

WHAT GO-KART TRACK DESIGN SHOULD I SELECT?

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Concession Go-kart tracks have proven to be one of the strongest attractions to be added to a family entertainment center. Their ability to attract guests from much greater distances than other types of attractions is well recognized.

When selecting the specific type of track, go-kart configuration and kart manufacturer it is important to take the time to review your alternatives. There are a variety of concession go-kart track concepts that serve specific needs for individual track facilities. They vary in size, concept and target markets. For larger facilities a combination of track types can result in higher annual revenues and help generate more repeat visits.

For smaller facilities the market may dictate a single track. In most situations the choice would be a family road course because it permits the greatest range of ridership from pre-teens through senior citizens. There may well be situations where demographics or existing competition may dictate a selection of another type of track configuration. Care should be taken prior to making a final decision. Visit other facilities, ask the operators their experience (not too likely if your site is within 60 miles), drive a number of track styles and kart varieties, observe the reactions of the guests in each of those situations and seek the experience and advice of experienced consultants, such as our firm. The following is a list of track and kart types available. Each has its pluses and limitations.

TYPES OF TRACKS

Family Road Course

By far the most popular track configuration. You should make certain that the design you choose is developed to provide maximum entertainment value, coupled with safety. These tracks are typically designed to accommodate drivers ten years old and older, and in most cases, operate at top speeds of 18 to 20 mph.

The family track configurations developed by my firm, Entertainment Concepts, Inc. have been continually tweaked, modified and improved over more than twenty years and reflect the experience gained with each one. To date more than 100 family road course tracks designed by our firm have been constructed around the country. These tracks incorporate a combination of short straight sections, coupled with a variety of banked turns (ranging from 1 to 3 feet) and elevation changes that keep the drivers attention all the way around the track. All our road course and slick track designs incorporate reversibility, the ability to operate in the opposite direction to create a completely different ride. This is done to generate added appeal for the facility and can be used to increase attendance during the week days which traditionally have lower attendance by offering a completely different riding experience.

The tracks have continuous steel rail barriers along both edges of the track. The steel rails are backed by automobile tires backed by a concrete barrier curb or curb and gutter. Our designs include pit safety gates having the same cross section as the remaining barrier system to lessen the impact of contact with them.

The pits contain raised islands separating karts into individual lanes for safety and to permit better pit control. They include spinner tires inflated to between 5 and 10 psi located at the ends of the raised islands that prevent karts hitting the raised islands head-on.

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Some designers continue to use the open pit design, minus the raised islands. We feel this reduces the safety within the pits and do not design our tracks with anything other than raised island. We have been aware of many track attendants and guests that have been struck by carelessly driven go-karts. Yes you can get rear-ended in the pit lanes, but this risk is even greater in the open lanes. The most hazardous hit (often resulting in serious injuries and concussions), which has occurred many times in the open pit configuration is a staff member (or guest) being struck from behind by a carelessly driven kart. Being flipped on your head is one tough way to be reminded to keep your mind on both your front and back when in the open pit area. This is also the case when on the track when karts are moving through the area.

The use of banked turns ranging from one foot to three feet, combined with short straight sections creates an illusion of speed as well as adding to the entertainment value and excitement of the ride. Most manufacturers and designers recommend a maximum speed of 18 mph, which makes the track safe for pre-teens.

If a given track requires riders to have a valid driver's license, the speed can be raised to 22 miles per hour or more, depending on State regulations. A number of states provide a separate classification for "racing karts," that permit higher speeds, ranging up to 50 mph. Our firm would only consider designing such tracks for adult only facilities and would require "hold harmless" insurance coverage from the track owner's insurance company.

Rookie Road Course

Over the years there has been a growing demand for tracks designed for younger drivers 7 to 12 years old. These tracks would operate karts travelling at lower speeds, normally less than 12 miles per hour. The karts could be full size karts using large seat back cushions or smaller versions of the standard go-karts (rookie karts), enabling new and younger drivers to gain experience and confidence before driving on family road courses with their higher speeds. Track geometry, track banking, pit designs, track surface and related replicate the concepts applied to the family tracks.

Banked turns ranging from one foot to two feet, plus short straight sections combine to create an illusion of speed. With smaller track radii and narrower kart widths, this results in smaller track footprints.

"Adult" Slick Road Course:

This is a specialty track targeted to the Adult (drivers licenses required) market, which includes many adults that don't like to ride on tracks with young drivers. Our design (which we

introduced in 1996) includes tighter turns (2 ½ foot radii), 6 inch cross slopes on a 30 foot track width, with a much smoother waxed surface and a variable profile that results in a driving experience similar to driving on black ice. These tracks require much higher driving skills. Most installations have included timing systems to increase the entertainment value. We recommend that drivers have a valid driver's license to drive on this type track,

High Banked Oval Track:

This track recreates some of the elements of the Indy and NASCAR racing environment on a much smaller scale. This is our unique concept that calls for a 30 foot radius, high banked (5 to 7 foot cross slope) turn at one end and a 12 foot radius with a foot cross slope turn at the other end. It is not suitable for younger and less physically able drivers. This being due to every client we designed this type of track for equipping them with full bodied NASCAR or Indy bodied karts (for the image) that weighed 200 to 400 pounds more than conventional karts. The resulting extra effort to control these heavyweights in line on the high banked track is not for those not strong of body. Most of our clients using high banked ovals require that drivers have current driver's licenses.

Because of the unique steering required to make the karts manageable on the high banks, (keeping the heavier karts from turning into the rail on the high banked end), this is the only track we design that does not have reversibility.

Oval and Tri-Oval Tracks:

Not as popular as road courses or "adult" slick road courses, some people still want to have oval or tri-oval tracks. These will have longer straight elements and the radii and banking can be the same as for the road courses.

TYPES OF KARTS

Gasoline Powered Karts

By far the most popular type of go-kart in use today, these karts come in a wide range of sizes and shapes, including single and two seat karts, in bodied and non-bodied karts. Most of them powered by Honda engines (great durability and performance) coming in 5, 6.5, 8, 8.5 and 9 horsepower configurations. We recommend 8-horse power and up to enable heavier drivers to be able to keep up with lighter weight drivers.

The karts available today come in both single seat and two seat (one adult and one child) versions in both bodied and no-body configurations.

For many years we've recommended that our clients consider using all two seat karts on the family track configurations for several reasons. First and foremost is that in doing so, there is no confusion establishing the right mix of karts in the pits. A second reason is the problems with larger drivers fitting into single seat bodied karts. We have clients using both systems with great success.

The decision between bodied and non-bodied Karts is really up to the purchaser. Bodied karts offer the opportunity to sell advertising on the karts (for non-bodied or bodied karts, advertising

could be sold on the safety fence around the track). Non-bodied karts can be loaded and unloaded at a faster pace than bodied karts.

Battery Powered (Electric) Karts:

A new entrant in the concession go-kart industry in the past dozen or so years is the electric (battery Powered) go-kart. As battery technology improves, electric karts are becoming more popular because of the ability to regulate speeds by use of a hand held controller. This allows a kart to be operated at 5 mph per hour for young drivers (birthday market), 9 mph for drivers between 8 and 12 years old, 18 mph for the family market and 22 mph or higher for the adult testosterone market by pressing a button on the controller.

As these karts are battery powered, they weigh more than the gasoline karts and thus they have higher impact with barrier systems.

A current drawback is the fact that karts cannot run more than about 8 minute before they start damaging the life cycling of the batteries. This results in the need for two sets of karts (one set on the track and one set charging in the pits). A good dual pit system using a 4 minute ride, which, considering loading and unloading times results in about 13 kart rides per hour for the two kart charging system as opposed to a single pit system which would result in 8 kart rides per hour.

Electric karts are far easier to maintain, as they don't require a small engine mechanic to keep the fleet operating at equivalent speeds between karts.

Electric karts currently on the market have either floor charging or plug-in charging systems. We recommend the floor charging system to assure more uniform battery charging and to avoid errant cables flying around in the event attendants fail to disconnect the cables prior to allowing karts to leave the pits.

Only one kart manufacturer currently offers reversibility by having a third contact on the battery contact assembly in the pit lanes, though this may change in the future. We have been lobbying the industry for more than 10 years to make this easy modification. The first track to incorporate this change will open this year.

Local zoning regulates lighting mounting heights (where possible we like 30 feet or higher to get better light distribution with fewer poles. For safe nighttime we specify a 20-foot candle average lighting level for better visibility and improved safety. As most jurisdictions have specific codes and local variations, the final design of track lighting systems can best be accomplished by local contractors that acquire the permits for construction.

Tracks should be constructed using Portland Cement Concrete (PCC) to permit a 40 % reduction in tire wear, lower track temperatures, much earlier availability after rainfalls due to no rutting, birdbaths and increased hydroplaning after rainfalls on bituminous concrete (blacktop, asphalt) surfaces. A properly constructed PCC pavement will have a much longer maintenance free lifetime (up to 40 years) than will an asphalt (bituminous concrete) pavement. Asphalt surfaces will require ongoing maintenance in order to maintain safe driving surfaces. One of the

problems with asphalt is that it is a live pavement and retains its flexibility through being flexed by traffic. When asphalt gets little or no traffic it begins to oxidize and ultimately crumble. For a good example, go to a shopping center parking lot and check the condition of the pavement farthest from the stores (less traffic). Once the asphalt starts to crumble the chunks can be thrown up by the karts. To minimize the deterioration, technicians spread a sealer to keep the amount of bitumens high and help lengthen and will have all of the drawbacks listed above. This has to continue until the overall pavement start to fail. This could be 20 to 30 years, but would have required maintenance every three to five years. All the reasons listed above for choosing Portland cement concrete pavement are the reasons asphalt pavement falls short.

Planning to Add Other Attractions:

For many go-kart track owners constructing tracks, this is the first of a number of steps toward developing a complete family entertainment center. If this is your planned course of action, make certain you have reviewed the various elements of your overall concept carefully before going for approval. You should evaluate the additional attractions to be included in your facility carefully. Their design and specific contributions to the daily per- capita revenues should be carefully evaluated in terms of the potential contribution each can make toward the success of your facility. Regardless of individual skills and talents, you would be well advised to seek experience advice from industry professionals in order to minimize potential bottlenecks or failure.

When constructing an overall facility in stages, make certain the master plan has been coordinated in such a way as to allow the project to grow without having to shut down completed attractions in order to complete the new elements. We hope you will consider our firm when making your selection of a consultant for your project team. Our long and extensive experience in the industry offers a wide range of possible services, ranging from site selection development of concept plans, feasibility studies, business plan and final design services.

May you future hold nothing but success, a feeling of satisfaction in providing an entertaining and exciting entertainment venue for your community and an exciting career for yourself.

Mr. Olesen is a registered professional engineer in numerous states and is president of Entertainment Concepts, Inc. (formerly Peter F. Olesen and Associates, Inc.) of Mount Prospect, Illinois, which he founded in April 1984. During the past 29 years he has been responsible for more than 440 family entertainment projects spanning site selection, concept development, feasibility studies, business plans, master plans, final design, construction plans and specifications, construction engineering and ongoing consultation for existing operations. These projects have spanned 43 states, Angola, Brunei, Canada (Alberta, British Columbia, Ontario and Quebec), Cuba (Guantanamo Bay), Kazakhstan, Mexico, Puerto Rico, Saudi Arabia and Vietnam.

His career has also included a wide range of civil engineering projects spanning freeways, tollways, traffic engineering, municipal and private enterprise projects which add to his qualifications for designing outstanding family entertainment industry projects.

He has written countless articles on go-karts, tracks, miniature golf courses, bumper boat ponds and related attractions for various industry magazine and internet publications. In addition he has made seminar presentations at various industry tradeshow, including International Association of Amusement Parks and Attractions, Fun Expo, Leisure Expo and Kart Expo. He has also been a speaker at the past 29 Foundations Entertainment University Seminars. You can get more information at www.fecdesigners.com, by contacting him by phone at 847-561-7013 or by e-mail at peteolesen@yahoo.com.

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