



ADDIS ABABA SCIENCE & TECHNOLOGY UNIVERSITY

SCHOOL OF CIVIL ENGINEERING & COTM

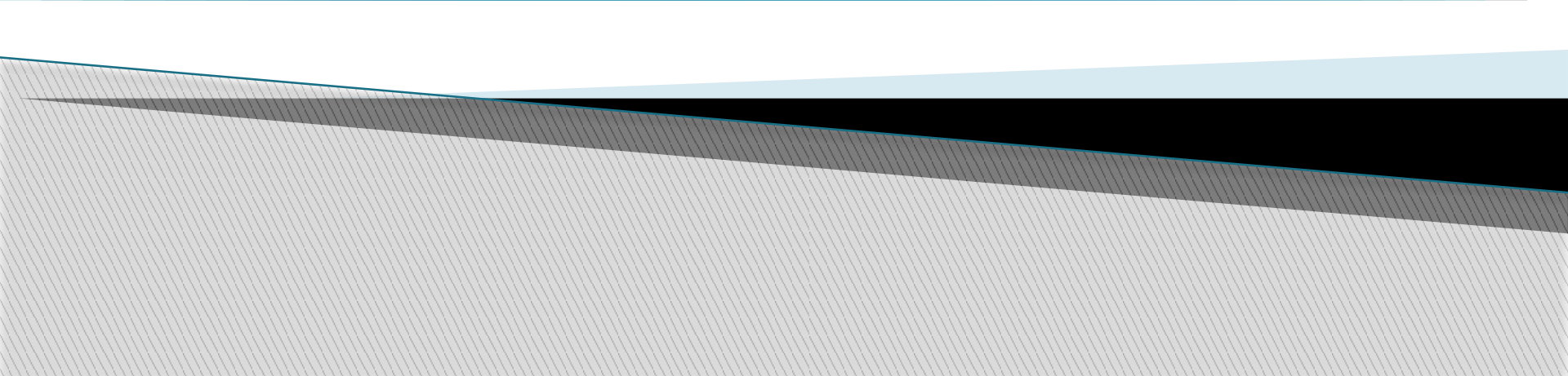
DEPARTEMENT OF COTM

BUILDING CONSTRUCTION - I

CHAPTER-8

FINISHING

CONTENTS

- ❑ Introduction
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- 
- A decorative graphic at the bottom of the slide consisting of several overlapping, wavy bands of different colors and patterns. From top to bottom, the layers include a light blue band, a solid black band, a dark grey band with diagonal hatching, and a light grey band with diagonal hatching. The waves create a sense of movement and depth across the bottom of the page.

1. INTRODUCTION

- Building finishes are used:
 - To **give protective coating** to the surface which preserves and protects the materials used in building from weather effects such as rain water, heat, frost, etc.
 - To **provide decorative finishes** which add to the appearance of the material surfaces and building as a whole.
- Types of building finish:
 - ✓ Plastering,
 - ✓ pointing,
 - ✓ white washing and color washing,
 - ✓ painting,
 - ✓ varnishing, and
 - ✓ distempering

1. INTRODUCTION

SELECTION OF FINISHING TYPE

- In making the decision for the **selection** of a suitable finish, **its specifications** and **color**, the following major factors need to be considered.
 - The **appearance** required,
 - The **maintenance** necessary for giving the satisfactory appearance,
 - The **degree of protection** against rain penetration to be provided by the finish,
 - The **severity of exposure** to atmospheric and climatic agencies affecting durability,
 - The **time of year** during which the finish is applied,
 - The **background materials** on which the finish is to be applied, and
 - The **cost**.

2. PLASTERING

2.1 INTRODUCTION

- ❑ Plastering is the **process of covering** various surfaces of structure with a plastic material such as **cement mortar, lime mortar or composite mortar**, etc. to obtain an **even, smooth, regular, clean and durable** surface.
- ❑ Purpose of Plastering:
 - **Conceals inferior quality** materials and defective workmanship,
 - **Provides a protective** coating against atmospheric effects
 - **Provides a base** or receiving other decorative finishes
- ❑ **Tools** - Laying trowel, float, floating rule and gauging trowel

2.2 PLASTERING MATERIALS:

2. PLASTERING

2.3 BACK GROUND FOR PLASTERING

- ❑ The durability of plastering depends not only on the properties of the mixture itself but also its adhesion with the background.
- ❑ A good background ***must be plain enough*** for suitable application of plaster and ***should have enough strength***.
- ❑ The usual types of backgrounds that are used for plaster work are:
 - A. Solid background:** For instance brick work, concrete blocks, heavy clay blocks , etc.
 - B. Lathing:** These include wood laths, expanded metal lathing , wire meshes etc.,
 - C. Boards and slabs in non-mortar construction:** E.g. slabs of gypsum plaster, fiberboards, etc.

2. PLASTERING

2.4 REQUIREMENTS FOR GOOD PLASTERING

- Some requirements of a good plaster are:
 - i. It should provide **a smooth, non-absorbent and washable surface.**
 - ii. It **should not contract** in volume while drying and setting otherwise it will crack and give an unsightly appearance.
 - iii. It **should adhere firmly** to the surface and resist the effects of weather agencies such as rain, heat, etc.
 - iv. It should offer **good insulation against sound and high resistance against fire.**
 - v. It should provide the surface with the required **decorative effect and durability.**

2. PLASTERING

2.5 DEFECTS IN PLASTERING

- Some of the defects in plastered work include **cracking, blistering, efflorescence** and **falling out of plaster**.

A. Cracking in plastering

- The major causes of cracking in plastering can be:
 - i.* **Structural defects** in building and **discontinuity of surface**,
 - ii.* Plastering on **very wet background**,
 - iii.* **Old surface** not being properly prepared,
 - iv.* **Movement in the background** due to thermal expansion or rapid drying of backing surface,
 - v.* **Movements in the plaster itself**, due to expansion as in the case of gypsum plaster or due to shrinkage of plasters coat during, drying as in the case of lime-sand plasters,
 - vi.* **Excessive shrinkage** of the plaster due to thick

2. PLASTERING

2.5 DEFECTS IN PLASTERING

B. Blistering or blowing of plaster

- This consists of formation of one or more **swelling in small patches** over the finished plastered surfaces.
- It is caused due to **faulty slaking of lime** particles in the plaster after its application.

C. Falling out of plaster

- Some portion of the **surface comes off (peeling)** due to:
 - **Lack of adhesion,**
 - **Excessive moisture** in the background,
 - **Excessive thermal changes** in the background,
 - **Rapid drying** of plaster coats,
 - **Insufficient drying** between each coat of plaster

2. PLASTERING

2.5 DEFECTS IN PLASTERING

D. Efflorescence

- Efflorescence is the ***whitish crystalline substance***, which appears on the surface of walls due to the presence of salts in the lime, cements, and bricks and sometimes even in water.
- Efflorescence ***can be rectified or checked*** by the following measures.
 - i. By scrubbing with brushes. It can also be removed by applying a solution of 1:5 $\text{HCl}:\text{H}_2\text{O}$ or H_2SO_4 and spraying with clean water,
 - ii. By using burnt bricks and clean water, which is free from salt,
 - iii. Using a mortar, which is waterproof, is also useful in preventing efflorescence.

2. PLASTERING

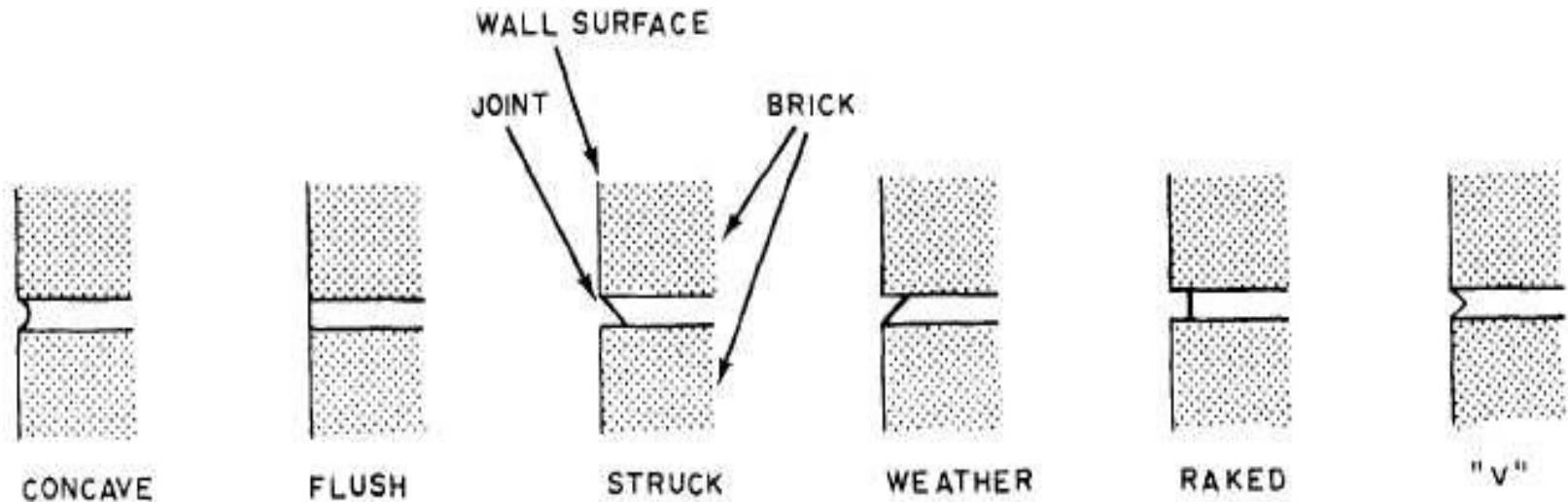
2.5 DEFECTS IN PLASTERING

E. Faulty workmanship

- The following points can be cited as major workmanship error in plastering:
 - i. **Excessive trawling** may cause the binder to come to the surface,
 - ii. The **interval** between successive application may be **short**,
 - iii. The coats may have been **too thick**,
 - iv. **Addition of water** to hydraulic lime after initial set has taken place may prove to be harmful.

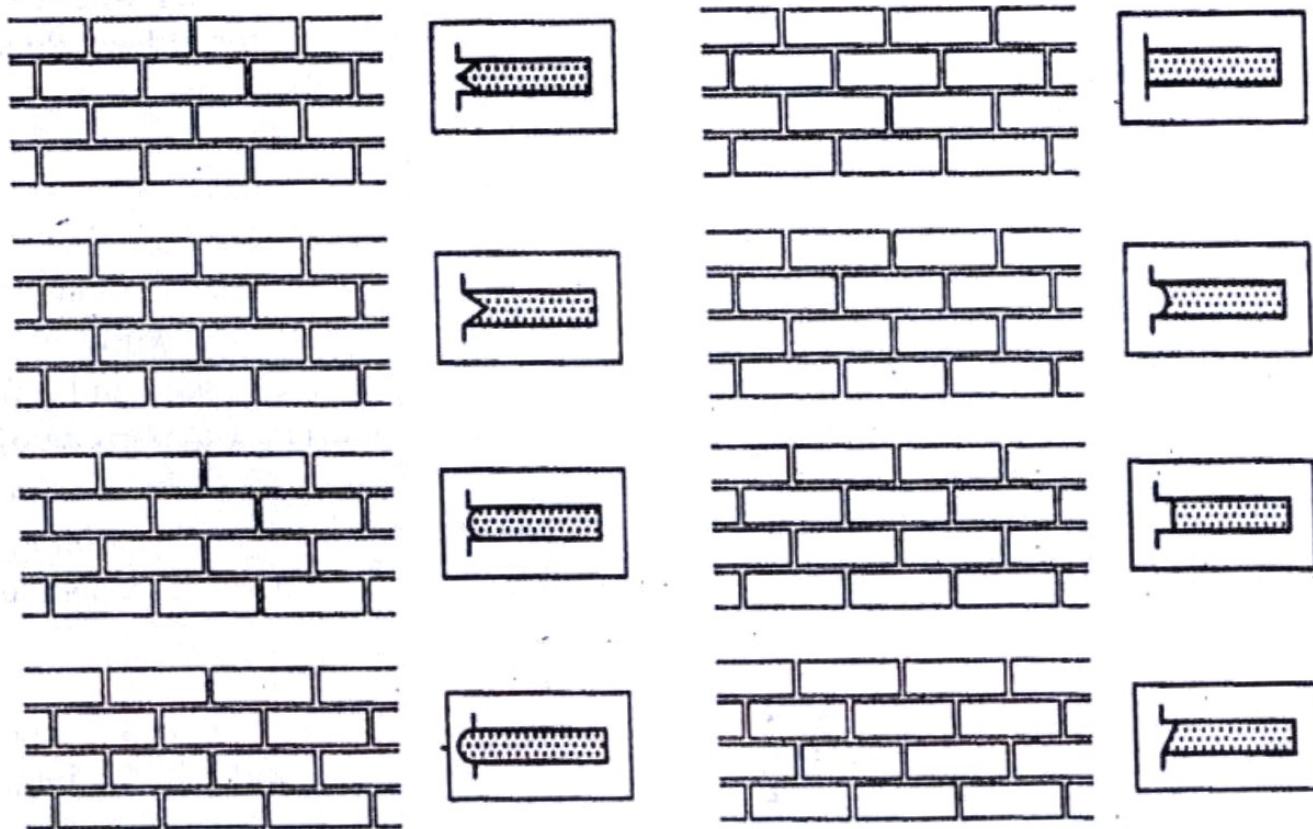
3. POINTING

- **Pointing** is the process of finishing of mortar joints in exposed brick or stone masonry.
- Pointing consists of raking out the green mortar in the joint to a depth of about 15mm and then refilling the joint with fresh mortar.
- Pointing gives good **appearance** and **water resistance**.



3. POINTING

Types of pointing finishes



Typical pointing
profile

4. WHITE WASHING

Process of white washing :

Preparation of white wash - Preparation of Surface -
Application of white wash

Preparation of White Wash

- ❑ White wash is prepared from fresh burnt shell lime or pure lime stone mixed with water.
- ❑ Fresh lime is slaked – For two days – Attains consistency of thin cream – Screening - Clean gum dissolved in hot water is added – White wash – Additives for glazing effect



4. WHITE WASHING

Preparation of Surface

- Surface – shall be clean, made free from loose materials
- If surface to be coated is extra smooth – then rub by sand paper for adhesion
- Re – whiting – scales shall be scrapped off, holes, irregularities, minor repair shall be made

Application of white wash

- Apply white wash in specified coats with a jute brush
- Usually three coats for new and one to two for old

5. COLOR WASHING

- A color wash is usually prepared by adding the necessary coloring pigments in suitable quantities to the screened whitewash or liquid mixture or whitewash.

6. PAINTS AND PAINTING

- **Paints** are coating of fluid materials, which are applied as a final finish to all surfaces such as walls, ceilings, woodwork, metalwork, etc.
- The process of application of paint as a coating is termed as **painting**.

OBJECTS OF PAINTING

- The objects of painting can be summarized as to:
 - ✓ **Protect the surface** from weathering effects of the atmosphere,
 - ✓ **Protect** the **decay** of wood and **corrosion** of metals,
 - ✓ **Provide a decorative finish** to obtain a clean, colorful and pleasing surface.

6. PAINTS AND PAINTING

CHARACTERISTIC OF A GOOD PAINT

- ✓ A good paint should have such a **consistency** that it can be applied easily and freely on the surface with a brush or spray,
- ✓ a good paint should be in **initial cost** and prove **economical** in the long run,
- ✓ The paint color should **neither fade nor change** by atmospheric influences in its designed service life, and

- ✓ **should not show any signs** such as brush marks, shrinkage marks, cracks, patches, etc. on

- Aluminum paint
- drying
- Anti corrosive paint

TYPES OF PAINT

- Asbestos paint
- Bituminous and tar paint
- Cellulose paint
- Cracks, patches, etc. on
- Oil paint
- Plastic paint
- Synthetic rubber paint
- Cellulose paint

6. PAINTS AND PAINTING

Defects in painting work

- Some of the usual defects in painting works are:
 - A. **Blistering**: This defect occurs by *formation of bubbles* under the paint film. It is generally caused due to *excess of oil* in final coat and imperfect seasoning of timber.
 - B. **Crawling**: This occurs due to application of *too thick coat*. It can be rectified by sandpapering the surface.
 - C. **Grinning**: This is *clear reflection of the background* due to lack of opacity of final coat of paint.
 - D. **Fading**: This is the *loss of paint color* due to the effect of sunlight on pigments of paint.
 - E. **Flashing**: This is *appearance or reflection of glossy patches* on the painted surface due to either workmanship or cheap paint used or due to weather effect.

7. VARNISH AND VARNISHING

- ❑ **Varnish** is a solution of *resinous substance* in oil, turpentine or alcohol.
- ❑ The varnish solution on drying or evaporation forms or leaves a *hard, transparent* and *glossy film* of resin on the varnish surface.
- ❑ **Varnishing** is the process of applying varnish to the wooden surfaces and also to the painted surface in order to improve their appearance and protect them from atmospheric action.
- ❑ The objects of varnishing are to:
 - **Brighten** the ornamental appearance of the grains of the unpainted wood surfaces,
 - **Protect** the structural wooden surfaces from atmospheric action,
 - **Give brilliancy** to the painted surface and also to papered walls and
 - **Protect the painted surface** from atmospheric

7. VARNISH AND VARNISHING

REQUIREMENTS OF A GOOD VARNISH

- A good varnish should have the following characteristics or qualities:
 - i. It should ***dry rapidly*** or quickly.
 - ii. On drying, it ***should form a protective film***, which should be hard, tough, resistance to wear or durable.
 - iii. It should ***exhibit a glassy surface***.
 - iv. The finished surface should be ***uniform in nature*** and ***pleasing in appearance***.
 - v. The color of the varnish ***should not fade*** or change when exposed to atmospheric action.
 - vi. It ***should not crack in drying*** and should have ***sufficient elasticity***.

8. DISTEMPER AND DISTEMPERING

- ❑ **Distemperring** is the process of applying distempers over the various surfaces more easily and with less cost than paints and varnishes, to safeguard them against weather effects and improve their appearance.
- ❑ **Distempers** are considered to water paints, consisting of whiting (i.e. powdered chalk), glue or casein as a binder, and suitable proportion of coloring pigments if desired.
- ❑ Distempers form a **cheap, durable** and **easily applied decoration** for internal use on plastered, cement concrete and various wall board surfaces.

9. MISCELLANEOUS FINISH

- I. **Wall tiling:** It is the process of lining or finishing the walls with special tiles either for height varying from 60 to 120 cm above the floor level or up to the ceiling.
- II. **Papering:** It is the process of pasting the papers on the walls and ceilings for improving the aesthetic values of the interior of rooms.
- III. **Whitening:** It is the process of whitening the walls and ceilings by a mixture of white fine powder, glue and water.
- IV. **Coal tarring:** it is the process of applying the coating of local tar to woodwork or iron work for preserving them.
- V. **Wax-polishing:** It is done on varnished surface to improve their elegance and also to protect the under coats
- VI. **Wood oiling** It is normally used as a substitute for

10. OTHER EXTERNAL FINISH

- The following external finishes are considered to be important in the application of various finishing qualities.
 - **Pebble-dash or dry-dash:** This is the finish in which small pebbles or crushed stone of suitable sizes are thrown on to a freshly applied final coat of mortar and left exposed.
 - **Rough cast:** This is a finish in which the final coat containing a proportion of fairly coarse aggregate is thrown as a wet mix and is left in a wet condition.
 - **Scarped finishes:** In this type of finishes the final coat of mortar, after being leveled and allowed to stiffen, is scraped with a steel straight edge so as to give a rough surface.
 - **Textured finishes:** with the aid of suitable tools, ribbed stucco or fun textures can be created in the final coat.
 - **Smooth finish** this type of finish has got a level and a ²³

10. OTHER EXTERNAL FINISH

- **Machine applied finishes:** A variety of finishes in which the final coat is applied by machine, which throws or spatters the material on the wall.
- **Board marked concrete:** A variety of surface textures and overall patterned effects can be achieved by casting concrete against suitably prepared rough sawn boards.
- **Exposed aggregate concrete finishes:** Removal of the cement-Sand mortar from the surface of concrete to reveal the underling coarse aggregate produces a durable textured finishes.
- **Tooled concrete finishes:** By tooling hardened concrete, the outer surface is broken away to leave a rough textured durable finishes.

THANK YOU!