

Practice Note: Design of Residential Buildings Using Engineered Lumber Products

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APEGM members involved with design of residential buildings using engineered lumber products; .i.e. Laminated Veneer Lumber (LVL), Parallel Strand Lumber (PSL) and Structural Composite Lumber (SCL) should take note of a potential problem associated with the use of standard adjustable steel columns and footings as referenced in Part 9 of the Manitoba Building Code (MBC). This concern was brought to the attention of the Association's Safety Committee by suppliers of pre-fabricated building components and building regulatory authorities.

Background

With the introduction of engineered lumber products LVL, PSL and SCL it is now possible for the designer to provide greater clear spans between structural supports. Consequently, because of the increase in tributary area from larger more open floor areas, the loadings to the structural supports are increased. As such, routinely specified structural elements for residential buildings such as footings and teleposts that are intended for use with dimension lumber could easily become overloaded.

Overloading of Standard Teleposts

The Manitoba Building Code, Subsection 9.17.3, references a standard to which typical adjustable steel columns are to be manufactured. That standard (CAN/CGSB 7.2 - M88) specifies that these columns be designed to support loads up to, but not exceeding 36 kN (8,000 lb). However, as noted above greater loads are now commonly developed.

In considering solutions it is to be noted that the doubling up of two standard teleposts is not good engineering practise and should not be used. Alternative design usually involves a heavy-duty telepost or specialized column design.

Better Footing Design Needed

A further issue arises when increased loads must be supported. The standard footing design as outlined in the Manitoba Building Code may well be under capacity and cannot be used. Once again, an alternative design will be required that conforms with

Limit States Design requirements for both Ultimate Limit States (ULS) capacity and Serviceability Limit States (SLS) requirements specified for the project.

Recommendation

It is strongly recommended that professional engineers providing services for residential buildings under Part 9 of the MBC 2011 take note of whether the structural system is other than the standard system provided for in the MBC 2011. If so, then particular attention should be paid to the capacities required of the column and foundation systems, and if necessary, alternative designs provided. The supporting documentation to demonstrate code compliance should be submitted to the authority having jurisdiction. Note that, if the structure is other than a standard system provided for in Part 9, then the telepost and its supporting foundation must be designed in accordance with Part 4.