Arch 172: Building Construction 1 **Fall 2020**
Final Project: Platform Frame Wall Section /100 (26% of final grade)

On a separate page *(a long piece from a roll of tracing paper is suggested)* please draft BY HAND a complete wall section, from the foundation to the peak of the roof. Use any books/aids that you like!! You may also use internet sources but be careful about what you use as they may not be Canadian code compliant. Computer drawing is not permitted as I am trying to preclude file sharing between classmates.

For the *platform framed building* described below, draw a complete wall section at **1:10 scale**, from the base of the footing to the peak of the roof. You may use break lines to bring the height of the section down to fit on a reasonably sized piece of paper or trace. **Label all materials, and indicate their size or thickness**. If labels are absent it will be assumed that knowledge is also absent. Use the labeling method shown in class (grouped notes). This is a metric drawing so please be sure to *label consistently in metric*.

The building is a two storey house with a pitched roof and a full basement. ***The list below is not meant to be entirely complete but is very close. Please add missing materials as necessary based upon your references and course notes.***

BASEMENT CONSTRUCTION:

- 250mm thick concrete foundation wall on 200 x 400 concrete footings;
- 100 mm deep concrete floor slab with 150 x 150 welded wire mesh, on vapour barrier on 150 mm gravel on undisturbed soil;
- 100 mm diameter weeping tiles around perimeter, with 200mm pea gravel cover and filter cloth; backfill
- Foundation wall to have: bituminous dampproofing; 50mm polystyrene insulation on exterior and a drainage board/matt. Leave the inside face of the concrete wall unfinished;
- *Ensure no thermal bridge where this meets grade*. Protect the insulation from UV radiation and damage by lawnmowers.

GROUND FLOOR CONSTRUCTION:

WALL: 90mm brick veneer; 25mm air space; 38mm polystyrene insulation; Tyvek (aka spunbonded olefin facer…); 13mm exterior grade plywood or OSB; 38x140mm wood studs with 140mm batt insulation; vapour barrier; 13mm gypsum board

GROUND FLOOR: 19mm plywood on 38 x 286 joists; basement ceiling unfinished

WINDOW: operable wood window (*approximate* a section, don't get bent out of shape drawing it exactly, but be sure to have it located correctly to cover the air space in the wall surrounding). Precast concrete window sill.

SECOND FLOOR CONSTRUCTION:

WALL: 19mm horizontal wood siding on 38mm *vertical* wood strapping @ 400 mm o.c.; 38mm polystyrene insulation (the wood strapping gets nailed through the insulation to the wood studs

behind with long nails); Tyvek; 13mm exterior grade wood siding or OSB; 38x140mm wood studs; 140 mm batt insulation; vapour barrier; 13mm gypsum board.

FLOOR BETWEEN SECOND AND FIRST FLOORS: 19mm hardwood flooring on 19mm plywood on 38 x 286 wood joists with 13mm gypsum board ceiling (note that the hardwood finished floor will be installed after the framing is up)

FLAT CEILING BETWEEN SECOND FLOOR ROOM AND ROOF CONSTRUCTION: 38 x 140 joists; 300 mm fiberglass batt insulation: vapour barrier; 13mm gypsum board

ATTIC CONSTRUCTION:
ROOF: asphalt shingles on building paper on 13mm roof sheathing or OSB on 38 x 140 rafters with 38 x 89 collar ties; detail the fascia and soffit; show a rain gutter; ensure that air can circulate from the soffit through to the attic (put in the product that keeps the air path clear from the soffit to the attic and holds back the insulation.

OTHER IMPORTANT THINGS TO INCLUDE:
It is critical to attempt to develop the proper details where the aforementioned walls, floors, ceilings and roof meet. Include all flashings, dampproofing (where required), eave detail, soffit ventilation, peak detail, etc. Show finished grade level. Do a bit of hatching to show materials.
Start from the bottom and work your way up, making sure that your paper is long enough.

The only tricky part of this is deciding how to transition from brick cladding on the ground floor to wood on the second floor. You are free to create a slight cantilever of the second floor over the first to create this detail if you wish. Every building we design is a bit different from the next, so details will change from project to project. The CMHC Best Practice Guides that you have been given in PDF form will be the very best sources for these details.

There has been sufficient time planned in your December schedule to allow you to start/finish this drawing between the completion of Arch 142 on the 14th and this due date on the 17th. If you have your CMHC resources handy it should take far less than this amount of time.

<u>Grading Rubric:</u>

/100 (valued at 26% of your final grade)

/10 neatness, accuracy and completeness of drawing and labeling overall

/10 following the submission guidelines accurately so that there was no requirement when grading to excessively manipulate the files, images were clear and in the proper orientation for viewing. No follow up emails required for clarification or to chase down elements.

The grades will be split evenly for each part of the wall based on the technical correctness of the drawing and the technical correctness of the labeling.

Basement and Ground Floor Construction /20

First floor wall and window /20

Second Floor Wall and Window and Second Floor Construction /20

Roof and Second Floor Ceiling Construction /20

SUBMISSION:

Please follow these instructions accurately as this will be a fairly difficult project to grade digitally.

Please be sure to take high quality photos of each part as outlined below. They match the grading rubric elements. Orient them vertically so that they are in the proper orientation for viewing. Check them for clarity before submitting. I need to be able to read the labels on the closer view photos.

There should be 5 photos total. Make sure that you upload them so that they appear in the order listed below.

1. Overall of the entire wall section. I am not expecting to be able to read the labels on this, but see the overall for reference.

2. Photo of the Basement and Ground Floor construction

3. Photo of the First Floor wall and window

4. Photo of the Second Floor Wall and Window and Second Floor construction

5. Photo of the Roof and second floor ceiling construction.