Finishing Trades Institute INTERNATIONAL®

Basic Blueprint Reading Principles

PLANS AND DRAWINGS – 8HR

Introduction

This Blueprint Plans and Drawings course will provide the basis for using a set of architectural plans. You will explore the various views of plan drawings and how to visualize and interpret those drawings. You will use a set of prints or pages from a set of prints to locate symbols, abbreviations, and other project information and understand the relationship between the drawings and the information found on the construction documents. You will learn about scale, fractional rule and how to use the architect's scale to determine dimensions on a set of plans.

Topics

- Introduction
- Learning Objectives
- Review of Previous Topics
- Projecting the View
- Five Basic Views
- How to Read Plans
- The Language of Plans
  - Symbols, Abbreviations, Lines, Drawings
- Proper Handling of Drawings and Plans
- Scale
- Using a Fractional Rule

Learning Outcomes

By the end of this lesson, you will 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 the various parts of a set of plans, such as plan details, shop drawing, etc.
- Identify and define material symbols, abbreviations, and lines used in drawings.
- Demonstrate proper handling procedures for a printed set of plans and drawings.
- Define the meaning of “scale.”
- Use a fractional rule to calculate measurements.

Review of Prior Learning

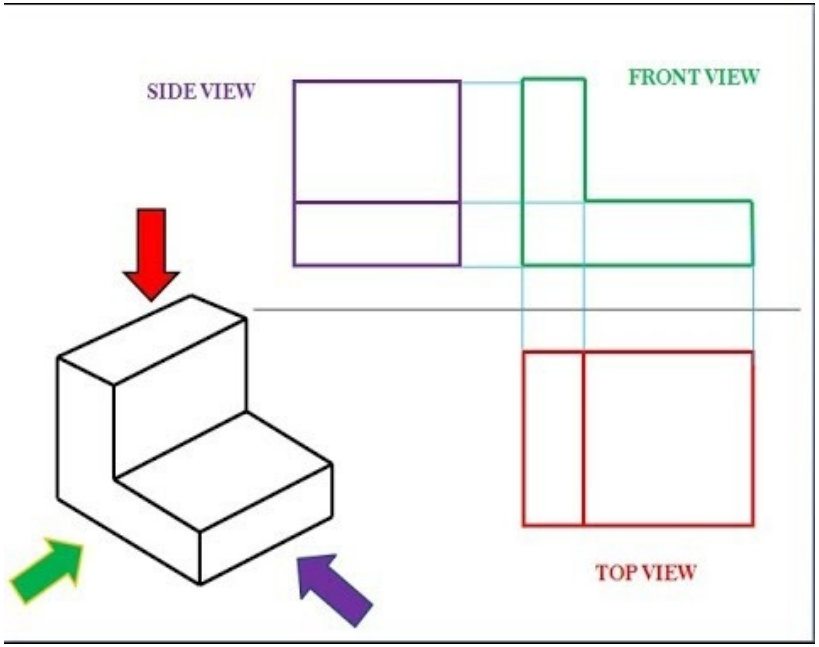
- Blueprints are sets of detailed architectural drawings used to construct a house or building.
- The specifications are detailed written instructions about how the building is to be built.
- Architectural drawings are the basis for all the other drawings and include working plans, elevations, details, and other information necessary.
- Visualization is a mental picture of how the object or house will look when completed can be formed form the information presented on the plans.
- A shop drawing takes a portion of a structure and details the exact design, dimension, and materials that will be used by a specific trade.

Projecting the View

What is an ORTHOGRAPHIC drawing?

An **orthographic drawing** represents a *three-dimensional object* using several *two-dimensional views* of the object. It is also known as an orthographic projection.

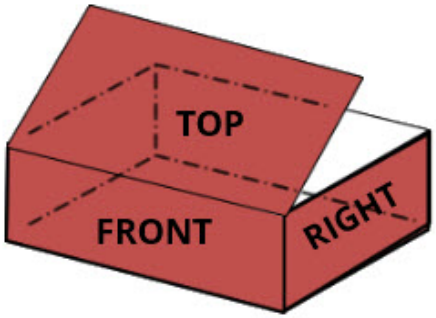
- The series of views in a set of plans are all related to each other by a system known as "orthographic projection."
- ***Orthographic Projection*** drawing an object from different directions.
- The different views are arranged so that the user can form a mental picture of the structure.

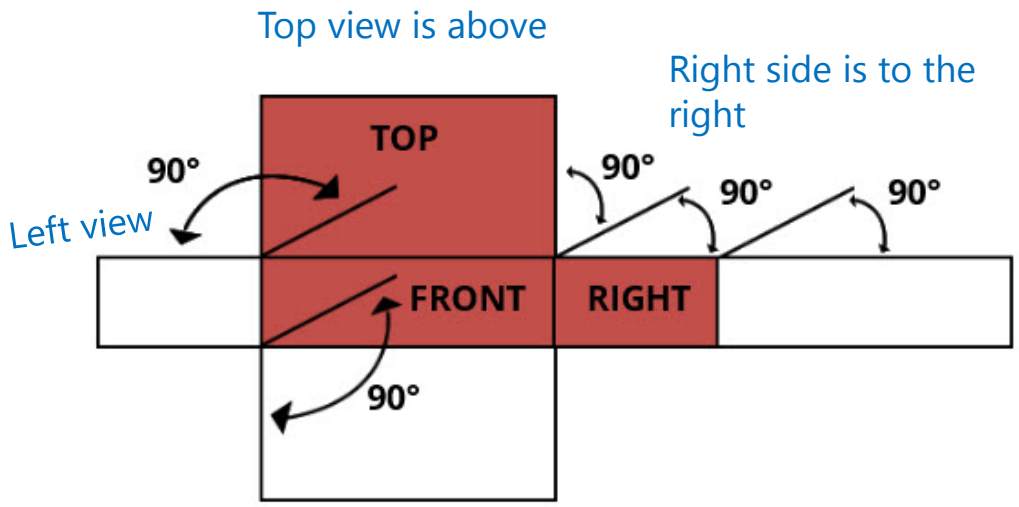


Projecting the View - Exercise

Projecting the View

- The front view remained in position
- The four adjoining views revolved on their hinges 90° with the front view bringing them into the same plane.
  - *The views of an orthographic drawing are projected at right angles* (90°) *to each other have a definite relationship*



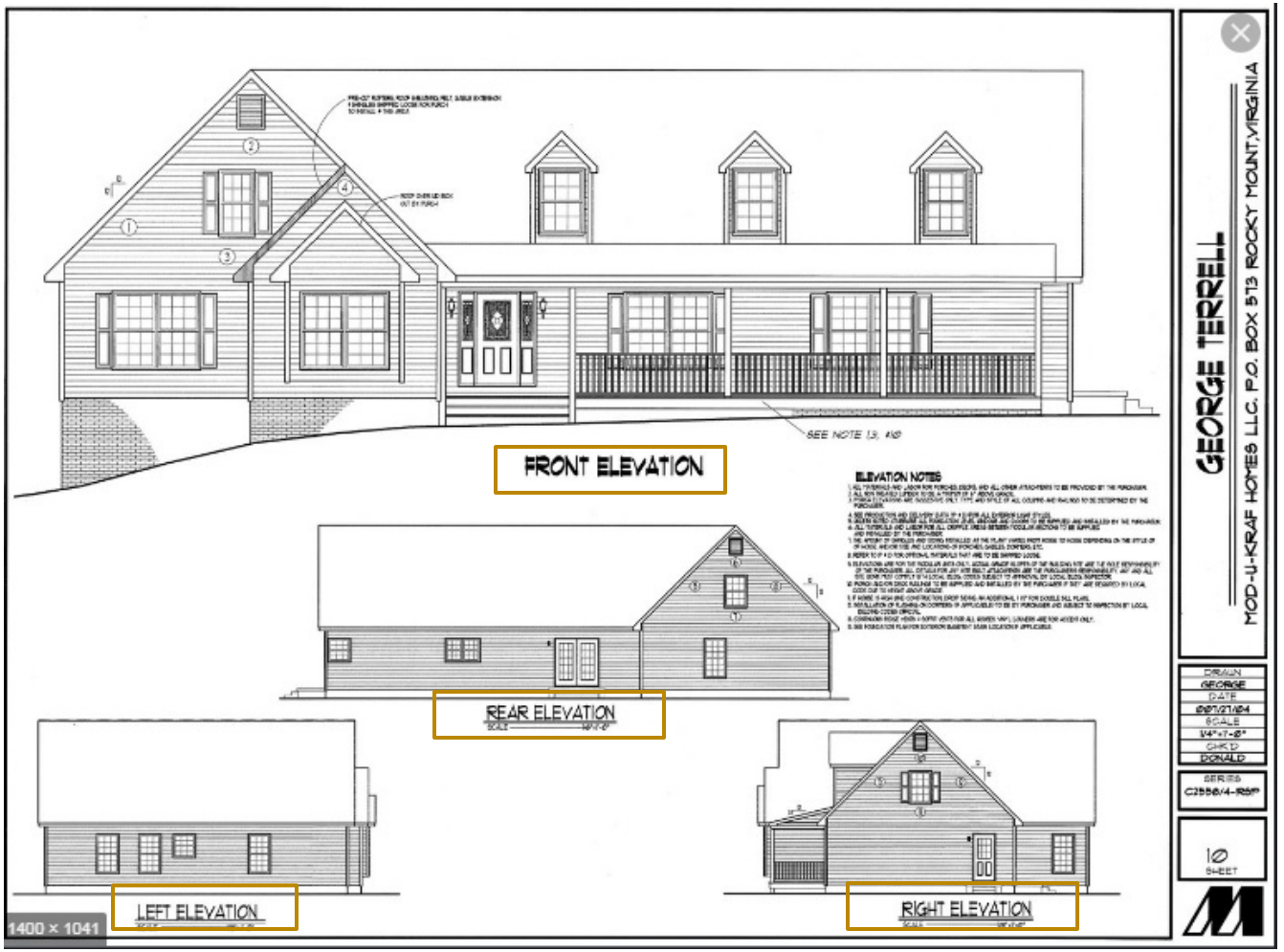


What are Blueprint Views?

The first step for building any structure is to develop a plan.

A plan is a set of technical drawings that show the building from different *views* and *elevations*, such as:

- Front
- Rear
- Left
- Right **OR**
- North
- South
- East
- West



Elevation Views

There are 5 Basic Elevation Views:

1) Plot Plan
2) Elevation
3) Floor Plan or Plan View
4) Section or Cross Section
5) Detail

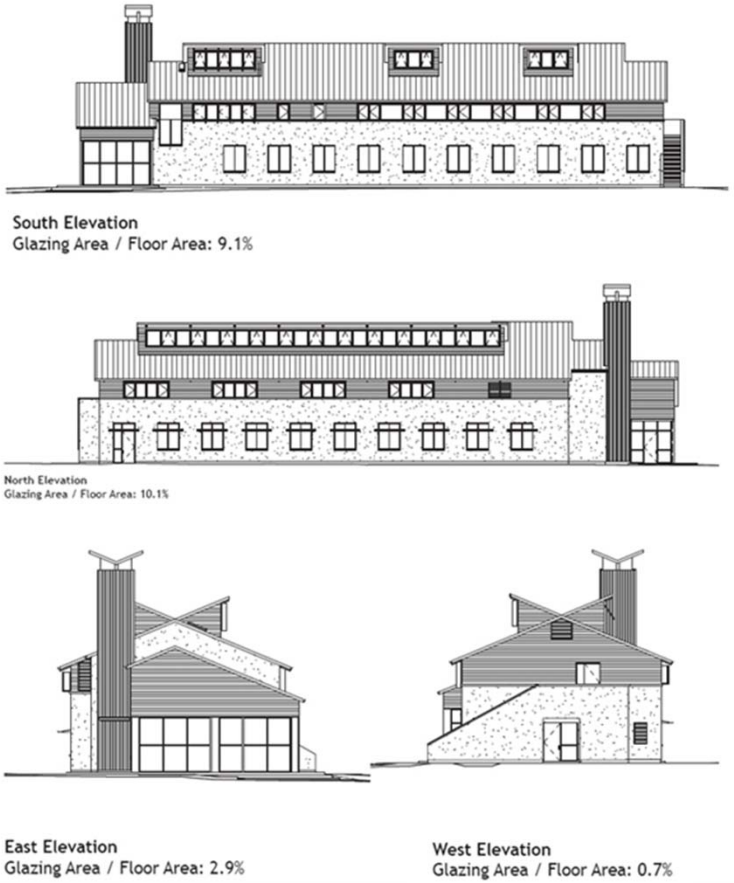
Plot Plan

- The plot plan view shows you how the structure fits on the lot
- View looking down on structure from directly above it
- Shows the location of the building or buildings on the site
- Includes utility runs, equipment layout, roads, sidewalks, landscape features
- Includes critical legal considerations such as property boundaries, setbacks, and rights of way.
- Also known as a Site Plan

Elevations

Elevation –

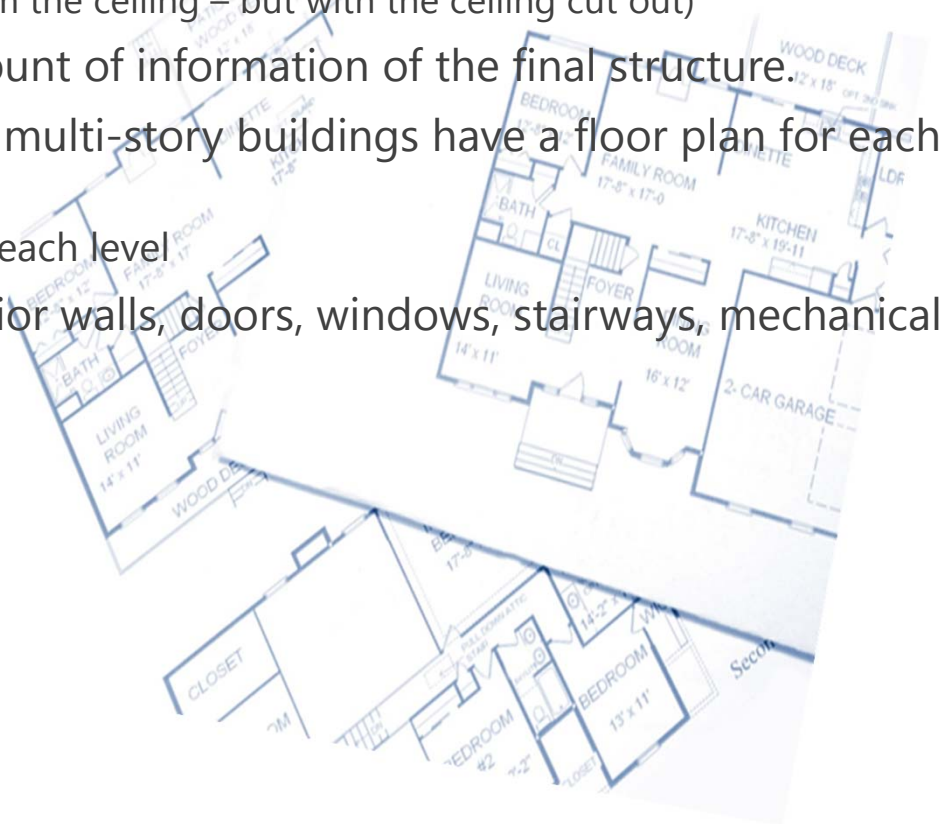
- Shows the front or side of an exterior view of a building as seen by a person looking at each side (i.e., at **eye level**).
- **Exterior elevation** drawings show the features and style of a building – doors, windows, moldings, etc.
- ***Interior* elevation** drawings may be provided to show the type 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.
- Elevation drawings may be shown on a larger scale in a **detail drawing**.



Floor Plans

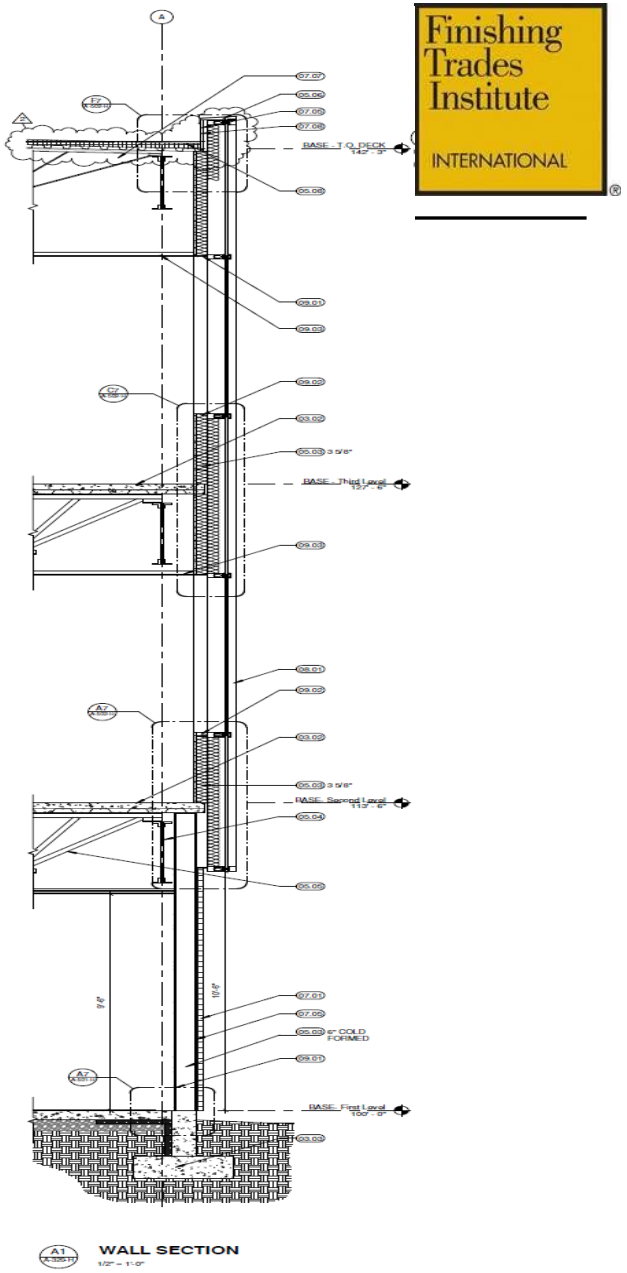
Floor plans are very important drawings!

- Drawing and view of the whole structure from above revealing its layout
  - (e.g. looking down from the ceiling – but with the ceiling cut out)
- Provides the largest amount of information of the final structure.
- Guides other drawings - multi-story buildings have a floor plan for each level including the basement.
  - Must know the details for each level
- Shows exterior and interior walls, doors, windows, stairways, mechanical equipment, etc.



Cross Section or Wall Section

- Section view is a dissection of the structure – as if it were sliced through vertically, then opened up to see inside.
- See “inside” a wall, window, door, etc. to clarify construction procedures.
- Used where construction is not shown on the plan or elevation views
- Views are either longitudinal or transverse sections



Door, Window, and Finish Schedules

- Included as a part of a set of working drawings.
- Lists sizes and other information for the doors and windows included in construction.
- Each item is referenced to the plan and elevation drawings.
- Doors are listed numerically while windows are listed alphabetically.
- Generally located at the end of the architectural section

Door Schedule

Name	Width	Count
SingleDoor	600.0000	1
SingleDoor	650.0000	6
SingleDoor	800.0000	2

Column Schedule

Name	h	w	Count
column	200	200	5
column	300	300	9
column	600	400	6

Wall Schedule

Count	Name	Length
1	brickwall	2750.0000
1	brickwall	2600.0000
1	brickwall	3650.0000
1	brickwall	600.0000
1	brickwall	2750.0000
1	brickwall	2750.0000
1	brickwall	3700.0000
1	brickwall	2700.0000
1	brickwall	4800.0000
1	brickwall	3650.0000
1	brickwall	3800.0000
1	brickwall	3700.0000
1	brickwall	4700.0000
1	brickwall	2700.0000
1	brickwall	2550.0000
1	brickwall	2700.0000
1	brickwall	3650.0000
1	brickwall	3650.0000
1	brickwall	2550.0000
1	brickwall	3600.0000
1	brickwall	2600.0000
1	brickwall	4650.0000
1	brickwall	2550.0000
1	brickwall	2750.0000
1	brickwall	2750.0000

Proper Handling

NEVER write on a plan unless you have been authorized to change.

Keep plans clean and free of oil and dirt.

Roll plans carefully to the inside of the roll. Do not fold.

Do not lay sharp tools or pointed objects on the plans.

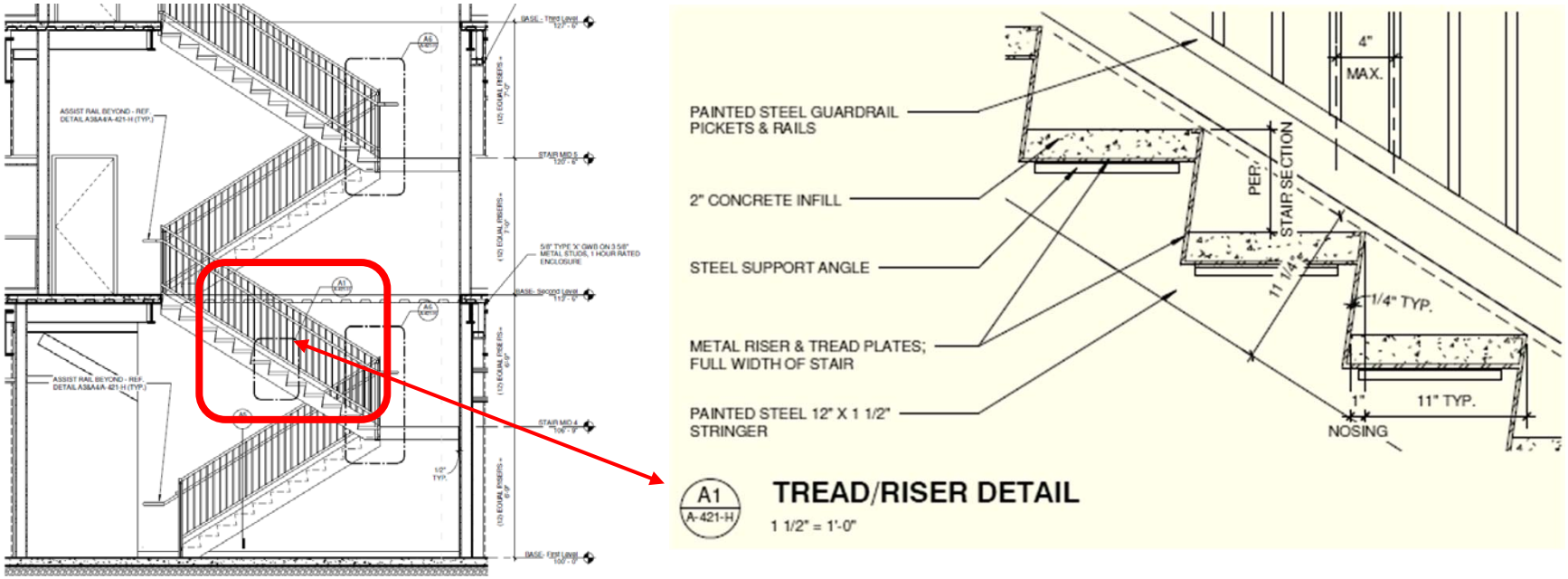
Lay plans in a safe and secure place to avoid being damaged.

When not in use, store plans in a clean, dry place.

Detail Views

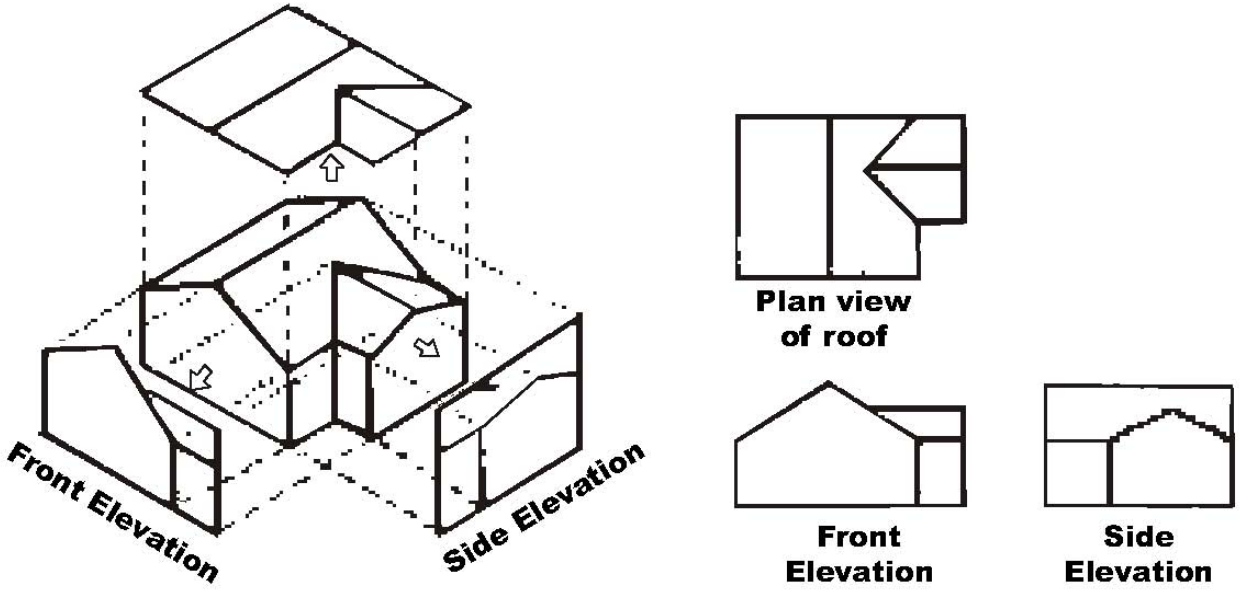
- A Detail is generally a close up of some part of the section not clearly visible on a plan.
- A detail helps show exactly how certain parts connect together.
- Detail views are commonly used for walls, hardware, metal members, or any special features.
- Detailed drawings can be found <u>throughout</u> any set of plans.

Shown from plan is *A-421-H* Stair Sections and Details (Tread/Riser details)



Plans and Drawings

The individual sheets containing each of the views form the set of plan for a particular job, as follows:



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.

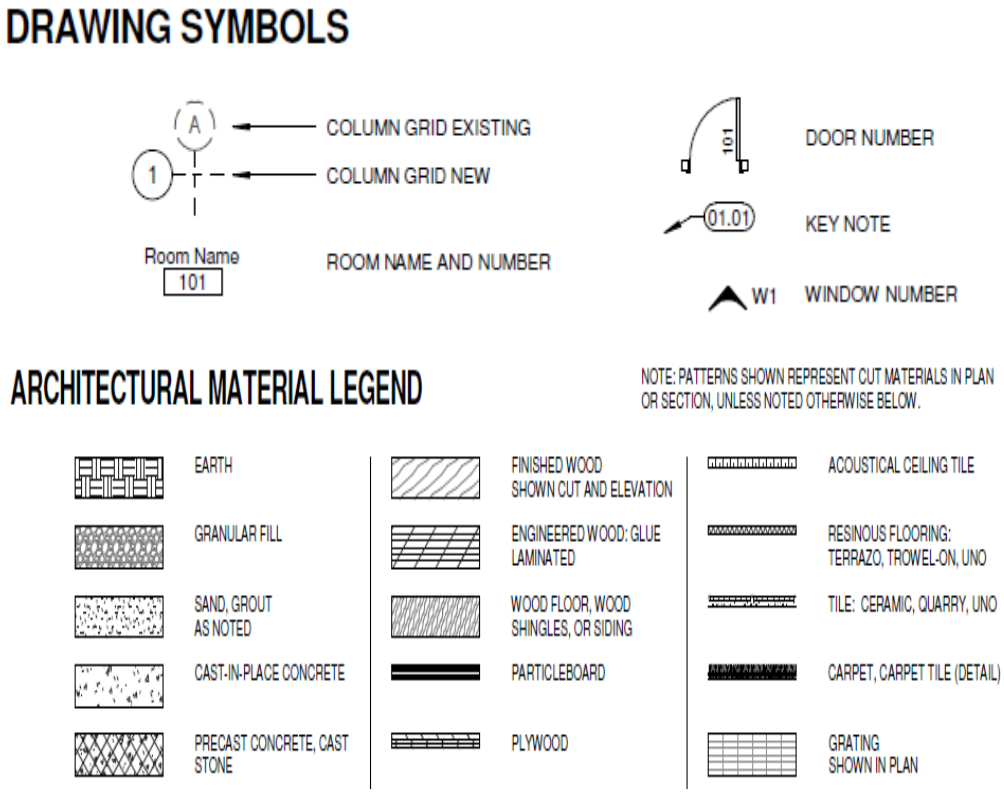
A plan's language, in the construction industry, is made up of symbols, abbreviations, and other codes or notations that explain the job.

The Language of Plans

Symbols
Abbreviations
Lines

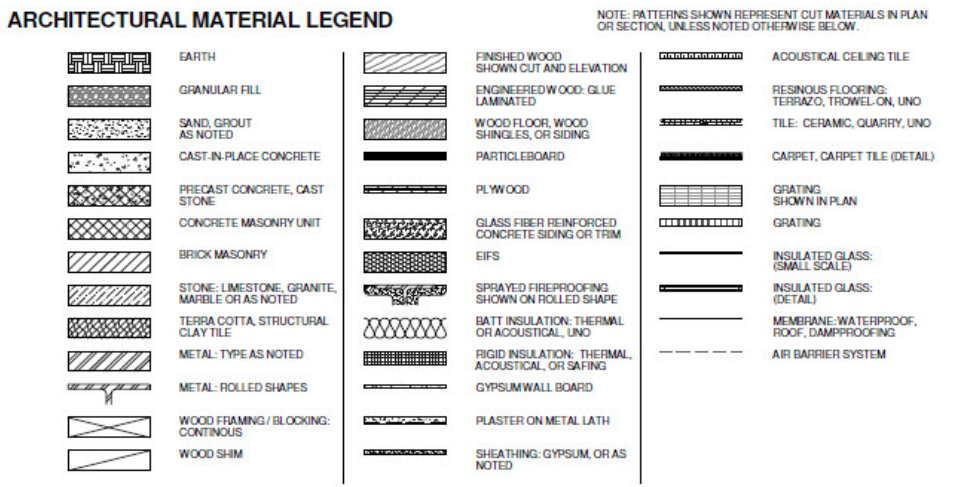
The Language of Plans

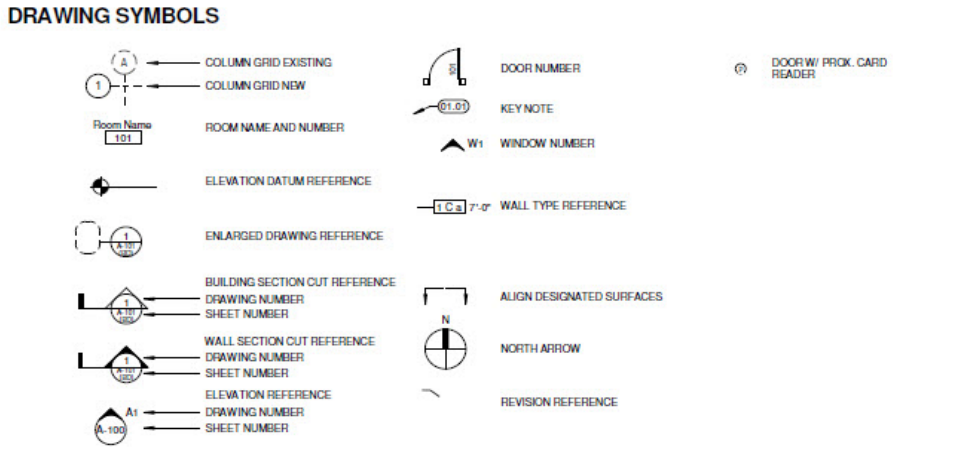
- Recognize symbols, lines, and abbreviations on drawings.
- Typically use standard symbols and abbreviations for the industry, but, there are some variations.
- The architect who produces the plans must make sure that symbols used by a draftsperson or other modifications will be understood.
- Drawings often include a table or legend for the abbreviations and symbols used.



The Language of Plans

- Symbols and abbreviation lists in the front of the plan are usually created by the architectural firm.
- Other lists may be found at the start of a new sections; i.e., there may be a new/separate list of symbols created by the mechanical or electrical engineer.
- Drawings often include a table or legend for the abbreviations and symbols used.





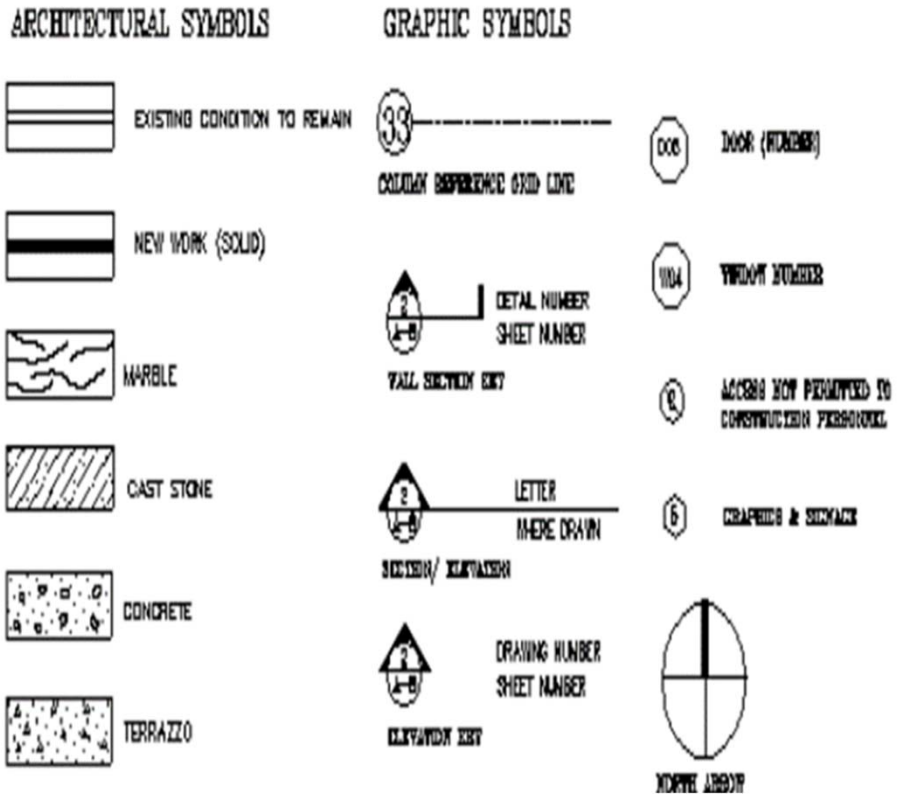
The Language of Plans - Symbols

Symbols generally do not resemble the objects they represent; therefore, they must be memorized.

Two types of symbols used:

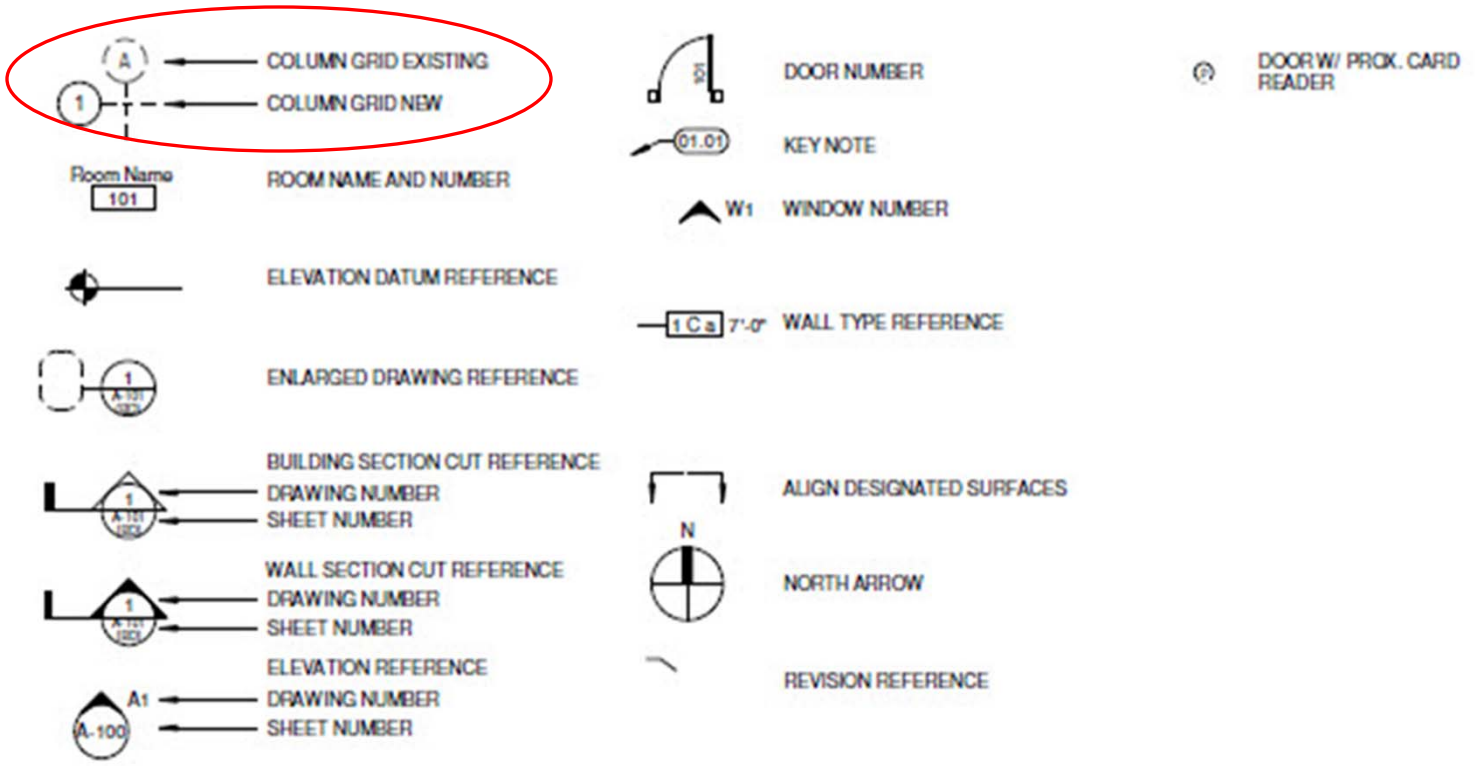
1. Drawing or Graphics Symbols – easily recognized
2. Architectural Material Symbols – recognized if familiar with the symbols

All tradespersons should be familiar with all symbols used on a plan or drawing since they may affect your area of construction.



The Language of Plans - Symbols

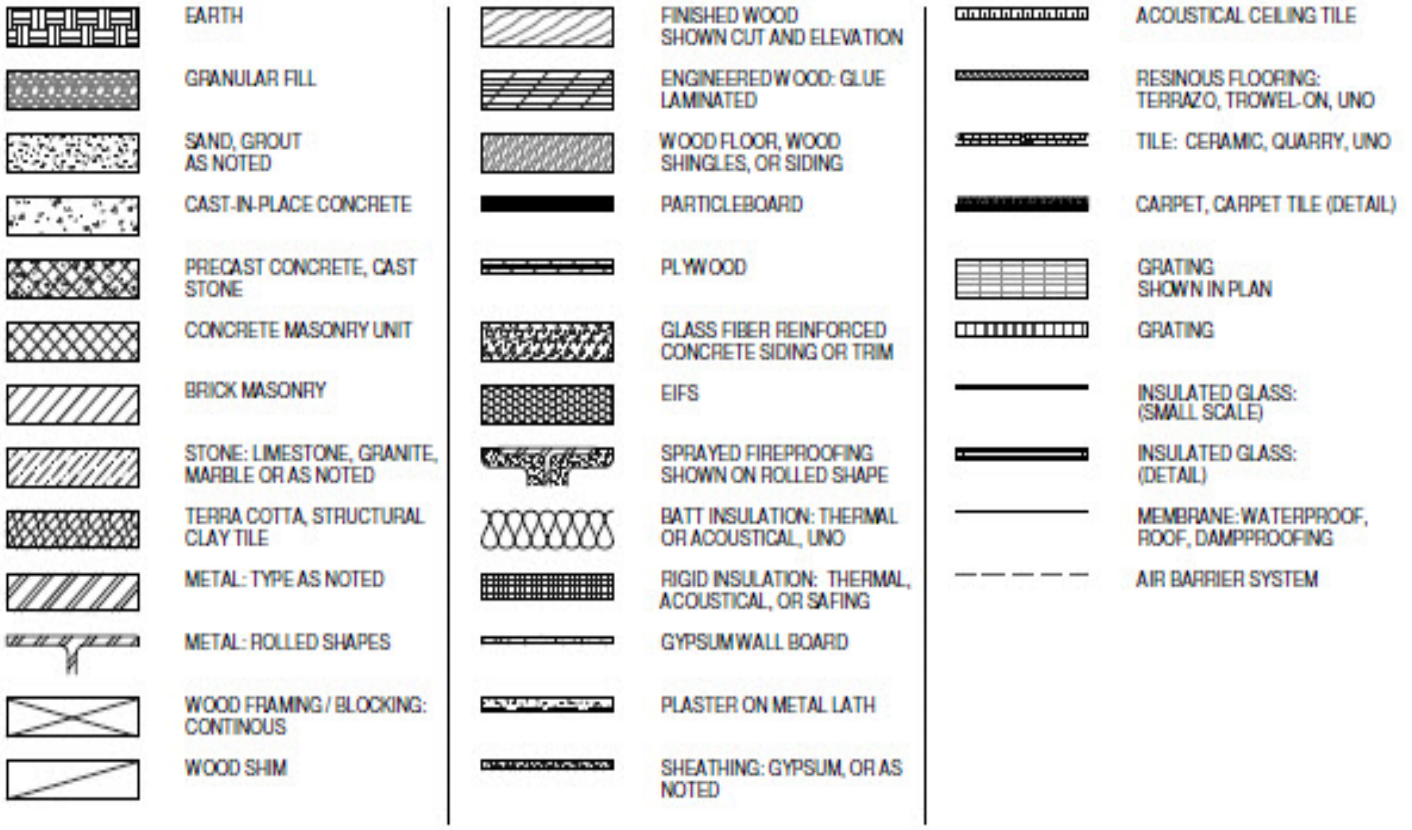
DRAWING SYMBOLS



The Language of Plans – Materials Symbols

ARCHITECTURAL MATERIAL LEGEND

NOTE: PATTERNS SHOWN REPRESENT CUT MATERIALS IN PLAN OR SECTION, UNLESS NOTED OTHERWISE BELOW.



The Language of Plans - Abbreviations

- Abbreviations save time and space on drawings.
- No set standards for abbreviations - vary according to the architect or engineer.
- Read abbreviations carefully. They may have two or more meanings. For example, “S” can mean “soil,” “south, “sewer,” or “switch.”
- Explained on the table or legend on the cover sheet of the plans.

ABBREVIATIONS

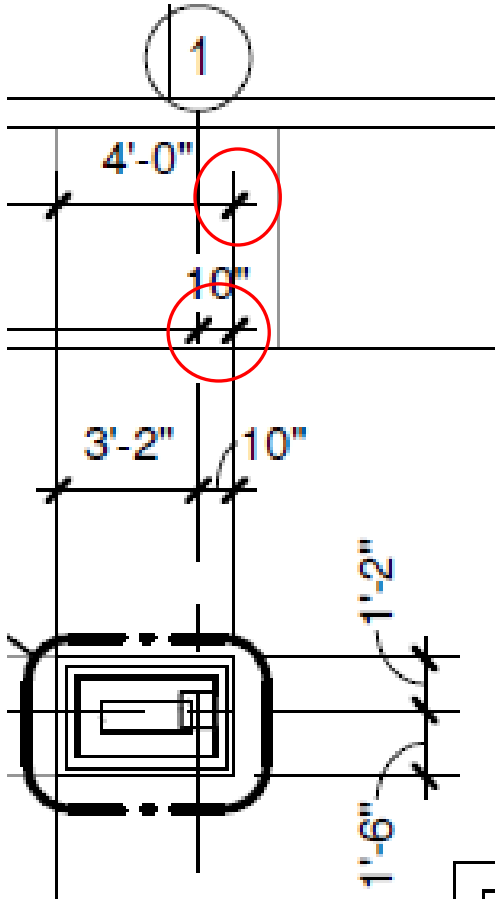
A	
A/C	AIR CONDITIONING
ACOUS.	ACOUSTICAL
A.C.T.	ACOUSTICAL CEILING TILE
ACP	ACOUSTICAL CEILING PANEL
ADA	AMERICANS W/DISABILITIES ACT
ADAAG	AMERICANS W/DISABILITIES ACT ACCESSIBILITY GUIDELINES
ADJ.	ADJUSTABLE
A/E	ARCHITECT/ENGINEER
A.F.F.	ABOVE FINISHED FLOOR
ALT.	ALTERNATE
ALUM.	ALUMINUM
A.P.	ACCESS PANEL
ARCH.	ARCHITECT/ARCHITECTURAL
A.V.	AUDIO/VISUAL

B	
BD.	BOARD
BITUM.	BITUMINOUS
BLDG.	BUILDING
B/O	BOTTOM OF
B.O.W.	BOTTOM OF WALL
BSMT.	BASEMENT

F	
F-R	FIRE-RESISTIVE
FAB.	FABRICATE/FABRICATOR
F.C.U.	FAN COIL UNIT
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.E.C.	
F.F.E.	FIRE EXTINGUISHER CABINET
F.F.&E.	FINISH FLOOR ELEVATION FURNISHINGS, FIXTURES
F.H.C.	FIRE HOSE CABINET
FIN.	FINISH(ED)
FLR.	FLOOR
FLUOR.	FLUORESCENT
F.O.	FINISH OPENING
F.O.B.	FACE OF BLOCK
F.O.BR.	FACE OF BRICK
F.O.C.	FACE OF CONCRETE
F.O.F.	FACE OF FINISH
F.O.G.	FACE OF GYPSUM BD.
F.O.S.	FACE OF STUD
FP	FAUX PAINT FINISH
FPRF.	FIREPROOF
FT.	FOOT/FEET
F.V.	FIELD VERIFY

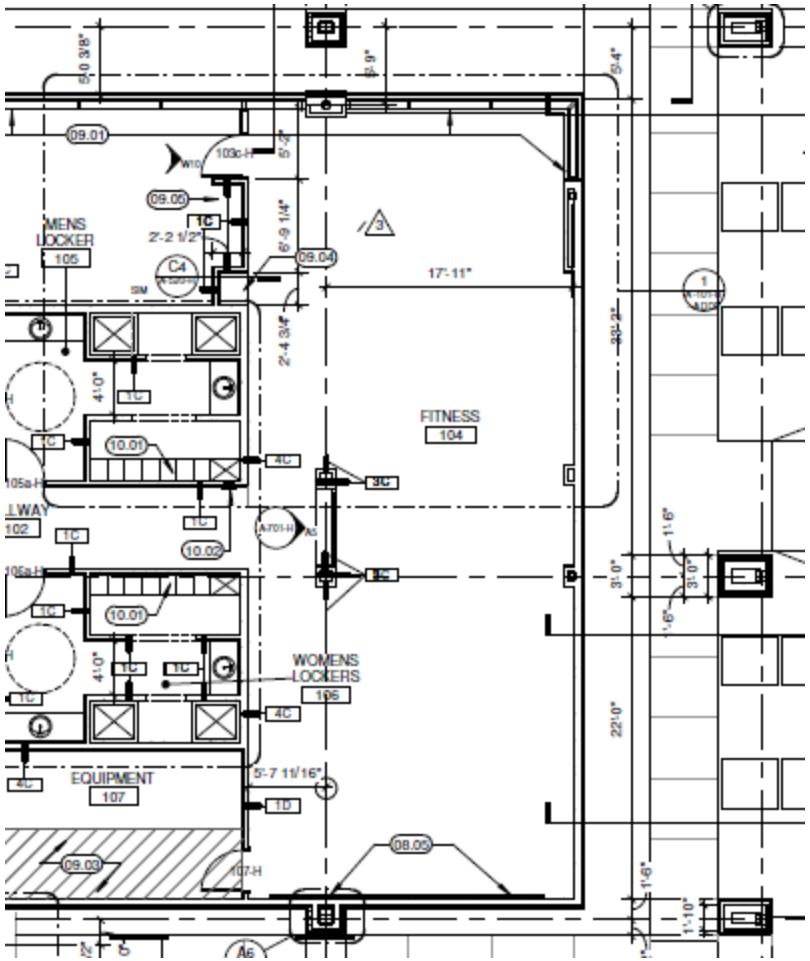
The Language of Plans - Lines

- Basis of all industrial drawings.
- Various types of lines also serve as symbols.
- The meaning of each line is determined by how it is drawn.
- 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.



HQ A-101-H

The Language of Plans - Lines

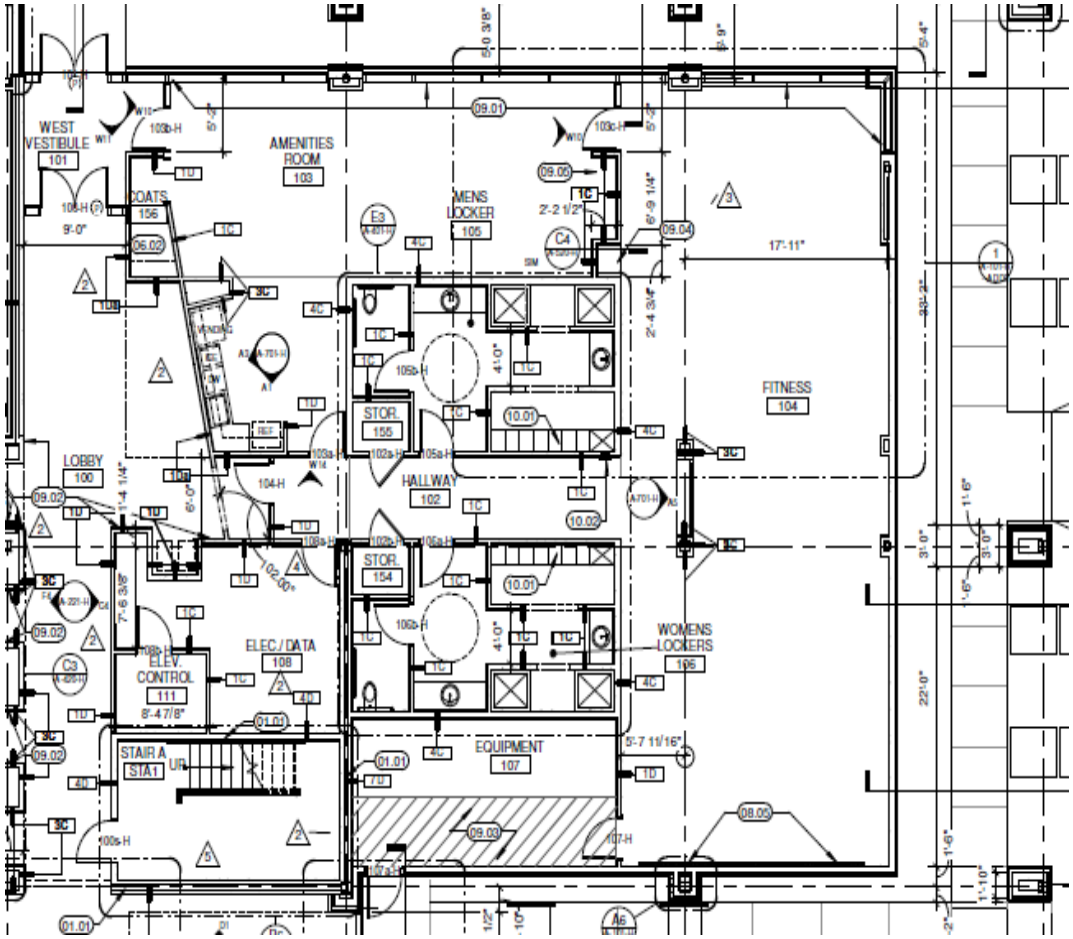


Property Lines (abbrev. P.L.)

- Extra heavy line
- Two short alternating with long dashes

- Found on a site plan (shows the whole property)

The Language of Plans - Lines

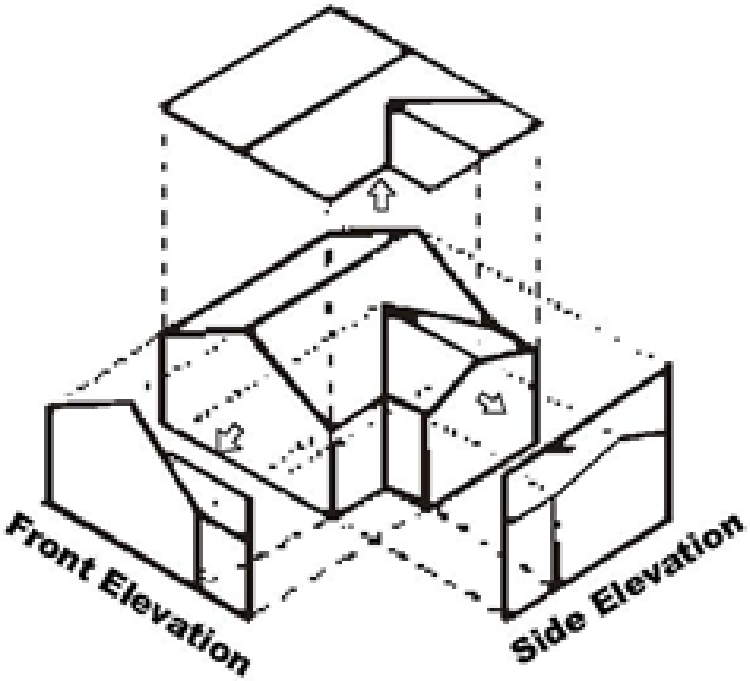


Object Line

- 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.

The Language of Plans - Lines

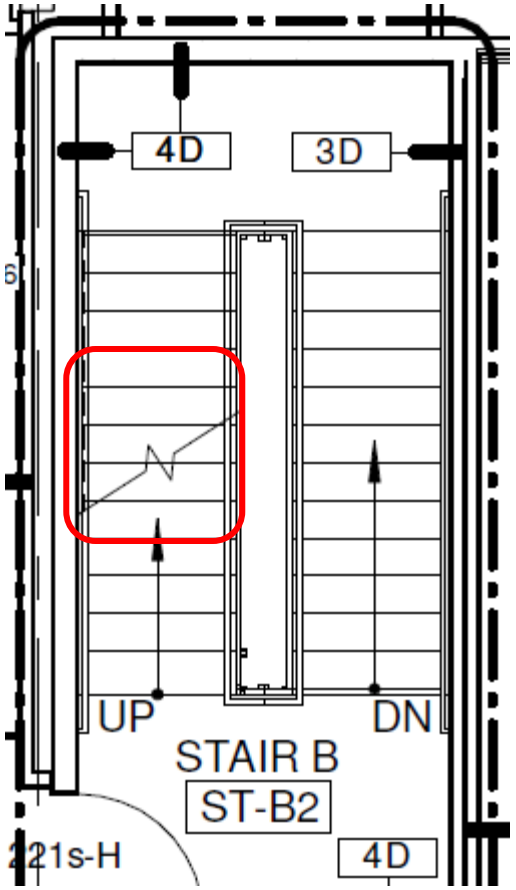


Hidden Lines

- 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
- Hidden lines are used to help clarify a drawing.

The Language of Plans - Lines

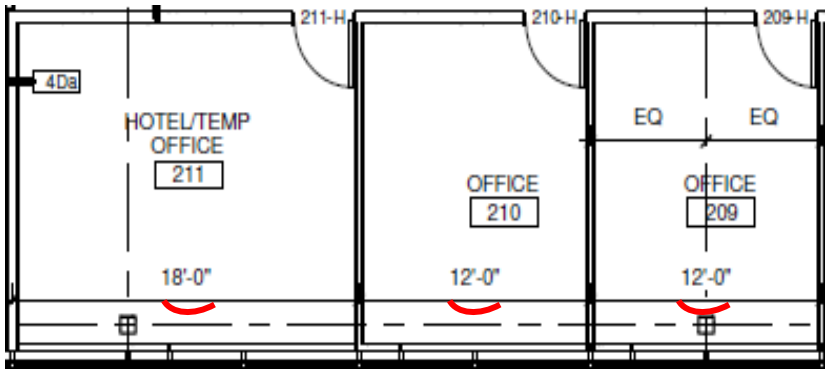


Break Lines

- Break lines are used to show that an object has not been drawn in its entirety; 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.
- A break line may also be called a *cut line*.

The Language of Plans - Lines

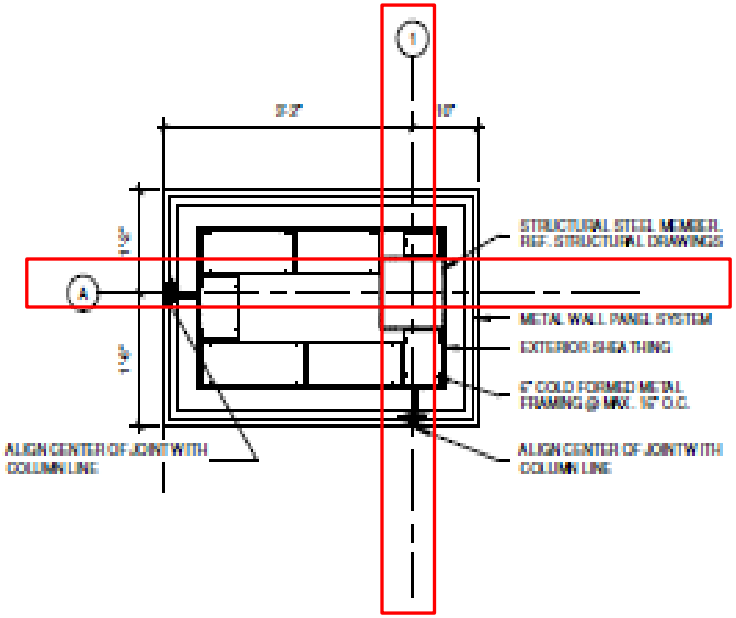


Dimensions and Extension Lines

- 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.

The Language of Plans - Lines

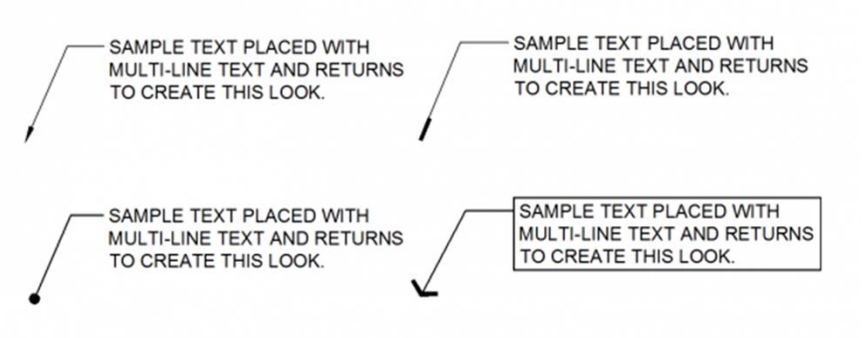


Center Lines

- 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.

The Language of Plans - Lines



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.

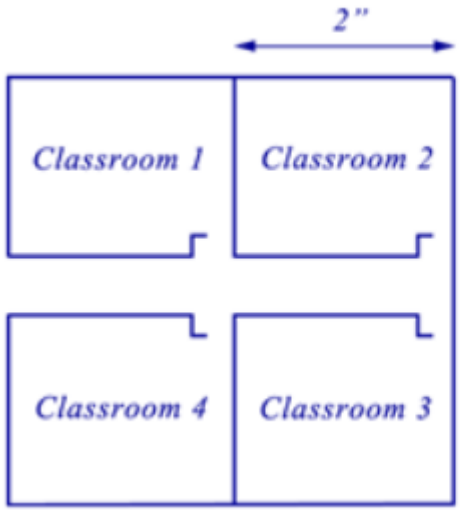
- A leader line may also indicate that an imaginary cut has been made at this point and that a detail is shown elsewhere on the drawings.
- Letters and numerals, usually in a circle attached to line, will generally indicate where this information can be found.

Blueprint Scales and Measurements

What is the Scale of a Blueprint?

The **scale** is a ratio of the size of the **drawing** to the size of the original object being drawn

- A **scale** factor is a number by which all the dimensions of an original figure are multiplied by to produce the dimensions of a new figure.
- **Blueprints** contain miniature drawings of a building so the actual measurements are scaled down so they would fit in the paper. Simply put, scaling a building **blueprint** means creating a floor plan that that is proportion to the structure that is going to be constructed.

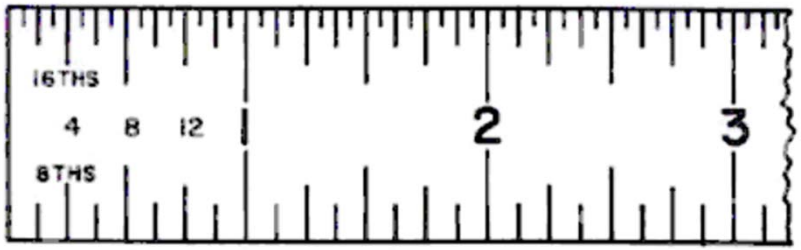


What is Scale?

Determine Scale
Reading The Fractional Rule

- Divided into 8ths or 16ths.
- The inch is divided into 16 parts, and each small division is 1/16th of an inch.

4/16 = ¼; 8/16 = ½; and 10/16 = 5/8



Study the major divisions of the inch numbered 4, 8, and 12.

There are four major divisions in an inch; each equal to 4/16, or ¼ of an inch.

There are four small divisions in each major division of ¼ inch. Representing 1/16th of an inch.

Two of these divisions equal 2/16, or 1/8.

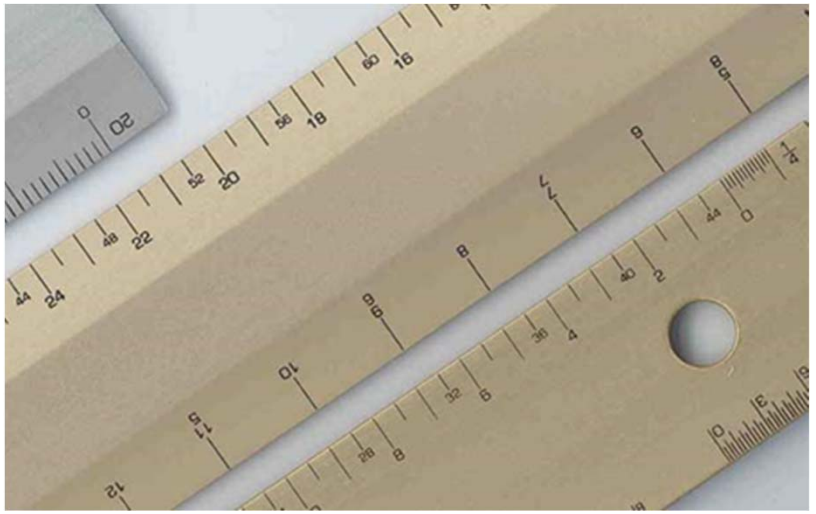
Reading The Architect's Scale

- Construction drawings are not drawn full size. They are drawn to a *specified scale*, such as one inch = 1 foot.
- Architect's scale is commonly used where the divisions of the scale equal 1 foot or 1 inch.
- The inch part is the first part of the scale with the closest lines.
- The foot part is the major part of the scale with lines that are further apart.

Since building are large structures, most architectural drawings scale to the measurement of a FOOT.

- Architect scales are 12" long.
- The 16 or full scale is broken into 12 inches.
- Each inch is broken down into 16 increments, each 1/16".

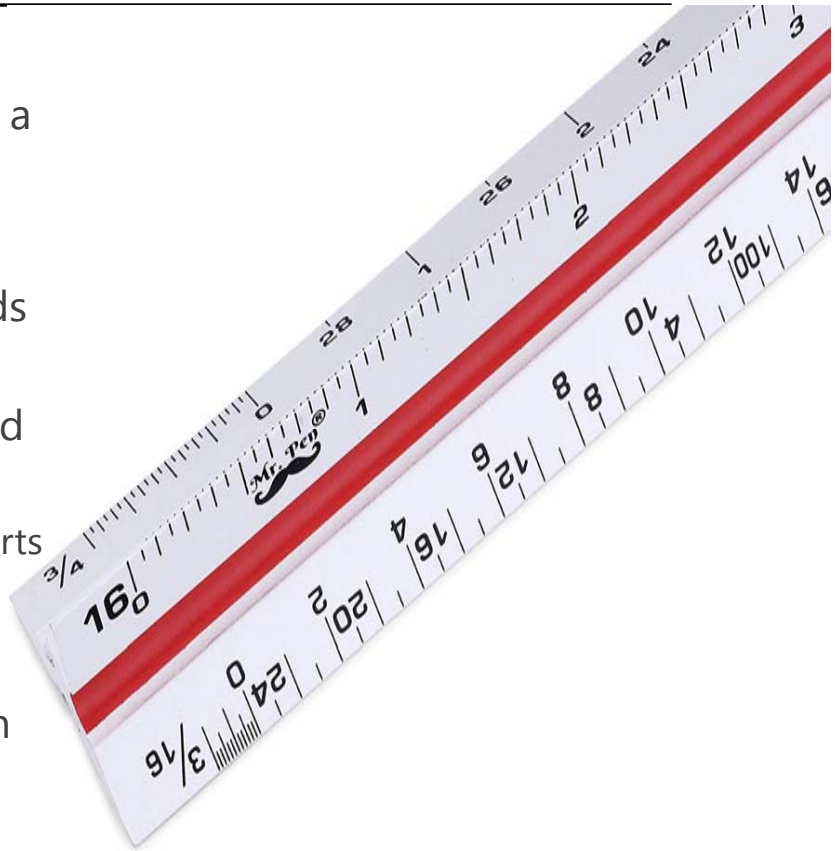
Triangular Architect's Scale



Beveled Scale

Reading The Architect's Scale

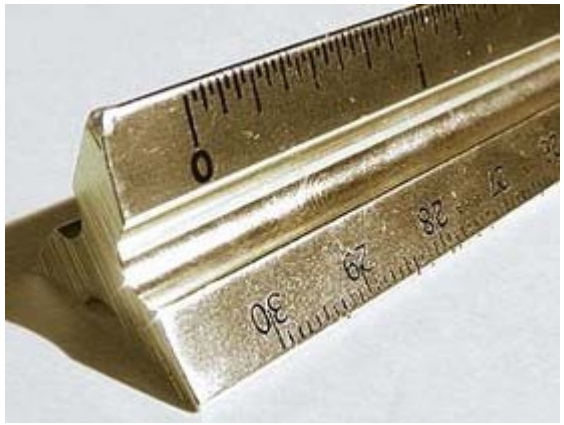
- Architect's scale ruler is designed for use in determining actual dimensions of distance on a scaled drawing.
- There are two scales on each edge.
  - One scale read left to right; the other reads right to left.
- Know the scale of the drawing being measured and then select the correct scale on the ruler.
  - For example, 1/8 on the ruler is a scale that converts 1/8 inch on a drawing to 1 foot.
- The triangular architect's scale has 11 scales in all.



Triangular Scale

6 sides and 11 different scales: a full scale of 12 inches graduated into 16 parts to an inch and 10 open divided scales with ratios.

- 3/32″ = 1′-0″
- 3/16″ = 1′-0″
- 1/8″ = 1′-0″
- ¼″ = 1′-0″
- 3/8″ = 1′-0″
- ½″ = 1′-0″
- ¾″ = 1′-0″
- 1″ = 1′-0″
- 1 ½ ″ = 1′-0″
- 3″ = 1′-0″



The scale of 1/8″ = 1′-0″ is commonly used for construction drawings.

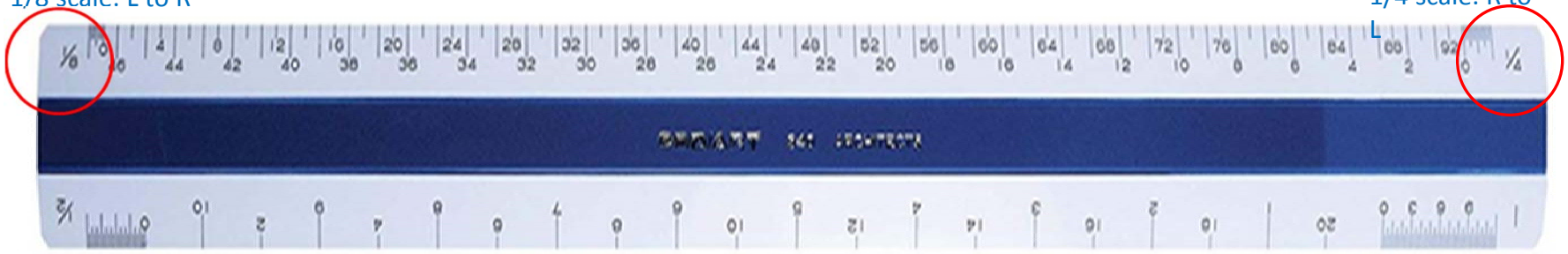
Bevel Scales

- Graduated with one, two, or four scaled edges.
- Two scales are located on each face:
  - One reads from left to right.
  - The other, which is twice as large, reads from right to left.

Two faces needed so all eleven scales can fit on the six edges of the triangular scale.

1/8 scale. L to R

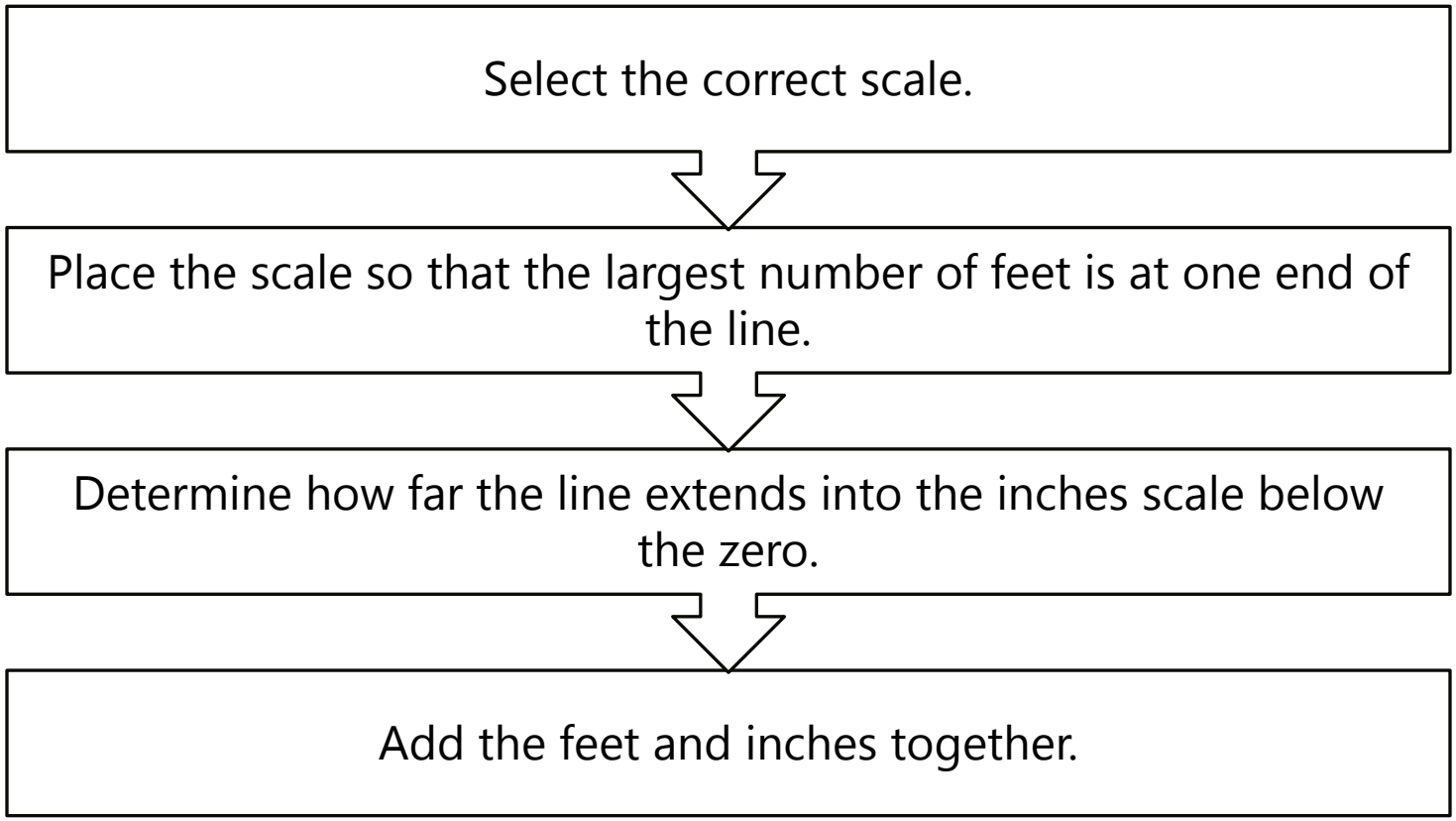
1/4 scale. R to L



**If the scale is read from the wrong direction, then the measurement could be wrong since the second row of numbers read from the opposite side of the scale at half-scale, or twice the value.

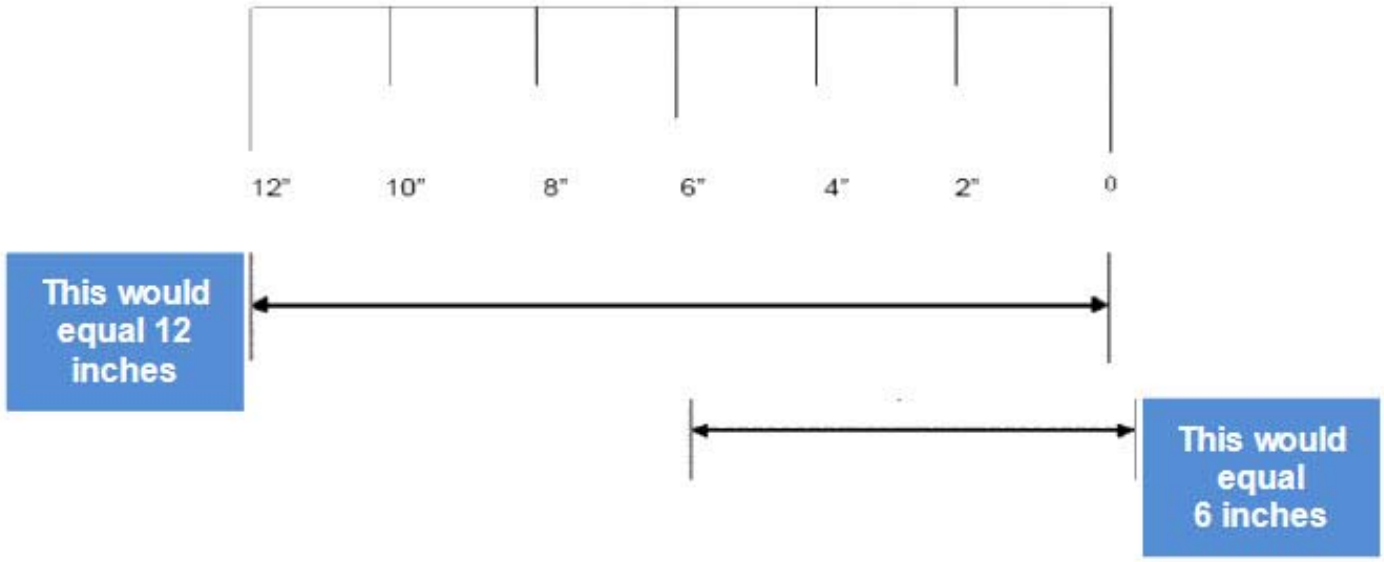
Determining Actual Length

To determine the actual length of a scaled line, follow these steps:



3/32 Scale

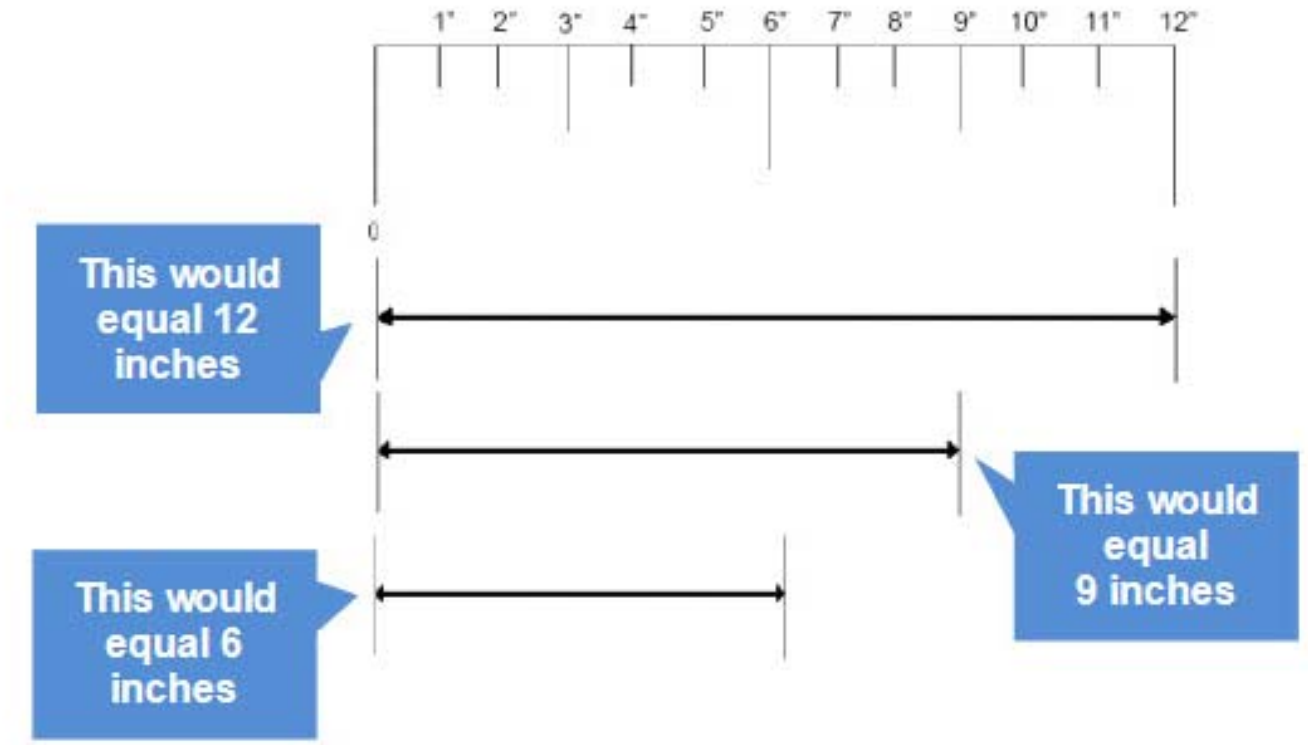
3/32 Scale: When you are scaling 3/32, each line in the inch part of the scale represents 2 inches



(Not actual scale dimensions)

3/16 Scale

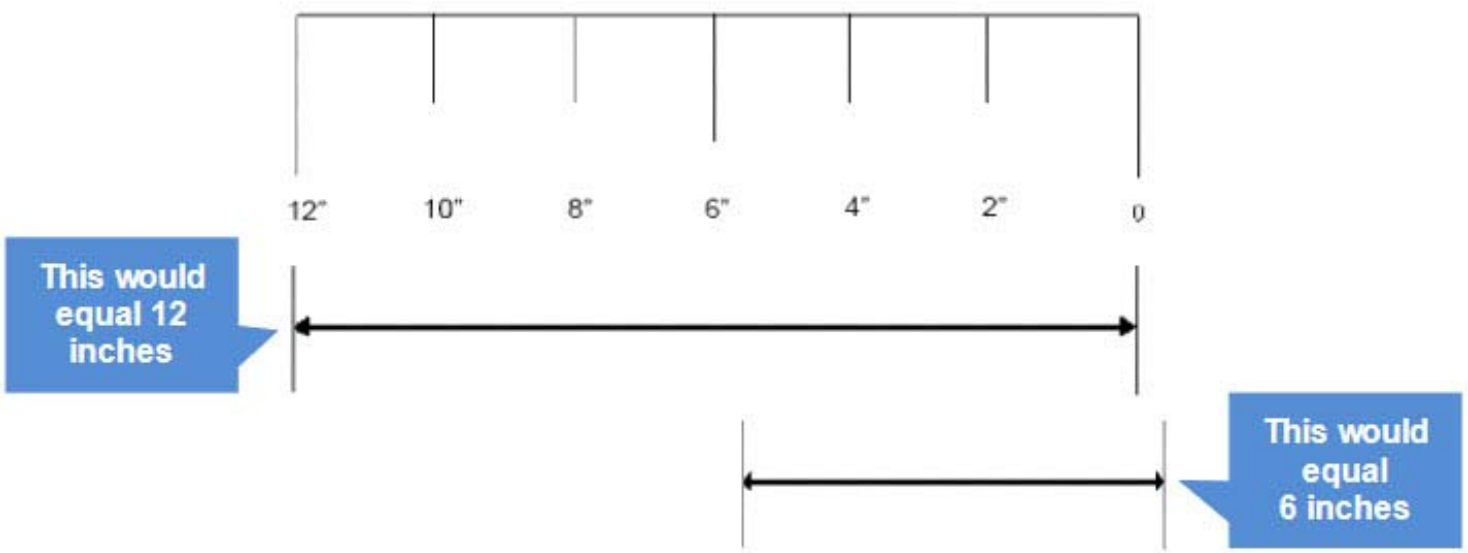
3/16 Scale: When you are scaling 3/16, each line represents 1 inch.



(Not actual scale dimensions)

1/8 Scale

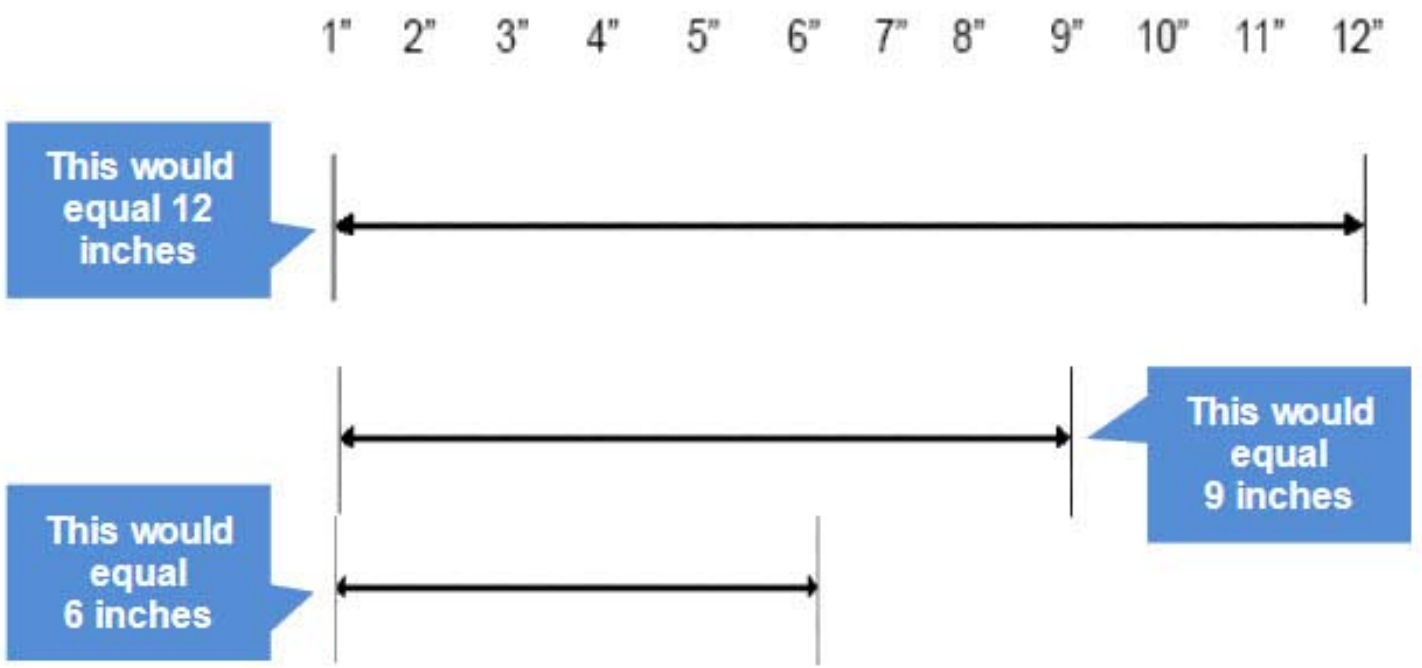
1/8 Scale: When you are scaling 1/8, each line represents 2 inches.



(Not actual scale dimensions)

1/4 Scale

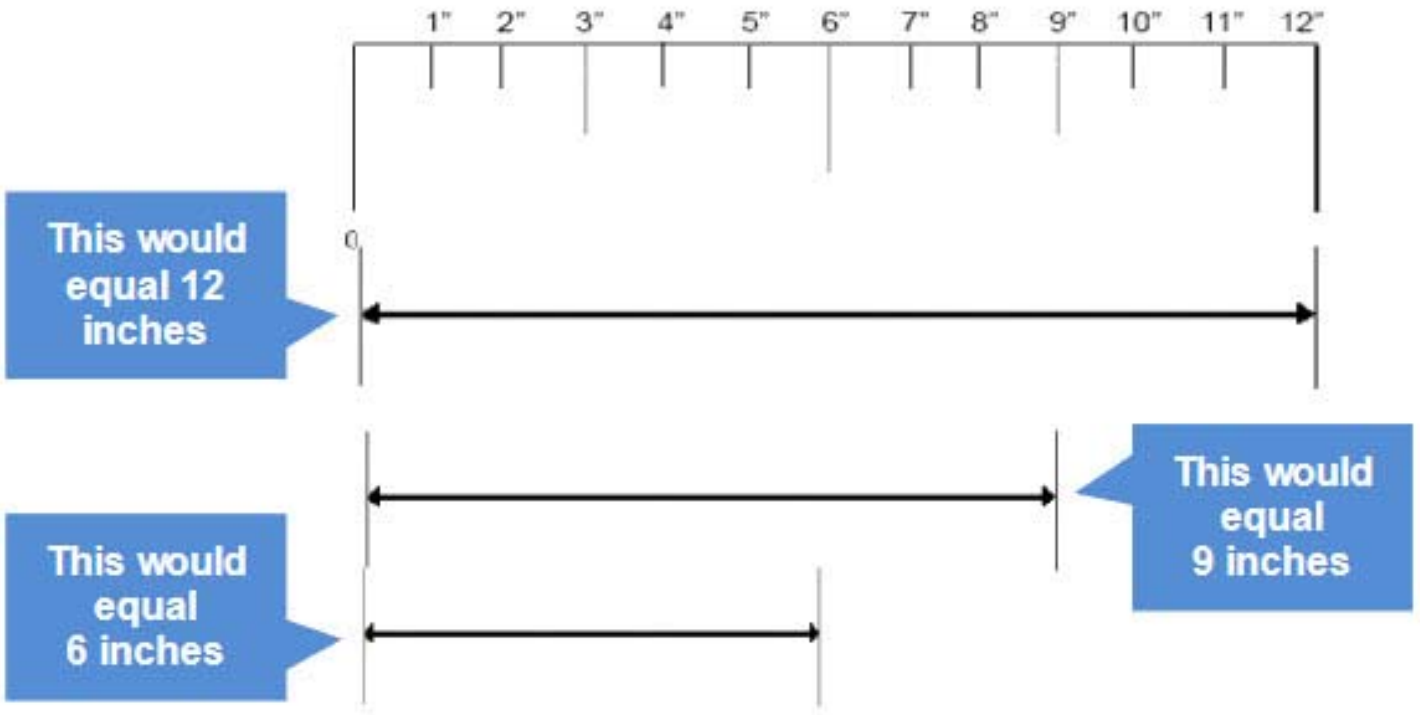
1/4 Scale: When you are scaling ¼, each line represents 1 inch



(Not actual scale dimensions)

3/8 Scale

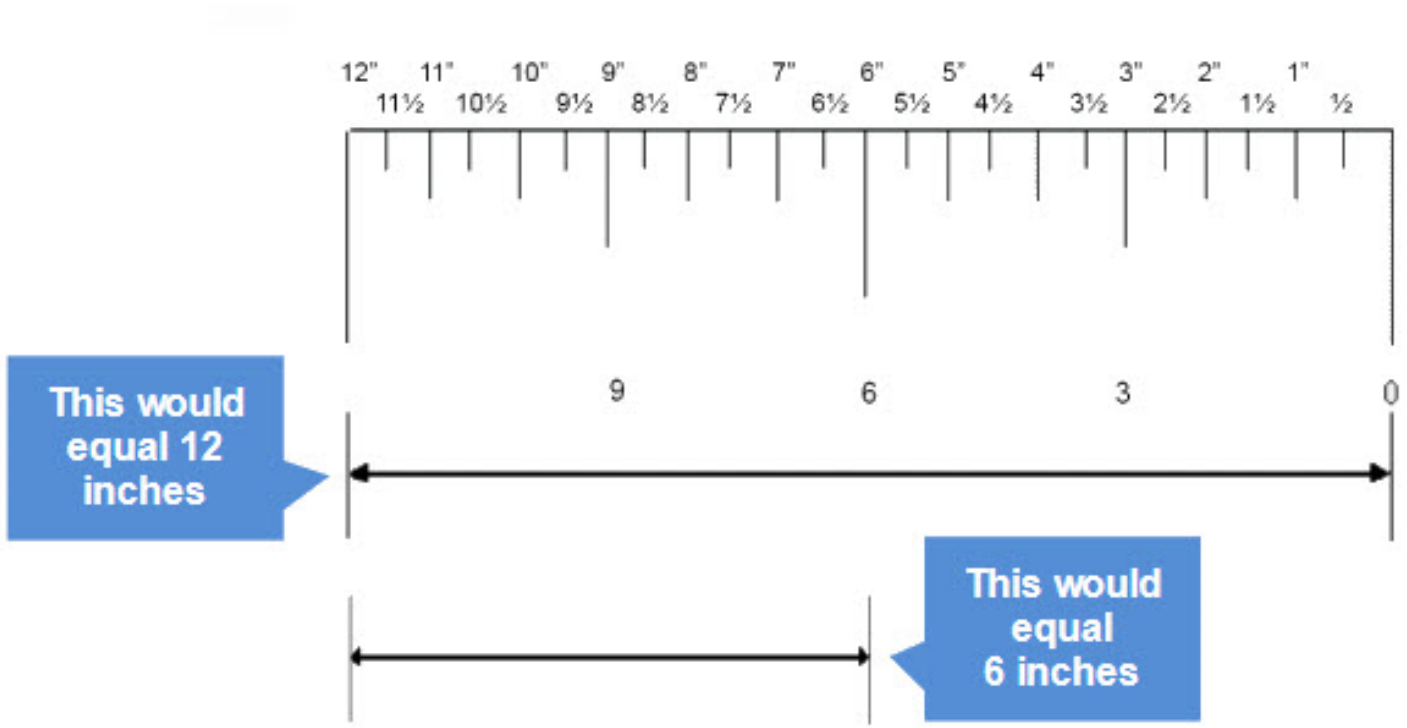
3/8 Scale: When you are scaling 3/8, each line represents 1 inch.



(Not actual scale dimensions)

3/4 Scale

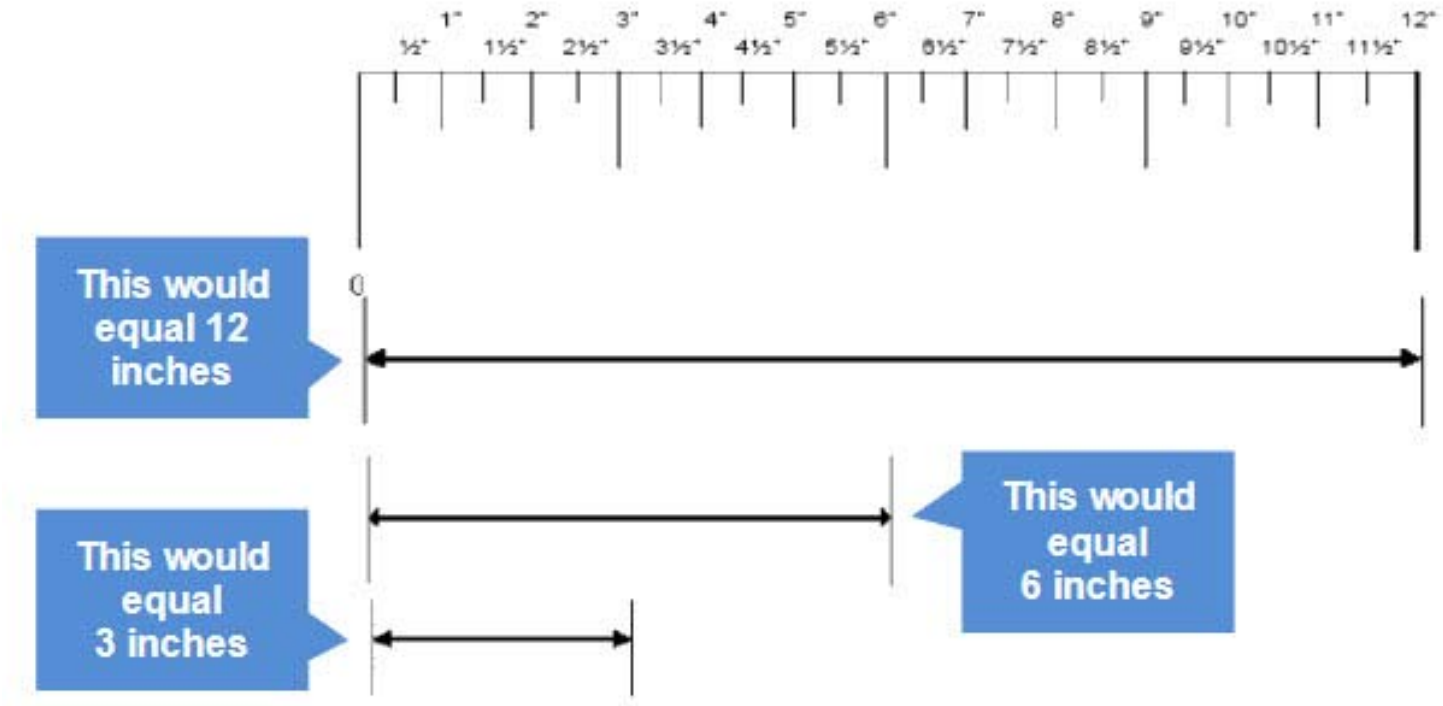
3/4 Scale: When you are scaling 3/4, each line represents ½ inch.



(Not actual scale dimensions)

½ Scale

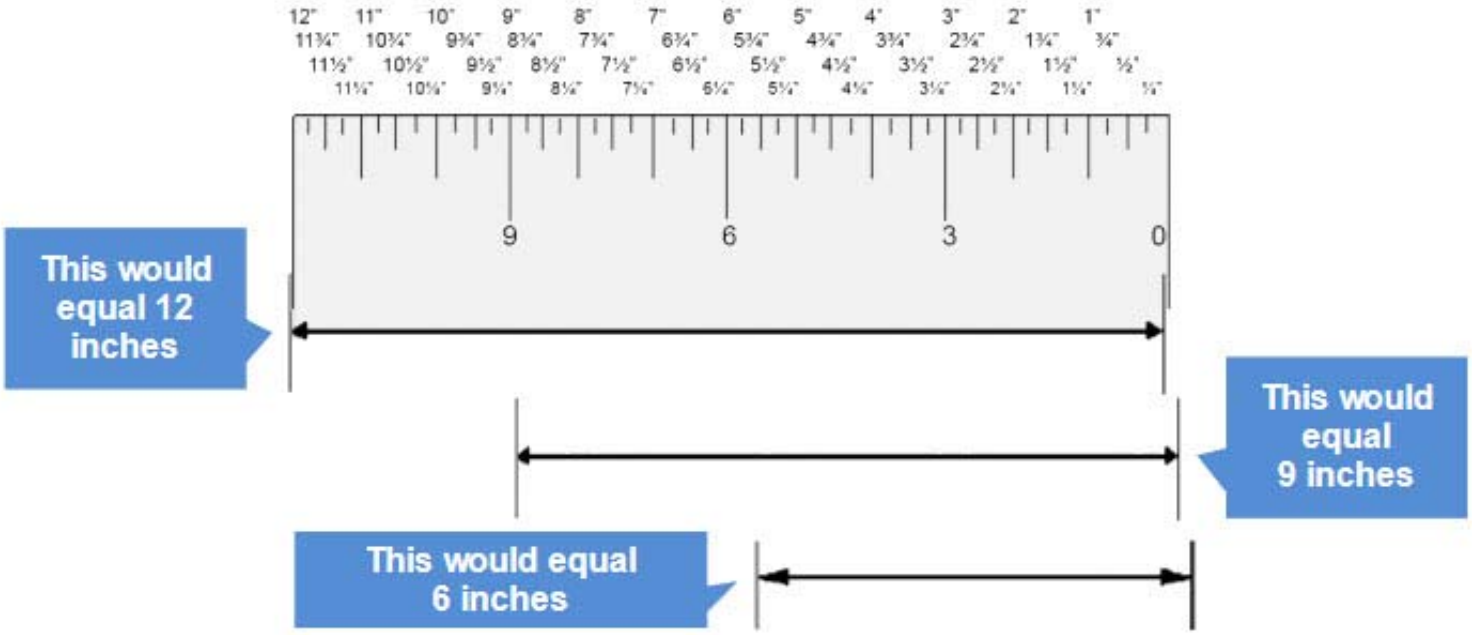
½ Scale: When you are scaling ½, each line represents ½ inch.



(Not actual scale dimensions)

1 Inch Scale

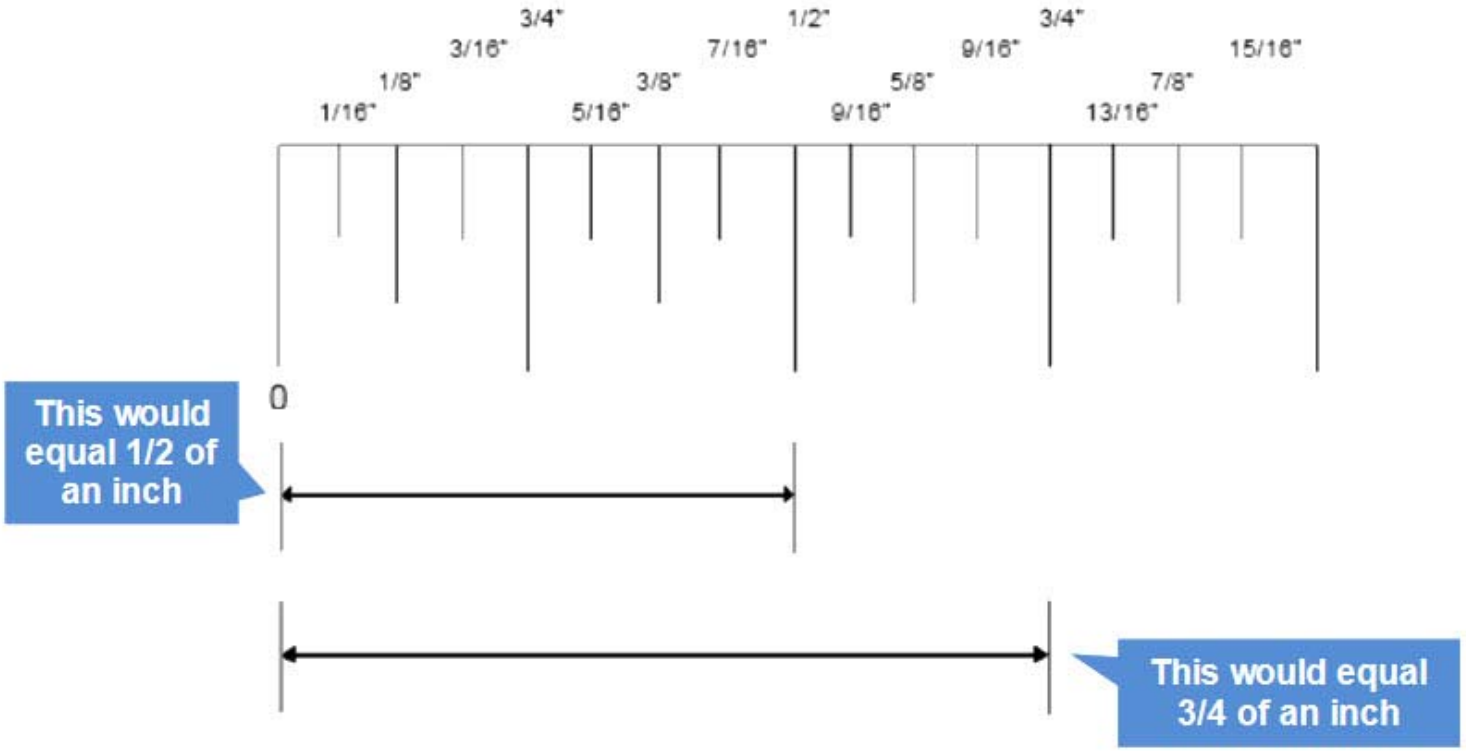
1 Inch Scale: When you are scaling 1 inch, each line represents ¼ inch.



(Not actual scale dimensions)

Full Scale Ruler

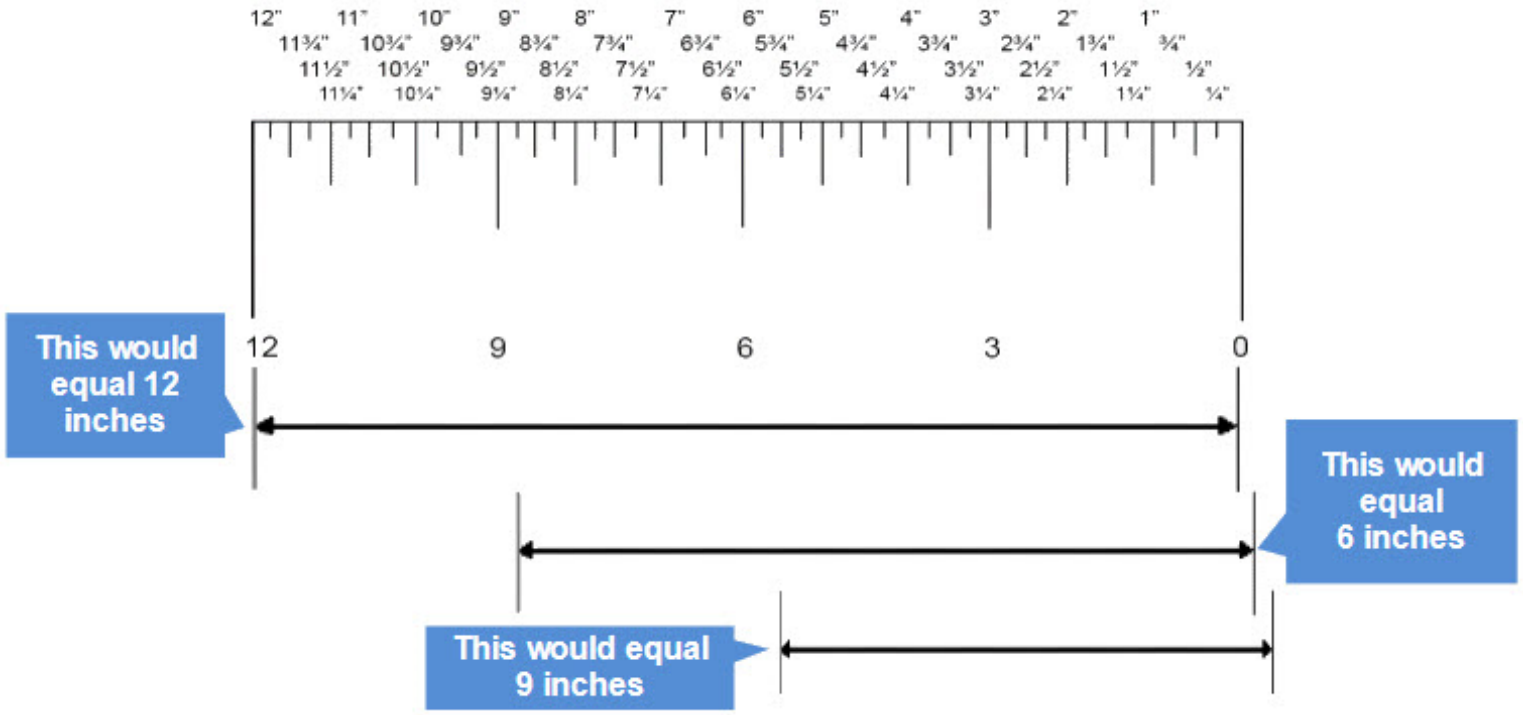
Full Scale Ruler: When using the full scale ruler, each line represents 1/16”



(Not actual scale dimensions)

1½" Scale

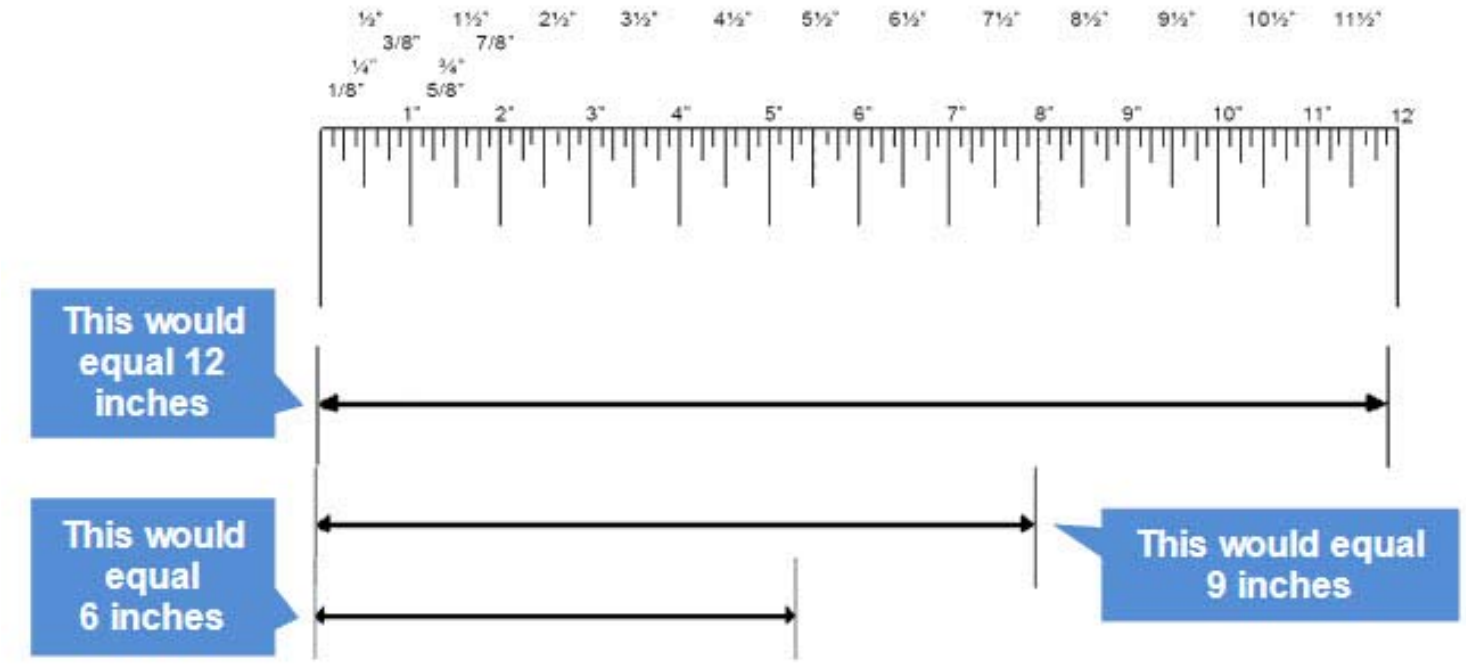
1½" Scale: When you are scaling 1½", each line represents ¼".



(Not actual scale dimensions)

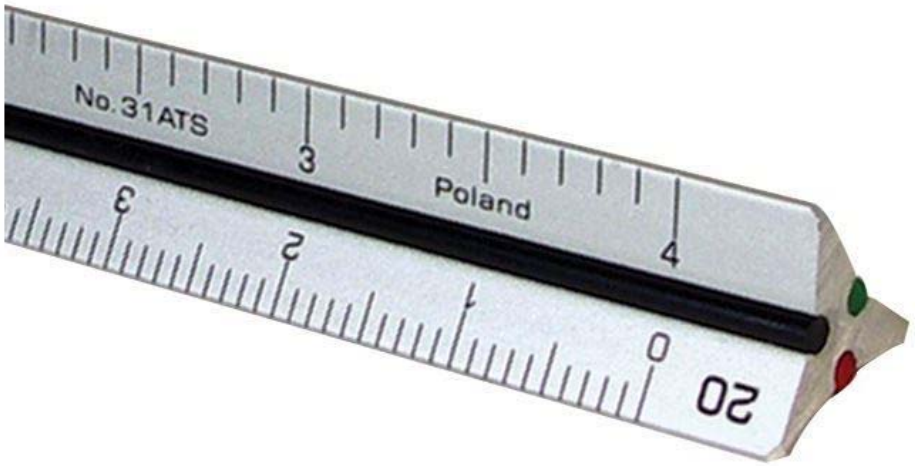
3″ Scale

3″ Scale: When you are scaling 3″, each line represents 1/8″.



(Not actual scale dimensions)

Engineer's Scale



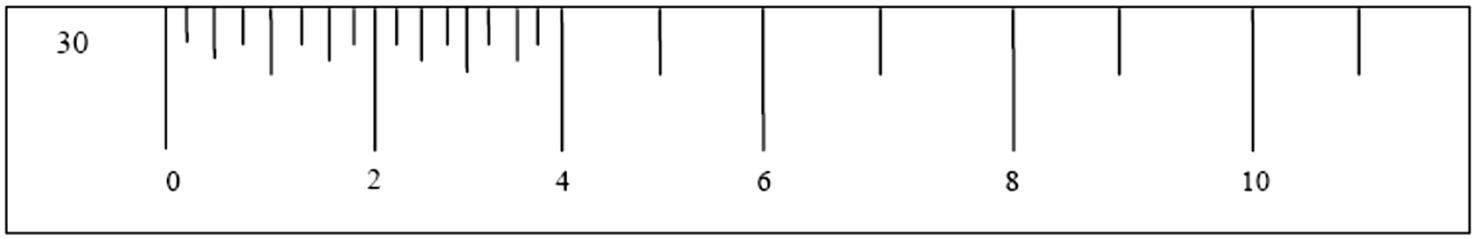
- Plot plans or building development sites are drawn at a very small scale such as: *1″ = 40′* or *1″ = 100′*

  The distance relationships may be shown as 1:10 or 1:50 and are often used by engineers for very large construction projects, or measuring roads, water mains, and topographical features.

  Rulers calibrated for these scales are called "Engineers' Scales".

Engineer's Scale

- Numbers run incrementally from *left to right*. The whole number to the left of the number line indicates the scale those numbers represent.
- Multiply the value you identify by 10.
- The small lines between the whole numbers represent individual feet.
- **Example:** A point that falls two marks to the right of the whole number 4 = 42 feet.



Engineer's Scale

- Engineer scales are 12" long.
- Each inch is broken down into 10 increments, each 1/10 of an inch.

Six scales	
1 inch = 10 feet	1 inch = 40 feet
1 inch = 20 feet	1 inch = 50 feet
1 inch = 30 feet	1 inch = 60 feet

- Manufactured parts and larger items such as bridges and towers use this scale.
- The choice of scale depends on the amount of detail required and the overall size of the object.

Determining Plan Dimensions

- Plan dimensions are written in feet and inches. Feet are always whole numbers.
  - A typical scale for a floor plan may be ¼" =1'0". For a detail view a larger scale of 1½"=1'0" might be used.
- The value on the LEFT of the equal sign shows the measurement on the drawing.
  - The value on the RIGHT of the equal sign shows the measurement as it will be on the finished object.
- Study the plans for all needed dimensions. If a dimension is missing, check the other drawings.

Determining Plan Dimensions

- For example, if the scale is ¼”=1’0", each ¼” length on the drawing represents an actual length of one foot.
- A line that is one inch long will represent four feet.
- Using the same scale, a line 1-5/8" long will represent 6½ feet (6’6") because it contains six and a half ¼” lengths.

Determining Plan Dimensions

- Study the plans for all needed dimensions. If a dimension is missing, check the other drawings.
  - Check all possible views for a missing dimension.
- Check all notes on the plan.
  - If a dimension cannot be found, calculate it from other dimensions. Always check the dimensions against each other.
- Equal distance should always be the same.

Knowledge Check

10 Questions

Knowledge Check
Q1

What is another name for construction drawings and blueprints?

A. Set of Plans
B. Specifications
C. Site Plans
D. Record Drawings

Knowledge Check
Q2

Which type of drawing is the basis for all other drawings?

A. Architectural
B. Electrical
C. Mechanical
D. Structural

Knowledge Check
Q3

Which type of drawing is based on the floor and reflected ceiling plans of the architect?

A. Architectural

B. Electrical

C. Mechanical

D. Structural

Knowledge Check
Q4

A _____ architect scale has 11 scales in all.

A. Rectangular
B. Square
C. Triangular
D. Polygon

Knowledge Check
Q5

Which drawing is considered the most important since it provides the largest amount of information?

A. Floor Plan

B. Elevation

C. Cross Sectional

D. Site Plan

Knowledge Check
Q6

Which scale is used for plot plans or the sites for building development projects as they are drawn at very small scale?

A. Triangular

B. Engineer

C. Architect

D. Bevel

Knowledge Check
Q7

What is not in the drawings, but included as a part of a set of working drawings?

A. Floor Plans

B. Letter Codes

C. Abbreviations

D. Door, Window, and Finish Schedules

Knowledge Check
Q8

The ability to read lines, symbols, dimensions, and other information on a print or plan is called:

A. Estimation

B. Interpretation

C. Projection

D. Visualization

Knowledge Check
Q9

What type of drawing allows a look at the “inside” of a wall, window, door, or any other structure to clarify construction procedures?

A. Elevation

B. Floor Plan

C. Projection

D. Cross Sectional

Knowledge Check
Q10

What type of line is used to show that an object has not been drawn in its entirety?

A. Property

B. Break

C. Object

D. Hidden

Summary

- Blueprints are sets of detailed architectural drawings used to construct a house or building.
- The specifications are detailed written instructions about how the building is to be built.
- Architectural drawings are the basis for all the other drawings and include working plans, elevations, details, and other information necessary.
- Be familiar with all symbols used on a plan or drawing as they may affect your area of construction.
- The architect's scale is most commonly used where the divisions of the scale equal 1 foot or 1 inch.
- Engineer scales are used for plot plans or the sites for building development projects as drawn at very small scale.

End of Lesson

Any Questions?

Glossary

- **Architect** - someone who creates plans to be used in making something, a qualified, licensed person designs drawings for const. project.
- **Architect's Scale** - a measuring device used for laying out distances, with scales indicating feet, inches, and fractions of inches.
- **Architectural Plans** - normally prepared by an architect. May include Overall esthetics of the project, size, shape, appearance etc.
- **Beam -** a large horizontal support in a structure, Steel, Stone, or Wood

Glossary

- **Blueprint** -a photographic print of a technical drawing with white lines printed on a blue background, or a similarly produced print with blue lines on a white background, usually of an architect
- **Civil Plans** - drawings that show the location of the building on the site from an aerial view, including contours, trees, construction features, and dimensions
- **Computer Aided Design (CAD) -** The way almost all blueprints are made today.
- **Contour Lines** - Solid or dashed lines showing the elevation of the earth on a civil drawing.

Glossary

- **Contract Documents** - Used to describe all of the documents needed to build a project. Typically these include the plans, specifications, general conditions and the contract for construction.
- **Detail Drawing** - enlarged views of some special features of a building, such as floors and walls.
- **Dimension line** - usually has an arrowhead at both ends, with the measurement written near the middle line
- **Dimensions** - The actual measurement of an object. It can measure to the exterior or the interior portion
- **Electrical plans** - engineered drawings that show all electrical supply and distribution locations of electric meter, switchgear.

Glossary

- **Elevation** - An element of architectural drawing, it refers to height above sea level or other define surface
- **Elevation Drawing** - A side view that shows the height of the object.
- **Engineer** - A person that applies scientific principles in design and construction.
- **Engineer's Scale** - A measuring device divided uniformly into multiples of 10 divisions per inch so drawings can be made with decimal.
- **Floor Plan** - An actual view of the layout of each room.
- **Foundation Plan** - Shows the lowest level of the building.

Glossary

- **HVAC**- Shows the placement of the heating, ventilating, and air conditioning components.
- **Hidden Line** - A dashed line on a plan showing an object obstructed from view by another object
- **Isometric Drawing** - Known also as a pictorial illustration, it lets you see an object as it really is, rather than as a flat.
- **Leader**- An arrowhead is placed on a line in order to identify a component.
- **Legend** - Defines the symbols used in architectural plans

Glossary

- **Mechanical Plans** - Are engineered plans for motors, pumps, piping systems, and piping equipment.
- **Metric Scale** - Used to draw or measure lines on a blueprint is divided into 10 millimeters or 20 half millimeters.
- **Not to Scale** - Means the drawing give the approximate potions and sizes.
- **Piping and Instrumentation Drawings** - Schematic drawings called that show all the equipment, pipe lines, valves, instruments, and controls needed to operate.
- **Plumbing** - Refers to both water supply and all liquid waste.

Glossary

- **Plumbing plans** - Shows the layout for the plumbing system that supplies hot and cold water, for the sewage.
- **Request for information** - Used to classify and discrepancy in the plans.
- **Roof Plan** - Shows the shape of the roof and the materials that will be used to finish it.
- **Scale** - tells the size of the object drawn compared with the actual size of the object.
- **Schematic** - a one line drawing showing the flow path for electrical circuitry.

Glossary

- Section Drawing - A cross sectional view that shows the inside of an object or building.
- Specifications - Written statement provided by the architectural and engineering firm to define the quality of work to be done.
- Structural Plans - Used to support the architectural design, include the general notes, a foundation plan.
- Symbol - Used on a drawing to tell the material is required for that part of the project.
- Title Block - Gives info about the structure and is numbered for easy filling.