Building A Practical Golf Facility

A Step-by-Step Guide To Realizing a Dream

By

Dr. Michael J. Hurdzan

Past President

American Society of Golf Course Architects

Published by American Society of Golf Course Architects

Supported by

The Professional Golfers' Association of America

United States Golf Association

IN APPRECIATION

This book was made possible through generous grants from several Allied Associations of Golf partners:

- The Professional Golfers Association of America
- The United States Golf Association Foundation
- The Golf Course Superintendents Association of America
- The PGA TOUR

Like the American Society of Golf Course Architects, these organizations believe this updated second edition will help grow the game by helping create easy-to-play facilities that will encourage new players to make golf their sport of choice for a lifetime.

We thank these allied golf organizations, along with the ASGCA Foundation, for partnering with ASGCA on this important publication project.

—American Society of Golf Course Architects
August, 2005

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INTRODUCTION

This booklet is all about dreams!

Yes, it's designed to help individuals bring golf to their communities. Golf might be in the form of a driving range... learning facility...short course... or a regulation golf course. A great golf experience can be enjoyed on minimum acreage, as this booklet illustrates.

In each case, however, the focus is on practical golf—inexpensive facilities that are easy to build and maintain–and can be sustainable with low player fees.

Author Mike Hurdzan, a past president of the American Society of Golf Course Architects, has long been a strong advocate of building golf facilities that allow new players and those without a fat wallet to enjoy the game of golf, just as the Scots did hundreds of years ago. His position, and that of the Society, is that it is good for the game of golf to have practical golf facilities for those interested in playing golf. Down the line, these players who have grown to love the

game will progress to more sophisticated golf courses and become life-long participants.

This booklet provides step-by-step instructions for those interested in developing a practical golf course, along with a resource guide that takes much of the guesswork out of the process. To supplement this booklet, you may also check in at **GolfCourse1.com** on the Internet.

We hope that this booklet will help you realize your golf dream.

Tom Marzolf

President, 2005-'06
American Society
of Golf Course Architects

CHAPTER ONE

A PHILOSOPHY FOR THE GROWTH OF GOLF

The general expectations for a golf course are that it will have 9 or 18 holes, be covered by closely-mown grass, and have man-made or natural "hazards."

These conventions evolved from a time when a golf course could be any number of holes, ranging from five or six up to 22 or more on any given piece of land, with the lengths of each hole measuring only a few yards up to holes almost a mile long, and often times on naturally occurring, open land that was either sparsely covered or devoid of anything but short grasses. During those formative years, every course, no matter how simple or crude, the game of golf was available for the enjoyment of all participants at a reasonable cost.

There is absolutely no reason why golf can not return to its roots, and ignore modern conventions in order to allow all people an opportunity to learn and experience the magic of playing golf, as it has for the 600 years of its history.

Golf courses should be made as accessible to all citizens, as are softball or football fields, basketball or tennis courts, beaches or pools, soccer pitches or playgrounds. Golf could and should become a national pastime for all.

THREE KEY WORDS

As custodians, protectors, leaders, and lovers of practical golf for the next millennium, we should be guided by a concept that can be said in three words – affordable, accessible, and sustainable.

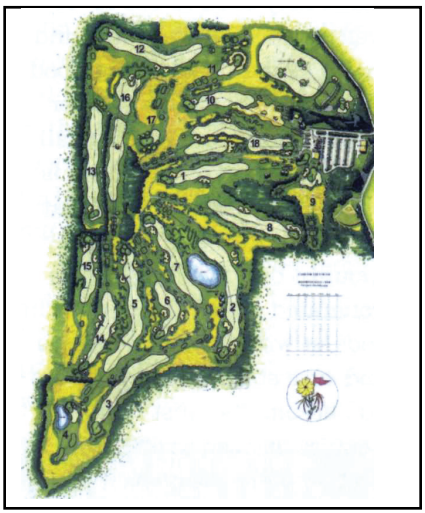
"Affordable" means keeping the game within the economic reach of most citizens by building simple, low-cost golf courses. "Accessible" means building those affordable golf courses near population

centers, public transportation, or best of all – within bicycle or walking distance where people can wear everyday clothes and play with whatever kind of equipment they can afford. Lastly, "sustainable" means building golf courses that can be maintained with minimal maintenance.

Golf used to be this way for hundreds of years, but within the past 50 years a false perspective developed that the game had drifted toward becoming an expensive, elitist, and environmentally unfriendly sport. Today that myth is being dispelled. A major taskforce, comprised of representatives from every major organization in golf and spearheaded by the PGA Tour, has been working on issues to help accelerate the future growth of the game of golf. That taskforce is called "Golf 20/20" and one part of its multifaceted strategy is a program called "Link Up 2 Golf," which was developed in southern California and is currently going through refinement in Durham, Chapel Hill and surrounding communities. A related research program deals with the importance of non-traditional or alternative facilities, such as golf courses of less than 9 or 18 hole loops, learning centers, etc. So far more than 5,000 alternative golf facilities have been identified in the United States. This booklet is intended to help inspired individuals who have the vision to see the enormous opportunity that the game of golf offers, and show them how to bring golf to their communities at an affordable cost. You may learn more about "Link Up 2 Golf" at www.playgolfamerica.com

CHAPTER TWO
GETTING STARTED

Interest in golf is at an all time high with people of all ages and economic backgrounds. All you need to experience the thrill and magic of golf is a club, ball, and a place to use them. Clubs and balls are readily available and can be very inexpensive, especially if the equipment is used. It can be found at yard sales, second-hand sporting good stores or at golf shops. In fact many golf organizations will provide golf equipment free of charge to certain organizations or individuals (see appendix one). However, finding a place to hit balls and then to experience the pleasure of playing golf is often more difficult.



Usually the biggest problem is where to get land for a course. People are conditioned to believe that land is expensive and there is no free or inexpensive land, but that is simply not true. There is free land, not to own perhaps, but to use, for a considerable period of time. Sources of free land might be government-owned vacant property, military installations, closed military installations, areas around airports or railroad yards, floodplains, landfills, quarried land, idle corporate land, school yards, university-owned property, or church property, to name a few. It is not likely any of these owners will give you title to the land, but they may be willing to allow it to be used for a community golf facility. The key questions that

must be answered deal with protecting the landowners from liabilities, legal and financial, as well as easy access to it again when they need to use it. A well-written contract, a sound management plan, and a good insurance policy will answer those concerns. Land is available if the proper approach is made to the owners, and that proper approach is a well thought out, professionally-generated study and plan. This booklet will provide processes and case studies that will help you accomplish just that.

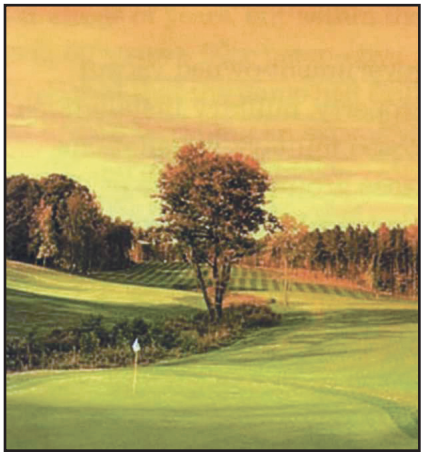


Photo Credit: John Johnson

PLAYING GOLF

Typically, commercial driving ranges provide the first opportunity to hit a golf ball, at a cost about equal to going to a movie. Many driving ranges also offer introductory rates for juniors.

Playing golf requires a bit more of a facility -- namely a tee and a green -- and these facilities can range from simple, inexpensive installations to very expensive high-tech ones. Places to play golf can range from nothing more than an open field, or literally a cow pasture, to posh country clubs. An individual's level of pleasure is not necessarily based on the quality of the golf course, but without question, some facilities are more refined than others. This booklet is about practical golf facilities that are affordable, accessible and will focus on the simple, inexpensive ways of providing a place to play the greatest game on earth.

There are several components that must be evaluated before making a decision about what kind of golf facility can be built. These are:

- **Site analysis**
- **Design**
- **Construction**
- **Maintenance**
- **Operations**

SITE ANALYSIS

There are various levels of golf facilities, ranging from simple to exclusive, but some general comments apply to all levels when assessing a site.

Size - Golf balls can injure people and damage property, and one way to help protect against possible problems is to separate golfers and adjoining property. This means trying not to put too much on a parcel of land. A typical par 4 hole of 400 yards will take up 10.4 acres (420 yards long with buffers x 120 yards minimum width). So a 10-acre parcel could contain one 400 yard long hole, or perhaps three or four par 3s ranging in length from 60 yards to 150 yards, and with skilled design, perhaps more. This means an 18-hole course of all short par 3s could be built on as little as 30 acres, while an intermediate length or executive course of 18 holes of par 3s and 4s would require 75-100 acres, and a full size par 72 course would need 120-200 acres. This assumes only useable land, which does not allow for wetlands, restricted areas, or land not easily made part of the golf area. To understand how to deal with such areas of restricted use, the reader is directed to Appendix Two, which lists useful publications on the topic. Golf can be played on very small places, and if only a few holes can fit on the site, that is better than no golf. A few safe golf holes are better than more holes that might be dangerous.

Various levels of golf facilities shown below will be examined later in this booklet, but for now it may be useful to see how much space each requires.

ALTERNATIVE LEVEL FACILITY MINIMUM SIZE AND REQUIREMENTS

- **Simple teaching area 10′ wide, 20′ long, 11′ high, a mat & net**
- **Simple driving range 300′ wide, 900′ long nets, approximately 6 acres**
- **Elaborate driving range 500′ wide, 1,200′ long, approximately 14 acres**
- **A few golf holes on a few useable acres, approximately 3-30 acres**

TRADITIONAL

- **Conventional golf course; 150-200 usable acres**

- **Average golf course; 120-plus usable acres**
- **Upscale golf course; 150-plus usable acres**
- **Exclusive golf course; 175-plus usable acres**

Some additional criteria for evaluating a potential site for golf are examined in the following paragraphs:

Shape - The shape of the property lines that define the golf course site can influence how much of the land is really useable for golf. The ideal shape is a square or near square rectangle. Property lines with a lot of zigs and zags usually have many small corners that cannot be efficiently used. A visit to the government agency responsible for property taxes can provide a map showing property lines and acreage.

Slope - Land can be both too flat and too steep for golf. When it is too flat, the land does not drain very well, which increases maintenance requirements. Land can be so steep that golfers are not comfortable using it, resulting in strange play patterns. It, too, can be difficult to maintain. The ideal site has slopes between 2% and 10%

(two to ten feet of elevation change per 100 feet of distance), which helps reduce the cost of drainage and earthmoving in construction, and is the easiest to maintain. Gently rolling or sloping land is best.

Soils - Intuitively, healthy soils make for healthy golf courses and those are characterized as being well drained, rich in organic matter, and supportive of whatever is growing in them. Sandy soils are best. Silty or clay soils are O.K. Rocky soils with impoverished plant growth should be avoided. Soil modification is not difficult to do, but it is costly. Therefore, one must balance the availability of property with poor soils with the cost of modifying those into acceptable plant growth mediums.

Vegetation - Trees and shrubs are a natural part of North American golf courses, but they can be both bad and good. Constructing golf holes in dense woods adds to the cost of permitting, construction and maintenance for many trees have to be cleared and disposed of to allow an abundance of sunlight and circulation of air and golfers. However, trees also make good safety buffers, provide shade, and add to the beauty of a golf hole and golf course.

Given a choice between a heavily wooded site and one with no trees, and the site is of adequate size, the one without trees is usually preferable. Trees can be planted and managed to a mature state in a reasonably short time. The ideal is a site with a few trees, perhaps in clusters, that are mature and in good health.

Climate - The climate of the region and micro-climates of the site should be characterized for their maximum and minimum monthly temperatures, length of growing season, annual rainfall, distribution, prevailing wind direction and speed, monthly relative humidity, air quality index (if applicable), and any other factor which will influence the type of grass or landscaping planted and how it will be maintained. This information will be needed later and can be found in the library, contacting a local office of the Department of Agriculture, or from a nearby airport.

Irrigation Water - This pamphlet will discuss various levels of golf course construction based upon budget and available natural resources. Water for irrigating turfgrass can be a very controlling factor and should be studied thoroughly before very much planning is done. Water requirements for a regulation 18-hole course might range from a low of perhaps 25,000 gallons per day in the Northeast to as much as a 1,000,000 gallons per day in the desert southwest. Sources include underground aquifers,

flowing streams, very large impoundment areas, city water, or reclaimed or effluent water. The quantity of available water will help determine the type of facility that can be built. Water quality should also be examined for any possible negative effects on golf course turf while evaluating the site. Contact the local water utility for such information or look in the telephone yellow pages under "Water and Sewage Companies – Utility" or "Water Well Drilling & Service," for a suitable contact.

Utilities - Golf courses usually require some sort of power, potable water, telephone, and septic service. The more readily available these services are, the lower the development cost will be for the pro shop and maintenance facility. Similarly, any existing or planned easements or rights-of-way, existing as well as buried utilities, should be identified and marked on the site maps. Contact each utility for services available at the potential golf site.

Site Maps - Every effort should be made to get as detailed and as recent map(s) of the golf course site as possible. These should include aerial photographs, topography, property boundaries, and maps showing locations of any buried or planned utility or right-of-way. The best scale for these maps is one inch on the map equals one hundred feet on the ground (commonly shown as 1" = 100'). Sources for these maps would be the city or

county engineering office, tax departments or agriculture or conservation services. Soil, water, vegetation, and wildlife maps might also be available. Another source is United States Geologic Survey maps that can be purchased at map stores, or found on the Internet by using a program called "Mapquest. com."

Economic Feasibility - Even simple golf courses cost money to build and maintain, but they also produce income by charging users. Finding the right balance point between expenses and income will vary from location to location. Generally the lower that one can keep expenses and user rates, the greater the chance of breaking even. For assistance in this critical analysis, contact one of the resource people listed in appendix three ("Resource People").

Environmental and Other Issues- Every parcel of ground being considered for a golf facility should be evaluated for issues such as environmental sensitivity, restricted use or buffer zones, historic or archeological issues, zoning or permitted use designations, and other regional requirements. These evaluations may require specialists in each of those fields. Contacting the local zoning or building board, environmental commission, or government engineering office can help identify possible limitations and solutions.

Summary of Site Analysis - To assist in site analysis, a checklist is provided in Appendix Five. With the above information, an experienced golf course architect or builder (listed under "Resource People" in Appendix Three) then can assist you in determining what kind of golf facility is possible and feasible on your site. If your goal is affordable and accessible golf, try to build the simplest, cheapest facility possible.

Community golf opportunities can be as simple as an area of a park designated for hitting golf balls, to something as complex as an actual golf course. Clearly, just having a place to teach and to hit golf balls would require no infrastructure, other than an open field of short grass or bare dirt so the shag balls could be found; and this is a good beginning. However, if a more formal golf facility is possible, then consideration should be given to developing one of the facilities described in this booklet.

VARIOUS LEVELS OF GOLF COURSES

Like nearly everything in life, there are various levels of complexity and sophistication that can serve as criteria for categorizing things. For example, automobiles can be basic transportation or they can be high-tech racing machines, and these can be further categorized into the type of racing they are built for. Likewise, golf facilities can be grouped as very basic places to learn or as a place to experience the thrill of hitting a golf ball to areas of legendary beauty and fame. Consistent with these ascending levels of greatness are ascending levels of cost – cost to produce them, cost to maintain them, and hence, cost to use them. Ultimately it is the user who will determine if the cost justifies the experience or value of the product. The goal of this book practical golf, which translates into affordable, accessible, sustainable golf. Various levels of golf facilities are explained to assist the reader in targeting the facility that their constituents will support.

VARIOUS LEVELS OF GOLF COURSES

Level One – A Simple Teaching Area

This is the most basic facility to introduce golf and can be any space large enough to swing a club and hit a golf ball. The smallest size is a room with an 11 or 12 foot high ceiling and a net or backstop designed to be sufficiently strong to stop golf balls. The only materials needed are a mat designed for hitting balls, the net or backstop, golf clubs and balls, and a teacher. This is all that is needed to teach the basic golf swing.

The downside is, of course, the available space determines the number of students that can be taught, and the student doesn't get to experience the exhilaration of seeing that little ball soaring off into the distance after a good swing. This feedback is very important and one of the magical things about golf.

The cost of this facility is near zero, for it can be in the school gym, a high ceiling basement, garage, community center, etc.

Level Two – A Simple Driving Range

This facility is any outdoor place where students can be taught, as in Level One, but get to see the golf ball in flight for at least a short distance. The recommended minimum area for a full size range would be 300' wide and about 900' long, or about 6.2 acres. This size field means as many as 25 golfers can use it at once, while providing for reasonable side safety buffers, possibly using nets. The use of hitting mats may still be required to make it an all-weather surface. The foundation for the mats should be a raised bed of compacted stone or paving, about 10' wide. From the teeing line, target flags located at known yardage distances (100, 150, 200, and 250 yards) will help keep shots more in the center of the range. Target greens and/or target fairways may be added on more upscale or permanent facilities.

If the facility is a schoolyard, government park, or commercial property, then

the owner may keep the grass mowed. If not, then arrangements should be made to keep the area maintained. Perhaps a commercial lawn or landscape service may volunteer to do this, or do it at a reduced rate.

If the minimum area is not available, then compromises must be made, such as limiting the use of long golf shots or the number of people using the area at one time.

Reduced Distance Golf Balls

Perhaps the best solution if space is limited is a reduced distance golf ball. There are a wide variety of such balls, ranging from plastic whiffle balls, sponge golf balls, to half-distance balls. Each of these has a place in developing golfers, but perhaps one of the very best is the Cayman, or half-distance ball. Although the idea of making a reduced distance ball has been around since the 1800s, Jack Nicklaus should be given credit for making the concept a commercial success. In the early 1980s, Jack was commissioned to design a golf course in the Cayman Islands, but there was only enough space for nine holes of full size golf. His visionary thinking led him to experiment with reduced weight golf balls that would go half as far as a regular ball. He now would design 18 holes on the small site. In fact, the golf course was so versatile that it could be played as an 18-hole par 54 with regular golf balls, or an 18-hole par 72 golf course with the reduced weight ball, or Cayman ball, as it became known. That course spurred development of other such courses, particularly in the southern United States. The champion of this concept of reduced length courses is William Amick, a past president of the American Society of Golf Course Architects, who is listed in Appendix Three under "Resource People." Reduced length golf courses and golf balls are still a viable alternative today. The balls are available through most golf stores, or by contacting any of the manufacturers of reduced distance balls listed in Appendix One.

Reduced distance golf balls should be thoroughly evaluated if space for hitting golf balls is limited. Perhaps just as important as the safety aspects of the reduced distance ball is the teaching value they provide, especially for very young and very old students. Since the ball is light it takes less energy to get it airborne, it does not sting the hands or feel hard like a mishit regular ball, and yet on chip shots it feels much like a regular ball.

Level Three – Elaborate Golf Range

This facility is like Level Two, except that it has bells and whistles, along with a higher price tag. Add-on options can be a permanent administration building and pro shop, parking lot, night lighting, grass tee, target greens, covered teeing areas that can be heated or cooled for all-year use, areas for video-taping golf swings, video library or viewing rooms, areas for maintenance equipment, etc. Cost of such facilities can range from $500,000 to $2,500,000. Such top-of-the-line facilities are well beyond the scope of affordable, accessible golf, but that does not mean these facilities cannot support those objectives. Often these facilities are open to programs that provide discounted fees to worthy organizations. When Hamilton County Park District near Cincinnati developed an upscale, state-of-the-art range, the planner also included a private teaching tee with its own separate parking area dedicated to buses or vans for children just starting to play golf. This allowed the program supervisors better control, made the kids feel special, and reduced the problems of transportation and traffic.

Level Four – A Few Golf Holes

As was previously pointed out, all that is required for a piece of land to be called a golf course is a teeing ground and a hole in the ground surrounded by short grass, generally called a "green." There are no requirements for distances between the tee and the green; the number or par of holes; the size, shape or configuration of tees or greens; types, number or placement of hazards; or even what is on the soil surface, if anything. At this level, there are few or no constraints or guidelines on making golf holes, except safety. The more conventional and sophisticated the golf course, the more it will appeal to advanced golfers, and the fee will be higher. Level Four is intended to provide a place to play golf for the rank beginner and at the lowest cost possible. This means a very crude golf course, costing almost nothing to build and little to maintain. One such golf course, called John's Golf Course, is profiled in Chapter Five on Case Studies.

At the most basic level it consists of simply mowing out as low as possible tee and green locations and keeping all vegetation in between down to less than two inches. This could commonly be nothing more than a pasture with fences to keep livestock off the tees and greens. The important thing for a Level Four golf course is to lay out as many golf holes on a piece of ground as will **safely** fit, and then allocate whatever construction funds or resources that may be available to build as many of the holes as possible. If a plan shows that nine holes or 18 holes will safely fit on a site, but money or resources can only get three to six holes built, then these few holes should be built as per the plan. When additional funds are found, the golf course can be enlarged in a logical way. The cost of a Level Four golf course can be nearly zero if only mowing grass is required to define tees and greens; up to perhaps $250,000 if a small amount of earthmoving, drainage, irrigation, planting and amenities are utilized. How to estimate

golf course construction cost and alternative construction techniques are discussed in Chapter Four of this booklet. In summary, a Level Four golf course can be any number of golf holes, of any size, requiring little or no construction that can be **safely** laid out on a parcel of ground.

Level Five – A Conventional Golf Course

Assuming the site is large enough to safely lay out 9 or 18 holes, then constructing a conventional golf course should be considered. A small site may yield only par 3 holes or "pitch and putts," as they are called. Larger sites may accommodate a bigger golf course (see chart below).

Each of these golf courses provides for all of the joy and excitement that golf can offer, especially to beginning golfers. So useable space on which to **safely** place golf holes will be the major determinant of the kind of golf course that can be built. The other important factor is money. A Level Five golf course is a bare bones, simple-as-it-gets golf course. The intent is to get it built for the least amount of money possible, keeping it simple to maintain so user fees also are kept low. This means a golf course built with very little or no earthwork, limited subsurface drainage, a crude irrigation system, easy to care for turfgrasses, very few hazards that require hand maintenance, and very little landscaping. It is the sort of golf course that was built 100 years ago with horses and slip-scrapers that helped golf become established in America. Chapter Four in this pamphlet will describe why some golf features, such as greens, can be built cheaply, while others are very expensive.

A Level Five golf course is a functional golf course in every way, and on an extraordinary site can be an extraordinary golf course, but is usually just a Plain Jane golf course – that is affordable and accessible. Examples of Level Five golf courses are Northwest Angle in Warroad, Minnesota and Tom O'Shanter's golf and learning center in West Palm Beach, Florida, which are profiled in Chapter Five on Case Studies.

Requirements for 18 Holes of Golf

Minimum	Pitch & Putt	Par 3	Executive	Full Size
Acreage	5-12	20-40	50-100	120 and up
Par	54	54	55 - 65	65 - 73
Total Length	900 yds.	1800 yds.	2500 – 4000 yds.	4500 – 7000 yds.
Tee Size				
Mats	6' x 6'	10' x 10'	10' x 10'	10' x 10'
Grass Covered	*100ft.	*400 ft. - 4000 ft.	*4000 ft. - 6000 ft.	*6000 ft. plus
Green Size				
Oiled sand	900	*1200 - 2000	*2000 - 3500	*3500 plus
Artificial turf	*600 - 1200	*1200 - 2000	*2000 - 3000	*3000 plus
Natural Grass	*1200 - 2000	*2000 - 3000	*3000 - 5000	*5000 plus

**Note: Figures are square feet*

Level Six – A Average Golf Course

There is nothing wrong with "average!" In the sense of a golf course, "average" should connote a golf course better than a Level Five in terms of more sophisticated earthmoving, a fair amount of drainage, a very functional irrigation system, more hazards, planted with high-tech turfgrasses, and a few amenities like landscaping and cart paths. The number of holes will be the same as a Level Five golf course for any given parcel of ground, but the difference is

that Level Six courses are more expensive. In short, a Level Six golf course is a fancier version of a Level Five. Nice daily fee golf courses are good examples of Level Six golf courses. Chapter Five on Case Studies references several Level Six golf courses, including Splitrock in Orient, Ohio; Harvard Gulch in Denver; Summit in Summit, New Jersey; and Old English in English, Indiana.

Level Seven – Upscale Golf Course

Upscale golf courses usually do not fall into the realm of affordable since they tend to charge in multiples of what a Level Six course would charge. In many Midwestern cities, a round of golf at a Level Five golf course costs less than $10 per day, a Level Six less than $20 per round, and a Level Seven at $50 or more per round. Again, why these differences in rates are required and justifiable will be explained in Chapter Four. There is no question that Level Seven golf courses can be excellent profit centers, but their appeal is to dedicated golfers to whom the pleasure of the golf course setting is more important than the money it costs to play. However, this doesn't mean that a Level Seven golf course cannot sponsor an affordable, accessible golf program, or serve as a fundraiser for one, or cannot permit a special one-half day tournament for successful graduates of an affordable accessible program.

Level Eight – Exclusive Golf Course

These courses have fees in excess of $100 per round, and $300 per round is not a shocking green fee any longer for some facilities. These courses are usually resort courses and their appeal is to well-heeled travelers. That is not the focus of this pamphlet, so little will be said about them except as a basis for comparison between various levels.

Obviously, each golf facility is a blend of these components that can be as simple or as complex as one wants to make them. However the theme of

this booklet is **PRACTICAL**, to keep all things accessible and affordable. A review of the case studies provided later will define what "practical" means in real terms.

Compenents of a Golf Facility

No matter what level of a golf facility is being planned, there are certain elements that are common to all.

These basic components are:

1. Parking lot (allow 180 square feet per car)
2. Pro shop (minimum of a few hundred square feet)
3. Restroom(s) (unisex and handicap accessible as a minimum)
4. Maintenance storage building (minimum of a 2-car garage)
5. Maintenance equipment (mowers, hand tools, see appendix on equipment)
6. Golf features (tees, greens, fairways, etc., but no standard number or size)

The basic staff needed includes:

1. Supervisor/administrator/counter person
2. Groundskeeper
3. One or two part time workers (either pro shop or grounds)

The basic administrative equipment needed would include:

1. Cash register and fixtures
2. Counter or desk
3. Basic utilities

The basic administrative programs needed would include:

1. Hours of operation and golfer control
2. Golf course maintenance
3. Accounting and bookkeeping
4. Food and beverage (optional)

Obviously these basic elements will vary greatly, depending upon the size of the golf facility and projected volume of use.

Now with an understanding of the basics of golf facilities and the spaces they require for safe use, it is time to discuss how to get a facility established in your community.

For more information on developing a golf course, check out GolfCourse1.com

CHAPTER THREE

PLANNING AND ORGANIZATION

No one person is smart or experienced enough to know everything that is required in planning, building or operating a golf course. Although a team of people is needed, it really only takes one person to start to bring golf to a community. Therefore, perhaps the most important team member is that one person with the determination and vision to make golf available. This person does not need to be a golf person, but he or she does need a tireless spirit that will not accept "no." Hopefully that is you! For you can make a difference if you set your heart and mind to it, and there are lots of people in the golf industry who are willing and able to help you. You, however, must be the "leader" or the "Lead Person."

The Lead Person will be responsible for doing most of the preliminary or research work necessary for a meaningful and productive planning process. If a consultant was hired to do this research, the cost could be $10,000 - $25,000 or higher. The key is to go slowly, be very thorough, and organize the information into a concise but complete presentation or report. Once all of the site assessment

information is available, then and only then should the Lead Person solicit the help of professionals in the golf business.

Golf course planning proceeds in very orderly phases, each one building upon the earlier phase. To skip a phase, or not complete one before going to the next, often can cause enormous problems and actually delay the project. A discussion follows for each of the phases, its associated activities, and the role of the lead person and others in that phase.

PHASES OF FACILITY PLANNING, CONSTRUCTION AND OPERATIONS

PHASE	TITLE	ACTIVITY
I	Research and Analysis	Identify possible site, then learn as much as possible about it - use checklist in Appendix 5
II	Schematic Design	Very early sketching to see what will fit on the site given constraints
III	Design Development	As possible routings or facility placement become more clear - more details added to make Master Plan
IV	Permits and Financing	Master Plan is presented to all who control and regulate site use or funds to build and operate it
V	Construction Documents	Approved Master Plan is converted to language contractors need to construct it
VI	Construction	Actual building of facility as per construction documents and alterations
VII	Turfgrass Establishment	Grow-in of planted grass to a mature enough stage to handle golf traffic
VIII	Opening and Operations	The day-to-day functioning of the facility and associated programs

PHASE I –
RESEARCH AND ANALYSIS

During this phase, the Lead Person should identify at least one possible site for golf that meets criteria described earlier, contact the owner(s) of the property to see if they would be willing to allow it to be used for golf, and under what conditions. The Lead Person should also have at least visited the city, county or state engineer's office, and obtained any available maps that show the property, and illustrate the points of site analysis outlined earlier as well as their opinion on the potential problems they might see with that site. Use the checklist provided in Appendix Five to gather as much information as possible. To this point, the Lead Person has spent only travel money, but has invested a great deal of time. Remember that patience is a virtue and persistence is a most powerful force, and the reward is that your effort may produce thousands of golfers and perhaps even an Open champion.

Once the Lead Person has assembled the necessary information using the checklist in Appendix Five, then a more professional team should help conduct a more in-depth study of the potential site. The job of the professional team is not to do the research required, but rather direct the Lead Person on what must be known about the site before detailed planning

can begin, and possible sources of that information. The intent is to minimize planning cost by having the Lead Person do as much grunt work as possible.

For instance, one of the most important aspects to this research is the availability of irrigation water. The professional team can estimate the quantity needed and potential sources of information on the subject, but it is up to the Lead Person to contact information sources who can answer where that amount

of water can be obtained. The quantity and quality of irrigation water available will impact many decisions made throughout the planning, construction and operational activities that will follow.

Once all or most of this information is available, the professional golf course team can then begin the next phase of planning, called "schematic design."

Besides the Lead Person, the professional team (or planning committee) should be composed of people with knowledge and experience.

To put together this professional planning team, the Lead Person should contact the local or national headquarters for the First Tee, ASGCA, GCSAA, PGA, and many other professional organizations, (see Appendix Three – "Resource People") and explain the situation and ask if the headquarters can suggest a professional person who might help. Once the names and phone numbers of these professional people are secured, the Lead Person should start making phone calls to see if they will become part of the team. It should be made clear to the professional that the purpose of the facility is to provide a place where people of average means can learn and enjoy the game of golf. Explain that your project is going to be done with a very lean budget, with no provision for normal fees, and in fact you would hope to find people who will volunteer their time and knowledge for the good of the

GOLF COURSE PLANNING TEAM

1. **Golf Course Architect – plans and observes the golf course construction.**
2. **Civil Engineer – advises and plans utilities, permit process, traffic, etc.**
3. **Golf Course Superintendent – consults on golf course grasses, irrigation, maintenance, etc.**
4. **Golf Professional – source for information on golf operations and programs.**
5. **Environmentalist – understands and advises on resource identification and restrictions.**
6. **Lawyer – handles the myriad of legal matters involved.**
7. **Golf Course Builder – advises on cost effective construction, schedules, and requirements.**
8. **Building Architect – plans and observes construction of structures and spaces.**
9. **Lead Person – provides the drive, coordination, and liaison required to complete project.**

community. If they are not able to participate, then ask for recommendations on whom to call. If no one can be found, call national headquarters again (see Appendix Three), for there are lots of golf people willing to help.

The golf nucleus of the planning team then are people involved in the industry, such as a golf architect, a golf professional, a golf course superintendent, and perhaps if one is really lucky, even a golf course builder. The Lead Person should arrange a half-day meeting with these golf professionals to view the site, review the available mapping and checklist materials and develop a strategy on how to proceed. It may be entirely possible that this initial site won't work for many reasons, ranging from the site being too small, to requiring a high cost for construction, or having complicated environmental issues. This first meeting will be a great education for the Lead Person, learning more in those four or five hours than most golfers learn about a golf course in a lifetime.

At the initial meeting, the team is simply trying to answer one question: "Is

this site suitable for the golf facility the Lead Person believes the community needs?" If the answer is "yes" then it must be decided what additional information is needed. If the answer is "no," then the team should advise the Lead Person on what was wrong with the site and what qualities a new site should have. Obviously it's better to have several sites available for the team's evaluation.

A "yes" answer to the suitability question doesn't end the research and analysis phase of golf course development, but rather it stimulates it for there are many, many things that must be known before the golf course architect can even put the first line on paper. The simplest way to use the comprehensive checklist provided in Appendix Five is to take a copy to an appropriate government planning, zoning

or engineering office, and ask them to help amass the material needed that they control, and reference other agencies for other materials. Start a filing system and then make the materials available to the golf planning team.

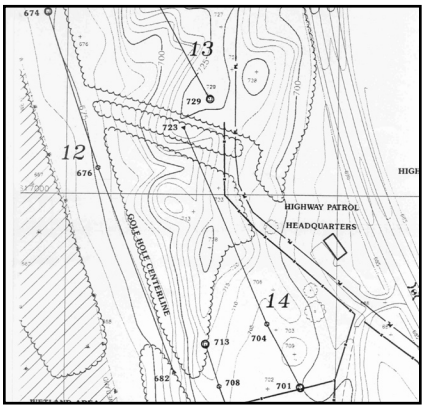
Ordinarily the combined fees or soft costs for such a team of professionals would be between $250,000 to $1 million, but if the project objective is to provide an affordable, accessible, and sustainable golf course, many or all of these professionals may be willing to work for a reduced fee, or donate their time to plan the facility. At this point, the project has already cut out big dollars that commercial ventures would otherwise have to pay out – and it was accomplished by just asking for help. The key is for the Lead Person to be well organized before contacting these potential teammates, for they may be willing to donate time, but not to waste time. So the Lead Person may wish to form a committee of volunteers like you, who will work in concert to search out the needed information. Once the research phase nears completion, then and only then should golf course planning begin, and that is called "schematic design."

PHASE II –
SCHEMATIC DESIGN

During this phase the entire planning team should meet and review the results of the research phase. Once everyone is familiar and comfortable with the site and available analysis, then the team should decide upon the following:

1. **Primary access route to and through the site**
2. **Suitable clubhouse and maintenance center locations**
3. **Acceptable parking areas**
4. **Realistic schedule for entire project**
5. **An achievable budget to accomplish all objectives**

After arriving at these decisions, it falls to the golf course architect to begin planning the facility. The golf architect is simply trying to study optional ways of using the land to find the best compromise between the site analysis and known limitations. For purposes of a quick study of alternatives, the architect may use very simple symbols, such as triangles for tees, dots for landing points, and circles for greens, commonly called "stick and ball" format. In the example below, the small



numbers are the approximate elevation at that key point.

Using this shorthand method allows the golf course architect to do many plans quickly, disregarding details, and focusing on how golf will fit on the land. Typically, schematic designs are done as overlays on tracing paper so they can overlay the base map(s) for evaluation by the rest of the team. Often many schematic designs are done for a site, leaving appropriate spaces for buildings, parking, etc. After the committee begins to narrow down

the number of schematic designs by eliminating those that don't work for various reasons, then the building architect and engineer take the lead on siting entrance roads, buildings, parking, etc. They also use the overlay technique for later review by the other team members.

A qualified and experienced golf course architect knows that safely routing golf holes or laying out golf facilities is not a job for amateur or "wannabe" designers. Even small mistakes in routing may result in serious safety problems or inefficient land use, add to the complexity of permitting and construction, as well as complicate long term maintenance and operation. In addition, a professional plan can inspire confidence among potential backers or sponsors of the project, and save significant time and money in developing the facility.

There are no hard and fast rules for planning a golf facility. The golf course designer must be prepared to defend professional decisions if an accident happens, and in court if necessary. There are, however, some very flexible guidelines that most golf course designers use as a starting point, and then make defensible adjustments based on site-specific conditions. In general those are discussed below.

Safety - The most important factor in golf course design is safety -- safety to golfers, employees, adjacent property users, and others who may have use rights. Golf balls can cause serious injury and damage. Although golfers are responsible for any balls they hit, it is the obligation of management and developers to provide a safely-designed facility. There are no safety standards for design of a golf facility, so each designer must apply prudent criteria, and then be prepared to defend those criteria if necessary. No

golf course can be 100% safe, but experienced members of the American Society of Golf Course Architects can significantly reduce the probability of an accident by recognizing certain guidelines.

Although no golfer likes to see protective screens or nets on a golf facility, they should be installed if needed for safety reasons, particularly when the golf course is intended for novice golfers or children. Blind spots, or places on a golf hole where players cannot see golfers ahead, should be avoided to reduce golf ball related injuries. Given the choice of a golf course on a small tract of land with safety screens or barriers between critical areas, warning bells or signals, or no golf course at all -- the choice would be to accept the safety devices. However, the best approach is to ask an experienced golf course architect for advice.

Routing Holes - The routing or layout of the golf holes and their features should require the smallest amount of modification of the land. This is a learned skill, not a God-given gift, and experience is the best teacher. One can assume that most golfers will be right-handed, a male will hit a driver 200 yards and a female about 130 yards; their shots will slice or curve from left to right; and they cannot reach any green in two shots that is over 380 yards from the teeing ground. There are maximum and minimum yardages for holes shown below.

Par Computation - "Par" is the score that an expert golfer would be expected to make for a given hole. Par means errorless play under ordinary weather conditions, to go from tee to green, allowing two strokes on the putting green.

Yardages for guidance in computing par are given below.

YARDAGE FOR GUIDANCE

PAR	MEN	WOMEN	BEGINNERS
3	0 up to 250	up to 210	30 to 150
4	251 to 470	211 to 400	250 to 350
5	471 and over	401 to 575	400 to 500
6	576 and over	501 and over	

Each hole should be measured horizontally from the middle of the tee area to be used to the center of the green, following the line of play planned by the architect in laying out the hole. On a hole with a bend, the line of play at the elbow point, or "dogleg," should be centered in the fairway in accordance with the architect's intention.

Fitting Golf Holes to the Land Available - The length of holes and their par is determined by how much land is available to safely lay out golf holes. A nine hole course of all very short par 3s, commonly called a pitch and putt (see Appendix Two, Useful References), has holes ranging in length from 20 yards to 100 yards and could fit on a few of acres of land. The exact amount of land goes back to what was found during site analysis. A pitch and putt course can be played with one lofted club like a 9-iron and a putter and is very appealing to beginners. To gain variety in length and club selection means increasing the useable land area. Thirty acres of ground may yield an 18-hole (par 3) course with holes of variable length (60 to 200 yards), allowing golfers to hit most of the clubs in their bag.

If at least 75 acres of useable ground are available, then an 18-hole course of all par 3s and 4s (par 58-60 of about 3,500 to 4,000 yards) can be built. There are commonly called executive or family golf courses (see case study on Blacklick Woods in the appendix). Clearly this is nearly a full or regulation course size course and ideally suited to the advanced novice and average golfer. It looks like a full-size golf course (usually thought of as having at least 6,000 yards total length and a par of 70 or more), except that

it is shorter. A full-size course with practice or learning facilities takes at least 150 acres of land, or 120 acres for the course alone. There are many variations for producing accessible, affordable golf courses and the choice of which type to build depends on the site, the feasibility study recommendations and the amount of money that can be invested to build and operate it. The issue of money is the most important influence on affordable and accessible golf facilities. By about the third meeting of the team, one schematic design begins to emerge as the best compromise of all factors. At this point, it is wise to ask all team members to collaborate on a cost estimate to see how affordable the project can be. If the costs are too high and there are no apparent and prudent ways to reduce them, then it's time to abandon the project, or scale back its content. Assuming the project is still a "go," then the next phase is design development.

PHASE III –
DESIGN DEVELOPMENT

This phase is where details, such as tees, greens, fairways, parking lots, roads, buildings, etc., are refined and added to the schematic design skeleton. These are drawn not only in the appropriate places, but also in the appropriate scale, so the end result is a pretty picture that shows the collective vision of the team. This plan can then be rendered, or colored, so it can be shown to other people in the community, or government officials, to generate their interest and comments. The team should also prepare a refined cost estimate for the entire project, as well as a time schedule, because everyone will ask, "What will it cost?" and "How soon will it be ready?"

At this point, the Lead Person must take responsibility for tracking down the money, permission, and support necessary for the facility to get built. The team can offer suggestions and advice, but it is not their job to secure the things required to go to the next step. Chapter Four of this booklet will deal with budgeting.

If no firm financial support can be found, then now is another good time to abandon the project, or scale it back to what is reaistic for the market.

PHASE IV –
PERMITS AND FINANCING

Once there is general acceptance of the project by the majority of people contacted, the next step is to write down the required approvals and commitments and put them into a checklist form. Gaining these approvals can be a lengthy process, and good record keeping is essential. The team can assist the Lead Person, but it still falls to the Lead Person to get the "i's" dotted and the "t's" crossed. When everything is in place and the cost estimate has been updated, then and only then should the team begin preparing construction documents.

PHASE V –
CONSTRUCTION DOCUMENTS

These are plans and specifications that describe in great detail exactly how to build the facility. The actual construction work may be carried out be community members or skilled contractors, but either way, there should be plans that guide the work so the construction is cost effective. The design professionals will produce drawings and specs for their portion of the project, to be reviewed by all other team members, and coordinated by the Lead Person or a designated representative. These documents can be used to solicit prices or donations from contractors who would actually build the facility.

PHASE VI – CONSTRUCTION

This period is when the actual golf facility is built according to the construction documents. Simple projects may take only days to prepare to use while more complex facilities, like an 18-hole golf course, might take up to a year or more. All financing must be in place before this phase begins because it is a time of rapid spending and no income. The best quality construction will come from the most experienced contractors, but a compromise in quality may be necessary to get the project built. Getting the facility built is more important than quality. Therefore, if the facility is to include donated time, labor or equipment, then every effort should be made to take maximum advantage of such gifts. This will require an extremely well-organized effort so nothing is wasted. An example of such a project can be found under Case Studies titled, Old English Golf Course, or Cotton Creek Golf Academy.

PHASE VII – TURFGRASS ESTABLISHMENT

For a simple Level One teaching area, this is a meaningless phase. For other levels that require planting of grasses, "grow-in" is important because it is a time of nurturing the young grass plants to maturity. Typically, this requires about 10-12 weeks of ideal growing weather when a great deal of watering, fertilizing, mowing, and pest control must be done. It is critical that the cost of this phase is included in the budget.

PHASE VIII –
OPENING AND OPERATIONS

The preparation activities for this phase began months earlier because it means securing permits and approvals, ordering supplies, training workers, testing equipment and establishing rules and operational procedures. The golf professional is a key resource person here.

SUMMARY

The planning process must be slow, methodical and detail oriented to produce a practical golf facility using very little means. The critical pathway is that the Lead Person has emerged, found a parcel of ground, has some assurances of availability, has conducted some research on the site, assembled a team of professionals, and has an understanding of the various steps or phases in planning and construction. Next is to key in on the exact type of golf facility that can be built and financed.

CHAPTER FOUR
BUDGETING FOR TIME AND MONEY

Everything has a price that can often be measured in terms of time and/or money, and to wisely spend those precious commodities requires a budget – a budget written after understanding most of the things that determine cost. A golf facility has many such costs, any number of which can exceed the resources available. Great wisdom is needed on where and how to make proper compromises that can bring everything into a reasonable budget.

TIME

The time required to establish a practical golf facility that is affordable, accessible and sustainable can be as little as a few days for a Level One teaching area, or up to several years for a Level Six golf course. The controlling factors usually are a combination of the following:

1. **Political**
2. **Social**
3. **Environmental**
4. **Physical**
5. **Financial**

Factors like political support or opposition, as well as social acceptance of the idea, will vary from community to community. If politicians and activist groups want something, it can get done quickly. If they do not want it, they can delay things for years. It is difficult to imagine any politician or activist group that would not recognize the benefit of having an affordable, accessible and sustainable golf facility, but occasionally there are some. No one can tell you how much time to budget for the required political and social support that will be needed, for those are unique to individual communities and the dogged persistence of the Lead Person.

Environmental factors usually deal with defined areas that are regulated by some agency working with equally well-defined rules and regulations, such as wetland or flood plain constraints. The, golf course architect, environmentalist, civil engineer, golf course superintendent and others on the professional planning team can advise on the proper process and alternatives to follow. Since one of the goals is a sustainable golf facility, this normally means one that uses less water, fertilizer, and pesticide as compared to more upscale projects. This is a great advantage in winning environmental approval. Additional ASGCA booklets and the Environmental Approach to Golf Course Development are listed in Appendix Two, "Useful Publications." Usually it is wise to budget 6-12 months of time and $20,000 for environmental studies and permits for lower level facilities, and much more, depending on the site, for a Level Six or Seven facility.

MONEY

Physical site factors that influence budgets of time and money have been previously addressed in the section on site selection, but are worth repeating here. One very important factor is climate because it determines the grass types, the planting dates, the extensiveness of irrigation, the construction season, the use period, and other required facilities. Another is the source of irrigation water, its quality, quantity, and cost to use it. Nearly as important as irrigation are the natural drainage characteristics of the site and the requirements to improve them, which can range from a few thousand dollars up to $20,000 or more per acre. Finally, a very significant physical factor is the quality of the soil and subsoil,

particularly with regard to hard rock layers. Again, members of the professional planning team can identify possible problems, solutions, and their attendant costs. Any of these physical factors, individually or in combination, can significantly derail the notion of an affordable golf course.

The last controlling factor of financial reality is based on the four previous factors. On a perfectly-sized piece of sandy, well-drained pasture with no environmental problems, in a cool climate of frequent light rain but plenty of sunshine, a Level Five or Six golf facility can be built for only a few hundred thousand dollars once permitted. It might mean leveling up a few tee areas and some brush or tree removal, but then all that has to be done is to begin golf course maintenance practices. There are very few sites in the world that approach this ideal except the links land of Europe, so a good bit more construction must be done, like earthmoving, drainage, irrigation and planting of grasses. Any one of these items alone can range over a million dollars each on a very difficult site. Not every site is adaptable to the notion of an affordable, accessible golf course; at least not in the conventional North American sense of golf. Therefore, alternatives should be looked at that will provide an enjoyable experience.

To assist the Lead Person in understanding where and how dollars are spent in golf course construction, a list of tasks to build a course is shown in Table One, with a range of values to build a Level Five, Six and Seven course in the Midwest on a very good site. Notice that all golf courses require a similar list of tasks, but each level does have a different quantity or scope of work required. Other parts of the country may require radically different estimates, so a good resource is the Golf Course Builders Association of America website (www.gcbaa.org).

The key to keeping construction budgets low is to find the most adaptable site possible, or find inexpensive

alternatives to high dollar ticket items. For example, consider greens, which are the central focus of the golf course, and are thought of as closely-mowed carpets of unblemished turf that allow a golf ball to roll as if it were on linoleum. To achieve such perfection usually requires extensive soil modification or special rootzones, often multiple irrigation systems, special turfgrasses, managed by a college-trained and often certified golf course superintendent, supervising a force of laborers equipped with an arsenal of tools, equipment and materials. It sounds costly, and it is! However, such sophistication may not be necessary or required on the practical golf course. Although lacking in the speed and trueness of tournament-type golf green, far simpler methods of preparing surfaces on which to play golf can be built. Discussion of various types of greens and other factors can be found in Appendix Four, "Choosing the Right Kind of Green."

But greens are just one small part of a golf course construction budget. There are many other items for which a cost can be estimated. What follows is a comparison of individual line item costs for three distinctly different levels of golf courses. The Midwest site is assumed to be well adapted to golf with good drainage and irrigation water available. Other sites and other regions will obviously have their own unique requirements and costs, so the purpose of this table is as an outline to permit developing your own construction estimate made up of all major line items. By comparing project elements for various levels of the golf courses, one can begin to understand where and how to maximize construction dollars. Again, it may be that if money is the only detriment to construction, then perhaps a phasing plan of a few holes at a time can be developed using the same methodology.

Table One

18-Hole Championship Golf Course In The Midwest On A Good Site

PROJECT ELEMENT	LEVEL 5	LEVEL 6	LEVEL 7
1. Mobilization	10,000	30,000	75,000
2. Site Clearing			
(0-90 Acres @ $800-3000/A)	0	32,000	270,000
3. Selective Thinning			
(01-80 A @ $1200-3000/A)	0	36,000	240,000
4. Grubbing and Disposal	3,000	5,000	10,000
5. Major Drainage	10,000	75,000	500,000
6. Minor Drainage	20,000	100,000	150,000
7. Topsoil Stripping			
a. 20,000 cubic yards	40,000		
b. 75,000 cubic yards		150,000	
c. 150,000 cubic yards			300,000
8. Earthmoving (includes lake excavation)			
a. 50,000 cubic yards	75,000		
b. 250,000 cubic yards		375,000	
c. 500,000 cubic yards			750,000
9. Topsoil Replacement			
a. 20,000 cubic yards	40,000		
b. 75,000 cubic yards		150,000	
c. 150,000 cubic yards			300,000
10. Rock Blasting (if necessary)	0	15,000	150,000
11. Greens Construction (120,000 square feet)			
a. topsoil	36,000		
b. Improved Soil Spec		190,000	
c. USGA Spec			600,000
12. Tee Construction (120,000 square feet)			
a. Top Soil	30,000		
b. Amended Soil		60,000	
c. High Sand			90,000
13. Driving Range/Learning Center			
a. Excavation/Grading	0	15,000	25,000
b. Tees	3,500	5,000	15,000
c. Lights/Structure	40,000		
14. Irrigation System			
a. Heads (400-600)	90,000	265,000	600,000
b. Pump Station/Pump House	40,000	80,000	180,000

COMPARISON OF THREE TYPICAL CAPITAL BUDGETS

PROJECT ELEMENT	LEVEL 5	LEVEL 6	LEVEL 7
15. Seedbed Preparation	50,000	95,000	125,000
16. Planting	50,000	110,000	110,000
17. Sodding			
(0 - 25,000 - 100,000 sq yds)	0	50,000	200,000
18. Straw Mulch			
(150 acres)	0	80,000	100,000
19. Bunkers			
a. Edging	1,000	3,000	8,500
b. Contouring	2,000	5,000	10,000
c. Sand Purchase	10,000	30,000	45,000
d. Sand Placement	4,000	14,000	20,000
20. Bulkheading/Walls	0	50,000	100,000
21. Cart Paths			
a. no paths	0		
b. 90,000 sq ft Tees & Greens		112,500	
c. 180,000 sq ft wall-to-wall			400,000
22. Bridges (as needed $100-300/lf)	0	30,000	100,000
Construction Sub-Totals	**$514,500**	**$2,202,500**	**5,473,500**
23. Parking (1.5 acres)	30,000	90,000	90,000
24. Clubhouse (high variable)			
a. 1500 sq ft @$50/sq ft	75,000		
b. 4,000 sq ft @ $75/sq ft		300,000	
c. 10,000 sq ft @ $150/sq ft			1,500,000
25. Maintenance Center			
(1,500 - 5,000 - 8000 sq ft)	40,000	125,000	200,000
26. Maintenance Equipment	100,000	375,000	825,000
27. Landscaping	0	10,000	50,000
28. Establishment/Maturation	50,000	80,000	150,000
29. Erosion Control	0	25,000	150,000
30. Fees			
a. Feasibility	0	0	25,000
b. Golf Course Architecture	20,000	250,000	1,250,000
c. Project Management	0	0	210,000
d. Civil Engineering	20,000	75,000	120,000
e. Other (See Note #2)	0	80,000	1,120,000
TOTAL CAPITAL BUDGET	**$849,500**	**$3,612,500**	**$11,163,500**

Budget Notes:

1. Some golf course projects could be built for perhaps 20% less than the low estimate, if the site is near perfect. On the other hand, some "high roller" projects in the United States have exceeded the high estimate given here by 300-400%. The figures are only planning guidelines and should be adjusted for each particular site.

2. Some sites may require extensive and unique professional services, particularly when dealing in fragile environmental areas, with complicated laws or regulations, or remedial engineering such as for earthquake or landslide protection.

3. No land costs are included, and that cost in some areas of the country will be significantly higher.

4. The low figures also assume lots of low-cost labor, equipment and materials.

Conclusion

Golf needs affordable, accessible golf courses to attract large segments of non-golfers and the key to achieving those goals is good. Carefully selecting a site, setting clear development objectives and judiciously allocating budgets will assure success.

BUDGETING FOR GOLF COURSE MAINTENANCE

Budgeting for maintenance should be going on concurrently with facility planning because design and maintenance are directly related. The more sophisticated the facility, the higher maintenance costs will be. So if the goal is affordability and accessibility, the estimated maintenance budget should be put together with the help of a golf course superintendent or golf course supply house and understood by the designer. Once the budget is in balance with the anticipated play and golf course income, then the final turfgrass types may be selected. Planting everything on the golf course except the greens with the same grass often saves construction money and simplifies maintenance. For example, improved varieties of Kentucky Bluegrass are well adapted in the northeast quarter of North America, and can be used on tees, fairways and roughs, by simply cutting each to different heights. These provide excellent playing conditions with very simple maintenance, using only one or two mowers that can be easily adjusted for height. Similarly, Bermuda grasses in the South and Southwest can provide the same advantages. The choice for putting greens can be a little more complicated, but bentgrass in the North and Bermuda grass cultivars in the South work well. Recently a variety of grass known as Paspalum has been introduced in tropical to subtropical regions. It can be irrigated with water too salty, nearly brackish, for ordinary grasses, and thus can be an alternative turf. Any golf course superintendent experienced in the region can help make the specific selection.

Assuming the golf course is planted to turf, some on-going maintenance will be necessary to provide suitable playing conditions for enjoyable golf. This includes mowing greens at least five days per week, tees twice per week, and fairways and roughs as needed, but generally at least once per week during the prime growing season. Applications of water, fertilizer, and pesticides may be necessary and require the

skillful labor of an experienced person, who is perhaps certified or licensed to perform those duties. Provisions must be made for trained labor, various pieces of equipment and their upkeep, as well as safe storage of turf care products. At country clubs, this could amount to more than a million dollar annual budget and almost that amount in maintenance equipment, buildings, and supplies. With the goal of practical golf, the maintenance budget should be matched to income and operational costs and should include provisions for labor, equipment, buildings, and supplies. The case studies featured in Chapter Five will give some estimates of operational and maintenance costs as a means of comparison. Success comes from good initial planning and budgeting, as well as enlisting the help of experienced people who share your vision of affordable, accessible golf and are capable of delivering a facility that fits the budgets.

A rule of thumb for determining user cost based upon total cost states that for each million dollars invested to build the entire facility (exclusive of land cost) then ten dollars per user must be charged. This assumes a user rate of 32,000 rounds per year. This means that if only $500,000 is invested, then only $5 in user fees is required to recover construction cost and sustain operations. However, this user fee must also be adjusted for user volume. If only 16,000 user fees are collected, then they must be twice as high than if 32,000 fees are collected. The ideal for affordable golf is to build the facility as economically as possible and where the most people can use it each year.

There are two ways to decide what total budget your project should have. One is to pick what you and the planning team decides is a reasonable user rate, say $10. Then apply the rule of thumb, which would say your maximum budget should be $1,000,000. Then budget and build a $1,000,000 facility. If a reasonable green fee for your area is $20, then you can spend $2,000,000.

The other way to budget is to decide what should be built on your site and have the team do everything they can to keep

costs as low as possible. Then, based on the actual cost to develop the facility, determine what the user fee must be by applying the rule of thumb. Either method works, but if you and the planning team are certain that there is some real threshold user fee that must not be exceeded, then the first method should be followed. Never build more than your customers can afford.

Sometimes you must think big and act small to gain success. This means that the full potential of any site should be considered and planned, but it isn't necessary to build the entire complex at once. If the planning team is confident of the project's ultimate success, then it is wise to phase in the project as funds allow. Suppose the site will allow for a great Level Three learning complex, a Level Five short course and a Level Six golf course at a total cost of $10,000,000, but the maximum amount that can be raised is only $750,000. Build as much as possible for the budget. Any golf facility is better than none. It may take 10 or 15 years to build the total project, in three or four phases, but that is a very successful plan.

CHAPTER FIVE
SUCCESSFUL CASE STUDIES

Case studies show what can be done, giving points of reference or contacts to learn more, and to provide encouragement and inspiration to interested parties that big dreams can come true. The way to use these case studies is to recognize that they have been grouped according to total cost of construction, starting at zero expense and going up in $250,000 increments to as high as several million dollars. Some contain land cost, while others do not, and some were built before newer and more stringent environmental regulations. So you must try to find comparable projects, while adjusting for local conditions. In some instances, you may learn from the construction effort of one case study and the maintenance experience and budgeting of another. It is recommended that the reader see the case studies as living reference sources that can answer specific questions about their projects successes and failures.

Other examples of case studies can be found in a recent publication,

Considerations for Non-Profit, Alternative Golf Facility Development listed in Appendix Two - Useful Publications. These case studies are for projects that range in cost from $95,000 for a three-acre, three-hole course, to $4,000,000 for a regulation 18-hole course.

PROJECT NAME:
Northwest Angle Country Club
LOCATION:
Warroad, Minnesota
DESCRIPTION:
Nine hole, homemade golf course built from 1984 - 1996, (Level Five)
CONSTRUCTION COST:
$20,000
MAINTENANCE BUDGET:
$2,500

In 1984, George and Judy Risser, decided to build a golf course with some friends on 50 acres of land they owned in northern Minnesota. It took five years of tree cutting and brush clearing before they had their first seven holes, which in 1996 were made into a nine-hole Level Five course. The greens are non-turf sand construction and the rest of the golf course is planted in a mixture of Kentucky bluegrass, fine fescues and ryegrasses. None of the turf is irrigated. The non-turf greens make maintenance easy and generate a lot of talk. The hazards include eight sand bunkers, some wetlands and trees. The clubhouse is a 15' x 20' building, built by George. It has sales and rental areas and a restroom. An outside patio provides a place to rest and enjoy the beauty of the land and golf course. The golf course is run by George. Judy is the only other employee, handling the bookkeeping and scheduling and organizing special events for regional golfers and their guests.

Daily green fees in the year 2000 were $7, and an annual membership is $60 per person for unlimited golf. Therefore, the average member pays less than $2 per round. A golf cart rental business has sprung up across

the street and the charge is $20 per day for those who insist on riding in a cart. The Rissers' never intended the golf course to make a profit, but rather just to provide a place to play golf. The golf course does run as a "break even" business. What little income they make they put back into their maintenance budget.

Wildlife is even more abundant than golfers on Minnesota's most northern golf course, and that makes golf there even more special. Bear, deer, ospreys, eagles, ducks, geese and every other creature found in the northwest woods find the golf course an attractive place.

For more information about Northwest Angle Country Club:
George or Judy Risser
PO Box 1
Angle Inlet, MN 56711
(218)-223-8001

PROJECT NAME:
Cottonwood Creek Junior Golf Course
LOCATION:
Waco, Texas
DESCRIPTION:
Nine hole, Par 3, (Level Five)
CONSTRUCTION COST:
$90,000
MAINTENANCE BUDGET:
$35,000

There are lots of wonderful things in Waco, and one of the best examples is Cottonwood Creek Junior Golf Course. This is a textbook example of how one person can make a difference and muster the support needed to get a golf facility built. Jim Moore, a former golf course superintendent and now a USGA agronomist, decided that although Waco had a solid junior golf program, the community needed more (pun intended). So Jim helped form a committee at the existing full-size, 18-hole Cottonwood Creek Golf Course to see if they could add a junior course to the facility. The committee got the City of Waco to commit 10 aces of vacant land near the clubhouse, convinced an ASGCA golf course architect to do a plan, and then set about getting whatever it took to get the plan built.

The total amount of money raised from grants and gifts was $90,000, and then they set their sights on getting folks to donate equipment, materials or give deep discounts on purchases. For instance, the local John Deere Company loaned the project a small bulldozer, irrigation companies donated outdated but serviceable equipment, a local NationsRent gave a 50% discount, and the City of Waco loaned a rubber tired loader to the project. Jim, his three sons Travis, Andrew and Patrick, ages 17, 15 and 10, respectively, plus three other laborers, did

most of the physical work. They completed the project in five months, including the sodding, and the project opened Oct. 19, 2001. The course is designed so only one additional laborer is added to the existing maintenance staff at Cottonwood Creek, thus keeping the added maintenance cost down to about $35,000 per year.

Waco already had the fourth largest junior golf tournament in the nation, the Starburst Junior Golf Tournament, which attracts 750 junior golfers to the four Waco courses. The Cottonwood Creek Junior Course will allow the tournament to grow even more, for now even four-year-olds and up can compete in a mini-event. The Cottonwood Creek junior program has had 150 - 200 children enrolled each year, at a cost of $15 per child, which provides eight group lessons, clubs, golf balls, lunch and a T-shirt. The program is run by the golf course staff with volunteer instructors coming from the senior league, students, high school coaches and teachers, and interested golfers and parents. The cost to play the full-size Cottonwood regular course is $5 for juniors, and play of members with children has doubled in recent years.

For more information contact:
Jim Moore, USGA Green Section
Construction Education Coordinator
720 Wooded Crest
Waco, Texas 76712
254-776-0765
Or visit their website @ www.usga.org

PROJECT NAME: Summit Municipal Golf Course
LOCATION:
Summit, New Jersey
DESCRIPTION:
Nine hole, Par 3, (Level Five)
CONSTRUCTION COST:
$200,000 (2001 dollars)
MAINTENANCE BUDGET:

The course was opened in 1967 as the first municipally-built facility in New Jersey and has shown a profit because of its simplicity. The holes on this Level Five facility range in length from 82 yards to 159 yards. It is situated on a parcel only 13 acres in size that is bordered on two sides by streets and two sides by houses. There is one large pond in the middle of the property, which serves as the irrigation source in the summer, and a skating rink in the winter.

The golf greens average 3,527 square feet in size, there are a total of eight bunkers on the course, and tees are synthetic turf on nine-foot by nine-foot wooden platforms. The clubhouse is composed of three components: 1) an open-air area for golfers to assemble before and after the round under a shelter house-type roof with vending machines; 2) a small office for the starter; and 3) a garage area for all of the maintenance equipment. The course plays around 25,000 rounds per year with a modest annual fee of about $20 for adults and $15 for juniors. Daily green fees are about $3 and $2.50, respectively.

The key to the success of this facility is its simplicity and the pride the community and employees take in it. Summit and Harvard Gulch municipals are the subject of USGA short course profiles listed in Appendix Two - Useful Publications, which give more details.

For more information contact:
Summit Municipal Golf Course
189 River Road
Summit, NJ 07901
(908) 277-2932

PROJECT NAME: Harvard Gulch Municipal Golf Course
LOCATION:
Denver, Colorado
DESCRIPTION:
9-hole, Par 3, (Level 6)
CONSTRUCTION COST:
$250,000
MAINTENANCE BUDGET:
$200,000

Harvard Gulch is a Level Six golf course on a seven-acre tract within a municipal park, it was built in 1982. The holes range in length from 64 yards to 134 yards. The course features a small pond and creek, and has 15 bunkers. The greens range in size from 1,500 to 3,000 sq. ft. and are made of native soil. Most tees are elevated and vary in size from 675 to 1,500 sq. ft., but clearly better playing conditions are found on the large tees. The smaller tees are resodded every season.

Harvard Gulch plays as many as 40,000 rounds per year with green fees around $6 for Denver county residents and $7.50 for non-residents. The golf course just about breaks even every year, but even when it must be subsidized it amounts to a very small portion of the recreation budget.

It is estimated that 15-20% of the players are juniors and a parent must accompany children six to 12. The golfers cover a wide spectrum of racial and age groups. The course has a very relaxed atmosphere that encourages beginners and makes them feel welcome.

A new clubhouse was built to house the starter's counter, a lounge area with a TV, an office for the course manager, a wood deck that overlooks the course and equipment storage. Again the simplicity of the facility helps keep costs in balance with income. This project is also the subject of a short course profile done by the USGA and is listed in Appendix Two.

For more information contact: Harvard Gulch Golf Manger
660 East Iliff
Denver, CO 80210
(303) 698-4078

PROJECT NAME: Tom O'Shanter Golf and Learning Center
LOCATION:
West Palm Beach, Florida
DESCRIPTION:
4-hole (Level 4) and driving range (Level 3)
CONSTRUCTION COST:
$300,000
MAINTENANCE BUDGET:
$150,000

The Children's Golf Foundation is an organization that teaches golf to physically challenged and disabled kids. The Foundation now provides golf lessons for more than 200 children a week, but the estimate is that there may be 20,000 special education students in Palm Beach County that will be served by the new Tom O'Shanter Golf and Learning Center. The new center is a culmination of 12 years of work to construct the permanent facility on a 15-acre former landfill site.

The total facility includes a 25,000 sq. ft. teeing ground for the range, an 8,000 sq.ft. putting green, 3,000 sq. ft. clubhouse and four holes ranging in length from 15 yards long to a 295-yard par 4. The result is a Level Three range and Level Four golf holes.

Palm Beach County is leasing the land to the Foundation for $1 per year, but funding to build the facility came from fundraisers, the USGA, the First Tee, the George S. May Foundation and Dorothy Campbell. Additional support came from throughout the golf industry, including golf course contractors, civil engineers, nurseries, and turf and irrigation companies. A local golf course superintendent agreed to oversee grow-in and offers advice and assistance on day-to-day maintenance.

For more information contact:The Children's Golf Foundation
11911 US Highway One
West Palm Beach, Florida 33408
(561)-776-1387
cgf@childrensgolf.org

PROJECT NAME: Bridging The Gap Golf Learning Center
LOCATION:
Milwaukee, Wisconsin
DESCRIPTION:
Intercity vacant one acre lot with 12 hitting stations, chipping and putting greens, clubhouse (Level 2)
CONSTRUCTION COST:
$450,000
MAINTENANCE BUDGET:
Estimated $10,000

Gary D'amoto's article in the October, 2001, issue of USGA Golf Journal notes this facility is located in "…a near north-side neighborhood with 93 percent minority, 73 percent single-parent families and more than 70 percent children. The average annual income is about $11,000." Hardly where you would expect to find a golf facility that has served more than 800 neighborhood and Special Olympics children in the first few months of operation. Built on a one-acre tract of land leased from the city of Milwaukee for $1 per year, the project "Lead Person" was Steven Quale, who dreamed about bringing golf to that community. He approached Robert Byrd, founder and president of Bridging the Gap School, "a choice school for children in kindergarten through fifth grade," and they became the "lead team."

They followed a procedure very similar to the one outlined in this booklet. They identified the land and what it would take to use it for golf, drew up plans, and then raised the $450,000 in gifts and grants necessary to build a small but state-of-the-art, facility.

The entire site is fenced and hitting areas are totally netted for safety and player control. The facilities programs are overseen by Evan Hewes, a PGA pro and director of golf. All

Photo Credit: Matthew Gilson

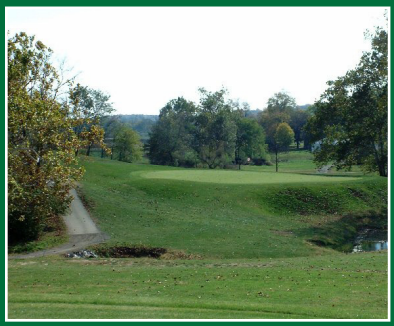
Bridging The Gap Golf Learning Center-Milwaukee

programs are free to children. Adults are required to be accompanied by a child, and groups are invited for three-day programs of basic golf instruction, golf history and etiquette. Once children develop a minimum skill level, they can find free transportation to area par 3 courses, and events, such as junior clinics at the Greater Milwaukee Open. Children can buy clubs and play local courses for $1 each and receive free golf balls. Caddie training is also available at Bridging the Gap Golf Learning Center and about 20 young people found jobs at area country clubs.

A reference to a more in-depth story can be found listed in Appendix Two.

For more information contact
Evan Hewes, PGA Pro
Bridging the Gap Golf
Learning Center
1600 W. state Street
Milwaukee, WI 53233

PROJECT NAME: Splitrock Golf Course
LOCATION:
Orient, Ohio
DESCRIPTION:
Eighteen hole, Par 72, 6,800 yards (Level Six) with practice range (Level Two)
CONSTRUCTION COST:
$800,000
MAINTENANCE BUDGET:
$300,000



Poor farm land often makes great golf ground, so when Glenn Gulick and wife Lucinda got discouraged farming, their thoughts turned to finding alternative uses for the land. It was too rolling for row crops, too dry to be good pastureland, and too remote to sell to a housing developer. They contacted ASGCA member firm Hurdzan/Fry, who saw their land as well adapted for building a practical Level Six golf course, which meant keeping all expenditures low. After going through an extensive research phase, followed by equally exhaustive schematic and design development phases, a master plan emerged that showed very little clearing, earthmoving or drainage was needed. Glenn and then partner Tim Triance bought a very old D-8 dozer, used trencher, and a few other miscellaneous pieces of equipment to supplement their modest stock of farm implements. They not only learned to run the equipment, but also enlisted family and friends to help build the course by installing irrigation, doing clearing or cleanup work, as well as hard labor to prepare seedbeds. A local golf course contractor agreed to build the greens to the California method with local sand, as well as do some modest shaping.

The golf course was

Split Rock Golf Course–Orient, Ohio

finished in 1997, has three or four sets of tees per hole, 6,000 sq.ft. greens, 35 acres of fairways, lots of bunkers and natural hazards of slopes, creeks and trees. The 18-hole green fees are $11 on weekdays and $13 on weekends, with carts at $15 per round. The golf course is located about 20 miles south of downtown Columbus, and is not easy to find the first time venturing out on country roads. But the golf course has a growing group of loyalists and has proven to be a lot more profitable than farming.

For more information contact:
Glenn Gulick
Split Rock Golf Course
10210 Scioto-Darby Road
Orient, OH 43146
614-877-9755

PROJECT NAME: Cozad Country Club
LOCATION:
South Central Nebraska
DESCRIPTION:
9-hole addition, (Level 6)
CONSTRUCTION COST:
$922,000
MAINTENANCE BUDGET:
$90,000

Cozad Country Club's first 9-holes were built at a Level Five course in the early 1940s, and like many south-central Nebraska golf courses, started out with oiled sand greens. The greens were converted to grass in the late 1950s and play steadily increased until the club felt it was ready for another nine holes. They contacted a Nebraska-based designer, and he prepared plans for a new nine holes that included automatic irrigation, improved varieties of turfgrasses, generous-sized tees, greens and fairways, and even concrete cart paths. A Minnesota golf course construction firm's final bid was $922,000 for what has proven to be a very fine and functional golf course that is now a Level Six.

Some compromises naturally had to be made to keep the construction cost below $1,000,000. Those included a simplified green construction method, scaled back irrigation installation, modest earthmoving and drainage. As monies become available, the club will add and expand the paths, irrigation and drainage systems.

The golf course is maintained by a golf course superintendent, five full-time and three part- time employees. The new nine was designed to allow for this modest staffing level by being able to accept larger riding mowers instead of walk behinds. Leased of equipment, including the natural gas engine that drives the irrigation pump, also reduced front-end costs.

For more information contact
Todd Bubak - Golf Course Superintendent
Cozad Country Club
Cozad, NE
(308) 784-2585

PROJECT NAME: Old English Golf Course
LOCATION:
English, Indiana
DESCRIPTION:
18-hole, full size (Level 6) with practice facilities (Level 3) and three practice holes (Level 4)
CONSTRUCTION COST:
$1.2 million
MAINTENANCE BUDGET:
$400,000 (Est.)

In 1987, the Little Blue River flooded the town of English in south-central Indiana for the last time. All 614 residents of the town were relocated, leaving behind abandoned buildings filled with generations of memories and local history. But the love of the place runs deep in this rural community 45 minutes north of Louisville, and old time residents could not simply allow the land to become overgrown flood plain. About the only permissible use would be agriculture or recreation, so Mark Megenity and Cary Hammond, a school teacher and utility company employee, respectively, decided the former town of English should become Crawford County's first and only golf course. They formed a public-private partnership to try to find a way to build Old English Golf Course, and began to assemble 300 acres of land through lease and purchase, even thought they had no money for construction. So Mark and Cary became the Lead Persons and they followed the method outlined in this pamphlet to a tee, with a result that the first nine holes were be completed in the fall of 2001 and the second nine in the spring of 2002.

The total golf course project will be for a Level Six 18-hole, par 72 golf course with full service Level Three practice facilities, short game center, and a Level Four three-hole

First Tee course. The tees and greens will average 6,000 sq. ft. in size, greens will be California construction with L-93 bentgrass, a fully automatic irrigation system, and improved bluegrass fairways. The total construction budget is approximately $1.2 million dollars. This includes renovation of an old house to serve as a clubhouse, and construction of the parking lot. Mark and Cary are seemingly doing the impossible when in reality they are just orchestrating a community effort.

A local construction company agreed to move the earth at a low cost when between jobs. However, the company got so caught up in the excitement of building Old English, they dedicated one crew fulltime to it. A couple of local golf course shapers signed on at a reduced rate, and rental equipment was placed on site for operators who would donate their time to help build the course. Suppliers of materials and equipment supported the effort by providing excess goods at a discount price, and ASGCA member David Whelchel did all of the design work for travel expenses. It is like an old time barn raising translated to a golf course.

The golf course has been the subject of many articles even before construction began, which helped generate the support it now enjoys. One of those articles, titled The Big *Floodlight*, is listed in Appendix Two.

For more information contact
Mark Megenity
Sterling Golf Development Corp.
139 North Boss Lane
PO Box 456
English, IN 47118
812-338-3748

PROJECT NAME:
Cantigny Youth Links
LOCATION:
Wheaton, Illinois
DESCRIPTION:
9-hole, Par 3, (Level 6)
CONSTRUCTION COST:
MAINTENANCE BUDGET:

The Cantigny Foundation, which oversees golf in Wheaton, IL, wanted to produce a special golf facility to encourage young golfers. They had 20 acres of prime, but unused land, a financial war chest of $_____, and a will to produce a golf course with all the bells and whistles built into it.

The project was designed by the team of Roger Packard and Andy North and construction began in late 1997. The nine, par-3 holes range in length from 40 to 180 yards and were completed in 1999. The yearly usage has been over 12,000 rounds, fees are $7 for juniors under 15, and $12 for adults. The Youth Links tee times are scheduled on 15-minute intervals from 8 a.m. to dusk, with an average playing time of an hour and one-half.

For youths to play the course without an adult in the group, the young golfer must be certified by the golf staff. Certification includes a teaching program and testing of golf safety, etiquette and fundamentals of golf. By early 2001, 1,400 youth golfers have been certified. In addition the golf course builder, Brent Wadsworth, established the Wadsworth Foundation to help underprivileged young people get an opportunity to experience golf. The Wadsworth Foundation works with the Warrensville Youth and Family Services, as well as Wheaton Youth Outreach Ministries, to find interested participants.

For additional information contact:
Mike Nass - General Manager
(630) 260-8189
mnass@tribune.com

PROJECT NAME:
Buchanan Fields
LOCATION:
Concord, California
DESCRIPTION:
9-hole executive course with driving range
CONSTRUCTION COST:
$2,000,000
MAINTENANCE BUDGET:
$350,000

This 9-hole executive course with a 50-stall driving range has become a popular spot for California Bay Area golfers who like to work on their game. At first glance, one might wonder how this modest facility came to be so popular. After all, the parcel of land definitely had its limitations being situated between Hwy 50 and the Buchanan Fields Airport. Many golf course developers might have passed on this parcel given its constraints, but that is what makes this success story so impressive.

Because of the adjacent airport, FAA regulations imposed strict building restrictions (including height and location). Furthermore, only minimal grading could be done on the course since mounds and ridges had to fit below a 50':1' height restriction (meaning that a mound 50 feet from the edge of the airport property could be no more than 1 foot tall). Not the best-case scenario for designing a golf course. But despite these obstacles, Buchanan Fields has become a charming 9-hole track with undulating greens and nicely shaped bunkers, requiring a variety of shot-making options.

The course's source of water is also an interesting component of this story. The course was watered for many years from two on-site wells, but over time the water quality of those wells deteriorated and became high in salt content. So three years ago the course operator approached the Contra Costa Sanitary District (CCSD) and worked

out a solution to the problem. At the time the CCSD was in need of disposing large quantities of treated sewer water. After a chemical analysis it was determined that the treated water was suitable for growing turf. As a result, the operator entered into a long-term agreement with the County to use this treated sewer water for the golf course. Consequently, the turf quality improved dramatically with this new source of water.

Indeed, the golf course facility has come a long way since its opening which dates back to 1961. The individual responsible for this turnaround is the current operator Tim Sullivan. Sullivan came into the picture in 1977 as a teaching pro at Buchanan Fields. After spending a few years on the lesson tee honing golfers' skills, Sullivan saw the opportunity to turn Buchanan Fields into a high quality facility. So in 1984 he entered into a long-term lease with Contra Costa County and became the Director of Golf.

Sullivan had a vision for the project but he knew patience would be required to make it successful. He waited a few years to implement that vision and in 1991 he started to make significant capital improvement. "I waited for the construction market to become a little soft so I could maximize the improvements that I thought were needed." Sullivan had a tight budget to work with and when construction on the new clubhouse, restaurant and parking lot was completed he was within 1% of the projected construction budget. "It took discipline to say no to some improvements knowing that we had only a certain amount to work with," says Sullivan. But, it was this fiscal discipline and good timing in the market place that allowed Buchanan Fields to be what it is today.

Improvements included a new pro-shop, a 2,000 sq. ft. restaurant, a new lighted driving range with 50 stalls, two lesson tees, and target greens. The pro-shop is fully stocked and has one

of the largest selections of merchandise of any Bay area pro-shop.

Sullivan has been proactive in extending his teaching programs to many city recreation departments in the surrounding community. It is not uncommon to see both lesson tees busy at the same time (each lesson tee can accommodate up to 20 pupils). And in the summer they have junior golf programs. Sullivan and his staff of teaching professionals pride themselves on offering high quality instruction at a reasonable rate.

During the weekdays Buchanan Fields has become a popular spot for juniors and senior citizens to sharpen their skills. Because it is a fair, short course one can make it around in 90 minutes. That coupled with reasonable green fees ($10 weekday, $11.50 weekend), and a first rate teaching staff has made Buchanan Fields a Bay Area success story.

For more information contact:
Tim Sullivan
Buchanan Fields Golf Course
1091 Concord Ave.
Concord, CA 94520
(925) 682-1846

PROJECT NAME:
Pleasanton Fairways Golf Course
LOCATION:
Pleasanton, California
DESCRIPTION:
9-hole executive with reduced size practice range (plans are underway to convert range into nine hole par-3 course) course with driving range
CONSTRUCTION COST:
$225,000.00 (Est.)
MAINTENANCE BUDGET:
$300,000.00 (Est.)

The Alameda County fairgrounds are located in Pleasanton, just 30 miles east of San Francisco. Within the fairgrounds sits the popular County racetrack, the most active horse-training tract west of the Mississippi River. Spectators and jockeys come from all over the country to experience this well known facility.

In 1974, Alameda County approached Randy Curtola, a local resident with experience in golf course construction and management, to build a golf course on the 35 acres inside the horse racetrack, which at the time remained unused throughout the year. There were two challenges presented to Curtola. The first was the fact that Alameda County needed the course to be closed 20 days a year to make way for the annual horse race activities. The second challenge was to maintain the racetrack as a popular training venue, which meant that the course could not open until

10:00 a.m. to accommodate the morning training schedule. Both Alameda County and Curtola eventually worked out a management agreement with a long-term lease for use of the land inside the track. Over the next six months, an

18-member crew constructed the nine-hole, par-31 golf course and practice range.

Fortunately the racetrack consisted of well-drained soil suitable for turf development. Two small lakes were dug on site to create enough dirt for the golf course features and green complexes. Greens mix was brought in to build the greens to California greens specifications, each averaging 4,500 sq. ft. in size. The golf course was planted with ryegrass and the greens were seeded with Penncross bentgrass. Irrigation water comes from well water found on site.

In terms of design features, only twelve bunkers were built to keep maintenance to a minimum. The entire golf course is mowed to fairway height of a half inch, reminiscent of the original courses in Scotland. The mowing patterns have been well-received and have proven to not only reduce maintenance, but have also improved playability, and increased the speed in which rounds are being played. The course measures 1,780 yards form the back tees and 1,720 yards from the forward tees.

Since the course opening, a new practice range has been developed on other fairground property, eliminating the need for the range within the racetrack. Plans are underway to develop the old range into a short course of par 3s, keeping with the original course's character.

For more information contact:
Randy Curtola
P.O. Box 123
Pleasanton, CA 94566
(925) 462-4653

PROJECT NAME:
John's Golf Course
LOCATION:
Eureka, Montana
DESCRIPTION:
10-hole, Par 3, (Level 4)
CONSTRUCTION COST:
$ 0
MAINTENANCE BUDGET:
$ 0

This is one of the most touching stories in golf and it demonstrates what one person can do to bring golf to a rural Montana community. The golf course is on 10 acres, designed and built by Steve Espinoza for his son John, who has Down syndrome. The project started when John expressed an interest in learning to play golf, and Steve built a very simple green and later added nine more. The longest hole is 320 yards and the shortest is 143 yards on this Level Four golf course.

The entire golf course staff is two - Steve and son John. Most of the golf course is mowed down native grasses, but they continue to establish turf as they can afford to buy more seed. There are no set fairways and a golfer can play holes in any order. John mows the golf course three times per week. As people make donations of seed, fertilizer or equipment, they add it to their little golf course. Other folks in the golf business continue to offer their help, advice and encouragement.

The most unique thing about John's Golf Course is that there are no green fees. Because the course doesn't generate income, it has no operating budget except for Steve and John's time and energy. Steve's philosophy is simple, "we do it with no money." The golf course provides a golf experience for everyone, including children, elderly and disabled, for all are welcome and play free.

An in-depth reference story on "John's Golf Course" can be found in Appendix Two.

For more information contact:
Steve EspinozaEureka, Montana
406-889-3685

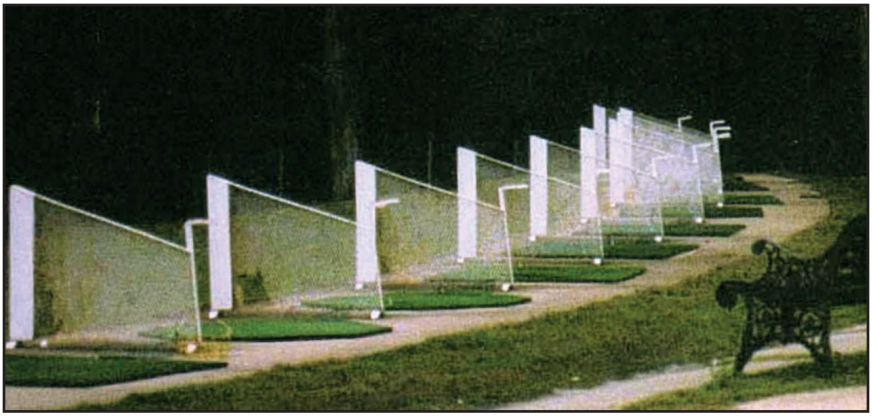
PROJECT NAME:
Spring Park Golf Range
LOCATION:
Traveler's Rest, South Carolina
DESCRIPTION:
Driving Range (Level 2)
CONSTRUCTION COST:
Under $125,000
MAINTENANCE BUDGET:
$75,000

A place to learn the game and perhaps hit your first golf shot describes this local Main Street practice area in the small town of Travelers Rest, S.C. The simple facility offers hitting a bucket of range balls (priced at $3, $4, $5 and $10) from mats placed on concrete. The pro shop is a single-wide, basic trailer with a restroom, counter for range balls and a seat for the retired owner.

You can help yourself to range buckets and place your money in the honor system cash box and even get your own change, if needed. Many days, the facility is open with no employees on site, so the honor system really does work the same way the rules of golf intended. Golf is a game of honor, and respect for the rules and traditions are fundamental to its success.

The main tee area has a few light poles, which allow for evening practice in the summer. The target area has many large, metal-painted yardage signs with distances posted every 50 yards. Several flagsticks are placed on the non-irrigated, closely mowed field on common Bermudagrass and weeds. The perimeter chain-link fence surrounds the tree-lined edges. A small tractor is used to pick up golf balls, which are later washed outside the pro shop and placed back into metal buckets.

During the summer and just about every Saturday, you'll find the range busy with young families enjoying



Spring Park Golf Range–Travelers Rest, S.C.

a fun time together, hitting a bucket of balls and seeing who can hit one the farthest. You'll find a father teaching the proper golf swing, a mother enjoying a break from her regular routine, kids begging parents for another bucket, and a new generation being introduced to the great game of golf.

For more information contact:
Mr. Tom Gibson
Spring Park Golf and Driving Range
115 S. Main Street
Travelers Rest, SC 29690
(864) 834-1574

PROJECT NAME:
Waterfront Greens Golf Course
LOCATION:
Swanton, Maryland
DESCRIPTION:
Level 5, 9-Hole Par 3 (Private)
CONSTRUCTION COST:
$470,000
MAINTENANCE COST:
$100,000

Waterfront Green Golf Course, which broke ground in May of 2002, is part of a new housing development immediately adjacent to Deep Creek Lake, in the far western region of Maryland.

Because of the huge lake, the area consists of semi-resort/retirement/second home communities. With this in mind, and with a desire to make the most of the required open space, the developer decided to build an enjoyable – and practical – par-3 course for the community's residents, instead of having the 22 acres revert to field growth.

Since it was an open site, the short course was designed by Brian Ault, ASGCA, with a bit of the heathland look – with rugged mounding, areas of natural fescue grasses, pot bunkers and the like. The greens are modest in size, but built to "California Method" criteria.

As a means to keep maintenance as simple as possible, while also providing an interesting aspect to playing the course, there are no distinct, elevated tees. This eliminates a moving operation, as well as periodic upkeep form the typical wear and tear that normal tees receive. All of the holes have fairways, many of which are partially connected to one another – so the fairway mower rigs will only need to be occasionally raised or lowered. There are also the

typical, primary roughs. Golfers will be able to choose a location from which to hit their "approach shot" to the green. The particular shot, which is chosen by the player with the lowest score on the previous hole, can either be in the fairway or in the rough.

Additionally – at the choice of the low scorer – once the shot is selected, the ball can be dropped, placed or picked up.

Though grading is limited, cuts and fills were balanced for convenience of construction, and to purposely create some diversity in the course's terrain. Because of the desired character and image of this course, no golf carts are permitted, and thus no need for cart paths (a further means of minimizing construction costs).

The community building for the residents of the development doubles as the clubhouse.

Overall, the 22-acre oasis is a unique recreational amenity for the homeowners.

For more information contact the developers:
Mike Goodfellow: (301) 387-7139
Hugh Umbel: (301) 387-8451

PROJECT NAME:
Hidden Oaks Golf Course
LOCATION:
St. Louis, Michigan
DESCRIPTION:
9-Hole Regulation Course
(Level 6)
CONSTRUCTION COST:
Under $800,000 (for 9-hole addition)
MAINTENANCE BUDGET:
Estimated $300,000

The history of this golf course started in 1970, when W. Bruce Matthews, Sr., and his son, Jerry, designed an 18-hole golf course for a private group of investors. At that time, only the front nine was constructed. It was run as a nine-hole private course, open to the public, with limited success. In 1995, Ed and Pam Dangler purchased the course with the intent of running it as a public golf course. Their first goal was to enlarge the operation to a full 18-hole, regulation length golf course with practice facility. Jerry Matthews, ASGCA, was retained as the golf course architect, which provided him a chance to finish a project he had started 28 years earlier.

The additional property purchased with the golf course was more than adequate for a 9- hole expansion – 130 acres – but approximately half of the land was classified as wetlands by the Michigan Department of Environmental Quality. This led to numerous design problems in locating adequate high ground for both the golf holes and the practice facility, plus designing a series of boardwalks to link these islands of usable land together.

Since Ed and Pam had just purchased the golf course and adjacent property, and needed to build a new parking lot, the funding available to construct the 9-hole addition was limited. The extensive wetlands necessitated lengthy boardwalks, which in turn

consumed a disproportionate share of the budget, set at $750,000 for the new nine holes. As a result of the initial bids coming in over budget, the work was broken down into three separate contracts: clearing, golf course construction and deseeding, and irrigation. The individual contracts were each negotiated with some of the original bidders and a local tree-clearing contractor. This process enabled the work to proceed within the scope of the budget. A local contractor constructed the boardwalks under a separate agreement.

It was agreed at the outset that while the budget was limited, the quality of the work was not to be sacrificed. The work comprised a new nine holes, including approximately 35 acres of clearing, modified USGA greens averaging 6,500 square feet, a three-tee system, 24 sand bunkers, a new pond, and a new, two-row automatic irrigation system compete with a new pumping station. The existing pump station was located nearly one mile away, and it was too expensive to update and enlarge the main lines to service the new nine holes and practice facility.

The work was done from May through October of 1998; with the new nine open for play in late spring of 1999. The project was completed on time, without sacrificing quality. The owners are very satisfied and the response from the golfing public has been very positive.

For more information contact:
Ed or Pam Dangler
Hidden Oaks
Golf Course
1270 W. Monroe
St. Louis, MI 48880

PROJECT NAME:
Jack Stephens Youth Golf Academy
LOCATION:
Little Rock Arkansas
DESCRIPTION:
9-Hole Championship Course & Practice Facilities (Level 6)
CONSTRUCTION COST:
Under $855,000
DESCRIPTION:
Chip & Putt Course
CONSTRUCTION COST:
$496,000
TOTAL COST:
$1,351,000
MAINTENANCE BUDGET:
$310,000

The original site was the home of Concordia Country Club, a six-hole course where renowned teaching professional Paul Runyan obtained his first professional position. Later it became Rock Creek Golf Course and expanded to nine holes. Jack Stephens and his corporation, Stephens, Inc., City of Little Rock, and the National First Tee Program teamed to create a First Tee initiative for the youth of Little Rock on the Rock Creek site. Ault, Clark & Associates donated their services to redesign and complete a Master Plan for the entire property.

Jack Stephens Youth Golf Academy features a massive driving range with more than two acres of teeing areas, and allows up to 75 people to hit simultaneously on the tee line. It also features five target greens with two pin locations at each one, and a target fairway. These greens are surrounded with bunkers to provide a realistic target for the golfer. The facility features a 9-hole championship course with three sets of tees, including a forward tee for beginners. This will allow the player to go around twice and play a

completely different course on the second nine. The 9-hole chip and putt course also features the same tee configuration.

There is also a large putting course, putting green chipping area and an uneven lies area with a practice bunker. This allows a beginner to graduate from the practice tee to the putting and chipping area, to the chip and putt, and finally to the 9-hole course.

The L-93 bentgrass greens, constructed utilizing the "California Method," average 6,000 square feet in the 9-hole course and 4,000 square feet on the chip and putt course. With a fully-automated irrigation system, the fairways and roughs are sprigged with Tifton 419 Zoysia grass sod lines the bunkers and greens edges, and 419 Bermudagrass sod was utilized on the steep slopes of the 9-hole course, as well as the practice facility and chip and putt course. The cost of construction for the entire course was approximately $1.35 million, which was aided by a variety of donations.

Donations included irrigation supplies and sod at wholesale cost, and the grass sprigs were provided at no charge. Landscapes Unlimited, who constructed the course, provided most of their services at cost and assisted in obtaining a number of donated products and services from their suppliers.

On April 11, 2001, former President George Bush, as well as Arkansas Governor Mike Huckabee, First Tee National Director Joe Louis Barrow and PGA Tour Commissioner Tim Finchem, joined golf greats Byron Nelson and Arnold Palmer in dedicating the new facility. Joining in the festivities was the man behind the vision for the facility, Jack Stephens, and his son, Warren, along with other notable attendees, including former NFL great and Fox network broadcaster, Pat Summerall, Hootie Johnson of Augusta National, Chris Shenkel and 250 children from neighboring Western Hills Elementary School.

For more information contact:
Mrs. Ginger Brown Lemm
Executive Director & PGA Professional
1 The First Tee Way
Little Rock, AR 72204
(501) 562-4653
www.thefirstteear.org

PROJECT NAME:
Ebensburg Country Club
LOCATION:
Cambria County,
Pennsylvania
DESCRIPTION:
18-Hole Private Golf Course
PROJECT DESCRIPTION:
Construction of a 9-hole addition to an existing 9-hole golf course (Level 6)
CONSTRUCTION COST:
$900,000
MAINTENANCE BUDGET:
Estimated $125,000

In the spring of 1997, Ed Beidel, ASGCA, made an initial site visit to Ebensburg Country Club to discuss the Club's plans to add nine holes to their existing nine-hole private golf course in Cambria County, Pennsylvania. After spending a half-day walking the 115-acre parcel that was to be utilized for the second nine, Beidel made a recommendation to the Board, based on their projected budget of $550,000.

The undeveloped parcel of land had a 150-foot change in elevation, typical of the mountain region of central Pennsylvania. The tract was segmented by an unnamed tributary that split at the upper end of the site. The watercourses and 11 acres of adjacent wetlands created some interesting site features and routing challenges. The lowest corner of the site (approximately 20 acres) was occupied by a mature stand of hardwoods interspersed with some hemlock.

The soils on the site were predominantly silt loams that had moderate to moderately rapid permeability, which ultimately reduced the need for extensive drainage systems. Stabilization of these vulnerable soils during construction was a concern, particularly how it might affect the erosion control line item of the construction

Ebensburg Country Club–Cambria County, Pa.

budget. Topsoil was plentiful and rich in the low-areas, offsetting the poor, stony surface soil on the intermediate slopes.

Overall, the site had physical and visual potential. Beidel advised the Club that based on site conditions, a second nine holes could be built in the three-quarters to one million-dollar range, however, this would be without any bells and whistles. The limited budget would still yield a facility that could be enhanced and strengthened in the following years. Spending less money would not produce a golf course that would match the Club's expectations or meet the goal of attracting new members.

A year and a half of hard work by the Club Board generated a financial commitment to meet the basic development needs. In the fall of 1998, the Club authorized topographic and boundary surveys as requested by the golf course architect. In early 1999, a routing plan was presented and accepted by the Ebensburg Country Club Board. Knowing that funds were tight, a routing plan was devised to reduce site disturbance and capitalize on exiting site features and amenities. Additionally, a 22-acre portion of the site was planned at the higher elevations for a future high-density residential development, providing a panoramic view of the golf course.

Golf holes through mature

tree stands were located to preserve and enhance the quality specimens and remove diseased and weaker vegetation. The new holes were routed over and adjacent to the delineated "wetlands," of which only 0.15 acres were disturbed by development. The rolling and moderate topography of the site was used to its maximum potential, whereas a minimum amount (40,000 cubic yards) of earthwork was necessary, thus minimizing the duration and extend of soil exposure and the cost of control.

Only 55 – 60 acres of the site were grassed and consisted of drought-tolerant varieties of blue-grass and ryegrass, with low maintenance fescue roughs. A basic, yet sufficient, single row irrigation system was installed, thus reducing construction cost and eventual maintenance cost. In routing golf holes through vegetation, along wetlands and fully compatible with existing terrain, minimal bunkering was necessary due to the natural framing and strategy created with existing site features.

All permitting and approvals were acquired in June, 1999, with construction commencing the second week of July. Final seed was sown the second week of October. Mother Nature blessed central Pennsylvania with ideal grow-in conditions in the fall of 1999 and the following spring. The new nine holes opened June 2000 to accolades from the membership, which doubled from a year earlier.

The course was chosen as the site for a Pennsylvania Department of Environmental Protection golf outing in its inaugural year. The partnership of a qualified golf course architect and a Club committed to a quality facility resulted in the creation of an affordable venue in a natural setting.

In the coming years, the Club will begin to upgrade the original nine holes as funds become available. It appears Ebensburg is off to a good start.

For more information contact:
John Sarver, Club Pro
Ebensburg Country Club
408 Manor Drive
Ebensburg, PA 15931
(814) 472-6550

PROJECT NAME:
Thornberry Creek Country Club
LOCATION:
Green Bay, Wisconsin
DESCRIPTION:
9-hole course with two greens at each hole (Level 6)
CONSTRUCTION COST:
$1,400,000
MAINTENANCE COST:
$230,000

The nine-hole course at Thornberry Creek Country Club was built on approximately 80 acres of an abandoned sand pit that had become an unauthorized dump area for debris from varying sources. The developer desired to turn a derelict parcel of land in the community where he resides into a recreational amenity.

Rick Jacobson, ASGCA, was selected as the golf course architect to design the nine-hole facility, and was faced with the challenge of designing something unique for the marketplace. A vision for having a nine-hole course that could play as an 18-hole course was introduced. To attain this goal, a concept of placing two separate greens, or one larger double green on each hole was integrated into the design, as well as three to five tees on every hole. The flexibility implemented into the design allows golfers to play a front nine from the white tees to the white flagsticks, and the back nine from the red tees to the red flagsticks. Or vice versa.

The first four months after the course opened, 18,000 nine-hole rounds were played and approximately 85% of the people who played opted to play 18 holes. The additional USGA green square footage resulting from the creative design concept added approximately 20% to the hard construction costs. Project sustainability was enhanced by the use of on-

Thornberry Creek Country Club–Green Bay, Wisc.

site sand in the construction of tees and greens to meet the $1.4 million construction budget. The annual operating budget includes an intense watering and fertilization schedule due to the existing sand base over which the golf course was built. The average water usage is nearly 200,000 gallons per night during the late spring, summer and early fall. An existing storage facility was renovated to serve as the clubhouse.

Due to the success of the initial nine-hole course, the developer proceeded to acquire adjacent acreage that resulted in the creation of a master plan for a golf course community that included an 18-hole championship golf course. The 18-hole course recently opened for play while league play and late afternoon golfers find the nine-hole course very accommodating to the varying skill levels of golfers. A greens fee rate of $18 for nine-hole and $32 for 18 holes is offered.

For more information contact:
Frank Guarascio
General Manager
Thornberry Creek Country Club
4470 N. Pine Tree Rd.
Oneida, WI 54155
(920) 434-7501

PROJECT NAME:
Ridgecrest Golf Course
LOCATION:
Nampa, Idaho
DESCRIPTION:
Municipal 18-hole regulation (Level 6), 9-hole executive (Level 4), practice facility, temporary clubhouse and parking
CONSTRUCTION COST:
$2,000,000
MAINTENANCE BUDGET:
$500,000

It is not always necessary to spend millions of dollars to create a great golf facility. In Nampa, the city created one of Idaho's top-rated golf facilities, which includes a temporary club-house and parking.

Nampa is located just outside Boise. The project site has about 250 acres of gently rolling to flat farm land with a long rock ridge bisecting the property. There are great views of the Rocky Mountains. Access was readily available from the adjacent freeway.

This project was unique because the City of Nampa acted as its own general contractor. Private developers sometimes act as the general contractor, but few municipal projects are built this way. Only a couple subcontractors were used in the process. The course was built, for the most part, by city employees.

The city had the foresight to secure a tract of land with ample size, irrigation rights and adequate soil. John Harbottle, ASGCA, was retained to design the course. After the construction plans were completed, the city hired a golf course shaper to act as its project manager. He actually became a city employee. The shaper used his expertise in the construction process to contour the course, manage the city workers and develop

their skills for golf course construction.

Major earthwork involved excavating three ponds. This work was subbed out to a local contractor. About 100,000 cubic yards were moved in this fashion. Only a minimal amount of earth was moved, keeping the topsoil in place and reducing construction costs as much as possible. The remaining earthwork was done with bulldozers using city equipment and crews. Drainage, and even the majority of the irrigation, was installed by city manpower. Finish grading, grassing and tree planning were also done in-house. Cart paths and the final few holes of irrigation were completed by subcontractors because time was running out on the grassing window.

Greens were built to USGA recommendations. The local sand source was very close to the site and material costs were low. Bunker sand was also locally available. The same sand used for sanding roads after a snowfall was used in the bunkers, and proved to be very acceptable.

The practice area contains a practice green of over 13,000 sq. ft.; a large practice bunker, chipping and pitching area with green; multiple target greens and a two-sided range measuring 600' by 1200'. You can play virtually every type of shot you need on the course within the practice facility. The practice area and 9-hole executive course are great facilities for developing new golfers, from juniors to seniors.

In 2000, Ridgecrest added a new clubhouse and made a very modest increase in green fees. The championship course is now $20 per round, and the 9-hole track may be played all day for $11. Ridgecrest is a source of civic pride, financial success and a recreational asset to the community.

For more information contact:
Jim Brown
Director of Golf
Ridgecrest Golf Course
3730 Ridgecrest Drive
Nampa, ID 83687
(208) 468-9073

PROJECT NAME:
Cobblestone Golf Course
LOCATION:
Kendallville, Indiana
DESCRIPTION:
18-hole course (Level 6)
CONSTRUCTION COST:
$2,500,000
MAINTENANCE BUDGET:
Estimated $425,000

Cobblestone, an upscale daily fee course near Ft. Wayne, was selected the "8th Best New Affordable Public Course in America" by Golf Digest in its 1999 annual survey. Since its opening in the summer of 1998, the course has been extremely well received, and is drawing play from throughout Indiana at approximately 24,000 rounds per year.

Cobblestone has been called the best course on the tour by several NGA Hooters Professional Golf Tour contestants in the annual event played at Cobblestone.

The course was developed by Cobblestone Golf LLC within the surrounding Cobblestone housing development, a project of the well-known Ft. Wayne developer, Sturges, Griffin Trent & Company. The golf course was designed by Burns Golf Design, ASGCA, of Fernandina Beach, Florida, which also did the initial master planning for the development, and was built by Fox Contractors of Ft. Wayne.

The Cobblestone course plays over ideal golf terrain, consisting mainly of gently rolling hills, with an overall elevation change of about 50 feet. Water comes into play on a dozen holes, in the form of a meandering stream, wetlands, or one of three lakes. Forty-one bunkers, about three quarters of which are on the back nine, add to the challenge. Trees, water, and the more severe natural terrain on the front nine provide much of its challenge. About half of Cobblestone's holes are wooded, and several of the remaining holes play

between areas of links type grasses. Despite a relatively modest construction cost of less than $2.5 million, the course features bentgrass fairways, USGA greens, full concrete cart paths, and substantial irrigation and drainage. Players can match their abilities to four sets of tees, ranging from 4,779 to 6,863 yards. One of Cobblestone's feature holes is the 12th, appropriately located in view of the course entrance. It is a 203 yard par three, played twenty feet downhill, to an amphitheater green, surrounded by three bunkers, and guarded on the front-left by a lake, and on the right by a huge sycamore tree.

For more information contact:
Rod Moulin
Cobblestone Golf Course
2702 Cobblestone Lane
Kendallville, IN 46755
(260) 349-1550

Cobblestone Golf Course–Kendallville, Ind.

PROJECT NAME:
Old South Golf Links
LOCATION:
Hilton Head, South Carolina
DESCRIPTION:
18-hole public golf course
(Level 6)
CONSTRUCTION COST:
$2,850,000
MAINTENANCE BUDGET:
$560,000

Old South started as a vision by a local farming family as a means to maintain control over its land, provide a source of income and protect the natural habitat of the area. Alan Ulmer and his family owned about 1,000 acres of land on the highway that provided access to nationally-known Hilton Head Island. Development had already started to move off of the island in the 1980s as Hilton Head became more developed and more expensive. The Ulmer land was widely known for its beauty and exposure to the salt marshes of Calibogue Sound and the May River.

The Ulmer family, working in conjunction with local developer George Lumly, devised a plan for the future of the Ulmer property. The nucleus of that plan was to offer the land for a golf course in exchange for partial ownership. It took several years for the plan to work, dealing with multiple golf course developers until just the right situation presented itself.

The agreement, in 1990, was for the Ulmer family to provide 180 acres for the golf course in exchange for 51% ownership in a General Partnership. The other 49% was represented by two local businessmen, David Staley and Tom Jacoby, who saw a demand for reasonably priced golf in the Hilton Head market. Staley and Jacoby, through a Limited Partnership, raised the cash and arranged for financing of

Old South Golf Links–Hilton Head, S.C.

the capital demands to build the golf course. The land for the golf course, contributed by the Ulmer family, was valued at $1,800,000 due to the location and scenic values. Staley and Jacoby are the managing General Partners.

The golf course, designed by ASGCA member Clyde Johnston, opened in the fall of 1991 and was built for $2,850,000. The clubhouse was not built initially so the total cost for all of the initial improvements came to $4,500,000 not including the donated land costs. After the course was operating profitability, the clubhouse was financed and built without any additional capital from the investors.

For more information contact:
Mr. David Staley, May River Golf Management
200 Main Street, Suite 201
Hilton Head Island, SC 29926
(843) 785-5353

PROJECT NAME:
Heritage Oaks Golf Course
LOCATION:
Harrisonburg, Virginia
DESCRIPTION:
18-hole golf course and practice area including practice range and 3-hole par 3 course (Level 6)
CONSTRUCTION COST:
$3,235,000
MAINTENANCE BUDGET:
$425,000

The City of Harrisonburg, Virginia, has built the Heritage Oaks Golf Course, an 18-hole regulation length municipal facility and 3-hole par 3 course, in the Shenandoah Valley. The course was carefully crafted to wind its way through open meadows and beneath the canopy of an Oak forest to protect and preserve the beauty inherent to the site. Based on extensive routing analysis, the course emerged from the rolling terrain and rock formations to incorporate many of the existing site features into the design and strategy of the course.

The topography of the site lends itself well to the design of interesting golf holes. The location of each hole utilizes the lay of the land differently, providing an interesting variety of challenges and strategies throughout the course. To minimize costly excavation of subsurface rock, the course was designed to be compatible with the existing terrain and natural drainage patterns of the site. To further reduce cost of construction, the City generated fill material necessary to cover exposed rock by partnering with nearby construction projects and providing the site excavation for the clubhouse and parking area. The city provided additional sweat equity for the project by contributing the labor,

equipment, and material necessary to complete the clearing and stump disposal for the golf course, as well as the installation of the golf car paths utilizing recycled asphalt to construct the base and final surface of the paths.

The golf course was designed by ASGCA Member Bill Love to allow maintenance practices that are cost effective, efficient and environmentally responsive.

Naturalized areas requiring low maintenance and reduced water requirements were incorporated through the course. Highly-maintained turfgrass was used only in the areas necessary to provide the proper playability. Backwash water from the water treatment plant was collected in a pond on the property and recycled to meet the irrigation requirements of the course. Littoral shelves and expanded wetlands have been developed along the waterways and ponds to enhance the aquatic environment, promote wildlife and add visual interest to the course.

The golf course was designed as a quality golf experience for the public and, therefore, a high degree of playability was important to accommodate players with a wide range of abilities. The distinct character and strategies of each individual hole make for a challenging, yet enjoyable, test of golf that will provide a different experience every time the course is played. The playability of the course, efficient maintenance and operational control are important factors and were required for the successful operation of this affordable facility.

For more information contact:
Heritage Oaks Golf Course
680 Garbers Church Rd.
Harrisonburg, VA 22801
Phone: (540) 442-6502

CHAPTER SIX
PRACTICAL GOLF COURSES BY STATE

ARIZONA

Dove Valley
Phoenix, AZ
Architects: Robert Trent Jones, Jr., ASGCA/Bruce Charlton, ASGCA

Mountain Shadows
Paradise Valley, AZ, 18-hole, Par 56 on 50 acres
Architect: Arthur Jack Snyder, ASGCA

San Pedro Golf Course
Benson, AZ (Opened 2002)
18-Hole Public Par-72, 7300 Yard Course
Architect: Mark Rathert, ASGCA
Phone: (520) 586-7888
Owners: Arizona Golf Systems, Lou Haines/Jim Cox
Cost to Build: $2.8 million
Maintenance: $500,000

ARKANSAS

Branchwood Golf Course
Bella Vista, AR (Opened 1987) 9-hole, Par 3
Architect: Tom Clark, ASGCA
Address: 101 Town Center
Bella Vista, AR 72714
Phone: (479) 855-8172
Owner: BV P.O.A.
Cost to Build: $225,000
Maintenance: $200,000

Coronado Golf Course
Hot Springs, AR (Opened 1988), Executive 18-hole
Architect: Tom Clark, ASGCA
Address: 199 Sutidor Way
Hot Springs Village, AR 71909
Phone: (501) 922-2355
Owner: HSV P.O.A.
Cost to Build: $1.3 million
Maintenance: $350,000

Dogwood Hills Golf Course
Bella Vista, AR, 18-hole regulation course
Architect: Bill Love, ASGCA
Phone: (479) 855-8172

Jack Stephens Golf Academy
Little Rock, AR, 9-hole Par 3 with practice area & putting greens
Architect: Tom Clark, ASGCA
Address: #1 The First Tee Way
Little Rock, AR 72204
Phone: (501) 562-GOLF (4653)
Cost to Build: $1.3 million
Maintenance: $310,000

Metfield Golf Course
Bella Vista, AR (Opened 1987 as an Executive 18-hole, now 9-hole)
Architect: Tom Clark, ASGCA
Address: 101 Town Center
Bella Vista, AR 72714
Phone: (479) 855-8172
Cost to Build: $1.3 million
Maintenance: $250,000

CALIFORNIA

Buchanan Fields Golf Course
Concord, CA, 9-hole executive with range
Address: 1091 Concord Ave.
Concord, CA 94520

Country Club of the Desert
La Quinta, CA
Architects: Pete Dye, ASGCA/Perry Dye, ASGCA

Deepcliff Golf Course
Cupertino, CA (Opened 1962) Public, 18 holes, par 60, 3,369 yards
Address: 10700 Clubhouse Lane
Cupertino, CA 95014
Phone: (408) 253-5357

Diablo Hills Golf Course
Walnut Creek, CA (Opened 1974) Public, 9 holes, par 34, 2,302 yards
Architect: Robert Muir Graves, ASGCA
Address: 1551 Marchbanks Drive
Walnut Creek, CA 94598
Phone: (925) 937-1270

Lone Tree Golf Course
Antioch, CA (Opened 1939) Public, 18 holes, par 72, 6,446 yards
Address: 4800 Golf Course Road
Antioch, CA 94509

Pleasanton Fairways Golf Course
Pleasanton, CA (Opened 1974) Public, 9 holes, par 30, 1,780 yards
Architect: Roland Curtola
Address: Alameda County Fairgrounds
P.O. Box 123
Pleasanton, CA 94556
Phone: (925) 462-4653
Cost to Build: $225,000
Maintenance: $300,000

River Park Golf Center
Fresno, CA, Level 3 Practice Facility with Level 4, 9-hole Par-3 course
Rustic Canyon
Thousand Oaks, CA
Architects: Gil Hanse, ASGCA/Geoff Shackelford

The Reserve at Spanos Creek
Stockton, CA
Architect: Andy Raugust, ASGCA

Willow Park Golf Course
Castro Valley, CA (Opened 1967) Public, 18 holes, par 71, 6,243 yards
Architect: Bob Baldock
Address: 17007 Redwood Road
Castro Valley, CA 94546
Phone: (510) 537-4733

COLORADO

Antelope Hills GC
Bennett, CO, 18-hole, par 72
Architect: Rick Phelps, ASGCA
Construction Cost: $1.8 million

Devil's Thumb Golf Course
Delta, CO, 18-hole, par 72
Architect: Rick Phelps, ASGCA
Construction Cost: $2.6 million

Great Sand Dunes
Alamosa, CO, 18-holes par 72
Architect: John Sanford, Jr., ASGCA
Address: 5303 Highway 150
Mosca, CO 81146
Phone: (719) 378-2356
Owner: The Nature Conservancy of Colorado
Construction Cost: $900,000

Green Valley Ranch Golf Club
Denver, CO
Architect: Perry Dye, ASGCA

Havard Gulch
Denver, CO
Address: 660 East Iliff
Denver, CO 80210
Phone: (303) 698-4078

Spring Ranch
Colorado Springs, CO
Architect: Rick Phelps, ASGCA

DELAWARE

The Golf Park at Rehoboth
Rehoboth Beach, DE, Learning facility, 3-hole, Par 3 Practice Course, plus driving range, 9-hole short game course, 18-hole putting course and driving range
Architect: Bill Love, ASGCA
Phone: (302) 227-2500
Cost to Build: $280,000

FLORIDA

Forest Lake Golf Club
Ocoee, FL
Architects: Lloyd Clifton, ASGCA/Kenneth Ezel, ASGCA/ George Clifton, ASGCA

Hidden Lakes Golf Course
New Smyrna Beach, FL, 18-hole, par 70
Architect: Bill Amick, ASGCA
Address: 35 Fairgreen Ave.
New Smyrna Beach, FL 32168
Phone: (386) 427-4138
Owner: Craig Shankland

Highland Reserve Golf Club
Davenport, FL
Architect: Michael Dasher, ASGCA

Jefferson Country Club
Monticello, FL, 9-hole, par 36 course
Architect: Bill Amick, ASGCA
Phone: (850) 997-5484

Legacy at Lakewood Ranch
Sarasota, FL
Architect: Vicki Martz, ASGCA

Madison Green
Royal Palm Beach, FL
Architect: John Sanford, Jr., ASGCA

North Hampton
Yulee, FL
Architect: Harrison Minchew, ASGCA

Oceans West Golf Course
Daytona Beach Shores, FL, 12-hole pitch and putt course
Architect: Bill Amick, ASGCA
Address: 2990 S. Atlantic Ave
Daytona Beach Shores, FL 32118

Pointe West
Vero Beach, FL
Architect: John Sanford, Jr., ASGCA

River Bend
Ormond Beach, FL
Architects: Lloyd Clifton, ASGCA/Kenneth Ezel, ASGCA/
George Clifton, ASGCA

Rock Springs Ridge Golf Club
Apopka, FL
Architects: Lloyd Clifton, ASGCA/Kenneth Ezel, ASGCA/
George Clifton, ASGCA

Tam O'Shanter
West Palm Beach, FL, learning center
Phone: (561) 842-0066

GEORGIA

The First Tee of Augusta
Augusta, GA
Architects: Harrison Minchew, ASGCA

Laura S. Walker Golf Course
Waycross, GA
(now The Lakes at Laura S. Walker), par 72, 4,734-6,595 yards
Architect: Steve Burns, ASGCA
Address: 5500 Laura Walker Road
Waycross, GA 31503
Phone: (912) 285-6154
Owner: Georgia Dept. of Natural Resources
Construction Cost: $2.4 million (golf course only)
Maintenance: $355,000

IDAHO

Ridgecrest Golf Course
Nampa, ID, Level 4 Executive 9-hole course with Level 6, 18-hole course
Architect: John Harbottle, ASGCA
Address: 3730 Ridgecrest Drive
Nampa, Idaho 83687
Phone: (208) 468-9073

ILLINOIS

Glenview National
Glenview, IL
Level 5, 9-hole family course on 38 acres
Architect: Rick Jacobson, ASGCA

The Golf Learning Center
Des Plaines, IL, Level 3, 9-hole par 3 course with 3-level driving range
Architect: Rick Jacobson, ASGCA

Water's Edge G.C.
Village of Worth, IL, 180-hole municipal course, par 72
Architect: Rick Robbins, ASGCA
Phone: (708) 671-1032

Willow Hill
Northbrook, IL, 9-hole par-34/35
Architect: Tim Nugent, ASGCA
Cost to Build: $1.1 million

INDIANA

Cobblestone Golf Course
Kendallville, IN, par 72, 4779-6863 yards
Architect: Steve Burns, ASGCA
Address: 2702 Cobblestone Lane
Kendallville, IN 46755
Phone: (219) 349-1550
Owner: Cobblestone Golf, LLC
Construction Cost: Under $2.5 million (golf course only)

Old English Golf Club
English, IN, 18-holes with practice range
Architect: David Whelchel, ASGCA
Address: 139 N. Boss Lane
English, IN 47118
Phone: (812) 338-3748

IOWA

Bent Tree
Council Bluffs, IA
Architects: Jeff Brauer, ASGCA/Eric Nelson, ASGCA

Legacy
Norwalk, IA
Architects: Jeff Brauer, ASGCA/Eric Nelson, ASGCA

KANSAS

Westlinks
Overland Park, KS
Architect: Craig Schreiner, ASGCA

MARYLAND

Great Hope Golf Course
Mt. Airy, MD, 18-hole Executive Course
Architects: Brian Ault, ASGCA/Thomas Clark, ASGCA
Cost to Build: $1.3 million

Waterfront Greens Golf Course
Swanton, MD, Level 3, 9-hole par 3 (private)
Architects: Brian Ault, ASGCA/Thomas Clark, ASGCA
Cost to Build: $470,000

MASSACHUSETTS

Blissful Meadows
Uxbridge, MA
Architects: Geoffrey Cornish, ASGCA/Brian Silva, ASGCA/
Mark Mungeam, ASGCA

Forekicker
Norfolk, MA
Architects: Geoffrey Cornish, ASGCA/Brian Silva, ASGCA/
Mark Mungeam, ASGCA

MICHIGAN

El Dorado Golf Course
Mason, MI, (27 Holes), 9-hole addition
Architect: Jerry Matthews, ASGCA
Address: 3750 Howell Road
Mason, MI 48854
Phone: (517) 676-2854

Greystone Golf Club
Romeo, MI, 18-hole course with practice range
Architect: Jerry Matthews, ASGCA
Address: 67500 Mound Road
Romeo, MI 48095
Owner: Bob Britemeyer
Phone: (248) 752-7030

Heritage Glen Golf Course
Paw Paw, MI, 18-hole course with practice range
Architect: Jerry Matthews, ASGCA
Address: 29795 Heritage Lane
Paw Paw, MI 49079
Owner: Bryan Rumsey
Phone: (616) 657-2552

Hidden Oaks G.C.
St. Louis, MI, 18-hole course
Architect: Jerry Matthews, ASGCA

Hunters Ridge Golf Course
Howell, MI, 18-hole course with practice range
Architect: Jerry Matthews, ASGCA
Address: 8101 Byron Road
Howell, MI 48843
Owners: Joe & Janet Mieslie
Phone: (517) 545-4653

Old Channel Trail Golf Course
Montague, MI
9-hole addition with practice range and 3 practice holes
Architect: Jerry Matthews, ASGCA
Address: 8325 North Old Channel Trail
PO Box 217
Montague, MI 49437
Owner: Meriam Leeke
Phone: (231) 894-5076

Red Hawk
East Tawas, MI
Architects: Arthur Hills, ASGCA/Steve Forrest, ASGCA

The Emerald at Maple Creek Golf Course
St. Johns, MI, 9-hole addition with practice range
Architect: Jerry Matthews, ASGCA
Address: 8103 North U.S. 27
St. Johns, MI 48879
Phone: (989) 224-6287

The Mackinaw Club
Mackinaw, MI, 18-hole course with practice range
Architect: Jerry Matthews, ASGCA
Address: 8700 Mackinaw Club Drive
Mackinaw City, MI 49701
Owners: Dick & Mary Carter
Phone: (231) 537-4955

The Natural at Beaver Creek Resort
Gaylord, MI, 18-hole course with practice range
Architect: Jerry Matthews, ASGCA
Address: 5004 West Otsego Lake Drive
Gaylord, MI 49735
Owner: Larry Bowden
Phone: (989) 732-1785

The Quest at Houghton Lake
Houghton Lake, MI, 18-hole, par 72
Architect: John Sanford, Jr., ASGCA
Address: 116 Questview
Houghton Lake, MI 48629
Phone: (989) 422-4516
Owner: Tom-Tom Investments, Tom Weideman, President
Construction Cost: $2.1 million

Whitefish Lake Golf Course
Pierson, MI, 9-hole addition
Architect: Jerry Matthews, ASGCA
Address: 2241 Bass Lake Road
Pierson, MI 49339
Owners: Watson & Elsie Pierce
Phone: (616) 636-5260

MINNESOT

Eagle Ridge
Coleraine, MN
Architect: Garret Gill, ASGCA

Golf at The Legacy
Faribault, MN
Architect: Garrett Gill, ASGCA

Glen Lake Golf Center
Eden Prairie, MN
Architect: Garret Gill, ASGCA/Paul Miller

Legacy Walk
Brainerd, MN
Architects: Robert Trent Jones, Jr., ASGCA/Bruce Charlton, ASGCA

Northwest Angle Golf Club
Angle Inlet, MN
Address: P.O. Box 1
Angle Inlet, MN 56711
Phone: (218) 223-8001
Owners: George and Judy Risser

MISSISSIPPI

Percy Quinn State Park Golf Course
McComb, MS
Architects: Arthur Hills, ASGCA/Steve Forrest, ASGCA

MISSOURI

Indian Hills
Marshal, MO
Architect: Craig Schreiner, ASGCA

NEBRASKA

Wild Horse Golf Course
Gothenberg, NE
Architects: Dave Axland/Dan Proctor

Cozad Country Club

Cozad, NE, 9-hole addition
Address: 100 Country Club Road
Cozad, NE 69130
Phone: (308) 784-2585

NEVADA

The Wolf at Las Vegas, Pointe Resort

Las Vegas, NV
Architect: Perry Dye, ASGCA

NEW JERSEY

Summit Municipal

Summit, NJ
Address: 189 River Road
Summit, NJ 07901
Phone: (908) 277-2932

NEW MEXICO

Piñon Hills

Farmington, NM
Architect: Kenneth Dye, ASGCA
Address: 2101 Sunrise Parkway
Farmington, NM 87401
Phone: (505) 326-6066
Owner: City of Farmington
Cost to Build: $1.8 million
Maintenance: $450,000

Paa Ko Ridge Golf Club

Sandila Park, NM
Architect: Kenneth Dye, ASGCA
Address: 1 Clubhouse Dr.
Sandia Park, NM 87047
Phone: (505) 281-6000
Owner: Paa Ko Golf Venture
Cost to Build: $2.5 million
Maintenance: $600,000

NORTH CAROLINA

Charles T. Meyers

Charlotte, NC, First 9-holes on landfill, additional 9-holes
Architects: Brian Ault, ASGCA/Thomas Clark, ASGCA
Cost to Build: $1.4 million

Crow Creek

Calabash, NC (Opened 2000), 18 hole public/resort, par 72
Architect: Rick Robbins, ASGCA
Address: 240 Hickman Rd NW
Calabash, NC 28467
Phone: (910) 287-3081
Owner: Jerry McLamb
Construction Cost: Approx. $3.5 million for course only

Deerbrook Golf Course

Shelby, NC (1999), 18-hole public course, par 72
Architect: Rick Robbins, ASGCA
Address: 201 Deer Brook Dr.
Shelby, NC 28150
Owner: Joe Spangler
Construction Cost: $3 million

High Vista Country Club

Etowah, NC, Level 7, 18-hole course
Architect: Tom Marzolf, ASGCA

Mill Creek Golf Course

Mebane, NC, (Opened 1994), 18-hole public course, par 72
Architect: Rick Robbins, ASGCA
Address: 1700 St. Andrews Drive
Mebane, NC 27302
Phone: (919) 563-4653
Construction Costs: $2.2 million

The New Finley Golf Course

Chapel Hill, NC, Level 7, 18-hole course

OHIO

Hawks Nest Golf Club

Creston, OH, Par 72, 4,767-6,680 yards
Architect: Steve Burns, ASGCA
Address: 2800 East Pleasant Home Rd.
Creston, OH 44217
Phone: (330) 435-4611
Owners: Betty & Earl Hawkins
Construction Cost: $2.9 million (course only)
Maintenance: approx. $350,000

Red Hawk Run

Findlay, OH
Architects: Arthur Hills, ASGCA/Steve Forrest, ASGCA

Sebastian Hills Golf Club

Xenia, OH, Par 72, 4,668-6,646 yards
Architect: Steve Burns, ASGCA
Address: Knoll Haven Drive
Xenia, OH 45389
Owner: Sebastian Hills LLC
Construction Cost: approx. $2.5 million including the course, clubhouse (remodeled farmhouse), cart barn, parking lot, and entrance road
Maintenance: approx. $300,000

Split Rock Golf Course

Orient, OH
Architects: Michael Hurdzan, ASGCA/Dana Fry, ASGCA
Address: 10210 Scioto-Darby Road
Orient, OH 43146
Phone: (614) 877-9755

PENNSYLVANIA

Birdsfoot Golf Club
Freeport, PA, 18-hole championship course
Architect: Ames Cervone, Jr.

Edensburg Country Club
Cambria, PA, 18-hole private club
Architect: Ed Beidel, ASGCA
Address: 408 Manor Drive
Edensburg, PA 15931
Phone: (814) 472-6550

Indian Creek Golf Club
Emmaus, PA, 18-hole, Executive Course
Architect: Jim Blaukovitch, ASGCA
Address: 1449 Chestnut Street
Emmaus, PA
Phone: (610) 965-8486
Owner: Art Schmidt

Sweetwater Golf Course
Pennsburg, PA, 9-hole course with practice range
Architect: Jim Blaukovitch, ASGCA
Address: 2554 Geryville Pike
Pennsburg, PA
Phone: (610) 282-0377

Melody Lakes Chip & Putt
Quakertown, PA, 9-hole pitch & putt
Address: 1045 N. West End Blv.
Quakertown, PA 18951
Phone: (215) 538-1191

Twin Woods Golf Course
Hatfield, PA
Address: 2924 E. Orvilla Road
Hatfield, PA
Phone: (215) 822-9263

Whitetail Golf Resort
Mercersburg, PA, 18-hole public/resort, par 72
Architect: Rick Robbins, ASGCA
Address: 11573 Blairs Valley Rd.
Mercersburg, PA 17236
Phone: (717) 328-4478
Owner: Hummelstown General Authority
Construction Cost: $3.4 million

Indian Mountain Golf Course
Kresgeville, PA, 9-hole, par 3 with pitch & putt
Phone: (610) 681-4534

Willow Run Inn & Golf Course
Berwick, PA, 18-holes
Architect: Jim Blaukovitch, ASGCA
Phone: (717) 752-1000

Evergreen Golf Course
Analomink, PA, 9-holes
Architect: Jim Blaukovitch, ASGCA
Phone: (570) 421-7721

Five Ponds Golf Club
Warminster, PA, 18-hole, par 71 public course
Architect: Ed Beidel, ASGCA
Address: 1225 West Street Road
Warminster, PA 18974
Phone: (215) 956-9727
Owner: Township of Warminster
Cost to Build: $1 million

Groff's Farm Golf Club
Mount Joy, PA, 18-hole, par-71 daily fee course
Architect: Ed Beidel, ASGCA
Address: 650 Pinkerton Road
Mount Joy, PA 17552
Phone: (717) 653-2048
Owners: Betty & Abram Groff
Cost to Build: $2.1 million

Tumblebrook Golf Course
Coopersburg, PA, 9-hole course
Architect Jim Blaukovitch, ASGCA
Address: Jacoby Road
Coopersburg, PA
Phone: (610) 282-0377
Owner: Upper Saucon Township

Turtle Creek Golf Course
Limerick, PA, 18-hole, par 72 daily fee course
Architect: Ed Beidel, ASGCA
Address: 303 West Ridge Pike
Limerick, PA 19468
Phone: (610) 489-5133
Owners: Barbara & William Waltz
Cost to Build: $2.5 million

Sawmill
Easton, PA
Architect: Dick Fields

SOUTH CAROLINA

Cane Patch Range and Par 3 Course
Myrtle Beach, SC, Practice Range with adjacent 270-hole, Chip & Putt
Architects: Brian Ault, ASGCA/Tom Clark, ASGCA
Address: 72 N Kings Hwy
Myrtle Beach, SC 29577
Phone: (843) 449-6085
Owners: Boroughs/Chapin
Cost to Build: $250,000
Maintenance: $300,000

Cross Winds
Greenville, SC, Level 4, 18-hole course, par 3
Architect: John LaFoy, ASGCA

Furman Golf Course
Travelers Rest, SC, Level 6, 18-hole course

Midway Par-3
Myrtle Beach, SC, 27-hole, par 3 with driving range
Architect: Brian Ault, ASGCA/Tom Clark, ASGCA
Cost to Build: $300,000

Oconee Country Club
Clemson, SC, Level 6, 18-hole course

Old South Golf Links
Hilton Head, SC, Level 6, 18 holes
Phone: (843) 785-5353
Architect: Clyde Johnston, ASGCA
Cost to Build: $2,850,000
Maintenance: $560,000

Pelham Tee
Greenville, SC, Level 3 Practice Facility

Rolling Green Golf Course
Pickens County, SC, Level 6, 18-hole golf course

Somersett Country Club
Greenville, SC, Level 5, 18-hole course

Spring Park Golf Range
Travelers Rest, SC, Level 2 Practice Facility
Phone: (864) 834-1574

TPC- Myrtle Beach
Murrells Inlet, SC, Level 8, 18-hole course
Architect: Tom Fazio, ASGCA

TEXAS

Avery Ranch
Austin, TX
Architect: Andy Raugust, ASGCA

Cottonwood Creek Golf Course
Waco, TX, 9 holes, par 3
Architect: Michael Hurdzan, ASGCA
Owner: City of Waco
Cost to Build: $90,000
Maintenance: $35,000

Deleware Springs Golf Course
Burnet, TX
Architects: Dave Axland/Dan Proctor

Garden Valley Golf Resort
Lindale, TX, 18-holes, par 72
Architect: John Sanford, Jr., ASGCA
Address: 22049 FM 1995
Lindale, TX 75771
Phone: (903) 882-6107
Construction Cost: $2.3 million

Painted Dunes Golf Course
El Paso, TX
Address: 12000 McCombs
El Paso, TX 79934

The Buckhorn
Comfort, TX
Architect: Art Schaupeter, ASGCA

The Republic
San Antonio, TX
Architect: Art Schaupeter, ASGCA

VIRGINIA

Bray Links Par 3
Williamsburg, VA (Opened 1990), 9-hole, par 3 at Kingmill Resort on the James
Architect: Tom Clark, ASGCA
Address: 1010 Golf Club Rd
Williamsburg, VA 23185
Phone: (804) 253-3906
Owner: Anheuser-Busch Corporation
Cost to Build: $400,000
Maintenance: $190,000

Cahoon Plantation
Chesapeake, VA (Opened 2000), 18-hole Chip & Putt
Architect: Tom Clark, ASGCA
Address: 1501 Cedar Rd
Chesapeake, VA 23322
Phone: (757) 436-2775
Owners: Wallace Cahoon
Cost to Build: $615,000
Maintenance: $270,000

Fair Oaks Golf Park
Fairfax Co., VA (Opened 1995), 9-hole, par 3 Chipping & Putting and Driving Range
Architect: Tom Clark, ASGCA
Address: 12908 Lee Jackson Memorial Hwy
Fairfax, VA 22033
Phone: (703) 222-6600

Heritage Oaks Golf Course
Harrisonburg, VA, 18 holes with 3-hole, par 3 course
Architect: Bill Love, ASGCA
Address: 680 Garbers Church Road
Harrisonburg, VA 22801
Phone: (540) 442-6502
Contact: Eric Smith, Director of Golf
Cost to Build: $3,235,000
Maintenance: $425,000

Hunting Hawk Golf Course

Glen Allen, VA, 18-hole course with practice facilities
Architect: Bill Love, ASGCA
www.HuntingHawkGolf.com
Owner: H.H. Hunt Corp.
Cost to Build: $3,000,000

Links at City Park Golf Course

Portsmouth, VA (Opened 2000), 9-hole Executive/ Driving Range/Putting Course
Architect: Tom Clark, ASGCA
Address: 140 City Park Ave.
Portsmouth, VA 23701
Phone: (757) 465-2935
Owner: City of Portsmouth
Cost to Build: $627,000
Maintenance: $350,000

Oak Marr Golf Complex

Oakton, VA, 9-hole, par 3 and Driving Range/ Putting Course
Architect: Tom Clark, ASGCA
Address: 3200 Germantown Rd
Oakton, VA 22124
Phone: (703) 255-5391
Owner: Fairfax County Park Authority
Cost to Build: $600,000
Maintenance: $285,000

The Golf Academy at Broad Run

Manassas, VA, Level 5, 9-hole course with learning center, practice range, Chipping area, practice putting green & putt-putt golf
Architect: Rick Jacobson, ASGCA

The Summitt

Cross Junction, VA, 9-hole addition
Architect: Brian Ault, ASGCA/Tom Clark, ASGCA
Cost to Build: $300,000

WASHINGTON

Barclay Course

Maristone Island, WA, Level 5 12-hole course

Camas Meadows

Camas, WA
Architect: Andy Raugust, ASGCA

Christy's Golf Range

Tacoma, WA, Level 3 Practice Facility with par 3, 9-hole course

Family Golf Center

Tacoma, WA, Level 3 Practice Facility

Fort Steilacoom Golf Course

Tacoma, WA, Level 4 Executive 9-hole course

Jefferson Park Short Course
Seattle, WA, Level 4 Executive 9-hole course

Meadow Park Golf Course
Tacoma, WA Level 3 Practice Facility with Level 4 Executive 9-hole and Level 6 18-hole courses
Architect: John Steidel, ASGCA (for remodel)

Performance Golf Center
Gig Harbor, WA Level 3 Practice Facility

WISCONSIN

Broadlands
Milwaukee, WI
Architect: Rick Jacobson, ASGCA (for remodel)

Bridging the Gap Learning Center
Milwaukee, WI
Address: Rick Jacobson, ASGCA
Cost to Build: $1 million

Morningstar
Milwaukee, WI
Architect: Rick Jacobson, ASGCA

Thornberry Creek Country Club
Oneida, WI, Level 5, 27-hole facility
Architect: Rick Jacobson, ASGCA
Phone: (920) 434-7501

University Ridge
Madison, WI
Architects: Robert Trent Jones, Jr., ASGCA/Bruce Charlton, ASGCA

APPENDIX ONE
SOURCES OF GOLF INSTRUCTION MATERIAL & EQUIPMENT

1. Golf Equipment - free or low cost golf equipment from qualified programs (501-C-3 preferred)

A) Golf Course Builders Association of America -
727 "O" Street
Lincoln, NE 68508
Tel: (402) 476-4444
E-mail: lee-gcbaa@alltel.net
Internet: www.gcbaa.org

B) PGA Foundation "Club for Kids"
PGA of America
100 Avenue of The Champions
Palm Beach Gardens, FL 33418
Tel: (561) 624-8400 Fax: (561) 624-7865
E-mail: pgacom@pghq.com
Internet: www.pga.com

C) Any local PGA golf professional can direct you to the sectional office that may administer free equipment programs.

D) The First Tee (see below)

2. Golf Instruction Materials – (free or low-cost teaching materials to start and sustain a beginning golfer class)

A) Hook A Kid On Golf
2050 Vista Parkway
West Palm Beach, FL 33411
Tel: (561) 684-1141
(800) 729-2057
Fax: (561) 684-2546
E-mail: hakog@nays.org
Internet: www.nays.org

A national junior golf development program, conducted in more than 150 cities, introduced the Traditions of Golf Challenge in 1999. This even allowed youngsters to put their new-found golfing skills – and knowledge of the game – to the test at a unique national tournament where kids' golf scores were only part of the "challenge." They were also observed and graded on their course etiquette by officials on selected holes. Teams were penalized if they wrote down their score while standing on the green, if they talked or moved while someone was playing, if they walked through a player's line on the green, used foul language, or placed their golf bag on the putting green. Additionally,

on each hole a player was selected to answer a question on golf history or a rule. If the youngster answered it correctly, the team received a birdie and had the chance to record an eagle by getting a bonus question correct.

B) Ladies Professional Golf Association
(LPGA) 100 International Golf Drive
Daytona Beach, FL 32124
Tel: (904) 274-6200
Fax: (904) 274-1099
Internet: www.lpga.com

A leader in developing teaching programs and professionals especially trained to work with young people and women. Many of today's most successful woman golfers are products of the LPGA program.

C) National Golf Foundation
(NGF) Publications Department
1150 South US Highway One, Suite 401
Jupiter, FL 33477
Tel: (561) 744-6006
Fax: (561) 744-6107
Internet: www.ngf.org

It is the clearinghouse for all sorts of materials and publications related to development. A catalog of their publications is available upon request.

D) USGA Library and Museum
Golf House
Far Hills, NJ 07931
Tel: (908) 234-2300
Fax: (908) 234-9687
Internet: www.usga.org

The USGA Foundation Grants Program has awarded 190 grants totaling over $4.5 million by 1999. In the next two years, the USGA granted funds to 320 programs - over half of which were junior programs.

E) The First Tee
World Golf Foundation, Inc.
170 Highway A1A North
Ponte Vedra Beach, FL 32082
Tel: (904) 940-4300
Internet: www.thefirsttee.com

An initiative of the World Golf Foundation that began in 1997, it is focused on creating affordable and accessible golf facilities for those who ordinarily would not have the opportunity to learn and play the game, especially young people.

F) American Junior Golf Association
2415 Steeplechase Lane
Roswell, GA30076
Tel: (770) 998-4653
Internet: www.ajga.org

An organization dedicated to the overall growth and development of young people through competitive junior golf, the AJGA continues to add events to its tournament schedule.

G) Kids Golf "Drive, Pitch & Putt"
PO Box 30098
Palm Beach Gardens, FL 33420
Tel: (561) 691-1700
Internet: www.kidsgolf.com

This competition is a junior skills challenge, free to all children and program directors worldwide. It uses the Internet and a patent-pending Kids Slant™ scoring system. Kids see how they rank with others worldwide simply by visiting the world rankings at the Kids Golf Web site. It's an excellent one-day activity, especially for large groups of kids. To learn how to run your own competition, visit the Kids Golf Web site.

APPENDIX TWO
USEFUL PUBLICATIONS

1. Developing Golf Courses on Landfills, Strip-mines and Other Unusual Locations. Jupiter, FL: National Golf Foundation, Executive Summaries 1992 (99LB032)

2. Duthie, Chris. **Desert Stormers.** Far Hills, NJ: USGA Golf Journal, March, 1999. Vol. LIII, No. 2: pp. 32-35

3. Economic Impact of Golf Courses on Local, Regional, and Natural Economies. Jupiter, FL: National Golf Foundation, Executive Summaries (99GCP27)

4. Executive and Par 3 Golf Courses: A Viable Enterprise. Jupiter, FL: National Golf Foundation, Executive Summaries (99LBO43)

5. Garrity, John. **Drawn in the Sand:** Sports Illustrated, June 29, 1998. pp. G44-G52

6. Golf Course Design and Construction. Jupiter, FL: National Golf Foundation, Executive Summaries (99GCP01)

7. Golf Digest's Pitch and Putt Planning Materials. Trumbull, Connecticut: New York Times Company Magazine Group, Inc., August, 1997

8. Guidelines for Planning and Developing a Public Golf Course. Jupiter, FL: National Golf Foundation, Executive Summaries (99GCP17)

9. Hurdzan, Dr. Michael. **Evolution of the Modern Green.** Chicago, IL: American Society of Golf Course Architects, 1996. Revised 1999

10. Hurdzan, Dr. Michael. **Golf Course Architecture: Design, Construction and Restoration.** Chelsea, MI: Sleeping Bear Press, 1996

11. Lessons Learned From New Municipal Golf Course Developments. Jupiter, FL: National Golf Foundation, Executive Summaries (99GCP25)

12. Love, Bill. **An Environmental Approach to Golf Course Development.** Chicago, IL: American Society of Golf Course Architects, 1999

13. Love, Bill. **An Environmental Approach to Golf Course Development.** Chicago, IL: American Society of Golf Course Architects, 1992

14. Lyon, Timothy. **Northwest Angle: Golf Like Nowhere Else.** Yarmouth, Maine: Golf Course News, March 1999

15. Nightingale, Dave. **The War of Attrition.** Far Hills, NJ: USGA Golf Journal, March, 1999. Vol. LIII, No. 2, pp. 12-19

16. Shapiro, David. Harvard **Gulch Municipal Golf Course: Short Course Profile.** Far Hills, NJ: United States Golf Association,

17. Shapiro, David. Summit **Municipal Golf Course: Short Course Profile.** Far Hills, NJ: United States Golf Association, 19__

18. The Economic Impact and Benefits of Golf Course Development. Jupiter, FL: National Golf Foundation, Executive Summaries 19__ (99LB036) [InfoPal]

19. Lidz, Franz. **Subway Series.** Sports Illustrated, June 11, 2001, pp. G30-G35

20. Overbeck, Andrew. **Children's Golf Foundation Building Facility for Disabled Kids.** Golf Course News, May 2001, pg. 5

21. Frase, Bob. **A Family Affair.** Golf Course Management, May 2001, pp. 150-156

22. Peacock, James. **John's Golf Course.** Golf Course Management, May 2001, pp. 120-130

23. Hurd, MacKenzie P. **Considerations for Non-Profit, Alternative Golf Facility Development.** United States Golf Association, January 2001, 45 pgs

24. Shapiro, David. **Harvard Gulch Municipal Golf Course: Short Course Profile.** United States Golf Association, 9 pgs

25. Shapiro, David. **Summit Municipal Golf Course: Short Course Profile.** United States Golf Association, 10 pgs

26. Nass, Michael. **Links for a Lifetime.** Golf Course Management, June 2001, pp. 86-92

27. Ostmeyer, Terry. **Steel Shoestrings.** Golf Course Management, July 2001, pp. 21-30

28. Musselwhite, Ronnie. **Making a Mark.** Golf Business, September 2001, pp. 30-33 (Lists "Link Up 2 Golf" Facilities)

29. Skyzinski, Rich. **Independence Daze.** United States Golf Association, Golf Journal, October 1998, pp. 42-49 ("Establishing Golf in Croatia")

30. Skyzinski, Rich. **Nothing Artificial About This Town's Spirit.** United States Golf Association, Golf Journal, June 1999, pg. 8

31. Sutton, Stan. **The Big Floodlight.** USGA Golf Journal, July 1997, pp. 38-43

32. Richardson, Forrest. **Routing the Golf Course.** Hoboken, NJ: John Wiley and Sons, 2002

APPENDIX THREE
RESOURCE PEOPLE

1. American Junior Golf Association (AJGA)

Setting up junior golf programs and tournaments
2415 Steeplechase Lane
Roswell, GA 30076
Tel: (770) 998-4653
Fax: (770) 992-9763

2. American Society of Golf Course Architects (ASGCA)

125 N. Executive Dr., Suite 106
Brookfield, WI 53005
Tel: (262) 786-5960
Fax: (262) 786-5919
Eimail: info@asgca.org
Internet: www.asgca.org

3. Amick, William, ASGCA

Design considerations for using a reduced distance golf ball
P.O. Box 1984
Daytona Beach, FL 32115
Tel: (904) 767-1449
Fax: (904) 767-4809

4. Club Managers Association of America (CMAA)

Club or course operations
1733 King Street
Alexandria, VA 22314
Tel: (703) 739-9500
Fax: (703) 739-0124
E-mail: cmaa@cmaa.org
Internet: www.cmaa.org

5. Golf Course Builders Association (GCBAA)

Cost estimating, construction sequence and techniques, referrals to local golf course builders
727 "O" Street
Lincoln, NE 68508
Tel: (402) 476-4444
Fax: (402) 476-4489
Internet: www.gcbaa.org

6. Golf Course Superintendents Association of America (GCSAA)

Golf course maintenance, budgeting, environmental information, hiring a golf course superintendent
1421 Research Park Drive
Lawrence, KS 66049
Tel: (785) 841-2240
Fax: (785) 832-4455
E-mail: ceomail@gcsaa.org
Internet: www.gcsaa.org

7. International Association of Golf Administrators, Inc. (IAGA)

Club and course operations
3740 Cahuenga Boulevard
North Hollywood, CA 91604
Tel: (818) 980-3630
Fax: (818) 980-5019

8. Ladies Professional Golf Association (LPGA)

Setting up and managing instruction programs, golf competitions, and opportunities in women's golf

100 International Golf Drive
Daytona Beach, FL 32124
Tel: (904) 274-6200
Fax: (904) 274-1099
Internet: www.lpga.com

9. National Club Association (NCA)

Club and course operations, budgeting, selecting a professional staff
Lafayette Centre,
1120 20th Street NW, # 725
Washington, DC 20036-3406
Tel: (202) 822-9822
Fax: (202) 822-9808
Internet: www.natlclub.org

10. National Golf Course Owners Association (NGCOA)

Club and course operations, budgeting, selecting a professional staff or contract operator
291 Seven Farms Drive
Charleston, SC 29492
Tel: (843) 881-9956
(800) 933-4262
Fax: (843) 881-9958
E-mail: info@ngcoa.org
Internet: www.ngcoa.org

11. National Golf Foundation (NGF)

Information sources for anything and everything connected to golf, including a book or how to select a career in golf
1150 South US Highway One, Suite 401
Jupiter, FL 33477
Tel: (561) 744-6006
Fax: (561) 744-6107
Internet: www.ngf.org

12. Professional Golfers' Association of America (PGA)

The industry's recognized authority on instruction. PGA Professionals conduct instruction programs, golf competitions and provide opportunities in golf.
100 Avenue of the Champions, Box 109601
Palm Beach Gardens, FL 33418
Tel: (561) 624-8400
Fax: (561) 624-8448
Internet: www.pga.com

13. PGA Tour, Inc.

Career opportunities in golf, as well as advice on adding star power to your effort
112 PGA Tour Boulevard
Ponte Vedra Beach, FL 32082
Tel: (904) 285-3700
Fax: (904) 285-2460
Internet: www.pgatour.com

14. United States Golf Association (USGCA)

Promotes the best interests and true spirit of the game through various initiatives, including agronomic research and support, writing and interpreting the Rules of Golf, conducting national championships and supporting programs designed to positively impact lives through golf.
P.O. Box 708
Far Hills, NJ 0793l
Tel: (908) 243-2300
Fax: (908) 234-9687
Internet: www.usga.org

APPENDIX FOUR
CHOOSING THE RIGHT KIND OF GOLF GREEN

Greens are arguably the most important golf feature. The very image of one is a perfectly maintained carpet of velvet-like grass. However, greens also are expensive to build and maintain and often there are environmental factors which prohibit creating "the perfect putting surface." As noted earlier, climate and irrigation water are two of the most dominant factors in locating, planning, and maintaining grass golf greens. Turfgrasses have individual water demands for supplemental irrigation, based upon the climates and microclimates. In extreme examples like the desert, where water demand is very high and availability is extremely low, the alternative may be oiled sand greens with no grass on their surface, or artificial turf greens. Both are acceptable substitutes for turfgrasses. In fact, the world famous Pinehurst Resort, site of the 1999 and 2005 US Open golf championship, had sand greens for its first 34 years. Many places without sufficient irrigation water still have them. The 1993 US Amateur Champion and member of the 1997 and 2001 Walker Cup,

John Harris, learned to play golf on a sand green course in southern Minnesota. Sand green championships are still popular in the Plains states. (Reference John Garrity's article **Drawn in the Sand** listed in Appendix Two).

Sand Green Construction - For over 100 years, the method of building a sand, or oiled sand green, was to find a flat spot for the green of 3,000 to 6,000 sq. ft., replace the top 6"-8" of the surface with pure, medium to fine-sized sand, and then apply used motor oil. Needless to say, despite its success as a green, or "browns" as some called them, the Environmental Protection Agency (EPA) is not fond of this practice. In some places, in fact, it may be illegal. To putt on the sand green, one simply marks the ball, and then smoothes away footprints in the line of putt with a smooth rake or piece of carpet on a handle. Every putt is a speed putt for the greens must be dead flat to avoid erosion of their surface during rainy periods. To retard the motor oil from leaching into the soil, a plastic liner can be placed under the sand. Sand greens need no irrigation, mowing, fertilizers, pest controls, no manpower or fossil fuel power for maintenance, and are cheap to build at a cost of about 30 cents per sq. ft.

An alternative to motor oil, to give the sand some body and definition, might be McDonald's recycled French fry oil!

Tees also can be bare or soiled sand, a small piece of carpet or artificial turf, or whatever vegetation or soil is native to the site in a non-irrigated state. Hazards on such golf courses should be those commonly found on the land. Just clear away the brush or big weeds and play golf, as it was done for the first 500 years or so of golf history -- inexpensively! (Reference Chris Duthie'd article **Desert Stormers** listed in Appendix Two.)

Artificial Turf - Assuming that budgets and market demands allow for a more sophisticated golf course, but still lacking irrigation water and/or a perfect precipitation pattern for non-irrigated turf, an alternative might be artificial turf. Yes,

plastic grass! (Reference Rick Skyzinski's article **Nothing Artificial About This Town's Spirit** listed in Appendix Two.) A brand name material might be very expensive to install, but it, too, would need no maintenance. These artificial turf surfaces are built by first establishing a solid base of stone and dust, tight soils, recycled asphalt, or any other material that can be tightly compacted. Then a pad of 1/4" to 3/4" is laid, if not part of the turf carpet. Then the turf carpet itself is put down, stretched and pinned down. The carpet is a long strand (3/4" to 1.5") of plastic material that vaguely resembles real grass, but is not nearly as dense. Finally, a repeated application of very fine sand, ground up car tires, ground cork, or a combination of stable, small grain-size stuff, is worked into the carpet between the strands. This is done by applying topdressing in 1/2" thickness, and then sweeping it repeatedly with an extra coarse broom. This topdress and sweep operation continues until the sand is just below the top of the "grass" strand, to produce a stable but forgiving, virtually maintenance-free playing surface. Several manufacturers of artificial turf can be found listed in the appendix labeled "Suppliers."

Artificial turf greens are an improvement over oiled sand, but more expensive to install. Artificial turf greens that average 1,200 - 1,500 sq. ft. each are small but adequate and cost between $20 and $30 per sq. ft. The tee can be a 6' x 6' driving range mat and the fairways planted in grasses common to non-irrigated lawns in the area. If the location is pure desert and no fairway grasses will grow, players can be given or sold a 6" x 12" piece of driving range mat that they carry with them and use between tee and green, except the hazards. On the Old Course at St. Andrews, Scotland, during the winter months before the 1995 British Open, all golfers were required to carry and use these fairway mats to save the course for the Open. This is a different kind of golf, but it is golf.

Grass Greens - Golfers usually prefer to play on natural grass greens as opposed to oiled sand or artificial turf. So if either natural rainfall or supplemental irrigation will support turfgrass greens, then they should be considered. Greens can range in cost from as low as 25 cents per sq. ft. to as high as $8. per sq. ft., depending upon the construction method and the availability of first- class materials. The more expensive

methods of construction are more predictable in their performance, and hence easier to maintain, particularly in stressful climates or microclimates, but they are not mandatory. In fact, grass green construction is one area where substantial savings in golf course construction is possible.

The various methods of grass green construction may be broadly categorized as:

1. **Push-up or topsoil**
2. **Modified soil or California method**
3. **USGA method**

Although the pros and cons of each method will be briefly discussed, sources of additional and more detailed information are listed in Appendix Two, "Useful Publications."

The Topsoil or Push-Up Green - Native soil is simply pushed up to provide better surface drainage, but without much other modification. Most early golf courses in North America were built this way, and many have served their golfers well despite enormous changes over the past 100 years in golf equipment, turf maintenance techniques and standards for playing conditions. This least-sophisticated method began to lose popularity in the 1920s, when some noted golf course turf scientists began to recognize that not all native soils were well suited for close-cropped putting surfaces. Over the past 75 years, great advances have been made in our knowledge and skills in building golf greens, including the push-up green.

The push-up green is very low cost, averaging about $1,500 - $2,500 per green (6,000 sq. ft.). If the topsoil is sandy or "light," it can produce excellent putting surfaces while requiring less water and fertilizers than the modified soil or USGA type greens. The downside is that if there is too much silt or clay in the topsoil, it has the tendency to compact and limit oxygen to the grass rootzone. To combat this compaction, the green maintenance staff must punch holes in the soil (aerate) four to six times per year to let oxygen move into the soil. If the number of rounds played on the course each year is relatively small (20,000 or less), then topsoil greens should be considered.

The final decision about topsoil greens should be made after some extensive physical and chemical testing has been done by one of the labs listed in the appendix labeled "Soil Testing Labs" -- AND consultation with an agronomist or experienced golf course superintendent. Choose with great deliberation, but remember your goal is affordable, accessible golf. No green construction method guarantees perfect or near perfect greens, but avoiding common pitfalls can produce acceptable ones.

Modified or Sand Based Greens- This broad category includes all types of green construction where native soils are not used, or are extensively modified for use, or a high sand rootzone material is imported to the golf course.

Modification of topsoil can be simply blending it with locally available sand to create a well aerated growing medium. Modification also includes the addition of organic matter sources, like peat humus or compost, or inorganic specialty products like calcimined clay, diatomaceous earth, or zeolite. Sometimes laboratories recommend mixing a combination of products, such as sand and compost, and eliminating soil. The more modification that's done, using more exotic materials, the higher the cost will be. Modified soil greens can range in cost from $1.50 per sq. ft. for a 100% sand green to as much as $3 per sq. ft. with blended exotic materials.

USGA Green Construction Method - This method is almost 50 years old and is the most highly-researched way to build golf greens with predicable performance characteristics.

The concept involves balancing the forces of capillary for water between sand particles against the pull of gravity against that same water. It is called the "perched water table" because the intent is to hold or conserve water in the rootzone against natural drainage of the sand rootzone. The system involves layers of materials of different textures, laboratory selected and carefully placed, to meet rigid standards. Naturally, this method is expensive, costing about $3 - $8 per sq. ft., depending upon the availability of suitable construction materials.

General Design Configuration for Grass Greens - Apart from the construction method, there are general design guidelines that apply for all greens. These involve the size, shape, slope, and surrounds for greens.

Green size is highly dependent upon the length of the golf hole, number of rounds of golf played, the turfgrass that will be used, and long term maintenance budgets. Balancing these influences may require the advice of a golf course superintendent, agronomist, or golf course architect. However, in general the most important aspect is to make the green large enough to spread out player wear, but not so big as to needlessly inflate operating costs. It is suggested that 3,500 sq. ft. be the minimum size; 6,000 sq. ft. the maximum. An average of 4,500 - 5,000 sq. ft. works well.

The slope of the green should be 2%, or two feet of vertical grade change in 100 feet of horizontal distance. This provides reasonable surface drainage for water, but is not so steep as to complicate putting. Maintaining this slope throughout the green is critical. These slopes should drain the water away from the green in at least two directions -- with three or four directions being better.

The green surrounds include slopes outside the putting surface, hazards such as sand bunkers or grassy hollows, and the collars or fringes (the fairway grasses that encircle the green). To keep the golf course affordable and accessible means making sure that these areas are easy to maintain, preferably with power-riding equipment. Here again a golf course agronomist, superintendent, or architect can provide invaluable advice.

All greens should have subsurface drainage, at least where the putting surface is low, or where surface drainage exits the green. Various materials are available for this process, but most involve

trenching, clearing, and backfilling with selected pea stone, coarse sand or native soils. Recently some designers and builders have used flat tile that is laid out on the graded subgrade and requires no trenching or backfilling. Conventional methods for installing 4" tile and pea stone backfill can cost $6 per linear foot, while flat tile cuts this cost to less than $2. Even push-up greens benefit from subsurface or tile drainage.

Irrigation for greens may be a simple valve and hose system, or range upward in sophistication to radio-activated, computer-controlled sprinkler heads made out of space-age materials. Obviously this is an area where lots of money may be spent -- or wasted. If oiled sand or artificial turf is used, then no irrigation is necessary. As a general rule, topsoil greens require less water than modified soil or USGA greens. Therefore, on a topsoil tee and green golf course, perhaps a very simple system of quick coupler valves and roller base sprinklers will suffice. If labor cost for maintenance is high or is in short supply, then a simplified system of pop-up sprinklers and a very simple central control package can be justified. Irrigation can cost us little as $5,000 per hole for the most basic system, to $100,000 per hole for a "Cadillac" system in the desert southwest. Irrigation supply companies can provide lots of free advice, as can a golf course superintendent, irrigation designer, builder, or designer (see appendix on "Resource People").

Grasses for Golf - If the climate of the site is conducive to growing fine grasses comparable to golf course turf, or if maintenance practices will permit growing them, then careful selection of which grasses to plant is advised. The reason is that each grass has its own growth requirement for maintaining it to golf course standards. In addition, the playing qualities of the grasses are different. Some suggestions based upon region are found in Appendix Two, "Useful Publications." Again, a seed supplier can provide invaluable advice, as can your friendly golf course superintendent.

APPENDIX FIVE
SITE EVALUATION CHECKLIST

RESEARCH PHASE CHECKLIST FOR AFFORDABLE, ACCESSIBLE, SUSTAINABLE GOLF FACILITIES

Project:

_____

Date:

_____

Mapping

_____ Boundary Survey
_____ Legal Description
_____ Topography
_____ Ownership Maps
_____ County Map
_____ City Map
_____ Easement Types
_____ Aerial Photographs
_____ Acreage (Excluding Peripheral R.O.W.)
_____ Plat Information for Surrounding Properties

Utilities

_____ Sewer
_____ Location
_____ Size and Depth
_____ Capacity Remaining
_____ Authority-Water
_____ Location
_____ Size and Depth
_____ Capacity Remaining
_____ Existing Wells
_____ Gas
_____ Electricity
_____ Utility Easements

Drainage—Overall Utility Development Plans

_____ Drainageways
_____ Water Table
_____ Flood Plain
_____ Flood Cross-section
_____ Storm Sewer
_____ Location
_____ Size
_____ Requirements

Soil Maps

_____ Soil Types
_____ Topsoil Depth
_____ Subsoil Conditions

Trees

_____ Location and Types
_____ Specimen

History

_____ Land Cost
_____ Previous plans
_____ Disposition Status
_____ Prepared By
_____ Ownership Status

Zoning and Land Use

_____ Comprehensive Master Plan
_____ Existing Zoning (on & off site)
_____ Existing Land Use (on & off site)
_____ Proposed Zoning and Land Use
_____ Proposed Street Plan
_____ Subdivision Ordinance
_____ Zoning Regulations

Accessibility

_____ Potential Ingress & Egress
_____ Planned Thoroughfares
_____ Overall Thoroughfare Plan

Governmental Authorities

_____ Fire Dist.
_____ City
_____ Police Dist.
_____ County
_____ Traffic Agency
_____ School Dist.
_____ Park Dist.
_____ Utility Dist.
_____ Water Management Authority
_____ State Dept. of Environmental Protection or Dept. of Natural Resources

Visual Survey

_____ Adjacent Land Use
_____ Quality
_____ Views
_____ Schools
_____ Shopping
_____ Employment Area
_____ Wind
_____ Parks
_____ Fire and Police Protection
_____ Alternate Access Potential

Engineering Costs

_____ Improvement Expenses
_____ Wetland Study
_____ Source of Adequate Irrigation Water
_____ Environmental Impact Requirements

Environmental and Related Issues

_____ Wetlands Designation and Mapping
_____ Rare or Endangered Species
_____ Buffer Zones
_____ Archeological Survey
_____ Historic Designations

NOTE: This list is provided to guide the "Leader" on information that should be researched and assembled before puling together a team of volunteer professionals from the golf industry. Most of the information is available through government agencies at no cost but does require a dedicated and substantial effort. As the information is assembled, establish a filing system for future use by the planning team. Remember if your motives are pure and you effort sincere, others will help you but they will not if they perceive you are wasting their time. Be efficient and organized.

Produced By

American Society of Golf Course Architects Foundation

125 N. Executive Dr.,
Suite 106
Brookfield, WI 53005
Phone: (262) 786-5960
Fax: (262) 786-5919
E-mail: info@asgca.org
Websites: www.asgca.org
www.golfcourse1.org
www.remodelinguniversity.org