GOLF BALL FLIGHT PROFILES

(ILLUSTRATION J)

LONGEST PGA TOUR PLAYERS DRIVER

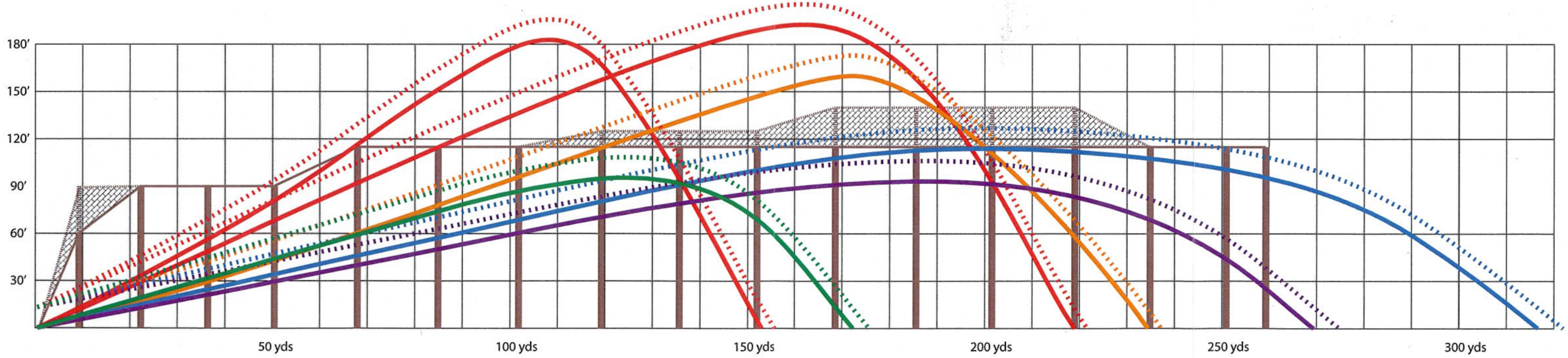
AVERAGE PGA TOUR PLAYERS DRIVER

AVERAGE PGA TOUR PLAYERS 7 IRON

RANDOM WORST CASE 99.7% (4 out of 1166 balls traveled above 180')

RANDOM WORST CASE 98.0% (20 out of 1166 balls traveled above 140')

DASHED LINES ARE SAME BALLFLIGHT FROM 2nd FLOOR



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Jefferson Park Ball Flight Study

Prepared by Bassetti Architects

10/12/2011

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Summary:
Seattle Parks & Recreation, the owner of Jefferson Park Golf Course, plans to add a new tee line structure with a second floor, doubling the current capacity. The purpose of this study is to identify the potential locations and probability that golf balls can be hit over the existing netting. It is highly recommended that the golf course document the current conditions and frequency of balls that travel outside the facility. It is impossible to keep all golf balls from being hit over the existing or proposed netting. There are locations that can be improved or evaluated from a cost stand point to determine if it is worth the expense. 14 existing poles and netting locations have the capability to be raised. Those locations are generally where a mishit driver would carry outside the range. The netting will need to be extended to the new structure. It is our recommendation that the two wooden poles adjacent to the existing range structure are replaced with new 90' steel poles as part of the extensions required to meet the new driving range structure.

Jefferson Park Ball Flight Study

Jefferson Park has a large range by traditional standards. It is up to 258 yards long and 80 yards wide with 115 foot high netting around most of the facility. The clubhouse renovation plan includes an expansion of the teeing line facility to 2 levels. The existing facility may or may not remain open during construction. The accompanying illustration shows the locations and elevations of the existing pole and netting system. (*Illustration A)*

Bassetti Architects, as part of their contract, has performed a ball and netting study to determine the efficacy of the existing netting structure for the new facility.

Hitting stations have been identified A-Z on the plan. Five hitting stations were chosen for analysis (C, G, L, R & W), based on worst case and typical locations. The distances to each pole were measured as indicated in *Illustrations B - G.* The distances and elevations were then analyzed as if the average PGA Tour Player were hitting from each station. The PGA Tour Player's average competition statistics can be seen on the accompanying *chart #1.* The Tour player hits, or carries in the air, a 7 iron highest and a driver the longest. The average PGA Tour player carries their 7 iron 172 yards with an apex height of 96 feet. The average PGA Tour player carries their driver 269 yards with an apex height of 93 feet.

The average PGA Tour player was placed at the five hitting stations and their 7 iron shots and drives were theoretically hit to each pole to see if the shots would carry over the nets. The data is shown on *chart #2.* The chart identifies the distance to each pole, the height of the net at each pole relative to the location of the player (1st or 2nd level), the height of the average PGA Tour player's golf ball at each pole for both driver and 7 iron. If there is any clearance of the golf ball above the net from either level, it has been indicated with red bold numbers.

There are two instances of the average tour player being able to carry the net from the ground level hitting stations with their 7 iron shot. The 60' wood poles are capable of being carried from the opposite sides of the tee line (tee locations C and W). This shot is an inaccurately struck and dangerous shot because it would require hitting back towards all the other players on the tee line. All other shots hit by the PGA Tour's average player from the first level were contained by the existing netting.

The average PGA Tour player hitting balls from the new 2nd level were able to clear the netting at 13 existing pole locations using a 7 iron and driver. The down range clearances were minimal and ranged from 1 to 4 feet. Much of the clearance can be attributed to the change in ground elevation. The land slopes from west to east, by as much as 5 feet, and from north to south, by as much as 17 feet. *Illustration H* shows the elevation changes across the range, the darker the color the higher the elevation. This geometry allows for easier clearance of the right side netting, especially when hitting from the higher left side of the tee line.

The average PGA Tour player's drive would not carry over the netting, from the 2nd level, during the course of normal practice. Only if they were deliberately trying to hit balls, to the 13 pole locations,

would they be able to clear the netting. These instances have been indicated on *illustration G*. The yellow poles were carried from one of the five locations on the data sheet. The orange poles were carried from two tee locations and the red poles were carried by three or more of the 5 tee locations (poles #8, 12, 13, 24 & 25).

PGA Tour data has been acquired and measured with the use of a Trackman, a sophisticated device with multiple radar detectors that measure every characteristic of the golf ball from impact, through flight and landing. This device is used to optimize the player's ability to hit a golf ball far. It is also utilized when fitting the right equipment to a players swing.

It is impossible to keep all balls within the current Jefferson range, or within the proposed higher nets. The golfer described below can hit it out of the current (or almost any) facility.

Random fast swinging inaccurate player

A player with a swing speed higher than most PGA Tour players, but with an erratic swing that produces far less accuracy. We acquired Trackman data from 1166 random shots from a golf school. The data was primarily gathered for club fitting and testing driver distances. 54 of the shots (4.6%) had an apex above 115', the height of the current netting at Jefferson Park. 20 shots (1.7%) had an apex above 140', the height of the proposed netting height. These balls were hit with a swing speed greater than 80% of the PGA Tour player's average drive swing speed (see chart *3*). These shots had unusual launch angles and flight characteristics. The data shows that they were probably full shots that were struck towards the crown, or top, of the driver. This strike causes the ball to launch on an unusually high trajectory. These shots would carry the netting if hit from the wrong location in the wrong direction. There are also instances where a high level collegiate player could hit out of the range if that was their goal. When hitting from the left most bay a highly skilled player can hook a ball over the net if desired.

All of the described ball trajectories can be seen on *illustration J*.

Conclusion:

The 60' wooden poles at the south end of the range netting are a potential problem area for containing balls. Netting will need to be added to connect to the new tee line structure. As the structure is finalized a first pole height can be determined. A 90' steel pole is recommended at this time.

The proposed additional netting at poles 7-15 & 22-30 would reduce the potential for balls to carry the netting. That cost should be compared to the current conditions and risk tolerance.

Range monitoring is highly effective in limiting ball escapes. All hitting bays should be within view of the professional or monitored by cameras to deter dangerous users. It is our recommendation to allow irons only from the second level range deck.

Range tees need to be sloped to drain properly, usually 1%. It is recommended to construct the tee line sloping downwards towards the range. This will lower the ball flight trajectory, perhaps as much as 5 feet for a well struck 7 iron. Also, very few players have the awareness to identify this slope.

Finally, while limited flight golf balls are currently used at Interbay Driving Range, they were not considered as part of this study for Jefferson Park Driving Range.

Glossary:

PGA Tour Player

The average PGA Tour player can swing their driver producing a clubhead speed of 113 miles per hour. The longest players can achieve swing speeds of up to 128mph, which translates into a ball speed of 191 mph. Presently there is a technical limit on equipment and balls that limits the ratio of ball speed to clubhead speed (1.485 smash factor). Future increases are limited to the ability of the player to swing faster. This may be accomplished by making a lighter golf club. Statistics for 2011 can be found here: http://www.pgatour.com/r/stats/filter/?4.

Smash Factor

The smash factor is the ratio of ball speed to club head speed (Ball speed / Club speed). The average player rarely hits the ball with the efficiency of a professional, thus have much lower smash factors (even though they may swing just as fast).

Ball Compression

The word "compression" defines the deflection that a golf ball undergoes when subjected to a compressive load. Compression measures how much the shape a golf ball changes under a constant weight. Golf balls used to be marketed by their compression, prior to introduction of the high end solid golf ball, non-wound construction. It was thought that slower swing speeds got more of a rebound with a lower compression. A lower compression ball negligibly reduces the distance traveled when hit by a highly skilled player.

Trackman

TrackMan is used by the PGA Tour, USGA and R&A for swing and ball flight analysis. A staple on professional tours, with leading club fitters, manufacturers, retailers, universities, academies, instructors, players and broadcast TV. Using Doppler radar - the same technology employed by the military for tracking missiles - TrackMan analyzes the golf swing and entire flight of the ball from impact to landing: displaying the ball's 3D trajectory in real time.

How a Golf Ball Produces Lift

Lift is an aerodynamic force which affects the flight of a golf ball. Given the proper spin a golf ball can produce lift. The backspin increases the speed on the upper surface of the ball while decreasing the speed on the lower surface. From the Bernoulli principle, when the velocity increases the pressure decreases. Therefore, the pressure on the upper surface is less than the pressure on the lower surface of the ball. This pressure differential results in a finite lift being applied to the ball.

JEFFERSON PARK RANGE
INDIVIDUAL POLE ELEVATIONS & LOCATIONS
(ILLUSTRATION A)
#1 A 346.5' 60'
#2 C 346.0' 90'
#3 C 344.7' 90'
#4 B 344.8' 90'
#5 D 342.9' 115'
#6 D 342.9' 115'
#7 D 341.8' 115'
#8 D 341.2' 115'
#9 D 340.2' 115'
#10 D 339.2' 115'
#11 D 338.2' 115'
#12 D 337.4' 115'
#13 D 337.1' 115'
#14 D 336.2' 115'
#15 D 333.0' 115'
#16 D 333.9' 115'
#17 D 332.5' 115'
#18 D 332.8' 115'
#19 D 333.3' 115'
#20 D 333.3' 115'
#21 D 334.0' 115'
#22 D 334.5' 115'
#23 D 335.5' 115'
#24 D 336.2' 115'
#25 D 336.8' 115'
#26 D 337.8' 115'
#27 D 339.0' 115'
#28 D 340.5' 115'
#29 D 342.0' 115'
#30 D 344.0' 115'
#31 D 345.2' 115'
#32 D 349.6' 115'
#33 C 349.9' 90'
#34 C 350.0' 90'
#35 A 350.0' 60'
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Pole #
Pole Type
Elevation
Height
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JEFFERSON PARK RANGE
DISTANCES FROM
TEE LINE TO
INDIVIDUAL POLES
(ILLUSTRATION B)
#1 A 346.5' 60'
#2 C 346.0' 90'
#3 C 344.7' 90'
#4 B 344.8' 90'
#5 D 342.9' 115'
#6 D 342.9' 115'
#7 D 341.8' 115'
#8 D 341.2' 115'
#9 D 340.2' 115'
#10 D 339.2' 115'
#11 D 338.2' 115'
#12 D 337.4' 115'
#13 D 337.1' 115'
#14 D 336.2' 115'
#15 D 333.0' 115'
#16 D 333.9' 115'
#17 D 332.5' 115'
#18 D 332.8' 115'
#19 D 333.3' 115'
#20 D 333.3' 115'
#21 D 334.0' 115'
#22 D 334.5' 115'
#23 D 335.5' 115'
#24 D 336.2' 115'
#25 D 336.8' 115'
#26 D 337.8' 115'
#27 D 339.0' 115'
#28 D 340.5' 115'
#29 D 342.0' 115'
#30 D 344.0' 115'
#31 D 345.2' 115'
#32 D 349.6' 115'
#33 C 349.9' 90'
#34 C 350.0' 90'
#35 A 350.0' 60'
Pole #
Pole Type
Elevation
Height
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
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JEFFERSON PARK RANGE
DISTANCES FROM
TEE LINE TO
INDIVIDUAL POLES
(ILLUSTRATION C)
#1 A 346.5' 60'
#2 C 346.0' 90'
#3 C 344.7' 90'
#4 B 344.8' 90'
#5 D 342.9' 115'
#6 D 342.9' 115'
#7 D 341.8' 115'
#8 D 341.2' 115'
#9 D 340.2' 115'
#10 D 339.2' 115'
#11 D 338.2' 115'
#12 D 337.4' 115'
#13 D 337.1' 115'
#14 D 336.2' 115'
#15 D 333.0' 115'
#16 D 333.9' 115'
#17 D 332.5' 115'
#18 D 332.8' 115'
#19 D 333.3' 115'
#20 D 333.3' 115'
#21 D 334.0' 115'
#22 D 334.5' 115'
#23 D 335.5' 115'
#24 D 336.2' 115'
#25 D 336.8' 115'
#26 D 337.8' 115'
#27 D 339.0' 115'
#28 D 340.5' 115'
#29 D 342.0' 115'
#30 D 344.0' 115'
#31 D 345.2' 115'
#32 D 349.6' 115'
#33 C 349.9' 90'
#34 C 350.0' 90'
#35 A 350.0' 60'
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Pole #
Pole Type
Elevation
Height
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JEFFERSON PARK RANGE
DISTANCES FROM
TEE LINE TO
INDIVIDUAL POLES
(ILLUSTRATION D)
#1 A 346.5' 60'
#2 C 346.0' 90'
#3 C 344.7' 90'
#4 B 344.8' 90'
#5 D 342.9' 115'
#6 D 342.9' 115'
#7 D 341.8' 115'
#8 D 341.2' 115'
#9 D 340.2' 115'
#10 D 339.2' 115'
#11 D 338.2' 115'
#12 D 337.4' 115'
#13 D 337.1' 115'
#14 D 336.2' 115'
#15 D 333.0' 115'
#16 D 333.9' 115'
#17 D 332.5' 115'
#18 D 332.8' 115'
#19 D 333.3' 115'
#20 D 333.3' 115'
#21 D 334.0' 115'
#22 D 334.5' 115'
#23 D 335.5' 115'
#24 D 336.2' 115'
#25 D 336.8' 115'
#26 D 337.8' 115'
#27 D 339.0' 115'
#28 D 340.5' 115'
#29 D 342.0' 115'
#30 D 344.0' 115'
#31 D 345.2' 115'
#32 D 349.6' 115'
#33 C 349.9' 90'
#34 C 350.0' 90'
#35 A 350.0' 60'
Pole #
Pole Type
Elevation
Height
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
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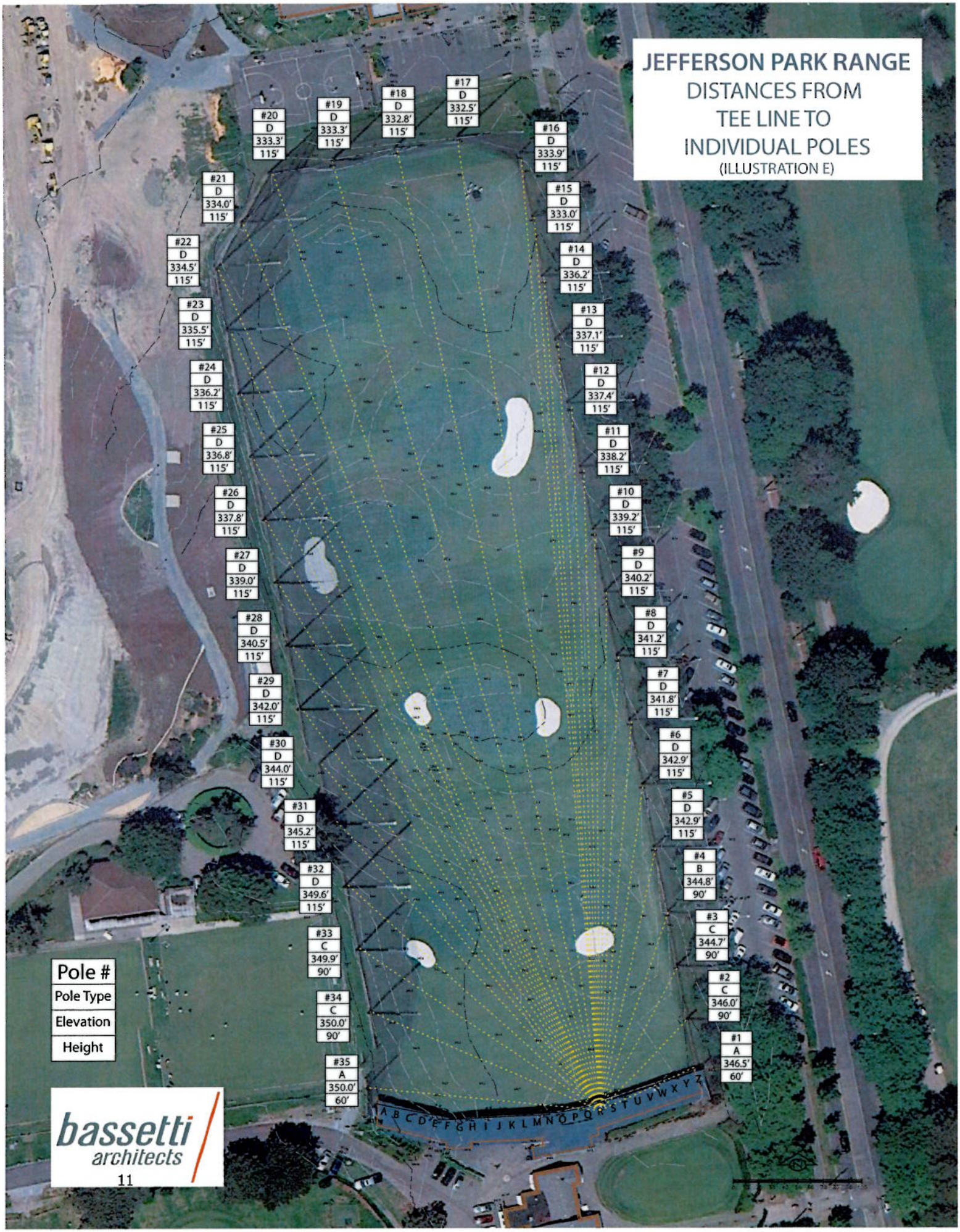
JEFFERSON PARK RANGE
DISTANCES FROM
TEE LINE TO
INDIVIDUAL POLES
(ILLUSTRATION E)
#17 D 332.5′ 115′
#18 D 332.8′ 115′
#19 D 333.3′ 115′
#20 D 333.3′ 115′
#16 D 333.9′ 115′
#21 D 334.0′ 115′
#15 D 333.0′ 115′
#22 D 334.5′ 115′
#14 D 336.2′ 115′
#23 D 335.5′ 115′
#13 D 337.1′ 115′
#24 D 336.2′ 115′
#12 D 337.4′ 115′
#25 D 336.8′ 115′
#11 D 338.2′ 115′
#26 D 337.8′ 115′
#10 D 339.2′ 115′
#27 D 339.0′ 115′
#9 D 340.2′ 115′
#28 D 340.5′ 115′
#8 D 341.2′ 115′
#29 D 342.0′ 115′
#7 D 341.8′ 115′
#30 D 344.0′ 115′
#6 D 342.9′ 115′
#31 D 345.2′ 115′
#5 D 342.9′ 115′
#32 D 349.6′ 115′
#4 B 344.8′ 90′
#33 C 349.9′ 90′
#3 C 344.7′ 90′
#34 C 350.0′ 90′
#2 C 346.0′ 90′
#35 A 350.0′ 60′
#1 A 346.5′ 60′
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Pole #
Pole Type
Elevation
Height
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JEFFERSON PARK RANGE
DISTANCES FROM
TEE LINE TO
INDIVIDUAL POLES
(ILLUSTRATION F)
#1 A 346.5' 60'
#2 C 346.0' 90'
#3 C 344.7' 90'
#4 B 344.8' 90'
#5 D 342.9' 115'
#6 D 342.9' 115'
#7 D 341.8' 115'
#8 D 341.2' 115'
#9 D 340.2' 115'
#10 D 339.2' 115'
#11 D 338.2' 115'
#12 D 337.4' 115'
#13 D 337.1' 115'
#14 D 336.2' 115'
#15 D 333.0' 115'
#16 D 333.9' 115'
#17 D 332.5' 115'
#18 D 332.8' 115'
#19 D 333.3' 115'
#20 D 333.3' 115'
#21 D 334.0' 115'
#22 D 334.5' 115'
#23 D 335.5' 115'
#24 D 336.2' 115'
#25 D 336.8' 115'
#26 D 337.8' 115'
#27 D 339.0' 115'
#28 D 340.5' 115'
#29 D 342.0' 115'
#30 D 344.0' 115'
#31 D 345.2' 115'
#32 D 349.6' 115'
#33 C 349.9' 90'
#34 C 350.0' 90'
#35 A 350.0' 60'
Pole #
Pole Type
Elevation
Height
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
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PGA Tour Averages

TRACKMAN STATS

	Club Speed (mph)	Attack Angle (deg)	Ball Speed (mph)	Smash Factor	Vertical Launch (deg)	Spin Rate (rpm)	Max Height (yds)	Land. Angle (deg)	Carry (yds)
Driver	112	-1.3°	165	1.49	11.2°	2685	31	39°	269
3-wood	107	-2.9°	158	1.48	9.2°	3655	30	43°	243
5-wood	103	-3.3°	152	1.47	9.4°	4350	31	47°	230
Hybrid 15-18°	100	-3.5°	146	1.46	10.2°	4437	29	47°	225
3 Iron	98	-3.1°	142	1.45	10.4°	4630	27	46°	212
4 Iron	96	-3.4°	137	1.43	11.0°	4836	28	48°	203
5 Iron	94	-3.7°	132	1.41	12.1°	5361	31	49°	194
6 Iron	92	-4.1°	127	1.38	14.1°	6231	30	50°	183
7 Iron	90	-4.3°	120	1.33	16.3°	7097	32	50°	172
8 Iron	87	-4.5°	115	1.32	18.1°	7998	31	50°	160
9 Iron	85	-4.7°	109	1.28	20.4°	8647	30	51°	148
PW	83	-5.0°	102	1.23	24.2°	9304	29	52°	136

Note: Please be aware that the *location* and *weather conditions* haven't been taken into consideration. Besides these reservations the data is based on a large number of shots and give a good indication on key numbers for tour players.

(CHART 1)

JEFFERSON PARK GOLF COURSE RANGE STUDY

Locations for net clearances when the average PGA Tour player hits their highest and longest clubs

(CHART 2)

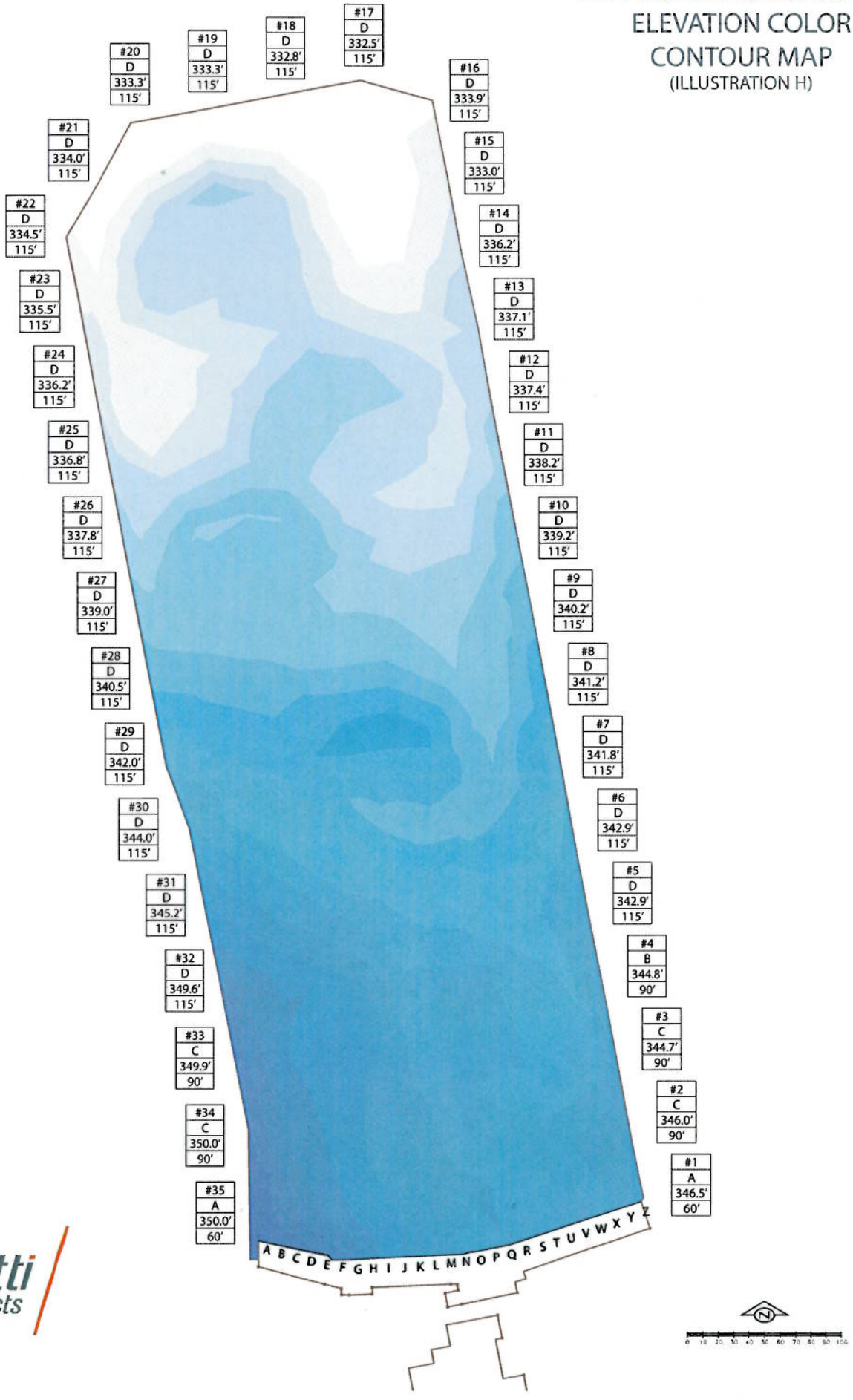
	POLE #	1	2	3	4	5	6	7	8	9	10	11	12	13
	POLE HEIGHT (ft)	60	90	90	90	115	115	115	115	115	115	115	115	115
	ELEVATION (ft)	346.5	346	344.7	344.8	342.9	342.9	341.8	341.2	340.2	339.2	338.2	337.4	337.1
STATION	1st Level 2nd Level	DISTANCE TO POLE IN YARDS												
C	350.1 363.1													
DISTANCE (yds)		75	76	80	85	95	106	118	132	146	160	175	190	206
NET HEIGHT 1st Level (ft)		**56**	86	85	85	108	108	107	106	105	104	103	102	102
NET HEIGHT 2nd Level (ft)		**43**	73	72	**72**	95	95	**94**	**93**	92	91	**90**	**89**	**89**
TOUR HEIGHT DRIVER (ft)		**44**	44	46	50	55	62	69	77	85	89	**92**	**93**	**90**
TOUR HEIGHT 7 IRON (ft)		**63**	64	67	**72**	80	89	**96**	**94**	84	42	0	0	0
CLEARANCE (ft)		**20**	9	5	**0**	15	6	**2**	**1**	7	2	**2**	**4**	**1**
G	347.6 360.6													
DISTANCE (yds)		63	65	70	78	89	101	115	130	145	159	175	191	206
NET HEIGHT 1st Level (ft)		59	88	87	87	110	110	109	109	108	107	106	105	105
NET HEIGHT 2nd Level (ft)		**46**	75	74	74	97	97	**96**	96	95	94	93	**92**	92
TOUR HEIGHT DRIVER (ft)		37	38	41	45	52	59	67	76	84	89	92	**93**	90
TOUR HEIGHT 7 IRON (ft)		**53**	55	59	65	75	85	**96**	95	84	45	0	0	0
CLEARANCE (ft)		**7**	21	15	9	23	12	**0**	**1**	11	5	**1**	**1**	**2**
L	347.8 360.8													
DISTANCE (yds)		47	50	57	66	79	94	109	125	140	156	172	188	204
NET HEIGHT 1st Level (ft)		59	88	87	87	110	110	109	108	107	106	105	105	104
NET HEIGHT 2nd Level (ft)		46	75	74	74	97	97	96	**95**	94	93	**92**	**92**	**91**
TOUR HEIGHT DRIVER (ft)		27	29	33	39	46	55	64	73	82	88	**92**	**93**	**91**
TOUR HEIGHT 7 IRON (ft)		40	42	48	56	67	79	91	**96**	88	55	0	0	0
CLEARANCE (ft)		6	33	26	18	30	18	5	**1**	6	5	**0**	**1**	**0**
R	347.7 360.7													
DISTANCE (yds)		27	33	42	54	70	86	102	119	135	151	167	184	201
NET HEIGHT 1st Level (ft)		59	88	87	87	110	110	109	109	108	107	106	105	104
NET HEIGHT 2nd Level (ft)		46	75	74	74	97	97	96	**96**	95	94	93	92	**91**
TOUR HEIGHT DRIVER (ft)		16	19	25	32	41	50	59	69	79	88	89	90	**92**
TOUR HEIGHT 7 IRON (ft)		23	28	36	46	59	72	86	**96**	92	72	0	0	0
CLEARANCE (ft)		23	48	38	28	39	25	10	**1**	3	6	4	**2**	**1**
W	346.1 359.1													
DISTANCE (yds)		11	20	33	46	63	80	97	114	131	147	163	180	197
NET HEIGHT 1st Level (ft)		60	90	89	89	112	112	111	110	109	108	107	106	106
NET HEIGHT 2nd Level (ft)		47	77	76	76	99	99	98	97	96	95	94	**93**	93
TOUR HEIGHT DRIVER (ft)		7	11	19	27	37	47	57	67	76	85	89	**93**	92
TOUR HEIGHT 7 IRON (ft)		10	17	28	39	53	67	82	96	94	84	35	0	0
CLEARANCE (ft)		38	60	48	37	45	31	16	**1**	**2**	10	5	**0**	**1**

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	90	90	60
336.2	333	333.9	332.5	332.8	333.3	333.3	334	334.5	335.5	336.2	336.8	337.8	339	340.5	342	344	346.2	349.8	349.9	350	350

221	236	252	255	252	250	248	237	226	210	193	177	160	143	126	110	95	80	62	46	29	13
101	98	99	97	98	98	98	99	99	100	101	102	103	104	105	107	109	111	115	90	90	60
88	85	86	84	85	85	85	86	86	**87**	**88**	**89**	90	91	**92**	94	96	98	102	77	77	47
82	68	44	35	45	45	46	67	75	**87**	**92**	**91**	89	83	74	64	55	47	36	27	17	8
0	0	0	0	0	0	0	0	0	0	0	0	42	85	**96**	92	79	68	52	39	24	11
6	17	42	49	40	40	39	19	11	**0**	**4**	**2**	**1**	6	**4**	**2**	17	30	50	38	53	36
222	238	253	257	255	254	253	242	232	216	199	183	166	149	133	116	101	87	69	54	38	26
104	100	101	100	100	101	101	101	102	103	104	104	105	106	108	109	111	114	117	92	92	62
91	87	88	87	87	88	88	88	89	90	**91**	**91**	92	93	95	**96**	98	101	104	79	79	49
81	65	42	24	35	40	42	59	72	85	**92**	**93**	90	85	77	68	59	51	40	31	22	15
0	0	0	0	0	0	0	0	0	0	0	0	19	75	93	**96**	85	73	58	45	32	22
10	22	46	63	52	48	46	29	17	5	**1**	**2**	**2**	8	**2**	**0**	13	28	46	34	47	28
220	236	252	256	256	256	256	246	236	220	204	188	171	155	138	122	107	93	77	63	49	41
103	100	101	100	100	101	101	101	102	103	103	104	105	106	108	109	111	113	117	92	92	62
90	87	88	87	87	88	88	88	89	90	**90**	**91**	92	93	95	96	98	100	104	79	79	49
83	68	45	33	33	33	33	50	68	83	**90**	**93**	91	87	81	71	63	54	45	37	29	24
0	0	0	0	0	0	0	0	0	0	0	0	0	55	90	95	90	79	65	53	42	35
7	19	43	54	54	55	55	38	21	7	**0**	**2**	**1**	6	5	**1**	8	22	39	26	38	14
217	233	249	255	256	256	258	249	240	224	208	192	176	160	145	130	115	102	88	75	65	60
104	100	101	100	100	101	101	101	102	103	104	104	105	106	108	109	111	114	117	92	92	62
91	87	88	87	87	88	88	88	89	90	91	**91**	92	93	95	96	98	101	104	79	79	**49**
85	70	46	35	33	33	24	45	60	80	88	**93**	91	89	85	76	67	60	51	44	38	35
0	0	0	0	0	0	0	0	0	0	0	0	0	42	83	95	96	86	74	63	54	**51**
6	17	42	52	54	55	64	43	29	10	3	**2**	**1**	4	10	**1**	**2**	15	30	16	25	**1**
214	230	246	253	254	256	259	250	243	227	211	196	180	166	150	136	122	110	97	87	78	75
105	102	103	101	102	102	102	103	103	104	105	106	107	108	109	111	113	115	119	94	94	64
92	89	90	88	89	89	89	90	90	91	92	93	94	95	96	98	100	102	106	81	81	**51**
85	72	50	40	37	33	24	46	57	75	87	92	93	90	85	79	71	64	57	51	45	44
0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	92	96	92	82	73	65	**63**
7	17	40	48	52	56	65	44	33	16	5	**1**	**1**	5	11	6	4	10	24	8	16	**13**

JEFFERSON PARK RANGE
POLES MOST LIKELY
TO BE CARRIED BY THE
AVERAGE PGA TOUR PLAYER
(ILLUSTRATION G)
#1 A 346.5' 60'
#2 C 346.0' 90'
#3 C 344.7' 90'
#4 B 344.8' 90'
#5 D 342.9' 115'
#6 D 342.9' 115'
#7 D 341.8' 115'
#8 D 341.2' 115'
#9 D 340.2' 115'
#10 D 339.2' 115'
#11 D 338.2' 115'
#12 D 337.4' 115'
#13 D 337.1' 115'
#14 D 336.2' 115'
#15 D 333.0' 115'
#16 D 333.9' 115'
#17 D 332.5' 115'
#18 D 332.8' 115'
#19 D 333.3' 115'
#20 D 333.3' 115'
#21 D 334.0' 115'
#22 D 334.5' 115'
#23 D 335.5' 115'
#24 D 336.2' 115'
#25 D 336.8' 115'
#26 D 337.8' 115'
#27 D 339.0' 115'
#28 D 340.5' 115'
#29 D 342.0' 115'
#30 D 344.0' 115'
#31 D 345.2' 115'
#32 D 349.6' 115'
#33 C 349.9' 90'
#34 C 350.0' 90'
#35 A 350.0' 60'
Pole #
Pole Type
Elevation
Height
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
bassetti architects

JEFFERSON PARK RANGE
ELEVATION COLOR CONTOUR MAP
(ILLUSTRATION H)



Pole #
Pole Type
Elevation
Height

bassetti architects

2011 PGA TOUR STATISTICAL LEADERS as of 9/25/2011

The players identified are only for clubhead speed - each category has a different list of players not supplied

(CHART 3)

				CLUBHEAD SPEED			BALL SPEED			CARRY YARDAGE			APEX HEIGHT			YARDS TO APEX			LAUNCH ANGLE		
RANK	PLAYER	ROUNDS	#	AVG	FASTEST	SLOWEST	AVG	FASTEST	SLOWEST	AVG	LONG	SHORT	AVG	MAX	MIN	AVG	MAX	MIN	AVG	MIN	MAX
	AVERAGE			113	128	89	167	191	132	270	348	190				181	225	85	10.7	0.4	32.1
1	J.B. Holmes	57	45	125	128	116	185	191	172	312	348	260	135' 0"	167' 8"	100' 11"	210	225	184	13.9	10.8	16.7
2	Bubba Watson	85	62	124	128	111	183	191	165	297	337	254	114' 11"	148' 0"	84' 2"	205	224	179	13.4	10.5	16.6
3	Gary Woodland	89	70	122	128	104	179	189	150	293	334	234	113' 9"	154' 1"	77' 11"	200	222	156	13.3	9.7	17.3
4	Dustin Johnson	72	58	121	126	113	179	186	162	293	328	251	113' 5"	141' 5"	83' 7"	198	212	182	13.2	9.8	19.6
5	Jhonattan Vegas	80	72	121	126	103	179	186	151	291	328	240	112' 8"	169' 8"	65' 7"	197	214	152	13.2	9.1	19.8
6	Robert Garrigus	73	58	121	125	112	179	187	165	290	334	226	112' 3"	132' 1"	87' 6"	195	209	175	13.0	11.0	16.2
7	Tag Ridings	75	57	120	124	103	177	183	149	290	320	226	112' 0"	174' 10"	60' 5"	195	215	148	13.0	9.6	19.7
8	Scott Stallings	78	65	119	126	115	176	183	163	288	333	255	111' 3"	130' 11"	91' 2"	195	213	164	12.9	8.9	17.0
9	Sergio Garcia	61	47	119	124	114	175	184	164	288	334	255	111' 0"	154' 10"	81' 5"	194	213	139	12.7	9.3	15.4
10	Zack Miller	76	63	119	126	101	175	183	162	286	329	256	109' 8"	133' 1"	65' 4"	194	214	136	12.6	8.9	17.2
11	Aaron Baddeley	77	65	119	128	110	175	179	169	286	328	249	109' 5"	164' 10"	74' 10"	194	210	175	12.6	8.5	18.9
11	Chris Couch	67	59	119	124	98	175	184	163	285	322	233	109' 0"	155' 0"	72' 7"	194	216	170	12.6	10.3	17.9
13	James Driscoll	60	47	119	128	111	174	181	160	285	312	256	109' 0"	145' 5"	63' 7"	193	211	178	12.6	9.3	16.4
14	Charley Hoffman	89	72	118	124	110	174	185	146	283	316	246	108' 10"	152' 2"	78' 2"	193	210	170	12.5	9.3	16.4
15	Bio Kim	59	42	118	124	104	174	188	156	283	327	244	108' 9"	174' 6"	58' 4"	193	209	147	12.4	8.5	15.7
16	Nick Watney	76	62	118	123	109	174	181	142	283	314	258	108' 1"	151' 8"	66' 4"	193	213	153	12.3	8.1	17.4
17	Kyle Stanley	90	74	118	127	107	174	181	162	283	318	242	107' 8"	151' 5"	52' 0"	193	209	169	12.3	8.2	16.0
18	Steven Bowditch	72	62	117	122	107	173	183	155	283	314	241	107' 8"	156' 11"	67' 6"	192	210	177	12.3	8.9	16.1
19	Martin Laird	73	61	117	122	109	173	178	156	283	326	251	107' 3"	201' 6"	58' 6"	192	202	173	12.3	4.9	18.1
20	Phil Mickelson	79	63	117	123	106	173	181	154	283	314	250	106' 10"	134' 0"	67' 8"	192	213	166	12.3	10.1	14.9
21	Robert Karlsson	61	48	117	121	111	173	179	163	282	317	248	106' 3"	150' 1"	65' 5"	192	210	163	12.2	8.7	16.9
22	Trevor Immelman	68	51	117	121	108	173	179	157	282	313	250	106' 3"	142' 4"	79' 5"	191	205	171	12.2	9.0	15.6
23	Ricky Barnes	70	58	117	124	108	173	180	164	282	313	238	106' 2"	144' 10"	68' 5"	191	213	164	12.1	7.1	20.3
24	Bill Haas	93	73	117	120	109	173	178	158	282	314	248	106' 1"	151' 5"	62' 1"	191	200	179	12.0	8.6	15.4
25	Adam Scott	60	51	117	120	105	172	180	161	282	342	246	105' 6"	168' 7"	61' 10"	191	205	150	12.0	8.5	15.9
26	Keegan Bradley	91	74	117	121	108	172	180	158	281	310	221	105' 5"	155' 8"	76' 11"	191	201	145	11.9	8.6	15.9
27	George McNeill	59	50	117	120	111	172	178	163	281	307	248	104' 7"	142' 10"	46' 8"	191	207	155	11.8	8.8	17.8
28	John Senden	90	79	116	123	108	172	176	163	281	316	240	104' 5"	128' 7"	81' 1"	190	213	168	11.8	8.2	16.5
29	Troy Matteson	85	71	116	120	110	172	181	158	281	317	250	103' 11"	146' 11"	22' 2"	190	204	173	11.8	8.2	32.1
30	Charl Schwartzel	58	37	116	121	111	172	178	161	281	309	255	103' 8"	136' 1"	73' 11"	190	205	173	11.8	6.3	16.5
31	Lucas Glover	70	55	116	120	110	172	177	159	280	310	250	103' 4"	134' 2"	68' 1"	190	202	171	11.8	8.1	17.5
32	Charles Howell III	102	89	116	120	109	171	181	142	280	313	247	103' 2"	143' 4"	73' 6"	190	203	168	11.8	7.6	18.8
33	Bobby Gates	68	48	116	122	101	171	178	158	280	316	208	102' 10"	132' 2"	55' 0"	190	206	173	11.8	8.0	16.5
34	Michael Putnam	67	47	116	124	112	171	179	150	280	322	247	102' 9"	154' 0"	67' 5"	190	204	174	11.7	7.2	14.4
35	Andres Romero	77	66	116	122	111	171	178	155	280	306	221	102' 6"	154' 6"	58' 2"	190	205	167	11.7	9.2	15.7
36	Jimmy Walker	79	77	116	122	98	171	181	165	280	312	235	102' 5"	145' 6"	60' 7"	190	208	168	11.7	8.9	15.4
37	Jason Day	76	64	116	121	109	171	178	160	279	311	249	102' 1"	142' 6"	67' 4"	190	204	174	11.7	7.9	15.5
38	Matt Jones	61	47	116	120	105	171	178	145	279	314	244	101' 8"	137' 11"	66' 5"	189	199	148	11.7	9.0	16.3
39	Marc Leishman	81	77	116	120	108	171	176	160	279	318	242	101' 8"	134' 6"	70' 5"	189	205	163	11.7	3.4	15.5
40	Alex Prugh	72	55	115	118	111	171	179	159	279	306	247	101' 8"	164' 0"	46' 5"	188	207	168	11.7	8.4	16.9
41	D.J. Trahan	79	73	115	121	107	171	176	163	279	304	234	101' 7"	146' 8"	62' 6"	188	207	165	11.7	7.7	16.1
42	Joseph Bramlett	63	44	115	120	110	171	176	161	278	301	253	101' 6"	138' 8"	64' 2"	188	218	162	11.6	8.6	17.6
43	Kevin Streelman	80	55	115	119	111	171	175	159	278	312	242	100' 10"	125' 8"	73' 6"	187	201	168	11.6	4.0	17.7
44	Sean O'Hair	67	46	115	122	106	170	177	156	278	303	239	100' 10"	142' 2"	56' 5"	187	203	166	11.6	8.2	14.3
45	David Duval	57	44	115	118	110	170	177	158	277	312	229	100' 8"	158' 10"	57' 10"	187	205	155	11.6	8.0	14.2
46	Pat Perez	74	62	115	120	108	170	177	160	277	313	242	100' 8"	134' 10"	59' 5"	187	202	176	11.6	8.4	15.6
47	Harrison Frazar	54	37	115	120	98	170	177	154	277	318	247	100' 6"	133' 4"	41' 0"	187	202	163	11.5	8.7	16.6
48	Derek Lamely	51	41	115	119	105	170	181	154	277	310	240	100' 5"	131' 10"	69' 7"	186	204	148	11.5	6.6	16.6
49	Jim Herman	57	40	115	119	108	170	175	156	277	318	245	100' 5"	131' 10"	73' 5"	186	201	164	11.5	2.5	15.4
50	Scott Gutschewski	55	37	115	119	105	170	175	157	277	310	243	100' 5"	135' 2"	57' 2"	186	202	170	11.5	7.7	14.2
51	Scott Piercy	64	45	115	120	108	170	177	160	277	314	238	100' 4"	129' 7"	61' 1"	186	211	163	11.5	7.0	16.8
52	Ryan Palmer	78	61	115	120	104	170	176	158	276	300	239	99' 11"	133' 10"	78' 6"	186	202	165	11.4	7.4	14.0
53	Anthony Kim	72	62	115	118	109	170	174	164	276	311	243	99' 8"	127' 10"	62' 1"	186	200	164	11.4	6.6	14.7
54	Justin Rose	77	66	115	120	107	170	173	162	276	308	245	99' 8"	156' 4"	60' 8"	186	208	137	11.4	3.9	14.6
55	Retief Goosen	46	38	115	118	110	170	178	160	276	309	251	99' 6"	136' 5"	73' 10"	186	198	168	11.4	7.5	16.2
56	Boo Weekley	54	40	115	119	109	169	175	153	276	300	252	99' 2"	128' 6"	63' 8"	186	199	172	11.4	8.1	15.4
57	John Rollins	75	63	115	118	106	169	176	159	276	315	235	98' 11"	144' 2"	62' 0"	186	202	155	11.3	8.3	14.5
57	Josh Teater	92	72	115	119	107	169	176	158	276	307	241	98' 9"	121' 8"	82' 8"	185	201	171	11.3	6.7	16.7
59	Rickie Fowler	82	64	115	120	108	169	175	163	276	292	252	98' 7"	121' 5"	69' 8"	185	205	153	11.3	8.8	16.7
60	Davis Love III	66	50	114	120	108	169	175	163	276	306	241	98' 6"	138' 4"	75' 4"	185	202	165	11.3	7.6	15.3
61	Kevin Chappell	68	49	114	118	109	169	176	159	276	298	248	98' 6"	129' 0"	53' 0"	185	197	166	11.3	7.8	19.6
61	Brandt Jobe	92	74	114	120	105	169	177	157	275	302	250	98' 5"	124' 2"	67' 8"	185	198	166	11.3	7.8	25.2
63	Brendon de Jonge	99	86	114	120	108	169	173	163	275	311	239	98' 4"	140' 6"	71' 8"	185	196	170	11.3	7.8	15.6
64	Stuart Appleby	65	60	114	118	110	169	184	158	275	305	242	98' 3"	146' 7"	44' 11"	185	206	162	11.3	5.9	16.6
65	Tom Gillis	52	46	114	118	107	169	175	152	275	311	241	98' 0"	126' 5"	77' 4"	184	201	141	11.2	7.5	17.0
66	Cameron Tringale	95	83	114	118	107	169	176	157	274	305	240	97' 10"	120' 4"	74' 11"	184	196	171	11.2	6.5	17.3
67	Jonathan Byrd	75	70	114	119	108	169	175	161	274	307	196	97' 3"	131' 7"	61' 0"	184	204	133	11.2	6.8	14.3
68	Stewart Cink	70	54	114	118	108	169	174	148	274	304	245	97' 3"	142' 6"	61' 11"	184	202	162	11.2	7.9	16.1
68	Steve Marino	76	66	114	118	110	168	175	150	274	305	240	97' 2"	154' 8"	62' 6"	183	195	166	11.1	8.3	14.8
70	John Daly	49	28	114	120	103	168	174	158	273	295	242	97' 1"	143' 0"	52' 7"	183	198	144	11.1	7.0	20.2
71	Webb Simpson	90	79	114	128	107	168	175	154	273	292	238	96' 11"	118' 6"	72' 2"	183	202	162	11.1	8.0	16.2
72	Scott McCarron	53	39	114	117	108	168	179	152	273	308	226	96' 9"	159' 4"	63' 10"	183	200	151	11.1	8.0	15.7
73	Andres Gonzales	47	31	114	116	110	168	174	160	273	309	247	96' 6"	131' 6"	63' 8"	183	195	153	11.1	8.2	13.9
74	Nathan Green	67	49	114	118	107	168	174	156	273	294	241	96' 5"	137' 6"	64' 6"	183	198	164	11.1	8.0	15.8
75	Blake Adams	100	84	114	118	106	168	173	155	273	310	245	96' 1"	128' 0"	69' 8"	183	195	149	11.0	6.9	17.9
76	Tommy Gainey	94	78	114	118	104	168	173	160	273	297	243	95' 8"	154' 6"	61' 8"	183	197	160	11.0	7.3	15.4
77	Padraig Harrington	60	47	114	118	102	168	176	157	273	297	240	95' 6"	127' 5"	65' 1"	183	199	157	11.0	8.0	16.0
78	Bo Van Pelt	90	68	114	117	103	168	174	161	273	298	232	95' 6"	123' 11"	64' 10"	182	204	162	11.0	2.8	16.6
79	Jeff Overton	82	65	114	118	109	168	174	152	273	304	234	95' 2"	122' 8"	61' 11"	182	206	152	11.0	8.2	15.3
79	Y.E. Yang	63	44	114	118	102	168	175	159	273	299	234	95' 0"	144' 11"	63' 10"	182	193	171	10.9	7.8	14.7
81	Rory Sabbatini	83	59	113	117	109	167	174	142	272	300	234	94' 10"	149' 0"	63' 2"	182	200	158	10.9	2.0	18.3
82	Matt Bettencourt	73	64	113	117	105	167	173	158	272	310	210	94' 7"	132' 5"	66' 6"	182	200	155	10.9	8.1	14.1
83	William McGirt	87	74	113	117	106	167	176	155	272	290	243	94' 7"	116' 5"	63' 0"	182	193	150	10.9	6.2	13.6
84	Jim Renner	53	38	113	118	106	167	172	159	272	312	245	94' 4"	146' 7"	48' 5"	182	201	167	10.9	8.2	13.7
85	Ryan Moore	77	58	113	117	108	167	172	142	272	300	237	94' 4"	138' 1"	69' 5"	182	195	136	10.9	6.6	15.9
86	Ben Martin	60	45	113	118	105	167	173	158	272	296	229	94' 4"	122' 4"	58' 6"	182	201	147	10.8	4.6	14.0
87	Michael Bradley	62	48	113	117	98	167	174	147	271	297	243	94' 3"	132' 8"	46' 5"	182	199	157	10.8	7.7	12.9
88	Brendan Steele	81	71	113	118	105	167	174	156	271	294	195	93' 9"	128' 8"	55' 7"	181	195	160	10.8	6.7	16.2
89	Chad Campbell	89	72	113	117	97	167	175	154	271	302	244	93' 7"	127' 2"	65' 0"	181	200	162	10.8	3.5	16.6
90	Vijay Singh	77	71	113	116	108	167	174	155	271	298	239	93' 7"	151' 4"	42' 11"	181	200	136	10.8	7.2	15.7
91	Jarrod Lyle	73	56	113	118	107	167	173	158	271	306	236	93' 5"	116' 1"	75' 5"	181	197	148	10.8	8.6	14.1
92	Graeme McDowell	48	38	113	116	106	167	172	158	270	294	251	93' 5"	131' 7"	59' 5"	181	195	155	10.8	6.7	14.4
93	Geoff Ogilvy	69	54	113	116	98	167	172	156	270	294	236	93' 3"	120' 2"	59' 11"	181	195	163	10.8	7.9	16.5
94	Kevin Stadler	78	58	113	117	93	167	171	145	270	316	202	93' 1"	125' 2"	59' 7"	181	195	158	10.7	6.4	14.0
94	Camilo Villegas	69	57	113	118	104	167	171	154	270	294	233	92' 10"	118' 6"	52' 10"	181	194	148	10.7	7.6	14.1
96	Bill Lunde	84	68	112	116	107	166	171	159	270	290	237	92' 9"	118' 6"	63' 2"	181	200	156	10.7	7.9	13.5
97	Roland Thatcher	53	40	112	116	107	166	171	140	270	289	241	92' 9"	118' 11"	55' 8"	181	195	155	10.7	4.9	15.1
98	J.J. Henry	92	76	112	118	99	166	171	156	270	295	247	92' 8"	122' 11"	64' 2"	180	196	166	10.7	8.0	13.9
99	Fabian Gomez	70	46	112	122	105	166	170	136	270	291	229	92' 8"	167' 8"	4' 11"	180	201	147	10.7	7.9	13.2
100	Chris Stroud	80	70	112	115	107	166	171	154	270	307	244	92' 7"	130' 4"	47' 1"	180	195	85	10.7	5.1	14.7
101	Michael Thompson	66	50	112	115	97	166	171	155	270	297	247	92' 5"	126' 1"	54' 5"	180	196	145	10.7	5.7	16.1
102	Fredrik Jacobson	92	72	112	117	106	166	177	156	269	292	223	92' 3"	121' 0"	58' 1"	180	195	129	10.7	7.3	17.0
103	Rod Pampling	60	40	112	116	94	166	174	138	269	293	240	92' 3"	128' 10"	62' 7"	180	192	158	10.6	8.3	15.1
104	Ernie Els	67	54	112	117	104	166	176	156	269	295	228	92' 2"	126' 11"	43' 0"	180	195	161	10.6	6.6	19.4
105	Kevin Na	76	53	112	118	107	166	171	155	268	298	238	92' 1"	121' 4"	66' 5"	180	192	161	10.6	7.3	13.5
106	Lee Janzen	56	38	112	116	105	165	172	156	268	290	240	91' 10"	125' 10"	60' 7"	180	191	168	10.6	7.7	14.7
107	Robert Allenby	80	65	112	115	92	165	171	146	268	295	200	91' 10"	157' 2"	56' 4"	180	193	166	10.5	6.3	14.1
108	Chris Kirk	85	82	112	116	106	165	170	139	268	300	206	91' 3"	137' 0"	57' 4"	179	191	162	10.5	8.3	13.2
109	Hunter Mahan	92	77	112	115	105	165	172	143	268	289	238	91' 1"	134' 5"	68' 0"	179	194	137	10.5	6.3	18.5
110	Luke Donald	69	48	112	117	105	165	169	161	268	287	242	90' 9"	134' 7"	40' 1"	179	188	162	10.5	8.0	12.7
111	Tim Herron	71	57	112	115	98	165	170	153	268	292	231	90' 8"	137' 0"	50' 11"	179	191	163	10.5	6.5	13.9

111	Sunghoon Kang	53	34	112	119	105	165	171	156	267	290	236	90' 7"	148' 11"	59' 0"	179	193	164	10.4	5.6	13.7
113	Billy Horschel	61	44	112	114	109	165	173	146	267	295	228	90' 5"	121' 6"	62' 1"	179	191	163	10.4	6.4	15.0
114	Joe Durant	61	44	111	115	107	164	170	141	267	294	224	90' 5"	129' 4"	54' 11"	179	189	159	10.4	8.5	12.9
114	Ryuji Imada	73	70	111	115	98	164	174	151	267	298	242	90' 4"	124' 5"	52' 4"	179	193	144	10.3	0.8	14.6
116	Troy Merritt	51	41	111	115	105	164	170	148	267	287	235	89' 8"	109' 0"	53' 2"	179	193	155	10.3	4.7	16.2
117	Daniel Summerhays	67	55	111	115	107	164	172	150	267	296	232	89' 7"	119' 6"	56' 7"	179	206	148	10.3	6.4	20.0
118	Martin Piller	53	35	111	114	105	164	169	156	267	287	229	88' 4"	137' 0"	58' 7"	178	212	159	10.3	5.3	14.3
119	Kris Blanks	80	68	111	116	97	164	170	146	266	295	226	88' 3"	115' 4"	53' 7"	178	198	163	10.3	1.2	14.2
120	Woody Austin	47	31	111	114	105	164	171	156	266	287	221	88' 2"	125' 8"	59' 10"	178	194	161	10.2	6.9	16.3
121	Alexandre Rocha	53	33	111	118	104	164	174	156	266	289	242	88' 0"	111' 10"	59' 11"	178	195	152	10.2	7.7	14.4
122	D.J. Brigman	57	37	111	115	105	164	171	152	265	285	238	87' 11"	138' 11"	43' 7"	178	190	142	10.2	6.6	13.1
123	Joe Ogilvie	67	48	111	115	97	164	168	159	265	287	233	87' 6"	134' 2"	53' 8"	178	193	156	10.2	6.7	15.0
124	Briny Baird	48	30	111	115	105	164	184	155	265	299	243	87' 5"	137' 2"	53' 11"	178	192	137	10.2	6.9	13.4
125	David Hearn	72	58	111	115	104	164	169	158	265	288	238	87' 0"	134' 8"	46' 0"	178	192	140	10.2	2.6	14.0
125	Kevin Kisner	56	37	111	114	106	164	169	156	265	283	239	87' 0"	117' 8"	52' 5"	178	186	149	10.2	7.4	14.3
127	Carl Pettersson	87	80	111	116	102	164	170	156	265	289	202	86' 11"	117' 7"	50' 2"	177	188	159	10.1	6.8	15.4
128	Charlie Wi	71	66	111	116	103	164	169	156	264	291	237	86' 10"	126' 0"	62' 2"	177	192	123	10.1	6.2	13.5
129	Hunter Haas	84	69	111	115	101	163	168	154	264	294	201	86' 9"	109' 6"	59' 7"	177	192	146	10.1	4.4	12.9
129	Paul Stankowski	62	45	111	113	107	163	169	132	264	284	226	86' 1"	170' 4"	55' 10"	177	187	158	10.1	5.3	14.1
131	K.J. Choi	77	63	110	118	97	163	170	147	264	287	223	85' 6"	114' 10"	57' 8"	177	192	158	10.1	5.4	12.2
132	Brandt Snedeker	81	67	110	127	104	163	170	153	264	291	201	85' 3"	127' 8"	50' 1"	176	189	157	10.1	7.0	12.9
133	Shaun Micheel	67	52	110	115	105	163	169	154	264	295	222	85' 3"	135' 11"	48' 10"	176	190	149	10.1	6.6	12.8
134	Matt Kuchar	90	71	110	116	104	163	171	153	264	300	203	84' 8"	140' 10"	42' 5"	176	203	152	9.9	6.5	13.4
135	Chez Reavie	90	74	110	115	105	163	171	144	264	287	235	84' 8"	114' 8"	46' 7"	176	187	166	9.9	2.2	13.7
136	Cameron Beckman	64	53	110	114	102	163	168	152	263	286	227	84' 8"	117' 2"	50' 10"	176	191	132	9.9	4.3	11.9
137	Steve Stricker	70	59	110	114	89	163	168	144	263	292	238	84' 6"	126' 2"	47' 4"	176	188	152	9.9	1.5	16.6
138	Spencer Levin	97	75	110	114	104	163	171	153	263	294	230	84' 6"	116' 4"	61' 0"	176	190	161	9.9	3.1	12.2
139	John Merrick	61	47	110	114	104	163	168	143	263	292	226	84' 5"	123' 2"	35' 5"	176	192	159	9.8	6.9	14.1
140	Billy Mayfair	78	66	110	114	106	163	170	134	263	294	237	84' 3"	114' 10"	64' 10"	175	193	155	9.8	7.3	13.6
141	Kent Jones	66	51	110	114	101	163	168	139	263	284	200	84' 2"	110' 2"	60' 0"	175	190	147	9.8	6.2	12.6
142	D.A. Points	83	70	110	113	96	163	166	156	262	285	227	84' 2"	105' 5"	59' 10"	175	200	150	9.8	6.3	13.0
143	Ian Poulter	52	41	110	113	96	162	166	153	262	280	220	83' 11"	116' 7"	48' 11"	175	190	157	9.8	3.5	13.7
144	Johnson Wagner	75	65	110	113	107	162	167	151	262	286	204	83' 10"	135' 4"	56' 0"	175	185	155	9.8	6.7	14.5
145	Jason Dufner	78	66	110	115	90	162	167	145	262	283	233	83' 10"	109' 1"	63' 2"	175	187	142	9.8	6.0	16.2
146	Marc Turnesa	50	34	110	113	104	162	174	147	262	289	193	83' 8"	112' 6"	55' 7"	175	184	152	9.7	6.1	14.4
147	Stephen Ames	57	40	110	112	101	161	168	155	262	292	230	83' 5"	101' 1"	59' 2"	175	190	148	9.7	3.3	14.7
148	Bryce Molder	70	52	109	117	100	161	174	156	262	277	237	83' 4"	110' 5"	54' 8"	174	188	153	9.7	5.8	12.9
149	Greg Chalmers	76	62	109	113	98	161	166	151	261	291	236	83' 3"	110' 2"	53' 4"	174	185	159	9.7	6.0	16.4
150	Chad Collins	47	37	109	115	104	161	166	155	261	287	235	83' 0"	120' 2"	49' 0"	174	186	149	9.7	5.4	15.0
151	David Mathis	69	46	109	117	105	161	174	155	261	283	236	82' 6"	133' 4"	55' 1"	174	194	141	9.6	5.9	13.1
152	Tim Petrovic	76	59	109	112	105	161	165	150	260	275	239	82' 4"	110' 0"	40' 2"	174	202	131	9.5	2.4	15.1
153	Michael Connell	66	59	109	113	100	161	172	154	260	278	232	82' 3"	119' 7"	45' 7"	174	191	144	9.4	3.8	15.0
154	Dean Wilson	62	52	109	112	103	161	166	145	260	286	232	82' 1"	115' 10"	44' 5"	174	194	161	9.4	5.4	14.5
155	Rich Beem	48	38	109	112	104	161	169	151	260	289	190	82' 1"	112' 8"	50' 6"	174	188	151	9.3	4.0	13.2
156	Colt Knost	68	49	109	117	105	161	178	145	260	292	233	82' 0"	111' 11"	59' 11"	173	192	144	9.3	0.6	16.6
157	Nate Smith	54	39	109	112	102	161	166	155	260	277	235	82' 0"	106' 5"	42' 6"	173	188	131	9.3	6.6	13.3
158	Steve Flesch	76	53	109	115	92	161	166	155	259	278	236	81' 11"	111' 0"	54' 5"	173	192	147	9.3	3.7	19.0
159	Jim Furyk	83	63	109	113	104	161	167	149	259	285	213	81' 9"	123' 11"	44' 8"	173	194	147	9.3	3.3	16.3
160	Vaughn Taylor	75	64	109	119	98	161	167	136	259	292	225	81' 9"	107' 1"	37' 1"	172	183	146	9.3	1.7	15.4
161	Jason Bohn	62	56	108	112	104	161	169	154	259	280	223	81' 7"	111' 10"	53' 4"	171	181	155	9.3	5.0	12.1
162	Chris DiMarco	82	65	108	111	102	161	164	154	258	286	224	81' 6"	129' 5"	40' 4"	171	183	157	9.2	1.4	14.0
163	Justin Leonard	72	56	108	112	103	160	171	152	258	286	224	81' 2"	115' 0"	52' 10"	171	187	141	9.2	1.7	16.6
164	Matt McQuillan	47	29	108	113	103	160	166	146	258	288	234	81' 1"	98' 8"	63' 7"	171	189	140	9.2	2.9	12.1
165	Ben Crane	66	51	108	111	99	160	167	135	258	281	228	81' 1"	130' 5"	49' 0"	171	183	151	9.1	4.9	13.4
166	Justin Hicks	51	33	108	116	102	160	163	156	257	276	224	80' 11"	118' 6"	50' 11"	171	183	153	9.0	3.5	13.7
167	Arjun Atwal	77	71	108	113	92	160	164	153	257	283	199	79' 9"	107' 2"	58' 5"	170	188	154	9.0	4.8	11.5
168	Richard S. Johnson	52	38	108	118	103	159	167	151	257	288	221	79' 4"	115' 8"	55' 10"	170	193	152	9.0	2.8	18.1
169	Shane Bertsch	50	33	108	110	105	159	165	150	257	275	230	79' 1"	112' 5"	47' 2"	170	186	138	9.0	1.2	12.5
170	Ben Curtis	54	46	108	110	105	159	163	155	256	284	205	78' 6"	106' 5"	49' 2"	170	182	153	9.0	1.5	14.6
171	Mark Wilson	87	74	108	112	105	159	164	142	256	279	234	78' 3"	118' 1"	52' 7"	170	192	137	9.0	0.4	13.3
172	Alex Cejka	57	43	107	113	103	159	164	151	256	283	202	77' 11"	105' 4"	48' 6"	170	188	138	8.9	6.4	13.5
173	Chris Riley	64	49	107	111	101	159	162	151	256	284	229	77' 10"	109' 6"	46' 7"	170	185	150	8.9	5.2	12.3
174	J.P. Hayes	49	39	107	111	97	159	175	152	255	274	226	77' 1"	108' 4"	39' 4"	169	184	144	8.8	0.7	13.9
175	Garrett Willis	57	37	107	109	102	159	178	153	255	272	238	76' 8"	120' 5"	32' 10"	169	184	153	8.7	3.3	16.2
176	Heath Slocum	75	65	107	121	103	158	163	142	254	272	223	76' 0"	100' 6"	39' 11"	168	179	147	8.7	1.3	11.9
177	Zach Johnson	77	67	107	110	96	158	163	151	254	286	221	75' 7"	97' 6"	31' 4"	168	182	143	8.5	2.5	11.1
178	Jerry Kelly	77	62	106	110	99	158	167	152	254	279	206	75' 0"	131' 2"	23' 10"	167	187	144	8.5	3.0	12.5
179	Aron Price	49	35	106	113	102	158	164	150	253	276	203	74' 11"	105' 1"	42' 4"	165	183	134	8.5	1.4	16.3
180	David Toms	76	57	106	110	101	157	162	134	253	270	231	74' 7"	97' 4"	45' 4"	165	186	143	8.3	3.3	12.3
181	Scott Verplank	46	40	106	110	103	157	161	153	252	270	229	74' 4"	118' 6"	44' 2"	164	178	149	8.2	1.1	11.3
182	Brian Davis	101	88	106	111	90	156	172	141	252	285	205	72' 8"	99' 4"	39' 10"	164	177	150	8.1	1.5	11.4
183	Paul Goydos	69	57	106	116	95	156	161	145	252	277	191	71' 4"	118' 8"	36' 8"	162	177	139	7.9	1.5	11.4
184	Nick O'Hern	75	53	104	107	93	155	159	134	250	277	217	68' 4"	92' 7"	19' 2"	161	183	129	7.9	1.3	11.5
185	Brian Gay	80	65	103	124	91	153	184	135	246	272	220	64' 2"	87' 6"	39' 1"	160	178	143	7.3	1.3	11.0