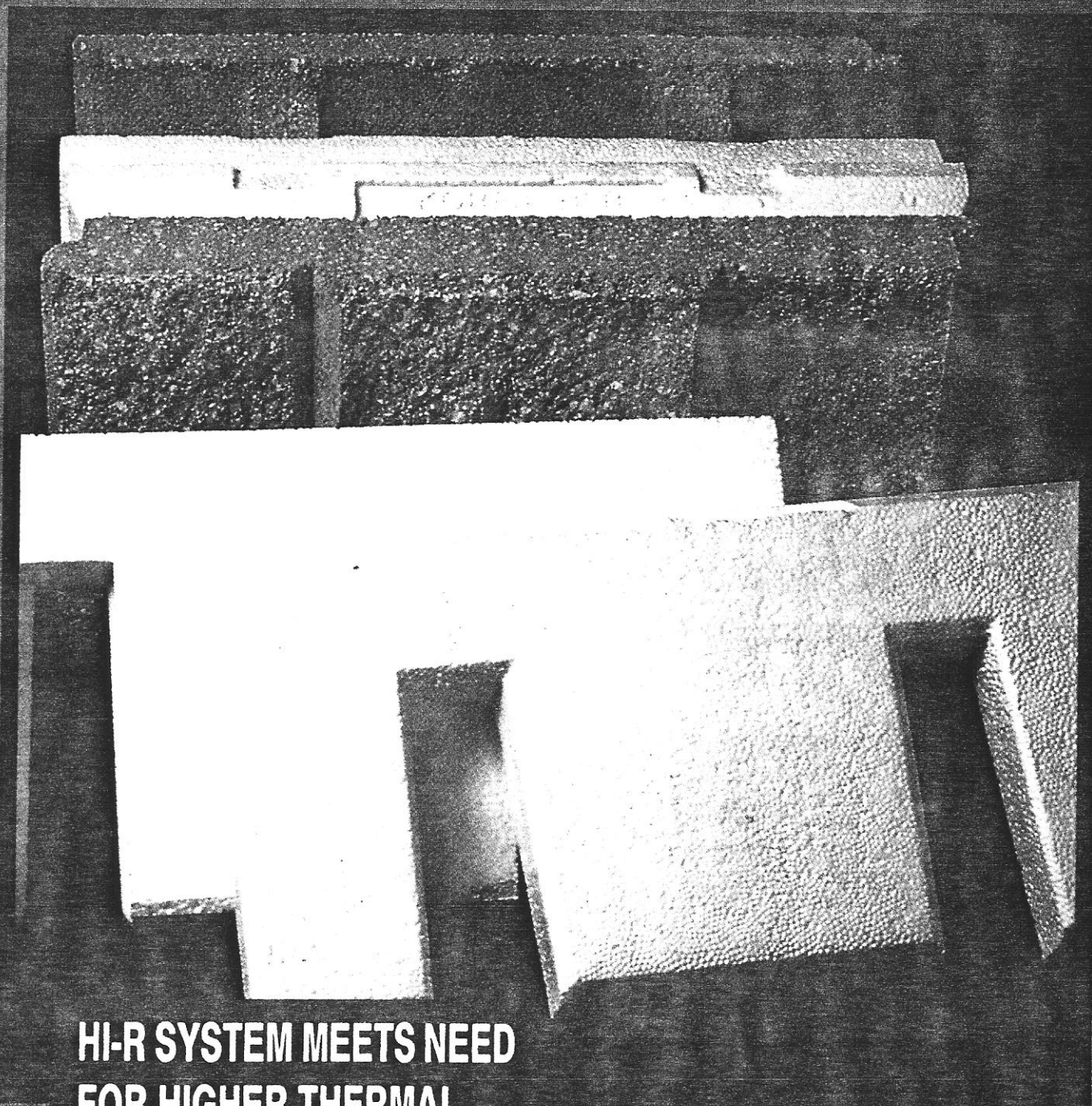


Masonry application • Masonry design • Masonry specification

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**HI-R SYSTEM MEETS NEED
FOR HIGHER THERMAL
RESISTANCE VALUES**

JULY/AUGUST 1996

Hi-R System Allows Use Of Single-Wythe Masonry Within New Energy Codes

In-core insert insulation has been successfully used in the masonry industry since 1971 when Korfil Inc. introduced their standard U-Shaped Inserts. At that time, there was less concern about energy consumption and thermal efficiency. These products are still in use today in areas where less stringent thermal values are accepted.

In the 1980s, Korfil introduced the Hi-R Wall system to meet the need for higher thermal resistance values required by many local and national energy codes.

In more recent times, energy codes are again being revised to reflect the

desire for increased thermal efficiency in all types of wall systems. There is concern in the masonry industry that alternative wall systems, such as precast sandwich panels, metal composites and tilt-up, will have market advantage over masonry when comparing economy and thermal efficiency. There is also the belief that despite its economies, single-wythe masonry will no longer be an acceptable alternative due to its low thermal efficiency. The Hi-R system is a solution to these concerns.

The Korfil Hi-R system is a specially modified web block combined with a block plant installed insert.

"The high density polystyrene insert covers the face of the block and the mortar joint to provide one of the highest means of thermal efficiency available in single-wythe masonry construction today," a company spokesperson said.

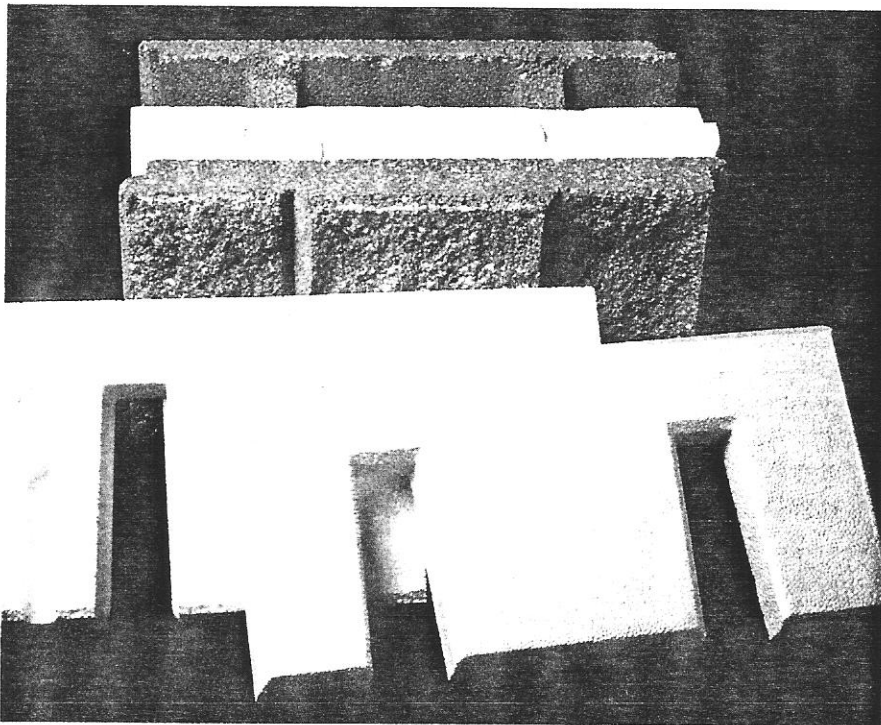
"The assembly provides a wall system capable of achieving higher thermal values than conventional masonry with R-values as great as R-15 in lightweight units."

Hi-R has no effect on the structural integrity of the wall construction, and is designed to allow for easy placement of both vertical and horizontal reinforcing steel. The inserts are left in place during grouting, so that even the reinforced wall sections are thermally efficient.

According to the spokesperson, the system has been tested for thermal capability in accordance with American Society for Testing and Materials (ASTM) method ASTM C90 unit masonry. Tests were performed in conformance with: ASTM E72 Flexural Strength Vertical Span; ASTM E72 Compressive Strength; ASTM E518 (modified) Flexural Beam Strength; and ASTM E529 Diagonal Tension (sheer) Strength.

"Only the Hi-R system is fully tested with third party certification under RAMTECLABORATORIES (NERQA 293) to provide assurance of performance," the spokesperson said.

"Hi-R projects such as the Toys "R" Us store in Whittier, CA have performed well when faced with the destruction of



The system is specially modified web block combined with a block plant installed insert.

earthquakes often found in the region."

In addition to the standard features of fire resistance and durability normally expected from concrete masonry construction, the system brings additional benefits:

- A variety of decorative faces in standard sizes can be manufactured to meet the aesthetic needs of the designer. Any colour or architectural face that can be produced by the local manufacturer can be incorporated into the system.

- Hi-R inserts do not shrink, emit toxic fumes or odors that could pose health problems to the building occupants.

- Hi-R insulation is installed at the block plant, saves job-site labour and allows for more accurate estimates of installation costs.

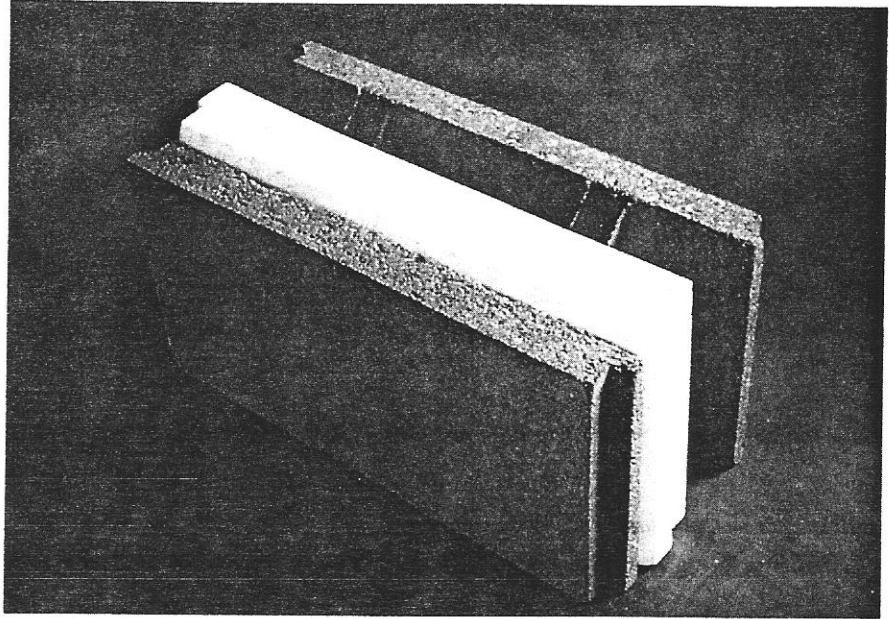
- When the units are installed at the job-site, the insulation faces little danger of damage from other trades and allows work to progress.

- The Hi-R units can be used as bond beams or lintels minimizing the delivery of several different types of block to the job.

The inserts do not absorb water, do not affect the dew point in the wall system and therefore maintain their thermal value. However, the inserts do not prevent the concrete unit from wicking water to the interior under severe weather conditions.

It is recommended that the units be manufactured with an integral water-repellent such as DRY-BLOCK to minimize water entry and prevent wicking of any water that does enter the wall system. Using the DRY-BLOCK Mortar Admixture in the mortar creates a water-repellent system of block and mortar that minimizes moisture issues over the life of the building. Flashing and weeps should be detailed and installed at open core areas to collect and drain any moisture to the exterior.

Because the Hi-R units can be produced by local block producers, the system is non-proprietary and allows for



competitive bidding. Hi-R inserts are manufactured by Concrete Block Insulating Systems (CBIS) and shipped to the local block manufacturer for installation into the specially-molded Hi-R units. The complete system is then shipped to the job-site for installation by the masonry contractor. The full range of Korfil insulation products manufactured by CBIS and DRY-BLOCK Water Repellent Admixtures are marketed and

sold by Grace Construction Products, Masonry Products Group.

With the move towards more stringent energy codes, it is important that the masonry industry find means to compete with competitive wall systems to avoid losing market share. The Hi-R system provides one solution to the issue.

For more information, contact: Grace Masonry Products at 1-800-558-7066.

