



TECHNICAL NOTES on Brick Construction

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Technical Notes 2 - Glossary of Terms Relating to Brick Masonry Jan/Feb 1975 (Reissued Mar. 1999)

ABSORPTION: The weight of water a brick unit absorbs, when immersed in either cold or boiling water for a stated length of time. Expressed as a percentage of the weight of the dry unit. See ASTM Specification C 67.

ADMIXTURES: Materials added to mortar to impart special properties to the mortar.

ANCHOR: A piece or assemblage, usually metal, used to attach building parts (e.g., plates, joists, trusses, etc.) to masonry or masonry materials.

ANSI: American National Standards Institute.

ARCH: A curved compressive structural member, spanning openings or recesses; also built flat.

Back Arch: A concealed arch carrying the backing of a wall where the exterior facing is carried by a lintel.

Jack Arch: One having horizontal or nearly horizontal upper and lower surfaces. Also called *flat* or *straight* arch.

Major Arch: Arch with spans greater than 6 ft and equivalent to uniform loads greater than 1000 lb. per ft. Typically known as Tudor arch, semicircular arch, Gothic arch or parabolic arch. Has rise to span ratio greater than 0.15.

Minor Arch: Arch with maximum span of 6 ft and loads not exceeding 1000 lb. per ft. Typically known as jack arch, segmental arch or multicentered arch. Has rise to span ratio less than or equal to 0.15.

Relieving Arch: One built over a lintel, flat arch, or smaller arch to divert loads, thus relieving the lower member from excessive loading. Also known as *discharging* or *safety arch*.

Trimmer Arch: An arch, usually a low rise arch of brick, used for supporting a fireplace hearth.

ASHLAR MASONRY: Masonry composed of rectangular units of burned clay or shale, or stone, generally larger in size than brick and properly bonded, having sawed, dressed or squared beds, and joints laid in mortar. Often the unit size varies to provide a random pattern, *random ashlar*.

ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

ASTM: American Society for Testing and Materials.

BACK FILLING: 1. Rough masonry built behind a facing or between two faces. 2. Filling over the extrados of an arch. 3. Brickwork in spaces between structural timbers, sometimes called *brick nogging*.

BACKUP: That part of a masonry wall behind the exterior facing.

BAT: A piece of brick.

BATTER: Recessing or sloping masonry back in successive courses; the opposite of corbel.

BED JOINT: The horizontal layer of mortar on which a masonry unit is laid.

BELT COURSE: A narrow horizontal course of masonry, sometimes slightly projected such as window sills which are made continuous. Sometimes called *string course* or *sill course*.

BLOCKING: A method of bonding two adjoining or intersecting walls, not built at the same time, by means of offsets whose vertical dimensions are not less than 8 in.

BOND: 1. Tying various parts of a masonry wall by lapping units one over another or by connecting with metal ties. 2. Patterns formed by exposed faces of units. 3. Adhesion between mortar or grout and masonry units or reinforcement.

BOND BEAM: Course or courses of a masonry wall grouted and usually reinforced in the horizontal direction. Serves as horizontal tie of wall, bearing course for structural members or as a flexural member itself.

BOND COURSE: The course consisting of units which overlap more than one wythe of masonry.

BONDER: A bonding unit. See *Header*.

BREAKING JOINTS: Any arrangement of masonry units which prevents continuous vertical joints from occurring in adjacent courses.

BRICK: A solid masonry unit of clay or shale, formed into a rectangular prism while plastic and burned or fired in a kiln.

Acid-Resistant Brick: Brick suitable for use in contact with chemicals, usually in conjunction with acid-resistant mortars.

Adobe Brick: Large roughly-molded, sun-dried clay brick of varying size.

Angle Brick: Any brick shaped to an oblique angle to fit a salient corner.

Arch Brick: 1. Wedge-shaped brick for special use in an arch. 2. Extremely hard-burned brick from an arch of a scove kiln.

Building Brick: Brick for building purposes not especially treated for texture or color. Formerly called *common brick*. See ASTM Specification C 62.

Clinker Brick: A very hard-burned brick whose shape is distorted or bloated due to nearly complete vitrification.

Common Brick: See *Building Brick*.

Dry-Press Brick: Brick formed in molds under high pressures from relatively dry clay (5 to 7 percent moisture content).

Economy Brick: Brick whose nominal dimensions are 4 by 4 by 8 in.

Engineered Brick: Brick whose nominal dimensions are 4 by 3.2 by 8 in.

Facing Brick: Brick made especially for facing purposes, often treated to produce surface texture. They are made of selected clays, or treated, to produce desired color. See ASTM Specification C 216.

Fire Brick: Brick made of refractory ceramic material which will resist high temperatures.

Floor Brick: Smooth dense brick, highly resistant to abrasion, used as finished floor surfaces. See ASTM Specification C 410.

Gauged Brick: 1. Brick which have been ground or otherwise produced to accurate dimensions. 2. A tapered arch brick.

Hollow Brick: A masonry unit of clay or shale whose net cross-sectional area in any plane parallel to the bearing surface is not less than 60 percent of its gross cross-sectional area measured in the same plane. See ASTM Specification C 652.

Jumbo Brick: A generic term indicating a brick larger in size than the standard. Some producers use this term to describe oversize brick of specific dimensions manufactured by them.

Norman Brick: A brick whose nominal dimensions are 4 by 2 2/3 by 12 in.

Paving Brick: Vitrified brick especially suitable for use in pavements where resistance to abrasion is important. See ASTM Specification C 7.

Roman Brick: Brick whose nominal dimensions are 4 by 2 by 12 in.

Salmon Brick: Generic term for under-burned brick which are more porous, slightly larger, and lighter colored than hard-burned brick. Usually pinkish-orange color.

"SCR Brick" (Reg U.S. Pat Off., SCPI (BIA)): See SCR (Reg U.S. Pat. Off., SCPI (BIA)).

Sewer Brick: Low absorption, abrasive-resistant brick intended for use in drainage structures. See ASTM Specification C 32.

Soft-Mud Brick: Brick produced by molding relatively wet clay (20 to 30 percent moisture). Often a hand process. When insides of molds are sanded to prevent sticking of clay, the product is *sand-struck* brick. When molds are wetted to prevent sticking, the product is *water-struck* brick.

Stiff-Mud Brick: Brick produced by extruding a stiff but plastic clay (12 to 15 percent moisture) through a die.

BRICK AND BRICK: A method of laying brick so that units touch each other with only enough mortar to fill surface irregularities.

BRICK GRADE: Designation for durability of the unit expressed as SW for severe weathering, MW for moderate weathering, or NW for negligible weathering. See ASTM Specifications C 216, C 62 and C 652.

BRICK TYPE: Designation for facing brick which controls tolerance, chippage and distortion. Expressed as FBS, FBX and FBA for solid brick, and HBS, HBX, HBA and HBB for hollow brick. See ASTM Specifications C 216 and C 652.

BUTTERING: Placing mortar on a masonry unit with a trowel.

CAPACITY INSULATION: The ability of masonry to store heat as a result of its mass, density and specific heat.

C/B RATIO: The ratio of the weight of water absorbed by a masonry unit during immersion in cold water to weight absorbed during immersion in boiling water. An indication of the probable resistance of brick to freezing and thawing. Also called *saturation coefficient*. See ASTM Specification C 67.

CENTERING: Temporary formwork for the support of masonry arches or lintels during construction. Also called *center(s)*.

CERAMIC COLOR GLAZE: An opaque colored glaze of satin or gloss finish obtained by spraying the clay body with a compound of metallic oxides, chemicals and clays. It is burned at high temperatures, fusing glaze to body making them inseparable. See ASTM Specification C 126.

CHASE: A continuous recess built into a wall to receive pipes, ducts, etc.

CLAY: A natural, mineral aggregate consisting essentially of hydrous aluminum silicate; it is plastic when sufficiently wetted, rigid when dried and vitrified when fired to a sufficiently high temperature.

CLAY MORTAR-MIX: Finely ground clay used as a plasticizer for masonry mortars.

CLEAR CERAMIC GLAZE: Same as *Ceramic Color Glaze* except that it is translucent or slightly tinted, with a gloss finish.

CLIP: A portion of a brick cut to length.

CLOSER: The last masonry unit laid in a course. It may be whole or a portion of a unit.

CLOSURE: Supplementary or short length units used at corners or jambs to maintain bond patterns.

COLLAR JOINT: The vertical, longitudinal joint between wythes of masonry.

COLUMN: A vertical member whose horizontal dimension measured at right angles to the thickness does not exceed three times its thickness.

COPING: The material or masonry units forming a cap or finish on top of a wall, pier, pilaster, chimney, etc. It protects masonry below from penetration of water from above.

CORBEL: A shelf or ledge formed by projecting successive courses of masonry out from the face of the wall.

COURSE: One of the continuous horizontal layers of units, bonded with mortar in masonry.

CULLS: Masonry units which do not meet the standards or specifications and have been rejected.

DAMP COURSE: A course or layer of impervious material which prevents capillary entrance of moisture from the ground or a lower course. Often called *damp check*.

DAMPPROOFING: Prevention of moisture penetration by capillary action.

DOG'S TOOTH: Brick laid with their corners projecting from the wall face.

DRIP: A projecting piece of material, shaped to throw off water and prevent its running down the face of wall or other surface.

EBM: See *Engineered Brick Masonry*.

ECCENTRICITY: The normal distance between the centroidal axis of a member and the parallel resultant load.

e_1/e_2 : Ratio of virtual eccentricities occurring at the ends of a column or wall under design. The absolute value is always less than or equal to 1.0.

EFFECTIVE HEIGHT: The height of a member to be assumed for calculating the slenderness ratio.

EFFECTIVE THICKNESS: The thickness of a member to be assumed for calculating the slenderness ratio.

EFFLORESCENCE: A powder or stain sometimes found on the surface of masonry, resulting from deposition of water-soluble salts.

ENGINEERED BRICK MASONRY: Masonry in which design is based on a rational structural analysis.

FACE: 1. The exposed surface of a wall or masonry unit. 2. The surface of a unit designed to be exposed in the finished masonry.

FACING: Any material, forming a part of a wall, used as a finished surface.

FIELD: The expanse of wall between openings, corners, etc., principally composed of stretchers.

FILTER BLOCK: A hollow, vitrified clay masonry unit, sometimes salt-glazed, designed for trickling filter floors in sewage disposal plants. See ASTM Specification C 159.

FIRE CLAY: A clay which is highly resistant to heat without deforming and used for making brick.

FIRE RESISTIVE MATERIAL: See *Non-combustible Material*.

FIREPROOFING: Any material or combination protecting structural members to increase their fire resistance.

FLASHING: 1. A thin impervious material placed in mortar joints and through air spaces in masonry to prevent water penetration and/or provide water drainage. 2. Manufacturing method to produce specific color tones.

FROG: A depression in the bed surface of a brick. Sometimes called a *panel*.

FURRING: A method of finishing the interior face of a masonry wall to provide space for insulation, prevent moisture transmittance, or to provide a level surface for finishing.

GROUND: Nailing strips placed in masonry walls as a means of attaching trim or furring.

GROUT: Mixture of cementitious material and aggregate to which sufficient water is added to produce pouring consistency without segregation of the constituents.

High-Lift Grouting: The technique of grouting masonry in lifts up to 12 ft.

Low-Lift Grouting: The technique of grouting as the wall is constructed.

HACKING: 1. The procedure of stacking brick in a kiln or on a kiln car. 2. Laying brick with the bottom edge set in from the plane surface of the wall.

HARD-BURNED: Nearly vitrified clay products which have been fired at high temperatures. They have relatively low absorptions and high compressive strengths.

HEAD JOINT: The vertical mortar joint between ends of masonry units. Often called *cross joint*.

HEADER: A masonry unit which overlaps two or more adjacent wythes of masonry to tie them together. Often called *bonder*.

Blind Header: A concealed brick header in the interior of a wall, not showing on the faces.

Clipped Header: A bat placed to look like a header for purposes of establishing a pattern. Also called a *false header*.

Flare Header: A header of darker color than the field of the wall.

HEADING COURSE: A continuous bonding course of header brick. Also called *header course*.

INITIAL RATE OF ABSORPTION: The weight of water absorbed expressed in grams per 30 sq. in. of contact surface when a brick is partially immersed for one minute. Also called suction. See ASTM Specification C 67.

IRA: See *Initial Rate of Absorption*.

KILN: A furnace oven or heated enclosure used for burning or firing brick or other clay material.

Kiln Run: Brick from one kiln which have not been sorted or graded for size or color variation.

KING CLOSER: A brick cut diagonally to have one 2 in. end and one full width end.

LATERAL SUPPORT: Means whereby walls are braced either vertically or horizontally by columns, pilasters, cross walls, beams, floors, roofs, etc.

LEAD: The section of a wall built up and racked back on successive courses. A line is attached to leads as a guide for constructing a wall between them.

LIME, HYDRATED: Quicklime to which sufficient water has been added to convert the oxides to hydroxides.

LIME PUTTY: Hydrated lime in plastic form ready for addition to mortar.

LINTEL: A beam placed over an opening in a wall.

MASONRY: Brick, stone, concrete, etc., or masonry combinations thereof, bonded with mortar.

MASONRY CEMENT: A mill-mixed cementitious material to which sand and water must be added. See ASTM C 91.

MASONRY UNIT: Natural or manufactured building units of burned clay, concrete, stone, glass, gypsum, etc.

Hollow Masonry Unit: One whose net cross-sectional area in any plane parallel to the bearing surface is less than 75 percent of the gross.

Modular Masonry Unit: One whose nominal dimensions are based on the 4 in. module.

Solid Masonry Unit: One whose net cross-sectional area in every plane parallel to the bearing surface is 75 percent or more of the gross.

MORTAR: A plastic mixture of cementitious materials, fine aggregate and water. See ASTM Specifications C 270, C 476 or BIA M1-72.

Fat Mortar: Mortar containing a high percentage of cementitious components. It is a sticky mortar which adheres to a trowel.

High-Bond Mortar: Mortar which develops higher bond strengths with masonry units than normally developed with conventional mortar.

Lean Mortar: Mortar which is deficient in cementitious components, it is usually harsh and difficult to spread.

NOMINAL DIMENSION: A dimension greater than a specified masonry dimension by the thickness of a mortar joint, but not more than 1/2 in.

NON-COMBUSTIBLE MATERIAL: Any material which will neither ignite nor actively support combustion in air at a temperature of 1200 F when exposed to fire.

OVERHAND WORK: Laying brick from inside a wall by men standing on a floor or on a scaffold.

PARGETING: The process of applying a coat of cement mortar to masonry. Often spelled and/or pronounced *paring*.

PARTITION: An interior wall, one story or less in height.

PICK AND DIP: A method of laying brick whereby the bricklayer simultaneously picks up a brick with one hand and, with the other hand, enough mortar on a trowel to lay the brick. Sometimes called the *Eastern* or *New England* method.

PIER: An isolated column of masonry.

PILASTER: A wall portion projecting from either or both wall faces and serving as a vertical column and/or beam.

PLUMB RULE: This is a combination plumb rule and level. It is used in a horizontal position as a level and in a vertical position as a plumb rule. They are made in lengths of 42 and 48 in., and short lengths from 12 to 24 in.

POINTING: Troweling mortar into a joint after masonry units are laid.

PREFABRICATED BRICK MASONRY: Masonry construction fabricated in a location other than its final inservice location in the structure. Also known as preassembled, panelized and sectionalized brick masonry.

PRISM: A small masonry assemblage made with masonry units and mortar. Primarily used to predict the strength of full scale masonry members.

QUEEN CLOSER: A cut brick having a nominal 2 in. horizontal face dimension.

QUOIN: A projecting right angle masonry corner.

RACKING: A method entailing stepping back successive courses of masonry.

RAGGLE: A groove in a joint or special unit to receive roofing or flashing.

RBM: Reinforced brick masonry

REINFORCED MASONRY: Masonry units, reinforcing steel, grout and/or mortar combined to act together in resisting forces.

RETURN: Any surface turned back from the face of a principal surface.

REVEAL: That portion of a jamb or recess which is visible from the face of a wall.

ROWLOCK: A brick laid on its face edge so that the normal bedding area is visible in the wall face. Frequently spelled *rolok*.

SALT GLAZE: A gloss finish obtained by thermochemical reaction between silicates of clay and vapors of salt or chemicals.

SATURATION COEFFICIENT: See *C/B Ratio*.

SCR (Reg U.S. Pat Off., SCPI (BIA)): Structural Clay Research (trademark Of the Structural Clay Products Institute, BIA).

"SCR acoustile" (Reg U.S. Pat Off., SCPI (BIA) Pat. No 3,001,602): A side-construction two-celled facing tile, having a perforated face backed with glass wool for acoustical purposes.

"SCR brick" (Reg U.S. Pat Off., SCPI (BIA)): Brick whose nominal dimensions are 6 by 2 2/3 by 12 in. (Reg U.S. Pat Off., SCPI (BIA)):

"SCR building panel" (Reg U S. Pat Off., SCPI (BIA) Pat. No. 3,248,836): Prefabricated, structural ceramic panels, approximately 2 1/2 in. thick.

"SCR insulated cavity wall" (Reg U.S. Pat Off., SCPI (BIA)): Any cavity wall containing insulation which meets rigid criteria established by the Structural Clay Products Institute (BIA).

"SCR masonry process" (Reg. U.S. Pat Off., SCPI (BIA)): A construction aid providing greater efficiency, better workmanship and increased production in masonry construction. It utilizes story poles, marked lines and adjustable scaffolding.

SHALE: Clay which has been subjected to high pressures until it has hardened.

SHOVED JOINTS: Vertical joints filled by shoving a brick against the next brick when it is being laid in a bed of mortar.

SLENDERNESS RATIO: Ratio of the effective height of a member to its effective thickness.

SLUSHED JOINTS: Vertical joints filled, after units are laid, by "throwing" mortar in with the edge of a trowel. (Generally, not recommended.)

SOAP: A masonry unit of normal face dimensions, having a nominal 2 in. thickness.

SOFFIT: The underside of a beam, lintel or arch.

SOFT-BURNED: Clay products which have been fired at low temperature ranges, producing relatively high absorptions and low compressive strengths.

SOLAR SCREEN: A perforated wall used as a sunshade.

SOLDIER: A stretcher set on end with face showing on the wall surface.

SPALL: A small fragment removed from the face of a masonry unit by a blow or by action of the elements.

STACK: Any structure or part thereof which contains a flue or flues for the discharge of gases.

STORY POLE: A marked pole for measuring masonry coursing during construction.

STRETCHER: A masonry unit laid with its greatest dimension horizontal and its face parallel to the wall face.

STRINGING MORTAR: The procedure of spreading enough mortar on a bed to lay several masonry units.

STRUCK JOINT: Any mortar joint which has been finished with a trowel.

SUCTION: See *Initial Rate of Absorption*.

TEMPER: To moisten and mix clay, plaster or mortar to a proper consistency.

TIE: Any unit of material which connects masonry to masonry or other materials. See *Wall Tie*.

TOOLING: Compressing and shaping the face of a mortar joint with a special tool other than a trowel.

TOOTHING: Constructing the temporary end of a wall with the end stretcher of every alternate course projecting. Projecting units are *toothers*.

TRADITIONAL MASONRY: Masonry in which design is based on empirical rules which control minimum thickness, lateral support requirements and height without a structural analysis.

TUCK POINTING: The filling in with fresh mortar of cut-out or defective mortar joints in masonry.

VENEER: A single wythe of masonry for facing purposes, not structurally bonded.

VIRTUAL ECCENTRICITY: The eccentricity of a resultant axial load required to produce axial and bending stresses equivalent to those produced by applied axial loads and moments. It is normally found by dividing the moment at a section by the summation of axial loads occurring at that section.

VITRIFICATION: The condition resulting when kiln temperatures are sufficient to fuse grains and close pores of a clay product, making the mass impervious.

WALL: A vertical member of a structure whose horizontal dimension measured at right angles to the thickness exceeds three times its thickness.

Apron Wall: That part of a panel wall between window sill and wall support.

Area Wall: 1. The masonry surrounding or partly surrounding an area. 2. The retaining wall around basement windows below grade.

Bearing Wall: One which supports a vertical load in addition to its own weight.

Cavity Wall: A wall built of masonry units so arranged as to provide a continuous air space within the wall (with or without insulating material), and in which the inner and outer wythes of the wall are tied together with metal ties.

Composite Wall: A multiple-wythe wall in which at least one of the wythes is dissimilar to the other wythe or wythes with respect to type or grade of masonry unit or mortar

Curtain Wall: An exterior non-loadbearing wall not wholly supported at each story. Such walls may be anchored to columns, spandrel beams, floors or bearing walls, but not necessarily built between structural elements.

Dwarf Wall: A wall or partition which does not extend to the ceiling.

Enclosure Wall: An exterior non-bearing wall in skeleton frame construction. It is anchored to columns, piers or floors, but not necessarily built between columns or piers nor wholly supported at each story.

Exterior Wall: Any outside wall or vertical enclosure of a building other than a party wall.

Faced Wall: A composite wall in which the masonry facing and backings are so bonded as to exert a common reaction under load.

Fire Division Wall: Any wall which subdivides a building so as to resist the spread of fire. It is not necessarily continuous through all stories to and above the roof.

Fire Wall: Any wall which subdivides a building to resist the spread of fire and which extends continuously from the foundation through the roof.

Foundation Wall: That portion of a loadbearing wall below the level of the adjacent grade, or below first floor beams or joists.

Hollow Wall: A wall built of masonry units arranged to provide an air space within the wall. The separated facing and backing are bonded together with masonry units.

Insulated Cavity Wall: See "SCR insulated cavity wall".

Loadbearing Wall: A wall which supports any vertical load in addition to its own weight.

Non-Loadbearing Wall: A wall which supports no vertical load other than its own weight.

Panel Wall: An exterior, non-loadbearing wall wholly supported at each story.

Parapet Wall: That part of any wall entirely above the roof line.

Party Wall: A wall used for joint service by adjoining buildings.

Perforated Wall: One which contains a considerable number of relatively small openings. Often called *pierced wall* or *screen wall*.

Shear Wall: A wall which resists horizontal forces applied in the plane of the wall.

Single Wythe Wall: A wall containing only one masonry unit in wall thickness.

Solid Masonry Wall: A wall built of solid masonry units, laid contiguously, with joints between units completely filled with mortar or grout.

Spandrel Wall: That part of a curtain wall above the top of a window in one story and below the sill of the window in the story above.

Veneered Wall: A wall having a facing of masonry units or other weather-resisting non-combustible materials securely attached to the backing, but not so bonded as to intentionally exert common action under load.

WALL PLATE: A horizontal member anchored to a masonry wall to which other structural elements may be attached. Also called *head plate*.

WALL TIE: A bonder or metal piece which connects wythes of masonry to each other or in other materials.

WALL TIE, CAVITY: A rigid, corrosion-resistant metal tie which bonds two wythes of a cavity wall. It is usually steel, 3/16 in. in diameter and formed in a "Z" shape or a rectangle.

WALL TIE, VENEER: A strip or piece of metal used to tie a facing veneer to the backing.

WATER RETENTIVITY: That property of a mortar which prevents the rapid loss of water to masonry units of high suction. It prevents bleeding or water gain when mortar is in contact with relatively impervious units.

WATER TABLE: A projection of lower masonry on the outside of the wall slightly above the ground. Often a damp course is placed at the level of the water table to prevent upward penetration of ground water

WATERPROOFING: Prevention of moisture flow through masonry due to water pressure.

WEEP HOLES: Openings placed in mortar joints of facing material at the level of flashing, to permit the escape of moisture.

WITH INSPECTION: Masonry designed with the higher stresses allowed under EBM. Requires the establishing of procedures on the job to control mortar mix, workmanship and protection of masonry materials.

WITHOUT INSPECTION: Masonry designed with the reduced stresses allowed under EBM.

WYTHE: 1. Each continuous vertical section of masonry one unit in thickness. 2. The thickness of masonry separating flues in a chimney. Also called *withe* or *tier*.