*City of Irvine*

*Park Standards Manual*

# SECTION VII. PARK DESIGN STANDARDS

# A. ATHLETIC FIELDS AND COURT STANDARDS

## 1. STANDARDS APPLICABLE TO ALL BASEBALL AND SOFTBALL FIELDS

**Accessibility:** All fields, dugouts and spectator areas shall provide access for disabled individuals by way of walkways, ramps, or other acceptable means. All amenities shall conform to California Title 24 Accessibility Regulations. Any proposed variations shall be subject to approval by the Chief Building Official.

**Backstops:** Backstop shall be surrounded by a 6 inch high concrete curb or block wall on the outside of the backstop to keep water from draining onto the field. All concrete surrounding the backstop shall slope 1 percent away from the field. For backstop design, see page VII-8.

**Batting Cages:** Batting cages may be required when more than two lighted ballfields are located on one site. Each batting cage shall have a minimum inside dimension of 70 feet by 15 feet (for Regulation and Pony Baseball Use) or 60 feet by 15 feet (for youth baseball or softball use). The floor shall be a 4-inch thick concrete pad with a centered floor drain. The perimeter fencing shall be 12 feet high chain link fence supported by 2 $^{7}/_{8}$" galvanized steel posts, maximum 8 feet on center. The chain link shall be 2-inch grid, 6 gauge chain link fabric with knuckled selvage at top and bottom. All chain link shall be covered on the inside with #36 nylon netting, 1 ¾ square inch, latex treated, with poly rope border, or approved equals. The chain link shall be fastened with screen rings 18 inches long on center. Each batting cage shall have two 120V outlets, located at the door end of the cage. Each batting cage shall have its own door with lockable latch. The batting cages shall be equipped with a pitching machine and sports turf homeplate mat. See Section VIII.A for detailed equipment specifications.

**Drinking Fountain:** A handicapped accessible drinking fountain shall be placed behind the backstop directly behind home plate. See Section VIII.A for detailed equipment specifications.

**Dugouts:** Dugouts shall be located along the first and third baselines, behind the backstop wings. They shall consist of concrete pads at field grade that are sloped away from the field, and surrounded by an 8 foot high 6 gauge chain link with black windscreen fabric on three sides and the top of the dugout. The windscreen fabric on top of the dugout shall be attached at a 9-foot height to the backstop wing, and at the top of the 8-foot high dugout fence, forming a "roof." The dugouts shall be 30 feet long, 10 feet wide, and equipped with a 25 foot long aluminum bench, a bat rack, and a latching gate to the infield (see diagram on page VII-8). See Section VIII.A for detailed equipment specifications.

**Electrical Outlets:** 30 amp electrical outlets shall be placed behind the backstop at home plate (1) and behind both dugouts.

**Field Drainage:** The fields will typically be crowned in the center with drainage to the sides. However, if the specific site or field overlay makes this drainage pattern unacceptable, other drainage patterns shown on page VII-9 may be considered. Control boxes and drainage grates shall not be located on playing fields and shall be vandal resistant. All drain pipes coming from drains with exposed grates, will be a minimum of 6-inch diameter. Any turns in the pipe greater than a 45 degree angle will be made with sweep ells. All turf infields and all infields in Community Parks shall have approved subsurface drains designed to remove the water from the site (such as to storm drains).

**Field Gradient:** Field gradients shall vary from site to site. Field gradients will range from 1.00 to 1.25 percent for skinned and turf infields and from 1.25 to 1.50 percent for outfield turf.

**Field Orientation:** The preferred field orientation places the back of the home plate facing due north to northeast, and the first baseline running west. However, optimum utilization of the site may require variations from this preferred orientation.

**Infield Surfaces:** All infields shall be covered with a 6 inch deep composition of 45 percent brick dust, 30 percent

clay and 25 percent Turface MVP, unless requested to be a turf infield by City staff.

**Infield Equipment:** Home plate, the bases, and the pitching rubber shall be provided at the time of construction, but shall be installed by the City of Irvine. For ballfields with turf infields, a pitchers mound cover and a home plate cover shall be provided. See Section VIII.A for detailed equipment specifications.

**Infield Watering:** All infields shall have a manual irrigation watering system that is capable of watering all infield brick dust areas. Sufficient number of valves shall be provided depending on the available pressure and the size of the main line at the site. Sprinklers shall be installed along the perimeter of the infield area, 3/4 inch to 1 inch above the brick dust surface. The sprinkler heads shall be Hunter I-42-ADS high speed with brown rubber tops. Valves and valve boxes shall be installed at the end of the dugout fence, on the spectator side of the fence. Valves shall be 1 ½ -inch to 2-inch ball type, made of bronze with rubber coated handles. Valves shall be installed in rectangular valve boxes at least 14 inches by 20 inches, manufactured by Ametek, Carson, or an approved equal, and installed per City Landscape Standards.

**Lighting:** The goal is that all fields at community parks are lighted for night-time use; however, each community park site shall be evaluated for appropriateness for lighting. Lighting will be included at neighborhood park sites with athletic fields whenever possible and appropriate. When lights are provided for athletic fields, lighting levels shall be per City Lighting Standards in effect at the time of City acceptance of the facility. Light poles shall be located behind the backstop, wings parallel to first and third baselines**,** and outside the area of play. The number of poles and lamps required shall be determined by the field configuration and the photometric measurements. Lighting level requirements vary with each type of field, as indicated on pages 4 - 7. Security lights shall be located halfway down the poles, not to exceed 30 feet in height, and illuminate the dugouts when field lights are off. Poles within the fenced playing areas shall be padded.

**Outfield Fencing:** Permanent outfield fencing shall be required where there is no field overlay. All permanent fencing shall be a minimum 8 feet high and constructed of 6-gauge chain link. The fences shall have top, center, and bottom rails. For permanent fencing there shall be concrete mow strips and the fence will be covered with windscreen fabric. When field overlay occurs, temporary fencing shall be provided that is 5 feet high made of flexible mesh with 6-feet high fiber- glass poles. See Section VIII.A for detailed equipment specifications.

**Pole Pads:** All poles within or in the vicinity of the playing area that are not protected by a fence shall have six 6 feet high pole pads. See Section VIII for detailed equipment specifications.

**Quick Couplers:** Three (3) quick coupler valves shall be placed as follows: two along the field lines near the fence at the dugouts, and one in the grass area immediately behind the second base.

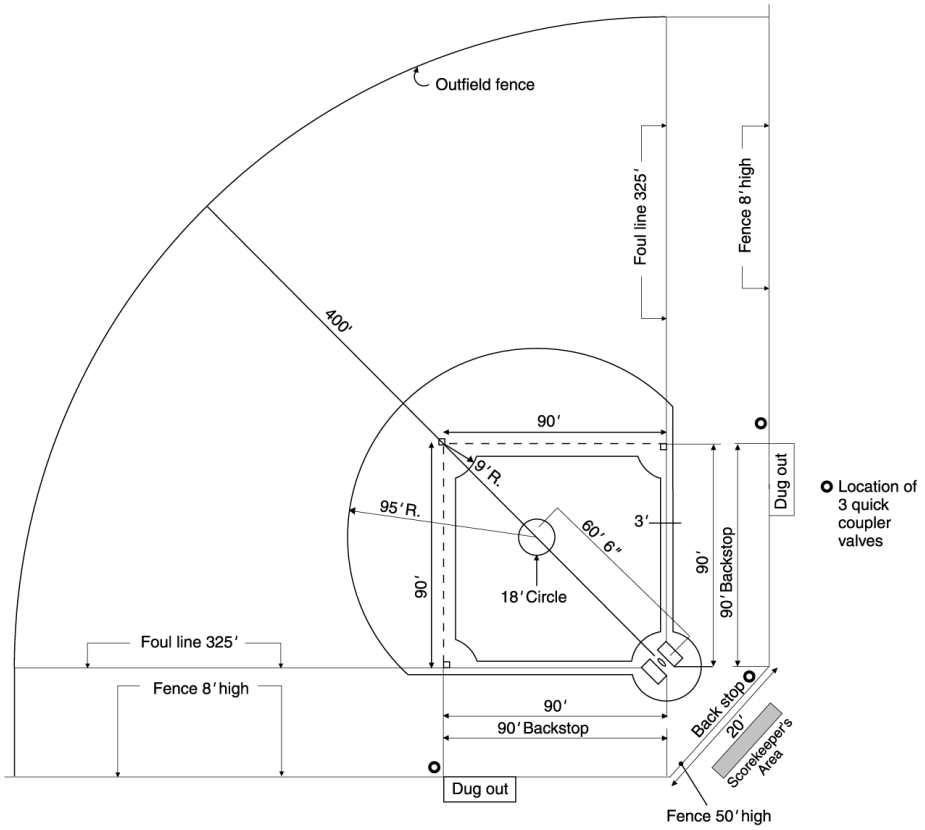
**Scoreboard:** This is an optional item for ball diamonds.

**Spectator Area:** A concrete-paved spectator area is required at all community park sites and at all regulation baseball fields. Although the spectator area is desirable in neighborhood parks, each site shall be evaluated for appropriateness, technical feasibility and financial impact. Spectator areas shall consist of either: (a) five (5) rows of aluminum bleachers seating 70 for each side of the field, placed on a concrete pad (see diagram on page VII-8); or (b) a tiered concrete structure. Companion seating for wheelchair users shall be provided within or immediately adjacent to each bleacher. All concrete shall drain away from the playing field. See Section VIII.A for detailed equipment specifications.

**Turf:** Turf type shall be a Hybrid Bermuda variety (Santa Ana or Tifway II) and installed by stolonizing, sodding, or another acceptable method.

# 2. REGULATION BASEBALL FIELD

| | |
|---|---|
| **Base Length:** | 90 feet |
| **Mound Size:** | 18 feet diameter, 10 inches high |
| **Infield Radius:** | 95 feet from center of the mound |
| **Pitching Rubber:** | 60 feet 6 inches distance from back point of home plate to front of rubber |
| **Foul Line to Home Plate:** | Minimum: 300 feet; Ideal : 310 feet-340 feet |
| **Centerfield to Home Plate:** | Minimum: 380 feet; Ideal: 380 feet-400 feet |
| **Backstop to Home Plate:** | 50 feet |
| **Minimum Setback:** | 125 feet from Home Plate/Foul lines to street, right of way, sidewalk, or building. |
| **Field Drainage:** | A sub-grade infield drainage system shall be installed for all regulation fields. |
| **Scorekeeper's Area:** | An elevated concrete scorekeeper's area shall be provided behind the backstop, directly behind home plate. |
| **Spectator Area:** | Required. |
| **Backstop:** | Permanent winged-style backstop required. See page VII-8 for backstop design. |
| **Lighting** | Minimum maintained lighting levels shall be 40 to 50 footcandles infield and 20 to 30 footcandles outfield. Regulation Baseball fields at Community Parks shall be lighted. See Section VII.D Lighting Standards for Public Facilities. |



# 3. PONY LEAGUE BASEBALL FIELD

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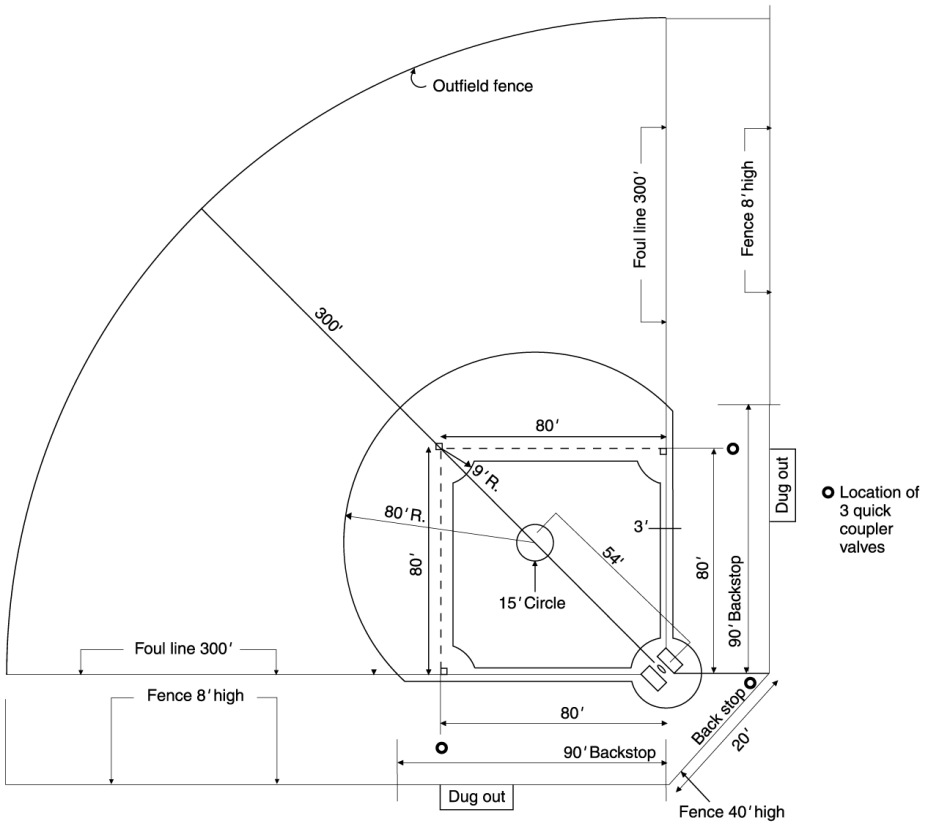
| **Base Length:** | 80 feet |
| **Mound Size:** | 15 feet diameter, 8 inches high (mound constructed by City after facility acceptance) |
| **Infield Radius:** | 80 feet from center of the mound |
| **Pitching Rubber:** | 54 feet distance from back point of home plate to front of rubber |
| **Foul Line to Home Plate:** | Minimum: 275 feet; Ideal: 300 feet |
| **Centerfield to Home plate:** | 300 feet |
| **Backstop to Home Plate:** | 40 feet |
| **Minimum Setback:** | 125 feet from home plate/foul lines to street, right of way, sidewalk, or building. |
| **Spectator Area:** | Required |
| **Backstop:** | Permanent winged-style backstop required. In situations where space is limited between fields, a clam-shaped backstop may be used. See page VII-8 for backstop design. |
| **Lighting Levels:** | Minimum maintained lighting levels shall be 20 to 30 footcandles infield, 15 to 20 footcandles outfield. See Section VII.D Lighting Standards for Public Facilities. |



# 4. YOUTH BASEBALL OR SOFTBALL FIELD

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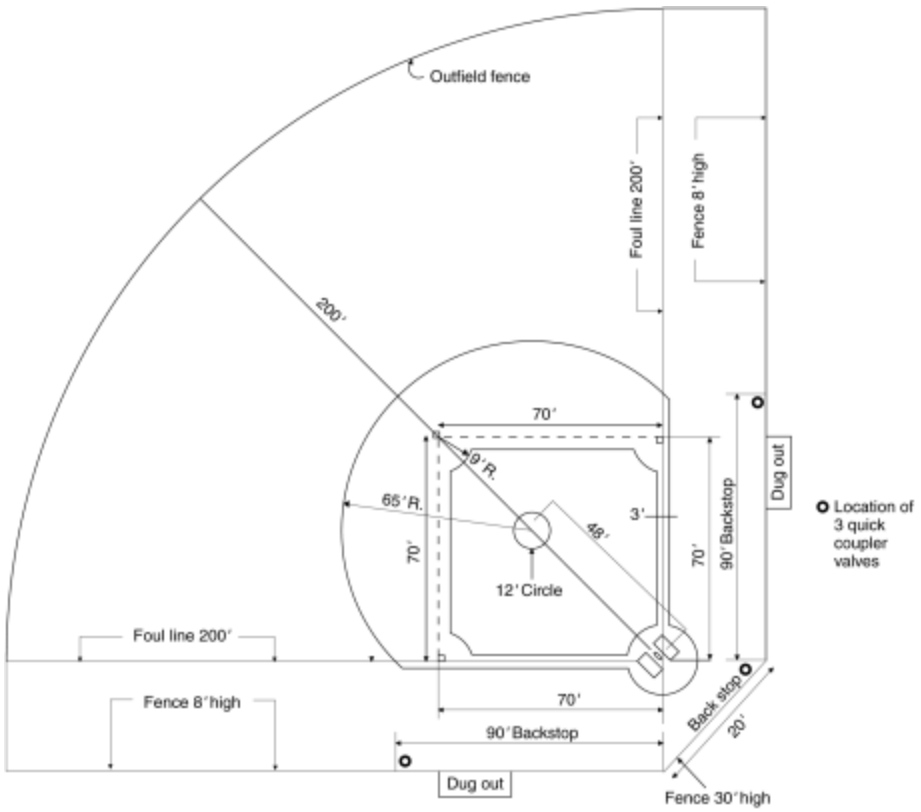
| **Base Length:** | 60 feet, 70 feet |
| **Mound Distance/Type:** | Baseball: 44 feet (12 feet diameter, 4 inches high)<br>48 feet (12 feet diameter, 6 inches high)<br>Mound to be constructed by City after facility acceptance |
| **Infield Radius:** | 65 feet from center of mound |
| **Pitching Rubber to Home Plate:** | Softball: 38 feet or 40 feet from back point of home plate to front of rubber.<br>Baseball: 44 feet, 46 feet, or 48 feet from back point of home plate to front of rubber. |
| **Foul Line to Home Plate:** | 200 feet |
| **Backstop to Home Plate**: | 30 feet |
| **Minimum Setback:** | 75 feet from home plate/foul lines to street, right of way, sidewalk, or building. |
| **Backstop:** | Permanent winged-style backstop required. In situations where space is limited between fields, a clam-shaped backstop may be used. See page VII-8 for backstop design. |
| **Lighting Levels:** | Minimum maintained lighting levels shall be 20 to 30 footcandles infield, 15 to 20 footcandles outfield. See Section VII.D Lighting Standards for Public Facilities. |



# 5. ADULT SOFTBALL FIELD

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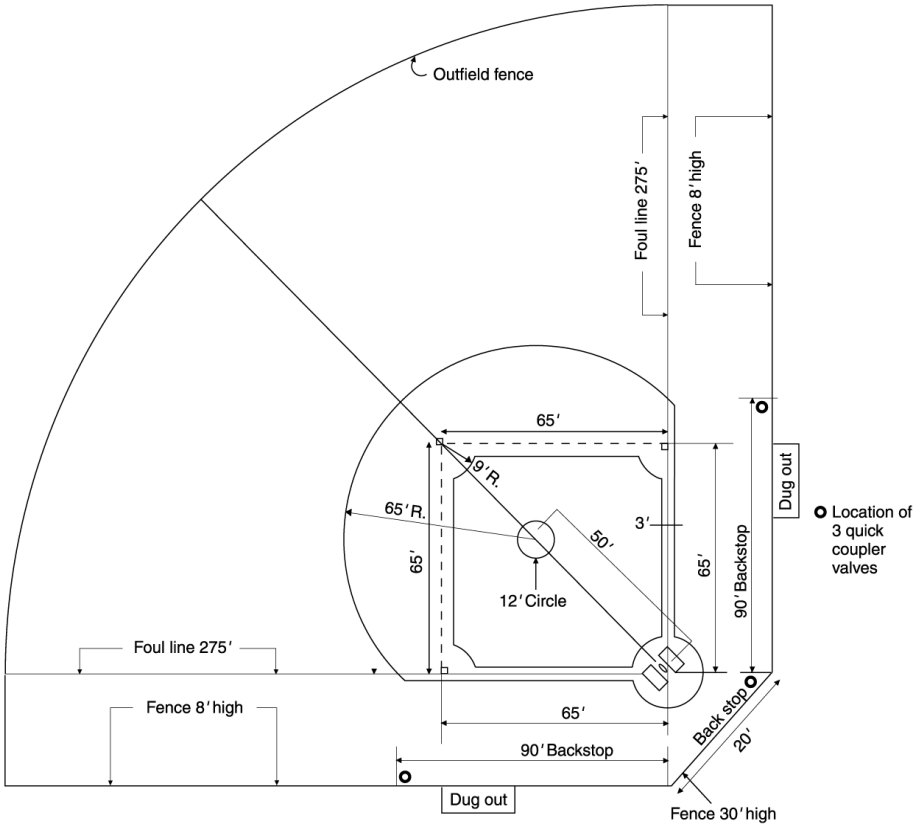
|---|---|
| **Base Length:** | 60 feet, 65 feet |
| **Infield Radius:** | 65 feet from center of rubber |
| **Pitching Rubber:** | 50 feet from back point of home plate to front of rubber |
| **Foul Line to Home Plate:** | 275 feet minimum |
| **Backstop to Home Plate:** | 30 feet |
| **Minimum Setback:** | 125 feet from home plate/foul lines to street, right of way, sidewalk, or building |
| **Backstop:** | Permanent winged-style backstop required. In situations where space is limited between fields, a clam-shaped backstop may be used. See page VII-8 for backstop design. |
| **Lighting Levels:** | Minimum maintained lighting levels shall be 20 to 30 footcandles infield, 15 to 20 footcandles outfield. See Section VII.D Lighting Standards for Public Facilities. |



# 6. BACKSTOP AND SPECTATOR AREA

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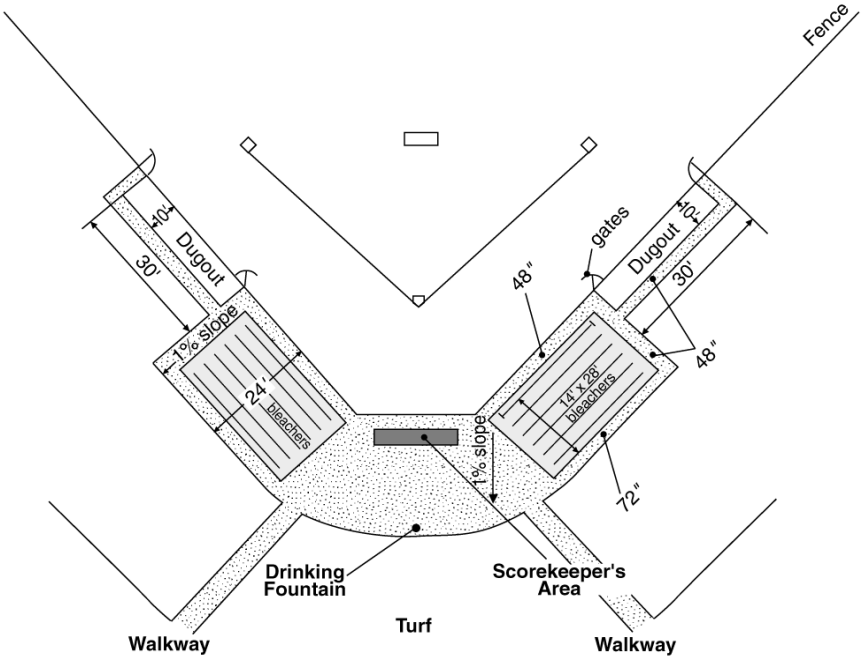
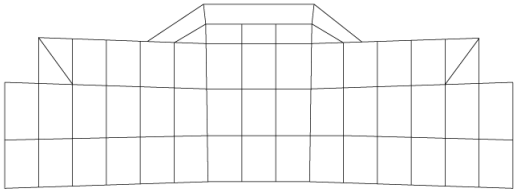
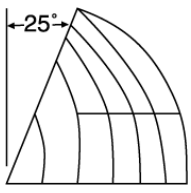
| **Accessibility:** | An unobstructed area minimum 4 feet wide in front of and on each side of the bleachers, and minimum 6 feet wide at the rear of the bleachers shall be provided for accessibility. Concrete walkways shall be provided for access to the area. The diagram below shows some possible walkway locations. |
| **Backstops:** | Backstops and wings shall be 30 feet in height. Back of backstop, centered behind the home plate, shall be 20 feet long, with each wing extending 90 feet parallel to each foul line, including front of the dugout. |
| **Concrete Pad:** | The area behind the backstop and wings, from first base to third base, shall be poured concrete as shown in the diagram below. The minimum width of the concrete pad shall be 24 feet, including the bleachers and the access area. |
| **Drinking Fountain:** | A drinking fountain shall be located on the concrete area behind the home plate, providing a 15 foot radius to allow space for pedestrian traffic. |
| **Seating:** | Spectator seating shall be provided by tiered concrete structures or portable bleachers containing five (5) rows of seating placed in an area approximately 28 feet with 14 feet. See Section VIII.A for detailed equipment specifications. Bleachers are required on each side of the spectator area. All seating facilities shall conform to California Title 24 Accessibility Regulations. |

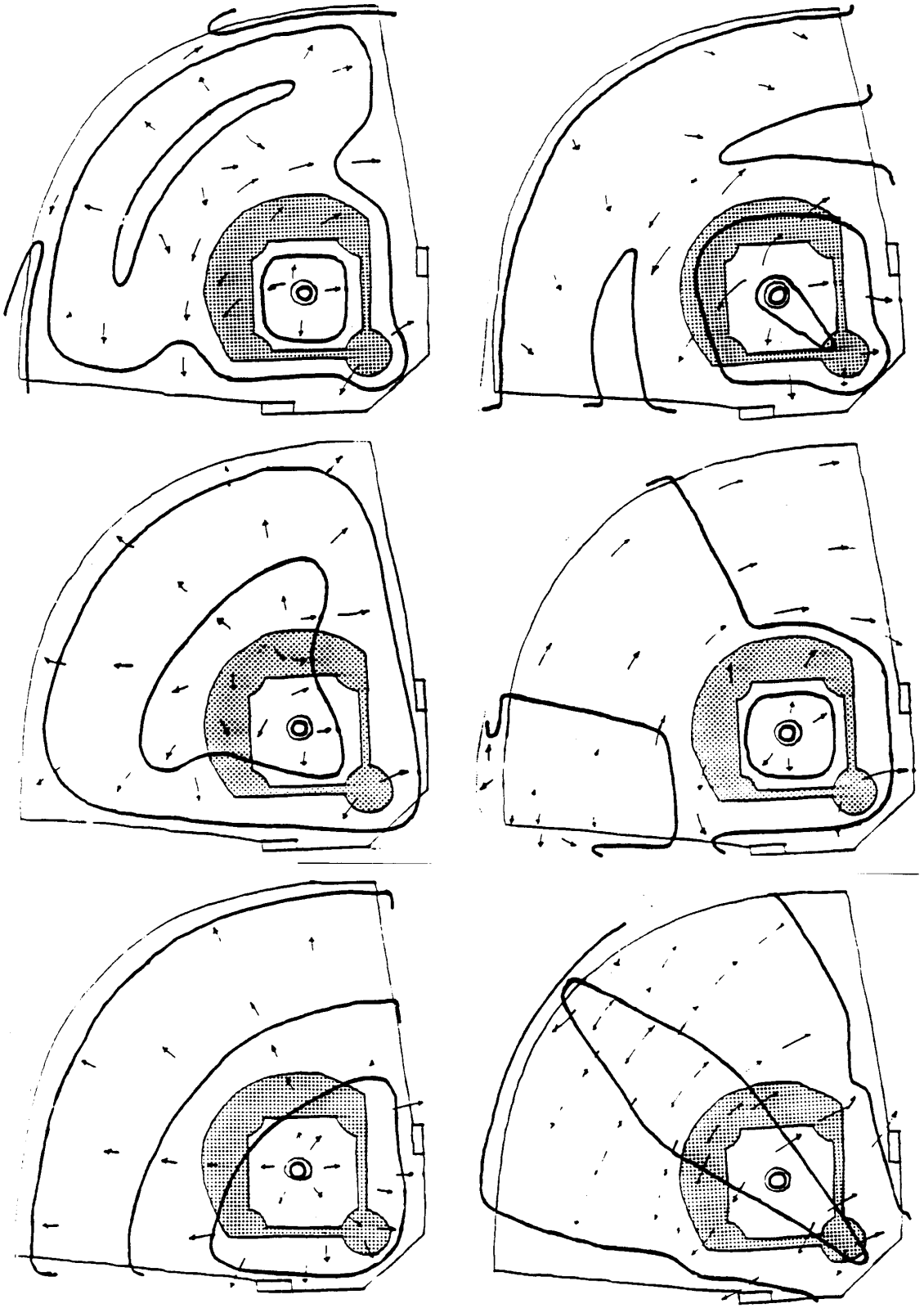



## Backstop Exhibits





## 7. SOFTBALL / BASEBALL DIAMOND DRAINAGE PATTERNS



# 8. STANDARDS APPLICABLE TO ALL SOCCER, FOOTBALL, AND RUGBY FIELDS

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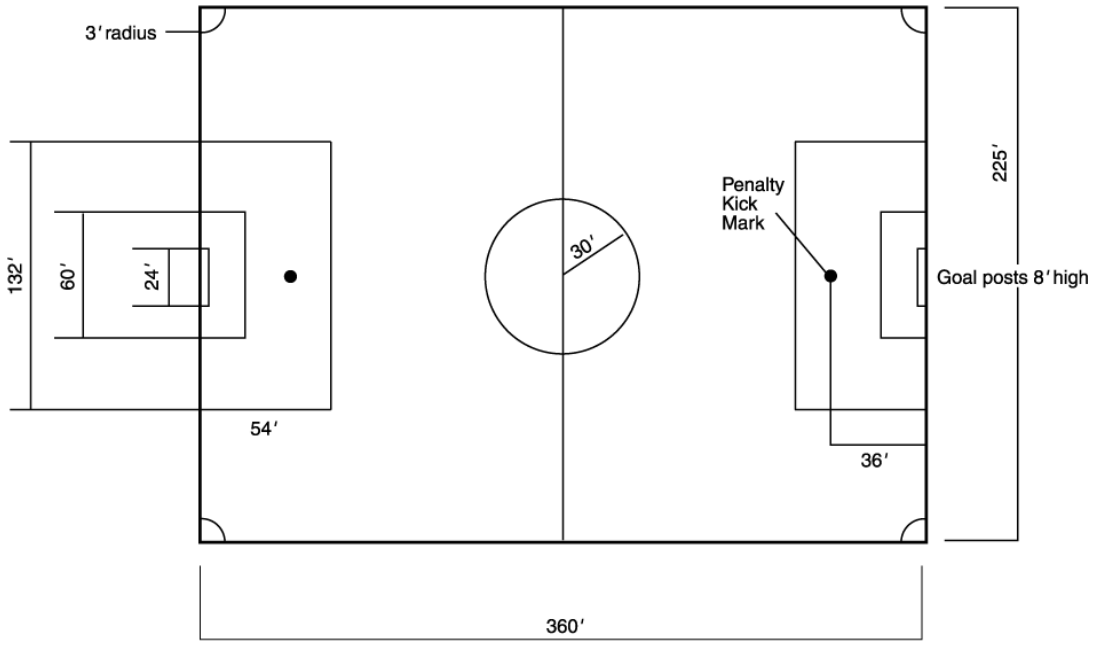
| **Field Orientation:** | Typically, the long axis of the fields should extend north/south, at right angles to the late afternoon sun's rays. |
| **Field Placement:** | Multiple fields being placed adjacent to one another shall be placed side-by-side. Fields may be "off-set" to facilitate field layout, but may not be end-to-end. The minimum separation between fields shall be 9 feet. |
| **Field Obstructions:** | An area, minimum 10 feet wide, will be provided around the field where possible, with no trees, berms, planters, or sidewalks within 10 feet of the sidelines. If possible, a minimum of 6 feet from each corner of the field will be level grass with no obstructions. |
| **Turf:** | Field turf shall be turf type 100% Hybrid Bermuda variety. Hybrid Bermuda shall be installed by stolonizing, sodding, or an acceptable alternative. |
| **Field Gradient:** | The acceptable gradient range for soccer fields is 1.5 to 1.75 percent. |
| **Field Drainage:** | Fields should typically use a corner pitch drainage pattern; however, field overlays and site situations may require the use of other patterns (See Soccer/Rugby Field Drainage Patterns, page VII-12). Permanent, dedicated, full time fields will have approved subsurface drains under the penalty and the goalie areas that will remove the water from the field. |
| **Lighting:** | The average minimum maintained lighting level shall be 20 to 30 foot-candles over the entire field area. The number of poles and lamps required shall be determined by field configuration and photometric measurements. See Section VII.D Lighting Standards for Public Facilities. |

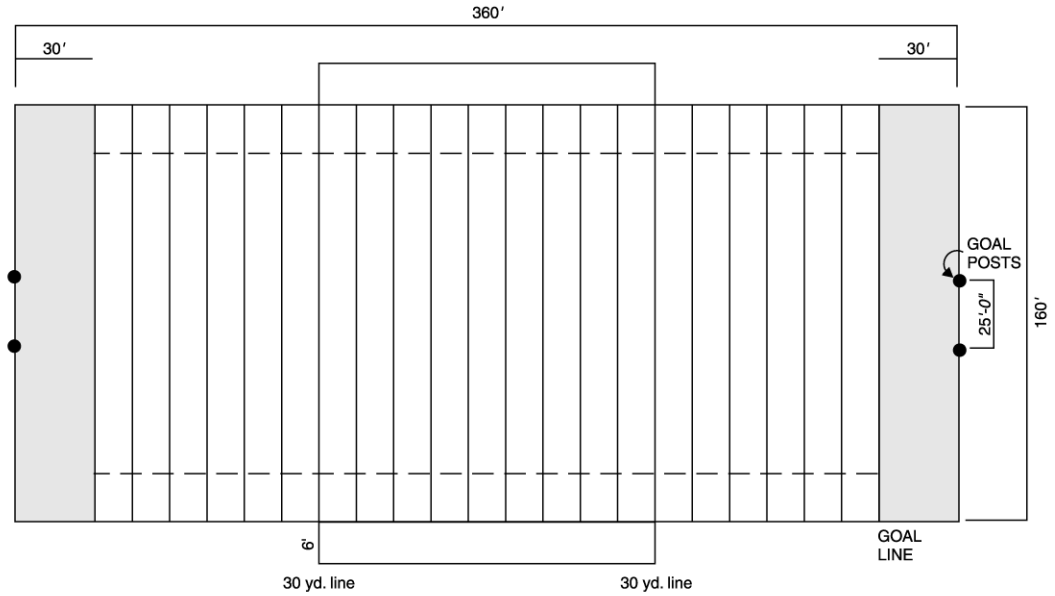
## Soccer Field

Field Dimensions: Minimum 180' x 300"; Ideal: 225' x 360'



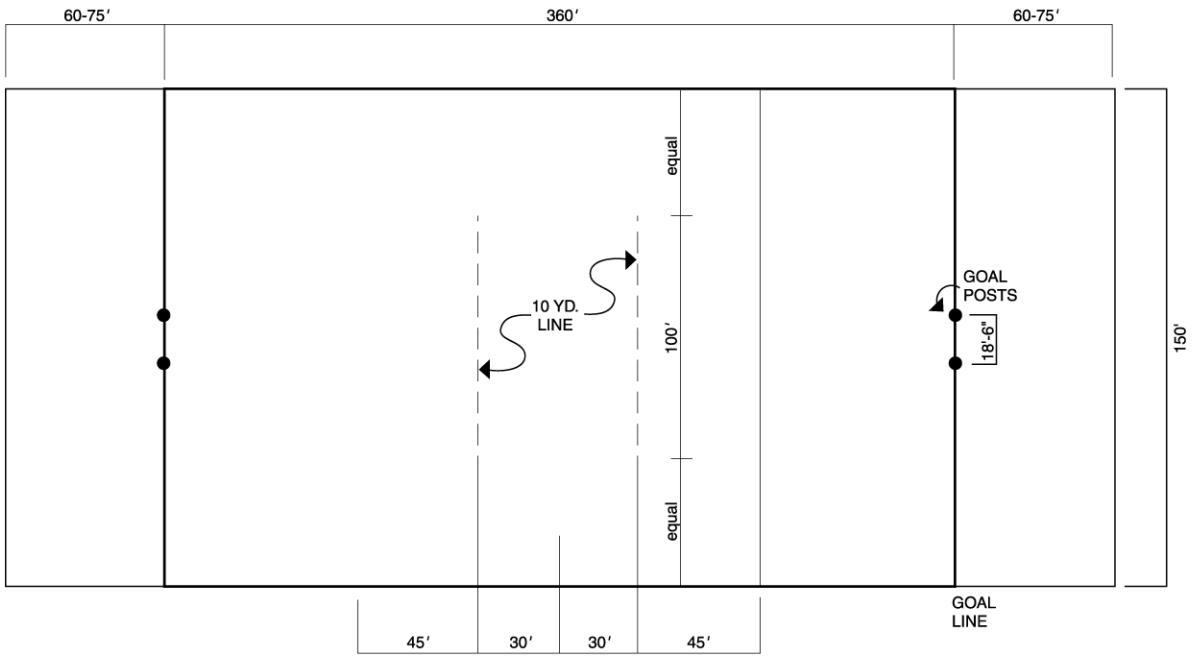
# Football Field

**Field Dimensions:** 160 feet x 360 feet

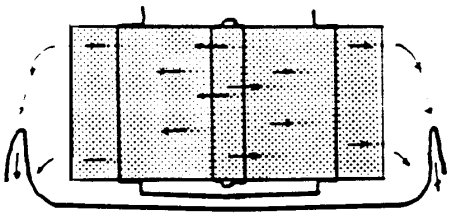


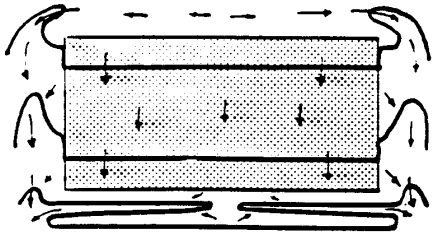

# Rugby Field

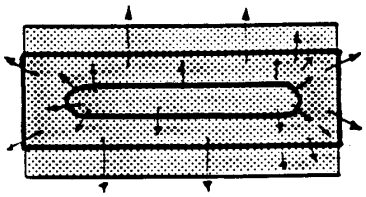
**Field Dimensions:** 150 feet x 360 feet

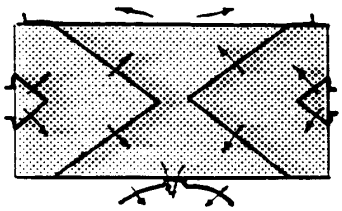


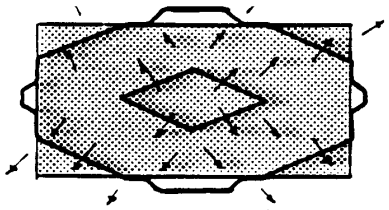
# 9. SOCCER/RUGBY FIELD DRAINAGE PATTERNS

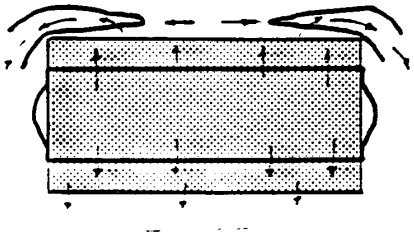


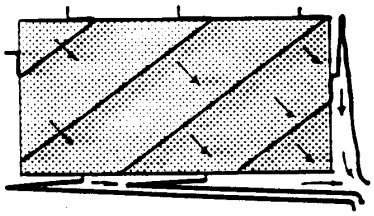


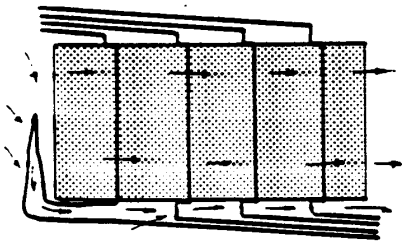


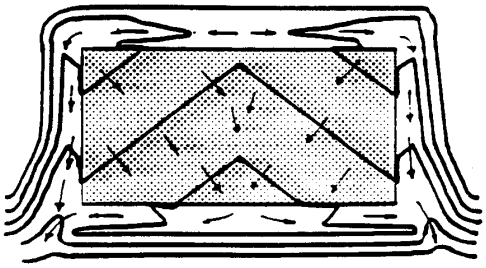






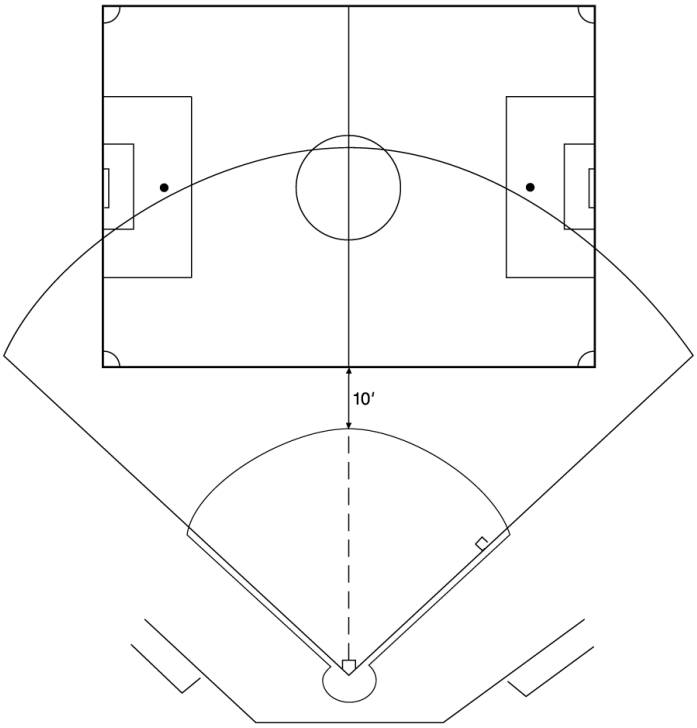


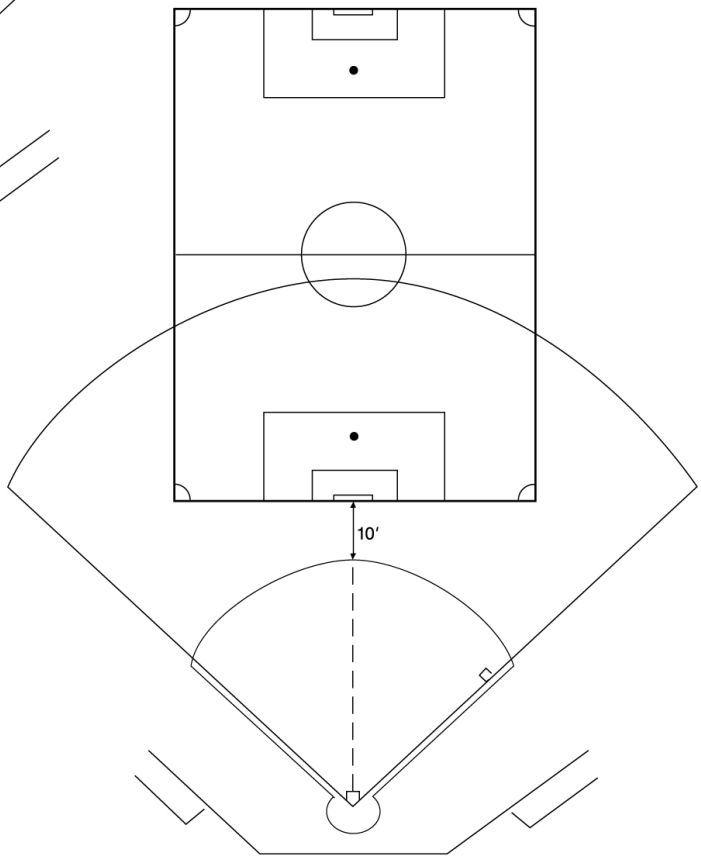




# 10. FIELD OVERLAY

Field overlay situations shall often occur in order to optimize the recreational opportunities. In case of an overlay, fields shall be placed in one of the arrangements shown below or in an acceptable alternative arrangement. In any field overlay, the edge of the soccer field shall be a minimum 10 feet from the edge of the brickdust on the baseball/softball field.



# 11. BASKETBALL COURT

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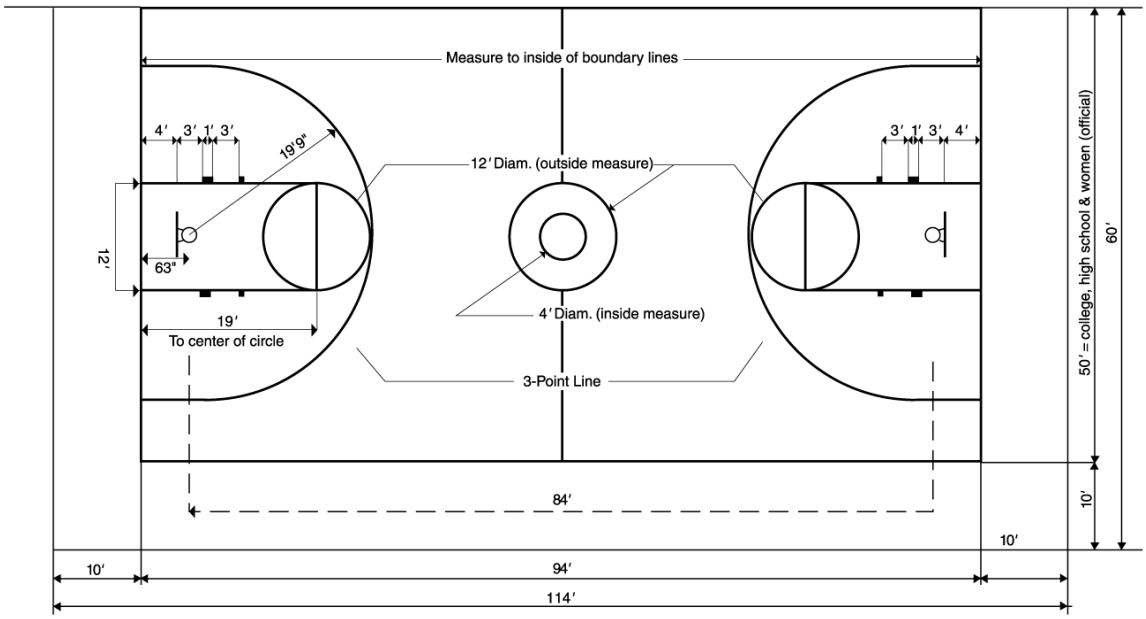
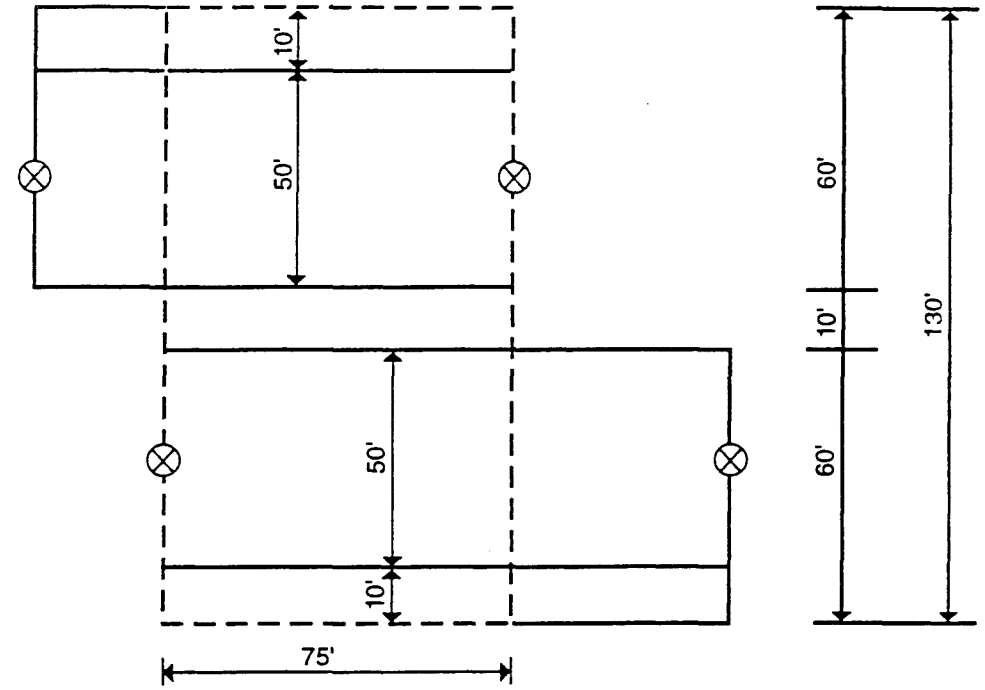
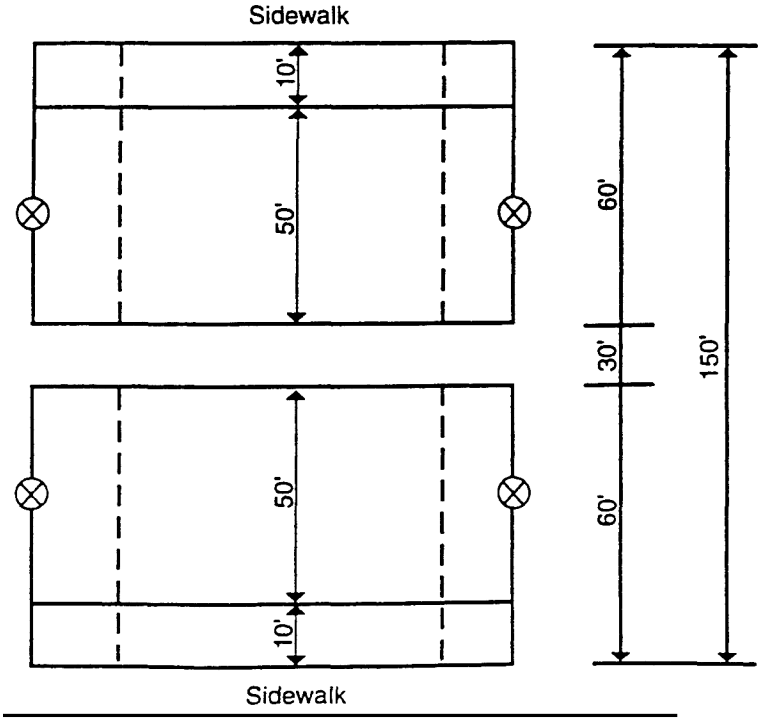
| **Court:** | Playing field: 84 feet by 50 feet for both indoor and outdoor courts.<br>Outdoor Courts shall have a poured concrete surface 94 feet by 60 feet. A medium broom finish shall be used to prevent slipping. |
| **Court Placement:** | 10 feet minimum distance between courts that are placed side-by-side or end-to-end. Where two or more courts are provided at one site, the courts should be configured for multi-purpose use, per Basketball Court Placement Diagram on page VII-15. |
| **Court Gradient:** | 1.0 to 1.5 percent. |
| **Markings:** | All markings on the playing surface shall be applied as shown below, using a wear-resistant, colored substance. All lines shall be minimum 2 inches wide unless otherwise noted. The color of the markings shall be determined during the final design. |
| **Goals:** | All goals shall have capped 5 feet $^{9}/_{16}$ inches straight posts with heavy duty adjustable bracing, a ¼ foot galvanized steel plate, rectangular 4 feet by 6 feet backboard offset, and breakaway goal. All goals are to have nylon nets and be set to regulation height. All goals are to have 6-foot offsets and a 7-foot pole pad with cable laces and hog rings. The nets provided shall be double headband 3mm polyurethane twin with an extra row of mesh in the net body. See Section VIII.A for detailed equipment specifications. |
| **Electrical Outlets**: | Two (2) electrical outlets shall be installed at each court on light poles, one outlet on each of the opposite sides of the court. Each outlet must be 30 amps. |
| **Lighting:** | Minimum maintained lighting levels shall be 20 to 30 footcandles over the entire court. The number of poles and lamps needed to maintain the required lighting level shall be determined by photometric measurements. Light posts shall be 13 inches in circumference and located 10 feet from the playing area edge. In case of a hardship, a minimum distance of 8 feet from the light post to the playing edge may be permitted. See Section VII.D Lighting Standards. |



# Basketball Court Placement



# 12. TENNIS COURT

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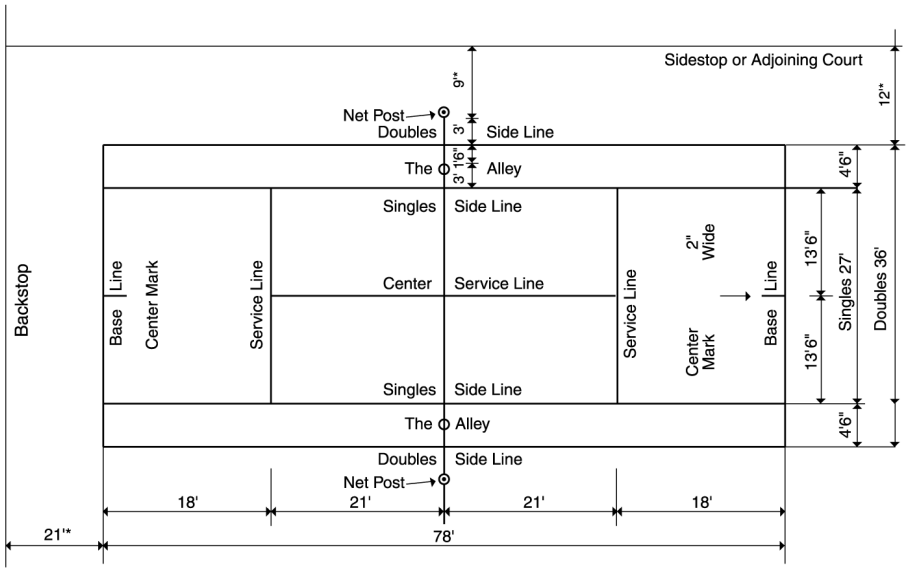
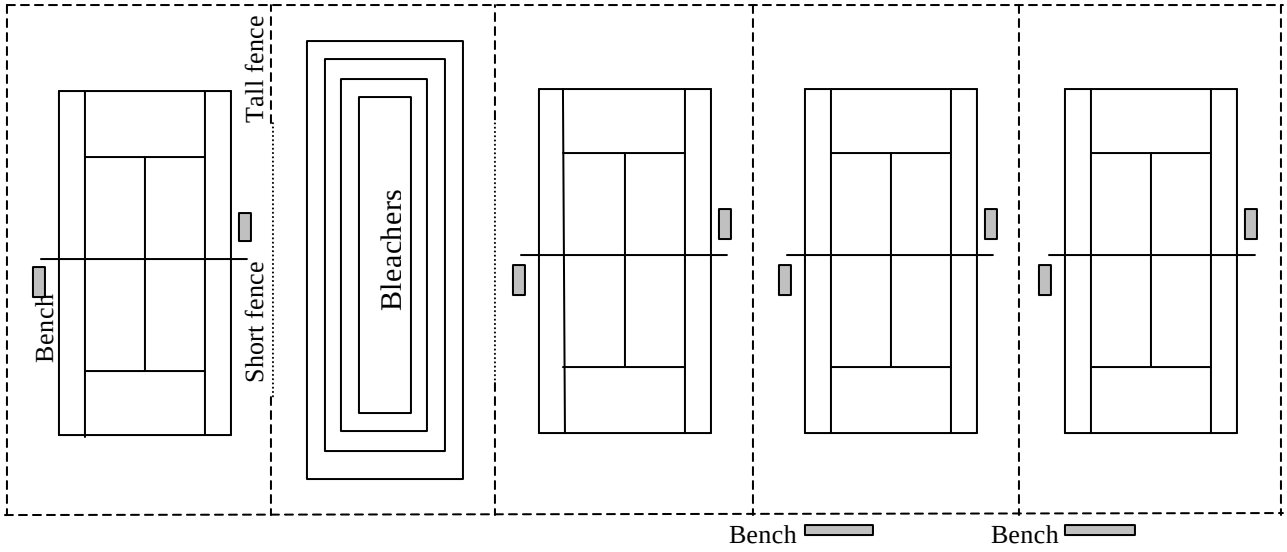
| **Court Dimension:** | 36 feet by 78 feet, with 12 foot side clearance on each side and 21 feet between each baseline and the fence. |
| **Orientation:** | Courts should be laid out on a north-south axis line. |
| **Court Placement:** | When two or more courts are placed side-by-side, the minimum distance between adjacent sidelines of the courts shall be 12 feet. A fence, 42 inches high, shall be placed midway between each two adjacent courts, beginning at a 46-inch gate opening at each end. The minimum distance between the end of each court and the fence shall be 21 feet. |
| **Court Gradient:** | The acceptable gradient range for tennis courts is 0.5 to1.0 percent, with a cross slope. |
| **Court Surface:** | Concrete, with a coarse, epoxy -bonded, colored surface.<br>Colors shall be determined at final design. |
| **Markings:** | The courts shall have markings for both singles and doubles play.<br>Baseline shall be painted 4 inches wide. All other lines shall be painted 2 inches wide. |
| **Fencing:** | 12 foot high 6-gauge chain link enclosing the court. The courts shall be shielded with an open mesh windscreen of black seamless polypropylene 9 feet high with center tabs. |
| **Net & Posts:** | Posts shall be 4½ inches O.D. and constructed of heavy duty galvanized steel, with heavy duty hardware and internal ratchet. Nets shall have a double headband and be constructed of a 3mm polyurethane twine mesh with an extra row of mesh in the body of the net to provide increased durability. See Section VIII.A for detailed equipment specifications. |
| **Electrical Outlets:** | Two (2) electrical outlets shall be installed at each court, one at each end. Each outlet must be 30 amps. |
| **Lighting:** | All public courts should be lighted for night-time use. Minimum maintained lighting level shall be 30 footcandles at the baseline and 50 footcandles at the net line. The number of poles and lamps needed to maintain the required lighting levels shall be determined by photometric measurements. Lighting shall be controlled by a time clock (preferred brand: Tork) placed at the main power panel for the park or inside the park building, if available. See Section VII.D Lighting Standards. |




*Minimum recommended distance

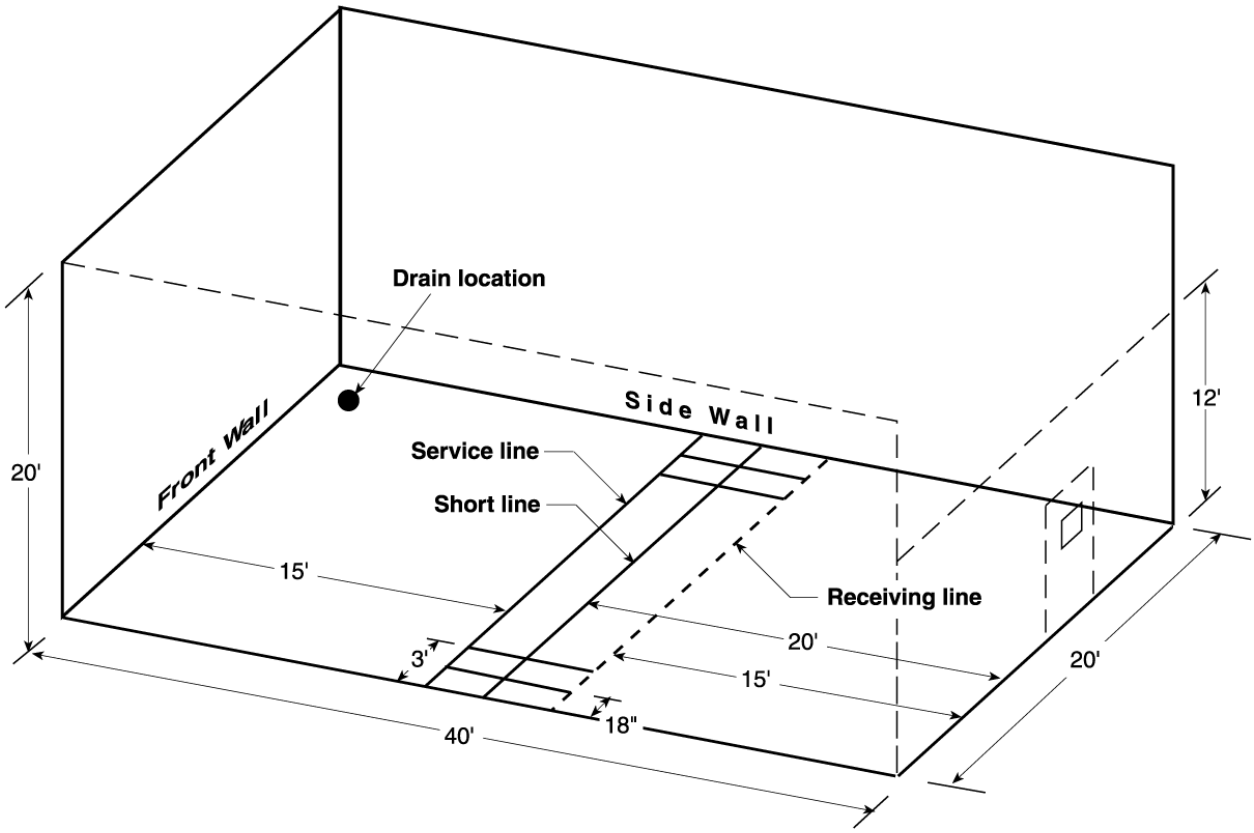
# 13. TOURNAMENT TENNIS COURTS

| | |
|---|---|
| **Applicability:** | If more than 4 tennis courts are at the same location, the courts shall conform to the following standards to allow for tournament tennis |
| **Design:** | Except as noted bellow, the design standards on VII-16 applicable to all tennis courts, shall also be used for tournament tennis. |
| **Seating:** | Spectator seating shall be provided by a tiered concrete structure or portable bleachers containing five (5) rows of seating placed in an area approximately 28 feet with 14 feet. See Section VIII.A for detailed equipment specifications. Bleachers are required on each side of the spectator area for viewing at least 2 courts. All seating facilities shall conform to California Title 24 Accessibility Regulations. |
| **Benches:** | Two benches for players shall be located adjacent to each court. A bench for patrons waiting to use the courts shall be placed adjacent to the perimeter gate. |
| **Drinking Fountain:** | A drinking fountain shall be located on the concrete area in proximity to the bleachers, providing an 8-foot radius to allow space for pedestrian traffic. |
| **Accessibility:** | An unobstructed area minimum 4 feet wide in front of and on each side of the bleachers, and minimum 6 feet wide at the rear of the bleachers shall be provided for accessibility. Concrete walkways shall be provided for access to the area. |
| **Lighting:** | All tournament level courts shall be lighted for night-time use. Average maintained lighting level shall be 75 to 100 footcandles over the entire court area. The number of poles and lamps needed to maintain the required lighting levels shall be determined by photometric measurements. Lighting shall be controlled by a time clock (preferred brand: Tork) placed at the main power panel for the park or inside the park building, if available. See Section VII.D Lighting Standards. |



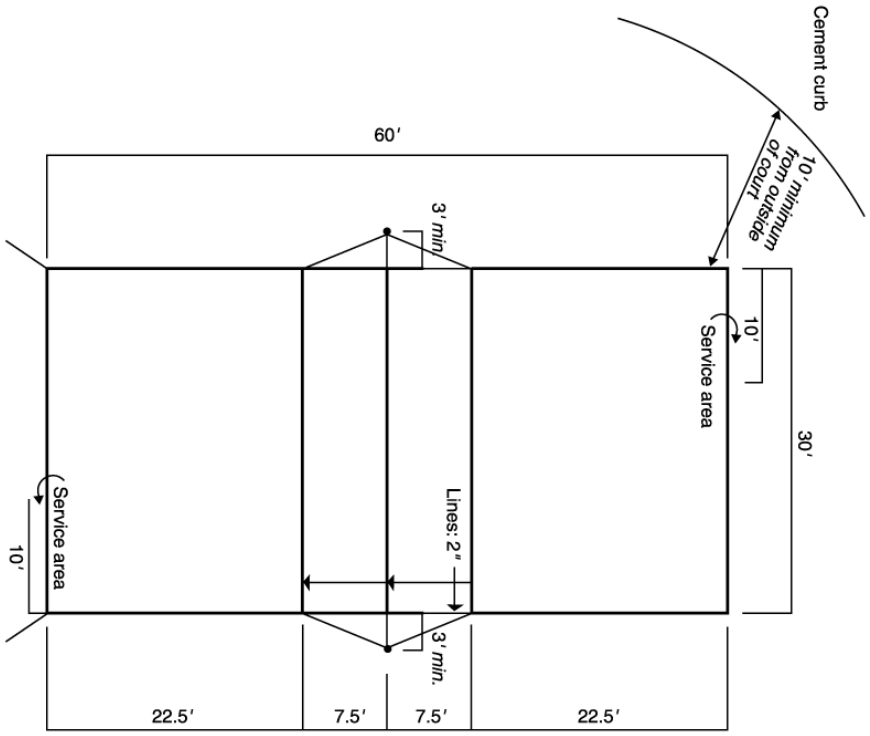
# 14. RACQUETBALL/HANDBALL COURT

| | |
|---|---|
| **Court:** | 20 feet wide, 40 feet long, and 20 feet high. |
| **Back Wall:** | Minimum 12 feet high with a door in the center. |
| **Court Gradient:** | From 0.5 to 1.0 percent. |
| **Court Surface:** | Concrete, with a medium broom finish. |
| | Court markings shall be applied using a wear-resistant substance. |
| **Drainage:** | Courts shall slope to a single floor drain placed near the front wall corner. |
| **Door:** | Metal door with expanded metal window shall be provided. See Section VIII.A. |
| **Electrical Outlets:** | Two (2) electrical outlets shall be installed at each court. The outlets shall be placed outside the court, adjacent to the door. Each outlet must be 30 amps. |
| **Lighting:** | All courts located at community parks should be lighted for night-time use. The minimum maintained lighting level shall be 20 to 30 footcandles over the entire court area. The number and placement of light fixtures shall be determined by photometric measurements. Lighting shall be controlled by a time clock (preferred brand: Tork) placed at the main power panel for the park or inside the park building, if available. See Section VII.D Lighting Standards for Public Facilities. |



# 15. VOLLEYBALL COURT

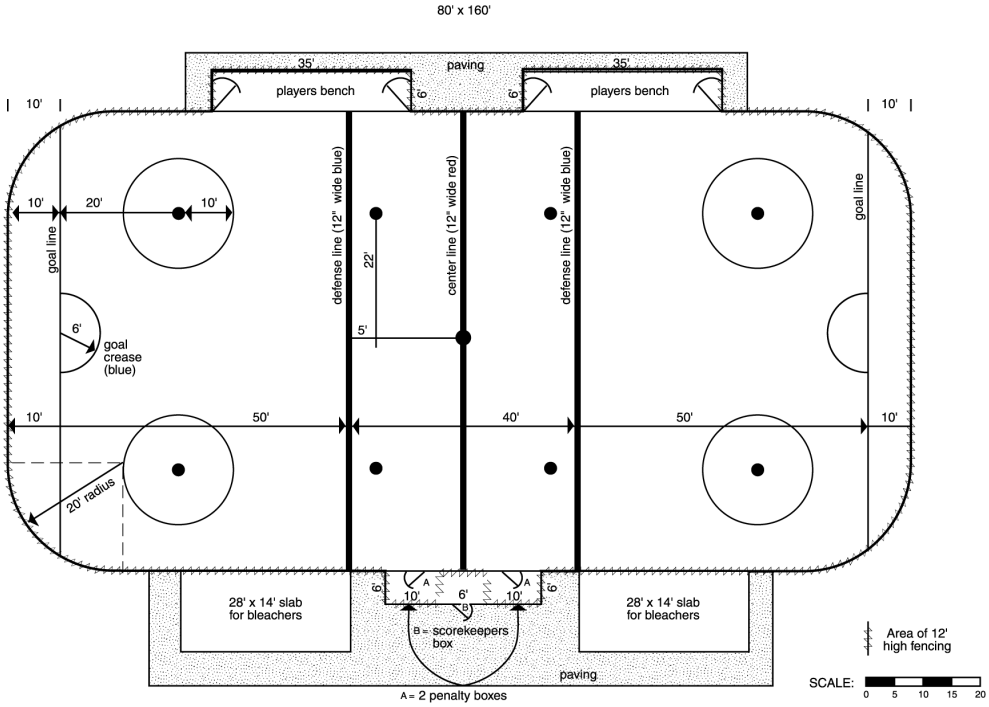
| | |
|---|---|
| **Court Dimensions:** | Concrete, grass, and sand courts: 42 feet by 80 feet, with a playing area of 30 feet by 60 feet. |
| **Court Placement:** | Minimum 10 feet distance between courts placed side-by-side.<br>Minimum 15 feet distance between courts placed end-to-end. |
| **Court Gradient:** | 1.25 to 1.5 percent for concrete courts; 1.0 percent for turf courts. |
| **Sand Courts:** | A concrete mow strip 4 feet wide is required surrounding the court. Minimum depth of sand shall be 10 inches. Sand shall be single washed with plaster or equivalent. |
| **Markings:** | Markings on concrete courts shall be applied using a wear-resistant substance. |
| **Nets & Posts:** | All volleyball standards shall be galvanized. The posts shall be 4 ½ inches O.D. The posts shall have a galvanized wheel and ratchet with a hole drilled in the ratchet for lock. A galvanized pulley for posts shall be used. The net shall have the cable along the top and rope along the bottom. The pole spacing shall accommodate a 32 foot net (approximately 38 feet apart). See Section VIII.A for detailed equipment specifications. |
| **Equipment:** | Elastic ropes will be provided for check-out at the park facilities. |
| **Electrical Outlet:** | If court is lighted, two (2) electrical outlets shall be provided on a lamp pole, each with 30 amp power. |
| **Lighting:** | Courts located at community parks shall be lighted. Minimum maintained lighting level shall be 20 to 30 footcandles over the entire court area. The number of poles and lamps needed to maintain the required lighting levels shall be determined by photometric measurements. Lighting shall be controlled by a time clock (preferred brand: Tork) placed at the main power panel for the park or inside the park building, if available. See Section VII.D Lighting Standards for Public Facilities. |



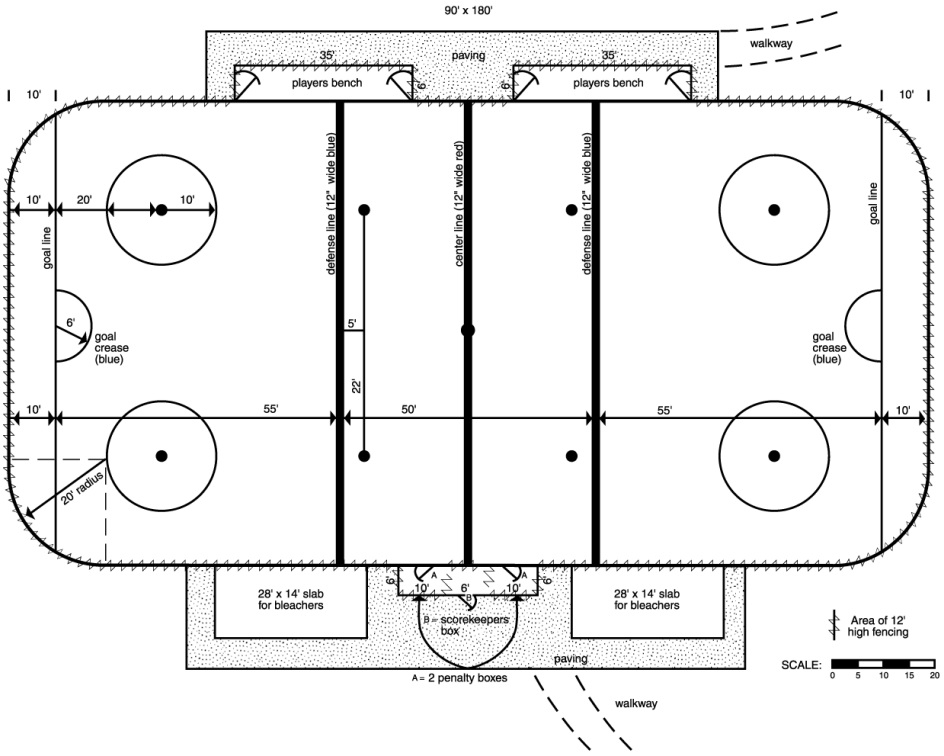
# 16. YOUTH AND ADULT ROLLER HOCKEY RINKS

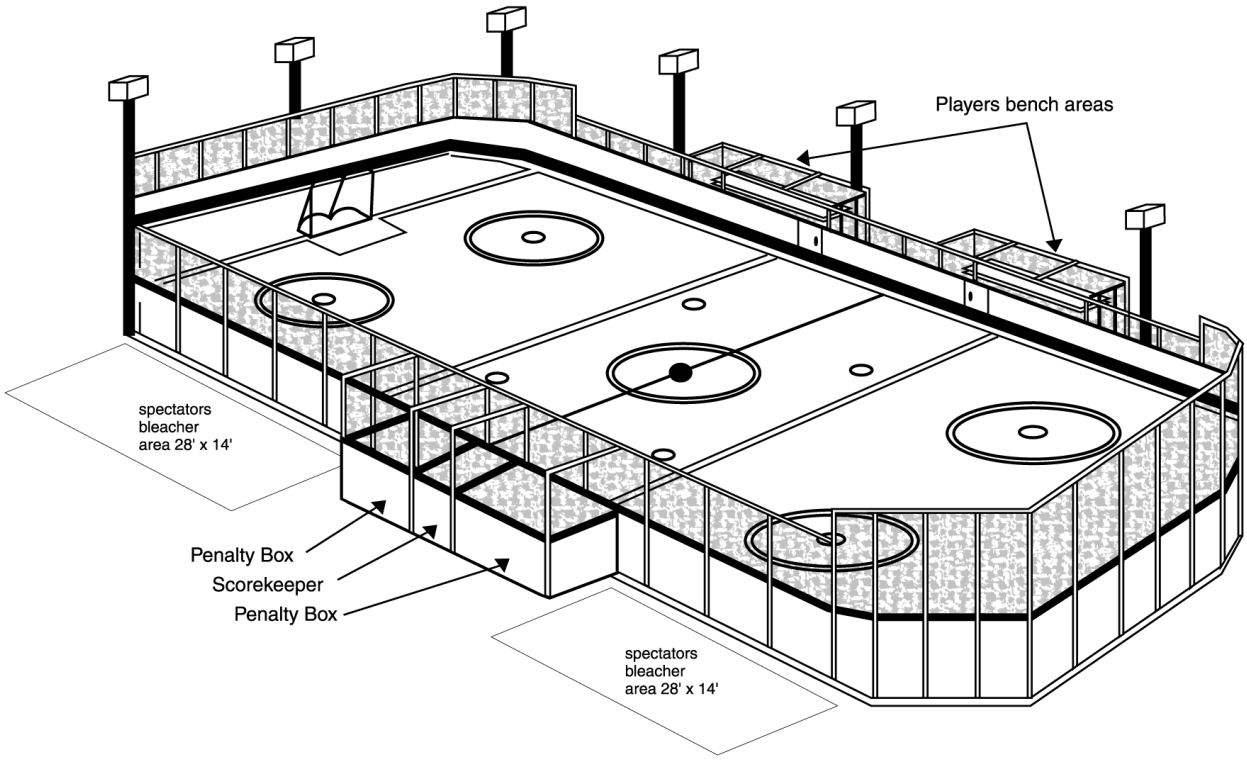
| | |
|---|---|
| **Dimensions:** | Youth Rink: Ideal: 80 feet x 160 feet; Minimum: 75 feet x 150 feet<br>Adult Rink: Ideal: 85 feet x 180 feet; Minimum: 80 feet x 170 feet |
| **Rink Gradient:** | The acceptable gradient range for a roller hockey rink is 1.0 to 1.5 percent. |
| **Rink Surface:** | Rink shall be a smooth, poured concrete surface. |
| **Markings:** | All markings on the playing surface shall be applied using a wear-resistant substance that is slip-resistant to rollerblades.<br>Center line shall be 12 inches wide and painted red.<br>Trisecting court lines shall be 12 inches wide and painted blue.<br>Dots and goal crease shall be painted blue. All other lines shall be painted black. |
| **Spectator Area:** | Spectator areas shall consist of two sets of aluminum bleachers, each with 5 rows, seating 70, on a concrete pad 28 feet by 14 feet. See Section VIII.A for detailed equipment specifications. A minimum of 4 feet of concrete must be provided on all sides of the bleachers for accessibility. Concrete walkways shall be provided to the bleachers for accessibility. Adequate space for forward or rearside access to wheelchair seating must be provided. |
| **Bench Areas:** | The penalty box area shall be divided into three portions: 2 separate penalty boxes 6 feet deep and 10 feet wide, separated by a scorekeeper's box 6 feet deep and 6 feet wide, with a total dimension of 6 feet by 26 feet. A 10 foot aluminum bench shall be provided in each penalty box. The players' bench areas and penalty boxes shall be paved with concrete and enclosed by 4 feet high ¾ inch plywood walls. The floors in the players' bench areas shall be covered with a raised wood floor, approximately 6 inches higher than the concrete. The players' benches shall be aluminum, 30 feet long. Each players' bench area shall have one gate to the outside and one gate to the rink. The scorekeeper's area shall be fenced in (facing the rink) on each side and on top for safety. The scorekeeper's box shall have a gate to the outside minimum 42 inches wide. The players' bench and penalty box areas shall be covered with fencing on all sides and on top, except where there is a gate to the rink. |
| **Fencing/Walls:** | The bottom 4 feet of the rink walls shall be ¾ inch plywood, coated with a smooth fiberglass finish, with 3 foot wide gated openings to the 2 players' benches and 2 penalty boxes. The top edge of the plywood wall shall have a protective weather strip cap. The bottom 8 inches of the plywood wall shall have an 8-inch high kickplate made of strips of polyurethane. A 4-foot high chain link fence is required above the plywood walls on the sidelines. An 8-foot high chain link fence is required above the plywood walls at the goal ends, starting at the curve of the corners. Only the plywood walls in front of the players' benches, gates, and penalty boxes shall not have chain-link fencing above. The chain link shall continue behind the players' benches. The chain link shall be 6-gauge, rubber-coated, with horizontal top and bottom rails. Vertical posts shall be placed no less than 8 feet on center. See drawing on next page for an illustration of the fencing. |
| **Electrical Outlets:** | Four (4) electrical outlets shall be installed at each court. One outlet shall be on each side of the rink, with one outlet inside the scorekeeper's box. Outlets must be 30 amps. |
| **Lighting:** | Minimum maintained lighting levels shall be from 40 to 50 footcandles over the entire rink. The number of poles and lamps needed to maintain the required lighting level shall be determined by photometric measurements. Light posts shall be 13 inches in circumference. See Section VII.D Lighting Standards for Public Facilities. |

# Youth Hockey (80 feet x 160 feet)




# Adult Hockey (85 feet x 180 feet)




Players bench areas
spectators
bleacher
area 28' x 14'
Penalty Box
Scorekeeper
Penalty Box
spectators
bleacher
area 28' x 14'

# 17. MAINTENANCE COMPOUND AND SOIL MATERIAL BUNKER

**Provision:** A maintenance compound is required at community parks where there are 4 or more fields of any type or combination. The reduced size maintenance compound shown on page VII-24 may be used as an alternative when fewer than 4 fields are located at one site, or when site conditions prohibit the provision of a full size facility.

## Regular Size Maintenance Compound and Soil and Material Bunker

**Plan:** The typical plan for the maintenance compound/bunker is shown below. Hardship conditions may require a modification of this plan.

**Bunker:** The maintenance compound shall have 4 bunker areas for storing soil and material. Each soil bunker shall be 12 feet wide, 15 feet long, and 5 feet high. The maintenance compound walls shall also function as walls for the soil bunkers. Each soil bunker shall be separated by additional internal concrete walls 8 inches to 12 inches thick.

**Flooring/Surfacing:** Concrete or asphalt.

**Drains:** A single central floor drain shall be provided for run-off from rainfall and cleaning activities.

**Shed:** A 20 feet by 20 feet metal shed (butler type) shall be placed in the corner of the compound. The shed shall have a 10-foot wide roll-up door opening to the wide part of the compound, and a 3-foot wide pedestrian door adjacent to the roll-up door.

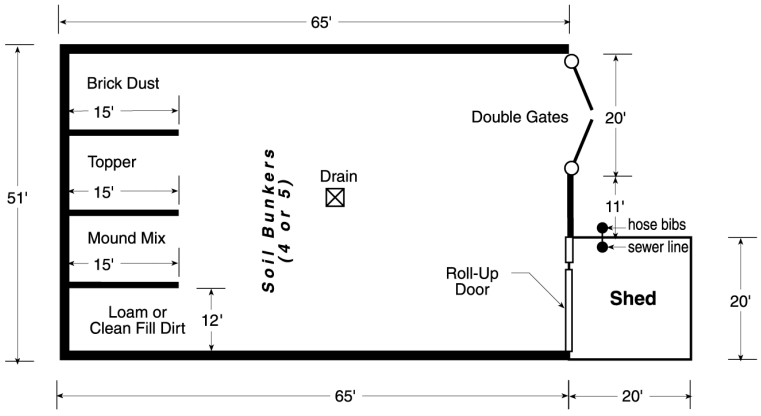
**Fencing:** A 6-foot high fence shall be installed around the soil/material bunkers. Fencing is not required around the shed. The fence shall be constructed of 6-gauge chain link, with a polypropylene fabric windscreen and rails at the top and bottom.

**Gate:** One lockable 20 feet double wide gate, 6 feet high, shall be provided for each compound.

**Water:** There shall be 2 bibs for each compound, 1 exterior and 1 interior. Both shall provide potable water. A sewer line shall be located adjacent to the interior water bib for waste water.

**Electricity:** The shed shall have two 8-foot long double fluorescent light fixtures and two double wall plug units (110 volts). The exterior of the shed shall have a security light (HPS) operated by a photo cell.

**Truck Access:** There shall be clear access from the street or parking lot for light and heavy-duty trucks and equipment. The access surfacing in front of the maintenance compound shall be built to accommodate the weight of a 10 yard truck (4,000 pounds).




*Not to Scale*

# Reduced Size Maintenance Compound and Soil and Material Bunker

**Plan:** A reduced size maintenance compound shown below may be allowed if required due to specific hardship conditions of the site, or when fewer than 4 fields are located at one park site.

**Bunker:** The maintenance compound shall have 4 bunker areas for storing soil and material. Each soil bunker shall be 12 feet wide, 15 feet long, and 5 feet high. The maintenance compound walls shall also function as walls for the soil bunkers. Each soil bunker shall be separated by additional internal concrete walls 8 inches to 12 inches thick.

**Flooring/Surfacing:** Concrete.

**Drains:** A single central floor drain will be provided for run-off from rainfall and cleaning activities.

**Shed:** A 10 by 10 feet metal shed (butler type) shall be placed in the corner outside of the compound. The shed shall have a 6-foot wide double door.

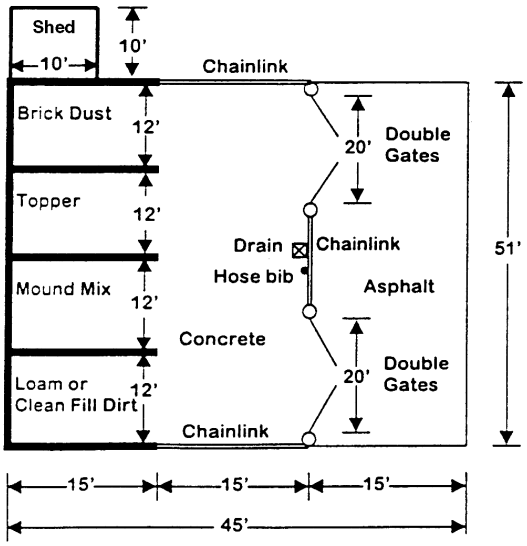
**Fencing:** A 6-foot high fence shall be installed around the soil/material bunkers. Fencing is not required around the shed. The fence shall be constructed of 6-gauge chain link, with a polypropylene fabric windscreen and rails at the top and bottom.

**Gate:** Two lockable 20 feet double-wide gates, 6 feet high, shall be provided for each compound.

**Water:** There shall be 1 bib for each compound providing potable water.

**Electricity:** The shed shall be equipped with one 4 feet long double fluorescent light fixture and one double wall plug unit (110 volts).

**Accessibility:** There shall be clear access from street or parking lot for light and heavy-duty trucks and equipment.



# Glossary

**Bibs:** A faucet having a downward bent nozzle.

**Bunker:** A large concrete enclosure consisting of three walls with three internal walls equally dividing the space within the enclosure walls.

**Crown:** The elevation of a field surface at its center above its elevations at its edges to encourage drainage.

**Footcandle:** A unit of illumination equivalent to the illumination produced by a source of one candle at a distance of one foot, and equal to one light incident per square foot.

**Gradient:** A slope or degree of inclination.

**Hardship:** A situation in which irregular shape or topography of the site prohibits adherence to the existing standards.

**Photometric Measurement:** A measurement of brightness, luminous flux, light distribution, and/or color.

**Stolonizing:** A process by which prostrate stems are planted just below the surface of an area, using a mechanical apparatus.

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Means, Louis E., and Jack, Harold K. *Physical Education Activities, Sports and Games.* Shalliam C. Brown Co. Publishers, Dubuque, IA. 1968.

United States Tennis Association. *Tennis Court Layout.* P.O. Box 672, White Plains, NY 10602-0672.

White, Jess R., Editor. *Sport Rules Encyclopedia, Second Edition.* Leisure Press, Champaign, IL. 1990.

# B. PLAY LOT STANDARDS AND GUIDELINES

***To be Prepared***

# C. POOL AND AUXILIARY FACILITIES STANDARDS

***To be Prepared***

# D. LIGHTING STANDARDS FOR PUBLIC FACILITIES

## 1. ATHLETIC FIELD LIGHTING STANDARDS

**Community Services Policy Procedure**
**Section 4.40, Effective 5-18-1989**

**SUBJECT**

LIGHTING STANDARDS FOR THE NEW CONSTRUCTION AND RETROFITTING OF OUTDOOR RECREATIONAL ATHLETIC FIELDS LIGHTS

**PURPOSE**

To provide standards by which architects, engineers, City staff shall plan the lighting design criteria for recreational athletic fields such as baseball, softball, soccer, and other similar facilities, which may be developed within the City of Irvine. These standards are designed to:

1. Provide a safe lighting system for the welfare of participants and spectators; and

2. Mitigate the environmental impact of recreational athletic field lighting on the community; and

3. Ensure that the standards established continue to be met over the life of the lighting system, as well as during the planning and initial installation.

**POLICY**

The Director of Community Services or designee shall ensure that the planning and implementation of lighting for recreational athletic fields is in conformance with the following standards as they apply to facilities which may be proposed, developed, retrofitted, or constructed.

**I. PLAYER/SPECTATOR SAFETY**

To provide for the welfare of participants and spectators, the following guidelines shall apply:

**A. Maximum Lighting**

The maximum lighting value that shall be used in lighting recreational athletic fields shall be an average maintained 50 footcandles (see Annotation A), as measured in the horizontal plane on the inbound portion of the playing field as defined in the City of Irvine Community Services Athletic Field and Court Standards.

**B. Minimum Lighting**

The average minimum planned maintained light levels for recreational athletic fields are defined in the City of Irvine Community Services Athletic Field and Court Standards.

**C. Guidelines**

Ninety-foot baseball fields are recommended to be lighted to a maintained level of 50 footcandles horizontal on the infield and 30 footcandles horizontal on the outfield. Tennis courts are to be lighted at 50 footcandles measured at the net and 30 footcandles measured at the baseline. All other baseball and softball facilities are recommended to be lighted to 30 footcandles maintained horizontal on the infield and 20 footcandles maintained horizontal on the outfield. Other types of recreational athletic fields are recommended to be lighted to 30 footcandles maintained horizontal over the playing surface.

**D. On-Field Measurement Criteria**

1. Horizontal Footcandles

   Determining the method of measuring the horizontal footcandles shall be the maximum footcandle light value which would occur on a light meter held in the horizontal position with the light sensitive surface of the meter located between 3 and 5 feet above the surface to be measured.

2. Maintaining Light Definition

   Planning or maintained light levels for the purposes of this policy shall allow for IES light loss factors by using .80 of the rated lumens as the assumed maintained light output of the 1500 or 1000 watt metal halide lamps.

**E. Quality of Lighting**

Facilities shall be planned with lighting uniformity not to exceed deviation of 3 to 1 when comparing the brightest to the darkest spot on the designated playing area, except that baseball and softball fields shall have a 3 to 1 measurement for the outfield portion, but shall have a measurement of 2 to 1 of uniformity on the infield.

Additionally, smoothness of lighting shall be evaluated to meet a standard not exceeding a 15% deviation in a 10 foot distance, except as the light values reduce at the end of the field (see Annotation C).

**F. Spectator Stadium**

Specialized applications with large spectator facilities may be granted permission to operate at specially-approved light levels greater than those provided for herein after proper public hearing to determine the appropriate light levels necessary for spectators.

## II. ENVIRONMENTAL CONTROL

The luminaries used to provide light on the recreational athletic fields shall include reflectors and application technology designed to protect the environment surrounding the facility and the operations at military and civilian airport from the impact of glare and spill lights.

### A. Glare and Spill Criteria

1. Spill Light

   The maximum footcandle level on the property line of the facility upon which the planned lighted recreational athletic fields are located shall not exceed 1.5 footcandles.

   The maximum footcandle level for the purpose of measuring spill light is defined as the maximum footcandle light value that would occur on a light meter located between 3 and 5 feet above the surface. The light-sensitive surface of the meter should be aimed at the light sources of greater intensity as viewed from that location.

   This policy assumes that no playing surface area is closer than 150 feet to the property line. In the event any playing surface is closer than 150 feet to the property line, Procedure #3 shall apply (see Annotation D). Ambient light shall not be included (see Annotation E).

2. Glare Light

   When viewed from any location outside the property line of the property on which the fields are to be lighted under the proposed plan, the maximum acceptable glare shall be determined by the following candlepower limitations at the light source:

   - Individual Fixtures. For any single fixture, the maximum candlepower shall not exceed 12,000 candlepower.

   - Total Fixtures on Pole. When the cumulative total of the candlepower of all the luminaries on any single pole for the luminaries aimed at any one field exceeds 30,000 candlepower, then the average of all the fixtures aimed at measurement point, on the single pole, shall not exceed 4,000 candlepower per fixture.

   At any location where the property line is less than 150 feet from the playing surface (see Procedure #3 and Annotation D).

   The single value candlepower curve shall be calculated with all the fixtures on the individual field simultaneously illuminated and with all fixtures aligned as they are proposed to be aligned for the final installation.

3. Extended Spill Light Scan

The manufacturer of the lighting equipment shall also submit a numeric simulation of the maximum footcandles as determined for spill light measurement for a distance of 1,000 feet each direction from home base for softball and baseball fields, or from the approximate center of other types of fields with light values shown on 50-foot increments. This light scan shall be run with all the lights operating on the applicable field.

Where applicable, the City of Irvine may request the extended maximum footcandle scans to be provided for purposes of determining spill light, in which all fields are assumed to be simultaneously illuminated to determine the cumulative effect of the spill light of the fields.

4. Extended Glare Light Scan

The manufacturer shall also, upon request, submit with the plan an extended numeric model for each to determine the sufficiency of the equipment to achieve the designed performance of the plan.

**B. Equipment Criteria**

To assure that the proposed recreation and athletic field lighting is capable of meeting the criteria set out in this policy, the luminaries to be used must meet the following minimum performance criteria:

1. Arc Tube Brightness

No portion of any arc tube shall be visible beyond 12 degrees vertical and 35 degrees horizontal measured from the maximum candlepower point of any fixture.

2. Output of Light Beam

The candlepower from the fixture above the maximum candlepower axis of the fixture shall not exceed the candlepower quantity at the specified degree measured in a vertical plane above the maximum candlepower axis as follows:

| **Nema Type Reflector for Vertical** | **Candlepower** | **Degrees above Maximum Candlepower In Vertical Plan** |
|---|---|---|
| Nema 2 | 12,000 | 18 degrees |
| Nema 3 | 12,000 | 20 degrees |
| Nema 4 | 12,000 | 22 degrees |
| Nema 5 | 12,000 | 28 degrees |
| Nema 6 | 12,000 | 34 degrees |

All new construction or retrofitted fields shall have glare and spill controls in the construction of the lighting. Glare control shall include a requirement that no light rays may emanate from the luminaries above horizontal in a direct manner.

## C. Application Criteria

The maximum candlepower aiming point of each luminary used in lighting recreational athletic fields shall, as a minimum requirement, be aimed at least 25 degrees down from horizontal. Furthermore, as an additional criteria for the aiming of fixtures, it shall be a requirement that any axis line from the fixture where the output of the fixture is 12,000 candlepower or more, that line shall be aligned down from horizontal a sufficient number of degrees to strike the surface so as to meet the glare criteria of this standard; however, in any event not more than 150 feet outside the boundaries of the playing field (see Annotation D).

## D. Submittal Documents

Plans for lighting recreational athletic fields shall include with their submittal for approval a numerical model that shows compliance with these guidelines and shall describe their compliance in the following manner, and shall each be presented on documents using 1 inch equals 200 feet.

1. Glare and Spill Documents

   a. Isocandela Curve of Total Candlepower–To establish a numerical model from which glare and spill control can be evaluated, there shall be provided with the lighting plan the plot of a line showing the total candlepower around the field at a uniform quantity of candlepower determined by multiplying the number of fixtures illuminating the field times the quantity of 2,000 (see Annotation F).

      The single value candlepower curve shall be calculated with all the fixtures on the individual field simultaneously illuminated and with all fixtures aligned as they are proposed to be aligned for the final installation.

   b. Extended Spill Light Scans–There shall also be submitted a numeric simulation of the maximum footcandles as determined for spill light measurement for a distance of 1,000 feet each direction, from home base for softball and baseball fields or from the appropriate center of other types of increments. This light scan shall be run with all the lights operating on the applicable field.

      Where applicable, the City of Irvine may request the extended maximum footcandle scans to be provided for purposes of determining spill light in which all fields are assumed to be simultaneously illuminated to determine the cumulative effect of the spill light of the fields.

2 Equipment Criteria

There shall be submitted with each proposed recreation and athletic field lighting project a written statement signed by the manufacturer, which provides the information as to degrees above vertical from a MAXIMUM candlepower, at which the candlepower output ceases to exceed 12, 000 candlepower from the vertical plane above the maximum candlepower and in a vertical plane 15 degrees to the right or left of the maximum candlepower, which documentation shall establish that the equipment meets or exceeds the criteria set out above the equipment.

The City of Irvine may, at its discretion, require a demonstration of the proposed lighting equipment to confirm the submittal documents.

3. Application Criteria

For proposed recreation and athletic field lighting projects, there shall be submitted a scale drawing showing the following information:

a. The location and height of each pole.

b. The number of light fixtures to be located on each pole.

c. The point on the ground where the max candlepower of each fixture is to be aimed.

d. The horizontal and vertical aiming angles for each fixture to that max candlepower aiming point.

e. The point on the ground where each fixture reaches 12,000 candlepower at the greatest angle in which that occurs above the max candlepower aiming point.

f. The vertical and horizontal degrees from each fixture to that 12,000 candlepower point.

## III. EVALUATING GLARE AND SPILL CRITERIA RESULTS

The science of lighting is such that there is a direct fixed relationship between candlepower, glare, and footcandles at any specifically defined point.

The most clearly determined measurement and the most convenient measurement is the footcandle reading at a given point. Accordingly, the primary method of evaluating the glare and spill performance criteria shall be to test the footcandle numbers provided on the extended spill lighting scan against actual readings at the designated location.

To confirm the correlation between the isocandela curve of the candlepower and the extended light scan of footcandle readings, the City may require the specific candlepower calculations and footcandle calculation for a sampling of the locations around the facility so that it may be determined that the various points are mathematically and scientifically consistent.

The City may additionally, at its discretion, further require additional candlepower information to permit direct testing of candlepower at specific off-site locations through the use of footlambert or candlepower measuring devices.

## IV. LONG-TERM PERFORMANCE

The performance guidelines established herein for the lighting of recreational athletic fields need to be adhered to, not only in the planning stage and the initial installation stage, but also during the life of the equipment on the facility. Accordingly, the following standards must be provided for in plans for the lighting of the facility and adhered to upon installation.

### A. Reflector Surfaces

Details of the design of the luminaries and the luminary assembly shall be sufficient to show the nature of the materials to be used in the construction of the luminary and that the materials are properly selected and applied that the effect they achieve on glare and spill control on the surfaces of the reflector can be sustained in the environment of wind, heat, air, and ultraviolet sunlight to which the equipment will be subjected.

### B. Mechanical Alignment

Sufficient design details of the luminary assembly shall be provided to show that the mechanical alignment of the luminary assembly has sufficient structural strength of materials and connecting methods to provide that the system will remain accurately aligned in winds of 125 miles per hour with a gust factor of 1.3, such that the glare and spill control standards will be maintained over the life of the equipment.

## V. PROCEDURES

The following steps shall be followed to ensure that new construction or retrofitted lighting complies with these standards for recreation and athletic uses in City parks:

### A. ARCHITECTS

These standards shall be provided to architectural firms who are proposing to provide design for new lighting systems.

1. The following should be carefully considered in the design of parks with lighted recreation athletic fields:

    a. Pole heights shall be maximized to ease or improve upon the environmental control parameters of these standards.

    b. Pole placement shall be such that each field is illuminated from adjacent poles surrounding that field.

    c. Lights shall be placed on crossarms at the top of poles, rather than spaced vertically along poles. Multiple crossarms, placed immediately below the top arm may be used where warranted by the number of lights.

    d. Park or field boundaries shall have berms and landscaping to minimize the visibility of the illuminated playing field from adjacent streets and residential property lines.

### B. LIGHTING CONSULTANT

A lighting consultant with experience in spill and glare control compliance may be required to provide documentation of compliance assurance in the master plan approval process, as well as to ensure proper construction to meet the specifications.

## C. EXCEPTIONS TO STANDARDS

In order that the provisions of this policy may be reasonably applied in instances where difficulties exist and unnecessary hardship would result to recreational athletic fields due to an inability to light a facility in an otherwise reasonable location, then an appeal may be made to the Community Services Commission for recommendations to the City Council. Only the City Council shall waive provisions of this policy.

## D. ANNOTATION

The annotations included with this policy are intended to describe the technology that is to be utilized in achieving the standards established in this policy.

### ANNOTATION A

### MAXIMUM HORIZONTAL FOOTCANDLES

The maximum glare and spill light levels have been set, based upon the combination of the available glare and spill technology and the desired light requirements for the facility, as stated in horizontal footcandles. However, since maximum light values are established for environmental protection and since, for purposes of environmental protection, the light values as viewed from the off premise locations are not directly affected by the horizontal footcandles, therefore, only the glare, which is measured in candlepower, and the spill light, which is measured in footcandles at or outside the property line, shall be ultimately determinative of the impact of maximum light values. Accordingly, the maximum horizontal footcandle guidelines for the playing field are advisory only as to glare and spill control. The candlepower limitations for glare and the footcandle limitations for spill light, established elsewhere in this policy are the governing guidelines for environmental control of light.

### ANNOTATION B

### MAINTAINED LIGHT VALUES

Current manufacturers' lamp catalogue publications list the initial lumen output as 155,000 lumens to 162,000 lumens for the various manufacturers. Test results available, and published manufacturers' charts for depreciation of lamps offer somewhat varying allowances for the amount and rate of depreciation of the lamps.

The dirt factor which will affect light output can only be estimated, as it will vary depending upon weather conditions and the environment in which the lighting is installed. For purposes of testing new installations, the IES and manufacturers' guideline of 100 hours of burning time shall be used. Accordingly, tests to determine initial light values for purposes of pro-rating to maintained light values shall be conducted after the lamps in the lighting system have been operated for 100 hours.

Accordingly, the policy established herein has set .80 of the rated initial lumens as the guideline for the IES standards of light loss factor to be used so that a consistent standard for lighting design can be applied to all new installations.

To assist in determining whether or not the field exceeds the maximum allowable lighting levels, the manufacturer shall supply a numerical computer simulation of the anticipated initial light value after the 100 hours of operations as a guideline for measurement.

## ANNOTATION C

### LIGHTING SMOOTHNESS

As of the time of the adopting of this policy, no IES guidelines exist for a smoothness of lighting on athletic facilities. It is anticipated that the IES will publish standards at some time as to this issue and at such time as the IES guidelines are established, those guidelines shall govern the issue of smoothness for purposes of this policy. Until such time as the IES establishes such guidelines, these standards, as provided, shall be the applicable standards.

## ANNOTATION D

### 150 FOOT MEASURING DISTANCE

Existing technology for glare and spill control permits these standards to be met under normal circumstances at distances of 150 feet outside the playing area of any field. Accordingly, the guidelines are written to permit the glare and spill standards to be applied at a distance 150 feet from the playing surface wherever that distance occurs on property which is part of the same parcel upon which the playing field is located.

Wherever the distance between the playing field and adjoining properties is less than 150 feet, then it is the intent of this policy that more stringent spill and glare control shall be applied to those lights on the playing field which impact upon adjacent property located less than 150 feet from the playing surface. In those circumstances, then the standards in this policy shall be met as outlined in Procedure #3.

## ANNOTATION E

### AMBIENT LIGHT

Ambient light from sources other than the planned playing field lighting shall be excluded in determining the footcandles of spill light. To test the quantity of spill light from the field lighting, there shall first be taken light meter readings at the designated location without the design field light shown in the plan to determine the ambient light. These quantities of light shall be deducted from the light values measured with the field lights operating.

## ANNOTATION F

**ISOCANDELA CURVE**

The purpose of the isocandela curve of total candlepower is to establish a mathematical benchmark against which spill and glare calculations can be confirmed in the event questions arise during the testing proces after installation, or for purposes of determining whether or not equipment proposed to be used has the technical capability, at the proposed aiming angle, of achieving the designed glare and spill standards.

The use of 2,000 times the number of fixtures is based upon the maximum average candlepower of 4,000 per fixture from a pole, and then reduced by one-half on the assumption that one-half of the fixtures will be facing away from any given surrounding point.

# 2. SECURITY LIGHTING (IRVINE UNIFORM SECURITY CODE)

**(Excerpt from the Irvine Uniform Security Code as it pertains to recreational facilities)**

**Sec. 5-9-520. Special Recreational Spaces Provisions**

The provisions of this section shall apply to community buildings, parks, open spaces, trails, community swimming pools, and associated sidewalks and parking lots.

A. Structures shall comply with all provisions of the Uniform Security Code except Section 5-9-517, Special Non-Residential Building Provisions, and Sub-Section (K) regarding lighting standards.

B. Exterior Lighting shall conform to the following standards:

1. All types of exterior doors shall be illuminated during the hours of darkness with a minimum maintained one (1) foot-candle of light at ground level, measured within a five (5) foot radius from the center of the door.

2. Recessed areas of buildings or fences, which have a minimum depth of two (2) feet, a minimum height of five (5) feet, and do not exceed six (6) feet in width and are capable of human concealment, shall be illuminated with a minimum maintained twenty-five one-hundredths (0.25) foot-candles of light at ground level during the hours of darkness. This requirement applies to defined recessed areas which are within six (6) feet of the edge of a designated walking surface with an unobstructed pathway to it, not hindered by walls or hedge tow landscaping a minimum of two (2) feet in height.

3. Stairways shall be illuminated with a minimum one (1) foot-candle of light on all landings and stair treads, during the hours of operation, including one hour thereafter.

4. Parking lots and walkways accessing buildings and parking areas shall be illuminated with a minimum maintained one (1) foot-candle of light on the driving or walking surface during the hours of operation and one hour thereafter.

5. Bike trails not incorporated in the roadway shall be illuminated with a minimum maintained twenty-five one-hundredths (0.25) foot-candles of light at ground level during the hours of darkness.

6. Paved walkways in open space areas, not directly serving buildings or parking areas, shall be illuminated with a minimum maintained twenty-five one-hundredths (0.25) foot-candles of light on the walking surface during the hours of operation and one hour thereafter.

7. Swimming pool decks and other hard surface recreation activity areas shall be illuminated with a minimum maintained one (1) foot-candle of light on the walking surface during the hours of operation and one hour thereafter.

8. The light source utilized to comply with this section to meet parking and drive surface lighting shall have a rated average bulb life of not less than 10,000 hours.

9. Luminaires utilized to meet the requirements of this section shall have vandal resistant light fixtures, if accessible, and be not less than eight (8) feet in height from ground level. A luminare not less than forty-two (42) inches may be utilized to illuminate a walkway if adjacent landscaping is of a variety which does not mature higher than two feet, and it does not interfere with the required light distribution for a distance of sixteen (16) feet along the walkway. Light fixtures shall be deemed accessible if mounted within fifteen (15) feet vertically or six (6) feet horizontally from any accessible surface or any adjoining roof, balcony, landing, stair treads, platform or similar structure.

10. Activation of the required exterior lighting shall be either by a photocell device or a time clock with an astronomic clock feature.

11. A site plan shall be provided showing buildings, parking area, walkways, detailed landscaping and a point-by-point photometric calculation of the required light levels. Foot-candles shall be measured on a horizontal plane and conform to a uniformity ratio of four to one (4:1 average/minimum). Landscaping shall not be planted so as to obscure required light levels.

12. Public recreation facilities and spaces shall utilize light poles and fixtures listed in the Irvine Community Services Department approved products list.

C. Swimming pools shall be secured as follows:

1. Restroom doors and pool gates shall be equipped with automatic closure devices, dead latches, and a latch protector consisting of minimum 0.125-inch-thick steel, two (2) inches wide and six (6) inches long.

2. The pool equipment room or enclosure to be secured with either a deadbolt lock or padlock with a minimum five (5) pin tumbler operation, minimum 3/8 inch thick shackle, and heel and toe locking.

3. The on and off switch for the spa is to be keyed.

4. Perimeter fencing, using either tubular steel or aluminum, is to be installed at a minimum height of six (6) feet. Vertical fence pickets are to be spaced not more than four (4) inches on-center and be designed to discourage climbing.

5. Emergency access to locked gates is to be provided through installation of a Knox box key vault which shall contain all keys required to enter the pool area at any time. The box is to be installed within eight (8) feet of the gate and placed between four (4) and five (5) feet above ground level.

6. Selection of landscaping is to consider height of plants regarding providing needed visibility into the pool area from adjacent uses, buildings, and streets.

7. Lighting shall conform to Section 5-9-517.K.7 regarding lighting fixtures.

8. All entrances to non-public pools/spas shall have signage indicating it is private property and no trespassing allowed.

9. A public telephone allowing for 911 calls is to be installed and maintained within twenty-five (25) feet of the main entry gate.

D. Landscaping guidelines are as follows:

1. Plant materials utilized shall take into consideration the need for users of the space to easily view their surroundings as well as police patrols to monitor the area from adjacent streets.

2. Trees shall be positioned to avoid interfering with required lighting levels and take into consideration the height of canopies from ground level regarding surveillance opportunities by users of the space and police patrols.

3. Planting of wide hedge rows and narrow vertical plants adjacent to solid fences is encouraged.

**Section 5-9-521. (Reserved)**
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**Sec. 5-9-528. Tests.**

A. It shall be the responsibility of the owner, or his designated agent, of a building or structure falling within the provisions of this code to provide the enforcing authority with a written specification performance test report indicating that the materials utilized meet the minimum requirements.

B. Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that any material or any construction does not conform to the requirements of this code, or in order to substantiate claims for alternate materials or methods of construction, the enforcing authority may require tests as proof of compliance to be made at the expense of the owner or his agent by any agency which is approved by the enforcing authority.

C. Specimens shall be representative, and the construction shall be verified by assembly drawings and bill of materials. Two (2) complete sets of manufacturer or fabricator installation instructions and full-size or accurate scale templates for all items and hardware shall be included.

# E.TRAIL DESIGN STANDARDS

***To be Prepared***