Roads on the Golf Course

A PANEL DISCUSSION AMONG:
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CHARLES DANNER:

Since golf carts made their debut, our thinking on damage to the golf course by cart traffic has undergone radical changes. We are sure of one thing—the carts are here to stay; and our maintenance practices, green and tee construction, and paths where needed must be given consideration.

However, most damage from cart traffic is in areas approaching or leaving tees and bridges where traffic is concentrated.

This concentrated traffic has resulted in badly worn areas or paths. Ground cover is worn off, and compaction makes it almost impossible to grow grass.

At first we ignored this condition around tees but then came to realize that these worn areas and paths created conditions ready made for accidents for cart users. With the ground cover lost, erosion had set in, making the path rough, uneven, and extremely hazardous. Last year one man was killed in Atlanta when a cart overturned. At Capital City Country Club, two persons were hurt in separate accidents, fortunately not seriously.

At Capital City we started a program of paving paths approaching and leaving tees. We have widened and paved bridges and built safety railings where needed.

We have a golf course modernization program with nine holes finished and the back nine scheduled for construction this spring. Every green on the front nine was built to keep carts from using the green shoulders or borders. Subtle barriers in placement of sand traps and, in some approaches, steep slopes were built in, with the thought that future cart traffic was bound to increase.

Our cart paths are paved with hot-mix asphalt, six feet wide where used only for carts and eight feet wide where the path follows a road used by golf course equipment. Where paths end, they are fanned out to twelve feet to minimize damage where carts leave them.

Paths should be cut out to a depth of six inches, and more for equipment use. This assures removing bermudagrass roots so that the bermuda will not grow back through the asphalt. Six-inch depth seems enough in the heavy clay soils of the Atlanta area, but in sandy or loamy soils spraying the soil with 2 pounds sodium arsenite to 1000 feet might be necessary to prevent recovery of bermudagrass. Six-inch depth is all right in Atlanta to prevent damage from freezing and thawing, but farther north the materials might have to be thicker.

We do not use boards or metal strips along edges; the paths are paved flush with the ground, so mowing over is no problem, and the bermudagrass and soil will keep the edge from breaking off. One problem is bermudagrass creeping onto the path. This can be controlled by edging or applying sodium arsenite or dalapon.

Construction is started by using a rotary cultivator to loosen the soil to a depth of six inches. This soil is removed by a front-end loader where

feasible and shovels to finish and true up the excavation. Crushed stone, a material graduated in size from 1½ inches down to dust, is spread to a depth of three inches and packed by rolling before paving with three inches of asphalt.

Where the path follows a road used by golf course equipment, we cut deeper and pave with five inches of asphalt instead of three inches.

In paving, we have a five-gallon container filled with kerosene to keep tools and roller clean. The tools can be dipped in the container and a large brush used to apply kerosene to the roller to prevent asphalt from sticking.

Hot-mix asphalt is dumped in the path and spread by shovels and rakes, smoothed with a board paddle and, after cooling, rolled. We used a power roller weighing 500 pounds. It did the job satisfactorily for the Atlanta area, but farther north a heavier roller should be used to seal the surface better to prevent damage from freezing.

Paths are peaked toward the center to prevent a golf ball from stopping on them. After rolling, the asphalt is allowed to set overnight before being opened for traffic.

Costs of materials and hauling vary. A base to start figuring costs might be that for both crushed stone and asphalt, 100 pounds of material are needed for one square yard per inch of thickness.

JAMES B. MONCRIEF:

Many courses have the advantage of being built on soils that make excellent cart paths without much change in the natural soil. Those with sandy-type soils have the advantage over those built on clay soils, especially when the weather is wet and the "no-cart" sign goes up. Courses with soils of sand and clay mixtures can have excellent cart paths when these soils are rolled. In most cases, however, these two ingredients are not found in the proportions necessary for ideal cart paths. Usually the addition of either sand or clay is needed.

More often, it is necessary to use a more stable material than that found on the site. Gravel or crushed rock seem to be the choices for base material with clay soils. Aggregate sizes range from dust to large rock. It is desirable to have a mixture of various sizes so voids will not cause depressions later. Dust, by-product of rock crushing, makes an excellent base for roads or cart paths. Small aggregate has the built-in safety factors of minimum damage to mowers and minimum danger of injuring players by rocks thrown by rotary mowers. Larger aggregate can be used where this hazard is not a factor and a heavy base is necessary to support the traffic.

The larger aggregates make excellent bases for roads and should be firmed in place before any other material is put on top or should be retained in place if no smooth surface is planned to cover the rock. It is advisable to cover large aggregate with a small aggregate before paving or applying asphalt.

Rarely are cart paths finished with anything other than asphalt. A great deal of pertinent information is available from THE ASPHALT HANDBOOK, published by the Asphalt Institute. In some instances, concrete is used. Other materials utilized are sea shells, coal cinders, straw, pecan hulls, rubber waste, and other local materials that prevent rutting and

slipping of equipment.

About five colors are available in asphalt. White is being experimented with but, due to cost, is not available for construction now. There are various blends of asphalt for rapid cure, medium cure, winter use, and summer use.

It is best that all asphalt be well sealed when rolling; usually a heavy roller of 2,000 pounds or more is advisable. Lighter rollers may be used as long as the surface is well sealed. The Athens Country Club, Athens, Ga., used its tennis court roller, and so far the results have been very satisfactory.

Where a cart path is steep, erosion can be a problem. Turf on either side of the path may be thinned out unless water is diverted by using asphalt or soil. Also, golfers walking at the side encourage erosion. Most do not walk on an asphalt cart path, but on turf. Many players have the feeling that asphalt wears out their spikes faster than sandy soils. Asphalt is much better to walk on with spikes than concrete.

Since people are used to highway markings, painted directional indicators on cart paths can be used to advantage.

LEE RECORD:

Thorough long-range planning is necessary in establishing service roads. How should we design them so that they will be desirable esthetically and of greatest advantage? Design is important in establishing desirable playing conditions and agronomic flexibilities which may enter the picture—erosion, flood control, and drainage of waste water.

Two types of design may be used—the solid roadway and the ribbon road where only tire strips are necessary. It would be desirable to have solid-paved roadways around the entire course, but we don't want to lose esthetic values and have the course look like a sports car race track.

A most important factor is the location of the maintenance barn in respect to location of service roads. Main arteries should be looked at, as direct routes to specific locations, such as one road in connection with incoming deliveries (fertilizer, lime, sand, etc.); this main artery may also be useful for deliveries to the clubhouse. Another important road is the golf cart road between the building in which carts are stored and the first tee.

Road design is very important. A road slightly raised in the center would be especially desirable for quick water run-off or possibly limited water diversion. With this type, a ball would be less apt to remain on the road surface.

Another type is concave, the reverse of the above mentioned. It is excellent in connection with water diversion, especially on hilly terrain. The depth for the center of the road need not be extreme, but enough of a swale is required to control water flow and run-off. Other designs of solid-surfaced roads are the flat surface and the flat surface with small raised curbs.

Where a solid road is not practical due to budget limitations, consider the ribbon or strip path design. This is useful in erosion control on slopes, and it may be used in water diversion. The width of the ribbon will vary with equipment on hand, but an average width is two to three feet.

Rough areas are the most desirable for roads, outside the rough mowed areas, as they may be concealed and not interfere with play.