

June 15, 2018

### **Building Division Process Changes (Part 9 - New Low Rise Residential)**

The City of Kitchener Building Division is reviewing the internal processes to ensure they are aligned with current OBC since the code has changed 8 times since Jan. 1, 2014 (2012 OBC) and the prescribed time frames have been difficult to maintain over the last two years. The goal is to find efficiencies to expedite the processing time and comply with OBC requirements without assuming additional exposure to risk and liability.

As part of this review it has been discovered that the plans review of new homes is taking too long (0.5 day to 1.5 days to review 1 new residential permit). There are a few reasons for the additional time to review new low rise projects including; increased energy efficiency requirements, increase of revisions after permit issuance, complexity of structural framing in low rise homes and quality of drawing submissions.

Leading up to this announcement, we have been working extensively with staff on internal review to improve the building permit process. During this review, we have identified areas of focus that overlay with the Industry and we circulated to and met with a number of home builders for comment on areas identified. The Building Division has now reviewed those comments and completed the final version of the changes for your information.

#### **Process Changes**

1. Structural Design, specifically Point Load calculations
2. Continuous Basement Insulation
3. CSA F280 - Heat Loss / Heat Gain Summary Form

The effective date for these changes is **July 1, 2018.**

## **1. Structural Design, specifically Point Load calculations**

Beams and lintels supporting concentrated loads / point loads fall outside of the prescriptive requirements of Part 9 of the Ontario Building Code and fall under Part 4 – Structural Design.

To date City of Kitchener Plans Examination staff have completed the required design work for Point Load Design on beams and lintels. Over the years home designs have drastically changed and commonly have a considerable number of point loads per building. For example, 27 years ago, a new home might have one (1) point load per house. As part of customer service, the Plan Examiner completed this design function. However, as noted designs have drastically changed over time and it is common for sixteen (16) point loads on one project.

Offering a high level of customer service continues to be important however this design activity adds an increase to our exposure to risk and liability along with additional time to complete the Structural Design review.

Moving forward the City of Kitchener will no longer be completing this design function.

All point loads fall outside the scope of Part 9 and are required to be designed in accordance with OBC Part 4. Therefore, shall be reviewed and sealed by a Professional Engineer of Ontario (P.Eng.) All beams / lintels supporting these point loads including carrying them down to the footings, and all adversely affected structure, shall be designed by a Professional Engineer of Ontario (P.Eng.).

## **2. Continuous Basement Insulation**

The Ontario Building Code was amended January 1, 2017 to require continuous basement insulation. Depending on the chosen method and type of insulation, continuous insulation may present construction and building envelope challenges if not fully understood and thought through and we are encountering these challenges on site.

Supplementary Standards SB-12; Energy Efficiency for Housing applies to new home construction. All permits issued after December 31, 2016, require continuous basement insulation, ranging from R5 ci + R12, to full R20 when the prescriptive method of compliance is chosen. There are also instances where continuous basement insulation may be required when the performance method of compliance is chosen.

To assist in improving this transition to continuous basement insulation the City of Kitchener Building Division has produced standard details for continuous basement insulation. These details illustrate various continuous basement insulation configurations, requirements and best practices for guidance of staff and the industry.

Moving forward, the City of Kitchener will require more detailed information on the drawings submitted for permit to clearly describe the proposed continuous basement insulation. The drawings shall indicate complete information describing the proposed thickness, R-value, types of basement insulation and if the joints in the continuous insulation will be taped or not.

Example:

1. 2" (R10) continuous extruded polystyrene (EPS) rigid foam insulation with joints taped + 3.5" (R14) fibreglass batt insulation
- or
2. R20 continuous glass batt blanket wrap c/w poly vapour barrier, etc.

This additional information will assist in expediting the plan review process as the Plans Examiner will have the complete information for code compliance. This will provide staff with the information to identify potential issues prior to construction saving time and money on site.

*Please refer to the attached 'Continuous Basement Insulation Tips' sheet and continuous basement insulation standard details for more information. Builders are encouraged to include the applicable detail as part of their base permit submission for code compliance. Yes it is fully acceptable to share these details with your BCIN designer or other professional designer.*

### Continuous Basement Insulation Tips:

- Foam plastic insulation shall be protected in accordance with OBC Div.B 9.10.17.10. with materials such as drywall, plywood, etc. In addition Rockwool insulation has testing approval as a thermal barrier for the 5.5" Rockwool comfort batt and 2" Rockwool comfort board 80. Note that fiberglass insulation is not currently recognized as a thermal barrier to protect foam plastic insulation.
- Some foam plastic insulation acts as a vapour barrier as meets the vapour permeance criteria of a vapour barrier. Consideration shall be made if a separate poly vapour barrier should or should not be installed;
  - Extruded polystyrene (XPS) insulation 2" thick or greater typically **does** meet the vapour permeance. When it does, joints should be sealed or ship lapped and shall be located sufficiently close to the warm side of the insulation to prevent condensation at design conditions.
  - Expanded polystyrene (EPS)(white bead rigid foam) insulation typically **does not** meet the vapour permeance requirements of a vapour barrier and a typical poly vapour barrier shall be installed on the warm side of the assembly.  
*The insulation specifications should always be reviewed to confirm the vapour permeance. Insulation with a vapour permeance not greater than 60 ng/(Pa·s·m<sup>2</sup>) may be considered a vapour barrier.*
- Basement insulation shall be protected from mechanical damage as per OBC Div.B 9.25.2.3.(7)&(8). In scenarios where a poly vapour barrier should not be installed over the exposed insulation due to the continuous foam insulation acting as the vapour barrier the City of Kitchener will accept building paper in lieu of the poly protection.

*Refer to continuous basement insulation details and Rockwool laboratory testing for further information.*

### **3. CSA F280 - Heat Loss / Heat Gain Summary**

The Ontario Building Code was amended January 1, 2015 to reference the 2012 edition of the CSA F280 standard. The updated standard requires that the Designer completing the heat loss / heat gain calculations prepare a table of inputs that lists all the pertinent information and assumptions upon which the calculation is based, including but not limited to;

- a) A list of the input data contained in the “Heat loss and gain calculation summary sheet” shown in Annex D of CSA F280-12; and
- b) The working fluid temperature for heating floor assemblies in contact with the soil or exposed to the exterior.

There is an increasing overlap between the Architectural Designer who selects the energy efficiency compliance package for the building and the Mechanical Designer completing the applicable heat loss / heat gain for the same building. Coordination between these Designers is critical to the overall energy efficiency design and performance of the building. Confirmation of this coordination has not previously been completed by City of Kitchener Staff as part of the review and the referenced heat loss / heat gain summary sheet has not been required to be submitted with the permit documentation.

Moving forward, the City of Kitchener will require that a heat loss / heat gain summary form be included with the submission for building permit. This form shall be completed by the HVAC Designer completing the heat loss heat gain calculations.

Some software programs used by HVAC designer in the preparation of heat loss heat gain calculations can generate a summary sheet containing this required information. To assist the industry, the City of Kitchener has created a form for the HVAC Designer to utilize, if needed. We will also accept other summary forms, provided they contain all the pertinent information.