Designation: F2631 – 07

Standard Practice for Installation of Chain-Link Fence for Outdoor Sports Fields, Sports Courts and Other Recreation Facilities[1]

This standard is issued under the fixed designation F2631; 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 is designed to be used for developing the chain-link fence, design, layout and installation for sports and recreation facilities such as sports fields, sports courts, waterfront areas, docks and marinas and other specific facilities.

1.2 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A392 Specification for Zinc-Coated Steel Chain-Link Fence Fabric
A491 Specification for Aluminum-Coated Steel Chain-Link Fence Fabric
A824 Specification for Metallic-Coated Steel Marcelled Tension Wire for Use With Chain Link Fence
F552 Terminology Relating to Chain Link Fencing
F567 Practice for Installation of Chain-Link Fence
F626 Specification for Fence Fittings
F668 Specification for Polyvinyl Chloride (PVC), Polyolefin and Other Polymer-Coated Steel Chain Link Fence Fabric
F900 Specification for Industrial and Commercial Steel Swing Gates
F934 Specification for Colors for Polymer-Coated Chain Link Fence Materials
F969 Practice for Construction of Chain-Link Tennis Court 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
F1184 Specification for Industrial and Commercial Horizontal Slide Gates
F1345 Specification for Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric
F1553 Guide for Specifying Chain Link Fence
F1664 Specification for Poly(Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence

2.2 *Other Standards:*

Federal Specification RR-F-191/3E Fencing, Wire and Post Metal (and Gates, Chain-Link, Fence Fabric and Accessories) Posts, top rail, braces
WL 2445 A Guide for the Selection of Line Post Spacings for Chain Link Fence[3]

3. Terminology

3.1 *Definitions*—See Terminology F552 for the definitions and terms used in this practice.

4. Summary of Practice

4.1 This practice is intended primarily to guide those responsible for or concerned with planning, designing and installing chain link fencing for sport fields, sports courts, waterfront zones, and other recreation facilities.

4.2 This practice does not intend to preclude any practice that has proven equal to or given better performance under varying conditions such as location, weather, intended use or anticipated use.

5. Significance and Use

5.1 The intended use of this practice is for chain link fencing of varying heights and designs to be used to enclose a sports field, sport court or recreation facility including the internal fencing required for safety, separation of activities, security, crowd control, access and egress or other requirements.

5.2 Consideration should be given to fence offset distances from the activity field to provide a safety area for the participants and viewers.

[1] This practice is under the jurisdiction of ASTM Committee F14 on Fences and is the direct responsibility of Subcommittee F14.10 on Specific Applications .

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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.

[3] Available from Chain Link Fence Manufacturers Institute, 10015 Old Columbia Road, Suite B-215, Columbia, MD 21046, http://www.chainlinkinfo.org.

5.3 This practice is not intended for applications where fencing higher than 12 ft (3660 mm) is desired by the owner.

5.4 Follow Guide F1553 format to specify the chain link fence material and installation.

5.5 *Warning Regarding Windscreens and Added Fence Padding*—If windscreens or padding are to be installed at the time of fence erection or at a later time, it is advisable to use stronger framework, closer post spacing or back bracing of posts depending on the type of screening material to be used, area of the fence covered and the local wind and weather conditions. Post size and spacing based on wind load can be calculated using the Chain Link Fence Manufacturers Institute's (CLFMI) Guide WL 2445.

6. Ordering Information

6.1 Purchase orders or construction contracts should include the following information; construction specifications, detail dimensioned drawings, typical elevations, special details peculiar to the project and the dimensional layout of fence.

6.2 Quantity or total measurements in lineal feet or metres of fence and gates.

6.3 Types and class of chain link fabric including selvage.

6.4 Group and class of framework and size of members.

6.5 Fitting material, gauge, and size.

6.6 Type and design of gates with opening dimensions including latch and hinge requirements.

6.7 Color if polymer coated fabric or system shall be in accordance with Specification F934.

6.8 Height of fence.

6.9 Number and location of horizontal top, mid or bottom rails.

6.10 Tension wire located at top or bottom of fence if horizontal rails not specified.

6.11 Depth and diameter of concrete footings if other than as indicated in Practice F567.

6.12 Spacing of line posts, if other than as indicated in Practice F567.

7. Materials

7.1 *Chain Link Fabric:*

7.1.1 Select chain link fabric having a 2-in. (50.8-mm) mesh or less and a wire of minimum 9 gauge, 0.148-in. (3.76-mm) diameter.

7.1.2 Fabric selvage finish at the top and bottom shall be knuckled.

7.1.3 Height of fabric 3 ft (914 mm) up to and including 12 ft (3660 mm).

7.1.4 Select the type and coating class of the chain link fabric listed below.

7.1.4.1 A392 zinc-coated, Class 1 or Class 2.

7.1.4.2 A491 Aluminum-coated.

7.1.4.3 F668 Polymer-coated, Class 1, Class 1a, or Class 2b. Select the color in accordance with Specification F934.

7.1.4.4 F1345 Zinc-5 % Aluminum-Mischmetal Alloy-Coated, Class 1 or Class 2.

7.2 *Posts:*

7.2.1 Galvanized steel post shall be in accordance with Specification F1043 Table 3 Heavy Industrial or Specification F1083.

7.2.2 When polymer coated specify type of coating in accordance with Specification F1043 and color in accordance with Specification F934.

7.2.3 Select the size of the post based on the height of the fence in accordance with Federal Specification RR-F-191/3E.

7.2.4 Fences containing windscreens require sturdier framework, see 5.5.

7.3 *Horizontal and Brace Rails :*

7.3.1 Horizontal rails when specified for top, middle or bottom of fence and terminal post bracing shall be in accordance with Specification F1043, Table 3 Heavy Industrial or Specification F1083.

7.3.2 When polymer coated, specify the type of coating in accordance with Specification F1043 and color in accordance with Specification F934.

7.4 *Tension Wire:*

7.4.1 Tension wire shall be used at the top or bottom of the fence when horizontal rails are not specified.

7.4.2 Tension wire when specified shall match the coating of the fence fabric in accordance with Specification A824 for metallic coated and Specification F1664 for polymer coated.

7.5 *Fittings:*

7.5.1 Fittings shall conform to Specification F626.

7.5.1.1 When a polymer-coated system is specified the fittings shall be polymer coated to match the framework coating and color specification.

7.5.2 Tie wire for posts and horizontal rail shall be minimum 11 gauge 0.120-in. (3.05-mm) steel.

7.5.2.1 When a polymer-coated system is specified, ties shall be polymer-coated color to match the fabric coating and color specification.

7.6 *Gates:*

7.6.1 Gates shall be fabricated in accordance with Specification F900 swing gates or Specification F1184 slide gates.

7.6.2 Polymer coated gates when specified shall be of the same coating specification and color as the framework in accordance with Specification F1043.

7.6.3 Swing gates shall be installed to swing outward to ensure the safety of players.

8. Installation

8.1 Layout fence to provide proper safety offset for player and viewer participants.

8.2 Chain link fence shall be installed in accordance with Practice F567.

8.3 Install chain link fabric on the playing side of the fence for installations adjacent to all facilities.

8.4 Install bottom rail on fence adjacent to play areas or in areas of high use to avoid possible injury by having ones foot catch on the bottom of the fence fabric.

8.5 Install fence fabric no greater than 2 in. (50.8 mm) above finish grade.

8.6 Fences shall not have any barbs, selvage ends, or ties exposed over the top rail or within the area of the fence.

8.7 The top of post footings shall be 2 in. (50.8 mm) below grade for added safety.

9. Location of Fences

9.1 The location of fencing will vary from activity to activity as the distance from limits or boundary of play will vary.

9.1.1 The fence location is to prohibit players from extending their motion of play beyond a limit or safe zone into which they might injure themselves or spectators and others.

9.1.2 The fence location is to prohibit spectators and others from intruding into the area of play which would interfere with the game or contact and injure one or more players.

9.1.3 Fences, though at times expressed as unsightly and tending to destroy the feeling of expansive outdoor areas, should be reduced to those used for safety.

9.1.4 Fences, unless an unusual unsafe circumstance, like a water body, should not be erected to keep people from using the facility.

9.1.5 Fences may be necessary in certain environments in order to reduce vandalism or rowdiness.

9.1.6 Fences are to define the perimeter of the playing area and the safety zone.

9.1.7 Fences can be designed for multi use fields and with a relocateable placement by the use of sleeves. The top of the sleeve should be at least 3 in. (76.2 mm) below the grade of the safety zone.

9.1.8 Fences can also be of a removable sports fence type placed around the perimeter of the field.

9.2 *Fence Variations*

9.2.1 *Soccer*

9.2.1.1 Because soccer fields are a highly active sport, it should have a safety zone 30 ft (9.14 m) outside of all boundary lines for adult play and 15 ft (4.57 m) for youth play.

9.2.1.2 Because the soccer ball may go beyond the playing area and safety zone, a 4-ft (1.22-m) high fence is recommended.

9.2.1.3 Because soccer serves a wide age group, fields can be designated as junior soccer and have a 12-ft (3.66-m) safety zone for child's play.

9.2.1.4 See Fig. 1.

9.2.2 *Six-Man Football*

9.2.2.1 Because football is a highly active sport, football fields should have a safety zone 30 ft (9.14 m) on sides of play lines to fences or other objects.

9.2.2.2 Because of the sport, football fields should have a safety zone 20 ft (6.1 m) on ends for run, kicks or pass plays.

9.2.2.3 See Fig. 2.

9.2.3 *Eight-Man Football (American)*

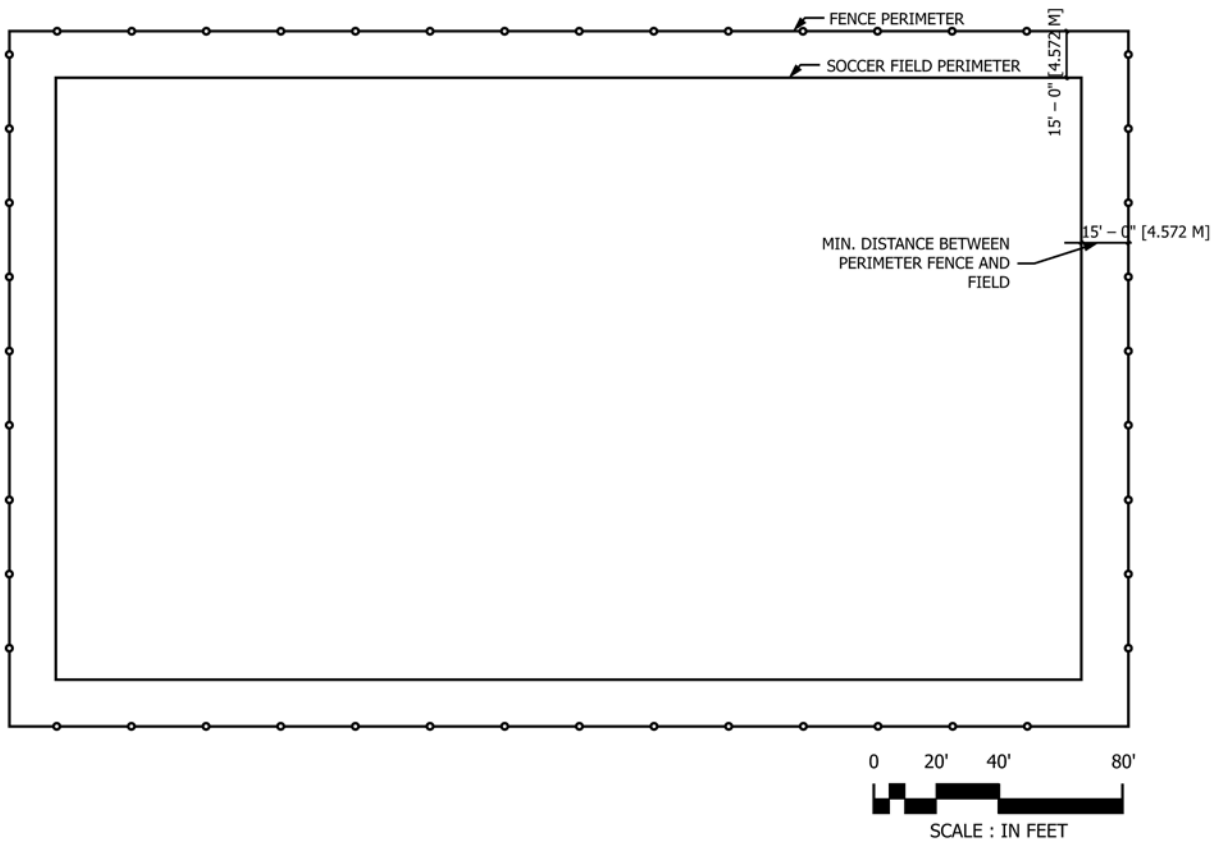

FIG. 1 Soccer Field

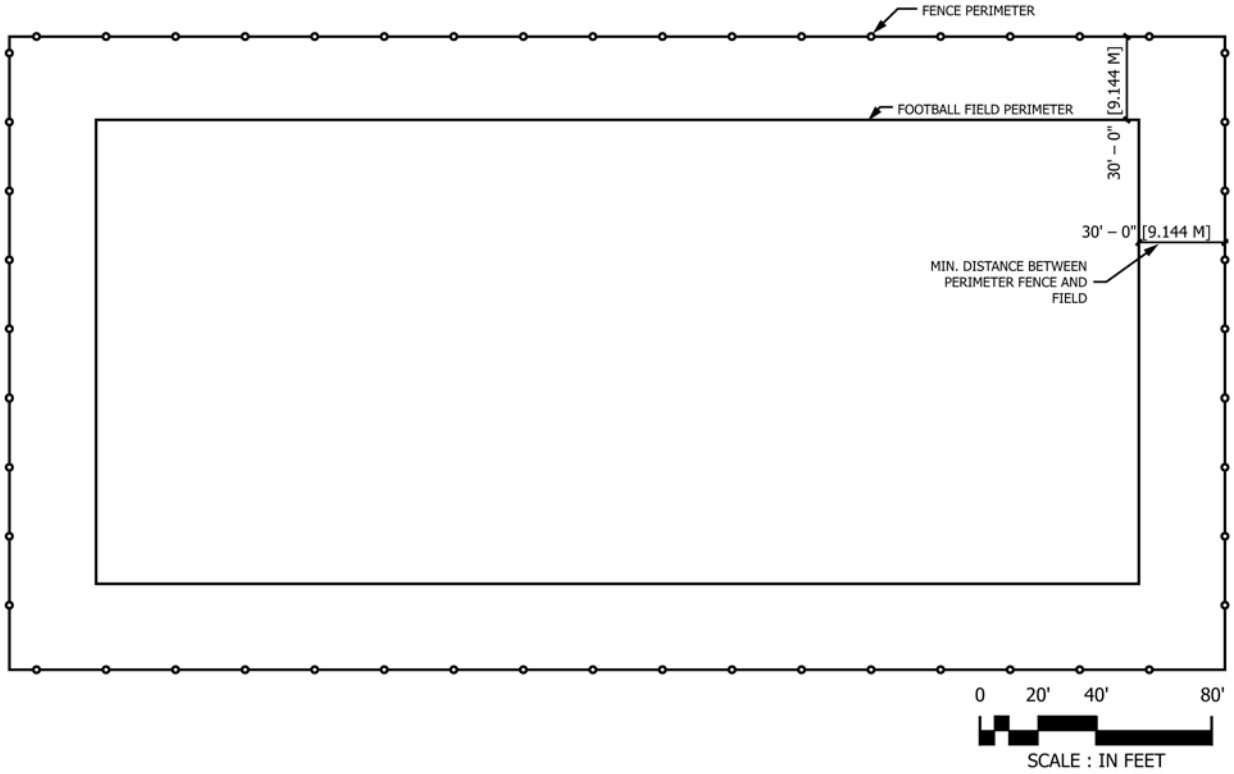

FIG. 2 Six-Man Football Field

9.2.3.1 Because football is governed by amateur and professional associations, a minimum of 20-ft (6.1-m) safety zone may vary.

9.2.3.2 Because the goal posts or post are within a playable area, either on the goal line or beyond it, they should be padded.

9.2.3.3 Because semi-pro and pro as well as other venues have no fencing to the edge of perimeter seating, the safety zone should be maintained.

9.2.3.4 Because a ball may go beyond the playing area and safety zone, a 4-ft (1.22-m) fence is recommended to protect children.

9.2.3.5 See Fig. 3.

9.2.4 *Field Hockey*

9.2.4.1 Because field hockey utilizes a hockey stick for controlling the ball, a 20-ft (6.1-m) safety zone is recommend to prevent inadvertent engagement of a spectator or errant piece of the stick from engaging a sideliner.

9.2.4.2 Because field hockey ball may go beyond the playing area and safe zone, a 4-ft (1.22-m) fence is recommended to protect children.

9.2.4.3 See Fig. 4.

9.2.5 *Lacrosse*

9.2.5.1 Because of a small and fastball in a game, lacrosse fields should have a safety zone of 30 ft (9.14 m) on each side and each end.

9.2.5.2 Because of a high-speedball involved in the game, a fence 6 ft (1.83 m) high should be in front of players bench.

9.2.5.3 See Fig. 5.

9.2.6 *Rugby*

9.2.6.1 Because of ball use in the game, rugby field should have a 15-ft (4.57-m) safety zone on each side and each end.

9.2.6.2 Because the ball could go beyond the playing area and the safety zone, a 4-ft (1.22-m) high fence should be provided.

9.2.6.3 See Fig. 6.

9.2.7 Sports courts zones include one wall handball, paddle tennis, basketball, and badminton (tennis is covered under Practice F969).

9.2.7.1 Fences are to protect the outdoor court playing area in locations, which are vulnerable to varied vehicular traffic from activity and games, conflicting uses and control of balls entering or exiting the court or area. Protection shall be placed, as illustrated on all sides of the court.

9.2.7.2 Fence development and that of the outdoor court areas requires a study of the location, orientation, and determination of number of court areas is essential before construction begins. As a saving, courts have usually been constructed in groups or batteries of two or more. When multiple uses of courts are developed, care must be taken to avoid conflicts in uses.

9.2.7.3 Fences should contain basketball and other activity courts and be oriented so the participants face one another at approximately a north-south direction.

9.2.7.4 Fence lines should be set so that there is at least 6 in. (152 mm) of surface beyond the fence for adjacent maintenance of turf or pavement and to prevent undermining of the court surface by drainage if there is an adjacent embankment. No reveals should be around the court that would be a tripping or fall hazard.

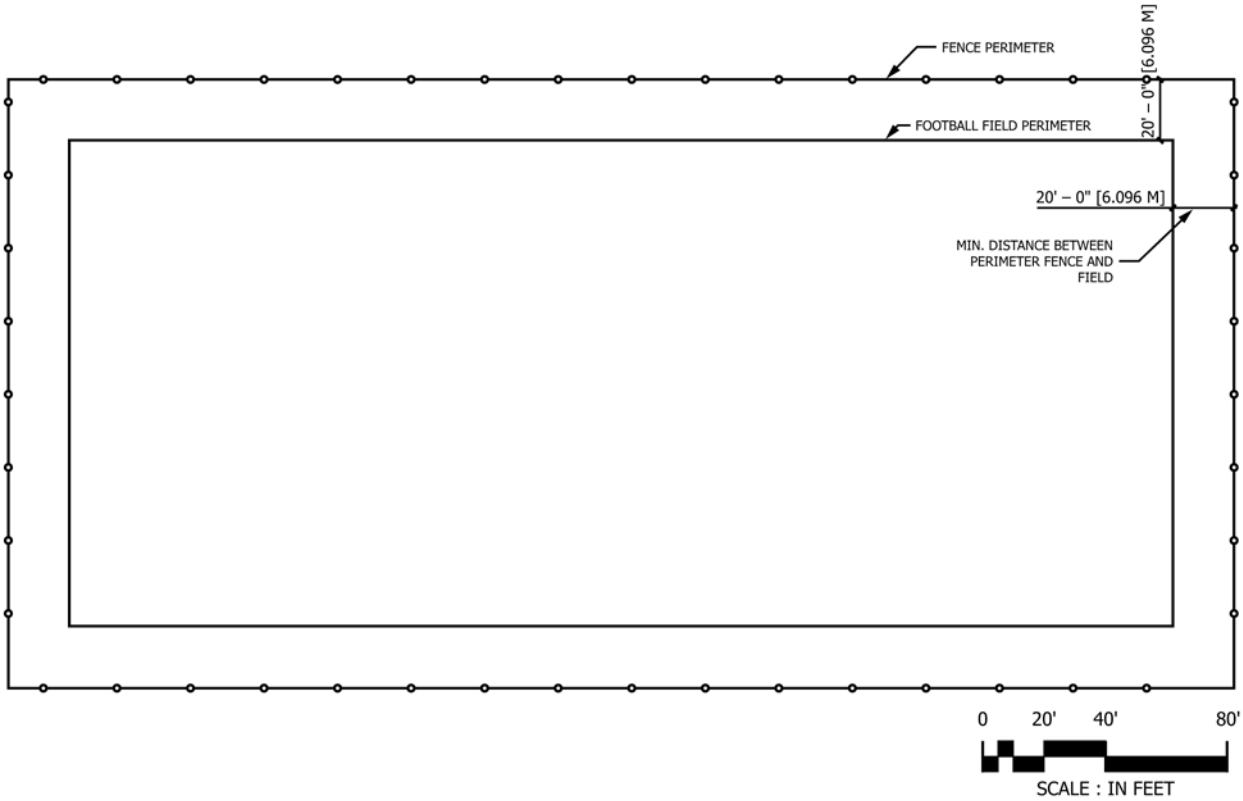

FIG. 3 Eight-Man Football Field

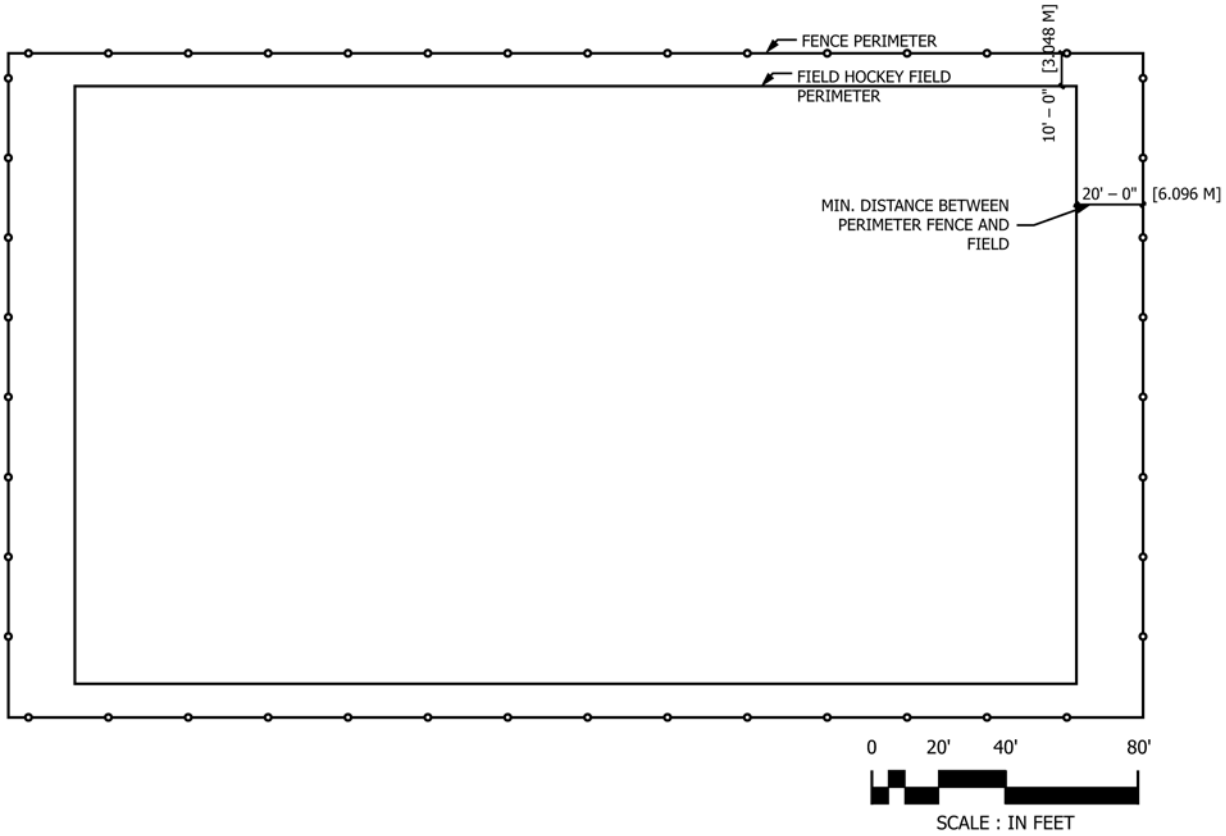

FIG. 4 Field Hockey Field

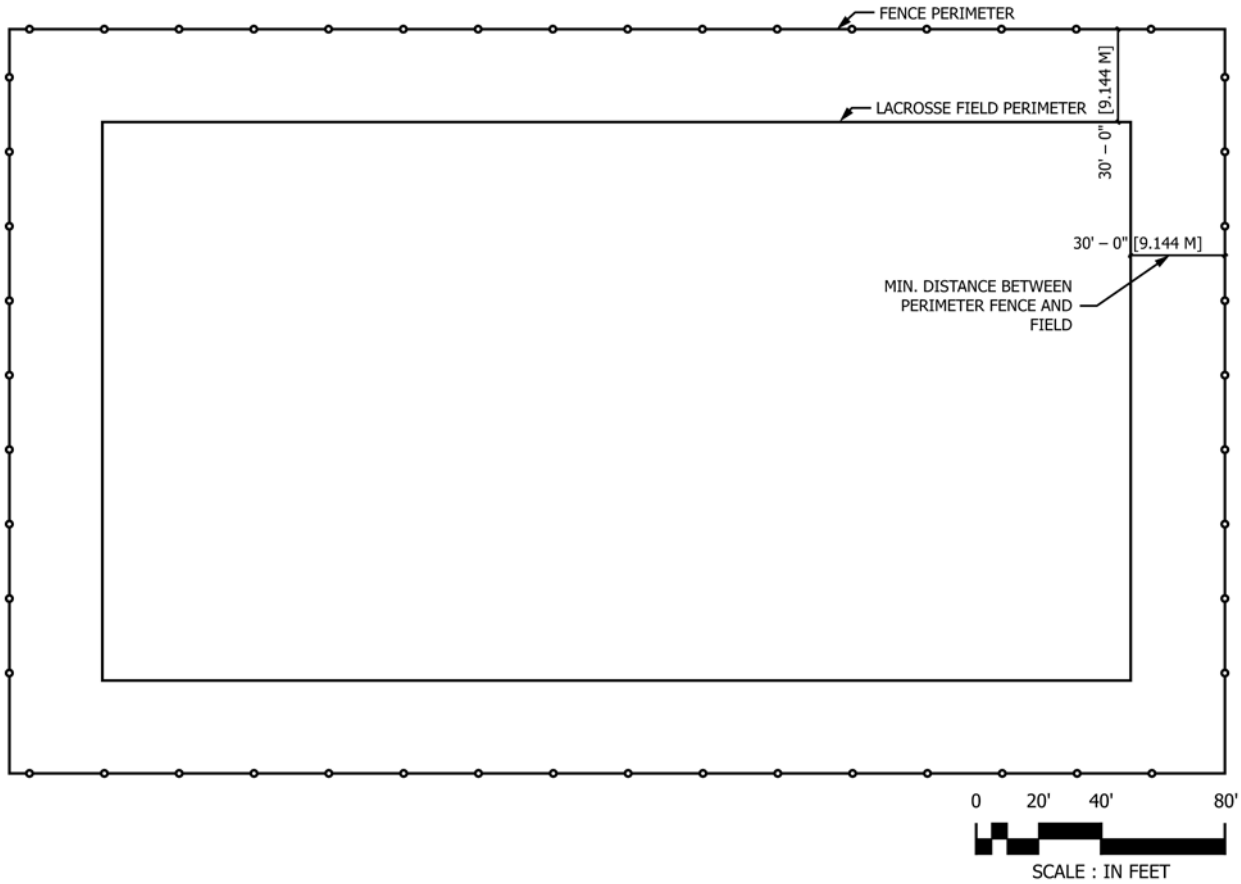

FIG. 5 Lacrosse Field

9.2.7.5 Fences shall be set so as not to disturb the surrounding smooth surface or hard surface court treatment which is essential for playing the game of basketball or other court sports particularly because of the dribbling or bouncing aspect of the ball.

9.2.7.6 Fences should have an access gate, wide enough for equipment service, if it is to be used on a year-round schedule.

9.2.7.7 Fences should be installed to allow the surface to be dust-free and drain quickly.

9.2.7.8 Fences should be installed to allow the surface to be easily maintained and with a relatively high degree of permanence.

9.2.7.9 Fences should be installed to permit the surface to be pitched from one side to the other in accordance with regulations for drainage, at 1-in. (25-mm) pitch for every 10 ft (3.05 m) of court, unless regulations state otherwise.

9.2.7.10 Fences should be installed to allow the surface to be elevated from the surrounding area for drainage purposes.

9.2.7.11 The fences should surround the game, which dimensions are usually determined by the age group which is to use the facility. For example, in basketball recommendations for each age group have been made as illustrated in Table 1.

9.2.7.12 The fence surrounding the court, if it contains any stanchions or poles used in support of basketball backstops, the stanchion should be set off 4 ft (1.22 m) off the playing court, and extended out at least 4 ft (1.22 m) onto the court. The court, if stanchions are not integrated into the fence, should have absorbent padding materials placed around them as well as the bottom of the basketball backboards.

9.2.7.13 The fence should contain a safety zone on all sides of the game boundary court, as illustrated, with dimension including the area between two or more courts and the end of the courts.

9.2.7.14 The fence provides protection against injuries or fatalities associated with any possible vehicle passage into the court surface from pedestrian passage to or from basketball or other activity courts, or from players running out of the court into traffic. This standard would be included in, but not be limited to, codes of state and local governments, model code organizations, building codes groups and consumers. It is understood that the inside court size will vary depending upon specific game, the specific use and local conditions.

9.2.8 *One-Wall Handball*

9.2.8.1 Because handball may be played on a one, three or four walled court, outdoor handball played on a one wall with perimeter fencing to contain the rubber ball.

9.2.8.2 Because the wall is 20 ft (6.10 m) in height the fence should be the same height with access/egress gates that do not affect the play.

9.2.8.3 See Fig. 7.

9.2.9 *Racquetball/Paddleball*

9.2.9.1 Because paddleball is closely related to racquetball, one or four walls became popular and on occasion a three wall

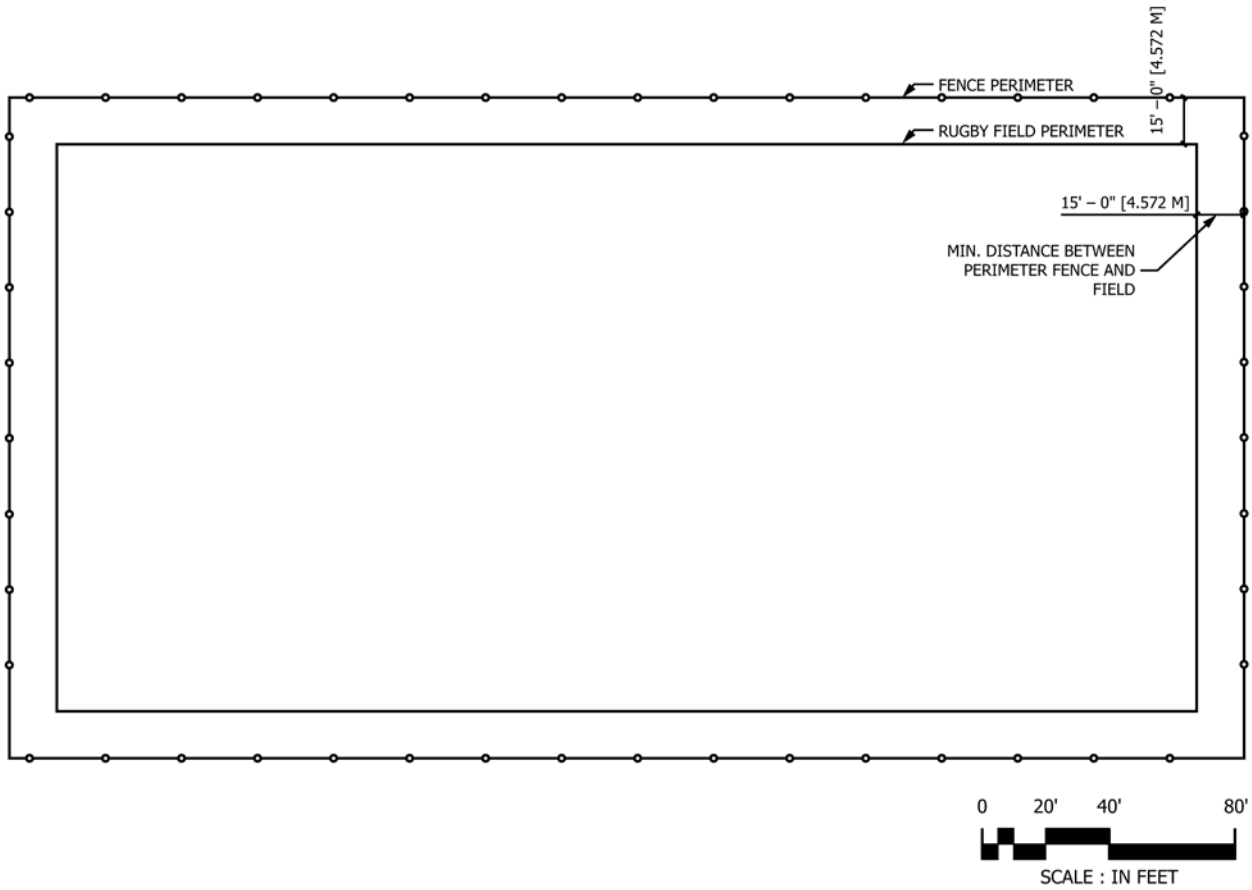

FIG. 6 Rugby Field

TABLE 1 Recommended Dimensions for Basketball Courts

Age Group	Inside	Basket height	Foul Lane Width	Foul Line to Basket
Court Group				
Elementary	74 by 42 ft (22.6 by 12.8 m)	8 ft (2.4 m)	5 ft (1.5 m)	10 ft (3.1 m)
Jr./Sr. High	84 by 50 ft (25.6 by 15.2 m)	10 ft (3.1 m)	12 ft (3.7 m)	10 ft (3.1 m)
College	94 by 50 ft (28.7 by 15.2 m)	10 ft (3.1 m)	12 ft (3.7 m)	10 ft (3.1 m)

court is used in which abbreviated side walls abut the front wall permitting corner shots and some side wall shots.

9.2.9.2 As in the indoor, a one wall court is 20 ft (6.10 m) wide, 34 ft (10.36 m) long, and is 16 ft high (4.88 m), it should have 6 ft (1.83 m) of clear safety space beyond the side and long line.

9.2.9.3 See Fig. 8.

9.2.10 *Basketball*

9.2.10.1 Because outdoor basketball courts may vary in size depending on the level of competitive play, it is recommended that Table 1 and Fig. 9 include herein be adapted to the dimensions of the court appropriate to the level of play.

9.2.10.2 Because outdoor basketball courts are exposed to varied rising and setting of the sun, the traditional north/south orientation may vary and the appropriate climate information should be consulted.

9.2.10.3 Because outdoor basketball courts may be adjacent to other structures with windows, these windows should have shatterproof safety glass.

9.2.10.4 Because the backboard mounted on the fence or freestanding pole may be less than 10 ft (3.05 m) of unobstructed safety zone; padding should be placed on the fence and on the in-ground pole.

9.2.10.5 Because the courts may be standing alone, the fence posts shall be placed 6 in (152 mm) to 1 ft (304.8 mm) inside the hard surface and the fabric should be affixed on the inside of the supporting posts.

9.2.10.6 Because the fencing or wall may be impacted on a regular basis during play outside the recommended foul line location, or at the minimum 8-ft (2.44-m) zone at ends or 6-ft (1.83-m) zone on sidelines; padding should be installed on the fence.

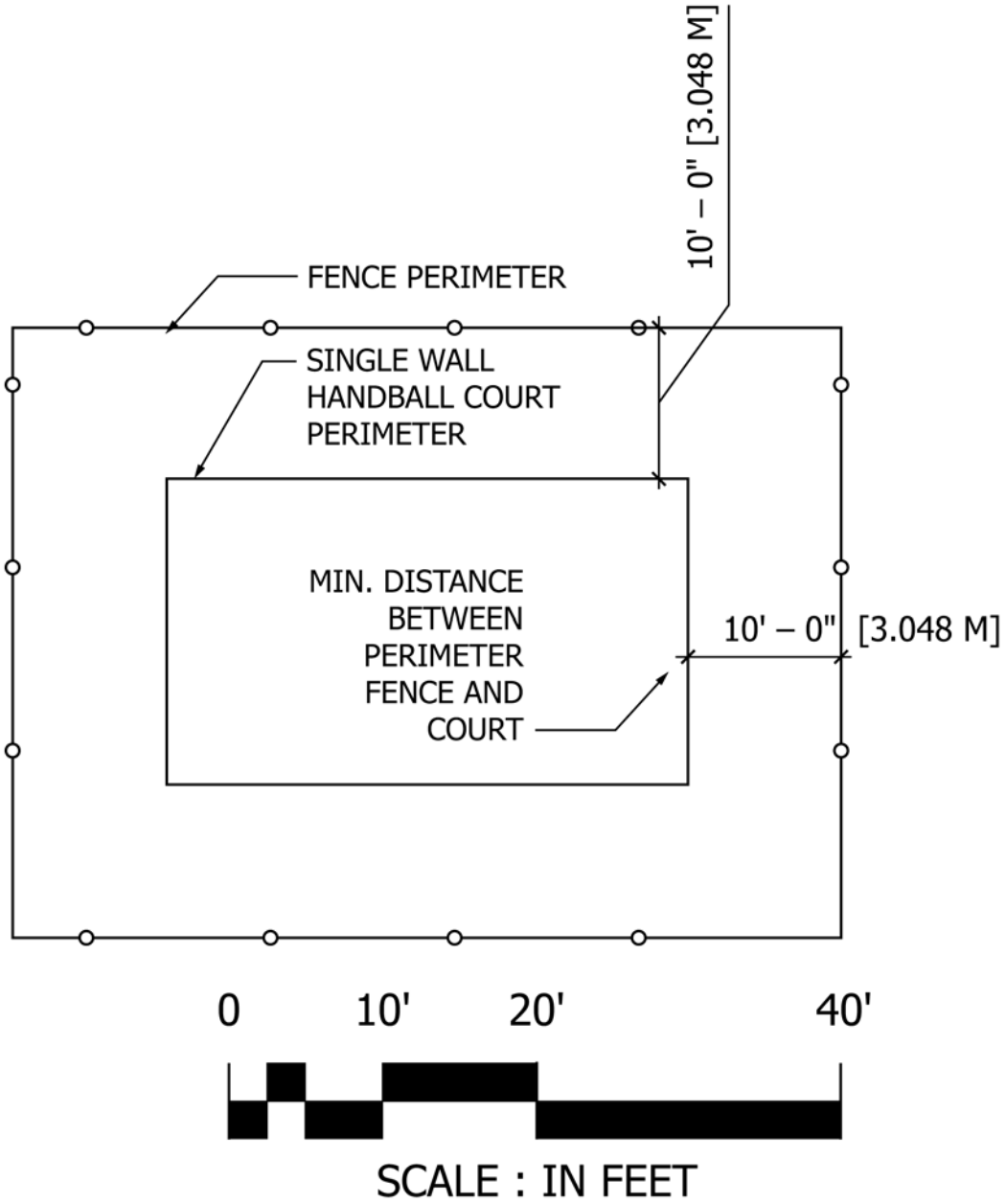

FIG. 7 One-Wall Handball Court

9.2.10.7 Because the inside height minimum for a court is 30 ft (9.14 m) or 23 ft (7.83 m), the height of the fence is to be 10 ft (3.05 m) minimum.

9.2.10.8 Because the courts may have varied ingress/egress patterns, usually at the side fence at the ends, maintenance equipment access to the court should have appropriate sized gates.

9.2.10.9 See Fig. 9 that has a safety zone of 6 ft (1.83 m) on each side and 10 ft (3.05 m) at the ends depending upon age group and court size.

9.2.11 *Badminton*

9.2.11.1 Because outdoor badminton courts (recreational) can be combined for singles and doubles as the doubles playing court is the same length 44 ft (13.4 m) as the singles court but 3 ft (0.91 m) wider or 20 ft (6.10 m). It is recommended that Fig. 10 be appropriately adapted to the level and type of play.

9.2.11.2 Because two or more courts may be laid out side by side, a minimum of 4 ft (1.22 m) should be allowed between them.

9.2.11.3 Because the game involves a lightweight shuttlecock, which speed is standardized and should not be too fast or too slow, any fencing intent should be to contain the shuttlecock and then contain the player if in a crowded or close area or with nearby outdoor obstacles and have a 10 ft (3.05 m) safety zone on sides and 10 ft (3.05 m) on the ends.

9.2.11.4 See Fig. 10.

9.2.12 *Paddle Tennis or Platform Tennis*

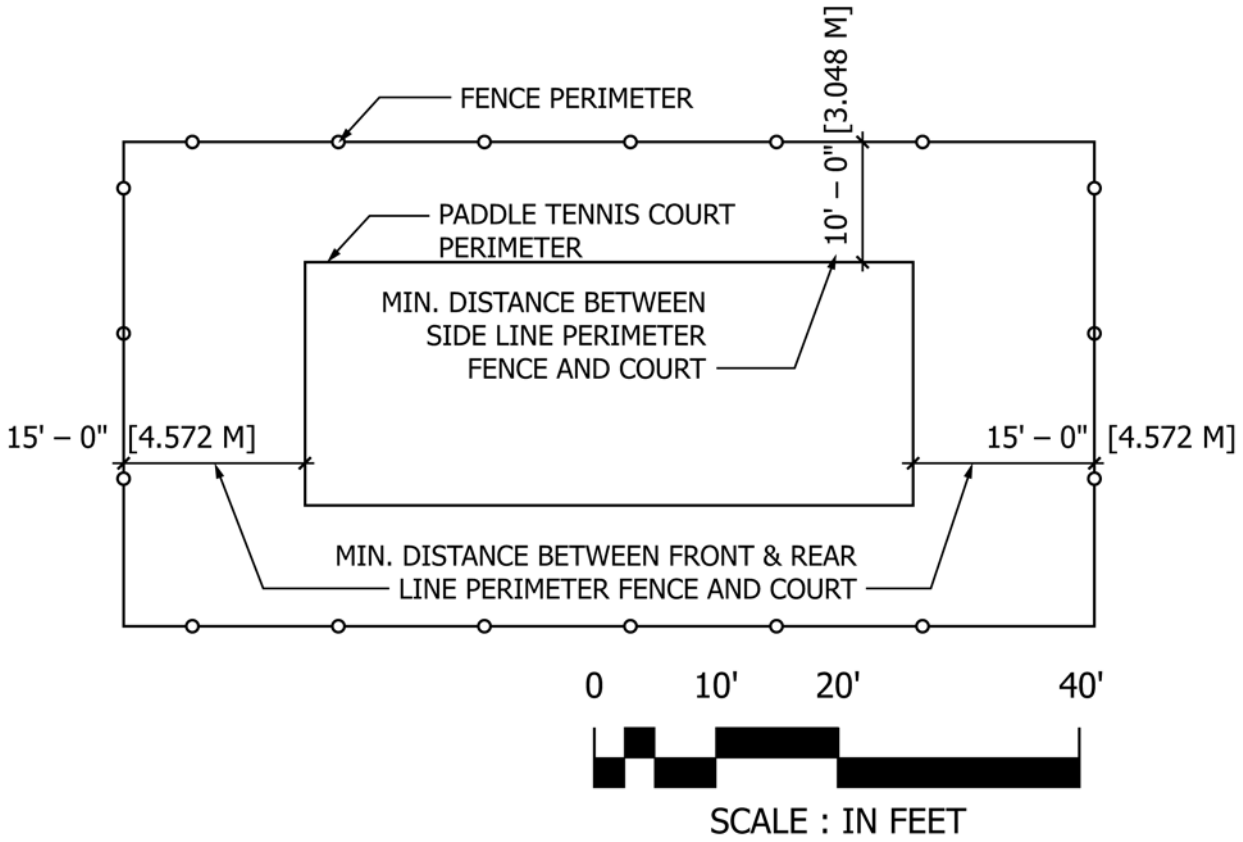

FIG. 8 Racquetball/Paddleball Court

9.2.12.1 Because in paddle or platform tennis, the ball maybe played off the sidewalls and back walls provided that the ball has bounced once in bounds and is struck before it bounces a second time thus the perimeter fence is critical. Paddle tennis fence should be installed 10 ft (3.05 m) on sides and 15 ft (4.57 m) at ends in accordance with Fig. 11. Platform Tennis fence is to be offset 5 ft (1.52 m) on the sides and 8 ft (2.44 m) on the backs in accordance with Fig. 12.

9.2.12.2 Because of the perimeter fence requirements, chain link mesh may be substituted for paddle tennis club netting where the facility is secure.

9.2.13 *Volleyball*

9.2.13.1 Because of the active use, the court should have a 6- to 10-ft (1.82- to 3.03-m) space outside of all boundary lines.

9.2.13.2 Because beach volleyball is played on sand or synthetic material, a fence may be eliminated but a cushion curb barrier is often used.

9.2.13.3 See Fig. 13.

9.2.14 Waterfront zones include marina floats, launching ramps, docks/piers, swimming floats and beaches.

9.2.14.1 Fences at marina floats areas are to prohibit access to boats by those unauthorized and to prevent toddlers, children and others to access the water from such floats.

9.2.14.2 Fences are to be designed appropriately into the setting so they do not detract from the aesthetics of the area.

9.2.14.3 Fence gates are to be self-closing and self-latching when one passes through to the floats. Many access points have pass cards or code accessed in addition to lock and key devices.

9.2.14.4 Fences should extend far enough on each side of the access point to prevent passage.

9.2.14.5 Fences at launching ramps areas are to prohibit access to the ramp walls from which a person can fall or dive onto the ramp as the depth may change due to tidal action.

9.2.14.6 Fences are to be designed appropriately to fit into the environment.

9.2.14.7 Fences should extend far enough back on shore and to and beyond the water line to prevent passage around the fence.

9.2.14.8 Fences are to protect the area from unauthorized and unsupervised use by swimmers, non-boaters and others that could be harmed from unauthorized entry into the water or property.

9.2.14.9 Fences at docks/piers are to prevent jumping, diving or shoving whereby one enters the water, which may be of unknown or changing depth and without supervision or control.

9.2.14.10 Fences should end on the shore at a point where unattended toddlers and children cannot access the water from the dock or pier.

9.2.14.11 Fences should be of a height that meets local building codes.

9.2.14.12 Fences at swimming floats or waterfronts are to prevent access by those unable to swim if accessing, inadvertently the water.

9.2.14.13 Fences or barriers are required by most health departments, but are not specified as to what type under many camp beaches and waterfronts codes or jurisdiction.

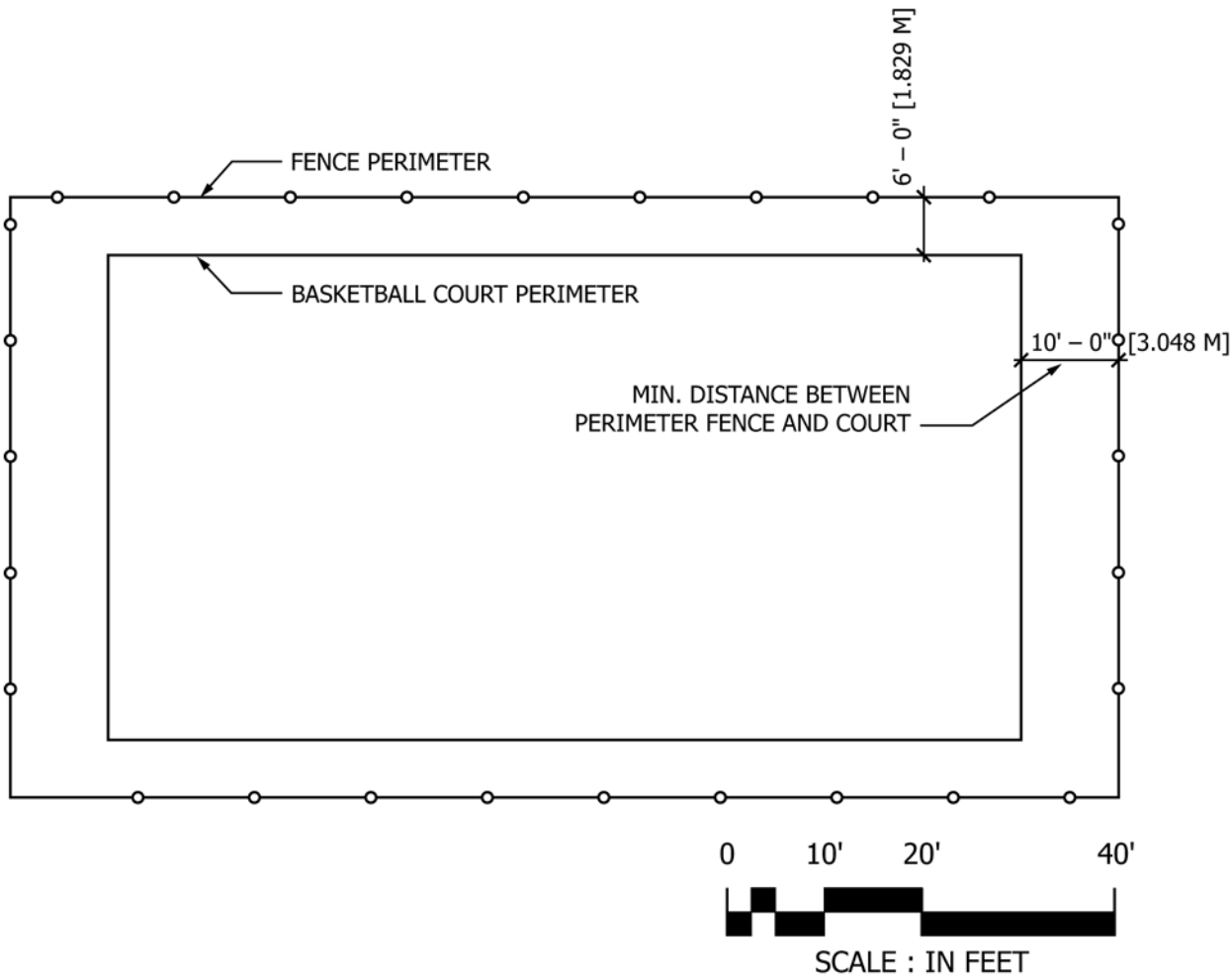

FIG. 9 Basketball Court

9.2.14.14 Gates shall be into each use area, that is gate and swimming float area, gate at canoeing area, gate at boating area, where a control system can be installed to identify users in the activity area.

9.2.14.15 Fences at beaches are provided to delimit safe areas for swimming and areas that are supervised.

9.2.14.16 Access points may or may not be gated but should be in proximity to lifeguards, beach security, or others.

9.2.14.17 Fences for ponds, decorative impoundments and utility basins are provided to prevent non-swimmers and other from accessing the water in which they may drown.

9.2.14.18 Fences at ponds that are man made but have attraction and features, that is, running water, water falls, bubblers that can lure toddlers and children should be fenced with chain link fences or other type of barrier that meet the requirements for residential pools and spas.

9.2.14.19 Fences at reservoirs, basins, and other irrigation or drainage impoundments of a man made utility are provided to prevent non-swimmers and others from accessing the water.

9.2.15 *Other Facilities*

9.2.15.1 Archery range should have a safety zone on each side of range beyond berm or bunker and 75 ft (22.9 m) behind target bunkers or berm.

9.2.15.2 Golf driving range should have a 10-ft (3.05-m) restraining line at the back and side of tees.

(1) Driving cages should have a 10-ft (3.05-m) restraining line behind all tees; posts should be padded to reduce rebound of balls.

(2) Greens if independent of a course should have a safety zone of 50 ft (15.24 m).

(3) Traps and hazards if independent of a course should have a safety zone of 60 ft (18.29 m).

9.2.15.3 Baseball/softball batting cages

(1) Cages could be in tandem but should have sufficient room for each player to swing with a safety zone of 10 ft (3.05 m) around the batter.

(2) Cages for pitching should have sufficient space for the pitcher, which would be a safety zone equivalent to the mound size.

(3) Fences for track and field are to protect the participants from overrunning the track and from spectators intruding into the running or participant areas.

10. Fence Safety Signs

10.1 Safety signs shall be mounted on water barriers to communicate important information to water access users

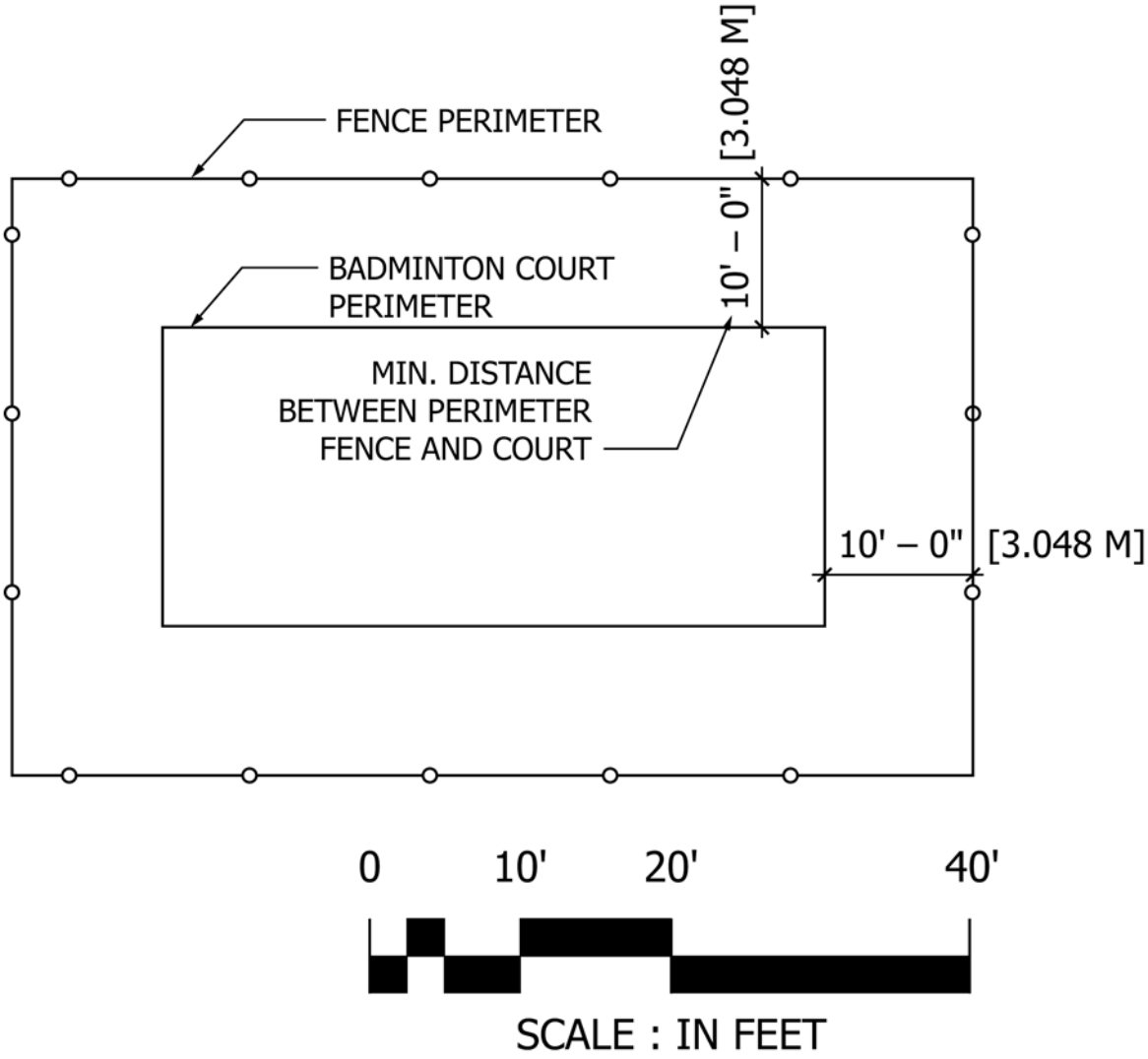

FIG. 10 Badminton Court

regarding the existence of hazards and ways to avoid personal injury. The communication of safety critical information is a non-delegable responsibility of water venue owners and operators. These signs shall tell people about a threat to their well being posted by dangerous conditions or products and as a safety measure to change behavior so that people act safely rather than unsafely.

10.2 Warning signs shall be located in close proximity to the actual hazard. They shall clearly, concisely tell people how to avoid being hurt in any way, which is readily understood and followed by those being warned. The signs shall provide motivation to act safely by explicitly stating the consequences of failure to act appropriately and by the use of the signal words "DANGER," "WARNING," and "CAUTION" to refer to the severity of the threat to the well being of the person being warned. In the latter regard, the signal "DANGER" is used to denote the possibility of serious permanent injury or death, the signal word "WARNING" is used to mark the threat of serious recoverable injury and the signal word "CAUTION" is used to mark the possibility of moderate or minor injury. The signs should also convey the prohibitions, that is, DEEP WATER ROCKS, and so forth. They should also convey the prohibitions, that is, NO DIVING, NO SWIMMING, and the potential result of action, that is, HEAD INJURY MAY OCCUR, DROWNING MAY OCCUR, and so forth.

10.3 Warning signs must be durable, legible, illuminated in large type, unambiguous, serious, and in simple language so that all the objectives are met for the duration of the existence of the hazard.

11. Fence Maintenance and Inspection

11.1 It is the responsibility of the owner, occupant, or tenant to maintain the integrity of the fence and to regularly inspect the gates, doors, and so forth for proper closing and locking operation for proper operation.

12. Keywords

12.1 archery; badminton; barriers; basketball; batting cages; docks; fence design; fences; field hockey; field layout; football; golf driving; greens; hazards; lacrosse; launching ramps; one-wall handball; paddle tennis; player limits; reservoirs; rugby;

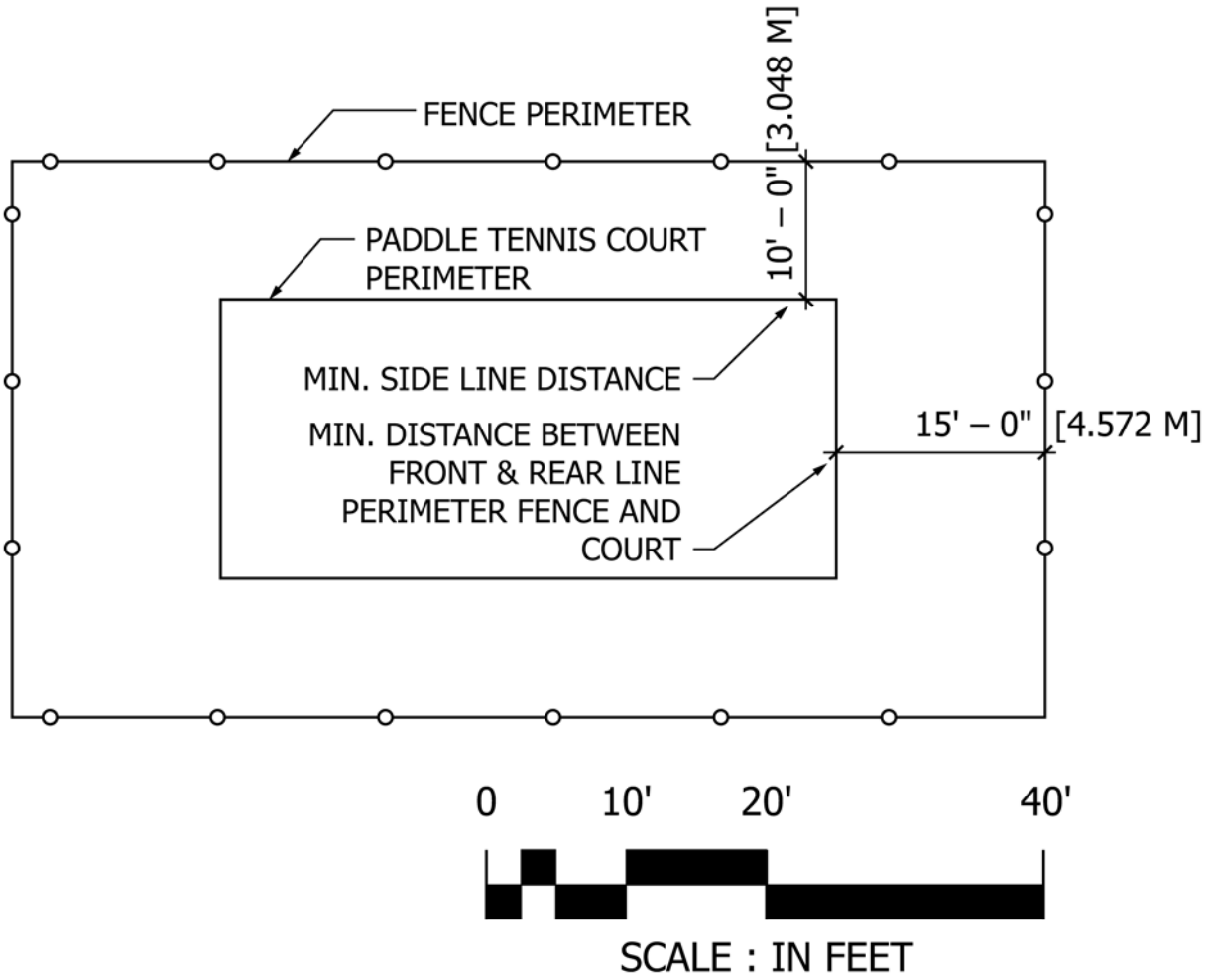

FIG. 11 Paddle Tennis Court

safety zones protection; six-man football; soccer; traps; volleyball; waterfronts

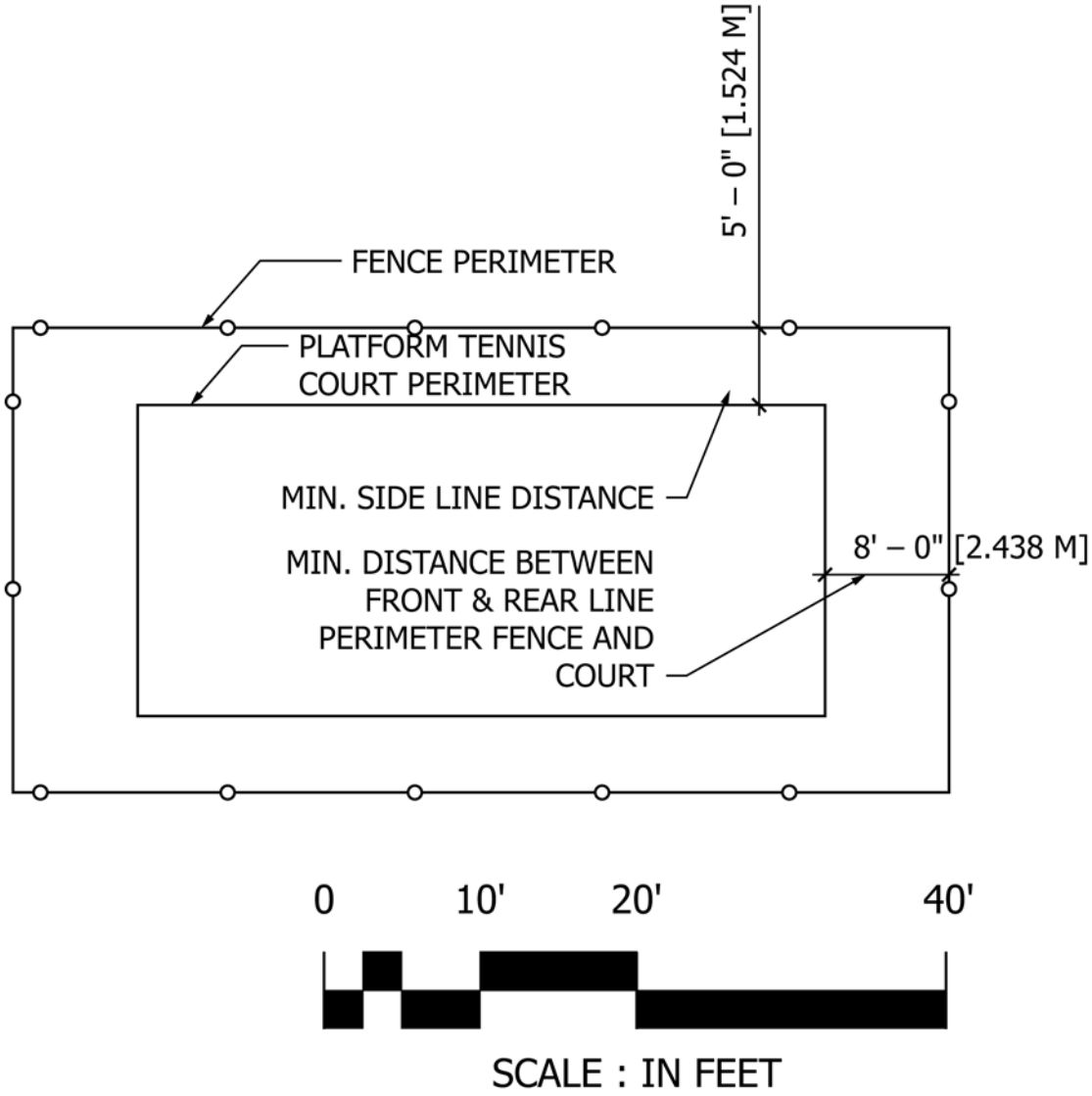

FIG. 12 Platform Tennis Court

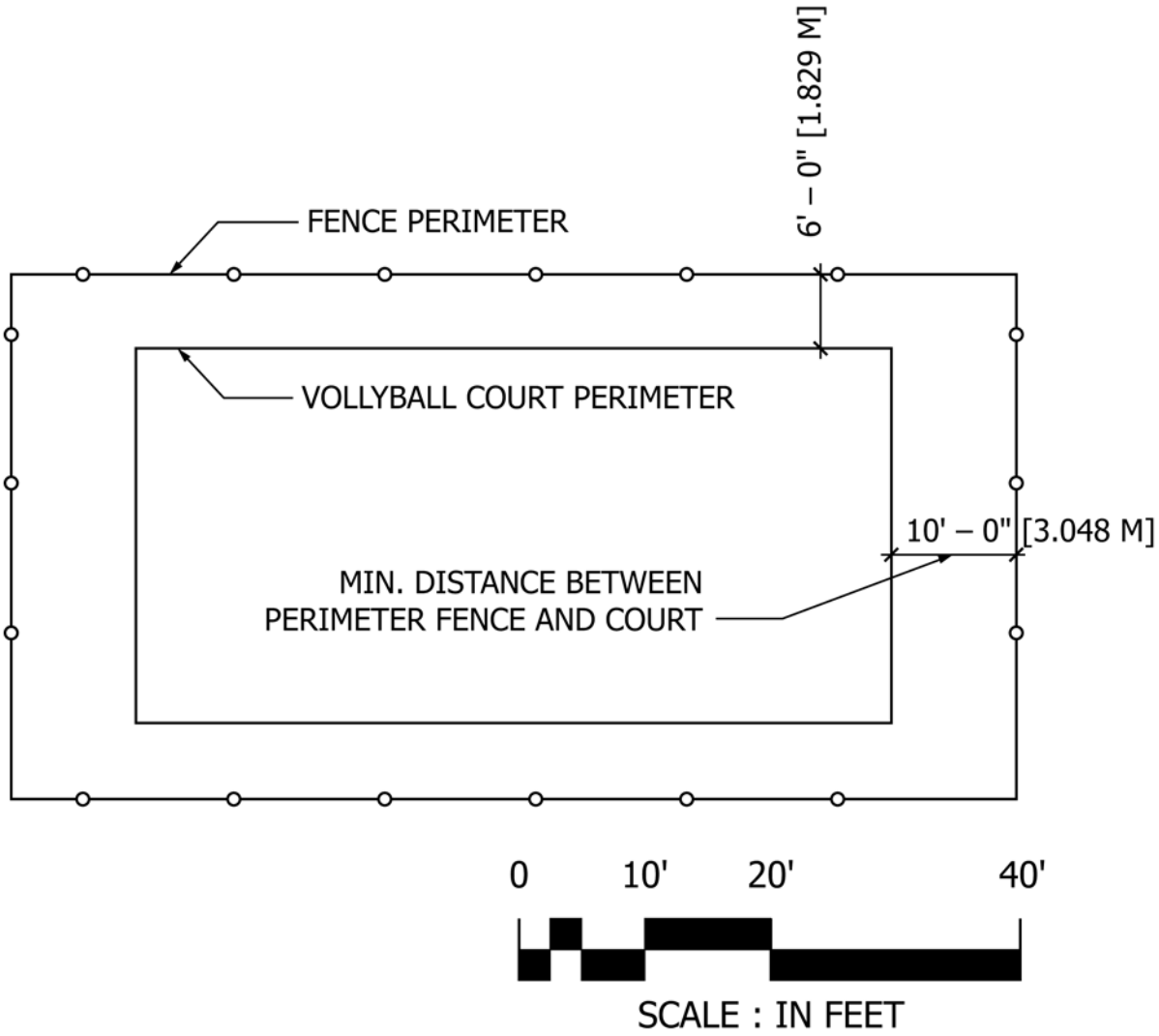

FIG. 13 Volleyball Court

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