GOLF COURSE ARCHITECTURAL ASSESSMENT

EXECUTIVE SUMMARY

The City of Chattanooga, Tennessee owns two (2) eighteen hole golf courses – Brainerd and Brown Acres. The following is a summary of an on-site assessment conducted on February 13 and 14, 2019 by Kevin Norby of Herfort Norby Golf Course Architects.

Based on our observations and review of the golf course, the primary issues regarding course conditioning and deferred capital investment at Brainerd and Brown Acres Golf Courses are:

1) Flooding and poor surface drainage of fairways
2) Outdated and poor condition of the irrigation systems
3) Contamination of sand and poor drainage in bunkers due to eroded edges.
4) Poor condition and lack of practice facilities
5) Deteriorated condition of cart paths
6) Safety issues

For purposes of prioritizing future projects, we have categorized improvements into critical, competitive and comprehensive. Those items listed as critical are, in our opinion, those improvements which are in greatest need of being addressed and would play the most significant role in reducing repairs and on-going maintenance and in increasing revenue through increased daily fee rounds. Those improvements which are identified as Competitive are those which we feel would make the course more playable and would aid in improving the overall condition thereby making it more competitive in the local golf market. Comprehensive improvements are those which will need to be completed at some time in the future but are not in need of immediate attention to avert additional damage or improve overall playability of the golf course.

Item	Brainerd	Brown Acres
Critical	2,338,500	2,112,000
Competitive	1,064,000	1,207,100
Comprehensive	3,384,000	572,500
Subtotal	6,776,500	9,490,500
Contingenc	677,650	949,050
Total	7,454,150	10,439,550

A detailed analysis of each golf course is presented below.

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BRAINERD GOLF COURSE

Brainerd Golf Course originally opened in 1926 as a nine-hole golf course and was later expanded to 18-holes. The front nine was designed by golf course architect Donald Ross while the back nine was, according to the Given Memorial Library archives, designed by Alex MacKay in the 1953. The parkland style course has minimal elevation change and tree-lined fairways with good sightlines and large receptive greens. Water is in play on only four holes (8,11,15 and 17) with small ponds that require forced carries on the par 4 eleventh and the par 3 seventeenth. There is also a series of narrow concrete-lined drainage ditches that cross the fairways on holes 1,3,4,5,8,9 and 16. The soils, unlike Brown Acres Golf Course consist of tight, poorly drained clay.

The 324 yard seventh is a dramatic short par four with a steep slope that falls of sharply off to the right of the green and approach. Although the green complex has been reconstructed in a more modern style, the classic bunkering and abrupt slope make this a very unique and memorable risk/reward hole. The course has four sets of tees and plays from 3,962 yards from the forward tees to 6,479 yards from the back tees.

Photo 1: The unique and memorable par 4 seventh hole.

Overall, the course is in fair condition. Like Brown Acres Golf Course, much of this can be attributed to poor drainage which has compromised the condition of the fairways, bunkers and cart paths. In addition, the condition of the irrigation system is quite poor which has resulted in marginal fairway and tee turf conditions.

The Golf Course:

Irrigation System

The existing irrigation system at Brainerd Golf Course was installed in the mid-1980s and consists of a series of pipes, satellites controllers, sprinkler heads, valves and a pumping system. The system is a hydraulic operated system which utilizes small liquid-filled tubes to trigger activation of the individual heads or block valves. The existing system utilizes a variety of Toro 600 series heads and was designed to provide single-row head-to-head coverage of tees, greens and fairways with a spacing of approximately 90 feet on center. Heads today are designed with spacing of 65 to 70 feet. New replacement parts for hydraulic irrigation components are no longer available today and used parts are hard to find and typically worn or damaged.

The life expectancy of a PVC pipe irrigation system is approximately 25-30 years. The system at Brainerd Golf Course is now nearly 30 years and, surprisingly the golf course staff has indicated that they experience relatively few breaks or leaks in the piping system. Most of their leaks are at sprinkler heads, swing joints and fittings. Given the age of the pipe, it is likely that these leaks will become more frequent and more severe in the coming years.

The irrigation system at Brainerd Golf Course does not have a central control system. There are three satellite controllers which can be adjusted to control the amount of time each sprinkler or zone will operate but the golf course staff must adjust these manually to change run time or account for seasonal variations in the weather. Modern control systems utilize a computerized central control which allows for programming of run times, seasonal adjustment and rain monitors to conserve water and manage usage. It is our recommendation that a new control system be installed to allow staff to monitor water usage and manage watering of the golf course.

The water delivery system consists of a single submersible pump located in the river to the east of hole 14. Originally, the irrigation supply system utilized two (2) pumps but the second pump was not replaced when it failed approximately five (5) years ago. The remaining irrigation pump consists of a 40 horse vertical turbine which lies on its side in the river and is capable of pumping approximately 350 gallons per minute. Depending on the acreage and the number of heads, a typical 18-hole golf course requires between 750 and 1,100 gpm to provide adequate water during peak season. Because the system at Brainerd Golf Course lacks a sufficient supply of water, the maintenance staff can only irrigate critical areas. Roughs and fairway edges have no irrigation and are allowed to decline during the hot summer months. Greens are typically watered daily while one third of the fairway heads and one third of the tee heads are run each night. The pump system should be updated with a second 60 horse pump and variable frequency drive to provide 1,000 to 1,200 gpm for the 18-hole course.

Photo 2: A single 40 horse vertical turbine pump lies on its side in the river. The second pump failed and was never replaced.

Photo 3: Irrigation pump switch panels located in the level of the levee pump building.

Critical improvements should the immediate installation of a new second pump, central control system and complete irrigation system including a heads, pipe and field satellites. It is estimated that a new 18-hole double-row irrigation system, including pump and control system, will cost between $1.5 million and $1.8 million depending on soil conditions, pipe sizing and the total number of heads.

Putting Greens

The putting greens at Brainerd Golf Course were reconstructed in 1988 using sand-based modified USGA construction without a choker layer or perimeter wicking barrier. The greens are grassed with Mini-Verde Bermuda Grass. The greens on both the front and back nine were reconstructed at the same time in a modern style which incorporates mounding and contouring that exhibits no sensitivity to the history or pedigree of the golf course. With that said, the greens appear to be in exceptional condition, are generously sized and very playable. A few greens do exhibit signs of algae growth but overall appear healthy. At this time we would not see reconstruction of the putting greens as necessary.

Fairway & Roughs

The fairway and rough turf at Brainerd Golf Course consists of a blend of 419 Bermuda and annual bluegrass. Annual bluegrass, which makes up much of the turf, is essentially a weed which favors low lying areas with wet soils. Annual bluegrass is problematic as it is not shaded tolerant, heat tolerant or cold hardy.

Photo 4: Poor turf conditions due to lack of water, poor drainage & compaction.

Overall, the fairways and rough turf conditions at Brainerd Golf Course would be considered fair to poor. Much of this is due to lack of adequate surface drainage. Throughout the course, fairways are very flat with poor surface drainage and little sub-surface drainage. Presumably, this is why the series of concrete-lined ditches were constructed. However, whether due to settling or lack of attention to surface drainage during construction, most holes have standing water or puddling which results in saturated soils, increased disease issues and rutting from carts & mowers. It appears that on holes 7,8,10,11,12 and 18 the drainage ditches were filled in which has resulted in large areas of poor drainage. Hole 18 is particularly problematic with large areas of standing water and considerable deposits of silt on the fairways and cart paths. Golf course staff has noted that, during most of the winter months, the golf course is played as "cart path only". As a result, it is likely that some golfers avoid playing Brainerd after rain.

Our recommendation would be to conduct a significant drainage improvement project to correct surface drainage and to allow the golf course to dry more quickly following rain events and normal irrigation cycles. This would include roto-tilling the fairway with a Blecovator or a Rotodarian and then grading the soil to provide surface drainage. Following grading, a series of subsurface drain tiles should be installed and then re-grassed. This will also reduce rutting from carts, reduce on-going maintenance and improve turf conditions & playability. It should be noted that the drainage improvements should be done prior to installing a new irrigation system or done at the same time a part of a larger more comprehensive project.

Tree & Stump Removal

In general, trees are nicely spaced throughout the course and do a nice job of framing golf holes without negatively shading greens or tees. The exception would be shade and root encroachment issues on holes 9,10,12 and 18

There are also numerous stumps throughout the golf course that have not been removed. The maintenance staff indicates that there has been no funding for tree or stump removal and estimates there are some 70 stumps in need of removal. These stumps are unsightly and increase string trimming and weekly maintenance.

Photo 5: Nearly 70 stumps remain from trees that have been removed throughout the course.

Sand Bunkers

Sand bunkers impact nearly every aspect of the golf course including the visual quality of the course, maintenance, pace of play and strategy. They are also an important tool in differentiating one course from other competing courses in the market.

Bunkers are also one of the most labor-intensive elements on a golf course. There are 28 sand bunkers at Brainerd Golf Course and, over the past 20-30 years, the bunkers have become severely contaminated with eroded edges and nearly vertical faces on which it is difficult to maintain sand. As those edges deteriorate, the native soils and rock wash into the bunker and the sand becomes contaminated so that it will no longer drain properly. The bunkers are in very poor condition and as a result require a significant amount of time and expense to maintain.

In addition, because of the effect which technology has had on golf equipment, many of the bunkers at Brainerd are no longer properly positioned to challenge the low handicap golfer. Instead, they now un-necessarily penalize the high-handicap and beginning golfer.

Photo 6: Bunkers are excessively large and poorly drained requiring extensive maintenance and providing a poor experience for golfers.

It is our recommendation that a comprehensive bunker renovation be undertaken to 1.) reduce regular maintenance and repair, 2.) provide visual framing and interest and 3.) define the holes strategically. The bunkers are contaminated and the edges are eroded. Therefore, the reconstruction of the bunkers should simply involve the removal and replacement of the sand but instead, should include completely reconstructing the bunker cavity to reduce their size and correct erosion. This involves regrading and reshaping the bunkers to adjust their size and contour, installing new subsurface drainage and replacing the sand. Some bunkers may be eliminated while the majority of bunkers will be relocated or reconstructed. By redesigning and reconstructing the existing bunkers, it is our belief that the City of Chattanooga can provide a more enjoyable golfing experience for golfers of all ages and all abilities at Brainerd Golf Course while, at the same time, minimizing the time and expense of repairing unexpected washouts.

Cart Paths

Cart paths at Brainerd Golf Course are continuous and run the length of each hole from tee to green. The paths are constructed of asphalt but many paths are in very poor condition due to poor subgrade preparation, damage from tree roots and damage from saturated soils. Damaged cart paths should be removed and reconstructed with a compacted granular base and a minimum of 2.5 inches of bituminous paving. Some paths, such as those on holes 5,7,8 and 9 should be relocated or realigned to allow for improved playability or reduced visual impact. Prior to paving cart paths, it is important that any drainage issues or fairway regrading be completed.

Photo 7: Existing cart paths are in poor condition.

Photo 8: Many paths are not paved or are deteriorated.

Salvaged railroad ties have been used throughout the golf course as cart path edging, walkways and retaining walls. In almost all instances, these old cross ties are rotted and in poor condition. This leaves the impression that the course is being neglected. These elements also require string trimming and act to create visual clutter. Our recommendation would be to remove all of the railroad tie walls and cart path edgers. Curbing should be replaced with asphalt or extruded concrete curbing.

Photo 9: Wood edgers are damaged and deteriorated.

Photo 10: Railroad ties are rotten and falling down.

Teeing Grounds

With the exception of the par three holes, the tees at Brainerd Golf Course are generally of sufficient size given the current level of play. However, many of the tees are uneven from decades of topdressing. The tees on holes 2,10 and 12 are heavily shaded so turf is thin and much of the tee unusable. We recommend removing trees to improve sunlight and air circulation and then stripping and leveling tees to improve turf quality and playability.

In addition, a number of new forward tees should be constructed to improve playability for the women, seniors, and juniors. We normally like to see a set of forward tees which play 4,400 to 4,600 yards. At 4,962 yards, the forward tees at Brainerd are too long to be enjoyable for most women and most entry-level golfers. In rebuilding the tees, attention should be paid to meeting new requirements for American Disabilities Act (ADA) for golf courses.

Immediate improvements should include the construction of forward tees to make the course more playable and more enjoyable for a wider range of golfers. Although we would not see the leveling of the existing tees as a "critical" item, in order to minimize future increased cost and disruption to play or course closures, it would make sense to do that work at the same time as the installation of a new irrigation system or the re-grassing of the golf course.

In many areas, railroad tie retaining walls have been constructed at the tee perimeters including those on holes 1 and 4. Most of these walls have deteriorated are now unsafe. These walls tend to clutter the golf course and increase maintenance by requiring hand mowing or string trimming. We would recommend that, whenever possible, retaining walls be removed completely by regrading the affected area in order to reduce visual clutter and maintenance. Where it is not possible due to spatial limitations, walls should be reconstructed with natural stone or other materials that are consistent with the age and history of the course or compliment other structures such as the clubhouse. Walls should not be constructed with pre-cast concrete block as these are unsightly and inconsistent with the age and character of the golf course.

Practice Facilities

The driving range at Brainerd Golf Course consists of only a small area between the tenth and eighteenth holes where golfers can hit and retrieve their own balls. Although the width of the length of the range would not allow golfers to hit woods, we would recommend that the range be developed as a dedicated short range area. This could be done by installing netting an all-season tee system such as Rhino Mat or individual mats to define the teeing area and orientation. If slightly more room is desired, the green and approach on hole 18 could be shifted left and the range located between holes 18 and 9. Driving ranges can be an important determinant for golfers deciding where to plan and can also be a significant source of revenue.

Photo 11: The practice green is nicely size and in good condition. .

Clubhouse & Maintenance Facilities

The clubhouse at Brainerd Golf Course is a two-story, 8,000 square foot, wood-framed structure which was constructed in the late 1920's shortly after the course was constructed. Without a more in-depth assessment, it is difficult to determine the actual condition of the structure but plumbing, electrical, insulation are dated. First impressions of the golf course are not particularly good because of the dated and cluttered feeling at the clubhouse entry. Paint is worn, steps are covered in moss and awnings are worn and discolored.

Immediate improvements should include a modest cosmetic facelift to improve the general appearance of the building and to address cosmetic and deferred maintenance issues. This should include the replacement of the exterior awnings, removal of railroad tie edging and planters, updating of trash cans, cleaning of moss from steps and replacement of entry railings. Other interior improvements should include improvements to flooring, heating and air conditions. Long-term future improvements should include a major remodel or the construction of a new clubhouse. Any significant remodeling of the structure, however, will likely require updates to meet current codes for American Disabilities Act (ADA), fire safety and health department. Those code upgrades will likely cost $500,000. It is estimated that a new clubhouse of similar size would likely cost in excess of $3.0 million depending on utility infrastructure costs and desired finishes. If expanded to allow for large events or underground cart storage, a new clubhouse could cost in excess of $5 million.

Photo 12: Brainerd Clubhouse entry.

Photo 13: Cluttered and dated clubhouse entrance.

The maintenance facility at Brainerd consists of a pole barn structure with a concrete floor. The building is small and generally adequate to meet storage and operational needs for an eighteen-hole golf course. Immediate short-term improvements should include replacement of unsightly fencing adjacent to the third hole with landscape hedge. Additional long-range improvements should include the construction of a wash pad with sediment traps.

Photo 14: Brainerd Golf Course maintenance facility.

Photo 15: View to maintenance facility from hole 3 tee.

RECOMMENDATIONS

For purposes of prioritizing future projects, we have categorized improvements into critical, competitive and comprehensive. Those items listed as critical are, in our opinion, those improvements which are in greatest need of being addressed and would play the most significant role in reducing repairs and on-going maintenance and in increasing revenue through increased daily fee rounds. Those improvements which are identified as Competitive are those which we feel would make the course more playable and would aid in improving the overall condition of the course more competitive in the local golf market. Comprehensive improvements are those which will need to be completed at some time in the future but are

not in need of immediate attention to avert additional damage or improve overall playability of the golf course.

Critical:	
1. Improve fairway drainage and re-grass holes 1,3-5,8-13,15-18	$116,000
2. Install subsurface drainage system on holes 1-18	$214,000
3. Install new irrigation system on holes 1-18 including new second pump.	1,627,500
4. Renovate bunkers on holes 1-18.	371,000
Total	$2,328,500

Competitive:	
1. Relocate & redevelop driving range	$108,000
2. Remove timber edging & reconstruct cart paths with curbing on holes 1-18	798,000
3. Construct new forward tees on holes 4,6,8,13 & 17.	54,000
4. Remove trees to reduce shade and laser-level tees on holes 2,10 and 12.	26,000
5. Cosmetic updates to clubhouse entry awning, paint, trash cans & flooring.	31,000
6. Remove stumps &timber walls, construct fence to screen maintenance.	47,000
Total	$1,064,000

Comprehensive:	
1. Level existing tees on holes 1-3,5,7,9-12,14-16 and 18.	171,000
2. Repair/repave clubhouse parking lot.	148,000
3. Repair drainage ditches	22,000
4. New course signage and entry signage.	32,000
5. Construct new clubhouse	3,000,000
4. Wash pad at maintenance area.	11,000
Total Comprehensive	$3,384,000
Subtotal all three phases	$6,776,500
Contingency (10%)	$677,650
Grand Total	$7,454,150

COST OF RENOVATION

Based on our preliminary assessment of Brainerd Golf Course, if only the "critical improvements" were implemented, the cost of the renovation would be $2.3 million. To complete the "competitive improvements" would add another $1.1 million. If the City should choose to implement all the improvements including the "comprehensive improvements" including clubhouse and maintenance facility upgrades, the total cost would likely approach $7 million dollars. Since at this time no detailed plans have been prepared, our recommendation

would be to include an additional 10 percent as a contingency and bringing the grand total to $7,454,150.

PHASING & DISRUPTION TO PLAY

Generally, when completing a golf course renovation project, we try to minimize disruption to play. However, when the project is extensive enough, it is often necessary and beneficial to close all or part of the golf course to allow the contractor to quickly and efficiently complete the work. At both Lester and Enger, some of the improvements such as the installation of an irrigation control system and reconstruction of bunkers or tee are not particularly disruptive. However, the re-grading of fairways and installation of the irrigation system are more disruptive and would require the closure of holes. Since the City of Chattanooga has two 18-hole golf courses, our recommendation would be to close one course and to make the required improvements to that course while continuing to play the other course. This will reduce labor and operational costs during that time and will provide for some economy of scale pricing by allowing the contractor to work quickly and efficiently without having to work around golfers. This will also allow the course to open with a new improved look. It will be important prior to beginning construction that a well-defined schedule and scope of work are defined and that a qualified golf course contractor who understands golf course construction and sequencing is utilized.

BROWN ACRES GOLF COURSE

The original nine-hole golf course at Brown Acres was built in 1975 by an unknown architect. The parkland-style course sits on 110 acres and has narrow tree-lined fairways with large undulating greens. The course is bisected by Interstate Highway 75 with holes 1,6,7,8,9,10 and 18 on the west side and the remaining holes south of the highway. The majority of the site is flat with a series of small ponds and grass swales which drain to the east towards the South Chickamauga Creek River. There is water in-play on thirteen holes including forced-carries on holes 1,5,8,15 and 18. The par three fourteenth is particularly memorable as it plays form an elevated tee to a green that sits 40 feet below. There is only one par five on the front and only one par three on the back so the course plays to a par 35 on the front and a par 37 on the back. Total yardage is 6,742 yards from the back tees and 4,934 yards from the front tees.

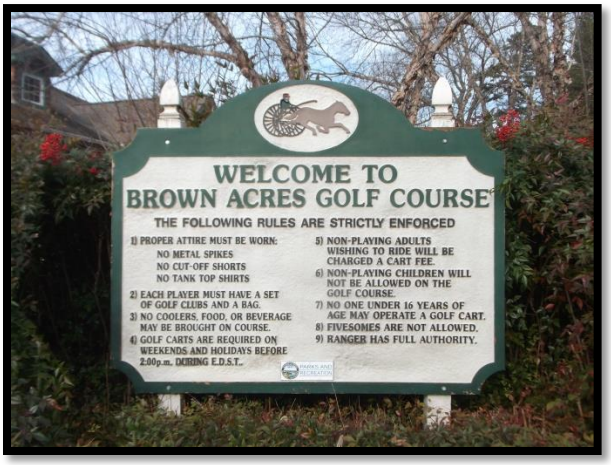

Photo 1: Entry signage at the golf course.

Photo 2: The dramatic downhill par 3 fourteenth is unique and memorable.

Although the greens are in very good condition, overall the course is fair to poor condition. Much of this can be attributed to seasonal flooding and, like Brainerd Golf Course, poor surface drainage in the fairways and roughs.

The Golf Course:

Irrigation System

The existing hydraulically operated irrigation system was installed when the course was constructed in 1971 and has been added on and modified a number of times. The system consists of Toro sprinkler heads and satellites controllers, PVC pipe and a pumping system that delivers water to the golf course from a pond located on the right side of hole 8. The pump system consists of two 40 horse vertical turbines with variable frequency drives and a five

horsepower pressure maintenance pump which are capable of pumping approximately 800 gallons per minute.

Photo 3: Modern vertical turbine pump station is adequately sized and is in good condition.

The life expectancy of a PVC pipe irrigation system is approximately 25-30 years. Much of the system at Brown Acres Golf Course is approaching 50 years old. The golf course staff has indicated that they are experiencing a very high number of leaks and breaks which requires a significant time commitment to repair and maintain. During the summer months, leaks occur on nearly a daily basis. In addition, staff is not able to run the system automatically overnight because of the risk of unmonitored leaks so watering can only occur in the early morning hours before golfers arrive. Irrigation components for a hydraulically controlled irrigation system are not available and used parts in good condition are almost impossible to find.

Immediate improvements should include replacement of the irrigation central control and field satellites as well as new heads, valves and pipe. A new irrigation system will provide improved coverage and control so that water can be placed more precisely where it is needed. It is estimated that a new 18-hole double-row system and central control will cost between $1.4 million and $1.7 million depending on soil conditions, pipe sizing and the total number of heads.

Putting Greens

The putting greens at Brown Acres were reconstructed in 1988 using sand-based modified USGA construction with no choker layer and no perimeter wicking barrier. The greens are grassed with Tif-Eagle Bermuda. The greens on both the front and back nine were reconstructed at the same time in a modern style which incorporates mounding and

contouring. The greens appear to be in very good condition, are generously sized and very playable.

Photo 4: Putting greens are nicely sized and in excellent condition.

Fairway & Roughs

The fairway and rough turf at Brown Acres consists of a blend of 419 Bermuda and annual bluegrass. Annual bluegrass, which makes up much of the turf, is essentially a weed which favors low lying areas with wet soils. The fairways and roughs have little slope or subsurface drainage so overall turf quality in many areas is quite poor.

Drainage & Flooding

Like Brainerd Golf Course, but to a greater degree, many holes have standing water or puddling which results in saturated soils, increased disease issues and rutting from carts & mowers. In particular, holes 2,3,6,10,13,15 and 17 have significant issues with drainage.

There are a series of shallow grass-lined swales which run through the course but, unfortunately, these swales do not appear to have any drainage pipe are too shallow to properly move water off the course. As a result they often have standing water which again, results in poor turf quality and damage from carts and mowers.

Photo 5: Flat fairways and pockets of standing water.

Photo 6: Shallow grass swales drain poorly.

Flooding due to rising water in the South Chickamauga Creek is a significant issue at Brown Acres Golf Course. According to staff, the golf course floods 3-5 times per year and at least once annually flooding is severe enough that the tunnel under the highway makes the course inaccessible. Flooding occurs primarily in winter months when revenues are low and, according to staff, the water typically recedes within a day or two and the course reopens for play in 3-5 days. Since flooding is short-term, loss of turf has not been a problem.

The primary issue for the golf course is that, although flood waters receded quickly, the course does not drain well so soils remain saturated which results in areas of standing water, rutting, poor turf quality and the course being accessible to golfers and maintenance staff by cart path only.

Our recommendation would be to conduct a comprehensive drainage improvement project and to regrass the fairways in order to correct surface drainage and to allow the golf course to dry more quickly after flooding or rain events. This should be done by using a specialized piece of equipment such as a Blecovator or a Rotodarian to till and loosen the top few inches of soil so that it can be graded properly. In addition, the small ponds on holes 1,6,8,16,17 and 18 should be enlarged and connected with a system of sub-surface drain tiles. It should be noted that the drainage improvements should be done prior to installing a new irrigation system or done at the same time a part of a larger more comprehensive project.

Sand Bunkers

At Brown Acres, there are only 17 sand bunkers on the golf course. In response to persistent flooding, most of the original bunkers have been removed rather than repaired. The remaining bunkers are badly contaminated and in need of complete reconstructed.

The bunkers are badly contaminated and the edges are eroded. The reconstruction of the bunkers should not simply include removal and replacement of the sand but instead, must include completely reshaping the bunkers to reduce their size and control erosion. This will

involve regrading and reshaping the bunkers to adjust their size and contour, installing new subsurface drainage and replacing the sand. Some bunkers will need to be eliminated and some bunkers will be relocated or reconstructed in their current location.

Photo 7-8: Bunkers have eroded edges, contaminated sand, and poor drainage.

It is our recommendation that a comprehensive bunker renovation be undertaken to reconstruct the remaining bunkers and maintain the strategic and visual quality of the course while minimizing on-going maintenance. This will involve removing rebuilding some bunkers and potentially adding some new bunkers. Bunkers that might be prone to flooding should be removed while new bunkers might be added or constructed in such a way as to reduce regular maintenance and yet provide visual framing and strategy.

Cart Paths

In general, the cart paths at Brown Acres run continuously from hole to hole. Holes 2,3,4,7,10 and 11 actually have two cart paths – one on each side of the hole. Most of the paths are constructed with gravel. Those paths that are paved are in very poor condition due to damage from tree roots and soft poorly-drained soils. Those holes with double cart paths should have one path removed as there is typically one side or the other that is more passable in wet weather. Damaged cart paths should be removed and reconstructed with a minimum of 5 inches of gravel base and 2.5 inches of pavement. At tees and greens cart path should be widened to allow carts or beverage carts to pass and to minimize rutting. Curb can be installed in select locations to minimize rutting.

Photo 9-10: Deteriorated cart paths should be replaced.

Like Brainerd Golf Course, salvaged railroad ties have been used throughout the golf course as cart path edging, walkways and retaining walls. These ties are rotted and in poor condition which leaves the impression that the course is being neglected. Our recommendation would be to remove all of the railroad tie walls and cart path edgers. Curbing should be replaced with asphalt or extruded concrete curbing and retaining walls should be eliminated completely, regraded and regrassed. Any retaining walls that cannot be eliminated should be reconstructed using natural stone such as the wall on hole 2 tee.

Photo 11-12: Deteriorated railroad tie cart path edging and retaining walls are unsightly.

Teeing Grounds

The tees on the par four and par fives at Brown Acres are generally sufficiently sized given the current level of play. The par 3 holes however lack sufficient size and, as a result, turf is in poor condition. Also, many of the tees are domed or uneven from years of settling and topdressing. There are four sets of tees on each hole but there are large gaps of 40 to 60 yards between many of the blue (back) and white tees particularly on holes 3,12,13,15 and 18. This is presumably a result of having randomly built new back tees over the years in an attempt to

"squeeze" more yardage out of the course. This has also resulted in safety issues on holes 6,16 and 18 and shade issues on holes 6,12,14 and 15. In addition, the tees on hole number 14 are particularly uneven, poorly aligned and difficult to access with a maintenance equipment.

Photo 13-14: Safety netting on holes 6 and 9 to protect golfers.

From the forward tees the course currently plays 2,321 yards on the front nine and 2,613 yards on the back nine for a total of 4,934 yards. We would like to see a set of forward tees that play 300 yards shorter and which minimizes the difficulty of the forced carries over water from the forward tees on holes 1,5 and 18. We would suggest that hole 10 be shortened and that new forward tees be constructed on holes 12 and 16 to provide a playing experience that would be more enjoyable for women, juniors and seniors.

Practice Facilities

The driving range at Brown Acres is ideally located just south of the clubhouse and parking lot near the first and tenth tee. The range is a little short and a bit narrow at 270 yards long and 90 yards wide. The teeing area is significantly undersized at just over 6,000 square feet which has resulted in very poor turf.

Our recommendation would be redevelop the driving range to increase the overall length and width and to increase the size of the turf tee in order to provide more time for turf recovery. This would involve shifting the range tee to the south and west towards the highway (partially impacting the back tees on 1 and 10). This will add approximately 30 yards in length and provide for the construction of a new 20,000 square foot turf tee while at the same time providing for a safer relationship between the range and highway. In addition, the overflow parking lot should be graded and paved to allow approximately 10 parking stalls to be eliminated on the south side of the parking lot to provide a safer relationship between the parking lot and the range. The driving range should also have an all-season synthetic teeing area with mats or synthetic tee to allow golfers to hit balls in the winter and spring when turn is not actively growing. This will minimize wear on turf and allow more time for turf to recover. After the new range is developed, and as part of a more long term approach, a new short-game

practice area should also be built between the clubhouse and the new range tee. Hole 10 could also be shortened to a 400 yard par four to improve safety between the highway and hole 10 green.

Photo 15-16: Tee on the driving range is small, uneven and lacks an all-season tee line.

Proposed Highway Expansion

The Tennessee Department of Transportation (TDOT) is proposing to widen the driving lanes on Interstate 75. At the time of this report, we understood that this will take approximately 2.5 acres of land from the golf course and potentially impact the golf course by creating an unsafe relationship between golfers and motorists. Currently, the vegetation which separates the golf course and the interstate provide a protective buffer that keeps golf balls from landing on the roadway. In removing the vegetative buffer and moving motorists closer to the golf course, it may become necessary to install a sound wall or to move the greens on holes 1 and 10 greens along with 18 tees to the east to create a safe relationship for motorists. This may also provide an opportunity to minimize the forced carry on hole 1 and reduce the forced carry distance on hole 18 by moving 18 tees forward. With the expanded roadway, we would recommend that a more in depth assessment of the proposed expansion project be conducted to determine the need for changes to the golf course or the construction of a sound wall or other protective measures. If the highway project has an excess of soil, the golf course elements (cart paths, greens, 18 tee and approaches) could be raised to minimize future flooding and improve golf course drainage.

Restroom facilities

The golf course has one bathroom facility located near the tee on hole 12. The restroom does not have electricity so it is not functional during much of the year. According to golf course staff, the cost of bringing power to the facility was previously estimated at $25,000. Having clean convenient restroom facilities is important in attracting golfers of all ages and genders. It

would be advisable to have a second facility in a location convenient to the front nine. The facility could be solar powered.

Clubhouse & Maintenance Facilities

The clubhouse at Brown Acres is a one-story wood-framed structure which was constructed in the 2000. It has cart storage in the lower level with pro-shop, offices, small grille and restrooms on the main floor. The clubhouse is in generally good condition with the exception of possibly needing a new roof in coming years.

Photo 17: Clubhouse large and well designed with underground cart storage.

The main parking lot east of the clubhouse is paved with asphalt but has numerous cracks and spot patches. The overflow parking lot to the northeast of the clubhouse is unpaved. Future improvements should include paving of the overflow parking lot as well as sealcoating or overlaying and the eventual removal and replacement of the main parking lot.

The maintenance facility at Brown Acres was constructed in 1991 and is a pole barn structure of approximately 4,000 sf. It has running water, a concrete floor and a heated office. The mechanic's work area does not have heat. Long range improvements should include a wash pad and heat for the shop area and an additional building which will provide for additional storage for fertilizer and chemical storage.

Photo 18: Maintenance facility at Lester Park Golf Course.

RECOMMENDATIONS.

For purposes of prioritizing future projects, we have categorized improvements into critical, competitive and comprehensive. Those items listed as critical are, in our opinion, those improvements which are in greatest need of being addressed and would play the most significant role in reducing repairs and on-going maintenance and in increasing revenue through increased daily fee rounds. Those improvements which are identified as Competitive are those which we feel would make the course more playable and would aid in improving the overall condition of the course more competitive in the local golf market. Comprehensive improvements are those which will need to be completed at some time in the future but are not in need of immediate attention to avert additional damage or improve overall playability of the golf course.

Critical:	
1. Improve fairway drainage and re-grass holes 1,3-5,8-13,15-18	$161,000
2. Install subsurface drainage system on holes 1-18	$142,000
3. Install new irrigation system on holes 1-18 including new second pump.	1,601,000
4. Renovate bunkers on holes 1-18.	208,000
Total	$2,112,000

Competitive:	
1. Relocate & redevelop iron-only driving range	$280,000
2. Remove timber edging, reconstruct cart paths with curbing on holes 1-18.	881,000
3. Level tees and reconstruct cart path on hole 14.	46,100
Total	$1,207,100

Comprehensive:	
1. Level existing tees on holes 1-13 & 15-18.	184,000
2. New course signage and entry signage.	32,000
3. Construct new bathroom facilities and power to existing bathrooms.	44,000
4. Remove alternate driveway to maintenance & pave overflow parking lot.	78,000
5. Repair/repave clubhouse parking lot.	141,000
6. New chemical storage building & heat in maintenance shop area	93,500
Total Comprehensive	$572,500
Subtotal all three phases	$9,490,100
Contingency (10%)	$949,010
Grand Total	$10,439,110

COST OF RENOVATION

Based on our preliminary assessment of the site, if only the "critical improvements" were implemented, the cost of a modest renovation would range cost $2.1 million. To complete the "competitive improvements" would add another $1.2 million. If the City should choose to implement all the improvements including the "comprehensive improvements" such as the clubhouse and maintenance facility, the total cost could exceed $9 million. Since at this time no detailed plans have been prepared, our recommendation would be to include an additional 20 percent to cover final design, permitting and a contingency bringing the grand total to $10,439,550.