
Partie 1 General

1.1 RELATED REQUIREMENTS

- .1 The list of Work in this division is indicative but non-limiting. It does not exclude Work described in other specification divisions shown on the drawings or required for full execution of the Work as intended on the drawings.
- .2 Section 01 33 00 – Submittal Procedures.
- .3 Section 01 41 00 – Regulatory Requirements
- .4 Section 01 45 00 – Quality Control
- .5 Section 01 61 00 – Common Product Requirements
- .6 Section 05 12 23 – Structural Steel for Buildings – shop primed and SSPC prepared steel surfaces.

1.2 SCOPE

- .1 Epoxy based intumescent coating, supplied in separate containers for components A and B and mixed at installation, multi-layer spray application, for exterior works.
- .2 Protective paint compatible with fireproofing coating.
- .3 Additional products: intumescent compound for on-site touch-ups.
- .4 Intumescent protection is required in these areas:
 - .1 Exposed beams and columns in completed works as identified on plan, requiring fire rating and located outside the building.
 - .2 Anchor plates of exposed bracing in completed works and/or related to elements in previous paragraph.

1.3 FIREPROOFING REFERENCE STANDARDS

- .1 CAN/ULC-S101 or ASTM E-119 standard methods for fire endurance tests.
- .2 Standard Methods of Fire Endurance Tests of Building Construction and Materials.
 - .1 ULC Fire Resistance Directory, ITS/Warnock Hersey Directory, UL Fire Resistance Volume 1 and Factory Mutual Approval Guide. UL or ULC certified to “Investigated For Exterior Use.”
- .3 CAN/ULC-S102 or ASTM E84 standard test method for surface burning characteristics.
- .4 Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 REFERENCE STANDARD FOR PHYSICAL PERFORMANCE

- .1 Not used.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product data: Submit product data sheet of all products in accordance with Section 01 33 00 – Submittal.
- .2 Submit manufacturer's application guide in accordance with requirements of Section 01 61 00 – Common Product Requirements.
- .3 Tests: Submit test reports in accordance with requirements of Section 01 41 00 – Regulatory Requirements and applicable to site-designated columns and beams. Assess beams not supported under slab as columns based on ULC and UL test results.
- .4 Technical proposals: if protection of certain steel sections cannot be supported by tested designs, obtain proposal or technical assessment from manufacturer. Documents may demonstrate extrapolation calculations or references based on results of tested designs available.

1.6 QUALITY ASSURANCE

- .1 Manufacturer: Company specializing in manufacturing products of this Section.
- .2 Applicator: Approved or supervised by the manufacturer of fireproofing materials. For the purposes of this specification, a manufacturer or steel applicator with suitable installations to apply fireproofing with prior training may be considered suitable.
- .3 Products: Manufactured in accordance with ULC or UL requirements and ULC or Warnock Hersey follow-up program.
- .4 Inspection: Manufacturer must provide site report validating quality of installation and thickness of intumescent coating. AWCI Technical Manual 12-B will serve as reference for inspection method. Conduct inspection prior to application of finish paint.

1.7 REGULATORY ORGANIZATION REFERENCE

- .1 Conform to latest edition of the National Building Code of Canada, 2005 edition.
- .2 Submit certificate attesting compliance of fireproofing materials with regulatory organization and test results.

1.8 SAMPLES

- .1 Prepare mock-up of two steel pieces bolted together, representative of elements to be sprayed or touched up on site, 1 metre (3 feet) minimum length. Sample to show typical total thickness. Integrated mesh between first and second coat of coating.
- .2 Sample approved by architect may be integrated into Work.

1.9 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store materials in original sealed undamaged containers in area protected from sunlight.
- .2 Store containers in room or temporary insulated and heated enclosure to maintain container temperature at 27°C (80°F). If containers are delivered during cold weather, store in heated area 24 to 48 hours before use.

- .3 Dispose of materials coming into contact with contaminants.

1.10 SITE CONDITIONS

- .1 Do apply epoxy-based intumescent coating when air and steel substrate temperature is below 5°C (40°F), or if humidity exceeds 75%. Steel surface temperature must be a minimum of 3°C (5°F) above dew point.
- .2 Provide temporary heating during work to ensure operation and maintenance and provide necessary heat.
- .3 Vent interior heating appliances outside and operate flame-free. Solid fuel appliances are not allowed.
- .4 Ventilate rooms where materials will be applied under this section for 24 hours following application of last coat of sealant or paint.
- .5 Relative humidity must not exceed 65% during application and drying of intumescent fireproofing coating and must not exceed 65% during application and drying of protective decorative finish. Maintain relative humidity between 40 and 60%.
- .6 Contractor must provide continuous temperature and humidity gauge, at least one device per zone. Devices must be installed in heating enclosures and remain accessible and in operation throughout the work.
- .7 Personnel on site during application of intumescent coating must wear appropriate protective coating as recommended by manufacturer.

1.11 SCHEDULING

- .1 Work under this section including touch-ups must be completed prior to installation of curtain walls and glass elevations.

1.12 WARRANTY

- .1 Work must be guaranteed for a period of two years following substantial completion of work.

1.13 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

Partie 2 Products

2.1 MATERIALS INTEGRATED INTO SYSTEM

- .1 Epoxy-based intumescent coating:
 - .1 95% solids.
 - .2 Two component coating mixed at application.
 - .3 Each container must bear ULC, UL, ITS-WH and FM certification labels confirming certification under paragraph 1.3.1.

- .4 Acceptable product: Thermo-Lag 3000 SA of Carboline USA, distributed by A/D Fire Protection Systems in Canada.
- .5 Replacement materials or products: approved by addendum to the Instructions to Bidders.
- .2 Protective paint deemed compatible by manufacturer of epoxy based intumescent coating.
 - .1 Finish coat colour selected by Architect.
- .3 Flexible non-metallic mesh: fibreglass or carbon fibre mesh as required by tested design and prescribed fire rating.
- .4 Cementitious spray-applied coating (West wing):
 - .1 Plaster based cementitious coating spray-applied to bare steel structures and compliant with UL, ULC, Warnock Hershey.
 - .2 Density: 240 kg/m³ ASTM E 605
 - .3 Adherence: 16.2 kPa ASTM E 736
 - .4 Compressive strength (deformation 10%): 68.9 kPa ASTM E 761
 - .5 Mildew resistance: None after 60 days ASTM G 21
 - .6 Surface flame spread: ASTM E 84
 - .1 Flame spread: 0
 - .2 Smoke developed: 0
 - .7 Combustibility: maximum 5 MJ/m² total; max. heat 20 kW/m²: ASTM E 1354.

2.2 ADDITIONAL MATERIALS

- .1 Primer: industrial and commercial primer deemed compatible by manufacturer. Refer to list of compatible primers approved by manufacturer.

Partie 3 Execution

3.1 EXAMINATION OF STEEL SURFACES

- .1 Remove dust, dirt, grease and any other foreign substances that may affect adherence of coating and compatible primer.
- .2 Examine steel surfaces prior to application of coating and report any defect likely to affect Work under this section.
- .3 Ensure steel surfaces are ready to be coated. Sand blast cleaning (SSPC-SP6/NACE No. 3) is recommended as a minimal measure. Grind smooth weld drips prior to application..
- .4 Ensure compatibility of surfaces with coating. Prime steel surfaces with compatible primer – see 2.2.1.
- .5 Application implies acceptance of substrate.
- .6 Steel surfaces to be protected by spray-applied cementitious coating (West wing):

- .1 Surfaces of columns, beams, posts, bracing plates, excluding steel bracing and decking, which will be bare metal unprepared.

3.2 CONDITIONS FOR APPLICATION OF COMPATIBLE PRIMER

- .1 Apply compatible primer according to primer manufacturer's instructions.
- .2 Do not prime columns, beams, posts, bracing plates, excluding steel bracing and decking, of West wing floor structures.

3.3 PROTECTION

- .1 Protect adjacent surfaces, materials and appliances from overspray.
- .2 Do not coat steel component extremities or junctions prior to final assembly on site. Complete coating work on site.

3.4 APPLICATION, HANDLING AND TRANSPORTATION

- .1 Apply in accordance with manufacturer's application instructions, including applying number of coats required to obtain total thickness as indicated by ULC, UL and ITS Warnock Hersey test methods selected. Follow indicated curing time between coats.
- .2 Apply coating to a maximum thickness of 1.5mm (0.060''). Overcoating of 0.75 mm (0.030'') is allowed at overlaps coated at different times.
- .3 Spray application is recommended for exposed surfaces to obtain relatively smooth finish.
- .4 At junctions of steel parts or places deemed too difficult to access for spraying, manually trowel apply to same maximum thickness per layer. Remove rough edges and sand uneven surfaces to make the finish as smooth as possible. Spray thin layer to standardize the visual difference in texture between sprayed areas and trowelled areas.
- .5 Apply surface paint with gun, brush or roller.
- .6 Application of sprayed cementitious coating (West wing)
 - .1 Coat support with adhesive or primer if recommended by manufacturer.
 - .2 Spray fireproofing to match test assemblies or according to recognized calculation criteria to meet indicated fire rating.
 - .3 Make as many passes as necessary to obtain even coat and uniform texture. Do not use expanded metal mesh
 - .4 Spray coating directly on trusses without using expanded metal lath.

3.5 HANDLING AND TRANSPORTATION OF SHOP COATED COMPONENTS

- .1 Use nylon straps to lifting and transfer into transport trucks. Chains are not allowed. Insert spacers between each piece in truck or temporary storage zone.

3.6 ON-SITE SCRATCH COAT

- .1 Smooth and repair damage caused to intumescent fireproofing coating by activities of other trades. Cost of repairs will be paid by Subcontractor responsible for work that caused the damage and cost will be determined by Contractor.

3.7 CLEANING

- .1 Remove all traces of fireproofing materials from surfaces not fireproofed.
- .2 Remove excess material, overspray, burrs and debris before product has cured.

3.8 SCHEDULE

- .1 Provide schedule when coordination for surface diversity, fire rating and thicknesses is required.
- .2 Contractor must prepare daily work log chronicling temperature and humidity during installation.

3.9 FIRE RATING

- .1 One-hour fire rating minimum one hour, unless otherwise indicated on plan.

END OF SECTION