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Standard Specification for Industrial and Commercial Horizontal Slide Gates[1]

This standard is issued under the fixed designation F1184; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

ε[1] NOTE—General Requirements were moved editorially to Section 4 in March 2023.

1. Scope

1.1 This specification covers detailed requirements for rolling, cantilever and overhead slide gates, gate posts, and accessories for industrial and commercial applications.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are for information only.

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A780 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

B221 Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

F567 Practice for Installation of Chain-Link Fence

F1043 Specification for Strength and Protective Coatings on Steel Industrial Fence Framework

F1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

F2200 Specification for Automated Vehicular Gate Construction

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *polymer*—as used in this specification, describes poly(vinyl chloride) (PVC) or polyester.

4. General Requirements

4.1 Gates shall be designed, constructed, and installed to not fall over more than 45 degrees from the vertical plane, when a gate is detached from the supporting hardware.

4.2 Positive stops shall be required to limit travel to the designed fully open and fully closed positions. These stops shall be installed at either the top of the gate, or at the bottom of the gate where such stops shall horizontally or vertically project no more than is required to perform their intended function.

4.3 All weight bearing exposed rollers 8 ft (2.44 m), or less, above grade shall be guarded or covered.

4.4 A gap, measured in the horizontal plane parallel to the roadway, between a fixed stationary object nearest the roadway (such as a gate support post) and the gate frame when the gate is in either the fully open position or the fully closed position, shall not exceed 2 ¼ in. (57 mm). See Fig. 1.

4.4.1 *Exception*—All other fixed stationary objects greater than 16 in. (406 mm) from the gate frame shall not be required to comply with this section.

4.5 All gates shall be designed with sufficient lateral stability to assure that the gate will enter a receiver guide.

4.5.1 *Single Panel*—Receiver guides shall be recessed behind the leading edge of the receiver post or fixed object.

4.5.1.1 *Exception*—Receiver guides mounted greater than 8 ft (2.44 m) above grade shall not be required to comply with this section.

4.5.2 *Dual Panels*—Receiver guides, if used, may be installed on either panel, and shall include a cross-sectional area of 9 in.^{2} (5806 mm^2) or greater as measured on the leading edge of each guide.

4.6 Gates shall be designed, constructed, and installed such that their movement shall not be initiated by gravity and shall not result in continuous, unimpeded movement in either linear direction of its travel.

5. Classification

5.1 Horizontal slide gates covered by this specification shall be of the types described in 5.1.1, 5.1.2, and 5.1.3.

[1] This specification is under the jurisdiction of ASTM Committee F14 on Fences and is the direct responsibility of Subcommittee F14.15 on Gates.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

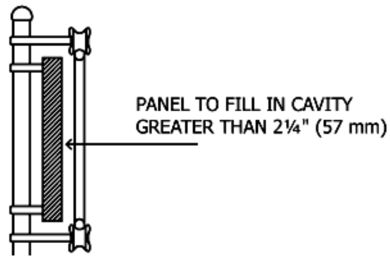

FIG. 1 Vehicular Horizontal Slide Gate – Section View

5.1.1 *Type I—Overhead Slide*—Any horizontal slide gate supported only from above.

5.1.2 *Type II—Cantilever Slide*—Any horizontal slide gate spanning an opening lacking a top or bottom support within that opening. Type II gates shall be supplied in one of two classes:

5.1.2.1 *Class 1*—Steel frame gates and aluminum frame gates using external rollers.

5.1.2.2 *Class 2*—Steel frame gates and aluminum frame gates using internal rollers.

5.1.3 *Type III—Rolling Gate*—Any horizontal slide gate that requires support on grade to traverse the gate opening. Type III gates shall be supplied in one of two classes:

5.1.3.1 *Class 1*—Steel frame gates and aluminum frame gates using an on-grade track to support and guide the entire gate.

5.1.3.2 *Class 2*—Steel frame gates and aluminum frame gates using a supporting pipe track at the trailing edge and an on-grade roller support at the leading edge of the gate.

6. Materials and Manufacture

6.1 *Materials*—The base materials of the gate frame shall be round or rectangular tubular members, welded at all corners. However, bolted or riveted, or both, field assemblies of modular panels are permitted.

6.1.1 The interior vertical or horizontal bracing, when needed, shall be the same metal tubular material and finish as the gate frame, but need not be the same size.

6.2 *Manufacture*—Gate frames shall be fabricated, and coated where necessary, as described in 6.2.1 through 6.2.6. For gates intended to be automated, manufacture shall conform to the applicable provisions of Specification F2200.

6.2.1 *Zinc-Coated Steel Frames* shall be in accordance with Specifications F1043 or F1083, or a combination thereof, and shall match that selected for any adjoining fence framework. Welded joints shall be coated in accordance with Practice A780, employing a zinc-rich paint conforming to 4.2.2 of Practice A780 and following only the procedures outlined in A2.1.3 and A2.1.4 of Practice A780.

6.2.2 *Aluminum Alloy Gate Frames* shall be in accordance with Specifications B221, 6005-T61, 6061-T6, or 6063-T6, and shall meet the performance criteria described in this specification.

6.2.3 *Polymer-Coated Steel or Polymer-Coated Aluminum Frames* shall be in accordance with Specification F1043 and shall match that selected for any adjoining fence framework. Welded joints on steel gate frames shall be coated in accordance with Practice A780, employing a zinc-rich paint conforming to 4.2.2 of Practice A780 and following only the procedures outlined in A2.1.3 and A2.1.4 of Practice A780. The painted areas shall then be top-coated to match the frame color.

6.2.4 *Chain Link Gate Fabric*—The fabric shall be as specified for the adjoining fence.

6.2.5 *Barbed Wire Top*—When specified, the barbed wire top shall have extensions to the gate frame to accommodate three strands of barbed wire uniformly spaced and positioned so that the top strand is approximately 1 ft (0.305 m) above the top horizontal member of the gate frame, except that the minimum height for barbed wire installed at the top of gates intended to be automated shall be in accordance with Specification F2200. Barbed wire shall be attached by suitable means to prevent wire from moving out of position and shall be supported by the gate frame extensions at maximum intervals of 10 ft (3.05 m).

6.2.6 *Barbed Tape*—The minimum height for barbed tape installed at the top of gates intended to be automated shall be in accordance with Specification F2200.

7. Dimensions

7.1 Width of gate opening shall be measured from one inside face to the other inside face of the gate posts.

7.2 Height of gate shall be measured from the finished grade line to the top edge of the gate frame, to match the height of the adjoining fence as measured from the finished grade line to the top edge of the top rail or fabric.

8. Gate Accessories

8.1 All gate hardware shall be of sufficient strength and durability to support the gate and repeated open-close cycles.

8.2 In addition, latches shall have a provision for locking devices.

9. Additional Specifications for Type I Gates

9.1 The specifications given in 9.1.1 through 9.1.7 shall apply only to Type I (overhead slide) gates with opening widths up to 40 ft (12.2 m).

9.1.1 *Materials and Manufacture*—In addition to the welded construction specified in 6.1, the gate frame may be alternatively assembled with corner fittings. Gates assembled with corner fittings shall have adjustable truss rods of 5⁄16 in. (7.9 mm) minimum diameter on panels 5 ft (1.52 m) wide or wider. Truss rods shall be of the same base metal and finish as the gate frame.

9.1.2 *Shape and Size*—Shape and size of the gate frame shall conform to procurement drawings or shall be of the shape and size as specified. The gate frame width shall be the width of the gate opening plus the diameter of one gate post.

9.1.3 *Dimension and Weight*—Gate frame members shall have dimensions and weights as described in Table 1.

9.1.4 *Gate Posts*—Gates having an opening width of up to 10 ft (3.05 m) and an overhead clearance of up to 14 ft (4.27 m) shall be supported by steel posts with a nominal outside diameter of 2.875 in. (73.02 mm) and a minimum weight of 4.64 lb/linear ft (6.91 kg/m). Gates having an opening width

TABLE 1 Type I Gates—Gate Frame Members, Dimensions and Weights

Gate Fabric Weight	Outside Dimensions in.	Outside Dimensions (mm)	Nominal Weight[A] lb/ft	Nominal Weight[A] (kg/m)
6 ft (1.8 m) or less				
Round tubular (steel)	1.66	(42.2)	1.83	(2.72)
Rectangular tubular (steel)	1.50	(38.1)	1.84	(2.74)
Round tubular (aluminum)	1.90	(48.3)	0.91	(1.35)
Rectangular tubular (aluminum)	2.00	(50.8)	0.91	(1.35)
Over 6 ft (1.8 m)				
Round tubular (steel)	1.90	(48.3)	2.28	(3.39)
Rectangular tubular (steel)	2.00	(50.8)	2.52	(3.75)
Round tubular (aluminum)	1.90	(48.3)	0.91	(1.35)
Rectangular tubular (aluminum)	2.00	(50.8)	0.91	(1.35)
Interior bracing[B]				
Round pipe (steel)	1.66	(42.2)	1.83	(3.39)
Rectangular pipe (steel)	1.50	(38.1)	1.84	(2.74)
Round tubular (aluminum)	1.90	(48.3)	0.91	(1.35)
Rectangular tubular (aluminum)	2.00	(50.8)	0.91	(1.35)

[A]Weight tolerance, ±5 %.
[B]The gate shall have vertical interior bracing at maximum intervals of 8 ft (2.4 m), and shall have a horizontal interior member if fabric height is 8 ft (2.4 m) or more.

larger than 10 ft (3.05 m) but up to 24 ft (7.32 m) with an overhead clearance of up to 22 ft (6.71 m) shall be supported by steel posts with a nominal outside diameter of 4.00 in. (101.6 mm) and a minimum weight of 6.56 lb/linear ft (9.77 kg/m). Gates having an opening width larger than 22 ft (6.7 m) but up to 40 ft (12.2 m) and an overhead clearance of up to 22 ft (6.71 m) shall be supported by a double set of steel posts with a nominal outside diameter of 4.00 in. (101.6 mm) and a minimum weight of 6.56 lb/linear ft (9.77 kg/m), or a single set of steel posts with a nominal outside diameter of 6.625 in. (168.3 mm) and a minimum weight of 18.97 lb/linear ft (28.27 kg/m). For post lengths over 24 ft (7.32 m), a single weld butt joint reinforced by an internal sleeve at least 2 ft (0.61 m) in length will be permitted. Gate posts shall be installed in accordance with Practice F567.

9.1.5 *Gate Support Member*—The overhead track support member shall be as indicated in the project specifications. The support member shall extend over the gate opening span and the adjacent span at the specified ground clearance. The support member shall be of adequate length to ensure a clear opening. The track and member shall have proper corrosion protection.

9.1.6 *Roller Assembly*—The gate shall be suspended from the overhead track member by means of suitable internal or external roller assemblies. These roller assemblies shall consist of at least two swivel type trucks having sealed lubricant ball bearing wheels, or roller bearing wheels with grease fittings, and include a means to assure that the trucks remain properly aligned in or on the track during all normal operations of the gate.

9.1.7 *Gate Extensions*—Gate extensions, which consist of vertical members which span the distance between the top of the gate and the overhead track, shall be attached to the gate frame by means of a threaded or bolted coupling, or a combination of both.

9.1.8 *Gate Extension Bracing*—Suitable diagonal or horizontal bracing, or both, shall be provided to ensure proper rigidity of the gate during normal operation.

10. Additional Specifications for Type II Gates

10.1 The specifications given in 10.1.1 through 10.1.8 shall apply only to Type II (cantilever slide) gates with opening widths up to 30 ft (9.1 m) and heights (see 6.2) up to 8 ft (2.4 m).

10.1.1 *Shape and Size*—Shape and size of the gate frame shall conform to procurement drawings or shall be of the shape and size as specified. The gate frame width shall be the width of the opening plus the diameter of one gate post, plus an overhang or counterbalance panel of at least 40 % of the width of the opening. Only the size of the opening need be filled with fabric or other specified material. Class 1 and Class 2 gates with tubular steel frames shall conform to the dimensions and weights in Table 2.

10.1.2 *Gate Posts*—Gates having an opening width of up to 12 ft (3.7 m) shall be supported by steel posts with a nominal outside diameter of 2.875 in. (73.03 mm) and a minimum weight of 4.64 lb/linear ft (6.91 kg/m). Gates having an opening width larger than 12 ft (3.7 m) shall be supported by steel posts with a nominal outside diameter of 4.00 in. (101.6 mm) and a minimum weight of 6.56 lb/linear ft (9.77 kg/m). Gate posts shall be installed in accordance with Practice F567.

10.1.3 *Guide Posts (for Class 1 Gates Only)*—Guide posts for all Class 1 gates equal to the height of the gate shall be installed adjacent to each gate support post (see Fig. 2). The gate shall slide between the gate support posts and the guide posts. Guide posts shall be the same as, or one pipe diameter smaller than, the gate support posts and shall have a minimum weight of 3.11 lb/ft (4.63 kg/m).

10.1.4 *Roller Assembly:*

10.1.4.1 External rollers for Class 1 gates shall be galvanized, malleable iron riding on a caged cylindrical roller or needle bearing. The bearing shall extend a minimum of 90 % of the width of the inside of the roller wheel, turn on a steel axle shaft and be housed within a steel bearing race or sleeve. The bearing shall not ride on any surface of the iron casting. The roller shall be drilled, tapped and equipped with a grease fitting. Roller assemblies shall be secured to the gate posts with a minimum of two ⅝ in. (15.9 mm) diameter "U" bolts, nuts, and lock washers for each assembly.

10.1.4.2 Internal rollers for Class 2 gates shall consist of two swivel type trucks having sealed lubricant ball bearing

TABLE 2 Gate Frame Members, Dimensions and Weights Type II, Class 1 or Class 2 Gates with Tubular Steel Frames

Gate Opening Width and Height	Outside Diameter of Pipe in.	Outside Diameter of Pipe (mm)	Nominal Minimum Weight of Pipe lb/ft	Nominal Minimum Weight of Pipe (kg/m)
Frame Size				
4 ft (1.2 m) width or less	1.90	(48.26)	2.28	(3.40 kg/m)
6 ft (1.8 m) height or less				
Over 4 ft (1.2 m) width	2.375	(60.325)	3.11	(4.63 kg/m)
All heights				
Interior bracing				
All gates	1.90	(48.26)	2.28	(3.40 kg/m)
Diagonal bracing				
All gates	1.90	(48.26)	2.28	(3.40 kg/m)