



Chapter THREE

FOUNDATIONS AND FRAMING

Once the excavation is completed, the location of the new home is staked and a soil analysis report is on hand; the next step is to frame and pour the footings. The entire process should take one day for a 4000 SQF double story home.

At PCM, we consider the footings of a home to be like the chassis of a motor car. This vital component must be completed with extraordinary care to avoid settling issues in the future. For this reason, PCM goes far beyond the minimum standard set out in the building code and will always spend more money in order to have a design that is at least two to three times more robust. This includes reinforcing the footings with a minimum of three 15M steel re-bars. The result of this approach is seen a year after the home is completed. No visible settling cracks are found, other than as a result of normal shrinkage due to the absence of water in the materials. These typical items are addressed as part of the warranty.

Once the framing of the footings is complete and the

re-bars are in place, a municipal inspection takes place. If the inspection is passed then the next step is to pour the concrete on the footings. The concrete specification will be mentioned in the structural engineer design and in order to ensure that the concrete conforms to this specification, it is PCM policy to always do concrete sampling with resulting laboratory reports.

HINT:

Liquid concrete, ready to be poured, all looks the same.

BEWARE:

Always do concrete sampling as not all concrete suppliers have the same quality standards.

With the footings completed, construction of the walls can begin. The very first step is to prepare the footings for the forms. The site is cleaned up, stone is placed, and the surveyor comes back on site to pin the exact location of the walls. The entire process should take no longer than one day for a conventional 4000 SQF double story home.

FOUNDATIONS:

Assuming that the walls are to be made of poured concrete, the initial step is to have the surveyor come back to site and reconfirm the exact location of the walls. This will ensure compliance with zoning by-laws and ensure that potential localization problems are completely avoided. Once the footings are pinned (marked) with the wall location, the forms are assembled on top of the footings, together with the assembly of all steel rebar. The wall height is confirmed by comparing it to the top floor marking, left by the surveyor.

Finally, with the assembly of the walls completed, the forms are checked once again in order to ensure that they are square. Scaffolding is assembled, to facilitate the safety of the workmen during the pour, and the whole assembly is ready for the concrete.

During the pour of concrete, it is PCM policy to always do concrete sampling with resulting laboratory reports,

following the same procedure as for the footings. Once the walls are poured the concrete is left to cure. The forms are then dismantled and taken away to the next job.

Prior to back-fill inspection by the municipality, the walls are sprayed and wrapped in order to either damp-proof or in extreme cases, waterproof the walls. Weeping tile for exterior drainage is also placed around the bottom of the footing and stone is placed above the weeping tile. With these steps completed, we are ready for a pre back-fill inspection.

The entire process should take three to four days for a conventional 4000 SQF double story home, if using poured concrete walls. It will take double the time or even longer if the client selects to use cement block foundation walls.





FRAMING:

The cost of framing is mostly influenced by the design of the home. When the builder is involved during the initial design process, as is the norm at PCM, there is a better chance that the process will be less time consuming, produce a higher quality design and enjoy lower overall costs.

Most custom homes today use a large amount of steel beams. The material cost for steel beams is substantially lower when compared to Laminated Veneer Lumber, but there are some significant drawbacks. In deciding to use steel, a supplier is required for the beams, another for a crane and a tradesman must be hired to weld them together. A painter is also required to prime the beams and welded joints. Four different skill-sets are needed and this demands additional coordination and time allocation. The labour costs increase dramatically and the time required to install all the steel beams slows down the process significantly, driving the total cost even higher.

At PCM we prefer to take the option to use LVL - Laminated Veneer Lumber. *(Similar in appearance to plywood, LVL is an engineered wood product that uses multiple layers of thin wood assembled with adhesives. It offers several advantages over typical milled lumber: it is stronger, straighter, and more uniform, and is much less likely than conventional lumber to warp, twist, bow, or shrink due to its composite nature. LVL is typically used for headers, beams, rim board, and edge-forming material. LVL is still a relatively new product; it was developed in Canada in the late 1990s. High-tech, computerized sawing systems are what makes it possible to produce large-size, top quality construction material using relatively small trees.)*



Although the initial material cost is higher when using LVL, we eliminate the need for all the extra costs associated with the use of steel. Using LVL improves the quality of the home and saves weeks worth of extra labour. If a steel beam is inserted or packed into a floor, in order to be flush with the ceiling of the home, there is always a possibility that when hardwood floors are nailed to the subfloor, a nail will touch the steel beam resulting in a squeaky floor right from day one! The initial saving isn't worth it in the end.

There are other framing techniques that we try to use as much as possible. In order to maximize strength and speed, construction floor joists are placed in one continuous long piece from the rear to the front of the home. By using these continuous floor joists it allows framers to complete an entire typical floor in about four hours, once again saving process time and adding additional strength to the design of the home.



ABOUT THE PEOPLE:

As with all tradesmen, finding the most qualified framers is again one of the most important factors when making a decision as to who to hire for the job. Every framer does not do the same work. If you pay less you should expect to get less, both in terms of quality and productivity. From our experience at PCM, the most qualified and skilled framers are almost always from unionized framing companies that have in excess of fifty crews employed at any one time. We find that unionized framers are usually held to the highest standards throughout the building process and are exceptionally well organized.

The entire framing process should take no longer than three to four working weeks for a conventional 4000 SQF double story home, regardless of whether the roof is hand-cut or if it is assembled with manufactured trusses. This time also includes the installation of the windows, which are part of the framing process.

The roof is shingled as soon as the ply-wood is applied to the roof and, often times, starts on the same day that the last nail goes into the ply-wood.

LIST OF SOME OTHER ACTIVITIES THAT HAPPEN AS FRAMING IS COMPLETED:

- Bill of quantities for all wall tiles, stone and flooring materials has to be confirmed on site and all finish material has to be reconfirmed with regards to the delivery dates;
- All installers to be informed by designer as to any particular requirements;
- Bill of quantities for all trim materials, like base boards has to be confirmed on site and all finish material has to be reconfirmed with regards to the delivery dates. All installers to be informed by designer as to any particular requirements;
- Glass and Mirror supplier to be involved and come to site in order to review openings. The same applies to closet organizer suppliers.