

CONSIDERATIONS FOR USE OF CORRUGATED DRAINAGE TUBING



Proper drainage is one of the most important factors in successful landscaping; particularly with high-use turf areas, such as golf course greens, athletic fields, parks, picnic grounds, camp sites and the like. A drainage system, properly designed and installed, not only helps insure maximum use of such areas by removing excess water, but also does much to promote the overall health of turf, trees and plants in general.

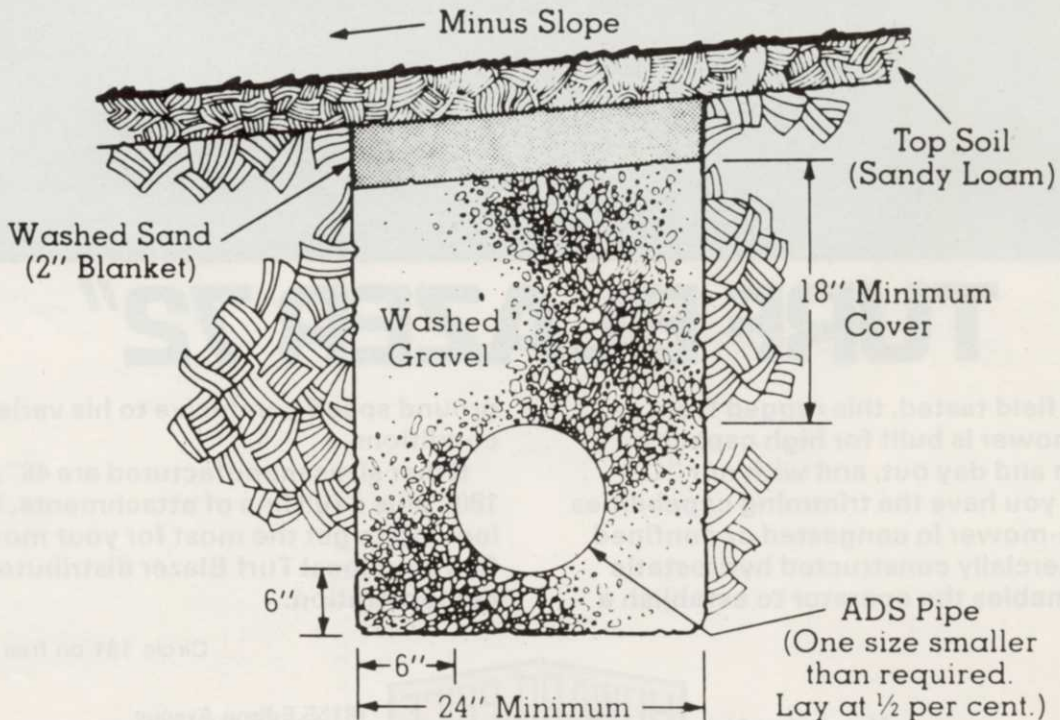
Primarily because of its economy, corrugated polyethylene drainage tubing is widely specified for golf course and landscape drainage. The material is lower in cost than many other types of drainage materials. It is also lighter weight, and easier and faster to install with smaller work crews and machinery. It can be used in narrow trench and drain plow installations, and connections can be made outside the trench, using snap-on fittings. No special tools or fittings are needed.

The material is durable, resists rot, acid and alkalis in soils, and is unaffected by freezing and thawing. Since it is continuous, it will not misalign; an especially important characteristic for unstable soils. For sandy and silty soils, drainage tubing is available wrapped in a factory-installed filter material that prevents clogging and blockage of the drainage line.

Benefits of drainage

The most obvious benefit is the rapid runoff of rainwater, to help provide maximum playability

Typical Slope Drainage Collection System



and use of greens, fairways, athletic fields and other high-use areas. Ron Reeve, Technical Director of Advanced Drainage Systems, Inc., a leading manufacturer of corrugated plastic drainage tubing, points out these additional benefits of landscape drainage:

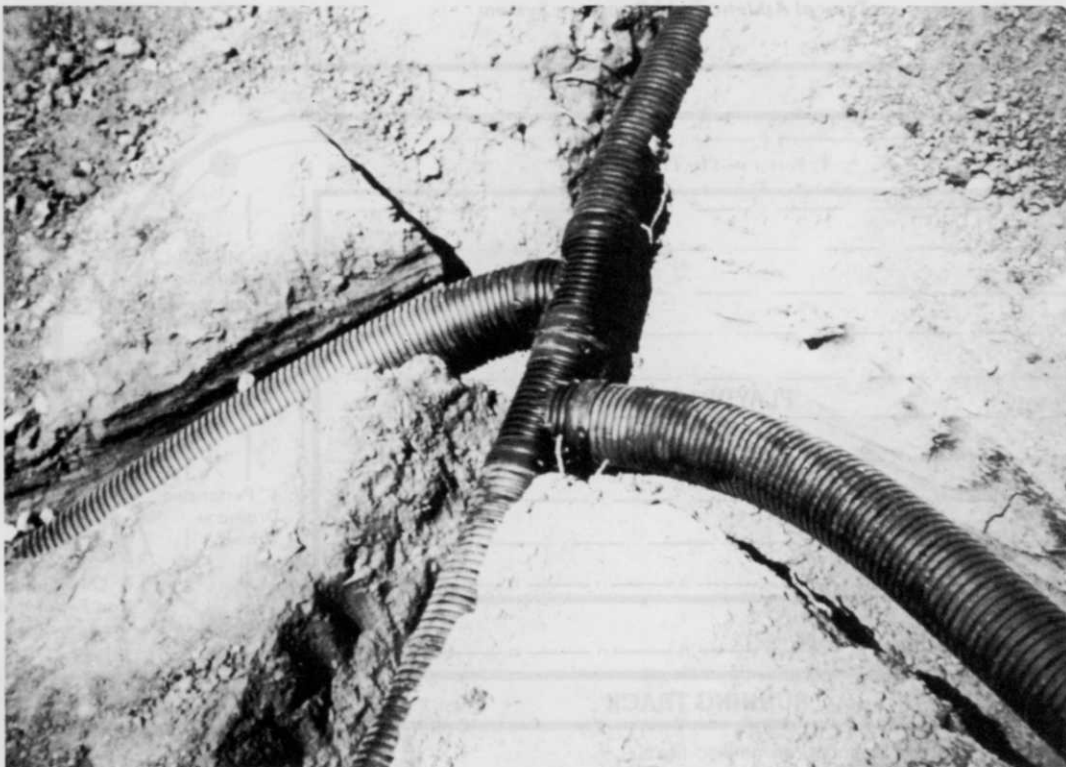
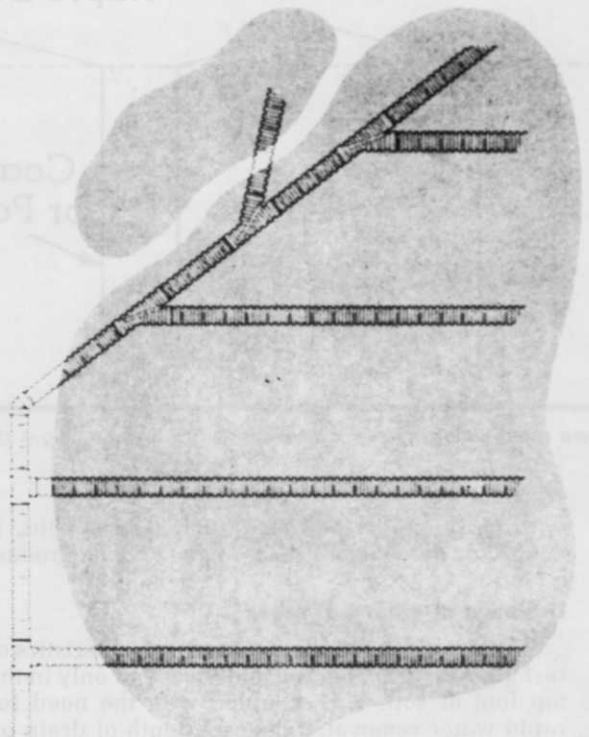
- Improves aeration, for growing healthy trees, shrubs, plants and the hardy turf required in high-traffic areas.
- Removes excess groundwater, thus increasing root zone depth.
- Favors nitrification and bacterial action: plants also have greater resistance to fungi and insects.

Golf course drainage

The soil stabilizing action that promotes healthy landscapes and turf, as well as the rapid runoff of surface water, is a vital concern of golf course architects and golf course superintendents, whose primary responsibility is to maintain playability of the course. When the course is frequently too wet, maintenance and repair costs increase while revenues decline.

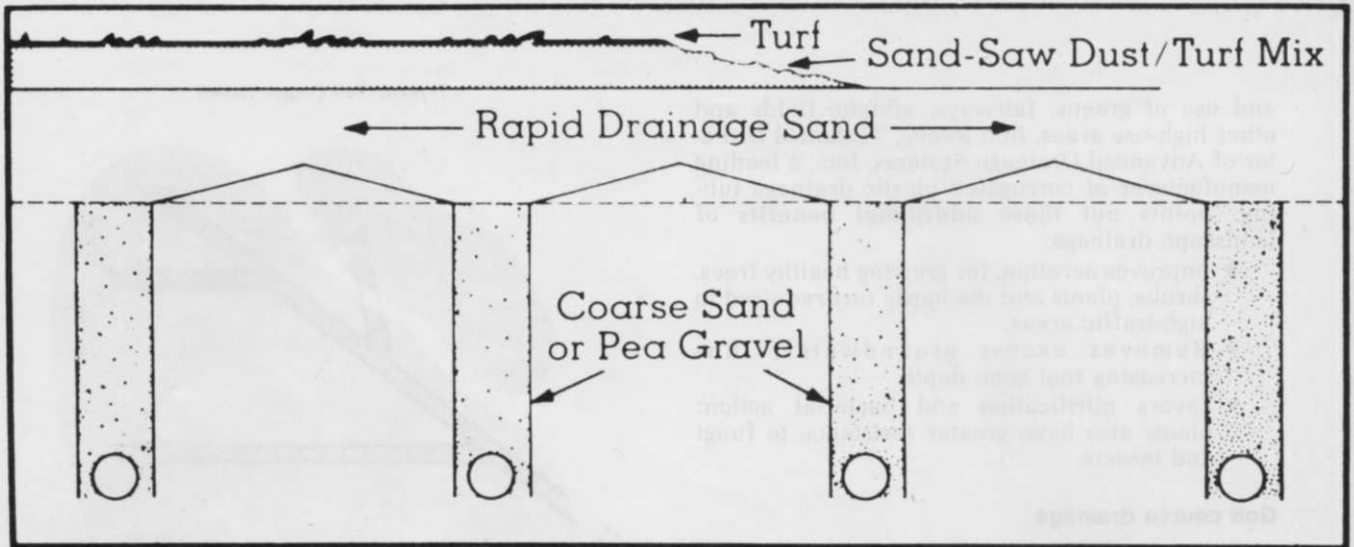
Total course drainage is needed in many areas, but in some cases drainage of greens, traps and local wet spots will suffice. In designing golf course greens, 3-inch and 4-in. diameter tubing is commonly specified. The tubing is placed approximately 18 in. deep and spaced from 4 to 10 ft. apart for rapid drainage. Corrugated drainage tubing,

Typical Golf Course Green



Joints
present fewer problems with plastic tubing.

Drainage



Where rapid water removal is needed, narrow strip grading is preferable.

with its flexibility and continuous roll lengths, is suited for quick installation in odd-shaped greens.

Drainage of other turf areas

Because of the shallow-rooted characteristics of turf grasses, drainage is usually needed only in the top foot of soil. This, coupled with the need for rapid water removal, dictates a depth of drain on such close spacing as from one to three feet. As the illustration shows, the surface can be graded in

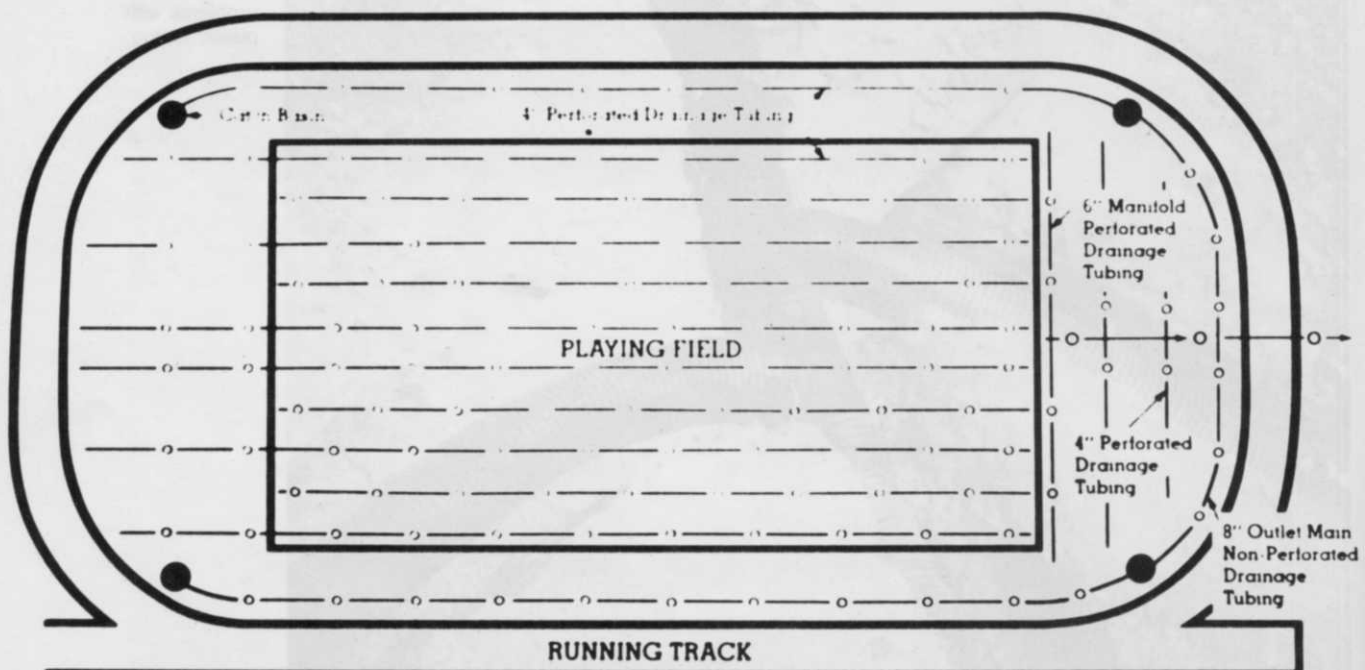
narrow strips, with peaks and valleys like a roof, to facilitate rapid runoff control.

In well-trafficked areas where soil compaction and lack of slope cause surface water to pond, a shallow subsurface drain with surface water inlets may be the answer.

In the case of athletic fields and other places where it is desirable to use the area as soon as

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Typical Athletic Field Drainage System



To handle play without damage requires good drainage on athletic fields.

possible after a downpour, a drainage system providing runoff that keeps up with rainfall may be justified. In areas of high intensity rainfall, design drainage rates as high as 1/3-in. per hour or 8 in. in 24 hours (160 gpm per acre) are used.

In the example shown, a football field 160 by 360 ft., 10 lines 300 ft. long, spaced 16 feet apart are used. Each line would handle the flow from 16 by 360 ft., or 5,760 sq. ft. (or 0.13 acres). Water flow requirement is 21 gpm per line. For a slope of 0.04, 3-in. tubing is adequate. For a slope of 0.100 4-in. tubing is required.

While drainage is certainly a major factor in successful landscaping, its cost, in proportion to the overall construction budget, is small. Depending upon locality and conditions encountered, drainage cost represents only about 8% to 10% of a total golf course construction budget and only about 5% of a landscaping budget. **WTT**

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