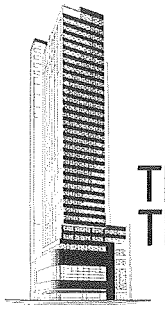

The Grille Is Gone: The Rise and Fall of Screen Block

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The image of perforated precast concrete units will forever be connected to the American 1950s and 1960s. Screen block became a ubiquitous element both inside and outside of residential and public buildings across the country. As an inexpensive and durable construction system, concrete screen block was unsurpassed in the postwar era. Its informality and stylishness coupled with the nation's preoccupation with the interconnection of interior and exterior space fostered its growth in popularity. As with most design trends, the screen unit began as a high-style tool limited in application and acceptance. But unlike other materials whose rises in popularity were hampered by expense, unavailability, or difficult installation, screen block was used by all segments of the population in applications from solar screens to fences to bookshelves. Its resulting prevalence signaled its demise as a high-style motif. As the trend of architectural screens died, along with it went the screen block. By the mid-1970s, their usage had waned as their image became inseparable from the postwar building boom.

Architectural screens were very popular in the late 1950s and into the 1960s. Masonry screens shaded glass curtain walls so important to Modern architecture, while their patterns imparted an air of decoration. Screens could also obscure unattractive fenestration while they gave the building a sense of style. Architectural screens were also produced in metal, particularly anodized aluminum, but metal screens did not offer the economy, availability, ease of production, or strength of concrete block. Clay producers quickly realized their drain tiles and flue liners, when cut into four-inch lengths, could be sold as premium screen units. Some clay companies tinted their clay bodies, while others used vitreous glazes to infinitely increase their block's color palette. Grilles appeared in other materials, such as unglazed terra cotta, limestone, and precast concrete panels. But none had screen block's ease of manufacture, which enabled block producers to more easily modify their lines to "compete successfully in today's architectural market against aluminum, steel, and glass."[1]

The National Concrete Masonry Association (NCMA) defines screen walls as "those wall structures constructed from concrete shapes having over 25 percent horizontal open areas."[2] Individual units weigh between 17 and 21 pounds versus 40 pounds for a typical standard unit. Screen blocks are commonly 4 to 6 inches thick and a foot square, although some units can measure 12 by 18 inches. They cannot be used in load-bearing walls as they do not provide the required bearing strength: they can normally carry only their own weight up to 20 feet. Whereas standard blocks must have an approximate compressive strength of around 1,000 psi, screen units test out around 300 psi.[3] However, when tested with their hollow cells parallel to the direction of the load, screen units should have a compressive strength exceeding 1,000 psi of gross area.[4] Because they have no center cell, screen blocks can only be reinforced lightly within their joints, with, for

instance, No. 2-1/4 wall mesh wire. Screen-block panels must be supported at their vertical extremities by steel columns, block columns, a combination of both set on a footing, or other structural members.[5]

Though early in the twentieth century a few architects experimented with piercing walls of reinforced concrete, Frank Lloyd Wright (1867–1959) and his son Lloyd (1890–1978) were among the first in this country to construct walls containing perforated concrete units.[6] Their Californian "textile-block" houses of the mid-1920s utilized precast units laid in a stack bond and reinforced along joint lines with internal horizontal and vertical reinforcing bars creating a load-bearing wall. Both architects filled pierced blocks with glass to create small windows within these houses' exterior walls. They also used glass-less perforated blocks as nonstructural interior and exterior railings and screens. These concrete block houses with their pierced walls helped blur the line between interior and exterior space, a trend that would be solidly associated with California after World War II. Certainly, the Wright's bold reinterpretation of the material shed new light on its possibilities. The elder Wright, who labeled the concrete block the "ugliest thing in the building world," saw this system as making the material "fit for a phase of modern architecture."[7] Francis Onderdonk, Jr., wrote in 1928 that with these solid and pierced concrete walls, "petrified tapestries can now enclose our spaces and clothe our masses."[8] Even though the Wrights' pioneering use of the screen wall was imaginative and effective, it would be another twenty-five years before the concept would enjoy widespread popularity.[9]

As strict Modernism swept across the country in the years after World War II, a popular, more informal, and stylized version pioneered by architects like Morris Ketchum (1904–?) and Morris Lapidus (1902–) gained popularity. Odd geometric juxtapositions, space-age motifs like rockets and atoms, and exaggerated perspective added a decorative richness that made this vein of Modernism more approachable to average Americans. As this new look permeated every aspect of American culture from automobiles to package design, it created an atmosphere in which screen block could flourish.

Concurrently, Frank Lloyd Wright continued his personal vision of organic architecture. In the 1950s, with the assistance of William Wesley Peters, more and more of Wright's plans, sections, and decorations were based on intersecting circles, arcs, and football shapes. Buildings like the Gammage Auditorium and the Marin County Courthouse influenced the work of the person most responsible for screen block's popularity, Edward Durell Stone (1902–1978).

Described as a Neoformalist, Stone freely admitted that his work was heavily influenced by Wright. His brand of Modernism was imposingly symmetrical yet full of humanistic elements. His 1954 American embassy in New Delhi, the building that thrust screen block into the international spotlight, is wrapped with an occupant-friendly pierced masonry screen whose design can be traced to the circle-obsessive late-Wrightian aesthetic.

The State Department appointed a selection committee to choose an architect for the New Delhi embassy. The committee's directive, meant to guide the building's would-be architect, included this paragraph: "To the sensitive and imaginative designer it will be an invitation to give serious study to local conditions of climate and site, to understand and sympathize with local customs and people . . . yet he will not fear using new techniques or new materials should these constitute real advances in architectural thinking." Stone later wrote how important this paragraph was to him. He derived the idea of the perforated concrete exterior wall (or "terrazzo grille" as he called it) from "an ancient principle in tropical climates."[10] Indeed, screens of stone, wood, and clay shaded and ventilated buildings in arid regions for centuries. Stone built his screen of one-foot square concrete units with a white marble appearance, fabricated individually on site. The blocks were then finished and polished by hand. The grille was constructed as a masonry wall with internal metal supports expressed on the grille's exterior face by small golden spheres. Ostensibly for strengthening against earthquakes, these gold studs increased the building's elegance in a very period manner. The grille encircled the embassy and stood proud from the glass curtain wall, forming a true screen. The building received universal praise for its elegance, appropriateness, and contribution to modern architecture.

Stone introduced the grille to America two years later in 1956 with his AIA-Award-winning Stuart Company headquarters in Pasadena, California. The highly influential building used grilles inside as well as out, prompting *Architectural Record* to describe it as possessing "an atmosphere of clean, bright, lush splendor."[11] Instead of ventilation, grilles provided sun shading and privacy. Originally a response to tropical climates, the grille seemed quite at home in southern California. With this building, Stone

cemented the image of the screen block into the minds of architects, builders, and homeowners.

Later that same year, the grille came to the city, transformed from sunshade to privacy screen by a change of location. Stone purchased a north-facing Victorian brownstone in Manhattan, stripped off the "ancient depressing face, and put glass all the way to the top." A foot from the curtain wall, he placed a concrete grille "essentially for privacy. It lights the interiors and enables us to see out without being observed by passers-by."[12] *Vogue* declared it "the most talked-about house in New York."[13] Even Frank Lloyd Wright reportedly admired it.[14] So much did Stone recommend the grille for urban use that he wrote in 1962, "the grille is the perfect solution . . . [for] the lower floors of apartments and town houses" as it "provides privacy and veils any irresponsible . . . housekeeping."[15] Stone countered contemporary hard-line, anti-ornamental Modernist dogma by claiming, "the practical purposes which these grilles serve are sufficient to answer those who have considered them elements of decoration only, without understanding the many architectural problems they solve."[16]

Although today his grilles may seem inseparable from the day's space-age popular style, Stone did not associate his own architecture with the populist mainstream. His 1959 essay "The Case Against the Tail-Fin Age" was a blistering attack on popular American culture. Of his 1954 embassy, a building strangely steeped in 1950s sparkle, he wrote: "The idea of a monumental building rising from a sea of multi-colored, tail-finned automobiles is simply revolting."[17] With a popular audience clamoring to commandeer his trademark screens, one might think that Stone would have either resisted their demands or abandoned the motif altogether. Though Stone was granted a patent for his screen block pattern, he never sued anyone for infringement. Indeed, Stone's became one of the era's most prevalent screen block designs. He continued to use grilles and later wrote of his pioneering use, "it was inevitable that such a simple, inexpensive and practical device would immediately become a part of the building vocabulary and would have wide and indiscriminate usage."[18]

As architects and builders of more dubious talent latched onto the idea, the screen disappeared from the high-style journals and was relegated to more trade-oriented publications. The most important periodical to quantify screen block's rise in popularity is *Concrete Products*. The author of the magazine's first article on screen block remarked that the units possessed the "one-two punch of functional design

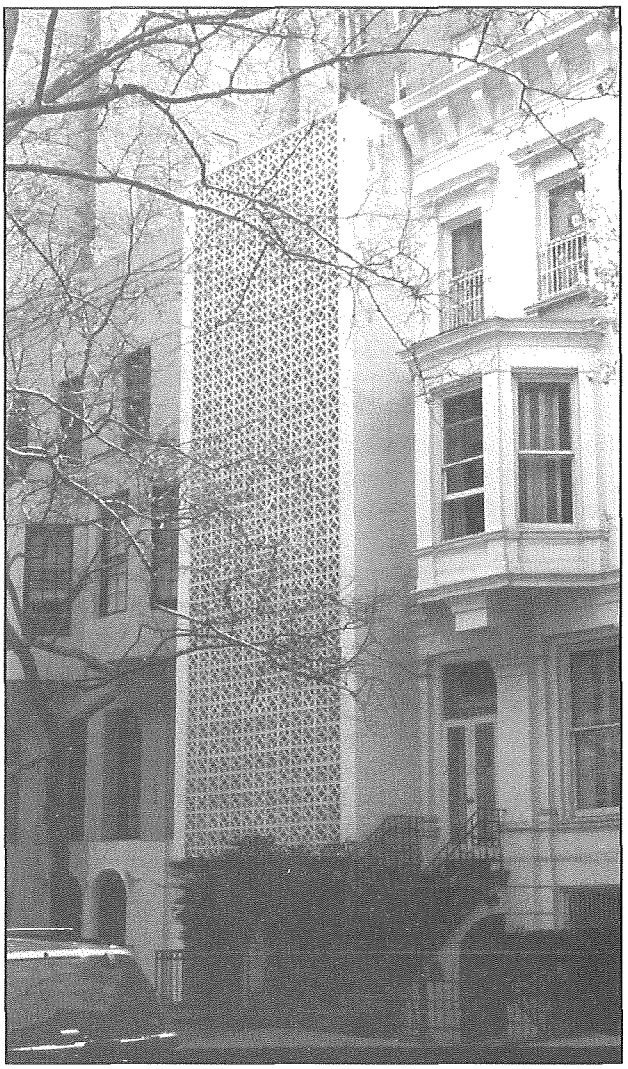

Figure 1. Edward Durell Stone Residence, 130 East Sixty-third Street, New York, 1956. Photgraph by the author.

and eye-catching appeal." They were "brightening store fronts, partitioning offices, fencing parking lots and finding their way into thousands of American homes." Assuring readers that such screens were functional, the article mentioned that one California plant owner figured that "block curtains" would keep his building 10 degrees cooler in the summer. By 1960, screen blocks were available in an array of colors, from pink and lavender to red and brown.[19] There was even a certain cachet to the material, as a typical screen unit cost three times as much as a standard block even though it used about half the concrete. But, as one block producer said in 1959, "Architects don't hesitate to pay the price after they see the results."[20]

The screen block's increase in popularity among consumers was partially a calculated effort. To coordinate public relations, seventeen of California's

largest block manufacturers organized themselves into Quality Block Producers in the mid-1950s. The group commissioned market studies and initiated a massive publicity campaign that placed advertisements and articles in such journals as *Sunset Magazine* (the postwar-era exporter of the "California lifestyle"), *The Los Angeles Times*, and the high-style visual-arts magazine *Arts and Architecture*. They even convinced The May Company department store to use screen block panels as backgrounds for its window displays. Most importantly, the group mass-mailed a two-color brochure to architects, builders, and decorators entitled "The big news in building is concrete block." As a result, producers experienced higher sales in 1960 than in any previous year.[21]

These California companies' aggressive marketing had a two-fold effect on the national screen block market: they portrayed screen block as the natural choice for a variety of construction scenarios, and they inextricably linked the screen block with California, making it essential to the "Populuxe" lifestyle. As the number of block designs topped 300, one contemporary author admitted, "There is little doubt that true screen block designs are already legion; it's readily accepted that their lace-like tracery represents distinctive beauty, and they have been photographed and exhibited so many times that they've become almost synonymous with the concept of gracious living."[22]

Other producers sparked consumer interest with elaborate screen block displays in home shows throughout the country. *Concrete Products* published the best of these along with tips on creating effective displays. Advice ranged from adding plants and flowers to turning the entire affair into an outdoor patio, further linking screen block with an outdoor (and hence Californian) lifestyle. Tactics such as direct-mail brochures, some with award-winning graphics, and competitions for new block designs continued to boost awareness and sales of screen units. Minoru Yamasaki's (1912–1986) acclaimed American Concrete Institute headquarters in Detroit of 1958, a showcase of the latest developments and techniques in concrete construction, utilized screen block for grilles and fencing.

Manufacturers across the country could purchase block-making machines from plant-equipment companies like Stearns, Clanton, or Fleming. Such machines and their molds were available separately, enabling even small producers to stock a large array of fashionable shapes. One advertisement warned, "Keep Pace with the Biggest Trend in Building! Be sure YOU can supply the right concrete block for the newest, most exciting trend in architectural history."[23] In house production was very appealing to retail building material stores because they could make their own block for direct public sale. Molds that produced screen blocks individually with no machinery required were also widely available. By 1961, even *Popular Mechanics* published ads for block machines marketed to those whose spare time could be filled with lucrative screen block making.[24]

Screen block designs were most often restricted to within the square outline of the blocks themselves. Sometimes overall screen patterns were formed by rotating individual blocks 90 or 180 degrees. By employing a different bond pattern or by rotating the block laterally, additional patterns could be achieved. But most often, screen block walls consisted of simply a grid of regular units.

When casting in the third dimension did occur, it was usually restricted to the face of the block so units could be cast face down and still be unmolded efficiently. In 1962, Fleming Manufacturing of Cuba, Missouri, developed "taper blocks," machine-made pierced units whose interior surface changed through the depth of the block producing, based on the position of the sun, "a screen wall which is constantly changing in appearance."[25] But this "beautiful new architecturally inspired building material," as one advertisement described them, was simply a standard block whose sidewalls were angled or curved slightly. Molds quickly became available, enabling other manufacturers to produce taper blocks in machines they already owned. But by far the most sculptural and expressive screen block forms were developed by a small company in Long Island, New York: Arts for Architecture, Inc.[26]

Founded in 1955 by prize-winning wallpaper designer James Seeman, Arts for Architecture, Inc. began manufacturing the screen block designs of internationally renowned sculptor Erwin Hauer (1926–) in 1958. One of Hauer's "repetitive modular sculptures," as the company referred to them, won the 1959 Medallion Award from the Industrial Designers Institute. "Architecture," the company's brochure read, "is heading towards new modes of decoration, new concepts of ornament, to integrate with the clean, functional qualities of contemporary public and residential buildings. It has been difficult to find decorative elements that catch the spirit of the new architecture. Aware of the problems of the architect and designer, this company originates and manufactures art forms that are flexible for use in a

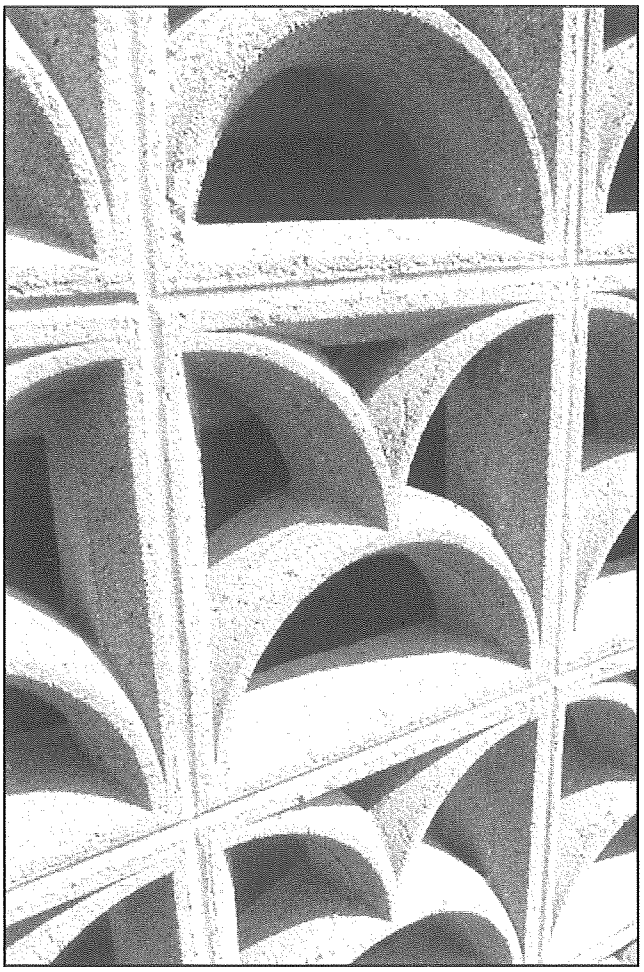

Figure 2. Taper block, screen block with slightly angled sides. Photograph by Ann Swallow.

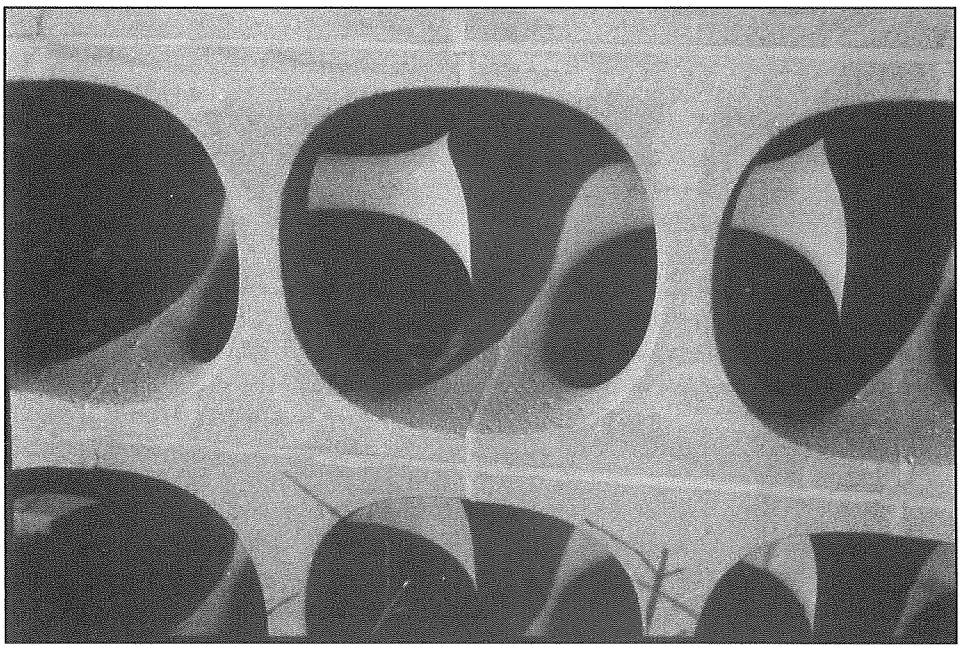

Figure 3. Design #5 by Erwin Hauer for Arts for Architecture, Inc., 1958. Photograph by the author.

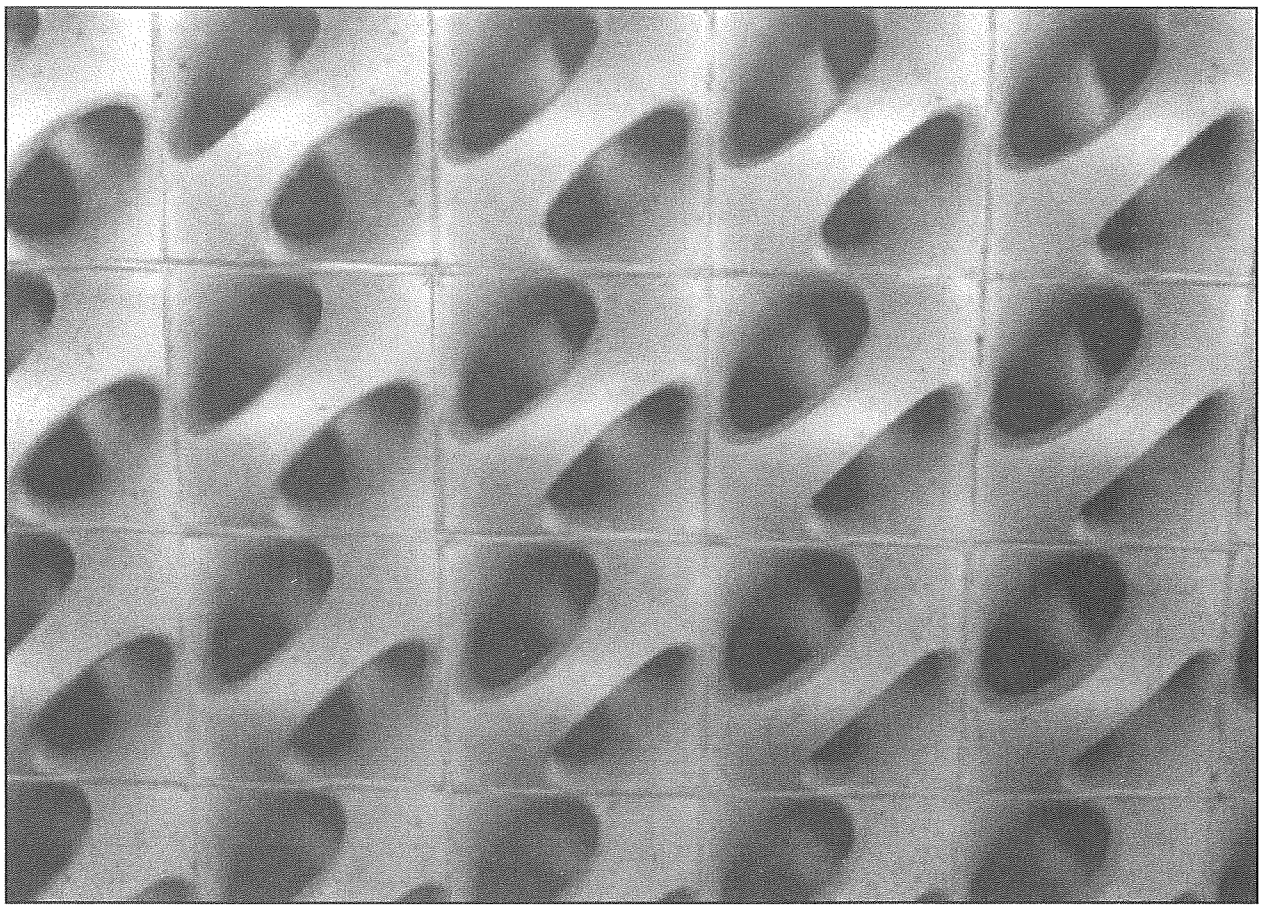

Figure 4. Design #5 by Erwin Hauer for Arts for Architecture, Inc., 1958. Photograph by the author.

broad range of interiors, consonant with the architecture of today and tomorrow."[27] Screens were constructed in stack bond, and the joints were smoothed by hand to produce a seamless finish. With each unit priced as high as sixteen dollars, these elegant and complex blocks were limited to more prestigious applications. A list of architects who specified the company's products reads like a "who's-who" of postwar design: Welton Becket; Charles Luckman; Skidmore, Owings, and Merrill; Victor Gruen; and Morris Lapidus. With showrooms in New York, Chicago, Los Angeles, Dallas, Boston, and San Francisco, Arts for Architecture continued introducing new wall treatments and screen blocks throughout the 1960s.

A couple of producers developed methods of transforming screen block panels into exterior walls. In 1963, United Cement Products of Wichita introduced "Glow-Core," commercially available screen block into which had been formed plastic panes. The laborious process involved floating a viscous resin on a liquid solution, in which a screen unit had been partially immersed. The one-eighth inch resin layer polymerized and bonded to the block walls, producing panes that could be slanted, colored, marbleized, or made translucent or textured with the addition of woven or chopped fiberglass.[28] In 1965, Conrad Pickel, a Munich native who ran a stained-glass studio in New Berlin, Wisconsin, perfected setting glass into the cells of screen blocks. Inch-thick chunks of colored West-Virginian glass were hand-hammered into faceted rectangles then laid inside the screen block. A layer of epoxy was then poured around the glass and allowed to set before marble grit was applied to the exterior. After a few days of curing, the units were waterproof and quite durable. The epoxy allowed the blocks to carry structural loads, while an optional second layer of glass offered insulation."[29] Both Glow-Core and faceted-glass block added a craft dimension often lacking in the material.

By the late 1960s, when architectural grilles were passé, screen block manufacturers continued to promote the material's one last use in the American

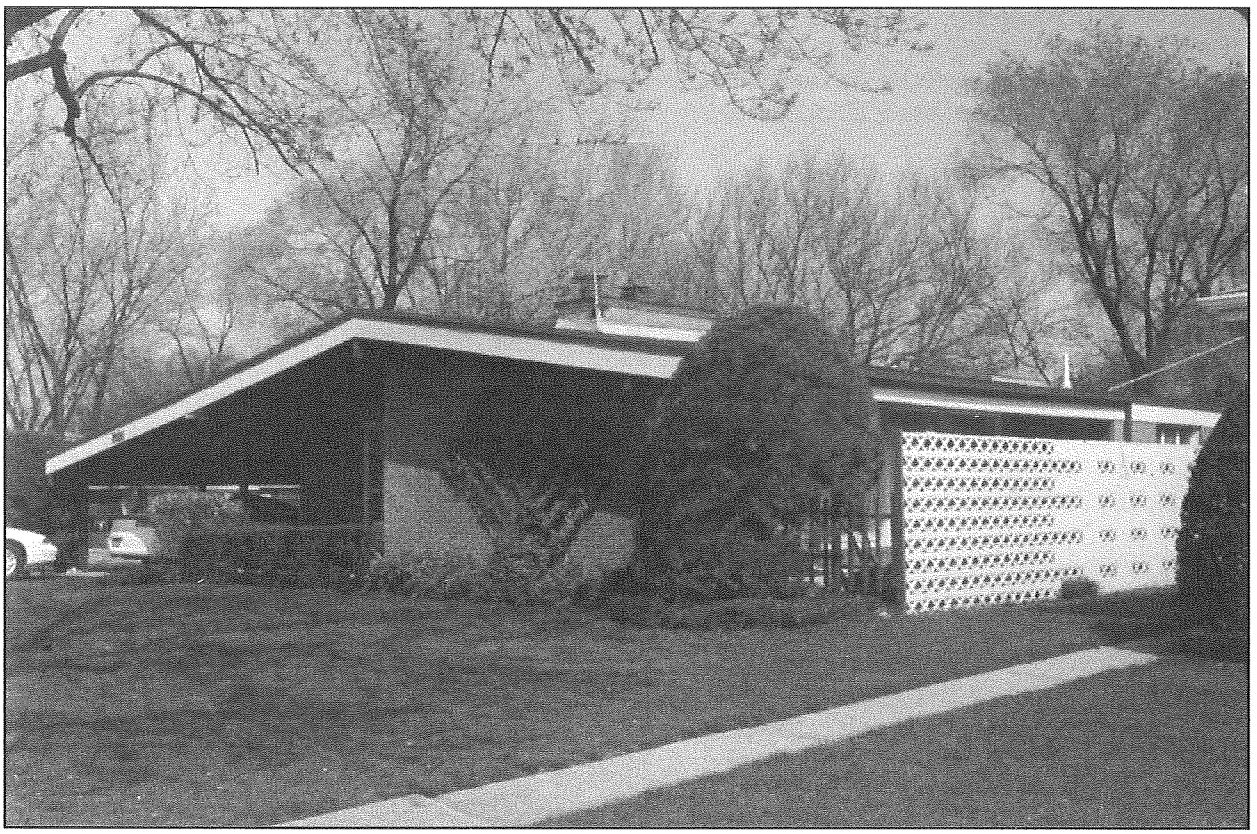

Figure 5. Privacy fencing. Photograph by the author.

landscape: privacy fencing. One article proclaimed, "Crowded house tracts have made privacy almost essential, and the rush to outdoor-type living that includes swimming pools, patios, and barbecue pits has strengthened the demand for economical residential fencing," for which screen units could provide decorative top courses, full panels, or landscape elements. Some producers estimated that between 80 and 90 percent of their blocks were used for fences, with half purchased by do-it-yourselfers.[30]

At the nexus of popular design appeal, ease of production and installation, ready availability, and affordability, screen blocks enjoyed a brief period of intense popularity. But their fall was almost as rapid. By the late 1960s, the masonry screen wall that previously knew "no limitation–either geographic or artistic" began to show its age.[31] No new block design can sever the link between screen block and the Populuxe era. Some contemporary architects realized the potential for the masonry screen block to turn into a lamentable cliché. Prominent modernist Edward Dart (1922–1975) said of the material in 1959: "Grille block [is a] special item that will have short-lived appeal. They date a structure. They're fine today, but what about five years from now?"[32] A 1959 survey disclosed that some architects considered them "'flashy' and 'fleeting in appeal.' They ask block producers to take another look at these quick-profit items and then junk them."[33] In 1979, after screen block's appeal had evaporated, Paul Goldberger disparaged Edward Durell Stone's New York rowhouse as "a parody of Ed Stone done by a clever and malevolent student."[34] Ironically, Stone himself wrote, "Architecture is not millinery. Fashions pass but buildings remain to become grim reminders of transient enthusiasms."[35]

The essential components of concrete block are a binder (i.e., portland cement), aggregate, and water. Once blocks are molded (usually with a hydraulic block-making machine with special molds for screen block production), they must be cured. The most obvious method, air curing, is seldom used in larger plants because of its slowness (three to seven days)

and uncontrollability. Most large plants cure with steam at atmospheric pressure, a procedure that gives high early strength and maturity. However, the block's ultimate strength is less than if it was air cured. [36]

There are a handful of cosmetic issues that, if handled improperly, can damage a wall's historic integrity. Like other masonry, historically unpainted screen block should not be painted, whereas painted block can be repainted. Exterior block can be satisfactorily repainted with acrylic latex paints. Acid cleaning should not be undertaken. Some screen block, like the ones on Edward Durell Stone's buildings, have crushed marble aggregate that dissolves easily in even dilute acids.

Over a period of years, the erosion of sand and binder on the horizontal surfaces of unpainted block can expose the aggregate. Though perhaps aesthetically objectionable, the exposure of the aggregate does not compromise the wall's physical integrity. Since the only solution is unsightly patching or skim coating, the blocks should be left alone. However, when confronted with the erosion of applied aggregate (such as with blocks by Versa-Tex of Kansas City, Missouri, who in 1965 introduced a standard screen unit with an exterior of colored aggregate), the aggregate should be reattached with epoxy. In this case the aggregate is an important decorative feature that should be retained.

Screen walls' most widespread problem is impact damage. Small chips rarely harm the overall visual effect of a screen wall, so they can usually be left alone. In a painted wall, chips can be easily spot painted with no further repair. Gluing a shattered unit back together with epoxy adhesive is feasible only if all the pieces remain. However, reforming a damaged block with concrete in-situ is prohibitively difficult as matching color and texture are nearly impossible. If the damage is severe enough, cutting out and replacing individual blocks is most likely the best strategy, though this will require a considerable amount of labor.[37] Replacement must be done with care because screen units have such a small bearing surface in cross section. Luckily, areas of impact damage are usually discrete and isolated, whereas systemic damage can threaten the stability and longevity of the entire wall.

Even though screen walls are nonstructural, they are more fragile than standard block walls and so can exhibit similar stresses and loading failures. Movements due to moisture, uneven foundation settlement, deflection, and thermal expansion and

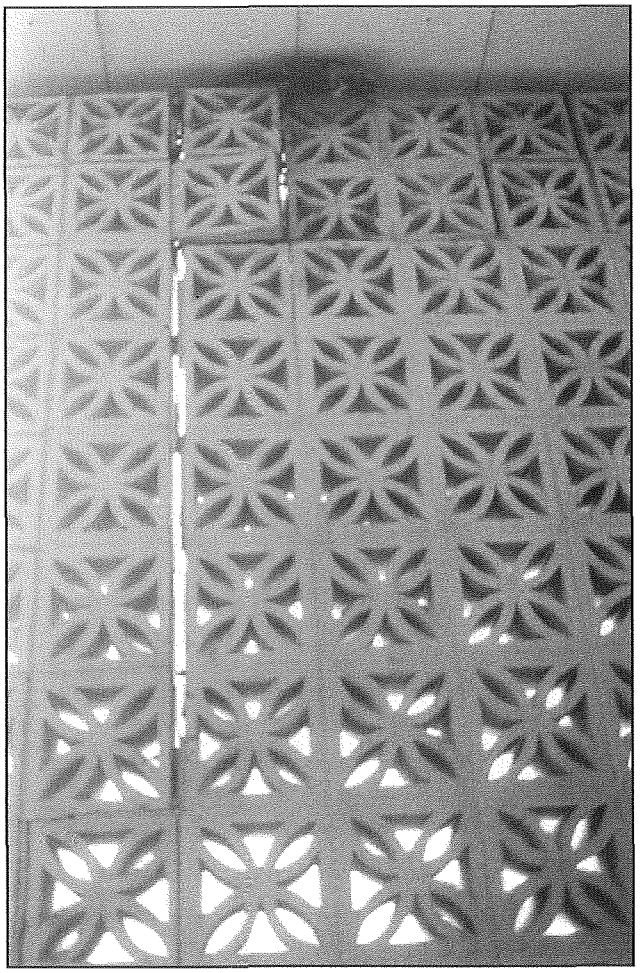

Figure 6. Screen block with severe damage: rusting of the steel joint reinforcements, uneven settling, and leaning out of plane. This wall can be rebuilt using the undamaged original units.

contraction all cause unsightly, but not necessarily structurally serious, cracking. Cracked joints can be repointed, though pointing should be done carefully as the screen wall is thin and prone to chipping. The NCMA recommends that, if needed, control joints can be installed to counteract poor design. Because screen walls are primarily constructed in stacked bond, the control joint will be less noticeable, and this may be a better alternative to rebuilding a historic screen.

Rebuilding a wall may be necessary if the settling of the column foundations has sheared off units' edges, leaving entire panels of block freestanding. Walls that lean out of plane or whose steel reinforcements have severely rusted may also need rebuilding. In these cases, a screen wall can be carefully dismantled and the mortar gently removed from the edges of undamaged units. The wall can be rebuilt with historic units on solid foundations.

If it is best to replace badly damaged screen block, how does one find replacements? The best solution is to use vintage block. Since no one salvages screen blocks, replacements can come from less prominent areas on the building in question. Panels of vintage block can be dismantled to provide vintage replacements for isolated spots where new blocks would stand out. By rebuilding the entire dismantled panel with new block, each panel will appear uniform in and of itself. If no blocks can be relocated, new ones must be used. Frequently, block producers carry a small range of screen block made from original molds. The thirty-five statewide masonry trade associations can provide lists of local producers who still make or stock screen block. If all else fails, new molds can be made by hand to produce air-cured blocks on an individual basis.

This begs the question, is screen block an artifact to be conserved or a product to be replaced? The same block designs were produced both by hand and by machine, blurring the distinction between artifact and product. Conservation of damaged screen block is difficult and expensive. Many screen block molds and stock can still be tracked down, especially in California, where most of the more unusual forms originated. My opinion is that the realities of conserving individual blocks make it too prohibitive for most commercially produced block. When the only difference between the new block and the damaged block is its age, replacement seems logical, if perhaps not very good preservation. This is not to say that some blocks do not deserve conservation, though. The more handwork involved in a unit's production, the more that conservation should be considered over replacement. Blocks that were machine-produced but hand-finished, like Edward Durell Stone's blocks with hand-polished marble aggregate, have a dimension of craftsmanship that warrants conservation. Blocks with a high level of design sense, such as those by Frank Lloyd Wright, Lloyd Wright, and Arts for Architecture, should also be conserved. Glow-Core and faceted-glass blocks began as production units but have been transformed into craft objects worthy of conservation.[38] It is indeed a thorny issue, where only time will reveal if we have made the right decisions.

Notes

[1] "From Fleming . . . 2 Top Priority Ideas for the Enterprising Block Man," Advertisement for Fleming Manufacturing Company, *Concrete Products* (November 1965): 58.

[2] "NCMA-TEK 98: Structural Design of Concrete Masonry Fences," (Herndon, Virginia: NCMA, 1978), 1.

[3] "Screen Block—Imagination Pays Off," *Concrete Products* (January 1959): 30.

[4] "NCMA-TEK 5: Concrete Masonry Screen Walls" (Herndon, Virginia: NCMA, 1970), 2.

[5] See Chapter 22 of the ACI Committee 531 report, "Concrete Masonry Structures—Design and Construction."

[6] By the 1920s, some concrete utility block *looked* like screen block; although they were never marketed as such. In 1929, Berks Building Block Company offered a concrete chimney flue whose circle-within-a-square form is precisely like that of a 1950s screen block. See "Creating a Greater Business," *Concrete Products* (November 1929): 45.

[7] Frank Lloyd Wright, *An Autobiography* (New York: Duell, Sloan and Pearce, 1943), 224.

[8] Francis S. Onderdonk, Jr., *The Ferro-Concrete Style* (New York: Architectural Book Publishing Company, 1928), 123.

[9] There were a handful of isolated, though innovative, uses of concrete screens that unfortunately had little if any popular impact. In the mid-1940s, Paul Lester Wiemar and José Luis Sert (1902–1983) developed what they called the "breathing wall," distinctively Modern panels of precast concrete boxes placed within a modular grid of windows, solid walls, and columns. Employed on several of the architects' South American projects, breathing walls admitted breezes while blocking rain, direct sun,and the gazes of passers-by. Antonin Raymond (1888–1976) and Ladislav Radic used similar screens as a clerestory on a Catholic church in Negros, Phillipines. Rain that penetrated the screen was collected by a trap and directed between the corrugated roofing and the main roof deck. Its evaporation helped cool the building. (Jeffrey Ellis Arouin, *Climate and Architecture* (New York: Reinhold Publishing Corporation, 1953), 207–209.

[10] Edward Durell Stone, *The Evolution of an Architect* (New York: Horizon Press, 1962), 138, 140.

[11] "The Stuart Company, Pasadena, California," *Architectural Record* (April 1958), 163.

[12] Stone, 141.

[13] "The Most Talked-About House in New York," *Vogue* 131 (1 February 1958): 168–77.

[14] "More than Modern," *Time* 71 (31 March 1958): 64.

[15] Stone, 141, 196.

[16] *Ibid.*, 142.

[17] *Ibid.*, 138.

[18] *Ibid*, 142.

[19] Ralph Torgeson, "Why Is Block So Successful in Southern California?" *Concrete Products* (July 1960): 33.

[20] "Screen Block—Imagination Pays Off," 34.

[21] Torgeson, 35. The firm to make the most of public relations was General Concrete Products of Van Nuys, California, then America's largest producer of specialty block. The first to fabricate screen blocks on a regular production schedule (in 1957), General Products supplied Edward Durell Stone with the screen units for his Stuart Company and developed a wide range of screen unit designs. It exhibited lavishly at home shows and illustrated real installations in its award-winning advertisements. Perhaps its biggest coup was supplying screen units for Jayne Mansfield's well-publicized California home.

[22] "Concrete Fences—A Growing Market," *Concrete Products* (April 1963): 31.

[23] Advertisement for Stearns Manufacturing Company, *Concrete Products* (October 1958): 81.

[24] "Make Money with Multicrete," advertisement for Dunn Mfg. Co., *Popular Mechanics* (February 1961): 54.

[25] "Product News—Screen Block," *Concrete Products* (February 1962): 78.

[26] Walter Zeischegg (1917–1983) of the famous Ulm School of Design experimented with sculptural screen block around 1963, but it is unclear if any went into production.

[27] "Arts for Architecture," 1962 brochure in the 1963 Sweets Catalog.

[28] Richard S. Huhta, "Window Panes for Screen Block," *Concrete Products* (April 1963): 36.

[29] "New Sparkle for Screen Block," *Concrete Products* (February 1967): 63.

[30] "Concrete Fences," 28. See also Harold Wehrenberg, "Block Fences Beef Up Our Business," *Concrete Products* (May 1967): 54.

[31] "Concrete Masonry Screen Walls," 2. Architect Herman Hertzberger reexamined the concept of masonry units with their cells turned perpendicular to the loading. In his "polyvalent" architecture of the 1970s and 1980s, he turned standard CMUs on their sides, transforming them into railings, planters, shelving, and seating.

[32] "The Architect Speaks Out—," *Concrete Products* (March 1959): 35.

[33] *Ibid,*. 49.

[34] Paul Goldberger, *The City Observed: New York—A Guide To The Architecture of Manhattan* (New York: Random House, 1979), 235.

[35] Stone, 158.

[36] Michael Gage and Tom Kirkbride, *Design in Blockwork* (London: The Architectural Press, 1980), 7, 10.

[37] "NCMA-TEK 44: Maintenance of Concrete Masonry Walls," (Herndon, Virginia: NCMA, 1972), 4.

[38] Glow-Core's inventor asserted that his blocks were "an art form, not a production line item." Huhta, *Concrete Products* (April 1963): 36.

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"Block of Future Shown at NCMA Show," *Concrete Products*, March 1959: 40–43.

"Concrete Curtain Walls," Chicago: Portland Cement Association, 1959.

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