

CURLING MANUAL

Building a Curling Facility

Prepared for
by
The Club and Membership Development Committee
of the
United States Curling Association

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This Building a Curling Facility manual is a work in progress. Please contact the USCA if you have questions, corrections, or comments. Thank you!

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INTRODUCTION

Scope and purpose

Most new curling clubs begin by renting skating ice on a once-a-week basis. They face a number of obstacles to growth such as high cost, scheduling problems, and poor ice quality. Curlers in these clubs dream of the day they will have their own facility with all the advantages it will bring. A dedicated curling facility is a “must” if a club is to thrive and grow.

Unfortunately, the transition from rented ice to even a basic, two-sheet facility of their own is a difficult one for a small club with 50 or so members. The high cost of building, regulations, and the difficulty of finding a suitable site are a few of the major problems facing builders today. A stand-alone curling facility operated only five months of the year is almost impossible economically.

With Olympic status has come an increased interest in curling. The United States Curling Association has recognized the need to grow the sport of curling and thus the need to build more curling facilities. This manual was prepared to assist clubs considering making the transition from rented ice to a dedicated curling facility.

How use this manual

This manual is intended as a guide rather than a detailed, explicit “how to” book. We have tried to make it as complete as possible by covering all the questions usually faced by a club planning to build a facility. We have also tried to be as specific as possible without including information likely to be quickly outdated.

Each of the following seven major sections covers a single aspect of building and operating a curling facility. Also included is a set of six worksheets designed to help a club decide important questions concerning building. These worksheets can be completed with the help of the material in the seven sections. It is recommended that the reader review all sections before completing the worksheets.

Help and support from the USCA

The USCA has a wide variety of programs, publications, and services to help clubs with all aspects of club operation. These include help with building membership, marketing, ice making, instruction and training, youth curling, and college curling. In addition, the USCA has a group of consultants who can advise clubs on matters related to building a facility.

For more information on programs and services contact:

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BEFORE YOU START

How long will it take?

It is very important that a club undertaking the building of a curling facility have a realistic expectation about how long the project will take. There is no simple answer to this question because each club faces a unique set of circumstances that can significantly affect the time required. Obviously, a club that is building a replacement facility will likely take much less time than a club that is building a new facility from scratch. However, based on the experiences of clubs that have built in recent years, it is safe to say that the project will take a minimum of two years.

The important point to realize is that a well-thought-out plan will help greatly in reducing the length of the project. The purpose of this manual is to help you create, as quickly as possible, a plan tailored to the needs of your club by providing you with ideas, support, and reliable sources of information. Planning a building project is discussed in more detail under Strategic/Business Plan in the next section.

Building codes, permits, and zoning

Construction Codes and Permits: A curling facility, even if privately owned, is considered as occupied by the public for fire code and safety purposes. Conformance with local building codes is mandatory. Depending on the area of the country, a model building code such as the Uniform Building Code, the Building Officials & Code Administrators National Code, or the National Fire Prevention Association, will apply. You should confirm with your designer and builder which code(s) applies. Construction permits will typically be submitted through your local Construction Department and Fire Marshall's offices.

ADA Compliance: The Americans with Disabilities Act is a Civil Law covering accommodation of people with disabilities. This legislation is intended to provide fair access to your facility, without use of a "back door" or segregation, to persons who are disabled, such as, non-ambulatory, confined to a wheelchair, blind, deaf, elderly, arthritic, or mentally deficient. Your facility must conform to this law because of use by the general public, employees, and membership. All compliance interpretations should be verified with your local ADA committee (typically through the Building Permit Department).

Zoning: The land use allowed in your community should list "Recreational" and/or "Business" use for your zone. Some jurisdictions may require a "Special Exception" approval because of club/business type functions if they are not clear that your facility is solely for recreational use. Curling facilities usually fit in the same category as tennis clubs, racquet ball clubs, golf clubs, etc., but classification becomes confusing when zoning officials realize there is a social club as well as a recreational aspect. Liquor license and food service complications should be addressed early with these municipal officials.

Approaches to design and building

Your club can choose between two basic approaches to designing and building a curling facility: design-bid-build and design-build/turnkey. Both methods have advantages and disadvantages, and you should choose the one that better suits your needs.

Design–bid–build: In this approach, the design and construction are two separate steps. First, you hire a designer (architect) to define the project and prepare a design, construction drawings, and specifications. Second, the design information is given to contractors who bid or negotiate a price for their part of the project based on the specifications and drawings. There are several advantages to this approach. Your Building Committee will be more involved in the process and will make the important decisions. Less up-front money is required because initially you will only be hiring a designer. Fund raising will be easier because you can show people what the project will look like before its built. Completing the design before getting a bid makes quality control easier. Soliciting bids from several contractors on a completed design may result in a lower cost. Using a separate designer means the designer will be your agent and more likely to be your advocate in dealing with a builder. The down side of this approach is that you will not know your cost until the bids are received, and the process usually takes longer.

Design–build: In this approach, both the design and construction of your facility are the responsibility of the same entity. You would hire a contractor or builder who, in turn, would hire all consulting architects and engineers and all the subcontractors who would actually build your facility. The advantages of using this method are that you only have to deal with one contractor, and the process is usually faster than one that requires a separate construction bid. In addition, you will know your cost earlier. The down side is that you will have no independent agent looking after your interests regarding quality and performance. And, since the price is usually agreed upon prior to building, there may be disputes about what was included in the price. Also, you may have little flexibility if you want to change the design after the contract is signed.

Project phases

Regardless of which approach to building your club takes, there will be several distinct phases in your project. Each of these phases is discussed below.

Planning: The planning phase, as the name implies, involves identification and documentation of all the building issues your club will need to consider, evaluate, and make decisions on. During this period, you will identify the building site and define what the building needs to provide in terms of space. You will also identify and define the look and feel of your new club. In this early phase, it is not necessary to have an architect under contract but it may be desirable, particularly if there is no one on the committee that has the ability to facilitate and document the planning process. Additionally, architects have specific training in functional planning and programming that could be invaluable in compressing this phase and making it more efficient and thorough. Refer to the section on selecting an architect if your committee feels one is needed in this phase. The end product of the planning phase should be a document that fully defines your project goals and objectives.

The key to successful planning is identifying and listing all the functional, practical, and perhaps not-so-practical “needs and wants” your members would like to have in the completed project. Ask your committee members to visualize the new club at its fifth anniversary. Ask a thousand questions such as “What does your club look like? How does it feel to be out on the ice? What do you see when you look out on the playing arena? How do guests view the game? Do you have an equipment locker? How about a refreshment after the game? Is there a place for small kids?” All these and similar questions will help you to form an overall project vision that, if achieved, should be the measure of your success in realizing your goal.

After setting your vision, start on your list of “Needs.” These are the basic functional requirements that every club must have, as a minimum, in order to play the game; for example, the number of sheets of ice; the amount of room behind the hacks for walkways; a compressor room; washrooms; etc. Next, identify those features, spaces, and functions that you would like to have in your ideal club—a warm area for spectators to view the game, a place to change, a full meal kitchen or just a snack bar; a bar/lounge; social hall, etc. These are your “Wants”. In the early planning phase, it is important to set aside the question of cost and budgets. Differentiating between Needs and Wants will be necessary when it comes time to prioritize these lists in light of your available budget. They’ll be plenty of time to worry about this later. For now, you should be defining what your “ideal club” would look like. Once this is defined, the reality of cost and budget will inevitably require that the design be modified, reduced, or planned for phased implementation.

Next, from your list of Needs and Wants identify specific spaces or rooms and estimate the amount of space you will need for each. The ice playing area and the refrigeration plant area are relatively easy to do and depend only on the number of sheets your club needs. Other areas, such as the warm room, washrooms, locker area, etc., depend on the size of your membership. To assist you in this effort, a list of typical space and the per occupant area allowances is provided in Appendix A.

Once the various areas are identified, list all the detail requirements for each space such as lighting, power outlets, plumbing, etc. A sample Room Data Sheet is provided in Appendix B for use in developing these requirements. Also, consider if you require specific desired functional adjacencies or relationships between various spaces, e.g., the warm room will need to be directly adjacent to the playing area with full view of the ice.

In this phase, you will also need to identify and document the specific needs of your building site. These needs include parking and on-site vehicle circulation. Other issues related to utility services, septic collection, drainage, etc., should be investigated. The issues related to site development are discussed in more detail in later sections.

Schematic Design: In this phase, your architect will take the requirements you have developed and prepare a number of conceptual plan sketches of designs that meet your needs. From these sketches, you should select a preferred plan from which Schematic Design Documents, consisting of drawings (plans and elevations) and outline specifications, will be prepared. These documents should be sufficient to fix, describe, and illustrate the full size, character, and scope of your new club, including materials, equipment, component systems and types of construction as may be appropriate. During this phase, your architect will also analyze the project scope and prepare an estimate of construction costs. (see the section on estimating for a detailed discussion on costs). If this initial estimate exceeds your budget, you will need to make changes to the program and your architect should make recommendations to keep the project within the limits of your budget.

Design Development: After your club has approved the schematic design, your architect will prepare *Design Development Documents* consisting of drawings, specifications, and other documents as necessary to set forth in detail the requirements for the construction of your facility. Your architect will also begin meeting with regulatory agencies to identify permit requirements. During this phase, your architect will update the previous cost estimates and make recommendations as necessary to keep the project within the limits of your budget

Construction Documents: In this phase, your architect will prepare *Construction Documents* consisting of drawings, specifications, and other documents as necessary to set forth in detail the requirements for the construction of the facility. Your architect will assist in making permit submittals to regulatory agencies. Prior to issuing the documents for bid, your architect should provide an estimate of probable construction costs and recommend changes as necessary to keep the project within the limits of the budget. This estimate should include the development and inclusion of bid alternatives to provide reasonable assurance that you will be able to award a construction contract that does not exceed your budget.

Bidding or Negotiation: During this phase, your architect will assist you in obtaining and evaluating bids or negotiated proposals and assist in awarding and preparing contracts for construction. Your architect will also provide clarifications and prepare addenda to the *Construction Documents*.

Construction Phase—Administration of the Construction Contract: Your architect will likely administer the *Contract for Construction* between your club and the building contractor. Your architect will visit the project during construction to become generally familiar with the progress and quality of the construction and to determine, in general, if the work is being performed in accordance with the *Contract Documents*. The architect will keep you informed of the progress of the work and will endeavor to guard against defects and deficiencies.

Based on his/her observations and evaluations, your architect will act as a consultant regarding the contractor's applications for payment. Your architect will assist you in determining whether to reject work which does not conform to the *Contract Documents*. The architect will also assist you in preparing changes for your approval and may recommend minor changes in the work that do not involve an adjustment in the *Contract Sum* or an extension of the *Contract Time* that is inconsistent with the intent of the *Contract Documents*.

Selecting architects and builders

If you decide to use an architect, you should make your selection using written selection criteria your club feels are the most critical to achieving a successful design. First, identify the qualifications you feel the architect must have in order to make the project a success. Typical criteria used for selection include:

- Past experience with similar facilities (curling clubs, private clubs, sports facilities, ice rinks, etc.)
- Ability to design to a budget
- Ability to work with groups/committees
- Quality of services provided (get references)

You should not make your selection only on the basis of fee comparison for several reasons. First, remember you are not buying a product where value comparisons can be easily made. Rather you are buying a service in which the relationship and working abilities differ such that cost has little comparison to the quality of service received. Also, small variations in fees are not important in the overall project costs. The ability to provide the most responsive service is more critical to overall project success than a 2% difference in fees.

After establishing your selection criteria, you must next identify architects that are capable of providing the needed design. Your initial list of candidates may be developed by word of mouth, from the yellow pages, or by placing an advertisement that describes the project, the

selection criteria, and requests that interested firms submit a statement of qualifications. Be sure to set a due date for receipt of all statements of qualifications.

Once you have all the responses, thoroughly review the information provided and rank the submissions from the most to the least qualified. At this time, a clear winner may be evident. However, it is usual to invite the top two or three to an interview where you can assess them face to face. It is important to remember you are hiring people, and it is as important to know that you can work with them as it is to know they can do the job. How easy it will be to work with an architect will usually come out during an interview. Allow an hour for the interview with a 25-minute presentation followed by 20 minutes of questions and answers. This permits 15 minutes between interviews.

After the interviews are complete, rank the firms. Issue a scope of services to the highest-ranking firm and request that they submit a fee proposal. After reviewing the proposal, you may need to negotiate the scope and fee to fit within your budget. If you are unable to agree on a scope and a fee with the highest ranked firm, cease negotiations and request a proposal from the second firm.

With this selection process, you can be assured of selecting the firm that you feel is most qualified, will be the easiest to work with, will be most responsive to your needs, and will do so at a price you can afford.

GETTING ORGANIZED

Committees

As an established club, you should already have a set of by-laws, a board of directors, and several committees. Before embarking on a building program, you will need to form a Building Committee with a chairperson and several subcommittees.

The chair of the Building Committee will be responsible for the overall administration of the program. The chairperson must be an enthusiastic supporter of the program with leadership and communication skills and the ability to coordinate activities without losing site of the “big picture.” It is important that the chair have a flexible schedule to accommodate meetings. The chair must also keep the Board of Directors and the club membership well informed of progress.

The specialized and detailed work is the responsibility of subcommittees. At a minimum, you will need the following subcommittees:

Membership: The responsibility of this subcommittee is to establish ties with the club membership by soliciting input on the project from the members through the use of surveys. They are responsible for “marketing” the project to the members and calculating potential membership.

Legal: This subcommittee is responsible for purchase agreements, leases, and standards for accounts and money. Its is very important to have the correct language in agreements you will have to live with for many years.

Design: This subcommittee will research and select the building design and layout.

Financial: This subcommittee is responsible for the Business Plan, analyzing cost of club operation, and applying for bank loan financing.

Fund Raising: The responsibility of this subcommittee is to raise money. Sources include members, friends of the club, national and regional organizations, corporate sponsors, gifts, etc. They are also responsible for deciding how to raise construction money, details of certificates issued to members, and whether to seek “non-profit” (501 (c) (3)) status.

Strategic/Business plan

Every club that builds a curling facility should have a Strategic Plan and a Business Plan. In its simplest terms, a Strategic Plan is a statement of what the club is, its mission, and its goals. A sample Strategic Plan is shown in Appendix A. A Business plan is a detailed description of how the goals in the Strategic Plan will be achieved. A sample Business Plan outline is shown in Appendix B.














One of the major goals of your Strategic Plan will be to construct a curling facility, and it is essential that all club members understand and support this goal. A club that is not united behind such a major project will surely fail. Before proceeding, make certain you have full member support.

Your Business Plan will be similar to the ones commonly used in business. Some members of your club may have had experience in preparing and/or implementing such plans. It is important to remember that your Business Plan will be carried out by volunteers who have other

things to do besides work on your project. Some tasks will take a little longer to get done than they would in the business world.

A Business Plan can be summarized in a timeline chart such as the one shown below which shows a few of the activities required in building a facility.

Sample Business Plan Timeline

Month	1	2	3	4	5	6	7	8	9	10	11	12
Activity												
Purchase site												
Select design												
Locate site												
Select builder												
Member pledge drive												
Apply for mortgage												

Each Business Plan activity is listed in the table and assigned a start and a completion date.

Collecting information on other curling clubs can be a useful step in the club building process. Studying other clubs—where they’ve been and where they are going—can help you get a sense of what a new club will face during its lifetime. Here are some things you should try to find out about other clubs:

Membership and recruitment: How many members does the club have? How many are active? Are they committed and enthusiastic about improving their club, or are they ambivalent and reluctant to invest their time and money? What is the average age of the membership? Is the membership getting older, or is the club successfully recruiting new, younger members that can keep the organization afloat for years to come? What is the economic state of the membership? Is it significantly better or worse than several years ago? Can the club expect to have a steady stream of dues-paying members, or is it getting harder over time to recruit and keep members who can afford to curl? Is their membership growing? Where do new members come from? What kinds of strategies are in place to acquire new members? Do they work? How many new members does the club attract? How many does it lose each year for all reasons?

Dues: What are the club’s dues and fees? Is the scheme popular with the membership? How could it be improved?

Finances: What are the club’s major sources of revenue? How has the revenue stream changes over the years? Is revenue increasing or decreasing? What are the club’s major expenses? How have expenses changed over the years? Do they have any major expenses in the near future? Does the club have any debt? Does the club have a surplus or loss at the end of each year?

Facility: How was the facility acquired? Is it fully owned by the club? What condition is it in? What kind of maintenance does it require? What does it cost to maintain, especially in the off season? Will it be viable in 10 years?

Overall club health: What is the overall state of the club? What is the likelihood that it will still be in operation 10 years from now? What would happen if, hypothetically, the facility suddenly did not exist? Would the club fold, or could it rebuild? Is the club vigorous enough financially and in terms of membership to survive for many years?

REDUCING COSTS

Sharing your facility

One way to reduce the risks and costs of developing a new curling facility is to share the development effort and the facility.

Other Curling Clubs: This option will only be feasible in areas where curling is already well established. If there is another curling club in your area that for any reason would like to be a partner in building a facility, it would be worthwhile at least to explore the possibility of a joint effort. With two or more clubs joining together to share a club building, the risk and effort of developing a facility as well as the operating expenses can be spread over a larger membership.

Other Ice Facilities: In this case, you are two basic options. The first is to build your facility next to a skating facility and pay a ground lease for the area under the club and a use fee for the supporting spaces (toilets, locker room, warm room, etc.) located in the skating arena. It is possible to share the ice plant with the skating arena, but you must have your own temperature control system because skating ice and curling ice require different surface temperatures. Your second option is to build a facility that could also be used by skaters. Your facility would have to have at least four sheet of ice. The ice could be rented to skaters in the off season, or even shared during the curling season if your membership could not support full-time use.

Other Recreational Facilities: Swim clubs and tennis clubs sometimes have enough unused land to build a curling facility. Sharing facilities with such a club has several advantages. First, the site likely already has many features, such as a parking lot, club room, etc., so all that is required is the ice area and a modest warm room.

Do it yourself

In the “good old days,” it was possible for a group of “do-it-yourselfers” to build a curling facility. If one or two club members had some building experience, perhaps one was a contractor, plans would be drawn up and a volunteer force of willing hands assembled. Unfortunately, in many areas of the country, this option is no longer feasible because of building codes, laws, and regulations.

Before deciding whether you can do it yourselves, you should check your local laws relating to building and development to determine whether you need a licensed professional prepare the building plans and specifications. In most jurisdictions, it is a requirement of law to have plans prepared under the supervision of a licensed architect or engineer who must stamp/seal the drawings. It may be impossible to obtain a building permit without detailed structural calculations, energy use estimates, waste water plans, etc. If your area will still allow non-professional development, or if you feel you have sufficient volunteers with the requisite professional qualifications, this may be an option worth pursuing.

One of the first decisions your building committee needs to determine is whether your club has architects, engineers, builders, or contractors as members. Certainly having this expertise “in-house” can be one of your best assets. However, it is important to remember that these members design and build buildings for their livelihood, and you should not expect to have them donate their services for free. There is certainly nothing unethical nor intrinsically wrong

with having a club member design or construct your club, but if that member also serves on the building committee, the possibility of, or at least the appearance of, a conflict of interest should be considered.

If you use volunteer professionals to develop your club, make sure that either they carry suitable insurance or that your club procures a project policy. Although their services may cost you nothing, they still can make mistakes for which they and your club will be liable should self-development with volunteer labor result in injury.

If self-development is pursued, consider the type and complexity of the building system you plan to use. Obviously, a steel and masonry building structure will require a higher level of building skill than wood-framed walls with prefabricated trusses. Do not attempt to build a complex building with volunteer labor unless your club has some experienced construction supervision.

Public land/building

One of your primary concerns in building a new curling facility is where and how to get the land. One way of solving this problem and possibly reducing or even eliminating the cost is to enter into a partnership with a local governmental agency that will provide the land in return for your club providing some public benefit.

Whom to Approach: A local parks and recreation agency is the most obvious initial contact. The typical mandate of these agencies is to develop public land for recreation, and curling obviously falls into this category.

How to Approach Them: It is important to remember that a public agency is subject to a tight budget and close scrutiny. In order to convince an agency to participate in a joint public-private development they must have a strong defense to the question “What’s in it for us?” To be successful you must tie the project into their mission and/or offer them use of the club in the off season.

You can appeal to the mission of a Parks and Recreation group by emphasizing the recreational and sport benefit of curling for all ages and abilities. In addition, you can offer the ice area in the off season for indoor recreational pursuits such as roller hockey, indoor soccer, basketball, large hall activities, dances, etc.

Off-season use

It is unlikely that your club will be able to leave your new facility idle during the off season. When designing your club, you should keep in mind possible alternate uses. Two important choices you make will greatly affect your options—the number of sheets of ice you build and the type of floor you install in the ice area. Generally speaking, the larger the floor area available, the more options you will have. A concrete floor in the ice area capable of light industrial use will be much more useful than a sand floor.

During the off season, your club will likely rent your facility to other ventures rather than operating the activities themselves. Possible income producing uses include:

Temporary Storage: This activity is usually not used by individuals because they typically need smaller, secure areas. However, in some parts of the country it may be feasible to rent space to individuals who need to store seasonal equipment such as snowmobiles, snow blow-

ers other such items that they typically use during curling season.. Renting the facility out as temporary storage may be most valuable to moving and transit companies, contractors, and other similar businesses that may need a large covered area on a temporary or seasonal basis. If the ice area is properly insulated and the leaseholder is willing to pay the power bill, renting the area as a cold storage facility may also be an option.

Flea Market: Flea markets are typically a regular weekend event in which the vendors rent table space on a per day basis. Your club could subcontract to an established flea market operator for a daily rental fee. Another way to produce income at a flea market is to operate a snack bar.

Special Shows One time sales events such as sports card shows, pet shows, antique shows, etc. frequently require a large flat floor area with supporting wash rooms and service spaces. Contact show promoters to determine the market for this use. Income can range from a daily lump sum charge to a percentage of the gate/sales. In some areas, there may be a sufficient market to have your club full nearly every weekend. It is also possible to make income from a snack bar operation.

Other Sports: This option may be somewhat limited because most summer sports are usually played outdoors. Possibilities may also be restricted by the size of your ice area floor. Sports such as indoor roller hockey or indoor tennis need at least a four-sheet. Tennis also requires a greater ceiling height than other possible uses.

Energy considerations

The cost of power to operate your facility's ice making equipment will be one of your club's major expenses. Your cost will depend on the climate in your location and on the power rate charged by your local utility. When planning your facility, you should compare carefully the first-costs of insulation, vapor barriers, reflective blankets, etc., against the long-term costs of power. It may be less expensive in the long run to pay the extra cost of installing more insulation when first building the club than to pay the cost of lost energy over the life of the club.

In most areas of the country, local building codes and ordinances mandate a maximum allowable energy usage for both space conditioning and lighting. This value is most often given for lighting as a maximum foot-candle per square foot of area and for space conditioning as a maximum BTU/Hour loss rate. To determine projected energy usage the following factors should be considered:

The Building Envelope: The term "building envelope" refers to the physical enclosure on the exterior walls and openings, roof, and floor. Each component in the envelope has a "U" value which is the rate at which the material or component transmits heat over time from the hot to the cold side. The lower the "U" value, the higher the resistance to heat transfer. The ability to resist heat transfer is commonly referred to as the "R" value. If the exterior walls are uninsulated steel panels the envelope will have a lower "R" value than if it is constructed of foam filled sandwich panels. Obviously, the uninsulated panel costs considerably less than the insulated sandwich panel. However, you will likely gain back the cost differential in five or fewer years of operation from the energy savings realized.

Lack of insulation can have a detrimental effect on the ice. If the outside temperature becomes very high and there is little insulation in the envelope, the heat load may become too large for the ice making equipment so that the ice becomes unplayable.

Typical building insulation values accepted as a prescriptive compliance with most energy codes are:

Location	Insulation
Floor slab/Foundations	R-10
Walls	R-19
Ceiling	R-30

Lighting: Most energy codes will limit the type and quantity of artificial light in a space. Because curling ice is a special use area, it may not be subject to lighting limitations. However, it is important to not over light your playing area. Most energy codes will not permit the use of incandescent lighting in large areas and so fluorescent, high pressure sodium, or metal halide may be your only possible lighting options. Because of low first-cost, strike-time, color rendition, heat generation, and glare issues, fluorescent lighting is the most commonly used method in curling facilities. Generally, fluorescent lighting with warm-white lamps, spaced evenly so as to provide 50 foot-candles of illumination at 3 feet above the ice, provide optimum lighting for curling. It is important to make sure that all fluorescent lighting in the ice area have cold weather ballasts because normal ballasts will not work. To achieve the optimum energy performance, use T-8 fluorescent fixtures in lieu of the more traditional T-12. Although the lamps can cost 20-40% more, they last longer and use 30% less energy.

Mechanical Equipment: You will have less opportunity to control the energy usage of the mechanical equipment in your facility because it will be selected based on your operating conditions and the projected capacity required. High power using equipment includes the ice refrigeration plant, space heaters and ventilators; hot water heater/boiler; dehumidifiers; etc. To manage the energy usage of this equipment efficiently, you should make sure that they are sized to meet anticipated demand without an excessive safety factor.

Other Considerations: If for any reason your facility does not have sufficient insulation, you should seriously consider using ice blankets. The technology of newer products make the use of ice blankets more feasible. They are lighter, less bulky, and more efficient than older products. If you plan to use ice blankets, make sure that you have provided a storage area adjacent to the ice.

In recent years, the use of a reflective material suspended from the ceilings of ice rinks has gained popularity. This material greatly reduces the radiation heat load from the ceiling on the ice surface. The refrigeration power saving can be as much as 20% so that the cost of the material can be recovered in about three years. In addition, the reflective material creates a warm zone near the ceiling that eliminates dripping, and the reflective nature of the material reduces the amount of lighting required.

LAND

Selecting a site

The site you choose will impact both the cost of construction and the operation of your facility. This decision is a critical one that must be made with diligence and objectivity. When analyzing a possible site, you should consider the following factors:

Land Use: One of the first things you need to identify is the regulatory restrictions on a site. Almost all jurisdictions in the United States regulate land use through zoning and other forms of land use regulation. Curling clubs could be classified under a number of uses such as; business; recreation; amusement/entertainment; sports club, etc. The important thing to know is how the applicable land use/zoning code will classify your club and whether the site under consideration permit this use.

Beside restricting use, most zoning codes also establish minimum development standards for establishing a new use or changing from a previously permitted use to a new one. Some of the issues typically addressed in zoning codes include:

- Maximum density of use
- Minimum landscaping required
- Vehicle circulation and parking
- Pedestrian walks
- Signs

Public vs. private land

See “Public land/building,” page 16.

Shared site

See “Sharing Your Facility,” page 15.

Serviced vs. raw land

See “Sharing Your Facility,” page 15.

Surplus land

See “Sharing Your Facility,” page 15.

BUILDING

Layouts and designs

(To be inserted: typical layouts for 2- to 6-sheet clubs) *[work in progress]*

Ice shed

Types of Building:

Conventional.

Metal prefal.

Fabric covered metal frame: Tension fabric (PVC polyester) skin stretched over galvanized tubular truss/arches. These can be of a double wall construction to allow insulation space between the faces. This type of construction has the shortest life span of any shelter (material warrantees of 15 years). The cost will be the lowest of the alternatives (approximately \$6 per square foot for kit materials). A potential problem is vandalism because the fabric could be purposely cut or torn.

Tilt-up concrete panels: These could be site-poured or factory-poured panels that are tilted up to the vertical position and welded to each other to form a simple flat wall. Typically used for warehouse, agricultural, and industrial type buildings, they are a quick, inexpensive way to form an exterior wall structure. The inside face can be furred with insulation boards or an insulation sandwich construction. This type of construction provides a long-term durable concrete exterior surface.

Footings: The building itself must be placed on a stable footing substructure to prevent differential movement within the building which will crack and destroy it. The substructure under the ice rink must also be stable enough that the ice surface remains level throughout the playing season. Most of the states in the northern half of the country have severe enough winters that frost is a potential problem. In these areas, foundation systems must be designed to penetrate the ground below the frost level.

Floors—Sand vs. Concrete: There are two types of floor commonly used in curling facilities: sand and concrete. In a sand floor, the refrigerant pipes are embedded in the sand which is cooled below the freezing point. The cold sand is then flooded in successive layers until the desired thickness of ice is reached. Because the pipes in the sand are vulnerable to damage, this type of floor cannot be used for other purposes in the off season. Refrigerant pipes embedded the concrete makes the best year-round floor for curling and other uses. However, the cost of installing a concrete floor is substantial. A multi-layer insulation barrier is applied under the entire floor area to prevent frost from penetrating into the ground below. For facilities that make ice for the full 12 months of the year, a subsoil heating system may be necessary to ensure that the subsoil does not freeze and cause frost heaves.

Storage: Your club will need to provide storage space for various items used in making and maintaining ice such as scrapers, hoses, and a pebbling can, as well as building maintenance items such as ladders, spare parts, etc.

Insulation: In most cases, it is necessary, or at least desirable, to insulate a curling facility. This involves placing an insulation envelope between the indoor rink and the outside weather.

ASHRAE standards, which take into account your local heating degree days, should be used to determine the most effective design, quality, and value of the insulation required. The most effective location for insulation is in the roof/ceiling assembly, but insulating the walls should also be considered. An effective vapor barrier on the warmer side of the building shell will help to keep frost and condensation from becoming a problem on and inside the shell itself.

Dehumidification: There are several sources of humidity in the playing area of a typical curling facility. They include leakage through the building shell from the outside atmosphere, the players themselves, sublimation of the ice surface, and water used in pebbling and flooding.. Excessive humidity will cause problems because of frost buildup on the ice surface and drips from the ceiling. These problems are usually avoided through the use of a refrigerant or desiccant type dehumidification system, or, in colder parts of the country, by heating and thus drying the air in the playing area. Ceiling treatments such as *Alumasorb* can be used in conjunction with dehumidification to eliminate humidity problems.

Lighting: The table shows the level of illumination recommended for curling by the *Illuminating Engineers Society*.

Illumination (Footcandles)		
Class of Play	Hack to Hog	Hog to Hog
Professional	125	100
Tournament/Amateur	50	30

The illumination at the house ends of each sheet should be between 50 and 125 ftc and 30 to 100 ftc for the rest of the sheet. The lighting system used should minimize glare off the shiny ice surface. Fluorescent strips with electronic or cold-weather ballast starters is a commonly used system. High energy discharge lighting sources should be avoided because they can cause local warming of the ice surface.

Mechanical [work in progress]

Comparative costs [work in progress]

Quality construction [work in progress]

Ice making equipment

Refrigeration [work in progress]

Ice mats [work in progress]

Ice maintenance equipment [work in progress]

Water supply [work in progress]

Curling equipment

Stones [work in progress]

Scoreboards, hacks, etc. [work in progress]

Warm room

Furnishings: It is important to develop a list of furnishings for your warm room. The list should include items such as: tables for 8 with chairs; chairs for people watching the curling; a trophy case; window drapes; etc. A careful choice of furnishings can make a big difference in making your club functional, comfortable, and attractive to new members.

Kitchen: Most small curling facilities have kitchens similar to those found in churches and other clubs, i.e., they have ovens, microwaves, refrigeration, etc., sufficient for the preparation of snacks and light meals and that allow a large quantity of food to be heated and served at the same time. In designing your kitchen, provide a countertop work area layout that can accommodate at least four people at a time. Be sure to comply with the ADA regulations. A fully compliant kitchen for the preparation of food is much more complicated because it must meet the Department of Health and Building Codes for public food service. A kitchen of this type is treated like a restaurant kitchen and would require commercial ranges, hoods, fire sprinklers, special countertops, equipment, commercial dishwashers, and sewer/drain grease traps.

Bar: If your club can obtain a liquor license then, for control purposes, it will likely want, at a minimum, a stand-up bar that separates the server/bartender from the patrons. Minimum equipment for such a bar includes a refrigerated cooler, ice machine, sink with hot/cold water, and a lockable storage area for liquor. If the bar area is near the ice area, a draft beer tap may be considered and the beer keg can be kept in the ice area. The bar area should meet ADA requirements.

Washrooms: The facility should provide a separate toilet and lavatory facility for men and women and a drinking fountain. A janitor service sink is recommended, and larger clubs may consider installing showers. Most plumbing codes set a minimum number of fixtures based on the number of occupants, typically one toilet (water closet) per 50 persons and one lavatory per 75 persons. Washrooms must meet ADA requirements.

Changing Rooms: Your facility should provide separate areas for men and women. These areas should have a bench, clothes storage/hanging, and preferably some lockers. The size of lockers can vary from small for a bag and shoes to large for hanging coats and storing brooms.

Heating and Ventilation: The warm room should meet current ASHRAE standards for heating, ventilation, and, if applicable, air conditioning. Special steps must be taken to maintain air quality in smoking areas.

Electrical service

The ice refrigeration plant will be the largest electrical load and will depend on the size of unit(s) used. The other loads will be the coolant circulating pump(s), lighting for the ice area and warm room, dehumidifier, kitchen and bar areas, the various electrical outlets throughout the building, and possibly a water heater. The table shows the expected average monthly electrical energy consumption in kWh/month for clubs of various sizes for a cold and a warm climate. These numbers can be used to get a rough estimate of power costs for your club.

Monthly Power usage (kWh/month)

No. of Sheets	Warm Climate	Cold Climate
1		
2		
3		
4		
5		
6		

Parking

The number of parking spots your club will require will be determined by local zoning regulations. This number is usually determined from the number of occupants expected in the building. A lenient regulation may only require one parking spot for each 5 occupants. The number of occupants may be determined as one per 15 square feet of club room and 8 players per sheet of ice. A two-sheet facility with a 1,500 square foot warm room would require 23 parking spots. A more restrictive regulation may require one spot for each three occupants and may require including the area of the ice surface as well as the warm room.

You should expect to provide two handicap spots for every 50 regular spots. Parking lot surfaces are usually required to be dust free and so require a concrete, macadam, or similar paving. Landscape screening of the parking area from adjacent properties may require a lot line setback.

FINANCING YOUR CLUB

Raising money

Bonds/Shares: The primary source of funds used to build most non-publicly owned curling facilities in the United States has been the club membership itself. By and large, the initial club membership will fund a large portion of the required equity in the form of cash. The cash is often acquired by the club through the sale of bonds in amounts ranging from \$100 to \$10,000, depending on the economic status of the membership. Bonds can take many forms. They can be interest bearing, redeemable, subject to a sinking fund requirement, or due at a date certain. Keep in mind, if they are interest bearing, the interest will have to be paid from operating income or accrued. In either case, payment of interest could cause difficulties later.

Solicitations: The use of a 501 (c) (3) corporation can be a major benefit in soliciting contributions. This type of corporation, if approved by the Federal Government, can receive tax deductible contributions. Such contributions can be in the form of cash, appreciated assets such as stock holdings, or hard assets that can be sold to raise cash. Many clubs have received 501 (c) (3) status, but obtaining this status requires following specific guidelines. If your club is considering applying, they should consult with someone who is thoroughly familiar with the process.

Sponsors: These are people who will help to underwrite a facility because of their love for the game. While finding these people is not easy, if you are successful, then financing your facility will be much easier. You should canvas your membership for the names of potential sponsors. Sponsors can be rewarded and recognized in various ways, e.g., naming a club event after them, plaques displayed in the club room, etc. If you have a 501 (c) (3) tax exempt status, sponsors may receive a tax advantage.

Public Grants: Your club may be in a position to receive support from a public organization. State programs that provide athletic outlets for juniors are a good example. Service clubs might also help if your club provides a facility for a youth group supported by the service club.

Financing

Mortgages: Your club may have difficulty obtaining a commercial mortgage because most financial institutions are reluctant to underwrite a facility for a sport with which they are unfamiliar. Your best source for a mortgage loan may be a local bank where the decision makers are likely to be familiar with your area and to know some of the people involved in your curling club. They will be more likely to grant a mortgage if they believe the property can be used for another purpose if the club fails and the property sold to satisfy the debt.

When approaching an institution for a loan, you should have a well-thought-out presentation ready. Your presentation must include a breakdown of the total anticipated costs, your equity component, how it will be raised, and where the loan fits in. You should not expect a loan to represent more than 50% of the total cost of the project. The people who will build the facility and run it in the future should be detailed. A pro forma operating statement showing income and expenses and how your club will make the monthly payments must be presented and must be realistic. You should not be surprised if the institution asks for the personal signatures of the founders on any sort of loan.

OPERATING YOUR CLUB

Organization

If your club has been curling on rented ice, you will already have an operating organization in place with a set of by laws, a Board of Directors, officers, and some committees. Your club should already belong to a regional curling association that, in turn, belongs to the United States Curling Association. If you do not already have these you will need to set them up.

Once your facility is in operation, you will probably need to upgrade the structure of your organization. At a minimum, your club will need:

- A set of by laws covering all aspects of club operation, responsibility of officers, election of officers, etc. A sample set of by laws is included in Appendix A.
- A board of directors elected by the membership
- Officers, including at least a president, vice president, secretary, and a treasurer.
- A regional association representative
- Committees including, at a minimum, membership, building/maintenance, ice, bar, and curling.

Finances

Clearly, if your club is to survive, your income must exceed, or, at least, equal your expenses. Expenses are easier by far that income to estimate and project. For this reason, income projection must be done realistically and conservatively. Income at any recreational facility such as a curling club is sometimes determined by factors beyond the control of the club. Planning for a “rainy day” is a very wise move.

Expenses

Taxes: Real estate taxes will likely be one of the largest annual expenses your club will face. In some communities, particularly in smaller centers, you may be able to get some relief if you can convince local officials that your club is a major benefit to the community. For example, if the schools can use your facility for sports and/or education, or the Parks and Recreation department can become some sort of partner.

Your club may have to file a state or local income tax form if you receive income from bar sales or other activities. In some states, your club may be required to collect sales tax on some items. Be sure to check with state and local authorities.

Utilities: The cost of electrical power is the largest single operating expense for most curling facilities because electricity is expensive and a refrigeration plant is in operation 24 hours a day during the curling season. Many utility companies use peak demand pricing where the maximum load during the billing period determines the per kilowatt-hour cost for that period. You can keep your power costs down by starting your compressor in the fall just after the billing cycle begins and shutting it down in the spring just before it ends. You should also look for special rates from your utility company.

Maintenance: A new facility should not require a lot of expensive maintenance for several years. However, your membership may want to make some improvements during

this time. Your greatest maintenance concern will likely be your refrigeration equipment. Great care should be taken in starting up your equipment in the fall and in shutting it down for the summer. If your club is fortunate enough to have someone on your maintenance committee who is familiar with refrigeration equipment you can probably do the work yourselves. If not, it would much better to have the work done by a professional.

Mortgage: If your club has a first mortgage, the debt service on this mortgage ranks second in priority behind real estate taxes in the list of bills to be paid. The payments will usually be monthly throughout the calendar year, so even though your facility may be shut down in the summer, the mortgage payments still have to be made. Lenders have little room and not much reason to be forgiving. Failure to pay the mortgage on time will often carry a significant penalty.

Other: Additional expenses your club should budget include a contingency fund, bar and kitchen supplies, property insurance, liability insurance, and regional and national curling association dues.

Income

Dues: Dues income will be the largest single source of income for your club. There are two steps in setting dues. The first step is to select the type of dues structure best suited to your club. Dues structures range from the “one size fits all” type in which a member pays one fee that covers all club curling to one in which the dues are determined by how much curling the members does. Other aspects of the dues schedule include reduced rates for new or younger members or members willing to curl at non-prime-time hours, and trial memberships.

Once you have selected your dues structure, you must set a dues rate which will produce the required income. Needless to say, your dues rate must make your club competitive with similar recreational activities in your area. You can get some idea of this by comparing your dues with the cost of bowling, indoor tennis, swim clubs, etc. The most difficult part of setting a dues rate for a new club is to estimate membership. Your best bet is to base your estimate on your current membership and a reasonable, conservative estimate of your net growth rate. When estimating net growth rate include the possibility of losing existing members—it happens!

Bar: Most curling clubs have a bar of some sort that generates a profit for the club. The situation in your club will depend on local liquor laws, your licensing arrangement, your storage capacity, your cooling capacity, and your need to provide a staffed bar.

In recent years, police enforcement of drinking and driving laws has increased. Your club should have adequate liquor liability insurance.

Bonspiels: Invitational and in-house bonspiels are not only fun but can generate appreciable income through increased bar sales and entry fees. Keep your bonspiel fees competitive by checking to see what other clubs are charging for similar events. Experience will soon tell you what income your club can expect from bonspiels. Keep in mind that, to be successful, bonspiels, like all club activities, require effort on the part of the members, and it is easy to overdo a good thing.

Off-season: Most curling facilities were not designed for use in the off season. If your club plans to generate income by using the facility in the off season, you should include

any necessary features in the original design and make sure that you meet any local codes for the type of use you are planning.

The warm room is the most likely part of your club to be useful in the off season. Summer time use may require air conditioning and additional kitchen and washroom capacity.

If you are considering using the ice area in the off season, then you should consider the largest unobstructed floor area you can afford, preferable with a concrete floor built to commercial building standards.

Other: Other sources of income include use of club by outside organizations for regular or occasional curling, fund raisers for special projects, sponsors for bonspiels or youth programs, etc. Some events may not raise a lot of money but are worth the effort because they give the club good exposure within your local community.

Leagues

Most clubs structure their curling on a league basis, and, if your club has been curling on rented ice you are likely already familiar with setting up this type of activity. With your own facility your club will be able to expand the types of leagues it can offer. Men's, women's, mixed, open, senior, and youth leagues are typically found in most clubs. Current trends suggest that many prospective new members may want to try the sport on a less structured basis. You may, for example, want to consider "drop-in" league in which the teams for the games are made up from the members that show up that day. The revenue from this type of curling may be small and difficult to predict, but, by offering flexibility, you may attract more people to the sport who will ultimately want to participate in more structured leagues.

Ice making

High quality ice is essential to the success of your curling club. Nothing will discourage potential new members faster than unplayable ice. Ice making is part art and part science and requires a knowledgeable and dedicated ice maker and Ice Committee. Ice making courses are available from the USCA, and it is strongly recommended that your club send its ice makers to these courses and give them every opportunity to learn from the experts.

Bonspiels

In any club, bonspiels serve several purposes—social, income production, competition, practice, to mention a few. For a new club looking for new members, bonspiels are an important recruiting tool because they are fun. You should schedule some sort of bonspiel activity for your membership about once a month and be sure that all new and prospective members are invited.

Marketing

The task of marketing in your club may be assigned to the Membership Committee or it may have its own committee. In either case, your club must be prepared to "sell" curling in a very competitive market. Potential new members will likely have several choices of where to spend their discretionary recreation dollar. The USCA has developed a seminar course for clubs to help them with marketing and club management using the latest methods and techniques. Your club should consider taking advantage of this course.

WORKSHEET/CHECKLIST

- A. Potential membership**
- B. Estimating capital available**
- C. Determining size of club**
- D. Estimating building costs**
- E. Estimating permissible debt load**
- F. Factors to consider**

SUPPLIERS

Refrigeration *[work in progress]*

Ice equipment *[work in progress]*

Dehumidifiers *[work in progress]*

Stones *[work in progress]*

Curling suppliers *[work in progress]*

Building Systems *[work in progress]*

ACKNOWLEDGMENTS

[work in progress]