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APPROVAL REPORT

Project No: 0003050495

Class: 4451

Product Name: Re-Examination of FM Approved #12 HWH Tekes 4, #12 HWH Tekes 5, #12 ICH Traxx 4, #12 ICH Traxx 5, #10 HWH Tekes 1, #10 ICH Traxx 1 and #12 ICH Traxx 1 fasteners per FM Standard 4451
FM Approval of #10 HWH Tekes 3 and #12 HWH Tekes 3 per FM Standard 4451

Name of Listing Company: ITW Buildex Corp

Address of Listing Company: 1349 W Bryn Mawr Ave
Itasca IL 60143
United States

Customer ID: 1000002231-1

Customer website: <http://www.itwbuildex.com>

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Materials

1/22/2014

Date of Approval

1 INTRODUCTION

1.1 ITW Buildex Corp requested Approval of their #10 HWH Tek 3 and #12 HWH Tek 3 to determine if they meet the Approval requirements of the Standard listed in Section 1.3. In addition, they requested re-examination of their #12 HWH Tek 4, #12 HWH Tek 5, #12 ICH Traxx 4 and #12 ICH Traxx 5 steel deck structural attachment fasteners and #10 HWH Tek 1, #10 ICH Traxx 1 and #12 ICH Traxx 1 side lap fasteners to determine if they meet the Approval requirements of the latest issue of the Standard listed in Section 1.3.

1.2 This report may be freely reproduced only in its entirety and without modification.

1.3 Standard

Title	Number	Issue Date
Approval Standard for Profiled Steel Panels for Use as Decking in Class 1 Insulated Roof Construction	4451	6/2012

1.4 Listing

The products and assemblies will be listed in RoofNav, an on-line resource of FM Approvals. Formulations, drawings and specifications are on file at FM Approvals.

2 DESCRIPTION

The #10 HWH Tek 3 and #12 HWH Tek 3 fasteners are described as follows:

2.1 #10 HWH Tek 3 are Size No. 10 screws, 3/4 in. (19 mm) long containing 16 threads per 1 in. (25 mm) of a coarse-thread series, a 5/16 in. (7.9 mm) hexagon drive head and a pilot drilling tip. The threads have a 0.186 in. (4.7 mm) maximum major diameter and 0.133 in. (3.4 mm) minimum minor diameter of a flat root contour. #12 HWH Tek 3 are Size No. 12 screws, 3/4 in. (19 mm) long containing 14 threads per 1 in. (25 mm) of a coarse-thread series, a 5/16 in. (7.9 mm) hexagon drive head and a pilot drilling tip. The threads have a 0.212 in. (5.4 mm) maximum major diameter and 0.161 in. (4.1 mm) minimum minor diameter of a flat root contour.

2.2 All other products are as described in RoofNav. Drawings and specifications are on file at FM Approvals.

3 EXAMINATIONS AND TESTS

3.1 All components, except those in Section 2.1 were produced under the FM Approvals Surveillance Audit program as indicated by FM Approvals labels. All samples were considered to be representative of standard production and were examined and tested as indicated below. Components incorporated into test samples were selected by FM Approvals personnel. Test samples were prepared by, or under the supervision of, FM Approvals personnel. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

- 3.1.1** The re-examination portion of this project of previously Approved fasteners was performed according to revised Standard 4451, June 2012. Calculations were submitted for review in conjunction with data on file at FM Approvals under the projects shown in Table 1 below. All data is on file at FM Approvals under Project No. 3050495 along with other documents and correspondence applicable to this program
- 3.2** Several performance requirements and tests required by the Standard have been waived due to previous successful testing. See Table 1 below for details.

Table 1	
FM Standard 4451 Performance Requirement	Submissions Required / Waivers
Allowable Live Load Deflection	Waived, not applicable
Combustibility From Below the Roof Deck	Waived, not applicable
Combination pull out / pull over resistance of fasteners (Testing)	Waived, see 1X7A2.AM, 2X9A2.AM, 3002146
Pull over resistance of fasteners (Calculation)	ITW to provided calculations
Combination pull off / pull over resistance of arc spot welds	Waived, not applicable
Side lap fastener and side lap crimping and interlocking resistance	Waived, see 2X9A2.AM Included
Fastener pull out resistance for above deck components	Waived, not applicable
Steel Deck Bending Stresses Under Service Wind Loads	Waived, not applicable
Wind Uplift Ratings Greater Than Class 1-90 and all assemblies that utilize steel deck with a design thickness less than 0.75 mm	Not requested
Foot Traffic Resistance of Insulation	Waived, not applicable
Bearing Capacity of Insulation	Waived, not applicable
Corrosion Resistance Test (Optional Test)	Not requested
Drivability Evaluation of Fasteners	Included

4 MARKING

- 4.1** The manufacturer shall mark each product and/or packaging with the manufacturer's name and product trade name. In addition, product and/or packaging must be marked with the Approval Mark of FM Approvals.
- 4.2** Markings denoting Approval by FM Approvals shall be applied by the manufacturer only within and on the premises of manufacturing locations that are under the FM Approvals Surveillance Audit program.
- 4.3** The manufacturer agrees that use of the FM Approvals name or Approval Mark is subject to the conditions and limitations of the Approval by FM Approvals. Such conditions and limitations must be included in all references to Approval by FM Approvals.

5 REMARKS

- 5.1** The securement of the roof system must be enhanced at the building corners and perimeter as outlined in FM Global Property Loss Prevention Data Sheet 1-29.
- 5.2** The roof cover must be installed using a roof perimeter flashing system Approved by FM Approvals. See RoofNav.

6 SURVEILLANCE AUDIT

The manufacturing facility at the following location shall be visited on a routine basis. The facility processes and quality control procedures in place have been determined to be satisfactory to manufacture products identical to that tested and Approved. A Form 797 shall be submitted to FM Approvals for requesting to manufacture products at any additional or alternate manufacturing facilities which are not listed below.

Audit Location

1349 W Bryn Mawr Ave
Itasca IL 60143
United States

7 MANUFACTURER'S RESPONSIBILITIES

- 7.1 The manufacturer shall notify FM Approvals of any planned change in the Approved products, prior to general sale or distribution, using Form 797, Approved Product Revision Report. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals.
- 7.2 To ensure compliance with his procedures in the field, the manufacturer shall supply to the installer such necessary instruction or assistance required to produce the desired performance achieved in the tests.
- 7.3 In accordance with the Master Agreement, the manufacturer shall make full and immediate disclosure to FM Approvals of all information concerning any defect in, or potential hazard of, the product or service manufactured or provided by the Customer which is Approved by, or being examined by, FM Approvals. The manufacturer shall make all necessary arrangements for the investigation of complaints / anomalies applicable to this approval and shall keep records of all complaints / anomalies including actions taken.

8 DOCUMENTATION

The following document describes the #10 HWH Tek 3 and #12 HWH Tek 3 fasteners and is on file at FM Approvals.

Document Title	Issue Date
Surveillance Audit Manual	January 16, 2014

9 CONCLUSIONS

- 9.1 Evaluation from the re-exam and previous FM Approvals programs indicate that the ITW Buildex #12 HWH Tek 4, #12 HWH Tek 5, #12 ICH Traxx 4, #12 ICH Traxx 5, #10 HWH Tek 1, #10 ICH Traxx 1, #12 ICH Traxx 1, #10 HWH Tek 3 and #12 HWH Tek 3 steel deck securement fasteners meet the requirements of FM Approvals for use as a component in Class 1-60, Class 1-75, and Class 1-90 wind uplift rated insulated steel deck roof constructions as described below and when used as described in RoofNav, an on-line resource of FM Approvals.

9.2 The #12 HWH Tek 4 and #12 HWH Tek 5 fasteners meet FM Approval requirements for use in securing FM Approved steel deck with design thicknesses of 0.0295, 0.0358, 0.0474 and 0.0598 in. (0.75, 0.91, 1.20 and 1.52 mm) to minimum 0.125 in. (3.2 mm) thick steel structural supports at the maximum spans shown in Table 2 below. The maximum total thickness of the steel deck plus steel support is 0.25 in. (6.4 mm) for #12 HWH Tek 4 fasteners and 0.5 in. (13 mm) for #12 HWH Tek 5 fasteners.

Table 2									
Fastener Spacing	Wind Rating	Deck Design Thickness							
		0.0295 in. (0.75 mm, 22 ga.)		0.0358 in. (0.91 mm, 20 ga.)		0.0474 in. (1.20 mm, 18 ga.)		0.0598 in. (1.52 mm, 16 ga.)	
in. (mm)		in.	mm	in.	Mm	in.	mm	in.	mm
6 (150)	1-60	231	5867	280	7112	371	9423	469	11913
	1-75	185	4699	224	5690	297	7544	375	9525
	1-90	154	3912	187	4750	247	6274	312	7925
8 (203)	1-60	173	4394	210	5334	278	7061	351	8915
	1-75	138	3505	168	4267	223	5664	281	7137
	1-90	115	2921	140	3556	185	4699	234	5944
12 (305)	1-60	115	2921	140	3556	185	4699	234	5944
	1-75	92	2337	112	2845	148	3759	187	4750
	1-90	77	1956	93	2362	123	3124	156	3962

9.2.1 The #12 ICH Traxx 4 and #12 ICH Traxx 5 fasteners meet FM Approval requirements for use in securing FM Approved steel deck with design thicknesses of 0.0295, 0.0358, 0.0474 and 0.0598 in. (0.75, 0.91, 1.20 and 1.52 mm) to minimum 0.125 in. (3.2 mm) thick steel structural supports at the maximum spans shown in Table 3 below. The maximum total thickness of the steel deck plus steel support is 0.25 in. (6.4 mm) for #12 ICH Traxx 4 fasteners and 0.5 in. (13 mm) for #12 ICH Traxx 5 fasteners.

Table 3									
Fastener Spacing	Wind Rating	Deck Design Thickness							
		0.0295 in. (0.75 mm, 22 ga.)		0.0358 in. (0.91 mm, 20 ga.)		0.0474 in. (1.20 mm, 18 ga.)		0.0598 in. (1.52 mm, 16 ga.)	
in. (mm)		in.	mm	in.	mm	in.	mm	in.	mm
6 (150)	1-60	223	5664	270	6858	358	9093	452	11481
	1-75	178	4521	216	5486	286	7264	361	9169
	1-90	148	3759	180	4572	238	6045	301	7645
8 (203)	1-60	167	4242	202	5131	268	6807	339	8611
	1-75	133	3378	162	4115	215	5461	271	6883
	1-90	111	2819	135	3429	179	4547	226	5740
12 (305)	1-60	111	2819	135	3429	179	4547	226	5740
	1-75	89	2261	108	2743	143	3632	180	4572
	1-90	74	1880	90	2286	119	3023	150	3810

- 9.2.2** The #10 HWH Teks 1, #10 ICH Traxx 1, #12 ICH Traxx 1, #10 HWH Teks 3 and #12 HWH Teks 3 fasteners meet FM Approvals Class 1-60, Class 1-75, and Class 1-90 wind uplift requirements for use in securing side laps of FM Approved steel deck with design thicknesses of 0.0295, 0.0358, 0.0474 and 0.0598 in. (0.75, 0.91, 1.20 and 1.52 mm). The fasteners are installed with a maximum spacing of 36 in. (914 mm) on center.
- 9.3** Tests show that the tested roof constructions in and of themselves would not create a need for automatic sprinklers.
- 9.4** Since a duly signed Master Agreement is on file for this customer, Approval is effective as of the date of this report.
- 9.5** Continued Approval will depend upon satisfactory field experience and periodic Facilities and Procedures Audits.

PROJECT DATA RECORD: 0003050495

ATTACHMENTS: None

ORIGINAL TEST DATA See PDR(s) for project(s) in Table 1