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Ontario

**Building Materials Evaluation
Commission**

**Commission d'évaluation des
matériaux de construction**

BMEC AUTHORIZATION: 14-01-367

Atlas and Apex Series Steel Framed Fabric Covered Building Systems

Date of Authorization: January 30, 2014
Date of Expiry¹: January 30, 2019

1. Applicant

Britespan Building Systems Inc.
37651 Amberly Road, R.R. #1
Lucknow, ON
N0G 2H0

Tel: 519-528-2922
Fax: 519-528-2890
Web: www.britespanbuildings.com

2. Manufacturing Facility

Britespan Building Systems Inc.
37651 Amberly Road, R.R. #1
Lucknow, ON
N0G 2H0

Membrane
ECP (Engineered Coated Product)
a div. of Intertape Polymer Group
50 Abbey Avenue
Truro, NS, B2N 6W4

3. Authorization

Britespan Building Systems Inc.'s Atlas and Apex Series are non-pressurized steel framed fabric covered building systems, composed of steel framework and Britespan Synergy Fabric membrane (the "Britespan System").

The Britespan Synergy Fabric membrane used in the design and construction of the Britespan System is FRU88X-6 (4 mil). Additional descriptive information is provided in documents supplied by the applicant listed in Appendix A.

¹ This Authorization expires on the date shown. It is the responsibility of Authorization holders to make a complete application considering the time for review and complexity of the new application.

Reports and assessment provided by the Applicant demonstrate that if the Britespan System is used in conjunction with the Britespan Synergy Fabric membrane, and is manufactured, designed, installed, and maintained in accordance with manufacturer's instructions and limitations, and the specific terms and conditions stated in this Authorization, the use of the Britespan System shall be deemed not in contravention of Sentence 3.1.15.1.(1). "Roof Covering Classification" of Division B of the Building Code;

All other requirements pertaining to the construction and installation are subject to the requirements of the Building Code, and subject to the following terms and conditions contained in 4 and 5 below:

4. Specific Terms and Conditions

1. This Authorization is valid only for the use of the fabric FRU88X-6 (4 mil) membrane (the "Membrane");
2. This Authorization is valid only for the use of the Membrane, when used in conjunction with Britespan Building Systems Inc.'s Atlas and Apex series, steel framed fabric covered building systems;
3. The Membrane used in conjunction with the Britespan System is authorized as a roof covering only when used with unheated Group A, Divisions 3 and 4 and Group F, Divisions 2 and 3 occupancies as defined by the Building Code, in lieu of the requirements of "Roof Covering Classification" Sentence 3.1.15.1.(1) of Division B of the Building Code.
4. The Membrane shall not be used in a building more than 1 storey in building height;
5. The Membrane is authorized for use only in unheated buildings;
6. The Membrane is authorized for use only in buildings that are permitted to be of combustible construction;
7. The structural design shall be carried out by a Professional Engineer as defined in the *Professional Engineers Act, 1990, (Ontario)*, and who is experienced in the specific method applied;
8. The site specific structural engineering design of the steel frame and the Membrane used in conjunction with the Britespan System shall be in accordance with Part 4 "Structural Design" of Division B of the Building Code, and CSA-S367-09 "Air-, cable-, and frame-supported membrane structures", including Annexes B, C, and D, and where there is a conflict, the most restrictive requirement shall prevail;
9. The structural design loads applied to the Britespan System shall not include any reductions associated with maintenance or snow melting;

10. The structural design of the Britespan System shall account for the effects of snow piling and snow drifting against the membrane walls of the building;
11. Britespan Building Systems Inc. shall maintain its certification in accordance with CSA A660 "Certification of Manufacture of Steel Building Systems";
12. The Membrane used in the construction of a Britespan System shall not be used in the construction of buildings where the structural design will require an Importance Factor(s) of greater than 1;
13. When the Membrane used in the construction of a Britespan System is designed without an end wall(s) or with large doors/panels additional wind loads, such as internal pressure, shall be considered;
14. The maximum span width for a Britespan System Apex Series shall be 30.48 m (100');
15. The maximum span width for a Britespan System Atlas Series shall be 24.99 m (82');
16. When the Membrane is installed in conjunction with a Britespan System, together they shall be constructed as per the requirements of Subsection 3.2.2. of Division B of the Building Code;
17. Except as permitted by Article 3.2.2.17. "Sprinklers in Lieu of Roof Rating" of Division B of the Building Code, the Membrane shall not be used where the assembly is required to have a fire-resistance rating;
18. The Membrane shall satisfy the following standards:
 - a. CSA-S367-09 "Air-, cable-, and frame-supported membrane structures", including Annexes B, C and D,
 - b. CAN/ULC-S109-03 "Standard for Flame Test of Flame-Resistant Fabrics and Films", and
 - c. NFPA 701-2004 "Methods of Fire Tests for Flame Propagation of Textiles and Films" Test 2;
19. The Membrane shall be tested in accordance with CAN/ULC-S102.2-03 "Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies" and have a flame- spread rating not more than 25, on both sides;
20. The Membrane shall not have a smoke developed classification greater than 95, as tested in accordance with CAN/ULC-S102.2-03 "Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies";
21. The Membrane shall be treated, equally, on both sides, for flame retardant, flame-resistance, flame-spread, and ultraviolet resistance;

22. Where the roof Membrane used in the construction of a Britespan System is considered a wall as described in Sentences 3.2.1.3.(1) and 9.10.1.2.(1) of Division B of the Building Code, the spatial separation requirements of Subsections 3.2.3. and 9.10.14. of Division B, of the Building Code shall apply;
23. The Membrane shall be installed, by installers, who are approved by Britespan Building Systems Inc.; and
24. The Membrane shall be installed under the supervision of a Britespan Building Systems Inc.'s consultant and as per the Britespan Building System Inc.'s "Owner/Installation Manual, 82' Wide Atlas 24, Atlas 24-82 Manual Rev. 4" for the Atlas Series or "Apex Series 100 Wide, Brite Ideas for Building a Brite Future, Installation Guide & Owner's Manual Rev.1" for the Apex Series, and is subject to the product's limitations as they are specified by the manufacturer.

5. General Conditions

1. The use of the Building Systems as described in Section 3. and the Specific Terms and Conditions set out in Section 4 must comply with:
 - (a) the *Building Code Act, 1992*, (the "Act") as amended or re-enacted,
 - (b) except as specifically authorized herein, the Building Code as amended or remade, and
 - (c) all other applicable legislation.
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 specified in Section 1. shall promptly notify the BMEC of:
 - (a) the failure of the Applicant to comply with any of the Specific Terms and Conditions set out in Section 4,
 - (b) the failure of the material, system or building design that is the subject matter of this Authorization to
 - (i) comply with any of the Specific Terms and Conditions set out in Section 4, or
 - (ii) provide a satisfactory level of performance in situ, or
 - (c) the occurrence of any of the events described in General Conditions 5.4.(a), (b), (e) or (f).
4. The BMEC may amend or revoke this Authorization at any time on its own initiative, or at the request of the Applicant specified in Section 1. Without restricting the foregoing, the BMEC may amend or revoke this Authorization where it determines that:
 - (a) any change has been made to:
 - (i) the name of the Applicant specified in Section 1,
 - (ii) the address or other contact name information of the Applicant specified in Section 1,
 - (iii) the ownership of the Applicant specified in Section 2,
 - (iv) the manufacturing facilities specified in Section 2,
 - (v) the material, system, or building design that is the subject matter of this Authorization, or
 - (vi) a test method relevant to this Authorization,

- (b) the Applicant has failed to comply with any of the terms and conditions set out in this Authorization,
- (c) in the opinion of the BMEC, the use of the material, system or building design authorized herein provides an unsatisfactory level of performance in situ,
- (d) in the opinion of the BMEC, amendment or revocation of the Authorization is appropriate on the basis of potential danger to public health and safety,
- (e) the *Act* or Building Code has been amended, re-enacted or remade in a manner relevant to this Authorization,
- (f) this Authorization was issued on mistaken, false or incorrect information, or
- (g) a revision of an editorial nature is appropriate.

Dated at Toronto this 30th day of January 2014

On behalf of the Building Materials Evaluation Commission,

Gerald R. Genge, P. Eng., C.Eng., BDS, BSSO, C.Arb., Q.Med.
Vice-Chair, Building Materials Evaluation Commission

Appendix A – Supporting Information

The following is a list of the documents that were submitted and reviewed, but were not limited to:

1. Manufacturer's Literature, Britespan Building Systems Inc., "For All Your Building Needs", 2 pages;
2. Manufacturer's Literature, Britespan Building Systems Inc., "Apex Building Series", 2 pages;
3. Manufacturer's Literature, Britespan Building Systems Inc., "Post Hot Dip Galvanized Steel", 2 pages;
4. Drawings, Britespan Building Systems Inc., Atlas Series, 20 pages;
5. Drawing, Britespan Building Systems Inc., Apex Series, 12 pages;
6. Certificate, Certificate of Registration QUASAR "CAN/CSA A660-10 Steel Building Systems", date of expiry September 24, 2013;
7. Letter of Validation, CWB, "Certification of Companies for Fusion Welding of Steel". From March 5, 2012 to April 4, 2013.
8. Limited Warranty, Britespan Building Systems Inc., dated 17 April 2013, 2 pages.
9. Manufacturer's Literature, Britespan Building Systems Inc., "Synergy FR Fabric –ECP-FRU-88x-6", dated April 11, 2013;
10. Manufacturer's Literature, Britespan Building Systems Inc., "Synergy NON-FR Fabric –ECP-RU-88x-6", dated April 11, 2013;
11. Manufacturer's Literature, Britespan Building Systems Inc., "Synergy FR Fabric –Fabrene P708WW", dated April 22, 2013;
12. Manufacturer's Literature, Britespan Building Systems Inc., "Synergy NON-FR Fabric –FabreneQ3155WW", dated April 22, 2013;
13. Manual, Britespan Building Systems Inc., "Owner/Installation Manual- Includes Warranty and Registration-82' Wide Atlas 24", Atlas 24-82 Manual rev. 4;
14. Manual, Britespan Building Systems Inc., "Apex Series, 100Wide-Brite Ideas for Building a Brite Future-Installation Guide and Owners Manual", rev. 1;
15. Manual, Britespan Building Systems Inc., "Quality Assurance Program Quality Manual", rev. 3;
16. Certificate, Orion Registrar, Inc., USA Certificate of Registration, "Intertape Polymer Group Engineered Coated Products Division 50 Abbey Avenue, Truro, Nova Scotia, B2N 6W4, Canada", October 3, 2012 to October 2, 2015.
17. Manufacturer's Literature, IPG Intertape Polymer Group, "NovaShield™ Membrane Structure Fabric with Armorkote™ Product Guide", © 2011;
18. Manufacturer's Literature, IPG Intertape Polymer Group, "NovaShield™ II with Armorkote™ RU-88x-6(FR), 400", effective date 05/12;
19. Test Report, Bodycote Materials Testing Canada Inc. "CAN/ULC-S102 Surface Burning Characteristics of "FRU88X-6"", Report Number 05-02-609, dated August 23, 2005;
20. Test Report, Bodycote Materials Testing Canada Inc. "CAN/ULC-S102.2 Surface Burning Characteristics of "FRU88X-6 4mil"", Report Number 06-02-417, dated May 26, 2006;
21. Test Report, Bodycote Materials Testing Canada Inc. "CAN/ULC-S109 Flame Resistance of "FRU88X-6, 4 mil" Woven Polyolefin", Report Number 06-02-866, dated November 24, 2006;

22. Test Report, Bodycote Materials Testing Canada Inc. "ASTM E 84 Surface Burning Characteristics of "FRU88X-6 Reinforced Fabric"", Report Number 08-002-695, dated August 22, 2008;
23. Test Report, Exova, "NFPA 701-2010 Test Method 1 – Flame Propagation of "FRU88X-6"", Report Number 11-002-637(A) dated September 26, 2011;
24. Test Report, Exova, "NFPA 701-2010 Test Method 2 – Flame Propagation of "FRU88X-6"", Report Number 11-002-637(B) dated September 26, 2011;
25. Certificate, California Department of Forestry and Fire Protection Office of the State Fire Marshal, Registered Flame Resistant Product-FRU88x-6 (4mil), Registration No. F-51405, Expires on June 30, 2013;
26. Manufacturer's Literature, IPG Intertape Polymer Group, "NovaShield™ II with Armorkote™ RU-88x-6, 4 mil (400)", effective date 03/ 2013;
27. Test Report, Intertape Polymer Group, "Fabric Breaking Force After Crease Fold Using Standard Test Methods For Coated And Laminated Fabrics For Architectural Use: ASTM D4851", dated March 21, 2013, 3 pages;
28. Test Report, Intertape Polymer Group, "Fabric Breaking Force Using Standard Test Methods For Coated And Laminated Fabrics For Architectural Use: ASTM D4851", dated March 21, 2013;
29. Test Report, Intertape Polymer Group, "Standard Test Method For Trapezoid Tearing Strength of Geotextiles: ASTM D4853", dated March 21, 2013;
30. Test Report, Intertape Polymer Group, "Standard Practice For Operating Fluorescent Light Apparatus For UV Exposure of Nonmetallic Materials: ASTM G154", dated March 20, 2013;
31. Test Report, Bodycote Materials Testing Canada Inc. "Cold Crack on One Coated Fabric", Report Number 08-001-T0314, dated June 24, 2008;
32. Material Safety Data Sheet, Intertape Polymer Group, "Flame Retardant Polyethylene Fabrics-NOVA-THENE® FR, FRU, Type 9700 and Type 1070 Fabrics", 3 pages, dated February 14, 2013;
33. Test Report, Bodycote Materials Testing Canada Inc. "CAN/ULC-S102 Surface Burning Characteristics of "Nova Shield II RU88x-6 4mil"", Report Number 08-002-394, dated February 14, 2008;
34. Test Report, Bodycote Materials Testing Canada Inc. "ATM E 84 Surface Burning Characteristics of "Nova Shield II" RU88x-6", Report Number 03-02-586(A), dated September 5, 2003;
35. Certificate, Canadian General Standards Board, "Fabrene Inc.-ISO 90 0001:2008", Expiry 2014-04-14;
36. Brochure, "Fabrene® Shelter Fabrics-101 Year-round Uses", 2 pages
37. Manufacturer's Literature, Intertape Polymer Group., "Fabrene P708WW" (metric data), dated 2013/03/25;
38. Manufacturer's Literature, Intertape Polymer Group., "Fabrene P708WW" (imperial data), dated 2012/10/01;
39. Manufacturer's Literature, Intertape Polymer Group., "Fabrene Q315WW" (metric data), dated 2009/11/12;
40. Manufacturer's Literature, Intertape Polymer Group., "Fabrene Q315WW" (imperial data), dated 09/11/12;
41. Test Report, Bodycote Materials Testing Canada Inc. "CAN/ULC-S102.2 Surface Burning Characteristics of "Product P7081830" Woven Polyolefin", Report Number 04-02-657(A), dated August 24, 2004;
42. Test Report, Bodycote Materials Testing Canada Inc. "CAN/ULC-S109 Flame Resistance Test of Woven Polyethylene Fabric", P708WW, Report Number 01-02-827(B) dated January 14, 2002;

43. Test Report, SGS, Flammability in accordance with the procedures outlined in NFPA 701-04 for Fabrene P708WW, Test Report No. 177:013423-01, 2 pages, dated June 30, 2008;
44. Test Report, SGS, Flame Spread Index and Smoke Developed Value for Fabrene P708, Test Report No. 177:012032, 6 pages, dated May 6, 2008;
45. Test Report, Bodycote Materials Testing Canada Inc. "UBC Standard 31-1 Flame Retardant Membranes of "Product P7081830" Woven Polyolefin", Test Report No. 04-02-657(C), dated August 24, 2004;
46. Test Report, Bodycote Materials Testing Canada Inc. "California Administrative Code Title 19 Fire Resistance of "P708WW" Woven Polyolefin", Test Report No. 05-02-967(D), dated December 15, 2005;
47. Test Report, Bodycote Materials Testing Canada Inc. "CAN/ULC-S102 Surface Burning Characteristics of "Q315" Reinforced Woven Fabric", Report Number 07-02-494, dated July 23, 2007;
48. Test Report, Bodycote Materials Testing Canada Inc. "ASTM E 84 Surface Burning Characteristics of Woven Reinforced Fabric", Report Number 06-02-633, dated September 1, 2006;
49. Graph, PGI Fabrene Inc., "UV Accelerated Exposure Results- QUV", dated 2013-03-25, 1 page.
50. Test Report, Group CTT Group, "Standard Test Method for Coated Fabrics- Hydrostatic Resistance", Test Report No. S679-007-65518A, dated April 19, 2013;
51. Report, Fabrene Inc., "Material Safety Data Sheet-Fabrene® Woven Polyolefin Fabric", dated February 4, 2013;
52. Manual, The Farley Group, Farley Manufacturing Inc. Air Supported structures, "Quality Assurance Manual", 3 pages, undated;
53. Log Data Sheet, The Farley Group, Farley Manufacturing Inc. "Qualifying Weld Machine for Production Log-Britespan (as per ASTM D451)", 1 page, undated;
54. Product Control Plan, The Farley Group, Farley Manufacturing Inc. "Cover Manufacturer", 1 page, Rev. 2, dated August 2011;
55. The Farley Group, Farley Manufacturing Inc., "Qualifying Fabric Weld machine For Use In Production Quality Control Procedure", 2 pages, undated;
56. Drawings and Calculations, Britespan Building Systems Inc., Britespan Atlas 82 Structural Drawing Set, dated April 16, 2013 and revised April 25, 2013, 18 pages;
57. Report, Britespan Building Systems Inc., "Atlas 82' (25.00 m) Canadian Structural Evaluation- 4 feet (1.22 m)- Frame Spacing", dated April 2013;
58. Report, Britespan Building Systems Inc., "4.1 Loading Calculations and Base Reactions", Atlas Series, 16 pages, dated 25/04/2013;
59. Report, Britespan Building Systems Inc., "4.2 Computer Model for Analysis- Staad. Pro", Atlas Series, 20 pages, dated 25/04/2013;
60. Report, Britespan Building Systems Inc., "4.3 Secondary Elements, Bracing and Connections", Atlas Series, 29 pages, undated;
61. Report, Britespan Building Systems Inc., "4.4 Analyses and Design Results- Staad. Pro", Atlas Series, dated April 25, 2013, 60 pages;
62. Drawings and Calculations, Britespan Building Systems Inc., Britespan Apex 100 Structural Drawing Set, dated April 17, 2013 and revised April 25, 2013, 20 pages;

63. Report, Britespan Building Systems Inc., "Apex 100' (30.49 m) Canadian Structural Evaluation- 8 feet (2.44 m)- Frame Spacing", 7 pages, dated April 2013;
64. Report, Britespan Building Systems Inc., "4.2 Computer Model for Analysis-Staad. Pro", Apex Series, 20 pages, dated April 25, 2013;
65. Report, Britespan Building Systems Inc., "4.2 Computer Model for Analysis-Staad. Pro", Apex Series, 20 pages, dated April 25, 2013;
66. Report, Britespan Building Systems Inc., "4.3 Secondary Elements, Bracing and Connections", Apex Series, 34 pages, undated;
67. Report, Britespan Building Systems Inc., "4.4 Analyses and Design Results-Staad. Pro", dated April 25, 2013, 81 pages;
68. Letter Report, Britespan Building Systems Inc., "Britespan Building System-Steel frame fabric covered building system-Certification and Analysis", 6 pages dated April 29, 2013;
69. Letter Report, Britespan Building Systems Inc., letter in response to the Building and Development Branch's Technical Report , 6 pages, dated May 29, 2013;
70. Letter Report, Britespan Building Systems Inc., "BMEC Application A2013-03 Britespan Building Systems Response to May 30, 2013 presentation & June 10 Letter", 33 pages, dated June 17, 2013;
71. Letter Report, Britespan Building Systems Inc., "BMEC Application A2013-03 Britespan Building Systems Response to July 31, 2013 letter", 53 pages, dated August 15, 2013; and
72. Letter Report, Britespan Building Systems Inc., "BMEC Application A2013-03 Britespan Building Systems Response to Oct 11, 2013 letter", 11 pages, dated October 24, 2013.