STONE, BRICK, AND CONCRETE MASONRY UNITS

DES 383.01- Codes & Materials

Fall 2021

MASONRY

Building with natural or manufactured:

stone, brick, or CMU

Usually mortared together

Comes in standard sizes

STONE- HOW IT'S MADE (CLICK)

Rock:

- stone in its natural element
- becomes stone when removed from its bed

Dressed:

- worked to desired shape and smoothed

Dimension Stone:

- Blocks or slabs of curtain size/shape

DESIGN AND HISTORICAL CONTENT:

- Stone has long been valued as a building material.
- In fact, early historical buildings, relied on heavy stone for load-bearing walls for support of upper floors.
- This resulted in smaller interior spaces due to low thick walls.

STONE PROPERTIES AND AESTHETIC

PROPERTIES


Strong


Durable


Dense (low to no pores)

AESTHETIC QUALITIES

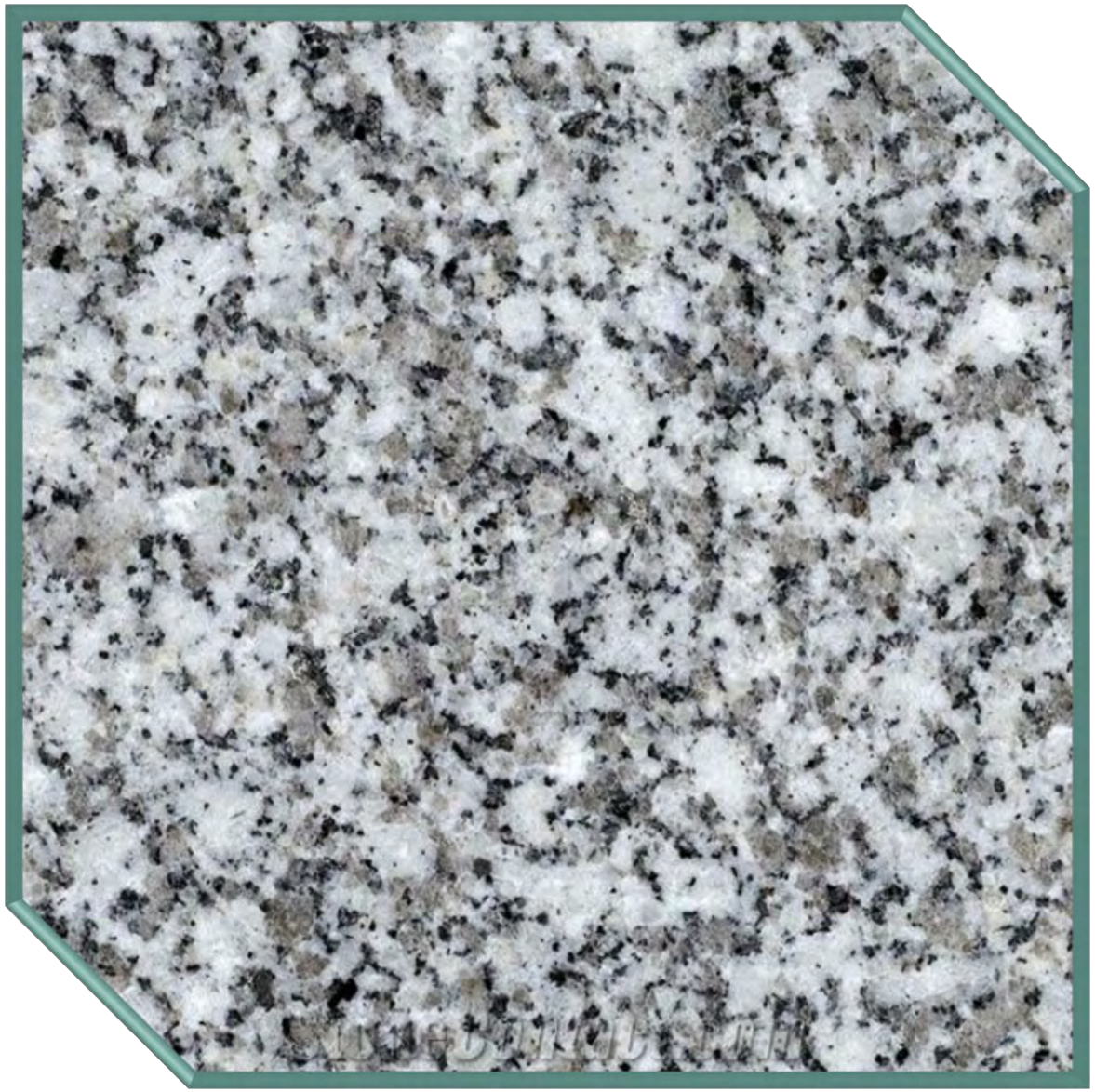
- Comes from its mineral composition along with other minerals
- Color, grain, and texture: unique and timeless
- Expresses permanence and immovability

STONE TYPES

Igneous

Sedimentary

Metamorphic



IGNEOUS ROCK

- Formed by lava
- Granite is the most common
- Made from different minerals such as:
  - Feldspar
  - Quart
  - Mica
  - Hornblende
- Resists stains, scratches, and chemicals
- Poor fire resistant
- Shapes and polished well

SEDIMENTARY ROCK

Consists of compressed deposited sediment

- Erosion
- Weathering (Wind, Water, Ice)
- Settles and layered on top of each other

LIMESTONE:

- Made of calcium carbonate (coral/shells)
- Durable
- Very Heavy
- Porous (Sealer recommended)

SANDSTONE

- Formed from layers of quartz/feldspar pressed together & cemented
- Easy to work with
- Highly Absorbent

TRAVERTINE

- Banded and compacted by precipitation near hot springs or caves
- Porous (Should be sealed)
- Varies in hardness
- Can be given a variety of finishes: matte, brushes, polished

METAMORPHIC ROCK

Created by subjecting rock to new conditions of temperature and pressure

Types of Metamorphic Stone:

Marble	Quartzite	Slate	Soapstone	Alabaster

METAMORPHIC ROCK CONTINUED

Marble

- ✓Recrystallized
- ✓High polishes well
- ✓Subject to staining

Quartzite

- ✓Form of sandstone
- ✓Hard, compact and granular material

Slate

- ✓Compressed clay & shale sediments
- ✓Dense, low-grain, and low porosity

Soapstone

- ✓Dense, soft rock
- ✓Nonporous
- ✓Does not stain

Alabaster

- ✓Gypsum- soft
- ✓Calcite- hard
- ✓Easily worked

STONE **INTERIOR** AVAILABILITY & APPLICATIONS

Available

- Slabs
- Pavers
- Tiles
- Bricks
- Blocks
- Treads

Applications

- Floors
- Walls
- Counters
- Showers
- Treads
- Fireplaces
- Surrounds
- Columns
- Sinks

BRICK- HOW IT'S MADE (CLICK)

Made of Clay (Earth)

Hardened by Drying

Heated by Sun/ Baked in Kiln

DESIGN AND HISTORICAL CONTENT:

- Brick has long been valued for structural strength and its warm colors/texture.
- Bonding creates rhythmic pattern which relates to human scale.
- Traditional role is used in both structure and finishing material.

BRICK BONDING (PATTERN IN WHICH IT IS LAID)

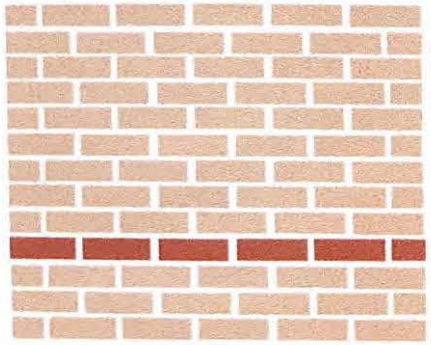


Figure 5.32: Running bond

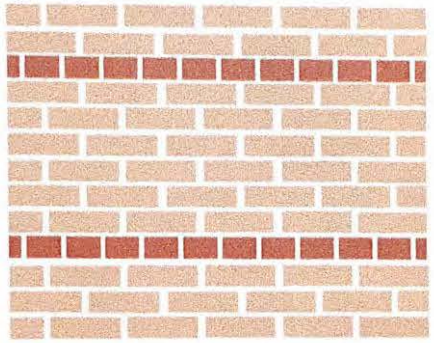


Figure 5.33: Common bond

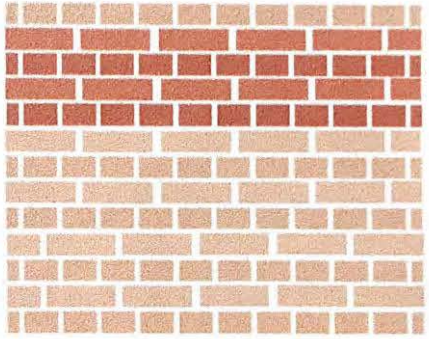


Figure 5.34: English bond

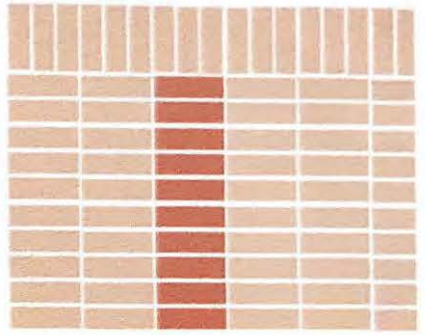
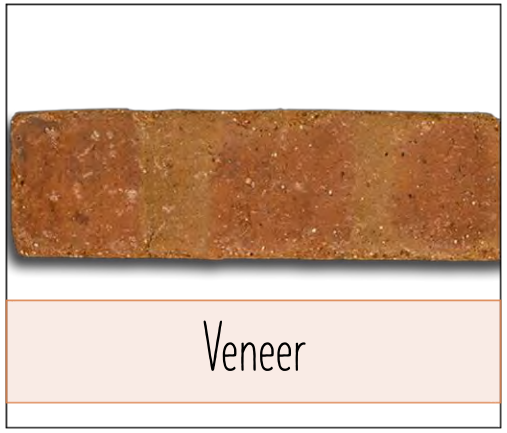


Figure 5.35: Stack bond

BRICK TYPES AND APPLICATIONS

TYPES

Masonry Paver



Veneer

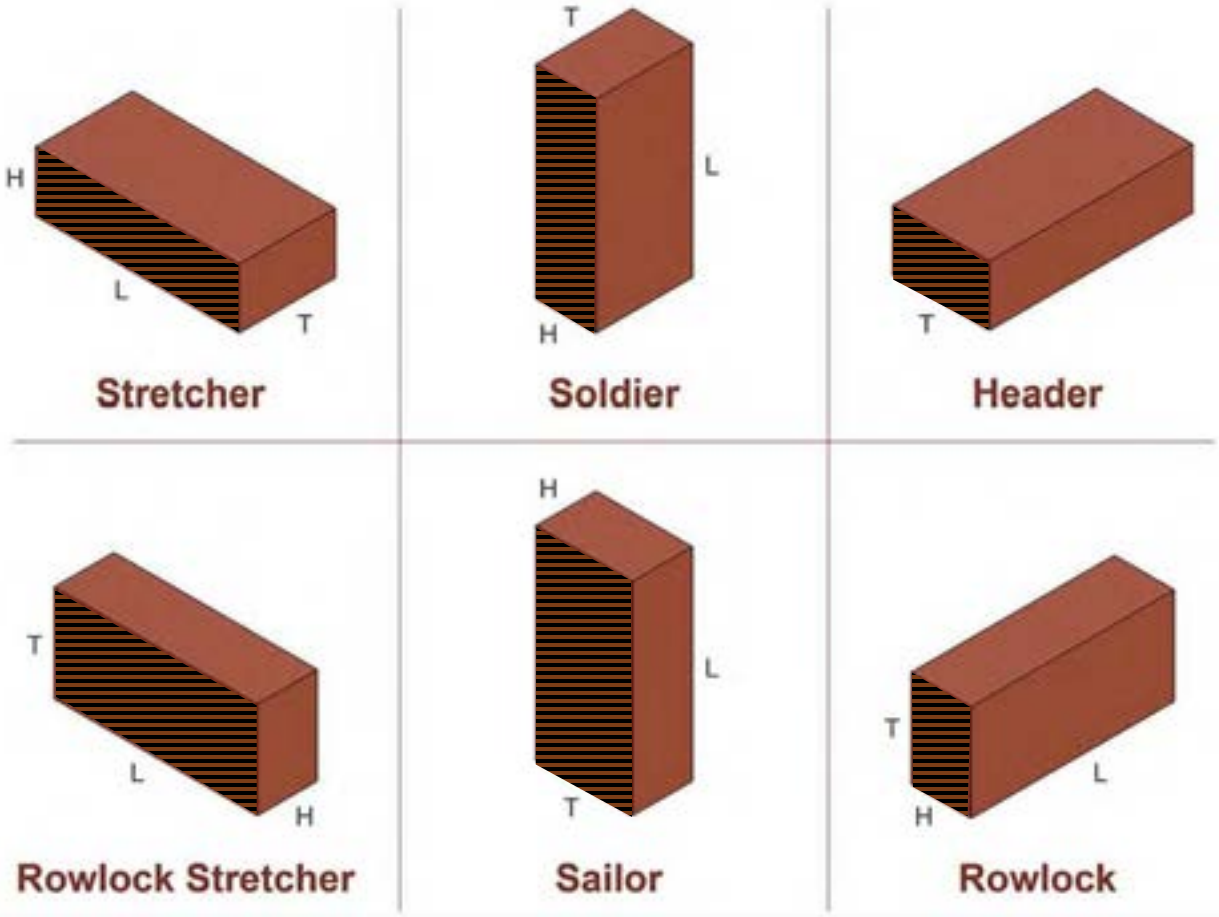
INTERIOR APPLICATION

- Structure
- Floors
- Walls
- Fireplaces

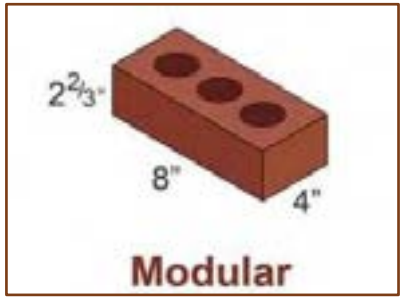
BRICKS

ORIENTATION

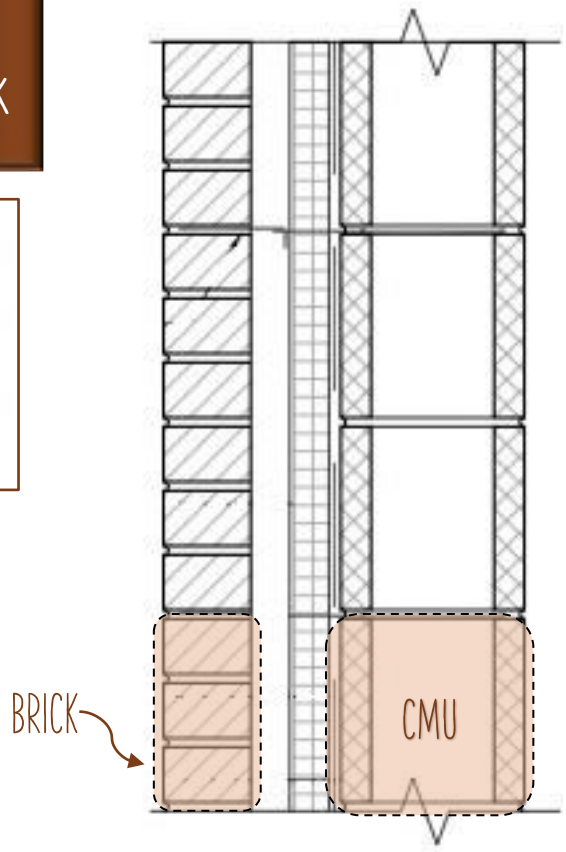
Length x Height x Thickness



U.S. Nominal Standard Size Brick



3 Standard Bricks = 1 CMU



CONCRETE MASONRY UNIT (CMU)

- Precast Portland Cement (click)
- Known as: Cinder or Concrete Block
- Strong & Fire Resistant
- Thermal properties

FUN FACT: DESIGNERS CAN QUICKLY MEASURE SIZE OF SPACE BY COUNTING CMU'S.

8" x 8" x 16"

$- Relatively Inexpensive

CMU TYPES AND SPECIFICATIONS

ASTM C90-11b Standards:

- ✓Weight (load-bearing determination)
- ✓Strength Grade
- ✓Intended Use
- ✓Moisture Content (Type I & II)

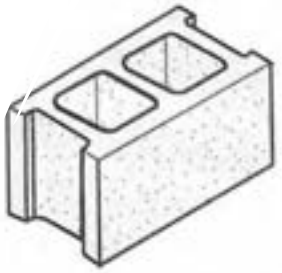


Figure 5.46: Stretcher block

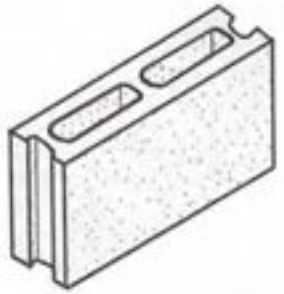


Figure 5.47: Partition block

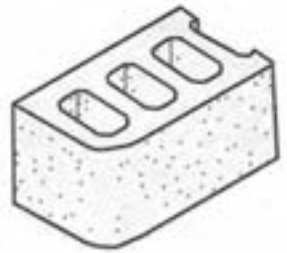


Figure 5.48: Bullnose block

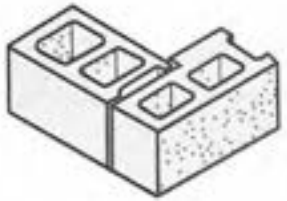


Figure 5.49: Corner block and return-corner block

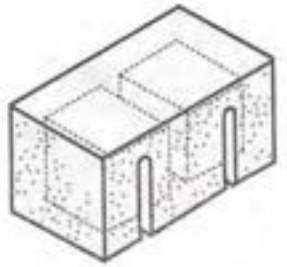


Figure 5.50: Sound-absorbing masonry unit

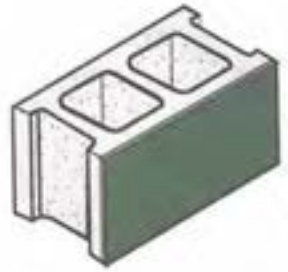


Figure 5.51: Faced block

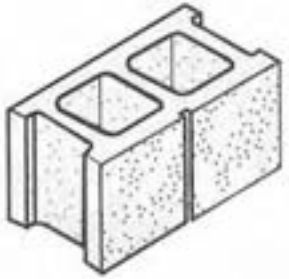


Figure 5.52: Scored block

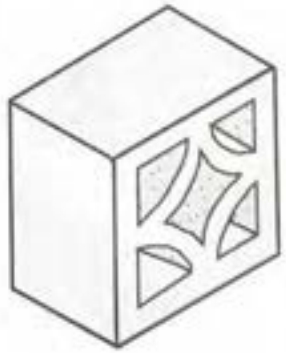


Figure 5.53: Screen block

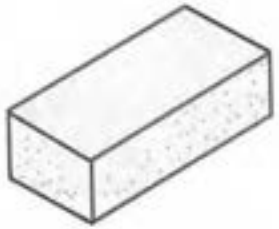


Figure 5.54: Concrete brick