

National Building Code of Canada 1995

Fourth Revisions and Errata

Issued by the Canadian Commission on Building and Fire Codes

April 2002

The attached pages identify fourth revisions and errata to the National Building Code of Canada 1995.

The revisions have been approved by the Canadian Commission on Building and Fire Codes. The revisions contained herein include updates from 01 July 2001 to 31 October 2001.

The errata are corrections that have been identified and are included to facilitate the use of the Code.

Fourth revisions are identified by an **r4** in the margin; fourth errata are identified by an **e4**.

Where changes to the document number and/or title have been made in Tables 2.7.3.2., A-2.7.3.2. and D-1.1.2., the Code Reference column of those tables directs the user to the relevant provisions of the Code where standards information should be updated.

General updates, such as new addresses, are listed in the attached pages for information purposes only.

For your convenience, change pages have been provided for these new revisions and errata. Simply replace the current page in your document with the updated page. A table lists all the new errata and revisions, including minor errata for which change pages have not been provided. Change pages follow the table.

e4/r4	Code Reference	Change
update	1.1.4.1.	<p>In the Abbreviations of Proper Names, make the following changes:</p> <p>ANSI American National Standards Institute (25 West 43rd Street, 4th Floor, New York, New York 10036 U.S.A.)</p> <p>ASCE American Society of Civil Engineers (1801 Alexander Bell Drive, Reston, Virginia 20191-4400 U.S.A.)</p> <p>ASME Zip Code now 07007-2900</p> <p>AWPA American Wood-Preservers' Association (P.O. Box 5690, Granbury, Texas 76049-7979 U.S.A.)</p> <p>CSA City name now Toronto</p> <p>CWC Canadian Wood Council (1400 Blair Place, Suite 210, Ottawa, Ontario K1J 9B8)</p> <p>EPA Environmental Protection Agency (Office of Radiation and Air, 1200 Pennsylvania Avenue, NW, Washington DC 20460 U.S.A.)</p> <p>FCC Change Postal Code to G1P 4R4</p> <p>FMEC Name has been changed to Factory Mutual Research Corporation (FMRC). Zip Code now 02062-9957</p> <p>FPS Zip Code now 53705-2295</p> <p>ISO International Standards Organization (Standards Council of Canada, 270 Albert Street, Suite 200, Ottawa, Ontario K1P 6N7)</p> <p>NFPA Zip Code now 02269-9101</p> <p>SFPE Society of Fire Protection Engineers (7315 Wisconsin Avenue, Suite 1225 W, Bethesda, Maryland 20814 U.S.A.)</p> <p>UL Zip Code now 60062-2096</p> <p>ULC City name now Toronto</p> <p>WCLIB Delete "6980 Southwest Varns Street" from address, and change Zip Code to 97281-3145</p> <p>WWPA Western Wood Products Association (522 SW Fifth Avenue, Suite 500, Portland, Oregon 97204-2122 U.S.A.)</p>
r4	2.7.3.1.(1)	Sentence (1) revised (change to effective date). Change page provided.
r4	Table 2.7.3.2.	Replace Table 2.7.3.2. Change pages provided.

e4/r4	Code Reference	Change
r4	3.1.5.11.(7)	Add new Sentence 3.1.5.11.(7). Change page provided.
r4	3.1.5.19.(1)	Replace Sentence 3.1.5.19.(1). Change page provided.
r4	4.1.7.2.(2)	Replace Sentence 4.1.7.2.(2). Change page provided.
e4	6.2.4.7.(2)	Change reference from “Subsection 6.2.3.” to “Subsection 3.6.5.”
r4	9.4.2.1.(1)	Replace Sentence 9.4.2.1.(1). Change page provided.
r4	9.7.2.1.(1)	Replace Sentence 9.7.2.1.(1). Change page provided.
r4	9.25.2.4.(2)	Replace Sentence 9.25.2.4.(2). Change page provided.
r4	Table A-2.7.3.2.	Replace Table A-2.7.3.2. Change pages provided.
r4	A-9.4.2.1.(1)	Add new Appendix note A-9.4.2.1.(1). Change page provided.
r4	A-9.10.3.1.	Replace Appendix note A-9.10.3.1. Change page provided.
r4	Table A-9.10.3.1.B.	Replace Table A-9.10.3.1.B. (Note: Tables A-9.10.3.1.A. and A-9.10.3.1.B. change pages are provided in a compressed format to facilitate insertion into binders. Table A-9.10.3.1.A. has no changes.) Change pages provided.
e4	Table C-2	Digby, Nova Scotia; Hourly Wind Pressures, under 1/10 kPa, should read: 0.40
r4	Table D-1.1.2.	Replace Table D-1.1.2. Change pages provided.

2.7.2. Conflicting Requirements

2.7.2.1. Conflict Between Code and Referenced Documents **e3**

1) In the case of conflict between the provisions of this Code and those of a referenced document, the provisions of this Code shall govern.

2.7.3. Effective Date

2.7.3.1. Documents Referenced

1) Unless otherwise specified herein, the

documents referenced in this Code shall include all amendments, revisions and supplements effective to 31 October 2001. **r r4**

2.7.3.2. Applicable Editions

1) Where documents are referenced in this Code, they shall be the editions designated in Table 2.7.3.2. (See Appendix A.) **e3**

Table 2.7.3.2. **r2 r4**
Documents Referenced in the National Building Code of Canada 1995
Forming Part of Article 2.7.3.2.



Issuing Agency	Document Number	Title of Document	Code Reference
ANSI	A208.1-1993 r e2	Particleboard	9.23.14.2.(3) 9.29.9.1.(1) 9.30.2.2.(1)
ANSI	B18.6.1-1981	Slotted and Recessed Wood Screws (Inch Series)	9.23.3.1.(2)
ANSI/ ASHRAE	62-1999 r4	Ventilation for Acceptable Indoor Air Quality	6.2.2.1.(2)
ASTM	A 123/A 123M-00 r r4	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products	Table 9.20.16.1.
ASTM	A 153/A 153M-00 r r4	Zinc Coating (Hot-Dip) on Iron and Steel Hardware	Table 9.20.16.1.
ASTM	A 252-98 r r4	Welded and Seamless Steel Pipe Piles	4.2.3.8.(1)
ASTM	A 283/A 283M-00 r r4	Low and Intermediate Tensile Strength Carbon Steel Plates	4.2.3.8.(1)
ASTM	A 653/A 653M-00 r r4	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process	9.3.3.2.(1)
ASTM	A 924/A 924M-99 r r4	Steel Sheet, Metallic-Coated by the Hot-Dip Process	9.3.3.2.(1)
ASTM	A 1008/A 1008M-01 r4	Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability	4.2.3.8.(1)
ASTM	A 1011/A 1011M-01 r4	Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability	4.2.3.8.(1)
ASTM	C 4-00 r r4	Clay Drain Tile and Perforated Clay Drain Tile	9.14.3.1.(1)
ASTM	C 5-79	Quicklime for Structural Purposes	9.20.3.1.(1)
ASTM	C 27-98 r4	Classification of Fireclay and High-Alumina Refractory Brick	9.21.3.4.(1)
ASTM	C 36/C 36M-99e1 r r4	Gypsum Wallboard	3.1.5.11.(4) 9.29.5.2.(1)
ASTM	C 37/C 37M-99 r r4	Gypsum Lath	9.29.5.2.(1)
ASTM	C 79/C 79M-00 e r4	Treated Core and Nontreated Core Gypsum Sheathing Board	Table 9.23.16.2.A.
ASTM	C 126-99 r r4	Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units	9.20.2.1.(1)
ASTM	C 207-91	Hydrated Lime for Masonry Purposes	9.20.3.1.(1)
ASTM	C 212-96 r	Structural Clay Facing Tile	5.6.1.2.(3) 9.20.2.1.(1)
ASTM	C 260-95 r	Air-Entraining Admixtures for Concrete	9.3.1.8.(1)
ASTM	C 411-97 r	Hot-Surface Performance of High-Temperature Thermal Insulation	3.6.5.4.(4) 3.6.5.5.(1) 9.33.6.4.(4) 9.33.8.2.(2)

2.7.3.2.

Table 2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
ASTM	C 412M-99 r4	Concrete Drain Tile	9.14.3.1.(1)
ASTM	C 442/C 442M-99 r r4	Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board	3.1.5.11.(4) 9.29.5.2.(1)
ASTM	C 444M-95 r	Perforated Concrete Pipe (Metric)	9.14.3.1.(1)
ASTM	C 494/C 494M-99a r r4	Chemical Admixtures for Concrete	9.3.1.8.(1)
ASTM	C 588/C 588M-99 r r4	Gypsum Base for Veneer Plasters	3.1.5.11.(4) 9.29.5.2.(1)
ASTM	C 630/C 630M-00 r r4	Water-Resistant Gypsum Backing Board	3.1.5.11.(4) 9.29.5.2.(1)
ASTM	C 700-00 r r4	Vitrified Clay Pipe, Extra Strength, Standard Strength and Perforated	9.14.3.1.(1)
ASTM	C 931/C 931M-98 r r4	Exterior Gypsum Soffit Board	3.1.5.11.(4) 9.29.5.2.(1)
ASTM	C 960-97 r	Predecorated Gypsum Board	3.1.5.11.(4) 9.29.5.2.(1)
ASTM	C 1002-00 r r4	Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs	9.24.1.4.(1) 9.29.5.7.(1)
ASTM	D 323-99a r r4	Vapor Pressure of Petroleum Products (Reid Method)	1.1.3.2.(1)
ASTM	D 2178-97a r	Asphalt Glass Felt Used in Roofing and Waterproofing	5.6.1.2.(1)
ASTM	D 2898-94	Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing	3.1.5.5.(4) 3.1.5.5.(5)
ASTM	E 90-97 r	Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements	3.3.4.6.(1) 9.11.1.1.(1)
ASTM	E 96-95 r	Water Vapor Transmission of Materials	5.5.1.2.(4) 9.30.1.2.(1)
ASTM	E 336-97 r	Measurement of Airborne Sound Insulation in Buildings	3.3.4.6.(1) 9.11.1.1.(1)
ASTM	E 413-87	Classification for Rating Sound Insulation	3.3.4.6.(1) 9.11.1.1.(1)
ASTM	F 476-84 r	Security of Swinging Door Assemblies	9.6.8.10.(1)
AWPA	M4-01 r r4	Care of Preservative-Treated Wood Products	4.2.3.2.(2)
BNQ	NQ 3624-115-2000 r r4	Polyethylene (PE) Pipe and Fittings – Flexible Corrugated Pipes for Drainage – Characteristics and Test Methods	9.14.3.1.(1)

Table 2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
CCBFC	NRCC 38727	National Fire Code of Canada 1995	3.2.5.17.(1) 3.3.1.2.(1) 3.3.5.2.(1) 6.2.2.5.(1) 8.2.2.2.(1) 8.2.2.4.(1) 8.2.2.6.(1) 8.2.2.15.(1) 8.2.3.2.(1) 8.2.3.4.(1) 8.2.3.6.(1) 8.2.3.10.(1) 8.2.3.12.(1) 9.10.19.4.(1) 9.10.20.8.(1)
CCBFC	NRCC 38728	National Plumbing Code of Canada 1995	5.6.2.2.(2) 7.1.2.1.(1) 9.31.6.3.(1)
CCBFC	NRCC 38732	National Farm Building Code of Canada 1995	2.1.5.1.(1)
CGA	CAN/CGA-6.19-M93	Residential Carbon Monoxide Detectors	9.32.3.8.(6) 9.32.3.8.(8)
CGSB	CAN/CGSB-1.501-M89	Method for Permeance of Coated Wallboard	5.5.1.2.(3) 9.25.4.2.(5)
CGSB	CAN/CGSB-7.1-M86	Cold Formed Steel Framing Components	9.24.1.2.(1)
CGSB	CAN/CGSB-7.2-94	Adjustable Steel Columns	9.17.3.4.(1)
CGSB	CAN/CGSB-10.3-92	Air Setting Refractory Mortar	9.21.3.4.(1) 9.21.3.9.(1) 9.22.2.2.(2)
CGSB	CAN/CGSB-11.3-M87	Hardboard	5.6.1.2.(3) 9.27.10.1.(2) 9.29.7.1.(1) 9.30.2.2.(1)
CGSB	CAN/CGSB-11.5-M87	Hardboard, Precoated, Factory Finished, for Exterior Cladding	5.6.1.2.(3) 9.27.10.1.(1)
CGSB	CAN/CGSB-12.1-M90 	Tempered or Laminated Safety Glass	3.3.1.18.(2) 3.4.6.14.(1) 3.4.6.14.(3) 9.6.6.2.(2) 9.7.3.1.(1) 9.8.8.6.(1)
CGSB	CAN/CGSB-12.2-M91	Flat, Clear Sheet Glass	9.6.6.2.(2) 9.7.3.1.(1)
CGSB	CAN/CGSB-12.3-M91	Flat, Clear Float Glass	9.7.3.1.(1)
CGSB	CAN/CGSB-12.4-M91	Heat Absorbing Glass	9.7.3.1.(1)
CGSB	CAN/CGSB-12.8-97 	Insulating Glass Units	5.3.1.2.(2) 9.7.3.1.(1)
CGSB	CAN/CGSB-12.10-M76	Glass, Light and Heat Reflecting	9.7.3.1.(1)

2.7.3.2.

Table 2.7.3.2. (Continued)














Issuing Agency	Document Number	Title of Document	Code Reference
CGSB	CAN/CGSB-12.11-M90	Wired Safety Glass	3.3.1.18.(2) 3.4.6.14.(1) 3.4.6.14.(3) 9.6.6.2.(2) 9.7.3.1.(1) 9.8.8.6.(1)
CGSB	CAN/CGSB-12.20-M89	Structural Design of Glass for Buildings	4.3.6.1.(1) 9.7.3.2.(1)
CGSB	19-GP-5M-1984 	Sealing Compound, One-Component, Acrylic Base, Solvent Curing	9.27.4.2.(2)
CGSB	CAN/CGSB-19.13-M87	Sealing Compound, One-Component, Elastomeric, Chemical Curing	9.27.4.2.(2)
CGSB	19-GP-14M-1976	Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing	9.27.4.2.(2)
CGSB	CAN/CGSB-19.22-M89	Mildew-Resistant Sealing Compound for Tubs and Tiles	9.29.10.5.(1)
CGSB	CAN/CGSB-19.24-M90	Multicomponent, Chemical-Curing Sealing Compound	9.27.4.2.(2)
CGSB	CAN/CGSB-34.4-M89	Siding, Asbestos-Cement, Shingles and Clapboards	5.6.1.2.(3) 9.27.8.1.(1)
CGSB	CAN/CGSB-34.5-M89	Sheets, Asbestos-Cement, Corrugated	5.6.1.2.(3) 9.27.8.1.(1)
CGSB	CAN/CGSB-34.14-M89	Sheets, Asbestos-Cement, Decorative	5.6.1.2.(3) 9.27.8.1.(1)
CGSB	CAN/CGSB-34.16-M89	Sheets, Asbestos-Cement, Flat, Fully Compressed	5.6.1.2.(3) 9.27.8.1.(1)
CGSB	CAN/CGSB-34.17-M89	Sheets, Asbestos-Cement, Flat, Semicompressed	5.6.1.2.(3) 9.27.8.1.(1)
CGSB	CAN/CGSB-34.21-M89	Panels, Sandwich, Asbestos-Cement with Insulating Cores	5.6.1.2.(3) 9.27.8.1.(1)
CGSB	CAN/CGSB-34.22-94 	Asbestos-Cement Drain Pipe	9.14.3.1.(1)
CGSB	CAN/CGSB-37.1-M89	Chemical Emulsified Type, Emulsified Asphalt for Dampproofing	9.13.2.1.(1)
CGSB	CAN/CGSB-37.2-M88	Emulsified Asphalt, Mineral-Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings	5.8.2.2.(6) 9.13.2.1.(1)
CGSB	CAN/CGSB-37.3-M89 	Application of Emulsified Asphalts for Dampproofing or Waterproofing	5.8.2.3.(1) 9.13.1.4.(1)
CGSB	CAN/CGSB-37.4-M89	Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing	5.6.1.2.(1) 9.26.2.1.(1)
CGSB	CAN/CGSB-37.5-M89	Cutback Asphalt Plastic Cement	5.6.1.2.(1) 9.26.2.1.(1)
CGSB	37-GP-6Ma-1983 	Asphalt, Cutback, Unfilled, for Dampproofing	5.8.2.2.(7) 5.8.2.2.(8) 9.13.2.1.(1)
CGSB	CAN/CGSB-37.8-M88	Asphalt, Cutback, Filled, for Roof Coating	5.6.1.2.(1) 9.26.2.1.(1)
CGSB	37-GP-9Ma-1983	Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing	5.6.1.2.(1) 5.8.2.2.(6) 9.26.2.1.(1)

Table 2.7.3.2. (Continued)






Issuing Agency	Document Number	Title of Document	Code Reference
CGSB	37-GP-12Ma-1984 	Application of Unfilled Cutback Asphalt for Dampproofing	5.8.2.3.(2) 9.13.1.4.(1)
CGSB	CAN/CGSB-37.16-M89	Filled, Cutback Asphalt for Dampproofing and Waterproofing	5.8.2.2.(6) 9.13.2.1.(1)
CGSB	37-GP-18Ma-1985 	Tar, Cutback, Unfilled, for Dampproofing	5.8.2.2.(7) 5.8.2.2.(8) 9.13.2.1.(1)
CGSB	37-GP-21M-1985	Tar, Cutback, Fibrated, for Roof Coating	5.6.1.2.(1) 9.26.2.1.(1)
CGSB	CAN/CGSB-37.22-M89 	Application of Unfilled, Cutback Tar Foundation Coating for Dampproofing	5.8.2.3.(2) 9.13.1.4.(1)
CGSB	37-GP-36M 1976 	Application of Filled Cutback Asphalts for Dampproofing and Waterproofing	5.8.2.3.(1)
CGSB	37-GP-37M 1977 	Application of Hot Asphalt for Dampproofing or Waterproofing	5.8.2.3.(1)
CGSB	CAN/CGSB-37.50-M89	Hot Applied, Rubberized Asphalt for Roofing and Waterproofing	5.6.1.2.(1) 5.8.2.2.(6) 9.26.2.1.(1)
CGSB	CAN/CGSB-37.51-M90 	Application for Hot-Applied Rubberized Asphalt, for Roofing and Waterproofing	5.6.1.3.(1) 5.8.2.3.(1) 9.26.15.1.(1)
CGSB	37-GP-52M-1984	Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric	5.6.1.2.(1) 5.8.2.2.(6) 9.26.2.1.(1)
CGSB	CAN/CGSB-37.54-95 	Polyvinyl Chloride Roofing and Waterproofing Membrane	5.6.1.2.(1) 5.8.2.2.(6) 9.26.2.1.(1)
CGSB	37-GP-55M-1979	Application of Sheet Applied Flexible Polyvinyl Chloride Roofing Membrane	5.6.1.3.(1) 9.26.16.1.(1)
CGSB	37-GP-56M-1985 	Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing	5.6.1.2.(1) 5.8.2.2.(6) 9.26.2.1.(1)
CGSB	37-GP-64M-1977	Mat Reinforcing, Fibrous Glass, for Membrane Waterproofing Systems and Built-Up Roofing	5.6.1.2.(1)
CGSB	41-GP-6M-1983	Sheets, Thermosetting Polyester Plastics, Glass Fiber Reinforced	5.6.1.2.(1) 9.26.2.1.(1)
CGSB	CAN/CGSB-41.24-95 	Rigid Vinyl Siding, Soffits and Fascia	5.6.1.2.(3) 9.27.13.1.(1)
CGSB	51-GP-21M-1978	Thermal Insulation, Urethane and Isocyanurate, Unfaced	5.3.1.2.(2) Table 9.23.16.2.A. 9.25.2.2.(1)
CGSB	CAN/CGSB-51.25-M87	Thermal Insulation, Phenolic, Faced	5.3.1.2.(2) Table 9.23.16.2.A. 9.25.2.2.(1)
CGSB	CAN/CGSB-51.26-M86	Thermal Insulation, Urethane and Isocyanurate, Boards, Faced	5.3.1.2.(2) Table 9.23.16.2.A. 9.25.2.2.(1)
CGSB	51-GP-27M-1979	Thermal Insulation, Polystyrene, Loose Fill	5.3.1.2.(2) 9.25.2.2.(1)

2.7.3.2.

Table 2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
CGSB	CAN/CGSB-51.32-M77 e	Sheathing, Membrane, Breather Type	5.6.1.2.(1) 5.6.1.2.(3) 9.20.13.9.(1) 9.23.17.1.(1) 9.26.2.1.(1)
CGSB	CAN/CGSB-51.33-M89	Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction	5.5.1.2.(2) 9.25.4.2.(4)
CGSB	CAN/CGSB-51.34-M86 (Amended 1988) r	Vapour Barrier, Polyethylene Sheet for Use in Building Construction	5.5.1.2.(2) 9.13.2.1.(1) 9.13.2.1.(2) 9.18.6.2.(1) 9.25.3.2.(2) 9.25.4.2.(3)
CGSB	CAN/CGSB-63.14-M89	Plastic Skylights	5.4.1.2.(3) 5.4.1.2.(4) 5.6.1.2.(1) 5.6.1.2.(2) 9.7.7.1.(1) 9.7.7.2.(1)
CGSB	CAN/CGSB-82.1-M89	Sliding Doors	5.3.1.2.(2) 5.4.1.2.(3) 5.4.1.2.(5) 5.6.1.2.(3) 5.6.1.2.(4) 9.6.5.2.(1)
CGSB	CAN/CGSB-82.5-M88	Insulated Steel Doors	5.3.1.2.(2) 5.4.1.2.(3) 5.6.1.2.(3) 9.6.5.3.(1)
CGSB	CAN/CGSB-82.6-M86	Doors, Mirrored Glass, Sliding or Folding, Wardrobe	9.6.6.3.(1)
CGSB	CAN/CGSB-93.1-M85	Sheet, Aluminum Alloy, Prefinished, Residential	5.6.1.2.(3) 9.27.12.1.(4)
CGSB	CAN/CGSB-93.2-M91 e	Prefinished Aluminum Siding, Soffits and Fascia, for Residential Use	5.6.1.2.(3) 9.27.12.1.(3)
CGSB	CAN/CGSB-93.3-M91 e	Prefinished Galvanized and Aluminum-Zinc Alloy Steel Sheet for Residential Use	5.6.1.2.(3) 9.27.12.1.(2)
CGSB	CAN/CGSB-93.4-92 e	Galvanized and Aluminum-Zinc Alloy Coated Steel Siding, Soffits and Fascia, Prefinished, Residential	5.6.1.2.(3) 9.27.12.1.(1)
CSA	A5-98 r4	Portland Cement	9.3.1.2.(1) 9.20.3.1.(1) 9.28.2.1.(1)
CSA	A8-98 r4	Masonry Cement	9.20.3.1.(1)
CSA	A23.1-00 r4	Concrete Materials and Methods of Concrete Construction	4.2.3.6.(1) 4.2.3.9.(1) 9.3.1.3.(1) 9.3.1.4.(1)
CSA	A23.3-94	Design of Concrete Structures	Table 4.1.9.1.B. 4.3.3.1.(1)
CSA	CAN/CSA-A82.1-M87	Burned Clay Brick (Solid Masonry Units Made from Clay or Shale)	9.20.2.1.(1)

Table 2.7.3.2. (Continued)













Issuing Agency	Document Number	Title of Document	Code Reference
CSA	A82.3-M1978	Calcium Silicate (Sand-Lime) Building Brick	9.20.2.1.(1)
CSA	A82.4-M1978	Structural Clay Load-Bearing Wall Tile	9.20.2.1.(1)
CSA	A82.5-M1978	Structural Clay Non-Load-Bearing Tile	9.20.2.1.(1)
CSA	CAN3-A82.8-M78	Hollow Clay Brick	9.20.2.1.(1)
CSA	CAN/CSA-A82.27-M91 	Gypsum Board	3.1.5.11.(4) Table 9.23.16.2.A. 9.29.5.2.(1)
CSA	A82.30-M1980	Interior Furring, Lathing and Gypsum Plastering	9.29.4.1.(1)
CSA	A82.31-M1980	Gypsum Board Application	9.10.12.5.(1) 9.29.5.1.(2)
CSA	A82.56-M1976	Aggregate for Masonry Mortar	9.20.3.1.(1)
CSA	CAN3-A93-M82	Natural Airflow Ventilators for Buildings	9.19.1.2.(6)
CSA	A123.1-98 	Asphalt Shingles Made From Organic Felt and Surfaced with Mineral Granules	5.6.1.2.(1) 9.26.2.1.(1)
CSA	A123.2-M1979	Asphalt Coated Roofing Sheets	5.6.1.2.(1) 9.26.2.1.(1)
CSA	A123.3-98 	Asphalt Saturated Organic Roofing Felt	5.6.1.2.(1) 9.26.2.1.(1)
CSA	A123.4-98 	Asphalt for Use in Construction of Built-Up Roof Coverings and Waterproofing Systems	5.6.1.2.(1) 5.8.2.2.(6) 9.13.2.1.(1) 9.26.2.1.(1)
CSA	A123.5-98 	Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules	5.6.1.2.(1) 9.26.2.1.(1)
CSA	A123.17-1963	Asphalt-Saturated Felted Glass-Fibre Mat for Use in Construction of Built-Up Roofs	5.6.1.2.(1) 9.26.2.1.(1)
CSA	CAN3-A123.51-M85	Asphalt Shingle Application on Roof Slopes 1:3 and Steeper	5.6.1.3.(1) 9.26.1.2.(1)
CSA	CAN3-A123.52-M85	Asphalt Shingle Application on Roof Slopes 1:6 to Less Than 1:3	5.6.1.3.(1) 9.26.1.2.(1)
CSA	A165.1-94	Concrete Masonry Units	9.15.2.2.(1) 9.17.5.1.(1) 9.20.2.1.(1) 9.20.2.6.(1)
CSA	A165.2-94	Concrete Brick Masonry Units	9.20.2.1.(1)
CSA	A165.3-94	Prefaced Concrete Masonry Units	9.20.2.1.(1)
CSA	CAN3-A165.4-M85	Autoclaved Cellular Units	9.20.2.1.(1)
CSA	CAN/CSA-A220.0-M91	Performance of Concrete Roof Tiles	5.6.1.2.(1) 9.26.2.1.(1)
CSA	CAN/CSA-A220.1-M91	Installation of Concrete Roof Tiles	9.26.17.1.(1)
CSA	CAN/CSA-A247-M86	Insulating Fibreboard	5.3.1.2.(2) 9.23.15.6.(3) Table 9.23.16.2.A. 9.25.2.2.(1) 9.29.8.1.(1)
CSA	CAN/CSA-A324-M88	Clay Flue Liners	9.21.3.3.(1)

2.7.3.2.

Table 2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
CSA	A371-94	Masonry Construction for Buildings	5.6.1.2.(3) 5.6.1.3.(3) 9.20.15.2.(1)
CSA	CAN/CSA-A405-M87	Design and Construction of Masonry Chimneys and Fireplaces	9.21.3.5.(1) 9.22.1.4.(1) 9.22.5.2.(2)
CSA	CAN3-A438-M84	Concrete Construction for Housing and Small Buildings	9.3.1.1.(1) 9.3.1.7.(1)
CSA	A440-00 r4	Windows	5.4.1.2.(3) 5.4.1.2.(5) 5.4.1.2.(6) 5.6.1.2.(3) 5.6.1.2.(4) 5.6.1.2.(5) 9.7.2.1.(1) 9.7.2.1.(2) 9.7.6.1.(1)
CSA	A440.1-00 e2 r4	User Selection Guide to A440	5.4.1.2.(5) 5.4.1.2.(6) 5.6.1.2.(4) 5.6.1.2.(5)
CSA	B44-00 r r4	Safety Code for Elevators	3.2.6.7.(2) 3.5.2.1.(1) 3.5.2.1.(2) 3.5.2.1.(3) 3.5.4.2.(1) 3.8.3.5.(1) Table 4.1.10.5.
CSA	B51-97 r	Boiler, Pressure Vessel, and Pressure Piping Code	6.2.1.5.(1) 9.31.6.3.(2) 9.33.5.2.(1)
CSA	B52-99 r r4	Mechanical Refrigeration Code	6.2.1.5.(1) 9.33.5.2.(1)
CSA	CAN/CSA-B72-M87	Installation Code for Lightning Protection Systems	6.3.1.4.(1)
CSA	B111-1974	Wire Nails, Spikes and Staples	9.23.3.1.(1) 9.26.2.2.(1) 9.29.5.6.(1)
CSA	B139-00 r4	Installation Code for Oil-Burning Equipment	6.2.1.5.(1) 8.2.2.11.(1) 9.31.6.3.(2) 9.33.5.2.(1)
CSA	B149.1-00 r4	Natural Gas and Propane Installation Code	6.2.1.5.(1) 8.2.2.11.(1) 9.10.21.1.(1) 9.31.6.3.(2) 9.33.5.2.(1)
CSA	B182.1-99 r r4	Plastic Drain and Sewer Pipe and Pipe Fittings	9.14.3.1.(1)
CSA	B355-00 r4	Lifts for Persons with Physical Disabilities	3.8.3.5.(2)

Table 2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
CSA	B365-01 	Installation Code for Solid-Fuel-Burning Appliances and Equipment	6.2.1.5.(1) 9.21.1.3.(2) 9.22.10.2.(1) 9.31.6.3.(2) 9.33.5.2.(1) 9.33.5.3.(1)
CSA	C22.1-98 	Canadian Electrical Code, Part I	3.6.1.2.(1) 3.6.2.1.(6) 3.6.2.8.(1) 6.2.1.5.(1) 8.2.2.9.(2) 9.31.6.3.(2) 9.33.5.2.(1) 9.34.1.1.(1)
CSA	C22.2 No. 0.3-96 	Test Methods for Electrical Wires and Cables	3.1.4.3.(1) 3.1.5.17.(1) 3.6.4.3.(1)
CSA	C22.2 No.113-M1984	Fans and Ventilators	9.32.3.9.(6)
CSA	C22.2 No.141-M1985	Unit Equipment for Emergency Lighting	3.2.7.4.(2) 9.9.11.3.(6)
CSA	C22.2 No. 211.0-M1984	General Requirements and Methods of Testing for Nonmetallic Conduit	3.1.5.19.(1)
CSA	CAN/CSA-C260-M90	Rating the Performance of Residential Mechanical Ventilating Equipment	9.32.3.9.(1)
CSA	C282-00 	Emergency Electrical Power Supply for Buildings	3.2.7.5.(1)
CSA	C439-00 	Standard Laboratory Methods of Test for Rating the Performance of Heat/Energy-Recovery Ventilators	9.32.3.9.(3)
CSA	CAN/CSA-C445-M92	Design and Installation of Earth Energy Heat Pump Systems for Residential and Other Small Buildings	9.33.5.2.(1)
CSA	CAN/CSA-F280-M90	Determining the Required Capacity of Residential Space Heating and Cooling Appliances	6.2.1.3.(1) 9.33.5.1.(1)
CSA	CAN/CSA-F326-M91	Residential Mechanical Ventilation Systems	9.32.3.1.(1)
CSA	G40.21-98 	Structural Quality Steels	4.2.3.8.(1) 9.23.4.3.(2)
CSA	G401-93	Corrugated Steel Pipe Products	9.14.3.1.(1)
CSA	O80 Series-97 	Wood Preservation	3.1.4.4.(1) 4.2.3.2.(1) 4.2.3.2.(2)
CSA	O80.1-97 	Preservative Treatment of All Timber Products by Pressure Processes	9.3.2.9.(3)
CSA	O80.2-97 	Preservative Treatment of Lumber, Timber, Bridge Ties, and Mine Ties by Pressure Processes	4.2.3.2.(1) 9.3.2.9.(3)
CSA	O80.3-97 	Preservative Treatment of Piles by Pressure Processes	4.2.3.2.(1)
CSA	O80.9-97 	Preservative Treatment of Plywood by Pressure Processes	9.3.2.9.(3)
CSA	O80.15-97 	Preservative Treatment of Wood for Building Foundation Systems, Basements, and Crawl Spaces by Pressure Processes	4.2.3.2.(1) 9.3.2.9.(3)

2.7.3.2.

Table 2.7.3.2. (Continued)










Issuing Agency	Document Number	Title of Document	Code Reference
CSA	O86-01 	Engineering Design in Wood	Table 4.1.9.1.B. 4.3.1.1.(1)
CSA	O115-M1982	Hardwood and Decorative Plywood	5.6.1.2.(3) 9.27.9.1.(1) 9.30.2.2.(1)
CSA	O118.1-97 	Western Cedars, Shakes and Shingles	5.6.1.2.(1) 5.6.1.2.(3) 9.26.2.1.(1) 9.27.7.1.(1)
CSA	O118.2-M1981	Eastern White Cedar Shingles	5.6.1.2.(1) 5.6.1.2.(3) 9.26.2.1.(1) 9.27.7.1.(1)
CSA	O121-M1978 	Douglas Fir Plywood	5.6.1.2.(3) 9.23.14.2.(1) 9.23.15.1.(1) Table 9.23.16.2.A. 9.27.9.1.(1) 9.30.2.2.(1) Table A-14 Table A-16 Table A-18
CSA	CAN/CSA-O122-M89	Structural Glued-Laminated Timber	Table A-11 Table A-20
CSA	CAN/CSA-O132.2 Series-90	Wood Flush Doors	9.6.5.1.(1)
CSA	CAN/CSA-O141-91	Softwood Lumber	3.1.4.6.(2) 9.3.2.6.(1)
CSA	O151- M1978 	Canadian Softwood Plywood	5.6.1.2.(3) 9.23.14.2.(1) 9.23.15.1.(1) Table 9.23.16.2.A. 9.27.9.1.(1) 9.30.2.2.(1) Table A-14 Table A-16 Table A-18
CSA	O153-M1980	Poplar Plywood	5.6.1.2.(3) 9.23.14.2.(1) 9.23.15.1.(1) Table 9.23.16.2.A. 9.27.9.1.(1) 9.30.2.2.(1)
CSA	CAN/CSA-O177-M89 	Qualification Code for Manufacturers of Structural Glued-Laminated Timber	4.3.1.2.(1) Table A-11 Table A-20

Table 2.7.3.2. (Continued)







Issuing Agency	Document Number	Title of Document	Code Reference
CSA	CAN/CSA-O325.0-92 	Construction Sheathing	5.6.1.2.(3) 9.23.14.2.(1) Table 9.23.14.5.B. 9.23.15.1.(1) Table 9.23.15.6.B. Table 9.23.16.2.B. Table A-14 Table A-16 Table A-18
CSA	O437.0-93 	OSB and Waferboard	5.6.1.2.(3) 9.23.14.2.(1) 9.23.14.4.(2) 9.23.15.1.(1) 9.23.15.2.(2) Table 9.23.16.2.A. 9.27.11.1.(1) 9.29.9.1.(2) 9.30.2.2.(1) Table A-14 Table A-16 Table A-18
CSA	CAN/CSA-S16.1-94	Limit States Design of Steel Structures	Table 4.1.9.1.B. 4.3.4.1.(1)
CSA	S136-94	Cold Formed Steel Structural Members	4.3.4.2.(1)
CSA	CAN3-S157-M83	Strength Design in Aluminum	4.3.5.1.(1)
CSA	S269.1-1975	Falsework for Construction Purposes	4.1.1.3.(3)
CSA	CAN/CSA-S269.2-M87	Access Scaffolding for Construction Purposes	4.1.1.3.(3)
CSA	CAN/CSA-S269.3-M92	Concrete Formwork	4.1.1.3.(3)
CSA	CAN3-S304-M84 	Masonry Design for Buildings	4.3.2.1.(1) 9.21.4.5.(1)
CSA	S304.1-94 	Masonry Design for Buildings (Limit States Design)	Table 4.1.9.1.B. 4.1.9.3.(5) 4.3.2.1.(1)
CSA	S307-M1980	Load Test Procedure for Wood Roof Trusses for Houses and Small Buildings	9.23.13.11.(5)
CSA	S350-M1980	Code of Practice for Safety in Demolition of Structures	8.1.1.3.(1)
CSA	CAN3-S367-M81	Air-Supported Structures	4.4.1.1.(1)
CSA	CAN/CSA-S406-92	Construction of Preserved Wood Foundations	9.15.1.3.(3) 9.16.5.1.(1)
CSA	S413-94	Parking Structures	4.4.2.1.(1)
CSA	CAN/CSA-Z32.4-M86	Essential Electrical Systems for Hospitals	3.2.7.6.(1)
CSA	CAN/CSA-Z240.2.1-92	Structural Requirements for Mobile Homes	9.12.2.2.(6) 9.15.1.4.(1)
CSA	Z240.10.1-94	Site Preparation, Foundation, and Anchorage of Mobile Homes	9.15.1.4.(1) 9.23.6.3.(1)
CSA	CAN/CSA-Z305.1-92	Nonflammable Medical Gas Piping Systems	3.7.5.1.(1)
CSA	CAN/CSA-Z317.2-M91	Special Requirements for Heating, Ventilation, and Air Conditioning (HVAC) Systems in Health Care Facilities	6.2.1.1.(1)

2.7.3.2.

Table 2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
EPA	EPA 402-R-93-003 r4	Protocols for Radon and Radon Decay Product Measurements in Homes	9.13.8.2.(7)
HC	H46-2/90-156E e r4	Exposure Guidelines for Residential Indoor Air Quality	9.13.8.2.(10)
ISO	8201: 1987(E)	Acoustics – Audible emergency evacuation signal	3.2.4.19.(2)
NFPA	13-1999 r r4	Installation of Sprinkler Systems	3.2.4.8.(2) 3.2.4.16.(1) 3.2.5.13.(1) 3.3.2.12.(3)
NFPA	13D-1999 r r4	Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes	3.2.5.13.(3)
NFPA	13R-1999 r r4	Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height	3.2.5.13.(2)
NFPA	14-2000 r r4	Installation of Standpipe, Private Hydrants and Hose Systems	3.2.5.9.(1) 3.2.5.10.(1)
NFPA	20-1999 r r4	Installation of Stationary Pumps for Fire Protection	3.2.5.19.(1)
NFPA	71-1989	Installation, Maintenance and Use of Signaling Systems for Central Station Service	3.2.4.7.(4)
NFPA	72-1990	Installation, Maintenance and Use of Protective Signaling Systems	3.2.4.7.(4)
NFPA	80-1999 r r4	Fire Doors and Fire Windows	3.1.8.5.(2) 3.1.8.10.(2) 3.1.8.12.(2) 3.1.8.12.(3) 3.1.8.14.(1) 9.10.13.1.(1) 9.10.13.2.(3)
NFPA	82-1999 r4	Incinerators and Waste and Linen Handling Systems and Equipment	6.2.6.1.(1) 9.10.10.5.(2)
NFPA	96-1998 e2 r4	Ventilation Control and Fire Protection of Commercial Cooking Operations	6.2.2.6.(1)
NFPA	211-2000 r r4	Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances	6.3.1.2.(2) 6.3.1.3.(1)
NFPA	214-1999 r r4	Water-Cooling Towers	6.2.3.15.(4)
NLGA		Standard Grading Rules for Canadian Lumber (2000) r4	9.3.2.1.(1)
SMACNA r		HVAC Duct Construction Standards – Metal and Flexible (1985) 2nd Edition - 1995	6.2.4.2.(1) 9.33.6.5.(2)
TC e2		Airport Regulations of the Aeronautics Act	4.1.6.12.(1)
TPIC r2		Truss Design Procedures and Specifications for Light Metal Plate Connected Wood Trusses (1996)	9.23.13.11.(6)
ULC	CAN/ULC-S101-M89	Fire Endurance Tests of Building Construction and Materials	3.1.5.11.(3) 3.1.5.11.(4) 3.1.5.11.(6) 3.1.7.1.(1) 3.1.11.7.(1) 3.2.3.7.(7) 3.2.6.5.(6)

Table 2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
ULC	CAN/ULC-S102-M88	Test for Surface Burning Characteristics of Building Materials and Assemblies	3.1.12.1.(1)
ULC	CAN/ULC-S102.2-M88	Test for Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials and Assemblies	3.1.12.1.(2) 3.1.13.4.(1)
ULC	ULC S102.3-M1982	Fire Test of Light Diffusers and Lenses	3.1.13.4.(1)
ULC	CAN4-S104-M80 	Fire Tests of Door Assemblies	3.1.8.4.(1) 3.2.6.5.(3)
ULC	CAN4-S105-M85	Fire Door Frames Meeting the Performance Required by CAN4-S104	9.10.13.6.(1)
ULC	CAN4-S106-M80	Fire Tests of Window and Glass Block Assemblies	3.1.8.4.(1)
ULC	CAN/ULC-S107-M87	Fire Tests of Roof Coverings	3.1.15.1.(1)
ULC	CAN/ULC-S109-M87	Flame Tests of Flame-Resistant Fabrics and Films	3.1.6.5.(1) 3.2.3.20.(1) 3.6.5.2.(2) 3.6.5.3.(1) 9.33.6.3.(1)
ULC	CAN/ULC-S110-M86	Fire Tests for Air Ducts	3.6.5.1.(2) 3.6.5.1.(5) 9.33.6.2.(2) 9.33.6.2.(4)
ULC	ULC-S111-95 	Fire Tests for Air Filter Units	6.2.3.14.(1) 9.33.6.15.(1)
ULC	CAN/ULC-S112-M90 	Fire Test of Fire Damper Assemblies	3.1.8.4.(1)
ULC	CAN4-S113-79	Wood Core Doors Meeting the Performance Required by CAN4-S104-77 for Twenty Minute Fire Rated Closure Assemblies	9.10.13.2.(1)
ULC	CAN4-S114-M80	Test for Determination of Non-Combustibility in Building Materials	1.1.3.2.(1)
ULC	ULC-S115-95 	Fire Tests of Firestop Systems	3.1.5.15.(3) 3.1.9.1.(1) 3.1.9.1.(2) 3.1.9.4.(4) 9.10.9.7.(3)
ULC	CAN4-S124-M85	Test for the Evaluation of Protective Coverings for Foamed Plastics	3.1.5.11.(2)
ULC	CAN/ULC-S126-M86	Test for Fire Spread Under Roof-Deck Assemblies	3.1.14.1.(1) 3.1.14.2.(1)
ULC	CAN/ULC-S134-92	Fire Test of Exterior Wall Assemblies	3.1.5.5.(1)
ULC	S505-1974	Fusible Links for Fire Protection Service	3.1.8.9.(1)
ULC	CAN/ULC-S524-01 	Installation of Fire Alarm Systems	3.2.4.5.(1)
ULC	CAN/ULC-S531-M87	Smoke Alarms	3.2.4.21.(1) 9.10.18.1.(1)
ULC	CAN/ULC-S537-97 	Verification of Fire Alarm Systems	3.2.4.5.(2)
ULC	CAN/ULC-S553-M86	Installation of Smoke Alarms	3.2.4.21.(7)
ULC	CAN/ULC-S610-M87	Factory-Built Fireplaces	9.22.8.1.(1)
ULC	ULC-S628-93	Fireplace Inserts	9.22.10.1.(1)

2.7.3.2.

Table 2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
ULC	CAN/ULC-S629-M87	650°C Factory-Built Chimneys	9.21.1.2.(1)
ULC	CAN/ULC-S639-M87	Steel Liner Assemblies for Solid-Fuel Burning Masonry Fireplaces	9.22.2.3.(1)
ULC	CAN/ULC-S701-97 r r2	Thermal Insulation, Polystyrene, Boards and Pipe Covering	5.3.1.2.(2) Table 9.23.16.2.A. 9.25.2.2.(1)
ULC	CAN/ULC-S702-97 r e4	Mineral Fibre Thermal Insulation for Buildings	5.3.1.2.(2) Table 9.23.16.2.A. 9.25.2.2.(1)
ULC	CAN/ULC-S703-01 r4	Cellulose Fibre Insulation (CFI) for Buildings	5.3.1.2.(2) 9.25.2.2.(1)
ULC	CAN/ULC-S705.1-98 r2	Thermal Insulation—Spray-Applied Rigid Polyurethane Foam, Medium Density, Material Specification	5.3.1.2.(2) 9.25.2.2.(1)
ULC	CAN/ULC-S705.2-98 r2	Thermal Insulation—Spray-Applied Rigid Polyurethane Foam, Medium Density, Installer's Responsibilities—Specification	5.3.1.3.(3) 9.25.2.5.(1)
ULC	ULC/ORD-C199P-M1988	Combustible Piping for Sprinkler Systems	3.2.5.14.(2)
ULC	ULC/ORD-C376-1995 r4	Fire Growth of Foamed Plastic Insulated Building Panels in a Full-Scale Room Configuration	3.1.5.11.(7)

- b) have a *flame-spread rating* not more than 25 on any exposed surface, or on any surface that would be exposed by cutting through the material in any direction, or are of *fire-retardant treated wood*, except that not more than 10% of the ceiling area within each *fire compartment* is permitted to have a *flame-spread rating* not more than 150.

3.1.5.11. Combustible Insulation and its Protection r4

1) *Combustible* insulation, other than foamed plastics, is permitted in a *building* required to be of *noncombustible construction* provided that it has a *flame-spread rating* not more than 25 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, where the insulation is not protected as described in Sentences (3) and (4).

2) Foamed plastic insulation having a *flame-spread rating* not more than 25 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a *building* required to be of *noncombustible construction* provided the insulation is protected from adjacent space in the *building*, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of

- a) not less than 12.7 mm thick gypsum board mechanically fastened to a supporting assembly independent of the insulation,
- b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation,
- c) masonry,
- d) concrete, or
- e) any thermal barrier that meets the requirements of classification B when tested in conformance with ULC standard CAN4-S124-M, "Test for the Evaluation of Protective Coverings for Foamed Plastics" (see Appendix A).

3) *Combustible* insulation having a *flame-spread rating* more than 25 but not more than 500 on an exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the exterior walls of a *building* required to be of *noncombustible construction*, provided the insulation is protected from adjacent space in the *building*, other than adjacent concealed spaces within wall assemblies, by a thermal barrier as described in Sentence (2), except that in a *building* that is not *sprinklered* throughout and is more than 18 m high, measured between *grade* and the floor level of the top *storey*, the insulation shall be protected by a thermal barrier consisting of

- a) gypsum board not less than 12.7 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled,
- b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation,
- c) masonry or concrete not less than 25 mm thick, or
- d) any thermal barrier that, when tested in conformance with CAN/ULC-S101-M, "Fire Endurance Tests of Building Construction and Materials," will not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 10 min. (See also Article 3.2.3.7.)

4) *Combustible* insulation having a *flame-spread rating* more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the interior walls, within ceilings and within roof assemblies of a *building* required to be of *noncombustible construction*, provided the insulation is protected from adjacent space in the *building*, other than adjacent concealed spaces within wall assemblies, by a thermal barrier as described in Sentence (2), except that in a *building* that is not *sprinklered* throughout and is more than 18 m high, measured between *grade* and the floor level of the top *storey*, the insulation shall be protected by a thermal barrier consisting of

- a) Type X gypsum board not less than 15.9 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled, conforming to
 - i) CAN/CSA-A82.27-M, "Gypsum Board,"
 - ii) ASTM C 36/C 36M, "Gypsum Wallboard," r4
 - iii) ASTM C 442/C 442M, "Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board," r4
 - iv) ASTM C 588/C 588M, "Gypsum Base for Veneer Plasters," r4
 - v) ASTM C 630/C 630M, "Water-Resistant Gypsum Backing Board," r
 - vi) ASTM C 931/C 931M, "Exterior Gypsum Soffit Board," or r
 - vii) ASTM C 960, "Predecorated Gypsum Board,"
- b) non-loadbearing masonry or concrete not less than 50 mm thick,
- c) loadbearing masonry or concrete not less than 75 mm thick, or

3.1.5.11.

- d) any thermal barrier that, when tested in conformance with CAN/ULC-S101-M, "Fire Endurance Tests of Building Construction and Materials,"
 - i) will not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 20 min, and
 - ii) will remain in place for not less than 40 min.

5) *Combustible* insulation, including foamed plastics, installed above roof decks, outside of *foundation* walls below ground level and beneath concrete slabs-on-ground is permitted to be used in a *building* required to be of *noncombustible construction*.

6) Thermosetting foamed plastic insulation having a *flame-spread rating* not more than 500 which forms part of a factory-assembled exterior wall panel that does not incorporate an air space is permitted to be used in a *building* required to be of *noncombustible construction* provided

- a) the foamed plastic is protected on both sides by sheet steel not less than 0.38 mm thick that will remain in place for not less than 10 min when the wall panel is tested in conformance with CAN/ULC-S101-M, "Fire Endurance Tests of Building Construction and Materials,"
- b) the *flame-spread rating* of the wall panel, determined by subjecting a sample including an assembled joint to the appropriate test described in Subsection 3.1.12., is not more than the *flame-spread rating* permitted for the room or space which it bounds,
- c) the *building* does not contain a Group B or Group C *major occupancy*, and
- d) the *building* is not more than 18 m high, measured between *grade* and the floor level of the top *storey*.

7) A factory-assembled non-loadbearing interior or exterior wall or ceiling panel containing foamed plastic insulation having a *flame-spread rating* of not more than 500 is permitted to be used in a *building* required to be of *noncombustible construction* provided **4**

- a) the *building* is *sprinklered*,
- b) the *building* is not more than 18 m high, measured between *grade* and the floor level of the uppermost *storey*,
- c) the *building* does not contain a Group A, Group B, or Group C *major occupancy*,
- d) the panel does not contain an air space,
- e) the panel, when tested in conformance with ULC/ORD-C376, "Fire Growth of Foamed Plastic Insulated Building Panels

- f) in a Full-Scale Room Configuration," meets the criteria defined in the document, and the *flame-spread rating* of a panel, determined by subjecting a sample, including an assembled joint typical of field installation, to the appropriate test described in Subsection 3.1.12., is not more than the *flame-spread rating* permitted for the room or space that it bounds.

3.1.5.12. Combustible Elements in Partitions

1) Except as permitted by Sentence (2), solid lumber *partitions* not less than 38 mm thick and wood framing in *partitions* located in a *fire compartment* not more than 600 m² in area are permitted to be used in a *building* required to be of *noncombustible construction* in a *floor area* that is not *sprinklered* throughout provided the *partitions*

- a) are not required *fire separations*, and
- b) are not located in a *care or detention occupancy*.

2) *Partitions* installed in a *building* of *noncombustible construction* are permitted to contain wood framing provided

- a) the *building* is not more than 3 *storeys* in *building height*,
- b) the *partitions* are not located in a *care or detention occupancy*, and
- c) the *partitions* are not installed as enclosures for *exits* or *vertical service spaces*.

3) Solid lumber *partitions* not less than 38 mm thick and *partitions* that contain wood framing are permitted to be used in a *building* required to be of *noncombustible construction* provided

- a) the *building* is *sprinklered* throughout, and
- b) the *partitions* are not
 - i) located in a *care or detention occupancy*,
 - ii) installed as enclosures for *exits* or *vertical service spaces*, or
 - iii) used to satisfy the requirements of Clause 3.2.8.1.(1)(a).

3.1.5.13. Storage Lockers in Residential Buildings

1) Storage lockers in storage rooms are permitted to be constructed of wood in a *building* of *residential occupancy* required to be of *noncombustible construction*.

3.1.5.14. Combustible Ducts

1) Except as required by Sentence 3.6.4.3.(1), *combustible* ducts, including *plenums* and duct connectors, are permitted to be used in a *building* required to be of *noncombustible construction* provided

these ducts and duct connectors are used only in horizontal runs.

2) *Combustible* duct linings, duct coverings, duct insulation, vibration isolation connectors, duct tape, pipe insulation and pipe coverings are permitted to be used in a *building* required to be of *noncombustible construction* provided they conform to the appropriate requirements of Subsection 3.6.5.

3) In a *building* required to be of *noncombustible construction*, *combustible* ducts need not comply with the requirements of Sentences 3.6.5.1.(1) and (2) provided the ducts are

- a) part of a duct system conveying only ventilation air, and
- b) contained entirely within a *dwelling unit*.

3.1.5.15. Combustible Piping Materials

1) Except as permitted by Clause 3.1.5.2.(1)(e) and Sentences (2) and (3), *combustible* piping and tubing and associated adhesives are permitted to be used in a *building* required to be of *noncombustible construction* provided that, except when concealed in a wall or concrete floor slab, they

- a) have a *flame-spread rating* not more than 25, and
- b) if used in a *building* described in Subsection 3.2.6., have a smoke developed classification not more than 50.

2) *Combustible* sprinkler piping is permitted to be used within a *sprinklered floor area* in a *building* required to be of *noncombustible construction*. (See also Article 3.2.5.14.)

3) Polypropylene pipes and fittings are permitted to be used for drain, waste and vent piping for the conveyance of highly corrosive materials and for piping used to distribute distilled or dialyzed water in laboratory and hospital facilities in a *building* required to be of *noncombustible construction*, provided

- a) the *building* is *sprinklered* throughout,
- b) the piping is not located in a vertical shaft, and
- c) piping that penetrates a *fire separation* is sealed at the penetration by a fire stop system that, when subjected to the fire test method in ULC-S115, "Fire Tests of Firestop Systems," has an FT rating not less than the *fire-resistance rating* of the *fire separation*.

3.1.5.16. Combustible Plumbing Fixtures

1) *Combustible* plumbing fixtures, including wall and ceiling enclosures that form part of the plumbing fixture, are permitted in a *building* required to be of *noncombustible construction* provided they are

constructed of material having a *flame-spread rating* and smoke developed classification not more than that permitted for the wall surface of the room or space in which they are installed.

3.1.5.17. Wires and Cables

1) Except as permitted by Article 3.1.5.18., optical fibre cables and electrical wires and cables with *combustible* insulation, jackets or sheathes are permitted in a *building* required to be of *noncombustible construction*, provided

- a) the wires and cables exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cabletrough in Clause 4.11.4. of CSA C22.2 No. 0.3, "Test Methods for Electrical Wires and Cables,"
- b) the wires and cables are located in
 - i) totally enclosed *noncombustible* raceways (see A-3.1.4.3.(1)(b)(i) in Appendix A),
 - ii) masonry walls,
 - iii) concrete slabs,
 - iv) a *service room* separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h, or
 - v) totally enclosed nonmetallic raceways conforming to Article 3.1.5.19., or
- c) the wires and cables are communication cables used at the service entry to a *building* and are not more than 3 m long.

(See Appendix A.)

3.1.5.18. Combustible Travelling Cables for Elevators

1) *Combustible* travelling cables are permitted on elevating devices in a *building* required to be of *noncombustible construction*.

3.1.5.19. Nonmetallic Raceways

1) Subject to limits on size for penetrations of *fire separations* as required by Sentence 3.1.9.3.(2), within a *fire compartment* of a *building* required to be of *noncombustible construction*, totally enclosed nonmetallic raceways not more than 120 mm in outside diameter, or an equivalent rectangular area, are permitted to be used to enclose optical fibre cables and electrical wires and cables, provided the raceways exhibit a vertical char not more than 1.5 m when tested in conformance with the Vertical Flame Test (FT - 4) - Conduit or Tubing on Cable Tray in Clause 6.16 of CSA C22.2 No. 211.0-M, "General Requirements and Methods of Testing for Nonmetallic Conduit." **44**

3.1.6.

3.1.6. Tents and Air-Supported Structures (See Appendix A.)

3.1.6.1. Means of Egress

1) Tents and *air-supported structures* shall conform to Sections 3.3. and 3.4.

3.1.6.2. Restrictions

1) An *air-supported structure* shall not be located above the *first storey* on any *building*.

2) An *air-supported structure* shall not be used for Groups B, C, or Group F, Division 1 *major occupancies* or for classrooms.

3) An *air-supported structure* shall be designed as open floor space without interior walls, *mezzanines*, intermediate floors or similar construction.

3.1.6.3. Clearance to Other Structures

1) Except as permitted by Sentences (2), (3) and (4), every tent and *air-supported structure* shall conform to Subsection 3.2.3.

- 2) Tents and *air-supported structures*
- a) shall not be erected closer than 3 m to other structures on the same property except as permitted by Sentences (3) and (4), and
 - b) shall be sufficiently distant from one another to provide an area to be used as a means of emergency egress.

3) Tents and *air-supported structures* not occupied by the public

- a) need not be separated from one another, and
- b) are permitted to be erected less than 3 m from other structures on the same property provided this spacing does not create a hazard to the public.

4) Tents not more than 120 m² in ground area, located on fair grounds or similar open spaces, need not be separated from one another provided this does not create a hazard to the public.

3.1.6.4. Clearance to Flammable Material

1) The ground enclosed by a tent or *air-supported structure* and for not less than 3 m outside the structure shall be cleared of all flammable material or vegetation that will spread fire.

3.1.6.5. Flame Resistance

1) Every tent and *air-supported structure* and all tarpaulins and decorative materials used in connection with these structures shall conform to CAN/ULC-S109-M, "Flame Tests of Flame-Resistant Fabrics and Films."

3.1.6.6. Emergency Air Supply

1) An *air-supported structure* used as a place of assembly for more than 200 persons shall have either

- a) an automatic emergency engine-generator set capable of powering one blower continuously for 4 h, or
- b) a supplementary blower powered by an automatic internal combustion engine.

3.1.7. Fire-Resistance Ratings

3.1.7.1. Determination of Ratings

1) Except as permitted by Sentence (2) and Article 3.1.7.2., the rating of a material, assembly of materials or a structural member that is required to have a *fire-resistance rating*, shall be determined on the basis of the results of tests conducted in conformance with CAN/ULC-S101-M, "Fire Endurance Tests of Building Construction and Materials."

2) A material, assembly of materials or a structural member is permitted to be assigned a *fire-resistance rating* on the basis of Appendix D.

3.1.7.2. Exception for Exterior Walls

1) The limit on the rise of temperature on the unexposed surface of an assembly as required by the tests referred to in Sentence 3.1.7.1.(1) shall not apply to an exterior wall that has a *limiting distance* of 1.2 m or more, provided correction is made for radiation from the unexposed surface in accordance with Sentence 3.2.3.1.(6).

3.1.7.3. Exposure Conditions for Rating

1) Floor, roof and ceiling assemblies shall be rated for exposure to fire on the underside.

2) *Firewalls* and interior vertical *fire separations* shall be rated for exposure to fire on each side.

3) Exterior walls shall be rated for exposure to fire from inside the *building*.

3.1.7.4. Minimum Fire-Resistance Rating

1) The use of materials or assemblies having a greater *fire-resistance rating* than required shall impose no obligation to exceed in whole or in part the minimum *fire-resistance ratings* required by this Part.

3.1.7.5. Rating of Supporting Construction

1) Except as permitted by Sentence (2) and by Articles 3.2.2.20. to 3.2.2.83. for mixed types of construction, all *loadbearing* walls, columns and arches in the *storey* immediately below a floor or roof assembly required to have a *fire-resistance rating* shall have a *fire-resistance rating* not less than that required for the supported floor or roof assembly.

2) *Loadbearing* walls, columns and arches supporting a *service room* or *service space* need not conform to Sentence (1).

3) If an assembly is required to be of *noncombustible construction* and have a *fire-resistance rating*, it shall be supported by *noncombustible construction*.

3.1.8. Fire Separations and Closures

3.1.8.1. General Requirements

1) Any wall, *partition* or floor assembly required to be a *fire separation* shall

- a) except as permitted by Sentence (2), be constructed as a continuous element (see Appendix A), and
- b) as required in this Part, have a *fire-resistance rating* as specified (see Appendix A).

2) Openings in a *fire separation* shall be protected with *closures*, shafts or other means in conformance with Articles 3.1.8.4. to 3.1.8.17. and Subsections 3.1.9. and 3.2.8. (See Appendix A.)

3.1.8.2. Combustible Construction Support

1) *Combustible construction* that abuts on or is supported by a *noncombustible fire separation* shall

4.1.7.2. Full and Partial Loading

1) A roof or other *building* surface and its structural members subject to loads due to snow accumulation shall be designed for the specified load in Sentence 4.1.7.1.(1), distributed over the entire loaded area.

2) In addition to the distribution in Sentence (1), flat roofs and shed roofs, gable roofs of 15° slope or less and arched or curved roofs shall be designed for the specified uniform snow load in Sentence 4.1.7.1.(1), computed using $C_a = 1.0$, distributed on any one portion of the loaded area, and half of this load on the remainder of the loaded area, in such a way as to produce the greatest effects on the member concerned. (See Appendix A.) **r4**

4.1.7.3. Specified Rain Load

1) The specified load due to the accumulation of rain water on a surface, whose position and shape and deflection under load is such as to make such an accumulation possible, is that resulting from the 24 h rainfall determined in conformance with Subsection 2.2.1. over the horizontal projection of the surface and all tributary surfaces. (See Appendix A.)

2) The provisions of Sentence (1) apply whether or not the surface is provided with drainage, such as rain water leaders.

3) Except as provided for in Sentence 4.1.7.1.(1), loads due to rain need not be considered to act simultaneously with loads due to snow.

4.1.8. Live Loads Due to Wind

4.1.8.1. Specified Wind Loading

1) The specified external pressure or suction due to wind on part or all of a surface of a *building* shall be calculated from

$$p = qC_eC_gC_p$$

where

- p = the specified external pressure acting statically and in a direction normal to the surface either as a pressure directed towards the surface or as a suction directed away from the surface,
- q = the reference velocity pressure, as provided for in Sentence (4),
- C_e = the exposure factor, as provided for in Sentence (5),
- C_g = the gust effect factor, as provided for in Sentence (6), and
- C_p = the external pressure coefficient, averaged over the area of the surface considered. (See Appendix A.)

2) The net wind load for the *building* as a whole shall be the algebraic difference of the loads on the windward and the leeward surfaces, and in some cases may be calculated as the sum of the products of the external pressures or suctions and the areas of the surfaces over which they are averaged as provided in Sentence (1). (See Appendix A.)

3) The net specified pressure due to wind on part or all of a surface of a *building* shall be the algebraic difference of the external pressure or suction as provided for in Sentence (1) and the specified internal pressure or suction due to wind calculated from

$$p_i = qC_eC_gC_{pi}$$

where

- p_i = the specified internal pressure, acting statically and in a direction normal to the surface either as a pressure (directed outwards) or as a suction (directed inwards),
- q = the reference velocity pressure, as provided for in Sentence (4),
- C_e = the exposure factor, as provided for in Sentence (5), evaluated at the *building* mid-height instead of the height of the element considered,
- C_g = the gust effect factor, as provided for in Sentence (6), and
- C_{pi} = the internal pressure coefficient.

4) The reference velocity pressure, q , is the appropriate value determined in conformance with Subsection 2.2.1. for the following conditions:

- a) the reference velocity pressure, q , for the design of cladding shall be based on a probability of being exceeded in any one year of 1 in 10,
 - b) the reference velocity pressure, q , for the design of structural members for deflection and vibration shall be based on a probability of being exceeded in any one year of 1 in 10,
 - c) for all *buildings*, except those listed in Clause (d), the reference velocity pressure, q , for the design of structural members for strength shall be based on a probability of being exceeded in any one year of 1 in 30, and
 - d) the reference velocity pressure, q , for the design of structural members for strength for *post-disaster buildings* shall be based on a probability of being exceeded in any one year of 1 in 100.
- 5) The exposure factor C_e shall be
- a) the value shown in Table 4.1.8.1. for the appropriate reference height for the surface or part of the surface,

4.1.8.1.

- b) the value of the function $(h/10)^{1/5}$ but not less than 0.9, where h is the reference height above *grade* in metres for the surface or part of the surface, or
- c) if a dynamic approach to the action of wind gusts is used, an appropriate value depending on both height and shielding (see Appendix A).

Table 4.1.8.1.
Exposure Factors, C_e
Forming Part of Sentence 4.1.8.1.(5)

Height, m	Exposure Factor
> 0 and ≤ 6	0.9
> 6 and ≤ 12	1.0
> 12 and ≤ 20	1.1
> 20 and ≤ 30	1.2
> 30 and ≤ 44	1.3
> 44 and ≤ 64	1.4
> 64 and ≤ 85	1.5
> 85 and ≤ 140	1.6
> 140 and ≤ 240	1.8
> 240 and ≤ 400	2.0

6) The gust effect factor C_g is one of the following values:

- a) 1.0 or 2.0 for internal pressures as appropriate (see Appendix A),
- b) 2.0 for the *building* as a whole and main structural members,
- c) 2.5 for small elements including cladding, or
- d) if a dynamic approach to the action of wind gusts is used, an appropriate value depending on the turbulence of the wind and the size and natural frequency of the structure (see Appendix A).

4.1.8.2. Dynamic Effects of Wind

1) *Buildings* whose height is greater than 4 times their minimum effective width or greater than 120 m and other *buildings* whose light weight, low frequency and low damping properties make them susceptible to vibration shall be

- a) designed by experimental methods for the danger of dynamic overloading and vibration and the effects of fatigue, or
- b) designed using a dynamic approach to the action of wind gusts (see Appendix A).

4.1.8.3. Full and Partial Loading

1) *Buildings* and structural members shall be capable of withstanding the effects of

- a) the full wind loads acting along each of the 2 principal horizontal axes considered separately,
- b) the wind loads as described in (a) but with 25% of the load removed from any portion of the area,
- c) the wind loads as in (a) but considered simultaneously at 75% of their full value, and
- d) the wind loads as described in (c) but with 25% of these loads removed from any portion of the area.

(See Appendix A.)

4.1.8.4. Interior Walls and Partitions

1) In the design of interior walls and *partitions* due consideration shall be given to differences in air pressure on opposite sides of the wall or *partition* which may result from

- a) pressure differences between the windward and leeward sides of a *building*,
- b) stack effects due to a difference in air temperature between the exterior and interior of the *building*, and
- c) air pressurization by the mechanical services of the *building*.

4.1.9. Live Loads Due to Earthquakes

4.1.9.1. Analysis

1) The specified loading due to earthquake motion shall be determined by the analysis given in this Subsection.

2) In this Subsection

A_r = response amplification factor to account for type of attachment of mechanical/electrical equipment, as defined in Sentence (19),

A_x = amplification factor at level x to account for variation of response of mechanical/electrical equipment with elevation within the *building*, as defined in Sentence (19),

C_p = seismic coefficient for mechanical/electrical equipment, as defined in Sentence (19),

D = dimension of the *building* in a direction parallel to the applied forces,

D_{nx} = plan dimension of the *building* at level x perpendicular to the direction of seismic loading being considered,

D_s = dimension of wall or braced frame which constitutes the main lateral-load-resisting system in a direction parallel to the applied forces,

e_x = distance measured perpendicular to the direction of seismic loading between center of mass and centre of rigidity at

Table 9.3.2.1.
Minimum Lumber Grades for Specific End Uses
 Forming Part of Sentence 9.3.2.1.(1)

Use	Boards ⁽¹⁾			Framing
	Paragraph in the NLGA grading rules under which boards are graded			
	All Species		Eastern White Pine & Red Pine	All Species
	Para 113	Para 114	Para 118	
Stud wall framing (<i>loadbearing</i> members)	—	—	—	Stud, Standard, No. 2
Stud wall framing (<i>non-loadbearing</i> members)	—	—	—	Stud, Utility, No. 3
Plank frame construction (<i>loadbearing</i> members)	No. 3 Common	—	No. 3 Common	No. 2
Plank frame construction (<i>non-loadbearing</i> members)	No. 5 Common	—	No. 5 Common	Economy, No. 3
Posts and beams less than 114 mm in thickness	—	—	—	Standard, No. 2
Posts and beams not less than 114 mm in thickness	—	—	—	Standard
Roof sheathing	No. 3 Common	Standard	No. 4 Common	—
Subflooring	No. 3 Common	Standard	No. 3 Common	—
Wall sheathing when required as a nailing base	No. 4 Common	Utility	No. 4 Common	—
Wall sheathing not required as a nailing base	No. 5 Common	Economy	No. 5 Common	—

Notes to Table 9.3.2.1.:

⁽¹⁾ See Appendix A.

9.3.2.9. Termite and Decay Protection

1) In localities where termites are known to occur, the clearance between structural wood elements and the finished ground level directly below them shall be not less than 450 mm, unless the structural wood elements are pressure treated with a chemical that is toxic to termites. **e2**

2) Structural wood elements shall be pressure treated with a preservative to resist decay where

- a) the structural wood elements are in contact with the ground, or
- b) the vertical clearance between structural wood elements and the finished ground level is less than 150 mm. (See also Articles 9.23.2.2. and 9.23.2.3.) **e2**

3) Where wood is required by this Article to be treated to resist termites or decay, such treatment shall be in accordance with the requirements of

- a) CSA O80.1, "Preservative Treatment of All Timber Products by Pressure Processes," **r**

- b) CSA O80.2, "Preservative Treatment of Lumber, Timber, Bridge Ties, and Mine Ties by Pressure Processes," **r**
- c) CSA O80.9, "Preservative Treatment of Plywood by Pressure Processes," or **r**
- d) CSA O80.15, "Preservative Treatment of Wood for Building Foundation Systems, Basements, and Crawl Spaces by Pressure Processes." **r**

9.3.3. Metal

9.3.3.1. Sheet Metal Thickness

1) Minimum thicknesses for sheet metal material given in this Part refer to the actual minimum thicknesses measured at any point of the material, and in the case of galvanized steel, include the thickness of the coating unless otherwise indicated.

9.3.3.2.

9.3.3.2. Galvanized Sheet Metal

1) Where galvanized sheet metal is intended for use in locations exposed to the weather or as a flashing material, it shall have a zinc coating not less than the G90 coating designation in

- a) ASTM A 653/A 653M, "Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process," or r
- b) ASTM A 924/A 924M, "Steel Sheet, Metallic-Coated by the Hot-Dip Process." r

- c) the span of any structural member does not exceed 12.20 m,
- d) the maximum deflection of the structural roof members does not exceed the limits specified in Sentence 9.23.13.11.(1) based on the loads specified in that Sentence,
- e) the maximum total roof area, notwithstanding any separation of adjoining *buildings* by *firewalls*, is 4 550 m², and
- f) for flat roofs, there are no significant obstructions on the roof, such as parapet walls, spaced closer than the distance calculated by:

$$D_o = 10 (H_o - 0.8S_s/\gamma)$$

where

D_o = the minimum distance between obstructions, m,

H_o = the height of the obstruction above the roof, m,

S_s = the ground snow load, kPa, and

γ = the unit weight of snow, kN/m³.

(See Appendix A.)

Section 9.4. Structural Requirements

(See Appendix A.)

9.4.1. General

9.4.1.1. Structural Design

1) Except as provided in Sentence (2), Sentence 9.23.4.2.(2) and Subsections 9.4.2. to 9.4.4., structural members and their connections shall be designed in conformance with Part 4.

2) Where structural members and their connections conform to the requirements listed elsewhere in this Part, it shall be deemed that the structural design requirements have been met.

9.4.1.2. Post, Beam and Plank Construction

1) Except for columns described in Section 9.17. and beams described in Subsection 9.23.4., post, beam and plank construction with the *loadbearing* framing members spaced more than 600 mm apart shall be designed in conformance with Subsection 4.3.1.

9.4.2. Specified Loads

9.4.2.1. Application

1) This Subsection applies to light-frame constructions where wall, floor and roof planes are generally comprised of frames of small repetitive structural members, and where r4

- a) roof and wall planes are clad, sheathed or braced on at least one side,
- b) the small repetitive structural members are spaced not more than 600 mm o.c.,

9.4.2.2. Specified Snow Loads

1) Except as provided in Sentences (2) and (3), specified snow loads shall be not less than those calculated using the following formula:

$$S = C_b \bullet S_s + S_r$$

where

S = the specified snow load,

C_b = the basic snow load roof factor, which is 0.5 where the entire width of a roof does not exceed 4.3 m and 0.6 for all other roofs,

S_s = the ground snow load in kPa, determined according to Subsection 2.2.1., and

S_r = the associated rain load in kPa, determined according to Subsection 2.2.1.

2) In no case shall the specified snow load be less than 1 kPa.

3) Bow string, arch or semi-circular roof trusses having an unsupported span greater than 6 m shall be designed in conformance with the snow load requirements in Subsection 4.1.7.

9.4.2.3. Balconies

1) Residential balconies not used as passageways shall be designed to carry the specified roof snow load or 1.9 kPa, whichever is greater.

9.4.2.4. Attics

1) Residential attics having limited accessibility to preclude storage of equipment or material shall be designed for a total specified load of not less than 0.35 kPa, where the total specified load is the sum of the specified *dead load* plus the specified live ceiling load. (See Appendix A.) r2

9.4.3. Deflections

9.4.3.1. Deflections

1) The maximum deflection of structural members shall conform to Table 9.4.3.1.

2) *Dead loads* need not be considered in computing deflections referred to in Sentence (1).

9.7.1.4. Window Opening into a Window-Well

1) Where a window required in Article 9.7.1.3. opens into a window-well, a clearance of not less than 550 mm shall be provided in front of the window.

2) Where the sash of a window referred to in Sentence (1) swings towards the window-well, the operation of the sash shall not reduce the clearance in a manner that would restrict escape in an emergency.

9.7.1.5. Double Glazing or Storm Sash

1) Windows which separate heated space from unheated space or from the exterior shall be provided with storm sash or double glazing. (See Appendix A.)

9.7.1.6. Height of Window Sills above Floors or Ground (See Appendix A.)

1) Except as provided in Sentence (2), openable windows in *buildings of residential occupancy* shall be protected by

- a) a *guard*, in accordance with Section 9.8., or
- b) a mechanism capable of controlling the free swinging or sliding of the openable part of the window so as to limit any clear unobstructed opening to not more than 100 mm measured either vertically or horizontally where the other dimension is greater than 380 mm.

2) Windows need not be protected according to Sentence (1) where

- a) the window serves a *dwelling unit* that is not located above another *suite*,
- b) the only opening greater than 100 mm by 380 mm is a horizontal opening at the top of the window,
- c) the window sill is located more than 450 mm above the finished floor on one side of the window, or
- d) the window is located in a room or space with the finished floor described in Clause (c) located less than 1 800 mm above the floor or ground on the other side of the window.

9.7.2. Window Standards

9.7.2.1. Window Standard r4

1) Except as provided in Sentence (2), windows shall conform to CSA A440, "Windows," but need not meet airtightness, watertightness and wind load resistance requirements more stringent than those for classifications A1, B1 and C1 in CSA A440, "Windows." (See Appendix A and Article 9.7.6.1.) r4

2) Windows need not comply with Clause 10.15 of CSA A440, "Windows," Energy Rating for Heating Conditions of Residential Windows. r4

9.7.3. Glass

9.7.3.1. Glass Standards

1) Glass shall conform to

- a) CAN/CGSB-12.1-M, "Tempered or Laminated Safety Glass,"
- b) CAN/CGSB-12.2-M, "Flat, Clear Sheet Glass,"
- c) CAN/CGSB-12.3-M, "Flat, Clear Float Glass,"
- d) CAN/CGSB-12.4-M, "Heat Absorbing Glass,"
- e) CAN/CGSB-12.8, "Insulating Glass Units," r4
- f) CAN/CGSB-12.10-M, "Glass, Light and Heat Reflecting," or
- g) CAN/CGSB-12.11-M, "Wired Safety Glass."

9.7.3.2. Structural Design of Glass

1) Glass in windows, sloped glazing and skylights shall be designed in conformance with CAN/CGSB-12.20-M, "Structural Design of Glass for Buildings." (See Appendix A.)

9.7.4. Caulking and Glazing

9.7.4.1. Sealing Compound

1) The sealing compound used to seal the glass component of a factory-sealed double-glazed unit to the sash component shall be compatible with the sealing compound used to edge seal the glass component.

9.7.4.2. Caulking Compound

1) Caulking shall be provided between window frames or trim and the exterior siding or masonry in conformance with Subsection 9.27.4.

9.7.5. Protection of Windows in Public Areas

9.7.5.1. Transparent Panels

1) Except as provided in Article 9.7.5.2., transparent panels that could be mistaken as a *means of egress* shall be protected by barriers or railings.

9.7.5.2. Sliding Glass Partitions

1) Sliding glass *partitions* that separate a *public corridor* from an adjacent *occupancy* and that are open during normal working hours need not conform to Article 9.7.5.1. and Sentence 9.6.6.2.(3), except that such *partitions* shall be suitably marked to indicate their existence and position.

9.7.5.3.

9.7.5.3. Windows in Exit Stairways

- 1) Windows in *exit* stairways that extend to less than 1 070 mm above the landing shall be
 - a) protected by *guards*, in accordance with Section 9.8., or
 - b) non-openable and designed to withstand the specified lateral loads for balcony *guards* as provided in Part 4.

9.7.5.4. Windows above the Second Storey

- 1) Windows in public areas that extend to less than 1 m from the floor and are located above the second *storey* in *buildings* of *residential occupancy* shall be
 - a) protected by *guards* in accordance with Section 9.8., or
 - b) non-openable and designed to withstand the specified lateral loads for balcony *guards* as provided in Article 4.1.10.1.

9.7.6. Resistance to Forced Entry

9.7.6.1. Forced Entry through Windows

- 1) In *dwelling units*, windows, any part of which is located within 2 m of adjacent ground level, shall conform to the requirements for resistance to forced entry as described in Clause 10.13 of CSA A440, "Windows." (See Appendix A.) **r4**

9.7.7. Skylights

9.7.7.1. Plastic Skylights

- 1) Plastic skylights shall conform to CAN/CGSB-63.14-M, "Plastic Skylights."

9.7.7.2. Glass Skylights

- 1) Factory-built glass skylights shall meet the performance requirements of CAN/CGSB-63.14-M, "Plastic Skylights."

Section 9.8. Stairs, Ramps, Handrails and Guards

9.8.1. Scope

9.8.1.1. Application

- 1) This Section applies to the design and construction of interior and exterior stairs, steps, ramps, railings and *guards*.

9.8.1.2. Exit Stairs

- 1) Where the stair forms part of an *exit*, the appropriate requirements in Sections 9.9. and 9.10. shall also apply.

9.8.1.3. Escalators and Moving Walkways

- 1) Escalators and moving *walkways* shall conform to the appropriate requirements in Part 3.

9.8.2. General

9.8.2.1. Uniform Treads and Risers

- 1) Treads and risers shall have uniform rise and run in any one flight.

9.8.2.2. Minimum Number of Risers

- 1) Except for interior stairs within a *dwelling unit*, at least 3 risers shall be provided for interior stairs.

9.8.3. Stair Dimensions

9.8.3.1. Rise, Run and Tread Depth of Stairs

- 1) Except as provided in Subsection 9.8.5., the rise, run and tread depth of stairs shall conform to Table 9.8.3.1.

Table 9.8.3.1.
Rise, Run and Tread Depth of Stairs
Forming Part of Sentence 9.8.3.1.(1)

Stair Type	Rise, mm		Run, mm		Tread Depth, mm	
	max.	min.	max.	min.	max.	min.
Service ⁽¹⁾	no limit	125	355	no limit	355	no limit
Private ⁽²⁾	200	125	355	210	355	235
Public ⁽³⁾	200	125	355	230	355	250

Notes to Table 9.8.3.1.:

- (1) Service stairs serve areas only used as service rooms or *service spaces*.
- (2) Private stairs are interior stairs within *dwelling units* and exterior stairs serving a single *dwelling unit*.
- (3) Public stairs are all stairs not described as service stairs or private stairs.

9.8.3.2. Nosings

- 1) Curved or bevelled leading edges of treads
 - a) shall not reduce the required tread depth by more than 15 mm, and

9.25.2.4. Installation of Loose-Fill Insulation

- 1) Except as provided in Sentences (2) to (6), loose-fill insulation shall be used on horizontal surfaces only.
- 2) Where loose-fill insulation is installed in an unconfined sloped space such as an attic space over a sloped ceiling, the supporting slope shall not be more than **r4**
 - a) 4.5 in 12 for mineral fibre or cellulose fibre insulation, and
 - b) 2.5 in 12 for other types of insulation.
- 3) Loose-fill insulation is permitted to be used in wood frame walls of existing *buildings*. (See Appendix A.)
- 4) Blown-in insulation is permitted to be installed in above-ground wood frame walls of new *buildings* provided
 - a) the density of the installed insulation is sufficient to preclude settlement,
 - b) the material is installed behind a membrane that permits visual inspection prior to installation of the interior finish,
 - c) the material is installed in a manner that will not interfere with the installation of the interior finish, and
 - d) no water is added to the insulation, unless it can be shown that the added water will not adversely affect other materials in the assembly.
- 5) Water repellent loose-fill insulation is permitted to be used between the outer and inner wythes of masonry *cavity walls*. (See Appendix A.)
- 6) Where soffit venting is used, measures shall be taken
 - a) to prevent loose-fill insulation from blocking the soffit vents and to maintain an open path for circulation of air from the vents into the *attic or roof space*, and
 - b) to minimize air flow into the insulation near the soffit vents to maintain the thermal performance of the material. (See Article 9.19.1.3.)

9.25.2.5. Installation of Spray-Applied Polyurethane

- 1) Spray-applied polyurethane insulation shall be installed in accordance with CAN/ULC-S705.2, "Thermal Insulation—Spray-Applied Rigid Polyurethane Foam, Medium Density, Installer's Responsibilities—Specification." **r2**

9.25.3. Air Barrier Systems

9.25.3.1. Required Barrier to Air Leakage

- 1) Thermally insulated wall, ceiling and floor assemblies shall be constructed so as to include an *air barrier system* that will provide a continuous barrier to air leakage
 - a) from the interior of the *building* into wall, floor, *attic or roof spaces*, sufficient to prevent excessive moisture condensation in such spaces during the winter, and
 - b) from the exterior inward sufficient to prevent moisture condensation on the room side during winter and to ensure comfortable conditions for the occupants.
 (See Appendix A.)

9.25.3.2. Air Barrier System Properties (See Appendix A.)

- 1) *Air barrier systems* shall possess the characteristics necessary to provide an effective barrier to air infiltration and exfiltration under differential air pressure due to stack effect, mechanical systems or wind. **e2**
- 2) Where polyethylene sheet is used to provide airtightness in the *air barrier system*, it shall conform to CAN/CGSB-51.34-M, "Vapour Barrier, Polyethylene Sheet for Use in Building Construction."

9.25.3.3. Continuity of the Air Barrier System

- 1) Where the *air barrier system* consists of an air-impermeable panel-type material, all joints shall be sealed to prevent air leakage.
- 2) Where the *air barrier system* consists of flexible sheet material, all joints shall be
 - a) sealed, or
 - b) lapped not less than 100 mm and clamped, such as between framing members, furring or blocking and rigid panels.
- 3) Where an interior wall meets an exterior wall, ceiling, floor or roof required to be provided with air barrier protection, the *air barrier system* shall extend across the intersection.
- 4) Where an interior wall projects through a ceiling or extends to become an exterior wall, spaces in the wall shall be blocked to provide continuity across those spaces with the *air barrier system* in the abutting walls or ceiling.
- 5) Where an interior floor projects through an exterior wall or extends to become an exterior floor, continuity of the *air barrier system* shall be maintained from the abutting walls across the floor assembly.

6) Penetrations of the *air barrier system*, such as those created by the installation of doors, windows, electrical wiring, electrical boxes, piping or ductwork, shall be sealed to maintain the integrity of the *air barrier system* over the entire surface.

7) Access hatches installed through assemblies constructed with an *air barrier system* shall be weatherstripped around their perimeters to prevent air leakage.

8) Clearances between *chimneys* or *gas vents* and the surrounding construction that would permit air leakage from within the *building* into a wall or *attic* or *roof space* shall be sealed by *noncombustible* material to prevent such leakage.

9.25.4. Vapour Barriers

9.25.4.1. Required Barrier to Vapour Diffusion

1) Thermally insulated wall, ceiling and floor assemblies shall be constructed with a *vapour barrier* so as to provide a barrier to diffusion of water vapour from the interior into wall spaces, floor spaces or *attic* or *roof spaces*.

9.25.4.2. Vapour Barrier Materials

1) Except as required in Sentence (2), *vapour barriers* shall have an initial permeance not greater than $45 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$.

2) When used where a high resistance to vapour movement is required, such as in wall constructions that incorporate exterior cladding or sheathing having a low water vapour permeance, *vapour barriers* shall have a permeance not greater than $15 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$. (See Appendix A.)

3) Where polyethylene is installed as the *vapour barrier* required in Sentence (2), it shall conform to CAN/CGSB-51.34-M, "Vapour Barrier, Polyethylene Sheet for Use in Building Construction."

4) Membrane-type *vapour barriers* other than polyethylene shall conform to the requirements of CAN/CGSB-51.33-M, "Vapour Barrier, Sheet, Excluding Polyethylene, for Use in Building Construction."

5) Where a coating is applied to gypsum board to function as the *vapour barrier*, the permeance of the coating shall be determined in accordance with CAN/CGSB-1.501-M, "Method for Permeance of Coated Wallboard."

9.25.4.3. Installation of Vapour Barriers

1) *Vapour barriers* shall be installed to protect the entire surfaces of thermally insulated wall, ceiling and floor assemblies.

2) *Vapour barriers* shall be installed sufficiently close to the warm side of insulation to prevent condensation at design conditions. (See Appendix A.)

Section 9.26. Roofing

9.26.1. General

9.26.1.1. Purpose of Roofing

1) Roofs shall be protected with roofing, including flashing, installed to shed rain effectively and prevent water due to ice damming from entering the roof.

9.26.1.2. Alternate Installation Methods

1) Methods described in CAN3-A123.51-M, "Asphalt Shingle Application on Roof Slopes 1:3 and Steeper," or CAN3-A123.52-M, "Asphalt Shingle Application on Roof Slopes 1:6 to Less Than 1:3," are permitted to be used for asphalt shingle applications not described in this Section.

9.26.2. Roofing Materials

9.26.2.1. Material Standards

- 1) Roofing materials shall conform to
 - a) CAN/CGSB-37.4-M, "Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing,"
 - b) CAN/CGSB-37.5-M, "Cutback Asphalt Plastic Cement,"
 - c) CAN/CGSB-37.8-M, "Asphalt, Cutback, Filled, for Roof Coating,"
 - d) CGSB 37-GP-9Ma, "Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing,"
 - e) CGSB 37-GP-21M, "Tar, Cutback, Fibrated, for Roof Coating,"
 - f) CAN/CGSB-37.50-M, "Hot Applied, Rubberized Asphalt for Roofing and Waterproofing,"
 - g) CGSB 37-GP-52M, "Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric,"
 - h) CAN/CGSB-37.54, "Polyvinyl Chloride Roofing and Waterproofing Membrane,"

- i) CGSB 37-GP-56M, "Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing,"
- j) CGSB 41-GP-6M, "Sheets, Thermosetting Polyester Plastics, Glass Fiber Reinforced,"
- k) CAN/CGSB-51.32-M, "Sheathing, Membrane, Breather Type,"
- l) CSA A123.1, "Asphalt Shingles Made From Organic Felt and Surfaced with Mineral Granules," r4
- m) CSA A123.2-M, "Asphalt Coated Roofing Sheets,"
- n) CSA A123.3, "Asphalt Saturated Organic Roofing Felt," r4

building code. These portions contain requirements in many of the areas where the NBC also has requirements and frequently the requirements are different. Because it would be illogical to have two different sets of requirements for houses, one set which applies to site-built houses and one set which applies to factory-built houses, the NBC does not make reference to these portions of the Z240 standards. Other portions of the Z240 standards deal with special requirements for mobile homes related to the fact that these houses must be moved over roads.

The NBC does not have requirements in this area. Therefore, labelling which indicates that a factory-built house complies with the Z240 standards can NOT be taken as an indication that the house complies with the NBC.

A-2.1.6.1.(1) Buildings Divided by Firewalls. This concept relates to the provisions directly regulated by this Code and does not apply to electrical service entrance requirements which are regulated by other documents.

A-2.1.6.2.(1) Buildings on Sloping Sites. Application of the definition of grade to stepped buildings on sloping sites often results in such buildings being designated as being greater than 3 storeys in building height even though there may be only 2 or 3 storeys at any one location. The diagrams below illustrate this application compared to a similar building on a flat site.

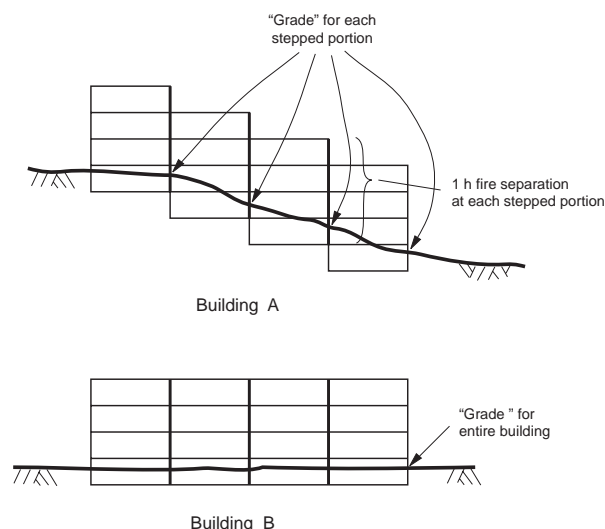


Figure A-2.1.6.2.
Application of the definition of grade

Under this Sentence, Building A can be considered as being 3 storeys in building height instead of 6 storeys in building height. Both Building A and Building B are comparable with regard to fire safety and egress.

This relaxation applies to the determination of building height only. All other requirements continue to apply as appropriate.

A-2.2.1.1.(1) Climatic Values. Data for municipalities not listed in Appendix C may be obtained by writing to: Head, Energy and Industrial Application Section, Atmospheric Environment Service, Environment Canada, 4905 Dufferin Street, Downsview, Ontario M3H 5T4.

A-2.2.1.1.(2) Winter Design Temperatures. The 2.5% values stated in Sentence 2.2.1.1.(2) are the least restrictive temperatures that can be used. If a designer chooses to use the 1% values given in Appendix C, they would be in excess of the Code minimums and would be considered acceptable.

A-2.3.5.2.(1) Information on Drawings. Examples of information that should be shown on architectural plans and plans for heating, ventilating and air-conditioning systems are:

- (a) the name, type and location of the building,
- (b) the name of the owner,
- (c) the name of the architect,
- (d) the name of the engineer or designer,
- (e) the north point,
- (f) the dimensions and height of all rooms,
- (g) the intended use of all rooms,
- (h) the details or description of the wall, roof, ceiling and floor construction, including insulation,
- (i) the details or description of the windows and outside doors, including the size, weatherstripping, storm sashes, sills and storm doors,
- (j) the size and continuity of all pipes, ducts, shafts, flues and fire dampers,
- (k) the location, size, capacity and type of all principal units of equipment,
- (l) the size, shape and height of all chimneys and gas vents,
- (m) the size and location of all combustion air and ventilation openings, and
- (n) the location and fire-resistance rating of required fire separations.

A-2.5.2. Structural Equivalents. Subsection 2.5.2. provides for the use of design methods not specified in Part 4 of the Code. These include full scale testing and model analogues. Normally this provision is used to permit acceptance of new and innovative structures or to permit acceptance of model tests such as those used to determine structural behavior or snow or wind loads. Subsection 2.5.2. specifically requires a level of safety and performance at least equivalent to that provided by design to Part 4 and requires loadings and design requirements to conform to Section 4.1.

Subsection 2.5.2. or other parts of Section 2.5. are not intended to allow structural design using design

A-2.5.2.

standards other than those listed in Part 4. The acceptance of structures which have been designed to other design standards would require the designer to prove to the appropriate authority that the structure provides the required level of safety and performance. The equivalence of safety can only be established by analyzing the structure for the loads and load factors set out in Section 4.1. and demonstrating that the

structure at least meets the requirements of the design standards listed in Sections 4.3. and 4.4.

A-2.7.3.2. Applicable Editions. Where documents are referenced in this Appendix, Appendix B or Appendix C, they shall be the editions designated in Table A-2.7.3.2.

Table A-2.7.3.2.
Documents Referenced in Appendices A, B and C of the National Building Code of Canada 1995









Issuing Agency	Document Number	Title of Document	Code Reference
ANSI	B18.6.1-1981	Slotted and Recessed Wood Screws (Inch Series)	A-9.23.3.1.(2)
ANSI/ ASCE	8-90	Design of Cold Formed Stainless Steel Structural Members	A-4.3.4.2.(1)
ASTM	C 516-80 	Vermiculite Loose Fill Thermal Insulation	A-9.25.2.4.(5)
ASTM	D 1037-96a 	Evaluating the Properties of Wood-Base Fiber and Particle Panel Materials	A-9.23.14.2.(4)
ASTM	D 1143-81	Piles Under Static Axial Compressive Load	A-4.2.7.2.(2)
ASTM	E 336-97 	Measurement of Airborne Sound Insulation in Buildings	A-9.11.1.1.(1)
ASTM	E 492-90	Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using The Tapping Machine	A-9.11.1.1.(1)
ASTM	E 597-95 	Determining a Single Number Rating of Airborne Sound Insulation in Multi-Unit Building Specifications	A-9.11.1.1.(1)
ASTM	E 1007-97 	Field Measurement of Tapping Machine Impact Sound Transmission Through Floor-Ceiling Assemblies and Associated Support Structures	A-9.11.1.1.(1)
ASTM	F 476-84 	Security of Swinging Door Assemblies	A-9.6.8.10.(1)
CCBFC	NRCC 30629	Supplement to the National Building Code of Canada 1990	Appendix C

Table A-2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
CCBFC	NRCC 38727	National Fire Code of Canada 1995	A-1.1.2.1. A-3.1.2.3.(1) A-3.2.4.6.(2) A-3.2.7.8.(3) A-3.3.1.4.(1) A-3.3.1.7.(1) A-3.3.3.1.(1) B-3.2.6.
CCBFC	NRCC 38728	National Plumbing Code of Canada 1995	Appendix C
CCBFC	NRCC 38732	National Farm Building Code of Canada 1995	A-1.1.3.2. A-5.1.1.1.(1)
CCBFC	NRCC 38826 	Structural Commentaries on the National Building Code of Canada 1995	A-1.1.2.1. A-4.1.1.3.(1) A-4.1.1.5.(1) A-4.1.1.5.(4) A-4.1.1.6.(1) A-4.1.1.6.(2) A-4.1.2.1.(1) A-4.1.3. A-4.1.4.3.(1) A-4.1.6.9. A-4.1.7. A-4.1.7.1. A-4.1.7.2.(2) A-4.1.7.3.(1) A-4.1.8.1.(1) and (2) A-4.1.8.1.(5)(c) A-4.1.8.1.(6)(a) A-4.1.8.1.(6)(d) and 4.1.8.2.(1)(b) A-4.1.8.3.(1) A-4.1.9.1.(2) A-4.1.9.1.(3) A-4.1.9.1.(8) and A-Table 4.1.9.1.B. A-4.1.9.1.(13)(b) A-Table 4.1.9.1.D. A-Table 4.1.9.1.E. A-4.1.9.1.(28) A-4.1.9.1.(29) A-4.1.9.4.(5) A-4.1.10.4. A-4.1.10.6.(1) A-4.2.4.4.(1) A-4.2.4.5.(1) A-4.2.5.1.(1) A-4.2.6.1.(1) A-4.2.7.2.(1) A-5.1.4.2. Appendix C
CGSB	CAN/CGSB-12.20-M89	Structural Design of Glass for Buildings	A-9.7.3.2.(1)
CGSB	37-GP-52M-1984 	Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric	A-5.8.2.2.(6)

A-2.7.3.2.

Table A-2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
CGSB	37-GP-56M-1985	Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing	A-5.6.1.2.(1) and (3)
CGSB	CAN/CGSB-51.34-M86 r4	Vapour Barrier, Polyethylene Sheet for Use in Building Construction	A-5.5.1.2.(2)
CGSB	CAN/CGSB-71.26-M88	Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems	Table A-9.23.4.2.C.
CGSB	CAN/CGSB-82.6-M86	Doors, Mirrored Glass, Sliding or Folding, Wardrobe	A-9.6.6.3.(1)
CMHC		Testing of Fresh Air Mixing Devices (1993)	A-9.32.3.
CMHC		Air Permeance of Building Materials (1988)	A-5.4.1.2.(1) and (2)
CSA	A23.3-94	Design of Concrete Structures	A-4.3.3.1.(1)
CSA	A23.4-00 r4	Precast Concrete – Materials and Construction	A-4.3.3.1.(1)
CSA	CAN/CSA-A82.1-M87	Burned Clay Brick (Solid Masonry Units Made from Clay or Shale)	A-5.6.1.2.(1) and (3)
CSA	A82.31-M80	Gypsum Board Application	Table A-9.10.3.1.A. Table A-9.10.3.1.B.
CSA	A277-01 r4	Procedure for Certification of Factory-Built Houses	A-2.1.4.1.(1)
CSA	A370-94	Connectors for Masonry	A-9.21.4.5.(2)
CSA	A371-94	Masonry Construction for Buildings	A-5.6.1.2.(1) and (3)
CSA	A440-00 r4	Windows	A-5.4.1.2.(3) A-9.7.2.1.(1)
CSA	A440.1-00 r4	User Selection Guide to A440	A-9.7.2.1.(1)
CSA	B44-00 r r4	Safety Code for Elevators	A-3.5.2.1.(1)
CSA	B149.1-00 r4	Natural Gas and Propane Installation Code	A-9.10.21.
CSA	B365-01 r4	Installation Code for Solid-Fuel-Burning Appliances and Equipment	A-9.33.1.1.(2)
CSA	C22.1-98 e2 r4	Canadian Electrical Code, Part I	A-3.1.4.3.(1)(b)(i) A-9.10.21.
CSA	CAN/CSA-F326-M91	Residential Mechanical Ventilation Systems	A-9.32.3. A-9.33.6.14.
CSA	O86-01 r4	Engineering Design in Wood	A-9.15.1.3.(3) A-9.23.4.2.
CSA	CAN/CSA-O141-91	Softwood Lumber	A-9.3.2.1.(1)
CSA	O437.0-93	OSB and Waferboard	A-9.23.14.4.(2)
CSA	CAN/CSA-S6-00 e r4	Canadian Highway Bridge Design Code	A-Table 4.1.6.10.
CSA	CAN/CSA-S16.1-94	Limit States Design of Steel Structures	A-4.3.4.1.(1)
CSA	CAN/CSA-S406-92	Construction of Preserved Wood Foundations	A-9.15.1.3.(3)
CSA	CAN/CSA-Z32.4-M86	Essential Electrical Systems for Hospitals	A-3.2.7.6.(1)
CSA	CAN/CSA-Z240 e MH Series-92	Mobile Homes	A-2.1.4.1.(1)

Table A-2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
CWC		The Span Book 1995, Revised 1999 r4	A-9.23.4.2.
FCC	Project 03-50-10-008	Serviceability Criteria for Residential Floors Based on a Field Study of Consumer Response (1985)	A-9.23.4.2.(2)
FMRC	FM 2008	Early Suppression-Fast Response Sprinklers (1996) r4	A-3.2.5.13.(7)
FPS		Performance Criteria for Residential Floors Based on Consumer Responses (1988)	A-9.23.4.2.(2)
HC	H46-2/90-156E r4	Exposure Guidelines for Residential Indoor Air Quality	A-9.13.8.2.
IRC	BPN 61	Shear Resistance of Wood Frame Walls	A-9.23.10.2.
IRC	CBD 222	Airtight Houses and Carbon Monoxide Poisoning	A-9.33.1.1.(2)
IRC	CBD 230	Applying Building Codes to Existing Buildings	A-1.1.2.1.
IRC	CBD 231	Moisture Problems in Houses	A-9.25.3.1.(1)
IRC	NRCC 28822	Performance and Acceptability of Wood Floors – Forintek Studies	A-9.23.4.2.(2)
ISO	7731:1986	Danger signals for work places – auditory danger signals	A-3.2.4.22.(1)(b)
ISO	8201:1987	Acoustics – Audible emergency evacuation signal	A-3.2.4.19.(2)
NFPA	13-1999 r r4	Installation of Sprinkler Systems	A-3.2.4.9.(2)(f) A-3.2.5.13.(1) A-3.2.5.13.(6) A-3.2.5.13.(7) A-3.2.5.14.(1) A-3.2.8.2.(3)
NFPA	13D-1999 r r4	Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes	A-3.2.5.13.(7) A-3.2.5.14.(1)
NFPA	13R-1999 r r4	Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height	A-3.2.5.13.(7) A-3.2.5.14.(1)
NFPA	20-1999 r r4	Installation of Stationary Pumps for Fire Protection	A-3.2.4.9.(2)(f) A-3.2.5.19.(1)
NFPA	30-2000 r r4	Flammable and Combustible Liquids Code	A-6.2.2.5.(1)
NFPA	32-2000 r r4	Drycleaning Plants	A-6.2.2.5.(1)
NFPA	33-2000 r r4	Spray Application Using Flammable or Combustible Materials	A-6.2.2.5.(1)
NFPA	34-2000 r r4	Dipping and Coating Processes Using Flammable or Combustible Liquids	A-6.2.2.5.(1)
NFPA	35-1999 r r4	Manufacture of Organic Coatings	A-6.2.2.5.(1)
NFPA	36-2001 r r4	Solvent Extraction Plants	A-6.2.2.5.(1)
NFPA	40-1997 r	Storage and Handling of Cellulose Nitrate Motion Picture Film	A-6.2.2.5.(1)
NFPA	50A-1999 r4	Gaseous Hydrogen Systems at Consumer Sites	A-6.2.2.5.(1)
NFPA	50B-1999 r4	Liquefied Hydrogen Systems at Consumer Sites	A-6.2.2.5.(1)
NFPA	51-1997 r	Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes	A-6.2.2.5.(1)
NFPA	51A -1996 r	Acetylene Cylinder Charging Plants	A-6.2.2.5.(1)

A-2.7.3.2.

Table A-2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
NFPA	61-1999 r r4	Prevention of Fires and Dust Explosions in Agricultural and Food Products Facilities	A-6.2.2.5.(1)
NFPA	65-1993	Processing and Finishing of Aluminum	A-6.2.2.5.(1)
NFPA	68-1998 r r4	Venting of Deflagrations	A-6.2.2.5.(1)
NFPA	69-1997 r	Explosion Prevention Systems	A-6.2.2.5.(1)
NFPA	80-1999 r r4	Fire Doors and Fire Windows	A-3.1.8.1.(2) A-3.2.8.2.(3)
NFPA	80A-1996 r	Protection of Buildings from Exterior Fire Exposures	A-3
NFPA	81-1986	Fur Storage, Fumigation and Cleaning	A-6.2.2.5.(1)
NFPA	86-1999 r r4	Ovens and Furnaces	A-6.2.2.5.(1)
NFPA	88A-1998 r r4	Parking Structures	A-6.2.2.5.(1)
NFPA	88B-1997 r	Repair Garages	A-6.2.2.5.(1)
NFPA	91-1999 r r4	Exhaust Systems for Air Conveying of Vapours, Gases, Mists, and Noncombustible Particulate Solids	A-6.2.2.5.(1)
NFPA	96-1998 e r4	Ventilation Control and Fire Protection of Commercial Cooking Operations	A-3.3.1.2.(2) A-6.2.2.5.(1) A-9.10.1.4.(1)
NFPA	204M-1991	Guide for Smoke and Heat Venting	A-6.2.2.5.(1)
NFPA	303-2000 r r4	Marinas and Boatyards	A-6.2.2.5.(1)
NFPA	307-2000 r r4	Construction and Fire Protection of Marine Terminals, Piers, and Wharfs	A-6.2.2.5.(1)
NFPA	325-1994 r	Fire Hazard Properties of Flammable Liquids, Gases and Volatile Solids	A-6.2.2.5.(1)
NFPA	326-1999 e r4	Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair	A-8.2.2.12.(3)
NFPA	327-1993	Cleaning or Safeguarding Small Tanks and Containers Without Entry	A-8.2.2.12.(3)
NFPA	395-1993	Storage of Flammable and Combustible Liquids at Farms and Isolated Sites	A-6.2.2.5.(1)
NFPA	409-1995 r	Aircraft Hangars	A-6.2.2.5.(1)
NFPA	415-1997 r	Airport Terminal Buildings, Fueling, Ramp Drainage, Loading Walkways	A-6.2.2.5.(1)
NFPA	480-1998 r4	Storage, Handling and Processing of Magnesium Solids and Powders	A-6.2.2.5.(1)
NFPA	481-2000 r r4	Production, Processing, Handling, and Storage of Titanium	A-6.2.2.5.(1)
NFPA	482-1996 r	Production, Processing, Handling and Storage of Zirconium	A-6.2.2.5.(1)
NFPA	490-1998 r4	Storage of Ammonium Nitrate	A-6.2.2.5.(1)
NFPA	650-1998 r4	Pneumatic Conveying Systems for Handling Combustible Particulate Solids	A-6.2.2.5.(1)
NFPA	651-1998 r4	Machining and Finishing of Aluminum and the Production and Handling of Aluminum Powders	A-6.2.2.5.(1)

Table A-2.7.3.2. (Continued)

Issuing Agency	Document Number	Title of Document	Code Reference
NFPA	654-2000 r4	Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids	A-6.2.2.5.(1)
NFPA	655-1993	Prevention of Sulfur Fires and Explosions	A-6.2.2.5.(1)
NFPA	664-1998 r4	Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities	A-6.2.2.5.(1)
NFPA	8503-97 r	Pulverized Fuel Systems	A-6.2.2.5.(1)
NLGA		Standard Grading Rules for Canadian Lumber (2000) r4	A-9.3.2.1.(1) Table A-9.3.2.1.A. A-9.3.2.8.(1) A-9.23.10.4.(1)
NLGA	SPS-1-2000 r4	Fingerjoined Structural Lumber	A-9.23.10.4.(1)
NLGA	SPS-3-2000 r4	Fingerjoined "Vertical Stud Use Only" Lumber	A-9.23.10.4.(1)
ONHWP		Details of Air Barrier Systems for Houses (1993)	Table A-9.25.1.2.B.
UL	ANSI/UL 199 (1997) r4	Automatic Sprinklers for Fire-Protection Service	A-3.2.5.13.(7)
UL	UL 1626 (1994)	Residential Sprinklers for Fire-Protection Service	A-3.2.5.13.(7)
ULC	CAN/ULC-S101-M89	Fire Endurance Tests of Building Construction and Materials	A-3.1.5.11.(2)(e) B-3.2.6.5.(6)(b)
ULC	CAN/ULC-S112-M90	Fire Test of Fire Damper Assemblies	Table B-3.2.6.6.C.
ULC	CAN4-S113-79	Wood Core Doors Meeting the Performance Required by CAN4-S104-77 for Twenty Minute Fire Rated Closure Assemblies	A-9.10.13.2.(1)
ULC	CAN4-S114-M80	Test for the Determination of Non-Combustibility in Building Materials	A-3.1.5.2.(1)(b)
ULC	CAN4-S124-M85	Test for the Evaluation of Protective Coverings for Foamed Plastics	A-3.1.5.11.(2)(e)
ULC	ULC-S332-93 r	Burglary Resisting Glazing Material	A-9.6.8.1.
ULC	CAN/ULC-S526-M87	Visual Signal Appliances for Fire Alarm Systems	A-3.2.4.20.(1)
ULC	CAN/ULC-S702-97 r	Mineral Fibre Thermal Insulation for Buildings e4	A-5.3.1.2.(2)
WCLIB	No. 17 (2000) e r4	Standard Grading Rules	A-Table 9.3.2.1.
WWPA	1998 e r4	Western Lumber Grading Rules	A-Table 9.3.2.1.

A-3 Application of Part 3. In applying the requirements of this Part, it is intended that they be applied with discretion to buildings of unusual configuration that do not clearly conform to the specific requirements, or to buildings in which processes are carried out which make compliance with particular requirements in this Part impracticable. The definition of "building" as it applies to this Code is general and encompasses most structures, including those which would not normally be considered as buildings in the layman's sense. This occurs more often in industrial uses, particularly those involving manufacturing facilities and equipment that require

specialized design that may make it impracticable to follow the specific requirements of this Part. Steel mills, aluminum plants, refining, power generation and liquid storage facilities are examples. A water tank or an oil refinery, for example, has no floor area, so it is obvious that requirements for exits from floor areas would not apply. Requirements for structural fire protection in large steel mills and pulp and paper mills, particularly in certain portions, may not be practicable to achieve in terms of the construction normally used and the operations for which the space is to be used. In other portions of the same building, however, it may be quite reasonable to

require that the provisions of this Part be applied (e.g., the office portions). Similarly, areas of industrial occupancy which may be occupied only periodically by service staff, such as equipment penthouses, normally would not need to have the same type of exit facility as floor areas occupied on a continuing basis. It is expected that judgment will be exercised in evaluating the application of a requirement in those cases when extenuating circumstances require special consideration, provided the occupants' safety is not endangered.

The provisions in this Part for fire protection features installed in buildings are intended to provide a minimum acceptable level of public safety. It is intended that all fire protection features of a building, whether required or not, will be designed in conformance with good fire protection engineering practice and will meet the appropriate installation requirements in relevant standards. Good design is necessary to ensure that the level of public safety established by the Code requirements will not be reduced by a voluntary installation.

Fire Fighting Assumptions

The requirements of this Part are based on the assumption that fire fighting capabilities are available in the event of a fire emergency. These fire fighting capabilities may take the form of a paid or volunteer public fire department or in some cases a private fire brigade. If these fire fighting capabilities are not available, additional fire safety measures may be required.

Fire fighting capability can vary from municipality to municipality. Generally, larger municipalities have greater fire fighting capability than smaller ones. Similarly, older, well established municipalities may have better fire fighting facilities than newly formed or rapidly growing ones. The level of municipal fire protection considered to be adequate will normally depend on both the size of the municipality (i.e., the number of buildings to be protected) and the size of buildings within that municipality. Since larger buildings tend to be located in larger municipalities, they are generally, but not always, favoured with a higher level of municipal protection.

Although it is reasonable to consider that some level of municipal fire fighting capability was assumed in developing the fire safety provisions in Part 3, this was not done on a consistent or defined basis. The requirements in the Code, while developed in the light of commonly prevailing municipal fire protection levels, do not attempt to relate the size of building to the level of municipal protection. The responsibility for controlling the maximum size of building to be permitted in a municipality in relation to local fire fighting capability rests with the municipality. If a proposed building is too large,

either in terms of floor area or building height, to receive reasonable protection from the municipal fire department, fire protection requirements in addition to those prescribed in this Code, may be necessary to compensate for this deficiency. Automatic sprinkler protection may be one option to be considered.

Alternatively, the municipality may, in light of its fire fighting capability, elect to introduce zoning restrictions to ensure that the maximum building size is related to available municipal fire protection facilities. This is, by necessity, a somewhat arbitrary decision and should be made in consultation with the local fire fighting service, who should have an appreciation of their capability to fight fires.

The requirements of Subsection 3.2.3. are intended to prevent fire spread from thermal radiation assuming there is adequate fire fighting available. It has been found that periods of from 10 to 30 minutes usually elapse between the outbreak of fire in a building that is not protected with an automatic sprinkler system and the attainment of high radiation levels. During this period, the specified spatial separations should prove adequate to inhibit ignition of an exposed building face or the interior of an adjacent building by radiation. Subsequently, however, reduction of the fire intensity by fire fighting and the protective wetting of the exposed building face will often be necessary as supplementary measures to inhibit fire spread.

In the case of a building that is sprinklered throughout, the automatic sprinkler system should control the fire to an extent that radiation to neighbouring buildings should be minimal. Although there will be some radiation effect on a sprinklered building from a fire in a neighbouring building, the internal sprinkler system should control any fires that might be ignited in the building and thereby minimize the possibility of the fire spreading into the exposed building. NFPA 80A, "Protection of Buildings from Exterior Fire Exposures," provides additional information on the possibility of fire spread at building exteriors.

The water supply requirements for fire protection installations depend on the requirements of any automatic sprinkler installations and also on the number of fire streams that may be needed at any fire, having regard to the length of time the streams will have to be used. Both these factors are largely influenced by the conditions at the building to be equipped, and the quantity and pressure of water needed for the protection of both the interior and exterior of the building must be ascertained before the water supply is decided upon. Acceptable water supplies may be a public waterworks system that has adequate pressure and discharge capacity, automatic fire pumps, pressure tanks, manually controlled fire

pumps in combination with pressure tanks, gravity tanks, and manually controlled fire pumps operated by remote control devices at each hose station.

A-3.1.2. Use Classification. The purpose of classification is to determine which requirements apply. This Code requires classification in accordance with every major occupancy for which the building is used or intended to be used. Where necessary, an application clause has been inserted in this Part to explain how to choose between the alternative requirements which multiple occupancy classification may present.

A-3.1.2.1.(1) Major Occupancy Classification. The following are examples of the

Table A-9.3.2.1.B. (Continued)



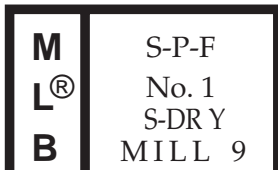



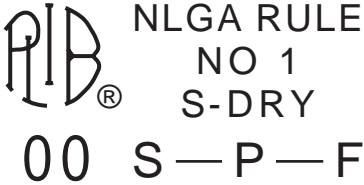
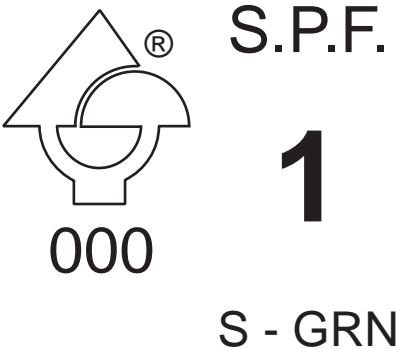
Facsimiles of Grade Mark	Association or Agency
	MacDonald Inspection Division of Intertek Testing Services NA Ltd.  211 Schoolhouse Street Coquitlam, British Columbia V3K 4X9
	Maritime Lumber Bureau P.O. Box 459 Amherst, Nova Scotia B4H 4A1
NFLD. LUMBER 	Newfoundland Lumber Producers Association P.O. Box 8 Glovertown, Newfoundland A0G 2L0
	Northern Forest Products Association 400-1488 Fourth Avenue Prince George, British Columbia V2L 4Y2
	N.W.T. Forest Industries Association Box 1033 Hay River, Northwest Territories X0E 0R0
O.L.M.A.[®] 01-1 CONST. S-DRY SPRUCE - PINE - FIR	Ontario Lumber Manufacturers' Association 55 University Avenue, Suite 1105, Box 8 Toronto, Ontario M5J 2H7

Table A-9.3.2.1.B. (Continued)

Facsimiles of Grade Mark	Association or Agency
	Pacific Lumber Inspection Bureau P.O. Box 7235 Bellevue, Washington 98008-1235 USA British Columbia Division: P.O. Box 19118 Fourth Avenue Postal Outlet Vancouver, British Columbia V6C 4R8
	Quebec Lumber Manufacturers' Association Association des manufacturiers de bois de sciage du Québec 5055, boul. Hamel ouest, bureau 200 Québec (Québec) G2E 2G6

A-9.3.2.8.(1) Non-Standard Lumber. The NLGA “Standard Grading Rules for Canadian Lumber” permit lumber to be dressed to sizes below the standard sizes (38 × 89, 38 × 140, 38 × 184, etc.) provided the grade stamp shows the reduced size. This Sentence permits the use of the span tables for such lumber, provided the size indicated on the stamp is not less than 95% of the corresponding standard size. Allowable spans in the tables must be reduced a full 5% even if the undersize is less than the 5% permitted.

A-9.4. Structural Requirements. Section 9.4. establishes the principle that the design of structural members of Part 9 buildings must either be based on the specific requirements in Part 9, such as the span tables, or be in accordance with Part 4. Usually a combination of the two approaches is used. For example, even if the snow load on a wood roof truss is based on Subsection 9.4.2., the joints must be designed in accordance with Part 4.

The only explicit treatment of structural loads in Section 9.4. is for gravity loads; wind and earthquake loads are dealt with implicitly in the body of Part 9 and are not used as inputs to any of the span tables. There may therefore be a tendency to assume that wind and earthquake loads do not need to be considered in the design of Part 9 buildings. In most cases this is true: the majority of low rise, wood frame buildings have a great deal of structural redundancy and continuity and have more than enough capacity to resist lateral loads due to wind and earthquake.

For example, in a traditional house configuration, even if there are large openings in the exterior walls

for picture windows and sliding doors, the many interior partitions act as shear walls and provide adequate lateral stability. This may not be the case for some newer house designs.

However, this does not apply to all building configurations or details that might be found in Part 9 buildings. For example, a mercantile building might be long and narrow with almost entirely windowed walls on the ends and few structurally attached interior partitions. In such a case, wind and earthquake loads would have to be considered in the design of the long structural walls and their foundations.

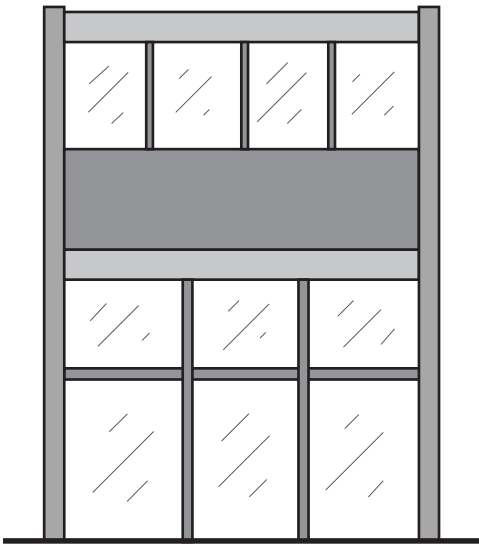


Figure A-9.4.A.
Mercantile building with little resistance to lateral loading

Another example is the practice, in some parts of the country, of building houses on crawl spaces with perimeter walls consisting of short, wood frame “knee” or “pony” walls and with no lateral bracing or interior partitions in the crawl space. The only structural continuity in the foundation-to-knee-wall and knee-wall-to-floor joints comes from nailing and this is inadequate to resist lateral loads from significant earthquakes.

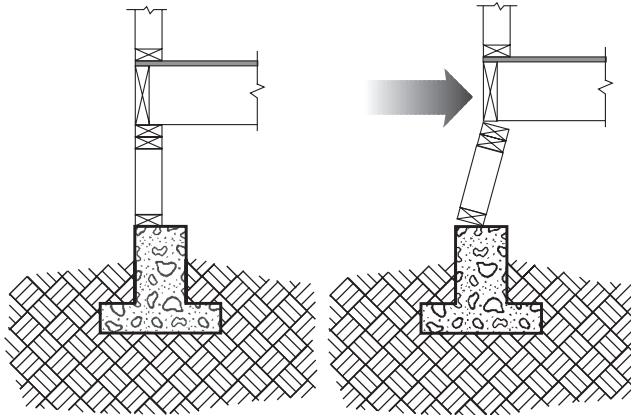


Figure A-9.4.B.

Crawl space knee-wall with little resistance to lateral loading

Thus Part 9 buildings are not exempt from having to comply with the wind and earthquake loading requirements of Part 4. In many cases, these considerations can safely be ignored but, in certain configurations, the building's resistance to wind and earthquake loads must be carefully considered.

See also A-9.23.10.2.

A-9.4.2.1.(1) **r4** Application of Simplified Part 9 Snow Loads. The simplified specified snow loads described in Article 9.4.2.2. may be used where the structure is of the configuration that is typical of traditional wood-frame residential construction and its performance. This places limits on the spacing of joists, rafters and trusses, the spans of these members and supporting members, deflection under load, overall dimensions of the roof and the configuration of the roof. It assumes considerable redundancy in the structure.

Because very large buildings may be constructed under Part 9 by constructing firewalls to break up the building area, it is possible to have Part 9 buildings with very large roofs. The simplified specified snow loads may not be used when the total roof area of the overall structure exceeds 4 550 m². Thus, the simplified specified snow load calculation may be used for typical town-house construction but would not be appropriate for much larger commercial or industrial buildings, for example.

The simplified specified snow loads are also not designed to take into account roof configurations that

seriously exacerbate snow accumulation. This does not pertain to typical projections above a sloped roof such as dormers, nor does it pertain to buildings with higher and lower roofs. Although two-level roofs generally lead to drift loading, smaller light-frame buildings constructed according to Part 9 have not failed under these loads. Consequently, the simplified calculation may be used in these cases. Rather, this limitation on application of the simplified calculation pertains to roofs with high parapets or significant other projections above the roof, such as elevator penthouses, mechanical rooms or larger equipment that would effectively collect snow and preclude its blowing off the roof.

The reference to Sentence 9.23.13.11.(1) invokes, for roof assemblies other than common lumber trusses, the same performance criteria.

The unit weight of snow on roofs, γ , obtained from measurements at a number of weather stations across Canada varied from about 1.0 to 4.5 kN/m³. An average value for use in design in lieu of better local data is $\gamma = 3.0$ kN/m³. In some locations the unit weight of snow may be considerably greater than 3.0 kN/m³. Such locations include regions where the maximum snow load on the roof is reached only after contributions from many snowstorms, coastal regions, and regions where winter rains are considerable and where a unit weight as high as 4.0 kN/m³ may be appropriate.

A-9.4.2.4.(1) **r2** Specified Loads for Attics with Limited Accessibility. Typical residential roofs are framed with roof trusses and the ceiling is insulated.

Residential trusses are placed at 600 mm on centre with web members joining top and bottom chords. Lateral web bracing is installed perpendicular to the span of the trusses. As a result, there is limited room for movement inside the attic space or for storage of material. Access hatches are generally built to the minimum acceptable dimensions of 500 mm by 700 mm, further limiting the size of material that can be moved into the attic.

With exposed insulation in the attic, access is not recommended unless protective clothing and breathing apparatus are worn.

Thus the attic space is recognized as uninhabitable and loading can be based on actual dead load. In emergency situations or for the purpose of inspection, it is possible for a person to access the attic without over-stressing the truss or causing damaging deflections.

A-Table 9.4.4.1.

A-Table 9.4.4.1. Classification of Soils.

Sand or gravel may be classified by means of a picket test in which a 38 mm by 38 mm picket bevelled at the end at 45° to a point is pushed into the soil. Such material is classified as “dense or compact” if a man of average weight cannot push the picket more than 200 mm into the soil and “loose” if the picket penetrates 200 mm or more.

Clay and silt may be classified as “stiff” if it is difficult to indent by thumb pressure, “firm” if it can be indented by moderate thumb pressure, “soft” if it can be easily penetrated by thumb pressure, where this test is carried out on undisturbed soil in the wall of a test pit.

A-Table 9.6.6.1. Glass in Doors. Maximum areas in Table 9.6.6.1. for other than fully tempered glazing are cut off at 1.50 m², as this would be the practical limit after which safety glass would be required by Sentence 9.6.6.2.(3).

A-9.6.6.3.(1) Mirrored Glass Doors. Standard CAN/CGSB-82.6-M covers mirrored glass doors for use on reach-in closets. It specifies that such doors are not to be used for walk-in closets.

A-9.6.6.6.(1) Double Glazing for Glass Doors and Glass in Doors. Where a door consists of a large area of glass held in a frame, for example, sliding patio doors, the glass is considered to be glass in a door and would be required to be double glazed. Only where a door is solid glass and has no frame would the glass not be required to be double glazed.

A-9.6.8.1. Forced Entry Via Glazing in Doors and Sidelights. There is no mandatory requirement that special glass be used in doors or sidelights, primarily because of cost. It is, however, a common method of forced entry to break glass in doors and sidelights to gain access to door hardware and unlock the door from the inside. Although insulated glass provides increased resistance over single glazing, the highest resistance is provided by laminated glass. Tempered glass, while stronger against static loads, is prone to shattering under high, concentrated impact loads.

Laminated glass is more expensive than annealed glass and must be used in greater thicknesses. Figure A-9.6.8.1. shows an insulated sidelight made of one pane of laminated glass and one pane of annealed glass. This method reduces the cost premium that would result if both panes were laminated.

Consideration should be given to using laminated glazing in doors and accompanying sidelights regulated by Article 9.6.6.1., in windows located within 900 mm of locks in such doors, and in basement windows.

Underwriters' Laboratories of Canada have produced a document ULC-S332, “Burglary Resisting Glazing Material,” which provides a test procedure to evaluate the resistance of glazing to attacks by thieves. While it is principally intended for plate glass show windows, it may be of value for residential purposes. **r**

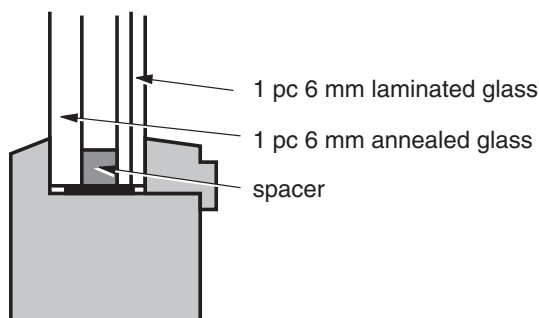


Figure A-9.6.8.1.
Combined laminated/annealed glazing

A-9.6.8.5.(1) Door Fasteners. The purpose of the requirement for 30 mm screw penetration into solid wood is to prevent the door from being dislodged from the jamb due to impact forces. It is not the intent to prohibit other types of hinges or strikeplates that are specially designed to provide equal or greater protection.

A-9.6.8.7.(1) Hinged Doors. Methods of satisfying this Sentence include either using non-removable pin hinges or modifying standard hinges by screw fastening a metal pin in a screw hole in one half of the top and bottom hinges. When the door is closed, the projecting portion of the pin engages in the corresponding screw hole in the other half of the hinge and then, even if the hinge pin is taken out, the door cannot be removed.

A-9.6.8.10.(1) Resistance of Doors to Forced Entry. This Sentence designates standard ASTM F 476, “Security of Swinging Door Assemblies,” as an alternate to compliance with the prescriptive requirements for doors and hardware. The annex to the standard provides four security classifications, with acceptance criteria, dep-

ending on the type of building and the crime rate of the area in which it is located. The NBC has only specified Grade 10, the minimum level. The annex suggests the following guidelines be followed when selecting security levels for door assemblies:

Grade 10: This is the minimum security level and is quite adequate for single-family residential buildings located in stable, low-crime areas.

Grade 20: This is the low-medium security level and is designed to provide security for residential buildings located in average crime-rate areas and for apartments in both low and average crime-rate areas.

Grade 30: This is the medium-high security level and is designed to provide security for residential buildings located in higher than average crime-rate areas or for small commercial buildings in average or low crime-rate areas.

Grade 40: This is the high security level and is designed for small commercial buildings located in high crime-rate areas. This level could also be used for residential buildings having an exceptionally high incidence of semi-skilled burglary attacks.

All these grades satisfy the Code and can be considered for use where a higher level of security is desired or warranted.

A-9.7.1.3.(1) Bedroom Window Height. Sentence 9.7.1.3.(1) requires every bedroom that does not have an exterior door to have at least one window that is large enough and easy enough to open that it can be used as an exit in case of a fire that prevents use of the normal building exits. However, the Article does not set a maximum sill height for such a window; it is therefore possible to install a window or skylight which satisfies the requirements of the Article but defeats the Article's intent by virtue of being so high that it cannot be reached for exit purposes. It is recommended that the sills of windows intended for use as emergency exits be not higher than 1.5 m above the floor. Sometimes it is difficult to avoid having the sill higher than this; e.g. skylights, windows in basement bedrooms. In these cases, it is recommended that access to the window be improved by some means such as built-in furniture installed below the window.

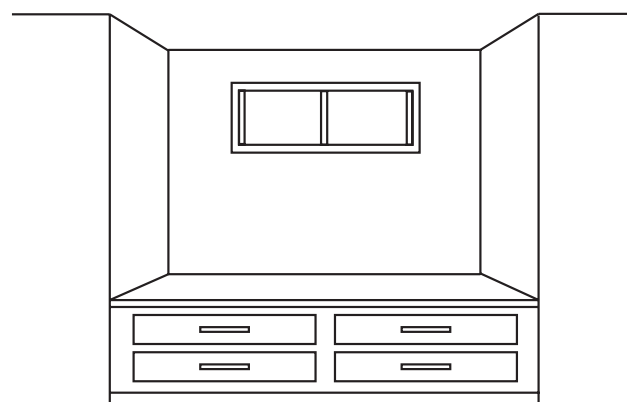


Figure A-9.7.1.3.A.

Built-in furniture to improve access to a window

A-9.7.1.3.(2) Bedroom Window Opening Areas and Dimensions. Although the minimum opening dimensions required for height and width are 380 mm, a window opening that is 380 mm by 380 mm would not comply with the minimum area requirements. (See Figure A-9.7.1.3.B.)

A-9.8.8.4.(1) and (2) Risk of Falling through Guards. The risk of falling through a guard is especially prevalent for children. Therefore the requirements are stringent for guards in all buildings except industrial buildings, where children are unlikely to be present except under strict supervision.

A-9.8.8.4.(3) Risk of Children Getting Their Heads Stuck between Balusters. The requirements to prevent children falling through guards also serve to provide adequate protection against this problem. However, guards are often installed where they are not required by the Code; i.e. in places where the difference in elevation is less than 600 mm. In these cases, there is no need to require the openings between balusters to be less than 100 mm. However, there is a range of openings between 100 mm and 200 mm in which children can get their heads stuck. Therefore, openings in this range are not permitted except in buildings of industrial occupancy, where children are unlikely to be present except under strict supervision.

A-9.8.8.5. Risk of Children Climbing Over Guards. Guards are sometimes constructed with horizontal or near-horizontal members between balusters such that a ladder effect is achieved; this can be very tempting for young children to climb, thus exposing themselves to risk of falling over the guard. Such construction is not permitted for required guards in buildings of residential occupancy.

A-9.9.4.5.(1) Openings in Exterior Walls of Exits

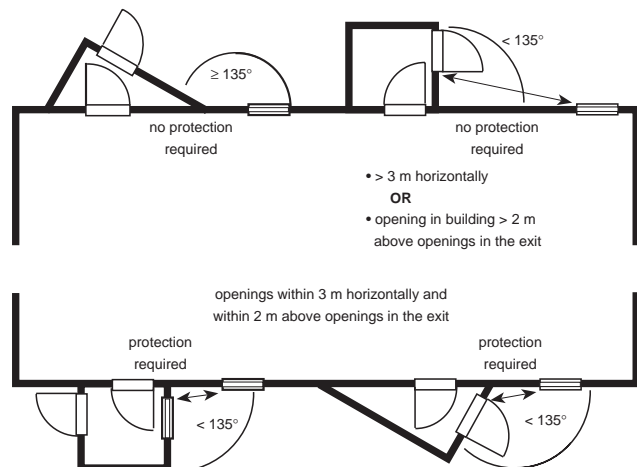


Figure A-9.9.4.5.
Protection of openings in exterior walls of exits

A-9.9.8.4.(1) Independent and Remote Exits. Subsection 9.9.8. requires that some floor

areas have more than one exit. The intent is to ensure that, if one exit is made untenable or inaccessible by a fire, one or more other exits will be available to permit the occupants to escape. However, if the exits are close together, all exits might be made untenable or inaccessible by the same fire. Sentence 9.9.8.4.(1) therefore requires at least two of the exits to be located remotely from each other. This is not a problem in many buildings falling under Part 9. For instance, apartment buildings usually have exits located at either end of long corridors. However, in other types of buildings (e.g. dormitory and college residence buildings) this is often difficult to accomplish and problems arise in interpreting the meaning of the word "remote." Article 3.4.2.3. is more specific, generally requiring the distance between exits to be one half the diagonal dimension of the floor area or at least 9 m. However, it is felt that such criteria would be too restrictive to impose on the design of all the smaller buildings which come under Part 9. Nevertheless, the exits should be placed as far apart as possible and the Part 3 criteria should be used as a target. Designs in which the exits are so close together that they will obviously both become contaminated in the event of a fire are not acceptable.

A-9.10.1.4.(1) Commercial Cooking Equipment. Part 6 refers to NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations," which in turn references "Commercial Cooking Equipment." However, the deciding factor as to whether or not NFPA 96 applies is the potential for production of grease-laden vapours and smoke, rather than the type of equipment used. While NFPA 96 does not apply to domestic equipment for normal residential family use, it should apply to domestic equipment used in commercial, industrial, institutional and similar cooking applications where the potential for the production of smoke and grease-laden vapours exceeds that for normal residential family use.

A-9.10.3.1.

A-9.10.3.1. **r4** Fire and Sound Resistance of Building Assemblies. The following tables may be used to select building assemblies for compliance with Article 9.10.3.1. and Subsection 9.11.2.

Tables A-9.10.3.1.A. and A-9.10.3.1.B. have been developed from information gathered from tests. While a large number of the assemblies listed were tested, the fire-resistance and acoustical ratings for others were assigned on the basis of extrapolation of information from tests of similar assemblies. Where there was enough confidence relative to the fire performance of an assembly, the fire-resistance ratings were assigned relative to the commonly used minimum ratings of 30 min, 45 min and 1 h, including a designation of "< 30 min" for assemblies that are known not to meet the minimum 30-minute rating. Where there was not enough comparative information on an assembly to assign to it a rating with confidence, its value in the tables has been left blank (hyphen), indicating that its rating remains to be assessed through another means. Future work is planned to develop much of this additional information.

These tables are provided only for the convenience of Code users and do not limit the number of assemblies permitted to those in the tables. Assemblies not listed or not given a rating in these tables are equally acceptable provided their fire and sound resistance can be demonstrated to meet the above-noted requirements either on the basis of tests referred to in Article 9.10.3.1. and Subsection 9.11.1. or by using the data in Appendix D, Fire-Performance Ratings. It should be noted, however, that Tables A-9.10.3.1.A. and A-9.10.3.1.B. are not based on the same assumptions as those used in Appendix D. Assemblies in Tables A-9.10.3.1.A. and A-9.10.3.1.B. are described through their generic descriptions and variants and include details given in the notes to the tables. Assumptions for Appendix D include different construction details that must be followed rigorously for the calculated ratings to be expected. These are two different methods of choosing assemblies that meet required fire ratings.

Table A-9.10.3.1.A.
Fire and Sound Resistance of Walls

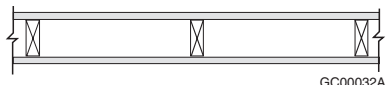
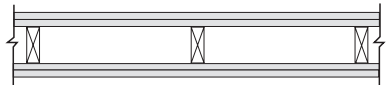
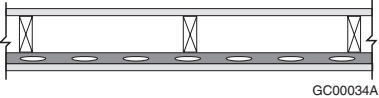
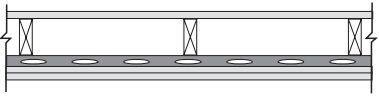
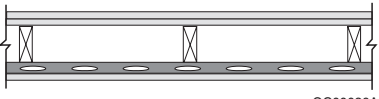
Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
• Wood Studs	W1	<ul style="list-style-type: none"> • 38 mm x 89 mm studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 1 layer of gypsum board on each side 	 GC00032A		
• Single Row	W1a	W1 with <ul style="list-style-type: none"> • 89 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	1 h	1 h	36
• Loadbearing or Non-Loadbearing	W1b	W1 with <ul style="list-style-type: none"> • 89 mm thick absorptive material⁽⁴⁾ • 12.7 mm Type X gypsum board⁽⁵⁾ 	45 min [1 h ⁽⁶⁾]	45 min [1 h ⁽⁶⁾]	34
	W1c	W1 with <ul style="list-style-type: none"> • 89 mm thick absorptive material⁽⁴⁾ • 12.7 mm regular gypsum board⁽⁵⁾⁽⁷⁾ 	30 min	30 min [45 min ⁽⁶⁾]	32
	W1d	W1 with <ul style="list-style-type: none"> • no absorptive material • 15.9 mm Type X gypsum board⁽⁵⁾ 	1 h	1 h	32
	W1e	W1 with <ul style="list-style-type: none"> • no absorptive material • 12.7 mm Type X gypsum board⁽⁵⁾ 	45 min	45 min	32
	W2	<ul style="list-style-type: none"> • 38 mm x 89 mm studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 2 layers of gypsum board on each side 	 GC00033A		
	W2a	W2 with <ul style="list-style-type: none"> • 89 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	1.5 h	2 h	38
	W2b	W2 with <ul style="list-style-type: none"> • 89 mm thick absorptive material⁽⁴⁾ • 12.7 mm Type X gypsum board⁽⁵⁾ 	1 h	1.5 h	38
	W2c	W2 with <ul style="list-style-type: none"> • 89 mm thick absorptive material⁽⁴⁾ • 12.7 mm regular gypsum board⁽⁵⁾ 	45 min	1 h	36

Table A-9.10.3.1.A. (Continued)

Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	W2d	W2 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	1.5 h	2 h	36
	W2e	W2 with • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	1 h	1.5 h	35
	W2f	W2 with • no absorptive material • 12.7 mm regular gypsum board ⁽⁵⁾	45 min	1 h	34
	W3	• 38 mm x 89 mm studs spaced 400 mm or 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • resilient metal channels on one side spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on each side	 GC00034A		
	W3a	W3 with • studs spaced 400 mm o.c. • 15.9 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	45
	W3b	W3 with • studs spaced 600 mm o.c. • 15.9 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	48
	W3c	W3 with • studs spaced 400 mm or 600 mm o.c. • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	45 min	43
	W4	• 38 mm x 89 mm studs spaced 400 mm or 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • resilient metal channels on one side spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on resilient metal channel side • 1 layer of gypsum board on other side	 GC00035A		
	W4a	W4 with • studs spaced 400 mm o.c. • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h [1.5 h ⁽⁶⁾]	51
	W4b	W4 with • studs spaced 600 mm o.c. • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h [1.5 h ⁽⁶⁾]	54
	W4c	W4 with • studs spaced 400 mm o.c. • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min [1 h ⁽⁶⁾]	1 h	49
	W4d	W4 with • studs spaced 600 mm o.c. • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min [1 h ⁽⁶⁾]	1 h	53
	W5	• 38 mm x 89 mm studs spaced 400 mm or 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • resilient metal channels on one side spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on resilient metal channel side • 2 layers of gypsum board on other side	 GC00036A		
	W5a	W5 with • studs spaced 400 mm o.c. • 15.9 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	51
	W5b	W5 with • studs spaced 600 mm o.c. • 15.9 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	54
	W5c	W5 with • studs spaced 400 mm o.c. • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	49
	W5d	W5 with • studs spaced 600 mm o.c. • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	53

A-9.10.3.1.

Table A-9.10.3.1.A. (Continued)

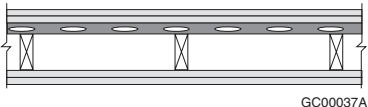
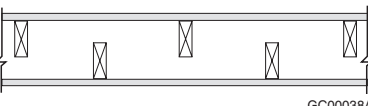
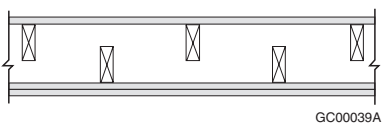
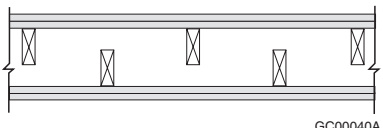
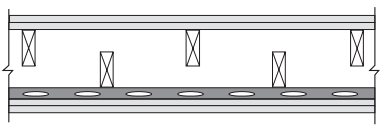
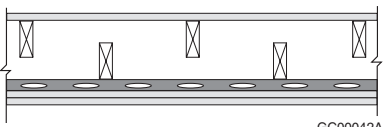
Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	W6	<ul style="list-style-type: none"> • 38 mm x 89 mm studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • resilient metal channels on one side • 2 layers of gypsum board on each side 			
	W6a	<ul style="list-style-type: none"> • W6 with • studs spaced 400 mm or 600 mm o.c. • 89 mm thick absorptive material⁽⁴⁾ • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board⁽⁵⁾ 	1.5 h	2 h	55
	W6b	<ul style="list-style-type: none"> • W6 with • studs spaced 400 mm or 600 mm o.c. • 89 mm thick absorptive material⁽⁴⁾ • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board⁽⁵⁾ 	1.5 h	2 h	58
	W6c	<ul style="list-style-type: none"> • W6 with • studs spaced 400 mm o.c. • 89 mm thick absorptive material⁽⁴⁾ • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board⁽⁵⁾ 	1 h	1.5 h	53
	W6d	<ul style="list-style-type: none"> • W6 with • studs spaced 400 mm o.c. • 89 mm thick absorptive material⁽⁴⁾ • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	1.5 h	55
	W6e	<ul style="list-style-type: none"> • W6 with • studs spaced 600 mm o.c. • 89 mm thick absorptive material⁽⁴⁾ • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board⁽⁵⁾ 	1 h	1.5 h	55
	W6f	<ul style="list-style-type: none"> • W6 with • studs spaced 600 mm o.c. • 89 mm thick absorptive material⁽⁴⁾ • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board⁽⁵⁾ 	1 h	1.5 h	58
	W6g	<ul style="list-style-type: none"> • W6 with • studs spaced 400 mm or 600 mm o.c. • 89 mm thick absorptive material⁽⁴⁾ • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board⁽⁵⁾ 	45 min	1 h	50
	W6h	<ul style="list-style-type: none"> • W6 with • studs spaced 400 mm or 600 mm o.c. • 89 mm thick absorptive material⁽⁴⁾ • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board⁽⁵⁾ 	45 min	1 h	52
	W6i	<ul style="list-style-type: none"> • W6 with • studs spaced 400 mm or 600 mm o.c. • no absorptive material • resilient metal channels spaced 400 mm or 600 mm o.c. • 15.9 mm Type X gypsum board⁽⁵⁾ 	1.5 h	2 h	47
	W6j	<ul style="list-style-type: none"> • W6 with • studs spaced 400 mm or 600 mm o.c. • no absorptive material • resilient metal channels spaced 400 mm or 600 mm o.c. • 12.7 mm Type X gypsum board⁽⁵⁾ 	1 h	1.5 h	46
<ul style="list-style-type: none"> • Wood Studs • Two Rows Staggered on 38 mm x 140 mm Plate • Loadbearing or Non-Loadbearing 	W7	<ul style="list-style-type: none"> • two rows 38 mm x 89 mm studs each spaced 400 mm or 600 mm o.c. staggered on common 38 mm x 140 mm plate • 89 mm thick absorptive material on one side or 65 mm thick on each side⁽⁴⁾ • 1 layer of gypsum board on each side 			
	W7a	<ul style="list-style-type: none"> • W7 with • 15.9 mm Type X gypsum board⁽⁵⁾ 	1 h	1 h	47
	W7b	<ul style="list-style-type: none"> • W7 with • 12.7 mm Type X gypsum board⁽⁵⁾ 	45 min [1 h ⁽⁶⁾]	45 min [1 h ⁽⁶⁾]	45

Table A-9.10.3.1.A. (Continued)

Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	W7c	W7 with • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	30 min	30 min [45 min ⁽⁶⁾]	42
	W8	• Two rows 38 mm x 89 mm studs each spaced 400 mm or 600 mm o.c. staggered on common 38 mm x 140 mm plate • 89 mm thick absorptive material on one side or 65 mm thick on each side ⁽⁴⁾ • 2 layers of gypsum board on one side • 1 layer of gypsum board on other side			
	W8a	W8 with • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1.5 h	52
	W8b	W8 with • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	50
	W9	• two rows 38 mm x 89 mm studs each spaced 400 mm or 600 mm o.c. staggered on common 38 mm x 140 mm plate • with or without absorptive material • 2 layers of gypsum board on each side			
	W9a	W9 with • 89 mm thick absorptive material on one side or 65 mm thick on each side ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	1.5 h	2 h	56
	W9b	W9 with • 89 mm thick absorptive material on one side or 65 mm thick on each side ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	1 h	1.5 h	55
	W9c	W9 with • 89 mm thick absorptive material on one side or 65 mm thick on each side ⁽⁴⁾ • 12.7 mm regular gypsum board ⁽⁵⁾	45 min	1 h	53
	W9d	W9 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	1.5 h	2 h	48
	W10	• two rows 38 mm x 89 mm studs each spaced 400 mm or 600 mm o.c. staggered on common 38 mm x 140 mm plate • with or without absorptive material • resilient metal channels on one side spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on each side			
	W10a	W10 with • 89 mm thick absorptive material on one side or 65 mm thick on each side ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	1.5 h	2 h	62
	W10b	W10 with • 89 mm thick absorptive material on one side or 65 mm thick on each side ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	1 h	1.5 h	60
	W10c	W10 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	1.5 h	2 h	50
	W10d	W10 with • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	1 h	1.5 h	48
	W11	• two rows 38 mm x 89 mm studs each spaced 400 mm or 600 mm o.c. staggered on common 38 mm x 140 mm plate • 89 mm thick absorptive material on one side or 65 mm thick on each side ⁽⁴⁾ • resilient metal channels on one side spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on resilient channel side • 1 layer of gypsum board on other side			
	W11a	W11 with • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h	56

A-9.10.3.1.

Table A-9.10.3.1.A. (Continued)

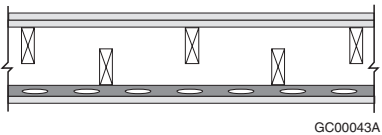
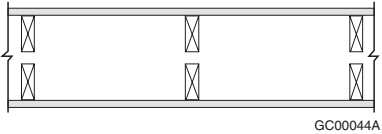
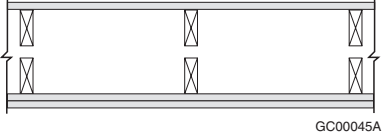
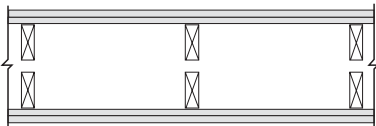
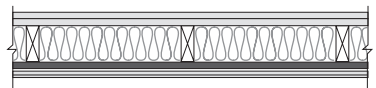

Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	W11b	W11 with • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min [1 h ⁽⁶⁾]	1 h	54
	W12	<ul style="list-style-type: none"> • two rows 38 mm x 89 mm studs each spaced 400 mm or 600 mm o.c. staggered on common 38 mm x 140 mm plate • 89 mm thick absorptive material on one side or 65 mm thick on each side⁽⁴⁾ • resilient metal channels on one side spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on resilient metal channel side • 2 layers of gypsum board on other side 	GC00043A		
	W12a	W12 with • 15.9 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	56
	W12b	W12 with • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	54
<ul style="list-style-type: none"> • Wood Studs • Two Rows on Separate Plates • Loadbearing or Non-Loadbearing 	W13	<ul style="list-style-type: none"> • two rows 38 mm x 89 mm studs, each spaced 400 mm or 600 mm o.c. on separate 38 mm x 89 mm plates set 25 mm apart • with or without absorptive material • 1 layer of gypsum board on each side 	GC00044A		
	W13a	W13 with • 89 mm thick absorptive material on each side ⁽⁴⁾⁽⁸⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h	57
	W13b	W13 with • 89 mm thick absorptive material on each side ⁽⁴⁾⁽⁸⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min [1 h ⁽⁶⁾]	45 min [1 h ⁽⁶⁾]	57
	W13c	W13 with • 89 mm thick absorptive material on one side only ⁽⁴⁾⁽⁸⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h	54
	W13d	W13 with • 89 mm thick absorptive material on one side only ⁽⁴⁾⁽⁸⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	45 min	53
	W13e	W13 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h	45
	W13f	W13 with • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	45 min	45
	W14	<ul style="list-style-type: none"> • two rows 38 mm x 89 mm studs, each spaced 400 mm or 600 mm o.c. on separate 38 mm x 89 mm plates set 25 mm apart • with or without absorptive material • 2 layers of gypsum board on one side • 1 layer of gypsum board on other side 	GC00045A		
	W14a	W14 with • 89 mm thick absorptive material on each side ⁽⁴⁾⁽⁸⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h [1.5 h ⁽⁶⁾]	61
	W14b	W14 with • 89 mm thick absorptive material on each side ⁽⁴⁾⁽⁸⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	61
	W14c	W14 with • 89 mm thick absorptive material on one side only ⁽⁴⁾⁽⁸⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h	57
	W14d	W14 with • 89 mm thick absorptive material on one side only ⁽⁴⁾⁽⁸⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	57
	W14e	W14 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	1 h	1 h	51
	W14f	W14 with • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	45 min	1 h	51

Table A-9.10.3.1.A. (Continued)

Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	W15	<ul style="list-style-type: none">• two rows 38 mm x 89 mm studs, each spaced 400 mm or 600 mm o.c. on separate 38 mm x 89 mm plates set 25 mm apart• with or without absorptive material• 2 layers of gypsum board on each side	 GC00046A		
	W15a	W15 with <ul style="list-style-type: none">• 89 mm thick absorptive material on each side⁽⁴⁾⁽⁸⁾• 15.9 mm Type X gypsum board⁽⁵⁾	1.5 h	2 h	66
	W15b	W15 with <ul style="list-style-type: none">• 89 mm thick absorptive material on each side⁽⁴⁾⁽⁸⁾• 12.7 mm Type X gypsum board⁽⁵⁾	1 h	1.5 h	65
	W15c	W15 with <ul style="list-style-type: none">• 89 mm thick absorptive material on each side⁽⁴⁾⁽⁸⁾• 12.7 mm regular gypsum board⁽⁵⁾	45 min	1 h	61
	W15d	W15 with <ul style="list-style-type: none">• 89 mm thick absorptive material on one side only⁽⁴⁾⁽⁸⁾• 15.9 mm Type X gypsum board⁽⁵⁾	1.5 h	2 h	62
	W15e	W15 with <ul style="list-style-type: none">• 89 mm thick absorptive material on one side only⁽⁴⁾⁽⁸⁾• 12.7 mm Type X gypsum board⁽⁵⁾	1 h	1.5 h	60
	W15f	W15 with <ul style="list-style-type: none">• 89 mm thick absorptive material on one side only⁽⁴⁾⁽⁸⁾• 12.7 mm regular gypsum board⁽⁵⁾	45 min	1 h	57
	W15g	W15 with <ul style="list-style-type: none">• no absorptive material• 15.9 mm Type X gypsum board⁽⁵⁾	1.5 h	2 h	56
	W15h	W15 with <ul style="list-style-type: none">• no absorptive material• 12.7 mm Type X gypsum board⁽⁵⁾	1 h	1.5 h	55
	W15i	W15 with <ul style="list-style-type: none">• no absorptive material• 12.7 mm regular gypsum board⁽⁵⁾	45 min	1 h	51
<ul style="list-style-type: none">• Exterior Wood Studs• Single Row	EW1	<ul style="list-style-type: none">• 38 mm x 89 mm studs spaced 400 mm or 600 mm o.c.• 89 mm thick absorptive material⁽⁶⁾• 1 or 2 layers of gypsum board on inside• exterior sheathing and siding	 GC00011A		
<ul style="list-style-type: none">• Loadbearing and Non-Loadbearing	EW1a	EW1 with <ul style="list-style-type: none">• 15.9 mm Type X gypsum board⁽⁵⁾⁽⁹⁾	1 h	1 h	N/A
	EW1b	EW1 with <ul style="list-style-type: none">• 12.7 mm Type X gypsum board⁽⁵⁾⁽⁹⁾	45 min	45 min	N/A
	EW1c	EW1 with <ul style="list-style-type: none">• 2 layers of 12.7 mm regular gypsum board⁽⁵⁾⁽⁹⁾	45 min	45 min	N/A
<ul style="list-style-type: none">• Non-Loadbearing Steel Studs	S1	<ul style="list-style-type: none">• 31 mm x 64 mm steel studs spaced 400 mm or 600 mm o.c.• with or without absorptive material• 1 layer of gypsum board on each side	 GC00018A		
<ul style="list-style-type: none">• 0.46 mm (25 Gauge)	S1a	S1 with <ul style="list-style-type: none">• studs spaced 600 mm o.c.• 65 mm thick absorptive material⁽⁴⁾• 15.9 mm Type X gypsum board⁽⁵⁾	–	45 min [1 h ⁽⁶⁾]	43
	S1b	S1 with <ul style="list-style-type: none">• studs spaced 400 mm o.c.• 65 mm thick absorptive material⁽⁴⁾• 15.9 mm Type X gypsum board⁽⁵⁾	–	45 min [1 h ⁽⁶⁾]	39
	S1c	S1 with <ul style="list-style-type: none">• studs spaced 400 mm or 600 mm o.c.• no absorptive material• 15.9 mm Type X gypsum board⁽⁵⁾	–	45 min	35

A-9.10.3.1.

Table A-9.10.3.1.A. (Continued)

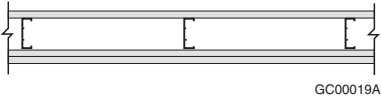
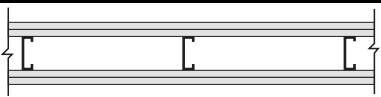
Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	S2	<ul style="list-style-type: none"> • 31 mm x 64 mm steel studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 1 layer of gypsum board on one side • 2 layers of gypsum board on other side 			
	S2a	<ul style="list-style-type: none"> • S2 with • studs spaced 600 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	1 h	50
	S2b	<ul style="list-style-type: none"> • S2 with • studs spaced 400 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	1 h	44
	S2c	<ul style="list-style-type: none"> • S2 with • studs spaced 600 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	1 h	50
	S2d	<ul style="list-style-type: none"> • S2 with • studs spaced 400 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	1 h	42
	S2e	<ul style="list-style-type: none"> • S2 with • studs spaced 600 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	1 h	41
	S2f	<ul style="list-style-type: none"> • S2 with • studs spaced 400 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	1 h	37
	S2g	<ul style="list-style-type: none"> • S2 with • studs spaced 600 mm o.c. • no absorptive material • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	1 h	40
	S2h	<ul style="list-style-type: none"> • S2 with • studs spaced 400 mm o.c. • no absorptive material • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	1 h	35
	S3	<ul style="list-style-type: none"> • 31 mm x 64 mm steel studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 2 layers of gypsum board on each side 			
	S3a	<ul style="list-style-type: none"> • S3 with • studs spaced 600 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	2 h	54
	S3b	<ul style="list-style-type: none"> • S3 with • studs spaced 400 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	2 h	51
	S3c	<ul style="list-style-type: none"> • S3 with • studs spaced 600 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	1.5 h	53
	S3d	<ul style="list-style-type: none"> • S3 with • studs spaced 400 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	1.5 h	47
	S3e	<ul style="list-style-type: none"> • S3 with • studs spaced 600 mm o.c. • 65 mm thick absorptive material⁽⁴⁾ • 12.7 mm regular gypsum board⁽⁵⁾ 	–	1 h	49

Table A-9.10.3.1.A. (Continued)

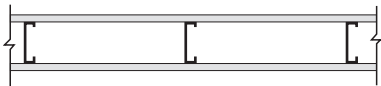
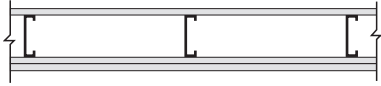
Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	S3f	S3 with • studs spaced 400 mm o.c. • 65 mm thick absorptive material ⁽⁴⁾ • 12.7 mm regular gypsum board ⁽⁵⁾	–	1 h	41
	S3g	S3 with • studs spaced 600 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	2 h	45
	S3h	S3 with • studs spaced 400 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	2 h	42
	S3i	S3 with • studs spaced 600 mm o.c. • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1.5 h	44
	S3j	S3 with • studs spaced 400 mm o.c. • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1.5 h	39
	S3k	S3 with • studs spaced 600 mm o.c. • no absorptive material • 12.7 mm regular gypsum board ⁽⁵⁾	–	1 h	40
	S3l	S3 with • studs spaced 400 mm o.c. • no absorptive material • 12.7 mm regular gypsum board ⁽⁵⁾	–	1 h	37
	S4	• 31 mm x 92 mm steel studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 1 layer of gypsum board on each side	 GC00021A		
	S4a	S4 with • studs spaced 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	45 min [1 h ⁽⁶⁾]	48
	S4b	S4 with • studs spaced 400 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	45 min [1 h ⁽⁶⁾]	47
	S4c	S4 with • studs spaced 600 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	45 min	38
	S4d	S4 with • studs spaced 400 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	45 min	38
	S5	• 31 mm x 92 mm steel studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 1 layer of gypsum board on one side • 2 layers of gypsum board on other side	 GC00022A		
	S5a	S5 with • studs spaced 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	1 h [1.5 h ⁽⁶⁾]	53
	S5b	S5 with • studs spaced 400 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	1 h [1.5 h ⁽⁶⁾]	52

Table A-9.10.3.1.A. (Continued)

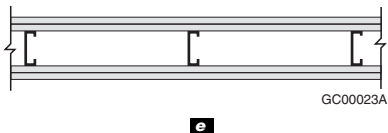
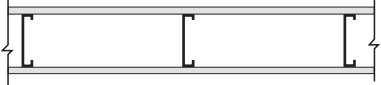
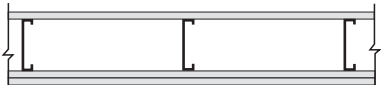
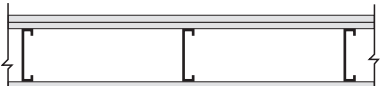
Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	S5c	S5 with • studs spaced 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1 h [1.5 h ⁽⁶⁾]	51
	S5d	S5 with • studs spaced 400 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1 h [1.5 h ⁽⁶⁾]	50
	S5e	S5 with • studs spaced 600 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	1 h	43
	S5f	S5 with • studs spaced 400 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	1 h	42
	S5g	S5 with • studs spaced 600 mm o.c. • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1 h	41
	S5h	S5 with • studs spaced 400 mm o.c. • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1 h	40
	S6	• 31 mm x 92 mm steel studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 2 layers of gypsum board on each side			
	S6a	S6 with • studs spaced 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	2 h	56
	S6b	S6 with • studs spaced 400 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	2 h	55
	S6c	S6 with • studs spaced 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1.5 h	55
	S6d	S6 with • studs spaced 400 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1.5 h	54
	S6e	S6 with • studs spaced 600 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 12.7 mm regular gypsum board ⁽⁵⁾	–	1 h	50
	S6f	S6 with • studs spaced 400 mm o.c. • 89 mm thick absorptive material ⁽⁴⁾ • 12.7 mm regular gypsum board ⁽⁵⁾	–	1 h	48
	S6g	S6 with • studs spaced 600 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	2 h	47
	S6h	S6 with • studs spaced 400 mm o.c. • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	2 h	45

Table A-9.10.3.1.A. (Continued)

Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	S6i	S6 with • studs spaced 600 mm o.c. • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1.5 h	45
	S6j	S6 with • studs spaced 400 mm o.c. • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1.5 h	44
	S6k	S6 with • studs spaced 600 mm o.c. • no absorptive material • 12.7 mm regular gypsum board ⁽⁵⁾	–	1 h	41
	S6l	S6 with • studs spaced 400 mm o.c. • no absorptive material • 12.7 mm regular gypsum board ⁽⁵⁾	–	1 h	39
	S7	• 31 mm x 152 mm steel studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 1 layer of gypsum board on each side	 GC00024A		
	S7a	S7 with • 150 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	45 min [1 h ⁽⁶⁾]	51
	S7b	S7 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	45 min	41
	S8	• 31 mm x 152 mm steel studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 1 layer of gypsum board on one side • 2 layers of gypsum board on other side	 GC00025A		
	S8a	S8 with • 150 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	1 h [1.5 h ⁽⁶⁾]	55
	S8b	S8 with • 150 mm thick absorptive material ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1 h [1.5 h ⁽⁶⁾]	54
	S8c	S8 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	1 h	45
	S8d	S8 with • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1 h	44
	S9	• 31 mm x 152 mm steel studs spaced 400 mm or 600 mm o.c. • with or without absorptive material • 2 layers of gypsum board on each side	 GC00026A		
	S9a	S9 with • 150 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	2 h	59
	S9b	S9 with • 150 mm thick absorptive material ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	–	1.5 h	57
	S9c	S9 with • 150 mm thick absorptive material ⁽⁴⁾ • 12.7 mm regular gypsum board ⁽⁵⁾	–	1 h	53
	S9d	S9 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	2 h	49

A-9.10.3.1.

Table A-9.10.3.1.A. (Continued)

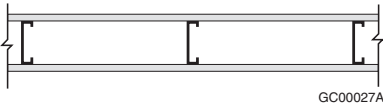
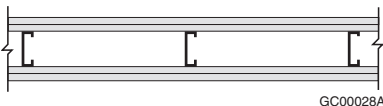
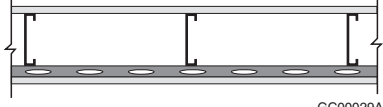
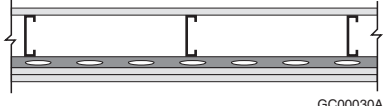
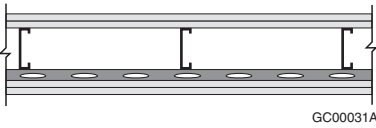
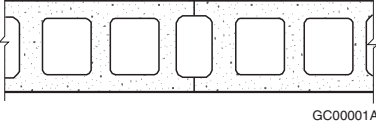
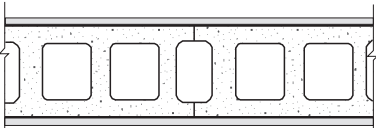
Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
<ul style="list-style-type: none"> • Loadbearing Steel Studs • 0.91 mm or 1.22 mm Thickness (18 or 20 Gauge) 	S9e	<ul style="list-style-type: none"> • S9 with • no absorptive material • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	1.5 h	47
	S9f	<ul style="list-style-type: none"> • S9 with • no absorptive material • 12.7 mm regular gypsum board⁽⁵⁾ 	–	1 h	43
	S10	<ul style="list-style-type: none"> • 92 mm loadbearing steel studs spaced 400 mm o.c. • with or without absorptive material • 1 layer gypsum board on each side 			
	S10a	<ul style="list-style-type: none"> • S10 with • 89 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	–	34
	S10b	<ul style="list-style-type: none"> • S10 with • no absorptive material • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	–	32
	S11	<ul style="list-style-type: none"> • 92 mm loadbearing steel studs spaced 400 mm o.c. • with or without absorptive material • 2 layers gypsum board on each side 			
	S11a	<ul style="list-style-type: none"> • S11 with • 89 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	–	38
	S11b	<ul style="list-style-type: none"> • S11 with • 89 mm thick absorptive material⁽⁴⁾ • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	–	38
	S11c	<ul style="list-style-type: none"> • S11 with • 89 mm thick absorptive material⁽⁴⁾ • 12.7 mm regular gypsum board⁽⁵⁾ 	–	–	36
	S11d	<ul style="list-style-type: none"> • S11 with • no absorptive material • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	–	36
	S11e	<ul style="list-style-type: none"> • S11 with • no absorptive material • 12.7 mm Type X gypsum board⁽⁵⁾ 	–	–	35
	S11f	<ul style="list-style-type: none"> • S11 with • no absorptive material • 12.7 mm regular gypsum board⁽⁵⁾ 	–	–	34
	S12	<ul style="list-style-type: none"> • 92 mm loadbearing steel studs spaced 400 mm o.c. • with or without absorptive material • resilient metal channels on one side spaced at 600 mm o.c. • 1 layer gypsum board on each side 			
	S12a	<ul style="list-style-type: none"> • S12 with • 89 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	–	49
	S12b	<ul style="list-style-type: none"> • S12 with • no absorptive material • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	–	39
	S13	<ul style="list-style-type: none"> • 92 mm loadbearing steel studs spaced 400 mm o.c. • with or without absorptive material • resilient metal channels on one side spaced at 600 mm o.c. • 2 layers gypsum board on resilient channel side • 1 layer gypsum board on other side 			
	S13a	<ul style="list-style-type: none"> • S13 with • 89 mm thick absorptive material⁽⁴⁾ • 15.9 mm Type X gypsum board⁽⁵⁾ 	–	–	54

Table A-9.10.3.1.A. (Continued)

Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	S13b	S13 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	–	44
	S14	• 92 mm loadbearing steel studs spaced 400 mm o.c. • with or without absorptive material • resilient metal channels on one side spaced at 600 mm o.c. • 2 layers gypsum board on each side	 GC00031A		
	S14a	S14 with • 89 mm thick absorptive material ⁽⁴⁾ • 15.9 mm Type X gypsum board ⁽⁵⁾	–	–	61
	S14b	S14 with • 89 mm thick absorptive material ⁽⁴⁾ • 12.7 mm Type X gypsum board ⁽⁵⁾	–	–	59
	S14c	S14 with • 89 mm thick absorptive material ⁽⁴⁾ • 12.7 mm regular gypsum board ⁽⁵⁾	–	–	54
	S14d	S14 with • no absorptive material • 15.9 mm Type X gypsum board ⁽⁵⁾	–	–	51
	S14e	S14 with • no absorptive material • 12.7 mm Type X gypsum board ⁽⁵⁾	–	–	49
	S14f	S14 with • no absorptive material • 12.7 mm regular gypsum board ⁽⁵⁾	–	–	45
• Hollow Concrete Block (Normal Weight Aggregate)	B1	• 140 mm or 190 mm concrete block	 GC00001A		
	B1a	• 140 mm bare concrete block ⁽³⁾	1 h	1 h	48
	B1b	• 190 mm bare concrete block ⁽³⁾	1.5 h	1.5 h	50
	B2	• 140 mm or 190 mm concrete block • no absorptive material • 1 layer gypsum-sand plaster or gypsum board on each side	 GC00002A		
	B2a	B2 with • 140 mm concrete block • 12.7 mm gypsum-sand plaster	2 h	2 h	50
	B2b	B2 with • 140 mm concrete block • 12.7 mm Type X gypsum board or 15.9 mm Type X gypsum board ⁽⁵⁾	2 h	2 h	47
	B2c	B2 with • 140 mm concrete block • 12.7 mm regular gypsum board ⁽⁵⁾	1.5 h	1.5 h	46
	B2d	B2 with • 190 mm concrete block • 12.7 mm gypsum-sand plaster	2.5 h	2.5 h	51
	B2e	B2 with • 190 mm concrete block • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	50
	B2f	B2 with • 190 mm concrete block • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	49

A-9.10.3.1.

Table A-9.10.3.1.A. (Continued)

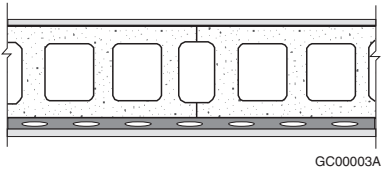
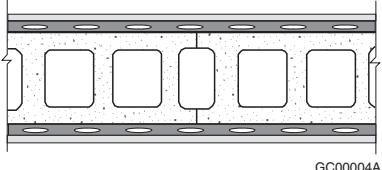
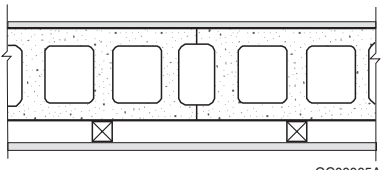
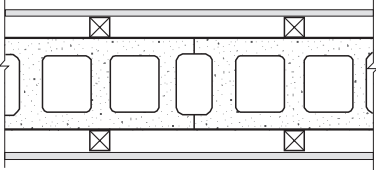


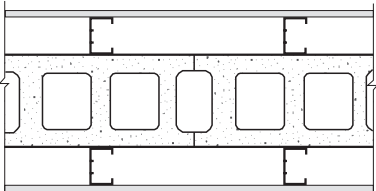
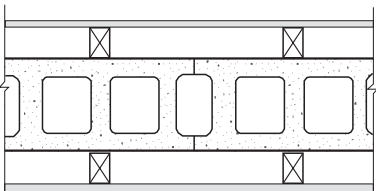
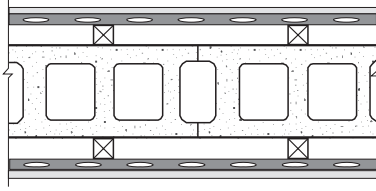
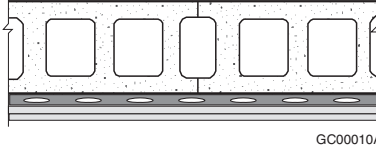
Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	B2g	B2 with • 190 mm concrete block • 12.7 mm regular gypsum board ⁽⁵⁾	2 h	2 h	48
	B3	• 140 mm or 190 mm concrete block • resilient metal channels on one side spaced at 400 mm or 600 mm o.c. • absorptive material filling resilient metal channel space ⁽⁴⁾ • 1 layer gypsum board on each side			
	B3a	B3 with • 140 mm concrete block • 12.7 mm Type X gypsum board or 15.9 mm Type X gypsum board ⁽⁵⁾	2 h	2 h	51
	B3b	B3 with • 140 mm concrete block • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	1.5 h	1.5 h	48
	B3c	B3 with • 190 mm concrete block • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	54
	B3d	B3 with • 190 mm concrete block • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	53
	B3e	B3 with • 190 mm concrete block • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	2 h	2 h	51
	B4	• 140 mm or 190 mm concrete block • resilient metal channels on each side spaced at 400 mm or 600 mm o.c. • with or without absorptive material • 1 layer gypsum board on each side			
	B4a	B4 with • 140 mm concrete block • 12.7 mm Type X gypsum board ⁽⁵⁾ , or 15.9 mm Type X gypsum board ⁽⁵⁾	2 h	2 h	47
	B4b	B4 with • 140 mm concrete block • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	1.5 h	1.5 h	42
	B4c	B4 with • 190 mm concrete block • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	50
	B4d	B4 with • 190 mm concrete block • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	49
	B4e	B4 with • 190 mm concrete block • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	2 h	2 h	45
	B5	• 190 mm concrete block • 38 mm x 38 mm horizontal or vertical wood strapping on one side spaced at 600 mm o.c. • with or without absorptive material • 1 layer gypsum board on each side			
	B5a	B5 with • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	54
	B5b	B5 with • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	53

Table A-9.10.3.1.A. (Continued)

Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	B5c	B5 with • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	2 h	2 h	51
	B6	• 140 mm or 190 mm concrete block • 38 mm x 38 mm horizontal or vertical wood strapping on each side spaced at 600 mm o.c. • absorptive material filling strapping space on each side ⁽⁴⁾ • 1 layer gypsum board on each side	 GC00006A		
	B6a	B6 with • 140 mm concrete block • 12.7 mm Type X gypsum board or 15.9 mm Type X gypsum board ⁽⁵⁾	2 h	2 h	57
	B6b	B6 with • 140 mm concrete block • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	1.5 h	1.5 h	56 
	B6c	B6 with • 190 mm concrete block • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	60
	B6d	B6 with • 190 mm concrete block • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	59
	B6e	B6 with • 190 mm concrete block • 12.7 regular gypsum board ⁽⁵⁾⁽⁷⁾	2 h	2 h	57 
	B7	• 190 mm concrete block • 65 mm steel studs each side spaced at 600 mm o.c. • absorptive material filling stud space on each side ⁽⁴⁾ • 1 layer gypsum board on each side	 GC00007A		
	B7a	B7 with • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	71
	B7b	B7 with • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	70
	B7c	B7 with • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	2 h	2 h	69
	B8	• 190 mm concrete block • 38 mm x 64 mm wood studs on each side spaced at 600 mm o.c. • absorptive material filling stud space on each side ⁽⁴⁾ • 1 layer gypsum board on each side	 GC00008A		
	B8a	B8 with • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	71
	B8b	B8 with • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	70
	B8c	B8 with • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	2 h	2 h	69

A-9.10.3.1.

Table A-9.10.3.1.A. (Continued)

Type of Wall	Wall Number	Description	Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ⁽¹⁾⁽²⁾⁽³⁾
			Loadbearing	Non-Loadbearing	
	B9	<ul style="list-style-type: none"> • 190 mm concrete block • 50 mm metal Z-bars on each side spaced at 600 mm o.c. (or 38 mm x 38 mm horizontal or vertical wood strapping plus resilient metal channels) • absorptive material filling Z-bar space on each side⁽⁴⁾ • 1 layer gypsum board on each side 	 GC00009A		
	B9a	B9 with • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	65
	B9b	B9 with • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	64
	B9c	B9 with • 12.7 mm regular gypsum board ⁽⁵⁾⁽⁷⁾	2 h	2 h	63
	B10	<ul style="list-style-type: none"> • 190 mm concrete block • resilient metal channels on one side spaced at 600 mm o.c. • absorptive material filling resilient metal channel space⁽⁴⁾ • 2 layers gypsum board on one side only 	 GC00010A		
	B10a	B10 with • 15.9 mm Type X gypsum board ⁽⁵⁾	3 h	3 h	56
	B10b	B10 with • 12.7 mm Type X gypsum board ⁽⁵⁾	2.5 h	2.5 h	55
	B10c	B10 with • 12.7 mm regular gypsum board ⁽⁵⁾	2 h	2 h	54


Notes to Table A-9.10.3.1.A.:

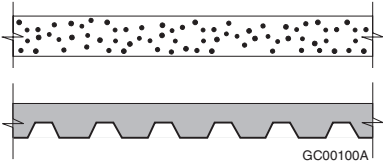
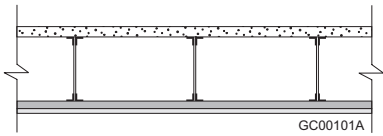
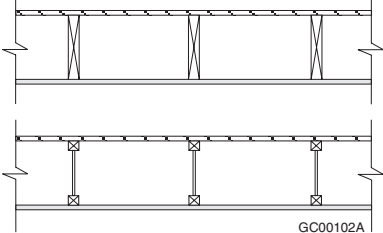
- (1) Fire-resistance and STC ratings of wood frame construction were evaluated only for 38 mm x 89 mm constructions. The fire-resistance ratings and STC ratings provided for 38 mm x 89 mm wood frame construction, however, may be applied to 38 mm x 140 mm wood frame construction; in some cases the ratings may be conservative. Where 38 mm x 140 mm framing is used and absorptive material is called for, the absorptive material must be 140 mm thick.
- (2) Sound ratings listed are based on the most reliable laboratory test data available for specimens conforming to installation details required by CSA A82.31-M, "Gypsum Board Application." Results of specific tests may differ slightly because of measurement precision and minor variations in construction details. These results should only be used where the actual construction details, including spacing of fasteners and supporting framing, correspond exactly to the details of the test specimens on which the ratings are based. Assemblies with sound transmission class ratings of 50 or more require acoustical sealant applied around electrical boxes and other openings, and at the junction of intersecting walls and floors, except intersection of walls constructed of concrete or solid brick.
- (3) Sound ratings are only valid where there are no discernible cracks or voids in the visible surfaces. For concrete blocks, surfaces must be sealed by at least 2 coats of paint or other surface finish described in to prevent sound leakage.
- (4) Sound absorptive material includes fibre processed from rock, slag, glass or cellulose fibre. It must fill at least 90% of the cavity thickness for the wall to have the listed STC value. The absorptive material should not overfill the cavity to the point of producing significant outward pressure on the finishes; such an assembly will not achieve the STC rating. Where the absorptive material used with steel stud assemblies is in batt form, "steel stud batts," which are wide enough to fill the cavity from the web of one stud to the web of the adjacent stud, must be used.
- (5) The complete descriptions of indicated finishes are as follows:
 - 12.7 mm regular gypsum board – 12.7 mm regular gypsum board conforming to
 - 12.7 mm Type X gypsum board – 12.7 mm special fire-resistant Type X gypsum board conforming to Article
 - 15.9 mm Type X gypsum board – 15.9 mm special fire-resistant Type X gypsum board conforming to
 - Except for exterior walls (see Note 2), the outer layer of finish on both sides of the wall must have its joints taped and finished.
 - Fastener types and spacing must conform to CSA A82.31-M, "Gypsum Board Application."
- (6) Absorptive material required for the higher fire-resistance rating is mineral fibre processed from rock or slag with a mass of at least 4.8 kg/m² for 150 mm thickness, 2.8 kg/m² for 89 mm thickness and 2.0 kg/m² for 65 mm thickness and completely filling the wall cavity. For assemblies with double wood studs on separate plates, absorptive material is required in the stud cavities on both sides.
- (7) Regular gypsum board used in single layer assemblies must be installed so all edges are supported.
- (8) Where bracing material, such as diagonal lumber or plywood, OSB, gypsum board or fibreboard sheathing is installed on the inner face of one row of studs in double stud assemblies, the STC rating will be reduced by 3 for any assemblies containing absorptive material in both rows of studs or in the row of studs opposite to that to which the bracing material is attached. Attaching such layers on both inner faces of the studs may

Table A-9.10.3.1.A. (Continued)

drastically reduce the STC value but enough data to permit assignment of STC ratings for this situation is not available. The fire-resistance rating is not affected by the inclusion of such bracing.

- (9) For exterior walls, the finish joints must be taped and finished for the outer layer of the interior side only. The gypsum board on the exterior side may be replaced with gypsum sheathing of the same thickness and type (regular or Type X).

Table A-9.10.3.1.B. 
Fire and Sound Resistance of Floors, Ceilings and Roofs

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
Floors and Ceilings					
Concrete Slabs	F1	• concrete floors			
	F1a	• 90 mm reinforced concrete with 20 mm minimum cover over reinforcing steel	1 h	48	23
	F1b	• 130 mm reinforced concrete with 25 mm minimum cover over reinforcing steel	2 h	52	27
	F1c	• pre-stressed hollow core slab 200 mm deep with 25 mm minimum cover over reinforcing steel	1 h	50	28
	F1d	• 150 mm composite slab on 75 mm steel deck with 152 x 152 x MW3.8 x MW3.8 wire mesh	-	51	21
	F1e	• 150 mm composite slab on 75 mm steel deck with 152 x 152 x MW3.8 x MW3.8 wire mesh • resilient metal channels 400 mm or 600 mm o.c. • 2 layers of 12.7 mm Type X gypsum board or 2 layers of 15.9 mm Type X gypsum board	1.5 h	57	36
Open Web Steel Joists	F2	• open web steel joists with concrete floor			
	F2a	• 50 mm thick concrete deck • on open web steel joists spaced 400 mm o.c. • furring channels spaced not more than 600 mm o.c. wired to underside of joists • 1 layer of 15.9 mm Type X gypsum board on ceiling side	45 min	53	27
	F2b	• 65 mm regular concrete minimum 155 kg/m ² • on composite steel joists spaced 1250 mm o.c. • furring channels spaced not more than 600 mm o.c. wired to underside of joists • 1 layer of 12.7 mm or 15.9 mm Type X gypsum board on ceiling side	1.5 h	53	28
Wood Floor Joists (Wood Joists minimum 38 x 235 mm, Wood I-Joists minimum 38 x 38 mm flange 9.5 mm OSB or plywood web, minimum 241 mm deep)	F3	• subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board on ceiling side			
	F3a	F3 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	33	28

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

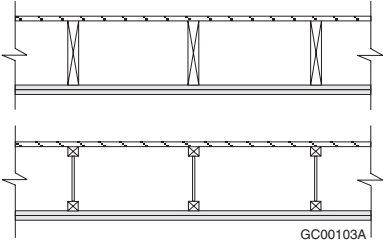
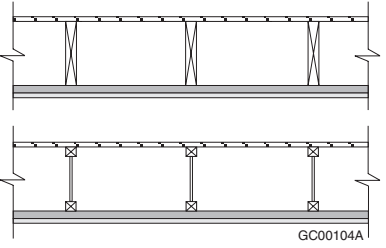
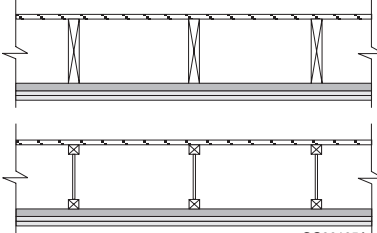
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F3b	F3 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	34	30
	F3c	F3 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	32	27
	F3d	F3 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	33	29
	F3e	F3 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	31	26
	F3f	F3 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	32	28
	F4	• subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 2 layers of gypsum board on ceiling side	 GC00103A		
	F4a	F4 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	36	31
	F4b	F4 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	37	33
	F4c	F4 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	35	30
	F4d	F4 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	36	32
	F4e	F4 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	34	29
	F4f	F4 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	35	31
	F5	• subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • metal furring channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side	 GC00104A		
	F5a	F5 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum	-	38	31
	F5b	F5 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	39	32

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F5c	F5 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	30 min [45 min] ⁽¹⁰⁾	41	34
	F5d	F5 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	30 min [45 min] ⁽¹⁰⁾	42	35
	F5e	F5 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	37	30
	F5f	F5 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	38	31
	F5g	F5 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	30 min [45 min] ⁽¹⁰⁾	40	33
	F5h	F5 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	30 min [45 min] ⁽¹⁰⁾	41	34
	F5i	F5 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	< 30 min	36	29
	F5j	F5 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	< 30 min	37	30
	F5k	F5 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	< 30 min	39	32
	F5l	F5 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	< 30 min	40	33
	F6	• subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • metal furring channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side			
	F6a	F6 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	41	34
	F6b	F6 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	1 h	42	35
	F6c	F6 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	44	37

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

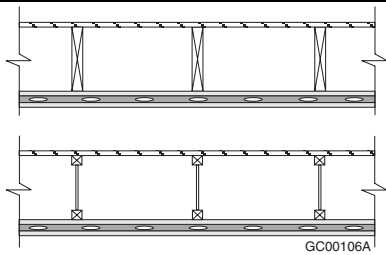
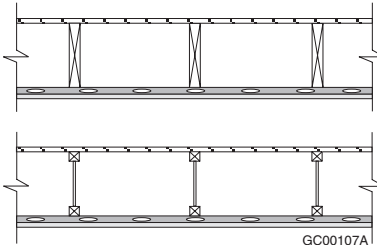
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F6d	F6 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	45	38
	F6e	F6 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	40	33
	F6f	F6 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	41	34
	F6g	F6 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	43	36
	F6h	F6 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	44	37
	F6i	F6 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	39	32
	F6j	F6 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	40	33
	F6k	F6 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	42	35
	F6l	F6 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	43	36
	F7	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board attached directly to joists on ceiling side • resilient metal channels spaced 400 mm or 600 mm o.c. attached to joists through gypsum board • 1 layer of gypsum board attached to resilient channel 			
	F7a	F7 with <ul style="list-style-type: none"> • no absorptive material in cavity • 15.9 mm Type X gypsum board • resilient metal channels • 15.9 mm Type X gypsum board 	1 h	35	27
	F7b	F7 with <ul style="list-style-type: none"> • absorptive material in cavity • 15.9 mm Type X gypsum board • resilient metal channels • 15.9 mm Type X gypsum board 	1 h	37	30
	F7c	F7 with <ul style="list-style-type: none"> • no absorptive material in cavity • 12.7 mm Type X gypsum board • resilient metal channels • 12.7 mm Type X gypsum board 	1 h	35	27

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F7d	F7 with <ul style="list-style-type: none"> • absorptive material in cavity • 12.7 mm Type X gypsum board • resilient metal channels • 12.7 mm Type X gypsum board 	1 h	37	30
	F7e	F7 with <ul style="list-style-type: none"> • no absorptive material in cavity • 12.7 mm regular gypsum board • resilient metal channels • 12.7 mm regular gypsum board 	-	32	26
	F7f	F7 with <ul style="list-style-type: none"> • absorptive material in cavity • 12.7 mm regular gypsum board • resilient metal channels • 12.7 mm regular gypsum board 	-	35	28
	F8	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F8a	F8 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	39	32
	F8b	F8 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	41	34
	F8c	F8 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹⁰⁾	48 ⁽⁸⁾	40
	F8d	F8 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹⁰⁾	49 ⁽⁸⁾	42
	F8e	F8 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	30 min	39	32
	F8f	F8 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	30 min	41	34
	F8g	F8 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	30 min [45 min] ⁽¹⁰⁾	48 ⁽⁸⁾	39
	F8h	F8 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	30 min [45 min] ⁽¹⁰⁾	49 ⁽⁸⁾	42
	F8i	F8 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	< 30 min	37	31

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

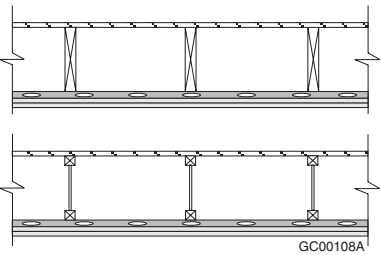
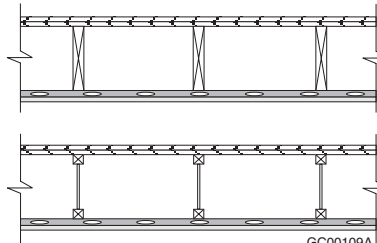
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F8j	F8 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	< 30 min	39	33
	F8k	F8 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	< 30 min	45	37
	F8l	F8 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	< 30 min	47	40
	F9	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F9a	F9 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	47	38
	F9b	F9 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	48 ⁽⁸⁾	40
	F9c	F9 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	54	47
	F9d	F9 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	55	49
	F9e	F9 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	47	38
	F9f	F9 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	48 ⁽⁸⁾	40
	F9g	F9 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	54	47
	F9h	F9 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	55	49
	F9i	F9 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	45	36
	F9j	F9 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	46	37

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F9k	F9 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	52	45
	F9l	F9 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	53	46
	F10	<ul style="list-style-type: none"> • one subfloor layer of 11 mm sanded plywood, or OSB or waferboard • one subfloor layer of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F10a	F10 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	41	34
	F10b	F10 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	42	35
	F10c	F10 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹⁰⁾⁽¹¹⁾	50	43
	F10d	F10 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	51	44
	F10e	F10 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	41	34
	F10f	F10 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	42	35
	F10g	F10 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	50	43
	F10h	F10 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	51	44
	F10i	F10 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	40	32
	F10j	F10 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	41	33
	F10k	F10 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	48 ⁽⁸⁾	40

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

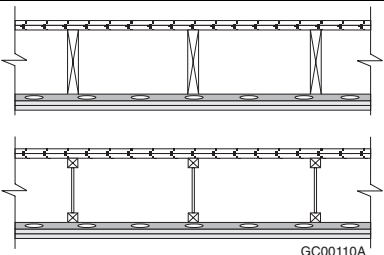
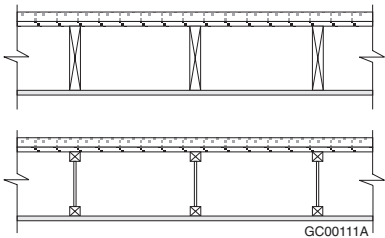
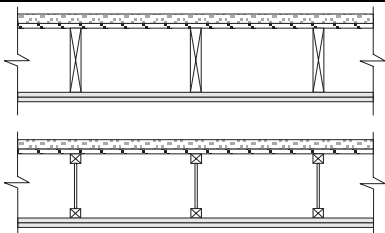
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F10l	F10 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	49 ⁽⁸⁾	41
	F11	<ul style="list-style-type: none"> • one subfloor layer of 11 mm sanded plywood, or OSB or waferboard • one subfloor layer of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F11a	F11 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	50	41
	F11b	F11 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	51	42
	F11c	F11 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	57	50
	F11d	F11 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	58	51
	F11e	F11 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	50	41
	F11f	F11 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	51	42
	F11g	F11 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	57	50
	F11h	F11 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	58	51
	F11i	F11 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	46	39
	F11j	F11 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	47	41
	F11k	F11 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	53	46
	F11l	F11 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	54	47

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F12	<ul style="list-style-type: none"> • 25 mm gypsum-concrete topping (at least 44 kg/m²) • subfloor of 15.5 mm plywood, OSB or waterboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board on ceiling side 	 GC00111A		
	F12a	F12 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	39	26
	F12b	F12 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	40	28
	F12c	F12 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	39	26
	F12d	F12 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	40	28
	F12e	F12 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	36	25
	F12f	F12 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	38	26
	F13	<ul style="list-style-type: none"> • 25 mm gypsum-concrete topping (at least 44 kg/m²) • subfloor of 15.5 mm plywood, OSB or waterboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 2 layers of gypsum board on ceiling side 	 GC00112A		
	F13a	F13 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	41	30
	F13b	F13 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	43	32
	F13c	F13 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	41	30
	F13d	F13 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	43	32
	F13e	F13 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	38	29
	F13f	F13 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	40	30

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

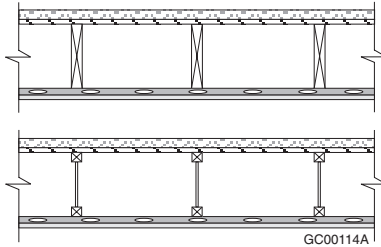
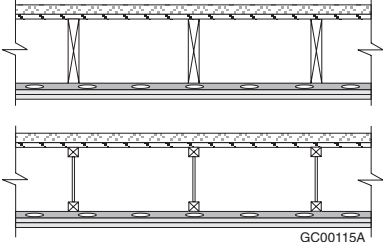
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F14	<ul style="list-style-type: none"> • 25 mm gypsum-concrete topping (at least 44 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F14a	F14 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	51	20
	F14b	F14 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	53	22
	F14c	F14 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹⁰⁾⁽¹¹⁾	57	24
	F14d	F14 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	58	26
	F14e	F14 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	51	20
	F14f	F14 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	53	22
	F14g	F14 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	57	24
	F14h	F14 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	58	26
	F14i	F14 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	49 ⁽⁸⁾	19
	F14j	F14 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	51	21
	F14k	F14 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	54	22
	F14l	F14 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	55	24

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F15	<ul style="list-style-type: none"> • 25 mm gypsum-concrete topping (at least 44 kg/m²) • subfloor of 15.5 mm plywood, OSB or waterboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F15a	<ul style="list-style-type: none"> • F15 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h ⁽¹¹⁾	55	26
	F15b	<ul style="list-style-type: none"> • F15 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	57	28
	F15c	<ul style="list-style-type: none"> • F15 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	61	30
	F15d	<ul style="list-style-type: none"> • F15 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	62	32
	F15e	<ul style="list-style-type: none"> • F15 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h ⁽¹¹⁾	55	26
	F15f	<ul style="list-style-type: none"> • F15 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	57	28
	F15g	<ul style="list-style-type: none"> • F15 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	61	30
	F15h	<ul style="list-style-type: none"> • F15 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	62	32
	F15i	<ul style="list-style-type: none"> • F15 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	53	25
	F15j	<ul style="list-style-type: none"> • F15 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	55	27
	F15k	<ul style="list-style-type: none"> • F15 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	58	28
	F15l	<ul style="list-style-type: none"> • F15 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	59	30

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

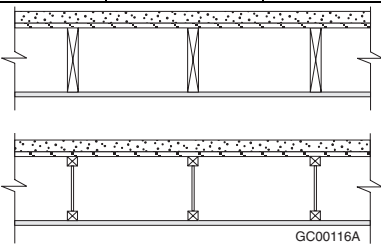
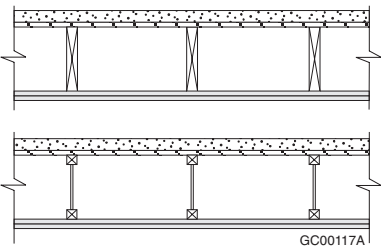
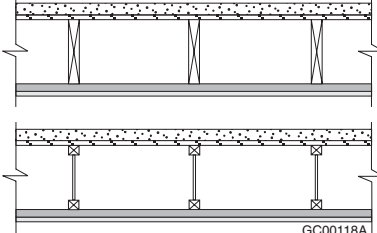
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F16	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board on ceiling side 			
	F16a	<ul style="list-style-type: none"> • F 16 with • no absorptive material in cavity • 15.9 mm Type X gypsum board 	-	46	25
	F16b	<ul style="list-style-type: none"> • F16 with • absorptive material in cavity • 15.9 mm Type X gypsum board 	-	48 ⁽⁸⁾	28
	F16c	<ul style="list-style-type: none"> • F16 with • no absorptive material in cavity • 12.7 mm Type X gypsum board 	-	46	25
	F16d	<ul style="list-style-type: none"> • F16 with • absorptive material in cavity • 12.7 mm Type X gypsum board 	-	48 ⁽⁸⁾	28
	F16e	<ul style="list-style-type: none"> • F16 with • no absorptive material in cavity • 12.7 mm regular gypsum board 	-	42	24
	F16f	<ul style="list-style-type: none"> • F16 with • absorptive material in cavity • 12.7 mm regular gypsum board 	-	44	25
	F17	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 2 layers of gypsum board on ceiling side 			
	F17a	<ul style="list-style-type: none"> • F17 with • no absorptive material in cavity • 15.9 mm Type X gypsum board 	-	47	30
	F17b	<ul style="list-style-type: none"> • F17 with • absorptive material in cavity • 15.9 mm Type X gypsum board 	-	49 ⁽⁸⁾	32
	F17c	<ul style="list-style-type: none"> • F17 with • no absorptive material in cavity • 12.7 mm Type X gypsum board 	-	47	30
	F17d	<ul style="list-style-type: none"> • F17 with • absorptive material in cavity • 12.7 mm Type X gypsum board 	-	49 ⁽⁸⁾	32
	F17e	<ul style="list-style-type: none"> • F17 with • no absorptive material in cavity • 12.7 mm regular gypsum board 	-	43	29
	F17f	<ul style="list-style-type: none"> • F17 with • absorptive material in cavity • 12.7 mm regular gypsum board 	-	45	30

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F18	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • metal furring channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 	 <p>GC00118A</p>		
	F18a	<ul style="list-style-type: none"> • F18 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	51	27
	F18b	<ul style="list-style-type: none"> • F18 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	52	27
	F18c	<ul style="list-style-type: none"> • F18 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	53	30
	F18d	<ul style="list-style-type: none"> • F18 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	54	30
	F18e	<ul style="list-style-type: none"> • F18 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	51	27
	F18f	<ul style="list-style-type: none"> • F18 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	52	27
	F18g	<ul style="list-style-type: none"> • F18 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	53	30
	F18h	<ul style="list-style-type: none"> • F18 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	54	30
	F18i	<ul style="list-style-type: none"> • F18 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	47	25
	F18j	<ul style="list-style-type: none"> • F18 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	48 ⁽⁸⁾	25
	F18k	<ul style="list-style-type: none"> • F18 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	49 ⁽⁸⁾	29
	F18l	<ul style="list-style-type: none"> • F18 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	50	29

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

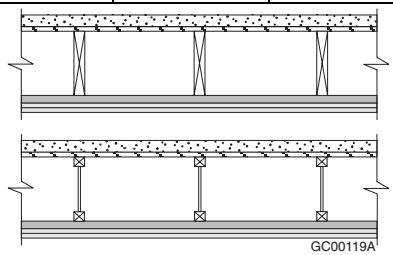
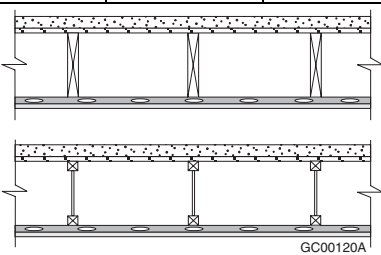
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F19	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • metal furring channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 	 GC00119A		
	F19a	F19 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	52	31
	F19b	F19 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	53	32
	F19c	F19 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	54	34
	F19d	F19 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	55	35
	F19e	F19 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	52	31
	F19f	F19 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	53	32
	F19g	F19 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	54	34
	F19h	F19 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	55	35
	F19i	F19 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	50	30
	F19j	F19 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	51	31
	F19k	F19 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	52	33
	F19l	F19 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	53	34

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F20	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F20a	F20 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	45 min ⁽¹¹⁾	57	28
	F20b	F20 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	59	30
	F20c	F20 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹⁰⁾⁽¹¹⁾	64	35
	F20d	F20 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	65	38
	F20e	F20 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	57	28
	F20f	F20 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	59	30
	F20g	F20 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	64	35
	F20h	F20 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	65	38
	F20i	F20 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	55	27
	F20j	F20 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	57	29
	F20k	F20 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	62	34
	F20l	F20 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	63	37

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

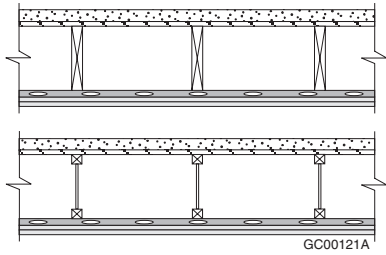
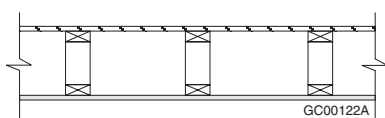
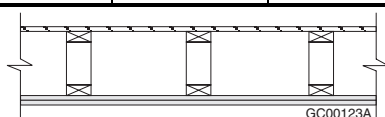
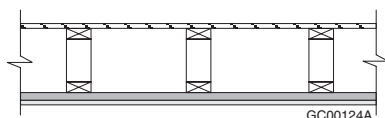
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F21	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F21a	F21 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	64	36
	F21b	F21 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	65	38
	F21c	F21 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	69	44
	F21d	F21 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	70	46
	F21e	F21 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	64	36
	F21f	F21 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	65	38
	F21g	F21 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	69	44
	F21h	F21 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	70	46
	F21i	F21 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	62	34
	F21j	F21 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	63	35
	F21k	F21 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	67	42
	F21l	F21 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	68	43

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
Wood Floor Trusses (wood framing members not less than 38 mm x 89 mm with metal connector plates not less than 1 mm thick with teeth not less than 8 mm in length – minimum 235 mm depth)	F22	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer gypsum board on ceiling side 			
	F22a	F22 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	33	28
	F22b	F22 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	34	30
	F22c	F22 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	32	27
	F22d	F22 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	33	29
	F22e	F22 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	31	26
	F22f	F22 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	32	28
	F23	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 2 layers of gypsum board on ceiling side 			
	F23a	F23 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	36	31
	F23b	F23 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	37	33
	F23c	F23 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	35	30
	F23d	F23 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	36	32
	F23e	F23 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	34	29
	F23f	F23 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	35	31
	F24	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • metal furring channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F24a	F24 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	-	38	31

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

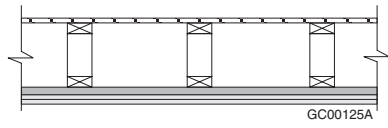
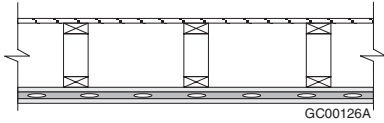
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F24b	F24 with <ul style="list-style-type: none"> no absorptive material in cavity metal furring channels spaced 600 mm o.c. 15.9 mm Type X gypsum board 	-	39	32
	F24c	F24 with <ul style="list-style-type: none"> absorptive material in cavity metal furring channels spaced 400 mm o.c. 15.9 mm Type X gypsum board 	-	41	34
	F24d	F24 with <ul style="list-style-type: none"> absorptive material in cavity metal furring channels spaced 600 mm o.c. 15.9 mm Type X gypsum board 	-	42	35
	F24e	F24 with <ul style="list-style-type: none"> no absorptive material in cavity metal furring channels spaced 400 mm o.c. 12.7 mm Type X gypsum board 	-	37	30
	F24f	F24 with <ul style="list-style-type: none"> no absorptive material in cavity metal furring channels spaced 600 mm o.c. 12.7 mm Type X gypsum board 	-	38	31
	F24g	F24 with <ul style="list-style-type: none"> absorptive material in cavity metal furring channels spaced 400 mm o.c. 12.7 mm Type X gypsum board 	-	40	33
	F24h	F24 with <ul style="list-style-type: none"> absorptive material in cavity metal furring channels spaced 600 mm o.c. 12.7 mm Type X gypsum board 	-	41	34
	F24i	F24 with <ul style="list-style-type: none"> no absorptive material in cavity metal furring channels spaced 400 mm o.c. 12.7 mm regular gypsum board 	-	36	29
	F24j	F24 with <ul style="list-style-type: none"> no absorptive material in cavity metal furring channels spaced 600 mm o.c. 12.7 mm regular gypsum board 	-	37	30
	F24k	F24 with <ul style="list-style-type: none"> absorptive material in cavity metal furring channels spaced 400 mm o.c. 12.7 mm regular gypsum board 	-	39	32
	F24l	F24 with <ul style="list-style-type: none"> absorptive material in cavity metal furring channels spaced 600 mm o.c. 12.7 mm regular gypsum board 	-	40	33
	F25	<ul style="list-style-type: none"> subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber on wood trusses spaced not more than 600 mm o.c. with or without absorptive material in cavity metal furring channels spaced 400 mm or 600 mm o.c. 2 layers of gypsum board on ceiling side 			
	F25a	F25 with <ul style="list-style-type: none"> no absorptive material in cavity metal furring channels spaced 400 mm o.c. 15.9 mm Type X gypsum board 	-	41	34
	F25b	F25 with <ul style="list-style-type: none"> no absorptive material in cavity metal furring channels spaced 600 mm o.c. 15.9 mm Type X gypsum board 	-	42	35
	F25c	F25 with <ul style="list-style-type: none"> absorptive material in cavity metal furring channels spaced 400 mm o.c. 15.9 mm Type X gypsum board 	-	44	37

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F25d	F25 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	45	38
	F25e	F25 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	40	33
	F25f	F25 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	41	34
	F25g	F25 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	43	36
	F25h	F25 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	44	37
	F25i	F25 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	39	32
	F25j	F25 with <ul style="list-style-type: none"> • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	40	33
	F25k	F25 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	42	35
	F25l	F25 with <ul style="list-style-type: none"> • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	43	36
	F26	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board attached directly to trusses on ceiling side • resilient metal channels spaced 400 mm or 600 mm o.c. attached to trusses through the gypsum board • 1 layer of gypsum board attached to resilient channel 			
	F26a	F26 with <ul style="list-style-type: none"> • no absorptive material in cavity • 15.9 mm Type X gypsum board • resilient metal channels • 15.9 mm Type X gypsum board 	-	35	27
	F26b	F26 with <ul style="list-style-type: none"> • absorptive material in cavity • 15.9 mm Type X gypsum board • resilient metal channels • 15.9 mm Type X gypsum board 	-	37	30
	F26c	F26 with <ul style="list-style-type: none"> • no absorptive material in cavity • 12.7 mm Type X gypsum board • resilient metal channels • 12.7 mm Type X gypsum board 	-	35	27

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

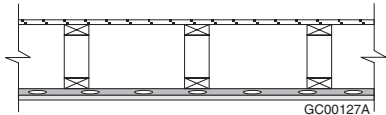
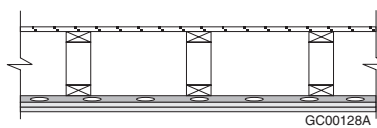
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F26d	F26 with <ul style="list-style-type: none"> • absorptive material in cavity • 12.7 mm Type X gypsum board • resilient metal channels • 12.7 mm Type X gypsum board 	-	37	30
	F26e	F26 with <ul style="list-style-type: none"> • no absorptive material in cavity • 12.7 mm regular gypsum board • resilient metal channels • 12.7 mm regular gypsum board 	-	32	26
	F26f	F26 with <ul style="list-style-type: none"> • absorptive material in cavity • 12.7 mm regular gypsum board • resilient metal channels • 12.7 mm regular gypsum board 	-	35	28
	F27	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F27a	F27 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	39	32
	F27b	F27 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	41	34
	F27c	F27 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹²⁾	48 ⁽⁸⁾	39
	F27d	F27 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	49 ⁽⁸⁾	42
	F27e	F27 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	40	34
	F27f	F27 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	41	34
	F27g	F27 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	48 ⁽⁸⁾	39
	F27h	F27 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	49 ⁽⁸⁾	42
	F27i	F27 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	37	31
	F27j	F27 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	39	33

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F27k	F27 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	45	37
	F27l	F27 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	47	40
	F28	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F28a	F28 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	47	38
	F28b	F28 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	48 ⁽⁸⁾	40
	F28c	F28 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	54	47
	F28d	F28 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	55	49
	F28e	F28 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	47	38
	F28f	F28 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	48 ⁽⁸⁾	40
	F28g	F28 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	54	47
	F28h	F28 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	55	49
	F28i	F28 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	45	36
	F28j	F28 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	46	37
	F28k	F28 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	52	45
	F28l	F28 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	53	46

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

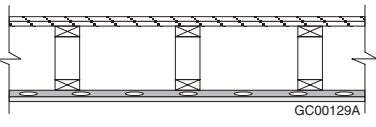
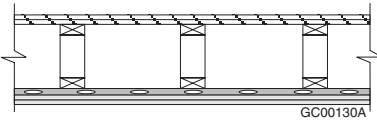
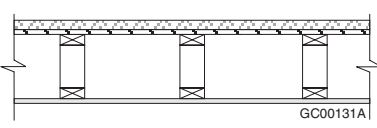
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F29	<ul style="list-style-type: none"> • one subfloor layer 11 mm sanded plywood, or OSB or waferboard • one subfloor layer of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F29a	F29 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	42	34
	F29b	F29 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	43	35
	F29c	F29 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹²⁾	50	43
	F29d	F29 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	51	44
	F29e	F29 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	42	34
	F29f	F29 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	43	35
	F29g	F29 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	50	43
	F29h	F29 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	51	44
	F29i	F29 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	40	32
	F29j	F29 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	41	33
	F29k	F29 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	48 ⁽⁸⁾	40
	F29l	F29 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	49 ⁽⁸⁾	41

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F30	<ul style="list-style-type: none"> • one subfloor layer 11 mm sanded plywood, or OSB or waferboard • one subfloor layer of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F30a	<ul style="list-style-type: none"> • F30 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	49 ⁽⁸⁾	40
	F30b	<ul style="list-style-type: none"> • F30 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	50	43
	F30c	<ul style="list-style-type: none"> • F30 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	57	50
	F30d	<ul style="list-style-type: none"> • F30 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	58	51
	F30e	<ul style="list-style-type: none"> • F30 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	50	41
	F30f	<ul style="list-style-type: none"> • F30 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	50	41
	F30g	<ul style="list-style-type: none"> • F30 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	57	50
	F30h	<ul style="list-style-type: none"> • F30 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	58	51
	F30i	<ul style="list-style-type: none"> • F30 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	46	39
	F30j	<ul style="list-style-type: none"> • F30 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	47	41
	F30k	<ul style="list-style-type: none"> • F30 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	53	46
	F30l	<ul style="list-style-type: none"> • F30 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	54	47
	F31	<ul style="list-style-type: none"> • 25 mm gypsum-concrete topping (at least 44 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board on ceiling side 			

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

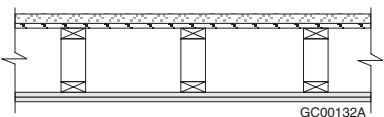
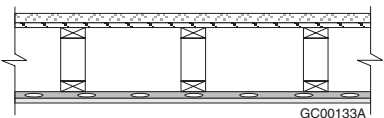
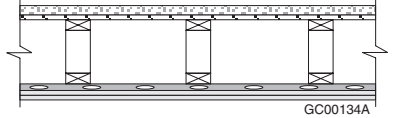
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F31a	F31 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	39	26
	F31b	F31 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	40	28
	F31c	F31 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	39	26
	F31d	F31 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	40	28
	F31e	F31 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	36	25
	F31f	F31 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	38	26
	F32	• 25 mm gypsum-concrete topping (at least 44 kg/m ²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 2 layers of gypsum board on ceiling side	 GC00132A		
	F32a	F32 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	41	30
	F32b	F32 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	43	32
	F32c	F32 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	41	30
	F32d	F32 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	43	32
	F32e	F32 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	38	29
	F32f	F32 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	40	30
	F33	• 25 mm gypsum-concrete topping (at least 44 kg/m ²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side	 GC00133A		
	F33a	F33 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	-	51	20
	F33b	F33 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	53	22
	F33c	F33 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	30 min [45 min] ⁽¹²⁾	57	24

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F33d	F33 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	58	26
	F33e	F33 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	51	20
	F33f	F33 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	53	22
	F33g	F33 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	57	24
	F33h	F33 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	58	26
	F33i	F33 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	49 ⁽⁸⁾	19
	F33j	F33 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	51	21
	F33k	F33 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	54	22
	F33l	F33 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	55	24
	F34	• 25 mm gypsum-concrete topping (at least 44 kg/m ²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side	 <p>GC00134A</p>		
	F34a	F34 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	55	26
	F34b	F34 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	57	28
	F34c	F34 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	-	61	30
	F34d	F34 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	62	32
	F34e	F34 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	45 min	55	26

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

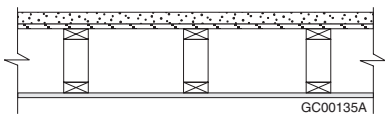
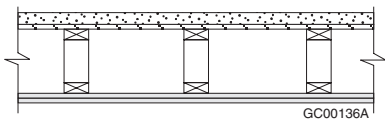
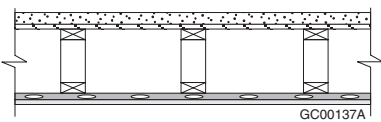
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F34f	F34 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	57	28
	F34g	F34 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	61	30
	F34h	F34 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	62	32
	F34i	F34 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	53	25
	F34j	F34 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	55	27
	F34k	F34 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	58	28
	F34l	F34 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	59	30
	F35	• 38 mm concrete topping (at least 70 kg/m ²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board on ceiling side			
	F35a	F35 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	46	25
	F35b	F35 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	48 ⁽⁸⁾	28
	F35c	F35 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	46	25
	F35d	F35 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	48 ⁽⁸⁾	28
	F35e	F35 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	42	24
	F35f	F35 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	44	25
	F36	• 38 mm concrete topping (at least 70 kg/m ²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 2 layers of gypsum board on ceiling side			
	F36a	F36 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	47	30

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F36b	F36 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	49 ⁽⁸⁾	32
	F36c	F36 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	47	30
	F36d	F36 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	49 ⁽⁸⁾	32
	F36e	F36 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	43	29
	F36f	F36 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	45	30
	F37	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F37a	F37 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	45 min	57	28
	F37b	F37 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	59	30
	F37c	F37 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	30 min [45 min] ⁽¹²⁾	64	35
	F37d	F37 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	65	38
	F37e	F37 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	57	28
	F37f	F37 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	59	30
	F37g	F37 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	64	35
	F37h	F37 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	65	38
	F37i	F37 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	55	27
	F37j	F37 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	57	29

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

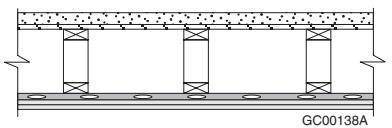
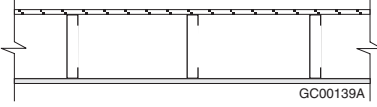
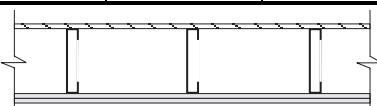
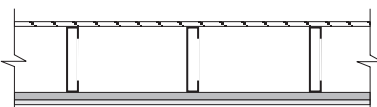
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F37k	F37 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	62	34
	F37l	F37 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	63	37
	F38	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on wood trusses spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F38a	F38 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	64	36
	F38b	F38 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	65	38
	F38c	F38 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	69	44
	F38d	F38 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	70	46
	F38e	F38 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	45 min	64	36
	F38f	F38 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	65	38
	F38g	F38 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	69	44
	F38h	F38 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	70	46
	F38i	F38 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	62	34
	F38j	F38 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	63	35
	F38k	F38 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	67	42
	F38l	F38 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	68	43

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
Cold Formed Steel Floor Joists (minimum 41 mm x 203 mm x 1.22 mm)	F39	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board on ceiling side 			
	F39a	<ul style="list-style-type: none"> • F39 with • no absorptive material in cavity • 15.9 mm Type X gypsum board 	-	33	28
	F39b	<ul style="list-style-type: none"> • F39 with • absorptive material in cavity • 15.9 mm Type X gypsum board 	-	34	30
	F39c	<ul style="list-style-type: none"> • F39 with • no absorptive material in cavity • 12.7 mm Type X gypsum board 	-	32	27
	F39d	<ul style="list-style-type: none"> • F39 with • absorptive material in cavity • 12.7 mm Type X gypsum board 	-	33	29
	F39e	<ul style="list-style-type: none"> • F39 with • no absorptive material in cavity • 12.7 mm regular gypsum board 	-	31	26
	F39f	<ul style="list-style-type: none"> • F39 with • absorptive material in cavity • 12.7 mm regular gypsum board 	-	32	28
	F40	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 2 layers of gypsum board on ceiling side 			
	F40a	<ul style="list-style-type: none"> • F40 with • no absorptive material in cavity • 15.9 mm Type X gypsum board 	-	36	31
	F40b	<ul style="list-style-type: none"> • F40 with • absorptive material in cavity • 15.9 mm Type X gypsum board 	-	37	33
	F40c	<ul style="list-style-type: none"> • F40 with • no absorptive material in cavity • 12.7 mm Type X gypsum board 	-	35	30
	F40d	<ul style="list-style-type: none"> • F40 with • absorptive material in cavity • 12.7 mm Type X gypsum board 	-	36	32
	F40e	<ul style="list-style-type: none"> • F40 with • no absorptive material in cavity • 12.7 mm regular gypsum board 	-	34	29
	F40f	<ul style="list-style-type: none"> • F40 with • absorptive material in cavity • 12.7 mm regular gypsum board 	-	35	31
	F41	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • metal furring channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F41a	<ul style="list-style-type: none"> • F41 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	38	31
	F41b	<ul style="list-style-type: none"> • F41 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	39	32

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

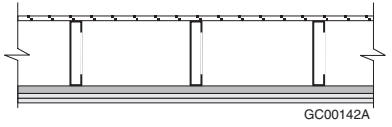
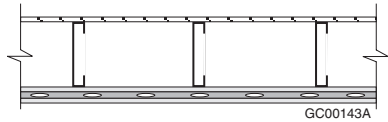
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F41c	F41 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	30 min [45 min] ⁽¹²⁾	41	34
	F41d	F41 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	30 min [45 min] ⁽¹²⁾	42	35
	F41e	F41 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	37	30
	F41f	F41 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	38	31
	F41g	F41 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	30 min [45 min] ⁽¹²⁾	40	33
	F41h	F41 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	30 min [45 min] ⁽¹²⁾	41	34
	F41i	F41 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	< 30 min	36	29
	F41j	F41 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	< 30 min	37	30
	F41k	F41 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	< 30 min	39	32
	F41l	F41 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	< 30 min	40	33
	F42	• subfloor of 15.5 mm plywood, OSB or waterboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • metal furring channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side	 <p>GC00142A</p>		
	F42a	F42 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	41	34
	F42b	F42 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	1 h	42	35
	F42c	F42 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	44	37
	F42d	F42 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	1 h	45	38

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F42e	F42 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	1 h	40	33
	F42f	F42 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	1 h	41	34
	F42g	F42 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	1 h	43	36
	F42h	F42 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	1 h	44	37
	F42i	F42 with • no absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	39	32
	F42j	F42 with • no absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	40	33
	F42k	F42 with • absorptive material in cavity • metal furring channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	42	35
	F42l	F42 with • absorptive material in cavity • metal furring channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	43	36
	F43	• subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board attached directly to joists on ceiling side • resilient metal channels spaced 400 mm or 600 mm o.c. attached to joists through the gypsum board • 1 layer of gypsum board attached to resilient channels	 <p>GC00143A</p>		
	F43a	F43 with • no absorptive material in cavity • 15.9 mm Type X gypsum board • resilient metal channels • 15.9 mm Type X gypsum board	1 h	35	27
	F43b	F43 with • absorptive material in cavity • 15.9 mm Type X gypsum board • resilient metal channels • 15.9 mm Type X gypsum board	1 h	37	30
	F43c	F43 with • no absorptive material in cavity • 12.7 mm Type X gypsum board • resilient metal channels • 12.7 mm Type X gypsum board	1 h	35	27
	F43d	F43 with • absorptive material in cavity • 12.7 mm Type X gypsum board • resilient metal channels • 12.7 mm Type X gypsum board	1 h	37	30

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

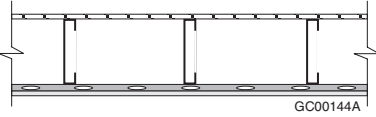
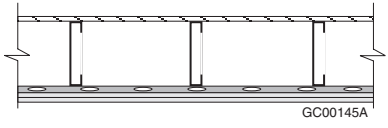
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F43e	F43 with <ul style="list-style-type: none"> • no absorptive material in cavity • 12.7 mm regular gypsum board • resilient metal channels • 12.7 mm regular gypsum board 	-	32	26
	F43f	F43 with <ul style="list-style-type: none"> • absorptive material in cavity • 12.7 mm regular gypsum board • resilient metal channels • 12.7 mm regular gypsum board 	-	35	28
	F44	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F44a	F44 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	39	32
	F44b	F44 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	41	34
	F44c	F44 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹²⁾	48 ⁽⁸⁾	40
	F44d	F44 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	30 min [45 min] ⁽¹²⁾	49 ⁽⁸⁾	42
	F44e	F44 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	-	39	32
	F44f	F44 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	-	41	34
	F44g	F44 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	30 min [45 min] ⁽¹²⁾	48 ⁽⁸⁾	39
	F44h	F44 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	30 min [45 min] ⁽¹²⁾	49 ⁽⁸⁾	42
	F44i	F44 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	< 30 min	37	31
	F44j	F44 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	< 30 min	39	33
	F44k	F44 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	< 30 min	45	37

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F44l	F44 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	< 30 min	47	40
	F45	<ul style="list-style-type: none"> • subfloor of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F45a	F45 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	47	38
	F45b	F45 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	48 ⁽⁸⁾	40
	F45c	F45 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	54	47
	F45d	F45 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	55	49
	F45e	F45 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	47	38
	F45f	F45 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	48 ⁽⁸⁾	40
	F45g	F45 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	54	47
	F45h	F45 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	55	49
	F45i	F45 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	45	36
	F45j	F45 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	46	37
	F45k	F45 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	52	45
	F45l	F45 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	53	46

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

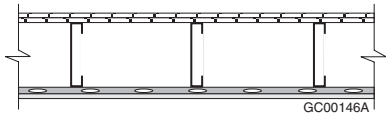
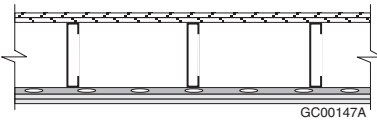
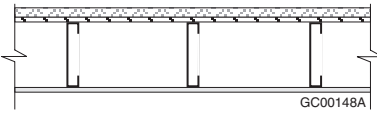
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F46	<ul style="list-style-type: none"> one subfloor layer of 11 mm sanded plywood, or OSB or waferboard one subfloor layer of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber on steel joists spaced not more than 600 mm o.c. with or without absorptive material in cavity resilient metal channels spaced 400 mm or 600 mm o.c. 1 layer of gypsum board on ceiling side 			
	F46a	F46 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 400 mm o.c. 15.9 mm Type X gypsum board 	-	41	34
	F46b	F46 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 600 mm o.c. 15.9 mm Type X gypsum board 	-	42	35
	F46c	F46 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 400 mm o.c. 15.9 mm Type X gypsum board 	-	50	43
	F46d	F46 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 600 mm o.c. 15.9 mm Type X gypsum board 	-	51	44
	F46e	F46 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 400 mm o.c. 12.7 mm Type X gypsum board 	-	41	34
	F46f	F46 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 600 mm o.c. 12.7 mm Type X gypsum board 	-	42	35
	F46g	F46 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 400 mm o.c. 12.7 mm Type X gypsum board 	-	50	43
	F46h	F46 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 600 mm o.c. 12.7 mm Type X gypsum board 	-	51	44
	F46i	F46 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 400 mm o.c. 12.7 mm regular gypsum board 	-	40	32
	F46j	F46 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 600 mm o.c. 12.7 mm regular gypsum board 	-	41	33
	F46k	F46 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 400 mm o.c. 12.7 mm regular gypsum board 	-	48 ⁽⁸⁾	40
	F46l	F46 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 600 mm o.c. 12.7 mm regular gypsum board 	-	49 ⁽⁸⁾	41

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F47	<ul style="list-style-type: none"> • one subfloor layer of 11 mm sanded plywood, or OSB or waferboard • one subfloor layer of 15.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F47a	<ul style="list-style-type: none"> • F47 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	50	41
	F47b	<ul style="list-style-type: none"> • F47 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	51	42
	F47c	<ul style="list-style-type: none"> • F47 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	57	50
	F47d	<ul style="list-style-type: none"> • F47 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	58	51
	F47e	<ul style="list-style-type: none"> • F47 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	50	41
	F47f	<ul style="list-style-type: none"> • F47 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	51	42
	F47g	<ul style="list-style-type: none"> • F47 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	57	50
	F47h	<ul style="list-style-type: none"> • F47 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	58	51
	F47i	<ul style="list-style-type: none"> • F47 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	46	39
	F47j	<ul style="list-style-type: none"> • F47 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	47	41
	F47k	<ul style="list-style-type: none"> • F47 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	53	46
	F47l	<ul style="list-style-type: none"> • F47 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	54	47
	F48	<ul style="list-style-type: none"> • 25 mm gypsum-concrete topping (at least 44 kg/m²) • subfloor of 12.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 1 layer of gypsum board on ceiling side 			

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

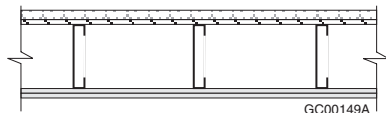
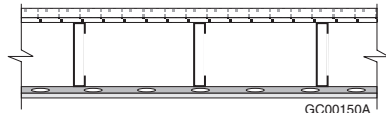
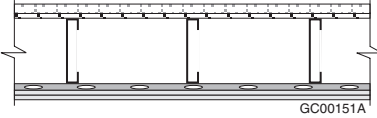
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F48a	F48 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	39	26
	F48b	F48 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	40	28
	F48c	F48 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	39	26
	F48d	F48 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	40	28
	F48e	F48 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	36	25
	F48f	F48 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	38	26
	F49	• 25 mm gypsum-concrete topping (at least 44 kg/m ²) • subfloor of 12.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • 2 layers of gypsum board on ceiling side	 GC00149A		
	F49a	F49 with • no absorptive material in cavity • 15.9 mm Type X gypsum board	-	41	30
	F49b	F49 with • absorptive material in cavity • 15.9 mm Type X gypsum board	-	43	32
	F49c	F49 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	41	30
	F49d	F49 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	43	32
	F49e	F49 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	38	29
	F49f	F49 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	40	30
	F50	• 25 mm gypsum-concrete topping (at least 44 kg/m ²) • subfloor of 12.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side	 GC00150A		
	F50a	F50 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	-	51	20
	F50b	F50 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	53	22
	F50c	F50 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	-	57	24

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F50d	F50 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	58	26
	F50e	F50 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	51	20
	F50f	F50 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	53	22
	F50g	F50 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	57	24
	F50h	F50 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	58	26
	F50i	F50 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	49 ⁽⁸⁾	19
	F50j	F50 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	51	21
	F50k	F50 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	54	22
	F50l	F50 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	55	24
	F51	• 25 mm gypsum-concrete topping (at least 44 kg/m ²) • subfloor of 12.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side			
	F51a	F51 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	55	26
	F51b	F51 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	1 h	57	28
	F51c	F51 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	61	30
	F51d	F51 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	45 min [1 h] ⁽¹²⁾	62	32
	F51e	F51 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	1 h	55	26

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

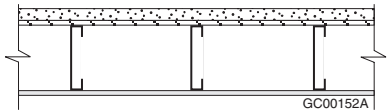
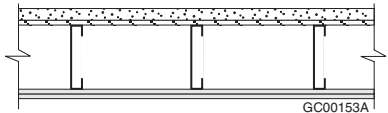
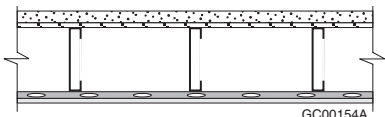
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F51f	F51 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 600 mm o.c. 12.7 mm Type X gypsum board 	1 h	57	28
	F51g	F51 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 400 mm o.c. 12.7 mm Type X gypsum board 	1 h	61	30
	F51h	F51 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 600 mm o.c. 12.7 mm Type X gypsum board 	45 min [1 h] ⁽¹²⁾	62	32
	F51i	F51 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 400 mm o.c. 12.7 mm regular gypsum board 	-	53	25
	F51j	F51 with <ul style="list-style-type: none"> no absorptive material in cavity resilient metal channels spaced 600 mm o.c. 12.7 mm regular gypsum board 	-	55	27
	F51k	F51 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 400 mm o.c. 12.7 mm regular gypsum board 	-	58	28
	F51l	F51 with <ul style="list-style-type: none"> absorptive material in cavity resilient metal channels spaced 600 mm o.c. 12.7 mm regular gypsum board 	-	59	30
	F52	<ul style="list-style-type: none"> 38 mm concrete topping (at least 70 kg/m²) subfloor of 12.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber on steel joists spaced not more than 600 mm o.c. 1 layer of gypsum board on ceiling side 	 GC00152A		
	F52a	F52 with <ul style="list-style-type: none"> no absorptive material in cavity 15.9 mm Type X gypsum board 	-	46	25
	F52b	F52 with <ul style="list-style-type: none"> absorptive material in cavity 15.9 mm Type X gypsum board 	-	48 ⁽⁸⁾	28
	F52c	F52 with <ul style="list-style-type: none"> no absorptive material in cavity 12.7 mm Type X gypsum board 	-	46	25
	F52d	F52 with <ul style="list-style-type: none"> absorptive material in cavity 12.7 mm Type X gypsum board 	-	48 ⁽⁸⁾	28
	F52e	F52 with <ul style="list-style-type: none"> no absorptive material in cavity 12.7 mm regular gypsum board 	-	42	24
	F52f	F52 with <ul style="list-style-type: none"> absorptive material in cavity 12.7 mm regular gypsum board 	-	44	25
	F53	<ul style="list-style-type: none"> 38 mm concrete topping (at least 70 kg/m²) subfloor of 12.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber on steel joists spaced not more than 600 mm o.c. 2 layers of gypsum board on ceiling side 	 GC00153A		
	F53a	F53 with <ul style="list-style-type: none"> no absorptive material in cavity 15.9 mm Type X gypsum board 	-	47	30
	F53b	F53 with <ul style="list-style-type: none"> absorptive material in cavity 15.9 mm Type X gypsum board 	-	49 ⁽⁸⁾	32

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F53c	F53 with • no absorptive material in cavity • 12.7 mm Type X gypsum board	-	47	30
	F53d	F53 with • absorptive material in cavity • 12.7 mm Type X gypsum board	-	49 ⁽⁸⁾	32
	F53e	F53 with • no absorptive material in cavity • 12.7 mm regular gypsum board	-	43	29
	F53f	F53 with • absorptive material in cavity • 12.7 mm regular gypsum board	-	45	30
	F54	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 12.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F54a	F54 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	-	57	28
	F54b	F54 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	59	30
	F54c	F54 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	-	64	35
	F54d	F54 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	65	38
	F54e	F54 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	57	28
	F54f	F54 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	59	30
	F54g	F54 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	64	35
	F54h	F54 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	65	38
	F54i	F54 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	55	27
	F54j	F54 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	57	29

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

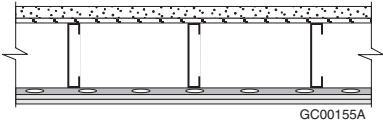
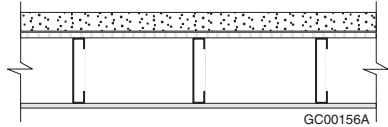
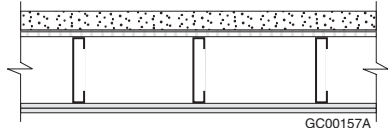
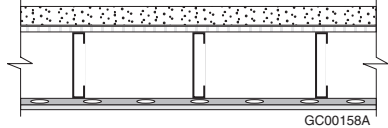
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F54k	F54 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	62	34
	F54l	F54 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	63	37
	F55	<ul style="list-style-type: none"> • 38 mm concrete topping (at least 70 kg/m²) • subfloor of 12.5 mm plywood, OSB or waferboard, or 17 mm tongue and groove lumber • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side 	 GC00155A		
	F55a	F55 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	64	36
	F55b	F55 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	1 h	65	38
	F55c	F55 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	1 h	69	44
	F55d	F55 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	45 min [1 h] ⁽¹²⁾	70	46
	F55e	F55 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	64	36
	F55f	F55 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	1 h	65	38
	F55g	F55 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board 	1 h	69	44
	F55h	F55 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board 	45 min [1 h] ⁽¹²⁾	70	46
	F55i	F55 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	62	34
	F55j	F55 with <ul style="list-style-type: none"> • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	63	35
	F55k	F55 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board 	-	67	42
	F55l	F55 with <ul style="list-style-type: none"> • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board 	-	68	43

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F56	<ul style="list-style-type: none"> • 50 mm concrete • 0.46 mm metal pan with a 19 mm rib • on steel joists spaced not more than 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F56a	<ul style="list-style-type: none"> • F56 with • no absorptive material in cavity • 15.9 mm Type X gypsum board 	-	46	25
	F56b	<ul style="list-style-type: none"> • F56 with • absorptive material in cavity • 15.9 mm Type X gypsum board 	-	48 ⁽⁸⁾	28
	F56c	<ul style="list-style-type: none"> • F56 with • no absorptive material in cavity • 12.7 mm Type X gypsum board 	-	46	25
	F56d	<ul style="list-style-type: none"> • F56 with • absorptive material in cavity • 12.7 mm Type X gypsum board 	-	48 ⁽⁸⁾	28
	F56e	<ul style="list-style-type: none"> • F56 with • no absorptive material in cavity • 12.7 mm regular gypsum board 	-	42	24
	F56f	<ul style="list-style-type: none"> • F56 with • absorptive material in cavity • 12.7 mm regular gypsum board 	-	44	25
	F57	<ul style="list-style-type: none"> • 50 mm concrete • 0.46 mm metal pan with a 19 mm rib • on steel joists spaced not more than 600 mm o.c. • 2 layers of gypsum board on ceiling side 			
	F57a	<ul style="list-style-type: none"> • F57 with • no absorptive material in cavity • 15.9 mm Type X gypsum board 	-	47	30
	F57b	<ul style="list-style-type: none"> • F57 with • absorptive material in cavity • 15.9 mm Type X gypsum board 	-	49 ⁽⁸⁾	32
	F57c	<ul style="list-style-type: none"> • F57 with • no absorptive material in cavity • 12.7 mm Type X gypsum board 	-	47	30
	F57d	<ul style="list-style-type: none"> • F57 with • absorptive material in cavity • 12.7 mm Type X gypsum board 	-	49 ⁽⁸⁾	32
	F57e	<ul style="list-style-type: none"> • F57 with • no absorptive material in cavity • 12.7 mm regular gypsum board 	-	43	29
	F57f	<ul style="list-style-type: none"> • F57 with • absorptive material in cavity • 12.7 mm regular gypsum board 	-	45	30
	F58	<ul style="list-style-type: none"> • 50 mm concrete • 0.46 mm metal pan with a 19 mm rib • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 1 layer of gypsum board on ceiling side 			
	F58a	<ul style="list-style-type: none"> • F58 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board 	-	57	28
	F58b	<ul style="list-style-type: none"> • F58 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board 	-	59	30

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

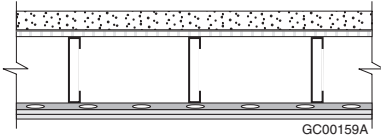
Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F58c	F58 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	-	64	35
	F58d	F58 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	-	65	38
	F58e	F58 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	57	28
	F58f	F58 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	59	30
	F58g	F58 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	-	64	35
	F58h	F58 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	-	65	38
	F58i	F58 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	55	27
	F58j	F58 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	57	29
	F58k	F58 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	62	34
	F58l	F58 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	63	37
	F59	• 50 mm concrete • 0.46 mm metal pan with a 19 mm rib • on steel joists spaced not more than 600 mm o.c. • with or without absorptive material in cavity • resilient metal channels spaced 400 mm or 600 mm o.c. • 2 layers of gypsum board on ceiling side	 GC00159A		
	F59a	F59 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	64	36
	F59b	F59 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	1 h	65	38
	F59c	F59 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 15.9 mm Type X gypsum board	1 h	69	44
	F59d	F59 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 15.9 mm Type X gypsum board	45 min [1 h] ⁽¹²⁾	70	46

Table A-9.10.3.1.B. (Continued)

Type of Assembly	Assembly Number	Description ⁽¹⁾⁽²⁾⁽³⁾	Fire-Resistance Rating ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Typical Sound Transmission Class ⁽⁴⁾⁽⁵⁾⁽⁷⁾⁽⁸⁾ (STC)	Typical Impact Insulation Class ⁽⁴⁾⁽⁷⁾⁽⁹⁾ (IIC)
	F59e	F59 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	1h	64	36
	F59f	F59 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	1 h	65	38
	F59g	F59 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm Type X gypsum board	1 h	69	44
	F59h	F59 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm Type X gypsum board	45 min [1 h] ⁽¹²⁾	70	46
	F59i	F59 with • no absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	62	34
	F59j	F59 with • no absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	63	35
	F59k	F59 with • absorptive material in cavity • resilient metal channels spaced 400 mm o.c. • 12.7 mm regular gypsum board	-	67	42
	F59l	F59 with • absorptive material in cavity • resilient metal channels spaced 600 mm o.c. • 12.7 mm regular gypsum board	-	68	43
Roofs					
Wood Roof Trusses	R1	• wood trusses spaced not more than 600 mm o.c. • 1 layer 15.9 mm Type X gypsum board	45 min	-	-
Rating Provided by Membrane Only					
	M1	• supporting members spaced not more than 600 mm o.c. • 1 layer 15.9 mm Type X gypsum board	30 min	-	-
	M2	• supporting members spaced not more than 600 mm o.c. • 2 layers 15.9 mm Type X gypsum board	1 h	-	-

Notes to Table A-9.10.3.1.B.:

- (1) For systems with a ceiling of a single layer of gypsum board on resilient channels, the resilient channel arrangement at the gypsum board butt end joints is to be as shown in Figure A-9.10.3.1.B.(a).
- (2) For systems with a ceiling of 2 layers of gypsum board on resilient channels, the fastener and resilient channel arrangement at the gypsum board butt end joints are to be as shown in Figure A-9.10.3.1.B.(b).
- (3) STC values given are for the minimum thickness of subfloor as shown. Minimum subfloor thickness required is determined by joist or truss spacing - see Table 9.23.14.5.A. Thicker subflooring is also acceptable.
- (4) Sound absorptive material includes fibre processed from rock, slag, or glass, or cellulose fibre either loose-fill or spray-applied. To obtain the listed STC rating, the nominal insulation thickness is 150 mm for rock, slag, or glass fibres or loose-fill cellulose fibre, and 90 mm for spray-applied cellulose fibre. Absorptive material will affect the STC by approximately adding or subtracting 1 per 50 mm change of thickness.
- (5) The fire and sound ratings are based on the spacing of ceiling supports as noted. A narrower spacing will be detrimental to the sound rating but not to the fire rating.
- (6) Type and spacing of fasteners shall be in accordance with Subsection 9.29.5. or CSA A82.31-M:
 - (i) fastener distance to board edges and butt ends shall be no less than 38 mm, except for fasteners on the butt ends of the base layer in ceilings with two layers (see Figure A-9.10.3.1.B.(b)); and
 - (ii) fasteners shall not be spaced more than 300 mm o.c.

A-9.10.3.1.

Table A-9.10.3.1.B. (Continued)

- (7) STC values given are for depth of framing member noted. For shallower members, subtract 1 from the STC for each 50 mm reduction in framing depth. For framing members deeper than noted, add 1 to the STC for each 50 mm increase in framing depth.
- (8) STC values given reflect results for joist spacing of at least 400 mm o.c. unless otherwise specified. For joist spacing of at least 600 mm o.c., add 2 to the STC values given in the Table.
- (9) IIC values given are for floors tested with no finished flooring.
- (10) The fire rating value within square brackets is achieved only where absorptive material includes:
 - (i) fibre processed from rock or slag with a thickness of 90 mm and 2.8 kg/m²; or
 - (ii) cellulose fibre spray-applied with a minimum depth of 90 mm on the underside of the deck and 90 mm on the sides of the floor joists, and a minimum density of 50 kg/m³.
- (11) The fire-resistance rating values given only apply to systems with solid wood joists spaced not more than 400 mm o.c. No information is available on wood I-joists for these cases.
- (12) The fire rating value within square brackets is achieved only where absorptive material includes fibre processed from rock or slag with a thickness of 90 mm and 2.8 kg/m².

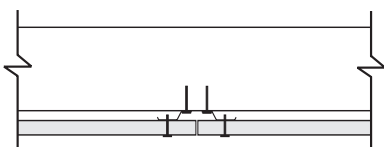


Figure A-9.10.3.1.B.(a)
Single Layer Butt Joint Details

Notes to Figure A-9.10.3.1.B.(a):

- (1) Figure is for illustration purposes only and is not to scale.
- (2) The structural member can be any one of the types described in the Table.
- (3) Adjacent gypsum board butt ends are to be attached to separate resilient channels using regular Type S screws, located a minimum of 38 mm from the butt end.

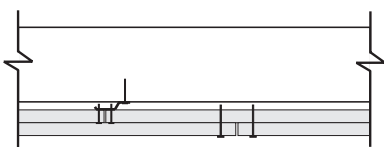


Figure A-9.10.3.1.B.(b)
Double Layer Butt Joint Details

Notes to Figure A-9.10.3.1.B.(b):

- (1) Figure is for illustration purposes only and is not to scale.
- (2) The structural member can be any one of the types described in the Table.
- (3) Base layer butt ends can be attached to a single resilient channel using regular Type S screws.
- (4) Type G screws measuring a minimum of 32 mm in length and located a minimum of 38 mm from the butt end are to be used to fasten the butt ends of the face layer to the base layer.

A-9.10.9.6.(1) Penetration of Fire-Rated Assemblies by Service Equipment. This Sentence, together with Article 3.1.9.1., is intended to ensure that the integrity of fire-rated assemblies is maintained where they are penetrated by various types of service equipment.

For buildings regulated by the requirements in Part 3, fire stop materials used to seal openings around building services, such as pipes, ducts and electrical outlet boxes, must meet a minimum level of performance demonstrated by standard test criteria.

This is different from the approach in Part 9. Because of the type of construction normally used for buildings regulated by the requirements in Part 9, it is assumed that this requirement is satisfied by the use of generic fire stop materials such as mineral wool, gypsum plaster or Portland cement mortar.

A-9.10.9.16.(4) **13** Separation between Dwelling Units and Storage or Repair Garages. The gas-tight barrier between a dwelling unit and an attached garage is intended to provide protection from carbon monoxide and gasoline fumes

entering the dwelling unit. Building assemblies incorporating an air barrier system will perform adequately with respect to gas tightness, provided all joints in the airtight material are sealed and reasonable care is exercised where the wall or ceiling is pierced by building services. Where a garage is open to the adjacent attic space above the dwelling unit it serves, a gas-tight barrier in the ceiling of the dwelling unit will also provide protection. Unit masonry walls forming the separation between a dwelling unit and an adjacent garage should be provided with two coats of sealer or plaster, or covered with gypsum wallboard on the side of the wall exposed to the garage. All joints must be sealed to ensure continuity of the barrier. (See also Sentences 9.25.3.3.(3) to (8).)

Appendix D

Fire-Performance Ratings

Section D-1 General

The contents of this Appendix have been prepared on the recommendations of the Standing Committee on Fire Performance Ratings, which was established by the Canadian Commission on Building and Fire Codes (CCBFC) for this purpose.

D-1.1. Introduction

D-1.1.1. Scope

1) This fire-performance information is presented in a form closely linked to the performance requirements and the minimum materials specifications of the National Building Code of Canada 1995.

2) The ratings have been assigned only after careful consideration of all available literature on assemblies of common building materials, where they are adequately identified by description. The assigned values based on this information will, in most instances, be conservative when compared to the ratings determined on the basis of actual tests on individual assemblies.

3) The fire-performance information set out in this Appendix applies to materials and assemblies of materials which comply in all essential details with the minimum structural design standards described in Part 4 of the National Building Code of Canada. Additional requirements, where appropriate, are described in other Sections of this Appendix.

This Appendix is included for explanatory purposes only and does not form part of the requirements. The bold face reference numbers that introduce each item do not relate to specific requirements in the Code.

4) Section D-2 of this Appendix assigns fire-resistance ratings for walls, floors, roofs, columns and beams related to CAN/ULC-S101-M, "Fire Endurance Tests of Building Construction and Materials," and describes methods for determining these ratings.

5) Section D-3 assigns flame-spread ratings and smoke developed classifications for surface materials related to CAN/ULC-S102-M, "Test for Surface Burning Characteristics of Building Materials and Assemblies" and CAN/ULC-S102.2-M, "Test for Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials and Assemblies."

6) Section D-4 describes noncombustibility in building materials when tested in accordance with CAN4-S114-M, "Test for Determination of Non-Combustibility in Building Materials."

7) Section D-5 contains requirements for the installation of fire doors and fire dampers in fire-rated stud wall assemblies and the installation of fire stop flaps in fire-rated membrane ceilings.

8) Section D-6 contains background information regarding fire test reports, obsolete materials and assemblies, assessment of archaic assemblies and the development of the component additive method.

D-1.1.2. Referenced Documents

1) Where documents are referenced in this Appendix, they shall be the editions designated in Table D-1.1.2.

Table D-1.1.2. ^{r4}
Documents Referenced in Appendix D Fire-Performance Ratings

Issuing Agency	Document Number	Title of Document	Reference
ANSI	A208.1-1993 ^{r62}	Particleboard	Table D-3.1.1.A.
ASTM	C 36/C 36M-99e1 ^{r r4}	Gypsum Wallboard	D-1.5.1. Table D-3.1.1.A.
ASTM	C 37/C 37M-99 ^{r r4}	Gypsum Lath	D-1.5.1.

D-1.1.2.

Table D-1.1.2. (Continued)

Issuing Agency	Document Number	Title of Document	Reference
ASTM	C 330-97 r4	Lightweight Aggregates for Structural Concrete	D-1.4.3.(2)
ASTM	C 442/C 442M-99 r r4	Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board	D-1.5.1. Table D-3.1.1.A.
ASTM	C 588/C 588M-99 r r4	Gypsum Base for Veneer Plasters	D-1.5.1. Table D-3.1.1.A.
ASTM	C 630/C 630M-00 r r4	Water-Resistant Gypsum Backing Board	D-1.5.1. Table D-3.1.1.A.
ASTM	C 931/C 931M-98 r e2 r4	Exterior Gypsum Soffit Board	D-1.5.1. Table D-3.1.1.A.
ASTM	C 960-97 r4	Predecorated Gypsum Board	D-1.5.1.
CCBFC	NRCC 30629	Supplement to the National Building Code of Canada 1990	D-6.2. D-6.3. D-6.4.
CGSB	4-GP-36M-1978	Carpet Underlay, Fibre Type	Table D-3.1.1.B.
CGSB	CAN/CGSB-4.129-93	Carpets for Commercial Use	Table D-3.1.1.B.
CGSB	CAN/CGSB-11.3-M87	Hardboard	Table D-3.1.1.A.
CGSB	CAN/CGSB-34.16-M89	Sheets, Asbestos-Cement, Flat, Fully Compressed	Table D-3.1.1.A.
CGSB	CAN/CGSB-92.2-M90	Trowel or Spray Applied Acoustical Material	D-2.3.4.(5)
CSA	A23.1-00 r r4	Concrete Materials and Methods of Concrete Construction	D-1.4.3.(1)
CSA	A23.3-94 r4	Design of Concrete Structures	D-2.1.5. D-2.6.6. D-2.8.2. Table D-2.8.2. e2
CSA	A82.5-M1978	Structural Clay Non-Load-Bearing Tile	Table D-2.6.1.A.
CSA	A82.22-M1977	Gypsum Plasters	Table D-3.1.1.A.
CSA	CAN/CSA-A82.27-M91	Gypsum Board	D-1.5.1. Table D-3.1.1.A.
CSA	A82.30-M1980	Interior Furring, Lathing and Gypsum Plastering	D-1.7.2.(1) D-2.3.9.(1) Table D-2.5.1.
CSA	A82.31-M1980	Gypsum Board Application	D-2.3.9.
CSA	A126.1-M1984	Vinyl Asbestos and Vinyl Composition Floor Tile	Table D-3.1.1.B.
CSA	A165.1-94	Concrete Masonry Units	Table D-2.1.1.
CSA	CAN/CSA-A247-M86	Insulating Fibreboard	Table D-3.1.1.A.
CSA	CAN/CSA-G312.3-M92	Metric Dimensions for Structural Steel Shapes and Hollow Structural Sections	D-2.6.6.
CSA	O86-01 e r4	Engineering Design in Wood	D-2.11.2.(1) D-2.11.2.(2)
CSA	O121-M1978	Douglas Fir Plywood	Table D-3.1.1.A.
CSA	CAN/CSA-O141-91	Softwood Lumber	D-2.3.6.(2) Table D-2.4.1.
CSA	O151-M1978	Canadian Softwood Plywood	Table D-3.1.1.A.
CSA	O153-M1980	Poplar Plywood	Table D-3.1.1.A.
CSA	O437.0-93 e	OSB and Waferboard	Table D-3.1.1.A.
CSA	CAN/CSA-S16.1-94	Limit States Design of Steel Structures	D-2.6.6.
NFPA	80-1999 r r4	Fire Doors and Fire Windows	D-5.2.1.

Table D-1.1.2. (Continued)

Issuing Agency	Document Number	Title of Document	Reference
ULC	CAN/ULC-S101-M89	Fire Endurance Tests of Building Construction and Materials	D-1.1.1.(4) D-1.12.1. D-2.3.2.
ULC	CAN/ULC-S102-M88	Test for Surface Burning Characteristics of Building Materials and Assemblies	D-1.1.1.(5)
ULC	CAN/ULC-S102.2-M88	Test for Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials and Assemblies	D-1.1.1.(5) Table D-3.1.1.B.
ULC	CAN4-S114-M80	Test for Determination of Non-Combustibility in Building Materials	D-1.1.1.(6) D-4.1.1. D-4.2.1.
ULC	S505-1974	Fusible Links for Fire Protection Service	D-5.3.2.
ULC	CAN/ULC-S702-97 e4	Mineral Fibre Thermal Insulation for Buildings e4	Table D-2.3.4.A. Table D-2.3.4.D. D-2.3.5. Table D-2.6.1.E. D-6.4.
ULC	CAN/ULC-S703-01 e4	Cellulose Fibre Insulation (CFI) for Buildings	D-2.3.4.(5)

D-1.1.3. Applicability of Ratings

The ratings shown in this document apply if more specific test values are not available. The construction of an assembly that is the subject of an individual test report must be followed in all essential details if the fire-resistance rating reported is to be applied for use with this Code.

D-1.1.4. Higher Ratings

The authority having jurisdiction may allow higher fire-resistance ratings than those derived from this Appendix, where supporting evidence justifies a higher rating. Additional information is provided in summaries of published test information and the reports of fire tests carried out by the Institute for Research in Construction, National Research Council of Canada, included in Section D-6, Background Information.

D-1.1.5. Additional Information on Fire Rated Assemblies

Assemblies containing materials for which there is no nationally recognized standard are not included in this Appendix. Many such assemblies have been rated by Underwriters Laboratories (UL), Underwriters' Laboratories of Canada (ULC), or Intertek Testing Services NA Ltd. (ITS). The UL "Fire Resistance Directory," Volume 1, can be obtained from UL, 333 Pfingsten Road, Northbrook, Illinois 60062 U.S.A. The ULC information is published in their "List of Equipment and Materials," Volume III, Fire Resistance Ratings. Copies of this document may be obtained from ULC, 7 Crouse Road, Scarborough,

Ontario M1R 3A9. ITS' Directory of Listed Products can be obtained from ITS, 3210 American Drive, Mississauga, Ontario L4V 1B3. **e2**

D-1.2. Interpretation of Test Results

D-1.2.1. Limitations

1) The fire-performance ratings set out in this Appendix are based on those that would be obtained from the standard methods of test described in the Code. The test methods are essentially a means of comparing the performance of one building component or assembly with another in relation to its performance in fire.

2) Since it is not practicable to measure the fire resistance of constructions in situ, they must be evaluated under some agreed test conditions. A specified fire-resistance rating is not necessarily the actual time that the assembly would endure in situ in a building fire, but is that which the particular construction must meet under the specified methods of test.

3) Considerations arising from departures in use from the conditions established in the standard test methods may, in some circumstances, have to be taken into account by the designer and the authority having jurisdiction. Some of these conditions are covered at present by the provisions of the National Building Code.

D-1.2.1.

4) For walls and partitions, the stud spacings previously specified as 16 or 24 inch have been converted to 400 and 600 mm, respectively, for consistency with other metric values; however, the use of equivalent imperial dimensions for stud spacing is permitted.

D-1.3. Concrete

D-1.3.1. Aggregates in Concrete

Low density aggregate concretes generally exhibit better fire performance than natural stone aggregate concretes. A series of tests on concrete masonry walls, combined with mathematical analysis of the test results, has allowed further distinctions between certain low density aggregates to be made.

D-1.4. Types of Concrete

D-1.4.1. Description

1) For purposes of this Appendix, concretes are described as Types S, N, L, L₁, L₂, L40S, L₁20S or L₂20S as described in (2) to (8).

2) Type S concrete is the type in which the coarse aggregate is granite, quartzite, siliceous gravel or other dense materials containing at least 30% quartz, chert or flint.

3) Type N concrete is the type in which the coarse aggregate is cinders, broken brick, blast furnace slag, limestone, calcareous gravel, trap rock, sandstone or similar dense material containing not more than 30% of quartz, chert or flint.

4) Type L concrete is the type in which all the aggregate is expanded slag, expanded clay, expanded shale or pumice.

5) Type L₁ concrete is the type in which all the aggregate is expanded shale.

6) Type L₂ concrete is the type in which all the aggregate is expanded slag, expanded clay or pumice.

7) Type L40S concrete is the type in which the fine portion of the aggregate is sand and low density aggregate in which the sand does not exceed 40% of the total volume of all aggregates in the concrete.

8) Type L₁20S and Type L₂20S concretes are the types in which the fine portion of the aggregate is sand and low density aggregate in which the sand does not exceed 20% of the total volume of all aggregates in the concrete.

D-1.4.2. Determination of Ratings

Where concretes are described as being of Type S, N, L, L₁ or L₂, the rating applies to the concrete containing the aggregate in the group that provides the least fire resistance. If the nature of an aggregate cannot be determined accurately enough to place it in one of the groups, the aggregate shall be considered as being in the group that requires a greater thickness of concrete for the required fire resistance.

D-1.4.3. Description of Aggregates

1) The descriptions of the aggregates in Type S and Type N concretes apply to the coarse aggregates only. Coarse aggregate for this purpose means that retained on a 5 mm sieve using the method of grading aggregates described in CSA A23.1, "Concrete Materials and Methods of Concrete Construction." ■

2) Increasing the proportion of sand as fine aggregate in low density concretes requires