CHAPTER ONE

The Plan

1.1 Methodology

In a perfect world timbers would be perfectly square and there wouldn't be a need for any reference line, joinery could be layed out (with a carpenter square) from a face surface. In reality however, timbers are just squared logs, meaning there is (almost) always twist or bow, even when machine-planed four sides. Given this fact that there are no true surfaces from which to measure/layout from, two planes of reference are required; the vertical (plumb) and horizontal (level). With a log it is simple, since there are no surfaces, the planes of reference can only be centered. With a timber, one has the option to apply the reference planes either close to two adjacent surfaces (called face layout/reference), or to center them (called centerline layout/reference). To establish these reference planes, one surface of the timber will be chosen as the 'face' and leveled, and the planes referenced from it.

Face layout (also called Square Rule Layout) dictates the leveled face to be an exterior surface. While this method presents a level surface to the exterior (for the wall panel), it (almost) always presents a sloping surface for the actual joinery. Sloping surfaces are difficult to join. Centerline layout dictates the joinery face as the surface to be leveled and the centered planes referenced from it. In this manner the joinery face(s) of the opposing timbers will be level and perpendicular to each other, presenting the best alignment for joints mating. The joinery will be located (and in alignment) along the centerline at uniform spacing, allowing for template layout and modular timber components. The following project of a one and two storey P&B building is a generic example of what can be created using this modular, centerline layout system.

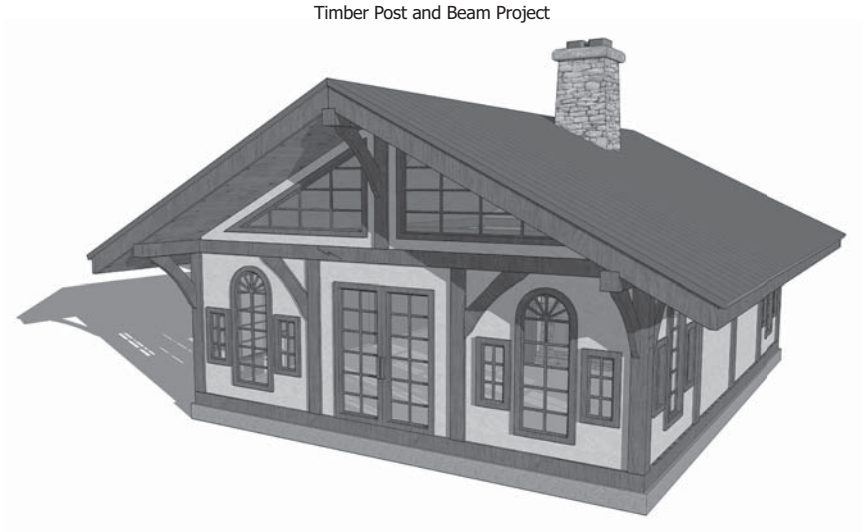


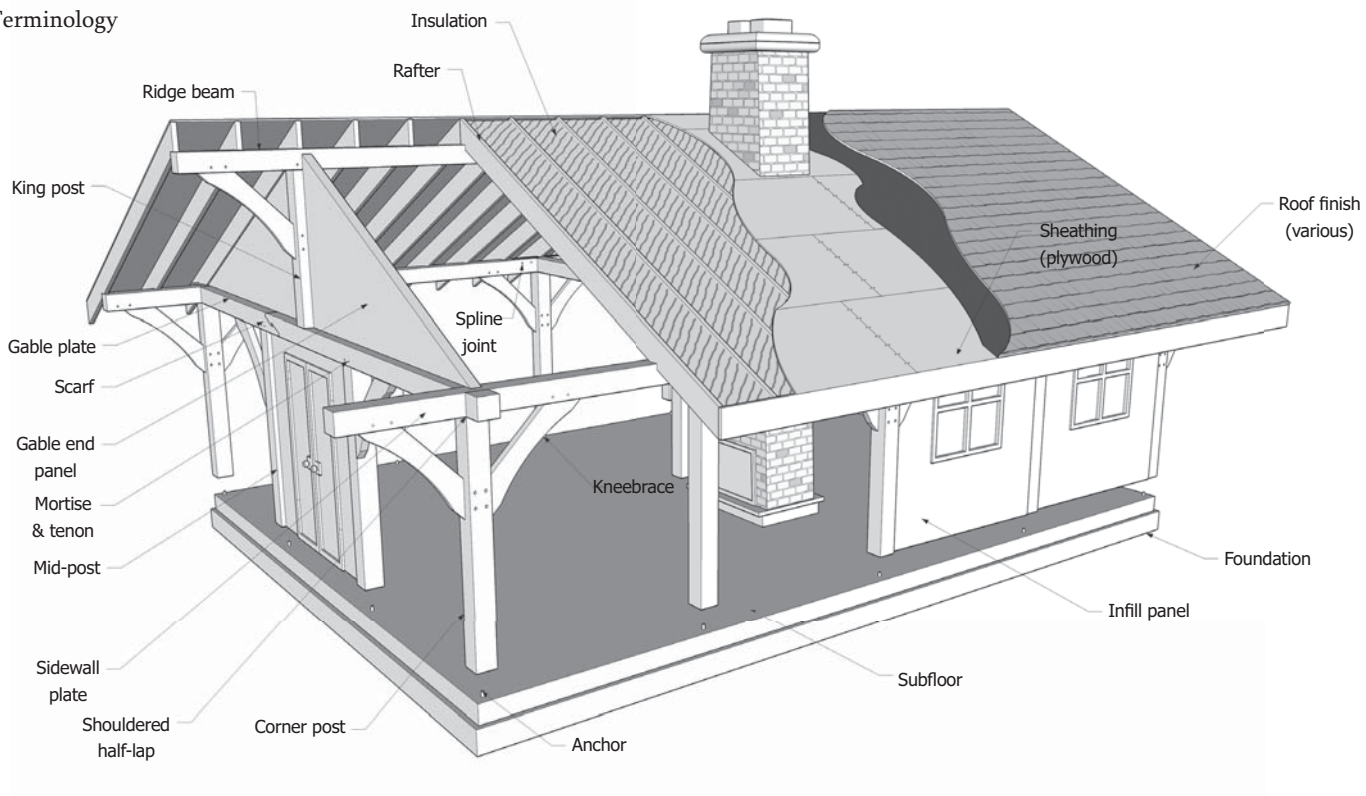
Figure 1-1
Methodology

1.2 Parts and Terminology

The drawing of our project building in Figures 1-1 and 1-2 shows a rectangular 24′ x 32′ (7315 mm x 9754 mm) building with 8″ x 8″ (203 x 203 mm) posts and beams. The distance between the posts in our project is 8′ (2438 mm). This post spacing distance depends entirely on the allowable span for the size of the beam (refer to Structural Beam Sizing in Appendix III), as well as your aesthetic preference. It is not necessary to further reduce post spacing for structural purposes. Note these dimensions are from the centers of the posts, which means that the foundation size needs to be increased to 24′8″ x 32′8″ (7518 x 9957 mm).

These building examples all show posts of identical lengths positioned at regular intervals on the floor plan to uniformly transmit the load to the ground. The spacing also gives a generous timber look to the building design. The kneebraces give rigidity to the framework. The lengths of the posts and locations of the kneebraces can be ascertained from the elevation and plan views of the building drawings. The beam lengths and projections can be calculated from the elevation drawings, and based on uniform post spacing. The timber lengths you are working with and their joint-loading capacity will determine the location of the splices. If you are adding a second floor, it is a good idea to place second-floor posts either directly over or close to the first-floor posts to effectively transmit the loads to ground.

Figure 1-2
Parts and
Terminology



The floor system for this building method can be either a conventional framed subfloor with a continuous concrete foundation or a timbered floor system with intermittent pier support. The posts can sit and be anchored to the surface of the reinforced subfloor or can pass through the subfloor and be anchored directly to the concrete foundation, separated by a membrane of closed-cell foam to act as a moisture break.