

Miniature Golf Design Today

By Peter F. Olesen, P.E.

Miniature golf has come a long way since its first inception. Today a course must meet different criteria than in the past. Miniature golf players have far greater entertainment expectations when they visit miniature golf courses. The play on the course has to be interesting and challenging, without becoming overwhelming. It must entertain youngsters as well as senior citizens and everyone between.

The days of people flocking to low par, gimmicky courses are almost gone. The reasons are many. For one thing people are looking for “more bang for their buck” in terms of realism and challenge. Youngsters are far more aware of golf as a sport and miniature golf as a form of entertainment. A major reason for this has been the increasing exposure to golf on television and in the newspapers. This has been accompanied with the expansion of driving ranges and public golf courses, introduction of golf oriented video and arcade games and golf simulators. As a result, more people aware of the sport and have become interested in miniature golf as a recreational pastime. It provides camaraderie, socialization; light hearted entertainment and a perceived valuable use of both for disposable time and money.

With the ever-increasing coverage of golf on television and increased emphasis in scholastic golf, even elementary school children are playing miniature golf with the understanding of par.

Years ago there was a strong interest in “gimmick” miniature golf. Today we see far more interest in “golf in miniature” with realistic fairways, challenging play and a themed surrounding. Where tourist oriented facilities now compete on the basis of elaborate theming; the average local market courses are seeing a demand for better, more challenging and more entertaining play as opposed to more elaborate theming.

Miniature golf offers a relaxing, time-consuming form of entertainment that blends well into the planning of family entertainment facilities in terms of extending times of stay. It is an ideal attraction for family units as it can involve a broad age span in a common entertainment venue. Miniature golf also lends itself to date-nights, as it doesn't consume funds as rapidly as many other entertainment formats and provides an easygoing entertainment form.

Miniature golf also serves as an excellent format for senior citizen group activities. These can be in the form of informal outings or regularly scheduled league competition. It is also an excellent activity for church outings, school activities, day camp outings, birthday parties, corporate functions, charity events, team building exercises and other occasions. It is a form of entertainment that does not require athleticism or special skills. It can mean entirely different things to different guests.

In determining the design you wish to incorporate into your new miniature golf course, there are a number of issues you should take into consideration in making your final determination. These include the following:

Target Market:

The type of course you would design for a local community where tourism isn't the primary target is quite different than a course you would design for a tourist environment. In the typical tourism market there may be a number of courses in close proximity to each other. This competition results in the creation of highly themed and landscaped facilities where being more attractive or exciting visually will take precedent over challenging play.

The local course must combine entertainment value with playing challenge to generate strong repeat business. If it is too simple (low par values), the desire to return is lessened for a majority of the market.

The exception could be for those who primarily target market the birthday party market. In this case you may want a simpler concept with lower par values, to reduce the time required to complete play. This concept will not work as well if your overall facility's target market is family oriented, in which case the time of play should be a little longer.

Course Design:

Each course site has its own individual physical characteristics that must be addressed in order for the course layout to best serve the needs of the owner and provides the best experience for the guests. This includes local climate, site topography and the competition.

Physical elements that can affect the design of a specific course include the existing physical terrain, the size and shape of the site, existing drainage and surface grades. Also having an impact are the location of existing or proposed adjacent attractions and the flow of people through the course and the surrounding facility.

The above initial conditions will govern the general configuration of the course in terms of its shape and the placement of individual holes, waterfalls, streams and pools. The size, shape and placement of specific holes, stream configuration, size and shape of waterfalls, streams and pools will still have to be coordinated between the client (owner/operator) and the design consultant.

The average size of individual fairways (holes) can vary according to available budget, overall course size and client preferences. For many sites the average par value may govern, especially in those situations where clients wish to have a quick turnover, rather than a more challenging and time consuming design.

Too simple a layout, with many par-one and par-two holes will be boring to all but the youngest players. Too difficult a course will turn off the younger players. We try to create a balance that includes several unusual holes that appeal to youngsters and some that challenge older players while not discouraging the younger players.

The character of individual holes is defined by the introduction of varying surface grades, alignment, introduction of simulated sand traps and water holes, creation of moguls and other surface irregularities, multiple cup placements, obstacles of various types, drop holes, ball ramps and other unique elements to increase the "fun" of playing the course.

When developing individual fairway configurations, care must be taken to avoid creating congestion spots on the course. Placing several higher par value fairways immediately next to each other is likely to create a backlog of one or more foursomes being stalled while others ahead of them are taking extra shots. This can in some cases end up slowing down the through-put on the course.

ADA Compliance

Today there are two schools of thought with respect to the implementation of strict ADA mandated guidelines for miniature golf courses. Current interpretation is that a course must contain nine handicap accessible holes on each 18-hole course. This approach is followed by most of the established miniature golf course design-build firms.

This writer and his company believe strongly that all eighteen holes on every course should be handicap accessible. Our reasoning is that it is not necessary to limit the ADA design to nine holes from a design standpoint, and it is certainly not equal treatment for individuals with handicaps, senior citizens and mothers with strollers. We feel that incorporating ADA compliant design into the entire course is attainable without sacrificing play and entertainment value. We have followed this policy since our first miniature golf course design in 1992.

Sound Drainage Design

In the past, many miniature golf course designers either ignored proper course drainage design, or failed to properly do so. This can result in loss of the use of the course for short or long times, depending on the degree of trapped water. We've observed courses where the designer drained the general course area, but actually trapped water on the fairways.

The individual fairways should be designed in such a manner that water will not accumulate and stay on the carpet. This means that the areas adjacent to the holes on the fairway carpet must also be designed to drain properly. The same is true for the individual cups. Proper drainage does not cost extra, it is just a matter of addressing it in design rather than after the fact. Failure to do so can result in the course collecting water that could breed mosquitoes, eventually flood fairways or destroy course landscaping. Addressing the issue at the start of the course design will result in drainage being a non-problem.

Landscaping Design

Good course landscaping involves more than creating attractive surroundings for the course. It must take into consideration the impact of such work on the operation and maintenance of the facility. Plantings that require extensive watering can create drainage problems, and if not properly controlled can also impact on course play. The use of conventional bluegrass and comparable lawn grasses in the areas between the fairways can greatly enhance the appearance of the course, but it also creates problems in terms of mowing operations and moving the equipment on or off the course as well as the requirement to vacuum or blow the fairways to remove grass clippings.

Landscaping Plant Selection

Care should also be taken during the design phase to avoid planting deciduous, leaf shedding plants away from the individual holes as possible. This will minimize the time required to clean course in the fall when the trees and bushes start to shed their leaves.

For those clients that want a lot of natural landscaping as part of their course, we recommend that they work with a local landscaper to assure that the plants selected are acclimated to the area and that they are as maintenance free as possible.

Some parents have expressed concerns with secluded areas are created on some courses through the use of taller and denser plantings, especially when coupled with lower lighting levels. We strongly recommend that the types of plantings and their placement be done in such a manner as to avoid hidden areas on the course for obvious security reasons.

Streams and Waterfalls

Streams and waterfalls should be designed to drain away from the waterfall toward a receiving pool to assure that the water system has positive flow to the return pump(s). The receiving pool at the end of the stream must be sized to accommodate enough water to allow the internal piping, stream bed and waterfall system to assure that there will still be water in the pool when the pumps turn to full flow in the mornings and that the pool is large enough to accommodate the overall volume of drainage in the evening when the pumps shut down.

Waterfalls can be designed as major structures, elements coming out of natural slopes or as small rock structures with water flowing out of them. Most waterfalls flow into a stream that connects to a receiving pond for recirculation back to the waterfall by means of a pump and underground piping. Some waterfalls are surrounded by water with all the flow and recirculation taking place from the pool to the top of the waterfall.

Aeration is an element that should be carefully considered in the development of waterfalls, ponds and streams that do not develop algae, scum or other unsightly water elements. Additional aeration can be obtained by having several fountains located in the streams or ponds.

Access to the pumps and electrical/mechanical elements should be tightly controlled. The pumps and their mechanical and electrical control panel shall be enclosed in a housing that prevents guest access. Access panels or door shall be locked to prevent unauthorized access.

Waterfall piping systems can incorporate valves to regulate flow. This permits the owner to vary the waterfall intensity from a very slow flow to a raging cascade.

Course Lighting

We recommend a fairly high lighting level on miniature golf courses for a number of reasons. These include helping guests feel comfortable, faster play and for site security. When establishing lighting levels, it is important to be aware of local lighting ordinances and regulations. The final course design should always be in compliance with the local regulating agencies.

Many communities have very specific regulations governing area lighting that span mounting heights, shielding, candlepower, hours of operation and related issues. The use of sharp cut-off luminaires and proper placement of the light standards can reduce neighborhood opposition.

We feel that the use of metal halide luminaires meets the needs of both the owners and the guests. These lamps create a white appearance throughout the site and provide better a better presentation of all of the site attractions, not just the miniature golf course. The introduction of outdoor LED lighting luminaires offers new and valuable options for operators. While the initial cost of LADs is higher, it is more than offset by the much longer life spans of the LED units and much lower electrical demands. Every new course owner should carefully consider the options.

Safety Elements

Care should be taken in the design of the course to avoid tripping hazards wherever possible. This includes on the fairways, sidewalks and adjacent areas.

Safety fences and netting should be used to keep small children away from the ponds and other hazards that may exist on or around the course. All controls shall be housed in childproof housings. We strongly encourage chain-link, wrought iron or other childproof fencing be used to keep non-players from wandering across the course.

End of Play Considerations

Most miniature golf courses are incorporating some form of ball capture at the 18th hole to reduce the number of balls that disappear from the site. Some of the approaches used include cups that transport balls to receptacle away from the fairway while others offer rewards for holes in one or for return of the balls to the caddy shack. These may be in the form of premiums such as free games, coupons from community fast food restaurants and other local businesses.

Play Flow Control

The design of the course should take into consideration the flow of people as they play through. Improper groupings of holes with higher par values can result in “bottlenecks” that slow down play over the entire course. Obviously a par four is going to take longer than a par 1 and every course has a mix. Proper planning that mixes the par values of adjacent holes can help reduce the potential of the design being responsible for delayed play.

Proper placement of benches to permit older players and those with physical problems to sit down occasionally, can greatly increase the player friendly feeling of a course

36 Hole Multiple Course Configurations – Yes or No

Many people want to have 36 hole layouts for marketing purposes. This is especially true when there are other facilities nearby. From a marketing standpoint this may have merit. It is important, however, to recognize the reality of gaining sufficient revenue to make both courses profitable. Failure to have a sufficient market to adequately benefit from the added 18 holes has caused more than one facility to fail.

If your market isn't large enough to justify another 18 holes, there may be other steps you can take to enhance your facility. It may be adding a WaterWars unit, adding a small bounce unit or some other unique attraction that the competition doesn't have. Sometimes it may involve

changing your food or snack service. Try to give better service and find ways to make your place more attractive.

If you have a market sufficient to support 36 holes of golf, there have been a number of approaches taken, some successful and some not so successful. It is important that you know the market.

Unique 36-Hole Course Design

In planning 36 hole miniature golf courses we attempt to impress on our clients the benefits of developing a course design that enables the operator to modify the configuration of the individual 18 hole fairways to permit four different 18 hole course configurations for league play and increasing interest among repeat customers. This design can also better utilize water elements and waterfalls.

Tourism Generated Markets

Developing a facility in a tourist market is quite different than establishing a facility in a local market. Tourist markets have large volumes of visitors that may be there for one day to several weeks, with the result that the average guest may only visit the course several times at best. This means that the location and visual attraction of the facility is of primary importance.

Most tourism areas have multiple facilities and attractions competing for the same disposable income. Therefore, the choice of theming and the magnitude of the physical appearance all enter into the equation that produces the best draw among competitors. It is important to create an image that is attractive, striking and unique at the same time. The guests attracted will only be there several times, so you need the “better mousetrap” so to speak, in order to draw them to your facility rather than to a competitor. Under these circumstances, the pendulum changes from play to wow factor.

We feel that course in a tourism market can still benefit from the inclusion of ADA elements into a superior facility. Properly marketed, these elements can be used to attract family units including seniors and others with arthritis or other slightly debilitating physical problems, parents with strollers and disabled individuals. .

Indoor Miniature Golf Courses

Many people have thought that the construction of indoor miniature golf courses was the best way to extend their season and that there was a strong demand for indoor miniature golf during the winter season. This has not proven to be true, as many failed indoor courses can attest to.

People equate miniature golf with the end of the indoor “cabin fever” season. They want to play outdoors. Even in the very warm states, where daytime play is often very uncomfortable, outdoor miniature golf has reigned supreme. People will still play miniature golf after the sun goes down, and the temperatures are high.

We’ve found, however, that indoor miniature golf can sustain itself in facilities that do a volume birthday party business. Under this format, the miniature golf play is part of the

package. These courses are targeted toward younger players and therefore can be constructed more economically and on a more limited floor space. As younger children do not have a preconceived concept that mini-golf should be 18 holes, the use of nine hole configurations permits less space to be used, coupled with lower costs

The new black light courses being introduced, offer the possibility of expanding the indoor market slightly. This is partly due to the novelty of the approach. Whether there will be a long-term impact generated by black light golf remains to be seen.

Double Header and Piggy Back Designs (Copyrighted 18 Hole play – 9 Hole Layouts).

Our firm has developed nine hole “Double Header” and “Piggy Back” course designs that actually permit playing 18 holes of golf on the nine fairway layouts, through the creation of two separate tee locations on each fairway. This results in a different playing experience when the fairway is played from the second “tee” when making the second cycle. The total course capacity is the same, but for older players, this equates to playing 18.

These designs are equally workable for indoor or outdoor locations where space and budget are both critical elements. We have developed layouts for indoor installation with four-foot elevation changes, waterfalls and streams and still being ADA compliant for all course play.

Nine Hole Courses

Nine-hole course are occasionally requested for sites with lower attendance potential or for sites with severe space restrictions. There are variables in total cost for 9 hole courses that include the impact of decisions concerning what use will be made of water, streams, ponds, fairway size and par values, landscaping and available space.

Some nine hole courses are equipped with multiple holes and dual flags to create the 18-hole experience the second time around. This would result in a slight cost savings over the “double header” concept described above, but the fairway play would be identical except for the final putt.

Pre-Fabricated Courses

There are several firms offering prefabricated miniature golf courses for extremely small areas and small budgets. There are also pre-fabricated courses that cost as much as conventional courses.

Their advantages are flexibility in moving or rearranging, and often in terms of cost. For locations where the space isn't available for year round play, the pre-fabricated units offer an ideal solution.

Disadvantages include the pre-fab look, rather simplistic play and low par values. When making your design choices, consider each element prior to finalizing your decision. The elements you must consider include: what is your target market (age groups, birthday parties, group events), how much space is available, how will it impact on your overall financial picture in terms of cost and revenue and what visual impact will it have on the remainder of your facility.

Selecting a Quality Contractor

There are a number of reputable design build and construction only firms in the industry that are capable of constructing miniature golf courses that will stand up to the traffic a quality course will attract.

The methods used to construct the courses can vary greatly. Some, from firms that actually walk out on the site and spray paint their proposed course layouts, including fairway configurations on the ground and then start excavating, forming and pouring the course; to those using computer software to generate more challenging play. There are courses out there that were actually created and constructed in this manner. Are they as good as those that were created by designers taking the time to actually consider the clientele and the play generated by each hole configuration? This writer doesn't think so.

The owner may have saved a few dollars during construction, but we feel the ultimate result will be many dollars in lost revenue due to having a less exciting and entertaining course. This will result in much lower play and lower revenues over time.

Some other firms have set course designs and construction methods that work well for their bottom line, but may fall short in terms of the customer's bottom line. Stock plans with mediocre construction, are not always the best path to ultimate course revenues.

There are a few totally construction oriented firms that work with plans developed by experienced designers, that actually follow the designs and specifications, resulting in superior construction, quality materials and long lasting. We have found that our experience with HH Miniature Golf Construction (formerly Fairway Miniature Golf Course Construction Company) located in Sturgis, Michigan has been excellent over the past 15 years. They have the skills and the commitment to provide their clients with quality miniature golf courses,

Peter is a registered professional engineer in numerous states and the President of Entertainment Concepts, Inc. (formerly Peter F. Olesen and Associates, Inc.) a firm with more than 30 years of experience in the design of family entertainment centers, both outdoor and indoor, stand alone go-kart tracks and miniature golf courses, bumper boat ponds and related attractions. The firm has been at the forefront of go-kart, miniature golf course and bumper boat pond design, having brought about many innovations in safety, geometrics, design and construction methods that are now widely emulated throughout the industry. The firm has performed more than 450 projects in 43 states, Angola, Brunei, Canada (Alberta, Ontario and Quebec), Cuba (Guantanamo Bay), Kazakhstan, Mexico, Puerto Rico, Saudi Arabia and Vietnam. These projects span feasibility, concept development, master plans, final design and construction engineering. He is a member of the faculty of Foundations Entertainment University which has presented 34 seminars in the past twelve years, has presented seminars at the International Association of Amusement Parks and Attractions, FunExpo, Kart Expo and Leisure Expo tradeshows as well presenting go-kart safety seminars for the State of Ohio. He has, and continues to write articles for industry magazines and internet newsletters.