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## Section II.F.1. - Above Surface Irrigation Systems for Clay and Fast Dry Tennis Courts

### 1.0 Definitions

Fast dry is a porous tennis court surface material consisting of natural crushed stone, brick, or tile, that is ground, screened, well graded, and may or may not be mixed with a chemical binder to form a stable homogeneous mixture having an affinity for water.

Clay is a porous tennis court surface material consisting of natural or processed clay which has been mixed, crushed, screened and blended with sand and silt, resulting in a plasticity index between 12% and 20%.

### 2.0 Purpose

The following is not intended as a specification for tennis court sprinkler systems, but merely as a guideline to be considered in selecting the best system under given conditions.

### 3.0 Objective

The main objective of an irrigation system is to provide an adequate amount of water to the court to totally saturate the court surface and base. The water should be distributed as evenly as possible over the entire court and should cascade to the surface as gently as possible to prevent washout and erosion.

### 4.0 Sprinkler System Layout

There are several brands and models of sprinkler heads available that will give adequate coverage if properly installed. In selecting a suitable layout, several variables should be considered, such as water pressure, volume, radius of coverage, friction loss, prevailing wind, and any surrounding conditions which would affect or be affected by the system. The following layouts are based on minimum throw patterns that must be achieved at each sprinkler head. Once a layout is selected and minimum throw radius becomes fixed, a head can be selected depending on volume and pressure available. NOTE: To maintain the minimum radius, a system must be able to supply the constant minimum pressure at each head and adequate volume for the total number of heads in operation at any one time. In some cases, a lack of sufficient volume and pressure may dictate selecting a smaller head or nozzle or operating only a few heads at one time to maintain the minimum required radius. Either alternative, however, will require longer irrigation time.

### 5.0 Site Selection

After a suitable layout has been chosen and heads selected, the system must be designed with adequately sized lines to supply sufficient volume to each head, with a minimum loss in pressure. A main line must be able to supply a volume equal to the total volume of all the heads operating at one time. If necessary, individual lines may be sized downward after each head depending on the number of heads each line supplies. Pipes should be selected using friction loss tables which apply to the type of

pipe being installed. These tables are usually available from a local irrigation supplier or from the sprinkler head manufacturer.

## **6.0 Type of Pipe**

Galvanized steel, copper, P.V.C. or black polyethylene pipe (poly pipe) are all acceptable for tennis court systems, with P.V.C. being the most popular because of its cost and ease of installation. Black poly pipe is only recommended for underground systems. When using P.V.C., or Black Poly Pipe, the pipe should be set in stone screenings to protect it from damage by large rocks.

## **7.0 Frost Prevention**

In areas where freezing occurs, the pipe should either be buried below the frost line or installed with adequate slope and drain valves to allow drainage when frost is anticipated. Where a compressor is available, pipe fittings may be installed and used to blow all remaining water from the lines at the end of the playing season.

## **8.0 Irrigation Cycles and Zoning**

Multiple irrigation cycles may provide more efficient use of water. Shorter, more frequent irrigation cycles will allow gradual absorption of water into the surface and base. Irrigation cycles of longer duration may result in excess water run-off rather than absorption. Automatic timers are available to provide desired watering cycles.

Zoning certain areas of the court may also result in more uniform coverage. For example, shaded areas or areas along the low side may require less irrigation than sunny ones or areas on the high side of the court. These areas could be controlled by a separate zone allowing for shorter irrigation cycles.

Irrigation cycles and zoning should be considered in the design of a new irrigation system.

## **9.0 Alternative Methods**

Refer to II.D.2., Fast Dry Tennis Courts for Use With Subsurface Irrigation.

## **10.0 Disclaimer**

In designing any above surface irrigation system, caution should be exercised in determining the location, elevation and type of sprinkler heads to minimize any potential hazard to players.

### **Refer to Guide Specifications:**

**[I.A. General Conditions for Construction](#)**

**[I.B. Site Investigation](#)**

**[I.C. Site Preparation, Earthwork, Drainage and Subbase Construction](#)**

**[I.D. Vegetation Control or Vegetation Regrowth Prevention](#)**

**[I.E. Subsurface and Surface Drainage for Recreational Areas](#)**

**[II.A. Tennis Court Orientation](#)**

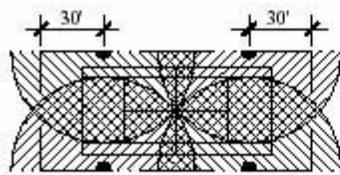
**[II.B. Tennis Court Dimensions and Related Measurements](#)**

**[II.D.1 Fast Dry Type Tennis Court for Use with Above Surface Irrigation](#)**

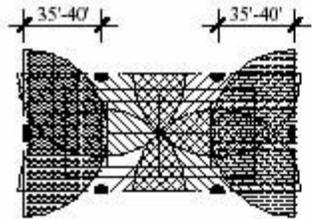
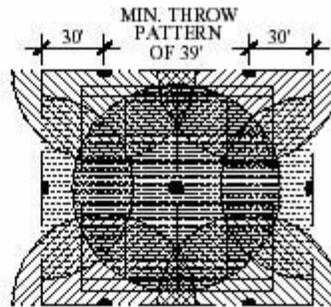
**[II.L. Net and Net Post Equipment](#)**

**Section II.F.1 - Drawings**

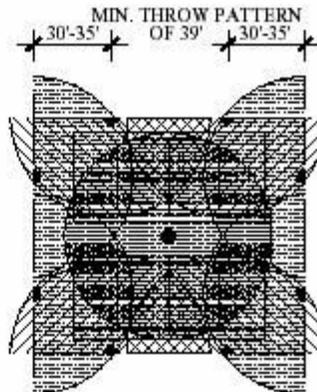
## Section II.F.1 - Typical Surface Irrigation System Layout Plans



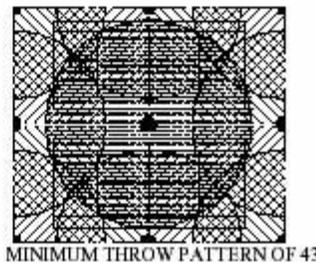
IDEAL WHERE NO WIND PROBLEMS EXIST AND ADEQUATE PRESSURE AND VOLUME CAN ACHIEVE A MINIMUM THROW PATTERN OF 43'



GOOD WHEN CONDITIONS ARE LESS THAN PERFECT. WORKS WHEN ADEQUATE PRESSURE AND VOLUME CAN ACHIEVE A MINIMUM THROW PATTERN OF 39' (36' AT 40') CAUTION: REAR SPRINKLER BEHIND BASE LINE COULD BE A SAFETY HAZARD.



CONFIGURATION PROVIDES EXCELLENT COVERAGE BUT USUALLY REQUIRES A HIGHER VOLUME SOURCE UNLESS THE SYSTEM IS ZONED. REQUIRES ADEQUATE PRESSURE AND VOLUME TO ACHIEVE A MINIMUM THROW PATTERN OF 43'



SINGLE COURT

MULTIPLE COURTS

### TYPICAL SURFACE IRRIGATION SYSTEM LAYOUT PLANS

NOT TO SCALE

45IRRIG.AVL.03

#### Notice

These Construction Guidelines are intended for use by architects, engineers, contractors, tennis court and running track owners. Parties not experienced in tennis court or running track construction are advised to consult a qualified contractor, consultant and/or design professional. Experienced contractors, consultants and/or design professionals can be identified through the American Sports Builders Association. Due to changing construction technology and techniques, only the most recent version of these Guidelines should be used. Variances in climate, soil conditions, topography and other factors may make these Guidelines unsuitable for certain projects.

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