



Golf Course Site Improvements

October 12, 2021

Attachment D

LOS ALAMOS
where discoveries are made

Project History

- 2012: Phase 1 CIP Application Process Complete for Golf Course Master Plan
- 2012: Phase 2 CIP Application Process Complete with No Project Funding Award
- 2016/2017: Recreation Bond Efforts Including Funding for Golf Course Improvements Failed
- August 8, 2017: Council directed staff working with the Parks and Recreation Board to devise a plan that implements golf course improvements at a cost not to exceed \$4.524 million and implement it over a multi-year period.
- December 5, 2017: Council approved \$4.524 million budget for Golf Course Improvements. Project considerations included:
 - Reduce water usage by 25% = \$30,000 year
 - Safety netting will decrease liability at the driving range by reducing balls from reaching the golfers and citizens
 - Maintenance costs will not increase
 - ***The main goal of the Golf Course Project is to replace the irrigation system. All other elements to be prioritized as funding allows.***
- May 2019 – February 2021: Irrigation System Design & Installation (\$2.6M)

Golf Course Improvements Status

Established Site Development Project Priorities

1. Safety Netting
2. Bunkers
3. Tees
4. Cart Paths
5. Greens
6. Restrooms

Site Development Design

- October 2020 – Agreement Executed
- May 13, 2021 – Parks & Rec. Board Design Presentation
- June 2021 – Design Complete
- July 2021 – Bidding cancelled for additional discussions about the scope of the improvements

Remaining Budget Available for Site Improvements: \$1.9M

Existing Range

1. Length – 156 to 257 yards
2. Poles approx. 40-50 ft. tall
3. Netting - Inadequate range ball containment
4. Holes 2 & 3 close to hitting stalls
5. No natural grass hitting
6. Limited number of hitting stalls
7. Lack of improved target greens
8. Poor condition short game area green
9. No social connection to clubhouse patio

GOLF COURSE ITEMS

EXPECTED LIFE CYCLE

HOW LONG SHOULD PARTS OF THE GOLF COURSE LAST?

ITEM	YEARS	ITEM	YEARS
Greens (1)	15 – 30 years	Cart Paths – concrete	15 – 30 years
Bunker Sand	5 – 7 years	Practice Range Tees	5 – 10 years
Irrigation System	10 – 30 years	Tees	15 – 20 years
<i>Irrigation Control System</i>	<i>10 – 15 years</i>	Corrugated Metal Pipes	15 – 30 years
<i>PVC Pipe (under pressure)</i>	<i>10 – 30 years</i>	Bunker Drainage Pipes (3)	5 – 10 years
<i>Pump Station</i>	<i>15 – 20 years</i>	Mulch	1 – 3 years
Cart Paths – asphalt (2)	5 – 10 years (or longer)	Grass (4)	Varies

NOTES: (1) Several factors can weigh into the decision to replace greens: accumulation of layers on the surface of the original construction, the desire to convert to new grasses and response to changes in the game from an architectural standpoint (like the interaction between green speed and hole locations). (2) Assumes on-going maintenance beginning 1 – 2 years after installation. (3) Typically replaced because the sand is being changed — while the machinery is there to change sand, it's often a good time to replace the drainage pipes as well. (4) As new grasses enter the marketplace — for example, those that are more drought and disease tolerant — replanting may be appropriate, depending upon the site.



Attachment D





Attachment D

Design Scenarios

1. Front 9 Improvements – High Safety Netting
 2. Front 9 Improvements – Expand Driving Range & Shorten Course
 3. Front 9 Improvements – Expand Driving Range & Course
- ❖ Back 9 Course & Cart Path Improvement Cost Estimate
 - ❖ Restricted Flight/Low Compression Range Ball Analysis

Evaluation Considerations:

- Prior Council Direction
- Budget/Cost
- Customer Experience
- Operations & Maintenance

Scenario #1

Front 9 Improvements: High Safety Netting



Existing Range

Range Ball Flight Study

BALL TRAJECTORY/NETTING PLAN

DESIGN TRAJECTORY

The USGA tests golf equipment to determine if it conforms to certain specifications relating to the speed with which golf balls leave the face of a driver. This testing equipment uses a club-head speed of 100 MPH. However, it is important to note it is possible for a person to swing with faster speeds. For example, Professional Golf level driver swing speed has been measured 130+ MPH. This trajectory design uses a swing speed for the Driver of 112 MPH in an effort to model a swing by a strong men golfer to achieve a 280.0 yard carry using a Spalding Super Range Ball.

For the purpose of this study, this illustration prepared by Tanner Consulting Group depicts the path of a Spalding 19C Range Ball hit with a 10.5 degree lofted driver. Additionally, it assumes the ball was struck in the middle of the club-face that was square to a correct alignment at impact. There is no guarantee that a golfer will be proficient enough to mirror the exact swing conditions to generate this ideal result. If a golf ball is struck with less power and/or accuracy than modeled above, the flight will not be nearly as straight or as far as shown. In addition, it is quite possible that a golfer can exceed the swing speed modeled in this ball trajectory. This can happen when a golfer uses a higher lofted club and/or a taller tee. These factors can increase the height and distance of the ball flight.

Also, if a golfer maliciously or purposely attempts to exceed the netting height, they may exceed the height of the netting and balls will exit the facility. Golfers must be responsible for using the facility as it is intended and in a safe and responsible manner. Site management should provide proper supervision and monitoring.

The equipment mentioned is specific. New technology is constantly improving golf equipment and with that fact, players will have an increased ability to hit the ball further and higher. For this reason Tanner Consulting Group recommends that the facility has structural engineering allowing for increasing the pole heights of the netting system if needed in the future. A minimum recommendation to consider would be the ability to increase the pole height and netting by 10%.

Tanner Consulting Group Disclaimer: Given the unlimited number of variables in the sport of golf, there is no way to guarantee 100% containment of golf balls with any netting installation. This design provided will help to reduce unwanted golf shots from exiting the property and is consistent with other netting designs utilized in the golf industry.

EQUIPMENT LEGEND

Golf Club Driver: CALLAWAY EPIC FLASH 10.5 DEGREES
STANDARD LENGTH SHAFTS REGULAR FLEX
Golf Ball: SPALDING 19C RANGE BALL

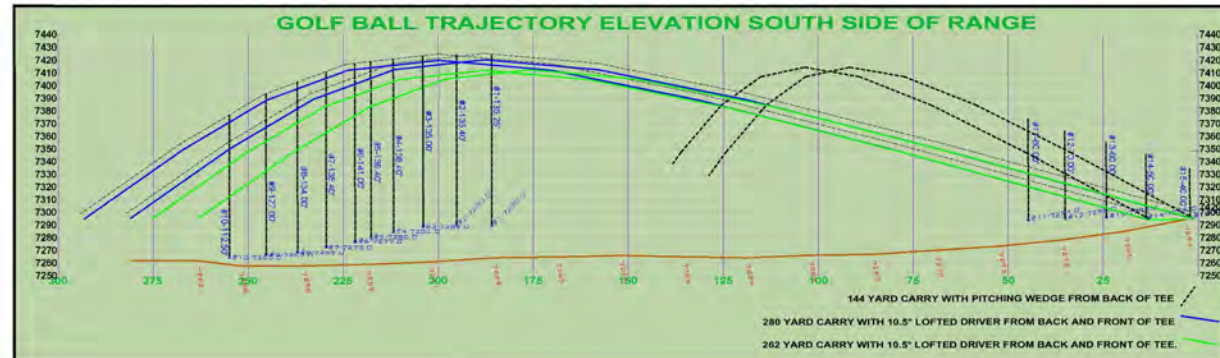
TANNER CONSULTING GROUP

603 Stanford Ct. Valley Springs, CA 95252
Ph (209)772-2233 Fax (209)772-2230
e-mail: tannerconsulting@aol.com website: www.tannerconsulting.com

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**BALL TRAJECTORY
NETTING PLAN**

LOS ALAMOS COUNTY GOLF COURSE
DRIVING RANGE
4290 DIAMOND DRIVE
LOS ALAMOS, NEW MEXICO 87544



FOR THE PURPOSE OF THIS STUDY, OUR ILLUSTRATIONS SHOW THE BALL HEIGHT AND DISTANCE HIT BY A SPECIFIC CLUB, BALL AND SWING SPEED. THESE ARE GOLF SHOTS THAT ARE HIT STRAIGHT AND CORRECT. THERE IS NO GUARANTEE THAT A GOLFER WILL HIT AT THIS SAME SPEED OR ANGLE. IF A GOLF SHOT IS MIS-HIT IT WILL USUALLY NOT TRAVEL AS FAR OR STRAIGHT. FOR THIS REASON, OUR STUDY REFLECTS WHAT WE DETERMINE TO BE "A WORSE CASE SCENARIO" THE GOLF CLUB WAS SELECTED BY POPULARITY.

Attachment D

SCALE: 1" = 40'
0 40' 80' 120'

DRAWN
CHECKED
DATE
SCALE
JOB NO.
SHEET NAME
N-3



Attachment D

Flight Study Recommendations

1. Rear Netting
 - 112-141 ft. x 400 ft.
 - 10 Steel Poles
2. Tee Deck
 - 40-80 ft. x 200 ft.
 - 5 Wood Poles

*Study Utilized Srixon 1PC Range Ball –
80% Compression, Currently in Use

Existing Range



Existing Range with Recommended Netting & Poles



Scenario #1 Cost Estimate

Design Scenario #1 - Front 9 Improvements: High Safety Netting				
	Quantity	Unit	Unit Price	Amount
Safety Netting	1	LS	\$ 922,800.00	\$ 922,800.00
Rear: 112-141 ft. x 400 ft., 10 Steel Poles				
Tee Deck: 40-80 ft. x 200 ft., 5 Wood Poles				
Driving Range Improvements	1	LS		\$ -
Other Improvements				
Bunkers	7000	SF	\$ 47.00	\$ 329,000.00
Tees	20	EA	\$ 7,500.00	\$ 150,000.00
Cart Paths		SF	\$ 5.00	\$ -
Greens	9	EA	\$ 5,000.00	\$ 45,000.00
Restrooms	2	EA	\$ 75,000.00	\$ 150,000.00
Subtotal				\$ 1,596,800.00
Total w/NMGRT				\$ 1,713,566.00
Total w/Contingency				\$ 1,876,354.77
Additional Design Costs				\$ -
GRAND TOTAL				\$ 1,876,354.77
AVAILABLE PROJECT BUDGET				\$ 1,887,000.00

Scenario #1 Highlights

- Addresses Safety
- Retains Current Course Layout
- Negative Aesthetics/View Shed Impacts
- High Initial & Maintenance Netting Cost (\$60K Every 5-7 Years)
- Limits Funding for Other Course Improvements
 - Majority of Funds for Netting
 - Bunkers, Tees & Greens Limited to Front 9 Only
 - 2 New Restrooms Included (1 Front, 1 Back 9)
 - No Cart Path Improvements
- Minimal Customer Experience Improvement

*** This Scenario is Not Recommended by Golf Course Design Professional**

Scenario #2

**Front 9 Improvements:
Expand Driving Range & Shorten Course**

Proposed Design

Expanded
Short Game Area
30,000 SF Grass Tee w/ Artificial Turf Tee

300 YARDS

3
344 yds

6
139 yds

4
157 yds

5
361 yds

2
403 yds

1
515 yds

8

Attachment D



Proposed Design



Scenario #2 Cost Estimate

Design Scenario #2 - Front 9 Improvements: Expand Driving Range & Shorten Course				
	Quantity	Unit	Unit Price	Amount
Expand Driving Range	1	LS	\$ 1,238,341.96	\$ 1,238,341.96
Renovated Holes 3, 4, 5, 6				
8 New Bunkers				
Other Improvements				
Bunkers	4500	SF	\$ 47.00	\$ 211,500.00
Tees		EA	\$ 7,500.00	\$ -
Cart Paths		SF	\$ 5.00	\$ -
Greens		EA	\$ 5,000.00	\$ -
Restrooms	2	EA	\$ 75,000.00	\$ 150,000.00
Subtotal				\$ 1,599,841.96
Total w/NMGRT				\$ 1,716,830.40
Total w/Contingency				\$ 1,876,495.63
Additional Design Costs				\$ -
GRAND TOTAL				\$ 1,876,495.63
AVAILABLE PROJECT BUDGET				\$ 1,887,000.00

Scenario #2 Highlights

- Addresses Safety
 - Lengthens & Widens Driving Range
 - Provides Natural Grass Tees w/Targets
 - Includes Short Game Area
 - Additional Hitting Stalls
 - Improved Integration with Clubhouse
 - Expanded Revenue Potential
- Improved Driving Range Customer Experience
- Eliminates Netting Maintenance Costs
- Front 9 Improvements (mix of new and rehabilitated holes)
 - Four Renovated Holes
 - Eight New Bunkers
 - Additional Bunker Renovations
 - 2 New Restrooms Included
 - No Cart Path Improvements (New gravel paths for renovated holes only)
- Within Current Council Project Approval Parameters
- Shortens Course 307 yards

Scenario #3

**Front 9 Improvements:
Expand Driving Range & Course**

Expand Driving Range

Design professional explored alternative designs that eliminate high cost of netting but satisfied needed driving range safety improvements.

An aerial photograph of a golf course. A red dashed line with an arrow at the end starts from the bottom left and curves upwards and to the right, following the edge of a wooded area. The text 'Existing Condition' is written in white, bold, sans-serif font to the right of the arrow. The golf course features several green fairways, sand traps, and a clubhouse with a parking lot on the right side. A road runs parallel to the clubhouse. The wooded area is filled with small, dark green trees.

Existing Condition

Attachment D

Proposed Scenario



300 YARDS

Attachment D

Scenario #3 Cost Estimate

Design Scenario #3 - Front 9 Improvements: Expand Driving Range & Course				
	Quantity	Unit	Unit Price	Amount
Expand Course	1	LS	\$ 710,000.00	\$ 710,000.00
Expanded Hole 1, New Holes 2 & 3				
Tree Clearing & Earthwork				
Irrigation System				
Expand Driving Range	1	LS	\$ 300,000.00	\$ 300,000.00
Other Improvements				
Bunkers	5500	SF	\$ 47.00	\$ 258,500.00
Tees	14	EA	\$ 7,500.00	\$ 105,000.00
Cart Paths		SF	\$ 5.00	\$ -
Greens	7	EA	\$ 5,000.00	\$ 35,000.00
Restrooms	2	EA	\$ 75,000.00	\$ 150,000.00
Subtotal				\$ 1,558,500.00
Total w/NMGRT				\$ 1,672,465.31
Total w/Contingency				\$ 2,020,338.10
Additional Design Costs				\$ 167,246.53
GRAND TOTAL				\$ 2,187,584.63
AVAILABLE PROJECT BUDGET				\$ 1,887,000.00
Attachment D				VARIANCE \$ 300,584.63

Scenario #3 Highlights

- Addresses Safety
 - Lengthens & Widens Driving Range
 - Provides Natural Grass Tees w/Targets
 - Includes Short Game Area
 - Additional Hitting Stalls
 - Expanded Revenue Potential
- Improved Overall Customer Experience
- Eliminates Netting Maintenance Costs
- Lengthens Course
- Exceeds Council Authorized Project Scope and Budget
- Modifies Existing Trail
- Removal of ~100 Mature Trees
- Additional Water Use for Irrigation (~8 acres, 2.5M gallons annually, 150 sprinkler heads)
- Additional Operations & Maintenance Costs

Back 9 Course & Cart Path Improvement Cost Estimate

Back 9 Renovations + Cart Paths Throughout				
Other Improvements - Back 9				
Bunkers	10000	SF	\$ 47.00	\$ 470,000.00
Tees	25	EA	\$ 7,500.00	\$ 187,500.00
Cart Paths (New 8 ft. Asphalt)	160000	SF	\$ 5.00	\$ 800,000.00
Greens	9	EA	\$ 5,000.00	\$ 45,000.00
Restrooms		EA	\$ 75,000.00	\$ -
Subtotal Back 9				\$ 1,502,500.00
Subtotal				\$ 1,502,500.00
Total w/NMGRT				\$ 1,612,370.31
Total w/Contingency				\$ 1,934,844.38
Additional Design Costs, 10%				\$ 161,237.03
GRAND TOTAL				\$ 2,096,081.41
GRAND TOTAL W/ONE YEAR ESCALATION				\$ 2,221,846.29

Restricted Flight/Low Compression Range Ball Analysis

AWAITING TANNER REPORT

Restricted Flight Ball Pros & Cons

- + Addresses Safety
- + Maintains Existing Course Layout
- + Provides more funds to apply to renovation existing tee boxes, bunker renovations, and drill and fill application to greens.
- Diminishes Driving Range Customer Experience
- Driving Range Becomes a Warm-Up Range
- Limits Driving Range Teaching Capabilities and for Game Improvement Practice
- Increased Cost of Restricted Flight Balls
- Unknown Ball Durability/Replacement Cycle

Design Scenario Summary

1. Front 9 Improvements - High Safety Netting
 - Within Current Budget
 - Accommodates Front 9 Course Renovations (excludes cart paths)
 - Not recommended by design consultant (negative visual and customer experience)
2. Front 9 Improvements – Expand Driving Range & Shorten Course
 - Within Current Budget
 - Accommodates Front 9 Course Renovations (excludes cart paths)
 - Not supported by LAGA
3. Front 9 Improvements – Expand Driving Range & Course
 - Accommodates Front 9 Renovations
 - Requires PRB & Council Approval of Course Expansion
 - Requires Council Budget Authorization of Additional ~\$300K
 - Requires Council Budget Authorization of Additional Ongoing Operational Costs

**Adding Back 9 course renovations plus cart path improvements would require an additional \$2.5M added to the current capital project budget subject to final bid costs received.*



Questions/Discussion

Attachment D