



MORRISON HERSHFIELD

December 30, 2015

Ray Snitynsky, M.Sc., P.Ag.
Quik-Therm Insulation Solutions Inc.
45016 Rochon Rd.
P.O. Box 577, La Salle, Manitoba
R0G 1B0

Dear Mr. Snitynsky:

Re: Fire Performance Testing of Wall Assembly with 2" Quick- Therm Solar Dry and Fibre-Reinforced Cement Board Siding

Quick-Therm Insulation Solutions has provided Morrison Hershfield with a test report T1035-1 authored by QAI Laboratories of Coquitlam, BC dated October 1, 2015 and requested that we comment on the significance of the test and its result with respect to complying with Division B, Sentence 3.2.3.8 (2) of the National Building Code and, by extension, provincial building codes.

The QAI Laboratories report presents the results of testing following the methods of CAN/ULC S101-14 *Standard Methods of Fire Endurance Tests of Building Construction and Materials* to the criteria defined in Division B, Sentence 3.2.3.8 (2) of the National Building Code.

Significance of this Test

Mid-rise (4-6 storey) residential buildings of wood frame construction are increasingly popular in some jurisdictions in Canada [The NBC currently only has provision for up to four storeys of wood frame residential buildings but some provinces including BC, Alberta, Ontario and Quebec have provisions allowing, with specific conditions, five and/or six storey buildings of this type]. Energy standards, whether referenced in the Building Code or via a voluntary program such as LEED, generally require a level of wall insulation which results in the requirement for some insulation to be placed outboard of the studs. If this insulation is a "foamed plastic insulation" the code has requirements that it be protected from fire from the inside with a thermal barrier, a function typically met with the gypsum wall board. In buildings over three storeys, the foamed plastic insulation must also protect from fire from the exterior. The protection, defined in Article 3.2.3.8, can be with 25mm of masonry or an assembly that has been tested to meet criteria defined in Sentence 3.2.3.8 (2) when tested according to CAN/ULC S101 *Standard Methods of Fire Endurance Tests of Building Construction and Materials*. In this test the outside of a full scale sample of a wall is subjected to heat and flame in a standardized furnace for at least 15 minutes and the noncombustible cladding must remain in place.

Quick-Therm Insulation Solutions commissioned QAI Laboratories, a qualified fire testing laboratory, to test a wall assembly commonly used in 4-6 storey wood frame constructions to the above requirements. The assembly (described in detail in attached Table 1 copied from QAI report) was a conventional 6" stud wall assembly with 2" Solar Dry insulation (A type II Expanded Polystyrene insulation with metalized polymer facers), 3/4"x 2" vertical strapping, screwed on 8"

centers into the studs, and cement board lap siding [a noncombustible cladding as required for by jurisdictions allowing five and six storey wood frame residential construction].

Results

The result of the testing was that the tested assembly meets the requirements of Article 3.2.3.8 of the NBC 2010.

Limitations

This commentary addresses residential wood frame construction to which Article 3.2.3.8 applies (i.e. Group C Occupancy constructed under Part 3 of a Canadian Building Code).

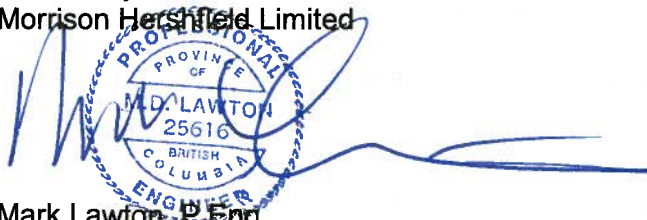
This commentary addresses one aspect of the code; conformance to Article 3.2.3.8. There are many other code requirements that a wood frame wall system must meet and there are variations in those requirements between provinces and applications. Appropriate expertise must be applied to each project to confirm code acceptance of a wall system.

Regardless of any testing, foamed plastic insulation is only allowed in wall systems where there is a sufficient limiting distance from adjacent properties or between buildings such that Subsection 5.2.3 of the code allows at least 10% (of wall area) unprotected openings.

The testing carried out only applied to the tested wall system. If there are minor differences, variation can be accepted on the basis of an engineering judgement by a fire protection engineer. In our opinion significant changes that preclude that approach would be,

- Quick Term insulation that is not Type II or in a thickness greater than 2".
- Alternate cladding material
- Lesser attachment of the strapping than tested (4 ¾" #10 screws at 8" o/c)

Yours truly,
Morrison Hershfield Limited



Mark Lawton, P.Eng.
Sr. Building Science Specialist, Principal



Client: Quik-Therm Insulation Solutions
 Job No.: T1035-1
 Date: October 1, 2015

Sample Description:

Table 1: Wall Description

COMPONENT	DESCRIPTION	
Assembly	Size:	9 ft. high by 12 ft. wide by 9.5 in. thick
	Type:	Wood stud framed exterior wall assembly with exterior mounted insulation and cement board siding.
Framing	Type:	SPF
	Size:	Nominal 2 in. by 6 in.
	Spacing:	16 in. on center (OC)
Stud Cavity Insulation	Type:	R20 Fiberglass
	Thickness:	5-1/2 in.
	Manufacturer:	John Mansonville
	Product Name:	Unfaced Fiberglass Batt
Interior Sheathing	Type:	Regular drywall board
	Dimensions:	4 ft. by 8 ft. by 1/2 in. thick
	Manufacturer:	Certaiteed
	Product Name:	Regular Gypsum Board
	Fastener Detail:	The boards were mounted horizontally with #6 – 1-5/8 in. coarse thread drywall screws spaced 24 in. OC
	Joint Treatment:	Multi-purpose joint compound and 2 in. paper joint tape
Vapour Barrier	Type:	Clear Polyethylene
	Thickness:	6 mil
	Location:	Between the framing and interior drywall.
Exterior Sheathing	Type:	Oriented Strand Board (OSB)
	Dimensions:	4 ft. by 8 ft. by 7/16 in. thick
	Fastener Detail:	Mounted horizontally with 2 in. common nails spaced 6 in. OC at the perimeter and 12 in. OC in the field.
Weather Barrier	Manufacturer:	Typar
	Product Name:	House Wrap
	Location:	Between the OSB and Quik-Therm SDI
Exterior Insulation	Type:	Type II Expanded Polystyrene with foil scrim
	Dimensions:	2 in.
	Manufacturer:	Quik-Therm Insulation Solutions
	Product Name:	Solar Dry Insulation (SDI)
	Fastener Detail:	Fastened at each stud location with 2 in. by 3/4 in. thick furring strips and #10 - 4-3/4 in. long GRK R4 screws spaced 8 in. OC
Protective Cladding	Type:	Cement board lap siding
	Size:	6-1/4 in. wide by 12 ft. long, 5 in. exposure with 1-1/4 in. overlap.
	Manufacturer:	James Hardie
	Product Name:	HardiePlank
	Fastener Detail:	2 in. common nails at each furring location approximately 5/8 in. from the top of the board.

