

CODES AND STANDARDS ENHANCEMENT INITIATIVE (CASE)

Nonresidential Opaque Envelope

Addendum to CASE Report submitted on December 2014

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NONRESIDENTIAL ENVELOPE

California Energy Commission

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2016 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS

California Utilities Statewide Codes and Standards Team

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1.1 Introduction

This addendum to the Title 24 Nonresidential Opaque Envelope CASE Report, submitted to the California Energy Commission (CEC) by the Statewide Utilities Codes and Standards Enhancement (CASE) Team in December 2014,¹ contains recommendations for the prescriptive requirements for relocatable public school buildings.

Relocatable public school buildings are a subset of nonresidential buildings, and they must comply with all nonresidential prescriptive requirements in Section 140 of the Standards, including the building opaque envelope requirements. By definition, the location of a relocatable public school building is not fixed in one climate zone; relocatable public school buildings could be moved throughout the state to any climate zone. The prescriptive envelope requirements in Table 140.3-B, for which proposed revisions are presented above, apply to “relocatable public school buildings where the manufacturer certifies use only in specific climate zone”. If a manufacturer of a relocatable public school building does not certify its use in a specific climate zone, the relocatable public school building must comply with the requirements in Table 140.3-D of the Standards.

1.2 Rationale for proposed code change

The requirements in Table 140.3-D are established in such a way that relocatable public school buildings will comply with the prescriptive requirements in most climate zones. Changes to the prescriptive wall requirements were not proposed in the CASE Report submitted in December 2014. However, upon closer review, the Statewide CASE Team is recommending a slight modification to the prescriptive wall requirements in Table 140.3D so that relocatable public school buildings comply with the opaque envelope prescriptive standards in all 16 climate zones.

The proposed changes to the code language that applies to relocatable public school buildings are shown in Section 1.3 below.

1.3 Proposed Code Language

The proposed changes for the 2016 Title 24 Standards are provided below in red text. Changes to the existing (2013) standards are marked with underlining new language and ~~strikethroughs~~ deletions. The changes indicate recommended updates to ensure consistency across all prescriptive insulation tables.

SECTION 140.3 – PRESCRIPTIVE REQUIREMENTS FOR BUILDING ENVELOPES

... *{Code language that does not pertain to the proposed measure omitted}* ...

¹ California Utilities Statewide Codes and Standards Team. 2014, December 12. “Codes and Standards Enhancement (CASE) Report for the 2016 California Building Efficiency Standards: Nonresidential Opaque Envelope. http://www.energy.ca.gov/title24/2016standards/prerulemaking/documents/2014-06-12_workshop/final_case_reports/2016_Title_24_CASE_Report-NR_Opaque_Envelope-Dec2014-V3.pdf.

TABLE 140.3-D PRESCRIPTIVE ENVELOPE CRITERIA FOR RELOCATABLE PUBLIC SCHOOL BUILDINGS FOR USE IN ALL CLIMATE ZONES

Roofs/Ceilings		
Roofs of Metal Buildings		Maximum U-factor 0.048 <u>0.041</u>
Roofs of all non-Metal Buildings		Maximum U-factor 0.039 <u>0.034</u>
Roofing Products – Aged Reflectance/Emittance		
Low-sloped		0.63/0.75
Steep-Sloped		0.20/0.75
Walls		
Walls of Wood frame buildings		Maximum U-factor 0.059 <u>0.042</u>
Walls of Metal frame buildings		Maximum U-factor 0.039 <u>0.034</u>
Walls of Metal buildings		Maximum U-factor 0.057
Walls of Mass/ $7.0 \leq HC$, any building		Maximum U-factor 0.170
All Other Walls		Maximum U-factor 0.059
Floors and soffits of all buildings		Maximum U-factor 0.048
Windows of all buildings		
U-factor		Maximum U-factor 0.47
RSHGC		Maximum RSHGC 0.26
Glazed Doors, All Buildings		
Max Average Weighted U-factor		0.45
Max Average Weighted RSHGC		0.23
Exterior Doors, all buildings		
Non-Swinging doors		Maximum U-factor 0.50
Swinging doors		Maximum U-factor 0.70
Skylights		
Glass with Curb		Maximum U-factor 0.99
Glass -without Curb		Maximum U-factor 0.57
Plastic with Curb		Maximum U-factor 0.87
Glass Skylights	0-2% SRR	Maximum SHGC 0.46
	2.1-5% SRR	Maximum SHGC 0.36
Plastic Skylights	0-2% SRR	Maximum SHGC 0.69
	2.1-5% SRR	Maximum SHGC 0.57