


**MODULE 2**



**PLANS AND DRAWINGS**

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**THE BUILDING TRADES**  
*Value on Display. Every Day.*

**OUTLINE**

- Introduction
- Learning Objectives
- Projecting the View
- How to Read Plans



Module Two 2

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**THE BUILDING TRADES**  
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**OUTLINE**

- The Language of Plans
  - Symbols
  - Abbreviations

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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OUTLINE (continued)

- The Language of Plans (continued)
  - Lines
    - Property Line
    - Object Line
    - Hidden Lines
    - Break Lines
    - Dimensions and Extension Lines
    - Center Lines
    - Leader or Reference Lines

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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OUTLINE (continued)

- Drawings
  - Proper Handling of Plans and Drawings

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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INTRODUCTION

- A set of working plans, along with the written specifications, make up the "language of construction." Reading and understanding the relationship that one view or drawing has with another is a necessary skill.
- The series of views in a set of plans are all related to each other by a system known as "orthographic projection." *Orthographic Projection* is a way of drawing an object from different directions. Usually a front, side, and plan view are drawn so that a person looking at the drawing can see all the important sides.
- The different views are arranged so that the user can form a mental picture of the structure.

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**NORTH AMERICA'S BUILDING TRADES UNIONS**  
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**LEARNING OBJECTIVES**

After completing this module, students should be able to:

- Identify the various views of a drawing that are included in a set of plans and their relationship to each other.
- Identify and define material symbols, abbreviations, and lines used in drawings.
- Describe proper handling procedures for plans and drawings.

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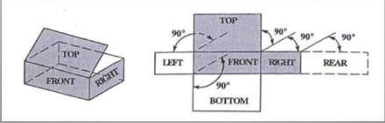
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**NORTH AMERICA'S BUILDING TRADES UNIONS**  
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**PROJECTING THE VIEW**

- The views of an orthographic drawing are projected at right angles (90°) to each other and have a definite relationship. The best way to visualize this is by cutting and unfolding a cardboard box.



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**NORTH AMERICA'S BUILDING TRADES UNIONS**  
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**PROJECTING THE VIEW**

- The front view has remained in position. The four adjoining views have revolved on their "hinges" 90° with the front view bringing them into the same plane. In other words, the top view is above, the right side is to the right, the bottom view is below and the left side is to the left. The rear view can be shown in various ways.

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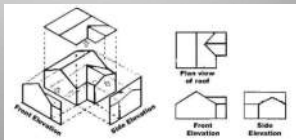
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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**PROJECTING THE VIEW**

- In architectural drawings, the different views of the building (floor plans and elevations) are obtained in the same manner.



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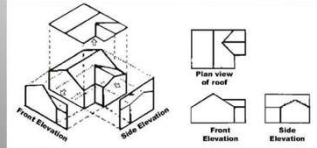
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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**PROJECTING THE VIEW**

- Each view is projected towards its "viewing plane," then unfolded and brought into plane with the front view.



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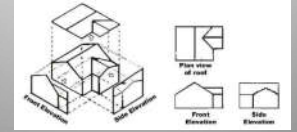
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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**PROJECTING THE VIEW**

- Due to the size of most architectural structures, the different views usually are separated and placed on individual sheets. These individual sheets form the set of plans for a particular job.



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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**HOW TO READ PLANS**

- Plan reading is defined as the gathering of information from a print or plan. It involves two principal elements: visualization and interpretation.
- Visualization is the ability to "see" or envision the size and shape of the structure from a set of plans. Interpretation is the ability to "read" lines, symbols, dimensions, notes, and other information on the print or plan.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**HOW TO READ PLANS**

- Plans use a language that is common to the construction industry. This language is made up of symbols, abbreviations, and other specific marks and notations. Without this common language, millions of words and thousands of pages would be needed to explain each job. However, coded language can be difficult to interpret, even with a minimal amount of wording; the possibility of misinterpretation still exists.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Reading and understanding construction blueprints and plans begin with recognizing the various symbols, abbreviations, and lines that appear on drawings.
- Trade groups and associations try to develop standard symbols and abbreviations for this purpose. However, there are some variations. For example, a draftsman may use different symbols for the same object. New materials may require new or modified symbols or new processes may require new abbreviations.

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### THE LANGUAGE OF PLANS

- The architect who produces the plans must make sure that they will be understood.
- The list of symbols and abbreviations on the first or second sheet of a set is put together by the architectural firm. There is often a list of symbols and abbreviations at the beginning of each separate section. For example the mechanical engineer may have a list with the mechanical drawings. The electrical engineer may have a list with the electrical drawings. The drawings often include a table or legend for the abbreviations and symbols used.

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### THE LANGUAGE OF PLANS

- Symbols
  - Symbols generally do not resemble the objects they represent; therefore, they must be memorized. Generally, two types of symbols are used on plans and drawings.
  - One type consists of picture-like drawings that can be easily recognized while the other represents materials that may not be recognizable unless you are familiar with those particular symbols.

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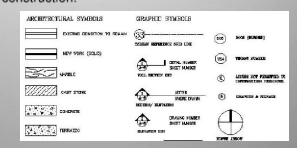
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### THE LANGUAGE OF PLANS

- Symbols
  - Regardless of the trade in which you are employed, you should be familiar with all symbols used on a plan or drawing since they may affect your area of construction.



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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Abbreviations
  - Using abbreviations saves time and space on drawings. However, there are no set standards for abbreviations, and they vary according to the architect or engineer. Care should be taken in reading abbreviations. They may have two or more meanings. For example, "S" can mean "soil," "south," "sewer," or "switch."

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Abbreviations
  - Abbreviations are usually clarified on the table or legend and found on the cover sheet of a set of blueprints. Usually, looking at the item indicated will give a clue as to the meaning of an abbreviation.

CMU	Concrete Masonry Unit	GT	Glazed Tile
COL	Column	GYF	Gypsum
CONC	Concrete	H	High
CONN	Connection	HB	House BB
CONST	Construction	HDR	Hardware
CONT	Conduit	HFT	Fixture Type
CORR	Corrosion	HFN	Fixture Number
CS	Care Stone	HGR	Hangar
CT	Ceramic Tile	HPP	High Point
CW	Cold Water	HR	Hour

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Abbreviations
  - Abbreviations are usually clarified on the table or legend and found on the cover sheet of a set of blueprints. Usually, looking at the item indicated will give a clue as to the meaning of an abbreviation.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - The line is the basis of all industrial drawings. By combining lines of different thicknesses, types, and lengths, it is possible to describe graphically any object in sufficient detail so that persons with a basic understanding of blueprint reading can accurately visualize the shape of the part.
  - Various types of lines also serve as symbols. The meaning of each line is determined by how it is drawn.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - Lines used in drawings have a standard, accepted meaning. When properly drawn, each of the following lines helps convey meaning to a drawing or plan.
  - Property Line
    - A property line is an extra heavy line made up of two short dashes alternating with long dashes. The property line is shown on a site plan (a plan that shows the whole piece of property under construction).

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - Lines used in drawings have a standard, accepted meaning. When properly drawn, each of the following lines helps convey meaning to a drawing or plan.
  - Object Line
    - An object line is a heavy continuous line that shows the outline of a structure or an object. The outline of objects such as rooms, doors, and windows are made with the object line.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - Lines used in drawings have a standard, accepted meaning. When properly drawn, each of the following lines helps convey meaning to a drawing or plan.
  - Hidden Lines
    - Hidden lines are made up of medium weight, evenly spaced, short dashes. They are used to show objects, edges, or surfaces that are not visible in a particular view. Often these hidden parts will be revealed in an elevation or in a sectional view as shown in Figure 9. Hidden lines are used to help clarify a drawing.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - Lines used in drawings have a standard, accepted meaning. When properly drawn, each of the following lines helps convey meaning to a drawing or plan.
  - Break Lines
    - Break lines are used to show that an object has not been drawn in its entirety. This is sometimes necessary to save space. A long break is shown by means of a zigzag in the line. A short break is shown with regular lines separating the two parts of an object.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - Lines used in drawings have a standard, accepted meaning. When properly drawn, each of the following lines helps convey meaning to a drawing or plan.
  - Dimensions and Extension Lines
    - Dimension lines are thin lines used to indicate the distance between two points. Extension lines extend out from the object to show what points are being measured. Dimension lines end with an arrowhead, a dot, a slash, or some other mark where they meet the extension lines. Measurements are written on or above the dimension line.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - Lines used in drawings have a standard, accepted meaning. When properly drawn, each of the following lines helps convey meaning to a drawing or plan.
  - Center Lines
    - Center lines indicate the center of symmetrical objects such as doors, windows, or columns. A center line is made up of alternating long and short dashes.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - Lines used in drawings have a standard, accepted meaning. When properly drawn, each of the following lines helps convey meaning to a drawing or plan.
  - Leader or Reference Lines
    - Leader or reference lines are used to connect a note or label to an object. A leader line may be straight, angled, or curved and usually ends in an arrowhead. A leader line may also indicate that an imaginary cut has been made at this point and that a detail is shown elsewhere on the drawings.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**THE LANGUAGE OF PLANS**

- Lines
  - Lines used in drawings have a standard, accepted meaning. When properly drawn, each of the following lines helps convey meaning to a drawing or plan.
  - Leader or Reference Lines (continued)
    - Letters and numerals, usually in a circle attached to line, will generally indicate where this information can be found.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**DRAWINGS**

- The floor plan is perhaps the most important drawing since it provides the largest amount of information. The floor plan, combined with elevation drawings, will give a clear image of what the structure should look like when it is constructed.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**DRAWINGS**

- The floor plan is a view from above representing a horizontal section at about eye level on each floor. In other words, imagine making a horizontal cut about four feet up from the floor through the entire structure. When the top is lifted away, the walls, doors, windows, etc. will be exposed. This view reveals the layout of the structure or building.
- The floor plan shows exterior and interior walls, doors, windows, stairways, fireplaces, mechanical equipment, etc.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**DRAWINGS**

- The first floor plan is generally the key drawing and is used as a guide for other drawings. Drawings for multi-story buildings include a floor plan for each floor including the basement.
- Elevation drawings show the exterior view of a building as seen by a person looking at each side. Elevation drawings show features such as the style of the building, doors, windows, moldings, etc. Any feature on an elevation drawing that does not have sufficient clarity will be shown on a larger scale in a detail drawing.

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NORTH AMERICA'S BUILDING TRADES UNIONS **THE BUILDING TRADES**  
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**DRAWINGS**

- Interior elevation drawings may be provided to show the type and construction of a particular interior wall or area. Elevations are labeled using directions such as east, west, north, and south.
- Symbols are commonly used on elevation drawings to indicate the type of finish or material.

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NORTH AMERICA'S BUILDING TRADES UNIONS **THE BUILDING TRADES**  
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**DRAWINGS**

- Cross-sectional drawings are made by imagining that a "cut" has been made through an object at right angles. This view allows a look at the "inside" of a wall, window, door, or any other structure to clarify construction procedures.

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NORTH AMERICA'S BUILDING TRADES UNIONS **THE BUILDING TRADES**  
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**DRAWINGS**

- A cross-section drawing can be used in any instance where construction is not shown on the plan or elevation views. Cross-section views are generally either a longitudinal section (the "cut" passes through the long dimension of a building) or a transverse section (the "cut" passes through the short dimension of a building).

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**DRAWINGS**

- Certain features may not show up clearly on a plan, elevation or sectional view. These special features will require a larger scaled illustration to provide the information needed for construction. Detailed views are commonly used for walls, hardware, metal members, or any other special feature.

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**DRAWINGS**

- Door, window, and finish schedules are not drawings but usually are included as a part of a set of working drawings. These schedules list the sizes and other necessary information for the various doors and windows that will be included in the construction.
- Each item in the schedule is referenced to the plan and elevation drawings. Doors are listed numerically while windows are listed alphabetically. Door and window schedules are generally located at the end of the architectural section

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**NORTH AMERICA'S BUILDING TRADES UNIONS** **THE BUILDING TRADES**  
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**PROPER HANDLING OF PLANS AND DRAWINGS**

- The set of plans and related specifications sheets are a vital part of any job. By following these precautions, they can be kept usable for a long period of time.
  1. NEVER write on a plan unless you have been authorized to make changes.
  2. Keep plans clean and free of oil and dirt. Soiled plans are difficult to read and contribute to errors.
  3. Roll plans carefully to the inside of the roll to avoid tearing or soiling. Plans should not be folded.

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The slide features a blue header with the text "NORTH AMERICA'S BUILDING TRADES UNIONS" and "THE BUILDING TRADES" in white. Below this, it says "Value on Display. Every Day." The main content is on a grey background with the title "PROPER HANDLING OF PLANS AND DRAWINGS" in red. It contains a bulleted list of instructions for handling plans and drawings. At the bottom, it says "Module Two" and "40".

**PROPER HANDLING OF PLANS AND DRAWINGS**

- The set of plans and related specifications sheets are a vital part of any job. By following these precautions, they can be kept usable for a long period of time.
- 4. Do not lay sharp tools or pointed objects on the plans.
- 5. While in use, lay plans in a safe and secure place to avoid being stepped on or damaged by weather.
- 6. When not in use, store plans in a clean, dry place.

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