

PART 1 - GENERAL

1.1 WORK INCLUDED

- 1.1.1 Provide all labour, materials, equipment and services necessary for, and incidental to, the complete and proper installation of spray-applied HiBAR™ and related work as shown on the drawings or where specified herein.
- 1.1.2 The material and installation shall conform to the applicable building code requirements and the requirements of all authorities having jurisdiction.

1.2 QUALITY ASSURANCE

- 1.2.1 Work shall be performed by a firm with expertise in the installation of fire protection or similar materials. This firm shall be licensed or otherwise approved by Celufibre Industries Inc.
- 1.2.2 Before proceeding with the fire protection work, approval of the proposed material thicknesses and densities shall be obtained from the architect and/or other applicable authorities.

1.3 RELATED SECTIONS

- 1.3.1 NMS MasterFormat Section 05 10 00 - Structural Metal Framing
- 1.3.2 NMS MasterFormat Section 05 20 00 - Metal Joists
- 1.3.3 NMS MasterFormat Section 05 30 00 - Metal Deck
- 1.3.4 NMS MasterFormat Section 07 21 00 - Spray-applied Mineral Fibre Insulation
- 1.3.5 NMS MasterFormat Section 07 21 00 / 07 21 29 - Fire Stopping
- 1.3.6 NMS MasterFormat Section 07 84 00 / 07 84 26 - Thermal Barrier for Plastics

1.4 REFERENCES

- American Society for Testing and Materials (ASTM International) – Standard Test Methods
- E605** – Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members
 - E631** – Terminology of Building Constructions
 - E736** – Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
 - E759** – Effect of Deflection of Sprayed Fire-Resistive Materials Applied to Structural Members
 - E760** – Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members
 - E761** – Compressive Strength of Sprayed Fire-Resistive Materials Applied to Structural Members
 - E859** – Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members
 - E937** – Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members
- Underwriters' Laboratories of Canada (ULC) – Standard Methods of Test
- CAN/ULC-S101** Fire Endurance Tests of Building Construction and Materials
 - CAN/ULC-S102** Surface Burning Characteristics of Building Materials and Assemblies
 - CAN4-S114** Determination of Non-combustibility in Building Materials
 - CAN/ULC-S124** Evaluation of Protective Coverings for Foamed Plastic
- See also ULC List of Equipment and Materials – Fire Resistance Directory

1.5 SUBMITTALS

- 1.5.1 Manufacturer's Data: Submit HiBAR™ specifications, including certification as may be required to show materials compliance with Contract Documents.
- 1.5.2 Test Data: Independent laboratory test results shall be submitted for all specified performance criteria.
- 1.5.3 Samples: When requested, provide samples (minimum 300mm x 300mm) of sprayed HiBAR™ bonded to a piece of rigid backing.

1.6 DELIVERY, STORAGE AND HANDLING

- 1.6.1 Deliver materials to the project in original, unopened packages, fully identified as to trade name, type and other identifying data. Packaging shall bear ULC labeling for fire-resistance classifications as required.
- 1.6.2 Store materials above ground, in a dry location, protected from the weather. Damaged packages found unsuitable for use should be rejected and removed from the project.

1.7 PROJECT CONDITIONS

- 1.7.1 Work on this Section shall only be performed under conditions stated in HiBAR™ application instructions.
- 1.7.2 Arrange for natural and/or forced ventilation to allow proper drying of HiBAR™ during and subsequent to its application. In enclosed areas, ventilation should not be less than 4 complete air changes per hour.
- 1.7.3 Ensure worksite air and substrate temperatures are maintained above 4°C during application and continuously thereafter until the product is completely dry cured through to the substrate.
- 1.7.4 Provide adequate protection from overspray to adjacent surfaces by means of drop cloths or polyethylene sheeting with necessary taping.
- 1.7.5 Close off and seal duct work at worksite while HiBAR™ is being applied.
- 1.7.6 Allow any designated representative of Celufibre Industries Inc. full access to the site.

1.8 SEQUENCING/SCHEDULING

- 1.8.1 All fire protection work on a floor shall be completed before proceeding to the next floor.

1.8.2 The Contractor shall cooperate in the coordination and scheduling of fire protection work to avoid delays in job progress.



PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

The spray-applied fire resistive material shall be manufactured by:
CELUFIBRE INDUSTRIES INC. (An affiliated company of Can-Cell Industries Inc.)
14735-124 Avenue, Edmonton, Alberta, Canada T5L 3B2
Phone (780) 447-1255 Fax (780) 447-1034

www.can-cell.com

Other distribution locations:

Can-Cell	Langley, BC	(604) 513-8830
Can-Cell	Kelowna, BC	(250) 491-9091
Can-Cell	Calgary, AB	(403) 275-4133
Benolec	Montreal, PQ	(450) 922-2000
Thermo Cell	Turo, NS	(800) 267-1433

2.2 ACCEPTABLE MATERIALS:

HiBAR™ Spray-Applied Fire Resistive Material – no substitutions

This is a semi-cementitious product that does not contain any form of asbestos or free crystalline silica.

2.2.1 Materials shall be applied to conform to the drawings, specifications and following test criteria:

2.2.1.1 Deflection: When tested in accordance with ASTM E759, the material shall not crack or delaminate when the non concrete topped galvanized deck to which it is applied is subjected to a one time vertical centre load resulting in a downward deflection of 1/120th of the span.

2.2.1.2 Bond Impact: When tested in accordance with ASTM E760, the material shall not crack or delaminate from the concrete topped galvanized deck to which it is applied.

2.2.1.3 Cohesion/Adhesion (bond strength): When tested in accordance with ASTM E736, the material applied over uncoated or galvanized steel shall have an average bond strength of 7.2 kPa.

2.2.1.4 Air Erosion: When tested in accordance with ASTM E859, the material shall not be subject to losses from the finished application greater than 0.27 grams per square meter.

2.2.1.5 Compressive Strength: When tested in accordance with ASTM E761, the material shall not deform more than 10 percent when subjected to a crushing force of 35.9 kPa.

2.2.1.6 Corrosion Resistance: When tested in accordance with ASTM E937, the material shall not promote corrosion of steel.

2.2.1.7 Non-combustibility: When tested in accordance with CAN4-S114, the material shall be non-combustible.

2.2.1.8 Surface Burning Characteristics: When tested in accordance with CAN/ULC-S102, the material shall exhibit the following surface burning characteristics:

Flame Spread0
Smoke Developed0

2.2.1.9 Density: When tested in accordance with ASTM E605, the material shall meet the minimum individual and average density values as listed in the applicable ULC design.

2.2.2 The material shall have been tested and reported by Underwriters' Laboratories of Canada (ULC) in accordance with CAN/ULC-S101.

2.2.3 HiBAR™ shall be applied at the specified thickness and density to achieve the ratings listed for the ULC design (assembly).

2.2.4 HiBAR™ shall be applied with fresh, clean water to the proportions recommended by the manufacturer.



PART 3 - EXECUTION

3.1 EXAMINATION

3.1.1 Examine all surfaces and conditions to which the Work of this Section is to be applied. Ensure they are adequate to provide a satisfactory application of the specified product. Report any deficiencies to the Superintendent.

3.2 PREPARATION

3.2.1 All surfaces to receive fire protection shall be free of oil, grease, loose mill scale, dirt, loose rust or a material that would impair satisfactory bonding to the surface.

3.2.2 Verify bond requirements and compatibility of all surfaces to receive fireproofing insulation. Advise general contractor of any surface that does not meet requirements.

3.2.3 Clips, hangers, supports, sleeves and other attachments to the substrate are to be placed by others prior to the application of HiBAR™.

3.2.4 The installation of ducts, piping, conduit or other suspended equipment shall not take place until the application of sprayed fire protection is complete in an area.

3.2.5 When roof traffic is anticipated, as in the case of periodic maintenance, roofing pavers shall be installed as a walkway to distribute loads.

3.3 APPLICATION

3.3.1 Equipment and application shall be in accordance with the Celufibre's written application instructions.

3.3.2 The application of HiBAR™ shall not commence until all surfaces to it have been inspected by the applicator and are acceptable to receive sprayed fire protection.

3.3.3 All unsuitable substrates must be identified and corrected prior to the application of the spray-applied fire resistive material.

3.3.4 Fire protection shall not be applied to steel floor decks prior to the completion of concrete work on that deck.

3.3.5 The application of HiBAR™ to the underside of roof decks shall not commence until the roof is completely installed and tight, all penthouses are complete, all mechanical units have been placed, and construction roof traffic has ceased.

3.3.6 Proper temperature and ventilation shall be maintained as specified in 1.7.2 and 1.7.3.

3.3.7 Provide masking, drop cloths or other suitable coverings to prevent overspray from coming in contact with surfaces that are not intended to be sprayed.

3.3.8 Bonding materials (adhesives, catch coats, metal lath, mesh, stud pins, etc.) shall be applied as per the applicable ULC design and Celufibre's written recommendations.

3.3.9 Topcoat material, if any, shall be the type recommended and approved by Celufibre Industries Inc. for each HiBAR™ application indicated.

3.4 REPAIRING AND CLEANING

3.4.1 All patching of and repair to sprayed fire protection, due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

3.4.2 After the completion of the work in this section, equipment shall be removed and all surfaces not to be sprayed shall be cleaned to the extent previously agreed to by applicator and general contractor.

3.5 INSPECTION AND TESTING

3.5.1 The spray-applied fire resistive material shall be tested for thickness and density in accordance with one of the following procedures:

ASTM E605 - Standard Test Method for Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members.

AWCI - Inspection Procedure for Field-Applied Sprayed Fire-Resistive Materials, Technical Manual 12-A; an annotated guide.

UBC Standard No. 7-6 - Thickness and Density Determination for Spray-Applied Fire Protection.

3.5.2 Inspection shall be contracted for and paid by someone other than the fire protection applicator.¹

¹ Revised January 2010