BSR/ASHRAE/IESNA Addendum bj
to ANSI/ASHRAE/IESNA Standard 90.1-2007

Public Review Draft

ASHRAE® Standard

Proposed Addendum bj to Standard 90.1-2007, *Energy Standard for Buildings Except Low-Rise Residential Buildings*

First Public Review (June 2009)
(Draft Shows Proposed Changes to Current Standard)

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**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.
1791 Tullie Circle, NE Atlanta GA 30329-2305**

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FOREWORD

This addendum adds an exception within Appendix G that allows users to claim energy cost savings credit for the increased ventilation effectiveness of certain HVAC system designs. The best example is a displacement ventilation system. The use of the Standard 62.1 Ventilation Rate Procedure is required to claim this credit and the process for calculating the baseline ventilation rates is straightforward when using a software tool designed to perform these calculations. Historically Standard 90.1 has not allowed credit for reduced ventilation airflow rates and this proposal is a first step in allowing additional credit for high performance building systems that reduce ventilation intake airflow rates

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Addendum bj to 90.1-2007 *Revise the Standard as follows (I-P units)*

Revise the Standard as follows (IP and S-I units)

G3.1.2.5 Ventilation. Minimum ventilation system *outdoor air* intake flow, ~~ventilation rates~~ shall be the same for the *proposed* and *baseline building designs.*

Exceptions: ~~When modeling demand-control ventilation in the *proposed design* when its use is not required by Section 6.4.3.8.~~

a) When modeling demand-control ventilation in the *proposed design* when its use is not required by Section 6.3.2(p) or Section 6.4.3.9.

b) When designing systems in accordance with Standard 62.1 Section 6.2 Ventilation Rate Procedure, reduced ventilation airflow rates may be calculated for each HVAC zone in the *proposed design* with a zone air distribution effectiveness (Ez) > 1.0 as defined by Table 6-2 in Standard 62.1.

Baseline ventilation airflow rates in those zones shall be calculated using the *proposed design* Ventilation Rate Procedure calculation with the following change only. Zone air distribution effectiveness shall be changed to (Ez)=1.0 in each zone having a zone air distribution effectiveness (Ez)>1.0.

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FOREWORD

The intent of this addendum is to coordinate terminology for visible transmittance with NFRC 200.

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Addendum bm to 90.1-2007

Revise Section 3.2 as follows (IP and SI Units)

Visible Transmittance, *VT*: The ratio of visible radiation entering the space through the fenestration product to the incident visible radiation, determined as the spectral transmittance of the total fenestration system, weighted by the photopic response of the eye and integrated into a single dimensionless value.

Revise Section 3.3 as follows (IP and SI Units)

~~**VLT**~~ **VT** visible ~~light~~ transmittance

Editorially revise all references from VLT to VT, all sections, all appendices (IP and SI Units)

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FOREWORD

This addendum limits poorly oriented fenestration. Compliance can be shown by having more south facing fenestration than west facing fenestration. For those buildings affected by this requirement, this reduces envelope loads, energy usage and thereby costs. This approach gives flexibility to building design teams to work with building siting and fenestration orientation as well as fenestration area to comply with the requirement. This addendum provides exceptions for retail glass and buildings potentially shaded from the south or west. Also, an exception is provided for certain additions and alterations.

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Addendum bn to 90.1-2007

Add new section as follows (IP and SI Units)

5.5.4.5. **Fenestration Orientation.** The *vertical fenestration area* shall meet the following requirement:

$$A_S \geq A_W \text{ and } A_S \geq A_E$$

where:

A_s = south oriented *vertical fenestration area* (oriented less than 45 degrees of true south)
A_n = north oriented *vertical fenestration area* (oriented less than 45 degrees of true north)
A_w = west oriented *vertical fenestration area* (oriented less than or equal to 45 degrees of true west)
A_e = east oriented *vertical fenestration area* (oriented less than or equal to 45 degrees of true east)

In the southern hemisphere, replace A_s with A_n in the formulae above.

Exceptions to 5.5.4.5:

(a) *Vertical fenestration* that complies with the exception to 5.5.4.4.1 (c).

(b) Buildings that have an existing building or existing permanent infrastructure within 20 ft (6 m) to the south (north in the southern hemisphere) which is at least half as tall as the proposed building.

(c) Buildings with shade on 75% of the west and east façade from existing buildings, existing permanent infrastructure, or topography at 9 AM and 3 pm on the summer solstice (June 21 in the northern hemisphere).

(d) *Alterations* and *additions* with no increase in *vertical fenestration area*.

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FOREWORD

This change allows the use of control that provides automatic 50% auto on with the capability to manually activate the remaining 50% and has full auto-off. This type of control was excluded from use in the existing language and only full manual on was allowed. Recent provided test case data shows that this control can save approximately 6% more of the lighting that is required to be occupancy sensor controlled.

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Addendum bp to 90.1-2007

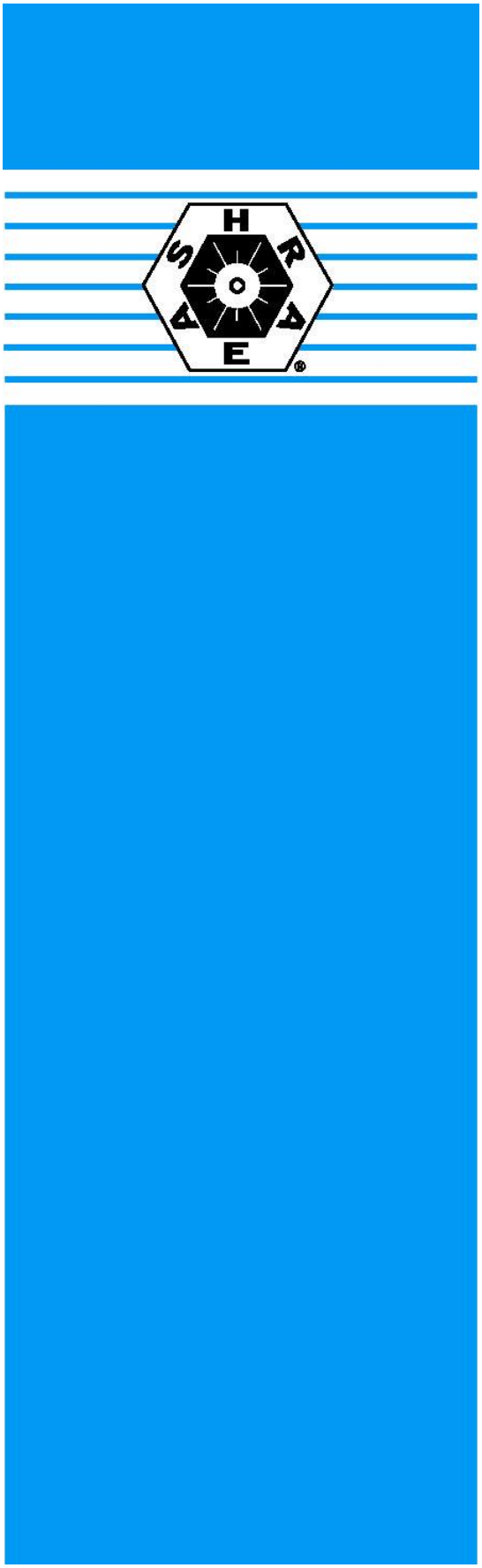
Modify 9.4 as follows (IP and SI units)

9.4 Mandatory Provisions

9.4.1 Lighting Control. Building controls shall meet the provisions of 9.4.1.1, 9.4.1.2, 9.4.1.3, and 9.4.1.4.

Any *automatic control device* required in sections 9.4.1.1, 9.4.1.2, and 9.4.1.4 shall either be manual on or shall ~~not~~ be ~~set~~ controlled to automatically turn the lighting on to not more than 50% power, except in the following spaces where full automatic-on is allowed:

a. public corridors and stairwells,
b. restrooms,
c. primary building entrance areas and lobbies ,
d. areas where manual-on operation would endanger the safety or security of the room or building occupant(s).



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FOREWORD

The retail lighting models used by the 90.1 Lighting Subcommittee were modified to make use of more recent lamp technology that is readily available including high performance T8s and ceramic metal halides.
Analysis indicated that use of these technologies allowed for the lower values proposed here while still meeting IESNA recommended light levels.

For Retail type "a" the existing LPD was based on 100% fluorescent (94% of the footcandles) for the "general" and 100% Halogen IR (6% of the footcandles) for the "feature" display. For this CMP the fluorescent was increased to "high-performance T8", and the "feature" display was changed to 100% CMH.

For Retail type "b" the existing LPD was based on 100% Metal Halide (77% of the footcandles) for the "general" and 100% Halogen IR (23% of the footcandles) for the "feature" display. For this CMP the Metal Halide was changed to 80% "high-performance T8" + 20% CMH accent, and the "feature" display was changed to 100% CMH.

For Retail type "c" the existing LPD was based on 50% halogen IR and 50% CFL (85% of the footcandles) for the "general" and 100% Halogen IR (15% of the footcandles) for the "feature" display. For this CMP the Halogen IR was changed to CMH for the "general", and the "feature" display was changed to 40% Halogen IR and 60% CMH.

For Retail type "d" the existing LPD was based on 100% halogen IR (80% of the footcandles) for the "general" and 100% Halogen IR (20% of the footcandles) for the "feature" displays. For this CMP, it was calculated by providing 40% of the footcandles from Halogen IR and 60% from CMH for both the "general" and "feature" displays.

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Addendum bq to 90.1-2007

Modify Section as follows (IP)

Additional Interior Lighting Power Allowance = 1000 watts
+ (Retail Area 1 × ~~1.0~~ <u>0.6</u> W/ft^2)
+ (Retail Area 2 × ~~1.7~~ <u>0.6</u> W/ft^2)
+ (Retail Area 3 × ~~2.6~~ <u>1.4</u> W/ft^2)
+ (Retail Area 4 × ~~4.2~~ <u>2.5</u> W/ft^2),

Modify Section as follows (SI)

Additional Interior Lighting Power Allowance = 1000 watts
+ (Retail Area 1 × ~~1.0~~ 6.5 W/m^2)
+ (Retail Area 2 × ~~1.7~~ 6.5 W/m^2)
+ (Retail Area 3 × ~~2.6~~ 15 W/m^2)
+ (Retail Area 4 × ~~4.2~~ 27 W/m^2),

BSR/UL 80

PROPOSAL

19 Tank Stability

19.1 The tank with intended supports ~~that exceed dimensional limits of the exception~~ shall be subjected to pushing and tilting without tip over after 1 minute. These tests shall be conducted in the most unfavorable condition with respect to tank and support geometry.

(UNCHANGED)
19.2 Pushing shall be simulated by applying a horizontal force of 50 lb (222 N) to the highest part of the empty tank. Tilting shall be simulated by placing the tank on a 15 degree incline plane, then filling to rated capacity with water.

Proposal for BSR/UL 514C, Standard for Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers

Topic: Revision To Paragraph 76.2 To Allow A Graduated Impact Force To Be Applied To A Sample During The Resistance To Impact Test, And A Corresponding Revision To Table 76.1

76.2 Each sample is to be placed with its open side down on a 1/2 inch (12.7 mm) thick, rigid, flat, steel plate and subjected to the impact of a 75 pound (34.02-kg) 6-inch (152-mm) diameter cylindrical steel weight free of sharp edges and having a flat impact surface. The weight is to be dropped vertically and is to be provided with guides so that the bottom of the weight will strike the center of the sample squarely. Table 76.1 specifies the distance through which the weight is to fall. for some boxes. Other sizes and types of boxes are to be tested in a similar manner with the impact weight and distance of fall selected to provide an equivalent impact force.

Table 76.1
Impact weight and distance

Type of box	Trade size of conduit sockets on box, Inches	Distance through which 75-pound (34.02-kg) weight falls, Feet	(m)[a]
Conduit body, flush-device box or outlet box	1/2, 3/4, 1	1	(0.30)
	1-1/4, 1-1/2	2	(0.61)
	2 – 4	4	(1.22)
~~Flush-device box or outlet box~~	~~All~~	~~4~~	~~(1.22)~~

[a] Measured from the bottom face of the weight to the top of the sample.

Proposals for BSR/UL 746C – June 19, 2009

1. Reference to Conformal Coatings Requirements

PROPOSAL

43A Conformal Coatings

43A.1 Conformal coatings used as a protective covering applied on a printed-wiring board used to increase the dielectric voltage-withstand capability between conductors, between conductors and accessible dead metal parts and/or to protect against environmental conditions shall be evaluated in accordance with the Standard for Polymeric Materials - Industrial Laminates, Filament Wound Tubing, Vulcanized Fibre, and Materials Used in Printed-Wiring Boards, UL 746E.

70A Conformal Coating Test

70A.1 The tests for conformal coatings are in the Standard for Polymeric Materials - Industrial Laminates, Filament Wound Tubing, Vulcanized Fibre, and Materials Used in Printed-Wiring Boards, UL 746E.

2. Offset Principle for Impact Testing

PROPOSAL

57.2.4 Tensile or flexural strength tests are to be conducted on specimens no thicker than the corresponding application. The results of Tensile, Charpy or Izod Impact testing of standard specimens in the nominal 4 mm thickness, can be considered representative of the testing of a reduced thickness ~~not less than 0.75 mm~~, provided the non-impact testing of the reduced thickness complies with the requirements of Table 25.1.

58.3 Tensile or flexural strength tests are to be conducted on specimens no thicker than the corresponding application. The results of Tensile, Charpy or Izod Impact testing of standard specimens in the nominal 4 mm thickness, can be considered representative of the testing of a reduced thickness ~~not less than 0.75 mm~~ provided the non-impact testing of the reduced thickness complies with the requirements of Table 25.1.

Proposals for BSR/UL 2335 Dated June 19, 2009

Proposals

1.1 This standard includes test methods and requirements to investigate ~~measures~~ the fire growth performance of pallets in idle ~~palletized~~ and commodity ~~rack~~ storage arrangements when protected by sprinkler systems installed in accordance with the Standard for the Installation of Sprinkler Systems, NFPA 13.

1.3 This standard does not ~~measure mechanical or structural properties of pallets~~ include test methods and requirements to investigate other performance characteristics such as:

a) Fire growth characteristics when pallets are not protected by sprinkler systems,

b) Risks associated with materials used in the pallet construction or the products of combustion, and

c) Physical strength characteristics of the pallets including those during a fire condition.

1.4 ~~This standard does not measure the hazards from the smoke generated.~~