BUILDING CODE INTERPRETATION

STANDATA

MANUFACTURED STRUCTURAL COMPONENTS

DISCUSSION

This STANDATA has been developed to address the use of manufactured structural components in the construction of one- and two-family dwellings. The components are manufactured roof trusses, manufactured floor joists, manufactured composite wood beams and columns, and engineered steel columns. These components are not covered by the prescriptive requirements of Part 9 of the Alberta Building Code. They have been "generically" engineered for very specific end uses and have smaller tolerances and margins of error inherent in their design and application. They allow a freedom in design that may result in structural loads being transferred in magnitudes and at specific points that are not anticipated by Part 9 of the Code.

This STANDATA describes a process by which a safety codes officer (SCO) may accept the use of these manufactured structural components as an alternative to the need for the direct involvement of a professional engineer in each specific project. The question then becomes, what information is required to be submitted with the application for a building permit in order to demonstrate conformance with the Code requirements?

The process described in this STANDATA is not intended for application to traditionally constructed housing where the structural components are covered by Part 9 of the Alberta Building Code. It only addresses one- and two-family dwellings that fall within the scope of the exemption from professional involvement as described in Clause 2.4.2.1.(2)(b) Division C.

DEFINED TERMS

The words and terms in italics in this STANDATA have the following meanings that are specific to this STANDATA only and are not to be used in other contexts:

> *Applicant* means the person responsible for the overall coordination of the construction. The applicant may be the contractor, the owner, or the owner's agent.

> *Beam calculation* means an analysis of a specific beam showing the resolution of all forces that the beam supports and transfers.

Issue of this STANDATA is authorized by
the Chief Building Administrator

[Original Signed]
Ata R. Khan, MRAIC

Alberta Municipal Affairs

SAFETY CODES COUNCIL

Engineer-approved computer design program means the manufacturer's proprietary software package used to design the manufactured structural components. The software must be approved by a professional engineer licensed to practice in the province of Alberta and a copy must be provided to the authority having jurisdiction.

Engineered column means an adjustable steel column that has been designed by a professional engineer, registered in the province of Alberta, and does not meet the criteria for acceptance in CAN/CGSB 7.2-94 "Adjustable Steel Columns."

> **NOTE:**
> An engineered column must also include the design of the column footing, specific to the individual project. The design of the column footing must account for the local soil conditions at each site. Generic footing designs are not acceptable.
>
> Adjustable steel columns are required to conform to CAN/CGSB 7.2-94 "Adjustable Steel Columns." Columns manufactured to that standard have a maximum allowable working load greater than 36kN (8000lbs), and have a minimum and maximum outside diameter of 63mm and 86mm, respectively. This is to allow for the installation of the columns in 51x100mm (2x4) frame-constructed walls.

Layout schematic means a schematic drawing produced by a computer program bearing original signatures, from the supplier of a manufactured component, submitted at the time of building permit application that must show the following information:

1. brand name of the manufactured structural component being used,

2. location of components, and

3. name of *engineer-approved computer design program* to be used in the design of the manufactured structural components,

Manufacturer's corporate letter means a letter from the manufacturer that

1. bears the original signature and stamp of a professional engineer licensed to practice in the province of Alberta,

2. verifies that the *engineer-approved computer design program* has been approved by a professional engineer licensed to practice in the province of Alberta in accordance with acceptable engineering principles,

3. lists the suppliers of the product or the building designer responsible for the design who are acceptable to the manufacturer to use the *engineer-approved computer design program*, and

4. states the CCMC product evaluation number and confirms the current status of the evaluation report.

Manufacturer's design drawings means drawings of the structural layout and components submitted at the time of building permit application. These drawings must show all details, component placement, load magnitudes and transfer points, name of the designer, and the official logo of the software, drawn to a scale of not less than 1:100, generated from a manufacturer's *engineer-approved computer design program*.

Manufacturer's product guide means the manufacturer's handbook including installation details, spans, nailing patterns, use limitations, etc.

Manufactured structural components means manufactured wood roof trusses or joists, manufactured wood joists, manufactured wood beams (other than built-up wood beams) and columns.

Supplier's letter means a letter from the supplier (or building designer) bearing original signatures, from the supplier of a manufactured component, submitted at the time of building permit application, which must show the following information:

1. brand name of the manufactured structural component being used,

2. name of the *engineer-approved computer design program* to be used in the design of the manufactured structural components, and

3. name of the contractor responsible for the overall coordination of the construction.

CODE REFERENCES

1. Sentences 2.2.2.1.(1) and (2) of Division C state:

> **2.2.2. Information Required for Proposed Work**
> **2.2.2.1. General Information Required**
> **1)** Sufficient information shall be provided to show that the proposed work will conform to this Code and whether or not it may affect adjacent property.
> **2)** Plans shall be drawn to scale and shall indicate the nature and extent of the work or proposed *occupancy* in sufficient detail to establish that, when completed, the work and the proposed *occupancy* will conform to this Code.

2. Clause 2.2.9.4.(1)(c) of Division C states:

> **2.2.9.4. Required Information**
> **1)** Except as otherwise required by this Part every applicant for a *permit* shall
> **…**
> > c) submit plans, specifications or other documents, showing the proposed *occupancy* of all parts of the *building*,
> > **…**

3. Sentence 2.4.2.1.(2) of Division C states:

> **2)** Except as required in Sentence (8), architect and engineer seals and stamps are not required on plans or specifications for a *building*
> **…**
> > b) classified as a *residential occupancy* that is
> > > i) a single family dwelling, or
> > > ii) a multiple family dwelling that contains 4 *dwelling units* or less,
> > **…**

INTERPRETATION

Conformance with the requirements of Sentences 2.2.2.1.(1) and (2) of Division C and Article 2.2.9.4. for the construction of one- and two-family dwellings which incorporate *manufactured structural components* can be demonstrated by an *applicant* for building permit, provided the following conditions are met:

1. The system and the system components shall be evaluated and listed by the Canadian Construction Materials Centre (CCMC),

2. The system shall be installed in accordance with CCMC Evaluation Report and the manufacturer's installation instructions,

3. The interface between different systems of *manufactured structural components* or between *manufactured structural components* and conventional construction shall be accounted for by the designer,

4. The manufacturer shall submit the *manufacturer's corporate letter* to the authority having jurisdiction to be retained on file,

5. The supplier of the *manufactured structural components* shall

   a. provide the authority having jurisdiction with a copy of the *engineer-approved computer design program*,

   b. complete the *supplier's letter* for submission by the *applicant*, and

   c. provide the *applicant* with the *layout schematic*, *beam calculations*, and/or the *manufacturer's design drawings*,

6. An *applicant* for a building permit to construct a one- or two-family dwelling that incorporates *manufactured structural components* shall

    a. submit a completed application for permit form for one- and two-family dwellings using *manufactured structural components*,

    b. submit the supplier's letter,

    c. submit a layout schematic for

        i. roof loads which are supported by the perimeter walls, and

        ii. floor joists of simple or continuous spans supporting uniformly distributed loads only,

            NOTE: Where continuous spans are incorporated into the design, the layout schematic should also show all joist and/or beam reactions and all construction details that are covered in the *manufacturer's product guide*.

    d. submit the *manufacturer's design drawings* for all *manufactured structural components* not covered by Item (c),

    e. submit *beam calculations* where loads are being transferred to a beam,

    f. submit the design of any engineered columns including the site-specific design of the column footing accounting for the soil conditions at the site,

    g. ensure all documentation submitted in support of a building permit application and as required by the SCO is available on site for the use of the contractor and SCO, and

    h. assume responsibility for the coordination between *manufactured structural components* in cases where more than one system is used,

7. The contractor shall

    a. install all *manufactured structural components* as shown on the plans and specifications and in accordance with the manufacturers instructions and *manufacturers product guide*, and

    b. report any discrepancies to the designer and SCO.

This INTERPRETATION is applicable throughout the province of Alberta.