News on the Block

Issue # 2 for 2017
Published quarterly

Welcome to the second 2017 issue of News on the Block. We welcome your feedback and story suggestions — please send them to: info@ccmpa.ca.

National Codes Updates: NBCC Parts 5 and 9; NECB

Written by Gary Sturgeon, B.Eng., MSc., P.Eng.

1. *Part 5, NBCC, Environmental Separation*

A. *Sound*

NRC Laboratory Study: Recent CCMPA Newsletters have focused on the on-going research being undertaken by CCMPA and the acoustics division of the National Research Council (NRC). Work has been completed to measure STC for bare CMU walls and for CMU walls having a multitude of various liners, to measure the "vibration reduction index" for CMU with hollow core slabs, and to measure the direct ASTC for CMU with wood joist flooring. Variables measured included loadbearing vs. nonloadbearing CMU, mass of CMU and mass of flooring systems, and orientation of joists/slabs with respect to the CMU (oriented parallel or perpendicular to the CMU). The results from direct testing were required to fill knowledge gaps needed by researchers to model and to calculate Apparent Sound Transmission Coefficient (ASTC) values, and to calibrate theory/model with direct measurement. Both a detailed method and simplified method are available to designers to calculate ASTC for adjacent spaces (side-by-side and one-above-the-other) using CMU construction with concrete slab, hollow core slab, and wood joist floors. As expected, results show that even bare CMU walls with the various flooring systems typically meet the minimum ASTC = 47 now required by the 2015 edition of the National Building Code (NBCC). RR-334 Report, "Apparent Sound Insulation in Concrete Block Buildings", and RR-331 Report, "Guide to Calculating Airborne Sound Transmission in Buildings" are now being updated by NRC to include the most recent research on CMU with hollow core slab. Shortly, it is anticipated that the Canadian Precast Prestressed Concrete Institute will engage the services of NRC to undertake additional testing. These STC data, and the resulting ASTC calculations that rely on these data for input, will also be included in an update to RR-331 and RR-334.

soundPaths: The most effective tool for designers to calculate ASTC and to offer cost-effective designs that maximize ASTC while minimizing construction costs is availability of user-friendly software. In a companion CCMPA-NRC consortium project, NRC is developing "soundPaths". This software is currently available to users without charge at http://www.nrc-cnrc.gc.ca/eng/solutions/advisory/soundpaths/index.html . This particular version is antiquated and now behind the available research and RR-331 development (upon which it is based). The beta version of a fully new soundPATHS was recently released by NRC for review by the consortium members and is under review by all members including CCMPA.

B. *Performance-Based Requirements*

Part 5, "Environmental Separation", is perhaps the most performance-based (as opposed to prescriptive-based) of all Parts of the NBCC. Under a directive to continue to develop performance/objective-based requirements, three task groups have been struck to study state-of-the-art knowledge of, and to develop and include performance-based requirements for (a) durability and (b) protection from precipitation. The objective is to use the structural engineering model for probability of loads, probability of resistance, and reliability, and to apply this model to environmental loads and performance limits. The work has long-term focus, and preliminary work by the Task Groups suggests that these two tasks are highly integrated, that there a wealth of information and research available, that ISO leads the world on these issues through published standards and guides, and that performance/objective-based requirements can be suitably embedded in Part 5. NRC is intimately involved as well, and is spearheading some of the work. Sturgeon serves on these Task Groups. Related to this, Appendix Note A.5.6.2.1 "Sealing and Drainage" has been a source of concern and under revision for several years. It is now deemed complete and ready for Public Review.

2. *Part 9, NBCC, Housing and Small Buildings*

A. *Part 9 Illustrated User's Guide*

Over this past year, the 2014 edition of the "Illustrated User's Guide - NBC 2010" has been under review. In February, 2017, Sturgeon re-wrote much of the text pertaining directly to masonry. It is reported that the text was well-received, underwent little to no change, and will be contained in the next edition. Code requirements could not be changed during this review, and rather, simply technical descriptions and information pertaining to code requirements could be modified.

B. *Proposed Changes*

Masonry Ties: The CSA A370 Technical Committee (Masonry Connectors for Buildings) has submitted a proposed change to increase the corrosion protection of masonry ties. This requests an increase in zinc galvanizing coating, and associated with this, some revision pertaining to the bending of corrugated strip ties, in-situ, after galvanizing. With respect to the latter, the A370 standard permits the use of corrugated strip ties under limiting conditions, but requires the tie to be pre-bent and pre-punched during fabrication, with galvanizing after fabrication. The A370 Technical Committee is seeking harmonization between Part 9 masonry tie requirements and those for corrugated strip ties in CSA A370.

Firewalls: In the 2005 edition of the NBCC, 2-hr. firewalls were permitted to be constructed of other than concrete or masonry. In 2006, the CCMPA proposed a change to the NBCC that would reinstate the use of only concrete and masonry for such firewalls, arguing that, given the objective-based requirements for such walls under the NBCC, compliance cannot be shown, and if somehow demonstrated, would come a strong likelihood that such firewalls could not perform under a fire event. The issue was marginalized by the various Standing Committees for the NBCC although it remained a discussion for concern at the table particularly with the introduction of wood mid-rise construction (6-storey wood frame). Recently, a Joint Task Group has been struck to deal with all of the issues on firewalls that have emerged over the past 10 years, including the CCMPA proposal. The Task Group will consist of members from the various Standing Committees whose requirements are affected, including Part 3 (fire), Part 4 (structure) Part 5 (environmental separation), and Part 9 (housing and small buildings). Work has not yet begun. CCMPA will have involvement.

3. *The National Energy Code for Buildings (NECB)*

A. *Recently Approved Changes*

The following proposed changes were recently approved for inclusion in the next edition of the NECB. These changes may be published as interim changes. The following changes will affect the masonry industry either directly, or indirectly:

Skylight Roof Area: The permissible area of roof skylight will be reduced from 5% to 2%. This will marginally affect tradeoffs within the building envelope that would otherwise facilitate the use of low R-value single wythe masonry walls.

Fenestration U-values: The permissible maximum U-value (minimum R-value) for fenestration will be increased by 15%. This will affect tradeoffs within the building envelope that would otherwise facilitate the use of low R-value single wythe masonry walls.

Thermal Bridging: Thermal bridging must now be specifically accounted for in the calculation of U-value for the elements of the building envelope including above-grade wall systems and fenestration, and below grade elements such as foundation walls. Specifically identified for consideration are masonry ties, and shelf angles used to support brick masonry. Technical support for these changes is heavily based on a report published by Morrison Hershfield titled "Building Envelope Thermal Bridging Guide". It is available on the internet for download free of charge. At this time, fasteners for masonry ties, and for other elements penetrating or partially penetrating the building envelope such as fasteners for masonry anchors and shelf angles, are excluded in the calculation to determine U-value. Consideration to include fasteners likely will be given in the next round of development of the NECB.

B. *Future Forecasting, Discussions, and Proposed Actions*

CCBFC Position Paper: The CCBFC recently released a position paper on a long-term strategy for developing and implementing more ambitious energy codes. The overall direction of the energy code with respect to efficiency is self-evident in the title of the paper. Pertinent issues include:

a. The NECB will develop a tiered system of requirements; fundamentally a ladder system. Each tier will give a jurisdiction (province) an understanding of requirements that will be in force in the next code edition. Each jurisdiction can chose its legislated requirements from the available tiers.

b. Long-term focus will be on energy use, not carbon.

c. There will be a move toward "net zero" buildings, wherein energy consumption is minimized, however, renewable energy can be included to offset consumption. The definition for "net zero" must be well-defined. The strategy is to reduce energy used in buildings by 50% before 2025-2030, with a 30% reduction by 2020.

d. Maintained will be the position that the overall energy performance of houses and buildings will not depend on the material or technique used for construction. For example, a masonry wall system will be required to meet the same energy performance requirements as a steel stud or wood stud wall system.

e. Presently, energy requirements are unrelated to the use/occupancy of a building. However, the CCBFC will continue to seek consensus on implementing energy targets based on occupancy type (warehouse vs. MURB for example).

Whole Building Air Leakage: Research and discussions are on-going that support the inclusion of mandatory, quantified limits on permissible air leakage for whole buildings, and for mandatory whole-building testing to verify compliance.

R-value of Air Spaces and Outboard Materials: The EIFS industry has completed its research on the effect of air space on R-value where a rainscreen EIFS is used. As a consequence, the issue of perhaps excluding any thermal resistance (R-value) for a vented/ventilated air space, or requiring a demonstrated effect, will likely emerge during the next round of development of the NECB for all wall systems and industries. At this time, for walls having a masonry veneer and an included vented/ventilated air space, the air space and materials outboard of the air space are permitted to contribute to the calculated U-value (R-value) of the wall system.

HALIFAX NOVA SCOTIA

FRIDAY, JUNE 2ND 2017 CCMPA MEMBERS MEETING

Thursday, June 1st 2017

DINNER

Friday, June 2nd 2017
MEMBERS MEETING
8:30am – 12noon
Morning Meeting

Afternoon Activity
TBA

Marriott Halifax

Address: 1919 Upper Water St,
Halifax, NS B3J 3J5
Phone: (902) 421-1700

NBCC - Tall Wood Buildings progress report

Provided by Stephen Skalko

Taller Encapsulated Mass Timber Construction (EMTC) Buildings: As expected the SC-FP voted to send the out for public comment the proposed revisions to allow buildings built of EMTC up to 12-stories. This action was taken even though there are still gaps in the technical research on effects of fire with portions of wall and ceiling surfaces of timber exposed within rooms; the understanding of full effect on fire intensity within compartments if water supplies cannot feed sprinklers and the timber structure contributes to the fuel load; and the details of proper connections to meet the 2-hour fire resistance required for these mass timber buildings. On a positive note the provisions do include more stringent requirements to minimize the possibility of fire impact during construction than that which is required for buildings of noncombustible construction. The provisions also encourage exterior wall coverings to be noncombustible materials and include provisions to allow masonry or concrete as an alternate to any exterior wall testing according to CAN/ULC S134. Going forward, I recommend CCMPA plan on submitting comments on the taller EMTC building provisions, especially if the technical gaps described above are still not addressed when the public review period occurs. I plan to prepare comments during the public review unless CCMPA directs me otherwise.

Fire Walls: The SC-FP still has the task of studying the present code provisions for fire walls which allow fire walls to be built of combustible materials. This task will be performed by a Joint Task Group of the SC-FP, the Subcommittee for Structural Design (SC-SD) and the Subcommittee for Housing and Small Buildings (SC-HSB). The Commission staff have received verbal commitments from the SC-SD and SC-HSB to participate. This has been on the SC-FP agenda for quite some time. On behalf of CCMPA, I continue to speak about its importance and the fact that the SC-FP has had it on the agenda for so long, but it is not moving forward as quickly as we could hope. These past few years Commission staff time has been devoted to other topics such as the combustible construction initiatives and fire walls has had a lower priority. On behalf of CCMPA, I have been placed on the list to be part of the TG on Fire Walls. It may be as an observer though I have expressed interest in being a member of the TG.

6-story Light Wood Frame Buildings: The Canadian Wood Council (CWC) did surprise the SC-FP at this meeting by asking that a new item be put on the agenda on the last day of the meeting. They tried to get the SC-FP to take up discussion on changes to the 2015 NBCC for the 6-story wood frame buildings. One of the limits on these buildings is to require them to have 25% open perimeter facing a street. The CWC asked the SC-FP to consider changing the value to 10% because after research they determined the original 25% was not thought out well and may not be necessary. They also said because they are finding some difficulties on projects meeting this 25% requirement and that it adds costs to the projects. There was lively discussion pro and con. Con included pointing out this was one of those "compensatory measures" that CWC used to justify the original work to allow 6-stories… so why now is it not necessary either than it is hard to meet. There was also complaints that this was sprung on the SC-FP at the last minute. The information was distributed to the SC-FP the night before the last day of the meeting. Observers had not even seen it yet. On behalf of CCMPA, I testified in opposition including that it was a compensatory measure in the original submittal and that this one item (25%) was one of the those the fire service submitted a number of comments on that even 25% was not enough. The Chair of the SC-FP referred the item for study to the Task Group on Combustible Construction. CCMPA must continue to monitor the TG on Combustible Construction, which I will continue to do for CCMPA.

The following are the main points on the status of National Building Code of Canada activities as they relate to the taller wood buildings proposals by the Canadian Wood Council as of today.

1. Working Groups: After the Standing Committee on Fire Protection (SCFP) meeting last fall (Sept) the Task Group on Combustible Construction (TGCC), which is assigned the task of evaluating the technical aspects of the CWC proposals, set up five (5) Working Groups to review various aspects of the CWC proposals. These WGs began having bi-weekly conference calls in November. The five WGs are (1) – Types of Construction; (2) – Encapsulation Fire Test Review; (3) – Building Size Review; (4) – Additional Measures; and (5) – Construction Safety. The masonry industry's interest lie mostly with the issues covered by WGs 1, 2 and 3, so those were the conference calls I monitored and participated in discussions to the extent permitted by the individual Chairs. There was a total of 11 calls I attended. The items of significance from these WG calls are summarized in No. 3.

2. TGCC: The WGs reported on their findings to the full TGCC in their February meeting in Vancouver. I attended that meeting to address concerns from the WG conference calls. One of the positive things I can report from that meeting is our pressure helped insure the significant gaps in technical information at present are kept to the forefront in this process. Item 3 covers the main areas of concern to the masonry industry.

3. Gaps in technical information: There are about 9 areas identified in the process as "gaps" where there is insufficient information to fully document or address items in the latest proposals for taller "Encapsulated Mass Timber Construction (EMTC)" buildings. Three (3) gaps which are of significant interest to the masonry industry are:

   A. Research of effects on fire intensity and impact within room compartments if portions of ceilings or walls are exposed wood (i.e. not encapsulated).

   B. Impact on fires within compartments of buildings constructed with EMTC versus noncombustible materials if the water supply for fire protection to a building is rendered inoperative.

   C. Protection of timber connections from the effects of fires suitable for incorporation into the code.

Gap (A) is expected to be addressed through ongoing fire testing but until the results are reported for us to review this is still a big item. Gap (B) is planned to be addressed by some method of computer modeling. A request by the SC-FP to NRC will be forthcoming but whether the modeling will be approved or done is unknown at present. Finally Gap (C) is supposed to be answered in a report to be issued based on a search of existing literature and testing data. The official report has not been issued yet.

4. Moving forward: Though these technical gaps exist, the TGCC still decided to move forward with processing the code proposals through SC-FP with the expectation that these gaps will likely be answered before the code process is completed. Their recommendations will be presented to the SC-FP at their meeting in Ottawa next week (April 25-27). I will be attending this meeting and still keeping pressure on the process to address these significant gaps before EMTC requirements are placed in the NBCC.

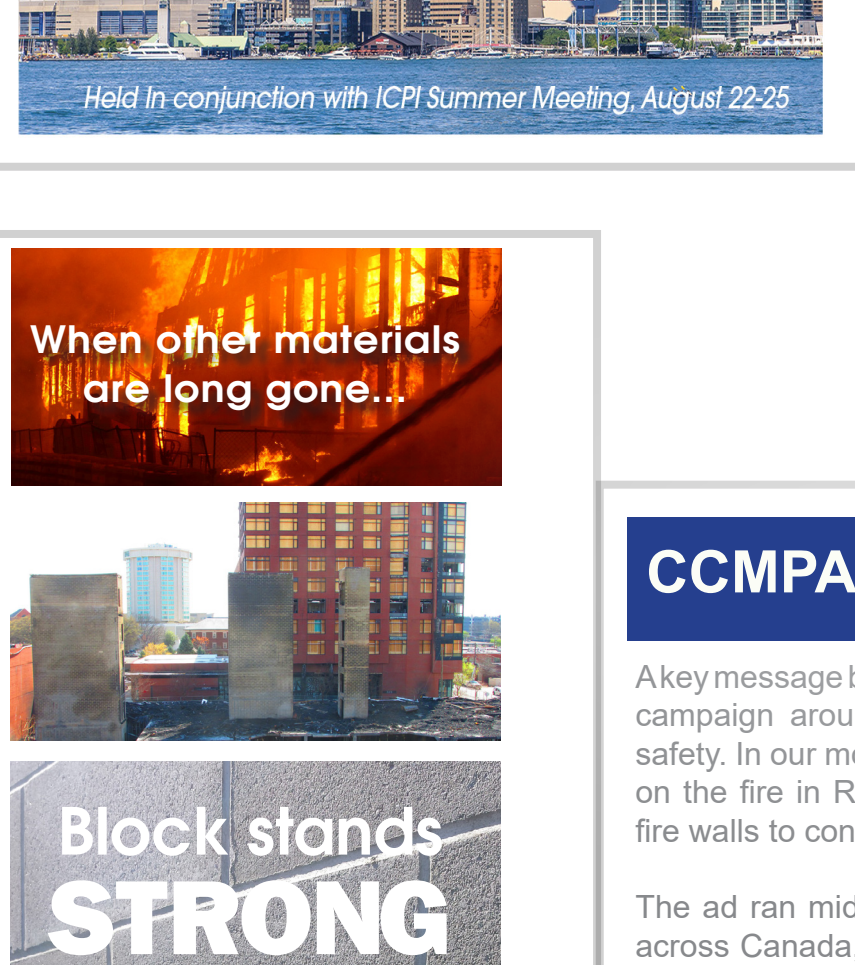
2017 CCMPA events

MARK YOUR CALENDAR for the 2017 NCMA Midyear Meeting

NCMA members will join their fellow colleagues, long-time friends and industry leaders at the National Concrete Masonry Association's 2017 Midyear Meeting being held August 21-24, at the Westin Harbour Castle Hotel in Toronto, CN. NCMA members should mark their calendars and keep Toronto in their plans for this summer. The NCMA Midyear Meeting is where members help set the stage for the future NCMA programs and the association's strategic planning efforts. More information will be available on the NCMA website (https://ncma.org/) as it becomes available.

NCMA Midyear Meeting 2017

WESTIN HARBOUR CASTLE HOTEL | TORONTO, CANADA | AUGUST 21-24



NATIONAL CONCRETE MASONRY ASSOCIATION
13750 Sunrise Valley Drive
Herndon, VA 20171-4662

CCMPA raises awareness

A key message behind CCMPA's ongoing awareness campaign around concrete block is strength and safety. In our most recent ad campaign, we focused on the fire in Raleigh, NC, and the need for block fire walls to contain fires.

The ad ran mid April, 2017, in eleven publications across Canada, including The Hill Times and Daily Commercial News.

Feedback and suggestions for future ads are welcome: info@ccmpa.ca.

AGM & Golf Tournament

CCMPA's
AGM & Golf Tournament
Thursday, September 21, 2017
White Oaks Hotel &
Grand Niagara Golf Course

DROP US A LINE

Marina de Souza, Executive Director
Canadian Concrete Masonry Producers Association

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