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SECTION 078100  
**Applied fireproofing**

Revise this Section by deleting and inserting text to meet Project-specific requirements.

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

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 (SFRM).
         2. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 078123 "Intumescent Fireproofing" for mastic and intumescent fire-resistive coatings.

Section 099646 "Intumescent Painting" for intumescent paints that are fire retarding but not fire resistive.

* + - 1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" Paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

If needed, insert list of conference participants not mentioned in Section 013100 "Project Management and Coordination."

Retain subparagraph below if required. If retaining, revise to include additional and product-specific requirements to suit Project.

Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

* + - 1. ACTION SUBMITTALS
         1. Product Data: For each type of product.
         2. LEED Submittals:

"Product Data for Credit EQ 4.2" Subparagraph below applies to LEED-NC, LEED-CI, and LEED-CS. Coordinate with requirements for paints and coatings.

Product Data for Credit EQ 4.2: For paints and coatings, documentation including printed statement of VOC content.

"Laboratory Test Reports for Credit EQ 4" Subparagraph below applies to LEED for Schools.

Laboratory Test Reports for Credit EQ 4: For paints and coatings used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

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

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

Extent of fireproofing 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 fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.

Treatment of fireproofing after application.

* + - * 1. Samples: For each exposed product and for each color and texture specified**, 4 inches (102 mm)** square in size.
      1. INFORMATIONAL SUBMITTALS

Coordinate "Qualification Data" Paragraph below with qualification requirements in Section 014000 "Quality Requirements" and as may be supplemented in "Quality Assurance" Article.

* + - * 1. Qualification Data: For Installer and testing agency.

Retain "Product Certificates" Paragraph below to require submittal of product certificates from manufacturers.

* + - * 1. Product Certificates: For each type of fireproofing.
        2. Evaluation Reports: For fireproofing, from ICC-ES.

Retain "Preconstruction Test Reports" Paragraph below if specifying preconstruction testing in "Preconstruction Testing" Article as Contractor's responsibility.

* + - * 1. Preconstruction Test Reports: For fireproofing.

Retain "Field quality-control reports" Paragraph below if Contractor is responsible for field quality-control testing and inspecting.

* + - * 1. Field quality-control reports.
      1. QUALITY ASSURANCE

Revise "Installer Qualifications" Paragraph below to suit Project. Verify that SFRM manufacturers qualify installers who are available to perform work in Project area. Consider inserting requirement for UL-qualified SFRM contractors if available in Project area. See discussion of UL-qualified SFRM contractor program in the Evaluations.

* + - * 1. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.
        2. Mockups: Build mockups [to verify selections made under Sample submittals and to demonstrate aesthetic effects] [to set quality standards for materials and execution] [and] [for preconstruction testing].

Indicate portion of Work represented by mockup on Drawings or draw mockup as separate element.

Build mockup of [**each type of fireproofing and different substrate**] [**and**] [**each required finish**] <**Insert description**> as shown on Drawings.

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

Retain subparagraph below if the intention is to make an exception to the default requirement in Section 014000 "Quality Requirements" for demolishing and removing mockups.

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

* + - 1. FIELD CONDITIONS

Revise "Environmental Limitations" Paragraph below if different temperature limits apply to required products. Many products allow temperatures to 40 deg F (4 deg C).

* + - * 1. Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is **40 deg F (4.4 deg C)** or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.
        2. Ventilation: Ventilate building spaces during and after application of fireproofing, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

1. PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products. For an explanation of options and Contractor's product selection procedures, see Section 016000 "Product Requirements."

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

Retain "Source Limitations" Paragraph if fire-resistance designs are based on products by single manufacturer. Retain option if one manufacturer cannot satisfy all design conditions.

* + - * 1. Source Limitations: Obtain fireproofing from single source.

UL 263 is cited as equivalent to ASTM E 119 in the International Building Code 2007 Supplement (hereafter, the IBC 2007 Supplement), but not in earlier versions. Insert UL 1709 or ASTM E 1529 test method in "Fire-Resistance Design" Paragraph below if required; see Evaluations. UL's "Fire Resistance Directory" does not list products tested to ASTM E 119 or ASTM E 1529. Insert additional testing only if required.

* + - * 1. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Steel members are to be considered unrestrained unless specifically noted otherwise.

Retain option in "VOC Content" Paragraph below if required for LEED-NC, LEED-CI, or LEED-CS Credit EQ 4.2 or if required by authorities having jurisdiction; coordinate with products and revise to suit Project.

* + - * 1. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction.

Retain applicable VOC content limits in subparagraphs below; revise if required. SFRM fireproofing, independent of primers, sealers, and topcoats, has virtually zero VOC content.

Flat Paints and Coatings: 50 g/L.

Nonflat Paints and Coatings: 150 g/L.

Primers, Sealers, and Undercoaters: 200 g/L.

Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.

Retain "Low-Emitting Materials" Paragraph below if required for LEED for Schools Credit EQ 4.

* + - * 1. Low-Emitting Materials: Fireproofing used within the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
        2. Asbestos: Provide products containing no detectable asbestos.
        3. Dry mix sprayed fire resistive materials containing mineral fibers are not allowed.
      1. SPRAYED FIRE-RESISTIVE MATERIALS

SFRM and finishes vary with manufacturer and product and are based on approved fire-resistance designs that comply with the fire-resistance ratings of building elements as required by code.

Copy "SFRM" Paragraph below and re-edit for each product or fire-resistance design.

Insert drawing designation; consider using the approved fire-resistance design as drawing designation. Use these designations on Drawings to identify each product or fire-resistance design.

First option in "SFRM" Paragraph, known in the industry as "wet" consistency or "cementitious" type, is most common; last option, known as "dry" or "fiber" type, applies only to Isolatek International's "Cafco Blaze-Shield" products.

* + - * 1. Standard Durability SFRM [**Interior Locations, Concealed Conditions**]: 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.

Retain "Products" Subparagraph and list of manufacturers and products below to require specific products or a comparable product from other manufacturers.

[Products](http://www.specagent.com/LookUp/?ulid=1069&mf=04&mf=95&src=wd&mf=&src=wd): Subject to compliance with requirements, provide the following:

Coordinate subparagraphs below with approved fire-resistance design, material composition, and other requirements retained.

[GCP Advanced Technologies Construction Products; GCP Advanced Technologies -- Conn](http://www.specagent.com/LookUp/?uid=123456895192&mf=&src=wd); GCP Advanced Technologies Construction Products; Monokote MK-6 Series

"Bond Strength" Subparagraph below corresponds to the IBC 2007 Supplement requirement for a building height up to 75 feet (22.8 m) above the lowest level of fire department vehicle access. First option It also corresponds to the 2006 IBC requirement for all SFRM. See Evaluations.

Bond Strength: Minimum **200-lbf/sq. ft. (9.58-kPa)** cohesive and adhesive strength based on field testing according to ASTM E 736.

"Density" Subparagraph below corresponds to minimum density required by the 2006 IBC. The IBC 2007 Supplement requires not less than the density specified in the approved fire-resistance design. Verify required density with authorities having jurisdiction.

Density: Not less than **15 lb/cu. ft. (240 kg/cu. m)** and as specified in the approved fire-resistance design, according to ASTM E 605.

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 E 605, whichever is thicker, but not less than 0.375 inch (9 mm).

Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: **0**.

Smoke-Developed Index: **0**.

Retain "Compressive Strength" Subparagraph below if required; values are examples only.

Compressive Strength: Minimum **10 lbf/sq. in. (68.9 kPa)** according to ASTM E 761.

Corrosion Resistance: No evidence of corrosion according to ASTM E 937.

Deflection: No cracking, spalling, or delamination according to ASTM E 759.

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

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.

Air Erosion: Maximum weight loss of [**0.0 g/sq. ft. (0. 0 g/sq. m)**] in 24 hours according to ASTM E 859.

Retain "Fungal Resistance" Subparagraph below if required for high-humidity conditions or special environments such as hospitals where indoor air quality is an issue. Verify, with manufacturer, test method and availability of antifungal additive for required products.

Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21.

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: Spray-textured finish.

* + - * 1. Intermediate Durability SFRM [Interior Locations, Exposed to View Only or for Buildings Between 75 and 420 Feet Tall]: 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.

Retain "Products" Subparagraph and list of manufacturers and products below to require specific products or a comparable product from other manufacturers.

Products: Subject to compliance with requirements, provide the following:

[GCP Advanced Technologies Construction Products; GCP Advanced Technologies -- Conn](http://www.specagent.com/LookUp/?uid=123456895192&mf=&src=wd); GCP Advanced Technologies Construction Products; Monokote MK-10HB or Monokote Z-106G

"Bond Strength" below corresponds to the IBC 2007 Supplement requirement for a building height of more than 75 up to 420 feet (22.8 up to 128 m)

Bond Strength: Minimum **600-lbf/sq. ft. (28.4-kPa)** cohesive and adhesive strength based on field testing according to ASTM E 736.

"Density" Subparagraph below corresponds to minimum density required by the 2006 IBC. The IBC 2007 Supplement requires not less than the density specified in the approved fire-resistance design. Verify required density with authorities having jurisdiction.

Density: Not less than **15 lb/cu. ft. (240 kg/cu. m)** and as specified in the approved fire-resistance design, according to ASTM E 605.

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 E 605, whichever is thicker, but not less than 0.375 inch (9 mm).

Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: **0**.

Smoke-Developed Index: **0**.

Compressive Strength: Minimum **30 lbf/sq. in. (206 kPa)** according to ASTM E 761.

Corrosion Resistance: No evidence of corrosion according to ASTM E 937.

Deflection: No cracking, spalling, or delamination according to ASTM E 759.

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

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.

Air Erosion: Maximum weight loss of **0.0 g/sq. ft. (0. 0 g/sq. m)** in 24 hours according to ASTM E 859.

Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21.

Finish: Spray-textured finish

* + - * 1. Super High Rise Durability SFRM [Interior Locations, Exposed to View Only or for Buildings Greater than 420 Feet Tall]: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.

Retain "Products" Subparagraph and list of manufacturers and products below to require specific products or a comparable product from other manufacturers.

Products: Subject to compliance with requirements, provide the following:

[GCP Advanced Technologies Construction Products; GCP Advanced Technologies -- Conn](http://www.specagent.com/LookUp/?uid=123456895192&mf=&src=wd); GCP Advanced Technologies Construction Products; Monokote MK-1000HB or Monokote Z-106 HY

"Bond Strength" below corresponds to the IBC 2007 Supplement requirement for a building height of more than 75 up to 420 feet (22.8 up to 128 m)

Bond Strength: Minimum **1,000-lbf/sq. ft. (47.9-kPa)** cohesive and adhesive strength based on field testing according to ASTM E 736.

"Density" Subparagraph below corresponds to minimum density required by the 2006 IBC. The IBC 2007 Supplement requires not less than the density specified in the approved fire-resistance design. Verify required density with authorities having jurisdiction.

Density: Not less than **18 lb/cu. ft. (240 kg/cu. m)** and as specified in the approved fire-resistance design, according to ASTM E 605.

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 E 605, whichever is thicker, but not less than 0.375 inch (9 mm).

Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: **0**.

Smoke-Developed Index: **0**.

Compressive Strength: Minimum **50 lbf/sq. in. (344 kPa)** according to ASTM E 761.

Corrosion Resistance: No evidence of corrosion according to ASTM E 937.

Deflection: No cracking, spalling, or delamination according to ASTM E 759.

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

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.

Air Erosion: Maximum weight loss of **0.0 g/sq. ft. (0. 0 g/sq. m)** in 24 hours according to ASTM E 859.

Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21.

Finish: Spray-textured finish

* + - * 1. Medium Durability SFRM [Interior Locations, Exposed Conditions to Abrasion]: Manufacturer's standard, factory-mixed, Portland cement based 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.

Retain "Products" Subparagraph and list of manufacturers and products below to require specific products or a comparable product from other manufacturers.

Products: Subject to compliance with requirements, provide the following:

[GCP Advanced Technologies Construction Products; GCP Advanced Technologies -- Conn](http://www.specagent.com/LookUp/?uid=123456895192&mf=&src=wd).; GCP Advanced Technologies Construction Products; Monokote Z-106/HY

"Bond Strength" Subparagraph below corresponds to the IBC 2007 Supplement requirement for a building height of more than 420 feet (128 m).

Bond Strength: Minimum **2,000-lbf/sq. ft. (94.5-kPa)** cohesive and adhesive strength based on field testing according to ASTM E 736.

"Density" Subparagraph below corresponds to "medium" density as designated by some manufacturers. . The IBC 2007 Supplement requires not less than the density specified in the approved fire-resistance design. Verify required density with authorities having jurisdiction.

Density: Not less than **22 lb/cu. ft. (350 kg/cu. m)** and as specified in the approved fire-resistance design, according to ASTM E 605.

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 E 605, whichever is thicker, but not less than 0.375 inch (9 mm).

Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: **0**.

Smoke-Developed Index: **0**.

Compressive Strength: Minimum **100 lbf/sq. in. (680 kPa)** according to ASTM E 761.

Corrosion Resistance: No evidence of corrosion according to ASTM E 937.

Deflection: No cracking, spalling, or delamination according to ASTM E 759.

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.

Air Erosion: Maximum weight loss of **0.0 g/sq. ft. (0. 0 g/sq. m)** in 24 hours according to ASTM E 859.

Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21

Finish: Spray-textured finish

* + - * 1. High Durability SFRM [Interior or Exterior Locations, Exposed Conditions Subject to Impact]: Manufacturer's standard, factory-mixed, Portland cement based 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.

Retain "Products" Subparagraph and list of manufacturers and products below to require specific products or a comparable product from other manufacturers.

Products: Subject to compliance with requirements, provide the following:

[GCP Advanced Technologies Construction Products; GCP Advanced Technologies -- Conn](http://www.specagent.com/LookUp/?uid=123456895192&mf=&src=wd); GCP Advanced Technologies Construction Products; Monokote Z-146, GCP Advanced Technologies Construction Products; Monokote Z-156

Bond Strength: Minimum **10,000-lbf/sq. ft. (478-kPa)** cohesive and adhesive strength based on field testing according to ASTM E 736.

"Density" Subparagraph below corresponds to "high" density as designated by some manufacturers. . The IBC 2007 Supplement requires not less than the density specified in the approved fire-resistance design. Verify required density with authorities having jurisdiction.

Density: Not less than **40 lb/cu. ft. (640 kg/cu. m)** and as specified in the approved fire-resistance design, according to ASTM E 605.

Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch (9 mm).

Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: 0.

Smoke-Developed Index: 0.

Compressive Strength: Minimum **500 lbf/sq. in. (3450 kPa)** according to ASTM E 761.

Corrosion Resistance: No evidence of corrosion according to ASTM E 937.

Deflection: No cracking, spalling, or delamination according to ASTM E 759.

Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.

Air Erosion: Maximum weight loss of **0.0 g/sq. ft. (0. 0 g/sq. m)** in 24 hours according to ASTM E 859.

Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21

Finish: [**Spray-textured finish**] [**Rolled, spray-textured finish**] [**Skip-troweled finish**].

* + - 1. AUXILIARY MATERIALS
         1. General: Provide auxiliary materials that are compatible with fireproofing 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.

* + - * 1. Substrate Primers: Primers approved by fireproofing 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 fireproofing 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 E 736.

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 fireproofing 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 weight, configuration, and finish required, according to fire-resistance designs indicated and fireproofing manufacturer's written recommendations. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive fireproofing.

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; delete both paragraphs if not required.

* + - * 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 fireproofing manufacturer.
        2. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachment.

Retain "Sealer" Paragraph below if required; consult manufacturers named in other Part 2 articles for recommendations for single-source responsibility for tested fire-resistance designs; revise to suit Project. "Sealer" Paragraph describes type of sealer for application over specific Isolatek products; verify with manufacturer.

1. EXECUTION
   * + 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 compliance with the following:

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 fireproofing with substrates under conditions of normal use or fire exposure.

Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.

Substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application.

First two paragraphs below contain recommendations from ASTM E 1513, "Practice for Application of Sprayed Fire-Resistive Materials (SFRMs)." Delete if not applicable.

* + - * 1. Verify that concrete work on steel deck has been completed before beginning fireproofing work.
        2. Verify that roof construction, installation of roof-top HVAC equipment, and other related work is complete before beginning fireproofing work.
        3. Conduct tests according to fireproofing manufacturer's written recommendations 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 fireproofing materials during application.
         2. Clean substrates of substances that could impair bond of fireproofing.

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

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

Retain paragraph below unless fireproofing is not 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 fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.
      1. APPLICATION
         1. Construct fireproofing assemblies that are identical to 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 fireproofing work.
         2. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
         3. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.

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

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

* + - * 1. Metal Decks:

Do not apply fireproofing to underside of metal deck substrates until concrete topping, if any, has been completed.

Do not apply fireproofing to underside of metal roof deck until roofing has been completed; prohibit roof traffic during application and drying of fireproofing.

* + - * 1. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.
        2. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.
        3. Extend fireproofing in full thickness over entire area of each substrate to be protected.
        4. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing 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 fireproofing 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 fireproofing over which they are applied.
        3. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.
        4. Cure fireproofing according to fireproofing manufacturer's written recommendations.
        5. Do not install enclosing or concealing construction until after fireproofing 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.

* + - * 1. Finishes: Where indicated, apply fireproofing 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.

* + - 1. FIELD QUALITY CONTROL

Retain first option in "Special Inspections" Paragraph below if Owner engages special inspector. Consider retaining second option if authorities having jurisdiction allow Contractor to engage special inspector. If retaining second option, retain "Field quality-control reports" Paragraph in "Informational Submittals" Article. See "Special Inspections" Article in the Evaluations.

* + - * 1. Special Inspections: [**Owner will engage**] [**Engage**] a qualified special inspector to perform the following special inspections:

Subparagraph below applies to the 2006 IBC and the IBC 2007 Supplement. Verify requirements with authorities having jurisdiction.

Test and inspect as required by Chapter 17 of the applicable IBC..

* + - * 1. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.

See Section 014000 "Quality Requirements" for retesting and reinspecting requirements and Section 017300 "Execution" for requirements for correcting the Work.

* + - * 1. Fireproofing will be considered defective if it does not pass tests and inspections.

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

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

* + - * 1. Prepare test and inspection reports.
      1. CLEANING, PROTECTING, AND REPAIRING
         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. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.
         3. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.
         4. Repair fireproofing damaged by other work before concealing it with other construction.
         5. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.