Federal Agency Guidance for the Acquisition of Modular Metric Construction Products; Federal Register, May 16, 1996, 61 FR 24761

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DEPARTMENT OF COMMERCE
Technology Administration
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Federal Agency Guidance for the Acquisition of Modular Metric Construction Products

AGENCY: Technology Administration, Department of Commerce.

ACTION: Publication of Federal Agency Guidance.

SUMMARY: These guidelines provide information and a policy statement for Federal agency implementation of metric-usage requirements in the acquisition of modular construction products. After a review process starting on April 12, 1996, the guidelines were approved by the Interagency Council on Metric Policy on May 3, 1996.

FOR FURTHER INFORMATION CONTACT:
Mr. Ralph Richter, Metric Program, U.S. Department of Commerce, National Institute of Standards and Technology, Building 820, Room 306, Gaithersburg, MD 20899. Phone (301) 975-3690.

SUPPLEMENTARY INFORMATION:

Background

The Omnibus Trade and Competitiveness Act of 1988 (Public Law 100-418, section 5164) amended the Metric Conversion Act of 1975 to, among other things, require that each Federal agency use metric measurements to the maximum extent feasible in its procurements and business-related activities. To fully implement this legislation within the Federal agencies, Executive Order 12770, ``Metric Usage in Federal Government Programs,'' was signed by President Bush in 1991. The Federal agencies are required to encourage and support an environment that facilitates the U.S. transition to the metric system of measurement.

Using the Executive Order and the 1988 amendments as guidance, the agencies involved in the construction of federal buildings and facilities have made substantial progress in the adoption of metric measurements. During this metrication process, the Government's construction agencies have worked closely with the private sector to reach a consensus among all of the interested parties: building material manufacturers, trade associations, design firms, and construction contractors.

Dimensions for the vast majority of construction products need only be ``soft-converted'' for use in metric construction projects. A soft metric conversion means that the physical dimensions of the product remain unchanged while the measurement units used to describe and specify the product are changed to metric units. To make metric construction succeed, however, a small percentage of products need their physical dimensions ``hard-converted'' to fit the product into the internationally recognized building module of 100 millimeters. These products are frequently referred to as modular products.

Just as it is logical and cost effective for inch-pound construction projects to use modular products that fit into the 4-inch module, it is logical and cost effective for metric construction projects to employ modular products that fit into the 100 mm module.

Modular construction products are brick, concrete block, suspended ceiling systems--including recessed lighting fixtures and air diffusers, raised access flooring, wallboard, plywood, particle board, and rigid insulation.

Before a modular construction product in a hard metric size is specified in a federal construction project, the product's application must require it to fit together with other modular metric components, and the product must be found to be available at a reasonable cost.

The statutory language in the 1988 legislation provides the necessary flexibility for appropriate implementation of this policy on modular construction products--the Federal agencies are required to forego metric conversion when it is impractical or is likely to cause significant inefficiencies or loss of markets to United States firms. The intent of the law is to pursue metrication for increased cost-effectiveness and productivity in U.S. business and greater access to international markets while avoiding any undue burden on American firms.

General Policy

(a) As construction metrication efforts continue, the Government's construction agencies shall continue to work closely with all interested private sector parties: building material manufacturers, trade association, design firms, and construction contractors. Consensus, efficiency, and cost-effectiveness shall be the goal.

(b) The Federal agencies shall conduct market research to determine the availability of modular metric construction products before developing new procurement specifications. Procurement officials in each agency, to the maximum extent practicable, shall specify commercial items or nondevelopmental items other than

commercial items to meet the needs of the agency.

(c) Throughout the acquisition process, the Federal agencies shall ensure that they give due consideration to the known effects of their actions on State and local governments and the private sector, paying particular attention to effects and possible cost burdens on small business.

(d) Modular construction products in a hard metric size shall only be specified in a federal construction project for situations in which the following criteria are met: (1) the product's application requires it to coordinate dimensionally into the 100 millimeter building module, (2) market research demonstrates the product's availability, sufficient to ensure competitive process, and (3) the product's total installed cost is reasonable.

Guidelines for Specific Modular Construction Products

A large portion of the language in this section is credited to the Guide for Specifying Metric Modular Products, a recently-developed draft document available from the Construction Metrication Council of the National Institute of Building Sciences. The Institute is a private, nonprofit organization created by Congress to serve as an authoritative source on issues of building science and technology.

Both the public and private sectors are working together to resolve building product metrication issues through the Construction Metrication Council. With broad support and participation of the private sector, the Council develops guidelines and recommends procedures to adopt the metric system of measurement as a means of increasing the international competitiveness, productivity, and quality of the U.S. construction industry. The Council works closely with the Interagency Council on Metric Policy to disseminate this information to the Federal agencies.

Steel Reinforcing Bar

Steel reinforcing bar is not considered to be a modular construction product because it is buried in concrete and is not required to coordinate dimensionally into the 100 mm building module.

Specifications for steel reinforcing bar are issued by the American Society for Testing and Materials (ASTM), a private sector standards-making organization. In 1979, ASTM first issued its Inter p p its International System of Units (SI) ``hard metric'' specification for steel reinforcing bar, ASTM A 615M. After receiving assurances from the steel industry that reinforcing bar conforming to ASTM A 615M would be supplied when it was specified and ordered, Federal agencies adopted this standard for their metric construction projects.

Starting in May 1995, the Concrete Reinforcing Steel Institute (CRSI) and the Steel Manufacturers Association (SMA) mounted a campaign to endorse, instead of ASTM A 615M, a soft metric conversion of the current inch-pound specification, ASTM A 615. Most steel companies support the position that a soft metric conversion of ASTM A 615 should be adopted as the steel reinforcing bar standard for metric construction projects. Since the summer of 1995, it has been recommended that the Federal agencies specify bar conforming to a soft metric conversion of ASTM A 615 for projects still in design and that they allow soft-converted substitutions for work ready to bid.

The American Society for Testing and Materials is in the process of revising its standard for steel reinforcing bar to reflect the steel industry's support for a soft metric conversion of this

product. The industry has pledged to provide complete metric design information, data, and specifications to both public and commercial users of steel reinforcing bar that conforms to a soft metric conversion of ASTM A 615.

Brick

The American Society for Testing and Materials' Standard Guide for Modular Coordination of Clay and Concrete Masonry Units, ASTM E 835/E 835M, sets forth metric dimensions for brick based on a module of 100 mm. Many common brick sizes are within a millimeter or two of metric modular sizes and nearly all can fit within the 100 mm module vertically be slightly varying mortar joint widths. The Brick Institute of America supports metrication.

A table that can be used to specify common brick sizes in metric units is available from the Construction Metrication Council of the National Institute of Building Sciences.

Concrete Block

Concrete block is usually considered a modular product. The Government's construction agencies, however, are aware of the costliness to the concrete masonry industry of buying the molds needed to produce concrete block in hard metric sizes and are attempting to minimize this expense. Inch-pound (soft-converted) block substitutions are recommended in all cases in which concrete block is used as a backup or infill material and in which architectural considerations otherwise permit.

Concrete block in a hard metric size will only be specified in a federal construction project in cases in which the block will be located in an architecturally exposed area or will be required to fit together with other modular metric components. The concrete block must also be found to be available at a reasonable cost. The Corps of Engineers has stated that approximately 60 percent of the cost of a concrete block wall is labor, 25 percent is the concrete block, and 15 percent is for other materials such as mortar and reinforcement. In projects for which concrete block in a hard metric size is needed, allowing inch-pound (soft-converted) block may save on the cost of the block, but would substantially increase the amount of cutting and trimming and would unreasonably increase labor costs. Therefore, in certain circumstances, it is logical and cost effective for the Government to specify concrete block in a hard metric size.

Total installed cost should be the determining factor in the selection of concrete block. Most often, concrete block is used as a back-up or infill material; when this is the case, inch-pound block substitutions are recommended. Where concrete block in a hard metric size is considered for use as an architectural material or as a primary structural system, cost and availability should be determined in advance to judge the appropriateness of such use.

Suspended Ceiling Systems

Components for suspended ceiling systems are T-bars, hangers, ceiling tile, recessed lighting fixtures, and recessed air diffusers. All components are available in modular metric sizes from a variety of manufacturers. With the exception of recessed lighting fixtures, all components are priced competitively with their inch-pound counterparts. A few large lighting manufacturers with highly automated production processes oppose metrication, and the product may carry a slight cost premium. Even so, quality modular metric lighting fixtures continue to be procured without difficulty when specified in federal projects.

Cost and availability shall be determined when components for suspended ceiling systems are specified in modular metric sizes.

Raised Access Flooring

Raised access flooring is a specialty item used primarily in computer rooms

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and other areas where provision for under floor cabling is desirable. A number of manufacturers make raised access flooring to fit the 100 mm module, but there may be a cost premium for small orders and longer delivery times for all orders. The Federal agencies shall specify metric raised access flooring if costs are generally comparable to inch-pound access flooring and procurement lead times are acceptable.

Wallboard

Wallboard is formed in continuous sheets of variable widths and cut to specified lengths. A variety of manufacturers make wallboard to fit the 100 mm module (1200 mm wide and 2400 and 3000 mm long), but there may be a cost premium for small orders and longer delivery times for all orders since metric wallboard is not yet a stock product. While the use of metric wallboard is desirable in metric construction projects, its use is not mandatory on small projects if project length or cost will increase.

Where framing spacing is specified to fit modular metric construction, the Federal agencies shall specify wallboard sheet type and thickness without specifying length and width. The construction contractor shall make the decision whether metric wallboard sheets or trimmed inch-pound sheets offer the most efficient and cost-effective solution in each situation.

Plywood and Particleboard

Like wallboard, wood-based sheet products such as plywood, particleboard, and oriented-strand-board (OSB) can be produced in a 1200 mm width and 2400 and 3000 mm lengths. There may be a premium for small orders and longer delivery times for all orders since metric plywood, particleboard, and oriented-strand-board are not yet stock products. With the exception of military family housing, however, wood products are rarely used in Government facilities.

Where framing spacing is specified to fit modular metric construction, the Federal agencies shall specify sheet type and thickness without specifying length and width. The construction contractor shall make the decision whether metric sheets or trimmed inch-pound sheets offer the most efficient and cost-effective solution in each situation.

Rigid Insulation

Rigid insulation is used on exterior walls and as a roof underlayment. Currently this metrical is available only in inch-pound sizes and must be cut to fit 400 or 600 mm framing spacing. On roofs, the product is usually laid over a rigid substrate that allows any sheet size to be used. The Federal agencies shall specify sheet type and thickness without specifying length and width. Where the sheets are applied directly to 400 or 600 mm framing spacing, the width must be trimmed by the contractor.

Further Guidance

Further guidance on the federal acquisition of modular metric construction products is available from the Construction Metrication Council of the National Institute of Building Sciences. Guidance is also available from the General Services Administration and its Metric Design Guide.

Dated: May 9, 1996.
Mary L. Good,
Under Secretary for Technology.
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