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**PART 1 GENERAL**

**1.1 REFERENCE STANDARDS**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .2 Underwriter's Laboratories of Canada (ULC)
  - .1 CAN-ULC-S101-14, Standard Methods of fire Endurance Tests of Building Construction and Materials.
  - .2 CAN-ULC-S102-11, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 29.06 – Health and Safety Requirements.
- .3 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.
  - .1 Test Reports:
    - .1 Submit product data including certified copies of test reports verifying fireproofing applied to substrate as constructed on project will meet or exceed requirements of Specification.
    - .2 Submit test results in accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.
    - .3 For assemblies not tested and rated, submit proposals based on related designs using accepted fireproofing design criteria.
  - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.
  - .4 Manufacturer's Field Reports: submit to manufacturer's written reports within [3] days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

**1.3 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Installer: company specializing in sprayed-on fireproofing with 5 years documented experience approved by manufacturer.
- .2 Mock-ups:
  - .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
  - .2 Apply fireproofing to approximately 10 m<sup>2</sup> area surface to be treated.

- .3 Mock-up will be used:
  - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
  - .4 Locate where directed.
  - .5 Allow 24hours for inspection of mock-up by Departmental Representative before proceeding with fireproofing work.
  - .6 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.
- .3 Site Meetings:
  - .1 Convene pre-installation meeting one week prior to beginning work of this Section, with contractor's representative and Departmental Representative in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Charts to:
    - .1 Verify Project requirements.
    - .2 Review installation and substrate conditions.
    - .3 Co-ordination with other building subtrades.
    - .4 Review manufacturer's installation instructions and warranty requirements.
  - .2 Prior to start of Work arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work.
  - .3 Hold project meetings every week.
  - .4 Ensure key personnel attend.
  - .5 Departmental Representative will provide written notification of change to meeting schedule established upon contract award hours prior to scheduled meeting.
- .4 Site Meetings: as part of Manufacturer's Services described in PART 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.
  - .1 After delivery and storage of products, and when preparatory Work is complete but before installation begins.
  - .2 Twice during progress of Work at 25% and 60% complete.
  - .3 Upon completion of Work, after cleaning is carried out.

#### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
  - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
  - .3 Deliver packaged materials in original unopened containers, marked to indicate brand name, manufacturer ULC markings
- .2 Storage and Protection:
  - .1 Store materials indoors in dry location.
  - .2 Store and protect materials from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.
  - .3 Damaged or opened containers will be rejected.
  - .4 Packaging to indicate shelf-life and materials to be applied prior to expiration of shelf-life.

- .5 Provide temporary enclosures to prevent spray from contaminating air beyond application area.
- .6 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of fireproofing materials.

## **1.5 AMBIENT CONDITIONS**

- .1 At temperatures less than 5 degrees C, ensure that 5 degrees C air and substrate temperature is maintained during and for 24 hours after application. Ensure that natural ventilation to properly dry the fireproofing during and subsequent to its application is provided. In enclosed areas lacking openings for natural ventilation, ensure that interior air is circulated and exhausted to the outside.
- .2 Maintain relative humidity within limits recommended fireproofing manufacturer.
- .3 Ensure that natural ventilation to properly dry fireproofing during and subsequent to its application is provided.
- .4 In enclosed areas lacking openings for natural ventilation, provide minimum of 4 air exchanges per hour by forced air circulation.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Fireproofing: standard density gypsum cement based spray applied fire resistive materials comprised of cement binders and light weight aggregates with the following characteristics:
  - .1 ULC certified and meeting the ULC Design for the Fire Rating indicated.
  - .2 Fire Rating: as indicated.
  - .3 Density: 240 kg/m<sup>3</sup> to ASTM E605.
  - .4 Cohesion/Adhesion: 9.5 kPa to ASTM E736.
  - .5 Deflection: No cracks or delaminations to ASTM E760.
  - .6 Corrosion Resistance: does not promote corrosion of steel to ASTM E937.
  - .7 Mould resistance: no evidence of mould growth to ASTM G21.
  - .8 Thickness: as required to achieve fire ratings indicated on the drawings.
- .2 Curing compound: type recommended by fireproofing manufacturer, qualified for use in ULC Designs specified.
- .3 Sealer: type recommended by fireproofing manufacturer, qualified for use in ULC Design specified.
  - .1 Colour: white.
- .4 Adhesives: provide adhesives as necessary to comply with fireproofing manufacturer's and fire test design requirements. Water based acrylic adhesives, as recommended by fireproofing manufacturer.
- .5 Lath: provide expanded metal lath for areas where adhesion to substrate is questionable, for boxed applications, to comply with ULC/UL requirements for application to primer or painted steel, or as otherwise required by the fire test design information.

- .6 Reinforcements: provide fibreglass mesh or wire lath for areas where adhesion is not compatible and for application of fireproofing to steel joists.
- .7 Mold inhibitor: provide factory added mould inhibitor tested in accordance with ASTM G21.
- .8 Top coats: use as required and recommended by fireproofing manufacturer or compatible products.

### **PART 3 EXECUTION**

#### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

#### **3.2 PREPARATION**

- .1 Substrate: free of material, which would impair bond.
- .2 Verify that painted substrates are compatible and have suitable bonding characteristics to receive fireproofing.
- .3 Remove incompatible materials.
- .4 Ensure that items required to penetrate fireproofing are placed before installation of fireproofing.
- .5 Ensure that ducts, piping, equipment, or other items which would interfere with application of fireproofing are not positioned until fireproofing work is completed.
- .6 Steel Surfaces:
  - .1 Structural steel and steel decking shall be unprimed.
  - .2 Steel surfaces that are painted and/or primed, shall meet UL requirements for application and adhesion characteristics. Provide certifications from fireproofing manufacturer of compatibility of fireproofing and painted systems. Restrictions published by UL shall apply.
  - .3 Steel surfaces with incompatible primers or paint shall be remedied by removal of primer or paint, be lathed, otherwise remedied within the requirements of UL, so that adequate and approved bonding can occur, acceptable to authorities having jurisdiction.

#### **3.3 APPLICATION**

- .1 Apply bonding adhesive or primer to substrate if recommended by manufacturer.
- .2 Apply fireproofing over substrate, building up to required thickness to cover substrate with monolithic blanket of uniform density and texture.
- .3 Apply fireproofing directly to open web joists without use of expanded lath.

- .4 Tamp smooth, surfaces visible in finished work.
- .5 Apply curing compound to surface of cementitious fireproofing as required by manufacturer.

### **3.4 FIELD QUALITY CONTROL**

- .1 Manufacturer's Field Services:
  - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
  - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
  - .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

### **3.5 PATCHING**

- .1 Patch damage to fireproofing caused by testing or by other trades before fireproofing is concealed, or if exposed, before final inspection.

### **3.6 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 Clean surfaces not indicated to receive fireproofing of sprayed material within 24 hours period after application.
- .3 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**