

# **Renovation of 29 Greenside Golf Course Bunkers**

## **Bear Trace at Harrison Bay Golf Course**

**8919 Harrison Bay Road  
Harrison, Tennessee 37341**

This request for bids is for a contract to furnish all material, equipment, supplies and labor necessary to renovate twenty-nine (29) greenside bunker cavities on the Bear Trace at Harrison Bay Golf Course.

### **General Conditions**

- 1) On-Site work shall be performed between contract award and August 15, 2024, unless an exception is granted by the Facilities Management Regional Manager. The course will remain open during the project.
- 2) The Contractor shall possess a BC-B(sm), BC-B, BC-C, or BC-24 Golf Course contractor license.
- 3) All work shall comply with state-approved versions of the International Building Code, standards, regulations, other applicable codes, manufacturer's recommendation, and best practices. Contractor is responsible for all permits and associated fees.
- 4) Only the Facilities Management Office can approve any alterations, modifications, or substitutions to the written scope, specifications, or requirements of the project. No additional work shall be authorized unless pre-approved by the Facilities Management Office.
- 5) Contractor shall keep the jobsite clean and safe and leave it in a neat and tidy manner.
- 6) All material substitutions shall be pre-approved prior to bid submission. The use of permeable concrete is not approved for this project.
- 7) All materials shall be installed per manufacturer's recommendation and best practice.
- 8) All dimensions listed are approximate. Contractor is responsible for verifying actual dimensions prior to ordering any materials or bidding. No allowances shall be made due to any bidder neglecting to visit the site and verifying dimensions and conditions.
- 9) All bids over \$100,000 shall include provisions for a payment bond in the amount of twenty-five percent (25%) of the contract price.

## **General Scope of Work**

The Contractor shall fully renovate a total of twenty-nine (29) greenside bunker cavities in this project. Contractor shall be responsible for removing existing sand, inspecting drainage tiles and repairing any damage, installing selected bunker liner, testing installed bunker liner to ensure it conforms to company requirements, installing new sand, packing sand, and opening for play. Approximately 31,940 square feet of new bunkers shall be installed on this project.

**Sand Selection**—Contractor shall select a tested sand from a local source that meets all United States Golf Association and patent company specifications for acceptable sand. Chosen sand shall be able to meet the specifications of a maximum slope of bunker less than eighty percent (80%) of the angle of repose. The Contractor shall present a sample of the bunker sand with testing results prior to installation and may be required to submit additional samples throughout the project. Pre-approved sand providers are Golf Agronomics G Angle, Bulk Aggregates, Turf Materials (Premium White Sand of Arkansas), and Short Mountain Silica.

## **Specific Instructions**

### **Subgrade of Bunker**

The floor of the bunkers' slopes where bunker sand shall ultimately be placed shall be equal to or be less than eighty percent (80%) of the angle of repose of the tested sand. The floor should be smooth and compacted. All excavation areas shall be marked in advance of excavation. All sod within the delineated area shall be removed and stockpiled in a designated area in the event the course elects to salvage the disturbed sod. If the course elects not to salvage the sod, the Contractor shall be required to dispose the unwanted sod. The Contractor shall remove all sand, gravel, and loose material to a compacted base. The cavity edges shall be excavated vertically to a depth of eight (8) inches. Where soil material prevents proper foundation preparation at the proposed elevation, the Contractor shall deepen excavation to level where a proper foundation can be prepared. Any materials removed shall be replaced with acceptable fill until stable at proposed grade. Sand limits shall be painted in the field by Golf Course Management. In general, it is Golf Course Management's intent to maintain the existing sand lines; however, in a few cases, the sand lines shall be modified by Golf Course Management to aid in the establishment of an acceptable slope.

The floor of the bunker shall have excavated drainage trenches that are wide enough so that the perforated drainpipe can be installed and surrounded by gravel. The pattern is such that the perforated drainpipes do not exceed twelve (12) feet from the edge of the bunker or from another perforated drainpipe. All loose soil shall be removed so that the floor of the bunker is smooth.

A four (4) inch or greater perforated drainpipe should be installed in the trenches and be surrounded by pea gravel. Gravel surrounding the pipe shall be washed pea gravel as approved and not exceeding half (½) -inch in size. A locator wire shall then be laid and connected in the trench with the perforated drainpipe system.

#### BUNKER CAVITY PREPERATION

The area to be covered with the new liner shall be water settled and mechanically compacted with a hand-operated compacting machine to a minimum dry density of ninety-five percent (95%). Absolutely no loose soil shall remain in the bunker cavity prior to liner placement. No liner material shall be placed in bunker until Golf Course Management has approved the bunker shape, depth, and compaction of the bunker cavity.

#### DEWATERING

The Contractor shall remove all water from any source that accumulates during the excavation process and prior to the installation of new drainage pipe. The embedment or pipe shall not be installed in water.

#### DRAINAGE INSTALLATION

The entire foundation area in the bottom of all trench excavation and bunker cavity shall be smooth, firm, stable, and at uniform density and completed immediately prior to the placing of pipe or materials. Drainage of sand bunkers shall be accommodated by a drainage trench or multiple trenches connecting to each other, each trench measuring eight (8) inches wide and twelve (12) inches deep connecting into an acceptable and functional outfall pipe. Contractor is responsible for ensuring outfall pipe exiting the bunker cavity is not restricted and is functioning properly to allow the bunker cavity to drain.

The locations of trenches shall be as determined and subsequently painted out in the cavity by Golf Course Management. Each sand bunker is to be drained with drainage trenches in a herringbone pattern with no distance between trenches or undrained area in excess of twenty (20) feet, unless approved by Golf Course Management. The top of the pipe shall be set no higher than two (2) inches below the top surface of the trench and centered within the eight (8) inch width of the trench. Each drainage trench shall slope a minimum of one-half percent (.5%) and shall terminate to the low point (or points) of the sand bunker where drainage shall be collected and exit via the outfall pipe. Drainage from the bunker floor shall continue downgrade at a greater depth, if necessary, to the edge of the sand bunker where Golf Course Management has designated the drainage exiting the sand bunker.

The minimum rate of fall shall not be less than one-half percent (.5%) at any point within the drainage trenches. At the edge of the sand bunker where drainage exits, the perforated pipe

shall connect to the existing outfall pipe. All areas of the sand bunkers are to be built with adequate drainage. No water shall be permitted to stand in any portion of any bunker. This is to be accomplished by sub-grades draining to the herring-bone drainage system and exiting the bunker via the outfall connection point.

Prior to placement of the pea gravel blanket, Contractor shall provide Golf Course Management with a record drawing (As-built) of the installed drainage showing the percentages of fall. In addition to the record drawing, Contractor shall provide to Golf Course Management digital photos showing the complete drainage system. Contractor shall not be granted approval to install the gravel layer until as-built documents have been reviewed and approved by Golf Course Management. Golf Course Management shall visually inspect all drainage installation, with written sign-off required before Contractor is authorized to install the pea gravel layer in bunker cavity.

Installation of new drainage lines shall require flush-out lines. However, if needed and determined by Golf Course Management, a flush-out line may be required for some sand bunkers. In general, flush-out lines shall extend from the top side of the main drainage line of the sand bunker and terminate to the point where it shall connect to a riser and trimmed and finished as specified by Golf Course Management. Single flush outs shall be contained in a six (6) inches diameter irrigation valve box. In instances where two flush outs are next to each other, the risers shall be contained in a single ten (10) inches irrigation diameter valve box.

#### Gravel Blanket Layer

A layer of clean approved pea gravel (3/16-inches to 1/4-inches) shall be placed over the entire floor of the bunker two (2) inches deep. This gravel should be brought up to the edge of the bunker. The gravel selected is to be tested by an accredited soils lab for bridging with the selected sand. This common criterion is based on engineering principles that rely on the largest fifteen percent (15%) of the sand particles bridging with the smallest fifteen percent (15%) of the gravel particles. The gravel shall be placed evenly and raked smooth.

#### Polymer Binder Application

ST410 Polymer or pre-approved equal shall be sprayed by a certified and trained system installer. Using proper pressure spray equipment, a uniform layer of polymer shall be applied to the gravel in the bunker at a rate one (1) gallon of polymer per thirty to thirty-five (30-35) square feet. The gravel shall be dry (less than fifteen percent (15%) as tested by the certified installer) at application time. The treated bunker shall be allowed to cure for approximately twenty-four (24) hours prior to sand installation. Polymer shall penetrate approximately ½ - 1-inches depth of the gravel. A sturdy pliable layer of glued gravel shall be the result. Binder shall be sprayed using

proper pressure spray equipment by a contractor with no less than 30,000 square feet of binder application experience.

#### Sand Installation

The tested and approved bunker sand shall be installed in the bunker and compacted at least four (4) inches deep. Care shall be taken to prevent damage to the gravel layer, perforated drainpipe, and bunker edge while sand is being installed. The sand should be compacted in a manner that is consistent with best practices. Some sands may require no tamping. Once the bunkers are inspected and deemed to be ready for sand, and the binder has cured for twenty-four (24) hours, sand may be installed. Sand should always be installed when it is slightly damp. Dry sand should never be installed in the gravel floor. Installing dry sand shall allow some particles to move through the glued stone and may reduce the drainage capabilities of the gravel. Sand may be installed in several methods, but at **no** time may any heavy equipment be allowed to cross the edges of the stone.

Small wagons with light loads may be used to dump sand along the sides of the bunkers. Once an adequate amount of sand is in the bunker, plywood shall be placed over at least twelve inches of sand and the carts may run over the sand and plywood. Conveyor augers are a very good way to install the sand in the bunkers. The installer shall make sure that the sand is moist when installing sand using a conveyor.

#### SAND PLACEMENT

After entire bunker is lined using the above procedures, sodding has been completed and written approval given, the Contractor shall clean the cavity with a hand blower to remove all foreign debris. Absolutely no loose soil shall remain in the bunker cavity prior to sand placement. No sand shall be placed in bunker until Golf Course Management has approved in writing the sod, bunker lining installation and removal of all debris.

The Contractor is responsible for controlling and removing any vegetative growth or contamination within sand bunkers during construction.

#### Sodding

Washed turf grass sod is required and is to be placed around the bunker as shown in the approved profiles. Unwashed sod may be used as approved by the golf course architect as long as no contamination shall occur. **No exposed soil edges** should be left without sod or treated gravel, or the sand shall become contaminated. All sand bunker banks and slopes leading away from edges that have been damaged during the bunker work shall be sodded as directed by Golf Course Management. If slopes are greater than 3:1, Contractor shall use wooden stakes to hold

the sod in place until established. Wooden stakes shall be of sufficient length to provide firm bearing.

All surfaces within the areas of disturbance to be re-sodded, which are slicked or glazed, shall be scarified, amended, and smoothed by floating or hand raking prior to planting. All areas to be sodded shall be floated in two directions to eliminate water holding depressions and pockets. All lumps and soil clods shall be eliminated.

#### SOD QUALITY

Sod shall be cut in a uniform thickness width and length. Sod shall be delivered to the job site within twenty-four (24) hours after being harvested. Any sod permitted to dry out or rot maybe rejected if, in the judgment of Golf Course Management, its survival after placement is doubtful, and shall be replaced at the sole cost of the Contractor.

#### INSTALLATION PROCEDURES

Sod shall be placed by hand with close joints and no overlapping. All spaces between sections of sod, openings at angles, and similar gaps shall be plugged with sod. After laying, the sod shall be thoroughly watered and then tamped with an approved sod tamper or rolled sufficiently to incorporate the sod with the sod bed and insure tight joints between the sections of strips. Rolling shall not be done to the extent that it causes excessive compaction. Any voids, openings, or crevices before and after tamping or rolling shall be filled with topsoil. Upon completion of the above work, the surface of the sodded area shall coincide with the finish grade and shall be flush with other grassed areas.

#### PROTECTION OF SOD PRIOR TO HANDOVER

It shall be the responsibility of the Contractor to repair any damage, to newly sodded and established grass areas, at the sole cost to the Contractor until the work area has been turned over to Golf Course Management.

Following the sodding operations within an area of disturbance and after the planted area(s) has been accepted by Golf Course Management, the maintenance and watering of these areas shall be the responsibility of Golf Course Management.

The Contractor accepts responsibility for repairing any damage caused by drainage problems, irrigation breaks and run-off, as result to the construction means and methods of the Contractor until the area has been accepted by Golf Course Management. Contractor shall be required to repair damaged areas, so the repaired area(s) match the surrounding turf conditions in terms of both plant population and quality of turf. Contractor may be required to install sod within the damaged areas.

If, after the third mowing by Golf Course Management problems arise or are perceived, in any grassed areas, which are related to construction methods used on the project, the Contractor is responsible for repair of these areas.

#### Bunker Liner Installation

Contractor shall not be allowed to deviate specifications and shall not cause any portion of the warranty to be voided or disallowed due to construction means and methods utilized by the Contractor.

#### INSPECTION AND QUALITY CONTROL

After 12-24 hours, the initial polymer application shall have cured. Contractor shall walk and inspect every square foot of each bunker at the end of the curing process. Any areas not to have received the specified rate of polymer shall be marked with turf paint and re-sprayed prior to calling for a final inspection by Golf Course Management. Improper application or omitting the inspection process and follow up polymer application shall leave areas weak and the pea gravel loose. It is installer's responsibility to inspect and maintain the highest standards.

All material of whatever nature used in the reconstruction of the bunkers shall be subject to inspection for workmanship, quality, flow grades, and satisfactory demonstration of flow into all inlets and through all pipes with no damage at exit point before approval by the Golf Course Management. All materials shall be subject to rejection for failure to conform to any specification requirements. Golf Course Management shall plainly mark rejected material and the Contractor shall replace rejected material with material that meets the requirements of these specifications and remove rejected material immediately from the work site. After 12-24 hours, the binder application shall have cured, and an inspection shall occur. Every square foot of every bunker shall be inspected prior to the job being considered complete. Those areas shall be touched up with more binder. Loose rock on the soil or grass next to the bunker that was not treated shall be blown away from the bunker.

#### **Additional Conditions**

- 1) All aspects of this job shall be left in a finished condition: All finish work and final cleanup are included in this contract.
- 2) Contractor shall be responsible for determining where all utilities are on the job site and should take care to protect the utilities from any damage caused by the demo/construction. This shall include any underground utilities around the job site area. If damage occurs, the Contractor shall be repaired within a 24-hour period from the time damage occurs.
- 3) Contractor shall perform work on regular time and shall invoice work time and material not to exceed the quoted price. Any variance in quote shall be addressed only with a

representative of the Facilities Management Regional Office before any additional work is undertaken or materials ordered.

- 4) Work shall be scheduled to avoid any interference with normal operation of the park as much as possible. During the construction period, the Contractor shall coordinate construction schedules and operations with the golf manager.
- 5) The Contractor shall schedule and attend a pre-construction conference where a pre-construction form shall be signed by Facilities Management, Contractor and Golf Manager before work can begin. Contractor shall also schedule and attend a final inspection where a final inspection form shall be signed by Facilities Management, Contractor and Golf manager before final invoice shall be paid.
- 6) The Contractor shall protect areas adjacent to his work and shall be required to repair any damage they may cause. Contractor shall protect work of other trades.
- 7) Workmanship is to be warrantied for not less than one year from date of final inspection. Materials shall be warrantied as per manufacturer's warranty.
- 8) Unless otherwise indicated, all materials, equipment, and supplies shall be new and in good condition and all work accomplished in a manner acceptable to Facilities Management.
- 9) Clean up of the project site shall be the responsibility of the Contractor. Contractor shall assure that job site is clean at end of each day to ensure safety. Contractor shall clean up and haul away all scrap when work is completed to a location off state property in accordance with all applicable laws and regulations.
- 10) Contractor, employees, and sub-contractors shall be licensed, certified, or registered as required. They shall be registered in the State of Tennessee Edison purchasing system.
- 11) The State of Tennessee shall not be held liable for any damage, loss of property, or injury of personnel resulting from actions of the contractor and/or his/her sub-contractors or employees.
- 12) Invoice shall be submitted for payment within 10 days of project completion. A copy of the invoice shall be submitted to:
- 13) Deborah Quist, East Tennessee Regional Office, 160 State Circle, Rocky Top, TN 37769 or [deborah.g.smith@tn.gov](mailto:deborah.g.smith@tn.gov).
- 14) Facilities Management Regional Contact for this project is:

Project Manager: Tim Stewart, 615-517-0598, [tim.stewart@tn.gov](mailto:tim.stewart@tn.gov)



Nothing Follows