

# Best Practice Golf Course Construction

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## Introduction



Golf Renovations and Shaping Specialists (GRASS) believe that successful outcomes for golf clubs building or renovating their courses can only benefit the golf industry. Golf course construction is a major undertaking on every level; the scope of works, the costs and the number of stakeholders involved.

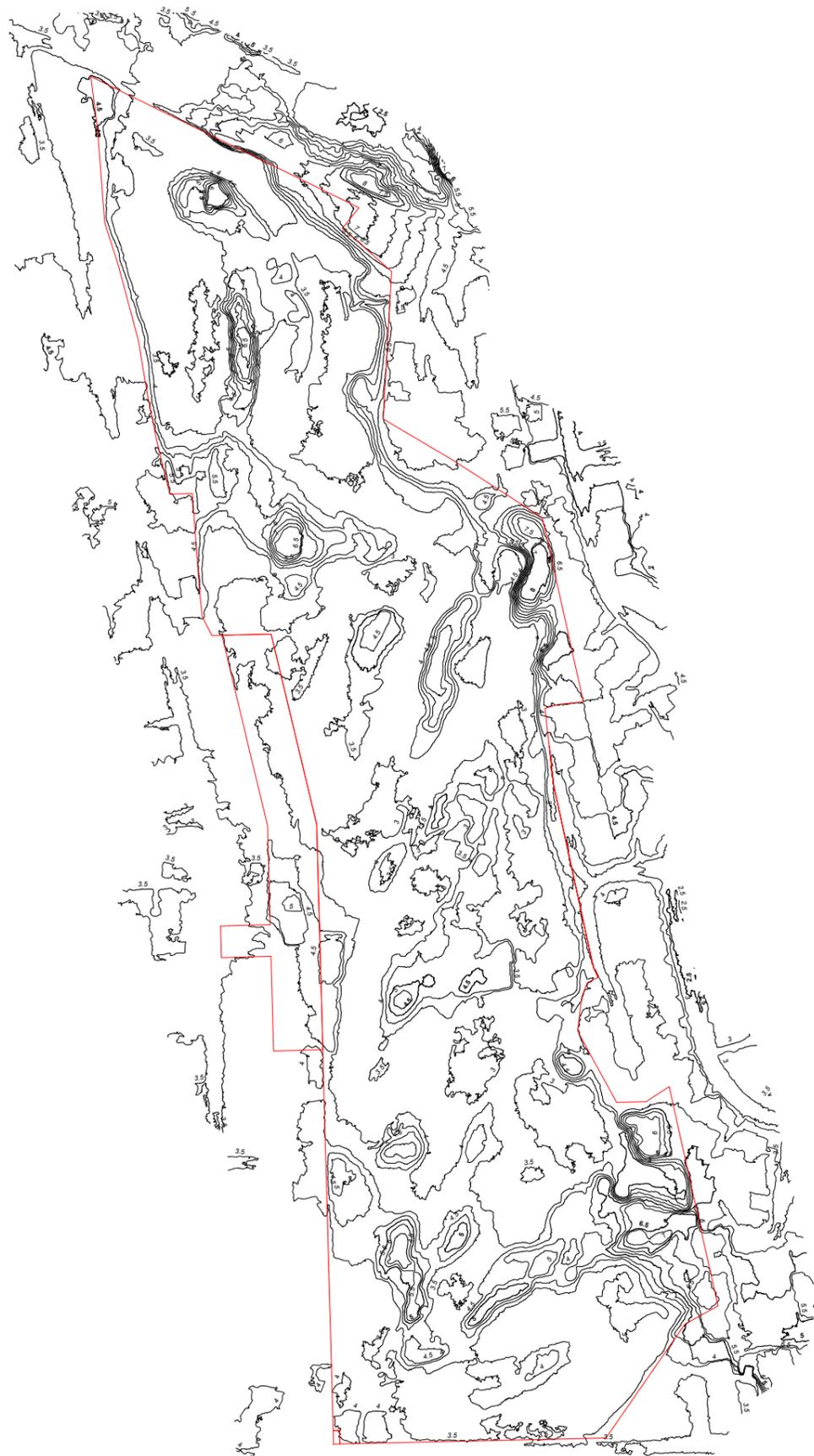
Getting everything right gives you an outstanding course that delivers real value for money, long into the future. Getting one component wrong can undermine the entire project; leaving you with cost overruns, unhappy stakeholders and diminishing returns.

We also believe that those in the golf industry should be learning from one another, ensuring future decisions and processes have the benefit

of hindsight and take into consideration other golf clubs experiences in this space.

Since 1990 GRASS has built or renovated courses including Gulf Harbour Country Club, Remuera Golf Club, Pegasus Golf and Sports Club, Russley Golf Course and most recently Pauatahanui Golf Course; successfully navigating a path through previously uncharted and undocumented processes (for many of them).

Stemming from these projects, GRASS has developed “The Best Practice Golf Course Construction Guide”. We are pleased to present you with this document and trust that it provides you with valuable assistance as you consider your various options and future direction of your golf club.



Waimairi Beach Golf Course

Date of Photography: 24 Dec 2011  
 Date of Contours: 17 Feb 2012  
 Contour Interval 0.5m  
 1:2,000  
 NZAM Ref 12.020

## Choosing Your Course Architect



As Kiwis we often do things with a bit of good old no. 8 wire attitude. When it comes to golf course construction, it is too big a project to risk with that type of approach.

There are reasons why other countries (Australia, Europe and the US) recognise golf course construction as a unique industry with specific standards to uphold. Given the number of courses they build each year, those standards have been thoroughly tested and proven to deliver quality results time after time.

Understand from the outset; your favourite pro-golfer is not an architect! Club Pros and ex touring professionals are great at their vocation – playing golf. Designing a golf course to exacting standards while understanding water tables, grading materials, earth moving equipment and so much more is not what they are trained to do. You can't doubt their passion, however, passion cannot replace experience.

There are of course ex Pros (Jack Nicklaus and Nick Faldo to name but two) who have gone to University, obtained their Architectural qualifications and deliver high quality design. As their ongoing reputation depends on their

respective bodies of work (and the work of their expert teams); you can expect a quality outcome every time.

You don't have to go internationally to find a quality golf course architect as there are several excellent New Zealand golf course architects to choose from – specialists who work to the highest standards at home and overseas. If you do want to broaden your search, many international golf course architects are more affordable and approachable than you may think.

**GRASS Tip: Talk to architects early to ensure you make an informed decision. We can help you identify the right course designer for you (e.g. Links or Parkland style courses) and make the introductions (including internationally).**

**Selecting a reputable, experienced architect who specialises in golf course construction will save you in time, cost and effort – they bring real value to your build.**



## Effective Contracting



Structuring your contracts is essential to make sure you have your bases covered and you know where your liabilities sit for any (likely) unexpected turn of events.

Contracting for a golf course is not the same as for other civil works. The tolerances are tighter (oftentimes within 10mm) and the reality is that a mistake doesn't just cost to put right; it can also cost exponentially if it means changes to other course elements – some of which may have already been completed.

Another area you should be concerned with is who has allowed for cost over runs and who pays for them. We (for example) use an internationally accepted contingency budget of five percent and we hardly ever touch it. However, five percent wouldn't necessarily cover remedial works in the event that you were liable for a problem that you should have properly contracted out responsibility for.

We've seen huge blowouts in our industry through contracting issues. Legal remediation adds more cost to the build. Getting the right contracts in place early means everyone understands their own risk and can take steps to both assure and insure for it.

Whether you are renovating a single green for a small rural club or building a complete 18 hole PGA standard course you need to ensure your risks are properly managed from the outset.

**GRASS Tip: What is most important is that you secure good warranty clauses and that includes a defect liability period.**

**We'd recommend that your Defect Liability period includes held retentions (5-10% up to \$300k) for a six-month period after the contractor has left the site.**





## Selecting Golf Course Construction Companies



Selecting the right course construction contractors is important. For major renovations you're likely spending a million and often much more. An experienced architect will produce a good schedule of works or recommend a civil engineering firm with sufficient expertise in a golf setting. Any old civil engineer will not do. The cheapest hourly rate isn't necessarily going to know your local Council requirements, the right grade of materials or even what warranties you can (and should) expect.

The tolerances for a golf course are markedly different than say, for a landscaped development. Civil engineering as a rule, doesn't have to work to a 10mm variation for example. A good golf course architect will have designed that variation for a specific purpose. Getting the detail right is essential.

In New Zealand, there are at least three firms we'd recommend as having sufficient experience and the right track record of results. We know of many other civil companies that would (now) refuse to touch another golf course having been burned in the past with penalties that exceed any profit.

If your construction contractors have the type

of experience you should demand they will be able to provide you with a Performance Evaluation of Capital Contractors Report, known as a PACE Report, from their last work. This is a comprehensive, independently done report that includes feedback on all aspects of the works, including stakeholders, that is only completed once all work is completed. You can't fake a PACE report and if a prospective construction company doesn't provide you one, ask for it!

You'll also need to consider the synergy between your architect, engineer and construction firm to ensure you have the project covered cost-effectively from start to finish and each party understands their responsibilities – without any gaps or double-ups.

**GRASS Tip: We can save you time and effort by connecting you with the people most qualified to deliver for your unique project - from conception to the aftercare your project deserves. That takes specialist understanding; we ensure you get that all the way through.**

**NOTE: GRASS has our latest PACE report published on our website [www.grass.nz](http://www.grass.nz)**



## Sourcing the Right Engineers



Lack of knowledge has proven to be an expensive problem for a number of golf course builds within New Zealand. The right engineers know what to look for and what they need to ensure happens to keep a project on track.

For example, water is an ongoing issue for golf courses. Not just for irrigation or to avoid flooding but to ensure all your potential water issues are factored in appropriately. Specialist engineers are well worth the fee. Five or ten thousand for a consulting hydrologist can save tens of thousands (and more) on remedial works later on.

You have 365 days of weather where your course needs to hold or shed moisture appropriately. In just one New Zealand instance; a 600mm variation cost over \$700k to fix including a further \$200k on reinstatement.

Understanding that it's the engineer's role to deliver to the architectural design gives you an idea of how important a role this is. You need experience and golf specific expertise for every construction component to get value for money in your build.

**GRASS Tip: We can work with you, your architect and chosen contractors and / or connect you with the right personnel and equipment from the outset. We prefer to be involved early, but we also know it's never too late for the right advice (it just may cost more to fix it later, than get it right at the beginning).**



## Bulk Earthworks Essentials



A digger is a digger is a digger... unfortunately not and having the right equipment for the job and knowing how and when to use it is essential and it comes at a price.

There's no such thing as a cheap approach in golf course construction. Cheap means deferred costs, that are often exponentially more expensive compared to putting the right, cost-effective approach in place in the first instance.

Your architect, engineer and contractors need to deeply understand the implications of the equipment and materials being used. Even hugely experienced civil construction firms don't necessarily understand the finesse and detail in course construction.

We've been called in to projects facing huge blowouts due to remedial works; a \$3.8m job where the drainage was incorrectly placed costing an additional \$3.2m to fix.

We've seen examples where a 45Ton scraper was used directly in front of a newly constructed green creating immense compaction. That ill-considered action caused ongoing turf quality issues meaning additional long term maintenance costs

to the client. Costs that in our view were entirely preventable. It's essential to use the right machine for the job! (See "The Value of Expert Shaping").

**GRASS Tip: Check that your contractors possess the right equipment and skills to deliver to your plans – warranties are not worth much if your contractor doesn't own the equipment required to fix any issues within the warranty period. Ask about their experience working with other contractors (especially for really large jobs).**

**Critically, ask about their successful delivery of golf courses – don't just take their word for it, talk to their customers. Putting bulk materials in the wrong place or using highly organic materials (that can result in slumping) in construction can be catastrophic down the track.**



## The Value in Expert Shaping

Shaping is a specialist skill-set that is developed over years of experience, and an essential requirement for golf course construction. Most equipment operators are licensed for a small number of machines. A specialist shaper has an arsenal of equipment at their direct command ensuring the right tool is used to the right effect. It's an art as much as a science – understanding the impact of a 40T digger versus a specialist shaping tool weighing a mere 480kgs is really important when working on a 650m<sup>2</sup> slope within an accuracy tolerance of 10mm.

Given that the track grousers on most machines have standard 25mm tread plates, you can see straight away how important it is to get this right. It's even more important when you consider that that level of accuracy must be mirrored at every level; from the membrane through 300mm compacted sand, then gravel and subgrade – including drainage.

Shapers don't just undertake work directly; they guide and direct teams of operators to make the most efficient use of skills and resources. That means the most cost effective deployment at critical stages of the build – all of which delivers outstanding value and cost savings over time.



**GRASS Tip: Ensuring your contractors have a thorough understanding of golf course construction equipment and when to use which tool at every stage is vital. We can help you identify the real costs of one approach over another.**

**Our early involvement also helps us ensure that the skills you need are available to you, when you need them – avoiding unnecessary delays (and additional costs).**



## Selecting Materials (World Standards)



There are international standards for golf course construction materials. The reason is that poor quality materials result in higher maintenance costs, poor performing putting surfaces and a shortened life of the course.

Course materials have to last 25-50 years. A saving on materials in the short term is no saving if you can't get the life out of the course. There are USGA specifications for sands and gravels to ensure weathering and breakdown is minimised as much as possible.

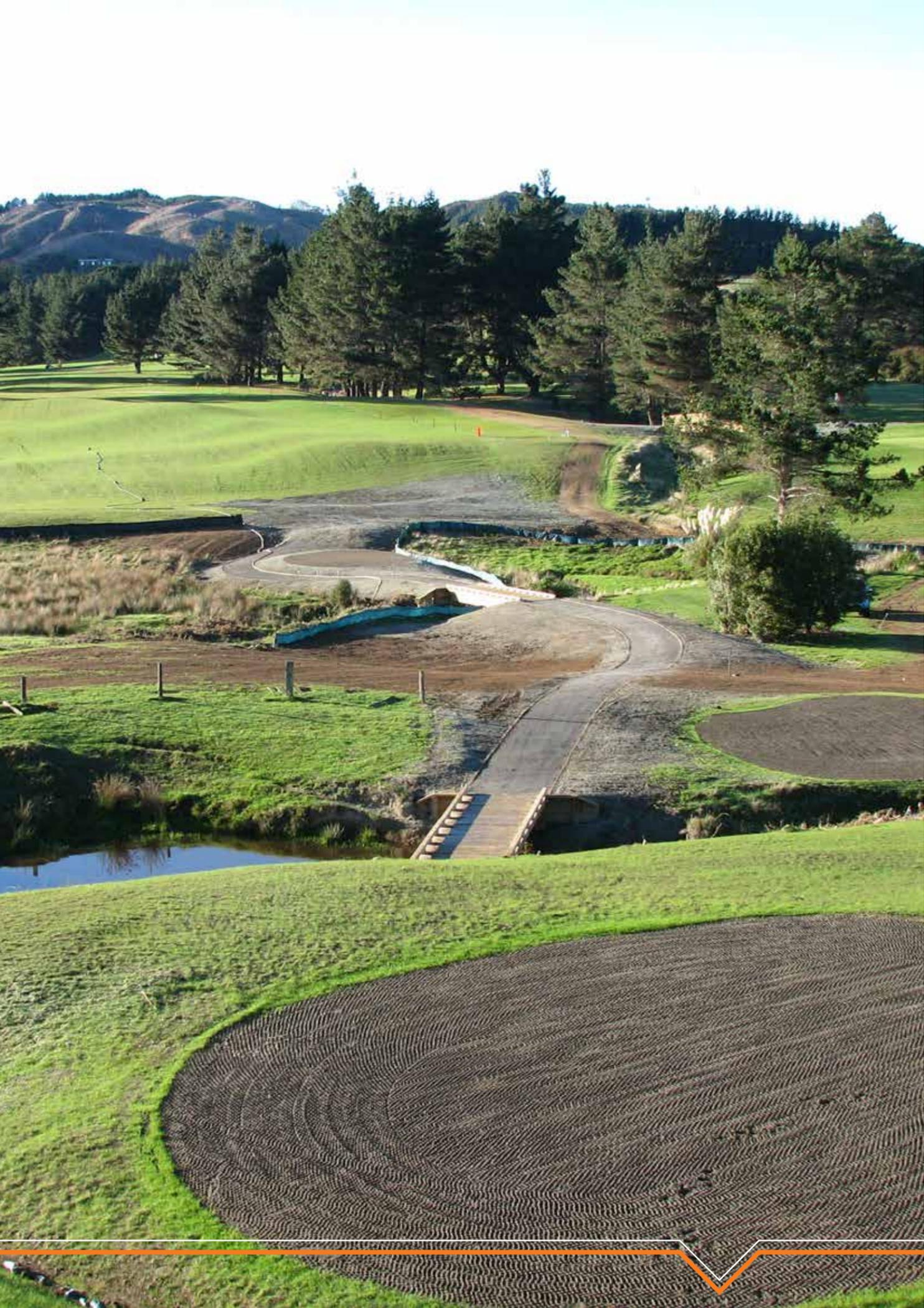
In New Zealand; clays, silts, lime and shell are calcareous meaning they are chalky and weather (i.e. degrade) over time. There are only a few companies who can deliver the quality of materials that can reliably preserve your course's condition over time.  
Pipework is another key consideration.

The difference between 6bar, 9bar or 12bar ratings makes a huge difference in drainage and irrigation but only form a small cost saving in the build. Of course repairing and reinstalling later is much more expensive consideration.

Careful material selection at this stage is

imperative whether you are spending \$50k or \$20m. Getting it wrong here, means you'll be paying for the life of the playing surface.

**GRASS Tip: Work with contractors that understand the quality required and who use suppliers that can reliably deliver to those high standards. From particle size to drainage, we can give you the cost-benefits to provide you with a quality build that will deliver over the long term.**



## Growing-In Essentials

A growing-in specialist is not a grass cutter. Whether you're spending \$1m or many millions, this vital stage of development needs specialist attention or it can break the entire project – after all what is a new golf course without lush looking greens and fairways.

In New Zealand we have some highly competent grow-in specialists. Many have done 3-4 projects in their time. At Grass, within our team we've easily done double digits locally and internationally, from seed to opening day. That kind of experience can't be beaten when it comes to delivering to a course's full potential.

We are strong advocates of having a rigorous auditing process as quality performance from before work starts to after we've handed over the new course is critical with what we do. Our clients, and we, can't afford mistakes to be made in the early stages that can be difficult and expensive to rectify later on.

Ultimately the return on investing in quality is in the playing of the course on opening day and well beyond. A quality grow-in provides a better experience from the outset and that allows you to reap the rewards of your investment more fully.



**GRASS Tip: It's important to understand that your course also carries the reputation of your architect, engineers and contractors. Experts in their fields will want to know that you'll invest in a quality grow-in process to fully realise the efforts made before this stage.**



## Maintenance - Equipment and Personnel

Your course is open... now what? Maintenance is what, and that comes in the form of people and equipment.

Take Gulf Harbour for an example. Construction started in 1995. It was opened in 1997 and hosted the World Cup in 1998. It was a \$17.3m build with a \$7m club house built on \$30m worth of land. Considering all the elements, that's a \$60m asset. That kind of asset can quickly depreciate if it's poorly maintained or poorly staffed. The right equipment and the right team provide much more than their cost. They're what keeps your customers coming back for more. That means investing in staff and equipment from the outset.

Having invested in the course, it makes sense to maintain it and ensure your operational budget delivers to its maximum capability and alerts you to issues early – fixes will always cost less now rather than later. Ensuring properly qualified staff are using the best tools for the job – from the greenkeepers to the club Pros means your customers will continue to receive the best possible experience.



**GRASS Tip: We don't do maintenance contracts ourselves so we can provide you with expert maintenance auditing. We're independent and can give you the benefit of our expert advice.**

**We can help you build a plan to most cost effectively provide the skills and resources you need, when you're going to need them – and make the most of your investment for many years to come.**



## Auditing for Ongoing Success



Proper auditing makes sense. It alerts you to issues early and lets you utilise your resources to the full. We audit our own process and we recommend to all golf courses they do the same. It makes sense to use expert auditors who can benchmark your performance against international standards, rather than trying to reinvent the wheel.

**GRASS Tip: Consider an independent audit for more than your finances. International norms include the US (twice a year) and Australian (annually). Auditing gives you clarity and transparency over your asset and how it compares against others, for your members and visitors.**

The auditing process can cover every part of your business; performance reviews, efficiency gains, budgeting, administration, course maintenance and more... It provides the insights from which you can fine tune your operations to ensure you're achieving your golf course's potential.

# Grass Tips Summary

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We can help you build a plan to most cost effectively provide the skills and resources you need, when you're going to need them – and make the most of your investment for many years to come.



## What We Do

Golf course construction is a major undertaking on every level; the scope of works, the costs and the number of stakeholders involved. Getting everything right gives you an outstanding course that delivers real value for money, long into the future.

### Building

Whether you are undertaking building a brand new golf course or replacing one hole, GRASS, as New Zealand's only 100% dedicated golf course construction specialists, has the experience to deliver the results you deserve.

### Renovation

Over time every golf course undertakes renovation, it could be a one off change to a bunker or a green, or a more systematic renovation of the course a few holes at a time. Whatever the project, GRASS will not take short cuts and you will be happy with the results for many years to come.

### Irrigation

We work with the finest suppliers of irrigation products and can provide a complete design service, or if you have your own designer we can professionally install the irrigation according to their plan.

### Consulting

In collaboration with golf course architects, clients and associates, GRASS can provide you with expert guidance as you consider the options available for your golf course.



## GRASS is New Zealand's only 100% dedicated Golf Course Construction Company.

Successful golf course construction is a team effort in which all parties, the club/ owner, the designers, the technical experts and the contractors must be aligned towards a clear vision.

To build great golf courses it takes a passion and a flair for golf course design, with technical excellence in construction.

GRASS has demonstrated over many years to be "the best in our field" with a dedicated, proven, stable work force of highly skilled operators and technicians. GRASS possesses New Zealand's largest and most modern fleet of light and heavy golf construction equipment.

- Pegasus Golf & Sports Club
- Gulf Harbour Golf Course
- Napier Golf Course
- Mt Maunganui Golf Course
- Remuera Golf Course
- Pauatahanui Golf Course
- Russley Golf Course
- Waimairi Beach Golf Course
- Rotorua Golf Course



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