

RECOMMENDED SELECTION AND USAGE GUIDE FOR COMMERCIAL STEEL DOOR AND FRAME PRODUCTS

PURPOSE

To provide architects, specifiers and users with concise, yet comprehensive guidelines for the selection and usage of steel doors and frames for commercial, industrial, institutional and multi-unit housing building construction.

SCOPE

The selection of steel doors and frames for specific applications is based on a variety of criteria including frequency and severity of use, fire and life safety code requirements, thermal insulation values, security and appearance.

Table I, Opening Classifications, outlines commercial, industrial, institutional and multi-housing building types and classifies typical door openings within these building types according to normal duty of performance requirements. These duty requirements can be used to select appropriate door and frame constructions and designs from Tables II and III.

Table II, Steel Door Classifications, relates basic steel door constructions, face sheet gauges, sizes and glazing configurations to the duty of performance which may be anticipated.

Table III, Steel Frame Classifications, relates basic steel frame constructions, gauges, and sizes to the duty of performance which may be anticipated.

It is recommended that this Selection and Usage Guide be used in conjunction with the CSDMA publications, “Specifications for Commercial Steel Doors and Frames”, the “Canadian Fire Labeling Guide for Steel Doors and Frames”, and the “Recommended Dimensional Standards for Commercial Steel Doors and Frames”. For conditions beyond the scope of this document, such as stainless steel, lead-lined, sound or blast retardant, bullet resistant and detention security steel doors and frames, please refer to the Product Directory on the Association website and contact an appropriate member for assistance.

Recommendations contained in this document are the opinions of member manufacturers, based on their combined experience and individual members classify the duty of their specific product lines.

All dimensions indicated are nominal. Requirements are stated in both imperial and corresponding hard metric values. Each is considered the standard for its measurement system. Users are advised not to mix measurement systems. All products, constructions and options included in this publication are not necessarily available from each member manufacturer. Users are encouraged to contact member manufacturers to assist in product selection to meet their project requirements.



**Canadian Steel Door
Manufacturers Association**

**L'Association Canadienne
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TABLE I - OPENING CLASSIFICATIONS

Legend S = Standard Duty M = Medium Duty H = Heavy Duty X = Extra-Heavy Duty		OPENING TYPES																	
		Entrance	Exit (exit only function)	Stairwell	Corridor (cross-corridor)	Room Access	Washroom	Utility	Storage	Kitchen	Operating Room	Exam Room	Production	Office	Classroom	Lecture, Conference Room, Auditorium	Gymnasium or Therapy Area	Dressing Room	Cafeteria, Lunch Room
BUILDING TYPES																			
COMMERCIAL	Arena	H	M	H	H	M	M	M	M	M				M		M		H	M
	Art Gallery	H	M	M	M	S	S	S	M				M	M	M				M
	Bank	H	M	M	M	S	S	S	S				S						S
	Club	M	S	M	M	S	M	S	S	M				S		M	M	M	M
	Department Store	H	S	M	M	S	M	S	S	M				S				S	M
	Mall	H	M	M	M	S	M	S	S	M				S				S	M
	Office Building	M	S	M	M	S	S	S	S	M				S				S	M
	Restaurant	H	S	M	M		M	S	S	M				S				S	
	Studio (TV/Radio)	M	S	M	M	S	S	S	S				S	S				S	M
	Theater	H	M	M	M	S	M	S	S				M	S					
INDUSTRIAL	Factory	M	S	M	M		M	S	S	M			M	M				M	M
	Filtration Plant	H	M	H	H		M	M	M				H	M				M	
	Generating Station	H	M	M	M		M	M	S				M	M				M	
	Laboratory	M	S	M	M		S	S	M	M			M	S		M		S	M
	Parking Garage	H	M	M				S	S					S					
	Sewage Treatment Plant	H	M	H	H		M	M	M				H	M				M	
	Warehouse	M	S	M	M		S	S	S				M	M				M	M
	Workshop/Hanger	M	S	M	M		M	S	S	M			M	M				M	M
INSTITUTIONAL	Community College	X	H	H	H		H	M	M	H		M		M	M	H	H	H	H
	Hospital	H	M	H	M	M	M	M	M	H	H	M		M	M	M	M	M	H
	Jail	H	H	X	X	X	H	H	H	H				H				H	H
	Library	H	M	M	M	S	M	S	S					M	M	M			H
	Military	H	H	H	H	M	M	S	M	H				M	H	H	H	H	H
	Museum	H	M	M	M	S	M	S	M					M	M	M			H
	Penitentiary	X	X	X	X	X	X	X	X	X	X	X		H	H	H	X	X	H
	Police Station	H	H	X	X	X	H	H	H	H				H		H	H	H	H
	Reformatory	X	X	X	X	X	X	H	H	X	X	X		H	H	H	X	X	H
	School	X	H	H	H		H	M	M	H		M		M	M	H	H	H	H
University	X	H	H	H		H	M	M	H		M		M	M	H	H	H	H	
HOUSING	Convalescent Home	M	S	M	M	M	S	S	S	H		M		M			M	S	M
	Dormitory	H	M	M	M	M	H	S	M										
	Home for the Aged	M	M	M	M	M	M	S	S	H		M		M		M	M	S	M
	Hotel	H	M	M	M	S	M	S	S	H				S		M	M	M	
	Motel	M	M	M	M	S	M	S	S					M					
	Condo/Apartment	M	M	M	M	S		S	S								M	M	

Doors in Institutional Buildings are in areas where individuals are not under legal restraint. Where individuals are under legal restraint, detention security (prison) doors should be specified.

TABLE II - STEEL DOOR CLASSIFICATIONS

Legend S = Standard Duty M = Medium Duty H = Heavy Duty X = Extra-Heavy Duty NR = Not Recommended	CONFIGURATIONS (Glazing and Maximum Nominal Leaf Size)					
	Slab, View, Narrow or Half Light			Multi-Light or Full Light		
	900 x 2150 (3' x 7')	1200 x 2450 (4' x 8')	1200 x 3050 (4' x 10')	900 x 2150 (3' x 7')	1200 x 2450 (4' x 8')	1200 x 3050 (4' x 10')
CONSTRUCTION AND FACE SHEET GAUGE						
LC 20	S	NR	NR	NR	NR	NR
LC 20 **	M	NR	NR	NR	NR	NR
LC 18	M	M	M	M	M	NR
LC 18 *	H	H	H	H	H	H
LC 16	H	H	H	H	H	H
LC 16 *	X	X	X	X	X	X
LC 14 *	X	X	X	X	X	X
WS 18 *	H	H	H	H	H	H
WS 16 *	X	X	X	X	X	X
WS 14 *	X	X	X	X	X	X

NOTES:

LC = Laminated Core Door Construction

All laminated core types can be used in fire-rated steel doors

Core Types: Honeycomb - For exterior doors a top cap is recommended to prevent moisture from entering the door

Polystyrene - Insulating core with a thermal value of RSI 1.0 (R 6.0) minimum.

Polyisocyanurate - Insulating core with a thermal value of RSI 1.9 (R11.0) minimum

Temperature Rise Rated - Mineral core used in fire-rated doors to achieve a 250° C (450°F) at 60 minutes temperature rise

Vertical Steel Stiffeners - Stiffeners laminated to each face sheet with voids between stiffeners filled with fiberglass batt type material.

WS = Welded Stiffener Door Construction

Vertical steel stiffeners are welded to each face sheet with voids between stiffeners filled with fiberglass batt type material.

* = Adhesive assisted edge seam or tack-welded edge seams or continuously welded edge seams

** = Adhesive assisted edge seam or tack-welded edge seams

TABLE III - STEEL FRAME CLASSIFICATIONS

Legend S = Standard Duty M = Medium Duty H = Heavy Duty X = Extra-Heavy Duty NR = Not Recommended	MAXIMUM FRAME RABBET OPENINGS					
	Singles			Pairs		
	900 x 2150 (3' x 7')	1200 x 2450 (4' x 8')	1200 x 3050 (4' x 10')	1800 x 2150 (6' x 7')	2400 x 2450 (8' x 8')	2400 x 3050 (8' x 10')
CONSTRUCTION AND GAUGE						
Slip-On 18	S	S	NR	S	NR	NR
Slip-On 16	M	M	NR	M	M	NR
KD 18	S	S	NR	S	NR	NR
KD 16	M	M	M	M	M	M
KD 14	H	H	H	H	H	H
Welded 18	S	S	NR	S	S	NR
Welded 16	M	M	M	M	M	M
Welded 14	X	X	X	X	X	X

NOTES:

Slip-On Construction: For installation in rough stud openings after drywall has been applied.

KD = Knocked-down: Components are assembled as a complete unit prior to installation.

Welded: Refer to CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Product - 08 11 00", Section 2.2.2 and Appendix 2