



Testing & Engineering Report

TECO Certified Rim Board in Fire-Rated Assemblies

TER No. 1005-01



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Division 06 - Wood and Plastics

Section 06170 - Prefabricated Structural Wood

1. Product Lines Evaluated:

1.1. TECO Certified Rim Board is available in two grades:

1.1.1. Standard: 1" Rim Board (25 mm)

1.1.2. Performance: 1¹/₈" Rim Board (29 mm)

1.2. TECO Certified Rim Board is qualified to the TECO Rim Board Product Standard (RB 133) and must be composed of wood. It may be in the form of oriented strand board¹ or other composite structural panels. Oriented strand lumber or laminated veneer lumber manufactured in accordance with ASTM D5456-06 is also acceptable.

2. Performance Evaluation:

2.1. The *International Building Code (IBC)*² and the *National Building Code of Canada (NBC)*³ allow for the component additive method (CAM) for calculating fire resistance ratings of protected wood-frame walls, floors, and roofs.

2.2. Code References:

Code	Applicable Chapters/Sections
<i>IBC 2009</i>	Chapter 7, Section 703.3, and Section 721
<i>IBC 2006</i>	Chapter 7, Section 703.3, and Section 721
<i>NBC 2005</i>	Appendix D

3. Applications:

TECO Certified Rim Board is used to tie floor joists together in order to carry the lateral and vertical loads from the walls past the I-joint, truss, etc. system to the sill plate and foundation wall.

4. Fire-Resistant Rim Board Assembly Applications:

The rim board assemblies in Figures 1-7 will achieve fire-resistance ratings of one hour. The assemblies listed are based on the char rates of TECO Certified Rim Board at the minimum specifications.

¹ Per RB 133, the base OSB panel must be qualified to US Dept. of Commerce Voluntary Product Standard PS2 or CSA O325.

² 2009 IBC Section 703.3 Alternative methods for determining fire resistance allows for calculations in accordance with Section 721.

³ Appendix D of the NBC details the "component additive method" to establish fire ratings of an assembly.



Assembly No. 1

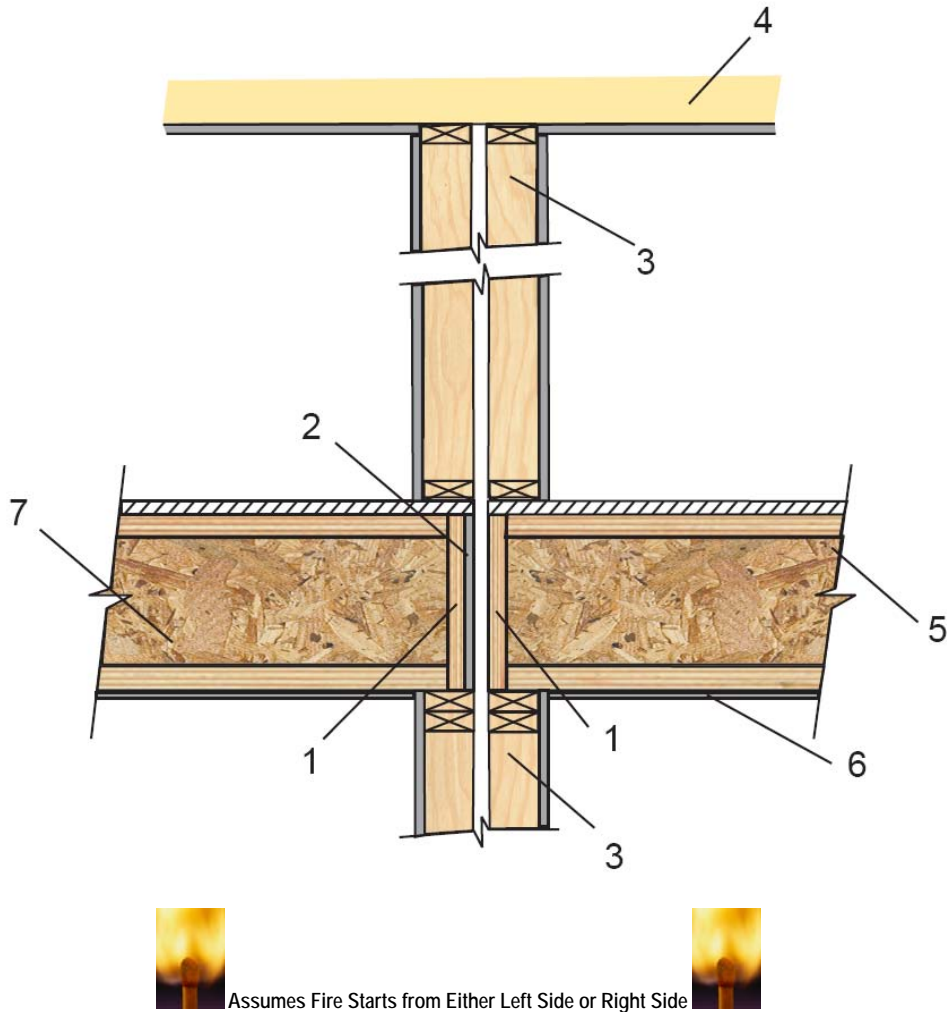


Figure 1: TECO Certified Rim Board One-Hour Assembly No. 1 (Shown as I-Joist Perpendicular to Rim Board)

[Note: Upper Load Uniformly Distributed to Both Walls and Load is Transferred to Non-Fire-Exposed Wall When Rim Board Support on Fire-Exposed Wall is Lost to Fire.]

1. Continuous TECO Certified Rim Board 1" or TECO Certified Rim Board 1 1/8"
2. Continuous 1/2" Type X gypsum board fastened to rim board with 1 1/2" Type W screws 12" on center
3. One-hour-rated wall construction
4. Floor or roof/ceiling assembly for story above
5. Un-rated floor/ceiling assembly
6. 1/2" min. gypsum board ceiling, taped and filled
7. I-Joists are shown in this graphic but the structural element may be any structural element assembly applied as specified, with or without a fire-endurance-rated assembly

Component Additive Calculation for Assembly No. 1

Component	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board
	Time (min.)	
1/2" Gypsum	15	15
Rim Board	33.75	39.65
1/2" Type X Gypsum	25	25
	73.75	79.65

Assembly No. 2

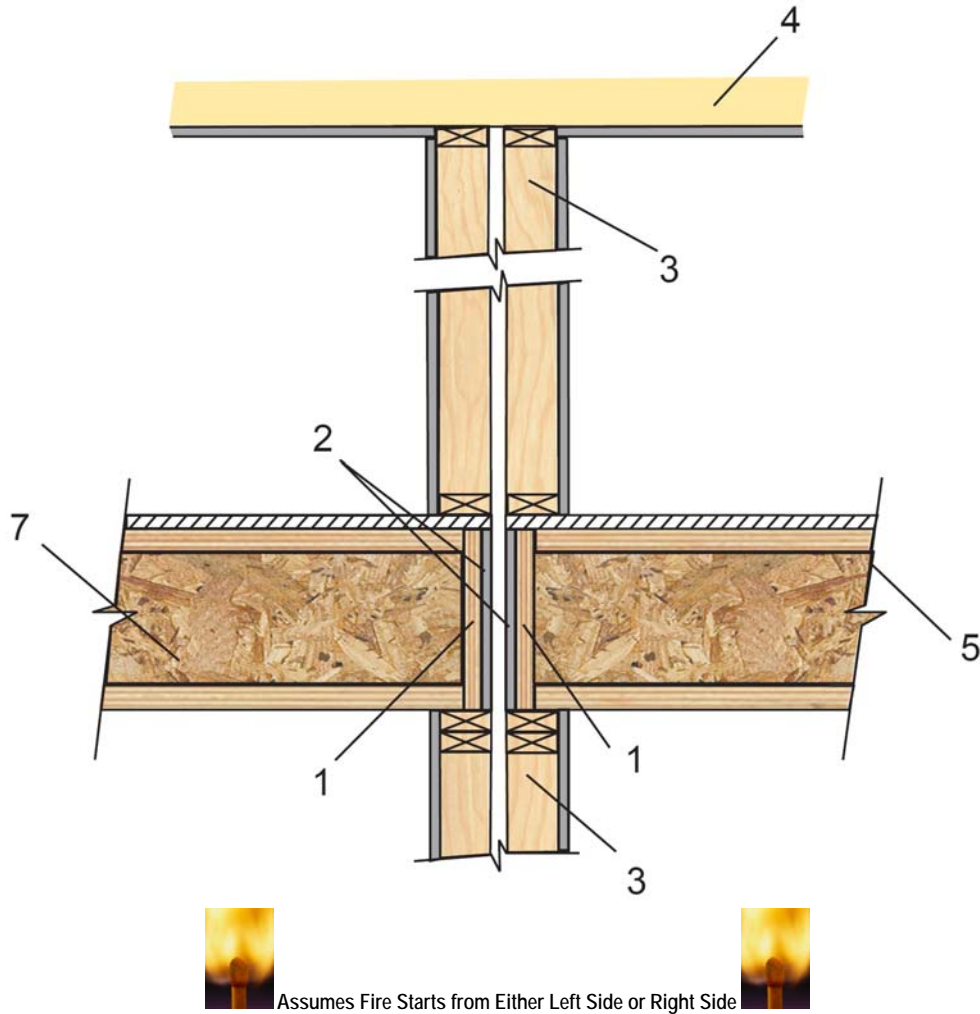


Figure 2: TECO Certified Rim Board One-Hour Assembly No. 2 (Shown as I-Joist Perpendicular to Rim Board)

[Note: Upper Load Uniformly Distributed to Both Walls and Load is Transferred to Non-Fire-Exposed Wall When Rim Board Support on Fire-Exposed Wall is Lost to Fire.]

1. Continuous TECO Certified Rim Board 1" or TECO Certified Rim Board 1 1/8"
2. Continuous 1/2" Type X gypsum board fastened to rim board with 1 1/2" Type W screws 12" on center
3. 45-minute or one-hour-rated wall construction
4. Floor or roof/ceiling assembly for story above
5. Un-rated floor/ceiling assembly
6. –
7. I-Joists are shown in this graphic but the structural element may be any structural element assembly applied as specified, with or without a fire-endurance-rated assembly

Component Additive Calculation for Assembly No. 2

Component	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board
	Time (min.)	
Rim Board	33.75	39.65
1/2" Gypsum	15	15
1/2" Gypsum	15	15
	63.75	69.65

Assembly No. 3

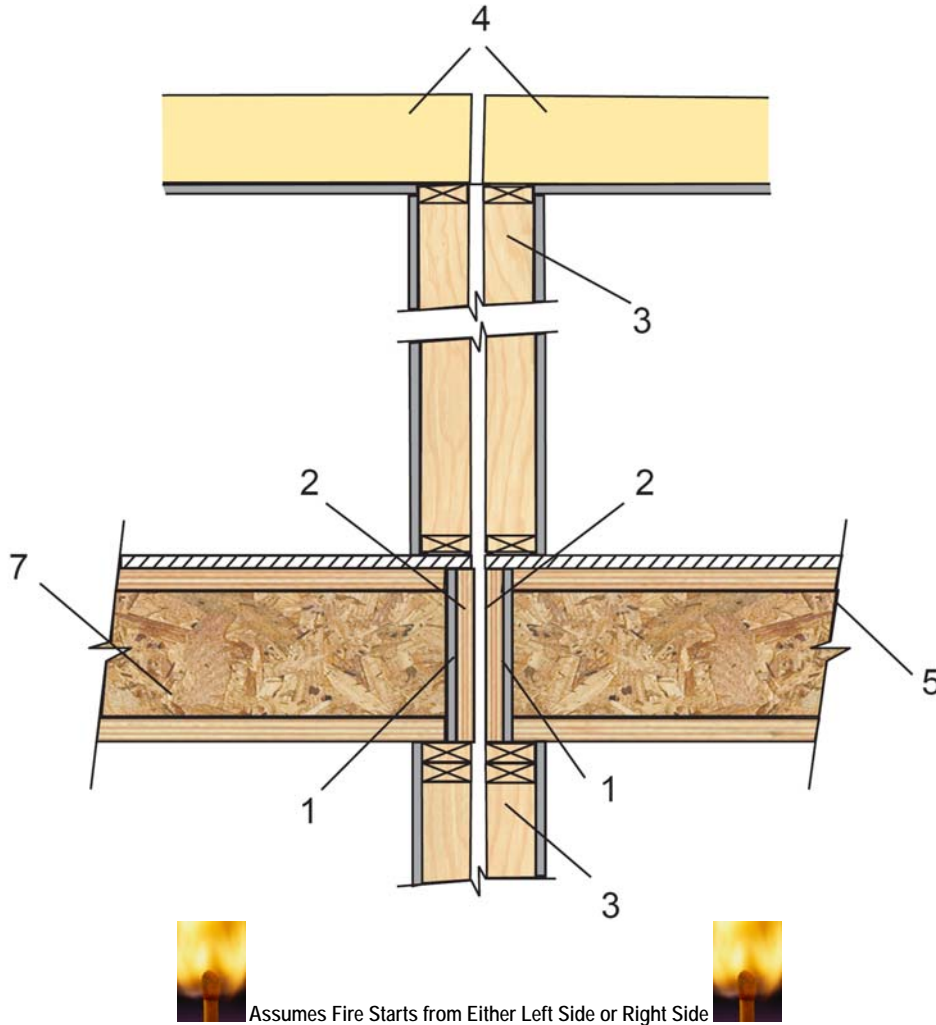


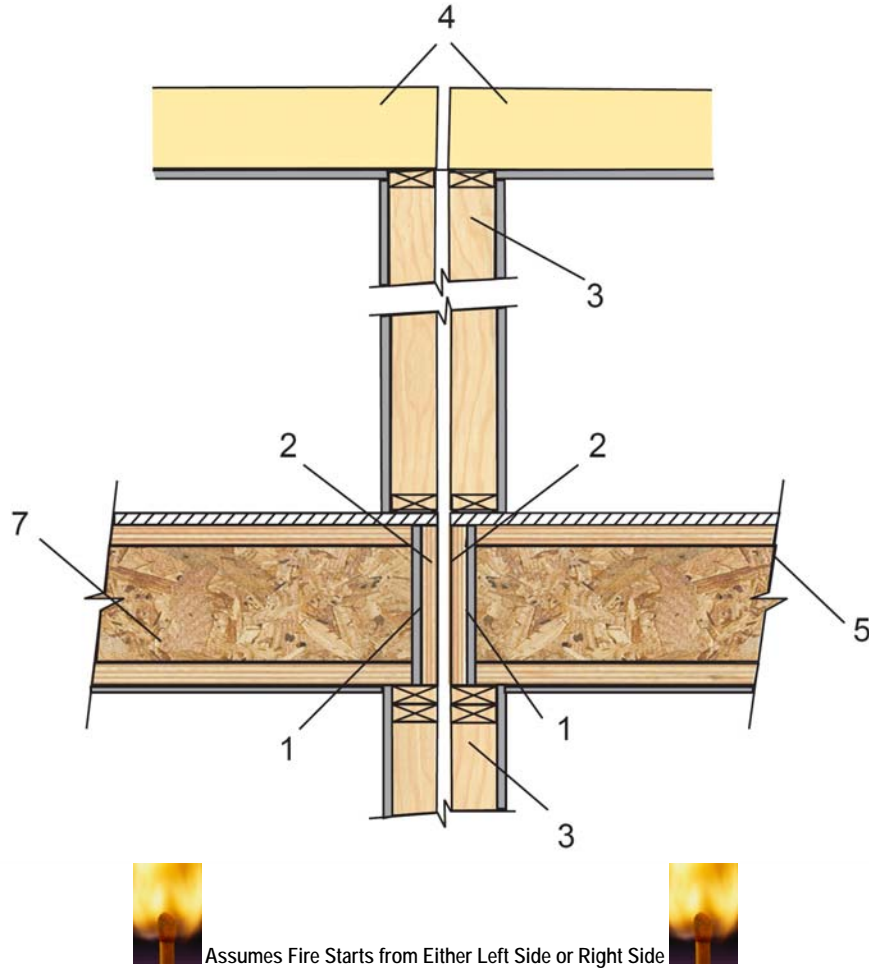
Figure 3: TECO Certified Rim Board One-Hour Assembly No. 3 (Shown as I-Joist Perpendicular to Rim Board)
 [Note: Upper Load Applied Individually to Each Wall – Load is Not Transferred to Non-Fire-Exposed Wall When Rim Board Support on Fire-Exposed Wall is Lost to Fire.]

1. Continuous TECO Certified Rim Board 1" or TECO Certified Rim Board 1 1/8"
2. Continuous 5/8" Type X gypsum board fastened to rim board with 1 1/2" Type W screws 12" on center
3. 45-minute or one-hour-rated wall construction
4. Floor or roof/ceiling assembly for story above
5. Un-rated floor/ceiling assembly
6. –
7. I-Joists are shown in this graphic but the structural element may be any structural element assembly applied as specified, with or without a fire-endurance-rated assembly

Component Additive Calculation for Assembly No. 3

Component	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board
	Time (min.)	
Rim Board	33.75	39.65
5/8" Type X Gypsum	40	40
	73.75	79.65

Assembly No. 4



Assumes Fire Starts from Either Left Side or Right Side

Figure 4: TECO Certified Rim Board One-Hour Assembly No. 4 (Shown as I-Joist Perpendicular to Rim Board)

[Note: Upper Load Applied Individually to Each Wall – Load is Not Transferred to Non-Fire-Exposed Wall When Rim Board Support on Fire-Exposed Wall is Lost to Fire.]

1. Continuous TECO Certified Rim Board 1" or TECO Certified Rim Board 1 1/8"
2. Continuous 1/2" gypsum board fastened to rim board with 1 1/2" Type W screws 12" on center (optional)
3. 45-minute or one-hour-rated wall construction
4. Floor or roof/ceiling assembly for story above
5. 45-minute-rated floor/ceiling assembly
6. –
7. I-Joists are shown in this graphic but the structural element may be any structural element assembly applied as specified, with or without a fire-endurance-rated assembly

Component Additive Calculation for Assembly No. 4

Component	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board
	Time (min.)			
45 min. Rated Floor/Ceiling Assembly ⁴	45	45	45	45
1/2" Gypsum (optional)	–	–	15	15
Rim Board	33.75	39.65	33.75	39.65
	78.75	84.65	93.75	99.65

⁴ Since the walls are rated for 60 min. and the floor/ceiling assembly is rated for 45 min., the TECO Certified Rim Board only needs to provide at least 15 min. additional fire resistance.

Assembly No. 5

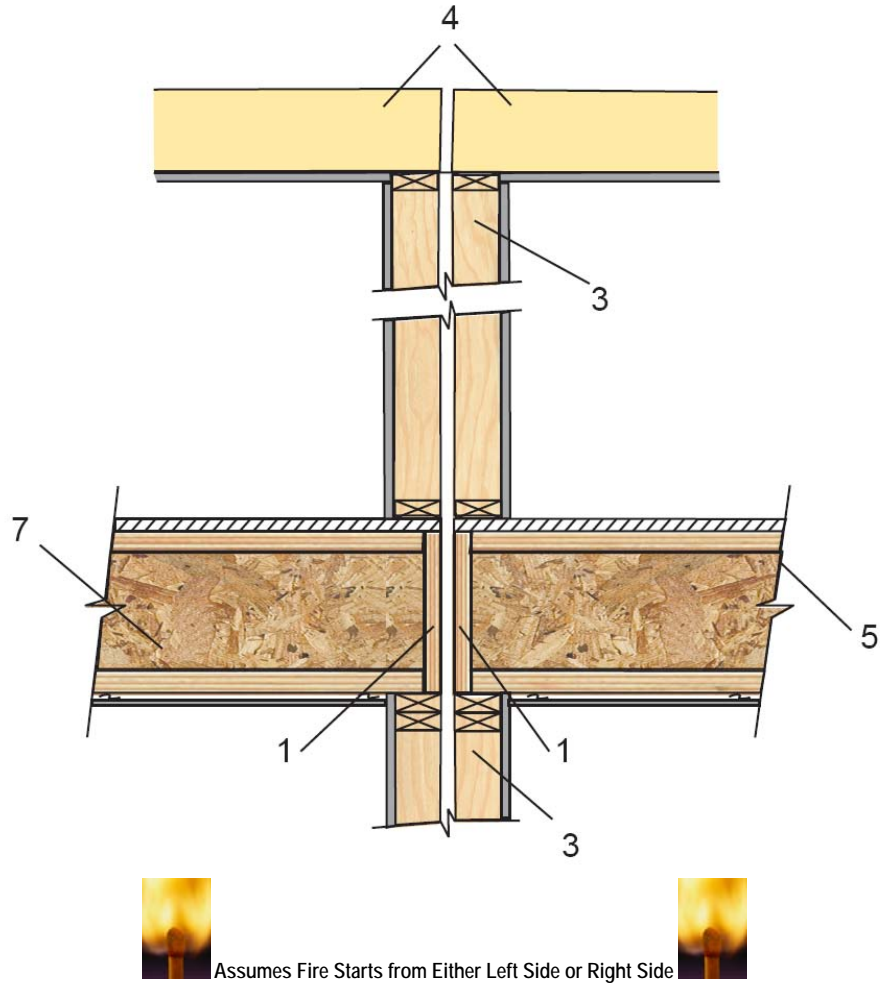


Figure 5: TECO Certified Rim Board One-Hour Assembly No. 5 (Shown as I-Joist Perpendicular to Rim Board)

[Note: Upper Load Applied Individually to Each Wall – Load is Not Transferred to Non-Fire-Exposed Wall When Rim Board Support on Fire-Exposed Wall is Lost to Fire.]

1. Continuous TECO Certified Rim Board 1" or TECO Certified Rim Board 1 1/8"
2. –
3. 45-minute or one-hour-rated wall construction
4. Floor or roof/ceiling assembly for story above
5. One-hour-rated floor/ceiling assembly
6. –
7. I-Joists are shown in this graphic but the structural element may be any structural element assembly applied as specified, with or without a fire-endurance-rated assembly

Component Additive Calculation for Assembly No. 5

Component	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board
	Time (min.)	
One-Hour-Rated Floor/Ceiling Assembly ⁵	60	60
Rim Board	33.75	39.65
	93.75	99.65

⁵ Since the walls are rated for 60 min. and the floor/ceiling assembly is rated for 60 min., the TECO Certified Rim Board does not need to provide any additional fire resistance to achieve a one-hour rating.

Assembly No. 6

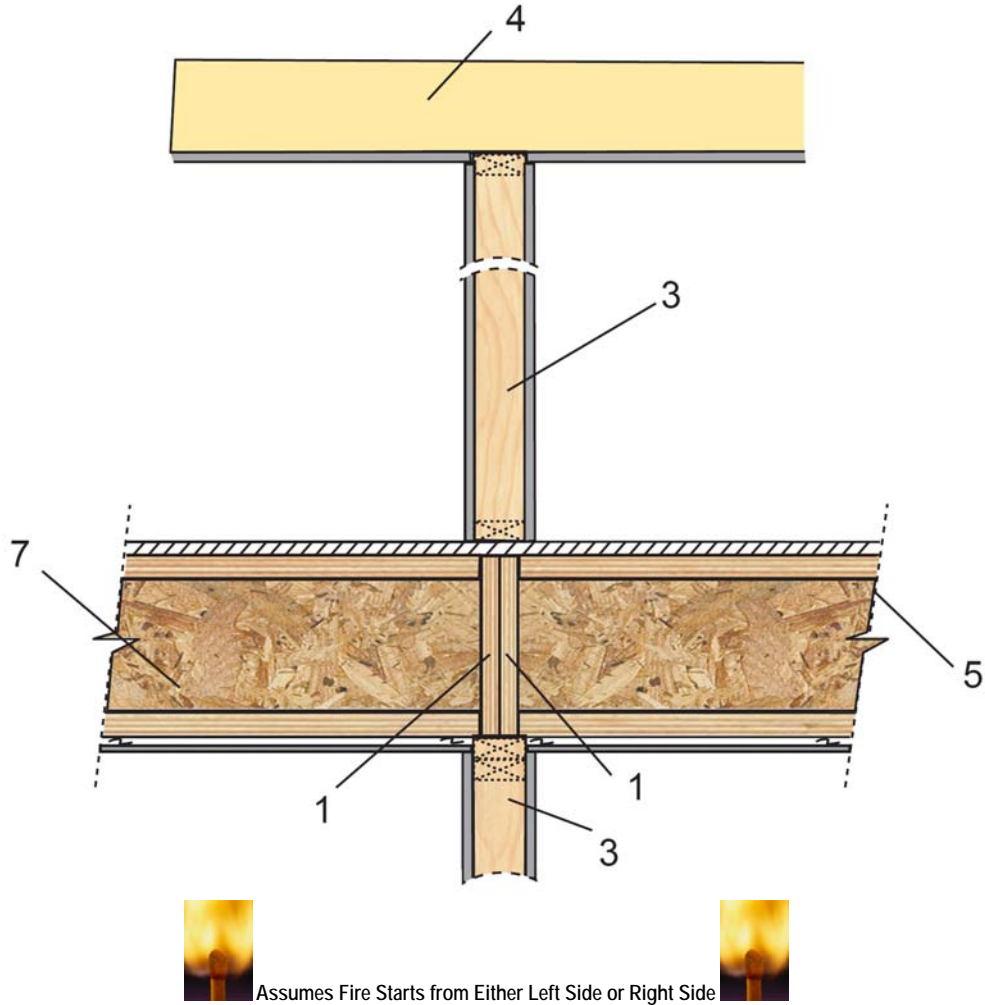


Figure 6: TECO Certified Rim Board One-Hour Assembly No. 6 (Shown as I-Joist Perpendicular to Rim Board)
 [Note: Single One-Hour-Rated Partition Wall]

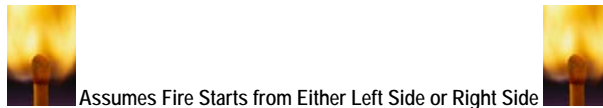
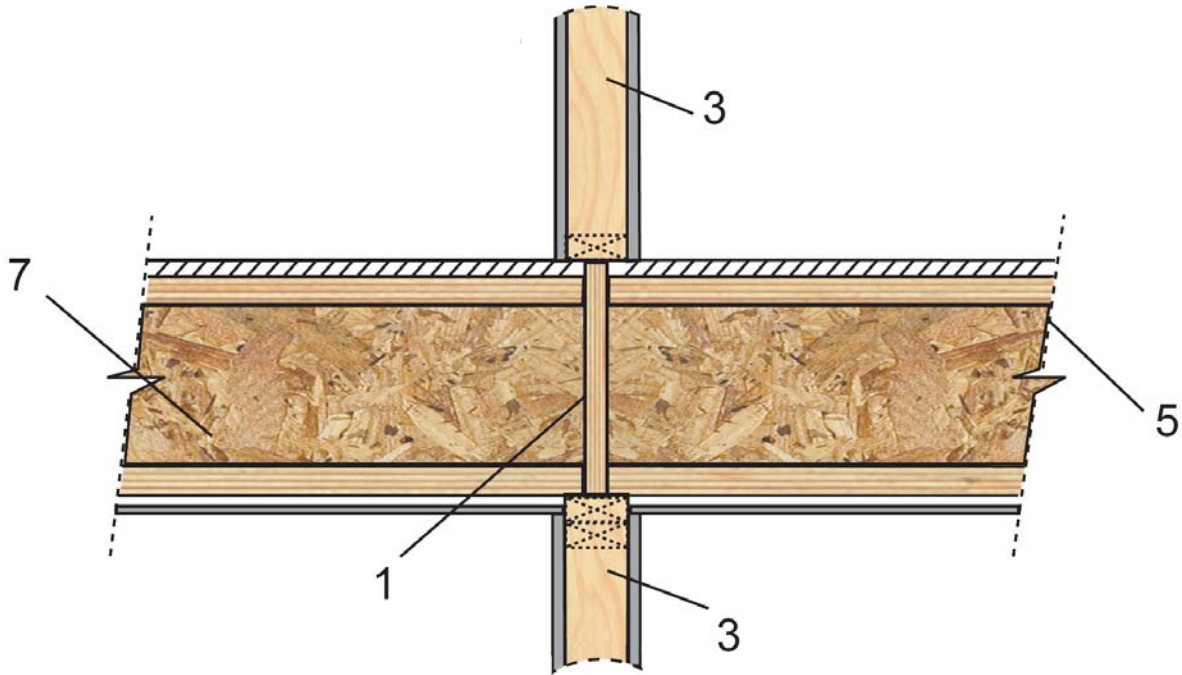
1. Continuous TECO Certified Rim Board 1" or TECO Certified Rim Board 1 1/8"
2. -
3. One-hour-rated 2x6 wall construction
4. Floor or roof/ceiling assembly for story above
5. One-hour-rated floor/ceiling assembly
6. -
7. I-Joists are shown in this graphic but the structural element may be any structural element assembly applied as specified, with or without a fire-endurance-rated assembly

Component Additive Calculation for Assembly No. 6

Component	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board
	Time (min.)	
One-Hour-Rated Floor/Ceiling Assembly ⁶	60	60
Rim Board	33.75	39.65
	93.75	99.65

⁶ Since the walls are rated for 60 min. and the floor/ceiling assembly is rated for 60 min., the TECO Certified Rim Board does not need to provide any additional fire resistance to achieve a one-hour rating.

Assembly No. 7



Assumes Fire Starts from Either Left Side or Right Side

Figure 7: TECO Certified Rim Board One-Hour Assembly No. 7 (Shown as I-Joist Perpendicular to Rim Board)
 [Note: Single One-Hour-Rated Partition Wall]

1. Continuous TECO Certified Rim Board 1" or TECO Certified Rim Board 1 1/8"
2. -
3. One-hour-rated 2x6 bearing wall or 2x4 staggered on 2x6 plates
4. -
5. 45-minute or one-hour-rated floor/ceiling assembly
6. -
7. I-Joists are shown in this graphic but the structural element may be any structural element assembly applied as specified, with or without a fire-endurance-rated assembly

Component Additive Calculation for Assembly No. 7

Component	45 min. Rated Floor/Ceiling Assembly ⁷		One Hour Rated Floor/Ceiling Assembly ⁸	
	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board	1" TECO Certified Rim Board	1 1/8" TECO Certified Rim Board
	Time (min.)			
Rated Floor/Ceiling Assembly	45	45	60	60
Rim Board	33.75	39.65	33.75	39.65
	78.75	84.65	93.75	99.65

⁷ Since the wall is rated for 60 min. and the floor/ceiling assembly is rated for 45 min., the TECO Certified Rim Board needs to provide an additional fire resistance of 15 min. to achieve a one-hour rating.

⁸ Since the wall is rated for 60 min. and the floor/ceiling assembly is rated for 60 min., the TECO Certified Rim Board does not need to provide any additional fire resistance to achieve a one-hour rating.

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5. Installation:

TECO Certified Rim Board shall be installed in accordance with the Rim Board Design and Installation Guide – Canada⁹ or Rim Board Design and Installation Guide – United States¹⁰.

6. Conditions of Use:

The manufactured rim board must be TECO Certified Rim Board and comply with all of the requirements of RB 133.

7. Test and Engineering Substantiating Data:

Based on Calculated Fire Resistance Rating of TECO Certified Rim Board Assemblies by Qualtim. Inc. dated May 28, 2010.

8. Identification:

TECO Certified Rim Board must be identified with the following information:

- 8.1.1. Name of the manufacturer or the TECO mill number
- 8.1.2. TECO's registered Certification Mark
- 8.1.3. Grade of the rim board
- 8.1.4. Thickness
- 8.1.5. RB 133 standard

Example grade stamps are shown in Figure 8.

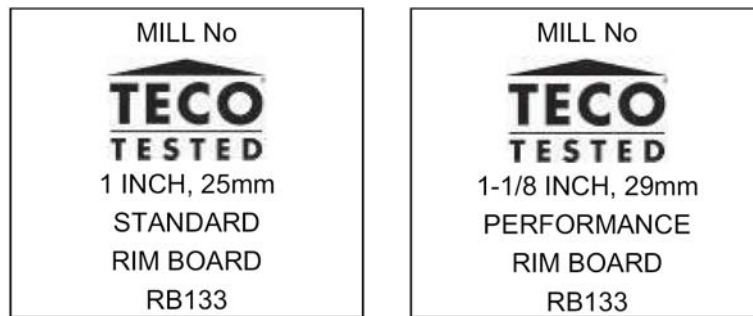


Figure 8: Example Grade Stamps for TECO Certified Rim Board per RB 133

9. Report Date:

This Testing and Evaluation Report shall be re-evaluated one year from the issue date.

10. Findings:

The Structural Building Components Research Institute (SBCRI) is an ACLASS¹¹ accredited state-of-the-art testing and research facility. It is one of the few facilities that has the capability of testing structural assemblies as they are actually built and installed in the field and is an approved agency as defined in Section 17 of the *IBC*. Through SBCRI's engineering partner Qualtim, Inc.¹², calculations have been prepared by licensed engineers for the fire endurance performance of TECO Certified Rim Board. Qualtim/SBCRI has listed and can provide detailed and sufficient technical data to substantiate the proposed use of TECO Certified Rim Board in the assemblies and applications defined above. This Testing and Evaluation Report finds that:

- 10.1.1. Supporting data consisting of valid research reports from an *IBC/IRC*-approved source has been provided and meets *IBC* Section 17 requirements for a product application not specifically provided for in this code.

⁹ www.tecotested.com/techtips/pdf/rimboarddiguide_canada

¹⁰ www.tecotested.com/techtips/pdf/rimboarddiguide_us

¹¹ ACLASS (www.aiclasscorp.com), an ANSI-ASQ National Accreditation Board company, is an international accreditation body based in Washington, DC. The type of ACLASS certification SBCRI has received is ISO/IEC 17025 accreditation, which is a very rigorous standard for general requirements for the competence of testing and calibration laboratories. SBC Research Institute's (www.sbcinfo.info) Certificate of Accreditation can be viewed online at: www.sbcinfo.info/docs/SBCRICertificate2009.pdf

¹² www.qualtim.com

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10.1.2. The evidence as submitted is satisfactory proof of performance for the use intended.

10.1.3. Any building official shall approve the use of TECO Certified Rim Board subject to the requirements of this code.

Data and engineering analysis review has found that the TECO Certified Rim Board Fire-Rated Assemblies as described in this Testing and Evaluation Report conform with or are suitable alternates to that specified in the code references listed in Section 2.



Responsibility Statement

The information contained herein is based on a product evaluation performed in accordance with the referenced testing and/or analysis using generally accepted engineering practices. Product quality control is the responsibility of the manufacturer. Consult your local jurisdiction or design professional to assure compliance with the local building code and the proper detailing and application for the intended purpose. Qualtim, Inc. (www.qualtim.com) and SBC Research Institute (www.sbcinfo.info) do not make any warranty, express or implied, or assume any legal liability or responsibility for the use, application of, and/or reference to opinions, findings, conclusions, or recommendations included in this Testing and Evaluation Report.