

CONTENTS

SPECIFICATION REFERENCE No. 11
Lathing and Plastering

11. FIRE PROTECTION

11.1 SPRAYED-ON FIRE PROTECTION

- 11.1.1 Scope
- 11.1.2 Fire Resistive Ratings
- 11.1.3 Test Criteria
- 11.1.4 Workmanship
- 11.1.5 Coordination
- 11.1.6 Cleanup

11.2 MATERIALS

- 11.2.1 Fire Protection Material
- 11.2.2 Accessory Materials

11.3 APPLICATION

- 11.3.1 Temperature and Ventilation
- 11.3.2 Surface Preparation
- 11.3.3 Bonding Adhesive
- 11.3.4 Fire Protection Material
 - (a) Cementitious Type
 - (b) Asbestos Fiber Type
- 11.3.5 Surface Finish

11. FIRE PROTECTION

Because of the rapid rate at which the lathing and plastering industry's fire research activity provides new test data, it is almost impossible to publish a complete listing of fire resistance ratings that is up to date.

Also, interpretation and recognition of fire test data varies among building departments and other governmental agencies which enforce fire protective standards of construction.

Unfortunate as this may be, it is a recurrent fact of life to the architect, engineer and contractor who must keep abreast of the most recent data and its degree of acceptance by enforcement agencies.

In addition to the publication of nationally recognized authorities which list fire resistive ratings, most manufacturers' associations publish complete lists of fire resistive assemblies tested with one or more of their members' products.

It is recommended that during preparation of preliminary drawings and specifications, the architect consult the building department having jurisdiction, national fire resistive listing authorities, or manufacturers of lath and plaster fireproofing products, for specific information on "approved" tested assemblies.

Standard lathing and plastering construction, with little exception, provides the architect with an almost limitless choice of fire protection methods.

Standard lathing and plastering construction will usually meet fire protection standards. These have been adequately covered in other sections of these reference specifications.

Included in this section are excerpts from "Fire Resistance Ratings" (April 1959) published by the National Board of Fire Underwriters. Also included is a recommended specification for the application of Sprayed-On Fire Protection.

Features of Fire Resistance Ratings

"The fire resistance rating of a *wall or partition or floor and ceiling construction* is essentially the time in hours the construction will remain in place and prevent temperatures on the unexposed side from exceeding a certain amount (250° F. higher than the starting temperature—max. 325° F.—when the construction is exposed to the standard test fire, simulating what might be anticipated in a fire in an actual structure).

"With masonry walls and partitions the critical feature . . . is usually the temperature rise on the unexposed surface . . .

"With columns, beams and girders the critical feature is usually the ability to carry the load . . . *usually dependent on the heat insulating value of the protective covering and its ability to stay in place during the fire exposure.*

"With incombustible floor construction the critical feature has usually been the temperature rise on the top unexposed surface in view of adequate protection provided on the underside.

"The use of perlite or vermiculite aggregate in place of sand in plaster, increases its resistance to fire.

"*. . . ratings of plaster facings on walls and partitions are not applicable to similar finishes on ceilings . . . plaster may fall from a ceiling considerably before it will fall from a vertical surface.*"

In fires in buildings the greatest number of deaths are caused by exposure to flame and hot or toxic gases, suffocation by smoke, deprivation of oxygen, and panic. Restrictions and limitations applicable to fire safety found in local building codes are designed primarily to prevent the spread of fire from one area to another, and to limit use of potentially dangerous flammable surface materials and so safeguard public health and welfare.

Flame spread requirements are set up by building codes with the intention of regulating the use of finishing materials with respect to the rapidity with which flames spread over their surfaces. Tests made in accordance with ASTM Specification E-84, commonly known as the Tunnel Test, are nationally accepted. From them classifications are reported by Underwriters' Laboratories, Inc.

To assist the designer most building codes include a division or chapter which states . . . "for the purpose of determining time periods of fire resistance, as required by the provisions of this Code, materials of construction shall be assumed to have the fire-resistive ratings given herein . . ." and these are detailed in tables showing the fire-resistive periods for "Protection of Structural Elements," for "Walls and Partitions" and for "Various Floors, Ceilings and Roofs."

11.1 SPRAYED-ON FIRE PROTECTION

11.1.1 Scope.—Furnish and apply sprayed-on fire protection as shown on the drawings and specified in this Section. (1)

11.1.2 Fire-resistive Ratings.—Apply sprayed-on fire protection material so as to provide the fire-resistive ratings indicated on the drawings or set forth herein.

11.1.3 Test Criteria.—Fire ratings and thickness of fire protection material proposed for use on the structural members and decking as indicated shall be established only by certified tests made by a testing laboratory recognized by the building department or state fire inspection agency having jurisdiction over the project. (2)

11.1.4 Workmanship.—Apply material in strict accordance with manufacturer's printed instructions and any additional requirements specified herein. Use experienced applicators and equipment of the type recommended by the material manufacturer.

11.1.5 Coordination.—Advise prime contractor prior to the application of fire protection materials. All other trades must have completed the installation of all items such as clips, sleeves, hangers, clamps, and supports of all kind for work suspended from, attached to, or passing through construction required to receive sprayed-on fire protection.

11.1.6 Cleanup.—After completion, clean up all rubbish resulting from this work and remove it from the premises. Leave clean all finish surfaces adjacent to sprayed areas.

11.2 MATERIALS

11.2.1 Fire Protection Material.—Shall be a factory-mixed blend of inorganic insulators and binders prepared for fire-protection purposes. Material may be cementitious type or asbestos fiber type.

Tested in accordance with ASTM E-84, material shall have a flame spread rating of 15 or less.

Material shall have been tested for fire resistance in accordance with the applicable requirements of ASTM E-119.

Deliver fire-protection material to the job in unopened factory-sealed bags, with each bag properly identified and bearing the Underwriter's re-examination label. Keep dry until ready for use.

11.2.2 Accessory Materials.—Provide bonding adhesives, sealers and other materials required for use with the approved fire-protection material to meet fire rating or application requirements.

11.3 APPLICATION

11.3.1 Temperature and Ventilation.—Apply sprayed-on fire protection material under temperature and ventilation conditions recommended by manufacturer. Temporary ventilating devices, or closures for openings, if needed, shall be provided before application of fireproofing. (3)

11.3.2 Surface Preparation.—Surfaces to receive fire protection shall have been cleaned by others of all dirt, grease, rust, scale, loose paint, and any other extraneous substances which might prevent permanent adhesion of fire protection. (4) (5)

11.3.3 Bonding Adhesive.—Where required by manufacturer, apply bonding adhesive on all surfaces to receive sprayed-on fire protection material in accordance with manufacturer's printed instructions.

(1) These specifications are recommended as a part of the plastering section, covering the machine application of fire protection materials directly to structural steel, roof and floor decks, beams and girders. When supplemented by the general conditions, plans, details and schedules, the specification should provide the contractor with sufficient information to establish costs and to construct the work properly.

(2) Indicate whether building department or state agency has jurisdiction.

(3) Responsibility for temperature and ventilation control should be assigned to prime contractor to avoid duplication of charges in bids of general and subcontractors. See 1.2.4.

(4) Architect may wish to require that manufacturer certify that surfaces have been inspected and are suitable to receive sprayed-on fire protection.

(5) Since control of surfaces prior to application of fire protection material is not possible, architect should provide that cleaning of surfaces be done by general contractor.

11.3.4 Fire Protection Material.—Application of fire protection material shall be in accordance with manufacturer's specifications.

(A) *Cementitious Type.*—Machine mix material with clean water only. The material and water ratio, mixing time, and wet density shall be strictly controlled on the project site in accordance with manufacturer's specifications. Spray on the material in as many coats as required to achieve thickness necessary to meet specific fire resistive ratings. Material that has partially set shall not be used, nor shall mixed material be retempered.

(B) *Asbestos Fiber Type.*—Spray on the material to the proper thickness and tamp to obtain density necessary to meet specific fire resistive ratings. No rebound material may be used for any subsequent application. Where recommended by manufacturer, provide sealer to prevent dusting of the fibers.

11.3.5 Surface Finish.—Where structural members are indicated to receive a surface finish, wrap or cage with metal or wire fabric lath, and plaster with approved fire resistive plaster. (6)

(6) Architect should indicate on drawings or in specifications.