DIVISION 7

SECTION 7G SPRAYED FIREPROOFING

7G.01 GENERAL: Comply with all of the Contract Documents.

7G.02 SCOPE OF WORK: Refer to "Division Scope of Work"

7G.03 QUALITY ASSURANCE

A. Fireproofing work shall be performed by a firm acceptable to the sprayed fireproofing material manufacturer.

B. Products, execution and fireproofing thickness shall conform to the applicable code requirements for the fire-resistance ratings called for.

7G.04 REFERENCES

A. ASTM Standards

1. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

2. E119 - Standard Methods of Fire Test of Building Construction and Materials.

3. E605 - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members.

4. E736 - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.

5. E759 - Standards Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members.

6. E760 - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members.

7. E761 - Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members.

8. E859 - Standard Test Method for Air Erosion of Sprayed Fire-Resistive Materials Applied to Structural Members.

9. E937 - Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material Applied to Structural Members.

B. Test Methods for abrasion and impact resistance developed by the City of San Francisco Bureau of Building Inspection.

C. Underwriter's Laboratories, Inc. (UL) Fire Resistance Directory (Latest Edition).

D. Uniform Building Code Standard No.43-8: Thickness and Density Determination for Spray-Applied Fireproofing.

E. AWCI Publication: Inspection Procedure for Field Applied Sprayed Fire Protection Materials.

7G.05 SUBMITTALS

A. Manufacturers' Data: Submit manufacturer's instructions for proper application of sprayed fireproofing.

B. Test Data: Laboratory test results for fireproofing shall be submitted for the following performance criteria specified, upon request:

1. Bond Strength per ASTM E736.

2. Compressive Strength per ASTM E761.

3. Deflection per ASTM E759.

4. Bond Impact per ASTM E760.

5. Air Erosion per ASTM E859.

6. Corrosion Resistance per ASTM E937.

7. Abrasion Resistance per city of San Francisco, Bureau of Building Inspection Test Method.

8. Impact Penetration per City of San Francisco, Bureau of Building Inspection Test Method.

7G.06 DELIVERY, STORAGE AND HANDLING

A. Material shall be delivered in original unopened packages, fully identified as to manufacturer, brand or other identifying data, and bearing the proper Underwriters' Laboratories, Inc. labels for fire hazard and fire-resistance classification.

B. Material shall be stored (above ground), under cover and in a dry location until ready for use. All bags that have been exposed to water before use shall be found unsuitable for use and discarded. Stock of material is to be rotated and used prior to its expiration date.

7G.07 PROJECT/SITE CONDITIONS

A. An air and substrate temperature of 40 degrees F (4.4 C) must be maintained for 24 hours before, during and for 24 hours after application of the sprayed fireproofing. If necessary for job progress, General Contractor shall provide enclosures with heat to maintain temperatures.

B. General Contractor shall provide ventilation to allow for proper drying of the fireproofing during and subsequent to its application. In poorly ventilated areas lacking natural ventilation, forced air circulation will be required.

7G.08 MATERIALS

A. The sprayed fireproofing material shall be cementitious fireproofing, as manufactured by the Construction Products Division of W.R. Grace & Co., or its processing distributors, formulated without asbestos or approved equal as determined by Architect/Engineer.

B. Materials shall be "MONOKOTE" MK-6 factory-blended cementitious fireproofing, applied to provide compliance with all drawings, specifications and the following performance test criteria.

1. Dry Density: The field density shall be measured, in accordance with ASTM STANDARD E605. Minimum average density shall be 15 pcf, and minimum individual density shall be 14 pcf, unless otherwise required by the authority having jurisdiction.

2. Deflection: Material shall not crack or delaminate from the surface to which it is applied when tested in accordance with ASTM E759.

3. Bond Impact: Material subject to impact tests in accordance with ASTM E760 shall not crack or delaminate from the surface to which it is applied.

4. Bond Strength: Fireproofing, when tested in accordance with ASTM E736, shall have a minimum bond strength of 200 psf.

5. Air Erosion: Maximum allowable weight loss of the fireproofing material shall be 0.005 gm./ft^2 when tested in accordance with ASTM E859.

6. Compressive Strength: The fireproofing shall not deform more than 10 percent when subjected to compressive forces of 1200 psf when tested in accordance with ASTM E761.

7. Corrosion Resistance: Steel with applied fireproofing shall be tested in accordance with ASTM E937 without evidence of corrosion of the steel.

8. Abrasion Resistance: No more than 15 cm^3 shall be abraded or removed from the fireproofing substrate when tested in accordance with test methods developed by the City of San Francisco, Bureau of Building Inspection, and required by the U.S. Navy (NAVFAC).

9. Impact Penetration: The fireproofing material shall not show a loss of more than 6 cm^3 when subjected to impact penetration tests in accordance with the test methods developed by the City of San Francisco, Bureau of Building Inspection, and required by the U.S. Navy (NAVFAC).

10. Surface Burning Characteristics: Material shall exhibit the following surface burning characteristics when tested in accordance with ASTM E84:

Flame Spread	- 0
Smoke Development	- 0

C. The sprayed fireproofing material shall have been tested and reported by Underwriter's Laboratories, Inc. in accordance with the procedures of ASTM E119.

D. Mixing water shall be clean, fresh and suitable for domestic consumption and free from such amounts of mineral or organic substances as would affect the set of the fireproofing material.

7G.09 WORKMANSHIP

A. All surfaces to receive sprayed fireproofing shall be free of oil, grease, paints/primers, loose mill scale, dirt or other foreign substances which may impair proper adhesion of the fireproofing to the substrate. Where necessary, cleaning of surfaces to receive fireproofing shall be the responsibility of the Structural Steel Erector, or General Contractor, as outlined in the structural steel or steel deck section.

B. Confirm compatibility of surfaces to receive sprayed fireproofing material:

1. The project Architect shall determine whether the painted/primed steel substrates have been tested in accordance with ASTM E119, with specified sprayed fireproofing material, to provide the required fire-resistance rating.

2. Painted or primed steel surfaces may require a fire- proofing bond test to determine if the paint formulation will impair proper adhesion.

Determination of the compatibility of paint or primer with the sprayed fire- proofing shall be the responsibility of the paint or primer manufacturer.

3. Rolling compounds or lubricants are commonly used in the manufacture of steel decking. The compounds may impair proper adhesion of fireproofing to the substrate. Steel deck specification section shall call for the deck manufacturer to supply decking free of amounts of these compounds or oils which would significantly impair the adherence of the fireproofing.

C. Prior to application of fireproofing, clips, hangers, support sleeves and other attachments required to penetrate the fireproofing shall be in place.

D. Ducts, piping, equipment or other suspended matter which would interfere with application of fireproofing materials shall not be positioned until fireproofing work is complete.

E. Prior to application of the fireproofing to the underside of steel decking, concrete work above shall be complete.

F. On roof decks without a concrete cover, complete all roofing applications and roof mounted equipment installation prior to application of the fireproofing to the underside of roof decking and supporting beams and joists. Prohibit all roof traffic upon commencement of the fireproofing and until the fireproofing material is dry.

G. Provide masking, drop cloths or other satisfactory coverings so as to prevent over-spray of sprayed fireproofing.

H. Application of sprayed fireproofing shall not begin until the General Contractor and the Fireproofing Applicator have inspected the surfaces to receive fireproofing to determine if surfaces are acceptable to receive the fireproofing material.

I. Equipment and application procedure shall conform to the material manufacturer's application instructions.

J. All patching and repairing of sprayed fireproofing, due to damage by other trades, shall be performed under this section and paid for by the trade(s) responsible for the damage.

7G.10 QUALITY CONTROL

A. Architect/Engineer may select, and will pay an independent testing laboratory to sample and verify the thickness and density of the fireproofing in accordance with provisions of ASTM E605. "Standard Test Methods for Thickness and Density of Sprayed Fire-

Resistive Materials Applied to Structural Members," the "Inspection Procedure for Field Applied Sprayed Fire Protection Materials" as published by the AWCI, or Uniform Building Code Standard No.43-8 entitled "Thickness and Density Determination for Spray-Applied Fireproofing."

B. The results of the above tests shall be made available to all parties at the completion of floor.

7G.11 CLEANING

A. After the completion of fireproofing work, application equipment shall be removed, and other surfaces not to be sprayed shall be cleaned of any applied fireproofing material.

7G.12 FIRE-RESISTIVE RATING

A. Fire resistive rating shall be three (3) hours for floor assembly.

7G.13 GUARANTEES

A. Guarantee all items of work furnished and installed under this Section for (1) one year, in addition to manufacturer’s standard warranties. All guarantees to be from the date, when **Final Certificate of Occupancy** is issued from Department of Buildings.

END OF SECTION