Unit Type	Light Transmitted (%)	U-Value	Shading Coefficient	Heat Gain (Btu/hr/sq.ft)
Solid	80	–	–	–
Hollow	50-75	–	–	–
Diffusion	28-40	–	–	–
Reflective	5-20	–	–	–
8 x 8 reflective	20	0.51	0.25	42
8 x 8 clear	62	0.51	0.65	140
1/4" clear sheet glass	90	1.04	1.00	215

Figure 3-17 Light transmission and thermal performance characteristics of glass block.

Figure 3-18 Glassel School of Art, Houston. Morris/Aubry architects. (*Photo courtesy Houston Museum of Fine Arts.*)

skeleton frames. Clay tile satisfied the demand and added elements of economy and fire resistance.

Structural clay tile is still produced by a limited number of manufacturers, both for new construction and for restoration/retrofit work. It is used as structural, facing, and backup material in construction. Tile, like brick, is made of clay that is molded and then fired in a kiln to ceramic fusion. Clay tile may be used with the hollow cells either horizontal or vertical (side construction or end construction tile), for both loadbearing and non-loadbearing applications. "Structural" clay tile is distinguished from flat clay wall tile and flat clay floor tile by its ability to carry load and support its own weight. The numerous types of tile used today are classified by function. *Structural clay loadbearing wall tile* and *structural clay non-loadbearing tile* may be used in the construction of walls and partitions where a finish coat of plaster or other material will be applied or where appearance is not a primary concern. These

units are the equivalent of building brick, and are considered principally utilitarian in nature. *Structural clay facing tile* and *ceramic glazed facing tile* may be loadbearing or non-loadbearing, but are distinguished from the above on the basis of finish, much the same as face brick is distinguished from building brick.

3.2.1 Loadbearing Wall Tile

ASTM C34, *Standard Specification for Structural Clay Loadbearing Wall Tile,* divides units into two grades based on compressive strength and resistance to frost action in the presence of moisture (*see Fig. 3-19*). The higher grade, LBX, is suitable for areas exposed to weathering provided it meets the same durability requirements as Grade SW, ASTM C216 face brick. Grade LB is limited to unexposed areas unless protected by at least 3 in. of stone, brick, terra cotta or other masonry. In either case, the tile carries the structural load, the live load, and the weight of the facing material, plus its own weight. Loadbearing tile may also be used in composite wall construction with facing tile, brick, or other masonry units. In this instance, the wythes of the wall are bonded together structurally so that the tile bears an equal share of the superimposed load.

3.2.2 Non-Loadbearing Tile

ASTM C56, *Standard Specification for Structural Clay Non-Loadbearing Tile,* covers partition tile, furring tile, and fireproofing tile. The standard includes

Type and Grade	Maximum Water Absorption by 1-Hour Boiling (%)		Minimum Compressive Strength§ (psi)			
			End Construction Tile		Side Construction Tile	
	Average of Five Units	Individual Unit	Minimum, Average of Five Tests	Minimum, Individual	Minimum, Average of Five Tests	Minimum, Individual
Loadbearing Tile (ASTM C34)						
Grade LBX	16	19	1400	1000	700	500
Grade LB	25	28	1000	700	700	500
Non-Loadbearing Tile (ASTM C56)						
Grade NB	–	28	–	–	–	–
Facing Tile (ASTM C212)						
Type FTX	9	11	–	–	–	–
Type FTS	16	19	–	–	–	–
Standard Class	–	–	1400	1000	700	500
Special Duty Class	–	–	2500	2000	1200	1000
Glazed Tile (ASTM C126)	–	–	3000	2500	2000	1500

§ Based on gross area, obtained as a product of horizontal face dimension (as placed in the wall) times thickness.

Figure 3-19 Physical requirements for structural clay tile.