



# Project Manual

## Sun 'N Lake Golf Club

### AQUA TEES REMODEL

Prepared For:

**Sun 'N lake Golf Club**

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## **SECTION 2000**

### **PROJECT MANAGEMENT AND LAYOUT STAKING**

**1.0** This section is included to outline the duties of the Golf Course General Contractor involving project administration and supervision. This work will include, but is not limited to:

1.1 Monthly progress and budget meetings –attendance and preparation of associated paperwork.

1.2 Weekly construction meetings – attendance.

1.3 A monthly written report of construction status.

Preparation of a monthly estimate to complete for each item. This list will be presented at the monthly budget meetings. The Owner will use this information to direct Designer for possible additions or deletions. All totals must be accurate at time of submittal.

The Contractor will keep a full-time person available to measure and monitor all line items on a daily basis. The contractor will produce monthly lists, which indicate exact, updated figures representing actual work in place for each line item. This list will be available to the designer during each and every periodic site inspection. The format for each type of list will be subject to the approval of the designer and owner. The list will be typed and packaged in a bound booklet and distributed at each monthly meeting. The method for measurement will be in units of each line item. For example, greens will be in square feet, cart path will be in linear feet, bulk earthwork will be by cubic yard, etc.

1.4 The contractor will be responsible for the accuracy of all numbers submitted in the monthly report. Owner reserves the right to verify contractor's measurements.

1.5 Coordination and scheduling of work related to local utility companies.

1.6 Preparation of forms and paperwork required by the Owner for sign-off of work completed.

1.7 Monthly field measurements of per hole yardages, green, tee, and bunker sizes, to help ensure compliance with the design goals. These measurements are to be presented to the designer and owner at all meetings and site visits.

1.8 Monthly field measurements of sod installed, areas yet to be planted, etc. to help monitor cost and to project completion totals.

### **2.0 Layout Staking**

2.1 The initial surveying of the golf course center points is the responsibility of the Owner.

2.2 The initial surveying of the property boundaries, easements, and sufficient benchmarks is the responsibility of the Owner.

2.3 The contractor shall perform such surveying and staking as will be necessary for the construction to comply with the requirements of the plans and specifications. This shall include, but not necessarily limited to, layout center stakes (see coordinates on plans), setting grade stakes for greens, tees and fairway cuts and fill; setting grade stakes for pond construction and drainage swales and channels; locating and establishing elevations for all culverts and drainage structures; and periodically checking locations and elevations on work in progress.

#### 2.4 Grade Checking

The contractor shall verify all grades, lines, levels, and dimensions as shown on the drawings, and he shall report any errors or inconsistencies in the above to the golf course designer.

2.5 The designer and superintendent will request detail on-site checking of grades in each swale and sheet flow areas that are part of this construction remodel.

## **SECTION 2200**

### **EARTHWORK**

#### **GENERAL**

This work includes, but not limited to furnishing all material and labor in the cut and fill operation of remodeling 36 Aqua tees.

#### **EXECUTION**

**1.0** The contractor shall perform such surveying and staking as required for the construction of the chipping green.

1.1 During earthwork operations, the contractor shall be responsible not to disturb centerline and location stakes, property line markers and benchmarks. The contractor shall be responsible for re-establishing and re-staking any stakes disturbed or destroyed. Contractor is at all times responsible for checking stakes, placement and verification.

**2.0** The contractor shall establish construction roads in and around the worksite. All construction haul roads shall be established with the owner's approval. The contractor shall be responsible for re-grading and loosening haul roads back to the original grade and compaction or to the satisfaction of the owner.

**3.0** Construction methods and practices used in the performance of the work contained in the contract documents shall comply with all requirements of applicable permits. This includes all existing permits obtained by the owner and all permits obtained specifically for the excavation of this work. The owner may suspend the work or any portion thereof for failure to comply with this provision. Fines levied by permitting agencies and restoration cost for damages to existing facilities shall be paid by the contractor as required to restore the facilities to their condition prior to construction.

**4.0** The contractor at all times during construction shall keep men and equipment on the job in sufficient numbers to meet the goals of the construction schedule. The owner will have the right to order additional men and/or equipment be placed on the job when, in the owner's judgment, progress on the work is behind schedule.

**5.0** Soil cut and fill is material, which has been generated by excavation and is suitable for shaping and grading. Fill shall be placed as shown on the grading plan. The location and quantities noted on the plans of soil cut and fill are approximations of site conditions. To ensure maximum use of available soil, soil shall be placed only upon sub grade approved by designer. The designer reserves the right to adjust the locations and quantities of soil cut and fill.

5.1 Fill material to be used in construction of tees, and fairway bunkers shall be suitably uniform. Material containing peat, muck, rock, or extensive organic matter will not be allowed as fill. Green mix, harvested from the existing greens, shall be used for the final 4” capping of the tees.

5.2 The designer reserves the right to adjust any proposed grades on tee and green locations to meet field conditions or to enhance the character of the golf course. The designer may require the contractor to place fill material, for the construction of mounds and other features of the golf course, in areas other than those shown on the plans as long as the total cut and fill quantities are not increased. If the designer requests additional fill placed on the course, the designer will advise the contractor and the necessary additional costs will be approved by the owner prior to contractor performing such work.

5.3 The fill for tees shall be carefully placed as not to destroy any of the existing natural vegetation around the tees.

5.4 During construction, excavation and filling shall be performed in a manner and sequence that will provide drainage at all times. Excavated and filled sections and adjacent transition areas shall be uniformly smooth graded as operations proceed.

5.5 Designer may order changes in the elevations, which do not materially increase the scope of the work, and said changes will be incorporated into the work by the contractor at no additional cost to the owner.

#### SCHEDULE, MEASUREMENT AND PAYMENT

Payments will be based on percentage completed of the total contract.

## **SECTION 2400**

### **SHAPING AND CONTOURING**

#### **GENERAL**

This work includes but is not limited to furnishing all materials, labor and equipment for shaping of a remodeled Aqua Tees.

#### **EXECUTION**

1.0 The contractor shall abide by all local, state and federal regulations regarding this contract. Contractor shall be responsible for any damage to adjacent property.

2.0 The contractor shall perform such surveying and staking as necessary for the construction to comply with the requirements of the plans and specifications. This shall include: preserving all staking points such as property lines, setting grade stakes for greens, tees, fairways, drainage swales and channels, and periodically checking locations and elevations on work in progress.

3.0 The contractor at all times shall keep men and equipment on the job in sufficient numbers to meet the goals of the construction schedule. Designer shall have the right to order that additional men and/or equipment be placed on the job at no additional expense to the owner, when in the owners judgment, progress on the work is behind schedule. The contractor shall be prepared to work in several different locations at the same time throughout the golf course construction process.

4.0 The contractor must provide experienced personnel in all areas of the operation. The personnel involved in the greens, fairway, bunker, and tee shaping and final contouring must be acceptable to the designer and superintendent.

5.0 The contractor shall coordinate all work areas and schedules with other contractors on the site to ensure no delay or damage is caused by lack of coordination. The time schedule for the shaping operation is very critical to the completion date of the golf course. The contractor shall coordinate his work schedule and work in accordance with the designer's directions and instructions.

5.1 The intent of the grading plan is to provide concepts for the shaping and contouring operations. Any necessary and/or detail plan will be furnished for each hole prior to beginning the shaping operation.

5.2 It is the intent of the owner that the finished tees will well-drained and playable.

Additional swales may be required over and above those shown on plans. Swales shall be constructed in the approximate locations as shown on the grading plan. The invert of the swales shall be deep enough to intercept surface water and to direct it to the nearest catch basin, lake, or drainage outlet. Swales shall be graded smoothly so as to permit ease of maintenance by mowing equipment and shall be free of all water holding depressions, etc. All areas within the limit of work shall be graded to a smooth condition compatible with surrounding areas. The minimum slope of all swales shall not be less than 2% on the back nine and 3% on the front nine of the golf course.

5.3 All shaping shall be done with positive surface drainage. Attention at all times shall be to eliminate surface water crossing greens and tees and not entering bunkers. Contractor shall use extreme care not to disturb or block existing storm drainage and/or drain lines installed in the sub-base of greens and sand traps after the initial shaping operations. The contractor is required to repair existing drain pipes, if damaged, and found to be critical to the future drainage of the golf course.

5.4 In order to develop the finest possible golf course feature, the designer reserves the right to adjust or change the design of greens and surrounding grades.

6.0 The contractor shall shape tees at a typical size of 15 feet wide by 30 feet long. The shapes and angles of the tees shall be according to the drawings and directions of the designer.

6.1 Tees shall be shaped so that the teeing surface is smooth and straight with no pockets that will collect water. The tees shall be pitched (see tee construction, section 2550) at a minimum of 1% from direction away from cart paths or golfer access to provide surface drainage.

6.3 Side slopes of tees shall be graded to blend smoothly with the surrounding contours and permit mowing with riding power equipment except as otherwise indicated by the designer.

6.4 All tees sub-grades shall be constructed smoothed and approved by the designer before receiving green mix from the existing greens. Sub-grades to be sloped at 2 to 3%.

## SCHEDULE, MEASUREMENT AND PAYMENT

7.0 The shaping of tee areas, fairway and rough areas, green areas and cart path sub-grades will be paid for on a per hole basis in relationship to the percentage complete of the entire contract.



## **SECTION 2550**

### **TEE CONSTRUCTION**

#### **A. GENERAL**

1.01 The work in this section includes, but is not limited to furnishing all labor and equipment for the construction and fine grading of all golf course tees. Tees will be built of native sand located on site.

#### **B. EXECUTION**

1.02 The contractor shall at all times keep men and equipment on the job in sufficient numbers to meet the goals of the construction schedule. The owner shall have the right to order that additional men and/or equipment be placed on the job when, in the owner's judgment, progress on the work is behind schedule.

1.03 All tee construction shall be in conformance with the plans and instruction of the owner/designer during construction.

The tee surface shall generally be constructed to drain towards the target or green. All tee surfaces will have a one percent slope. On holes that play uphill, this one percent slope will be from front to back. On holes that play downhill, the one percent will be from back to front. On holes that are cut into the side of a hill, the one percent slope shall fall to the side of the tee away from the hill cut.

The tee sub-grade shall be compacted sufficiently to prevent future settling which might create a depression in the sub-grade and corresponding water-holding depression on the tee surface.

Any low areas or swales around the tee areas are to be drained as part of the drainage plan.

1.04 In finish grading of the tees all one half-inch diameter and larger rocks shall be removed from areas to be grassed.

Finish grade on compacted soil shall be accomplished only by use of a hydraulically-controlled spike tooth harrow mounted on a Toro Sand Pro (or Equal) or hand raked with a thirty-six inch landscape rake or other method demonstrated to, and approved by, the Golf Course Designer.

1.05 The tee surface shall be constructed to drain towards the target or as directed by the architect at a slope of 1%.

1.06 Tee surfaces shall be laser graded with a tractor pulled box blade, utilizing a dual sloped laser transmitter. If weather or irrigation damage this work, the contractor will be required to again laser grade the tee surface. This corrective work cannot be completed by hand.

The contractor shall use surveying instruments to verify grades and slopes on the tee tops after sod-bed preparing but before planting.

1.07 The designer shall approve all finish grades before sodding.

#### C. SCHEDULE, MEASUREMENT AND PAYMENT

1.08 Payment shall be based on percentage of the total contract completed on a per hole basis.

## **SECTION 2450 FINE GRADING**

### **GENERAL**

This work includes, but is not limited to furnishing all materials, labor, and equipment for the preparation for cleaning and fine grading of Aqua Tees. To prepare a proper planting bed for seed or sod. The work area will include all areas disturbed by the contractor within the property boundary.

### **EXECUTION**

1.0 Clearing, together with major root raking, rock removal, stump removal, and heavy clean-up operations, grading of fairway and rough areas including provision for adequate surface drainage, topsoil replacement and rough grading, and drain line and irrigation installation shall have been done previous to fairway and rough fine grading.

2.0 Following acceptance by Designer of rough grading, Contractor shall have all areas to be grassed thoroughly scarified and loosened by disking, harrowing, or other suitable means to a minimum depth of four (4) inches prior to fine finish grading. These areas shall be machine or hand worked as necessary to eliminate all lump and soil clods. Tillage shall include the removal of all equipment ruts and tracks, areas of compaction or erosion, and any other undesirable soil conditions, which would prevent the proper formation of a finely pulverized seedbed.

3.0 Tillage shall be accomplished only under proper soil conditions. The Designer may, at his discretion, delay the tillage operation during periods of severe drought, excessive soil moisture, or other unsatisfactory soil conditions.

3.1 All rocks, stones, sticks, brush, roots, and other objectionable materials which might interfere with the formation of a finely pulverized planting bed, impair planting or create future problems of maintenance shall be removed from the soil. All stone larger than 3/4" in diameter shall be removed from the planting bed except as otherwise directed by the Designer. All such materials shall be disposed of by burying or dumping in areas approved by the Designer.

4.0 Areas to be planted shall be graded and floated to provide complete surface drainage or not less than 2%. All water-holding depressions and pockets shall be eliminated. Undulations and unsightly variations in grade, which will not permit the use of normal mowing equipment without scalping or missing, shall be removed so that proper use of such equipment may be had.

5.0 Areas to be planted shall also be finish graded to meet any walks, paths or other adjoining surfaces so that, after compaction, no water pockets or ridges remain. Ten feet around catch basins must have 3% or greater positive drainage.

#### SCHEDULE, MEASUREMENT AND PAYMENT

Payment for cleaning and fine grading will be on a percentage of the total contract approved by Designer as an acceptable planting bed.

## SECTION 2900

### GRASSING

#### GENERAL

The work covered by this Section includes but is not limited to furnishing all material, labor and equipment for sodding roughs, sodding slopes and sodding bunker edges.

#### **Tees**

Sod

419 Bermuda

#### **Fairways**

Sod

419 Bermuda

#### **Primary Rough**

Sod

419 Bermuda

#### 1.0 Fertilizer

Owner's Superintendent will apply all fertilizer and soil amendments.

#### EXECUTION

2.0 During Planting the contractor shall take care not to destroy any irrigation heads, valves, or other irrigation equipment. Any damage to irrigation equipment caused by the contractor will be back-charged against his contract.

2.1 Prior to pH adjustment, fertilization and planting, all areas shall be inspected by Contractor and Designer to assure that the planting bed has been properly prepared by the Contractor. The Contractor and the Designer must be in agreement on the acceptability of the planting bed. Inadequate preparation of the planting bed shall result in the reworking of the area to the complete satisfaction of the Designer.

2.2 After soil pH adjustments have been made, dry applied fertilizer applied and the soil cleaned and smoothed to the satisfaction of the Designer and after the irrigation system has been tested and is operative, the golf course may be planted.

2.3 Fertilizer - Owner's Superintendent will apply all fertilizer and soil amendments.

2.4 Sod shall be certified by the state's Department of Agriculture as to the genetic purity, free from pests and disease delivered in a timely fashion and consists of stem and leaves. The sod shall come from a nursery approved by the designer.

2.5 Sod shall consist of live, growing plants secured from sources where the soil is fertile and shall have a healthy, virile root system of dense, thickly matted roots throughout the soil of the sod for a minimum of one inch. Sod shall be free from noxious weeds or other grasses and shall not contain any matter deleterious to growth or which might affect its subsistence or hardiness when transplanted. Only sod secured from approved sources shall be used. Any sod permitted to dry out or its survival after placement is doubtful may be rejected by the Owner.

2.6 Contractor shall not use sod from areas where the roots have dried because of exposure to air and sun, nor from where grass has thinned from these or other reasons.

2.7 All sodded areas shall be knitted neatly and firmly together, allowing no spaces, gaps, voids, or depressions within sodded areas. When laid on surfaces of slopes, which may cause sod to slide due to the height and slope of the surface or due to the nature of the soil, sod shall be stabilized by a method acceptable to the Owner to ensure proper binding and to prevent slippage. Anchoring is best achieved by using wooden pegs to anchor the sod to the slope. To avoid interference with future mowing operations, pegs shall be driven beneath the mower cutting height. The areas to receive sod shall be moist and once sod is in place the contractor should initially water the sod before turning it over to the owner.

2.8 All other areas disturbed during planting procedures shall be repaired by the Contractor. They shall be regraded to the original grade, fertilized and grassed according to fairway or rough specifications as the situation warrants.

## MAINTENANCE

3.1 Immediately after all areas have been planted and ruts caused by fairway planter or tractor have been smoothed, the contractor shall water the planted areas sufficiently to seal the soil around the sod. This initial watering is of extreme importance. The contractor shall not allow the sod to go without water for more than 30 minutes after planting.

3.2 It will be the contractor's responsibility to maintain the planted areas by keeping the top inches of the soil constantly moist until the entire area is turned

over to the owner.

3.3 Immediately after completion of planting and initial watering of any specific area the Contractor shall notify the Owner to start a regular fertilization and watering program (owner only starts watering after the entire hole complete and then turned over to the owner).

3.4 After the entire golf hole is complete and turned over to the owner, no golf course maintenance of any type shall be required of the contractor.

3.5 After planting any erosion damage or any other type of damage not caused directly by the contractor is the responsibility of the owner.

#### SCHEDULE, MEASUREMENT AND PAYMENT

4.0 Payment planting of roughs will be on the percentage complete of the total contract.

## **SECTION 2860**

### **CART PATH – CONCRETE**

#### GENERAL

1.0 The work shall include, but not be limited to, furnishing all materials, labor and equipment, to install cart path over the prepared sub-grade and cleaning and regarding after such installation.

1.1 The Cart Path Plan shall be used in staking out the path. Centerlines of cart paths will be staked on the site by contractor and approved by the Designer. The Designer reserves the right to revise alignment subsequent to staking to take best advantage of the lay of the land and completed golf course features.

1.2 Cart Paths shall be four inch (4") thick concrete. Width shall be eight (8') unless specified by the designer, or owner. Curbs shall be four-inch (4") roll down curbs as indicated in details. Curbs shall be staked as per plan or direction of designer or owner. Locations shall be approved by the designer or owner.

1.3 The contractor shall keep all equipment off of new cart paths throughout construction. Contractor is responsible for cleaning the cart path before turning it over to owner.

#### CART PATH SUB-GRADE

2.0 The horizontal cross slope of the paths shall not exceed 5% unless approved by the golf course designer.

2.1 The maximum percent of vertical slope shall be no greater than 8%. Curbing, turnouts, banked turns; flat benches and switchbacks shall be used to decelerate the descent of carts where necessary.

2.2 Contractor shall grade the sub-grade of the cart path in the existing soil material. The sub-grade shall be graded in such a way as to ensure positive drainage off the cart path. Contractor acknowledges that the designer will not accept cart path, which pools or retains water on the surface or between the path and the curb.

2.3 After excavation, the contractor shall regrade and compact to 95% of proctor for a depth of six inches (6") using a vibratory steel wheeled roller weighing not less than five tons. Areas that cannot be compacted must be de-mucked and replaced with clean fill in order to ensure proper compacted sub-grade. Owner reserves the right to test compaction using a qualified independent company. In the event that compaction does



not meet the compaction requirements of 95%, the contractor shall reimburse owner for the cost of such test and contractor shall provide whatever work is necessary to bring the applicable sub-grade up to the required 95% compaction at contractor's sole expense.

2.4 Maintain sub-grade in smooth, compacted condition at required section and grade until concrete is ready to be placed. Keep sub-grade thoroughly wetted down sufficiently in advance of placing concrete to ensure firm, moist condition for at least two inches below prepared surface.

2.5 Prepare sufficient amount of sub-grade in advance of placing concrete to enable work to proceed smoothly and effectively.

## MATERIALS

3.0 The work shall consist of a pavement composed of plain Portland cement concrete constructed on a prepared sub-grade in accordance with these specifications and in a close conformity with lines, grades and thickness.

3.1 For the mix design, contractor shall add to the concrete mix at the plant, Fibermesh brand fiber reinforcement in the amount of 1.5 pounds per cubic yard of concrete. Use of Fibermesh shall be in compliance with Report Number NER-284 prepared by the council of American Building officials. Concrete batch tickets shall be made available at the job site and shall indicate fiber quantity in accordance with the criteria of "Specifications of Ready-Mix Concrete". Copies of all batch tickets are to be furnished to the owner on a daily basis.

### Products:

Concrete	ASTM C 94 Alternate No. 2 3000 psi at 28 days 6+/-2% Entrained Air 1 ½ lbs. Fibermesh /yd concrete
Joint Sealer (If Necessary)	ASTM D 3405
Curing materials	ASTM C 3091 m 171, OR M182
Preformed Filler	ASTM D 1751

3.2 All paths shall be HAND formed and all forms shall have a depth equal or greater than the specified thickness of the pavement. All forms shall be in sections not less than ten feet in length.

3.3 Forms shall be set up to provide ample strength and adequately braced to withstand loads applied during concrete placement operations. Flexible or curve forms shall be used for construction of circular pavements where the radius is 100 feet or less.

3.4 Forms will be set accurately to required grade and alignment following the layout establishment by the designer. Contractor acknowledges that positive drainage of cart paths is required and owner will not accept cart path that pools water or retains water between the path and curb. Forms shall remain in place for a minimum of 12 hours after completion.

3.5 Curbs shall be formed and poured as a contiguous part of the cart path.

3.6 Locate expansion joints in cart paths at an interval of 60 LF of pour. Expansion joints shall be one-inch non-asphalted fiberboard (ASTM D 1751).

3.7 Space control joints in concrete cart path and curb at ten feet on center maximum. The control joints will be 1" in depth.

3.8 Place and finish concrete in accordance with Chapter 10 of ACL 316. Deposit concrete so specified slab thickness (four inches) is obtained after vibrating and finish operations. Minimize handling to prevent segregation.

3.9 After vibrating, screening and floating, test surfaces with straight edges in the longitudinal direction to required grade. Straightness of surface shall not vary over ¼ " in 10 feet. A spray curing compound shall be used.

4.0 The pavement shall be textured with a broom finish. A rough transverse broom texture shall be applied to provide a uniform rough texture.

4.1 Concrete shall test 3,000 PSI after 28 days. Owner may test and contractor shall pay for test if not passed. All concrete not at 3,000 PSI shall be removed and replaced at contractor's expense.

#### SCHEDULE, MEASUREMENT AND PAYMENT

5.0 The basis of payment shall be linear foot installed price based on a unit of one foot x eight feet x four inches.