

THE ROLE OF THE GOLF COURSE SUPERINTENDENT IN GOLF COURSE CONSTRUCTION

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The superintendent is hired to protect the interests of the owner, to insure that he gets a maintainable golf course, and to avoid built-in problems. He should meet with the architect and builder frequently, protect the environment, salvage natural features where possible including wild life, wet lands, protect natural beauty and be concerned with surface runoff, ground water, lakes and streams. Plan on using silt fences to prevent erosion, protect trees (roots and tree trunks) from the equipment.

Work with the architect to ensure all playing areas are drained, (surface and underground).

If the architect isn't connected with his own construction company; help secure a company with a good reputation and one with adequate staff and equipment. Often it will require several contractors. Survey engineers, earth moving and clearing, shapers for greens, tees, and bunkers, underground contractors for drainage, rock picking, irrigation engineer, irrigation installer, well drillers, cart path builders, bridge builders, landscape contractor for tree planting, hydro-mulching and sodding. You need to find an architect to design the maintenance building, pump house and shelters including the toilets. And of course a builder to construct these buildings.

Hire experts to identify wetlands and to mitigate areas for new wetlands if needed.

A soil profile audit must be made to help determine what you have to work with. Soil types, percolation rates, depth and quality of soil and the nutrition requirements must also be determined. This will help to determine stock piling of soil (where and how much). The architect determines cuts and fills to create land features and surface drainage.

If land is wooded it will require clearing and creating center lines. Harvesting of wood can be a good source of revenue often overlooked. burning permits are often required. The superintendent should locate sites for bury pits to dispose of unburned stumps and ash. You certainly don't want to locate these pits where they may cause settling in the future. Grubbing of stumps and roots is very important. Clearing of adjacent woods will continue for two or three years after construction ends. It is very important to establish haul roads in areas that are out of play. They have a lasting effect on the soil because of compaction.

Provide protection against erosion throughout the entire operation from start to finish. Silt fence around the perimeter of all disturbed areas. Use straw bales around drains or across water sheds. Avoid disturbing more area than is necessary.

Protect wetlands using silt fences. Keep equipment out using "DO NOT DISTURB" signs. concern yourself with neighbors. Avoid dust and mud on local roads and avoid making noise before the local ordinances allow; it can be a problem. Keep the neighbors informed and give tours when appropriate. They want to know what is going on.

Determine water source for irrigation [wells-lakes-streams-city water] the location of the water and of course the quantity and quality of the water is important. Quantity is directly related the irrigation requirements. Pumping plants require 1000-2000 gallons per minute for a four to seven hour window or 1/2 to one million gallons per night.

Establish chemical bench marks for water quality of the surfaced water leaving the property before construction starts and also during construction. This is also a good idea to test your well for water quality before the golf course is completed. This will allow you to compare the water quality in future years.

Drainage of tees, greens, bunkers and fairways should be addressed early so adequate drainage can be provided. A dry golf course is vital. A golf course that is closed because of wet conditions is not producing revenue. It could cost the owner \$10,000 to \$15,000 per day.

At this point we begin the search for sand in the bunkers and for the greens mix, pea stone, peat and sod. We have to determine the amounts for each and get prices. If time allows, you could contract a grower to provide the sod. It takes about eight acres to cover the perimeters of the tees, greens and bunkers.

DEVELOP TIME LINES FOR THE CONSTRUCTION AND COMPLETION OF THE DRAINAGE AND IRRIGATION, SEEDING, FERTILIZING, SODDING, TREE PLANTING AND OTHER LANDSCAPING.

Always keep in mind the narrow window of time for seeding (August through September) for good germination and time to mature for a mid-summer opening the next year.

As the earth moving is taking place and being completed in certain areas, the underground drainage is taking place. The superintendent should be recording his own "as-builts", checking to make sure the trenches are back filled properly. There is nothing worse than sunken ditch lines two or three years later. Catch basins and risers need to be protected from erosion.

Shaping of features is a part of this operation. Be concerned about maintainability of these features, at least have some input. Make certain that all greens, tees and bunkers have access to future drainage when they are completed.

Some things to mention at this point:

1. SECURITY: Property and equipment should be fenced in. Local police should be alerted about your storage areas. Hire Rent-a-Cops.
2. CONTROL EQUIPMENT ROUTING: Prevent compaction.
3. TEMPORARY OFFICE: Field trailer with phone and other utilities.
4. TRANSPORTATION: For Superintendent and owner and his guests.
5. ROCK PICKING: Disposal and sale of stone if possible.
6. RECORD OF "AS BUILTS": Using camera, drawings and prints for all installations.
7. CONTACT SUPPLIERS: Form bidding procedures for pipe, wire, sand, soil, sod, sprinklers and maintenance equipment.

Make certain the entire site and all features are kept clean and neat. All areas of construction should be leveled daily before going home, for drainage, especially in wet and freezing weather. Avoid making MUD. It is your biggest enemy during construction. Working with wet soil destroys the TILTH.

Building the slopes of water features is always a concern. Depth of the water is important for weed control. The size of the pond is important for an irrigation pond. The draw down caused by irrigation can leave an ugly edge if lake is too small. Stabilization of the slopes is important. You can use erosion blanket, straw or sod. Sod needs water. If there is water in the pond you could use a portable pump to maintain the sod.

At this point the irrigation is being installed. This requires selecting a system first. Designing is done in conjunction with an irrigation engineer. Determine what gets watered and how it gets watered. Size a number of sprinklers to determine the size of pipe and pump.

The superintendent can assist in locating sprinkler heads and flagging them prior to installation. Develop your own as-builts during the installation including the controller locations and the wire routing. Make certain that the ditches are kept clean and compacted after the pipe is installed. Keep the sprinklers about six inches above the ground until the grass is mowed. This will keep them in sight and clean during the final grading and seeding and should prevent damage to the sprinklers.

If you need wells hire the well driller early. After water is found you will have to test the well for 24 to 48 hours. Where do you pump this water? Provisions must be made. Most irrigation systems today have multiple row fairway and green designs that will total over one thousand heads per 18 hole golf courses. Well and pump-house equipment should be automated. The location of the pump house is very important when designing the course. The type of pumps and motors is also very important. It is common to use variable speed motors and computerized controls.

Other buildings needed would include shelters (size and location), toilets (temporary at first) location and size is important, drinking fountains (temporary at first), weather alert system (use irrigation

system to carry power and signal), maintenance building (design and location). Access to this area and the location of utilities is very important. GCSAA has a very good book that every superintendent should have. It is called "Golf Course Maintenance Facilities" it is a guide to planning and design.

Cart paths are planned and installed at this time. Consideration of location and materials to be used including the width and depth as well as the curbing location must be made. Sodding of the walk-ways is important when water becomes available. This is also the time to be putting conduits under the paths for future use for utilities. Cart paths should be hidden from view when possible. This is the job of the golf course architect.

The shaping of the tees and greens has been completed and the drain tile should be installed. The pea stone and tile should be on site. The top mix decision has been made and the mix can be delivered directly to each tee and green. The top mix must be mixed off site. All areas must be kept perfectly clean. There can be no contamination by dirty equipment or by careless operators. Hauling and spreading must be closely supervised. **THERE CAN BE NO DEVIATION FROM THE SPECS.**

The irrigation should be in by now so there should be no concern about seeding and completing the remainder of the course.

I prefer the USGA Specifications for building greens. It is the cheapest in the long run. But you must build the greens as specified. There are no short cuts.

The remainder of the golf course soils should be tested for nutrients. This will help you make decisions concerning fertilizer applications for seeding.

If irrigation is ready we can start and complete the rock picking and hand raking for seed bed preparation. We need to select seed varieties and amounts needed. All areas should be fertilized prior to seeding. Germination starts in three to five days. The grass at this tender age needs constant supervision for water needs for fertilizer needs and for diseases such as Pythium. Irrigation programming is determined at this time according to the needs of the grass. Field testing continues. Most watering is accomplished during the day light hours.

You must protect the young grass from erosion with silt fences, straw, erosion blankets and hydro mulching. You must make additions to the drainage system on an as needed basis. You can begin sodding, preferably before seeding. We usually sod about six feet around the perimeters of all features such as tees, greens and bunkers. Also included would be the walkups to the tees and greens. Your crew should be able to lay about 1000 to 2000 yds per day. You will need about eight acres of sod.

Now you should be increasing the size of the crew because you will be maintaining the grass that has been seeded and sodded. Mowing will start on many of these areas so you will be buying some of your mowing equipment. You will have to roll the new seedlings with a light roller just before you mow for the first time. Your first mowing should start at 1/2 inch on all bentgrass plantings and then lower the mower on the greens to 3/8 the second time and then gradually lower the mowers until you reach 1/4 and remain there for several mowings. If the greens are mature enough before winter you may want to lower them to 3/16. The fairways and tee can remain at 1/2 inch until the next spring when they can be lowered to 3/8".

The tees are usually the last features completed. As mentioned earlier we have sodded the banks of the bunkers so the only thing left is to mark the edges, excavate, and tile them. You will be hooking up the new tile to the tile that was installed earlier in the construction. The biggest mistake I see in new construction is the placement of sand into the bunker before the bunkers are ready. This is often done to save time and when the ground is firm or froze. In reality this usually wastes time because the piles of sand have to be moved several times and the sand gets contaminated. The shapes of the bunkers are determined by the architect. The excavation is usually done with a small back hoe and balloon tired tractors and trailers. Once the floor of the bunker has been finalized you must install the drains. The drainage pipe can be back filled with pea stone and quite often you can use the same sand that will be placed in the bunker. If you use pea stone I would use some type of fabric to keep the stone from mixing with the sand.

Four to six inches of sand is placed in the bunkers. The slopes require a little less than the floor. The six inches of sand will settle to about four inches after raking a few times and after several rains or irrigation cycles.

House keeping is very important at this time. Don't leave piles of debris laying around because they never get picked up in time. Each bunker must be completed before leaving site.

Erosion on greens may occur during torrential down pours. Protect if possible. Repairs should be made by replacing with mixed soil set aside for that reason. Rope off areas from traffic. Mulch other washouts.

Supervise tree planting which can be done the first fall or the next spring. Make certain that water is available. Prune and shape existing trees. This is an ongoing job for several years.

As the grass matures you can begin to lower heads. Landscape where needed. Around buildings and tees or lakes. Topdress greens and tees before winter. Plan and build target greens on practice range.

During the winter move into new maintenance building. Buy equipment for opening course such as ball washers, tee markers, cups, poles, flags, tee benches, cup changing equipment and bunker rakes.

Winterize irrigation system. Protect greens if needed with blankets. Apply fungicide treatment for snow mold. Develop budget for maintenance and capitol expenditures.

In the spring time we can assemble equipment, mark hazards on the course, increase frequency of cut (very important), install yardage markers (GAM), mark cart paths for yardage, increase crew size and help with landscaping around the clubhouse.

Purchase additional equipment, move into offices with all necessary equipment, hook up utilities including the weather station, maintain good PR with local governments, measure course for course rating and continue erosion control and repairs.

Play golf and PROMOTE.