



September 16, 2009

ICC Evaluation Service, Inc.
Los Angeles Business/Regional Office
5360 Workman Mill Road
Whittier, CA 90601

Re: Written Comments regarding October 7, 2009 Hearing Agenda Item 19 – Proposed Acceptance Criteria AC420, Horizontally Sliding Accordion-folding Egress Fire-door Assemblies

To whom this may concern,

Cornell Iron Works, Inc., established in 1828, currently manufactures a line of Accordion Folding Fire Doors that have been previously evaluated by ICC-ES and were found to be compliant with the International Building Code® per Evaluation Report ESR-2300. Cornell has also worked with ICC-ES to create EG287 and holds ESR-1167 for its Emergency Response Grilles.

The purpose of this correspondence is to express numerous concerns with the proposed AC420 - Horizontally Sliding Accordion-folding Egress Fire-door Assemblies as authored by Won-Door Corporation. While we agree that an Acceptance Criteria is warranted, many areas of the criteria submitted by Won-Door have been included to create a proprietary position for their product, and not necessarily to meet the requirements of current building codes and standards. The following recommended revisions are to keep the Acceptance Criteria performance based so that it accurately addresses the functionality requirements of 2009 IBC Section 1008.1.4.3 and 2007 NFPA 80 Chapter 9.

Additionally, we recommend that all references to “release devices” be removed from the AC. Accordion Folding Fire Door systems receive an electrical signal, (a normally closed (N/C) alarm signal that opens upon alarm activation or alarm system malfunction), from a separately supplied UL 864 listed fire alarm control panel, which activates the close circuit of the operator/controller. The system does not “release” anything to activate automatic closing.

To ensure that the correct listing for the operating system is referenced in the AC, it is important to understand that at the core of Horizontally Sliding Accordion-folding Egress Fire-door Assemblies is a motor operated sliding fire door that is activated to power close upon alarm signal. Once again, the fire door operating system does not release anything to activate automatic closing, but only receives a signal from a separately supplied UL 864 listed fire alarm control panel that activates the “close” circuit of the door. Electric powered fire door operators are required to be listed per ANSI/UL 325, Door, Drapery, Gate, Louver, and Window Operators and Systems.

AN ISO 9001:2000 REGISTERED COMPANY



Cornell appreciates the opportunity to be able to review and comment on this proposed Acceptance Criteria. Our desired outcome is an AC that is not proprietary to a single manufacturer's product, but one that provides for safe horizontally sliding egress fire door assemblies that meet the requirements of the current building codes and standards.

You can be assured that we will participate in the future development of this project and that we are willing to assist ICC-ES with this endeavor.

Yours truly,

A handwritten signature in black ink, appearing to read "John Polchin", with a long, sweeping horizontal line extending to the right.

John Polchin
Director of Marketing

AN ISO 9001:2000 REGISTERED COMPANY

“Red” Underlined – Newly Proposed Text
“Blue” Italicized – Clarifying Statements
~~“Red” Strikethrough~~ – Text for Omission

AC420-Cornell Comments
September 2009

PROPOSED ACCEPTANCE CRITERIA FOR HORIZONTALLY SLIDING, ACCORDION-FOLDING, EGRESS FIRE-DOOR ASSEMBLIES

1 1.0 INTRODUCTION

2 **1.1 Purpose:** The purpose of this acceptance criteria is to establish requirements
3 for horizontally sliding fire-door assemblies used in a means of egress. A horizontally
4 sliding fire door assembly includes the fire-rated sliding panel, housing, strike, motor
5 operator assembly, tracks, rollers, exit devices, and lead post. This criteria is applicable
6 to horizontally sliding fire-rated door assemblies, used as opening protectives to retard
7 the passage of fire and smoke, in order to be recognize in an ICC Evaluation Service,
8 Inc. (ICC-ES), evaluation report under the 2009 *International Building Code*® (IBC).

9 Bases of recognition are 2009 IBC 715 and 1008.1.3.3 1008.1.4.3, 2007 NFPA 80
Chapter 9, and NFPA101 7.2.1.14
10 ~~and 715.~~

11 1.2 Scope:

12 **1.2.1** Horizontally sliding, accordion-type, fire-rated door assemblies are used
13 as opening protection in fire-resistance-rated wall assemblies, as smoke- and draft-
14 control assemblies, and as a means of egress. The horizontally sliding, accordion-type,
15 fire-rated door assembly may be single-~~sided~~ sliding or bi-parting.

16 1.3 Codes and Referenced Standards:

17 **1.3.1** 2009 *International Building Code*® (IBC), International Code Council.

18 **1.3.2** ANSI/UL 10B-2008, UL Standard for Fire Safety Tests of Door

19 Assemblies, Underwriters Laboratories Inc.

20 **1.3.3** NFPA 80-07, Standard for Fire Doors and Windows and Other Opening
Protectives, National Fire

21 Protection Association.

Since Accordion Fire Doors are signaled to close by a separately supplied UL 864 listed Fire Alarm Control Panel and since the Fire Alarm Control Panel is provided by others and is not part of the Accordion Fire Door assembly, then the reference to the UL 864 standard should be removed from this Acceptance Criteria and replaced with the proper UL 325 listing standard for the power operator and controller.

22 **1.3.4** ~~ANSI/UL 864-06, UL Standard for Safety for Control Units for Fire-~~

23 ~~Protective Signaling Systems, Underwriters Laboratories Inc.~~ ANSI/UL 325-02, UL
Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and
Systems, Underwriters Laboratories Inc.

24 **1.3.5** UL 1004-94, UL Standard for Electric Motors, Underwriters Laboratories

25 Inc.

26 **1.3.6** UL 2111-97, UL Standard for Overheating Protection for Motors,

27 Underwriters Laboratories Inc.

28 **1.3.7** UL 1784-01, UL Area Leakage tests for Door Assemblies, Underwriters

29 Laboratories Inc.

30 **1.4 Definitions:**

31 **1.4.1 Horizontally Sliding, Accordion-type, Fire-door Assembly: A**

32 horizontally sliding, accordion-type fire-door assembly is a fire-resistance-rated,

Because horizontally sliding, accordion-type fire doors do not latch, all reference to latching should be removed from this Acceptance Criteria.

33 horizontally sliding door assembly that automatically closes ~~and latches~~ by actuation of

34 a listed smoke-automatic fire detector or separately supplied UL 864 listed fire alarm
equipment. The assembly consists of

35 a track and trolley system, floating jamb, striker jamb or post, folding panels, and an

All references to a “microprocessor-based system” should be removed from the A.C. A microprocessor-based system is proprietary to Won-Door and is not required to meet the functional requirements of the code.

36 intelligent controller and power operator that has a self-contained power source.
37 ~~microprocessor-based-releasing device.~~

38 **1.4.1.1 Releasing Devices Operating System:** A UL 325 listed releasing
39 devices operating system consisting of a control

40 unit, a power supply, and a motor operator that includes associated drive components

39 such as a motor, clutch, roller chain, sprockets, etc. They may also include local or

40 remote display devices.

All components of the operator and controller should be tested and listed as a complete system, and it should not be allowable to group individually listed components together and then claim that the “system” is listed. This is now covered in lines 37-40 and 96-113.

41 ~~—————1.4.1.1.1 Electrically Operated Motor: An electrically operated motor~~
42 ~~consists of a separately listed electric motor tested to appropriate standards to prevent~~
43 ~~electric shock or fire. It should be thermally protected and rated for 5 hp (3.7 kW) or~~
44 ~~less, 250V or less, AC or DC.~~

45 **2.0 BASIC INFORMATION**

46 **2.1 General:** The following information shall be submitted:

47 **2.1.1 Product Description:** The following details shall be submitted:

48 **2.1.1.1** General information on each component of the horizontally sliding,
49 accordion-type, fire-door assembly.

50 **2.1.1.2** Complete information concerning assembly dimensions,
51 configuration, and material specifications.

52 **2.1.1.3** Manufacturing process.

53 **2.1.1.4** Dimensioned scaled drawings of the assembly and all components.

54 **2.1.2 Installation Instructions:** Installation instructions and details shall be

55 submitted and shall include the following:

56 **2.1.2.1** Instructions on the installation of all assembly components and
57 configuration of the automatic closing system.

58 **2.1.2.2** Electrical schematics for all applicable assembly components. The
59 installation instructions shall specify, “The *(model number to be inserted)* assembly and
60 the automatic closing system shall be installed in ordinary locations in accordance with
61 the applicable requirements of the IBC. Consult your local jurisdictional authority for
62 applicable requirements before installing.”

63 **2.1.2.3** Instructions on field-testing the installed assembly for proper
64 operation. The installation instructions shall specify the ~~following: “The need for~~
65 supervision of electrical power supply and to consult with the Authority Having
Jurisdiction (AHJ) circuits or the need for listed uninterruptible power
66 ~~supply equipment shall be in accordance with the applicable requirements. Consult the~~
67 ~~code official having jurisdiction~~ for applicable requirements ~~before installing.”~~ at the time
of installation. Upon completion of installation, an inspection and closing test shall be
performed on each door and successful testing shall be documented in writing by the
installer and the AHJ or building owner representative. The documentation shall state the
requirement for not less than annual inspection and testing by a trained door systems
technician as per the requirements of NFPA 80. Written records of all testing shall be
maintained and shall be made available to the AHJ upon request.

68 **2.1.2.4** Instructions concerning ongoing inspection and maintenance
69 ~~schedules~~ requirements are to be provided to ~~be required of~~ the building owner.

In most instances, the structural supporting members that support horizontally sliding, accordion type, fire doors are not provided by the fire door manufacturer and therefore should not be a requirement of this Acceptance Criteria. See 2.1.5 below.

70 ~~**2.1.3 Engineering Calculations:** Signed and sealed engineering~~
71 ~~calculations shall be submitted for the structural members supporting the horizontally~~
72 ~~sliding, accordion type, fire door assembly and its components.~~

73 **2.1.4 Packaging and Identification:** A description of the method of

74 packaging and field identification of the horizontal sliding, accordion-type, fire-door
75 assembly. Identification of each assembly shall include the evaluation report number.
76 the name or logo of the inspection agency, and the serial or issue number issued by the
77 testing and inspection agency for each assembly; the manufacturer's name and
78 location; the model number or product type; and the fire-resistance and smoke rating of
the
79 assembly. If an assembly is manufactured at several locations, each assembly shall be
80 distinctively marked to identify the place of manufacture.

81 **2.1.5 Field Preparation:** Details shall be submitted of field preparation for
82 installing a horizontally sliding, accordion-type, fire-door assembly. Details shall also be
83 submitted of field preparation of the site-built fire door construction that provides
84 structural support to the assembly and its components.

85 **2.2 Testing Laboratories:** Testing laboratories shall comply with Section 2.0 of the
86 ICC-ES Acceptance Criteria for Test Reports (AC85) and Section 4.2 of the ICC-ES
87 Rules of Procedure for Evaluation Reports.

88 **2.3 Test Reports:** Test reports shall comply with AC85.

89 **2.4 Product Sampling:** Sampling of horizontally sliding fire-door assemblies for
90 tests under this criteria shall comply with Section 3.1 of AC85.

91 **3.0 BASIC REQUIREMENTS**

92 **3.1 Assembly Materials:**

93 **3.1.1 General:** Horizontally sliding, accordion-type, fire-door assemblies
94 qualified in accordance with this acceptance criteria shall be constructed as described in
95 the approved quality documentation.

96 **3.1.2 Releasing Devices Power Operated Closing System:** ~~Listed releasing devices shall comply with~~ Only labeled power operators listed for use with the door shall

be used. Listed power operator systems shall comply with the requirements of ANSI/UL 325.

97 ~~ANSI/UL 864-2006, including the alarm verification feature described in Section 55.2 of~~
98 ~~said standard. The releasing devices shall be separately labeled as showing compliance~~
99 ~~as a “Releasing Device”, UL category SZNT, by an independent testing agency~~
100 ~~accredited by the International Accreditation Service, Inc. (IAS), or by another~~
101 ~~accreditation body that is a signatory to the International Laboratory Accreditation~~
102 ~~Cooperation (ILAC) Mutual Recognition Arrangement (MRA). The scope of the~~
103 ~~laboratory’s accreditation shall include the type of testing that is to be reported to ICC-~~
104 ~~ES. The operating device(s), such as a switch, relay, or coding mechanism, of the listed~~
105 ~~releasing device shall perform as intended when operated for the number of cycles and~~
106 ~~rate indicated for daily use circuits as shown in Table 67.1 of ANSI/UL 864-2006.~~

107 **3.1.3 Electrically Operated Motors:** Protected and approved thermal device-
protected

108 motors shall comply with the construction requirements of UL 1004 as outlined in UL 325
Sections 16 and 23 and ~~the running and~~

109 ~~locked rotor protection requirements~~ of UL 2111 as outlined in UL 325 Section 17 for the
intended application. The operating system shall be tested ~~The~~

110 ~~motors shall be separately labeled as “Thermally Protected” and “Suitable for Field~~

111 ~~Wiring”~~ by an independent testing inspection agency accredited by the International
Accreditation Service, Inc. (IAS) or by another

112 accreditation body that is a signatory to the International Laboratory Accreditation
Cooperation (ILAC) Mutual Recognition Arrangement (MRA). The scope of the
laboratory’s

113 accreditation shall include the type of testing that is to be reported to ICC-ES.

114 **3.1.3 Standby Power:** Standby or emergency power shall be provided. The

115 standby or emergency power shall pick up its connected loads within 10 seconds of

116 failure of the normal source of power. The standby or emergency power shall have

117 capacity of 50 opening and closing cycles.

118 **3.2 Fire-resistance Testing:**

119 **3.2.1** The fire-resistance rating of the horizontally sliding, accordion-type, fire-
120 door assembly, including the ~~releasing device~~ power operated closing system, header
assembly, striker, and storage

121 pocket(s) shall be established by tests conducted in accordance with UL 10B.

122 **3.2.2** The horizontally sliding, accordion-type, fire-door assembly, including
123 the ~~automatic power operated~~ closing system ~~releasing device~~, shall be installed in the
test door

124 opening in the manner in which it is intended to be used. The tested door assembly
125 shall be ~~operated to ensure proper~~ tested with the lead post engaged by the power
operator drive chain assembly of the latching mechanism

126 into the striker jamb/post prior to the fire-endurance test.

127 **3.2.3** Nonsymmetrical assemblies shall be tested with both faces exposed to
128 the furnace, and the assigned fire resistance rating shall be the shortest duration
129 obtained from the two tests. When evidence is furnished to show that the door was
130 tested with the least fire-resistant side exposed to the furnace, the assembly need not
131 be subjected to tests from the opposite side, subject to acceptance by ICC-ES.

132 **3.2.4** The fire-resistance rating of the assembly shall be compatible with the
133 fire-resistance rating of the opening into which it is to be installed.

134 **3.3 Performance:** The assembly shall be self-closing or automatically closing ~~on-upon~~
135 ~~command~~ signal from the separately supplied UL 864 listed building alarm system or from
a listed smoke-automatic fire detector,

136 fire alarm equipment, or approved signaling device. Manufacturers shall provide
performance verified test results by an independent testing agency accredited by the IAS
of a sample product as currently being manufactured. The test unit is to be installed in a
manner to simulate required field construction including header, floor, striker and pocket
construction to replicate how a unit is impacted by typical field installations. Test results
shall demonstrate compliance to the performance requirements of the 2009 IBC Section

1008.1.4.3 and 2007 NFPA 80 Chapter 9 and be made available to the AHJ upon request.

137 **3.3.1** The assembly shall be automatically closing by the actuation of smoke-
138 automatic fire detectors installed in accordance with Section 907.10 of the IBC, or by
139 loss of power to the smoke-automatic fire detectors or the ~~hold-open device~~ fire alarm
control panel. The

140 assembly shall not have more than a 10-second delay before it starts to close ~~after the~~
141 ~~smoke-automatic fire detector is actuated.~~ following alarm activation.

142 **3.3.2** Closing speed shall be as per NFPA 80, not less than 6 inches (152
143 mm) per second to assure timely protection of the opening, and not more than 24 (610
144 mm) inches per second.

145 **3.3.3** Sensors shall be used to pause or stop the assembly during the closing
146 cycle if the pathway is obstructed. The pause shall not be more than 10 seconds before
147 closing resumes when the system is in the fire alarm condition.

148 **3.3.4** A test report ~~from an approved by an~~ independent authority testing agency
accredited by the IAS shall be provided

149 as evidence that the door is easily recognized and operable for its intended usage
150 without a key, special knowledge or effort. The actuating device shall be subjected to a
151 measurable force load. The force shall be applied to the actuating device in the
152 direction of egress travel (perpendicular to the door). The force causing the actuating
153 device to signal the power operating system to open the door shall not be more than 15
154 pounds (67 N).

155 **3.3.5** The door shall be equipped with a self-contained power supply
156 subjected to cycle testing. One cycle shall be defined as the time to completely close
157 the door from the open position and return it to the open position. The self-contained
158 power supply shall have sufficient capacity to operate the door 50 cycles without the aid

159 of outside power.

160 **3.3.6** The door shall include temperature-sensing devices installed at the
161 leading edge approximately 12 inches from the top of the door. These devices shall be
162 subjected to a measurable temperature. When the temperature ~~exceeds~~ reaches 500°F
163 (260°C) on either side of the door, the actuating device shall be deactivated and ~~shall not~~
~~cause allow~~ the door to be power opened.

164 **3.3.7** A lateral load shall be applied to the door in the direction of egress
165 travel. The total load shall be equivalent to 250 pounds (1113 N) of force distributed
166 over a minimum of five points over the total area of the closed door at locations at least
167 3 feet (914 mm), but not more than 6 feet (1829 MM), from the floor. Under these
168 conditions, the door must meet the conditions of ease of operation as outlined in
169 Section 3.3.4.

170 **3.3.8** Upon activation of the actuating device while in a fire alarm condition,
171 the door shall open to a field-programmable distance approved by the local authority
172 having jurisdiction at the rate dictated in Section 3.3.2, and shall not have more than a
173 10-second delay before it starts to re-close.

Although it is logical to provide monitoring of critical system conditions and system faults, the building codes and standards do not dictate specific system monitoring requirements. And, although the Won-Door and Cornell systems provide monitoring of critical system conditions and faults, it is our opinion that 3.4 to 3.8 should be generally stated or deleted altogether so as not to make this A.C. proprietary in nature.

174 **3.4 Path Obstructions:** The assembly shall be capable of monitoring the closing
175 path for obstructions. When deemed necessary by the code official, the monitoring shall
176 occur at least on a daily basis. ~~Detected obstructions shall cause an alarm to sound at~~
177 ~~the door location or at an optional constantly attended location.~~

178 **3.5 Transmission Faults:** Critical system faults shall cause an audible and visual alarm to be

179 indicated at the door location and optionally at a constantly attended location
180 designated by the code official. ~~Minimally, faults shall include power supply faults, fuse~~
181 ~~faults, input device faults, and drive train faults. Power supply faults shall include under~~
182 ~~and over voltage conditions for both primary and standby power. Standby power~~
183 ~~utilizing batteries shall indicate faults for bad batteries and disconnected or missing~~
184 ~~batteries. Fused circuits shall be monitored and faults transmitted for fuse failures.~~
185 ~~Input devices such as key switches, limit switches, actuating (exiting) devices, and~~
186 ~~safety switches shall be monitored for abnormal conditions and be capable of~~
187 ~~transmitting faults on their occurrence. The drive train, including motor and chain, shall~~
188 ~~be monitored for reliability and faults.~~

189 **3.6 Transmission of Alarms:** Fire alarm signals received shall cause the door to
automatically close. ~~an audible~~
190 ~~and visual indication at the door location and optionally at a constantly attended location~~
The fire door system shall allow for remote monitoring of the alarm status at the door and
door position as
191 designated by the AHJ. ~~code official.~~

192 **3.7 Transmission of Door Status:** The system shall be capable of transmitting to
193 a constantly attended location when the door changes state from the closed position.

194 ~~**3.8 Transmission of Supervisory Conditions:** The system shall be capable of~~
195 ~~transmitting to a constantly attended location when the system is take out of service.~~

196 **4.0 QUALITY CONTROL**

197 **4.1** The products shall be manufactured under an approved quality control program
198 with inspections by an inspection agency accredited by IAS, or otherwise
199 acceptable to ICC-ES.

200 **4.2** Quality documentation complying with the ICC-ES Acceptance Criteria for
201 Quality Documentation (AC10) shall be submitted.

202 **5.0 EVALUATION REPORT RECOGNITION**

203 **5.1** The evaluation report shall provide the following information:

204 **5.1.1** Drawings and details of the horizontally sliding, accordion-type, fire-
205 door assembly, including all components qualified under this criteria.

206 **5.1.2** Description of the fire-resistance door construction in which the
207 horizontally sliding, accordion-type, fire-door assembly was qualified in accordance with
208 the fire-resistance test requirements specified in Section 3.2 of this criteria.

209 **5.1.3** Description of compliance with 2009 IBC section 1008.1.4.3 and 2007
NFPA 80,
210 chapter 9.

211 **5.1.4** Reference to specific published installation instructions and drawings,
212 including applicable dates and revision numbers of the instructions and drawings.■