TOPIC: Parallel chord wood truss

A parallel chord wood truss is an open web truss configuration that is used in the construction of floors and ceilings. These trusses are lighter, less expensive and can be easier to install than other types of floor and ceiling joists. Pound for pound an open wood truss is among the strongest structural members manufactured. These trusses can be manufactured to precise specification for each application to carry the calculated load for which they are designed.

Lumber used in trusses is graded using either a visual process or a machine stress rating in accordance with national standards. In the visual grading process, each piece of lumber is visually examined and the wood grade is based on the size of growth characteristics that could affect the strength and stiffness of the member. Each piece of lumber that is machine stress rated, undergoes a stiffness evaluation in addition to a visual evaluation. The sizes of the members increase with span and truss capacity.

The truss connector plates are usually proprietary products. They are made of galvanized steel and manufactured by high speed stamping machines that punch out the plate teeth and shear the plate to the required size. Truss plate manufacturers carry out a series of tests to determine the design properties of each type of plate. Many sizes and gauges of connector plates are manufactured. The most common are 16, 18 and 20 gauge sheet steel.

The top chords of parallel chord trusses provide a wide surface for easier nailing and increased glue contact area with the sheathing material when used in a floor system. These trusses are designed and built for each project, so no on site trimming or cutting is required. They are designed for longer, clear span capabilities with minimum deflection which usually means greater strength and larger clear spans than conventional joists. The open web design allows for easier installation of heating, plumbing and electrical systems.

This technical bulletin has been drafted to be general in nature and not technically exhaustive.
Parallel chord trusses can be designed to be top or bottom chord bearing. When a longer span is required, the height of the truss usually increases. If a bottom chord bearing truss is used, the elevation of a single story building can increase, potentially increasing the need for steps to the building. A top chord bearing truss system is designed to carry the load, but a majority of the truss is hanging below the supporting member.

Several designs of top chord bearing trusses are shown below.

The Building Component Safety Information Booklet is a very good guide to the practice, handling, installation, restraining and bracing of metal connected wood trusses. This manual can be found and/or downloaded at sbcindustry.com/bcsi.php

Parallel chord trusses have been in use for many years and are becoming more popular in both residential and commercial building projects.