Designation: F567 – 23

Standard Practice for Installation of Chain-Link Fence[1]

This standard is issued under the fixed designation F567; 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.

1. Scope

1.1 This practice covers the installation procedure for chain-link fence.

1.2 This practice is intended primarily to guide those responsible for or concerned with the installation of chain-link fence.

1.3 This practice does not intend to preclude any practice that has proven equal to or given better performance under varying conditions, that is, location, weather, intended use, materials, etc.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements, see Section 13.

1.6 *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]

F626 Specification for Fence Fittings

F654 Specification for Residential Chain Link Fence Gates

F900 Specification for Industrial and Commercial Steel Swing Gates

F1184 Specification for Industrial and Commercial Horizontal Slide Gates

3. Site Preparation

3.1 The purchaser shall indicate the location of fence lines, gates, and terminal posts with suitable stakes. Stake intervals shall not exceed 500 ft (152.5 m) or line of sight.

3.2 All underground utility locations, USC&G benchmarks, property monuments, and other underground structures shall be indicated by the purchaser.

3.3 Before installing chain-link fence, all necessary site clearing and grading shall be performed by the purchaser. Adequate clearance on both sides of the fence line is required.

4. Post Location

4.1 Space line posts equidistant at intervals not exceeding 10 ft (3.05 m). Measure the interval parallel to the grade of the proposed fence and in the line of fence from center to center of the post.

4.2 Set terminal posts (end, corner, and gate) at the beginning and end of each continuous length of fence and at abrupt changes in vertical and horizontal alignments.

5. Post Setting

5.1 Set posts in concrete in holes of diameter and depth as follows. Intended use and local conditions shall determine post footing dimensions; that is, under normal conditions the diameter shall be four times the largest cross section of the post up to a 4 in. (101.5 mm) outside diameter and three times for larger outside diameters. The depth shall be a minimum of 24 in. (609.6 mm) plus an additional 3 in. (76.2 mm) for each 1 ft (305 mm) increase in the fence height over 4 ft (1.22 m) to a maximum total of 60 in. (1525 mm) for a fence height up to 20 ft (6.10 m).

5.2 Dig or drill holes in the line of the fence in accordance with 5.1. Forms are not necessary.

5.3 Set posts in a vertical position, plumb and in line. Backfill concrete (2500 psi) (17.2 MPa) into the excavation and extend 2 in. (50 mm) above grade. An alternative method is to stop footing 6 in. (152.4 mm) below grade to allow for cover with sod, black top, or other materials if the footings are not in an area subject to cathodic protection. In either case,

[1] This practice is under the jurisdiction of ASTM Committee F14 on Fences and is the direct responsibility of Subcommittee F14.40 on Chain Link Fence and Wire Accessories.

Current edition approved June 1, 2023. Published June 2023. Originally approved in 1978. Last previous edition approved in 2019 as F567 – 14a (2019). DOI: 10.1520/F0567-23.

[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.

crown the concrete at its top to shed water and slope a minimum of 2 in. (50.8 mm) away from the post. When setting a post in concrete the post end may be suspended above the bottom of the hole by using mechanical means of support, gravel or concrete with slump sufficient to support the post.

5.4 The use of mechanical devices for the setting of fence posts is acceptable under this practice, provided the mechanical strength in the ground is equal or superior to the strength developed by the concrete footing as recommended.

5.5 When solid rock or concrete is encountered, without an overburden of soil, set posts in the solid rock or concrete. The depth of the hole shall be three times the largest cross section of the posts. The diameter of the hole shall be ½ in. (13 mm) greater than the largest cross section of the post.

5.6 The use of sleeves in order to leave voids in new concrete construction is recommended.

5.7 Half-fill the void with nonshrinkable hydraulic cement and force post to the bottom of the hole and plumb. Thoroughly work additional grout into the hole so as to leave no voids. Crown the grout to shed water.

5.8 Drive posts are to be driven by mechanical means to a minimum depth of 36 in. (914.4 mm) or 6 in. (152.4 mm) greater than that called for in 5.1, for the height of fence.

5.9 Where soil conditions are unstable or rock is encountered, the drive post embedment must be altered to maintain stability. The depth should be in keeping with standard fence construction practices for the local area or refer to 5.5.

5.10 The post tops must be protected to prevent distortion of the exposed end. The use of a drive cap is recommended.

5.11 *Residential Swing Gate Posts:*

5.11.1 See Table 1.

5.12 *Industrial and Commercial Swing Gate Posts:*

5.12.1 See Table 2.

5.13 *Cantilever Slide Gate Posts* (Specification F1184, Type II)—Refer to Specification F1184, Type II Cantilever Slide Gates, for post setting requirements.

5.14 *Overhead Slide Gate Posts* (Specification F1184, Type I)—Refer to Specification F1184, Type I Overhead Slide Gates, for post setting requirements.

6. Bracing and Middle Rail

6.1 No braces are required on fabric 6 ft (1.83 m) high or less where the top rail is specified. On all fabric over 6 ft, braces are required. With fabric equal to or greater than 12 ft (3.66 m) in height, a middle rail is recommended and required when specified. Braces are required on all terminals regardless of height, on fences installed without a top rail.

6.2 Securely fasten diagonal braces to the terminal post and the adjacent line post or its footing or a footing of equal size. There shall be no more than a 50° angle between the brace and the ground. Securely fasten horizontal braces with truss rods to the adjacent line post and terminal posts.

6.3 When the top rail is used, attach the brace at the halfway point of the terminal post above grade and, when the top rail is omitted, at the two-thirds point above grade.

7. Top Rail and Tension Wire

7.1 Support the top rail at each post so that a continuous brace from end to end of each stretch of fence is formed. Securely fasten the top rail to the terminal posts and join with sleeves or coupling to allow for expansion and contraction.

7.2 When the top rail is omitted, stretch a tension wire from end to end of each stretch of fence at a height that will enable it to be fastened to the fabric within the top 1 ft (305 mm) of the chain-link fabric. If specified, fasten the bottom tension wire within the bottom 6 in. (150 mm) of fabric. Securely fasten the tension wire to the terminal posts. The tension wire shall be taut and free of sag.

8. Tie Wires and Clips

8.1 Standard straight, preformed hook or pigtail round wire ties, preformed power-fastened wire ties, interlocking flat aluminum band ties, and powder-driven fasteners for attaching chain link fabric to round tubular or rectangular roll-formed rails and intermediate posts shall be as specified in Specification F626.

8.2 Irrespective of the type of fastener utilized, it is critical to the integrity of the fence system to assure that they are installed properly.

8.2.1 *Consumer Safety*—For fence applications where pedestrians may be in contact with the fence, such as play areas, sports fields, play courts, and swimming pools, wire ties shall be trimmed and bent in such a manner as to avoid injury to pedestrians in contact with the fence.

8.3 *Standard Straight, Preformed Hook or Pigtail Round Wire*

8.3.1 Metallic coated or polymer coated steel 9 gauge, 0.148 in. (3.76 mm), tie installation requires engagement of one wire forming a picket of the chain link fabric with a manually bent hook, preformed hook or pigtail end of the tie, by wrapping the wire tie a minimum of one 360° turn around the chain link picket wire and then wrapping the body of the tie around the rail or post a minimum of 180°. The opposite end of

TABLE 1 Minimum Requirements for Setting Residential Gate Posts

Gate Leaf Width	Height	Post Size	Size of Hole			
		Specification	Diameter		Depth	
		F654	Dirt	Solid Rock or Concrete	Dirt	Solid Rock or Concrete
4 ft (1.2 m) or less	6 ft (1.8 m) or less	Table 2	8 in. (203 mm)	Post O.D. + ½ in.	30 in. (762 mm)	Post O.D. × 3
Over 4 ft (1.2 m) Up to 6 ft (1.8 m)	6 ft (1.8 m) or less	Table 3	10 in. (254 mm)	Post O.D. + ½ in.	30 in. (762 mm)	Post O.D. × 3

TABLE 2 Minimum Requirements for Setting Industrial and Commercial Swing Gate Posts

Gate Leaf Width	Height	Post Size	Size of Hole			
		Specification F900	Diameter		Depth	
			Dirt	Solid Rock or Concrete	Dirt	Solid Rock or Concrete
4 ft (1.2 m) or less	6 ft (1.8 m) or less	Steel 2.375 (60.3) Alum. 2.375 (60.3)	10 in. (254 mm)	Post O.D. + ½ in. (+13 mm)	30 in. (762 mm)	Post O.D. × 3
Over 4 to 10 ft (1.2 to 3.7 m)	6 ft (1.8 m) or less	Steel 2.875 (73.0) Alum. 2.875 (73.0)	12 in. (304 mm)	Post O.D. + ½ in. (+13 mm)	36 in. (914.5 mm)	Post O.D.× 3
Over 10 to 18 ft (3.7 to 5.5 m)	6 ft (1.8 m) or less	Steel 4.0 (101.6) Alum. 4.0 (101.6)	12 in. (304 mm)	Post O.D. + ½ in. (+13 mm)	36 in. (914.5 mm)	Post O.D.× 3
6 ft (1.8 m) or less	Over 6 ft (1.8 m)	Steel 2.875 (73.0) Alum. 2.875 (73.0)	12 in. (304 mm)	Post O.D. + ½ in. (+13 mm)	36 in. (914.5 mm)	Post O.D. × 3
Over 6 to 12 ft (1.8 to 3.7 m)	Over 6 ft (1.8 m)	Steel 4.0 (101.6) Alum. 4.0 (101.6)	12 in. (304 mm)	Post O.D. + ½ in. (+13 mm)	36 in. (914.5 mm)	Post O.D. × 3
Over 12 to 18 ft (3.7 to 5.5 m)	Over 6 ft (1.8 m)	Steel 6.625 (168.3)	20 in. (508 mm)	Post O.D. + ½ in. (+13 mm)	42 in. (1066 mm)	Post O.D. × 3
Over 18 to 24 ft (5.5 to 7.3 m)	Over 6 ft (1.8 m)	Steel 8.625 (219.1)	26 in. (660.4 mm)	Post O.D. + ½ in. (+13 mm)	48 in. (1.2 m)	Post O.D. × 3

the tie is then secured to a second chain link fabric picket wire by wrapping the wire tie a minimum of one 360° turn around the chain link picket wire. The final process of tightening the tie on the fabric picket wire should draw the fabric and the main body of the tie tightly to the rail or post.

8.3.2 Aluminum alloy ties and 11 gauge, 0.120 in. (3.05 mm), or less metallic or polymer coated steel tie installation requires engagement of a minimum of one wire forming a picket of the chain link fabric with a manually bent hook, preformed hook or pigtail end of the tie by wrapping the wire tie a minimum of two 360° turns around the chain link picket wire and then wrapping the body of the tie around the rail or post a minimum of 180°. The opposite end of the tie is then secured to a minimum of one chain link fabric picket wire by wrapping the wire tie a minimum of two 360° turns around the chain link picket wire. The final process of tightening the tie on the fabric picket wire should draw the fabric and the main body of the tie tightly to the rail or post

8.4 *Power-Fastened, Preformed Metallic Coated Steel Round Wire Tie*—Select ties that are preformed to the size of the rail or post. Insert tie a full 360° around the rail or post including a minimum of one chain-link fabric wire picket. The two ends of the tie are pre-formed in such a manner that they can be power twisted together in a close helix of a minimum of 1½ machine turns, which is equivalent to three full twists, thereby drawing the wire tie up tightly around the rail or post and the chain-link fabric. After twisting, any protruding wire ends may be cut off and bent over to prevent untwisting.

8.5 *Straight, Manually-Fastened Metallic Coated Steel Round Wire Tie*—Bend tie to the shape of the rail or post, insert through the chain link fence fabric, including a minimum of one wire picket, wrap around the post or rail a full 360° and twist the two end wires securely with a minimum of three full twists. After twisting, any protruding wire ends may be cut off and bent over to prevent untwisting.

8.6 *Interlocking, Preformed Flat Aluminum Band Tie*—Select band preformed to the size of the post or rail, insert the band a full 360° around the rail or post and a minimum of one picket of the chain-link fabric then secure band by flattening down the preformed ends into a double closed loop against the rail or post.

8.7 *Powder-Driven Fastener*—Position the cap and pin in the center of the post or rail member, capturing a minimum of one chain link wire picket. Using a powder activated tool, “shoot” the pin into the post or rail. OSHA training is required before one can operate a powder activated tool on a jobsite.

9. Chain-Link Fabric

9.1 Place chain-link fabric on the outside of the area enclosed or as directed by the purchaser.

9.2 Join rolls of wire fabric by weaving a single picket into the ends of the rolls to form a continuous mesh.

9.3 Cut the fabric by untwisting a picket and attach each span independently at all terminal posts. Use stretcher bars with tension bands at maximum 15 in. (380 mm) intervals or any other approved method of attachment.

9.4 Place the fabric by securing one end, applying sufficient tension to remove all slack before making attachment elsewhere. Tighten the fabric to provide a smooth uniform appearance free from sag.

9.5 Install fence fabric at grade to a maximum of 3 in. (76 mm) clearance above grade. If the 3 in. (76 mm) maximum space cannot be maintained for the distance between or at line posts, reduce the space greater than 3 in. (76 mm) by installing tension wire or bottom rail. Install the top of the fence fabric for fences with top rail from a minimum of being tangent to the top of the top rail to a maximum of ½-diamond above the top of the top rail. Fasten the fabric to the line posts at intervals not exceeding 15 in. (380 mm). Fasten fabric to the rail or tension wire at intervals not exceeding 24 in. (609 mm).

10. Barbed Wire

10.1 If barbed wire is required, pull it taut to remove all sag, firmly install it in the slots of the extension arms, and secure it to a post or terminal arm.

11. Gates

11.1 The purchaser shall indicate the operational direction of the gates. Grade clearance and possible gate obstruction shall be considered in the design to provide adequate operational clearance so that the gate can operate freely.