

Date of Authorization
BMEC Authorization
BMEC Application

September 29, 2005
05-12-316
A2005-16

AUTHORIZATION REPORT - XLShelter Membrane

1. Applicant

All Cover Portable Systems/XLShelters
4664 Ontario Street
Beamsville, Ontario
N0G 1L0

Tel: (800) 282-1239
Fax: (905) 563-6367
Web: www.xlshelter.com

2. Manufacturing Facilities

Inland Plastics Ltd.
Box 2199
Drumheller, Alberta
T0J 0Y0

Layfield Geosynthetics and Industrial
Fabrics Ltd.
11120 Silversmith Place
Richmond, British Columbia
V7A 5E4

3. Description

The XLShelter Building System is a non pressurized building, wherein the structure is composed of a steel framework to support the XLShelter Membrane which is tensioned to provide a weather barrier.

The steel framework is a series of in-line clear span frames, with end walls. The frame pieces are modular and are used in different arrangements to make a variety of profiles. The steel frame structure of the XLShelter Building System shall be designed and constructed in accordance with the Building Code.

The XLShelter Membrane is a flame resistant woven polyolefin material, FRU88X-6, 4 mil. The XLShelter Membrane pieces are custom-sized and the edges reinforced for each building as per XLShelter Building System specifications.

The XLShelter Membrane meets the requirements of a Class A material under ASTM E 84 Surface Burning Characteristics and satisfies the flammability requirements set out in CAN/ULC-S109 and NFPA 701-1996.

4. Authorization requested

The Applicant sought a Building Materials Evaluation Commission (the "BMEC") Authorization for the XLShelter Membrane for use as a roof covering, when used in conjunction with an unheated XLShelter Building System, as defined in this Authorization, in lieu of the requirements of Sentence 3.1.15.1.(1). "Roof Covering Classification" of the Building Code.

5. Assessment

Reports and assessments provided by the Applicant show that if the XLShelter Membrane is designed, performance tested and installed in accordance with the limitations in the manufacturer's instructions, and the specific terms and conditions stated in this Authorization, the level of performance required by the Building Code will be provided.

The reports submitted and reviewed included, but were not limited to:

1. Inland Plastics Ltd. P2004-4 LDPE (Low Density) - FR, Manufacturer's Information, dated 2001.
2. Armorkote Membrane Structure Fabrics, FRU88X-6 data Sheet, Layfield Geosynthetics and Industrial Fabrics Ltd.
3. Inland Plastics Warranty.
4. All Cover Building Systems "Certified Engineering Drawings".
5. All Cover Building Systems "XLShelter Steel Framing Systems".
6. All Cover Building Systems "XLShelter Membranes as Roof Covering".
7. All Cover Building Cover Warranty.
8. Intertape Polymer Group "Manufacturing Quality Control - Certificate of Registration: ISO 9001-2000".
9. International Building Code, Chapter 31 "Special Constructions".
10. ASTM D 5034, Standard Test Method for Breaking Strength and Elongation of Textile Fabric, re-approved in 2001.
11. ASTM D 5035, Standard Test Method for Breaking Force and Elongation of Textile Fabric, re-approved in 2003.

12. ASTM D 3786 - 01, Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics.
13. ASTM D 2136 - 02 , Standard Test Method for Coated Fabrics - Low Temperature Bend.
14. ASTM D 2261, Tearing Strength of Fabric by the Tongue Procedure, re-approved in 2002.
15. CAN/CGSB-37.54-95 "Polyvinyl Chloride Roofing and Waterproofing Membrane", dated May 1995.
16. Birdair, Technical Specifications and Fabric Characteristics.
17. All Cover / XL Shelter Building Systems, Assembly Instruction, 2005.
18. NFPA 701-1989 "Large Scale Flame Resistance of FRU88X-6 Fabric", dated June 2000.
19. ASTM E 84 "Surface Burning Characteristics of FRU88X-6", dated June 2000.
20. Office of State Fire Marshal, California Department of Forestry and Fire Protection Office of the State Fire Marshal, "Registered Flame Resistant Product".
21. CAN/ULC-S109 "Flame Resistance of FRU88X-6 Fabric", dated June 2000.
22. Rowan Williams Davies and Irwin Inc. / Inland Plastic, Static Coefficient of Friction Tests Nova Shield Fabric, dated March 2004.
23. Bodycote Materials Testing Ortech Laboratories / Layfield Group, "NFPA 701-1989 Large Scale Flame Resistance of FRU88X-6 Fabric", dated June 2000.
24. Bodycote Materials Testing Ortech Laboratories / Layfield Group ASTM E 84, "Surface Burning Characteristics of FRU88X-6 Fabric", dated June 2000.
25. Inland Plastics Ltd. Material Safety Data Sheet, dated 2001.
26. Live Load Case Study for XLShelter Membranes, dated August 31, 2005.
27. Bodycote Materials Testing Canada Inc. "NFPA 701-1996 Test 1 and Test 2 Flame Resistance of FRU88X-6", dated September 6, 2001.

28. Acceptance by other Jurisdictions:

- (a) Development Services Commission, Markham, Ontario: Non Housing Building Permit, dated 2004.
- (b) Building Permit issued by the City of North Bay, 2004.
- (c) Building Permit (04-122264), Toronto Urban Development Services.
- (d) Certified Plan (02-55028), Toronto Urban Development Services.
- (e) Permit (Project# 05-000745 TS) issued by the City of St. Catharines.
- (f) Permit (Project# 05-000770 TS) issued by the City of St. Catharines.

6. Authorization

The XLShelter Membrane is authorized for use as a roof covering, only when used in conjunction with an unheated XLShelter Building, in lieu of the requirements of Sentence 3.1.15.1.(1) "Roof Covering Classification" of the Building Code; all other requirements pertaining to the installation and construction are subject to the requirements of the Building Code, and are subject to the following terms and conditions:

Note: this Authorization is not intended to be used as an equivalent to CAN/ULC-S107-M87 where roof coverings are permitted to be used in the construction of traditional roofing systems Class A, B, and C as determined by CAN/ULC-S107-M87.

A. Specific Terms & Conditions

- 1. This Authorization is valid only for the use of the XLShelter Membrane FRU88X-6, when it is used in conjunction with an XLShelter Building System.
- 2. In addition to the requirements of Article 2.3.1.1. of the Building Code, the structural design shall be carried out by a Professional Engineer as defined in the *Professional Engineers Act*, (Ontario) experienced in the specific method applied.
- 3. When the XLShelter Membrane is installed in conjunction with an XLShelter Building System, together they shall be constructed as per the requirements of Subsection 3.2.2. of the Building Code.
- 4. The XLShelter Membrane used in the construction of an XLShelter Building System must be designed in accordance with Subsections 4.1.7. and 4.1.8. of the Building Code.
- 5. The XLShelter Membrane is authorized for use only in buildings that are permitted to be of combustible construction.

6. Except as permitted by Article 3.2.2.17. of the Building Code, the XLShelter Membrane shall not be used where the assembly is required to have a fire-resistance rating.
7. The XLShelter Membrane is authorized for use in unheated building applications, when the XLShelter Membrane is used in conjunction with an XLShelter Building System.
8. The requirements of Article 2.1.1.11. of the Building Code need not be considered, when the XLShelter Membrane is used in conjunction with an XLShelter Building System, for buildings that consume energy at a rate less than 3.5 Btu/h•ft² under peak conditions.
9. The XLShelter Membrane shall not be used in a building more than 1 storey in building height.
10. The XLShelter Membrane shall not be used in the construction of the XLShelter Building System where the major occupancy is Group A, B, C, D, E or F Division 1, as defined by the Building Code.
11. The XLShelter Membrane shall meet the following standards:
 - a. CAN/ULC-S109-M87 “Standard for Flame Tests of Flame-Resistant Fabrics and Films”,
 - b. NFPA 701-1996 “Standard Methods of Fire Tests for Flame-Resistance of Textiles and Films”, Test 1 and Test 2, and
 - c. CAN/ULC-S102.2-M2003 “Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials and Assemblies.”
12. The XLShelter Membrane shall not have a flame spread rating more than 25, as specified in CAN/ULC-S102.2-M2003.
13. The XLShelter Membrane shall be installed by installers who are approved by All Cover Portable Systems/XLShelters.
14. The XLShelter Membrane shall be installed as per the XLShelter Building System Installation Manuals, and are subject to the product’s limitations as specified by the manufacturer.
15. The XLShelter Membrane shall be identified by a permanent mark that indicates the manufacturer’s name and registered trademark.

16. The XLShelter Membrane used in the construction of XLShelter Building System, shall have the spatial separation determined in accordance with the Building Code, where the roof membrane becomes a part of the exposing building face.

B. General Conditions

1. The use of the XLShelter Membrane must comply with the *Building Code Act, 1992* as amended or re-enacted from time to time and except as specifically authorized herein, with the Building Code as amended or remade from time to time.
2. A copy of this Authorization shall accompany each application for a building permit and shall be maintained on the site of the construction with the building permit.
3. The Applicant named in Part 1 hereof shall promptly notify the BMEC of:
 - (a) the failure of the Applicant, or of the material, system or building design that is the subject matter of this Authorization, to comply with any of the terms and conditions set out in 6. A. above; or
 - (b) the occurrence of any of the events described in Conditions 6. B. 4. (a) and (b) (ii) below.
4. The BMEC may amend or revoke this Authorization where it determines that:
 - (a) any change has been made to:
 - (i) the material, system or building design that is the subject matter of this Authorization;
 - (ii) the address of the applicant specified in Part 1 of this Authorization; or,
 - (iii) the ownership of the applicant specified in Part 1 of this Authorization.
 - (b) the use of the material, system or building design authorized herein;
 - (i) does not comply with the *Building Code Act, 1992* or any relevant legislation as they may be amended or re-enacted from time to time; or

- (ii) provides an unsatisfactory level of performance, in situ
 - (c) the Applicant, or the material, system or building design that is the subject matter of this Authorization, has failed to comply with any of the terms and conditions set out in this Authorization; or
 - (d) any Building Code provision relevant to this Authorization has been amended or remade.
5. Where the BMEC receives additional information concerning the material, system or building design authorized herein, the BMEC may review this Authorization and the BMEC may after the review amend or revoke this Authorization as in the opinion of the BMEC may be necessary.

Dated at Toronto this 29 day of September 2005.

BUILDING MATERIALS EVALUATION COMMISSION

Edward Link, Vice-Chair