

Cart Paths and Traffic Management Go Hand in Hand

A well-designed system of cart paths can improve the golfing experience and a facility's bottom line.

BY DAVID OATIS AND STEVE KAMMERER

Traffic from golf carts and course maintenance vehicles has a huge impact on turf health, playability, and aesthetics. While turf can be very wear tolerant when traffic is widely dispersed, wear problems can quickly develop in areas where traffic is concentrated. Not surprisingly, most golf facilities have installed a system of cart paths to manage traffic problems.

When combined with effective turf- and traffic-management programs, cart paths enable courses to handle more traffic with fewer of the detrimental and highly visible side effects. Paths can also help facilitate play during or shortly after inclement weather. Effectively managing traffic is a vital part of maintaining golfer satisfaction and a healthy bottom line.

Even if the need for cart paths is obvious, it is not always easy to determine how extensive they should be or how they should be laid out. These decisions depend on myriad factors, including the amount of cart traffic, course design, topography, soil conditions, drainage, irrigation, turf health, maintenance practices, and grass species.

DEVELOPING A PLAN

Paths often draw the ire of golfers because of their impact on playability. Errant shots that ricochet off paths damage golf balls and may cause balls to travel farther from their intended target, perhaps into a hazard or even out of bounds. Some dislike the unnatural appearance of paths in an otherwise natural setting. However, if golf cart usage is high and turf management practices are intensive, cart paths are usually essential.

At minimum, a system of paths should accommodate golf carts and



Traffic from golf carts and maintenance equipment can quickly break down cart path edges when paths are not sufficiently wide.



Paths that are too narrow initially must be widened to accommodate traffic.

maintenance equipment. Paths may also be needed for various services and for emergency vehicles. The key is to thoughtfully design path systems so that they solve traffic problems with minimal impact on aesthetics or playability.

Start by analyzing golfer and maintenance traffic patterns to develop a long-range plan. Remember that existing systems can be upgraded and new paths installed in phases as necessity dictates and budgets allow. Consider working with a golf course architect for help designing an effective cart path system. Engineers may also be needed to aid in the design process where challenging site conditions such as steep topography or unstable terrain exist. Safety considerations must receive the highest priority whenever new cart paths are designed and installed.

Path systems should be intentional. Locating paths where golf and maintenance traffic have created wear issues rarely solves the problem and often results in paths that are unattractive and too close to the line of play. Path

systems also should be kept simple. Intricate routings or complicated directions can confuse golfers and slow pace of play.

Keep in mind that cart paths cannot solve every traffic problem. Their relative effectiveness varies tremendously based on design and usage patterns. Path systems must be tailored to each golf course as there is no one-size-fits-all solution. A variety of agronomic and management strategies also are necessary to maintain quality turf in high-traffic zones.

ASSESSING THE NEED

Are wall-to-wall paths necessary? Can paths be located just around tees and greens or only on certain holes? These are a few of the factors to consider before answering these questions. Since conditions may change significantly over time, the best solution today could be different in the future. Accordingly, courses may choose to start with a minimalistic path system. However, it is wise to develop designs that allow for expansion so that paths can later be extended or added as

necessary. It may also become necessary to replace deteriorating paths with new, improved cart paths that are better designed to accommodate facility needs.

If a course has plenty of room to disperse traffic, golf rounds are low, golf cart usage is low, and course maintenance is not intensive, shorter and possibly fewer paths may be adequate. However, if traffic flow is constricted and turf is weak, traffic injury will be problematic. Furthermore, difficult soils, poor drainage, and steep topography all suggest the need for more extensive path systems. Poorly drained soils are susceptible to traffic issues like compaction and rutting, and topography can exacerbate wear issues because of injury caused by vehicles accelerating going uphill and braking going downhill.

GROWING ENVIRONMENTS

Turf that receives ample sunlight and airflow grows more vigorously and handles traffic better than turf growing under shade. Weak, less vigorous turf is slow to recover when wear occurs.

Tree roots also compete with turf for moisture and nutrients, spelling disaster for turf in high-traffic, low-light, and heavily treed locations. Tree removal may be required in high-traffic areas to improve traffic flow and turf performance.

Tree roots also can damage cart paths. Keeping paths well away from trees, especially species with aggressive surface roots, is critical for maximizing the useful life of a path.

AVOIDING OBSTRUCTIONS

Obstructions funnel traffic, which results in turf damage. Obstructions commonly found on golf courses include bunkers, mounding, steep topography, trees, and naturalized areas. Obstructions in high-traffic

areas create very challenging wear problems, so it is critical to eliminate them from high-traffic areas whenever possible. Trees that obstruct traffic are especially damaging because they add shade and root competition to the equation. Simply put, trees and traffic do not mix.

Although lack of irrigation is not a physical obstruction, dry turf cannot withstand as much traffic as turf receiving adequate moisture. Thus, improving irrigation coverage in high-traffic areas may be advisable in some situations. Similarly, intensifying cultural practices can help maintain better turf and playability in high-traffic areas. Developing specialized maintenance programs for high-traffic areas can help tremendously.

TRANSITION AREAS

Areas where carts enter and exit paths are among the highest-traffic locations at a golf course, and they typically experience some degree of turf damage. Designing these transition areas with minimal obstructions so that traffic patterns can be extensively shifted is critical.

Longer transition areas are necessary where play is heavy, soils are poor, topography is steep, and turf is weak. Cart path transition areas generally should have between 20 and 40 linear yards of entry and exit area to allow enough room to adequately shift traffic patterns.

One effective design is to start and end paths with long, gentle arcs angled away from the flow of traffic (Figure 1).



Figure 1. Wrapping cart paths around greens and tees allows golfers to utilize multiple access routes. These areas must be kept free of traffic-funneling obstructions.



Concentrated traffic entering or exiting a path leads to predictable turf damage. The presence of trees in these areas makes it almost impossible to maintain turf cover.

When paths end in the direction of traffic flow, golfers usually enter and exit at one point or drive alongside the path. Wear problems are inevitable in both cases. Paths can end in straight lines without concentrating traffic, but only when they are located on the perimeter of a hole. For years, cart paths have been designed with fan- or ball-shaped ends in an effort to disperse traffic, but they rarely provide adequate area and often result in unsightly and unmanageable wear.

Dispersing traffic as it enters and exits cart paths is the most important function of transition areas, but provid-

ing golfers with ample access to greens, tees, and fairways from their golf carts also should be considered. Where possible, wrap cart paths around greens and around or alongside tees to ensure there are plenty of access points so that foot traffic is not funneled. The presence of obstructions in walking routes to and from playing surfaces also must be assessed to limit wear problems.

LOCATION AND COURSE DESIGN

Cart paths must be incorporated in long-range course improvement and

architectural plans to prevent costly mistakes. If there are plans to make changes to the golf course — e.g., shifting of holes, widening approaches, bunker renovations — it is important to understand how those changes will affect traffic flow so path systems can be adjusted. For example, a path that was once a reasonable distance from an approach may end up being much too close if the approach is widened. The alignment and proper grassing lines on each hole should be confirmed before cart paths are installed or modified.

Cart paths should never be the most distinctive visual feature when standing on a tee. Thought and creativity should be exercised to hide paths. However, golfers may not use paths that are too well hidden or too far from play. Paths should be kept a reasonable distance from play to reduce their potential impact, but course design and topography can restrict path locations in some cases.

Trees commonly have been used to hide paths, but their funneling effects, combined with shade and root competition, limit their effectiveness for this purpose. Low, gentle mounding, particularly when combined with curbing, can be very effective for hiding paths. Tilting paths a few degrees away from the primary viewing direction can also make them much less obvious. Combining these techniques can help hide some paths in plain sight.

DRAINAGE

Drainage must be evaluated as paths are designed, particularly when curbing is included. Paths located in wet areas may not hold up, and paths that are not installed at the proper grade can hinder surface drainage. However, paths can be designed to aid drainage by intercepting and diverting surface water away from important areas or into drainage receptacles.

Paths sometimes must be cut to accommodate projects such as installing or repairing irrigation or drainage infrastructure. It is not possible to foresee all eventualities, but placing pipe sleeves under new paths where appropriate in certain locations can help avoid the need to cut and patch paths in the future.

CURBING

Golfers have a habit of pulling their golf carts just off the edge of paths. This can be a consequence of paths being too narrow for other carts or maintenance equipment to pass. Regardless of the reason, it results in tremendous wear alongside paths and frequently causes paths to effectively expand in width. Erosion usually exacerbates the issue once turf is lost alongside a path. The solutions are to ensure paths are of adequate width and to use curbing to restrict cart access from key areas. Curbing receives considerable abuse, so durable materials should be used. Wood products such as landscape timbers and railroad ties were commonly used in the past, but they can be slippery when wet and deteriorate much more rapidly than hard surfaces like concrete.

It is important to install curbing so that turf is flush with the top of the curb. Raised curbing is unattractive, can be a tripping hazard, and it necessitates additional hand work and trimming. Architects may be helpful in

determining the best curbing design for your unique situation.

CART PATH WIDTH

Cart path width can be a contentious issue and often there is pressure to install narrow paths. Unfortunately, most maintenance equipment does not fit on narrow paths. It is also difficult to keep all four wheels of a golf cart on narrow paths. Consequently, the edges of narrow paths often break down and wear problems develop in adjacent turf areas. Wide paths solve traffic problems more effectively and are more durable than narrow paths. Most agree that a minimum path width of 8 feet works best. However, paths must be wider — perhaps 12 to 16 feet — where golf cart and maintenance traffic is heavy.

BUILDING MATERIALS

One of the most important cart path considerations is whether to construct paths from stable or unstable materials. Asphalt and concrete are the two most commonly used stable materials and

initially are more expensive than other alternatives. Assuming they are properly installed, concrete and asphalt last much longer and require far less maintenance than unstable materials. However, longevity is impacted heavily by climate, so choosing materials and installation techniques that are appropriate and practical for your local climate is critical.

Unstable materials include wood chips, mulch, crushed sea shells, gravel, rock, brick or stone dust, and decomposed granite. Unstable materials often are selected based on installation cost and because they can produce a more natural appearance. They also are sometimes perceived to affect playability less than concrete or asphalt. However, there are some major drawbacks to using unstable materials — the biggest is that they move. Other drawbacks include:

- Dusty when dry and muddy when wet
- Prone to erosion and washing out
- Margins are less distinct



Paths that are oriented toward a fairway provide limited exit area. Concentrated wear at the exit point causes a path to grow a little longer each year.

- May provide poor traction on sloped or wet areas
- Require regular maintenance and frequent repair

Concrete paving products are sometimes used and fall somewhere between stable and unstable materials. Properly installed, they can work well. However, pavers may move if installed without an adequate base, necessitating periodic, time-consuming realignment.

GOLFER EDUCATION

Simple, consistent path systems combined with clear guidance and golfer education will yield fewer traffic problems, translating to more enjoyable golf, faster play and better turf.

Information about how golfers should traverse a golf course should be clearly communicated. Lengthy articles describing what is being asked of golfers rarely are effective. Short messages with pictures that can be clearly displayed in a golf shop or locker room can work well. A series of pictures and diagrams can convey messages quickly, simply, and clearly. Including a training period to emphasize cart use instructions also is important. The following is a good example of a traffic education plan:

Post educational materials in highly visible locations.

Provide traffic control at cart path entries.

- For the first month of the season, paint a white line in the approaches to indicate where golfers should exit the fairway and enter the paths. Shift the line every week or so to spread wear.
- Include two posts at each end of the line for emphasis.
- In month two, delete the white line but retain both posts.



Cart paths constructed from unstable material may wash out and require significant time and money to repair.

- By the third month, golfers should have picked up the routine, so you may be able to eliminate one post.
Provide traffic control at cart path exits.

- For the first month, place a barrier or a highly visible rope and two stakes across the path at exit points. Shift the exit point every day or two to spread wear.

- A month or two later, delete the barrier and retain a single post. Hopefully, golfers will have picked up the routine.

Placing simple messages on carts, where golfers can clearly see them, can be very effective as well. Rotate between two or three simple messages as conditions dictate.

- Messages could include: cart paths only, paths only on par-3 holes, paths only around greens and tees, disperse, roughs only, 90-degree rule.

Total compliance is unrealistic to expect for any set of golf course traffic guidelines, but if 60 or 70 percent of golfers comply, turf wear problems can be dramatically reduced.

CONCLUSION

Cart paths are here to stay and, although some golfers dislike them, a well-designed system of paths combined with effective turf management strategies can elevate turf performance, aesthetics, and playability. When thoughtfully designed and installed, cart and maintenance paths can improve the golfer experience and a facility's bottom line.

DAVID OATIS is regional director of the USGA Green Section Northeast Region. STEVE KAMMERER, Ph.D., is regional director of the USGA Green Section Southeast Region.

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