SECTION 078100 - APPLIED FIRE PROTECTION

1. GENERAL
   * + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
      1. SUMMARY
         1. Section Includes:

Sprayed fire-resistive materials.

* + - 1. DEFINITIONS
         1. SFRM: Sprayed fire-resistive materials.
         2. Fireproofing Manufacturer: Manufacturer of primary fire resistive materials.
         3. Fire Resistance Rating: Time rating (in hours) in accordance with Underwriters Laboratories Fire Resistance Directory listings.
      2. COORDINATION

Two paragraphs below are for new construction. Revise paragraphs to suit project.

* + - * 1. Compatibility Coordination: Coordinate shop paint for structural steel, steel joists, and steel decks with the fireproofing system to ensure that they are compatible.
        2. Apply fireproofing prior to installation of ductwork, piping, conduits, and other suspended items. However, hangers, clips and other supports for these items shall be installed before application of fireproofing.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: Manufacturer’s product descriptions for each required material.

Fireproofing: Include fireproofing manufacturer’s application instructions, including primer/adhesive requirements and recommended minimum thickness and density for each required hourly rating.

* + - * 1. Sustainable Design Submittals:

Retain "Shop Drawings" paragraph below if extent or complexity of fire protection is sufficient justify submitting Shop Drawings. Consider deleting paragraph if only one fire-resistance design is required for Project.

* + - * 1. Shop Drawings: Framing plans or schedules, or both, indicating the following:

Extent of fire protection for each construction and fire-resistance rating.

Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.

Minimum sprayed fire-resistive material thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.

Treatment of sprayed fire-resistive material after application.

Retain "Samples" paragraph below for single-stage Samples if finish texture and color is critical for exposed areas, with a subordinate list if applicable.

* + - * 1. Samples: For each exposed product and for each color and texture specified, 18 by 18-inches by full thickness and density, applied on appropriate backing board, showing actual finish texture.

Retain the next two paragraphs, applicable.

Sealer/Topcoat: Apply over 2/3 of each fireproofing sample.

Reinforcement: Square foot.

* + - * 1. Quality Control Submittals:

Qualification Data: For Installer.

Product Certificates: For each type of sprayed fire-resistive material.

UL fire resistance rating certificates.

UL fire hazard classification certificates.

Fireproofing manufacturer’s certification (or confirming independent test reports) that fireproofing meets the performance requirements and physical properties.

Affidavit by fireproofing manufacturer (or confirming independent test reports) certifying the fireproofing is free of asbestos.

Evaluation Reports: For sprayed fire-resistive material, from ICC-ES.

Design Consultant to review code references and verify that the referenced sections/tables are current. Note that code references shall be based on the current version of the Uniform Code.

* + - 1. QUALITY ASSURANCE
         1. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by sprayed fire-resistive material manufacturer with minimum 5 years’ experience and with trained staff, with minimum 1 years’ experience, to install manufacturer's products according to specified requirements.
         2. Equipment: Use mixing and application equipment recommended by the fireproofing manufacturer.

Retain “Mockups” if required for large or complex projects or if finish texture and color is critical.

* + - * 1. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for materials and execution.

Build mockup with an area 100 sq.ft. of each type of fire protection and different substrate [**and] [each required finish**], including a 10 foot long section of a typical beam or column, as shown on Drawings.

Do not proceed with the fireproofing in other areas until the mockup has been reviewed and approved by the Director’s Representative.

Completely remove rejected mockups.

Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative specifically approves such deviations in writing.

Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

* + - 1. FIELD CONDITIONS
         1. Environmental Limitations: Do not apply fire protection when ambient or substrate temperature is 68 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 48 hours before, during, and for 48 hours after product application.
         2. Ventilation: Ventilate building spaces during and after application of fire protection, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fire protection dries thoroughly.

1. PRODUCTS
   * + 1. PERFORMANCE REQUIREMENTS

Drawings must reflect proper selection of UL listed assembly and indicate required hourly rating as required by the New York State Uniform Fire Prevention and Building Code (BCNYS).

* + - * 1. Assemblies: Provide fire protection, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

Indicated fire resistance hourly rating when applied to the construction assembly shown on the Drawings.

* + - * 1. Fire Hazard Classification: Fireproofing shall be listed in the Underwriters Laboratories Building Materials Directory with the following performance properties:

Flame Spread: 10 or less.

Smoke Developed: 5 or less.

* + - * 1. Source Limitations: Obtain fire protection[ for each fire-resistance design] from single source.
        2. Asbestos: Provide products containing no detectable asbestos.
      1. SPRAYED FIRE-RESISTIVE MATERIALS

Type 1 is a low-medium density, moderate priced, interior use cementitious fireproofing for deck, beam, and column surfaces not subject to physical damage. It has a rough texture appearance “as sprayed”; appearance and “finish” should be taken into consideration for exposed surfaces. It is not recommended for use on column surfaces which will be subject to physical abuse.

* + - * 1. Sprayed Fire-Resistive Material, Type 1: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

GCP Applied Technologies Inc.; Grace Construction Products; Monokote MK-6 GF.

Isoltek; Cafco 300.

Approved equivalent.

Application: Designated for interior use by a qualified testing agency acceptable to authorities having jurisdiction.

Bond Strength: Minimum 200-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E736.

The IBC requires not less than the density specified in the approved fire-resistance design. Verify required density with authorities having jurisdiction.

Density: Not less than density specified in the approved fire-resistance design, according to ASTM E605.

Increase minimum thickness in "Thickness" subparagraph below if required.

Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E605, whichever is thicker, but not less than 0.375 inch.

"Combustion Characteristics" subparagraph below is a pass-fail test for measuring combustibility that is referenced in codes to determine if elementary products are noncombustible.

Combustion Characteristics: ASTM E136.

Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Compressive Strength: Minimum 1000 lbf/sq. in. according to ASTM E761.

Corrosion Resistance: No evidence of corrosion according to ASTM E937.

Deflection: No cracking, spalling, or delamination according to ASTM E759.

Retain "Effect of Impact on Bonding" subparagraph below if required. Cited test method is for effect of impact loading on bonding of fire protection applied to underside of metal deck.

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E760.

Air Erosion: Maximum weight loss of 0.025 g/sq. ft. in 24 hours according to ASTM E859.

Retain "Finish" subparagraph below if appearance is a concern; consult manufacturer for recommendations and revise to suit Project. Separate topcoat in last option offers a hard surface for softer varieties of SFRM, greater color selection, or both. If retaining more than one finish, indicate locations of each on Drawings or by inserts.

Finish: [**As selected by Director’s Representative from manufacturer's standard finishes] [Spray-textured finish] [Rolled, spray-textured finish] [Skip-troweled finish] [Skip-troweled finish with corner beads] <Insert requirement>.[ Apply separate, colored topcoat after finishing**.]

Consider retaining "Color" subparagraph below if important to Project's appearance; consult manufacturer for recommendations.

Color: [**As indicated by manufacturer's designations] <Blue**>.

Type 2 is a high density, high priced cementitious fireproofing. It is recommended for surfaces subject to physical abuse (particularly exposed surfaces of columns) and exterior surfaces.

* + - * 1. Sprayed Fire-Resistive Material, Type 2: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Carboline Company; a subsidiary of RPM International; Pyrocrete 241.

GCP Applied Technologies Inc.; Grace Construction Products; Monokote Z146.

Approved equivalent.

Application: Designated for exterior and interior use by a qualified testing agency acceptable to authorities having jurisdiction.

Bond Strength: Minimum 10 000-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E736.

Density: Not less than density specified in the approved fire-resistance design, according to ASTM E605.

"Combustion Characteristics" Subparagraph below is a pass-fail test for measuring combustibility that is referenced in codes to determine if elementary products are noncombustible.

Combustion Characteristics: ASTM E136.

Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Compressive Strength: Minimum 500 psi according to ASTM E761.

Corrosion Resistance: No evidence of corrosion according to ASTM E937.

Deflection: No cracking, spalling, or delamination according to ASTM E759.

Retain "Effect of Impact on Bonding" subparagraph below if required. Cited test method is for effect of impact loading on bonding of fire protection applied to underside of metal deck.

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E760.

Air Erosion: Maximum weight loss of 0.000 g/sq. ft. in 24 hours according to ASTM E859.

Hardness (Shore D): minimum 40, per ASTM D2240.

Retain "Finish" subparagraph below if appearance is a concern; consult manufacturer for recommendations and revise to suit Project. Separate topcoat in last option offers a hard surface for softer varieties of SFRM, greater color selection, or both. If retaining more than one finish, indicate locations of each on Drawings or by inserts.

Finish: [**As selected by Architect from manufacturer's standard finishes] [Spray-textured finish] [Rolled, spray-textured finish] [Skip-troweled finish] [Skip-troweled finish with corner beads] <Insert requirement>.[ Apply separate, colored topcoat after finishing**.]

Consider retaining "Color" subparagraph below if important to Project's appearance; consult manufacturer for recommendations.

Color: [**As indicated by manufacturer's designations] <Blue**>.

Retain Type 3 if a replacement fireproofing for retrofit and renovation work inside a building. It can be applied with small portable equipment. If asbestos-containing material is being removed from surfaces to be re-fireproofed, Section 028213 must provide for encapsulation of remaining fibers on the surfaces.

* + - * 1. Sprayed Fire-Resistive Material, Type 3: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

GCP Applied Technologies Inc.; Grace Construction Products; RetroGuard RG.

Isoltek; Cafco 300 or Blaze Shield.

Approved equivalent.

Application: Designated for interior use by a qualified testing agency acceptable to authorities having jurisdiction.

Use subparagraph below when Type 3 fireproofing is replacing asbestos-containing material.

Compatible with encapsulant and classified with encapsulant as an Underwriters Laboratories listed fireproofing system.

Bond Strength: Minimum 200-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E736.

Density: Not less than density specified in the approved fire-resistance design, according to ASTM E605.

"Combustion Characteristics" subparagraph below is a pass-fail test for measuring combustibility that is referenced in codes to determine if elementary products are noncombustible.

Combustion Characteristics: ASTM E136.

Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Compressive Strength: Minimum 500 psi according to ASTM E761.

Corrosion Resistance: No evidence of corrosion according to ASTM E937.

Deflection: No cracking, spalling, or delamination according to ASTM E759.

Retain "Effect of Impact on Bonding" subparagraph below if required. Cited test method is for effect of impact loading on bonding of fire protection applied to underside of metal deck.

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E760.

Air Erosion: Maximum weight loss of 0.025 g/sq. ft. in 24 hours according to ASTM E859.

Retain "Finish" subparagraph below if appearance is a concern; consult manufacturer for recommendations and revise to suit Project. Separate topcoat in last option offers a hard surface for softer varieties of SFRM, greater color selection, or both. If retaining more than one finish, indicate locations of each on Drawings or by inserts.

Finish: [As selected by Architect from manufacturer's standard finishes] [Spray-textured finish] [Rolled, spray-textured finish] [Skip-troweled finish] [Skip-troweled finish with corner beads] <Insert requirement>.[ Apply separate, colored topcoat after finishing.]

Color: Blue.

Blue color sealer or topcoat may be applied to achieve color.

Type 4 is a low density, relatively low cost, interior use mineral fiber fireproofing for surfaces not subject to physical damage. If it is used in air plenums or other areas not recommended for use on column surfaces which will be subject to physical abuse.

* + - * 1. Sprayed Fire-Resistive Material, Type 4: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Isoltek; Cafco Blaze-Shield II.

Approved equivalent.

Application: Designated for interior use by a qualified testing agency acceptable to authorities having jurisdiction.

Bond Strength: Minimum 200-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E736.

The IBC requires not less than the density specified in the approved fire-resistance design. Verify required density with authorities having jurisdiction.

Density: Not less than density specified in the approved fire-resistance design, according to ASTM E605.

Increase minimum thickness in "Thickness" subparagraph below if required.

Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E605, whichever is thicker, but not less than 0.375 inch.

"Combustion Characteristics" subparagraph below is a pass-fail test for measuring combustibility that is referenced in codes to determine if elementary products are noncombustible.

Combustion Characteristics: ASTM E136.

Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Compressive Strength: Minimum 1000 lbf/sq. in. according to ASTM E761.

Corrosion Resistance: No evidence of corrosion according to ASTM E937.

Deflection: No cracking, spalling, or delamination according to ASTM E759.

Retain "Effect of Impact on Bonding" subparagraph below if required. Cited test method is for effect of impact loading on bonding of fire protection applied to underside of metal deck.

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E760.

Air Erosion: Maximum weight loss of 0.025 g/sq. ft. in 24 hours according to ASTM E859.

Retain "Finish" subparagraph below if appearance is a concern; consult manufacturer for recommendations and revise to suit Project. Separate topcoat in last option offers a hard surface for softer varieties of SFRM, greater color selection, or both. If retaining more than one finish, indicate locations of each on Drawings or by inserts.

Finish: [**As selected by Director’s Representative from manufacturer's standard finishes] [Spray-textured finish] [Rolled, spray-textured finish] [Skip-troweled finish] [Skip-troweled finish with corner beads] <Insert requirement>.[ Apply separate, colored topcoat after finishing**.]

Consider retaining "Color" subparagraph below if important to Project's appearance; consult manufacturer for recommendations.

Color: [**As indicated by manufacturer's designations] <Blue**>.

* + - 1. AUXILIARY MATERIALS
         1. Provide auxiliary materials that are compatible with sprayed fire-resistive material and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.

Retain "Substrate Primers" paragraph below if primers are required. If primers are specified for shop or field application in another Section, verify that they comply with requirements below.

On rehab projects, existing paint should be checked for compatibility. If incompatible, paint should be removed or, if possible, neutralized with a special substrate primer.

* + - * 1. Substrate Primers: Primers approved by sprayed fire-resistive material manufacturer and complying with one or both of the following requirements:

Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

Primer's bond strength in required fire-resistance design complies with specified bond strength for sprayed fire-resistive material and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E736.

Retain "Bonding Agent" paragraph below if required; consult UL's "Fire Resistance Directory" or the listings of another qualified testing agency and manufacturer for recommendations. UL permits bonding agents applied to primed or painted surfaces to obtain the minimum required bond strength.

* + - * 1. Bonding Agent: Product approved by sprayed fire-resistive material manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.

Retain "Metal Lath" paragraph below for applications requiring reinforcement. Generally, exterior applications of portland cement with mineral aggregate require reinforcement; consult manufacturers for recommendations and revise to suit Project.

* + - * 1. Metal Lath: Expanded metal lath fabricated from material of 3.4 lbs./sq.yd. and configuration, and finish required, according to fire-resistance designs indicated and sprayed fire-resistive material manufacturer's written instructions. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive sprayed fire-resistive material.

Retain "Reinforcing Fabric" and "Reinforcing Mesh" paragraphs below if required. They may be required for certain SFRM applications, especially to protect steel joists. Consult manufacturers for recommendations and revise to suit Project.

* + - * 1. Reinforcing Fabric: Glass- or carbon-fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by sprayed fire-resistive material manufacturer.
        2. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by sprayed fire-resistive material manufacturer. Include pins and attachment.

"Sealer" and "Topcoat" paragraphs below are generic descriptions; retain if required and revise to suit Project. Insert proprietary products for use only with same manufacturer's SFRM. Consult manufacturers named in "Sprayed Fire-Resistive Materials" Article for recommendations for single-source responsibility for tested fire-resistance designs.

Sealer and/or topcoat is required for certain uses and conditions. Various coatings are available for specific applications, and to provide decorative colors. Modify paragraph below for specific special coating if needed. Specify “sealer or topcoat” or “sealer and topcoat” in Part 3 (where indicated) as required for the particular type of fireproofing and application standard color or selected color may be used on new buildings. Unless the fireproofing itself is blue, blue color sealer or topcoat is required on rehab projects involving the removal and replacement of large areas of existing fireproofing to identify which areas were re-fireproofed with non-asbestos material. Blue sealer or topcoat is likewise required on newly fireproofed areas in existing buildings. Blue color is not required for spot patching or on exposed surfaces where the color may be objectionable. Delete paragraph below if sealer/topcoat is not required.

* + - * 1. Sealer: Transparent-drying, water-dispersible, tinted protective coating recommended in writing by sprayed fire-resistive material manufacturer for each fire-resistance design.
        2. Topcoat: Suitable for application over sprayed fire-resistive material; of type recommended in writing by sprayed fire-resistive material manufacturer for each fire-resistance design.

"Cement-Based Topcoat" and "Water-Based Permeable Topcoat" subparagraphs below are examples of products for use only with same manufacturer's SFRM; insert proprietary products if required or revise for other products to suit Project. Consult manufacturers named in "Sprayed Fire-Resistive Materials" Article for recommendations for single-source responsibility for tested fire-resistance designs.

Cement-Based Topcoat: Factory-mixed, cementitious hard-coat formulation for trowel or spray application over SFRM.

Water-Based Permeable Topcoat: Factory-mixed formulation for brush, roller, or spray application over applied SFRM. Provide application at a rate of [**30 sq. ft./gal.] [60 sq. ft./gal.] [120 sq. ft./gal.] <Insert value**>.

1. EXECUTION

Edit the next 2 Articles to suit project conditions. When using just Type 3 replacement fireproofing, delete requirements which are not applicable.

* + - 1. EXAMINATION
         1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design.

Verify that substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fire protection with substrates under conditions of normal use or fire exposure.

Verify that objects penetrating fire protection, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.

Verify that substrates receiving fire protection are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fire protection application.

Check paint on substrate for compatibility with primer/fireproofing and adequacy of bond strength in accordance with fireproofing manufacturer’s instructions.

For existing buildings, existing paint should be checked for compatibility. If incompatible, paint should be removed or, if possible, neutralized with a special substrate primer.

For fireproofing on underside of steel decks, verify that concrete Work on the decks is completed.

For fireproofing on underside of roof deck assembly, verify that deck roofing Work is completed.

First two paragraphs below contain recommendations from ASTM E1513, "Practice for Application of Sprayed Fire-Resistive Materials (SFRMs)." Retain paragraphs if applicable.

* + - * 1. Verify that concrete work on steel deck is complete before beginning Work.
        2. Verify that roof construction, installation of rooftop HVAC equipment, and other related work are complete before beginning Work.
        3. Conduct tests according to sprayed fire-resistive material manufacturer's written instructions to verify that substrates are free of substances capable of interfering with bond.
        4. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
        5. Proceed with installation only after unsatisfactory conditions have been corrected.
      1. PREPARATION
         1. Cover other work subject to damage from fallout or overspray of fire protection materials during application.
         2. Clean substrates of substances that could impair bond of fire protection.

Retain first paragraph below if primers are recommended by sprayed fire-resistive material manufacturer or included in fire-resistance design.

* + - * 1. Prime substrates where included in fire-resistance design and where recommended in writing by sprayed fire-resistive material manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fire protection.

Retain paragraph below unless fire protection is neither visible nor important to Project's appearance.

* + - * 1. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fire protection. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.
      1. APPLICATION
         1. Construct fire protection assemblies that are identical to UL fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fire protection Work.
         2. Comply with sprayed fire-resistive material manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fire protection; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.

Drawings should indicate required fire rating for columns, primary girders/beams/trusses/joists, secondary beams/joists, beneath floor assemblies, and beneath roof assembly.

* + - * 1. Coordinate application of fire protection with other construction to minimize need to cut or remove fire protection.

Do not begin applying fire protection until clips, hangers, supports, sleeves, and other items penetrating fire protection are in place.

Defer installing ducts, piping, and other items that would interfere with applying fire protection until application of fire protection is completed.

* + - * 1. Metal Decks:

Do not apply fire protection to underside of metal deck substrates until concrete topping, if any, is completed.

Do not apply fire protection to underside of metal roof deck until roofing is completed; prohibit roof traffic during application and drying of fire protection.

* + - * 1. Install auxiliary materials as required, as detailed, and according to fire-resistance design and sprayed fire-resistive material manufacturer's written instructions for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by sprayed fire-resistive material manufacturer.
        2. Spray apply fire protection to maximum extent possible. After the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by sprayed fire-resistive material manufacturer.

Apply the fireproofing in a monolithic covering of uniform density and texture, free of seams, staging breaks, holes, voids, and other defects that might impair the fire resistance. Install the fireproofing to the full required thickness over entire area of each surface to be covered.

Stop-off application operation at natural stopping points, such as inside corners, wherever possible.

Edge of fireproofing adjoining other materials shall be sharp and clean, without overlapping.

* + - * 1. Extend fire protection in full thickness over entire area of each substrate to be protected.
        2. Install body of fire protection in a single course unless otherwise recommended in writing by sprayed fire-resistive material manufacturer.

Retain first paragraph below if applicable for abatement of asbestos or other hazardous material.

* + - * 1. For applications over encapsulant materials, including lockdown (post-removal) encapsulants, apply fire protection that differs in color from that of encapsulant over which it is applied.
        2. Where sealers are used, apply products that are tinted to differentiate them from fire protection over which they are applied.
        3. Provide a uniform finish complying with description indicated for each type of fire protection material and matching finish approved for required mockups.
        4. Cure fire protection according to sprayed fire-resistive material manufacturer's written instructions.
        5. Do not install enclosing or concealing construction until after fire protection has been applied, inspected, and tested and corrections have been made to deficient applications.

Retain or revise "Finishes" paragraph below to suit Project; coordinate with finishes retained in "Sprayed Fire-Resistive Materials" Article. If a sealer/topcoat is to be applied, modify below if necessary, for the particular sealer/topcoat select applicable. See notes for sealer/topcoat in Part 2.

* + - * 1. Finishes: Where indicated, apply fire protection to produce the following finishes:

Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.

Spray-Textured Finish: Finish left as spray applied with no further treatment.

Rolled, Spray-Textured Finish: Even finish produced by rolling spray-applied finish with a damp paint roller to remove drippings and excessive roughness.

Skip-Troweled Finish: Even leveled surface produced by troweling spray-applied finish to smooth out the texture and neaten edges.

"Skip-Troweled Finish with Corner Beads" subparagraph below requires installation of screeds or corner beads.

Skip-Troweled Finish with Corner Beads: Even, leveled surface produced by troweling spray-applied finish to smooth out the texture, eliminate surface markings, and square off edges.

Some fireproofing products require a sealer and topcoat, other require a sealer or topcoat, and some require neither; consult fireproofing manufacturers’ literature or talk to fireproofing manufacturers’ representatives for specific recommendations. Add additional language if there are multiple sealers or topcoats required for different applications.

* + - * 1. Sealer or Topcoat: Apply sealer or topcoat on surfaces of fireproofing in accordance with the fireproofing manufacturer’s application instructions.
      1. FIELD QUALITY CONTROL

Use paragraph for small projects that do not require BDC 406. Delete paragraph below if BDC 406 is included in the project manual. Verify use of paragraph with the Code Compliance Manager.

* + - * 1. Testing Agency: The State will engage a qualified testing agency to perform special inspections, tests, and prepare reports. The testing agency will interpret the tests and indicate in each report whether the tested work complies with or deviates from project requirements. The testing agency will perform tests in accordance with the New York State Uniform Fire Prevention and Building Code (BCNYS).

Use paragraph below for larger projects that require BDC 406. Delete paragraph below if BDC 406 is not included in the project manual. Verify use of paragraph with the Code Compliance Manager.

* + - * 1. Special Inspections and Testing Agency: The State will engage a qualified special inspections and testing agency to perform special inspections, tests, and prepare reports. The special inspections and testing agency will interpret the tests and indicate in each report whether the tested work complies with or deviates from project requirements. The special inspections and testing agency will perform tests in accordance with the New York State Uniform Fire Prevention and Building Code (BCNYS).
        2. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fire protection for the next area until test results for previously completed applications of fire protection show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
        3. Fire protection will be considered defective if it does not pass tests and inspections.

Remove and replace fire protection that does not pass tests and inspections, and retest.

Apply additional fire protection, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

* + - * 1. Prepare test and inspection reports.
      1. CLEANING
         1. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.
      2. PROTECTION
         1. Protect fire protection, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fire protection is without damage or deterioration at time of Substantial Completion.
      3. REPAIRS
         1. As installation of other construction proceeds, inspect fire protection and repair damaged areas and fire protection removed due to work of other trades.
         2. Repair fire protection damaged by other work before concealing it with other construction.
         3. Repair fire protection by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 078100