bunker toolbox

bunkers 360

Introduction

The Bunker Toolbox is designed to be a planning aid and a basic roadmap for considering many aspects of bunker renovation. For those that have bunker challenges and are considering a bunker project, advanced planning and preparation is a must. This is where the toolbox can be most advantageous – by providing some basic structure to the planning process, helping you get the most out of your investment. The Bunker Toolbox should provoke discussion amongst your internal team so that options can be reviewed and decisions can be made.

The contents of this Bunker Toolbox have been assembled through many contributions by architects, builders, professional organizations and industry suppliers. We thank them for their thoughts, advice, and counsel. Although this document contains very good and helpful ideas, it does not cover every aspect or circumstance that one can face.

The following pages are organized as a "Planning Guide" with references to various documents located or linked in the Appendices. The Planning Guide contains most of the conceptual information. The Appendices have instructions and links to specific components of the Bunker Toolbox.

It is important to state that every golf course is a unique product, with its own set of circumstances. Each bunker project will have its own solutions and considerations. A golf course should always seek the advice of trusted professionals, architects, and builders before proceeding with a project.

Bunker Toolkit Contents

Planning Guide Part 1 - The "Big Picture"/ Creating the Project Parameters

Prior to any shovel being placed into the ground, it is critical for facilities and personnel to get a full and complete picture of their course's bunkers. Beyond just a basic understanding, a detailed review needs to be made to identify problem areas and determine what needs to be improved. Assembling perspectives from a wide point of view will produce the best assessment and will result in the best possible project result.

Defining What Needs to be Addressed

In many ways, this section constitutes the preparatory work necessary for creating a Bunker Master Plan. Although you might be considering the use of an architect, this effort will form the basic discussion points for your club either internally or when hiring professional guidance.

Building a Hole-By-Hole Accounting – The most logical starting point is a tour of the course, hole by hole, noting each bunker or bunker complex. Characteristics such as bunker dimensions, drainage characteristics and outlets (good or bad), playability factors, surround condition, egress, and sand characteristics should all be noted. This type of review will help the assessment be more accurate and provide the background needed for proper estimating. Even if your problem bunkers are well-known, this review should still be performed. If drainage and washout problems exist, it's a good idea to survey the course during and after rain events. See Appendix A for documents that will help you in this process.

When creating this account, there is no such thing as too much detail. As one progresses through the planning process, information can always be distilled into concise summaries. It's a good idea to organize your initial accounting sheets into a binder or into folders. This will give you easy access to them should you need to reference them in the future.

NOTE: For some facilities that have an architect under contract, the architect will assist you in performing this assessment. However, having input from the maintenance staff perspective, including historic performance considerations will help insure all issues get addressed.

Documenting the Conditions Through Pictures – Sometimes words cannot capture the entire situation, so it's a good idea to have a digital camera handy. Taking pictures of bunker conditions can be a real asset when trying to get the project considered. For many golfers and management, bunkers are seen only after the maintenance staff has groomed them back into form. Pictures are particularly important when documenting poorly draining bunkers or when washouts are a problem.

NOTE: It is important to mention the importance of being organized when documenting through pictures. Digital cameras are programmed to assign a picture names (i.e. dsc001, dsc002, etc…) that have no meaning to your project. When transferring digital images, it is a good idea to create folders with your own naming conventions and to save your pictures within them. Once there, you can rename files for additional organization.

Assembling a "Wish List" – After the hole-by-hole accounting, the next step is to build a thorough list of ALL items that you'd like to have addressed. Literally, put every consideration together, no matter how elaborate or involved it may seem.

This list will be the working document when you begin to prioritize. It also forms the basis of what can be called a rough or initial Bunker Master Plan. Although it's not a formal plan, you'll be able to set objectives and identify more strategic aspects of the course as it pertains to bunkers. Whether it's tree removal, bunker relocation, rerouting, or major bunker reshaping, this wish list will help you set all items together and view them as a whole.

Get Feedback – Survey everyone in your organization and at your club about the course bunkers. Getting input from golfers, managers, and employees will help fill out concepts on your list or identify things that were missed. It also provides you insight into other perspectives and will help shape the prioritization of the wish list. Surveys can be helpful if your club already has a good feedback/comment box program.

This step is where your understanding of the political setting will help you position your arguments for the bunker project. It reinforces the impression of involvement and will help you identify engaged persons that could make the short list for the Internal Project Team

Aggregate & Categorize Conditions – This is where you begin to distill your thought and ideas. The course inventory and wish list you created will undoubtedly have redundant issues. Grouping ideas together will help you begin to summarize bunker conditions and put more clarity into your initial management presentation.

Remodel, Renovate or Restore

Most people look at these words as rather interchangeable. In fact, each has its own meaning and its own implications. For your project, it's good to keep in mind each concept and how your project will be classified.

Renovation – Most closely synonymous with '*rejuvenate'*, a bunker renovation can be classified as bringing conditions up to a desired level. This might involve minor drainage issues, liner installations, and sand replacement. In most cases, a bunker renovation is the least involved of the three.

Remodel – Most closely synonymous with '*change'*, a bunker remodel can be classified as improving conditions or making strategic and mechanical changes to significantly alter bunker appearance, performance, and playability. A bunker remodel usually involves drainage changes/improvements, liner installation, minor/major reshaping, sand replacement, re-grass/re-sod of surrounds, and possible repositioning. Many bunker projects actually are a combination of both renovation and remodel.

Restoration – Most closely synonymous with *'original form'*, a bunker restoration is a specific type of project that pertains to historic architecture. For courses that many be many decades old, a restoration is distinctly different than the other two in one regard – research. A restoration can involve many countless hours locating and reviewing historic pictures, analyzing old construction documents, and performing archeological style excavating.

Research is critical if restoration is the goal. Since a course is a living, breathing entity, conditions change over time, and greatly over decades. Whether by natural processes, neglect, or oversight, original designs

are literally buried. Bunkers change in shape/features, increase/decrease in size, or even be vacant where a bunker once existed. Restorations are best understood as "bringing back the original style or design intent" while using "modern mechanicals and methods" to achieve improved performance.

Assessing the Importance & Feasibility of the Project

Prioritizing the Wish List – Building owner/management support for bunker projects will involve a realistic assessment of what changes are desired and what impact it will make to the club. The project's impact will be measured based on the cash outlay for the work and what operational, playability and asset benefits will result. Based on the culture of your particular club, mechanical/performance improvements may take higher precedence over aesthetic/playability improvements and vice versa. You'll need to set your priorities and rank your wish list knowing this culture and begin planning your arguments that support these priorities.

Determining the project's cost structure will be pursued at a later time in the project planning process. At this stage, the focus should be on the changes and their impact on performance and playability.

Understanding that not all your items may be pursued immediately, organizing and ranking the list allows you to keep items under consideration for subsequent phases of work or future proposals. Ranking your wish list also aides you when making final project trade-offs.

Determining Impact & Improving the Asset – Whether your club is daily fee or private, the golf course is an asset on the balance sheet. Making changes and improvements to your bunkers is categorized as a capital investment. As such, viewing a bunker project as an improvement process will allow you to better determine your project's impact. Replacing sand alone is not a capital improvement. Upgrading drainage systems, installing liners, and reshaping bunkers is a capital improvement.

It's important to note that accounting rules with regards to capital improvements have changed over recent years. When defining a bunker project as a capital improvement, there are significant tax implications that can benefit your organization. As you progress through the planning process, it's valuable to keep this in mind.

Factoring The Impact to Maintenance Costs – Building your argument for the bunker project will involve an accurate assessment of how improvements will impact your maintenance labor. Improvements in drainage and the addition of liners have a direct impact to maintenance labor as does changing bunker edging with free-form grassing styles.

Two important costs should be looked at. First are the costs associated with repairing bunkers after rain events. Whether it's pumping water from poorly draining bunkers or repairing bunker faces after washouts, you'll need to approximate the labor hours spent on a typical event and determine an annualized cost.

Second is the sand replenishment costs when replacing or "topping off' bunker sand. As the most costly component of any bunker, you'll need to research what the typical timeframes and costs are for your sand replenishment program. Improving bunker performance through improved drainage and use of liners will extend the life of your bunker sand and reduce the costs of replenishment over time.

Quick Look – The Structure of the Project

At this point, you should start to consider how you will implement the bunker project. You might already have an architect under retainer or you may know that your project will get handled in more of an "in-house" format. Even if you do, it is valuable to consider various options. Many facilities are looking deeper into these options and structuring their project that best matches their requirements of time, risk and cost. Part 2 of this Guide discusses in more detail more common options.

When preparing your ideas for an initial management presentation, the options for a project's structure should be addressed. Although options may be reviewed in a more cursory manner at this stage, it's always a good idea for management to know and understand the options that are available.

Initial Management Presentation

Once the assessment and priorities are complete and you've performed the benefit analysis, you're ready to pitch your case to management or your owner. Keep in mind that the initial presentation is to get management's approval at looking deeper into the project. It will take additional investment in your time to determine methods, research vendors, gather projected costs and build the final proposal.

Selling the Project – At the core, bunker improvement projects are all about providing a better golf product – both for the golfer and the maintenance staff. Many studies have shown two immutable facts – golfers complain more about bunkers than any other course feature (why they complain is an entirely different

and lengthy discussion altogether) and maintenance staffs spend more on bunker maintenance than any other course feature. Minimizing bunker problems and reducing maintenance costs are the best arguments for selling the project. Beyond this, a better golf product has many intangibles that benefit your organization.

It can be said that most every manager, owner and golfer desires a better golf product. The differences come when identifying how to make the golf product better. It's your responsibility to present good arguments and offer a range of alternatives or options for management to consider.

Each club will have different requirements for such an idea exchange. Some may be more formalized while others more casual. As an initial phase, the presentation will, in most cases, not be as elaborate as the final project proposal. Appendix C & D contain assets that will help you organize and construct your Initial Management Presentation.

Getting to the Planning Phase -- Management needs to understand the value of additional planning. They are not approving the project at this stage. They are simply giving you the OK to spend more time gathering costs and setting up more detailed parameters. This will certainly require administrative help and other organizational resources that impact operational budgets.

Planning Guide Part 2 - Bunker Construction: Setting Up the Project

Now that you have your ideas and objectives organized, the real core of project planning begins. You'll need to be considering: what's the best fit for your facility's culture; what budget you think may be available; and what suppliers you'll be considering. Always keep in mind that projects contain may trade-offs. Your ability to understand what these trade-offs mean and what impact they have to your project will help you put a realistic plan and budget in place.

Advantages of Professional Guidance

It must be said that, professional guidance can make a significant impact to the success of your bunker project. Working closely with a qualified architect and builder brings many years of specialized experience that you or your organization, in most cases, probably doesn't possess. Finding solutions for many bunker issues is where the experience matters. Experienced professionals will have answers to common problems that will avoid delays and additional costs resulting from inexperience. As stated earlier, it will be a matter of risk.

The challenge is determining how much guidance your project requires. Being honest with yourself and your staff's capabilities in terms of time requirements, expertise, and willingness will go a long way in choosing the right amount of guidance. The good news is that most architects and builders are willing to fit into your needs and help you define the working relationship that will provide results.

Industry Trends & Perspectives

Over recent years, a newer approach to construction is worth noting -- construction management. Different from conventional or design/build projects, construction management allows you to define the roles and responsibilities differently, yet retain an independent manager that looks out for your interests.

A number of architects are now addressing construction management as an entirely new and separate service. When major design elements are not required, architects offer construction management as an option. You can also choose and independent construction manager (independent of the contractor) to serve as controlling manager for the project.

Focusing solely on construction management, architects assist with project development, help in vendor selection, and manage the entire project at a rates greatly reduced from typical design/management fees. If limited design work is needed, architects charge according to the specific design work needed.

The larger costs associated with architectural firms are driven by the aesthetic creation, raw design elements, construction drawings, and their respective name value. Smaller, more specialized golf course architectural firms are providing this newer approach.

It's worth looking into when your project can be defined as a renovation with minor remodeling. If you don't require a signature name to perform the remodel, desire construction expertise, and are looking at ways to control costs, then construction management approach may be the answer.

Implementation Methods

The following methods are described in very simple terms. Each method will have its own set of responsibilities, working relationships and processes. It is advisable, at this point, to get familiar with standard documents from the American Institute of Architects (AIA). These documents serve as the legal basis for any relationship you form for any type of construction, including your bunker project.

A summary of these documents is located in Appendix E. For full copies of these documents, access is made available for a small cost, (usually between $5 to $15) from each AIA state office/website. The full service AIA distributors list can be found in Appendix E. Additionally, you can also visit the AIA website for additional information - www.aia.org.

NOTE: Your diligence with learning about these documents and how contracts can be structured will protect your club and result in far smoother working relationships. Each basic contract can be modified to suit the particular requirements of the project. Formalizing projects in contract form protects everyone involved, so it's not recommended to undertake a project without this protection.

Conventional – This is the traditional method for most bunker projects and involves your club, a golf course architect, and a golf course construction company. Conventional methods are normally structured where an architect (under a separate contract with the club) provides the master planning, design services, construction details, and documents for a fixed fee. In addition to this arrangement, architects normally: interview contractors and review bids; provide construction supervision, schedule site visits, and analyze contractor invoices for progress payments.

The contractor (also under separate contract) performs the work indicated in the construction details as specified by the architect. The contractor works with the architect to complete the project at the direction from the architect.

When you're undertaking a bunker restoration or remodel, a conventional method is most typical. It places management accountability on the architect. It is also common for this method to be part of a larger Master Plan or course-wide remodel involving tees, greens, and fairways.

Design/Build – This is a combined method which centers the relationships onto a single, responsible entity. When you're looking for a more streamlined process, the design/build method can simplify the contract process and defines a single payee. You will see both architects and contractors solicit this method as a turn-key option.

The benefits of a streamlined method allow you to define more simple working relationships and reduce the complexity of multiple primary contracts. Design/build projects can also result in some cost savings as the supplier (whether architect or contractor) has consolidated financial responsibility. This creates a certain amount of flexibility in job costing which the supplier can reflect in more competitive pricing.

There is, however, a drawback. In a design/build method there is an absence of a true checks-and-balance system. So it is a greater responsibility for the club to oversee and insure that all construction work meets the specifications. In short, the design/build method is best suited to situations where you would be selecting the most trusted, reputable firms.

Construction Management – This method is quickly becoming a viable choice for many construction projects including bunkers. Most notably, construction management structures the project so that you can retain an independent professional to oversee the entire project. Commonly referred to as a Construction Manager-Adviser (CMa), this professional advises the owner over the entire length of the project. In simplest terms, the CMa performs all the same functions as an architect, without the design factor.

In most cases, this CMa comes from an architectural background. This service is commonly offered by specialized golf course architects or by firms concentrating solely on construction management. When master planning and major design work is not required, construction management is a good choice.

Under CMa situations, a club will enter into individual contracts between contractor and the CMa. The CMa has responsibility to the owner and directs the contractor based on the construction details. The CMa

arrangement is a good fit when clubs choose to assume a portion of construction activities or materials acquisition.

In-House Projects – This method is usually seen when projects are small or budgets dictate work to be phased over a longer period of time. This option is common for minor bunker renovation projects where there are no design requirements; drainage is repaired, replaced or improved; liners are installed; and sand replaced.

In-house projects allow you to dictate every aspect of the project and, for some, this is preferred. But keep in mind, that tackling in-house projects can be a large challenge. If not managed properly, projects can get out of control, increasing your costs and delaying completion.

If your capability to fully manage a bunker project is in question, you may want to consider a shared approach to the project. By hiring construction professionals to focus their efforts on specialized tasks like re-shaping, drainage work, and liner installation, you'll be able to focus on more basic tasks such as excavating, sand installation, and re-grassing. A shared approach to bunker projects can also be considered for any other implementation method – conventional, design/build, and construction management.

Understanding Risk

When reviewing the different implementation methods, it's important to address the concept of risk and to better understand what role you can play in your project. For any situation, you can negotiate many line item costs by assuming responsibility for them. For example, you may choose to acquire certain materials directly instead of the through the contractor. This may result in a better price, but you risk buying more than you need resulting in higher costs. Another example would be equipment, where you might be able to negotiate a better price, but risk paying for the equipment as it sits idle due to bad weather.

These quick examples illustrate that by hiring a supplier to provide project materials and equipment, you avoid taking these chances. Suppliers put mark-ups on acquired items. This is normal practice. But when considering that risk is placed on the supplier, these costs are justified.

When the costing/bid process begins, you'll have the opportunity to review a range of these line item costs that you'll be able to control. You'll need to consider what line items you can tackle yourself and what level of risk you're willing to take.

Selecting Vendors

When you begin soliciting suppliers, keep in mind that history matters. Doing your due diligence when it comes to reviewing a company's background, calling references, and reviewing recent projects will make a large difference. It is also important to consider what projects they've done that closely resemble your own. A good history of bunker projects will translate into a better chance of success.

When beginning your search, it is always a good idea to check with trade associations like the ASGCA and the GCBAA. They'll be able to steer you to the types of vendors you're looking for. It is also good to check with clubs in your area that have undertaken bunker projects and get their input on vendors they've used.

Architects – It's always preferred to have an on-going relationship with a golf course architect. If this is not the case, you may want to identify architects that your facility has used in the past. Another good starting point is the ASGCA website at www.asgca.org and review their "Find a Member" section. You can look at the entire directory or select by state to narrow your search. There are a number of other resources available on the site such as in the design and remodeling overview sections, and useful information in the articles and publications sections.

Look in the full member directory list for website information. Most of the ASGCA members have websites which provide a lot of background. You'll quickly be able to zero in on firms that have the expertise your project needs. You can also refer to Appendix G for a list of architects with strong bunker credentials.

Due to the many disciplines required, golf course architects should be evaluated based on their: knowledge of the history and use of bunkers; knowledge of the risk/reward theories related to bunkers; experience creating and managing a bunker master plan; familiarity with drainage and liner products/techniques. You should also consider their perspectives of bunker design and determine if their beliefs and theories mirror those of your project objectives. It's important to have an architect that can work within the scope of the work you need performed.

With architect selection, some clubs may choose to formalize the effort through a 'Request for Proposal' (RFP) process. This can be very useful when selection is made by committee or you prefer to compare prospective firms on a common set of criteria. RFP are discussed briefly in an upcoming section.

Finally, be prepared to make a short list of finalists you'll want to interview. Some may choose to meet prior to a final proposal. Architects appreciate the change to meet face to face, visit the course and gain better insight into the project. In a face to face interview, you'll be able to get direct answers to questions

of design, specifications, and project management. You'll also be able to gain a better understanding of their project teams and how they normally execute projects.

Lastly, think about contractual issues. Get familiar with the different owner/architect AIA contracts so that you can consider your eventual working relationships and the cost/payment structure for services provided.

Builders – Selecting contractors is somewhat different than for architects. The focus is normally on the specifications of the project versus the intangible nature of design and the strategic aspects project planning. You'll need to consider how each prospective builder will translate those specs into a finished product.

Although some may view construction as a commodity or price only process, that simply shouldn't be the case. Beyond the specifications of the job, an experienced golf course builder brings considerable insight into the process. Many unforeseen circumstances can arise during a bunker project. The right golf course builder will translate these into successful solutions and keep your project on track.

How a contractor performs the job is just as important as how much. So contractors should be evaluated based on the total package they are presenting.

Begin your search by identifying clubs nearby that have performed bunker work. Find out from your colleagues who they've used and what their opinion is on the quality of work performed. Additionally, if you'll be working with an architect, they will recommend contractors which they've shared a good history. Continue your search at the GCBAA website www.gcbaa.org and review their member directory. It's recommended to start your search with Certified Builders.

Begun in 1992, the Board of Directors of the GCBAA established the certification program to identify competent builders and to establish a more uniform standard of quality. It is an important standard, especially if your bunker project is a high-profile endeavor. If you have a smaller, less involved project, certification may not be as important a factor.

Beyond specifications, you'll want to evaluate prospective builders in much the same fashion as architects – getting background on company history, key staff, and those on the project management team. You can formalize the evaluation process in an RFP, normally called a "bid package", including the detailed specifications for the job. Generally, when you employ an architect for the project, they'll help you evaluate or pre-qualify these builders.

Lastly, you'll also want to again consider contractual issues by reviewing AIA documents. No matter which implementation method you're considering, the project details will get folded into the contract.

Creating 'Request For Proposals' (RFPs)

There are many ways to structure your outgoing documents. In the simplest form, RFPs allow you to create a common document which notifies prospective firms of your intent and provides structure for consistent evaluation. How architects and builders respond to both the requested and additional requirements gives you insight into how they approach challenges and offer solutions.

It is normal for RFPs to originate from the golf course owner or from club management, but this is not a requirement. The maintenance professional or experienced Superintendent can adequately spearhead this process. It's important for management to agree, in principle, on the basic objectives, giving the maintenance professional responsibility for pulling things together.

We've created two basic templates for proposal requests, located in Appendix B – Construction Documents. One is designed for soliciting architects, the other for builders. You'll be able to modify them as needed.

Architect RFP - You'll be relying on many of the materials created under Part 1 – Creating the Project Parameters. Gather your priorities list and shape them into to clearly defined objectives and recap your most important priorities. Other items on your wish list can get folded into the RFP as supplemental concerns in your detailed project description. Architects will be able to interpret your objectives into a preliminary plan which they will use as a guide during their initial site visit and initial cost estimates.

If you're considering a design/build implementation method, you'll be able to address this option at the end of your RFP package. The architectural firm will be able to address this option independently, should they have the capability or wish to offer this service.

As you prepare this package, keep in mind that this is a starting point. After review and consideration of each RFP response, you'll have ample opportunity to discuss, negotiate, and adjust the specifics with the final group under consideration.

Builder Bid Package – This package traditionally relies on the construction plans and specs as created by the architect. If the project is smaller or simpler in scope, and you're not using an architect, the plans and

specs as you define them will need to have considerable accuracy and detail. Within the Builder RFP template (Appendix B) you'll see a cost estimate table. This table contains line items that are based on measurements such as square footage, cubic yards, linear feet, ton, etc.. Measurements taken in your initial course inventory are the basis for the bid sheet. Again, the more accurate your measurements, the more accurate the initial estimates will be.

If you're considering the design/build method provided by a builder, then include this as a requirement in your initial description and in your project details. Not all builders provide this option, so it's good to place it up front in your document.

When creating the builder bid package, you should consider it in two distinct parts. The first part should solicit all of the information regarding their company history, key personnel, references, and details on bunker projects that resemble your proposed project. The second part should contain all of the physical details of the project including specifications, methods, and scheduling/timeframes. If you're considering assuming some of the project risk by acquiring products directly or performing a portion of the work, preface the specifications with details on what the shared approach might entail.

When building the specifications for the builder RFP, be thinking about how you're going to set up the project contractually. With contractors, you can setup the basis of payment as a "Stipulated Sum" or as "Cost of the Work Plus a Fee". The latter is normally used when there is not a competitive bidding situation. For larger more complex projects, the stipulated sum approach is most common.

The Bidding Process

As you begin to receive responses to your RFPs, it's important to consider that the least expensive price is not necessarily the best choice. These are businesses and they need to make a profit too. A well respected, reputable firm that delivers quality work may be what your project needs, but it may not be the least expensive.

You'll need to maintain a broad perspective as you begin evaluating your architects and builders. Both architect and builder understand that RFPs are an entry point into the business opportunity and anticipate a certain level of negotiating to win the contract. Depending on the nature of the project, you may find that negotiating specific line items or contract terms will deliver favorable results to the facility.

For example, you may not desire full color renderings of an architect's design when a simple photo-rendering may suffice or you may have access to construction equipment locally that may reduce the mobilization costs of the project. Again, the more precise the information in your project details, the more accurate the initial estimates will be.

Specific to contractor bidding, you should keep the following in mind:

> At the outset of design and in schematics, architects use estimating to predict the eventual cost of the project. In spite of limited information, and many yet-to-be designed details, the architect has a responsibility to give the owner an idea of the required budget - or if there is already a budget, as is often the case, to seek to design within it. An understanding of the different factors that affect cost can help the architect; an estimator needs a good all-round knowledge of construction as well as an insight into the implications of design decisions. This is a time when good estimating can really help a project, particularly specialized ones. One can honestly present the cost of alternative scenarios to your facility.
>
> At Design Development it is still not too difficult to make changes to materials, even to the size or configuration, to keep a project on budget. Enough information is available for accurate estimating, even if the lack of specifications and full documentation means that competitive estimates, by any subcontractors or third party suppliers, may not be available. At this point both the architect, before spending a lot of hours on construction documents, and the owner who is committed to the project, deserve and need to be sure of the cost. And this is the time when meaningful Value Engineering

can be done, before the phrase comes to mean merely reducing quality or architectural effect to save money.

Once Construction Documents are complete, or at whatever point it is decided to bid the project to fix actual construction costs, estimating is largely a matter of determining the reasonable cost - meaning lowest obtainable acceptable bid. The information needed to price the project will be obtained from the drawings and specifications; the clearer and more consistent these are the more competitive the pricing.

Specifications – As you'll see in the bid sheet (Appendix B), line items are created for each possible aspect of a bunker project. The accuracy of the weights and measures will have the greatest impact of bid accuracy. Experienced architects should provide extremely accurate measurements based on their detailed construction documents. If it is a preliminary phase, then basic approximations will be used.

Timelines – The scheduling of your project will also impact the bidding process. A faster, tighter project timeline can be more costly. Seasonality will also impact the project bids, where inclement weather seasons can force overruns. The more flexible your timeline is, the more this can positively impact bids.

Planning Guide Part 3 – Design Considerations

When your bunker project involves a remodeling or restoration approach, you'll be considering many issues related to design. Whether you've got an older course or you're considering upgrading course performance and aesthetics, one must understand that there are many approaches to design. Not all approaches will fit your course or your club's culture.

This section is intended to provide a basic understanding for the design process and what results from it. Before engaging professional architectural services, it's recommended that you create an internal planning and design team that can begin considering the aesthetic aspects of your course.

It's worth mentioning at this point that golf course design can be a volatile topic within your organization and your membership/golfer base. You'll need to acknowledge many points of view and carefully consider your options.

Architects & the Master Plan

When beginning the dialog with architectural firms, the conversation will quickly turn to the topic of Master Planning. Perhaps most critical in a course-wide perspective, master planning is a structure that allows facilities to organize, anticipate and execute every aspect of course maintenance and renovation.

Within the context of bunkers, master planning can shape ideas and actions for bunkers while considering the whole. With the considerable emphasis placed on bunkers in recent years (specifically with playability and maintenance), many facilities have chosen to prioritize bunkers as a separate plan. This is especially true when other course conditions and features have been properly addressed and a range of bunker problems exist.

Advantages of Professional Guidance – It's important to reiterate the value professionals bring to your bunker planning efforts. Specific to design, recognized golf course architects have considerable knowledge regarding the history of the game and how architecture has shaped the game over the many years. This insight can provide immeasurable benefits to the ultimate success of your project.

Does Every Bunker Project require a Master Plan? – Quite simply, no. In many cases, minor remodeling projects or renovations only require that design be considered in terms of integrity and maintenance. Other factors that impact whether master planning is performed can include time, cost, and course condition. It's important to point out that while master planning may not be performed, maintenance professionals should have a basic idea or list of objective that they follow over the years.

What a Master Plan Entails – When you consider master planning with bunkers in mind, the process helps consolidate your ideas and initiatives. It is an excellent method for informing your membership/golfer base about what you've got on your horizon and how it benefits the facility.

A bunker master plan helps frame the issues, puts bunkers in context with other course features and acts as a tool for change. It needs to be a fluid objective while also providing a structure for budgeting time, money, and materials.

A master plan will include illustrative drawings that reflect the architect's intent and provide you with a conceptual idea of the finished product. Some architects will even provide their ideas (and alternatives) in photo-rendered sketches.

In its most basic form, master planning for bunkers can be a simple organization of thoughts from your course inventory/assessment (Part 1 of this Guide) that's placed into a bulleted list. Master Planning is about general intent and is not about a strict, inflexible plan.

Your Planning and Design Team – To give your bunker project the best chance of being pursued, create an internal team that includes the club owner/manager, golf professional, golf course superintendent and a small representative group of your golfers/membership. Informal in nature, this team should be apprised of ideas and developments in the design process. When discussions and actions are required, people will have been kept in the loop and will be ready to put a context to the issues.

Design & Functional Requirements

There are a considerable number of golf course architecture books that can be read for background. Being a golf course professional, you'll also have impressions regarding design and what may make sense for your facility. You and your team should get familiar with design options and be open minded about possibilities and solutions for your bunker concerns.

Based on your course assessment and prioritized wish list (from Part 1 of this Guide), an architect will construct a preliminary design study and work with your internal team to determine a range of budget considerations. You'll need to make important decisions on whether to perform particular changes and/or how the bunker project could be phased. What follows is a group of basic design components that you will need to consider when looking for these solutions.

Maintenance – Beyond any aesthetic concern, design needs to consider its impact to maintenance, specifically in terms of drainage performance and labor efficiency. Most bunker problems are caused by

water and how water interacts with the mechanical/physical structures of the bunker. With today's products and methods, finding the right balance between your renovation investment and labor savings is not difficult. You also need to view design in terms of longevity – using these products and methods to increase the life you'll get out of the new bunkers.

Playability – You need to understand the flow of your course and avoid bottlenecks where possible. Designing to keep your range of players satisfied involves providing the right choices. You need to challenge the low handicapper while giving high handicapper an option for a safer alternative.

Shot Values – Linked to playability, bunker design needs to consider whether you're taking a penal or strategic (risk/reward) approach. Bunker design should give the golfer a reasonable expectation of exiting the hazard without a penalty. Plan your bunkers so that enough reward exists to take bigger risks.

Aesthetics – Think about your course's style and character. If you're considering improvements to the aesthetic value of your course, changes should fit into the overall scheme that exists. Subtle changes in design can prove to be more successful than major, wholesale shifts is style.

Environmental – Bunker designs need to consider water use. Bunker mounding or grass facing can be a useful option, but you'll need to review its potential impact on irrigation. With greater tightening of water use expected in the future, designs requiring increased use wouldn't seem realistic.

Consultation & Design Changes

There is no rule of thumb to consider when reviewing initial design ideas. Your internal team will need to carefully discuss design options and listen to all perspectives. An architect or designer can serve as a useful tool to reduce political pressure and get your team focused on a common set of objectives.

This stage of bunker planning is most important as it's the time where your club's intent will get formed into more precise design decisions. Take your time when evaluating the preliminary ideas. Architects expect these discussions and can help your team understand the implications of each design alternative.

Architects will include budget estimates for the bunker project with their initial designs. Based on more standardized costs, you'll be able to begin thinking about your objectives as a cost/benefit analysis.

The consultation/change stage can actually involve several cycles. It will greatly depend on the culture of your organization and the ability of the architect to accurately interpret your objectives.

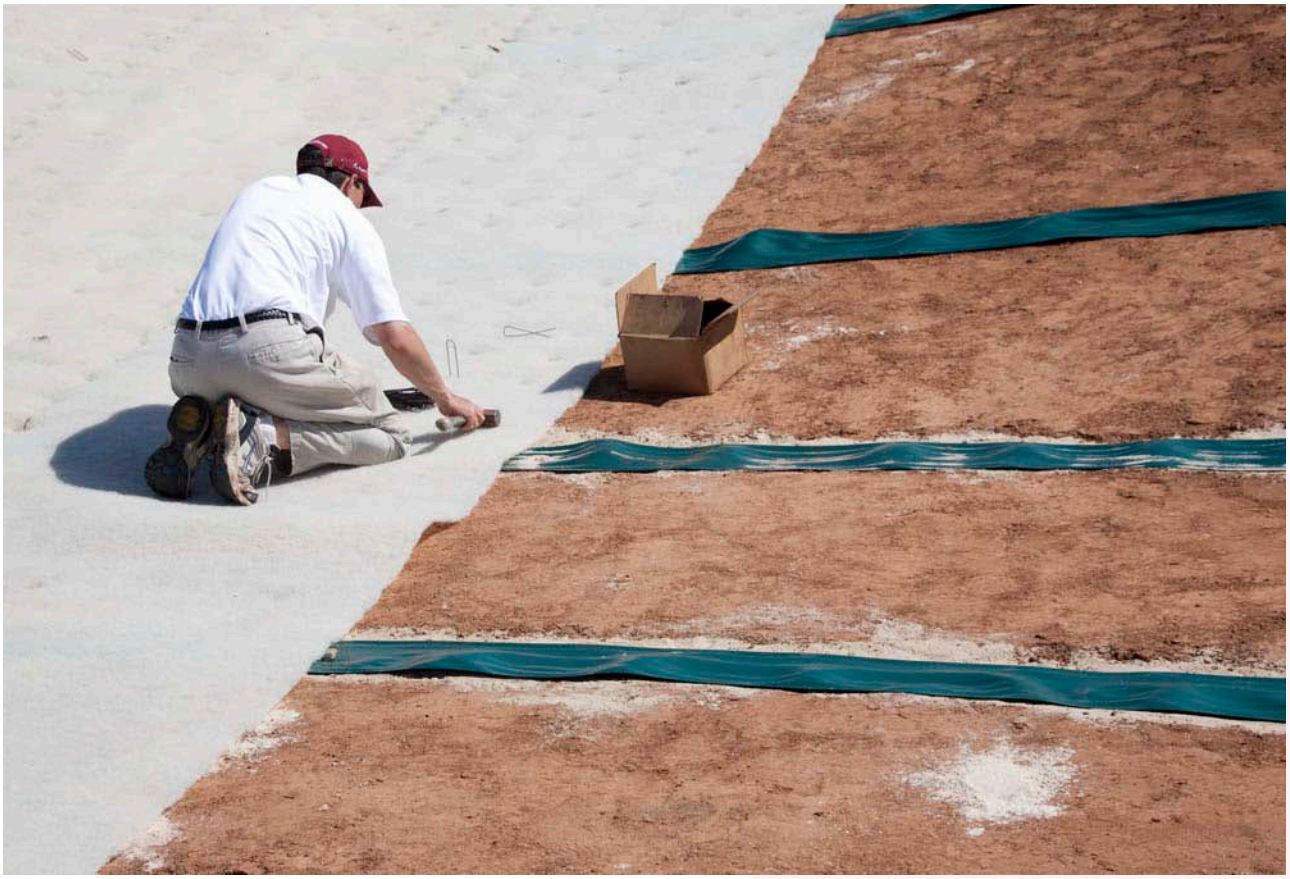
Once changes are presented and agreed to, an architect will create accurate, detailed construction plans that will be the basis for contractor bidding. There is a cost to change or adjust construction plans, so make sure everybody on your team is in agreement.

Construction Documents, Specs & Bid Sheets

Beyond the more illustrative drawings, ideas, and plans presented initially or as a part of the Bunker Master Plan, construction documents are comprised of technical drawings (usually in AutoCAD format) and detailed construction instructions. Construction documents will detail items such as earthwork calculations, drainage mapping, liner applications, bunker shaping, irrigation diagrams, and grassing plans. Included in the documents are general project conditions, specifications, and bid sheets.

The level of detail found in these documents allow for more accurate cost estimating and accounting while forming the basis of the contract with the selected contractor. In a bidding situation, they allow for a direct comparison of vendors and provide a framework for negotiating costs.

It is useful to review the construction documents with the architect so that you have a line item understanding of the work. This will help you have greater control over managing the project and provide an additional level of contractor guidance during construction.



Planning Guide Part 4 - Project Management

As the approval for the project is progressing or being finalized, you'll want to spend some time organizing and preparing your management plans. This section highlights several factors important to keeping your project on time and on budget. It also addresses key communications ideas that will improve the impact to your club and minimize problems.

Project Start-Up Issues

Internal Management Team – In most cases, you will use the same group of individuals from your planning and design team to serve on the project management team. You should plan to have weekly meetings to discuss progress so that everyone in your organization is on the same page.

It's useful to schedule meetings to coincide with an architect's site visits or with a contractor's on-site manager. Meetings should be more informal in nature and focus on project status. Issues may arise during the project that will require discussion and action. Be prepared to address them during these meetings so delays are not encountered.

Disruptions to Play & Course Impact – Interruptions are reality of any bunker project. You'll want to consider how to define phases of work that will minimize the impact of your project. As this schedule is created, you'll want to create and post a series of regular announcements to keep members/golfers informed. Include what phases of work will be performed on what parts of the course. This allows members/golfers to anticipate any disruptions and plan their activities accordingly.

You'll need to plan your construction routes as well. With any bunker project, the transportation and movement of workers, equipment, and materials will need to be confined to pre-defined and marked routes. Review these plans with your contractor and make sure to schedule reminder discussions or to revise routes as construction migrates to other areas of your course.

Internal & External Communication Plans – Be prepared and organized with the communication devices you will use to manage the project and keep internal team members and external members/golfers informed. It is normal for the greatest communication challenges to exist when disseminating information to the wider audience. It's recommended to use a combination of printed notices/letters, posters, and emails to keep people informed. You'll need to solicit assistance from the club's office personnel to help create, print, and execute these devices. If you have a club membership email list, you'll find this a valuable asset when disseminating project information.

You should plan on meeting daily with your golf pro to review project status. This person should shoulder the responsibility of face-to-face communication with golfers, outlining where change of routing or disruptions may occur on each day. Reminders and information can also be inserted into score cards as an effective tool.

Enthusiasm & Acceptance – It's important to maintain a high level of enthusiasm and acceptance during the project. This is true for both internal team members and your club as a whole. Any project brings with it additional pressures and responsibilities for internal staff while disruptions and increased noise change the golfer's experience

More so in the case of major or more complex bunker projects, the impact needs to be managed proactively. Get people to focus on the end result. Showcase completed bunkers as they happen. Let them know when the project is complete, the course will be greatly improved. This will translate into a happier and better golf experience.

In-Process Issues

Daily Progress Meetings – At the end of each day, meet with the contractor to review job progress and planned work for the following day. This will help you set-up your external communications for the next day more effectively.

Weekly Management Meetings – Summarize job progress and present this information on a scheduled weekly basis with your internal team. It's beneficial to schedule a fixed day and time for the meetings so people can plan around them accordingly.

Changing Project Scope & Quotes – You will undoubtedly encounter situations during construction that were not anticipated. You'll need to carefully review what options exist to remedy the condition. Any change in scope definitely means more costs. Bring in your architect and discuss with the contractor the options and get quotes for any additional work, equipment or materials that might be required.

Change Orders – If new work is required, review with the club owner or your internal team to make decisions on costs. It's important to get all details of required changes in writing. Don't make any agreements informally as you'll create problems and disputes when it comes time for payment of additional work.

Keeping Track of Material – It should be your responsibility to monitor and inventory job materials. Whether honest mistakes are made or job site theft occurs, keeping on top of what you've got can save you

money. Begin by checking or auditing all material shipments. Verify your quantities and secure materials in a protected area.

Record Keeping – As your project progresses, paperwork will accumulate. Maintain accurate accounts of every aspect of the job. Create a system to organize and file documents that is separate from your normal maintenance efforts.

Pictorial Record Keeping – Purchase a digital camera and create a routine for downloading pictures and organizing them on a computer. Consider grouping job phases, golf holes or bunker complexes together. Take pictures so that you have a record of conditions before the project, during all phases of work, and after job completion. It's also a nice touch to identify and mark locations where pictures will be taken so you have pictures from the same angles and perspectives.

Materials Acquisition

You'll hear from many people it is better to perform a minimum project with maximum quality. This also applies to materials – choose the best products. The following are several tips you can consider when selecting or specifying products for your job.

Sand Selection & Acquisition – Much like design itself, the concept of sand selection is varied. What constitutes "good" sand will be different for every club and region of the country. You will encounter specific opinions within your membership and organization. Be prepared for many heated discussions about sand.

There is a range of bunker sand articles available at the USGA website (www.usga.org). Use the search box and type 'bunker sand'. You can also go directly to the following articles:

www.usga.org/turf/articles/management/bunkers/selecting_sand.html

www.usga.org/turf/articles/management/bunkers/help_your_bunkers.html

www.usga.org/turf/green_section_record/2008/sep_oct/bunker_sand_analysis.pdf

www.usga.org/turf/articles/construction/bunkers/select_best_sand.html

www.usga.org/turf/regional_updates/regional_reports/southwest/06-04-2008.html

It's important to keep in mind important characteristics such as particle size, shape (angularity), and infiltration rate. The above articles also address testing in terms of penetrometer values, crusting potential, chemical reaction (pH), hardness, color, and overall playing quality.

Suffice it to say, bunker sand is the single most expensive item in a bunker project. Due to this fact, you'll want to spend time testing several sands on your course, usually in one or two "test bunkers". When it

comes time to select sand, you'll want to monitor and test sand directly from the sand pile. Make sure you take several samples from different points of the pile, not just at the edges.

Bunker Drainage – When working with the architect or mapping out your drainage plan, know that more drainage is better. If you have problem bunkers, the faster you can get water into drainage tiles the better. You should also consider where and how quickly bunker drainage enters main drainage systems.

Beyond the basic 4-inch pipe and gravel format, there are a number of different products on the market that offer alternatives or enhancements to traditional drainage methods. It's worth researching your options and considering these alternatives. Drainage systems will be in the ground a long time, so considering options that can improve performance and lengthen the life cycle of the bunker.

Bunker Liners -- Over the past 10 years, there has been a wide acceptance of implementing these products into bunkers. These synthetic, non-woven products prevent sand contamination and washouts by creating a barrier between the sand and the bunker surface.

When determining what product to use, consider how long suppliers have been 'in the ground' and execute your due diligence when calling references. You'll want to look at the range of products offered and compare the product grades with your application.

Consider the shape of your bunkers and, at minimum, implement liners on the bunker faces. Most courses that are using liners prefer to line the entire bunker, eliminating any chance of contamination. Some courses will choose to place higher grade products on bunker slopes and lower grade products in the bunker base.

APPENDIX A - Project Planning Checklists

Located in the Appendix A folder are a group of documents designed to help you plan and organize your project. Each Checklist is provided in Portable Document Format (PDF-requires Acrobat Reader), and two versions of Microsoft Word (98-2002 and 2007).

The checklists are designed to be "ready to use" so most users will simply print the checklists directly from the PDF. If you'd like to modify the checklist, than the Word document will allow for modification.

Course Assessment & Inventory

This checklist will provide the basic structure to evaluate your course. Although you may be retaining an architect who may also perform this assessment (as a part of their contracted services), the evaluation and inventory process is an important step in setting up your project correctly.

Architect & Builder Selection Process

Both of these checklists help you organize your evaluation efforts. Also, look in Appendix B for the Architect and Builder RFP Templates which should be used in conjunction with these checklists.

Master Planning

This checklist is a basic list. You may find that additional, more detailed line items are necessary for your project. If you need to make modifications, look for the Word documents titled "BTB-Planning_Checklists_ALL.docx (or .doc)". These are multi-page documents containing all of the checklists.

Construction Management

This checklist covers some of the core responsibilities of the construction phase. Depending on the specifics of your project, you'll want to plan ahead and begin formulating specific methods to perform these tasks. Also look in Appendix B for the documents titled "BTB-Project_Management_Control_Sheet", either as a Microsoft Excel file or as a PDF. These files and this checklist work together to set-up and manage the Construction Phase.

In-House Project Task Review

If you're considering direct control over your project as a General Contractor, you'll want to review this checklist. It's much more detailed and factors in many of the responsibilities that a Golf Course Builder would perform. Acting as your own general contractor has a number of advantages, but be aware that the more complex your project, the more these functions will require your time.

Project Communications

This checklist will be important for all projects. Think ahead with regards to the mechanisms you'll need to keep golfers/members informed. Also look in Appendix B for several Communications Worksheets and in Appendix F for various documents and templates you can use to help create these communication vehicles.

APPENDIX B - Project Worksheets

Located in the Appendix B folder are a group of documents designed to help you execute your project in the form of various tables, templates, and worksheets. Each of the following sections are organized as separate folders within the Appendix B folder. Each document is provided in Portable Document Format (PDF-requires Acrobat Reader), and two versions of Microsoft Word (98-2002 and 2007).

Using these documents will vary based on each function. Some you'll simply use to print out while others you'll need to modify for your particular need. It's recommended that you review the PDF versions to determine which you'll need. When ready to make modifications, then use the Word documents provided.

Project Organization

There are two basic components in this document. The first component is a recommended filing system structure that defines how you might want to set-up organizing your physical files. The second part is a project manual that gives you ideas about creating a compact binder that would contain important project files. Depending on the size and complexity of your project, you'll want to consider what method might work best for you.

Course Assessment & Inventory

There are three basic components in this document. The first component is a course assessment table that allows for detailed info on each bunker/bunker complex and corresponding hole. The table can be used for simple measurements and calculations to be made. The second component is a notes/comments page that should be used for detailed observations or ideas. The third component is a bunker grid that will allow you to make rough sketches, detailing drainage or other bunker features.

Use and print these pages as necessary, making sure to keep yourself organized. It's a good idea to print enough pages and drop into a folder, keeping everything in a quick, easy to use format.

RFP's, Bidding & Cost Estimating

These documents will help you solicit, select, and negotiate with key vendors. The RFP Templates for architects and builders help you set-up a standardized method of soliciting firms. The bid sheets organize common elements you'll see in bunker projects and allow you to modify tables to suit your needs. You're also provided bid tabulations sheets to help you make direct comparisons.

The Basic Estimate Worksheet is set-up as a spreadsheet with formulas for calculations already set-up. All you will need to do is enter quantities and price and the rest is completed for you. Keep in mind that the values used in the spreadsheet are arbitrary. You'll want to make your own determinations as to the costs you'll see in your area.

Project Management

These documents are at the core of any project. Keeping organized with contracts, contract terms, change orders, and responsibility assignments will go a long way towards project success. If you're implementing a project with the help of an architect or construction manager, you will want to review the control sheets and determine what roles each will serve.

Some of these documents are provided in Microsoft Excel (98-2002 and 2007 versions) so you can keep them updated and use them as working documents.

APPENDIX C - Presentation Preparation

The Bunker Toolbox was primarily designed for the golf course maintenance professional. Although others within course management may use this as a guide or tool, the maintenance professional is in the best position to formulate and execute many aspects of bunker project planning. However, presentations may be an area that is unfamiliar or uncomfortable, so we've created this Appendix and Appendix D to take some of the uncertainty out of the process.

From the standpoint of presentations, there are two primary situations where you may be required to provide information in a concise manner and perhaps in front of multiple decision makers. The first is an initial presentation where you're looking to have management approve a more formalized bunker planning process. The second is a complete presentation, usually in front of the greens committee or an ownership board. The second situation is where you provide, in complete detail, all relevant aspects of the bunker project so financial considerations and approval can be made.

Part 1 – Initial Management Presentation Tips

Project Focus – It's all about justifying the full project planning process so that a complete review can be made. Once the complete review is performed by ownership a go/no-go decision can be made on the bunker project.

There are additional resources that will have to be dedicated to the full planning process, you'll need ownership to be behind the effort. However, the effort required to prepare the initial review will be your own. You'll need to make time in your schedule to pursue the collection of this information.

Historic Impact – In many cases, golfers/members seldom see the work necessary to properly maintain a golf course. This is especially true for bunker maintenance. What occurs after rain events and behind the scenes goes un-noticed, so you need to put these facts front and center. Be diligent and document these settings through photographs. Plan and organize a image library you'll be able to reference and use images in your presentations.

You need to equate these efforts into a quantifiable amount in terms of maintenance labor expenditures and sand replenishment costs. Furthermore, you need to analyze your regular bunker maintenance efforts and determine how a proper renovation will extend the life of bunkers. Compare current costs with anticipated savings over the long haul.

Preliminary Cost Estimating – It's important to provide a basis for understanding the costs of bunker projects. We've provided an MS-Excel spreadsheet in the RFP/Cost Estimating folder of Appendix B that will help you begin the estimating process. The spreadsheet has a number of line items that you may or may not be performing, so determine your general needs and use the calculation/dimensions created in your Course Assessment.

NOTE: The cost numbers provided in the spreadsheet are general averages for various line items. Costs may be different in your area, so it's a good idea to check with other courses in your area that have recently executed a bunker project.

Initial Planning Approval – Good managers and business owners like to know what the possibilities are relative to improving their business. Bunker maintenance is no different. When pulling the background information together for initial planning approval, always keep in mind that it is worth understanding the range of options available to you. Proceed with the attitude that "the right information will help us make the best decision".

As you move forward with obtaining initial planning approval, let ownership understand that bunker renovation planning is a small investment that delivers large results. Being organized with the issues at this stage translates into trust that ownership will have in you. They want to know that you'll manage the planning process effectively and deliver reasonable options at the end.

Part 2 – Full Project Presentation Tips

Each organization is structured differently, so the precise format of the final project proposal will vary. Since the planning process will involve collecting ideas from a variety of sources, don't hesitate to credit those sources. You'll find that many prospective vendors many choose to help you formulate your final ideas for consideration in vendor selection.

When you're presenting your ideas, you'll want to organize them into a specific sequence. What follows is an intuitive format that should highlight the program details. As you'll see in the next Appendix – Presentation Templates, we've provided the same structure as a helpful guide.

Introduction & Acknowledgements – Always begin your presentation by describing the team involved in the planning process and thank them in a public forum. Summarize the presentation briefly with the key elements in your material.

Project Solutions & Benefits – Start your presentation by describing the bunker problems affecting your course and detail what efforts you make in bringing bunkers to the club standard. Follow up the problems with the basic actions you'd like to pursue and how it will benefit your organization, members, and golfers.

Make sure to re-use your photographic documentation of unseen bunker conditions from the Initial Management Presentation. Again, showcase your current efforts and explain the budgetary impact of your current maintenance routines.

Recommended Project Structure – Provide your audience with a brief description of the implementation methods you could use (from Part 2 – Bunker Construction: Setting Up the Project), but quickly follow that with your recommended method and explain what benefits that method provides to your organization.

Important Strategic, Mechanical, and Aesthetic Improvements – You'll need to highlight two or three of the most important actions from each of these aspects. Don't go into every detail, but give the audience a good sense of what your priorities and approach have been. Be prepared for any follow-up questions or comments, and have back-up materials ready to explain more detailed objectives.

If you have examples of other facilities that have made similar improvements, it is always a good idea to highlight the benefits other organizations have attained by following these actions. Make sure that your audience knows bunker projects are common. Get them informed about the techniques you'll be using and that they are proven and accepted practices. Nobody likes to feel like a guinea pig.

Project Scope – Provide the basic parameters of the bunker project. If you're planning on defining phases or if you'll be performing the work internally, give the audience a sense of what the project will entail and how you'll be addressing the impact to the course over time. Don't shy away from acknowledging some inconveniences may be experienced.

Pre-Screened Project Vendors – Showcase the talent that you've selected for the project. If you've got an architect involved in the initial design work, it's a good idea to highlight their conceptual or final ideas and background. Include descriptions on the contractors or any subcontractors that will also be a part of the project. Highlight concepts like professionalism, quality, and trustworthiness. People like to know that they're entrusting their course to reliable, proven businesses.

Anticipated Project Schedule – Provide a basic calendar for the project. Highlight start date and completion target date. If you have established important project milestones, include them in this overview.

Keep everybody aware of the flexibility of schedules and that issues may be uncovered during renovation that were not planned for. You should explain the contingency plans you have for the schedule, should something arise.

Costing & Financials – Avoid showing project costs in complex tables. Provide important costs as total items. As seen in the Cost Estimating spread sheet (Appendix B), the main table sections work well. Have backup material ready should you be asked about how specific numbers were reached.

Don't shy away from the total number either. As a golf professional, you're aware of what maintenance budgets are and how they work. Renovations are no different. If you've set up the project in phases, then you'll want to explain how this option will stretch costs over a greater period of time.

If you've performed an initial budget that includes methods for where the investment money or expenditures will be pulled from, include your ideas or options here. As a capital expenditure, let your audience know that these expenditures have good tax consequences.

Project Management – Once you've discussed dollars and cents, everyone will want to understand how the money will be safeguarded. This is why project management is last. Wrap your presentation up with positive, actionable measures. Provide the audience with some of the important aspects you'll be implementing, especially how project communications will flow and how members/golfer will be kept apprised of project status and impact.

Since so much work has been performed in the planning stages by this point, it's a good idea to set a target date for decision making and acceptance or modifications of the project. Those that are a part of the decision-making and budgetary process should be provided some general timeframes for when final decisions would be realistic.

APPENDIX D - Presentation Templates

This appendix contains a few presentation templates set up in PowerPoint. As we've done with other support documents, they've been provided in two versions – PowerPoint 98-2002 and PowerPoint 2007. There are some very solid improvements to the 2007 version, so if you've got the chance, acquire that version and use those templates.

PowerPoint Tips & Tricks

It's worth stating at this stage that it's recommended that you get assistance from an office assistant or someone familiar with PowerPoint, etc… to help you build your presentation. There is nothing more aggravating than for a maintenance professional to be absorbed into hours of computer work. You should focus on the content and get help with putting the content in place. If this kind of assistance is unavailable, then stay patient and set small blocks of time aside throughout the week to build these presentations.

Image Management – Most people do little to management image size in their presentations. When we mention image size here, we're not talking about how big the image is on the slide, but the pixel dimension of the image itself.

When using digital cameras, each camera has its own designed resolution (megapixels). Since PowerPoint presentations are shown on a computer screen or projector, keep in mind the most common size of screens is either 1280x1024 pixels or 1600x1200 pixels, or 1.3 and 1.9 megapixels, respectively.

So when you're using a 6 or 8 megapixel camera, you'd be wasting pixels on screen. The reason this is mentioned, is that if your presentation includes lots of pictures, carrying so many "over-budgeted" pictures within a presentation makes PowerPoint run slow and can even cause system crashes.

To management image size, you can use very simple image editing programs, either as one of your computer operating system components or as a separate program like Photoshop Elements, for example. You'll want to experiment a little with image size and your specific presentation.

Image Crop & Resize Tool – This is probably the most important tool within PowerPoint. As you construct each slide, you'll want to balance image placement and words. The crop/resize tool makes it very easy to manage these efforts, right from within the program. Instead of going back and forth from program to program, this tool saves a lot of time. Make sure to learn about this tool in the program help area if you're unfamiliar.

Slide Transitions & Animation – Just because you can add crazy transitions doesn't mean you should. Keep your slide and bullet point effects to clean, consistent effects. Don't mix transitions.

It's a good idea to select a single slide transition and a single bullet point transition (not necessarily the same) for your presentation. Most of the transitions have preset speeds that are acceptable. Look in the

help screens if you want to tinker with transitions. NOTE: You shouldn't get too involved with transitions. It's the content that matters most.

Slide Content – It's always better to have less content on a slide and add more slides. Nothing puts a crowd to sleep faster than a slide filled with too many words and too many small images in the same slide.

As you construct your slides, keep your content to a single headline statement and around 4 bullet points. Avoid using too many words to capture your thoughts. You want people to listen to YOU and not be reading the slides. Make your points quick and compact. If you need to continue a concept, add another slide before trying to cram it on a single slide.

Slide Sequencing – Balance slide content from slide to slide. Avoid having too many slides in a row with either just images or just words. Try and block a few slides with words and follow them up with images that translate to what was just reviewed.

Tables – Keep your tables simple. Placing a 6 column 8 row table into a slide is too much content. Especially when you get to cost estimating information and line items, try and breaking content up ito multiple tables and drop them onto separate slides.

Bunker360 Templates – The templates were constructed with a simple, appealing color scheme. The font or typeface used in these template is an effective, impactful font that is provided in the Presentation Templates folder. You can move them to your desktop and install them as you normally would. You'll notice "placeholder" images in these templates. Replace images with your own that would asupport the relevant topic being discussed.

APPENDIX E - Construction Documents

The documents mentioned in this Appendix are sourced from the American Institute of Architects. You'll want to review the AIA Document Summary for the descriptions of the various contract types.

When you're ready to search deeper into a particular contract, you'll be able to access state-level AIA organizations (in the AIA Distributor List document) and pay to download the contracts for a nominal fee.

Get familiar with the structure and content of the various contracts as these will be the basis for the working relationships you will create for your project. Architects and Builders also rely on these as templates for their own contracts that they would be presenting you.

The more you know about the terms of any contract, the better manager you will be for your project. You shouldn't proceed with a any architect or builder unless you agree to terms of a formalized contract. It's safer for you and helps define the legal parameters of any relationship.

AIA Document Summary

This document is organized into several "document families" – conventional, Design/Build, and Construction Management. Depending on the nature of your project or which method you'll be considering, you'll be able narrow your search more quickly by using these families.

AIA Full Service Distributor List

These are the state offices of the AIA. You'll see addresses, contact info as well as websites. All the websites provide access to these documents.

APPENDIX F - Project Communications

These documents, templates and samples are simple tools you'll find effective when managing communications. They can be used as is or modified to suit your needs. The documents in the Communications Management folder are created in the same fashion as the other Appendices, in both PDF and Word versions.

Specific to Signage and Notifications, some of the documents/samples have been created using professional design/layout programs. Files such as Adobe Illustrator (.ai) will require that program to open and use/modify the content. Some of these files will have PDF alternates where you'll be able to print from and make changes or add content by hand.

Communications Management

The Project Communication document will be very important to document team meeting and make quick notations regarding meeting content and actions. The Team Meeting Action List is a plain version provided as an alternate. The Project Communications Record Document contains a template for keeping track of phone/in-person discussions with vendors and also has a reiteration of a change order template.

The Execution Progress Report is a template you'll find useful when reviewing and discussing job progress with vendors. It also serves to document job status, pitfall or problems that may be useful when evaluating vendors and making disbursements.

Signage & Flyer Samples

When preparing to keep golfers/members informed of your construction project, you'll find these documents useful for getting people's attention. They're simple graphic compositions that allow for easy updating of relevant information. There is an 11x17 Bunker Notice Poster in PDF and AI versions; a 5x8 Score Card Bunker Notice in PDF and AI versions; and a 2-up 5x8 Bunker Schedule in PDF and Word (98-2002 and 2007 versions).

Communication Templates

This section includes a Bunker Performance & Maintenance Survey and several different memo formats. It will be useful to copy and paste these items for your own modification. The bunker survey is a good option for extracting information from your membership in a more structured format. The survey is not completely scientific, but it will provide you ways to tabulate responses as well as obtaining more subjective statements from members/golfer. In general, the memo options are designed to keep you thinking about ways to keep members/golfers informed.