the part

TOLERANCES

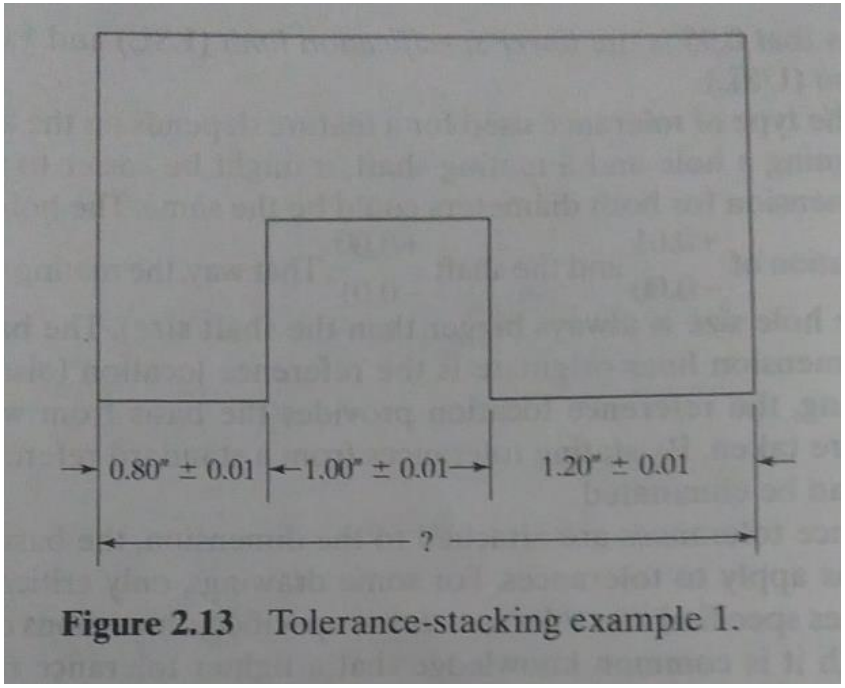


Figure 2.13 Tolerance-stacking example 1.

Tolerance-stacking example 1

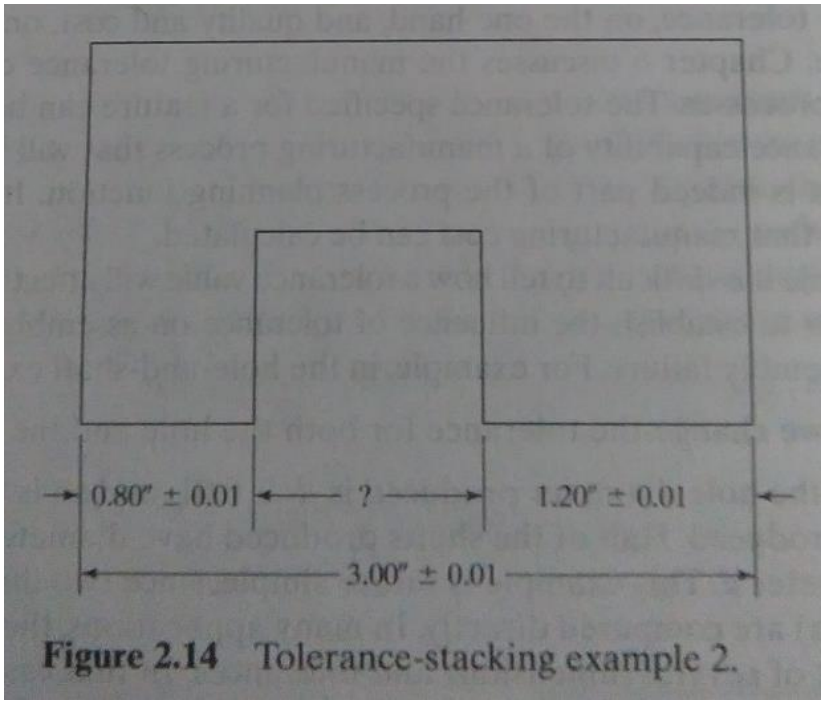
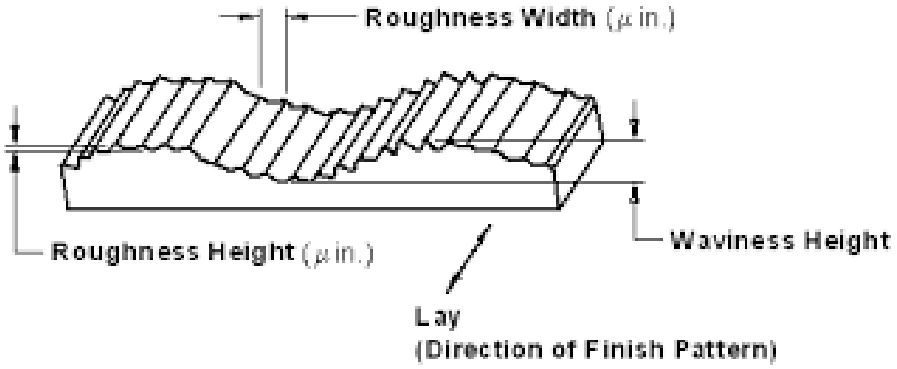


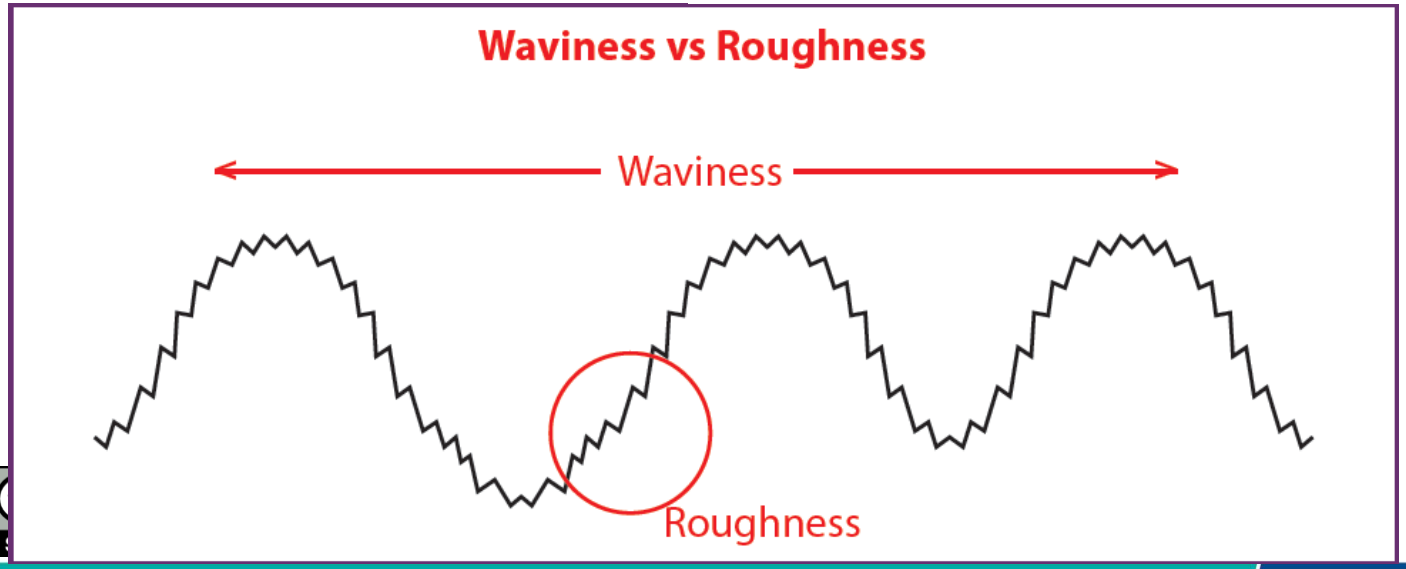
Figure 2.14 Tolerance-stacking example 2.

Tolerance-stacking example 2

SURFACE FINISH

- **Waviness: surface variation on a relatively large scale.**
- **Roughness: same variation on a smaller scale. Roughness is like the ripple on a wave.**





Have any questions?

Thank you
and Have a nice day!

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