

STUDY OF POURED-IN-PLACE CONCRETE WALL PERFORMANCE

Project Profile

Project Details

Project No. 1885.10
 Year of Completion 2006

Project Team

Client CMHC

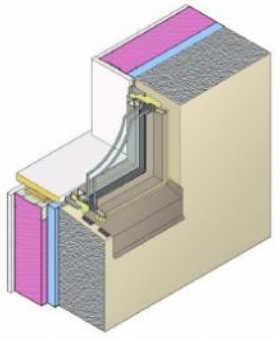
RDH Staff

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Project Description

Over the past 10 years the development community have increasingly utilized poured-in-place concrete wall assemblies in combination with rainscreen windows to provide acceptable long-term envelope performance. There is very little published research regarding the performance of this type of wall assembly. This study therefore analyzes and documents potential performance issues, and models and analyzes the performance characteristics of poured-in-place concrete wall assemblies. Finally, practical design and construction guidance is provided.

STUDY OF POURED-IN-PLACE CONCRETE WALL PERFORMANCE IN COASTAL BRITISH COLUMBIA



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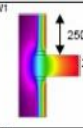



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determined using THERM, which accounts for thermal bridging of steel components and of the floor-to-wall intersection.

Table 3.1: Summary of the overall thermal resistance of typical wall assemblies

Wall Assembly	Description	Nominal Thermal Resistance Rsi (m ² K/W)	Effective Thermal Resistance (m ² K/W)
W1	 150 mm Concrete 13 mm Airspace 92 mm Batt Insulation (with steel studs @ 400) 0.15 mm Polyethylene Film 13 mm Gypsum Wallboard	Air film 0.03 0.13 0.16 2.10 --- 0.08 Air film 0.12	1.24
W2	 150 mm Concrete 50 mm Extruded Polystyrene Foam (with 500mm x 25mm T-bar system) 0.15 mm Polyethylene Film 13 mm Gypsum Wallboard	Air film 0.03 0.13 1.72 --- 0.08 Air film 0.12	1.27
W3	 150 mm Concrete 25 mm Extruded Polystyrene Foam 64 mm Batt Insulation (with steel studs @ 400) 0.15 mm Polyethylene Film 13 mm Gypsum Wallboard	Air film 0.03 0.13 0.86 1.52 --- 0.08 Air film 0.12	1.44
Rainscreen Sluicoo	 22 mm Gypsum 22 mm Airspace 76 mm Semi Rigid Fibre Insulation (with steel studs @ 400) Waterproofing membrane 13 mm Exterior sheathing 50mm Airspace on steel studs 13 mm Gypsum Wallboard	Air film 0.03 0.14 0.21 --- 2.11 0.01 0.08 0.20 0.08 Air film 0.12	1.96

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