STEEL LATH: Expanding in Use

Once On/y For a Plaster Base, Metal Lath is Making a Strong Comeback in Newly Developing Market Areas

One example of lath's resurgence is its widespread use of exteriors and interiors at the TWA-Northwest Orient terminal, Washington National Airport.

Readily forming walls and ceilings to varying contours, and providing a variety of shadow patterns, steel lath shapes curved surfaces as well as flat planes.

A major historic restoration, that of the old Illinois State Capitol building in Springfield, relied on steel lath and plaster to restore the classically elegant interior. The structure was literally taken apart, piece by piece, and put back together in its original condition.

Steel lath, now among the most versatile materials in all of construction, is using this versatility to win expanded markets in up-and-coming building areas.

Once, lath was virtually a single-application product, a base for plaster interior walls and partitions. Its new, almost-unlimited usefulness is the key to a dramatic comeback from loss of the original market to drywall construction.

Today, steel lath is back up to more than $50 million in annual sales and $30 million in yearly square yardage.

• In concert with the lightweight steel framing that is growing dynamically in low-rise construction, lath is starting to realize major volume as the base for exterior curtain walls.

• With the popularity of lower-cost remodeling, as contrasted with new construction, metal lath and Portland cement are employed increasingly as modern facades for older buildings.

• Architects are making greater use of a significant advantage that steel lath has over wallboard—its ability to serve as a form and base for all types of contoured and angled walls and ceilings.

• Another boon is the emergence of a host of improved plaster finishes, including exposed aggregates, marble chips and more color variety.

• Concern over the health hazards of spray-applied asbestos fireproofing is helping to win converts to membrane fireproofing of columns, beams and girders with metal lath and plaster.

Benefiting from these and other developments are the steel lath manufacturers, who include: Alabama Metal Industries, Birmingham; Bostwick Steel Lath, Niles, O.; Ceco Corp., Broadview, Ill.; Inryco, Milwaukee; National Gypsum, Buffalo; U.S. Gypsum,

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Chicago; Western Metal Lath, La Mirada, Calif.; Wheeling Corrugating, Wheeling, West Va.
The lath these firms produce today is generally made of mild sheet steel, either plain with black asphalt paint or galvanized for high-moisture conditions. A standard lath sheet is 27" wide x 96" long and from .015" to .024" thick.

Specifics Vary
Basically, lath is made from 9"-wide coil steel that is slit by rotating cutters, then pulled apart to expand the width to 27" and the slits into diamond-shaped openings—over 1,000 in each square foot of lath. Although the specifics will vary by producer, these are the main current styles.

Diamond meshes, the most popular, are normally selected for multi-purpose plastering work. They now often come already backed with waterproof paper or polyethylene film to conserve the amount of plaster used. One variation is self-furring diamond mesh, produced with indentations which hold the body of the lath about 1/4" away from the background surface, enabling the plaster to form full keys.

Another important type is ribbed lath, in herringbone mesh patterns, fabricated with evenly-spaced strips of solid metal that are self-furring, stiffen the sheet and permit wider spacing of supports. There are 1/8" flat ribs, 3/8" and 3/4" V-shaped ribs. The deeper sizes add rigidity when lath is used as centering and reinforcing for concrete floor and roof slabs, and where the ribs serve as studless vertical reinforcements.

A final style is sheet lath, made by stamping (not stretching) already-full-size sheets into a pattern of ribbed perforations. It is exceptionally rigid, frequently employed as a backing for ceramic tile and a base for pneumatically-applied concrete.

Product Refined
According to the Metal Lath/Steel Framing Association, steel lath and its accessory items have been refined to the point where their technical capabilities more than meet the industry's new role of serving a broad and growing variety of construction applications. Certainly the most promising is the combination of steel studs, metal lath and Portland cement for curtain walls on both high-rise and low-rise buildings. This system achieves the look of precast concrete, while offering economies of up to 50 percent in both direct cost and reduced wall weight.

One example of the system's attributes is Stemmons Empire, an 11-story Dallas office project, which utilized a curtain wall of alternating three-sided plaster projections and tinted mirror panels. To speed installation, the plaster columns were prefabricated in 13-foot, floor-height panels at the contractor's shop. Frames of steel studs and channel iron were formed on jigs, then covered with galvanized steel lath. Plaster was spray-applied to a 7/8" thickness and finished with fine-blown texture, white cement.

The 704 completed panels were trucked to the job site, hoisted into position and welded to the structural framing—all by a six-man crew in only 45 working days. The cost saving on the wall system was approximately $2 per square foot under precast concrete, about $500,000 on the exterior wall alone.

In Minneapolis, metal lath and stud panels permitted winter enclosure of a 12-story Federal housing project. Panels were formed on site to fit wall openings between concrete columns. When cured, the sections were tilted into place, caulked to complete the exterior wall and allow interior work to proceed on schedule.

Great Strength
As for strength, metal lath curtain walls withstand forces of even hurricane velocity. Proof was of-
ffered when the 180-mile-per-hour winds of Hurricane Celia swept through Corpus Christi, Texas, and steel lath and plaster curtain walls came through the storm without visible damage.

A burgeoning application, remodeling work, has gained new popularity in the past few years, rooted in the ever-increasing costs of land and new construction. Metal lath has grown correspondingly as the most practical material to over-coat exteriors and rebuild the interiors of older buildings that are still structurally sound. Besides lath’s principal renovation advantages—economy and light weight—its minimal design constraints appeal strongly to architects.

A project in Jefferson City, Mo.—transforming a six-story, 60-year hotel into a modern office building—typifies the results possible. The exterior design plan consisted of a series of vertical fins extending the full height of the building and ending in vaulted arches at the roof.

The key to its successful completion was construction of steel lath, surmounted by scratch and brown coats of Portland cement plaster as a base for a finish of exposed aggregate. Important in lath construction the work was done by one contractor, so job coordination problems were reduced to a minimum.

For private residences, a popular resurfacing technique is brickfacing, where steel lath is first nailed to the surface being refinished, then surmounted by a solid masonry membrane of three coats of Portland cement. The last coat is in color and hand tooled to give the appearance of standard-sized face brick. An average home can be brickfaced in two days. A new facade can be put on a four-story building in three.

Contour Potential

Lath’s most creative potential is in its contoured style, serving as the base for complex wall and ceiling shapes: cones, curves, domes, free forms and slanted planes. Shapes that are difficult to achieve in plywood, wallboard, concrete block, brick and ceramic tile can be designed by architects and realized practically in metal lath and plaster.

Frank Lloyd Wright recognized this flexibility when he chose metal lath as the material for his final commission, the Guggenheim Museum in New York City. Lath contours and angled planes, designed to create special sound distribution and absorption patterns, have also been placed in countless numbers of acoustically-planned walls and ceilings.

A little-known but widespread application is steel lath as a form for simulated rock formations. Examples can be seen in aquariums, botanical gardens, museums, theme parks and zoos throughout the U.S.

But commercial, residential and institutional buildings are really responsible for the uptrend in curved lath use. The simple erection procedure may be a factor. A contoured wall, for example, starts with a floor track that follows the exact curve desired. Identical track work is transferred to the ceiling, with steel studs extended between the two. Bent and curved lath is then applied on both sides of the studs. Lath is firm enough so that the plaster or concrete spray nozzle can be directed perpendicular to the lath at the high pressure necessary to obtain a dense coating with little material loss.

The finishing touch to steel lath’s resurgence is provided by the wide array of surface treatments now available. Facing materials range from smooth to deeply textured, natural or any color, reflective or matte finish. They can duplicate the appearance of architectural cast stone or masonry, travertine marble or the strong form of precast concrete.

Versatile, light weight, compact, fireproof, durable and economical, steel lath is winning new interest as a modern construction material for a variety of functions.

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