

Introduction to Masonry

Introduction to Masonry – Study Notes

1. What Is Masonry?

- **Definition:** Masonry is the craft of building structures from individual units (bricks, concrete blocks, natural stone, etc.) bound together with mortar.
 - **Key Elements:**
 - **Units** – bricks, blocks, stones, tiles.
 - **Mortar** – a mixture of cement, lime, sand, and water that adheres the units.
 - **Tools** – trowel, jointer, level, plumb line, hammer, mason's line, etc.
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2. Types of Masonry Units

Unit Type	Typical Material	Common Uses	Typical Dimensions
Clay Brick	Fired clay	Residential walls, facades	190?mm?×?90?mm?×?57?mm (standard)
Concrete Block	Concrete (cement + aggregate)	Load?bearing walls, foundations	400?mm?×?200?mm?×?200?mm (solid)
Facing Block	Concrete with a thin veneer	Decorative façades	Same as concrete block
Stone	Natural stone (granite, limestone, sandstone)	Heritage buildings, ornamental work	Varies widely
Glass Block	Reinforced glass	Light?transmitting walls	190?mm?×?190?mm?×?190?mm

3. Mortar – The Glue of Masonry

Mortar Type	Composition (by volume)	Typical Applications
Type N	1?part cement : 1?part lime : 6?parts sand	General?purpose, exterior walls
Type S	1?part cement : ½?part lime : 4.5?parts sand	High?strength, load?bearing, below?grade

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Mortar Type	Composition (by volume)	Typical Applications
Type M	1 part cement : ¼ part lime : 3 parts sand	Heavy loads, foundations
Type O	1 part cement : 2 parts lime : 9 parts sand	Non-structural interior work

- **Water-Cement Ratio:** 0.45–0.60 for most mixes; adjust for workability.
 - **Adhesion:** Properly dampen units before applying mortar to prevent suction.
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4. Basic Masonry Principles

1. Bond Patterns

- **Running Bond** – staggered joints; most common for bricks.
- **Stack Bond** – vertical joints aligned; used for decorative panels.
- **English Bond** – alternating header and stretcher courses; high strength.
- **Flemish Bond** – each course alternates header-stretcher; aesthetic appeal.

2. Load Transfer

- **Compression** is the primary stress masonry can safely carry.
- **Tension** is minimal; reinforcement (rebar, steel mesh) is added where needed.

3. Tolerance & Alignment

- **Vertical (plumb) tolerance:** ±3 mm per 3 m of height.
 - **Horizontal (level) tolerance:** ±3 mm per 3 m of length.
 - Use a **mason's line** and **spirit level** to maintain consistency.
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5. Construction Process – Step-by-Step

Step	Action	Key Points
1. Site Preparation	Clear debris, set out foundation lines	