

1. What section of the International Energy Conservation Code lists U-Factors for different types of Windows and Skylights if the information from the manufacturer is not available?

ANSWER: IECC Table 102.1.3(1) through (3) Default glazed fenestration U-factors, default door U-factors, & default glazed fenestration SHGC (Solar Heat Gain Coefficient).

2. What is the U-Value (U-Factor) for a swing steel door, 1-3/4" thick, containing a solid urethane foam core with a thermal break if information from the manufacturer is not available?

ANSWER: IECC Table 102.1.3(2) U-Factor Default Table for Insulated Metal Doors U = 0.60

3. True or False: An alteration to an existing office building replaces single pane glass window with an aluminum frame and no thermal break, U=1.23, which covers 6 square feet, and a 1 3/4" thick steel door which incorporates a fiberglass or mineral wool core with steel stiffeners with no thermal break, U= 0.60, which covers 20 square feet (6 ft. 8 in x 3 ft).

The replacement glass window consists of double glass, argon filled between the panes, with an air space of 1/2", with an aluminum frame and no thermal break, U=0.69. The replacement door consists of a metal door consisting of a solid urethane foam core with a thermal break, U=0.19.

This meets the energy conservation requirements of the Commercial code associated with building alterations.

ANSWER: 63.0003(3)(a)1. True. The alteration shall not increase the rate of heat loss through the portion of the thermal envelope containing the alteration. Both of these changes improve the building envelope, actually lowering the building heat loss and in doing so meet the code.

4. When attempting to apply the prescriptive building envelope requirements of IECC, which of the climate zones are the following counties located in: Brown, Dane, Milwaukee, & Ashland?

ANSWER: IECC Table 301.1 Zone 6, 6, 6 & 7, respectively

5. A multi-story apartment building located in Green Bay (Brown County) has parking in the "basement". The parking area will NOT be heated. What is the minimum R-value required for the floor assembly located between the unheated basement and the heated occupied floor above?

ANSWER: Review Table 301.1, IECC Table 402.1.1 Zone 6, R-30 or via footnote f, insulation sufficient to fill the framing cavity to R-19 minimum when framing is used

6. A multi-story apartment building located in Eau Claire (Eau Claire County) has heated parking in the "basement" which is 20 ft below grade. What is the minimum R-value required to be addressed on the basement wall assembly, and how far below grade must the insulation be located?

ANSWER: Review Table 301.1, IECC Table 402.1.1 Zone 6, Minimum R-10 continuous insulation/R-13 cavity insulation; IECC 402.2.6 requires wall associated with conditioned basements to be insulated from the top of the basement wall down to 10 ft below grade or to the basement floor, whichever is less. Walls associated with unconditioned basements shall meet the requirement unless the floor overhead is insulated per 402.1 & 402.2.5.

7. If vertical insulation, 48 inches in height, is to be used as unheated slab-on-grade insulation for an apartment building, what minimum R-value must the insulation have? Would the minimum R-value change for a heated Slab-On-Grade?

ANSWER: IECC Table 402.1.1 Zones 6 & 7, R-10 for a depth of 4 ft is required for slab-on-grade floors with a floor surface less than 12" below grade, as addressed by IECC 402.2.7. The minimum R-value would increase to R-15 for a heated slab through the use of footnote d.

8. What section of the code provides an equivalent insulated metal assembly for wood framed assemblies in a low rise residential building?

ANSWER: IECC Table 402.2.4

9. What section of the code addresses the requirements for a sun room installed onto a condominium? In general, are the building envelope requirements more or less restrictive than for other portions of the building?

ANSWER: IECC 402.3.5, less restrictive

10. Name the two computer software programs that are accepted by the Dept. for use in demonstrating building envelope compliance for low rise residential buildings and commercial buildings?

ANSWER: Rescheck & Comcheck per Comm 63.0404 & Comm 63.0506, respectively.

11. What section(s) of the code addresses the need for a vapor retarder to be installed on the warm in winter side of cavity walls on apartment buildings and commercial buildings?

ANSWER: IECC 402.5, 502.5, respectively

12. If the IECC requirements are not to be used for a commercial building, what national standard can be substituted for demonstrating compliance with building envelope, building mechanical systems, service water heating, or lighting? Are there limitations when taking such action?

ANSWER: IECC 501.2 references ASHRAE/IESNA 90.1-2004. Yes, there are limitations. The limitations are that the topic shall be addressed entirely by IECC or ASHRAE, and the designer may not mix and match between the two sets of rules. Additionally, Comm 63.0501 requires that Wisconsin amendments for design loads, economizers, lighting systems and dual switching be applicable immaterial of which of the two (2) sets of requirements are used.

13. What is the prescribed minimum R-value for a roof on a mercantile building in Milwaukee (Milwaukee County) with 1) continuous insulation entirely above deck; 2) metal buildings (with R-5 thermal blocks); and 3) attics located in zone 6?

ANSWER: Review Table 301.1, IECC Table 502.2(1) Zone 6, R-20 continuous insulation, R19, & R-38 respectively

14. What is the prescribed minimum R-value for an unheated and heated slab in Table 502.2(1) for a factory building located in Superior (Douglas County)?

ANSWER: Review IECC Table 301.1, then apply Table 502.2(1) Zone 7, No minimum R-value required for unheated slabs. A minimum of R-10 for a minimum of 36" below the floor slab (either horizontally or vertically) is required for heated slabs.

15. Do the minimum R-values for walls, roofs, windows, doors, etc. change for either low rise residential buildings or commercial buildings based on the amount of window area on the building's exterior walls?

ANSWER: No for low rise residential buildings; for commercial buildings, IECC Table 502.3 vertical fenestration is limited to 40% of above grade wall for building fenestration. Buildings with greater than 40% fenestration must use another method of compliance using IECC 501.2.

16. If a new office building located in Green Bay (Brown County) had a wood framed exterior wall involving an average R-value of R=13; windows with a weighted average U-Factor of U=0.30; windows with a weighted average shading coefficient of 0.40, then this design would meet the building envelope requirements associated IECC Tables 502.2 (1) & 502.3. True or False.

ANSWER: True, assuming that the windows do not exceed 40% of the above grade walls. See IECC Table 502.3.

17. What section of the code addresses the need for dock weatherseals?

ANSWER: IECC 502.4.5

18. What section of the code addresses the need for a vestibule to be installed in a commercial building assuming that a listed exception cannot be met?

ANSWER: IECC 502.4.6

19. True or False: Setback thermostat controls are required in commercial buildings but not for low rise residential buildings.

ANSWER: IECC 503.2.4.3 True

20. True or False: Energy recovery systems are mandated by the code to be installed in individual fans systems with greater than 5,000 cfm of supply air AND which have a minimum 70% outside air supply.

ANSWER: IECC 503.2.6 True

21. What is the minimum R-value of the insulation required to enclose a 2 inch steam pipe?

ANSWER: IECC Table 503.2.8 nominal pipe diameter thickness in inches--3" of insulation thickness per Table x (1/0.27 Btu/inch/h sf °F—See footnote a) = R-11.0

22. True or False: A roof top system for use in heating and cooling a commercial building has a cooling capacity of 48,000 btu/hr. An economizer is needed to be installed, unless an exception has been met.

ANSWER: IECC/ Comm 63.0503 True

23. What section of the code addresses the need for heated pools to have a cover? If the water temperature exceeds 90°F, what minimum R-value must the cover have?

ANSWER: IECC 504.7.3, Minimum R-12.