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SCHOOLS DIVISION OF NEGROS ORIENTAL
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Kagawasan Ave., Daro, Dumaguete City, Negros Oriental

TLE-IA-CARPENTRY

Quarter 4 – Module 1 (Week 1&2)

IDENTIFY TYPES OF FORMWORKS

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TLE-IA-CARPENTRY

Quarter 4 – Module 1 (Week 1&2)

IDENTIFY TYPES OF FORMWORKS

What I Need to Know

After going through this module, you are expected to:

- Identify the types of formworks
- Discuss the use and function of each formwork
- Appreciate the uniqueness of formwork by drawing and labelling the different types of formwork.

What I Know

Direction: Read each question carefully. Supply the correct answer in a sheet of paper.

1. _____is commonly available material and has excellent strength, weight and cost factor.

2. In heavy construction works _____may require a lifting mechanism to handle the formwork panels or props.

3. _____ is lighter but less durable than metal formwork.

Lesson 1 TYPES OF FORMWORKS

What's In

Write your answers in a sheet of paper.

What is the difference between scaffolding and formworks?

What's New

Formwork is a mould or open box, like container into which fresh concrete is poured and compacted.

When the concrete is set, the formwork is removed and a solid mass is produced in the shape of the inner face of the formwork.

The top of the formwork is normally left open.

Formwork is a temporary construction; However, care must be taken to prevent damage to permanent work. Three general principles govern formwork design and construction:

Quality accuracy of the concrete shape and the final finished surface quality.

Safety strength of the formwork structure. Personal safety of people, both carpenters and the public.

Economy The structural frame is usually the most significant cost component, a dominant and critical factor in the time of construction.

What Is It

TYPES OF FORMWORKS

FORMWORK TYPES (MATERIALS)

1. Timber **2.** Metals **3.** Plastics

1. **TIMBER FORMWORK**

a. Lumber:

Lumber is commonly available material and has excellent strength, weight, and cost factor.

Lumber is classified as:

•**Boards**: 1 to 1.5 inches thick, 2 or more inches width
•**Dimensions:** 2 to 4 inches thick, any width.
•**Timbers:** 5 or more inches thickness, 5 or more inches width

b. Plywood

• The use of plywood in concrete forming for form facing has improved the quality of finished concrete.

• The relatively large sheets of plywood have reduced the cost of building and at the same time have provided smooth surfaces that reduces cost of finishing of concrete surfaces.

• is a manufactured wood product consisting number of veneer sheets, or plies

• Type of plywood can be grouped as exterior and interior. For formwork the exterior plywood is used. Adhesive used to bond the piles in manufacturing of exterior plywood is watertight and gives maximum number of reuses.

2. **METAL FORMWORK**

The initial cost of metal formwork is more than timber formwork but the number of reuses of metal formwork is higher than that of timber.

•In long run metal formwork can be economical.

•In heavy construction works metal formwork may require a lifting mechanism to handle the formwork panels or props.

Steel sheet formwork has the problem of rusting also. To avoid rusting, in every use the surfaces should be oiled with an appropriate releasing agent.

•In metal formwork usage, the metal sheets are prepared as panels of standard sizes. This brings the difficulties of erecting irregular dimensions of formwork.

•Steel or aluminum or magnesium is the most widely used metals.

3. **PLASTIC FORMWORK**

•They have impervious surfaces that usually create a smooth finish to the concrete.

•Plastic formwork could be reinforced or un-reinforced.

•Plastic is reinforced by glass fibers.

•Reinforced plastics are specially produced for a specific formwork type.

•Un-reinforced plastics are produced in sheet form with smooth or textured surfaces.

•Plastic formwork is lighter but less durable than metal formwork.

FORMWORK TYPES (BY SHAPE)

Considering shapes, formwork types can be classified as:

1. Column Formwork



•Column formwork is made usually with either timber or metal panels.

•The principle is to create an enclosed box with frames at the exact size of the column and fix it tightly on the kicker left from base or at the last stage of column concreting.

•The box is held in position by steel column clamps or bolted yokes and supported by timber studs or props

2. Beam formwork


•Beam formwork consists of open through section and because it is not closed at the top requires more supporting framework to restrain the sides.

•The supports need to be maintained to the soffit and provide lateral support to the sides.

•In timber this is done with the use of a head tree across the top of a vertical member.

• Metal panels are used with corner pieces, but timber head trees are needed for vertical support.

3**. Slab Formwork**

•Floors require a large area of formwork to be provided usually from beam to beam.

• Timber floor formwork consists of timber boards or plywood sheets supported on a framework and resting on a series of timber joists.

• Timber and metal props can be used for vertical supports.

•Metal panels can be used and bolted or clipped together and held in place by a system of metal beams or a tabular scaffold system.

•Adjustable props need for levelling purposes

4. **Wall Formwork**

•Wall formwork is a simpler than for other concrete units as the actual forces against it are less, most of the load being carried vertically downwards.

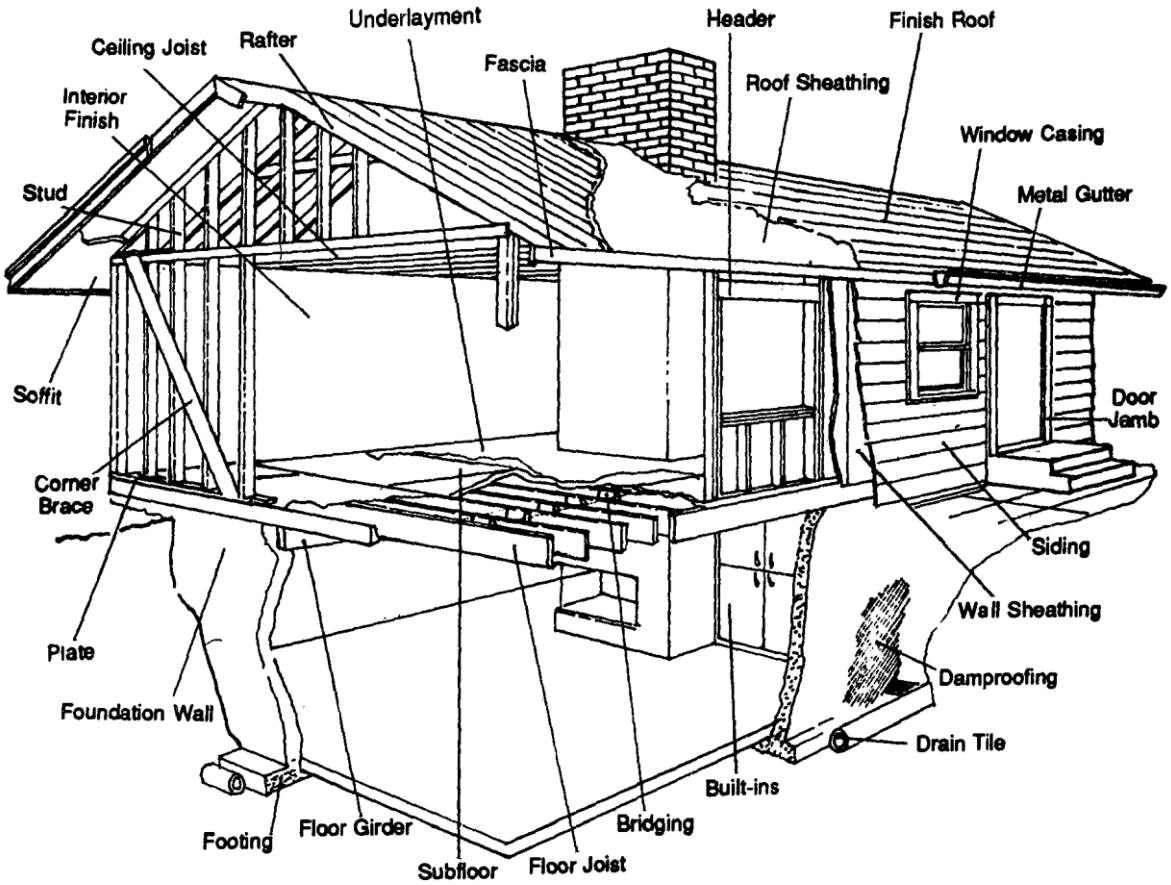
•The panels at both sides are held in position by ties.

•Ties are also used as spacer, arranging wall thickness.

•Wall support systems are usually sloping props at satisfactory intervals.

What's More

Parts of a House/Building Structure



1. ***Foundation.*** This is the supporting portion of a structure located below the floor construction or grade including the footing.

2. ***Footing***. This refers to the spreading course or courses at the base of a foundation wall or column.

3. ***Flooring***. This is a horizontal structure extending to one or more stories of a building.

4. ***Wall.*** This is a vertical plane structure found inside or outside a building. It is made of timber, concrete, or masonry blocks.

5. ***Column.*** This is a vertical structure for support. It may be circular or rectangular in shape.

6. ***Girder***. This is a large or principal beam used to support concentrated loads at a particular point along its length.

7. ***Beam.*** This is a principal structural member used between posts, columns, or walls.

8. ***Joist.*** This is one of parallel framing members used to support floor and ceiling loads. It is supported by beams, girders, or bearing wall.

9. ***Bridging.*** These are pieces of wood fitted in pairs from the lower side of one floor joist to the upper side of adjacent joist and crossed to distribute the load. Sometimes pieces of solid stocks of equal widths to the joist are used.

10. ***Stud.*** This refers to one of a series of structural wood lying vertically along walls and partitions.

11. ***Jamb.*** This refers to the top or one of two sides of a door or window frame which touches the door or sash.

12. *Corner braces.* These are diagonal braces fitted into studs to reinforce the corners of a frame structure.

13. ***Header.*** This is a horizontal structural member that supports the load over an opening such as a window or a door. It is also called lintel.

14. ***Sill.*** This is a horizontal piece lying at the bottom of the opening into which a window or a door is set.

15. ***Casing***. This is the trimming around a door or window.

16. ***Casement.*** This is a window in which the sash wings open on its vertical edge.

17. ***Stair.*** This is a series of steps with or without landings or platforms, usually between two or more floors in a building.

18. ***Stairwell.*** This is the framed opening which receives the stairs.

19. ***Sidings.*** This refers to the finish covering of the outside wall of a building.

20. ***Ceiling***. This is the finish covering of the joist of a roofing system.

21. ***Rafter.*** This is one of a series of structural members of a roof designed to support roof loads.

22. ***Truss***. This is a structural unit assembled in the form of a triangle. It provides a rigid support over wide spans with minimum amount of material.

What I Have Learned

Direction: Read each question carefully. Write only the letter. Use separate sheet for your answer.

1. It is commonly available material and has excellent strength, weight and cost factor.
   A. lumber B. metal C. plastic D. plywood

2. It is a manufactured wood product consisting a number of veneer sheets, or plies
   A. lumber B. plywood C. metal D. plastic

3. The initial cost of _____ is more than timber formwork but the number of reuses of metal formwork is higher than that of timber.
   A. timber formwork B. plastic formwork C. metal formwork

4. They have impervious surfaces that usually create a smooth finish to the concrete.
   A. timber formwork B. metal formwork C. plastic formwork

What I Can Do

Activity

After successfully performing the assigned task from what I have learned, draw and label different types of formworks according to shapes.

Assessment

Direction: Read each sentence carefully. Write the correct letter of your choice. Write it in a sheet of paper.

1. It is a simpler than for other concrete units as the actual forces against it are less, most of the load being carried vertically downwards.

A. wall formwork B. column formwork C. slab formwork D. beam formwork

2. Floors require a large area of formwork to be provided usually from beam to beam.

A. wall formwork B. slab formwork C. column formwork D. beam formwork

3. It consists of open through section and because it is not closed at the top requires more supporting framework to restrain the sides.

A. wall formwork B. slab formwork C. beam formwork D. column formwork

4. It is made usually with either timber or metal panels.

A. wall formwork B. slab formwork C. beam formwork D. column formwork

5. This is a vertical plane structure found inside or outside a building.
A. wall B. Beam C. Slab D. column

6. This is a principal structural member used between posts, columns, or walls.

A. wall B. beam C. slab D. column

7. This refers to the top or one of two sides of a door or window frame which touches the door or sash.

A. wall B. Beam C. Jamb D. flooring

8.This is a horizontal structural member that supports the load over an opening such as a window or a door. It is also called lintel.

A. wall B. Beam C. Jamb D. Header

Answer Key

What I Know

1. lumber
2. metal formwork
Plastic formwork

What I Have Learned

1. A
2. B
3. C
4. C

Assessment

1. A
2. B
3. C
4. D
5. A
6. B
7. C
8. D

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