

ADDENDA

**ANSI/ASHRAE/IES Addendum d to
ANSI/ASHRAE/IES Standard 90.2-2024**

High-Performance Energy Design of Residential Buildings

Approved by ASHRAE and the American National Standards Institute on January 30, 2026; and by the Illuminating Engineering Society on January 27, 2026.

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FOREWORD

Addendum d makes changes to the envelope backstop tables to align with current minimum national model code requirements by removing Table 6.3. It also makes associated updates to cross references throughout. These changes include the following:

- Updates to U-value tables to align with IECC-2024 and address the perception from potentially adopting jurisdictions that it is not as stringent as the current IECC Residential Code
- Updates to associated footnotes
- Update to definition of warm-humid
- Removal of separate solar U-value table
- Removal of references to solar U-value table
- Update to normative reference for IECC-R from 2021 to 2024

Informative Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strike through~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum d to Standard 92.4-2024

Modify Section 5.1.1 as follows.

5.1.1 Prescriptive Compliance. *Additions* shall comply with Section 5.1.1(a) through (d):

- a. Envelope assemblies: All new envelope *assemblies* comprising the *addition* shall meet or exceed the envelope *assembly* characteristics of Table ~~7-1~~ 6-3 and Table 7-2.
- b. Heating and cooling systems: New heating, cooling, and duct systems that are part of the *addition* shall comply with Section 7.2 and either Table 5-1 or Table 5-2.
- c. *Service water heating* systems: New *service water heating* systems that are part of the *addition* shall comply with Section 7.4 and Table 5-3.
- d. Lighting: New lighting systems that are part of the *addition* shall comply with Section 7.5.

Modify Section 5.2.1 as follows.

5.2.1 Envelope Assemblies. All new envelope *assemblies* comprising the *alteration* shall meet or exceed the envelope *assembly* characteristics of Table ~~6-3~~ 7-1 and Table 7-2.

Remove and reserve Section 6.2.3 as follows.

6.2.3 Reserved. Building Thermal Envelope. ~~Where renewable energy systems are used, the building envelope components shall have solar heat gain coefficient (SHGC) values and U-factors no greater than the values shown in Table 6-3.~~

Delete Table 6.3 in its entirety (I-P and SI).

Table 6-3 Maximum SHGC and U-Factors when Renewable Energy Systems are Used (I-P Units)

Climate Zone	Maximum SHGC					Maximum U-Factors				
	Glazed Fenestration	Skylights	Fenestration	Skylights	Ceilings	Frame Walls	Mass-Walls	Floors	Basement Walls	Crawlspace Walls
0	0.25	0.30	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
1	0.25	0.30	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.25	0.30	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.25	0.30	0.35	0.55	0.030	0.060	0.098	0.047	0.091 ^a	0.136
4 except Marine	0.40	0.40	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
Marine 4 and 5	NR	NR	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	NR	NR	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7	NR	NR	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055
8	NR	NR	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

a. The required U-factor is 0.360 for warm-humid locations as defined by Figure R301.1 and Table 301.1 in the IECC.³

Table 6-3 Maximum SHGC and U-Factors when Renewable Energy Systems are Used (SI Units)

Climate Zone	Maximum SHGC					Maximum U-factors				
	Glazed Fenestration	Skylights	Fenestration	Skylights	Ceilings	Frame Walls	Mass-Walls	Floors	Basement Walls	Crawlspace Walls
0	0.25	0.30	2.84	4.26	0.20	0.48	1.12	0.36	2.04	2.71
1	0.25	0.30	2.84	4.26	0.20	0.48	1.12	0.36	2.04	2.71
2	0.25	0.30	2.27	3.69	0.17	0.48	0.94	0.36	2.04	2.71
3	0.25	0.30	1.99	3.12	0.17	0.34	0.56	0.27	0.52 ^a	0.77
4 except Marine	0.40	0.40	1.99	3.12	0.15	0.34	0.56	0.27	0.34	0.37
Marine 4 and 5	NR	NR	1.82	3.12	0.15	0.34	0.47	0.19	0.28	0.31
6	NR	NR	1.82	3.12	0.15	0.26	0.34	0.19	0.28	0.31
7	NR	NR	1.82	3.12	0.15	0.26	0.32	0.16	0.28	0.31
8	NR	NR	1.82	3.12	0.15	0.26	0.32	0.16	0.28	0.31

a. The required U-factor is 2.04 for warm-humid locations as defined by Figure R301.1 and Table 301.1 in the IECC.³

Modify Table 7-1 as follows (I-P and SI).

Table 7-1 Envelope Component Maximum SHGC and U-Factors (I-P)

Climate Zone	Maximum SHGC				Maximum U-factors				
	Glazed Fenestration	Fenestration	Skylights	Ceilings	Frame Walls	Mass Walls	Floors	Basement Walls	Crawlspace Walls
0	0.30-0.28	1.2-0.50	0.75-0.60	0.035	0.082	0.197 ^a	0.064	0.360	0.477
1	0.30-0.28	1.2-0.50	0.75-0.60	0.035	0.082	0.197 ^a	0.064	0.360	0.477
2	0.30-0.28	0.65-0.40	0.75-0.60	0.035-0.030	0.082	0.165 ^a	0.064	0.360	0.477
3	0.30-0.28	0.50-0.30	0.65-0.53	0.035-0.026	0.082-0.060	0.141-0.098^a	0.047	0.091 ^b	0.136
4 except Marine	NR 0.40	0.35-0.30	0.60-0.53	0.030-0.026	0.082-0.045	0.141-0.098^a	0.047	0.059	0.065
Marine 4 and 5	NR	0.35-0.28	0.60-0.50	0.030-0.026	0.057-0.045	0.082	0.033	0.050	0.065-0.055
6	NR	0.35-0.28	0.60-0.50	0.026	0.057-0.045	0.060	0.033	0.050	0.065-0.055
7	NR	0.35-0.27	0.60-0.50	0.026	0.057-0.045	0.057	0.033	0.050	0.065-0.055
8	NR	0.35-0.27	0.60-0.50	0.026	0.057-0.045	0.057	0.033-0.028	0.050	0.065-0.055

- a. Where greater than half of a *mass wall's* insulation is on the interior, the maximum U-factor shall be as follows: 0.170 in Climate Zones 0 and 1, 0.140 in Climate Zone 2, ~~0.120~~ 0.080 in Climate Zones 3- and ~~0.100~~ in Climate Zone 4 except Marine-, and 0.048 for Climate Zones Marine 4, 5, 6, 7, and 8.
- b. The required U-factor is 0.360 for warm-humid locations as defined by R301.3 Figure R301.1 and Table 301.1 in of the IECC.³

Table 7-1 Envelope Component Maximum SHGC and U-factors (SI)

Climate Zone	Maximum SHGC				Maximum U-factors				
	Glazed Fenestration	Fenestration	Skylights	Ceilings	Frame Walls	Mass Walls	Floors	Basement Walls	Crawlspace Walls
0	0.30-0.28	6.82-2.84	4.26-3.41	0.20	0.47	1.12 ^a	0.36	2.04	2.71
1	0.30-0.28	6.82-2.84	4.26-3.41	0.20	0.47	1.12 ^a	0.36	2.04	2.71
2	0.30-0.28	3.69-2.27	4.26-3.41	0.20-0.17	0.47	0.94 ^a	0.36	2.04	2.71
3	0.30-0.28	2.84-1.70	3.69-3.00	0.20-0.15	0.47-0.34	0.80-0.56^a	0.27	0.52 ^b	0.77
4 except Marine	NR 0.40	1.99-1.70	3.41-3.00	0.17-0.15	0.47-0.26	0.80-0.56^a	0.27	0.34	0.37
Marine 4 and 5	NR	1.99-1.59	3.41-2.84	0.17-0.15	0.32-0.26	0.47	0.19	0.34	0.37-0.31
6	NR	1.99-1.59	3.41-2.84	0.15	0.32-0.26	0.34	0.19	0.28	0.37-0.31
7	NR	1.99-1.53	3.41-2.84	0.15	0.32-0.26	0.32	0.19	0.28	0.37-0.31
8	NR	1.99-1.53	3.41-2.84	0.15	0.32-0.26	0.32	0.19-0.16	0.28	0.37-0.31

- a. Where greater than half of a *mass wall's* insulation is on the interior, the maximum U-factor shall be as follows: 0.96 in Climate Zones 0 and 1, 0.79 in Climate Zone 2, ~~0.720~~ 0.45 in Climate Zones 3- and ~~0.100~~ in Climate Zone 4 except Marine-, and 0.27 for Climate Zones Marine 4, 5, 6, 7, and 8.
- b. The required U-factor is 0.360 for warm-humid locations as defined by R301.3 Figure R301.1 and Table 301.1 in of the IECC.³

Modify Section 10 as follows.

3. ICC. ~~2021-2024~~. International Energy Conservation Code. Country Club Hills, IL: International Code Council.

Modify Section D1.2 as follows.

D1.2 Installed insulation materials, thickness amounts, and locations shall comply with *the proposed design*. ~~In no case shall installed insulation thickness amounts be less than those required to deliver the maximum U-factors defined in Table 6-3 or Table 7-1, as applicable.~~

Modify Table H-1 as follows.

Table H-1 Sample Plan Review Inspection Checklist

Project address or location		[Home Address]	
Builder's name and phone number			
Builder's e-mail address			
Climate zone		House Size, ft ²	Orientation
<i>Building Thermal Envelope Compliance</i>			Notes
Conditioned floor area defined		☐ Yes ☐ No	
U-Factor values listed for all <i>fenestration</i>		☐ Yes ☐ No	
SHGC values listed for all <i>fenestration</i>		☐ Yes ☐ No	
Insulation materials listed with R-values		☐ Yes ☐ No	
Mechanical Compliance			Notes
HVAC equipment listed (List equipment types, sizes and efficiencies in the notes.)		☐ Yes ☐ No	
Manual J included and project address/location verified		☐ Yes ☐ No	
Duct design defined, including duct layout that identifies duct sizes, duct lengths, fittings, transitions, locations, insulation materials, R-value sealing requirements, and design values for cfm, external static pressure, and utilized friction rate		☐ Yes ☐ No	
Service water heating equipment listed (List equipment size, type, and efficiency in the notes.)		☐ Yes ☐ No	
Pipe design defined, including locations, insulation materials and R-values		☐ Yes ☐ No	
Lighting Compliance			Notes
Lighting fixture schedule, lumens, and wattage listed		☐ Yes ☐ No	
Modeling Compliance			Notes
Name and version of the simulation program employed listed		☐ Yes ☐ No	
The <i>proposed design</i> adheres to the modeling rule set defined in Section 6.1 (unless <i>on-site power production</i> or <i>off-site power production</i> is being utilized).		☐ Yes ☐ No	
The <i>proposed design</i> meets the <i>ERI</i> appropriate for its climate zone, per Table 6-1.		☐ Yes ☐ No	
<i>Renewable Energy System</i>			Notes
On-site power production system or off-site power production system defined, including <i>renewable energy</i> source and projected kW output		☐ Yes ☐ No	
Complies with the <i>building thermal envelope</i> elements in Table 7-1-6-3		☐ Yes ☐ No	
Sign below to confirm that the above information is listed on the constructed documents submitted.			
Jurisdiction having authority:			
Inspectors name (printed):			
Inspectors signature:			Date:

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ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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