SECTION 07 81 00

APPLIED FIREPROOFING

PART 1 – GENERAL

1.1 PURPOSE

A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 LESSONS LEARNED AND DESIGN CONSIDERATIONS

A. Submittals shall be reviewed by UTA Facilities and EH&S.

B. For renovation projects, extra care shall be taken to protect existing and to remove over spraying.

1.3 SECTION INCLUDES

A. Fireproofing of interior structural steel not exposed to damage or moisture.

1.4 RELATED REQUIREMENTS

A. Section 05 12 00 – Structural Steel Framing.
B. Section 05 21 00 – Steel Joist Framing.
C. Section 05 31 23 – Steel Decking.
D. Section 07 81 23 – Intumescent Mastic Fireproofing.
E. Section 07 84 00 – Firestopping.

1.5 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; current edition.
B. ASTM E736 - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members; current edition.
C. ASTM E759 - Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members; current edition.
D. ASTM E760/E760M - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members; current edition.
E. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; current edition.
F. ASTM E937 - Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; current edition.
G. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.
H. UL - Standard for Fire Tests of Through-Penetration Firestops; current edition.

1.6 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with placement of ceiling hanger tabs, mechanical component hangers, and electrical components.
B. Pre-installation Meeting: Convene three before starting work of this section.

1.7 SUBMITTALS

A. See Division 01 for submittal procedures.
B. Product Data: Provide data indicating product characteristics.
C. Test Reports: Reports from reputable independent testing agencies for proposed products, indicating compliance with specified criteria, conducted under conditions similar to those on project, for:
    1. Bond Strength.
    2. Bond Impact.
    3. Compressive Strength.
    4. Fire tests using substrate materials similar those on project.
D. Manufacturer's Installation Instructions: Indicate special procedures.
E. Manufacturer's Certificate: Certify that sprayed-on fireproofing products meet or exceed requirements of

contract documents.

F. Manufacturer's Field Reports: Indicate environmental conditions under which fireproofing materials were installed.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section, and:

1. Having minimum five years of documented experience.
2. Approved by manufacturer.

1.9 MOCK-UP

A. Construct mock-up, 100 square feet in size.

B. Conform to project requirements for fire ratings.

C. Locate where directed.

D. Examine installation within one hour of application to determine variances from specified requirements due to shrinkage, temperature, and humidity.

E. Where shrinkage and cracking are evident, adjust mixture and method of application as necessary. Remove materials and re-construct mock-up.

F. Mock-up may remain as part of the Work if approved.

1.10 FIELD CONDITIONS

A. Do not apply spray fireproofing when temperature of substrate material and surrounding air is below 40 degrees F or when temperature is predicted to be below said temperature for 24 hours after application.

B. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.

C. Provide temporary enclosure to prevent spray from contaminating air.

D. Do not allow roof traffic during installation of roof fireproofing and drying period.

1.11 WARRANTY

A. See Division 01.

B. Correct defective Work within a five year period after Date of Substantial Completion.

1. Include coverage for fireproofing to remain free from cracking, checking, dusting, flaking, spalling, separation, and blistering.
2. Reinstall or repair failures that occur within warranty period.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Sprayed-On Fireproofing Fireproofing:

1. Carboline Company: www.carboline.com.
2. GCP Applied Technologies: www.gcpat.com.
3. Southwest Fireproofing Products Company: www.sfrm.com.
4. Substitutions: See Division 01.

FIREPROOFING ASSEMBLIES

2.2 B. Provide assemblies as indicated on the drawings.

C. Provide fire resistance ratings for the following building elements as required by the building code:

1. Primary structural frame, including columns, girders, and trusses: 2 hour.
2. Roof construction, including supporting beams and joists: 1 hour.

2.3 MATERIALS

A. Sprayed Fire-Resistive Material for Interior Applications, Concealed: Manufacturer's standard factory mixed material, which when combined with water is capable of providing the indicated fire resistance, and conforming to the following requirements:

1. Bond Strength: 150 pounds per square foot, minimum, when tested in accordance with ASTM E736 when set and dry.

2. Dry Density: As required by fire resistance design.
3. Compressive Strength: 8.33 pounds per square inch, minimum.
4. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760.
5. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937.
6. Surface Burning Characteristics: Maximum flame spread index of 0 (zero) and maximum smoke developed index of 0 (zero), when tested in accordance with ASTM E84.
7. Effect of Deflection: No cracking, spalling, or delamination, when tested in accordance with ASTM E759.
8. Products:
   a). GCP Applied Technologies; Monokote MK-6: www.gcpat.com.
   b). Substitutions: See Division 01.

2.4 ACCESSORIES

A. Primer Adhesive: Of type recommended by fireproofing manufacturer.
B. Metal Lath: Expanded metal lath; minimum 1.7 pounds per square foot, galvanized finish.
C. Water: Clean, potable.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive fireproofing.
B. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.
C. Verify that ducts, piping, equipment, or other items that would interfere with application of fireproofing have not been installed.
D. Verify that voids and cracks in substrate have been filled. Verify that projections have been removed where fireproofing will be exposed to view as a finish material.

3.2 PREPARATION

A. Perform tests as recommended by fireproofing manufacturer in situations where adhesion of fireproofing to substrate is in question.
B. Remove incompatible materials that could affect bond by scraping, brushing, scrubbing, or sandblasting.
C. Prepare substrates to receive fireproofing in strict accordance with instructions of fireproofing manufacturer.
D. Apply fireproofing manufacturer's recommended bonding agent on primed steel.
E. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.
F. Close off and seal duct work in areas where fireproofing is being applied.

3.3 APPLICATION

A. Install metal lath over structural members as indicated or as required by UL Assembly Design Numbers.
B. Apply primer adhesive in accordance with manufacturer's instructions.
C. Apply fireproofing in thickness and density necessary to achieve required ratings, with uniform density and texture.

3.4 FIELD QUALITY CONTROL

A. See Division 01 for additional requirements.
B. Inspect the installed fireproofing after application and curing for integrity, prior to its concealment. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings and requirements of the Authority Having Jurisdiction.
C. Remove and replace installed fireproofing that does not comply with specified requirements, as directed by Architect.
D. Re-inspect the installed fireproofing for integrity of fire protection, after installation of subsequent Work.

3.5 CLEANING

A. Remove excess material, overspray, droppings, and debris.
B. Remove fireproofing from materials and surfaces not required to be fireproofed.

END OF SECTION