INFORMATION BULLETIN

STANDATA

THE SELECTION AND USE OF WOOD-BASED RIM BOARDS IN ALBERTA

SCOPE

This Information Bulletin covers the accepted methods for the selection and installation of rim boards to satisfy the general requirements of the Alberta Building Code 1997 ("ABC"). These requirements of the ABC include vertical and in-plane load transfer capability, structural integrity.

Factors key to the successful installation of rim boards are also described. The objective of this Information Bulletin is to promote preferred practices and to avoid the possibility of structural failure in buildings under high lateral load conditions.

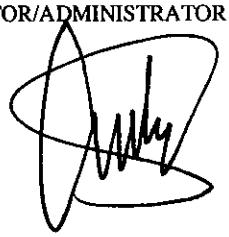
Rim boards covered in this Information Bulletin are limited to those intended for dry service end use applications only.

PURPOSES

Rim boards are full depth wood-based members that are located at the joist elevation in an end-bearing wall or parallel to the joist framing. When installed they are required to:

- Transfer all vertical loads at the rim board location from above to below.
- Transfer in-plane lateral loads from the diaphragm to the wall plate.
- Provide diaphragm attachment for the sheathing at the top edge of the rim board.
- Provide lateral support to joists or rafters.
- Provide closure for ends of rafters and joists.
- Provide an attachment base for siding and/or deck ledger.

ISSUE OF THIS INFORMATION BULLETIN IS AUTHORIZED BY THE DIRECTOR/ADMINISTRATOR.



C.M. TYE

SAFETY CODES COUNCIL

Alberta MUNICIPAL AFFAIRS

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MATERIALS

Wood-based rim boards may be made from a range of materials. These include structural composite lumber, prefabricated wood I-joists, sheathed pony walls and wood-based panel products including OSB, plywood and waferboard.

To be acceptable materials chosen must comply with the following Standards, as appropriate:

- CSA 0121-M "Douglas Fir Plywood."
- CSA 0151-M "Canadian Softwood Plywood."
- CSA 0437.0 "OSB and Waferboard."
- CAN/CSA 0122-M89 "Structural Glued Timber."

Rim boards installed in Alberta may be made from wood-based products that have been evaluated by the Canadian Construction Materials Centre (CCMC) and found to be compliant with the intent of the ABC 1997.

To achieve compliance products must provide a level of performance equivalent to that required in:

- ABC 1997, Subsection 3.1.4, Section 9.23 and Part 4.
- CSA 086.1-94 "Engineered Design in Wood (Limit States Design)," and
- Supplement No 1 to CSA 086.1S1-98

The adhesive used must comply with:

- CAN/CSA 0437.2-M86 "Evaluation of Binder Systems for Waferboard and Strandboard," and
- CCMC'S Technical Guide "Structural Composite Lumber," MF No. 06185

DESIGN AND APPLICATION RESPONSIBILITIES

The Alberta Building Code does not contain specific requirements for manufactured lumber components of buildings. The Director's Ruling 97-DR-025 "Assurance of Structural Sufficiency in the Design of One and Two Family Dwellings Incorporating Manufactured Structural Components" does, however, set out basic requirements for assurance of structural sufficiency in the design of manufactured structural components and Sentence 2.4.1.1.(2) of the Alberta Building Code 1997 permits acceptance of products on the basis of evaluation reports issued by the Canadian Construction Materials Centre (CCMC). CCMC evaluated rim boards of the following minimum thickness may be used in Alberta:

Recommended thicknesses by the Rim board and I-Joist manufacturers [2,5] :-

Type	Rim board attached to I-joists ends [1,3] (alternatives)	Rim board parallel to I-Joist framing [1]
Rectangular (LVL, Plywood, OSB, etc) (Min Vertical Capacity 29.2 kN/m (2000plf) Unfactored)	• **32 mm thick (1¼") rim board**[5,6] • **29 mm thick (1 1/8") rim board**[5,7] Floor sheathing requires modification. See Rim Board Detail. • **25 mm thick (1") rim board**[5,7] Sheathing requires modification. See Rim Board Detail. Not recommended for support of deck ledgers. • **19 mm (¾") or 22 mm (7/8") thick rim board when used:** Blocking panels between the I-joists, or Blocking panels and squash blocks, or as non-structural closure on elements such as cantilevers	• **32 mm thick (1¼") or 29 mm thick (1 1/8") rim board**[5,6] (depending on manufacturer's design) See Wall Bracing Detail. • **38 x 89 (2 x 4) pony wall with 9.5 mm (3/8") OSB or equivalent sheathing with 38 x 89 mm (2x4) studs @ 600 mm (24") o/c.** Parallel to I-joists only. Pony wall must be sheathed before installation of I-joists.

Note 1. Basement concrete wall must be laterally braced as per the Alberta Housing Technical Committee Guideline of July 1999 for the backfill and wall length parameters or equivalent.

Note 2. The above recommendations apply to ABC Part 9 residential construction. The vertical and lateral loads must be calculated for Part 4 Engineered Construction and the appropriate rim board must be used. If a permit applicant is deemed to have fully complied with STANDATA 97-DR-025, "Assurance of Structural Sufficiency in the Design of One and Two Family Dwellings Incorporating Manufactured Structural Components", the applicant is deemed to have verified the adequacy of all components of the floor system.

Note 3. If the load bearing capacity of rim board is exceeded provide squash blocks at joist bearings.

Note 4. Designers may refer to the Canadian Wood Council's "Woodworks - Design & Costing Workbook" for lateral load transfer methodology and other CWC publications.

Note 5. In order to comply with minimum quality standards, rim board must meet CCMC Technical Guide Masterformat Section 06103.

Note 6. Equivalent lateral capacity to 38 mm thick (1½") dimension lumber.

Note 7. Not equivalent to dimension lumber for lateral capacity. Lateral load design calculations required.

RECOMMENDED INSTALLATION METHODS – REFER TO ILLUSTRATIONS

Rim boards

When floor joists are placed at right angles to exterior walls, ensure that adequate joist bearing is provided on the wall.

Pony Walls

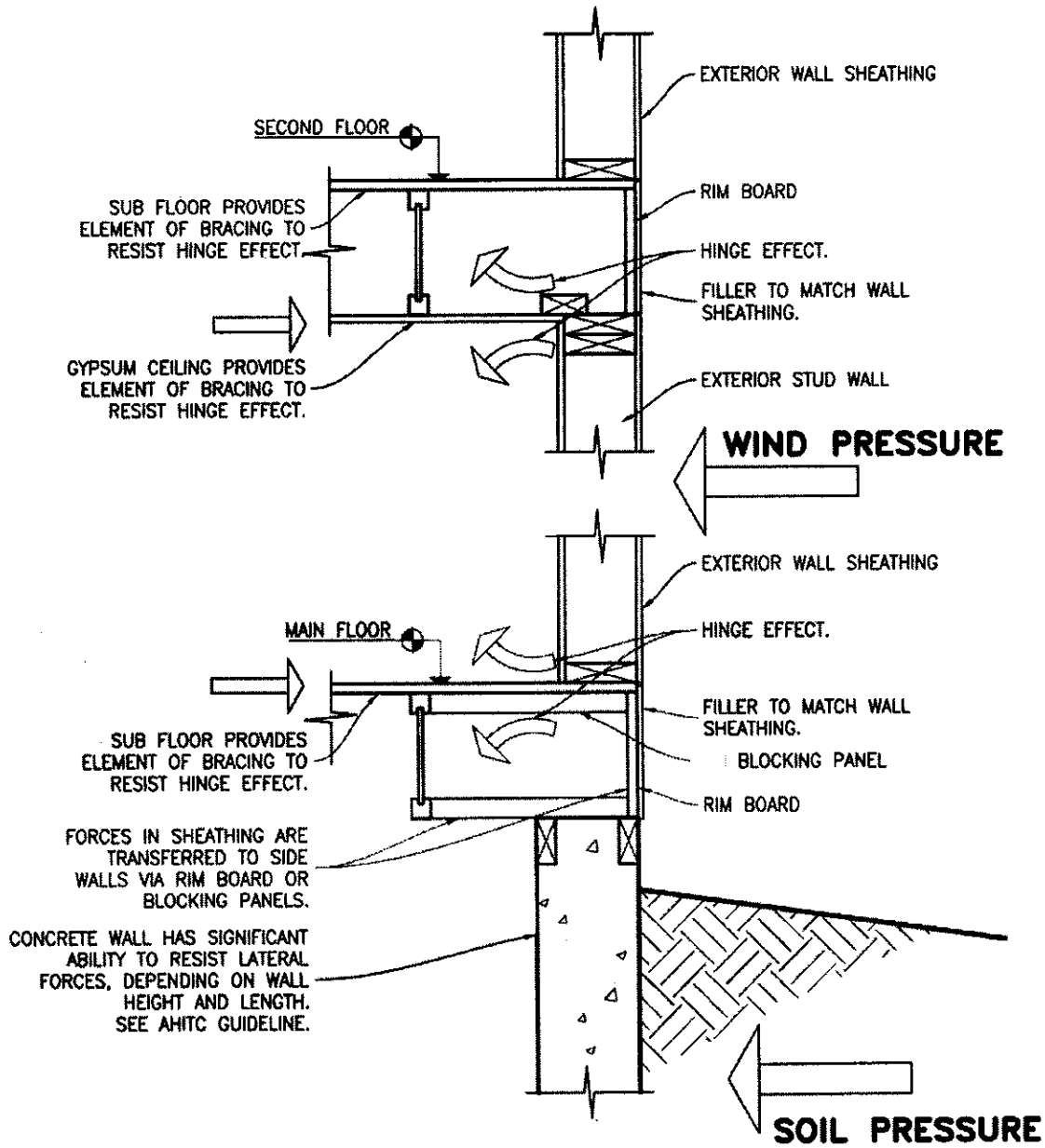
Pony walls of dimensional lumber construction may be used in lieu of rim boards only where they are parallel to joist span. Pony walls should always be sheathed prior to installation and braced to interior joists, as described for rim boards.

Nailing

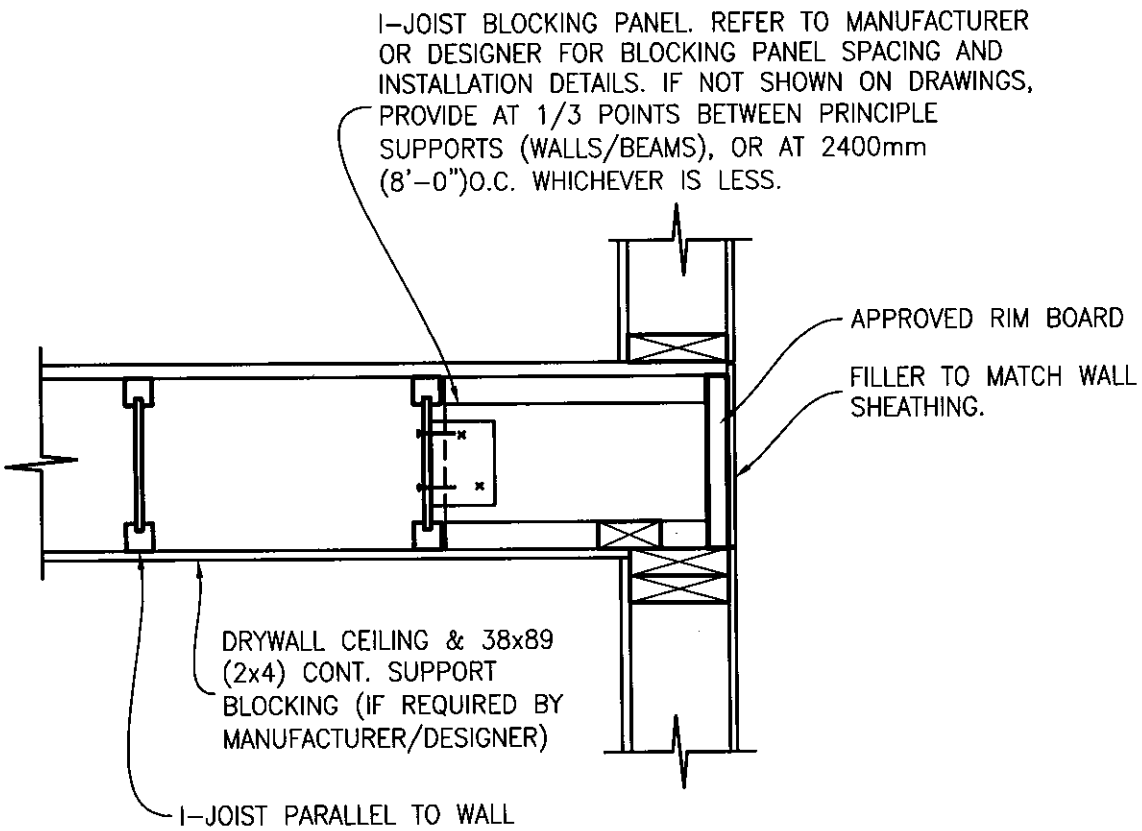
The designer must select a rim board that can transfer all the design loads (see Design and Application). The designer must also select a rim board with nailing surface sufficiently wide to allow for effective nailing of both the floor decking and the bottom plate of the wall above to the rim board without splitting it. The connection detail and installation procedure must allow unhindered inspection of the integrity of the connection (bearing length of joists, full embedding and spacing of nails, etc).

INSPECTION REQUIREMENTS

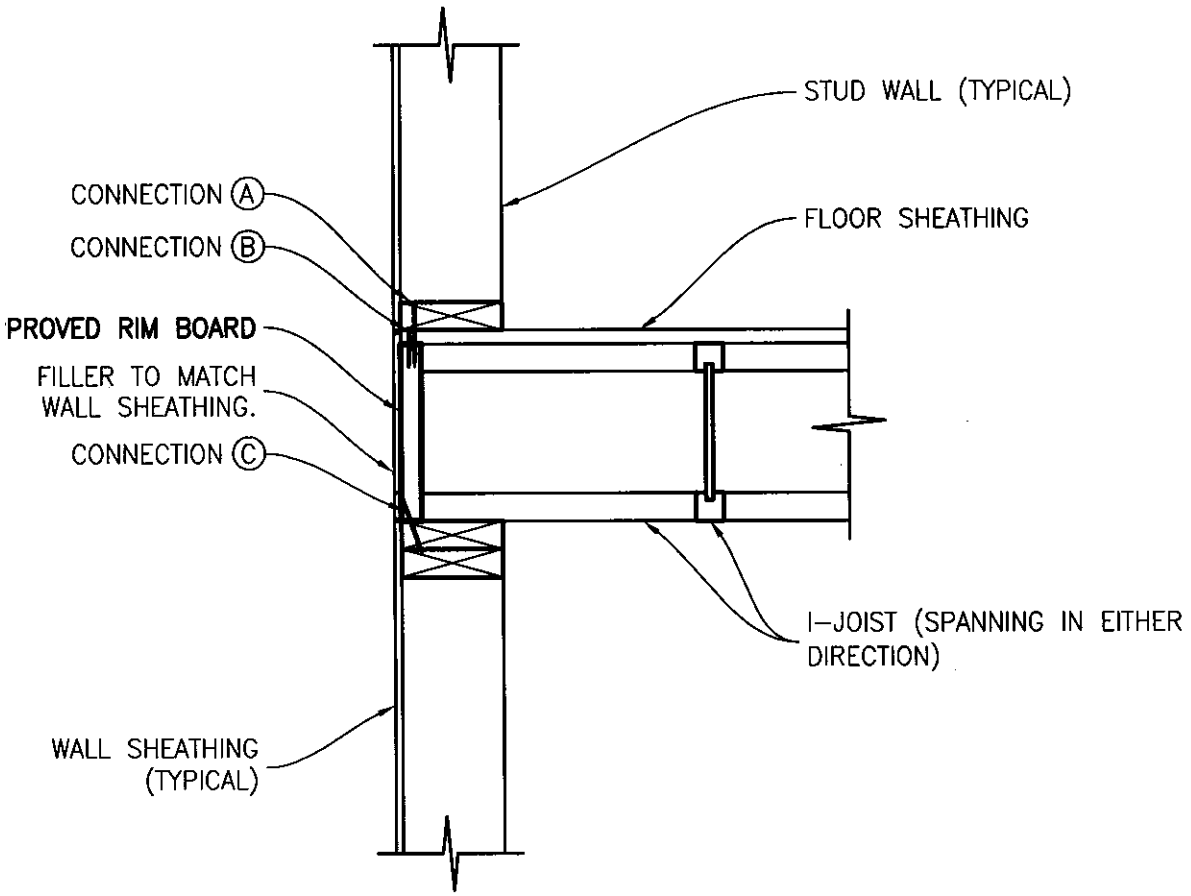
Due to the critical role of nailing in the installation of rim boards there is a need to provide for unobscured inspection by all interested parties. Care must be taken to ensure that items such as glued rigid thermal insulation do not hide such areas until inspection is complete.



RIM BOARD WALL SECTION:
TYPICAL CONSTRUCTION



WALL BRACING DETAIL



RIM BOARD DETAIL

FACT: IN ORDER TO INSTALL CONNECTION B (WALL PLATE NAILS) PROPERLY IN 29mm (1⅛") OR THINNER RIM BOARDS ANY TONGUE OR GROOVE MUST BE REMOVED TO ENSURE THAT THE NAIL PENETRATES INTO SOLID MATERIAL AND IS SPACED PROPERLY (I.E., NO SPLITTING OCCURS).

NOTE: UNLESS LATERAL LOAD ANALYSIS IS PERFORMED ON EACH SPECIFIC PROJECT, IT IS IMPORTANT FOR THE RIM DETAIL TO PROVIDE THE MINIMUM CODE ACCEPTED STANDARD PERFORMANCE DICTATED FOR 38 (2) X LUMBER.