

Case Study

The Reenergizing of Poppy Hills

How a Water Reduction Initiative has increased Speed of Play

Bruce Charlton
President/Chief Design Officer
Robert Trent Jones II, LLC

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AMERICAN SOCIETY of
GOLF COURSE ARCHITECTS

A. Initial Steps to Sizing Up the Issues of Pace of Play

- What type of course do you operate?
- What type of golfers (Hcps.) do you cater to?
- Cart/Walking policies
- What are your current round times?
- Are round times consistent — or varied?
- What is your idea of an ideal round time?
- Where are the bottlenecks on your course?

B. Understanding Site Constraints

- How set-in-stone is your routing and course footprint?
- Is there any room for change and adjustment?
- Quantify the grade and site constraints
- Quantity soil types, vegetation and firmness

C. The Design Intent of the Course

- History and legacy
- Identify the essential design characteristics
- How does the design dictate set-up?
- How does the design dictate maintenance?
- Does the design limit flexibility (tees, lengths)?
- What changes to the design intent would be possible and beneficial?
- What type of golfers (Hcps.) do you cater to?

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Pace of Play CHECKLIST & TIPS *for working with your* COURSE ARCHITECT



Pace of Play has become a household term in golf. What was once regarded as “something only the group ahead could solve” is now being tackled by all of golf’s major organizations.

The members of the American Society of Golf Course Architects (ASGCA) are uniquely qualified to assist course owners and operators in improving pace of play at their facilities. Getting players to move faster — *and smoother* — involves five basic ingredients:

- (1) *Course design — The key variable that sets it all in motion.*
- (2) *How the course is being managed (e.g., the starting time interval, sequencing at the first tee, assisting players, etc.)*
- (3) *Course set-up (e.g., tee flexibility, hole lengths, hole placement, etc.)*
- (4) *Maintenance and Turf Conditions (green speeds, rough heights, tall grasses, visibility, etc.)*
- (5) *Player abilities, and the varying types of players on a course at any given time.*

The goal is to create an even flow of golfers as they play the game, minimizing wait times and creating a more enjoyable experience. Your Golf Course Architect also has the goal of preserving the spirit of the game — to make sure that your course offers the fun and challenging aspects that lure people to play time and time again.

For more information visit: www.asgca.org

D. Routing & Sequence

- Does the current routing pose any routing obstacles?
- Where are the issues?
- Does the par order and lengths of holes work for (or against) good pace?
- Are there solutions that may not involve physical change? (Easy fixes)
- What are some ideas that may be “thinking out of the box”?

E. Course Set-up, Length & Flexibility

- Is tee flexibility ample?
- Is there a tee use policy and a way to enforce it?
- Are there solutions to set-up where wait times can be reduced or eliminated?
- Have you implemented Tee It Forward tools?

F. Course Conditions

- Greens speeds
- Rough heights
- Tall grasses, and their proximity to frequent play
- Fairway widths
- Hazard difficulty
- Forced carries
- Tree overgrowth (blind areas, visibility)
- Hole locations
- Firmness, roll, lies

G. Follow-up

- Master planning relative to Pace of Play solutions
- Turf area evaluation
- Tee addition planning

Produced in cooperation with the United States Golf Association

www.usga.org/paceofplay



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Poppy Hills- Renovation Summary

Three Important Pieces:

1. Water Conservation
1. Golfer Experience
2. Pace of Play Considerations



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Poppy Hills- The Setting



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Poppy Hills

Elimination of mounds, and cleaning the forest floor



Before



After



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Reduction of Turf that's out of play

Poppy Hills



Before

After



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Poppy Hills

Seamless Transitions



Before



After





WATER CONSERVATION

1. Poppy Hills- Water Conservation

Case Study: Renovation Of Poppy Hills Golf Course

BY THE NUMBERS

- 12 } Acres of added natural areas
- 20 } Acres of irrigated turf reduction
- 50 } Approximate acres of playable fairway
- 150% } Increase of fairway landing areas
- 1,800 } Individually controlled sprinklers
- 45,000 } Square feet of new practice tees
- 75,000 } Linear feet of underground drainage
- 150,000 } Square feet of newly designed greens
- 170,000 } Total Square feet of meandering tee surfaces



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1. Poppy Hills- Water Conservation

- Installation of "State of the Art" / Water Efficient Irrigation System
- Implementation of an expanded water conservation and management program
- During irrigation replacement also establish 15.5 acres of non-irrigated areas
- Develop sand cap program for improved drainage and to promote firm and fast playing conditions
- Introduce naturalized features
- Establish low maintenance areas that will also come into play strategically

Existing Conditions



Existing Irrigated Turf ± 85 Acres

Proposed Plan



Proposed Irrigated Turf ± 69.5 Acres

Estimated Turf Reduction Site Totals

Existing Property Size: ±166 Acres
Existing Irrigated Turf: ±85.0 Acres
Proposed Irrigated Turf Area: 69.5 Acres
Total "naturalized" area added: 15.5 Acres
Estimated Reduced Turf: ±18.2%



1. Poppy Hills- Water Conservation

Project Totals



'As built' Irrigated Turf	62.3 acres
Previous Irrigated Turf	85.0 acres
Naturalized Non-Irrigated Area	15.0 acres
Non-Irrigated "Natural Sand Areas"	5.26 acres
Non-Irrigated Golf Bunker Area	3.14 acres
New Forested Areas	4.0 Acres





1. Poppy Hills- Water Conservation



REDUCING IRRIGATED TURF



SAND CAPPING

Photo: Courtesy of Poppy Hills Golf Course



1. Poppy Hills- Water Conservation



Careful selection of new grasses



New Technologies to reduce bunker maintenance



Poppy Hills

1. Poppy Hills- Water Conservation

Illustrations: RTJ II



BEFORE



AFTER



ACHIEVING MORE WITH LESS



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2. Poppy Hills- Player Experience

Firm, Fast, Fun

- Reduced severity of doglegs
- Reduced square footage of bunkers
- Introduced Sandy playable areas
- Flexible Teeing Grounds
- Elimination of perched tees
- Increased vision through the forest



2. Poppy Hills- Player Experience

Firm, Fast, Fun



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2. Poppy Hills- Player Experience Firm, Fast, Fun

ROBERT
TRENT JONES II
Golf Course Architects

PROJECT: POPPY HILLS
TITLE: BUNKER EDGING
PAGE NO: CONCEPTS
DATE: 11.29.2013

POPPY HILLS BUNKER EDGING LEGEND



MOW FAIRWAY DIRECTLY INTO
SAND IN BUNKER



CREATE "EYEBROW" EFFECT ON
"BACK EDGE" OR "CARRY EDGE" OF
BUNKERS - MOW TURF HIGHER
THAN FAIRWAY CUT TO GIVE BUNKER
EDGES CLEAR DEFINITION WHEN
VIEWED BY PLAYERS



BRING "PINE STRAW/MULCH" FROM
FOREST FLOOR TO MEET BUNKER
SAND LINE. (PLANT NURSERY CROP IN
2013 TO PROVIDE SOIL
STABILIZATION)

ROBERT TRENT JONES II, LLC - main: 650-326-3833 - email: rtj2@rtj2.com - web: www.rtj2.com - 705 Forest Avenue - Palo Alto, California 94301
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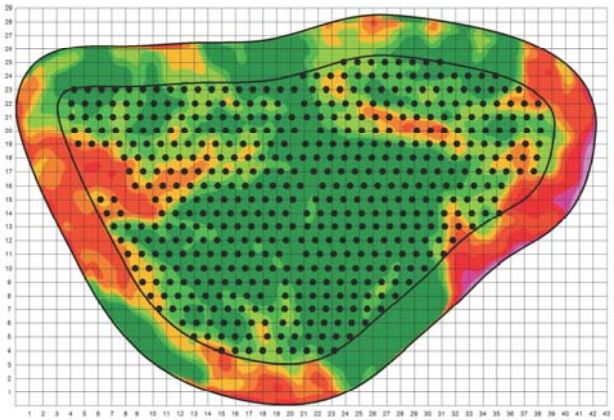
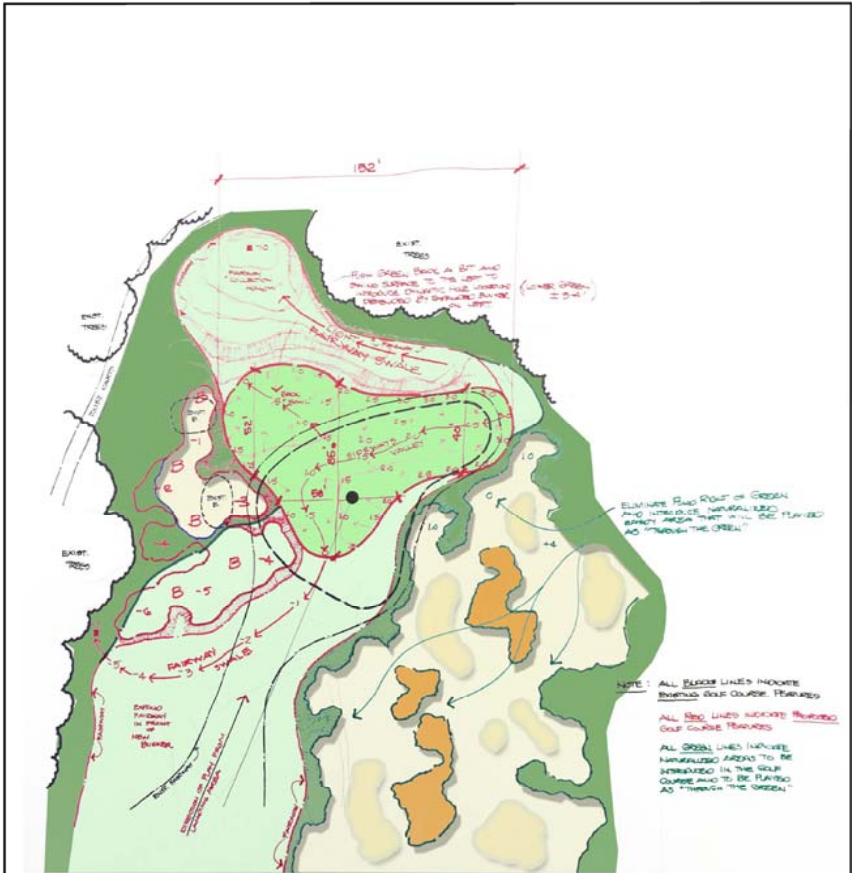


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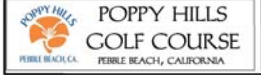
2. Poppy Hills- Player Experience Firm, Fast, Fun

Poppy Hills Golf Course

5



Slope	Green Area ft ² (%)	Putting Area ft ² (%)
0-2	3186.4 (41.2)	2408.3 (48.5)
2-2.5	1205.6 (15.6)	961.6 (19.4)
2.5-3	1060.1 (14.1)	760.7 (15.3)
3-3.5	723.8 (9.4)	417.7 (8.4)
3.5-4	561.1 (7.2)	241.7 (4.9)
4-5	653.7 (8.4)	149.8 (3.0)
5-6	302.2 (3.9)	30.6 (0.6)
6-7	61.3 (0.8)	0.0 (0.0)
7-10	43.0 (0.6)	0.0 (0.0)
10-100	7.8 (0.1)	0.0 (0.0)



Conceptual
Green Diagram

HOLE
5

Existing Green Area: 7,236 sq. ft.
Proposed Green Area: 8,960 sq. ft.



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3. Pace of Play Considerations



3. Pace of play Considerations

- **Routing**
- **Flow of play**
- **Reduce severity of green contours**
- **Increasing Vision**
- **Elimination of Rough**
- **Cleaning forest floor**
- **Increasing fairway width**
- **Creating more opportunities for recovery**
- **Reducing water hazards**



3. Pace of Play Considerations

Initial Golf Course Analysis

Poppy Hills Golf Course Existing Shot Values Analysis																				
Robert Trent Jones II, LLC																				
May-08																				
Hole Number	Direction of Play								Hole Nuber	Tee Shot						Wind				
	N	NE	E	SE	S	Sw	w	Nw		L to R	R to L	Straight	Hazard Right	Hazard Left	Hazard Centra	Head	Tail	L To R	R to L	
Hole 1									Hole 1											
Hole 2									Hole 2											
Hole 3									Hole 3											
Hole 4									Hole 4											
Hole 5									Hole 5											
Hole 6									Hole 6											
Hole 7									Hole 7											
Hole 8									Hole 8											
Hole 9									Hole 9											
Front Nine Total	3	0	2	1	1	0	2	0	Front Nine	3	3	3	4	4	1	2	2	3	2	
Hole 10									Hole 10											
Hole 11									Hole 11											
Hole 12									Hole 12											
Hole 13									Hole 13											
Hole 14									Hole 14											
Hole 15									Hole 15											
Hole 16									Hole 16											
Hole 17									Hole 17											
Hole 18									Hole 18											
Back Nine Total	2	0	0	5	1	0	1	2		4	1	4	5	2	2	3	3	1	2	
Totals	5	0	2	6	2	0	3	2		7	4	7	9	6	3	5	5	4	4	
*note wind direction is based off of prevailing on shore pattern																				



3. Pace of Play Considerations

Initial Golf Course Analysis

Hole Number	Hazard Angle at Green on Approach			Wind				Hole Number	Green Orientation for Approach (optimum angle for approach)			
	Hazard Right	Hazard Left	Hazard Central	Head	Tail	L To R	R. To L		Left to Right to Play	Right to Left to Play	Parallel to Play	Perpendicular to Play
Hole 1								Hole 1				
Hole 2								Hole 2				
Hole 3								Hole 3				
Hole 4								Hole 4				
Hole 5								Hole 5				
Hole 6								Hole 6				
Hole 7								Hole 7				
Hole 8								Hole 8				
Hole 9								Hole 9				
Front Nine	6	5	2	2	2	1	2	Front Nine	4	2	3	0
Hole 10								Hole 10				
Hole 11								Hole 11				
Hole 12								Hole 12				
Hole 13								Hole 13				
Hole 14								Hole 14				
Hole 15								Hole 15				
Hole 16								Hole 16				
Hole 17								Hole 17				
Hole 18								Hole 18				
	6	5	1	0	2	2	2		3	4	0	2
	12	10	3	2	4	1	4		7	6	3	2





A New Golf Experience



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Case Study:

Independence Golf Club

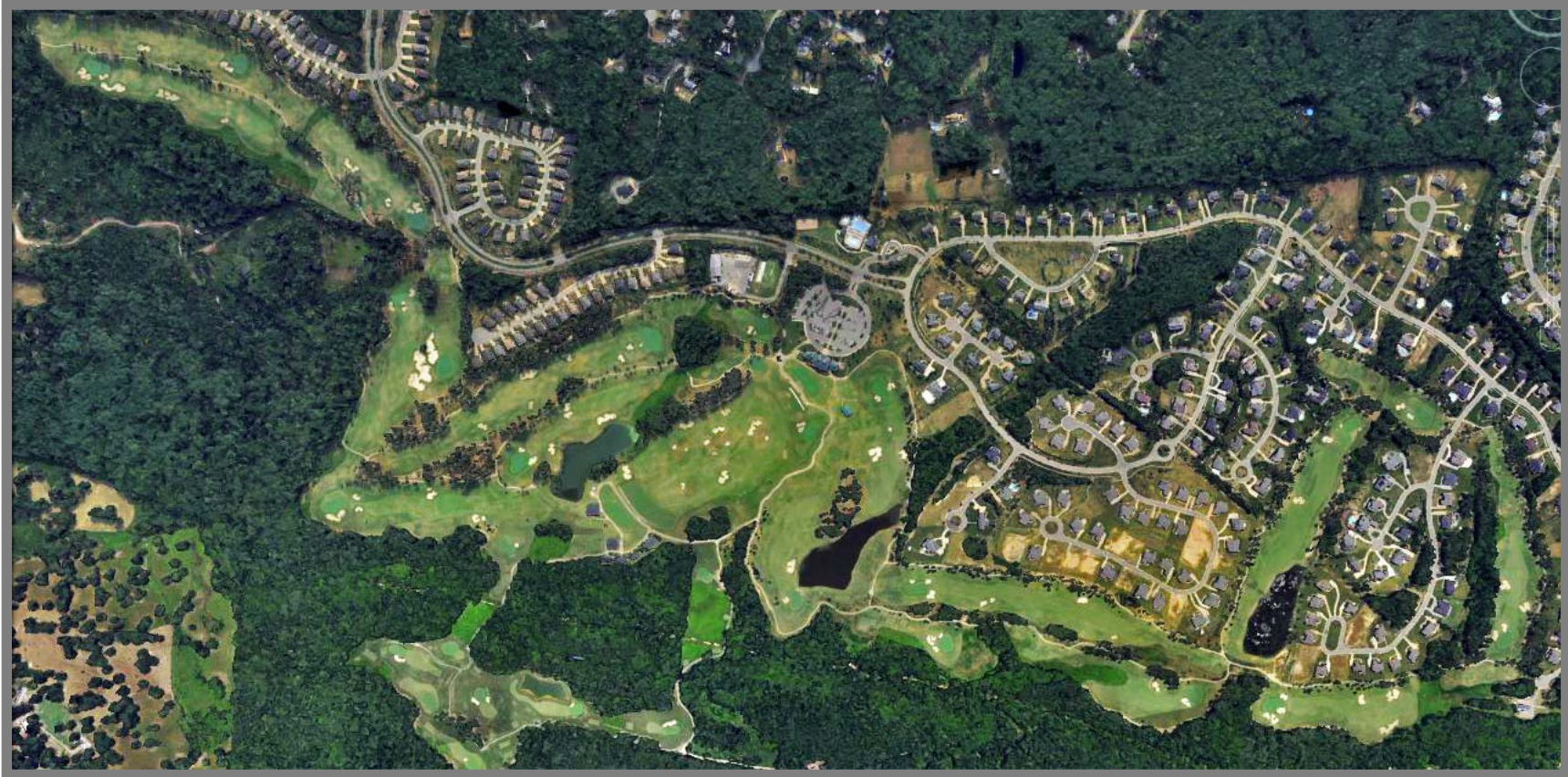
Lester George, Golf Course Architect, A.S.G.C.A.



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Pace of Play Symposium

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Aerial Photo Before Renovation

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Preliminary Master Plan

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Corporate & Commercial
Expansion Plan

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Corporate & Commercial
Expansion Plan (Rear)



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Every discussion with the owner and every decision was made with the following three objectives in mind:

- Pace of Play
- Playability (Enjoyment)
- Sustainability (Maintenance)



Owner's Objectives
and Imperatives

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GOLF COURSE ARCHITECTS

Pace of Play CHECKLIST & TIPS for working with your COURSE ARCHITECT



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*For information on the USGA Pace Rating System go to:
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For more information visit: www.asgca.org

Checklist



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Analysis of Playability

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Analysis of Playability

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INDEPENDENCE GOLF COURSE						
HOLE #	EXISTING BUNKERS (S.F.)	REBUILT IN PLACE (S.F.)	NEW BUNKERS (S.F.)	REMOVED BUNKERS (S.F.)	PROPOSED BUNKERS (S.F.)	DIFFERENCE (S.F.)
1	10,243	4,392	0	3,776	4,392	-5,851
2	9,125	4,808	0	3,323	4,808	-4,317
3	19,193	5,436	1,682	2,249	7,118	-12,075
4	13,198	6,036	0	7,666	6,036	-7,162
5	4,569	1,778	1,506	2,125	3,284	-1,285
6	6,705	4,221	3,843	1,128	8,064	1,359
7	6,829	1,321	2,933	0	4,254	-2,575
8	9,852	7,607	1,194	3,399	8,801	-1,051
9	2,143	952	0	659	952	-1,191
10	3,690	3,462	2,571	0	6,033	2,343
11	2,797	1,620	0	1,623	1,620	-1,177
12	2,995	2,843	0	0	2,843	-152
13	4,118	4,642	1,516	271	6,158	2,040
14	2,225	1,856	0	1,335	1,856	-369
15	6,477	5,038	0	1,026	5,038	-1,439
16	13,271	5,161	1,579	5,386	6,740	-6,531
17	6,553	536	3,964	6,022	4,500	-2,053
18	7,937	4,448	0	3,378	4,448	-3,489
TOTAL	131,920	66,157	20,788	43,366	86,945	-44,975
RANGE	20,262	4,244	2,014	15,841	6,258	-14,004



Analysis of Playability Bunkers

Pace of Play Symposium

Case Study: Independence Golf Club

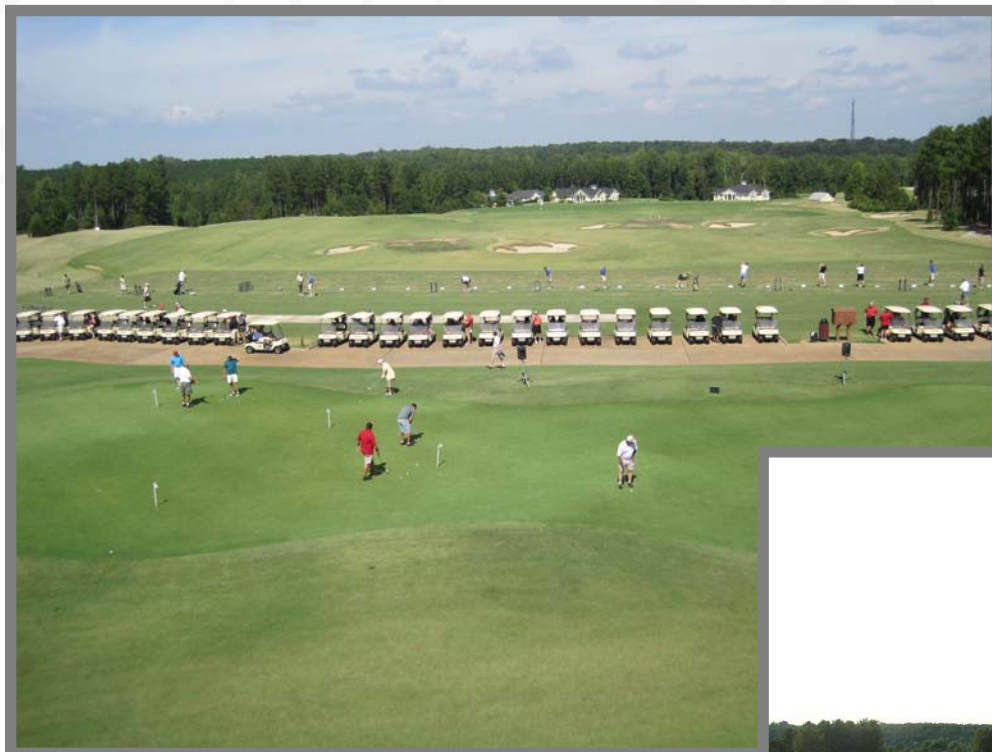
INDEPENDENCE GOLF COURSE			
HOLE #	EXISTING FAIRWAY	PROPOSED FAIRWAY	DIFFERENCE
	(S.F.)	(S.F.)	(S.F.)
1	74,622	89,623	15,001
2	88,042	90,055	2,013
3	88,719	94,590	5,871
4	90,663	107,044	16,381
5	63,898	67,580	3,682
6	67,231	75,236	8,005
7	23,641	17,458	-6,183
8	127,349	125,330	-2,019
9	11,366	12,566	1,200
10	66,407	61,614	-4,793
11	1,635	9,756	8,121
12	56,347	60,124	3,777
13	105,866	105,579	-287
14	15,944	10,015	-5,929
15	57,643	60,350	2,707
16	82,785	85,123	2,338
17	122,355	108,424	-13,931
18	74,952	70,639	-4,313
TOTAL	1,219,465	1,251,106	31,641



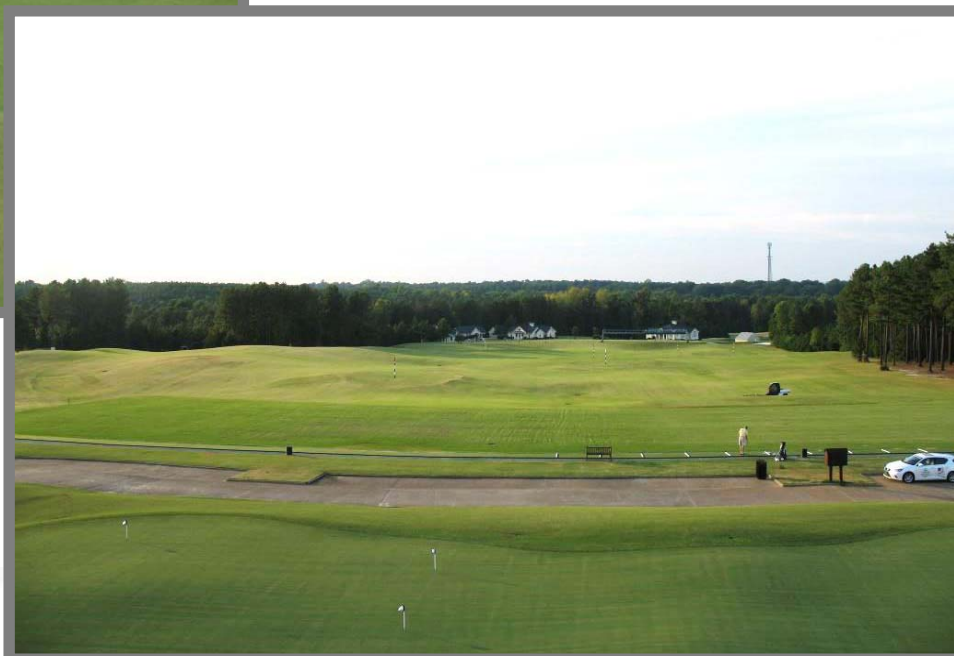
Analysis of Playability Fairways

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Range
(Maintenance)



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Hole # 1 – Par 4
460 / 425 / 390 / 335 / 325

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Hole # 1 – Par 4
460 / 425 / 390 / 335 / 325

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Hole # 2 – Par 4
450 / 415 / 400 / 340 / 315

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Hole # 3 – Par 4
415 / 385 / 370 / 285 / 285



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Hole # 3 – Par 4
415 / 385 / 370 / 285 / 285

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Hole # 3 – Par 4
Approach

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Hole # 6 – Par 4
400 / 365 / 355 / 325 / 290

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Hole # 7 – Par 3
220 / 195 / 170 / 145 / 140

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Hole # 7 – Par 3
220 / 195 / 170 / 145 / 140

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Hole # 11 – Par 3
210 / 160 / 140 / 110 / 85

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Hole # 11 – Par 3
215 / 210 / 160 / 140 / 110 / 85

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Hole # 13 – Par 5
520 / 485 / 470 / 440 / 410

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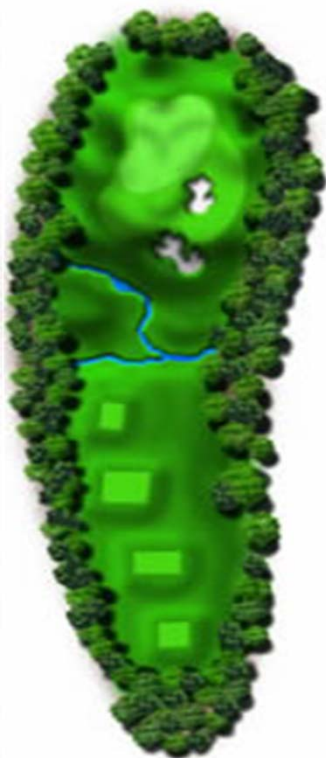
Hole # 13 – Par 5

520 / 485 / 470 / 440 / 410

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Case Study: Independence Golf Club



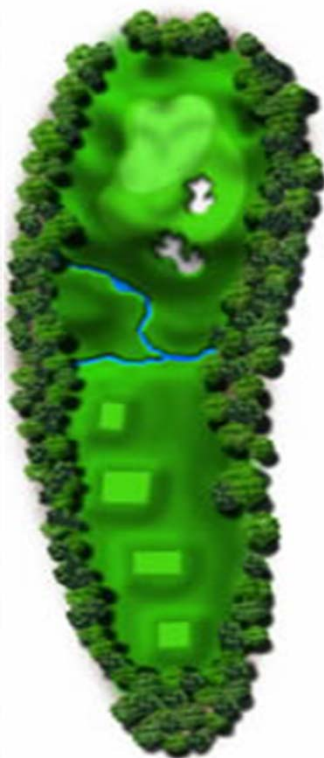
Hole # 14 – Par 3

205 / 180 / 145 / 135 / 115

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Case Study: Independence Golf Club

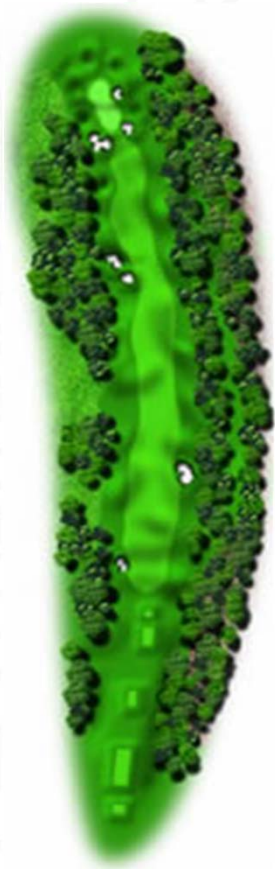


Hole # 14 – Par 3
205 / 180 / 145 / 135 / 115

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Case Study: Independence Golf Club



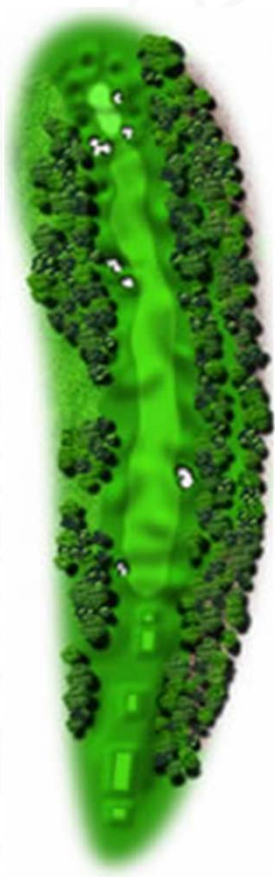
Hole # 17 – Par 5

595 / 560 / 500 / 450 / 425

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Pace of Play Symposium

Case Study: Independence Golf Club

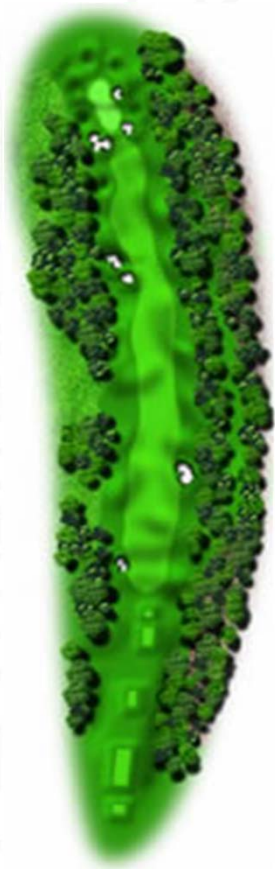


Hole # 17 – Par 5
Saving Bunker



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Hole # 17 – Par 5
595 / 560 / 500 / 450 / 425

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Primary Rough

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Secondary Rough

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- Removed 500 trees, bushes, shrubs, and 55,000 sq. ft. of bunkers.
- Added protective and saving bunkers.
- Re-routed cart, walking paths, and traffic patterns.
- This combination of changes has resulted in an average round of 4 hour and 5 minutes, yielding **an average reduction of 45 minutes per round!!**



Impact on Pace

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- Increase in pace of play allows 10 more prime-time groups at an average revenue of \$300 per foursome, yielding a revenue increase of \$3,000 per day.
- 10 fewer golf carts needed due to faster pace, at a cost of \$75 per cart for a savings of \$750/month.
- Able to reallocate 20% of 26,400 annual maintenance man hours, resulting in \$52,800 of savings annually.
- Able to compete with private clubs for high-end corporate outings.



Impact on Revenue

Pace of Play Symposium

Case Study: Independence Golf Club

- Reduced bunker severity.
- Continues to challenge the better player.
- Able to provide higher handicap player with a fun experience.
- Increasing fairway area/reducing rough area provides a direct benefit to playability.
- Lowering rough height and new mowing patterns (green surrounds) increases pace of play.



Impact on Playability

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Case Study: Independence Golf Club

- Conversion to Champion Bermuda greens (USGA Consult)
- Conversion to Better Billy Bunkers
- Conversion to 419 Bermuda Grass fairways (USGA Consult)
- Added two wells for self-contained irrigation
- Converted 7 acres of rough to mulch



Impact on Sustainability

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Lester George, A.S.G.C.A.

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